



Groundwater Sample Results, Combined Level 2 and Level 4 Laboratory Report, and the Sample Location Report, SDG 320-24236-1

*Naval Air Station Dallas
Dallas, Texas*

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NAS DALLAS, TX
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LABORATORY DATA PACKAGE 320-24236-1 NAS DALLAS TX
01/13/2017
TEST AMERICA, INC.

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-24236-1

Job Description: PFAS, NAS Dallas

For:

EnSafe, Inc.

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Attention: Thomas Wiberg



Approved for release.
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01/13/2017

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Definitions/Glossary

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Qualifiers

LCMS

Qualifier	Qualifier Description
Q	One or more quality control criteria failed.
E	Result exceeded calibration range.
M	Manual integrated compound.
U	Undetected at the Limit of Detection.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
B	Blank contamination: The analyte was detected above one-half the reporting limit in an associated blank.
D	The reported value is from a dilution.
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

CASE NARRATIVE

Client: EnSafe, Inc.

Project: PFAS, NAS Dallas

Report Number: 320-24236-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica West Sacramento attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

TestAmerica utilizes USEPA approved methods and DOD QSM, where applicable, in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. A summary of QC data for these analyses is included at the back of the report.

All parameters for which TestAmerica West Sacramento has certification were evaluated to the QSM specified reporting convention or to the client specified format if different from QSM. Parameters not certified under QSM, if any, were evaluated to the detection limit (DL) and include qualified results where applicable.

The sample(s) that contain constituents flagged with U are undetected. The result associated with this flag is the limit of detection (LOD).

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 12/09/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.2 C.

PFAS

The first level standard from the initial calibration curve is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5amu; therefore, detection of the analyte serves as verification that the assigned mass is within +/- 0.5amu of the true value, which meets the DoD/DOE QSM tune criterion.

The continuing calibration verification (CCV) associated with batch 320-144253 recovered above the upper control limit for Perfluorooctanesulfonic acid (PFOS). The samples associated with this CCV were greater than the calibration range for Perfluorooctanesulfonic acid (PFOS). The samples were diluted and reported in a subsequent analytical batch. The following samples are impacted: FFTA2TMW-1216 (320-24236-3), FFTA2TMW-1216 (320-24236-3[MS]) and FFTA2TMW-1216 (320-24236-3[MSD]).

The method blank for preparation batch 320-142967 and analytical batch 320-144253 contained Perfluorohexanoic acid (PFHxA) above half the reporting limit (1/2RL). Associated samples were not re-extracted and/or re-analyzed because results for PFHxA were either greater than 10X the value found in the method blank or not detected.

Perfluorohexanesulfonic acid (PFHxS) and Perfluorooctanoic acid (PFOA) were detected in method blank MB 320-142967/1-A at levels that were above the method detection limit but below ½ the reporting limit. The values should be considered estimates, and have been flagged.

The Isotope Dilution Analyte (IDA) recoveries for several analytes in the following samples is below the method recommended limit: FSS6TMW-1216 (320-24236-1), FSS2TMW-1216 (320-24236-2), FFTA2TMW-1216 (320-24236-3), FFTA2TMW-1216 (320-24236-3[MS]), FFTA2TMW-1216 (320-24236-3[MSD]), FFTA4TMW-1216 (320-24236-9), and FFTA4TMW-1216-D (320-24236-10). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the

samples.

The matrix spike / matrix spike duplicate (MS/MSD) recoveries for Perfluorooctane Sulfonamide (FOSA) and Perfluorotetradecanoic acid (PFTeA) in preparation batch 320-142967 and analytical batch 320-144253 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Due to the high concentration of Perfluoroheptanoic acid (PFHpA), Perfluorohexanesulfonic acid (PFHxS), Perfluorohexanoic acid (PFHxA), Perfluorooctanesulfonic acid (PFOS), Perfluorooctanoic acid (PFOA), and Perfluoropentanoic acid (PFPeA), the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-142967 and analytical batch 320-144253 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount.

The concentration of one or more analytes associated with the following samples exceeded the instrument calibration range: FSS6TMW-1216 (320-24236-1), FSS2TMW-1216 (320-24236-2), FFTA2TMW-1216 (320-24236-3), FFTA2TMW-1216 (320-24236-3[MS]), FFTA2TMW-1216 (320-24236-3[MSD]), FFTA4TMW-1216 (320-24236-9) and FFTA4TMW-1216-D (320-24236-10). These samples have been run at dilution and both sets of data have been reported.

Samples FSS6TMW-1216 (320-24236-1)[100X], FSS2TMW-1216 (320-24236-2)[200X], FFTA2TMW-1216 (320-24236-3)[20X], FFTA4TMW-1216 (320-24236-9)[100X] and FFTA4TMW-1216-D (320-24236-10)[100X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The following samples (FSS2TMW-1216 (320-24236-2)) required complex dilutions in order for the target analyte concentrations to be within the calibration range. Due to software limitations the complex dilution samples will have a dilution factor of 1.0 in the dilution factor field and a DL2 suffix. The complex dilution factors are as follows. FSS2TMW-1216 (320-24236-2) - 4000X dilution

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method(s) 3535: The following samples were decanted into another poly bottles due to having sediment and potentially clogging our SPE cartridges. The decanting was done prior to spiking and the extraction. FSS6TMW-1216 (320-24236-1), FFTA2TMW-1216 (320-24236-3), FFTA2TMW-1216 (320-24236-3[MS]) and FFTA2TMW-1216 (320-24236-3[MSD])

Method(s) 3535: The following sample was a cloudy white color after adding the methanol and water for the final volume. FSS6TMW-1216 (320-24236-1)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Client Sample ID: FSS6TMW-1216

Lab Sample ID: 320-24236-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.6	E	0.0025	0.00047	ug/L	1		537 (Modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.98	E	0.0025	0.0010	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.4	E B	0.0025	0.00080	ug/L	1		537 (Modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.7	E	0.0025	0.00082	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.5	E	0.0025	0.00076	ug/L	1		537 (Modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.13		0.0025	0.00067	ug/L	1		537 (Modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.0014	J	0.0025	0.00045	ug/L	1		537 (Modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.00068	J	0.0025	0.00041	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.0	E M	0.0025	0.00094	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.5	E	0.0025	0.00089	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA)	0.0057		0.0025	0.00065	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanoic acid (PFBA) - DL	2.1	D	0.25	0.047	ug/L	100		537 (Modified)	Total/NA
Perfluoropentanoic acid (PFPeA) - DL	5.5	D	0.25	0.10	ug/L	100		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	10	D B	0.25	0.080	ug/L	100		537 (Modified)	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	4.4	D	0.25	0.082	ug/L	100		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	4.1	D	0.25	0.076	ug/L	100		537 (Modified)	Total/NA
Perfluorononanoic acid (PFNA) - DL	0.12	J D	0.25	0.067	ug/L	100		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	4.3	D	0.25	0.094	ug/L	100		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	29	D	0.25	0.089	ug/L	100		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	6.5	D	0.41	0.13	ug/L	100		537 (Modified)	Total/NA

Client Sample ID: FSS2TMW-1216

Lab Sample ID: 320-24236-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.3	E	0.0025	0.00045	ug/L	1		537 (Modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.3	E	0.0025	0.00098	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	4.4	E B	0.0025	0.00078	ug/L	1		537 (Modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.1	E	0.0025	0.00079	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA)	11	E M	0.0025	0.00074	ug/L	1		537 (Modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.61	E	0.0025	0.00065	ug/L	1		537 (Modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.046		0.0025	0.00043	ug/L	1		537 (Modified)	Total/NA
Perfluoroundecanoic acid (PFUnA)	0.0049		0.0025	0.00074	ug/L	1		537 (Modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.00069	J	0.0025	0.00040	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	5.0	E M	0.0025	0.00091	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.8	E	0.0025	0.00086	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	62	E Q	0.0040	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorodecanesulfonic acid (PFDS)	0.63	E	0.0040	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA)	0.60	E	0.0025	0.00063	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanoic acid (PFBA) - DL	18	D	0.49	0.091	ug/L	200		537 (Modified)	Total/NA
Perfluoropentanoic acid (PFPeA) - DL	21	D	0.49	0.20	ug/L	200		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	50	D B	0.49	0.16	ug/L	200		537 (Modified)	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	6.4	D	0.49	0.16	ug/L	200		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	23	D M	0.49	0.15	ug/L	200		537 (Modified)	Total/NA
Perfluorononanoic acid (PFNA) - DL	0.61	D	0.49	0.13	ug/L	200		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	26	D	0.49	0.18	ug/L	200		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	82	E D	0.49	0.17	ug/L	200		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Client Sample ID: FSS2TMW-1216 (Continued)

Lab Sample ID: 320-24236-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS) - DL	580	E D	0.79	0.25	ug/L	200		537 (Modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA) - DL	0.76	D	0.49	0.13	ug/L	200		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL2	240		9.9	3.4	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL2	680	M	16	5.0	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: FFTA2TMW-1216

Lab Sample ID: 320-24236-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.31		0.0026	0.00047	ug/L	1		537 (Modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.58	E J	0.0026	0.0010	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.87	E J B	0.0026	0.00081	ug/L	1		537 (Modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.66	E J	0.0026	0.00083	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA)	3.8	E J M	0.0026	0.00077	ug/L	1		537 (Modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.029		0.0026	0.00068	ug/L	1		537 (Modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.017		0.0026	0.00046	ug/L	1		537 (Modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.00059	J	0.0026	0.00041	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.26		0.0026	0.00095	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.5	E J	0.0026	0.00090	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.2	Q E J	0.0041	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA)	0.088	J	0.0026	0.00066	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanoic acid (PFBA) - DL	0.31	D	0.052	0.0095	ug/L	20		537 (Modified)	Total/NA
Perfluoropentanoic acid (PFPeA) - DL	1.0	D J	0.052	0.020	ug/L	20		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	1.7	D B J	0.052	0.016	ug/L	20		537 (Modified)	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	0.74	D J	0.052	0.017	ug/L	20		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	7.1	D M J	0.052	0.015	ug/L	20		537 (Modified)	Total/NA
Perfluorononanoic acid (PFNA) - DL	0.030	J D	0.052	0.014	ug/L	20		537 (Modified)	Total/NA
Perfluorodecanoic acid (PFDA) - DL	0.016	J D	0.052	0.0091	ug/L	20		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.13	D	0.052	0.019	ug/L	20		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	5.0	D J	0.052	0.018	ug/L	20		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	1.3	D J	0.083	0.026	ug/L	20		537 (Modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA) - DL	0.087	D J	0.052	0.013	ug/L	20		537 (Modified)	Total/NA

Client Sample ID: FB120816

Lab Sample ID: 320-24236-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.0011	J	0.0022	0.00078	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: EBWC120816-a

Lab Sample ID: 320-24236-5

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA)	0.00042	J	0.0024	0.00039	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.00087	J	0.0024	0.00084	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: EBWC120816-b

Lab Sample ID: 320-24236-6

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Client Sample ID: EBWC120816-b (Continued)

Lab Sample ID: 320-24236-6

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA)	0.00057	J	0.0026	0.00041	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.00092	J	0.0026	0.00090	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: EBDPT120816-a

Lab Sample ID: 320-24236-7

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA)	0.00044	J	0.0023	0.00038	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.00089	J	0.0023	0.00082	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - RA	0.0033	J M	0.0038	0.0012	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: EBDPT120816-b

Lab Sample ID: 320-24236-8

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA)	0.00040	J	0.0023	0.00037	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: FFTA4TMW-1216

Lab Sample ID: 320-24236-9

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.40	E	0.0024	0.00044	ug/L	1		537 (Modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.74	E	0.0024	0.00095	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.1	E B	0.0024	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.0	E	0.0024	0.00077	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA)	7.3	E M	0.0024	0.00072	ug/L	1		537 (Modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.0055		0.0024	0.00063	ug/L	1		537 (Modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.00048	J	0.0024	0.00038	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.0	E M	0.0024	0.00088	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.9	E	0.0024	0.00083	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.068		0.0038	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanoic acid (PFBA) - DL	0.43	D	0.24	0.044	ug/L	100		537 (Modified)	Total/NA
Perfluoropentanoic acid (PFPeA) - DL	1.4	D	0.24	0.095	ug/L	100		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	7.6	B D	0.24	0.075	ug/L	100		537 (Modified)	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	1.2	D	0.24	0.077	ug/L	100		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	23	D M	0.24	0.072	ug/L	100		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	2.0	D	0.24	0.088	ug/L	100		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	15	D	0.24	0.083	ug/L	100		537 (Modified)	Total/NA

Client Sample ID: FFTA4TMW-1216-D

Lab Sample ID: 320-24236-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.42	E	0.0024	0.00044	ug/L	1		537 (Modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.76	E	0.0024	0.00095	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.0	E B	0.0024	0.00075	ug/L	1		537 (Modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.1	E	0.0024	0.00077	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA)	7.5	E M	0.0024	0.00072	ug/L	1		537 (Modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.0050		0.0024	0.00063	ug/L	1		537 (Modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.00091	J	0.0024	0.00038	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.1	E M	0.0024	0.00088	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.2	E	0.0024	0.00083	ug/L	1		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Client Sample ID: FFTA4TMW-1216-D (Continued)

Lab Sample ID: 320-24236-10

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.064		0.0038	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanoic acid (PFBA) - DL	0.44	D	0.24	0.044	ug/L	100		537 (Modified)	Total/NA
Perfluoropentanoic acid (PFPeA) - DL	1.4	D	0.24	0.095	ug/L	100		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	8.1	B D	0.24	0.075	ug/L	100		537 (Modified)	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	1.2	D	0.24	0.077	ug/L	100		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	23	D M	0.24	0.072	ug/L	100		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	2.1	D	0.24	0.088	ug/L	100		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	15	D	0.24	0.083	ug/L	100		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Client Sample ID: FSS6TMW-1216

Date Collected: 12/08/16 09:30

Date Received: 12/09/16 09:50

Lab Sample ID: 320-24236-1

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.6	E	0.0025	0.00047	ug/L		12/19/16 14:38	12/29/16 01:37	1
Perfluoropentanoic acid (PFPeA)	0.98	E	0.0025	0.0010	ug/L		12/19/16 14:38	12/29/16 01:37	1
Perfluorohexanoic acid (PFHxA)	1.4	E B	0.0025	0.00080	ug/L		12/19/16 14:38	12/29/16 01:37	1
Perfluoroheptanoic acid (PFHpA)	2.7	E	0.0025	0.00082	ug/L		12/19/16 14:38	12/29/16 01:37	1
Perfluorooctanoic acid (PFOA)	2.5	E	0.0025	0.00076	ug/L		12/19/16 14:38	12/29/16 01:37	1
Perfluorononanoic acid (PFNA)	0.13		0.0025	0.00067	ug/L		12/19/16 14:38	12/29/16 01:37	1
Perfluorodecanoic acid (PFDA)	0.0014	J	0.0025	0.00045	ug/L		12/19/16 14:38	12/29/16 01:37	1
Perfluoroundecanoic acid (PFUnA)	0.0020	U	0.0025	0.00076	ug/L		12/19/16 14:38	12/29/16 01:37	1
Perfluorododecanoic acid (PFDoA)	0.0020	U	0.0025	0.00060	ug/L		12/19/16 14:38	12/29/16 01:37	1
Perfluorotridecanoic Acid (PFTriA)	0.0020	U	0.0025	0.00056	ug/L		12/19/16 14:38	12/29/16 01:37	1
Perfluorotetradecanoic acid (PFTeA)	0.00068	J	0.0025	0.00041	ug/L		12/19/16 14:38	12/29/16 01:37	1
Perfluorobutanesulfonic acid (PFBS)	2.0	E M	0.0025	0.00094	ug/L		12/19/16 14:38	12/29/16 01:37	1
Perfluorohexanesulfonic acid (PFHxS)	6.5	E	0.0025	0.00089	ug/L		12/19/16 14:38	12/29/16 01:37	1
Perfluorodecanesulfonic acid (PFDS)	0.0031	U	0.0041	0.0012	ug/L		12/19/16 14:38	12/29/16 01:37	1
Perfluorooctane Sulfonamide (FOSA)	0.0057		0.0025	0.00065	ug/L		12/19/16 14:38	12/29/16 01:37	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	13	Q	25 - 150				12/19/16 14:38	12/29/16 01:37	1
13C4 PFBA	19	Q	25 - 150				12/19/16 14:38	12/29/16 01:37	1
13C5-PFPeA	34		25 - 150				12/19/16 14:38	12/29/16 01:37	1
13C2 PFHxA	34		25 - 150				12/19/16 14:38	12/29/16 01:37	1
13C4-PFHpA	19	Q	25 - 150				12/19/16 14:38	12/29/16 01:37	1
13C4 PFOA	42		25 - 150				12/19/16 14:38	12/29/16 01:37	1
13C5 PFNA	52		25 - 150				12/19/16 14:38	12/29/16 01:37	1
13C2 PFDA	132		25 - 150				12/19/16 14:38	12/29/16 01:37	1
13C2 PFUnA	123		25 - 150				12/19/16 14:38	12/29/16 01:37	1
13C2 PFDoA	110		25 - 150				12/19/16 14:38	12/29/16 01:37	1
18O2 PFHxS	17	Q	25 - 150				12/19/16 14:38	12/29/16 01:37	1
13C4 PFOS	54		25 - 150				12/19/16 14:38	12/29/16 01:37	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.1	D	0.25	0.047	ug/L		12/19/16 14:38	01/03/17 16:58	100
Perfluoropentanoic acid (PFPeA)	5.5	D	0.25	0.10	ug/L		12/19/16 14:38	01/03/17 16:58	100
Perfluorohexanoic acid (PFHxA)	10	D B	0.25	0.080	ug/L		12/19/16 14:38	01/03/17 16:58	100
Perfluoroheptanoic acid (PFHpA)	4.4	D	0.25	0.082	ug/L		12/19/16 14:38	01/03/17 16:58	100
Perfluorooctanoic acid (PFOA)	4.1	D	0.25	0.076	ug/L		12/19/16 14:38	01/03/17 16:58	100
Perfluorononanoic acid (PFNA)	0.12	J D	0.25	0.067	ug/L		12/19/16 14:38	01/03/17 16:58	100
Perfluorodecanoic acid (PFDA)	0.10	U	0.25	0.045	ug/L		12/19/16 14:38	01/03/17 16:58	100
Perfluoroundecanoic acid (PFUnA)	0.20	U	0.25	0.076	ug/L		12/19/16 14:38	01/03/17 16:58	100
Perfluorododecanoic acid (PFDoA)	0.20	U	0.25	0.060	ug/L		12/19/16 14:38	01/03/17 16:58	100
Perfluorotridecanoic Acid (PFTriA)	0.20	U	0.25	0.056	ug/L		12/19/16 14:38	01/03/17 16:58	100
Perfluorotetradecanoic acid (PFTeA)	0.10	U	0.25	0.041	ug/L		12/19/16 14:38	01/03/17 16:58	100
Perfluorobutanesulfonic acid (PFBS)	4.3	D	0.25	0.094	ug/L		12/19/16 14:38	01/03/17 16:58	100
Perfluorohexanesulfonic acid (PFHxS)	29	D	0.25	0.089	ug/L		12/19/16 14:38	01/03/17 16:58	100

TestAmerica Sacramento

Client Sample Results

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Client Sample ID: FSS6TMW-1216

Date Collected: 12/08/16 09:30

Date Received: 12/09/16 09:50

Lab Sample ID: 320-24236-1

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	6.5	D	0.41	0.13	ug/L		12/19/16 14:38	01/03/17 16:58	100
Perfluorodecanesulfonic acid (PFDS)	0.31	U	0.41	0.12	ug/L		12/19/16 14:38	01/03/17 16:58	100
Perfluorooctane Sulfonamide (FOSA)	0.20	U	0.25	0.065	ug/L		12/19/16 14:38	01/03/17 16:58	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	18	Q	25 - 150				12/19/16 14:38	01/03/17 16:58	100
13C4 PFBA	139		25 - 150				12/19/16 14:38	01/03/17 16:58	100
13C5-PFPeA	143		25 - 150				12/19/16 14:38	01/03/17 16:58	100
13C2 PFHxA	119		25 - 150				12/19/16 14:38	01/03/17 16:58	100
13C4-PFHpA	96		25 - 150				12/19/16 14:38	01/03/17 16:58	100
13C4 PFOA	149		25 - 150				12/19/16 14:38	01/03/17 16:58	100
13C5 PFNA	150		25 - 150				12/19/16 14:38	01/03/17 16:58	100
13C2 PFDA	158	Q	25 - 150				12/19/16 14:38	01/03/17 16:58	100
13C2 PFUnA	154	Q	25 - 150				12/19/16 14:38	01/03/17 16:58	100
13C2 PFDoA	145		25 - 150				12/19/16 14:38	01/03/17 16:58	100
18O2 PFHxS	120		25 - 150				12/19/16 14:38	01/03/17 16:58	100
13C4 PFOS	126		25 - 150				12/19/16 14:38	01/03/17 16:58	100

Client Sample ID: FSS2TMW-1216

Date Collected: 12/08/16 11:35

Date Received: 12/09/16 09:50

Lab Sample ID: 320-24236-2

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	3.3	E	0.0025	0.00045	ug/L		12/19/16 14:38	12/29/16 01:44	1
Perfluoropentanoic acid (PFPeA)	2.3	E	0.0025	0.00098	ug/L		12/19/16 14:38	12/29/16 01:44	1
Perfluorohexanoic acid (PFHxA)	4.4	E B	0.0025	0.00078	ug/L		12/19/16 14:38	12/29/16 01:44	1
Perfluoroheptanoic acid (PFHpA)	5.1	E	0.0025	0.00079	ug/L		12/19/16 14:38	12/29/16 01:44	1
Perfluorooctanoic acid (PFOA)	11	E M	0.0025	0.00074	ug/L		12/19/16 14:38	12/29/16 01:44	1
Perfluorononanoic acid (PFNA)	0.61	E	0.0025	0.00065	ug/L		12/19/16 14:38	12/29/16 01:44	1
Perfluorodecanoic acid (PFDA)	0.046		0.0025	0.00043	ug/L		12/19/16 14:38	12/29/16 01:44	1
Perfluoroundecanoic acid (PFUnA)	0.0049		0.0025	0.00074	ug/L		12/19/16 14:38	12/29/16 01:44	1
Perfluorododecanoic acid (PFDoA)	0.0020	U	0.0025	0.00058	ug/L		12/19/16 14:38	12/29/16 01:44	1
Perfluorotridecanoic Acid (PFTriA)	0.0020	U	0.0025	0.00054	ug/L		12/19/16 14:38	12/29/16 01:44	1
Perfluorotetradecanoic acid (PFTeA)	0.00069	J	0.0025	0.00040	ug/L		12/19/16 14:38	12/29/16 01:44	1
Perfluorobutanesulfonic acid (PFBS)	5.0	E M	0.0025	0.00091	ug/L		12/19/16 14:38	12/29/16 01:44	1
Perfluorohexanesulfonic acid (PFHxS)	6.8	E	0.0025	0.00086	ug/L		12/19/16 14:38	12/29/16 01:44	1
Perfluorooctanesulfonic acid (PFOS)	62	E Q	0.0040	0.0013	ug/L		12/19/16 14:38	12/29/16 01:44	1
Perfluorodecanesulfonic acid (PFDS)	0.63	E	0.0040	0.0012	ug/L		12/19/16 14:38	12/29/16 01:44	1
Perfluorooctane Sulfonamide (FOSA)	0.60	E	0.0025	0.00063	ug/L		12/19/16 14:38	12/29/16 01:44	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	42		25 - 150				12/19/16 14:38	12/29/16 01:44	1
13C4 PFBA	13	Q	25 - 150				12/19/16 14:38	12/29/16 01:44	1
13C5-PFPeA	15	Q	25 - 150				12/19/16 14:38	12/29/16 01:44	1

TestAmerica Sacramento

Client Sample Results

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Client Sample ID: FSS2TMW-1216

Lab Sample ID: 320-24236-2

Date Collected: 12/08/16 11:35

Matrix: Water

Date Received: 12/09/16 09:50

Method: 537 (Modified) - Perfluorinated Hydrocarbons (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	15	Q	25 - 150	12/19/16 14:38	12/29/16 01:44	1
13C4-PFHpA	6	Q	25 - 150	12/19/16 14:38	12/29/16 01:44	1
13C4 PFOA	10	Q	25 - 150	12/19/16 14:38	12/29/16 01:44	1
13C5 PFNA	6	Q	25 - 150	12/19/16 14:38	12/29/16 01:44	1
13C2 PFDA	60		25 - 150	12/19/16 14:38	12/29/16 01:44	1
13C2 PFUnA	122		25 - 150	12/19/16 14:38	12/29/16 01:44	1
13C2 PFDoA	119		25 - 150	12/19/16 14:38	12/29/16 01:44	1
18O2 PFHxS	9	Q	25 - 150	12/19/16 14:38	12/29/16 01:44	1
13C4 PFOS	4	Q	25 - 150	12/19/16 14:38	12/29/16 01:44	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	18	D	0.49	0.091	ug/L		12/19/16 14:38	12/30/16 12:48	200
Perfluoropentanoic acid (PFPeA)	21	D	0.49	0.20	ug/L		12/19/16 14:38	12/30/16 12:48	200
Perfluorohexanoic acid (PFHxA)	50	D B	0.49	0.16	ug/L		12/19/16 14:38	12/30/16 12:48	200
Perfluoroheptanoic acid (PFHpA)	6.4	D	0.49	0.16	ug/L		12/19/16 14:38	12/30/16 12:48	200
Perfluorooctanoic acid (PFOA)	23	D M	0.49	0.15	ug/L		12/19/16 14:38	12/30/16 12:48	200
Perfluorononanoic acid (PFNA)	0.61	D	0.49	0.13	ug/L		12/19/16 14:38	12/30/16 12:48	200
Perfluorodecanoic acid (PFDA)	0.20	U	0.49	0.087	ug/L		12/19/16 14:38	12/30/16 12:48	200
Perfluoroundecanoic acid (PFUnA)	0.40	U	0.49	0.15	ug/L		12/19/16 14:38	12/30/16 12:48	200
Perfluorododecanoic acid (PFDoA)	0.40	U	0.49	0.12	ug/L		12/19/16 14:38	12/30/16 12:48	200
Perfluorotridecanoic Acid (PFTriA)	0.40	U	0.49	0.11	ug/L		12/19/16 14:38	12/30/16 12:48	200
Perfluorotetradecanoic acid (PFTeA)	0.20	U	0.49	0.079	ug/L		12/19/16 14:38	12/30/16 12:48	200
Perfluorobutanesulfonic acid (PFBS)	26	D	0.49	0.18	ug/L		12/19/16 14:38	12/30/16 12:48	200
Perfluorohexanesulfonic acid (PFHxS)	82	E D	0.49	0.17	ug/L		12/19/16 14:38	12/30/16 12:48	200
Perfluorooctanesulfonic acid (PFOS)	580	E D	0.79	0.25	ug/L		12/19/16 14:38	12/30/16 12:48	200
Perfluorodecanesulfonic acid (PFDS)	0.59	U	0.79	0.24	ug/L		12/19/16 14:38	12/30/16 12:48	200
Perfluorooctane Sulfonamide (FOSA)	0.76	D	0.49	0.13	ug/L		12/19/16 14:38	12/30/16 12:48	200

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	97		25 - 150	12/19/16 14:38	12/30/16 12:48	200
13C4 PFBA	124		25 - 150	12/19/16 14:38	12/30/16 12:48	200
13C5-PFPeA	121		25 - 150	12/19/16 14:38	12/30/16 12:48	200
13C2 PFHxA	147		25 - 150	12/19/16 14:38	12/30/16 12:48	200
13C4-PFHpA	81		25 - 150	12/19/16 14:38	12/30/16 12:48	200
13C4 PFOA	95		25 - 150	12/19/16 14:38	12/30/16 12:48	200
13C5 PFNA	51		25 - 150	12/19/16 14:38	12/30/16 12:48	200
13C2 PFDA	129		25 - 150	12/19/16 14:38	12/30/16 12:48	200
13C2 PFUnA	129		25 - 150	12/19/16 14:38	12/30/16 12:48	200
13C2 PFDoA	129		25 - 150	12/19/16 14:38	12/30/16 12:48	200
18O2 PFHxS	149		25 - 150	12/19/16 14:38	12/30/16 12:48	200
13C4 PFOS	54		25 - 150	12/19/16 14:38	12/30/16 12:48	200

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL2

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	240		9.9	3.4	ug/L		12/19/16 14:38	01/04/17 21:40	1

TestAmerica Sacramento

Client Sample Results

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Client Sample ID: FSS2TMW-1216

Date Collected: 12/08/16 11:35

Date Received: 12/09/16 09:50

Lab Sample ID: 320-24236-2

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL2 (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	680	M	16	5.0	ug/L		12/19/16 14:38	01/04/17 21:40	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
18O2 PFHxS	116		25 - 150				12/19/16 14:38	01/04/17 21:40	1
13C4 PFOS	119		25 - 150				12/19/16 14:38	01/04/17 21:40	1

Client Sample ID: FFTA2TMW-1216

Date Collected: 12/08/16 12:40

Date Received: 12/09/16 09:50

Lab Sample ID: 320-24236-3

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.31		0.0026	0.00047	ug/L		12/19/16 14:38	12/29/16 01:52	1
Perfluoropentanoic acid (PFPeA)	0.58	E J	0.0026	0.0010	ug/L		12/19/16 14:38	12/29/16 01:52	1
Perfluorohexanoic acid (PFHxA)	0.87	E J B	0.0026	0.00081	ug/L		12/19/16 14:38	12/29/16 01:52	1
Perfluoroheptanoic acid (PFHpA)	0.66	E J	0.0026	0.00083	ug/L		12/19/16 14:38	12/29/16 01:52	1
Perfluorooctanoic acid (PFOA)	3.8	E J M	0.0026	0.00077	ug/L		12/19/16 14:38	12/29/16 01:52	1
Perfluorononanoic acid (PFNA)	0.029		0.0026	0.00068	ug/L		12/19/16 14:38	12/29/16 01:52	1
Perfluorodecanoic acid (PFDA)	0.017		0.0026	0.00046	ug/L		12/19/16 14:38	12/29/16 01:52	1
Perfluoroundecanoic acid (PFUnA)	0.0021	U	0.0026	0.00077	ug/L		12/19/16 14:38	12/29/16 01:52	1
Perfluorododecanoic acid (PFDoA)	0.0021	U	0.0026	0.00060	ug/L		12/19/16 14:38	12/29/16 01:52	1
Perfluorotridecanoic Acid (PFTriA)	0.0021	U	0.0026	0.00057	ug/L		12/19/16 14:38	12/29/16 01:52	1
Perfluorotetradecanoic acid (PFTeA)	0.00059	J	0.0026	0.00041	ug/L		12/19/16 14:38	12/29/16 01:52	1
Perfluorobutanesulfonic acid (PFBS)	0.26		0.0026	0.00095	ug/L		12/19/16 14:38	12/29/16 01:52	1
Perfluorohexanesulfonic acid (PFHxS)	2.5	E J	0.0026	0.00090	ug/L		12/19/16 14:38	12/29/16 01:52	1
Perfluorooctanesulfonic acid (PFOS)	1.2	Q E J	0.0041	0.0013	ug/L		12/19/16 14:38	12/29/16 01:52	1
Perfluorodecanesulfonic acid (PFDS)	0.0031	U	0.0041	0.0013	ug/L		12/19/16 14:38	12/29/16 01:52	1
Perfluorooctane Sulfonamide (FOSA)	0.088	J	0.0026	0.00066	ug/L		12/19/16 14:38	12/29/16 01:52	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C8 FOSA	4	Q	25 - 150				12/19/16 14:38	12/29/16 01:52	1
13C4 PFBA	32		25 - 150				12/19/16 14:38	12/29/16 01:52	1
13C5-PFPeA	63		25 - 150				12/19/16 14:38	12/29/16 01:52	1
13C2 PFHxA	68		25 - 150				12/19/16 14:38	12/29/16 01:52	1
13C4-PFHpA	41		25 - 150				12/19/16 14:38	12/29/16 01:52	1
13C4 PFOA	31		25 - 150				12/19/16 14:38	12/29/16 01:52	1
13C5 PFNA	72		25 - 150				12/19/16 14:38	12/29/16 01:52	1
13C2 PFDA	111		25 - 150				12/19/16 14:38	12/29/16 01:52	1
13C2 PFUnA	118		25 - 150				12/19/16 14:38	12/29/16 01:52	1
13C2 PFDoA	106		25 - 150				12/19/16 14:38	12/29/16 01:52	1
18O2 PFHxS	38		25 - 150				12/19/16 14:38	12/29/16 01:52	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.31	D	0.052	0.0095	ug/L		12/19/16 14:38	12/30/16 14:26	20
Perfluoropentanoic acid (PFPeA)	1.0	D J	0.052	0.020	ug/L		12/19/16 14:38	12/30/16 14:26	20
Perfluorohexanoic acid (PFHxA)	1.7	D B J	0.052	0.016	ug/L		12/19/16 14:38	12/30/16 14:26	20

TestAmerica Sacramento

Client Sample Results

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Client Sample ID: FFTA2TMW-1216

Lab Sample ID: 320-24236-3

Date Collected: 12/08/16 12:40

Matrix: Water

Date Received: 12/09/16 09:50

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	0.74	D J	0.052	0.017	ug/L		12/19/16 14:38	12/30/16 14:26	20
Perfluorooctanoic acid (PFOA)	7.1	D M J	0.052	0.015	ug/L		12/19/16 14:38	12/30/16 14:26	20
Perfluorononanoic acid (PFNA)	0.030	J D	0.052	0.014	ug/L		12/19/16 14:38	12/30/16 14:26	20
Perfluorodecanoic acid (PFDA)	0.016	J D	0.052	0.0091	ug/L		12/19/16 14:38	12/30/16 14:26	20
Perfluoroundecanoic acid (PFUnA)	0.041	U	0.052	0.015	ug/L		12/19/16 14:38	12/30/16 14:26	20
Perfluorododecanoic acid (PFDoA)	0.041	U	0.052	0.012	ug/L		12/19/16 14:38	12/30/16 14:26	20
Perfluorotridecanoic Acid (PFTriA)	0.041	U	0.052	0.011	ug/L		12/19/16 14:38	12/30/16 14:26	20
Perfluorotetradecanoic acid (PFTeA)	0.021	U	0.052	0.0083	ug/L		12/19/16 14:38	12/30/16 14:26	20
Perfluorobutanesulfonic acid (PFBS)	0.13	D	0.052	0.019	ug/L		12/19/16 14:38	12/30/16 14:26	20
Perfluorohexanesulfonic acid (PFHxS)	5.0	D J	0.052	0.018	ug/L		12/19/16 14:38	12/30/16 14:26	20
Perfluorooctanesulfonic acid (PFOS)	1.3	D J	0.083	0.026	ug/L		12/19/16 14:38	12/30/16 14:26	20
Perfluorodecanesulfonic acid (PFDS)	0.062	U	0.083	0.025	ug/L		12/19/16 14:38	12/30/16 14:26	20
Perfluorooctane Sulfonamide (FOSA)	0.087	D J	0.052	0.013	ug/L		12/19/16 14:38	12/30/16 14:26	20
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	4	Q	25 - 150				12/19/16 14:38	12/30/16 14:26	20
13C4 PFBA	119		25 - 150				12/19/16 14:38	12/30/16 14:26	20
13C5-PFPeA	142		25 - 150				12/19/16 14:38	12/30/16 14:26	20
13C2 PFHxA	124		25 - 150				12/19/16 14:38	12/30/16 14:26	20
13C4-PFHpA	101		25 - 150				12/19/16 14:38	12/30/16 14:26	20
13C4 PFOA	94		25 - 150				12/19/16 14:38	12/30/16 14:26	20
13C5 PFNA	121		25 - 150				12/19/16 14:38	12/30/16 14:26	20
13C2 PFDA	126		25 - 150				12/19/16 14:38	12/30/16 14:26	20
13C2 PFUnA	126		25 - 150				12/19/16 14:38	12/30/16 14:26	20
13C2 PFDoA	123		25 - 150				12/19/16 14:38	12/30/16 14:26	20
18O2 PFHxS	115		25 - 150				12/19/16 14:38	12/30/16 14:26	20
13C4 PFOS	125		25 - 150				12/19/16 14:38	12/30/16 14:26	20

Client Sample ID: FB120816

Lab Sample ID: 320-24236-4

Date Collected: 12/08/16 13:20

Matrix: Water

Date Received: 12/09/16 09:50

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.00090	U	0.0022	0.00041	ug/L		12/19/16 14:38	12/29/16 02:14	1
Perfluoropentanoic acid (PFPeA)	0.0018	U	0.0022	0.00089	ug/L		12/19/16 14:38	12/29/16 02:14	1
Perfluorohexanoic acid (PFHxA)	0.0018	U	0.0022	0.00070	ug/L		12/19/16 14:38	12/29/16 02:14	1
Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0022	0.00072	ug/L		12/19/16 14:38	12/29/16 02:14	1
Perfluorooctanoic acid (PFOA)	0.0018	U	0.0022	0.00067	ug/L		12/19/16 14:38	12/29/16 02:14	1
Perfluorononanoic acid (PFNA)	0.0018	U	0.0022	0.00059	ug/L		12/19/16 14:38	12/29/16 02:14	1
Perfluorodecanoic acid (PFDA)	0.00090	U	0.0022	0.00039	ug/L		12/19/16 14:38	12/29/16 02:14	1
Perfluoroundecanoic acid (PFUnA)	0.0018	U	0.0022	0.00067	ug/L		12/19/16 14:38	12/29/16 02:14	1
Perfluorododecanoic acid (PFDoA)	0.0018	U	0.0022	0.00052	ug/L		12/19/16 14:38	12/29/16 02:14	1
Perfluorotridecanoic Acid (PFTriA)	0.0018	U	0.0022	0.00049	ug/L		12/19/16 14:38	12/29/16 02:14	1
Perfluorotetradecanoic acid (PFTeA)	0.00090	U	0.0022	0.00036	ug/L		12/19/16 14:38	12/29/16 02:14	1
Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0022	0.00082	ug/L		12/19/16 14:38	12/29/16 02:14	1
Perfluorohexanesulfonic acid (PFHxS)	0.0011	J	0.0022	0.00078	ug/L		12/19/16 14:38	12/29/16 02:14	1

TestAmerica Sacramento

Client Sample Results

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Client Sample ID: FB120816

Date Collected: 12/08/16 13:20

Date Received: 12/09/16 09:50

Lab Sample ID: 320-24236-4

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorodecanesulfonic acid (PFDS)	0.0027	U	0.0036	0.0011	ug/L		12/19/16 14:38	12/29/16 02:14	1
Perfluorooctane Sulfonamide (FOSA)	0.0018	U	0.0022	0.00057	ug/L		12/19/16 14:38	12/29/16 02:14	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C8 FOSA	77		25 - 150				12/19/16 14:38	12/29/16 02:14	1
¹³ C4 PFBA	139		25 - 150				12/19/16 14:38	12/29/16 02:14	1
¹³ C5-PFPeA	137		25 - 150				12/19/16 14:38	12/29/16 02:14	1
¹³ C2 PFHxA	135		25 - 150				12/19/16 14:38	12/29/16 02:14	1
¹³ C4-PFHpA	133		25 - 150				12/19/16 14:38	12/29/16 02:14	1
¹³ C4 PFOA	135		25 - 150				12/19/16 14:38	12/29/16 02:14	1
¹³ C5 PFNA	132		25 - 150				12/19/16 14:38	12/29/16 02:14	1
¹³ C2 PFDA	144		25 - 150				12/19/16 14:38	12/29/16 02:14	1
¹³ C2 PFUnA	143		25 - 150				12/19/16 14:38	12/29/16 02:14	1
¹³ C2 PFDoA	134		25 - 150				12/19/16 14:38	12/29/16 02:14	1
¹⁸ O2 PFHxS	135		25 - 150				12/19/16 14:38	12/29/16 02:14	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.0027	U	0.0036	0.0011	ug/L		12/19/16 14:38	12/30/16 14:49	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOS	128		25 - 150				12/19/16 14:38	12/30/16 14:49	1

Client Sample ID: EBWC120816-a

Date Collected: 12/08/16 07:50

Date Received: 12/09/16 09:50

Lab Sample ID: 320-24236-5

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.00096	U	0.0024	0.00044	ug/L		12/19/16 14:38	12/29/16 02:22	1
Perfluoropentanoic acid (PFPeA)	0.0019	U	0.0024	0.00095	ug/L		12/19/16 14:38	12/29/16 02:22	1
Perfluorohexanoic acid (PFHxA)	0.0019	U	0.0024	0.00076	ug/L		12/19/16 14:38	12/29/16 02:22	1
Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0024	0.00077	ug/L		12/19/16 14:38	12/29/16 02:22	1
Perfluorooctanoic acid (PFOA)	0.0019	U	0.0024	0.00072	ug/L		12/19/16 14:38	12/29/16 02:22	1
Perfluorononanoic acid (PFNA)	0.0019	U	0.0024	0.00063	ug/L		12/19/16 14:38	12/29/16 02:22	1
Perfluorodecanoic acid (PFDA)	0.00096	U	0.0024	0.00042	ug/L		12/19/16 14:38	12/29/16 02:22	1
Perfluoroundecanoic acid (PFUnA)	0.0019	U	0.0024	0.00072	ug/L		12/19/16 14:38	12/29/16 02:22	1
Perfluorododecanoic acid (PFDoA)	0.0019	U	0.0024	0.00056	ug/L		12/19/16 14:38	12/29/16 02:22	1
Perfluorotridecanoic Acid (PFTriA)	0.0019	U	0.0024	0.00053	ug/L		12/19/16 14:38	12/29/16 02:22	1
Perfluorotetradecanoic acid (PFTeA)	0.00042	J	0.0024	0.00039	ug/L		12/19/16 14:38	12/29/16 02:22	1
Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0024	0.00089	ug/L		12/19/16 14:38	12/29/16 02:22	1
Perfluorohexanesulfonic acid (PFHxS)	0.00087	J	0.0024	0.00084	ug/L		12/19/16 14:38	12/29/16 02:22	1
Perfluorodecanesulfonic acid (PFDS)	0.0029	U	0.0039	0.0012	ug/L		12/19/16 14:38	12/29/16 02:22	1
Perfluorooctane Sulfonamide (FOSA)	0.0019	U	0.0024	0.00062	ug/L		12/19/16 14:38	12/29/16 02:22	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C8 FOSA	64		25 - 150				12/19/16 14:38	12/29/16 02:22	1
¹³ C4 PFBA	123		25 - 150				12/19/16 14:38	12/29/16 02:22	1
¹³ C5-PFPeA	129		25 - 150				12/19/16 14:38	12/29/16 02:22	1
¹³ C2 PFHxA	123		25 - 150				12/19/16 14:38	12/29/16 02:22	1
¹³ C4-PFHpA	124		25 - 150				12/19/16 14:38	12/29/16 02:22	1

TestAmerica Sacramento

Client Sample Results

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Client Sample ID: EBWC120816-a

Date Collected: 12/08/16 07:50

Date Received: 12/09/16 09:50

Lab Sample ID: 320-24236-5

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOA	126		25 - 150	12/19/16 14:38	12/29/16 02:22	1
13C5 PFNA	122		25 - 150	12/19/16 14:38	12/29/16 02:22	1
13C2 PFDA	124		25 - 150	12/19/16 14:38	12/29/16 02:22	1
13C2 PFUnA	125		25 - 150	12/19/16 14:38	12/29/16 02:22	1
13C2 PFDoA	117		25 - 150	12/19/16 14:38	12/29/16 02:22	1
18O2 PFHxS	127		25 - 150	12/19/16 14:38	12/29/16 02:22	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.0029	U	0.0039	0.0012	ug/L		12/19/16 14:38	12/30/16 16:34	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOS	131		25 - 150				12/19/16 14:38	12/30/16 16:34	1

Client Sample ID: EBWC120816-b

Date Collected: 12/08/16 09:20

Date Received: 12/09/16 09:50

Lab Sample ID: 320-24236-6

Matrix: Water

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.0010	U	0.0026	0.00047	ug/L		12/19/16 14:38	12/29/16 02:29	1
Perfluoropentanoic acid (PFPeA)	0.0021	U	0.0026	0.0010	ug/L		12/19/16 14:38	12/29/16 02:29	1
Perfluorohexanoic acid (PFHxA)	0.0021	U	0.0026	0.00081	ug/L		12/19/16 14:38	12/29/16 02:29	1
Perfluoroheptanoic acid (PFHpA)	0.0021	U	0.0026	0.00083	ug/L		12/19/16 14:38	12/29/16 02:29	1
Perfluorooctanoic acid (PFOA)	0.0021	U	0.0026	0.00077	ug/L		12/19/16 14:38	12/29/16 02:29	1
Perfluorononanoic acid (PFNA)	0.0021	U	0.0026	0.00068	ug/L		12/19/16 14:38	12/29/16 02:29	1
Perfluorodecanoic acid (PFDA)	0.0010	U	0.0026	0.00046	ug/L		12/19/16 14:38	12/29/16 02:29	1
Perfluoroundecanoic acid (PFUnA)	0.0021	U	0.0026	0.00077	ug/L		12/19/16 14:38	12/29/16 02:29	1
Perfluorododecanoic acid (PFDoA)	0.0021	U	0.0026	0.00060	ug/L		12/19/16 14:38	12/29/16 02:29	1
Perfluorotridecanoic Acid (PFTriA)	0.0021	U	0.0026	0.00057	ug/L		12/19/16 14:38	12/29/16 02:29	1
Perfluorotetradecanoic acid (PFTeA)	0.00057	J	0.0026	0.00041	ug/L		12/19/16 14:38	12/29/16 02:29	1
Perfluorobutanesulfonic acid (PFBS)	0.0021	U	0.0026	0.00095	ug/L		12/19/16 14:38	12/29/16 02:29	1
Perfluorohexanesulfonic acid (PFHxS)	0.00092	J	0.0026	0.00090	ug/L		12/19/16 14:38	12/29/16 02:29	1
Perfluorodecanesulfonic acid (PFDS)	0.0031	U	0.0041	0.0013	ug/L		12/19/16 14:38	12/29/16 02:29	1
Perfluorooctane Sulfonamide (FOSA)	0.0021	U	0.0026	0.00066	ug/L		12/19/16 14:38	12/29/16 02:29	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	36		25 - 150				12/19/16 14:38	12/29/16 02:29	1
13C4 PFBA	124		25 - 150				12/19/16 14:38	12/29/16 02:29	1
13C5-PFPeA	129		25 - 150				12/19/16 14:38	12/29/16 02:29	1
13C2 PFHxA	120		25 - 150				12/19/16 14:38	12/29/16 02:29	1
13C4-PFHpA	128		25 - 150				12/19/16 14:38	12/29/16 02:29	1
13C4 PFOA	125		25 - 150				12/19/16 14:38	12/29/16 02:29	1
13C5 PFNA	123		25 - 150				12/19/16 14:38	12/29/16 02:29	1
13C2 PFDA	121		25 - 150				12/19/16 14:38	12/29/16 02:29	1
13C2 PFUnA	124		25 - 150				12/19/16 14:38	12/29/16 02:29	1
13C2 PFDoA	112		25 - 150				12/19/16 14:38	12/29/16 02:29	1
18O2 PFHxS	125		25 - 150				12/19/16 14:38	12/29/16 02:29	1

TestAmerica Sacramento

Client Sample Results

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Client Sample ID: EBWC120816-b

Lab Sample ID: 320-24236-6

Date Collected: 12/08/16 09:20

Matrix: Water

Date Received: 12/09/16 09:50

Method: 537 (Modified) - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.0031	U	0.0041	0.0013	ug/L		12/19/16 14:38	12/30/16 16:41	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOS	132		25 - 150				12/19/16 14:38	12/30/16 16:41	1

Client Sample ID: EBDPT120816-a

Lab Sample ID: 320-24236-7

Date Collected: 12/08/16 08:10

Matrix: Water

Date Received: 12/09/16 09:50

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.00094	U	0.0023	0.00043	ug/L		12/19/16 14:38	12/29/16 02:37	1
Perfluoropentanoic acid (PFPeA)	0.0019	U	0.0023	0.00093	ug/L		12/19/16 14:38	12/29/16 02:37	1
Perfluorohexanoic acid (PFHxA)	0.0019	U	0.0023	0.00074	ug/L		12/19/16 14:38	12/29/16 02:37	1
Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0023	0.00075	ug/L		12/19/16 14:38	12/29/16 02:37	1
Perfluorooctanoic acid (PFOA)	0.0019	U	0.0023	0.00070	ug/L		12/19/16 14:38	12/29/16 02:37	1
Perfluorononanoic acid (PFNA)	0.0019	U	0.0023	0.00061	ug/L		12/19/16 14:38	12/29/16 02:37	1
Perfluorodecanoic acid (PFDA)	0.00094	U	0.0023	0.00041	ug/L		12/19/16 14:38	12/29/16 02:37	1
Perfluoroundecanoic acid (PFUnA)	0.0019	U	0.0023	0.00070	ug/L		12/19/16 14:38	12/29/16 02:37	1
Perfluorododecanoic acid (PFDoA)	0.0019	U	0.0023	0.00055	ug/L		12/19/16 14:38	12/29/16 02:37	1
Perfluorotridecanoic Acid (PFTriA)	0.0019	U	0.0023	0.00052	ug/L		12/19/16 14:38	12/29/16 02:37	1
Perfluorotetradecanoic acid (PFTeA)	0.00044	J	0.0023	0.00038	ug/L		12/19/16 14:38	12/29/16 02:37	1
Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0023	0.00086	ug/L		12/19/16 14:38	12/29/16 02:37	1
Perfluorohexanesulfonic acid (PFHxS)	0.00089	J	0.0023	0.00082	ug/L		12/19/16 14:38	12/29/16 02:37	1
Perfluorodecanesulfonic acid (PFDS)	0.0028	U	0.0038	0.0011	ug/L		12/19/16 14:38	12/29/16 02:37	1
Perfluorooctane Sulfonamide (FOSA)	0.0019	U	0.0023	0.00060	ug/L		12/19/16 14:38	12/29/16 02:37	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C8 FOSA	68		25 - 150				12/19/16 14:38	12/29/16 02:37	1
¹³ C4 PFBA	126		25 - 150				12/19/16 14:38	12/29/16 02:37	1
¹³ C5-PFPeA	134		25 - 150				12/19/16 14:38	12/29/16 02:37	1
¹³ C2 PFHxA	127		25 - 150				12/19/16 14:38	12/29/16 02:37	1
¹³ C4-PFHpA	133		25 - 150				12/19/16 14:38	12/29/16 02:37	1
¹³ C4 PFOA	134		25 - 150				12/19/16 14:38	12/29/16 02:37	1
¹³ C5 PFNA	127		25 - 150				12/19/16 14:38	12/29/16 02:37	1
¹³ C2 PFDA	132		25 - 150				12/19/16 14:38	12/29/16 02:37	1
¹³ C2 PFUnA	133		25 - 150				12/19/16 14:38	12/29/16 02:37	1
¹³ C2 PFDoA	123		25 - 150				12/19/16 14:38	12/29/16 02:37	1
¹⁸ O2 PFHxS	130		25 - 150				12/19/16 14:38	12/29/16 02:37	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	0.0033	J M	0.0038	0.0012	ug/L		12/19/16 14:38	12/30/16 16:49	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C4 PFOS	118		25 - 150				12/19/16 14:38	12/30/16 16:49	1

TestAmerica Sacramento

Client Sample Results

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Client Sample ID: EBDPT120816-b

Lab Sample ID: 320-24236-8

Date Collected: 12/08/16 09:30

Matrix: Water

Date Received: 12/09/16 09:50

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.00092	U	0.0023	0.00042	ug/L		12/19/16 14:38	12/29/16 02:59	1
Perfluoropentanoic acid (PFPeA)	0.0018	U	0.0023	0.00091	ug/L		12/19/16 14:38	12/29/16 02:59	1
Perfluorohexanoic acid (PFHxA)	0.0018	U	0.0023	0.00072	ug/L		12/19/16 14:38	12/29/16 02:59	1
Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0023	0.00073	ug/L		12/19/16 14:38	12/29/16 02:59	1
Perfluorooctanoic acid (PFOA)	0.0018	U	0.0023	0.00068	ug/L		12/19/16 14:38	12/29/16 02:59	1
Perfluorononanoic acid (PFNA)	0.0018	U	0.0023	0.00060	ug/L		12/19/16 14:38	12/29/16 02:59	1
Perfluorodecanoic acid (PFDA)	0.00092	U	0.0023	0.00040	ug/L		12/19/16 14:38	12/29/16 02:59	1
Perfluoroundecanoic acid (PFUnA)	0.0018	U	0.0023	0.00068	ug/L		12/19/16 14:38	12/29/16 02:59	1
Perfluorododecanoic acid (PFDoA)	0.0018	U	0.0023	0.00053	ug/L		12/19/16 14:38	12/29/16 02:59	1
Perfluorotridecanoic Acid (PFTriA)	0.0018	U	0.0023	0.00050	ug/L		12/19/16 14:38	12/29/16 02:59	1
Perfluorotetradecanoic acid (PFTeA)	0.00040	J	0.0023	0.00037	ug/L		12/19/16 14:38	12/29/16 02:59	1
Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0023	0.00084	ug/L		12/19/16 14:38	12/29/16 02:59	1
Perfluorohexanesulfonic acid (PFHxS)	0.0018	U	0.0023	0.00080	ug/L		12/19/16 14:38	12/29/16 02:59	1
Perfluorooctanesulfonic acid (PFOS)	0.0027	U	0.0037	0.0012	ug/L		12/19/16 14:38	12/29/16 02:59	1
Perfluorodecanesulfonic acid (PFDS)	0.0027	U	0.0037	0.0011	ug/L		12/19/16 14:38	12/29/16 02:59	1
Perfluorooctane Sulfonamide (FOSA)	0.0018	U	0.0023	0.00058	ug/L		12/19/16 14:38	12/29/16 02:59	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	53		25 - 150				12/19/16 14:38	12/29/16 02:59	1
13C4 PFBA	123		25 - 150				12/19/16 14:38	12/29/16 02:59	1
13C5-PFPeA	127		25 - 150				12/19/16 14:38	12/29/16 02:59	1
13C2 PFHxA	125		25 - 150				12/19/16 14:38	12/29/16 02:59	1
13C4-PFHpA	127		25 - 150				12/19/16 14:38	12/29/16 02:59	1
13C4 PFOA	126		25 - 150				12/19/16 14:38	12/29/16 02:59	1
13C5 PFNA	121		25 - 150				12/19/16 14:38	12/29/16 02:59	1
13C2 PFDA	129		25 - 150				12/19/16 14:38	12/29/16 02:59	1
13C2 PFUnA	134		25 - 150				12/19/16 14:38	12/29/16 02:59	1
13C2 PFDoA	122		25 - 150				12/19/16 14:38	12/29/16 02:59	1
18O2 PFHxS	124		25 - 150				12/19/16 14:38	12/29/16 02:59	1
13C4 PFOS	121		25 - 150				12/19/16 14:38	12/29/16 02:59	1

Client Sample ID: FFTA4TMW-1216

Lab Sample ID: 320-24236-9

Date Collected: 12/08/16 14:10

Matrix: Water

Date Received: 12/09/16 09:50

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.40	E	0.0024	0.00044	ug/L		12/19/16 14:38	12/29/16 03:07	1
Perfluoropentanoic acid (PFPeA)	0.74	E	0.0024	0.00095	ug/L		12/19/16 14:38	12/29/16 03:07	1
Perfluorohexanoic acid (PFHxA)	1.1	E B	0.0024	0.00075	ug/L		12/19/16 14:38	12/29/16 03:07	1
Perfluoroheptanoic acid (PFHpA)	1.0	E	0.0024	0.00077	ug/L		12/19/16 14:38	12/29/16 03:07	1
Perfluorooctanoic acid (PFOA)	7.3	E M	0.0024	0.00072	ug/L		12/19/16 14:38	12/29/16 03:07	1
Perfluorononanoic acid (PFNA)	0.0055		0.0024	0.00063	ug/L		12/19/16 14:38	12/29/16 03:07	1
Perfluorodecanoic acid (PFDA)	0.00096	U	0.0024	0.00042	ug/L		12/19/16 14:38	12/29/16 03:07	1
Perfluoroundecanoic acid (PFUnA)	0.0019	U	0.0024	0.00072	ug/L		12/19/16 14:38	12/29/16 03:07	1
Perfluorododecanoic acid (PFDoA)	0.0019	U	0.0024	0.00056	ug/L		12/19/16 14:38	12/29/16 03:07	1
Perfluorotridecanoic Acid (PFTriA)	0.0019	U	0.0024	0.00053	ug/L		12/19/16 14:38	12/29/16 03:07	1
Perfluorotetradecanoic acid (PFTeA)	0.00048	J	0.0024	0.00038	ug/L		12/19/16 14:38	12/29/16 03:07	1

TestAmerica Sacramento

Client Sample Results

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Client Sample ID: FFTA4TMW-1216

Lab Sample ID: 320-24236-9

Date Collected: 12/08/16 14:10

Matrix: Water

Date Received: 12/09/16 09:50

Method: 537 (Modified) - Perfluorinated Hydrocarbons (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.0	E M	0.0024	0.00088	ug/L		12/19/16 14:38	12/29/16 03:07	1
Perfluorohexanesulfonic acid (PFHxS)	3.9	E	0.0024	0.00083	ug/L		12/19/16 14:38	12/29/16 03:07	1
Perfluorooctanesulfonic acid (PFOS)	0.068		0.0038	0.0012	ug/L		12/19/16 14:38	12/29/16 03:07	1
Perfluorodecanesulfonic acid (PFDS)	0.0029	U	0.0038	0.0012	ug/L		12/19/16 14:38	12/29/16 03:07	1
Perfluorooctane Sulfonamide (FOSA)	0.0019	U	0.0024	0.00061	ug/L		12/19/16 14:38	12/29/16 03:07	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	2	Q	25 - 150				12/19/16 14:38	12/29/16 03:07	1
13C4 PFBA	38		25 - 150				12/19/16 14:38	12/29/16 03:07	1
13C5-PFPeA	61		25 - 150				12/19/16 14:38	12/29/16 03:07	1
13C2 PFHxA	43		25 - 150				12/19/16 14:38	12/29/16 03:07	1
13C4-PFHpA	30		25 - 150				12/19/16 14:38	12/29/16 03:07	1
13C4 PFOA	23	Q	25 - 150				12/19/16 14:38	12/29/16 03:07	1
13C5 PFNA	126		25 - 150				12/19/16 14:38	12/29/16 03:07	1
13C2 PFDA	130		25 - 150				12/19/16 14:38	12/29/16 03:07	1
13C2 PFUnA	135		25 - 150				12/19/16 14:38	12/29/16 03:07	1
13C2 PFDoA	116		25 - 150				12/19/16 14:38	12/29/16 03:07	1
18O2 PFHxS	25		25 - 150				12/19/16 14:38	12/29/16 03:07	1
13C4 PFOS	130		25 - 150				12/19/16 14:38	12/29/16 03:07	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.43	D	0.24	0.044	ug/L		12/19/16 14:38	01/03/17 17:06	100
Perfluoropentanoic acid (PFPeA)	1.4	D	0.24	0.095	ug/L		12/19/16 14:38	01/03/17 17:06	100
Perfluorohexanoic acid (PFHxA)	7.6	B D	0.24	0.075	ug/L		12/19/16 14:38	01/03/17 17:06	100
Perfluoroheptanoic acid (PFHpA)	1.2	D	0.24	0.077	ug/L		12/19/16 14:38	01/03/17 17:06	100
Perfluorooctanoic acid (PFOA)	23	D M	0.24	0.072	ug/L		12/19/16 14:38	01/03/17 17:06	100
Perfluorononanoic acid (PFNA)	0.19	U	0.24	0.063	ug/L		12/19/16 14:38	01/03/17 17:06	100
Perfluorodecanoic acid (PFDA)	0.096	U	0.24	0.042	ug/L		12/19/16 14:38	01/03/17 17:06	100
Perfluoroundecanoic acid (PFUnA)	0.19	U	0.24	0.072	ug/L		12/19/16 14:38	01/03/17 17:06	100
Perfluorododecanoic acid (PFDoA)	0.19	U	0.24	0.056	ug/L		12/19/16 14:38	01/03/17 17:06	100
Perfluorotridecanoic Acid (PFTriA)	0.19	U	0.24	0.053	ug/L		12/19/16 14:38	01/03/17 17:06	100
Perfluorotetradecanoic acid (PFTeA)	0.096	U	0.24	0.038	ug/L		12/19/16 14:38	01/03/17 17:06	100
Perfluorobutanesulfonic acid (PFBS)	2.0	D	0.24	0.088	ug/L		12/19/16 14:38	01/03/17 17:06	100
Perfluorohexanesulfonic acid (PFHxS)	15	D	0.24	0.083	ug/L		12/19/16 14:38	01/03/17 17:06	100
Perfluorooctanesulfonic acid (PFOS)	0.29	U	0.38	0.12	ug/L		12/19/16 14:38	01/03/17 17:06	100
Perfluorodecanesulfonic acid (PFDS)	0.29	U	0.38	0.12	ug/L		12/19/16 14:38	01/03/17 17:06	100
Perfluorooctane Sulfonamide (FOSA)	0.19	U	0.24	0.061	ug/L		12/19/16 14:38	01/03/17 17:06	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	4	Q	25 - 150				12/19/16 14:38	01/03/17 17:06	100
13C4 PFBA	148		25 - 150				12/19/16 14:38	01/03/17 17:06	100
13C5-PFPeA	149		25 - 150				12/19/16 14:38	01/03/17 17:06	100
13C2 PFHxA	133		25 - 150				12/19/16 14:38	01/03/17 17:06	100
13C4-PFHpA	122		25 - 150				12/19/16 14:38	01/03/17 17:06	100
13C4 PFOA	138		25 - 150				12/19/16 14:38	01/03/17 17:06	100
13C5 PFNA	175	Q	25 - 150				12/19/16 14:38	01/03/17 17:06	100

TestAmerica Sacramento

Client Sample Results

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Client Sample ID: FFTA4TMW-1216

Lab Sample ID: 320-24236-9

Date Collected: 12/08/16 14:10

Matrix: Water

Date Received: 12/09/16 09:50

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	175	Q	25 - 150	12/19/16 14:38	01/03/17 17:06	100
13C2 PFUnA	151	Q	25 - 150	12/19/16 14:38	01/03/17 17:06	100
13C2 PFDoA	150		25 - 150	12/19/16 14:38	01/03/17 17:06	100
18O2 PFHxS	138		25 - 150	12/19/16 14:38	01/03/17 17:06	100
13C4 PFOS	136		25 - 150	12/19/16 14:38	01/03/17 17:06	100

Client Sample ID: FFTA4TMW-1216-D

Lab Sample ID: 320-24236-10

Date Collected: 12/08/16 00:00

Matrix: Water

Date Received: 12/09/16 09:50

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.42	E	0.0024	0.00044	ug/L		12/19/16 14:38	12/29/16 03:14	1
Perfluoropentanoic acid (PFPeA)	0.76	E	0.0024	0.00095	ug/L		12/19/16 14:38	12/29/16 03:14	1
Perfluorohexanoic acid (PFHxA)	1.0	E B	0.0024	0.00075	ug/L		12/19/16 14:38	12/29/16 03:14	1
Perfluoroheptanoic acid (PFHpA)	1.1	E	0.0024	0.00077	ug/L		12/19/16 14:38	12/29/16 03:14	1
Perfluorooctanoic acid (PFOA)	7.5	E M	0.0024	0.00072	ug/L		12/19/16 14:38	12/29/16 03:14	1
Perfluorononanoic acid (PFNA)	0.0050		0.0024	0.00063	ug/L		12/19/16 14:38	12/29/16 03:14	1
Perfluorodecanoic acid (PFDA)	0.00096	U	0.0024	0.00042	ug/L		12/19/16 14:38	12/29/16 03:14	1
Perfluoroundecanoic acid (PFUnA)	0.0019	U	0.0024	0.00072	ug/L		12/19/16 14:38	12/29/16 03:14	1
Perfluorododecanoic acid (PFDoA)	0.0019	U	0.0024	0.00056	ug/L		12/19/16 14:38	12/29/16 03:14	1
Perfluorotridecanoic Acid (PFTriA)	0.0019	U	0.0024	0.00053	ug/L		12/19/16 14:38	12/29/16 03:14	1
Perfluorotetradecanoic acid (PFTeA)	0.00091	J	0.0024	0.00038	ug/L		12/19/16 14:38	12/29/16 03:14	1
Perfluorobutanesulfonic acid (PFBS)	1.1	E M	0.0024	0.00088	ug/L		12/19/16 14:38	12/29/16 03:14	1
Perfluorohexanesulfonic acid (PFHxS)	4.2	E	0.0024	0.00083	ug/L		12/19/16 14:38	12/29/16 03:14	1
Perfluorooctanesulfonic acid (PFOS)	0.064		0.0038	0.0012	ug/L		12/19/16 14:38	12/29/16 03:14	1
Perfluorodecanesulfonic acid (PFDS)	0.0029	U	0.0038	0.0012	ug/L		12/19/16 14:38	12/29/16 03:14	1
Perfluorooctane Sulfonamide (FOSA)	0.0019	U	0.0024	0.00061	ug/L		12/19/16 14:38	12/29/16 03:14	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	2	Q	25 - 150				12/19/16 14:38	12/29/16 03:14	1
13C4 PFBA	34		25 - 150				12/19/16 14:38	12/29/16 03:14	1
13C5-PFPeA	56		25 - 150				12/19/16 14:38	12/29/16 03:14	1
13C2 PFHxA	40		25 - 150				12/19/16 14:38	12/29/16 03:14	1
13C4-PFHpA	29		25 - 150				12/19/16 14:38	12/29/16 03:14	1
13C4 PFOA	21	Q	25 - 150				12/19/16 14:38	12/29/16 03:14	1
13C5 PFNA	120		25 - 150				12/19/16 14:38	12/29/16 03:14	1
13C2 PFDA	129		25 - 150				12/19/16 14:38	12/29/16 03:14	1
13C2 PFUnA	133		25 - 150				12/19/16 14:38	12/29/16 03:14	1
13C2 PFDoA	122		25 - 150				12/19/16 14:38	12/29/16 03:14	1
18O2 PFHxS	24	Q	25 - 150				12/19/16 14:38	12/29/16 03:14	1
13C4 PFOS	124		25 - 150				12/19/16 14:38	12/29/16 03:14	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.44	D	0.24	0.044	ug/L		12/19/16 14:38	01/03/17 17:13	100
Perfluoropentanoic acid (PFPeA)	1.4	D	0.24	0.095	ug/L		12/19/16 14:38	01/03/17 17:13	100
Perfluorohexanoic acid (PFHxA)	8.1	B D	0.24	0.075	ug/L		12/19/16 14:38	01/03/17 17:13	100

TestAmerica Sacramento

Client Sample Results

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Client Sample ID: FFTA4TMW-1216-D

Lab Sample ID: 320-24236-10

Date Collected: 12/08/16 00:00

Matrix: Water

Date Received: 12/09/16 09:50

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1.2	D	0.24	0.077	ug/L		12/19/16 14:38	01/03/17 17:13	100
Perfluorooctanoic acid (PFOA)	23	D M	0.24	0.072	ug/L		12/19/16 14:38	01/03/17 17:13	100
Perfluorononanoic acid (PFNA)	0.19	U	0.24	0.063	ug/L		12/19/16 14:38	01/03/17 17:13	100
Perfluorodecanoic acid (PFDA)	0.096	U	0.24	0.042	ug/L		12/19/16 14:38	01/03/17 17:13	100
Perfluoroundecanoic acid (PFUnA)	0.19	U	0.24	0.072	ug/L		12/19/16 14:38	01/03/17 17:13	100
Perfluorododecanoic acid (PFDoA)	0.19	U	0.24	0.056	ug/L		12/19/16 14:38	01/03/17 17:13	100
Perfluorotridecanoic Acid (PFTriA)	0.19	U	0.24	0.053	ug/L		12/19/16 14:38	01/03/17 17:13	100
Perfluorotetradecanoic acid (PFTeA)	0.096	U	0.24	0.038	ug/L		12/19/16 14:38	01/03/17 17:13	100
Perfluorobutanesulfonic acid (PFBS)	2.1	D	0.24	0.088	ug/L		12/19/16 14:38	01/03/17 17:13	100
Perfluorohexanesulfonic acid (PFHxS)	15	D	0.24	0.083	ug/L		12/19/16 14:38	01/03/17 17:13	100
Perfluorooctanesulfonic acid (PFOS)	0.29	U	0.38	0.12	ug/L		12/19/16 14:38	01/03/17 17:13	100
Perfluorodecanesulfonic acid (PFDS)	0.29	U	0.38	0.12	ug/L		12/19/16 14:38	01/03/17 17:13	100
Perfluorooctane Sulfonamide (FOSA)	0.19	U	0.24	0.061	ug/L		12/19/16 14:38	01/03/17 17:13	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	3	Q	25 - 150				12/19/16 14:38	01/03/17 17:13	100
13C4 PFBA	143		25 - 150				12/19/16 14:38	01/03/17 17:13	100
13C5-PFPeA	143		25 - 150				12/19/16 14:38	01/03/17 17:13	100
13C2 PFHxA	122		25 - 150				12/19/16 14:38	01/03/17 17:13	100
13C4-PFHpA	120		25 - 150				12/19/16 14:38	01/03/17 17:13	100
13C4 PFOA	139		25 - 150				12/19/16 14:38	01/03/17 17:13	100
13C5 PFNA	173	Q	25 - 150				12/19/16 14:38	01/03/17 17:13	100
13C2 PFDA	181	Q	25 - 150				12/19/16 14:38	01/03/17 17:13	100
13C2 PFUnA	172	Q	25 - 150				12/19/16 14:38	01/03/17 17:13	100
13C2 PFDoA	161	Q	25 - 150				12/19/16 14:38	01/03/17 17:13	100
18O2 PFHxS	138		25 - 150				12/19/16 14:38	01/03/17 17:13	100
13C4 PFOS	133		25 - 150				12/19/16 14:38	01/03/17 17:13	100

Default Detection Limits

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Prep: 3535

Analyte	LOQ	DL	Units	Method
Perfluorobutanesulfonic acid (PFBS)	0.0025	0.00092	ug/L	537 (Modified)
Perfluorobutanoic acid (PFBA)	0.0025	0.00046	ug/L	537 (Modified)
Perfluorodecanesulfonic acid (PFDS)	0.0040	0.0012	ug/L	537 (Modified)
Perfluorodecanoic acid (PFDA)	0.0025	0.00044	ug/L	537 (Modified)
Perfluorododecanoic acid (PFDoA)	0.0025	0.00058	ug/L	537 (Modified)
Perfluoroheptanoic acid (PFHpA)	0.0025	0.00080	ug/L	537 (Modified)
Perfluorohexanesulfonic acid (PFHxS)	0.0025	0.00087	ug/L	537 (Modified)
Perfluorohexanoic acid (PFHxA)	0.0025	0.00079	ug/L	537 (Modified)
Perfluorononanoic acid (PFNA)	0.0025	0.00065	ug/L	537 (Modified)
Perfluorooctane Sulfonamide (FOSA)	0.0025	0.00064	ug/L	537 (Modified)
Perfluorooctanesulfonic acid (PFOS)	0.0040	0.0013	ug/L	537 (Modified)
Perfluorooctanoic acid (PFOA)	0.0025	0.00075	ug/L	537 (Modified)
Perfluoropentanoic acid (PFPeA)	0.0025	0.00099	ug/L	537 (Modified)
Perfluorotetradecanoic acid (PFTeA)	0.0025	0.00040	ug/L	537 (Modified)
Perfluorotridecanoic Acid (PFTriA)	0.0025	0.00055	ug/L	537 (Modified)
Perfluoroundecanoic acid (PFUnA)	0.0025	0.00075	ug/L	537 (Modified)

Isotope Dilution Summary

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		3C8 FOS/ (25-150)	3C4 PFB/ (25-150)	3C5-PFPe (25-150)	3C2 PFHx (25-150)	3C4-PFHp (25-150)	3C4 PFO/ (25-150)	3C5 PFN/ (25-150)	3C2 PFD/ (25-150)
320-24236-1	FSS6TMW-1216	13 Q	19 Q	34	34	19 Q	42	52	132
320-24236-1 - DL	FSS6TMW-1216	18 Q	139	143	119	96	149	150	158 Q
320-24236-2	FSS2TMW-1216	42	13 Q	15 Q	15 Q	6 Q	10 Q	6 Q	60
320-24236-2 - DL	FSS2TMW-1216	97	124	121	147	81	95	51	129
320-24236-2 - DL2	FSS2TMW-1216								
320-24236-3	FFTA2TMW-1216	4 Q	32	63	68	41	31	72	111
320-24236-3 - DL	FFTA2TMW-1216	4 Q	119	142	124	101	94	121	126
320-24236-3 MS	FFTA2TMW-1216	3 Q	34	66	70	43	33	83	112
320-24236-3 MS - DL	FFTA2TMW-1216	3 Q	117	141	119	102	96	129	124
320-24236-3 MSD	FFTA2TMW-1216	3 Q	34	67	72	45	33	88	107
320-24236-3 MSD - DL	FFTA2TMW-1216	3 Q	126	149	129	108	100	138	131
320-24236-4	FB120816	77	139	137	135	133	135	132	144
320-24236-4 - RA	FB120816								
320-24236-5	EBWC120816-a	64	123	129	123	124	126	122	124
320-24236-5 - RA	EBWC120816-a								
320-24236-6	EBWC120816-b	36	124	129	120	128	125	123	121
320-24236-6 - RA	EBWC120816-b								
320-24236-7	EBDPT120816-a	68	126	134	127	133	134	127	132
320-24236-7 - RA	EBDPT120816-a								
320-24236-8	EBDPT120816-b	53	123	127	125	127	126	121	129
320-24236-9	FFTA4TMW-1216	2 Q	38	61	43	30	23 Q	126	130
320-24236-9 - DL	FFTA4TMW-1216	4 Q	148	149	133	122	138	175 Q	175 Q
320-24236-10	FFTA4TMW-1216-D	2 Q	34	56	40	29	21 Q	120	129
320-24236-10 - DL	FFTA4TMW-1216-D	3 Q	143	143	122	120	139	173 Q	181 Q
LCS 320-142967/2-A	Lab Control Sample	62	131	132	126	128	127	123	127
LCS 320-142967/2-A - RA	Lab Control Sample								
MB 320-142967/1-A	Method Blank	64	131	137	131	132	133	126	130
MB 320-142967/1-A - RA	Method Blank								

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)			
		3C2 PFUn (25-150)	3C2 PFD (25-150)	3C2 PFHx (25-150)	3C4 PFO (25-150)
320-24236-1	FSS6TMW-1216	123	110	17 Q	54
320-24236-1 - DL	FSS6TMW-1216	154 Q	145	120	126
320-24236-2	FSS2TMW-1216	122	119	9 Q	4 Q
320-24236-2 - DL	FSS2TMW-1216	129	129	149	54
320-24236-2 - DL2	FSS2TMW-1216			116	119
320-24236-3	FFTA2TMW-1216	118	106	38	
320-24236-3 - DL	FFTA2TMW-1216	126	123	115	125
320-24236-3 MS	FFTA2TMW-1216	111	106	41	99
320-24236-3 MS - DL	FFTA2TMW-1216	123	119	119	122
320-24236-3 MSD	FFTA2TMW-1216	111	102	43	
320-24236-3 MSD - DL	FFTA2TMW-1216	131	125	125	127
320-24236-4	FB120816	143	134	135	
320-24236-4 - RA	FB120816				128
320-24236-5	EBWC120816-a	125	117	127	
320-24236-5 - RA	EBWC120816-a				131
320-24236-6	EBWC120816-b	124	112	125	
320-24236-6 - RA	EBWC120816-b				132
320-24236-7	EBDPT120816-a	133	123	130	

TestAmerica Sacramento

Isotope Dilution Summary

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons (Continued)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)			
		³ C2 PFUn (25-150)	³ C2 PFDo (25-150)	¹⁸ O2 PFHx (25-150)	³ C4 PFO (25-150)
320-24236-7 - RA	EBDPT120816-a				118
320-24236-8	EBDPT120816-b	134	122	124	121
320-24236-9	FFTA4TMW-1216	135	116	25	130
320-24236-9 - DL	FFTA4TMW-1216	151 Q	150	138	136
320-24236-10	FFTA4TMW-1216-D	133	122	24 Q	124
320-24236-10 - DL	FFTA4TMW-1216-D	172 Q	161 Q	138	133
LCS 320-142967/2-A	Lab Control Sample	119	114	128	128
LCS 320-142967/2-A - RA	Lab Control Sample				126
MB 320-142967/1-A	Method Blank	127	112	130	126
MB 320-142967/1-A - RA	Method Blank				113

Surrogate Legend

¹³C8 FOSA = ¹³C8 FOSA
¹³C4 PFBA = ¹³C4 PFBA
¹³C5-PFPeA = ¹³C5-PFPeA
¹³C2 PFHxA = ¹³C2 PFHxA
¹³C4-PFHpA = ¹³C4-PFHpA
¹³C4 PFOA = ¹³C4 PFOA
¹³C5 PFNA = ¹³C5 PFNA
¹³C2 PFDA = ¹³C2 PFDA
¹³C2 PFUnA = ¹³C2 PFUnA
¹³C2 PFDoA = ¹³C2 PFDoA
¹⁸O2 PFHxS = ¹⁸O2 PFHxS
¹³C4 PFOS = ¹³C4 PFOS

QC Sample Results

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-142967/1-A

Matrix: Water

Analysis Batch: 144253

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 142967

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.0010	U	0.0025	0.00046	ug/L		12/19/16 14:38	12/29/16 00:06	1
Perfluoropentanoic acid (PFPeA)	0.0020	U	0.0025	0.00099	ug/L		12/19/16 14:38	12/29/16 00:06	1
Perfluorohexanoic acid (PFHxA)	0.00147	J	0.0025	0.00079	ug/L		12/19/16 14:38	12/29/16 00:06	1
Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.00080	ug/L		12/19/16 14:38	12/29/16 00:06	1
Perfluorooctanoic acid (PFOA)	0.00116	J	0.0025	0.00075	ug/L		12/19/16 14:38	12/29/16 00:06	1
Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.00065	ug/L		12/19/16 14:38	12/29/16 00:06	1
Perfluorodecanoic acid (PFDA)	0.0010	U	0.0025	0.00044	ug/L		12/19/16 14:38	12/29/16 00:06	1
Perfluoroundecanoic acid (PFUnA)	0.0020	U	0.0025	0.00075	ug/L		12/19/16 14:38	12/29/16 00:06	1
Perfluorododecanoic acid (PFDoA)	0.0020	U	0.0025	0.00058	ug/L		12/19/16 14:38	12/29/16 00:06	1
Perfluorotridecanoic Acid (PFTriA)	0.0020	U	0.0025	0.00055	ug/L		12/19/16 14:38	12/29/16 00:06	1
Perfluorotetradecanoic acid (PFTeA)	0.0010	U	0.0025	0.00040	ug/L		12/19/16 14:38	12/29/16 00:06	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		12/19/16 14:38	12/29/16 00:06	1
Perfluorohexanesulfonic acid (PFHxS)	0.000944	J	0.0025	0.00087	ug/L		12/19/16 14:38	12/29/16 00:06	1
Perfluorodecanesulfonic acid (PFDS)	0.0030	U	0.0040	0.0012	ug/L		12/19/16 14:38	12/29/16 00:06	1
Perfluorooctane Sulfonamide (FOSA)	0.0020	U	0.0025	0.00064	ug/L		12/19/16 14:38	12/29/16 00:06	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
¹³ C8 FOSA	64		25 - 150	12/19/16 14:38	12/29/16 00:06	1
¹³ C4 PFBA	131		25 - 150	12/19/16 14:38	12/29/16 00:06	1
¹³ C5-PFPeA	137		25 - 150	12/19/16 14:38	12/29/16 00:06	1
¹³ C2 PFHxA	131		25 - 150	12/19/16 14:38	12/29/16 00:06	1
¹³ C4-PFHpA	132		25 - 150	12/19/16 14:38	12/29/16 00:06	1
¹³ C4 PFOA	133		25 - 150	12/19/16 14:38	12/29/16 00:06	1
¹³ C5 PFNA	126		25 - 150	12/19/16 14:38	12/29/16 00:06	1
¹³ C2 PFDA	130		25 - 150	12/19/16 14:38	12/29/16 00:06	1
¹³ C2 PFUnA	127		25 - 150	12/19/16 14:38	12/29/16 00:06	1
¹³ C2 PFDoA	112		25 - 150	12/19/16 14:38	12/29/16 00:06	1
¹⁸ O2 PFHxS	130		25 - 150	12/19/16 14:38	12/29/16 00:06	1
¹³ C4 PFOS	126		25 - 150	12/19/16 14:38	12/29/16 00:06	1

Lab Sample ID: LCS 320-142967/2-A

Matrix: Water

Analysis Batch: 144253

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 142967

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorobutanoic acid (PFBA)	0.0400	0.0441		ug/L		110	60 - 140
Perfluoropentanoic acid (PFPeA)	0.0400	0.0422		ug/L		105	60 - 140
Perfluorohexanoic acid (PFHxA)	0.0400	0.0413		ug/L		103	60 - 140
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0418		ug/L		104	60 - 140
Perfluorooctanoic acid (PFOA)	0.0400	0.0406		ug/L		101	60 - 140
Perfluorononanoic acid (PFNA)	0.0400	0.0384		ug/L		96	60 - 140
Perfluorodecanoic acid (PFDA)	0.0400	0.0399		ug/L		100	60 - 140
Perfluoroundecanoic acid (PFUnA)	0.0400	0.0382		ug/L		95	60 - 140
Perfluorododecanoic acid (PFDoA)	0.0400	0.0386		ug/L		96	60 - 140
Perfluorotridecanoic Acid (PFTriA)	0.0400	0.0384		ug/L		96	50 - 150

TestAmerica Sacramento

QC Sample Results

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCS 320-142967/2-A

Matrix: Water

Analysis Batch: 144253

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 142967

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorotetradecanoic acid (PFTeA)	0.0400	0.0478		ug/L		120	50 - 150
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0432		ug/L		122	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	0.0364	0.0397		ug/L		109	60 - 140
Perfluorodecanesulfonic acid (PFDS)	0.0386	0.0385		ug/L		100	50 - 150
Perfluorooctane Sulfonamide (FOSA)	0.0400	0.0384		ug/L		96	60 - 140

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C8 FOSA	62		25 - 150
13C4 PFBA	131		25 - 150
13C5-PFPeA	132		25 - 150
13C2 PFHxA	126		25 - 150
13C4-PFHpA	128		25 - 150
13C4 PFOA	127		25 - 150
13C5 PFNA	123		25 - 150
13C2 PFDA	127		25 - 150
13C2 PFUnA	119		25 - 150
13C2 PFDoA	114		25 - 150
18O2 PFHxS	128		25 - 150
13C4 PFOS	128		25 - 150

Lab Sample ID: 320-24236-3 MS

Matrix: Water

Analysis Batch: 144253

Client Sample ID: FFTA2TMW-1216

Prep Type: Total/NA

Prep Batch: 142967

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	0.31		0.0428	0.334	4	ug/L		62	60 - 140
Perfluoropentanoic acid (PFPeA)	0.58	E J	0.0428	0.582	E 4	ug/L		13	60 - 140
Perfluorohexanoic acid (PFHxA)	0.87	E J B	0.0428	0.852	E 4	ug/L		-37	60 - 140
Perfluoroheptanoic acid (PFHpA)	0.66	E J	0.0428	0.667	E 4	ug/L		10	60 - 140
Perfluorooctanoic acid (PFOA)	3.8	E J M	0.0428	3.73	E 4 M	ug/L		-104	60 - 140
Perfluorononanoic acid (PFNA)	0.029		0.0428	0.0667		ug/L		87	60 - 140
Perfluorodecanoic acid (PFDA)	0.017		0.0428	0.0503		ug/L		79	60 - 140
Perfluoroundecanoic acid (PFUnA)	0.0021	U	0.0428	0.0453		ug/L		106	60 - 140
Perfluorododecanoic acid (PFDoA)	0.0021	U	0.0428	0.0427		ug/L		100	60 - 140
Perfluorotridecanoic Acid (PFTriA)	0.0021	U	0.0428	0.0436		ug/L		102	50 - 150
Perfluorotetradecanoic acid (PFTeA)	0.00059	J J	0.0428	0.0633		ug/L		147	50 - 150
Perfluorobutanesulfonic acid (PFBS)	0.26		0.0378	0.299	4	ug/L		115	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	2.5	E J	0.0389	2.34	E 4	ug/L		-345	60 - 140
Perfluorooctanesulfonic acid (PFOS)	1.2	Q E J	0.0397	0.701	E 4	ug/L		-1329	60 - 140

TestAmerica Sacramento

QC Sample Results

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: 320-24236-3 MS

Matrix: Water

Analysis Batch: 144253

Client Sample ID: FFTA2TMW-1216

Prep Type: Total/NA

Prep Batch: 142967

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanesulfonic acid (PFDS)	0.0031	U	0.0412	0.0513		ug/L		124	50 - 150
Perfluorooctane Sulfonamide (FOSA)	0.088	J	0.0428	0.0780	J	ug/L		-24	60 - 140
Isotope Dilution	MS %Recovery	MS Qualifier	Limits						
13C8 FOSA	3	Q	25 - 150						
13C4 PFBA	34		25 - 150						
13C5-PFPeA	66		25 - 150						
13C2 PFHxA	70		25 - 150						
13C4-PFHpA	43		25 - 150						
13C4 PFOA	33		25 - 150						
13C5 PFNA	83		25 - 150						
13C2 PFDA	112		25 - 150						
13C2 PFUnA	111		25 - 150						
13C2 PFDoA	106		25 - 150						
18O2 PFHxS	41		25 - 150						
13C4 PFOS	99		25 - 150						

Lab Sample ID: 320-24236-3 MSD

Matrix: Water

Analysis Batch: 144253

Client Sample ID: FFTA2TMW-1216

Prep Type: Total/NA

Prep Batch: 142967

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	0.31		0.0424	0.341	4	ug/L		78	60 - 140	2	30
Perfluoropentanoic acid (PFPeA)	0.58	E J	0.0424	0.569	E 4	ug/L		-18	60 - 140	2	30
Perfluorohexanoic acid (PFHxA)	0.87	E J B	0.0424	0.835	E 4	ug/L		-78	60 - 140	2	30
Perfluoroheptanoic acid (PFHpA)	0.66	E J	0.0424	0.649	E 4	ug/L		-32	60 - 140	3	30
Perfluorooctanoic acid (PFOA)	3.8	E J M	0.0424	3.62	E 4 M	ug/L		-353	60 - 140	3	30
Perfluorononanoic acid (PFNA)	0.029		0.0424	0.0649		ug/L		84	60 - 140	3	30
Perfluorodecanoic acid (PFDA)	0.017		0.0424	0.0508		ug/L		81	60 - 140	1	30
Perfluoroundecanoic acid (PFUnA)	0.0021	U	0.0424	0.0451		ug/L		106	60 - 140	0	30
Perfluorododecanoic acid (PFDoA)	0.0021	U	0.0424	0.0461		ug/L		109	60 - 140	8	30
Perfluorotridecanoic Acid (PFTriA)	0.0021	U	0.0424	0.0484		ug/L		114	50 - 150	10	30
Perfluorotetradecanoic acid (PFTeA)	0.00059	J J	0.0424	0.0697	J	ug/L		163	50 - 150	10	30
Perfluorobutanesulfonic acid (PFBS)	0.26		0.0375	0.298	4	ug/L		112	50 - 150	1	30
Perfluorohexanesulfonic acid (PFHxS)	2.5	E J	0.0386	2.24	E 4	ug/L		-590	60 - 140	4	30
Perfluorooctanesulfonic acid (PFOS)	1.2	Q E J	0.0393	0.577	E 4	ug/L		-1658	60 - 140	19	30
Perfluorodecanesulfonic acid (PFDS)	0.0031	U	0.0408	0.0503		ug/L		123	50 - 150	2	30
Perfluorooctane Sulfonamide (FOSA)	0.088	J	0.0424	0.0723	J	ug/L		-38	60 - 140	8	30

TestAmerica Sacramento

QC Sample Results

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

<i>Isotope Dilution</i>	<i>MSD %Recovery</i>	<i>MSD Qualifier</i>	<i>Limits</i>
13C8 FOSA	3	Q	25 - 150
13C4 PFBA	34		25 - 150
13C5-PFPeA	67		25 - 150
13C2 PFHxA	72		25 - 150
13C4-PFHpA	45		25 - 150
13C4 PFOA	33		25 - 150
13C5 PFNA	88		25 - 150
13C2 PFDA	107		25 - 150
13C2 PFUnA	111		25 - 150
13C2 PFDoA	102		25 - 150
18O2 PFHxS	43		25 - 150

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Lab Sample ID: 320-24236-3 MS
Matrix: Water
Analysis Batch: 144510

Client Sample ID: FFTA2TMW-1216
Prep Type: Total/NA
Prep Batch: 142967
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Perfluorobutanoic acid (PFBA) - DL	0.31	D	0.0428	0.346	D 4	ug/L		87	60 - 140
Perfluoropentanoic acid (PFPeA) - DL	1.0	D J	0.0428	0.992	D 4	ug/L		-22	60 - 140
Perfluorohexanoic acid (PFHxA) - DL	1.7	D B J	0.0428	1.66	D 4	ug/L		-73	60 - 140
Perfluoroheptanoic acid (PFHpA) - DL	0.74	D J	0.0428	0.753	D 4	ug/L		41	60 - 140
Perfluorooctanoic acid (PFOA) - DL	7.1	D M J	0.0428	6.84	D M 4	ug/L		-545	60 - 140
Perfluorononanoic acid (PFNA) - DL	0.030	J D	0.0428	0.0660	D	ug/L		83	60 - 140
Perfluorodecanoic acid (PFDA) - DL	0.016	J D	0.0428	0.0472	J D	ug/L		73	60 - 140
Perfluoroundecanoic acid (PFUnA) - DL	0.041	U	0.0428	0.0450	J D	ug/L		105	60 - 140
Perfluorododecanoic acid (PFDoA) - DL	0.041	U	0.0428	0.0437	J D	ug/L		102	60 - 140
Perfluorotridecanoic Acid (PFTriA) - DL	0.041	U	0.0428	0.0411	J D	ug/L		96	50 - 150
Perfluorotetradecanoic acid (PFTeA) - DL	0.021	U	0.0428	0.0544	D	ug/L		127	50 - 150
Perfluorobutanesulfonic acid (PFBS) - DL	0.13	D	0.0378	0.177	D	ug/L		114	50 - 150
Perfluorohexanesulfonic acid (PFHxS) - DL	5.0	D J	0.0389	4.73	D M 4	ug/L		-747	60 - 140
Perfluorooctanesulfonic acid (PFOS) - DL	1.3	D J	0.0397	0.695	D 4	ug/L		-1640	60 - 140
Perfluorodecanesulfonic acid (PFDS) - DL	0.062	U	0.0412	0.0399	J D	ug/L		97	50 - 150
Perfluorooctane Sulfonamide (FOSA) - DL	0.087	D J	0.0428	0.0716	D J	ug/L		-37	60 - 140

<i>Isotope Dilution</i>	<i>MS %Recovery</i>	<i>MS Qualifier</i>	<i>Limits</i>
13C8 FOSA - DL	3	Q	25 - 150
13C4 PFBA - DL	117		25 - 150
13C5-PFPeA - DL	141		25 - 150
13C2 PFHxA - DL	119		25 - 150
13C4-PFHpA - DL	102		25 - 150

TestAmerica Sacramento

QC Sample Results

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL (Continued)

Lab Sample ID: 320-24236-3 MS

Matrix: Water

Analysis Batch: 144510

Client Sample ID: FFTA2TMW-1216

Prep Type: Total/NA

Prep Batch: 142967

<i>Isotope Dilution</i>	<i>MS %Recovery</i>	<i>MS Qualifier</i>	<i>Limits</i>
13C4 PFOA - DL	96		25 - 150
13C5 PFNA - DL	129		25 - 150
13C2 PFDA - DL	124		25 - 150
13C2 PFUnA - DL	123		25 - 150
13C2 PFDoA - DL	119		25 - 150
18O2 PFHxS - DL	119		25 - 150
13C4 PFOS - DL	122		25 - 150

Lab Sample ID: 320-24236-3 MSD

Matrix: Water

Analysis Batch: 144510

Client Sample ID: FFTA2TMW-1216

Prep Type: Total/NA

Prep Batch: 142967

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MSD Result</i>	<i>MSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
Perfluorobutanoic acid (PFBA) - DL	0.31	D	0.0424	0.347	D 4	ug/L		89	60 - 140	0	30
Perfluoropentanoic acid (PFPeA) - DL	1.0	D J	0.0424	0.982	D 4	ug/L		-46	60 - 140	1	30
Perfluorohexanoic acid (PFHxA) - DL	1.7	D B J	0.0424	1.65	D 4	ug/L		-110	60 - 140	1	30
Perfluoroheptanoic acid (PFHpA) - DL	0.74	D J	0.0424	0.743	D 4	ug/L		16	60 - 140	1	30
Perfluorooctanoic acid (PFOA) - DL	7.1	D M J	0.0424	6.88	D M 4	ug/L		-441	60 - 140	1	30
Perfluorononanoic acid (PFNA) - DL	0.030	J D	0.0424	0.0658	D	ug/L		84	60 - 140	0	30
Perfluorodecanoic acid (PFDA) - DL	0.016	J D	0.0424	0.0499	J D	ug/L		80	60 - 140	6	30
Perfluoroundecanoic acid (PFUnA) - DL	0.041	U	0.0424	0.0449	J D	ug/L		106	60 - 140	0	30
Perfluorododecanoic acid (PFDoA) - DL	0.041	U	0.0424	0.0448	J D	ug/L		106	60 - 140	3	30
Perfluorotridecanoic Acid (PFTriA) - DL	0.041	U	0.0424	0.0406	J D	ug/L		96	50 - 150	1	30
Perfluorotetradecanoic acid (PFTeA) - DL	0.021	U	0.0424	0.0581	D	ug/L		137	50 - 150	7	30
Perfluorobutanesulfonic acid (PFBS) - DL	0.13	D	0.0375	0.182	D	ug/L		128	50 - 150	3	30
Perfluorohexanesulfonic acid (PFHxS) - DL	5.0	D J	0.0386	4.67	D M 4	ug/L		-905	60 - 140	1	30
Perfluorooctanesulfonic acid (PFOS) - DL	1.3	D J	0.0393	0.577	D 4	ug/L		-1957	60 - 140	19	30
Perfluorodecanesulfonic acid (PFDS) - DL	0.062	U	0.0408	0.0420	J D	ug/L		103	50 - 150	5	30
Perfluorooctane Sulfonamide (FOSA) - DL	0.087	D J	0.0424	0.0749	D J	ug/L		-30	60 - 140	4	30

<i>Isotope Dilution</i>	<i>MSD %Recovery</i>	<i>MSD Qualifier</i>	<i>Limits</i>
13C8 FOSA - DL	3	Q	25 - 150
13C4 PFBA - DL	126		25 - 150
13C5-PFPeA - DL	149		25 - 150
13C2 PFHxA - DL	129		25 - 150
13C4-PFHpA - DL	108		25 - 150

TestAmerica Sacramento

QC Sample Results

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL (Continued)

Lab Sample ID: 320-24236-3 MSD

Matrix: Water

Analysis Batch: 144510

Client Sample ID: FFTA2TMW-1216

Prep Type: Total/NA

Prep Batch: 142967

	MSD	MSD	
Isotope Dilution	%Recovery	Qualifier	Limits
13C4 PFOA - DL	100		25 - 150
13C5 PFNA - DL	138		25 - 150
13C2 PFDA - DL	131		25 - 150
13C2 PFUnA - DL	131		25 - 150
13C2 PFDoA - DL	125		25 - 150
18O2 PFHxS - DL	125		25 - 150
13C4 PFOS - DL	127		25 - 150

Method: 537 (Modified) - Perfluorinated Hydrocarbons - RA

Lab Sample ID: MB 320-142967/1-A

Matrix: Water

Analysis Batch: 144510

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 142967

Analyte	MB	MB								
	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil	Fac
Perfluorooctanesulfonic acid (PFOS) - RA	0.0030	U	0.0040	0.0013	ug/L		12/19/16 14:38	12/30/16 16:11		1
	MB	MB								
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil	Fac
13C4 PFOS - RA	113		25 - 150				12/19/16 14:38	12/30/16 16:11		1

Lab Sample ID: LCS 320-142967/2-A

Matrix: Water

Analysis Batch: 144510

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 142967

Analyte			Spike	LCS	LCS					
			Added	Result	Qualifier	Unit	D	%Rec	Limits	
Perfluorooctanesulfonic acid (PFOS) - RA			0.0371	0.0511		ug/L		138	60 - 140	
	LCS	LCS								
Isotope Dilution	%Recovery	Qualifier	Limits							
13C4 PFOS - RA	126		25 - 150							

QC Association Summary

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

LCMS

Prep Batch: 142967

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24236-1 - DL	FSS6TMW-1216	Total/NA	Water	3535	
320-24236-1	FSS6TMW-1216	Total/NA	Water	3535	
320-24236-2 - DL2	FSS2TMW-1216	Total/NA	Water	3535	
320-24236-2	FSS2TMW-1216	Total/NA	Water	3535	
320-24236-2 - DL	FSS2TMW-1216	Total/NA	Water	3535	
320-24236-3	FFTA2TMW-1216	Total/NA	Water	3535	
320-24236-3 - DL	FFTA2TMW-1216	Total/NA	Water	3535	
320-24236-4 - RA	FB120816	Total/NA	Water	3535	
320-24236-4	FB120816	Total/NA	Water	3535	
320-24236-5	EBWC120816-a	Total/NA	Water	3535	
320-24236-5 - RA	EBWC120816-a	Total/NA	Water	3535	
320-24236-6 - RA	EBWC120816-b	Total/NA	Water	3535	
320-24236-6	EBWC120816-b	Total/NA	Water	3535	
320-24236-7 - RA	EBDPT120816-a	Total/NA	Water	3535	
320-24236-7	EBDPT120816-a	Total/NA	Water	3535	
320-24236-8	EBDPT120816-b	Total/NA	Water	3535	
320-24236-9 - DL	FFTA4TMW-1216	Total/NA	Water	3535	
320-24236-9	FFTA4TMW-1216	Total/NA	Water	3535	
320-24236-10	FFTA4TMW-1216-D	Total/NA	Water	3535	
320-24236-10 - DL	FFTA4TMW-1216-D	Total/NA	Water	3535	
MB 320-142967/1-A - RA	Method Blank	Total/NA	Water	3535	
MB 320-142967/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-142967/2-A - RA	Lab Control Sample	Total/NA	Water	3535	
LCS 320-142967/2-A	Lab Control Sample	Total/NA	Water	3535	
320-24236-3 MS	FFTA2TMW-1216	Total/NA	Water	3535	
320-24236-3 MS - DL	FFTA2TMW-1216	Total/NA	Water	3535	
320-24236-3 MSD - DL	FFTA2TMW-1216	Total/NA	Water	3535	
320-24236-3 MSD	FFTA2TMW-1216	Total/NA	Water	3535	

Analysis Batch: 144253

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24236-1	FSS6TMW-1216	Total/NA	Water	537 (Modified)	142967
320-24236-2	FSS2TMW-1216	Total/NA	Water	537 (Modified)	142967
320-24236-3	FFTA2TMW-1216	Total/NA	Water	537 (Modified)	142967
320-24236-4	FB120816	Total/NA	Water	537 (Modified)	142967
320-24236-5	EBWC120816-a	Total/NA	Water	537 (Modified)	142967
320-24236-6	EBWC120816-b	Total/NA	Water	537 (Modified)	142967
320-24236-7	EBDPT120816-a	Total/NA	Water	537 (Modified)	142967
320-24236-8	EBDPT120816-b	Total/NA	Water	537 (Modified)	142967
320-24236-9	FFTA4TMW-1216	Total/NA	Water	537 (Modified)	142967
320-24236-10	FFTA4TMW-1216-D	Total/NA	Water	537 (Modified)	142967
MB 320-142967/1-A	Method Blank	Total/NA	Water	537 (Modified)	142967
LCS 320-142967/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	142967
320-24236-3 MS	FFTA2TMW-1216	Total/NA	Water	537 (Modified)	142967
320-24236-3 MSD	FFTA2TMW-1216	Total/NA	Water	537 (Modified)	142967

Analysis Batch: 144510

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24236-2 - DL	FSS2TMW-1216	Total/NA	Water	537 (Modified)	142967
320-24236-3 - DL	FFTA2TMW-1216	Total/NA	Water	537 (Modified)	142967
320-24236-4 - RA	FB120816	Total/NA	Water	537 (Modified)	142967

TestAmerica Sacramento

QC Association Summary

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

LCMS (Continued)

Analysis Batch: 144510 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24236-5 - RA	EBWC120816-a	Total/NA	Water	537 (Modified)	142967
320-24236-6 - RA	EBWC120816-b	Total/NA	Water	537 (Modified)	142967
320-24236-7 - RA	EBDPT120816-a	Total/NA	Water	537 (Modified)	142967
MB 320-142967/1-A - RA	Method Blank	Total/NA	Water	537 (Modified)	142967
LCS 320-142967/2-A - RA	Lab Control Sample	Total/NA	Water	537 (Modified)	142967
320-24236-3 MS - DL	FFTA2TMW-1216	Total/NA	Water	537 (Modified)	142967
320-24236-3 MSD - DL	FFTA2TMW-1216	Total/NA	Water	537 (Modified)	142967

Analysis Batch: 144867

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24236-1 - DL	FSS6TMW-1216	Total/NA	Water	537 (Modified)	142967
320-24236-9 - DL	FFTA4TMW-1216	Total/NA	Water	537 (Modified)	142967
320-24236-10 - DL	FFTA4TMW-1216-D	Total/NA	Water	537 (Modified)	142967

Analysis Batch: 145022

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24236-2 - DL2	FSS2TMW-1216	Total/NA	Water	537 (Modified)	145739

Cleanup Batch: 145739

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24236-2 - DL2	FSS2TMW-1216	Total/NA	Water	Dilution	142967

Lab Chronicle

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Client Sample ID: FSS6TMW-1216

Date Collected: 12/08/16 09:30

Date Received: 12/09/16 09:50

Lab Sample ID: 320-24236-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144253	12/29/16 01:37	TTP	TAL SAC
Total/NA	Prep	3535	DL		142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	100	144867	01/03/17 16:58	SBC	TAL SAC

Client Sample ID: FSS2TMW-1216

Date Collected: 12/08/16 11:35

Date Received: 12/09/16 09:50

Lab Sample ID: 320-24236-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144253	12/29/16 01:44	TTP	TAL SAC
Total/NA	Prep	3535	DL		142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	200	144510	12/30/16 12:48	CBW	TAL SAC
Total/NA	Prep	3535	DL2		142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Cleanup	Dilution	DL2		145739	12/19/16 14:38	TTP	TAL SAC
Total/NA	Analysis	537 (Modified)	DL2	1	145022	01/04/17 21:40	SBC	TAL SAC

Client Sample ID: FFTA2TMW-1216

Date Collected: 12/08/16 12:40

Date Received: 12/09/16 09:50

Lab Sample ID: 320-24236-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144253	12/29/16 01:52	TTP	TAL SAC
Total/NA	Prep	3535	DL		142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	20	144510	12/30/16 14:26	CBW	TAL SAC

Client Sample ID: FB120816

Date Collected: 12/08/16 13:20

Date Received: 12/09/16 09:50

Lab Sample ID: 320-24236-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144253	12/29/16 02:14	TTP	TAL SAC
Total/NA	Prep	3535	RA		142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)	RA	1	144510	12/30/16 14:49	CBW	TAL SAC

Lab Chronicle

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Client Sample ID: EBWC120816-a

Date Collected: 12/08/16 07:50

Date Received: 12/09/16 09:50

Lab Sample ID: 320-24236-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144253	12/29/16 02:22	TTP	TAL SAC
Total/NA	Prep	3535	RA		142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)	RA	1	144510	12/30/16 16:34	CBW	TAL SAC

Client Sample ID: EBWC120816-b

Date Collected: 12/08/16 09:20

Date Received: 12/09/16 09:50

Lab Sample ID: 320-24236-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144253	12/29/16 02:29	TTP	TAL SAC
Total/NA	Prep	3535	RA		142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)	RA	1	144510	12/30/16 16:41	CBW	TAL SAC

Client Sample ID: EBDPT120816-a

Date Collected: 12/08/16 08:10

Date Received: 12/09/16 09:50

Lab Sample ID: 320-24236-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144253	12/29/16 02:37	TTP	TAL SAC
Total/NA	Prep	3535	RA		142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)	RA	1	144510	12/30/16 16:49	CBW	TAL SAC

Client Sample ID: EBDPT120816-b

Date Collected: 12/08/16 09:30

Date Received: 12/09/16 09:50

Lab Sample ID: 320-24236-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144253	12/29/16 02:59	TTP	TAL SAC

Client Sample ID: FFTA4TMW-1216

Date Collected: 12/08/16 14:10

Date Received: 12/09/16 09:50

Lab Sample ID: 320-24236-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144253	12/29/16 03:07	TTP	TAL SAC
Total/NA	Prep	3535	DL		142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	100	144867	01/03/17 17:06	SBC	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Client Sample ID: FFTA4TMW-1216-D

Lab Sample ID: 320-24236-10

Date Collected: 12/08/16 00:00

Matrix: Water

Date Received: 12/09/16 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144253	12/29/16 03:14	TTP	TAL SAC
Total/NA	Prep	3535	DL		142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	100	144867	01/03/17 17:13	SBC	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Certification Summary

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Oregon	NELAP	10	4040	01-28-18

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
537 (Modified)	3535	Water	Perfluorobutanesulfonic acid (PFBS)
537 (Modified)	3535	Water	Perfluorobutanoic acid (PFBA)
537 (Modified)	3535	Water	Perfluorodecanesulfonic acid (PFDS)
537 (Modified)	3535	Water	Perfluorodecanoic acid (PFDA)
537 (Modified)	3535	Water	Perfluorododecanoic acid (PFDoA)
537 (Modified)	3535	Water	Perfluoroheptanoic acid (PFHpA)
537 (Modified)	3535	Water	Perfluorohexanesulfonic acid (PFHxS)
537 (Modified)	3535	Water	Perfluorohexanoic acid (PFHxA)
537 (Modified)	3535	Water	Perfluorononanoic acid (PFNA)
537 (Modified)	3535	Water	Perfluorooctane Sulfonamide (FOSA)
537 (Modified)	3535	Water	Perfluorooctanesulfonic acid (PFOS)
537 (Modified)	3535	Water	Perfluorooctanoic acid (PFOA)
537 (Modified)	3535	Water	Perfluoropentanoic acid (PFPeA)
537 (Modified)	3535	Water	Perfluorotetradecanoic acid (PFTeA)
537 (Modified)	3535	Water	Perfluorotridecanoic Acid (PFTriA)
537 (Modified)	3535	Water	Perfluoroundecanoic acid (PFUnA)

Method Summary

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Method	Method Description	Protocol	Laboratory
537 (Modified)	Perfluorinated Hydrocarbons	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: EnSafe, Inc.
Project/Site: PFAS, NAS Dallas

TestAmerica Job ID: 320-24236-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-24236-1	FSS6TMW-1216	Water	12/08/16 09:30	12/09/16 09:50
320-24236-2	FSS2TMW-1216	Water	12/08/16 11:35	12/09/16 09:50
320-24236-3	FFTA2TMW-1216	Water	12/08/16 12:40	12/09/16 09:50
320-24236-4	FB120816	Water	12/08/16 13:20	12/09/16 09:50
320-24236-5	EBWC120816-a	Water	12/08/16 07:50	12/09/16 09:50
320-24236-6	EBWC120816-b	Water	12/08/16 09:20	12/09/16 09:50
320-24236-7	EBDPT120816-a	Water	12/08/16 08:10	12/09/16 09:50
320-24236-8	EBDPT120816-b	Water	12/08/16 09:30	12/09/16 09:50
320-24236-9	FFTA4TMW-1216	Water	12/08/16 14:10	12/09/16 09:50
320-24236-10	FFTA4TMW-1216-D	Water	12/08/16 00:00	12/09/16 09:50

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 142379Lab Sample ID: IC 320-142379/4 Client Sample ID: _____Date Analyzed: 12/15/16 12:29 Lab File ID: 15DEC2016B_004.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	2.43	Assign Peak	chandrase nas	12/15/16 13:48
Perfluorohexanesulfonic acid (PFHxS)	2.44	Assign Peak	chandrase nas	12/15/16 13:48
Perfluorooctanesulfonic acid (PFOS)	3.15	Assign Peak	chandrase nas	12/15/16 13:48
Perfluorododecanoic acid (PFDoA)	4.14	Incomplete Integration	chandrase nas	12/15/16 13:48

Lab Sample ID: IC 320-142379/5 Client Sample ID: _____Date Analyzed: 12/15/16 12:36 Lab File ID: 15DEC2016B_005.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.15	Assign Peak	chandrase nas	12/15/16 13:50

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 144213Lab Sample ID: CCV 320-144213/5 CCVL Client Sample ID: _____Date Analyzed: 12/28/16 16:51 Lab File ID: 28DEC2016A_005.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.21	Baseline	phomsopha t	12/29/16 08:10

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 144253Lab Sample ID: 320-24236-1 Client Sample ID: FSS6TMW-1216Date Analyzed: 12/29/16 01:37 Lab File ID: 28DEC2016C_015.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.87	Incomplete Integration	phomsopha t	01/06/17 09:11

Lab Sample ID: 320-24236-2 Client Sample ID: FSS2TMW-1216Date Analyzed: 12/29/16 01:44 Lab File ID: 28DEC2016C_016.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.90	Incomplete Integration	phomsopha t	01/06/17 09:09
Perfluorooctanoic acid (PFOA)	2.77	Incomplete Integration	phomsopha t	12/29/16 17:52

Lab Sample ID: 320-24236-3 Client Sample ID: FFTA2TMW-1216Date Analyzed: 12/29/16 01:52 Lab File ID: 28DEC2016C_017.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.76	Incomplete Integration	phomsopha t	12/29/16 17:56

Lab Sample ID: 320-24236-3 MS Client Sample ID: FFTA2TMW-1216 MSDate Analyzed: 12/29/16 01:59 Lab File ID: 28DEC2016C_018.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.80	Incomplete Integration	phomsopha t	12/29/16 17:57

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 144253Lab Sample ID: 320-24236-3 MSD Client Sample ID: FFTA2TMW-1216 MSDDate Analyzed: 12/29/16 02:07 Lab File ID: 28DEC2016C_019.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.76	Incomplete Integration	phomsopha t	12/29/16 18:14

Lab Sample ID: 320-24236-9 Client Sample ID: FFTA4TMW-1216Date Analyzed: 12/29/16 03:07 Lab File ID: 28DEC2016C_027.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.86	Incomplete Integration	phomsopha t	01/06/17 09:09
Perfluorooctanoic acid (PFOA)	2.69	Incomplete Integration	phomsopha t	12/29/16 18:22

Lab Sample ID: 320-24236-10 Client Sample ID: FFTA4TMW-1216-DDate Analyzed: 12/29/16 03:14 Lab File ID: 28DEC2016C_028.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.82	Incomplete Integration	phomsopha t	12/29/16 18:23
Perfluorooctanoic acid (PFOA)	2.68	Incomplete Integration	phomsopha t	12/29/16 18:23

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 144510Lab Sample ID: CCV 320-144510/5 CCVL Client Sample ID: _____Date Analyzed: 12/30/16 11:26 Lab File ID: 30DEC2016A_005.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	2.46	Assign Peak	chandrase nas	01/03/17 10:09
Perfluorooctanesulfonic acid (PFOS)	3.17	Assign Peak	chandrase nas	01/03/17 10:09

Lab Sample ID: 320-24236-2 DL Client Sample ID: FSS2TMW-1216 DLDate Analyzed: 12/30/16 12:48 Lab File ID: 30DEC2016B_005.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.79	Incomplete Integration	phomsopha t	01/03/17 13:49

Lab Sample ID: 320-24236-3 DL Client Sample ID: FFTA2TMW-1216 DLDate Analyzed: 12/30/16 14:26 Lab File ID: 30DEC2016B_018.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.78	Incomplete Integration	phomsopha t	01/03/17 14:04

Lab Sample ID: 320-24236-3 MS DL Client Sample ID: FFTA2TMW-1216 MS DLDate Analyzed: 12/30/16 14:34 Lab File ID: 30DEC2016B_019.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	2.44	Incomplete Integration	phomsopha t	01/03/17 14:05
Perfluorooctanoic acid (PFOA)	2.78	Incomplete Integration	phomsopha t	01/03/17 14:05

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 144510Lab Sample ID: 320-24236-3 MSD DL Client Sample ID: FFTA2TMW-1216 MSD DLDate Analyzed: 12/30/16 14:41 Lab File ID: 30DEC2016B_020.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	2.44	Incomplete Integration	phomsopha t	01/03/17 14:06
Perfluorooctanoic acid (PFOA)	2.78	Incomplete Integration	phomsopha t	01/03/17 14:06

Lab Sample ID: 320-24236-7 RA Client Sample ID: EBDPT120816-a RADate Analyzed: 12/30/16 16:49 Lab File ID: 30DEC2016B_037.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.17	Incomplete Integration	phomsopha t	01/03/17 14:25

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 144867Lab Sample ID: 320-24236-9 DL Client Sample ID: FFTA4TMW-1216 DLDate Analyzed: 01/03/17 17:06 Lab File ID: 03JAN2017C_024.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.93	Isomers	chandrase nas	01/04/17 10:13

Lab Sample ID: 320-24236-10 DL Client Sample ID: FFTA4TMW-1216-D DLDate Analyzed: 01/03/17 17:13 Lab File ID: 03JAN2017C_025.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.93	Isomers	chandrase nas	01/04/17 10:13

Lab Sample ID: CCV 320-144867/26 Client Sample ID: _____Date Analyzed: 01/03/17 17:21 Lab File ID: 03JAN2017C_026.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorononanoic acid (PFNA)	3.30	Incomplete Integration	chandrase nas	01/04/17 10:14

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 145022Lab Sample ID: CCV 320-145022/5 CCVL Client Sample ID: _____Date Analyzed: 01/04/17 16:33 Lab File ID: 04JAN2017A_005.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.31	Assign Peak	chandrase nas	01/05/17 09:05

Lab Sample ID: 320-24236-2 DL2 Client Sample ID: FSS2TMW-1216 DL2Date Analyzed: 01/04/17 21:40 Lab File ID: 04JAN2017A_046.d GC Column: Acquity ID: 2.1 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.29	Incomplete Integration	phomsopha t	01/10/17 11:01

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCMPFCSU_00046	03/01/17	11/03/16	Methanol, Lot Baker 144541	50000 uL	LCM2PFHxDA_00008	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00007	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00007	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00008	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00011	1000 uL	13C8_FOSA	1 ug/mL
					LCMPFBA_00008	1000 uL	13C4_PFBA	1 ug/mL
					LCMPFDA_00011	1000 uL	13C2_PFDA	1 ug/mL
					LCMPFDoA_00008	1000 uL	13C2_PFDoA	1 ug/mL
					LCMPFHxA_00012	1000 uL	13C2_PFHxA	1 ug/mL
					LCMPFHxS_00008	1000 uL	1802_PFHxS	0.946 ug/mL
					LCMPFNA_00008	1000 uL	13C5_PFNA	1 ug/mL
					LCMPFOA_00012	1000 uL	13C4_PFOA	1 ug/mL
					LCMPFOS_00017	1000 uL	13C4_PFOS	0.956 ug/mL
					LCMPFUdA_00009	1000 uL	13C2_PFUdA	1 ug/mL
.LCM2PFHxDA_00008	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
.LCM2PFTeDA_00007	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
.LCM4PFHFA_00007	05/27/21	Wellington Laboratories, Lot M4PFHFA0516			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
.LCM5PFPEA_00008	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
.LCM8FOSA_00011	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8_FOSA	50 ug/mL
.LCMPFBA_00008	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4_PFBA	50 ug/mL
.LCMPFDA_00011	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2_PFDA	50 ug/mL
.LCMPFDoA_00008	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2_PFDoA	50 ug/mL
.LCMPFHxA_00012	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2_PFHxA	50 ug/mL
.LCMPFHxS_00008	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		1802_PFHxS	47.3 ug/mL
.LCMPFNA_00008	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5_PFNA	50 ug/mL
.LCMPFOA_00012	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4_PFOA	50 ug/mL
.LCMPFOS_00017	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4_PFOS	47.8 ug/mL
.LCMPFUdA_00009	02/12/21	Wellington Laboratories, Lot MPFUdA0216			(Purchased Reagent)		13C2_PFUdA	50 ug/mL
LCPFC-L1_00022	05/15/17	12/15/16	MeOH/H2O, Lot 90285	5 mL	LCMPFCSU_00047	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8_FOSA	50 ng/mL
							13C4_PFBA	50 ng/mL
							13C2_PFDA	50 ng/mL
							13C2_PFDoA	50 ng/mL
							13C2_PFHxA	50 ng/mL
							1802_PFHxS	47.3 ng/mL
							13C5_PFNA	50 ng/mL
							13C4_PFOA	50 ng/mL
							13C4_PFOS	47.8 ng/mL
							13C2_PFUdA	50 ng/mL
					LCPFCSP_00071	25 uL	Perfluorobutanoic acid (PFBA)	0.5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.442 ng/mL
							Perfluorodecanoic acid (PFDA)	0.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorododecanoic acid (PFDoA)	0.5 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	0.482 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.5 ng/mL
							Perfluoroheptanesulfonic Acid	0.476 ng/mL
							Perfluorohexanoic acid (PFHxA)	0.5 ng/mL
							Perfluorohexadecanoic acid	0.5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.455 ng/mL
							Perfluorononanoic acid (PFNA)	0.5 ng/mL
							Perfluorooctanoic acid (PFOA)	0.5 ng/mL
							Perfluorooctadecanoic acid	0.5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.464 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	0.5 ng/mL
							Perfluoropentanoic acid (PFPeA)	0.5 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	0.5 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	0.5 ng/mL
							Perfluoroundecanoic acid (PFUnA)	0.5 ng/mL
..LCMPFCSU_00047	06/14/17	12/14/16	Methanol, Lot Baker 144541	50000 uL	LCM2PFHxDA_00008	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00007	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00007	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00008	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00011	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00008	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00011	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00008	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00012	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00008	1000 uL	1802 PFHxS	0.946 ug/mL
					LCMPFNA_00008	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00012	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00017	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00009	1000 uL	13C2 PFUnA	1 ug/mL
					(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00007	12/07/20		Wellington Laboratories, Lot M2PFTeDA1115		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00007	05/27/21		Wellington Laboratories, Lot M4PFHpA0516		(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00008	05/22/20		Wellington Laboratories, Lot M5PFPeA0515		(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00011	12/22/17		Wellington Laboratories, Lot M8FOSA1215I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00008	05/24/21		Wellington Laboratories, Lot MPFBA0516		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00011	08/19/20		Wellington Laboratories, Lot MPFDA0815		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00008	04/08/21		Wellington Laboratories, Lot MPFDoA0416		(Purchased Reagent)		13C2 PFDoA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFHxA_00012	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00008	10/23/20		Wellington Laboratories, Lot MPFHxS1015		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00008	04/13/19		Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00012	01/22/21		Wellington Laboratories, Lot MPFOA0116		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00017	08/03/21		Wellington Laboratories, Lot MPFOS0816		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa_00009	02/12/21		Wellington Laboratories, Lot MPFUDa0216		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00071	05/15/17	11/10/16	Methanol, Lot 090285	10000 uL	LCPFCSP_00070	2000 uL	Perfluorobutanoic acid (PFBA)	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid (PFDA)	0.1 ug/mL
							Perfluorododecanoic acid (PFDoA)	0.1 ug/mL
							Perfluorodecanesulfonic acid (PFDS)	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid (PFHxA)	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.091 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0928 ug/mL
							Perfluorooctane Sulfonamide (FOSA)	0.1 ug/mL
							Perfluoropentanoic acid (PFPeA)	0.1 ug/mL
							Perfluorotetradecanoic acid (PFTeA)	0.1 ug/mL
							Perfluorotridecanoic Acid (PFTriA)	0.1 ug/mL
							Perfluoroundecanoic acid (PFUnA)	0.1 ug/mL
..LCPFCSP_00070	05/15/17	11/15/16	Methanol, Lot 090285	10000 uL	LCPFBA_00005	100 uL	Perfluorobutanoic acid (PFBA)	0.5 ug/mL
					LCPFBS_00005	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00005	100 uL	Perfluorodecanoic acid (PFDA)	0.5 ug/mL
					LCPFDoA_00005	100 uL	Perfluorododecanoic acid (PFDoA)	0.5 ug/mL
					LCPFDS_00006	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.482 ug/mL
					LCPFHpA_00005	100 uL	Perfluoroheptanoic acid (PFHpA)	0.5 ug/mL
					LCPFHpS_00009	100 uL	Perfluoroheptanesulfonic Acid	0.476 ug/mL
					LCPFHxA_00004	100 uL	Perfluorohexanoic acid (PFHxA)	0.5 ug/mL
					LCPFHxDA_00006	100 uL	Perfluorohexadecanoic acid	0.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHxS-br_00002	100 uL	Perfluorohexanesulfonic acid (PFHxS)	0.455 ug/mL
					LCPFNA_00005	100 uL	Perfluorononanoic acid (PFNA)	0.5 ug/mL
					LCPFOA_00006	100 uL	Perfluorooctanoic acid (PFOA)	0.5 ug/mL
					LCPFODA_00005	100 uL	Perfluorooctadecanoic acid	0.5 ug/mL
					LCPFOS-br_00002	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.464 ug/mL
					LCPFOSA_00006	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.5 ug/mL
					LCPFPeA_00005	100 uL	Perfluoropentanoic acid (PFPeA)	0.5 ug/mL
					LCPFTeDA_00004	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.5 ug/mL
					LCPFTrDA_00004	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.5 ug/mL
					LCPFUdA_00005	100 uL	Perfluoroundecanoic acid (PFUnA)	0.5 ug/mL
...LCPFBA_00005	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
...LCPFBS_00005	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00005	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
...LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
...LCPFDS_00006	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
...LCPFHpA_00005	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpS_00009	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00004	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
...LCPFHxDA_00006	05/25/21	Wellington Laboratories, Lot PFHxDA0516			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxS-br_00002	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
...LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00006	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00005	01/30/20	Wellington Laboratories, Lot PFODA0115			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS-br_00002	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
...LCPFPeA_00005	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
...LCPFTeDA_00004	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
...LCPFTrDA_00004	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
...LCPFUdA_00005	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC-L2_00023	05/15/17	12/15/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00047	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00071	50 uL	Perfluorobutanoic acid (PFBA)	1 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.884 ng/mL
							Perfluorodecanoic acid (PFDA)	1 ng/mL
							Perfluorododecanoic acid (PFDoA)	1 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	0.964 ng/mL
							Perfluoroheptanoic acid (PFHpA)	1 ng/mL
							Perfluoroheptanesulfonic Acid	0.952 ng/mL
							Perfluorohexanoic acid (PFHxA)	1 ng/mL
							Perfluorohexadecanoic acid	1 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.91 ng/mL
							Perfluorononanoic acid (PFNA)	1 ng/mL
							Perfluorooctanoic acid (PFOA)	1 ng/mL
							Perfluorooctadecanoic acid	1 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.928 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	1 ng/mL
							Perfluoropentanoic acid (PFPeA)	1 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	1 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	1 ng/mL
							Perfluoroundecanoic acid (PFUnA)	1 ng/mL
.LCMPFCSU_00047	06/14/17	12/14/16	Methanol, Lot Baker 144541	50000 uL	LCM2PFHxDA_00008	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00007	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00007	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00008	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00011	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00008	1000 uL	13C4 PFBA	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFDA 00011	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA 00008	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA 00012	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS 00008	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA 00008	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA 00012	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS 00017	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA 00009	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA 00008	01/07/21		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA 00007	12/07/20		Wellington Laboratories, Lot M2PFTeDA1115		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA 00007	05/27/21		Wellington Laboratories, Lot M4PFHPA0516		(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA 00008	05/22/20		Wellington Laboratories, Lot M5PFPeA0515		(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA 00011	12/22/17		Wellington Laboratories, Lot M8FOSA1215I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA 00008	05/24/21		Wellington Laboratories, Lot MPFBA0516		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA 00011	08/19/20		Wellington Laboratories, Lot MPFDA0815		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA 00008	04/08/21		Wellington Laboratories, Lot MPFDoA0416		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA 00012	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS 00008	10/23/20		Wellington Laboratories, Lot MPFHxS1015		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA 00008	04/13/19		Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA 00012	01/22/21		Wellington Laboratories, Lot MPFOA0116		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS 00017	08/03/21		Wellington Laboratories, Lot MPFOS0816		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA 00009	02/12/21		Wellington Laboratories, Lot MPFUdA0216		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
..LCPFCSP_00071	05/15/17	11/10/16	Methanol, Lot 090285	10000 uL	LCPFCSP_00070	2000 uL	Perfluorobutanoic acid (PFBA)	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid (PFDA)	0.1 ug/mL
							Perfluorododecanoic acid (PFDoA)	0.1 ug/mL
							Perfluorodecanesulfonic acid (PFDS)	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid (PFHxA)	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.091 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0928 ug/mL
							Perfluorooctane Sulfonamide (FOSA)	0.1 ug/mL
							Perfluoropentanoic acid (PFPeA)	0.1 ug/mL
							Perfluorotetradecanoic acid (PFTeA)	0.1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorotridecanoic Acid (PFTriA)	0.1 ug/mL
							Perfluoroundecanoic acid (PFUnA)	0.1 ug/mL
..LCPFCSP_00070	05/15/17	11/15/16	Methanol, Lot 090285	10000 uL	LCPFBA_00005	100 uL	Perfluorobutanoic acid (PFBA)	0.5 ug/mL
					LCPFBS_00005	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00005	100 uL	Perfluorodecanoic acid (PFDA)	0.5 ug/mL
					LCPFDoA_00005	100 uL	Perfluorododecanoic acid (PFDoA)	0.5 ug/mL
					LCPFDS_00006	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.482 ug/mL
					LCPFHpA_00005	100 uL	Perfluoroheptanoic acid (PFHpA)	0.5 ug/mL
					LCPFHpS_00009	100 uL	Perfluoroheptanesulfonic Acid	0.476 ug/mL
					LCPFHxA_00004	100 uL	Perfluorohexanoic acid (PFHxA)	0.5 ug/mL
					LCPFHxDA_00006	100 uL	Perfluorohexadecanoic acid	0.5 ug/mL
					LCPFHxS-br_00002	100 uL	Perfluorohexanesulfonic acid (PFHxS)	0.455 ug/mL
					LCPFNA_00005	100 uL	Perfluorononanoic acid (PFNA)	0.5 ug/mL
					LCPFOA_00006	100 uL	Perfluorooctanoic acid (PFOA)	0.5 ug/mL
					LCPFODA_00005	100 uL	Perfluorooctadecanoic acid	0.5 ug/mL
					LCPFOS-br_00002	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.464 ug/mL
					LCPFOSA_00006	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.5 ug/mL
					LCPFPeA_00005	100 uL	Perfluoropentanoic acid (PFPeA)	0.5 ug/mL
					LCPFTeDA_00004	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.5 ug/mL
					LCPFTrDA_00004	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.5 ug/mL
					LCPFUDa_00005	100 uL	Perfluoroundecanoic acid (PFUnA)	0.5 ug/mL
...LCPFBA_00005	05/27/21	Wellington Laboratories, Lot PFBA0516		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL	
...LCPFBS_00005	03/15/21	Wellington Laboratories, Lot LPFBS0316		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL	
...LCPFDA_00005	07/02/20	Wellington Laboratories, Lot PFDA0615		(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL	
...LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot PFDoA0115		(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL	
...LCPFDS_00006	05/24/21	Wellington Laboratories, Lot LPFDS0516		(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL	
...LCPFHpA_00005	01/22/21	Wellington Laboratories, Lot PFHpA0116		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL	
...LCPFHpS_00009	11/06/20	Wellington Laboratories, Lot LPFHpS1115		(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL	
...LCPFHxA_00004	12/22/20	Wellington Laboratories, Lot PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL	
...LCPFHxDA_00006	05/25/21	Wellington Laboratories, Lot PFHxDA0516		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL	
...LCPFHxS-br_00002	07/03/20	Wellington Laboratories, Lot brPFHxSK0615		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL	
...LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL	

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFOA_00006	11/06/20		Wellington Laboratories, Lot PFOA1115		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00005	01/30/20		Wellington Laboratories, Lot PFODA0115		(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS-br_00002	10/14/20		Wellington Laboratories, Lot brPFOSK1015		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA_00006	09/02/17		Wellington Laboratories, Lot FOSA0815I		(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
...LCPFPeA_00005	01/30/20		Wellington Laboratories, Lot PFPeA0115		(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
...LCPFTeDA_00004	12/09/20		Wellington Laboratories, Lot PFTeDA1215		(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
...LCPFTTrDA_00004	12/10/18		Wellington Laboratories, Lot PFTTrDA1213		(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
...LCPFUdA_00005	08/19/20		Wellington Laboratories, Lot PFUdA0815		(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC-L3_00020	05/15/17	12/15/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00047	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00071	250 uL	Perfluorobutanoic acid (PFBA)	5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	4.42 ng/mL
							Perfluorodecanoic acid (PFDA)	5 ng/mL
							Perfluorododecanoic acid (PFDoA)	5 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	4.82 ng/mL
							Perfluoroheptanoic acid (PFHpA)	5 ng/mL
							Perfluoroheptanesulfonic Acid	4.76 ng/mL
							Perfluorohexanoic acid (PFHxA)	5 ng/mL
							Perfluorohexadecanoic acid	5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	4.55 ng/mL
							Perfluorononanoic acid (PFNA)	5 ng/mL
							Perfluorooctanoic acid (PFOA)	5 ng/mL
							Perfluorooctadecanoic acid	5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	4.64 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctane Sulfonamide (FOSA)	5 ng/mL
							Perfluoropentanoic acid (PFPeA)	5 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	5 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	5 ng/mL
							Perfluoroundecanoic acid (PFUnA)	5 ng/mL
.LCMPFCSU_00047	06/14/17	12/14/16	Methanol, Lot Baker 144541	50000 uL	LCM2PFHxDA_00008	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00007	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00007	1000 uL	13C4-PFHpa	1 ug/mL
					LCM5PFPEA_00008	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00011	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00008	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00011	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00008	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00012	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00008	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00008	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00012	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00017	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUDa_00009	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00008	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00007	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00007	05/27/21	Wellington Laboratories, Lot M4PFHpa0516			(Purchased Reagent)		13C4-PFHpa	50 ug/mL
..LCM5PFPEA_00008	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00011	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00008	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00011	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00008	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00012	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00008	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00008	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00012	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00017	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa_00009	02/12/21	Wellington Laboratories, Lot MPFUDa0216			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSU_00071	05/15/17	11/10/16	Methanol, Lot 090285	10000 uL	LCPFCSU_00070	2000 uL	Perfluorobutanoic acid (PFBA)	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid (PFDA)	0.1 ug/mL
							Perfluorododecanoic acid (PFDoA)	0.1 ug/mL
							Perfluorodecanesulfonic acid (PFDS)	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid (PFHxA)	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.091 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0928 ug/mL
							Perfluorooctane Sulfonamide (FOSA)	0.1 ug/mL
							Perfluoropentanoic acid (PFPeA)	0.1 ug/mL
							Perfluorotetradecanoic acid (PFTeA)	0.1 ug/mL
							Perfluorotridecanoic Acid (PFTriA)	0.1 ug/mL
							Perfluoroundecanoic acid (PFUnA)	0.1 ug/mL
							Perfluorobutanoic acid (PFBA)	0.5 ug/mL
..LCPFCSP_00070	05/15/17	11/15/16	Methanol, Lot 090285	10000 uL	LCPFBA_00005	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFBS_00005	100 uL	Perfluorodecanoic acid (PFDA)	0.5 ug/mL
					LCPFDA_00005	100 uL	Perfluorododecanoic acid (PFDoA)	0.5 ug/mL
					LCPFDoA_00005	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.482 ug/mL
					LCPFDS_00006	100 uL	Perfluoroheptanoic acid (PFHpA)	0.5 ug/mL
					LCPFHpA_00005	100 uL	Perfluoroheptanesulfonic Acid	0.476 ug/mL
					LCPFHpS_00009	100 uL	Perfluorohexanoic acid (PFHxA)	0.5 ug/mL
					LCPFHxA_00004	100 uL	Perfluorohexadecanoic acid	0.5 ug/mL
					LCPFHxDA_00006	100 uL	Perfluorohexanesulfonic acid (PFHxS)	0.455 ug/mL
					LCPFHxS-br_00002	100 uL	Perfluorononanoic acid (PFNA)	0.5 ug/mL
					LCPFNA_00005	100 uL	Perfluorooctanoic acid (PFOA)	0.5 ug/mL
					LCPFOA_00006	100 uL	Perfluorooctadecanoic acid	0.5 ug/mL
					LCPFODA_00005	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.464 ug/mL
					LCPFOS-br_00002	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.5 ug/mL
					LCPFOSA_00006	100 uL	Perfluoropentanoic acid (PFPeA)	0.5 ug/mL
					LCPFPeA_00005	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.5 ug/mL
					LCPFTeDA_00004	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.5 ug/mL
					LCPFTriDA_00004	100 uL	Perfluoroundecanoic acid (PFUnA)	0.5 ug/mL
					LCPFUdA_00005	100 uL		

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFBA_00005	05/27/21	Wellington Laboratories, Lot	PFBA0516		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
...LCPFBS_00005	03/15/21	Wellington Laboratories, Lot	LPFBS0316		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00005	07/02/20	Wellington Laboratories, Lot	PFDA0615		(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
...LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot	PFDoA0115		(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
...LCPFDS_00006	05/24/21	Wellington Laboratories, Lot	LPFDS0516		(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
...LCPFHpA_00005	01/22/21	Wellington Laboratories, Lot	PFHpA0116		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpS_00009	11/06/20	Wellington Laboratories, Lot	LPFHpS1115		(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00004	12/22/20	Wellington Laboratories, Lot	PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
...LCPFHxDA_00006	05/25/21	Wellington Laboratories, Lot	PFHxDA0516		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxS-br_00002	07/03/20	Wellington Laboratories, Lot	brPFHxSK0615		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
...LCPFNA_00005	10/23/20	Wellington Laboratories, Lot	PFNA1015		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00006	11/06/20	Wellington Laboratories, Lot	PFOA1115		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00005	01/30/20	Wellington Laboratories, Lot	PFODA0115		(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS-br_00002	10/14/20	Wellington Laboratories, Lot	brPFOSK1015		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot	FOSA0815I		(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
...LCPFPeA_00005	01/30/20	Wellington Laboratories, Lot	PFPeA0115		(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
...LCPFTeDA_00004	12/09/20	Wellington Laboratories, Lot	PFTeDA1215		(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
...LCPFTrDA_00004	12/10/18	Wellington Laboratories, Lot	PFTTrDA1213		(Purchased Reagent)		Perfluorotridecanoic Acid (PFTTriA)	50 ug/mL
...LCPFUdA_00005	08/19/20	Wellington Laboratories, Lot	PFUdA0815		(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC-L4_00024	06/14/17	12/15/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00047	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00074	100 uL	Perfluorobutanoic acid (PFBA)	20 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	17.68 ng/mL
							Perfluorodecanoic acid (PFDA)	20 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorododecanoic acid (PFDoA)	20 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	19.28 ng/mL
							Perfluoroheptanoic acid (PFHpA)	20 ng/mL
							Perfluoroheptanesulfonic Acid	19.04 ng/mL
							Perfluorohexanoic acid (PFHxA)	20 ng/mL
							Perfluorohexadecanoic acid	20 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	18.2 ng/mL
							Perfluorononanoic acid (PFNA)	20 ng/mL
							Perfluorooctanoic acid (PFOA)	20 ng/mL
							Perfluorooctadecanoic acid	20 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	18.56 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	20 ng/mL
							Perfluoropentanoic acid (PFPeA)	20 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	20 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	20 ng/mL
							Perfluoroundecanoic acid (PFUnA)	20 ng/mL
.LCMPFCSU_00047	06/14/17	12/14/16	Methanol, Lot Baker 144541	50000 uL	LCM2PFHxDA_00008	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00007	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00007	1000 uL	13C4-PFHFA	1 ug/mL
					LCM5PFPEA_00008	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00011	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00008	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00011	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00008	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00012	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00008	1000 uL	1802 PFHxS	0.946 ug/mL
					LCMPFNA_00008	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00012	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00017	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUDa_00009	1000 uL	13C2 PFUnA	1 ug/mL
					(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00007	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00007	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C4-PFHFA	50 ug/mL
..LCM5PFPEA_00008	05/27/21	Wellington Laboratories, Lot M4PFHFA0516			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00011	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00008	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00011	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00008	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFHxA_00012	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00008	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		1802 PFHxS	47.3 ug/mL
..LCMPFNA_00008	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00012	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00017	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa_00009	02/12/21	Wellington Laboratories, Lot MPFUDa0216			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
..LCPFCSP_00074	06/14/17	12/14/16	Methanol, Lot 090285	10000 uL	LCPFBA_00005	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mL
					LCPFBS_00005	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00005	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00005	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDS_00006	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00006	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00009	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00005	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxDA_00006	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00002	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00006	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00006	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00002	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00008	200 uL	Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00005	200 uL	Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00005	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTriDA_00005	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFUdA_00005	200 uL	Perfluoroundecanoic acid (PFUnA)	1 ug/mL
..LCPFBA_00005	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00005	03/15/21	Wellington Laboratories, Lot LFPBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00005	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
..LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDS_00006	05/24/21	Wellington Laboratories, Lot LFPDS0516			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpA_00006	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpS_00009	11/06/20	Wellington Laboratories, Lot LFPHpS1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00005	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxDA_00006	05/25/21	Wellington Laboratories, Lot PFHxDA0516			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFHxS-br_00002	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA 00006	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA 00006	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA 00006	04/29/21	Wellington Laboratories, Lot PFODA0416			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00002	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00008	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
..LCPFPeA_00005	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFTeDA_00005	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00005	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
..LCPFUdA_00005	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC-L5_00022	06/14/17	12/15/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00047	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00074	250 uL	Perfluorobutanoic acid (PFBA)	50 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	44.2 ng/mL
							Perfluorodecanoic acid (PFDA)	50 ng/mL
							Perfluorododecanoic acid (PFDoA)	50 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	48.2 ng/mL
							Perfluoroheptanoic acid (PFHpA)	50 ng/mL
							Perfluoroheptanesulfonic Acid	47.6 ng/mL
							Perfluorohexanoic acid (PFHxA)	50 ng/mL
							Perfluorohexadecanoic acid	50 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.5 ng/mL
							Perfluorononanoic acid (PFNA)	50 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
							Perfluorooctadecanoic acid	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	46.4 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	50 ng/mL
							Perfluoropentanoic acid (PFPeA)	50 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	50 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	50 ng/mL
							Perfluoroundecanoic acid (PFUnA)	50 ng/mL
.LCMPFCSU_00047	06/14/17	12/14/16	Methanol, Lot Baker 144541	50000 uL	LCM2PFHxDA_00008	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00007	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00007	1000 uL	13C4-PFHpa	1 ug/mL
					LCM5PFPEA_00008	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00011	1000 uL	13C8_FOSA	1 ug/mL
					LCMPFBA_00008	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00011	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00008	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00012	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00008	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00008	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00012	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00017	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00009	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00008	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00007	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00007	05/27/21	Wellington Laboratories, Lot M4PFHpa0516			(Purchased Reagent)		13C4-PFHpa	50 ug/mL
..LCM5PFPEA_00008	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00011	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8_FOSA	50 ug/mL
..LCMPFBA_00008	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00011	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00008	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00012	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00008	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00008	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00012	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00017	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00009	02/12/21	Wellington Laboratories, Lot MPFUdA0216			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00074	06/14/17	12/14/16	Methanol, Lot 090285	10000 uL	LCPFBA_00005	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mL
					LCPFBS_00005	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00005	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00005	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDS_00006	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHpA_00006	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHps_00009	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00005	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxDA_00006	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00002	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00006	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00006	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00002	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00008	200 uL	Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00005	200 uL	Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00005	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTrDA_00005	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFUdA_00005	200 uL	Perfluoroundecanoic acid (PFUnA)	1 ug/mL
..LCPFBA_00005	05/27/21		Wellington Laboratories, Lot PFBA0516		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00005	03/15/21		Wellington Laboratories, Lot LPFBS0316		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00005	07/02/20		Wellington Laboratories, Lot PFDA0615		(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
..LCPFDoA_00005	01/30/20		Wellington Laboratories, Lot PFDoA0115		(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDS_00006	05/24/21		Wellington Laboratories, Lot LPFDS0516		(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpA_00006	01/22/21		Wellington Laboratories, Lot PFHpA0116		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHps_00009	11/06/20		Wellington Laboratories, Lot LPFHps1115		(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00005	12/22/20		Wellington Laboratories, Lot PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxDA_00006	05/25/21		Wellington Laboratories, Lot PFHxDA0516		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00002	07/03/20		Wellington Laboratories, Lot brPFHxSK0615		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00006	10/23/20		Wellington Laboratories, Lot PFNA1015		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00006	11/06/20		Wellington Laboratories, Lot PFOA1115		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00006	04/29/21		Wellington Laboratories, Lot PFODA0416		(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00002	10/14/20		Wellington Laboratories, Lot brPFOSK1015		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00008	09/02/17		Wellington Laboratories, Lot FOSA0815I		(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
..LCPFPeA_00005	01/30/20		Wellington Laboratories, Lot PFPeA0115		(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFTeDA_00005	12/09/20		Wellington Laboratories, Lot PFTeDA1215		(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00005	02/12/21		Wellington Laboratories, Lot PFTrDA0216		(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFUDa_00005	08/19/20		Wellington Laboratories, Lot PFUDa0815		(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC-L6_00020	06/14/17	12/15/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00047	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPF CSP_00074	1000 uL	Perfluorobutanoic acid (PFBA)	200 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	176.8 ng/mL
							Perfluorodecanoic acid (PFDA)	200 ng/mL
							Perfluorododecanoic acid (PFDoA)	200 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	192.8 ng/mL
							Perfluoroheptanoic acid (PFHpA)	200 ng/mL
							Perfluoroheptanesulfonic Acid	190.4 ng/mL
							Perfluorohexanoic acid (PFHxA)	200 ng/mL
							Perfluorohexadecanoic acid	200 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	182 ng/mL
							Perfluorononanoic acid (PFNA)	200 ng/mL
							Perfluorooctanoic acid (PFOA)	200 ng/mL
							Perfluorooctadecanoic acid	200 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	185.6 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	200 ng/mL
							Perfluoropentanoic acid (PFPeA)	200 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	200 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	200 ng/mL
							Perfluoroundecanoic acid (PFUnA)	200 ng/mL
.LCMPFCSU_00047	06/14/17	12/14/16	Methanol, Lot Baker 144541	50000 uL	LCM2PFHxDA_00008	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00007	1000 uL	13C2-PFTeDA	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCM4PFHPA_00007	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00008	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00011	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00008	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00011	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00008	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00012	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00008	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00008	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00012	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00017	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUDa_00009	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00008	01/07/21		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00007	12/07/20		Wellington Laboratories, Lot M2PFTeDA1115		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00007	05/27/21		Wellington Laboratories, Lot M4PFHPA0516		(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00008	05/22/20		Wellington Laboratories, Lot M5PFPeA0515		(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00011	12/22/17		Wellington Laboratories, Lot M8FOSA1215I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00008	05/24/21		Wellington Laboratories, Lot MPFBA0516		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00011	08/19/20		Wellington Laboratories, Lot MPFDA0815		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00008	04/08/21		Wellington Laboratories, Lot MPFDoA0416		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00012	04/08/21		Wellington Laboratories, Lot MPFHxA0416		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00008	10/23/20		Wellington Laboratories, Lot MPFHxS1015		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00008	04/13/19		Wellington Laboratories, Lot MPFNA0414		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00012	01/22/21		Wellington Laboratories, Lot MPFOA0116		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00017	08/03/21		Wellington Laboratories, Lot MPFOS0816		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa_00009	02/12/21		Wellington Laboratories, Lot MPFUDa0216		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
..LCPFCSP_00074	06/14/17	12/14/16	Methanol, Lot 090285	10000 uL	LCPFBA_00005	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mL
					LCPFBS_00005	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00005	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00005	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDS_00006	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00006	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00009	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00005	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxDA_00006	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00002	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00006	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00006	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00002	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00008	200 uL	Perfluorooctane Sulfonamide (FOSA)	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFPeA_00005	200 uL	Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00005	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTrDA_00005	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFUDa_00005	200 uL	Perfluoroundecanoic acid (PFUnA)	1 ug/mL
..LCPFBA_00005	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00005	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00005	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
..LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDS_00006	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpa_00006	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHps_00009	11/06/20	Wellington Laboratories, Lot LPFHps1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00005	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxDA_00006	05/25/21	Wellington Laboratories, Lot PFHxDA0516			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00002	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00006	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00006	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00006	04/29/21	Wellington Laboratories, Lot PFODA0416			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00002	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00008	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
..LCPFPeA_00005	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFTeDA_00005	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00005	02/12/21	Wellington Laboratories, Lot PFTTrDA0216			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
..LCPFUDa_00005	08/19/20	Wellington Laboratories, Lot PFUDa0815			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC2-L1_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00014	25 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.474 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.479 ng/mL
							N-ethylperfluoro-1-octanesulfo namide	0.5 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.5 ng/mL
							MeFOSA	0.5 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.5 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00001	03/10/19		WELLINGTON, Lot dNEtFOSA0314M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19		WELLINGTON, Lot dNMeFOSA0114M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18		WELLINGTON, Lot d3NMeFOSAA0113		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20		WELLINGTON, Lot d5NEtFOSAA0515		(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17		WELLINGTON, Lot M262FTS0714		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17		WELLINGTON, Lot M282FTS0414		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00014	01/20/17	07/20/16	Methanol, Lot 104453	5000 uL	LCPFC2SP_00013	500 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.0958 ug/mL
							N-ethylperfluoro-1-octanesulfo namide	0.1 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							MeFOSA	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
..LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfo namide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LC6:2FTS_00001	10/03/17		WELLINGTON, Lot 62FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
...LC8:2FTS_00001	10/03/17		WELLINGTON, Lot 82FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
...LCN-EtFOSA-M_00002	07/14/19		WELLINGTON, Lot NEtFOSA0714M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
...LCN-EtFOSAA_00001	01/29/18		WELLINGTON, Lot NEtFOSAA0113		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSA-M_00001	07/15/19		WELLINGTON, Lot NMeFOSA0714M		(Purchased Reagent)		MeFOSA	50 ug/mL
...LCN-MeFOSAA_00001	12/09/19		WELLINGTON, Lot NMeFOSAA1214		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L2_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00014	50 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ng/mL
							N-ethylperfluoro-1-octanesulfo namide	1 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	1 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00001	03/10/19		WELLINGTON, Lot dNEtFOSA0314M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19		WELLINGTON, Lot dNMeFOSA0114M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18		WELLINGTON, Lot d3NMeFOSAA0113		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20		WELLINGTON, Lot d5NEtFOSAA0515		(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17		WELLINGTON, Lot M262FTS0714		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17		WELLINGTON, Lot M282FTS0414		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00014	01/20/17	07/20/16	Methanol, Lot 104453	5000 uL	LCPFC2SP_00013	500 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.0958 ug/mL
							N-ethylperfluoro-1-octanesulfo namide	0.1 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							MeFOSA	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
..LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfo namide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
...LC6:2FTS_00001	10/03/17		WELLINGTON, Lot 62FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
...LC8:2FTS_00001	10/03/17		WELLINGTON, Lot 82FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
...LCN-EtFOSA-M_00002	07/14/19		WELLINGTON, Lot NetFOSA0714M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
...LCN-EtFOSAA_00001	01/29/18		WELLINGTON, Lot NetFOSAA0113		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSA-M_00001	07/15/19		WELLINGTON, Lot NMeFOSA0714M		(Purchased Reagent)		MeFOSA	50 ug/mL
...LCN-MeFOSAA_00001	12/09/19		WELLINGTON, Lot NMeFOSAA1214		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L3_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NETFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00014	250 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	4.74 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	4.79 ng/mL
							N-ethylperfluoro-1-octanesulfo namide	5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							N-ethyl perfluorooctane sulfonamidoacetic acid	5 ng/mL
							MeFOSA	5 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	5 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NETfOSA-M 00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M 00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA 00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NETfOSAA 00001	200 uL	d5-NETfOSAA	1 ug/mL
					LCM2-6:FTS 00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS 00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NETfOSA-M 00001	03/10/19		WELLINGTON, Lot dNetFOSA0314M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M 00001	01/28/19		WELLINGTON, Lot dNMeFOSA0114M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA 00001	01/31/18		WELLINGTON, Lot d3NMeFOSAA0113		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NETfOSAA 00001	05/08/20		WELLINGTON, Lot d5NETfOSAA0515		(Purchased Reagent)		d5-NETfOSAA	50 ug/mL
..LCM2-6:FTS 00001	07/15/17		WELLINGTON, Lot M262FTS0714		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS 00001	04/13/17		WELLINGTON, Lot M282FTS0414		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00014	01/20/17	07/20/16	Methanol, Lot 104453	5000 uL	LCPFC2SP_00013	500 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.0958 ug/mL
							N-ethylperfluoro-1-octanesulfo namide	0.1 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							MeFOSA	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
..LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfo namide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
...LC6:2FTS_00001	10/03/17		WELLINGTON, Lot 62FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
...LC8:2FTS_00001	10/03/17		WELLINGTON, Lot 82FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCN-EtFOSA-M_00002	07/14/19		WELLINGTON, Lot NETFOSA0714M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
...LCN-EtFOSAA_00001	01/29/18		WELLINGTON, Lot NETFOSAA0113		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSA-M_00001	07/15/19		WELLINGTON, Lot NMeFOSA0714M		(Purchased Reagent)		MeFOSA	50 ug/mL
...LCN-MeFOSAA_00001	12/09/19		WELLINGTON, Lot NMeFOSAA1214		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L4_00003	02/26/17	09/22/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00008	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NETFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00017	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	18.96 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	19.16 ng/mL
							N-ethylperfluoro-1-octanesulfo namide	20 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	20 ng/mL
							MeFOSA	20 ng/mL
.LCMPFC2SU_00008	02/26/17	08/26/16	Methanol, Lot 104453	10000 uL	LCd-NETFOSA-M_00002	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00002	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00002	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NETFOSAA_00002	200 uL	d5-NETFOSAA	1 ug/mL
					LCM2-6:FTS_00002	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00002	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NETFOSA-M_00002	03/10/19		WELLINGTON, Lot dNETFOSA0314M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00002	06/10/21		WELLINGTON, Lot dNMeFOSA0616M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00002	01/20/21		WELLINGTON, Lot d3NMeFOSAA0116		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NETFOSAA_00002	12/07/20		WELLINGTON, Lot d5NETFOSAA1115		(Purchased Reagent)		d5-NETFOSAA	50 ug/mL
..LCM2-6:FTS_00002	01/08/21		WELLINGTON, Lot M262FTS0116		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00002	01/08/21		WELLINGTON, Lot M282FTS0116		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00017	03/02/17	09/02/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00002	100 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.474 ug/mL
					LC8:2FTS_00002	100 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.479 ug/mL
					LCN-EtFOSA-M_00003	100 uL	N-ethylperfluoro-1-octanesulfo namide	0.5 ug/mL
					LCN-EtFOSAA_00002	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
					LCN-MeFOSA-M_00002	100 uL	MeFOSA	0.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCN-MeFOSAA_00003	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
..LC6:2FTS_00002	06/25/21		WELLINGTON, Lot 62FTS0616		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00002	10/23/20		WELLINGTON, Lot 82FTS1015		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSA-M_00003	05/24/21		WELLINGTON, Lot NtFOSA0516M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
..LCN-EtFOSAA_00002	01/20/21		WELLINGTON, Lot NtFOSAA0116		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00002	05/24/21		WELLINGTON, Lot NMeFOSA0714M		(Purchased Reagent)		MeFOSA	50 ug/mL
..LCN-MeFOSAA_00003	01/20/21		WELLINGTON, Lot NMeFOSAA0116		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L5_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00013	250 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ng/mL
							N-ethylperfluoro-1-octanesulfo namide	50 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	50 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NtFOSAA_00001	200 uL	d5-NtFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NtFOSA-M_00001	03/10/19		WELLINGTON, Lot dNtFOSA0314M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19		WELLINGTON, Lot dNMeFOSA0114M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18		WELLINGTON, Lot d3NMeFOSAA0113		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NtFOSAA_00001	05/08/20		WELLINGTON, Lot d5NtFOSAA0515		(Purchased Reagent)		d5-NtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17		WELLINGTON, Lot M262FTS0714		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17		WELLINGTON, Lot M282FTS0414		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfo namide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
..LC6:2FTS_00001	10/03/17		WELLINGTON, Lot 62FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00001	10/03/17		WELLINGTON, Lot 82FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSA-M_00002	07/14/19		WELLINGTON, Lot NetFOSA0714M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
..LCN-EtFOSAA_00001	01/29/18		WELLINGTON, Lot NetFOSAA0113		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00001	07/15/19		WELLINGTON, Lot NMeFOSA0714M		(Purchased Reagent)		MeFOSA	50 ug/mL
..LCN-MeFOSAA_00001	12/09/19		WELLINGTON, Lot NMeFOSAA1214		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L6_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00013	1000 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	189.6 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	191.6 ng/mL
							N-ethylperfluoro-1-octanesulfo namide	200 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	200 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NETfOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NETfOSA-M_00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NETfOSA-M_00001	03/10/19		WELLINGTON, Lot dNetFOSA0314M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCd-NMeFOSA-M_00001	01/28/19		WELLINGTON, Lot dNMeFOSA0114M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18		WELLINGTON, Lot d3NMeFOSAA0113		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20		WELLINGTON, Lot d5NEtFOSAA0515		(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17		WELLINGTON, Lot M262FTS0714		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17		WELLINGTON, Lot M282FTS0414		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfo namide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
..LC6:2FTS_00001	10/03/17		WELLINGTON, Lot 62FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00001	10/03/17		WELLINGTON, Lot 82FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSA-M_00002	07/14/19		WELLINGTON, Lot NEtFOSA0714M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
..LCN-EtFOSAA_00001	01/29/18		WELLINGTON, Lot NEtFOSAA0113		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00001	07/15/19		WELLINGTON, Lot NMeFOSA0714M		(Purchased Reagent)		MeFOSA	50 ug/mL
..LCN-MeFOSAA_00001	12/09/19		WELLINGTON, Lot NMeFOSAA1214		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFCIC_00020	03/01/17	12/01/16	MeOH/H2O, Lot 09285	5 mL	LCMPFCSU_00046	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFACMXB_00007	125 uL	Perfluorobutanesulfonic acid (PFBS)	44.25 ng/mL
							Perfluorobutanoic acid (PFBA)	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorodecanesulfonic acid (PFDS)	48.25 ng/mL
							Perfluorodecanoic acid (PFDA)	50 ng/mL
							Perfluorododecanoic acid (PFDoA)	50 ng/mL
							Perfluoroheptanoic acid (PFHpA)	50 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	47.25 ng/mL
							Perfluorohexanoic acid (PFHxA)	50 ng/mL
							Perfluorononanoic acid (PFNA)	50 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	47.75 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
							Perfluoropentanoic acid (PFPeA)	50 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	50 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	50 ng/mL
							Perfluoroundecanoic acid (PFUnA)	50 ng/mL
					LCPFC3IM_00005	250 uL	Perfluorooctane Sulfonamide (FOSA)	50 ng/mL
.LCMPFCSU_00046	03/01/17	11/03/16	Methanol, Lot Baker 144541	50000 uL	LCM2PFHxDA_00008	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00007	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00007	1000 uL	13C4-PFHpa	1 ug/mL
					LCM5PFPEA_00008	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00011	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00008	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00011	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00008	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00012	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00008	1000 uL	1802 PFHxS	0.946 ug/mL
					LCMPFNA_00008	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00012	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00017	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00009	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00008	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00007	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00007	05/27/21	Wellington Laboratories, Lot M4PFHpa0516			(Purchased Reagent)		13C4-PFHpa	50 ug/mL
..LCM5PFPEA_00008	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00011	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00008	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00011	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00008	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00012	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00008	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		1802 PFHxS	47.3 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFNA_00008	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00012	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00017	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00009	02/12/21	Wellington Laboratories, Lot MPFUdA0216			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFACMXB_00007	11/06/20	Wellington Laboratories, Lot PFACMXB1115			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1.77 ug/mL
							Perfluorobutanoic acid (PFBA)	2 ug/mL
							Perfluorodecanesulfonic acid (PFDS)	1.93 ug/mL
							Perfluorodecanoic acid (PFDA)	2 ug/mL
							Perfluorododecanoic acid (PFDoA)	2 ug/mL
							Perfluoroheptanoic acid (PFHpA)	2 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	1.89 ug/mL
							Perfluorohexanoic acid (PFHxA)	2 ug/mL
							Perfluorononanoic acid (PFNA)	2 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	1.91 ug/mL
							Perfluorooctanoic acid (PFOA)	2 ug/mL
							Perfluoropentanoic acid (PFPeA)	2 ug/mL
							Perfluorotetradecanoic acid (PFTeA)	2 ug/mL
							Perfluorotridecanoic Acid (PFTriA)	2 ug/mL
Perfluoroundecanoic acid (PFUnA)	2 ug/mL							
.LCPFC3IM_00005	06/01/17	12/01/16	Methanol, Lot 090285	5 mL	LCPFOSA_00008	0.1 mL	Perfluorooctane Sulfonamide (FOSA)	1000 ng/mL
..LCPFOSA_00008	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
LCPFCSP_00073	05/28/17	11/28/16	Methanol, Lot 090285	10000 uL	LCPFBA_00005	100 uL	Perfluorobutanoic acid (PFBA)	0.5 ug/mL
					LCPFBS_00005	100 uL	Perfluorobutane Sulfonate	0.442 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00005	100 uL	Perfluorodecanoic acid (PFDA)	0.5 ug/mL
					LCPFDoA_00005	100 uL	Perfluorododecanoic acid (PFDoA)	0.5 ug/mL
					LCPFDS_00006	100 uL	Perfluorodecane Sulfonate	0.482 ug/mL
							Perfluorodecanesulfonic acid (PFDS)	0.482 ug/mL
					LCPFHpA_00006	100 uL	Perfluoroheptanoic acid (PFHpA)	0.5 ug/mL
					LCPFHpS_00009	100 uL	Perfluoroheptane Sulfonate	0.476 ug/mL
							Perfluoroheptanesulfonic Acid	0.476 ug/mL
					LCPFHxA_00005	100 uL	Perfluorohexanoic acid (PFHxA)	0.5 ug/mL
					LCPFHxDA_00006	100 uL	Perfluorohexadecanoic acid	0.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHxS-br_00002	100 uL	Perfluorohexane Sulfonate	0.455 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.455 ug/mL
					LCPFNA 00006	100 uL	Perfluorononanoic acid (PFNA)	0.5 ug/mL
					LCPFOA 00006	100 uL	Perfluorooctanoic acid (PFOA)	0.5 ug/mL
					LCPFODA 00006	100 uL	Perfluorooctadecanoic acid	0.5 ug/mL
					LCPFOS-br_00002	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.464 ug/mL
					LCPFOSA_00008	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.5 ug/mL
					LCPFPeA_00005	100 uL	Perfluoropentanoic acid (PFPeA)	0.5 ug/mL
					LCPFTeDA_00005	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.5 ug/mL
					LCPFTrDA_00005	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.5 ug/mL
					LCPFUDa_00005	100 uL	Perfluoroundecanoic acid (PFUnA)	0.5 ug/mL
.LCPFBA 00005	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
.LCPFBS_00005	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
.LCPFDA 00005	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
.LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
.LCPFDS_00006	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecane Sulfonate	48.2 ug/mL
							Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
.LCPFHpA_00006	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
.LCPFHpS_00009	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptane Sulfonate	47.6 ug/mL
							Perfluoroheptanesulfonic Acid	47.6 ug/mL
.LCPFHxA 00005	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
.LCPFHxDA_00006	05/25/21	Wellington Laboratories, Lot PFHxDA0516			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS-br_00002	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexane Sulfonate	45.5 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
.LCPFNA 00006	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
.LCPFOA 00006	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
.LCPFODA 00006	04/29/21	Wellington Laboratories, Lot PFODA0416			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
.LCPFOS-br_00002	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LCPFOSA_00008	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
.LCPFPeA_00005	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
.LCPFTeDA_00005	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
.LCPFTrDA_00005	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFUdA_00005	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL

Reagent

LC6:2FTS_00001

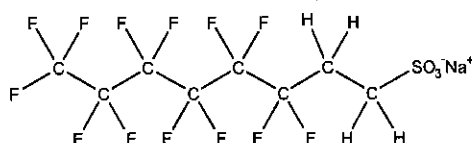
r: 7h115 &v
S: 7h20/15 &v



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 6:2FTS **LOT NUMBER:** 62FTS1014
COMPOUND: Sodium 1H,1H,2H,2H-perfluorooctane sulfonate
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_8H_4F_{13}SO_3Na$ **MOLECULAR WEIGHT:** 450.15
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ (Na salt) **SOLVENT(S):** Methanol
 $47.4 \pm 2.4 \mu\text{g/ml}$ (6:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/03/2014
EXPIRY DATE: (mm/dd/yyyy) 10/03/2017
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 03/27/2015
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

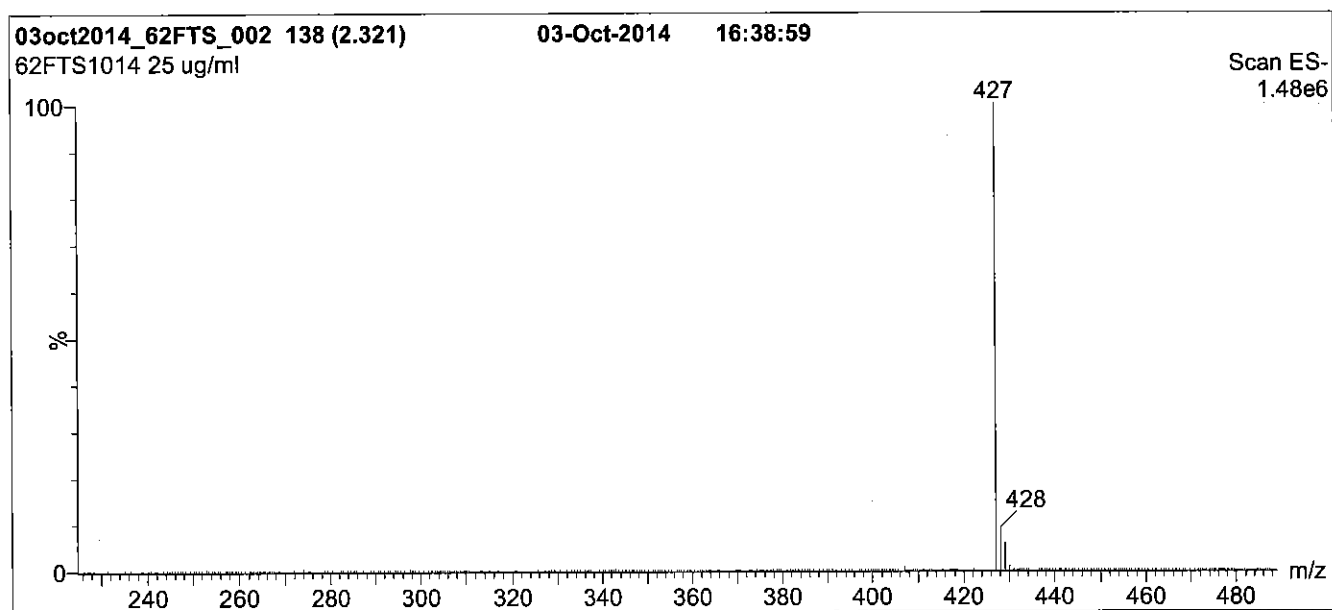
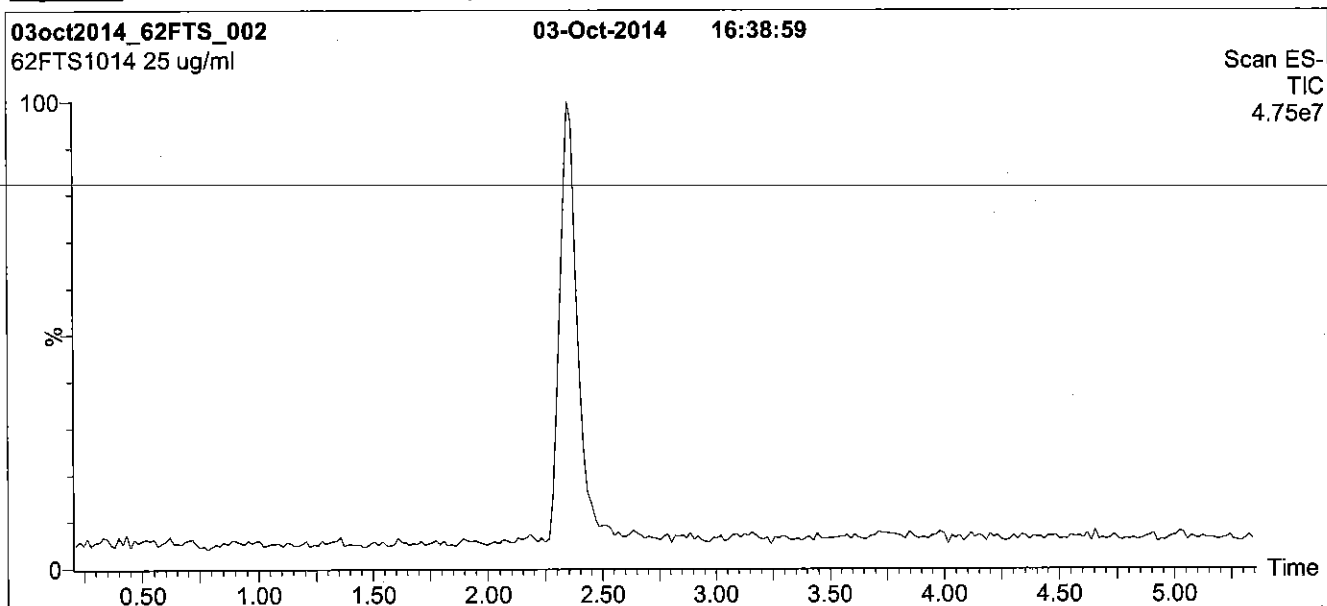
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



****For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com****

Figure 1: 6:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

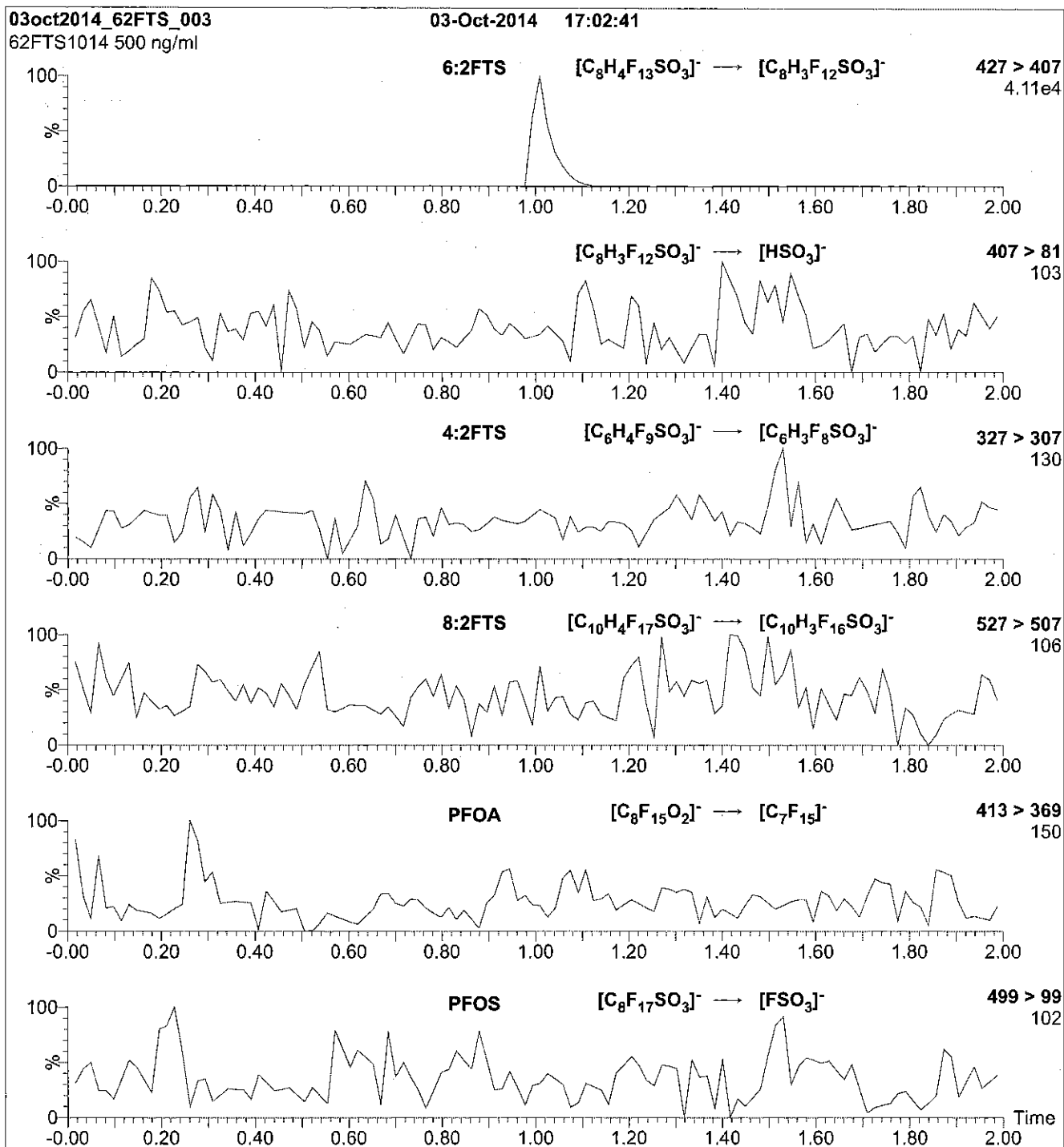
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: 6:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml 6:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 25

Reagent

LC6:2FTS_00002

R: 8/23/16 SBC



715544

ID: LC6:2FTS_00002

Exp: 06/25/21 Prod: SBC

6:2FTS



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

6:2FTS

LOT NUMBER:

62FTS0616

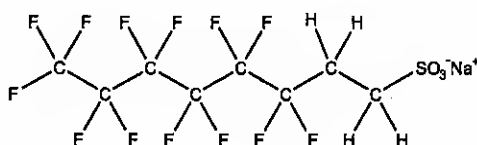
COMPOUND:

Sodium 1H,1H,2H,2H-perfluorooctane sulfonate

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

C₈H₄F₁₀SO₃Na

MOLECULAR WEIGHT:

450.15

CONCENTRATION:

50.0 ± 2.5 µg/ml (Na salt)
47.4 ± 2.4 µg/ml (6:2FTS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

06/25/2016

EXPIRY DATE: (mm/dd/yyyy)

06/25/2021

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 06/29/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • Info@well-labs.com

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Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

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$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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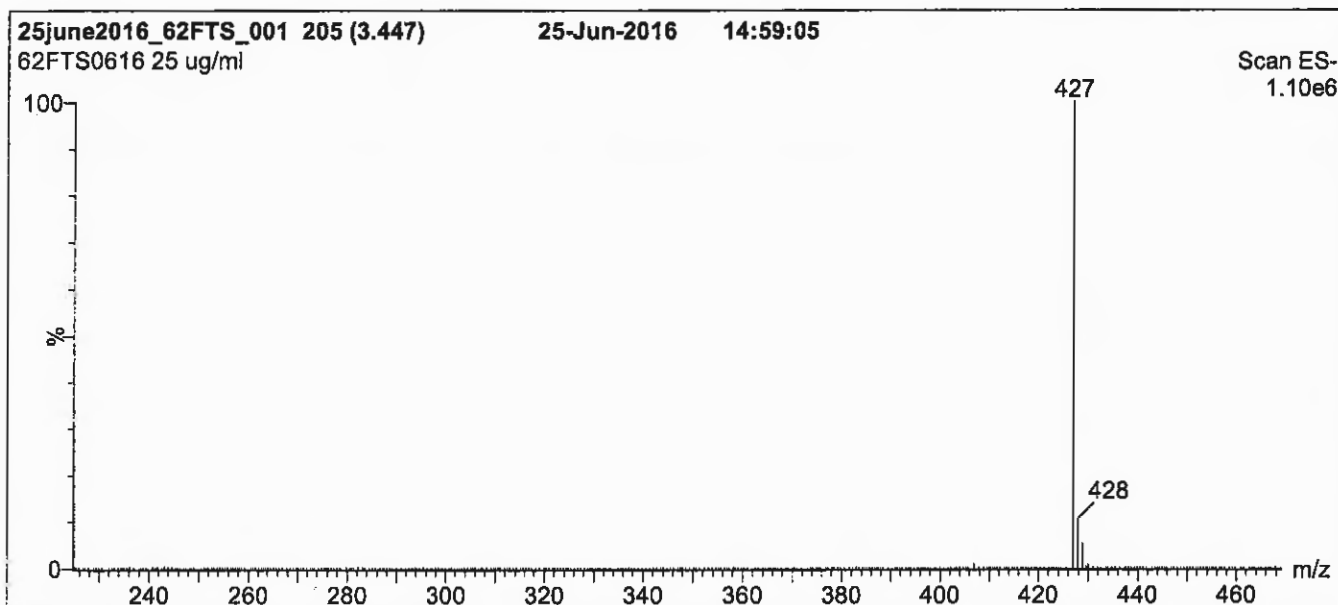
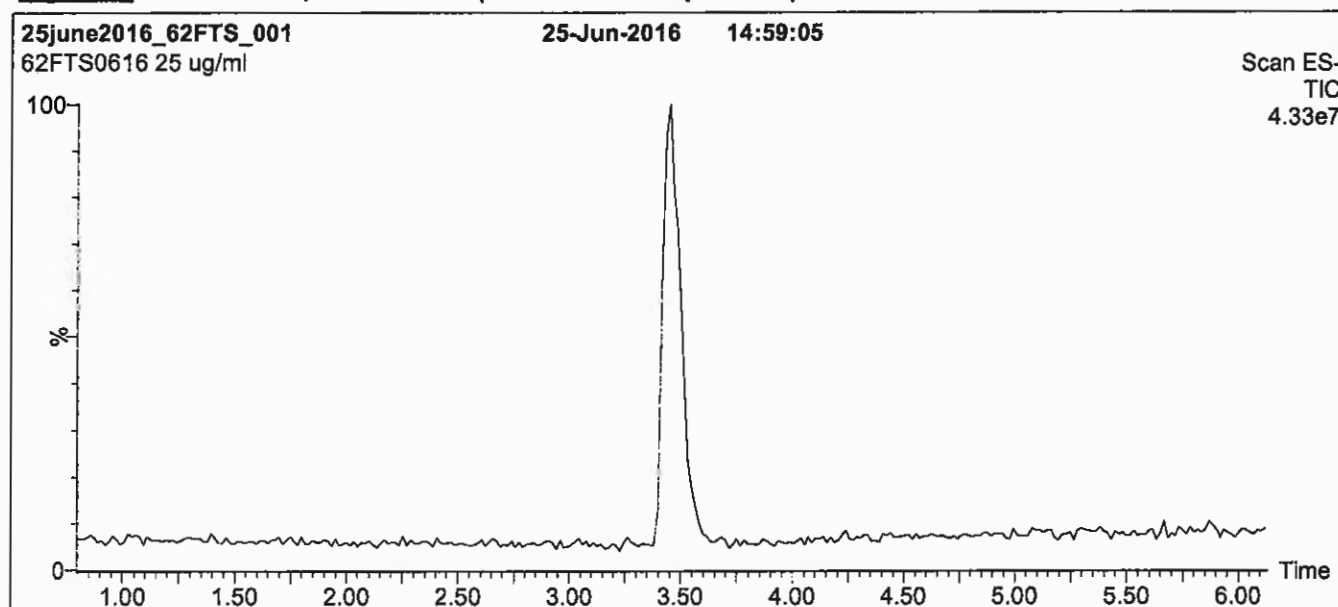
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: 6:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

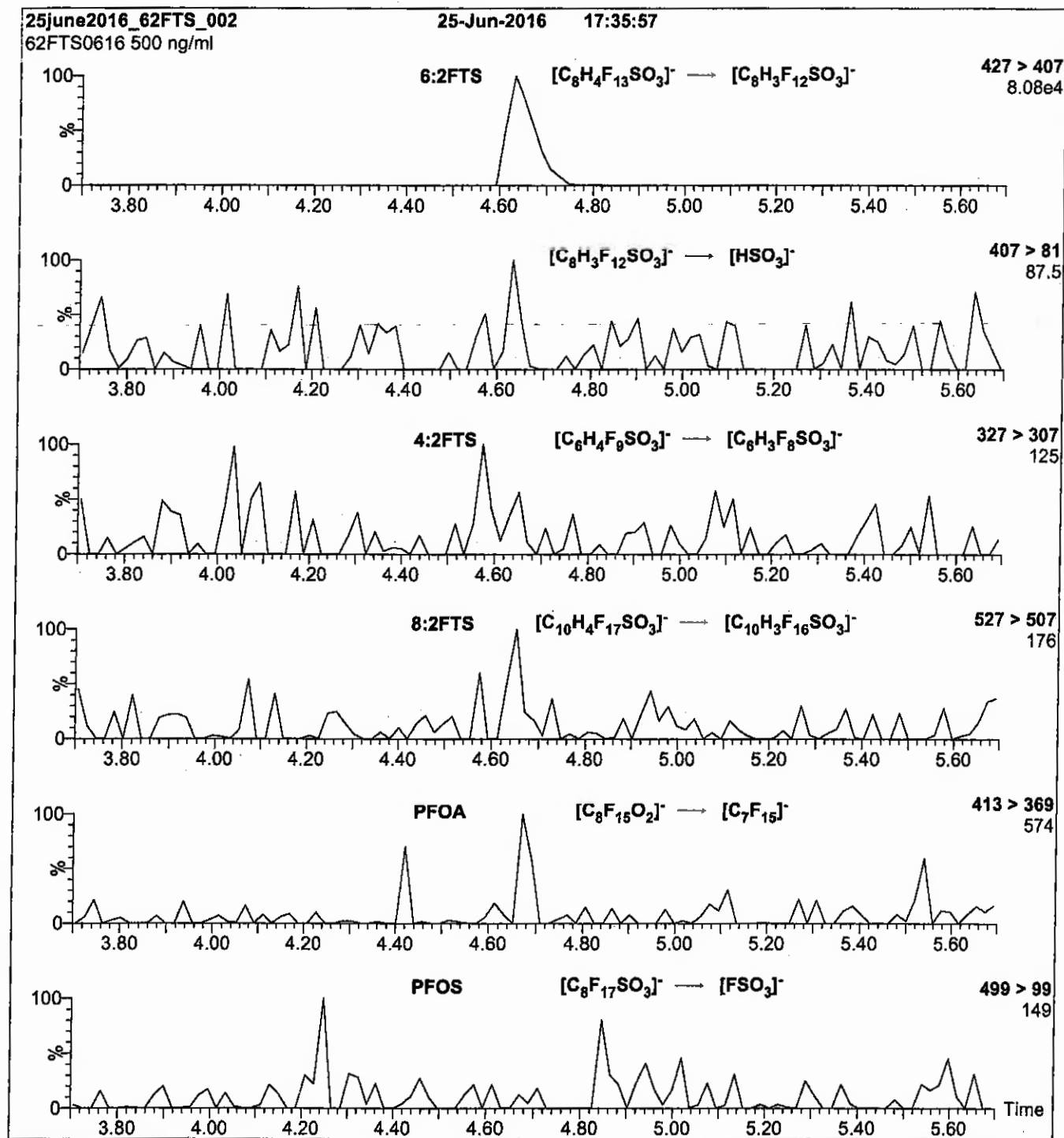
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: 6:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop Injection
10 μ l (500 ng/ml 6:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = $3.46e-3$
Collision Energy (eV) = 25

Reagent

LC8 : 2FTS_00001

r: 7/16/15 8V
S: 7/22/15 8V



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

8:2FTS

LOT NUMBER:

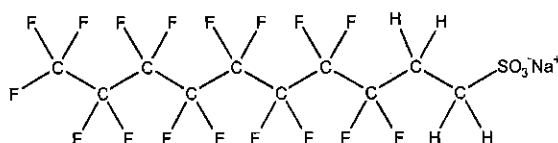
82FTS1014

COMPOUND:

Sodium 1H,1H,2H,2H-perfluorodecane sulfonate

STRUCTURE:**CAS #:**

Not available

**MOLECULAR FORMULA:** $C_{10}H_4F_{17}SO_3Na$ **MOLECULAR WEIGHT:**

550.16

CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ (Na salt)
 $47.9 \pm 2.4 \mu\text{g/ml}$ (8:2FTS anion)**SOLVENT(S):**

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

10/03/2014

EXPIRY DATE: (mm/dd/yyyy)

10/03/2017

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 03/27/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

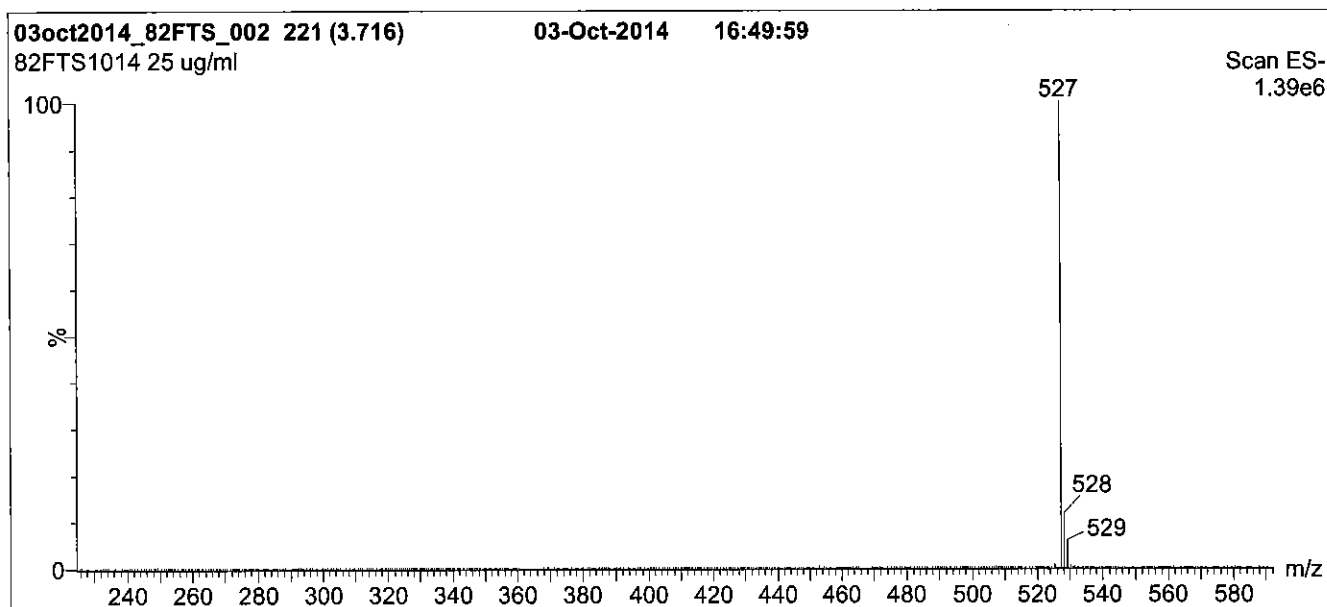
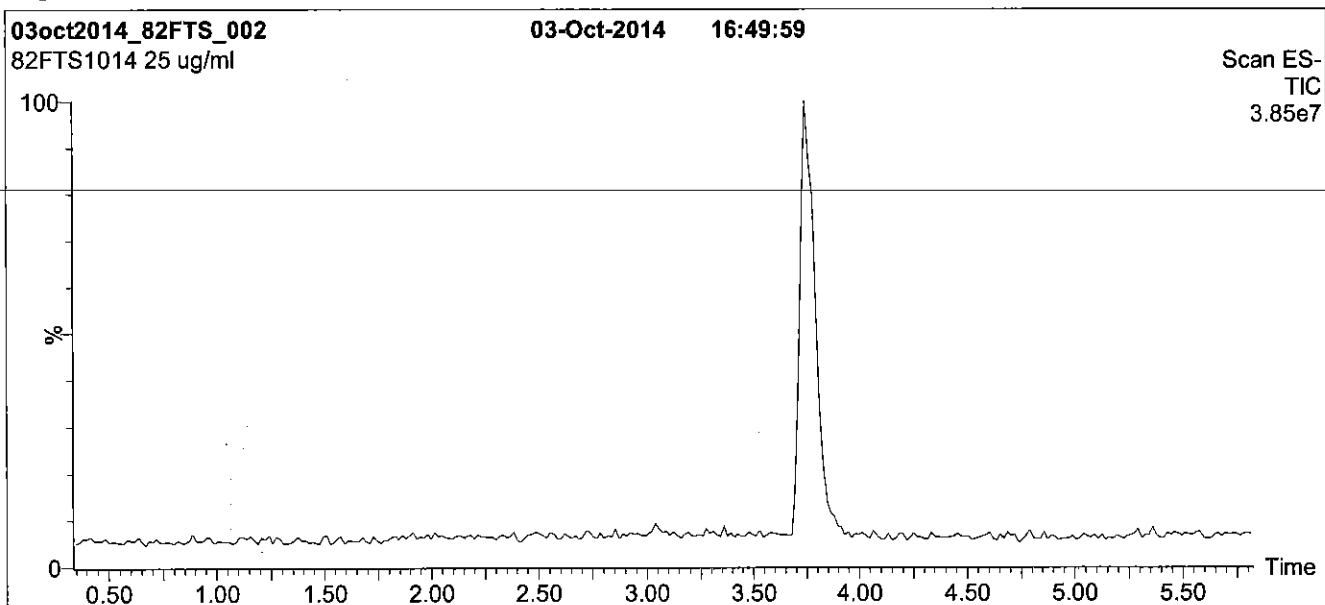
QUALITY MANAGEMENT:

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Figure 1: 8:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min.
Return to initial conditions in 0.5 min.
Time: 10 min

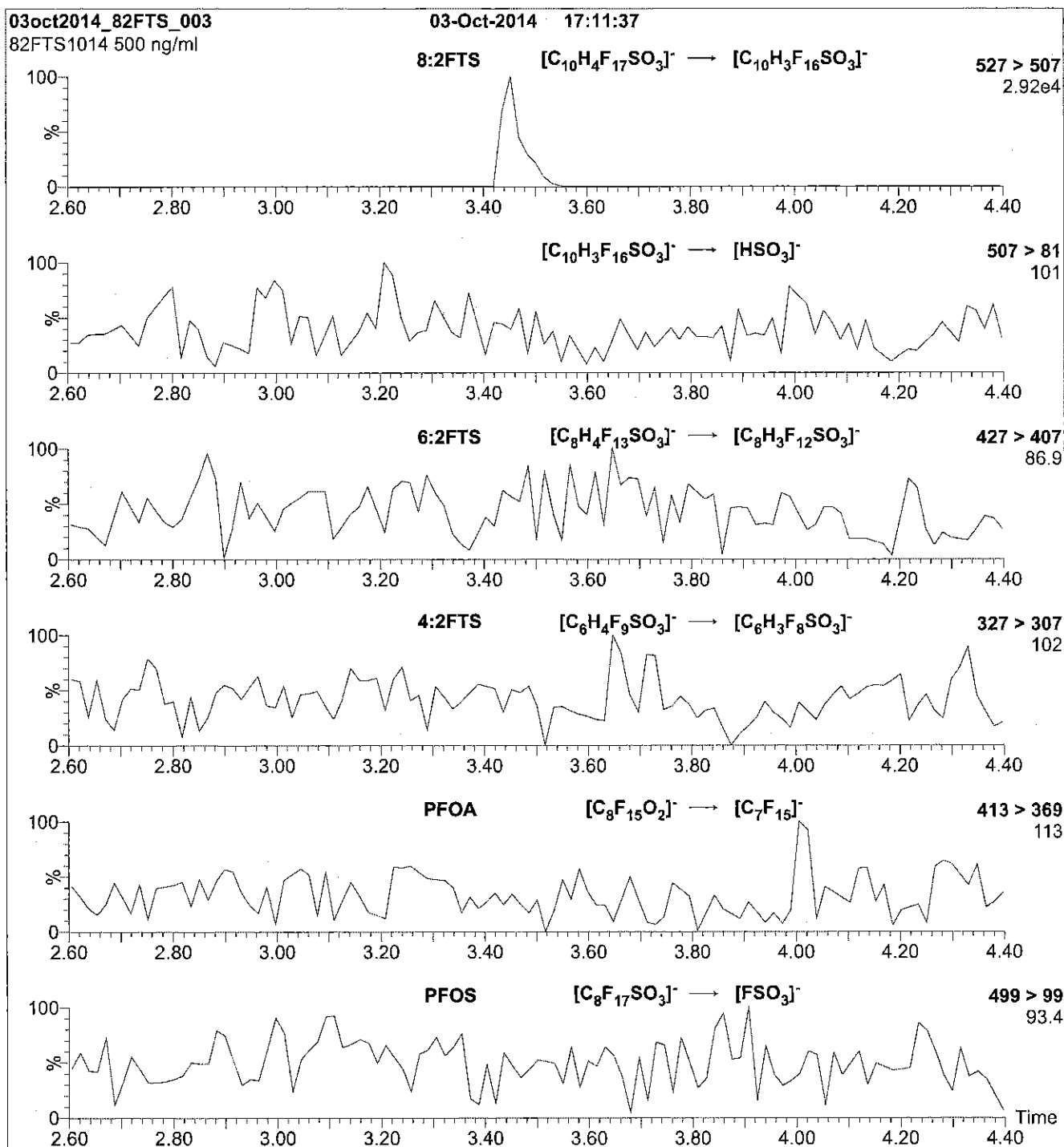
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: 8:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml 8:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 30

Reagent

LC8 : 2FTS_00002

R: 8/23/16 SBC

715545
ID: LC8:2FTS_00002
Exp: 10/23/20 Prep'd: SBC
8:2FTS

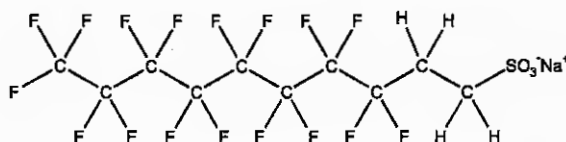


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 8:2FTS **LOT NUMBER:** 82FTS1015
COMPOUND: Sodium 1H,1H,2H,2H-perfluorodecane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_{10}H_4F_{17}SO_3Na$ **MOLECULAR WEIGHT:** 550.16
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ (Na salt) **SOLVENT(S):** Methanol
 $47.9 \pm 2.4 \mu\text{g/ml}$ (8:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/23/2015
EXPIRY DATE: (mm/dd/yyyy) 10/23/2020
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

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Certified By:

B.G. Chittim

Date: 10/27/2015
(mm/dd/yyyy)

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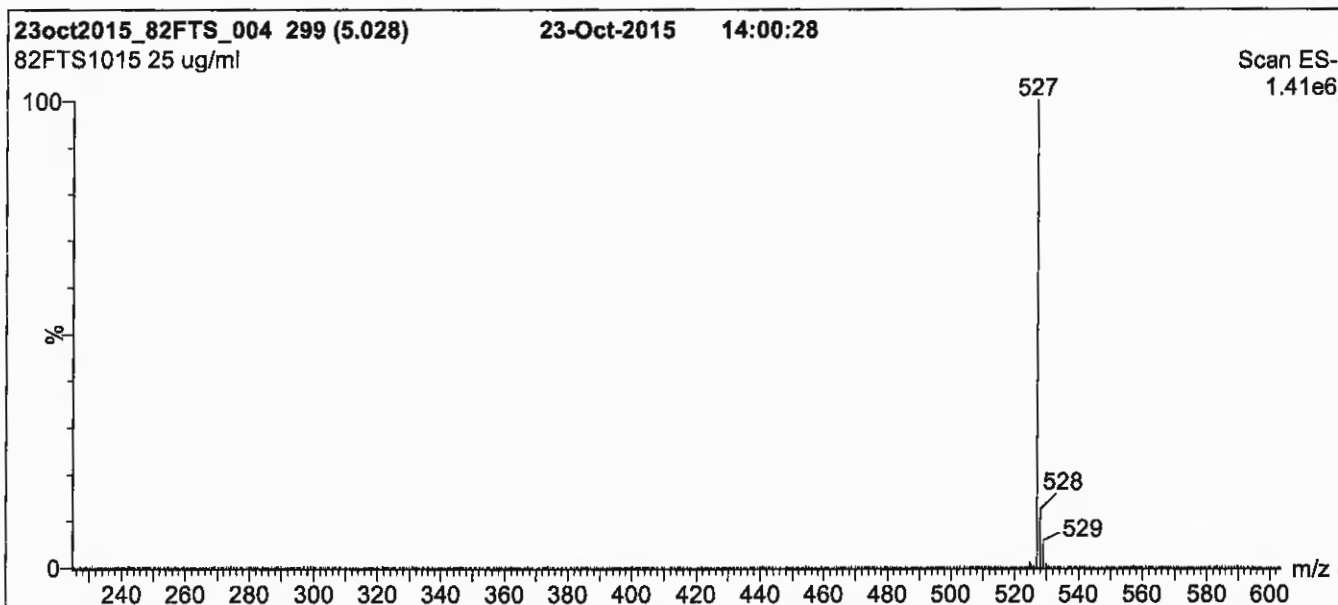
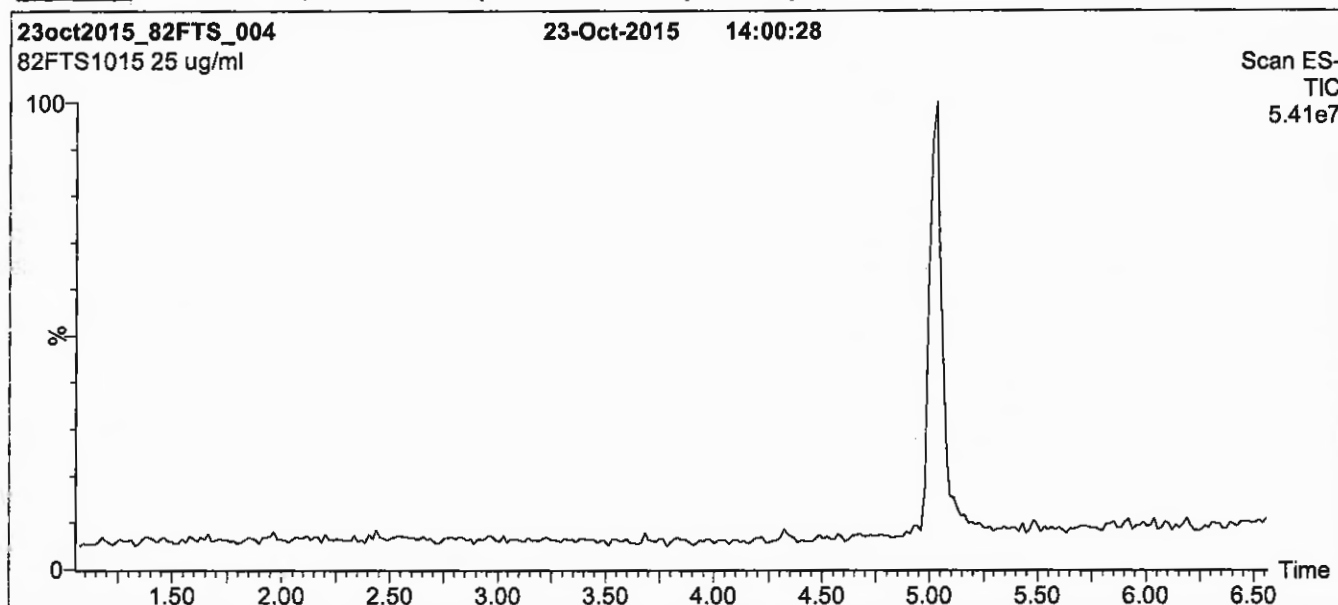
QUALITY MANAGEMENT:

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Figure 1: 8:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min.
Return to Initial conditions in 0.5 min.
Time: 10 min

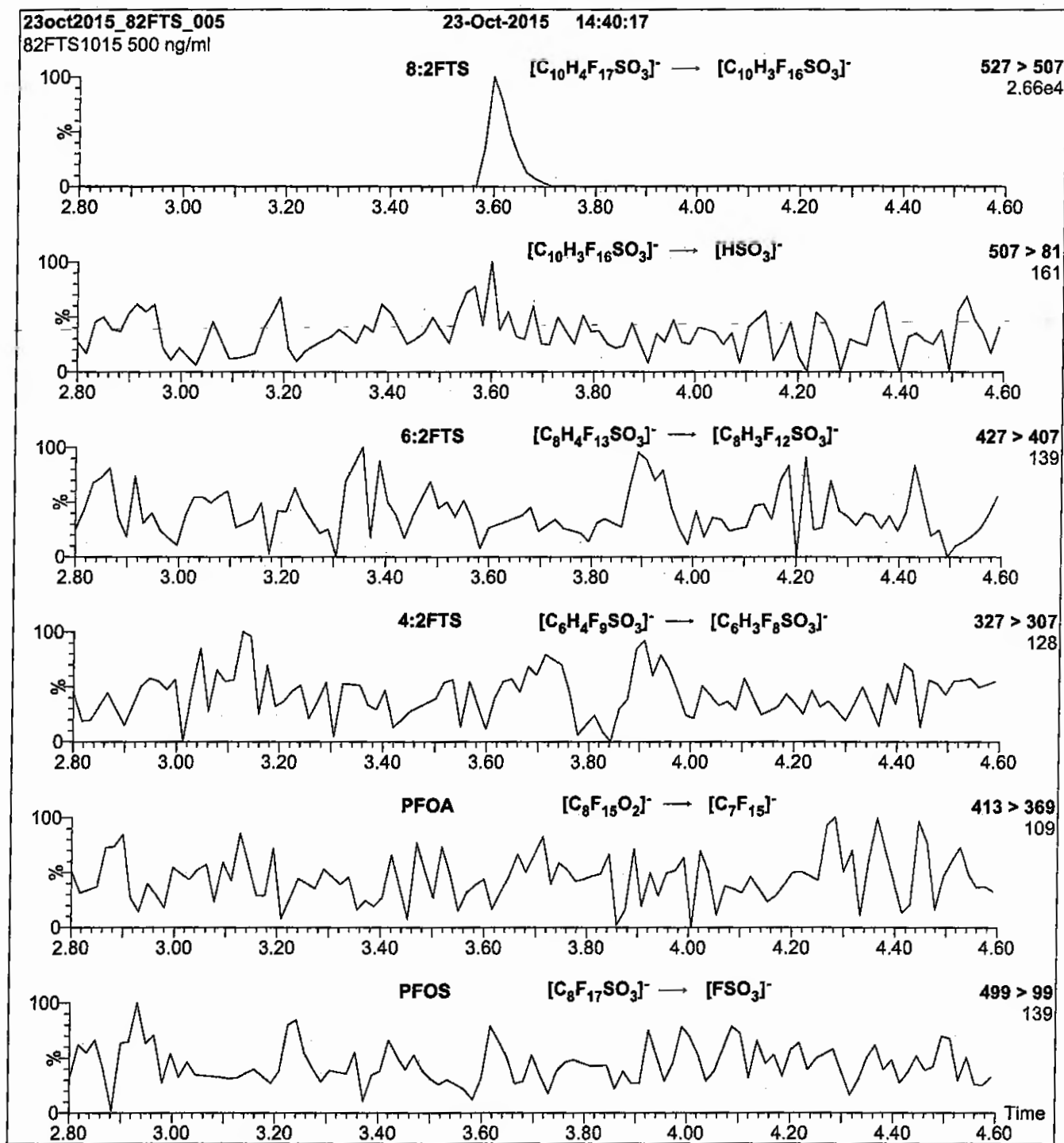
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: 8:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml 8:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 30

Reagent

LCd-NEtFOSA-M_00001

C: 7/16/15 8/



WELLINGTON LABORATORIES

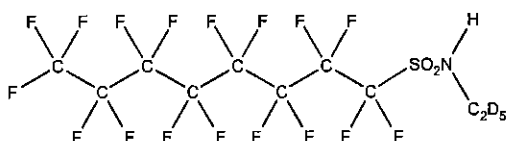
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d-N-EtFOSA-M
COMPOUND: N-ethyl-d₅-perfluoro-1-octanesulfonamide

LOT NUMBER: dNEtFOSA0314M

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: C₁₀D₅HF₁₇NO₂S
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/10/2014
EXPIRY DATE: (mm/dd/yyyy) 03/10/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 532.23
SOLVENT(S): Methanol
ISOTOPIC PURITY: ≥98% ²H₅

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/01/2015

(mm/dd/yyyy)

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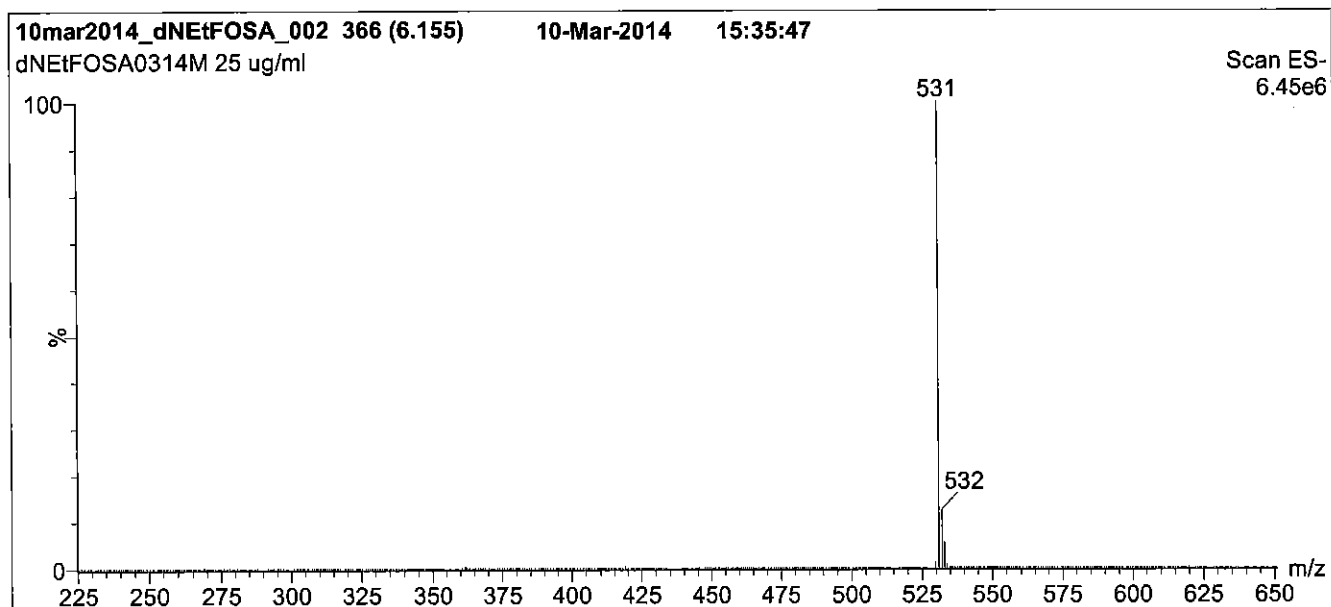
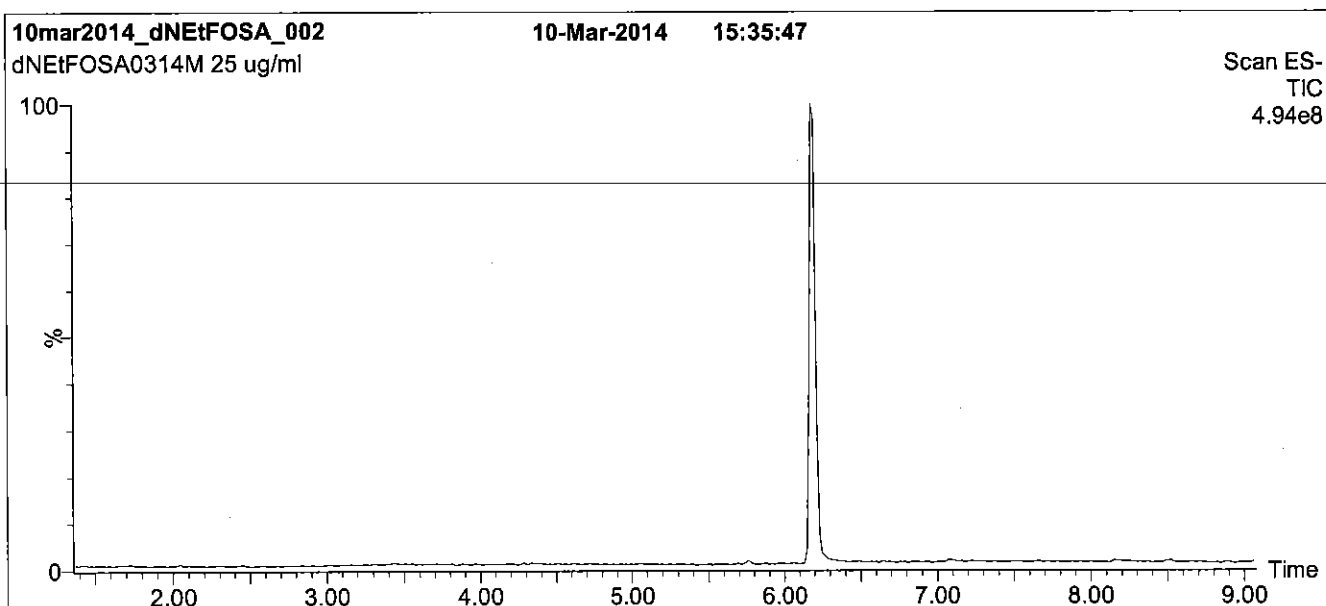
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Figure 1: d-N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% H₂O / 60% (80:20 MeOH:ACN)
(both with 10mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

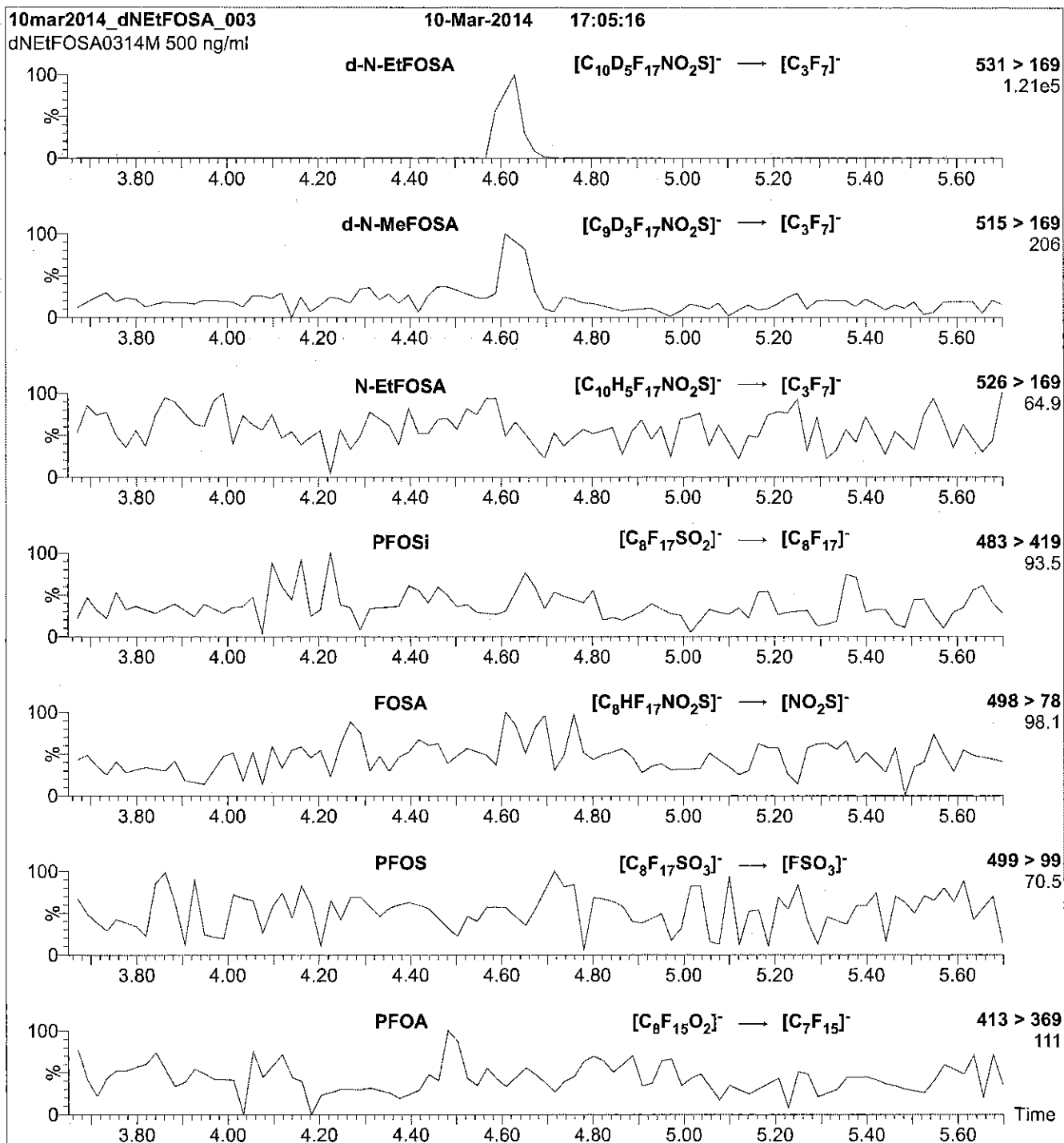
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: d-N-EtFOSA-M; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml d-N-EtFOSA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 25

Reagent

LCd-NEtFOSA-M_00002

R-7/6/16 CBW



671571

ID: LCd-NEtFOSA-M_00002

Exp: 03/10/19 Prpd: CBW

d-N-EtFOSA-M



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

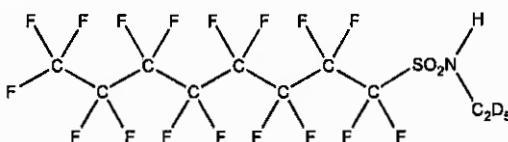
d-N-EtFOSA-M

LOT NUMBER:

dNEtFOSA0314M

COMPOUND:N-ethyl-d₅-perfluoro-1-octanesulfonamide**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**C₁₀D₅HF₁₇NO₂S**CONCENTRATION:**

50 ± 2.5 µg/ml

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/10/2014

EXPIRY DATE: (mm/dd/yyyy)

03/10/2019

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

MOLECULAR WEIGHT:

532.23

SOLVENT(S):

Methanol

ISOTOPIC PURITY:≥98% ²H₅**DOCUMENTATION/ DATA ATTACHED:**

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/01/2015

(mm/dd/yyyy)

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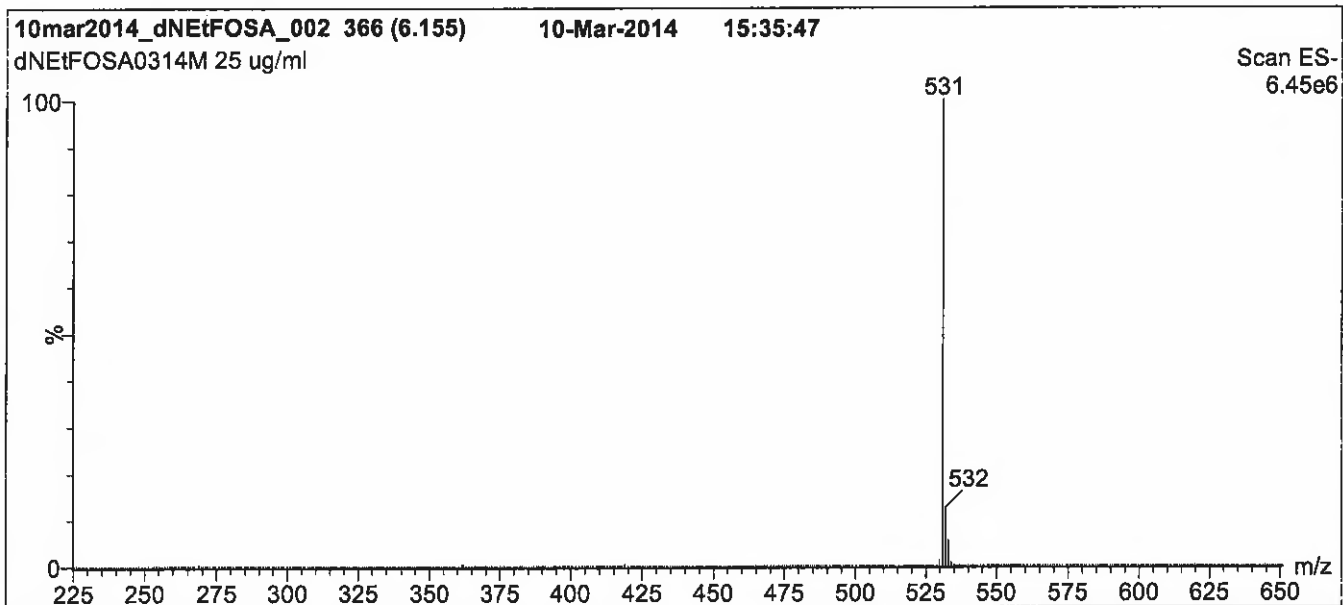
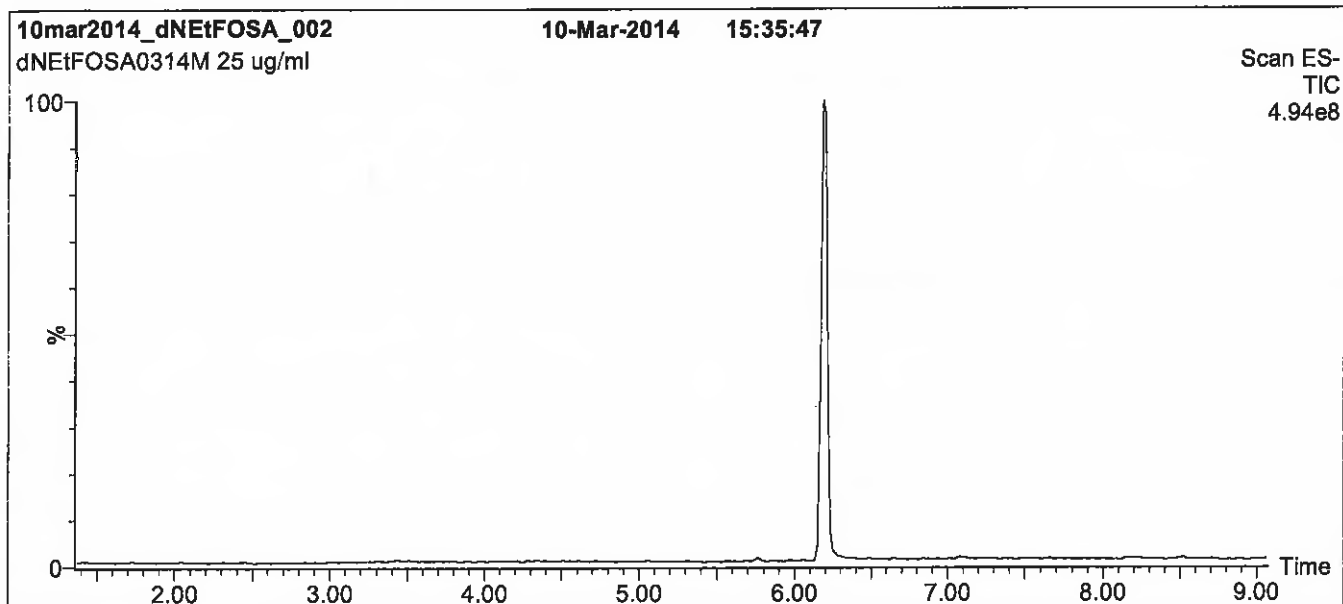
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LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gracient
Start: 40% H₂O / 60% (80:20 MeOH:ACN)
(both with 10mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

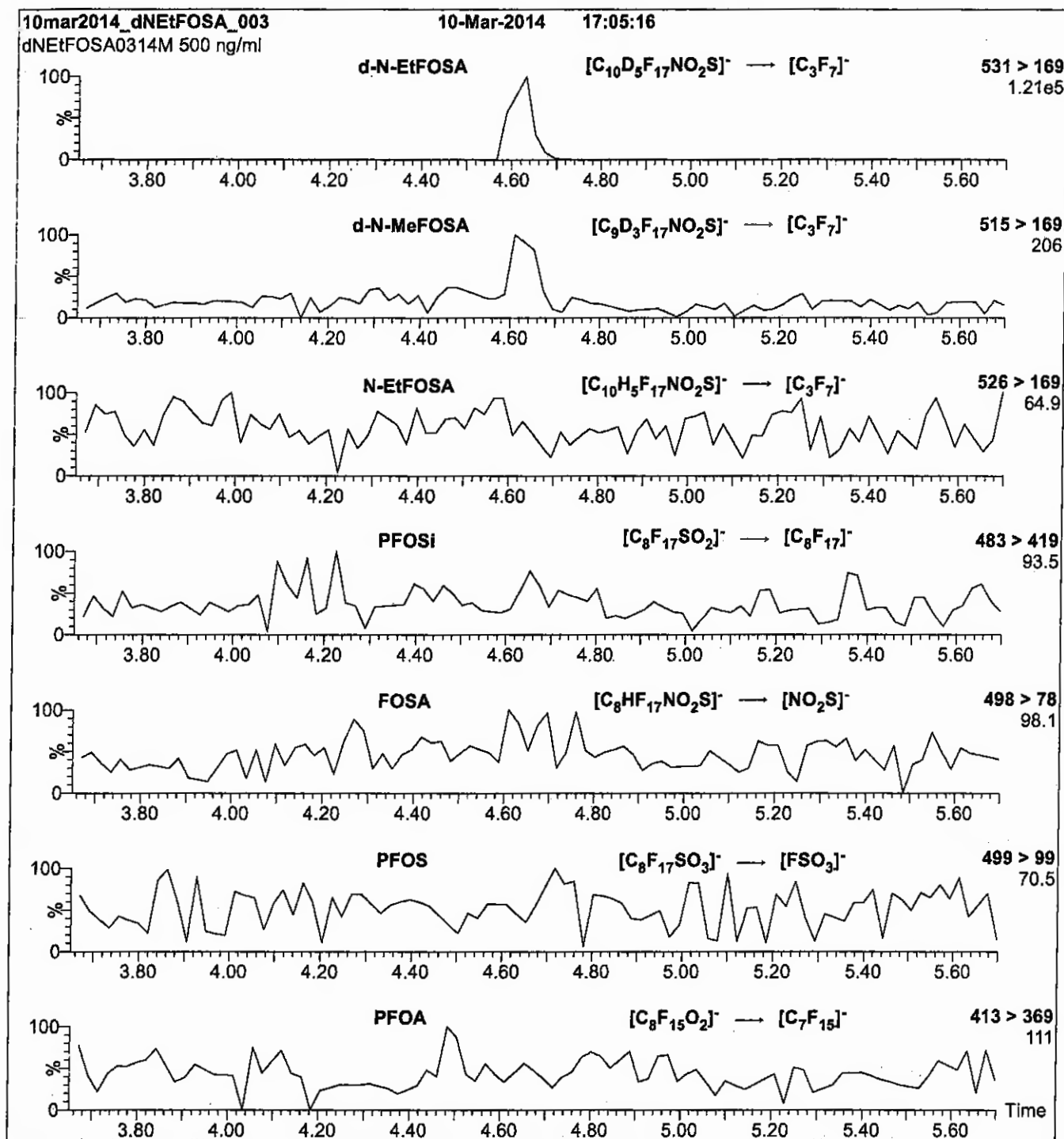
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: d-N-EtFOSA-M; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml d-N-EtFOSA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 25

Reagent

LCd-NMeFOSA-M_00001

r: 7/16/15 SKW



WELLINGTON LABORATORIES

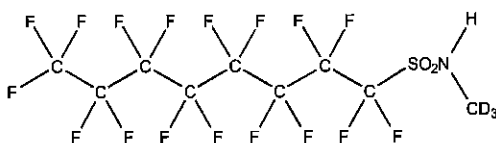
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d-N-MeFOSA-M
COMPOUND: N-methyl-d₃-perfluoro-1-octanesulfonamide

LOT NUMBER: dNMeFOSA0114M

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: C₈D₃HF₁₇NO₂S
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/28/2014
EXPIRY DATE: (mm/dd/yyyy) 01/28/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 516.19
SOLVENT(S): Methanol
ISOTOPIC PURITY: ≥98% ²H₃

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/01/2015
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

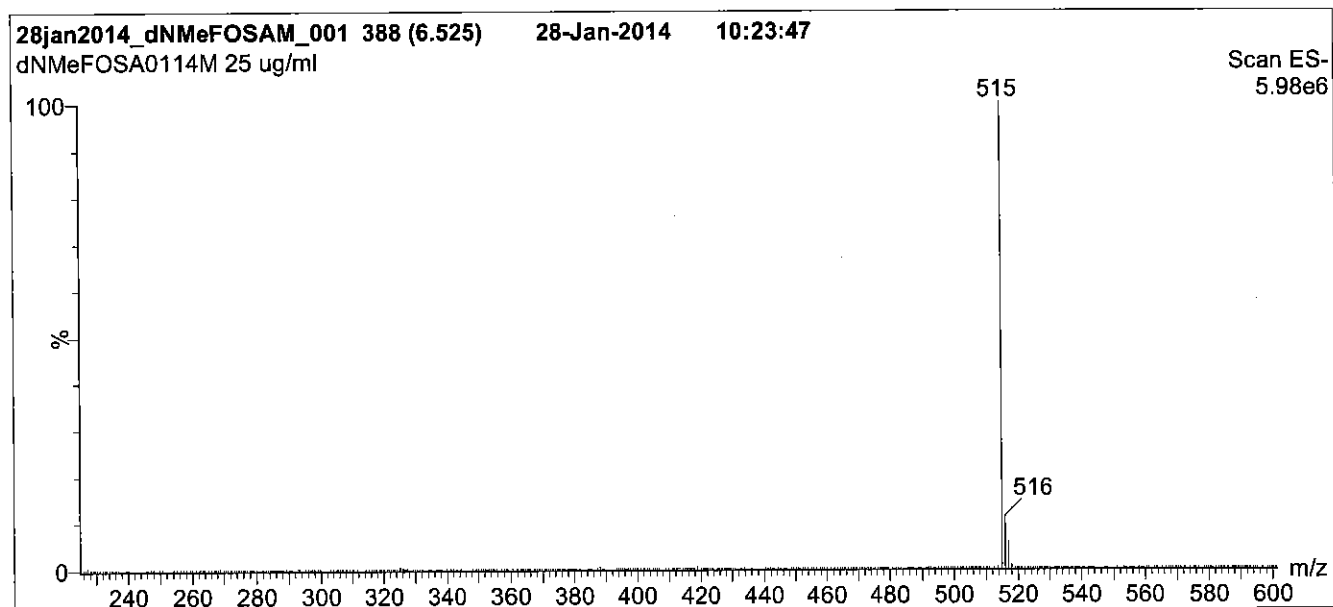
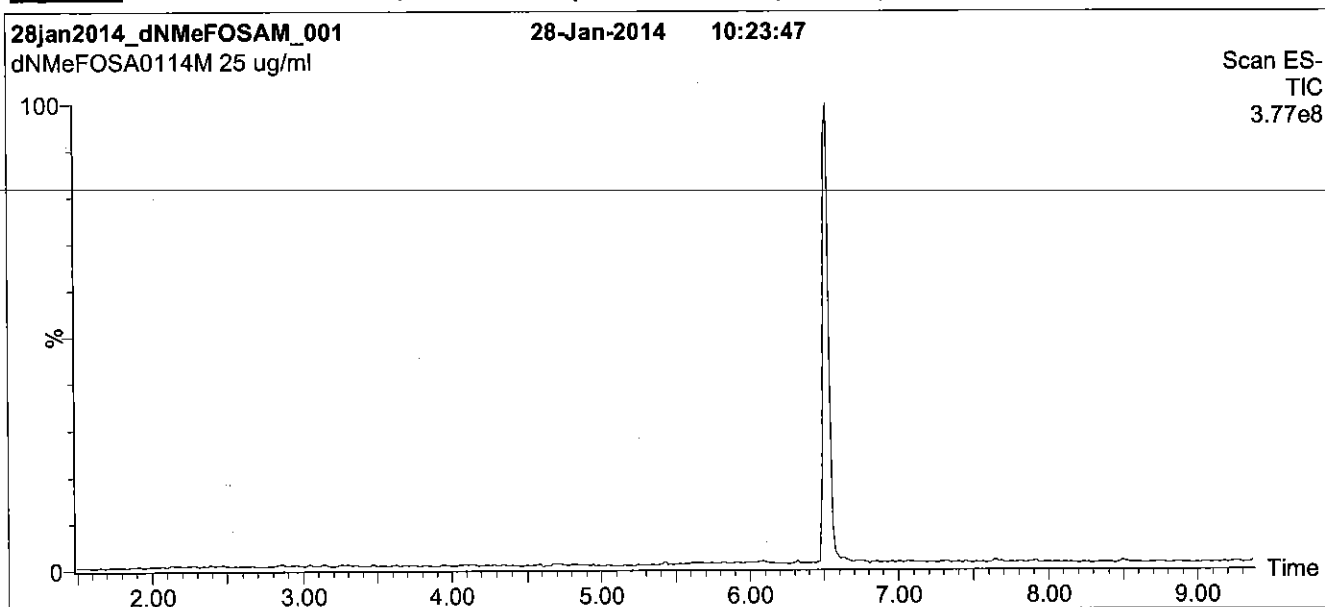
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: d-N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% H₂O / 50% (80:20 MeOH:ACN)
(both with 10mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min. Return to initial conditions over 0.5 min.
Time: 10 min

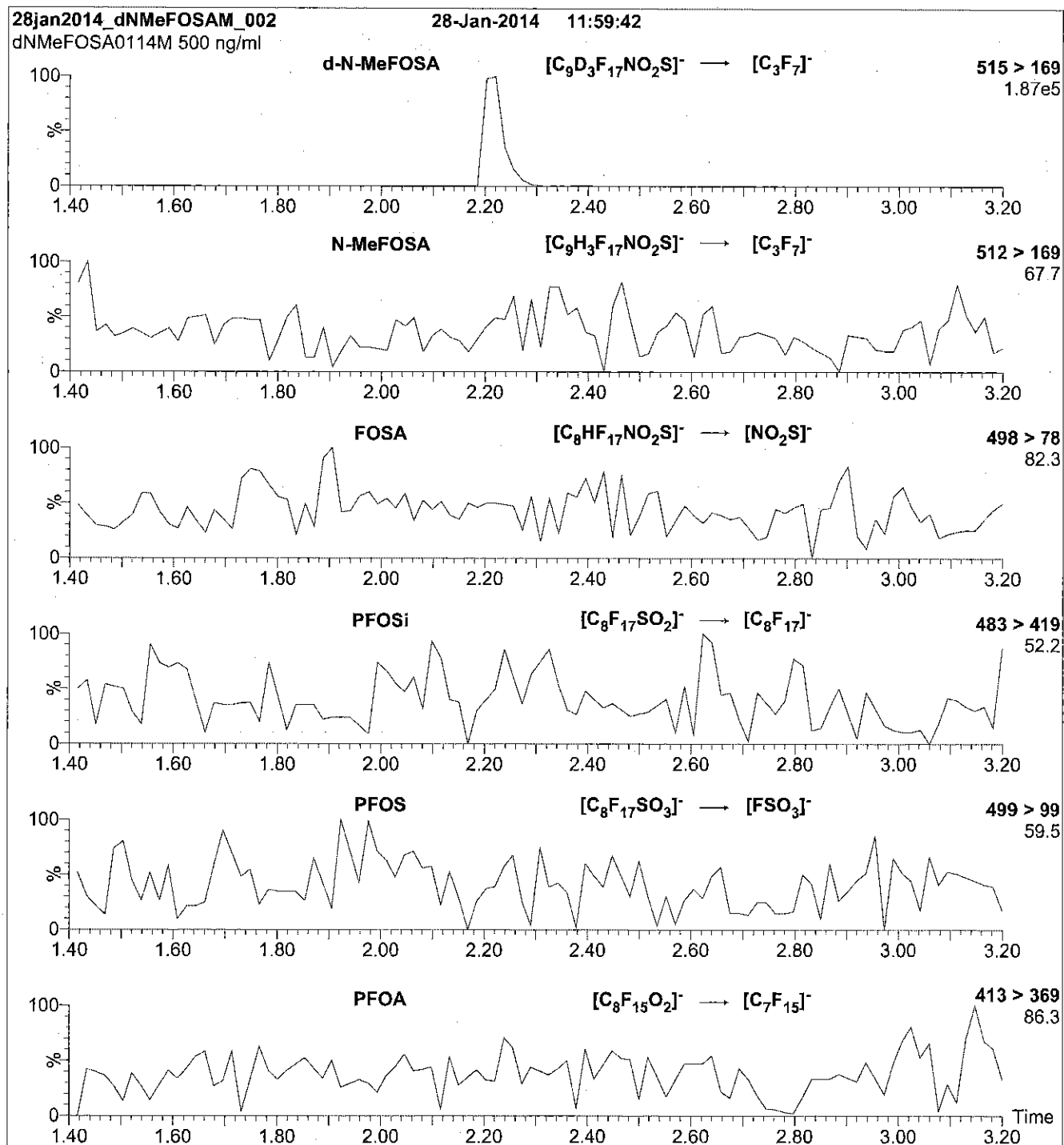
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: d-N-MeFOSA-M; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml d-N-MeFOSA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 30

Reagent

LCd-NMeFOSA-M_00002



671625

ID: LCd-NMeFOSA-M_00002

Exp: 06/13/21 Ppdt: CBW

d-N-MeFOSA-M

**WELLINGTON
LABORATORIES****CERTIFICATE OF ANALYSIS
DOCUMENTATION****PRODUCT CODE:**

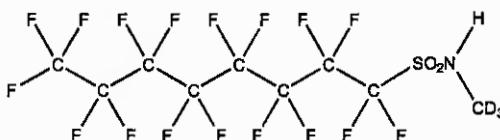
d-N-MeFOSA-M

LOT NUMBER:

dNMeFOSA0616M

COMPOUND:N-methyl-d₃-perfluoro-1-octanesulfonamide**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**C₈D₃HF₁₇NO₂S**CONCENTRATION:**

50 ± 2.5 µg/ml

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

06/10/2016

EXPIRY DATE: (mm/dd/yyyy)

06/10/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

MOLECULAR WEIGHT:

516.19

SOLVENT(S):

Methanol

ISOTOPIC PURITY:≥98% ²H₃**DOCUMENTATION/ DATA ATTACHED:**

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 06/16/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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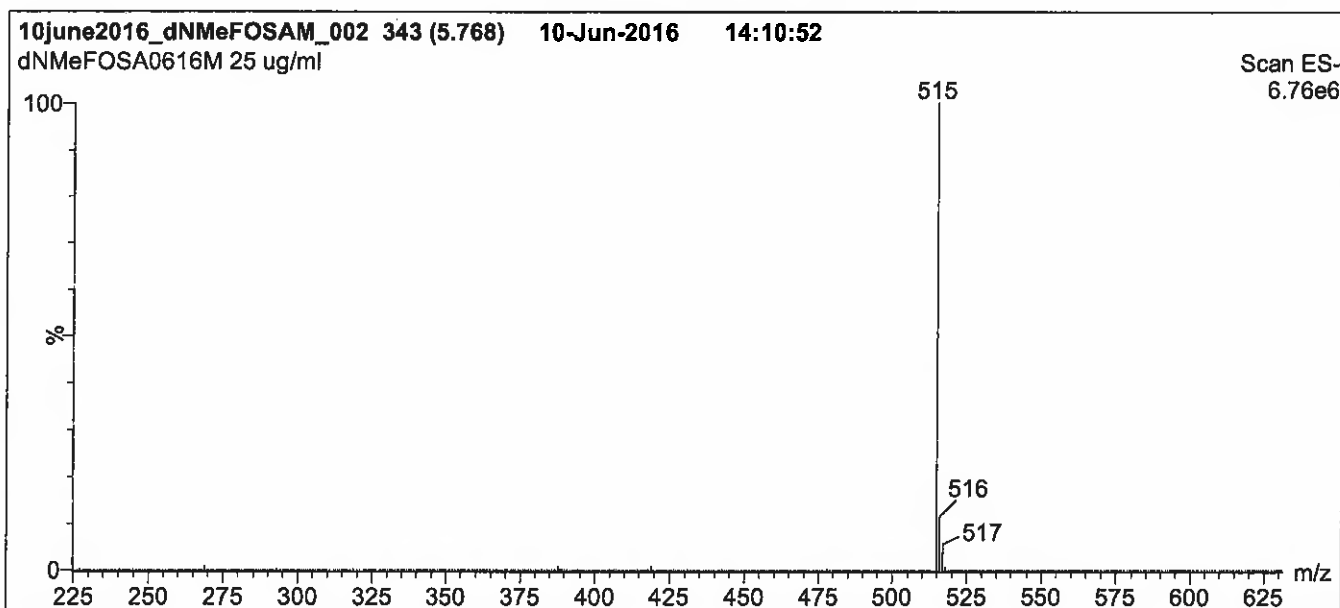
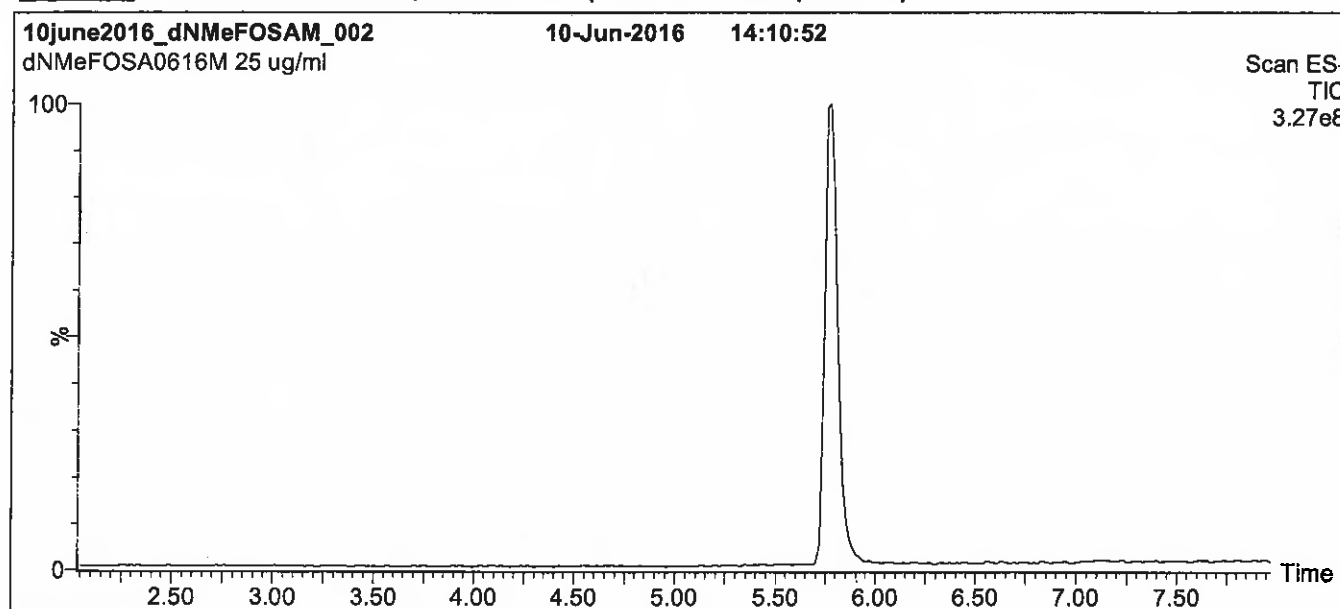
QUALITY MANAGEMENT:

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Figure 1: d-N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% H₂O / 60% (80:20 MeOH:ACN)
(both with 10mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

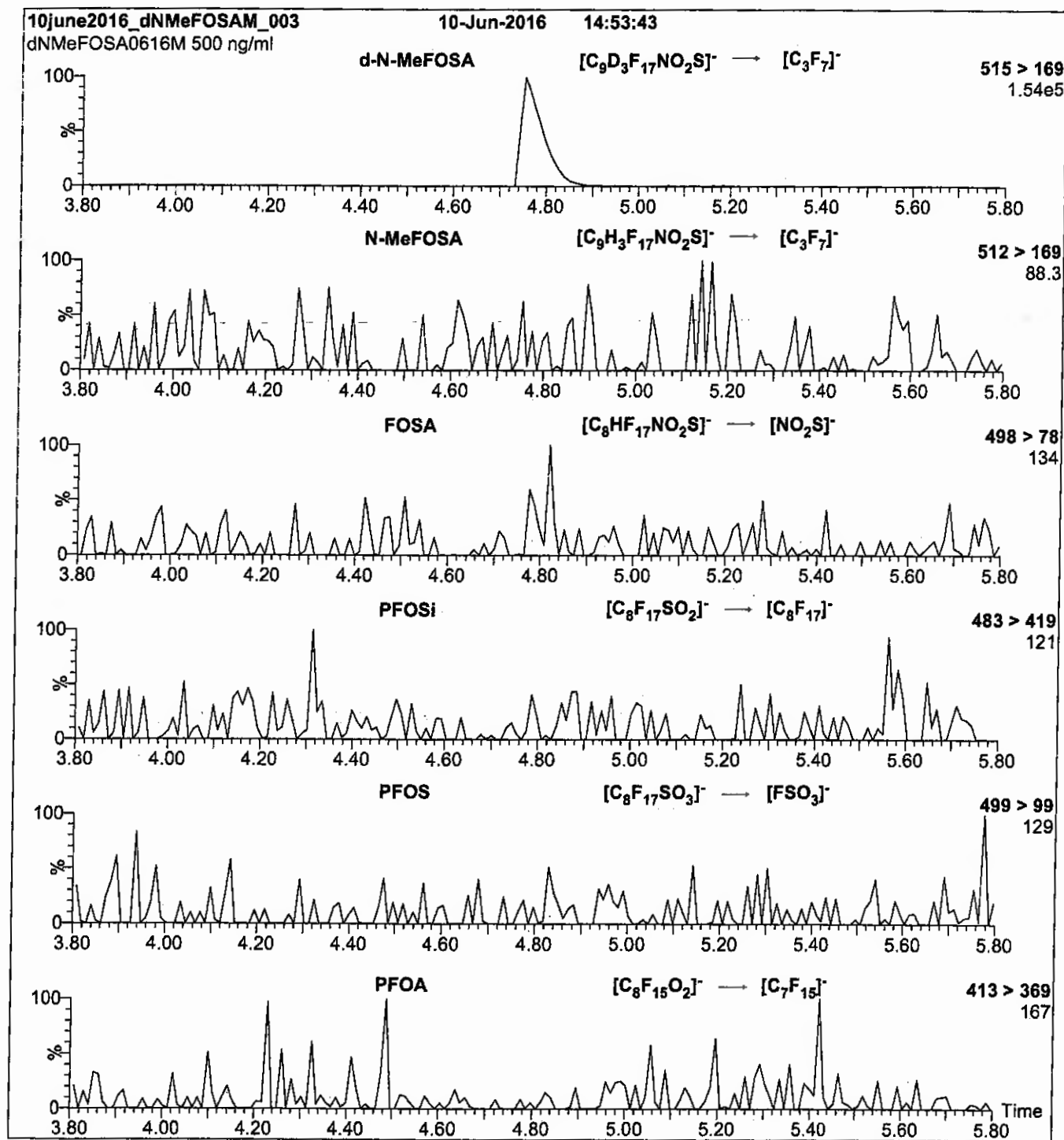
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: d-N-MeFOSA-M; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml d-N-MeFOSA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 25

Reagent

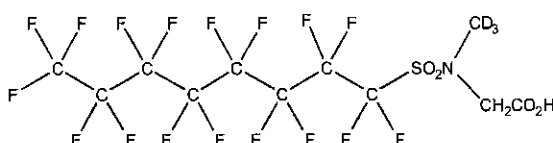
LCd3-NMeFOSAA_00001



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d3-N-MeFOSAA **LOT NUMBER:** d3NMeFOSAA0113
COMPOUND: N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_{11}D_3H_3F_{17}NO_4S$ **MOLECULAR WEIGHT:** 574.23
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** $\geq 98\% \text{ } ^2\text{H}_3$
LAST TESTED: (mm/dd/yyyy) 01/31/2013
EXPIRY DATE: (mm/dd/yyyy) 01/31/2018
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/06/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HOMOGENEITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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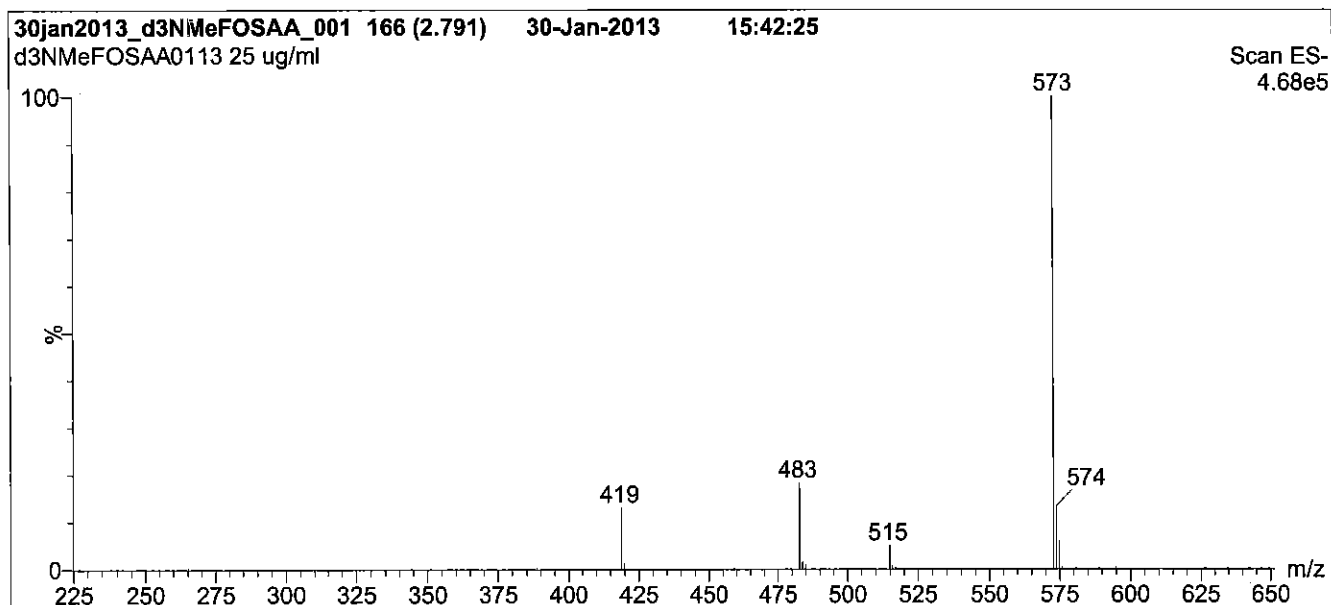
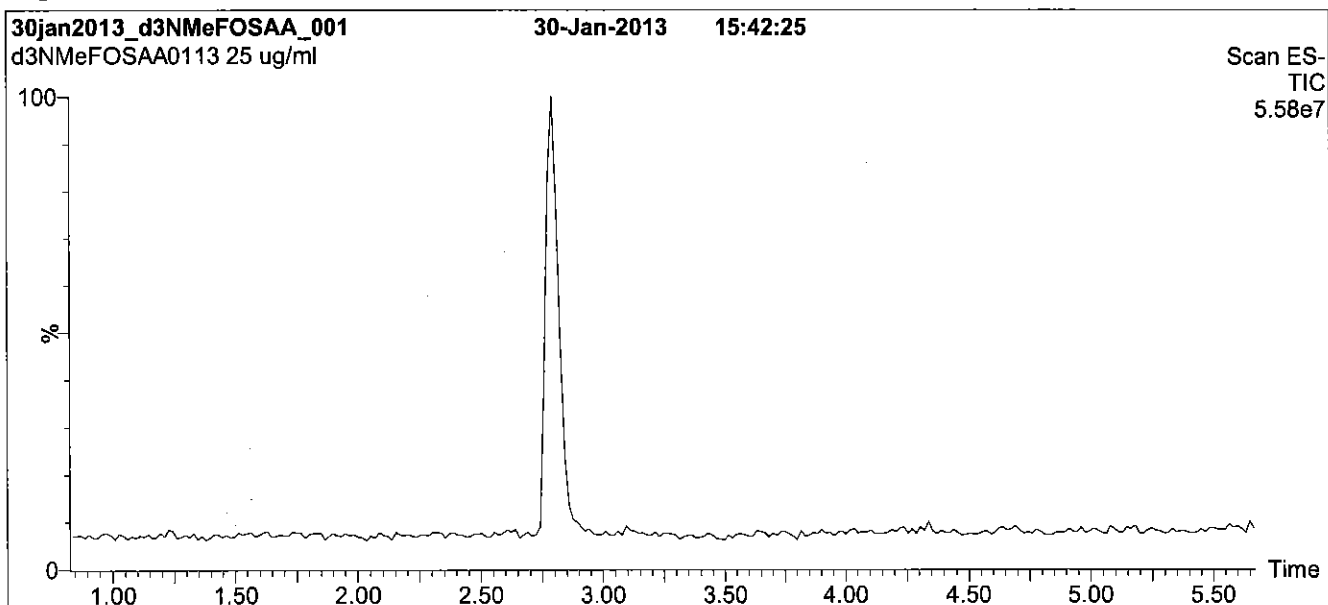
QUALITY MANAGEMENT:

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Figure 1: d3-N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

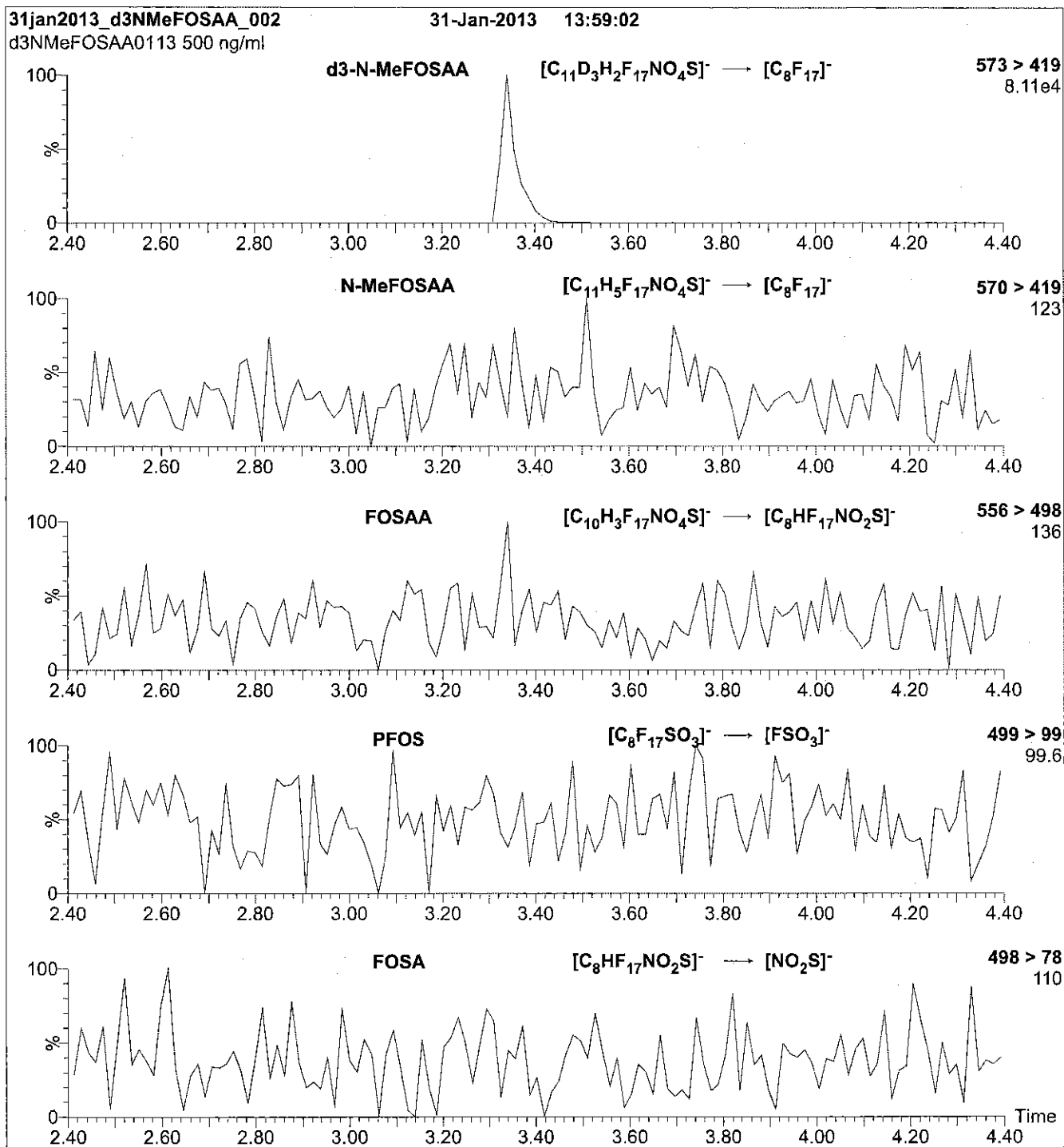
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV): 3.00
Cone Voltage (V): 35.00
Cone Gas Flow (l/hr): 50
Desolvation Gas Flow (l/hr): 750

Figure 2: d3-N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml d3-N-MeFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 25

Reagent

LCd3-NMeFOSAA_00002

R-7/6/16 CBW



671572

ID: LCd3-NMeFOSAA_00002

Exp: 01/20/21 Prod: CBW

d3-N-MeFOSAA



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

d3-N-MeFOSAA

LOT NUMBER:

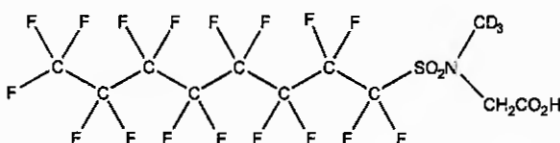
d3NMeFOSAA0116

COMPOUND:

N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE:**CAS #:**

Not available

**MOLECULAR FORMULA:** $C_{11}D_3H_3F_{17}NO_4S$ **CONCENTRATION:** $50 \pm 2.5 \mu\text{g/ml}$ **MOLECULAR WEIGHT:**

574.23

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY: $\geq 98\% \text{ } ^2\text{H}_3$ **LAST TESTED:** (mm/dd/yyyy)

01/20/2016

EXPIRY DATE: (mm/dd/yyyy)

01/20/2021

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 01/25/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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UNCERTAINTY:

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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

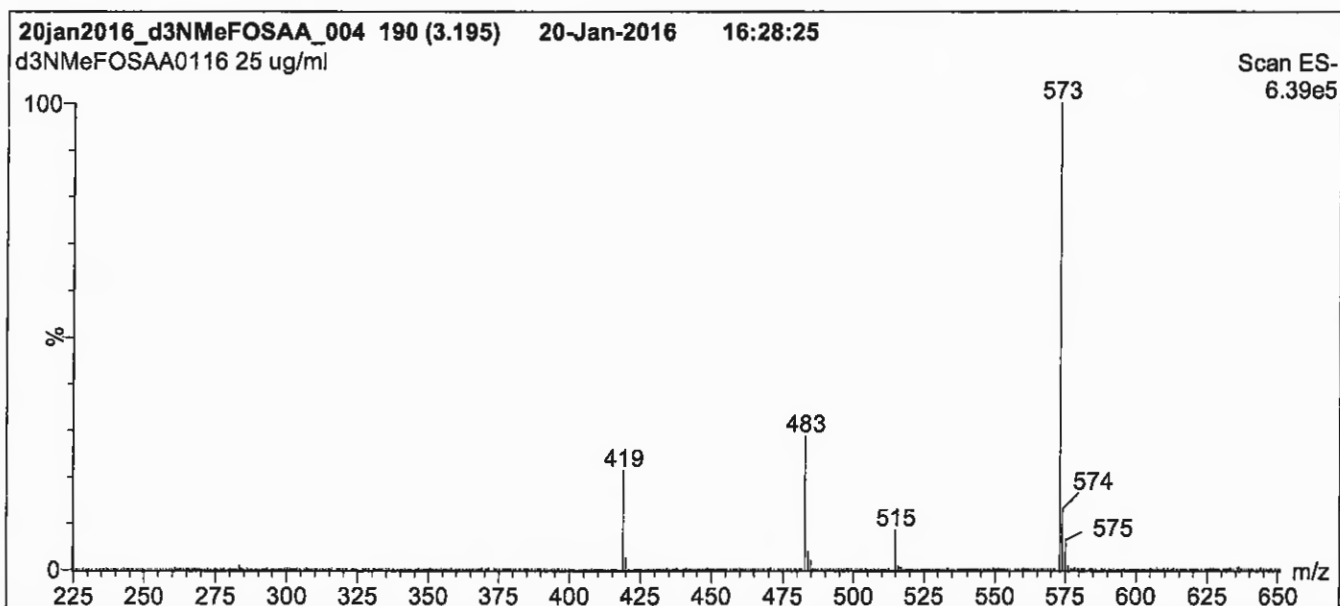
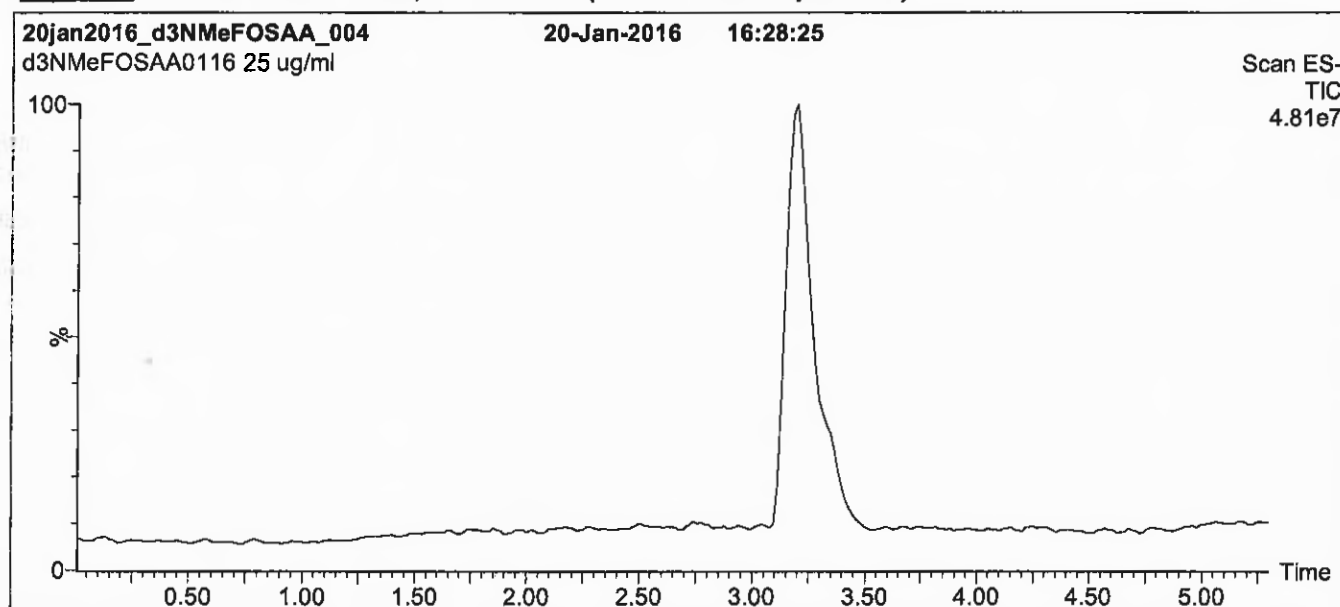
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



****For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com****

Figure 1: d3-N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

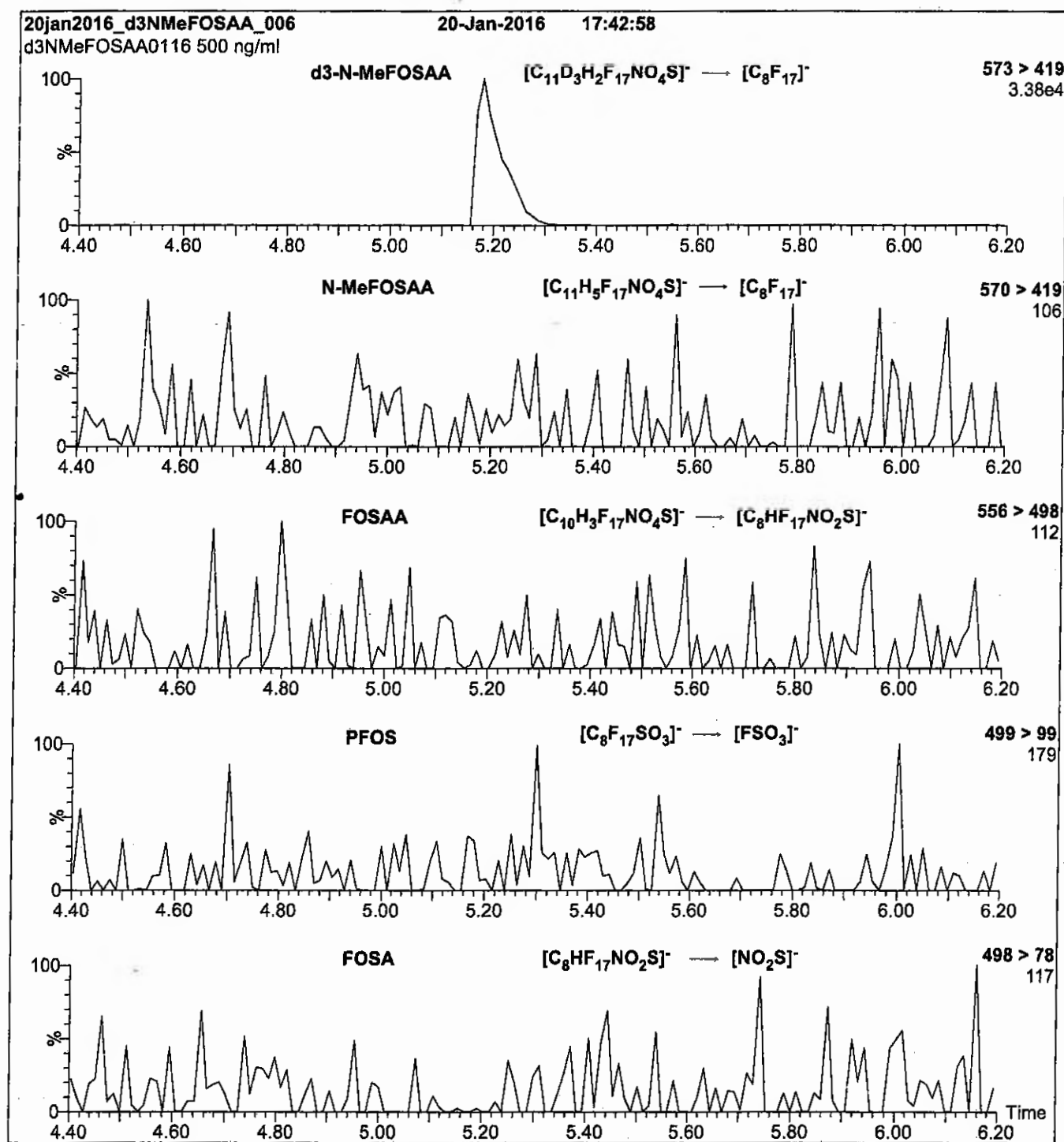
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: d3-N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml d3-N-MeFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

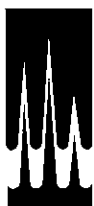
Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 25

Reagent

LCd5-NEtFOSAA_00001

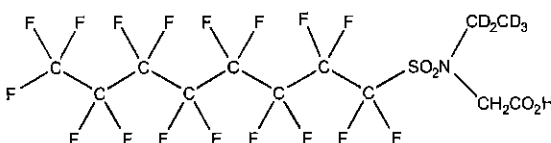


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d5-N-EtFOSAA **LOT NUMBER:** d5NEtFOSAA0515
COMPOUND: N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_{12}D_5H_3F_{17}NO_4S$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$

MOLECULAR WEIGHT: 590.27
SOLVENT(S): Methanol
 Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/08/2015
EXPIRY DATE: (mm/dd/yyyy) 05/08/2020
RECOMMENDED STORAGE: Refrigerate ampoule

ISOTOPIC PURITY: $\geq 98\% \text{ } ^2\text{H}_5$

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/11/2015
 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

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HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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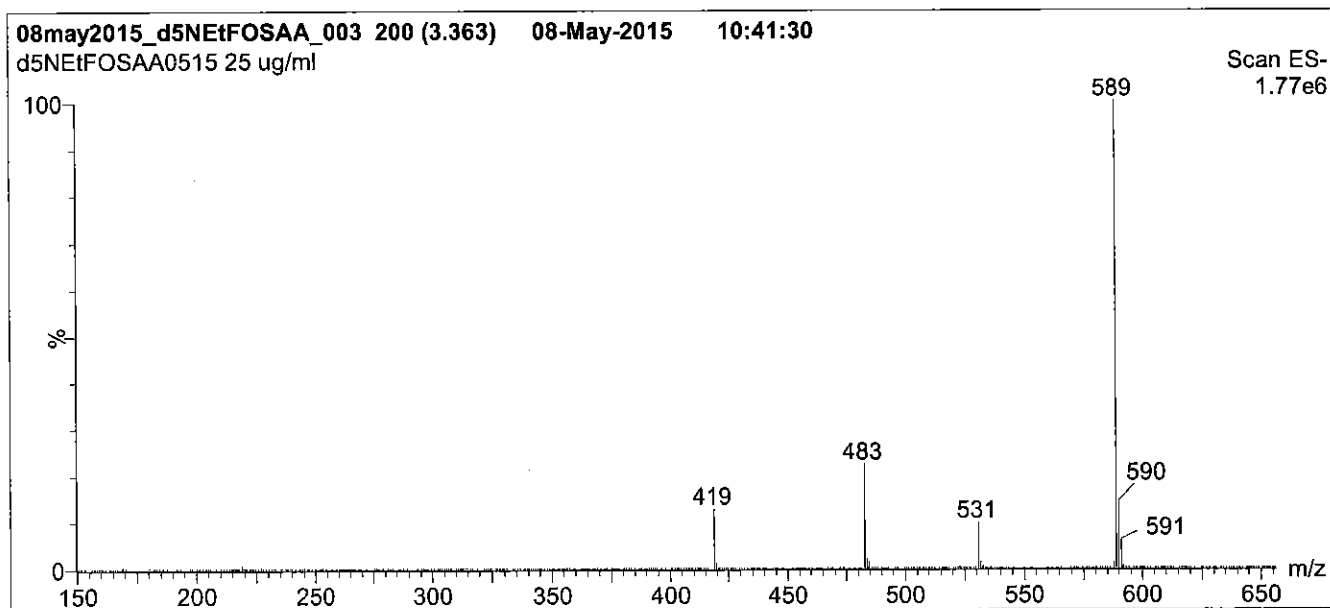
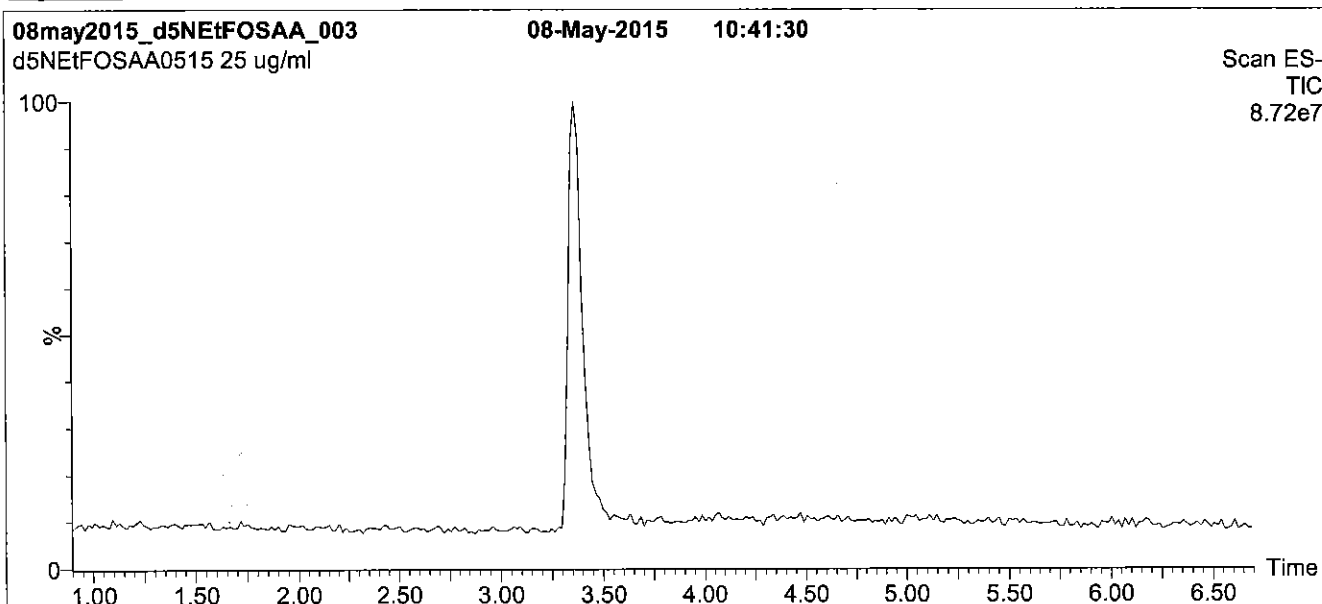
QUALITY MANAGEMENT:

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Figure 1: d5-N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient

Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)

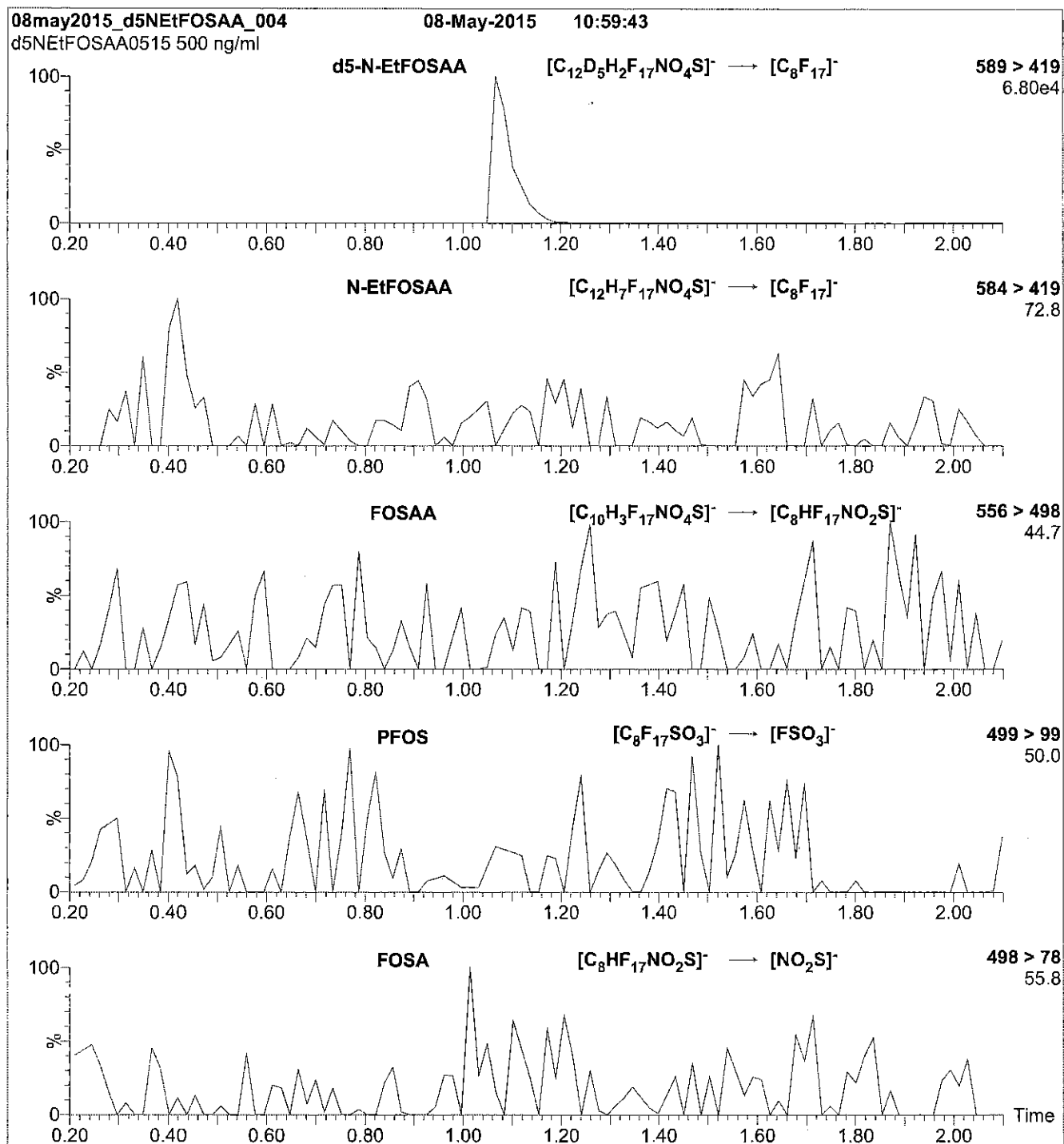
Capillary Voltage (kV) = 3.00

Cone Voltage (V) = 35.00

Cone Gas Flow (l/hr) = 50

Desolvation Gas Flow (l/hr) = 750

Figure 2: d5-N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml d5-N-EtFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 25

Reagent

LCd5-NEtFOSAA_00002

R: 7/6/16 CBW



671603

ID: LCd5-NEtFOSAA_00002

Exp: 12/07/20 Prep: CBW

d5-N-EtFOSAA

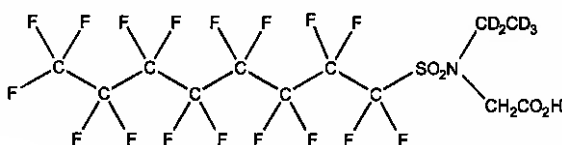


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d5-N-EtFOSAA **LOT NUMBER:** d5NEtFOSAA1115
COMPOUND: N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_{12}D_5H_3F_{17}NO_4S$

CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$

MOLECULAR WEIGHT: 590.27

SOLVENT(S): Methanol

Water (<1%)

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: $\geq 98\% \text{ } ^2\text{H}_6$

LAST TESTED: (mm/dd/yyyy) 12/07/2015

EXPIRY DATE: (mm/dd/yyyy) 12/07/2020

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/07/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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EXPIRY DATE / PERIOD OF VALIDITY:

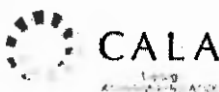
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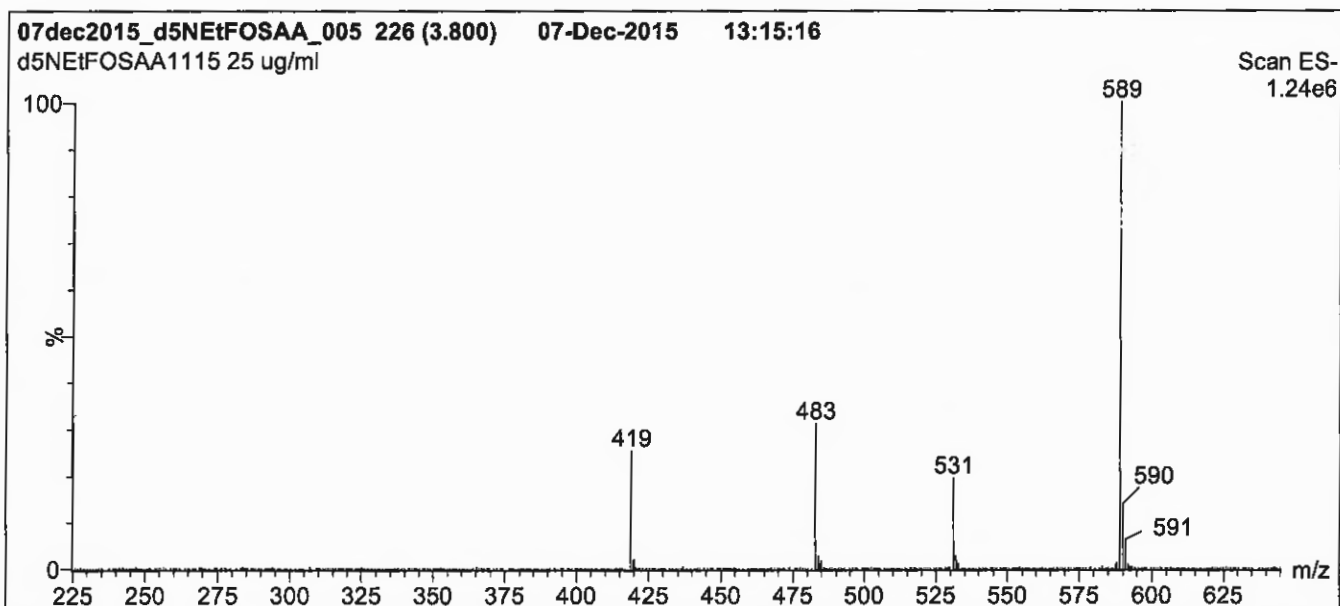
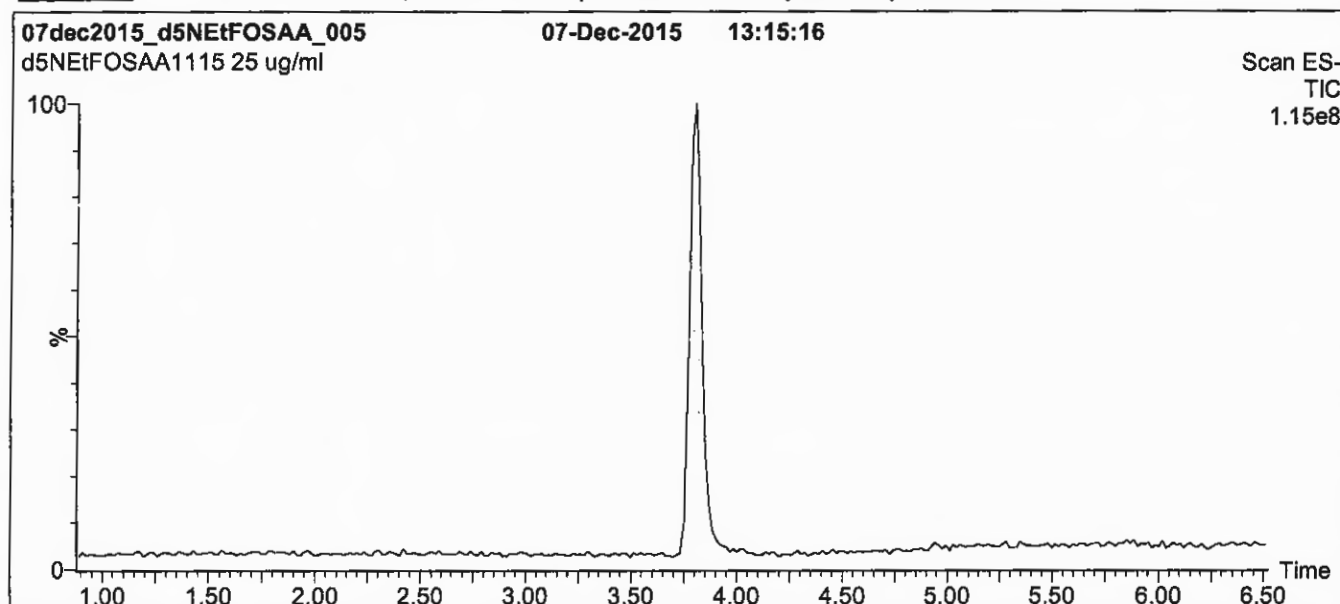
QUALITY MANAGEMENT:

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Figure 1: d5-N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min.
before returning to initial conditions in 0.5 min.
Time: 10 min

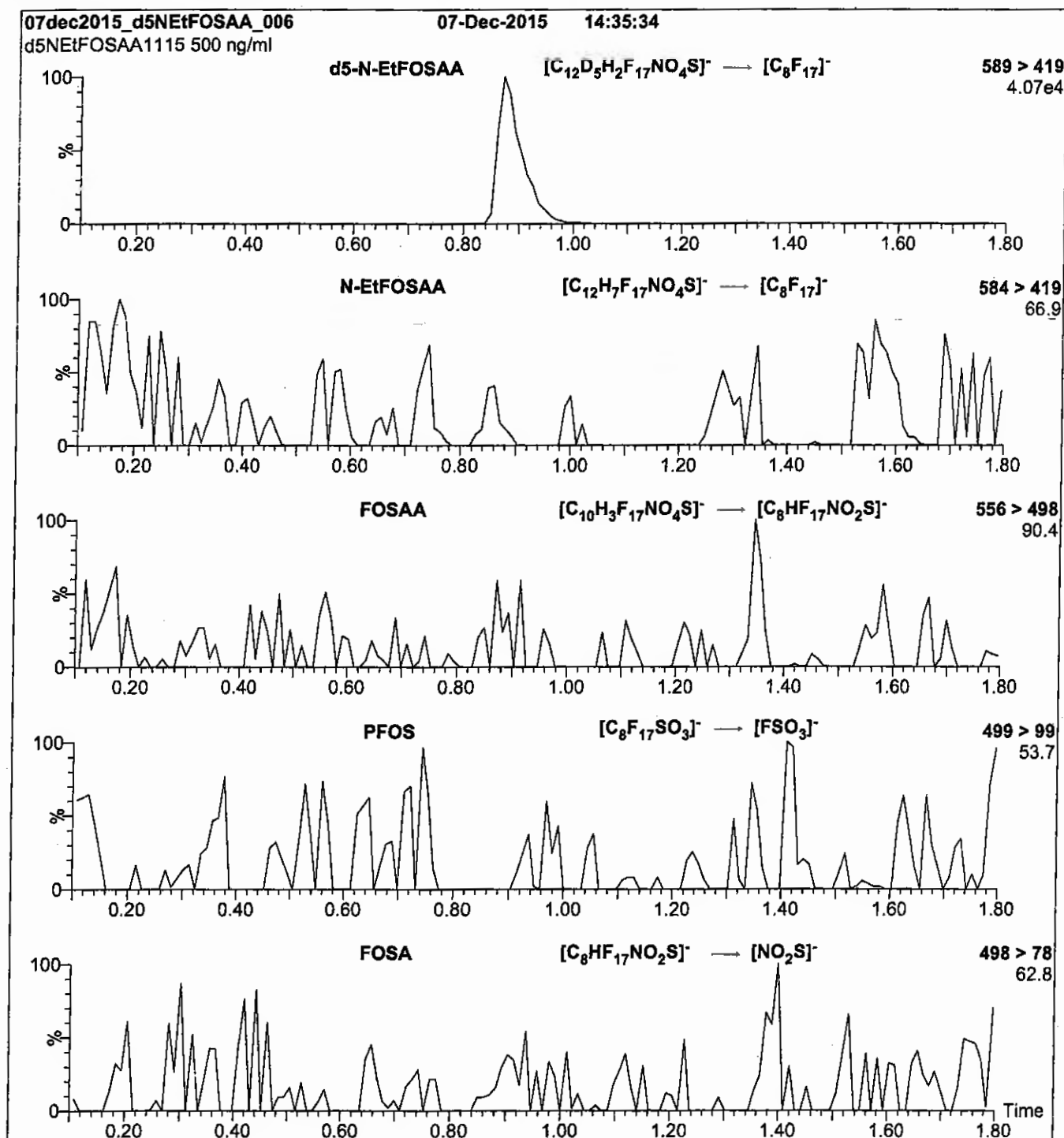
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: d5-N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml d5-N-EtFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

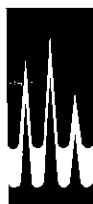
MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 25

Reagent

LCM2-6:FTS_00001

R. 7/16/15 SW
S. 7/20/15 SW

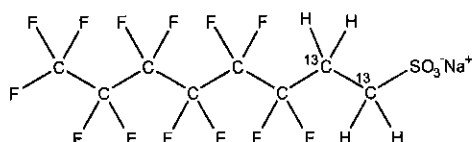


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-6:2FTS **LOT NUMBER:** M262FTS0714
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-¹³C₂]octane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₆H₄F₁₃SO₃Na **MOLECULAR WEIGHT:** 452.13
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.5 ± 2.4 µg/ml (M2-6:2FTS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 07/15/2014 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 07/15/2017
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 6:2FTS contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 6:2FTS and M2-6:2FTS will produce signals in the m/z 429 to m/z 409 channel during SRM analysis. We recommend using the m/z 429 to m/z 81 transition to monitor for M2-6:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 03/27/2015
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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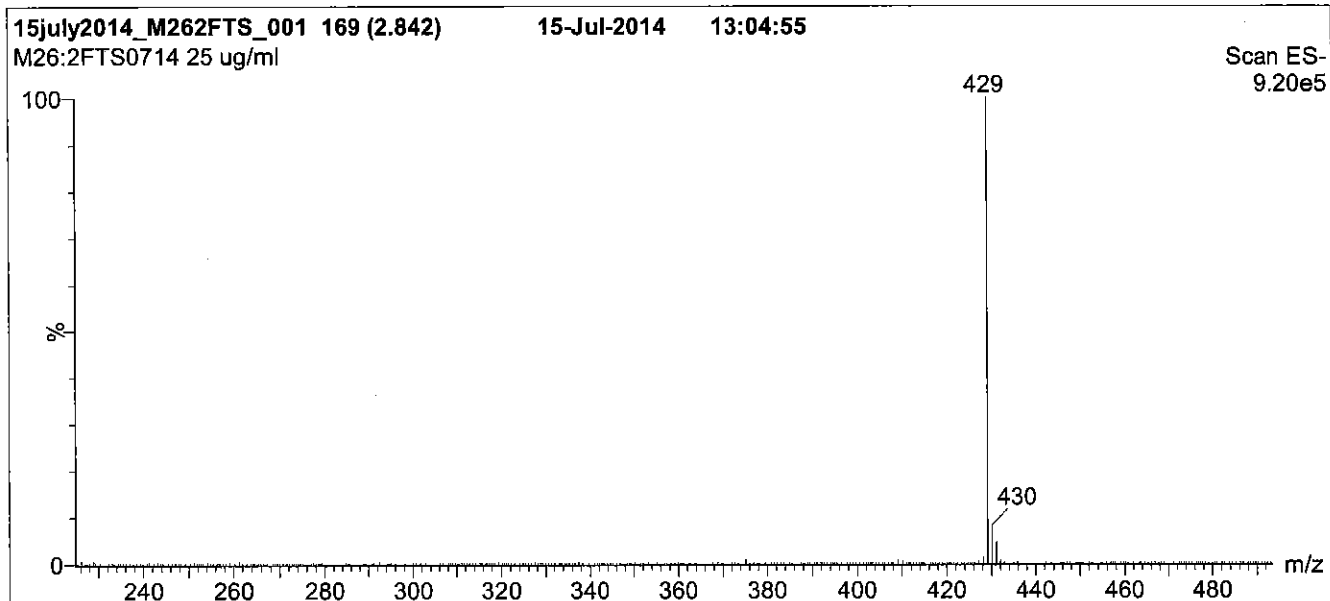
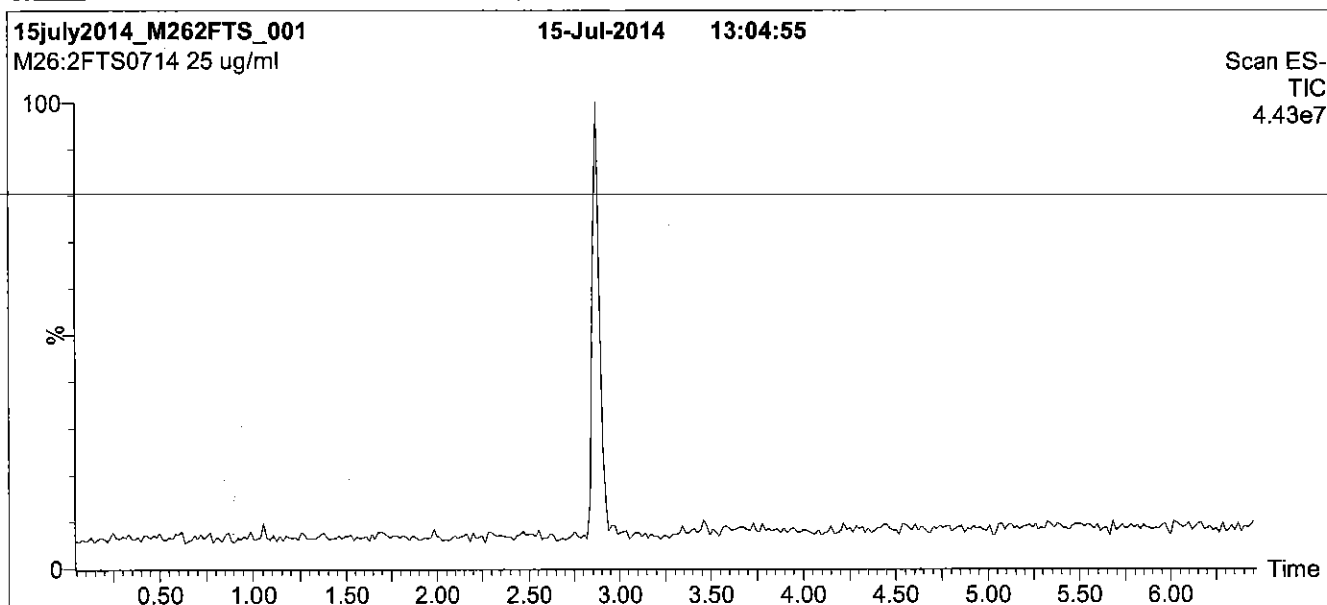
QUALITY MANAGEMENT:

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Figure 1: M2-6:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min
and hold for 2 min before returning
to initial conditions in 0.5 min.
Time: 10 min

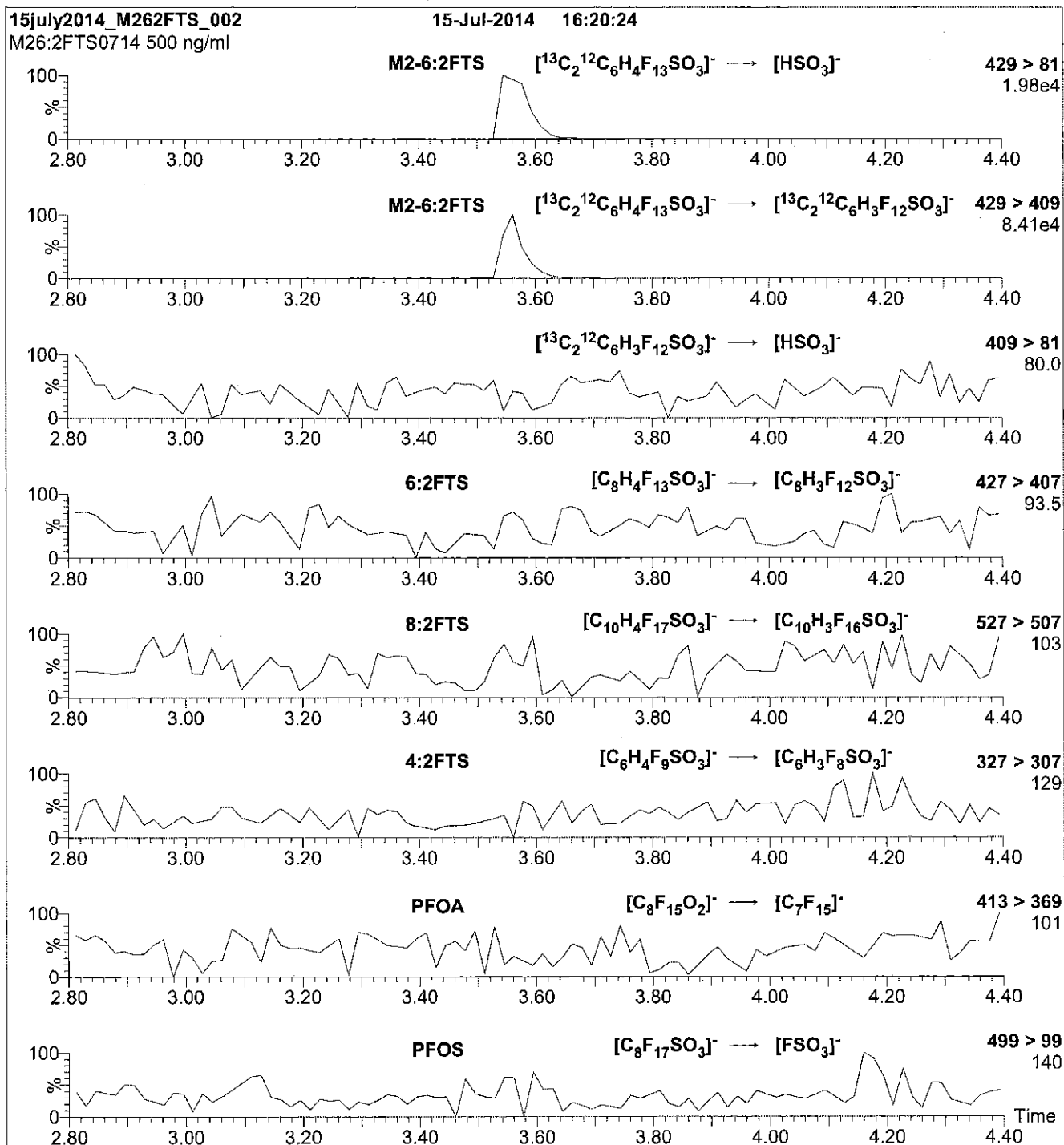
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2-6:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2-6:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 25

Reagent

LCM2-6:FTS_00002

R: 7/6/16 CSW

671575
ID: LCM2-6:FTS_00002
Exp: 01/08/21 Prod: CSW
M2-6:2FTS

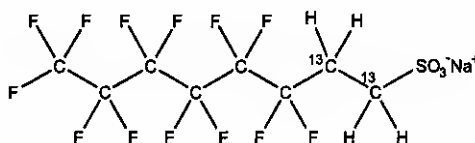


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-6:2FTS **LOT NUMBER:** M262FTS0116
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-¹³C₂]octane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₆H₄F₁₃SO₃Na **MOLECULAR WEIGHT:** 452.13
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.5 ± 2.4 µg/ml (M2-6:2FTS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 01/08/2016 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 01/08/2021
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 6:2FTS contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 6:2FTS and M2-6:2FTS will produce signals in the m/z 429 to m/z 409 channel during SRM analysis. We recommend using the m/z 429 to m/z 81 transition to monitor for M2-6:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 01/11/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • Info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to International interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

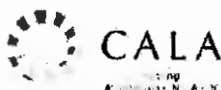
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

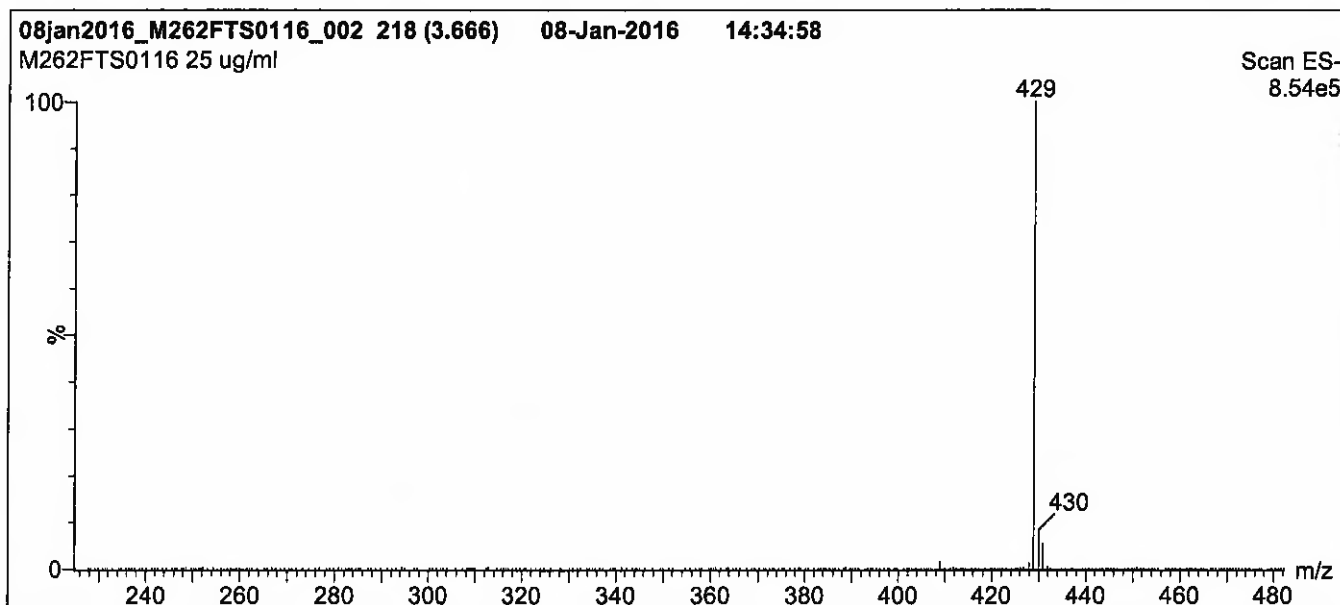
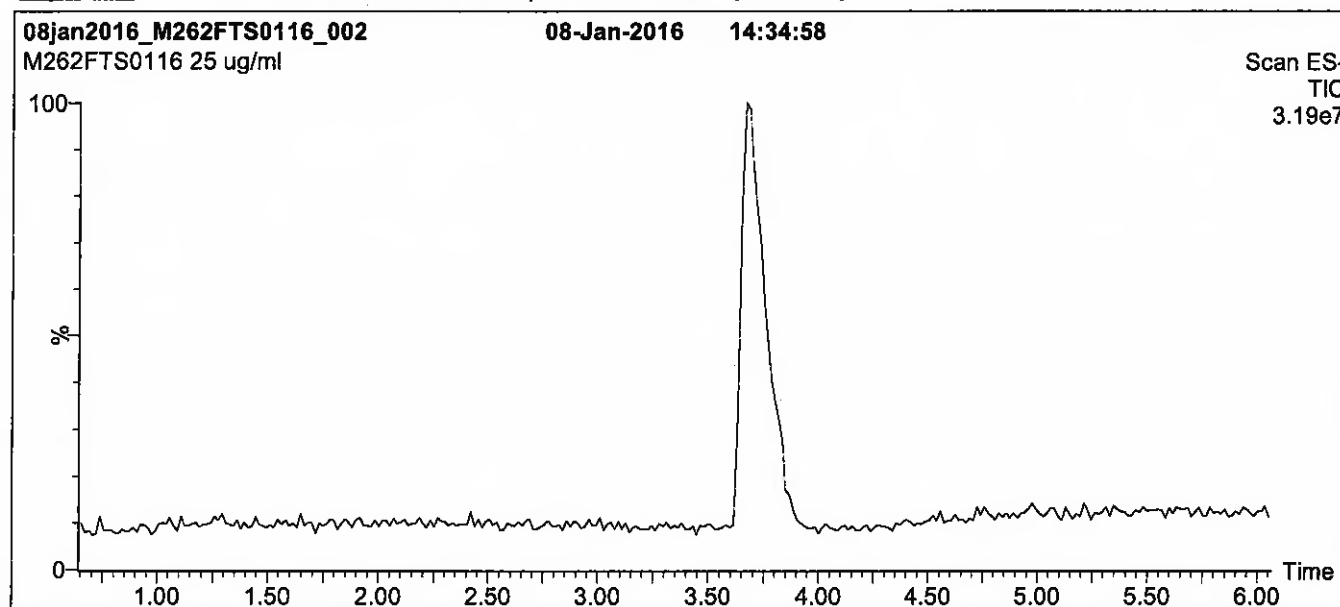
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: M2-6:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min
and hold for 2 min before returning
to initial conditions in 0.5 min.
Time: 10 min

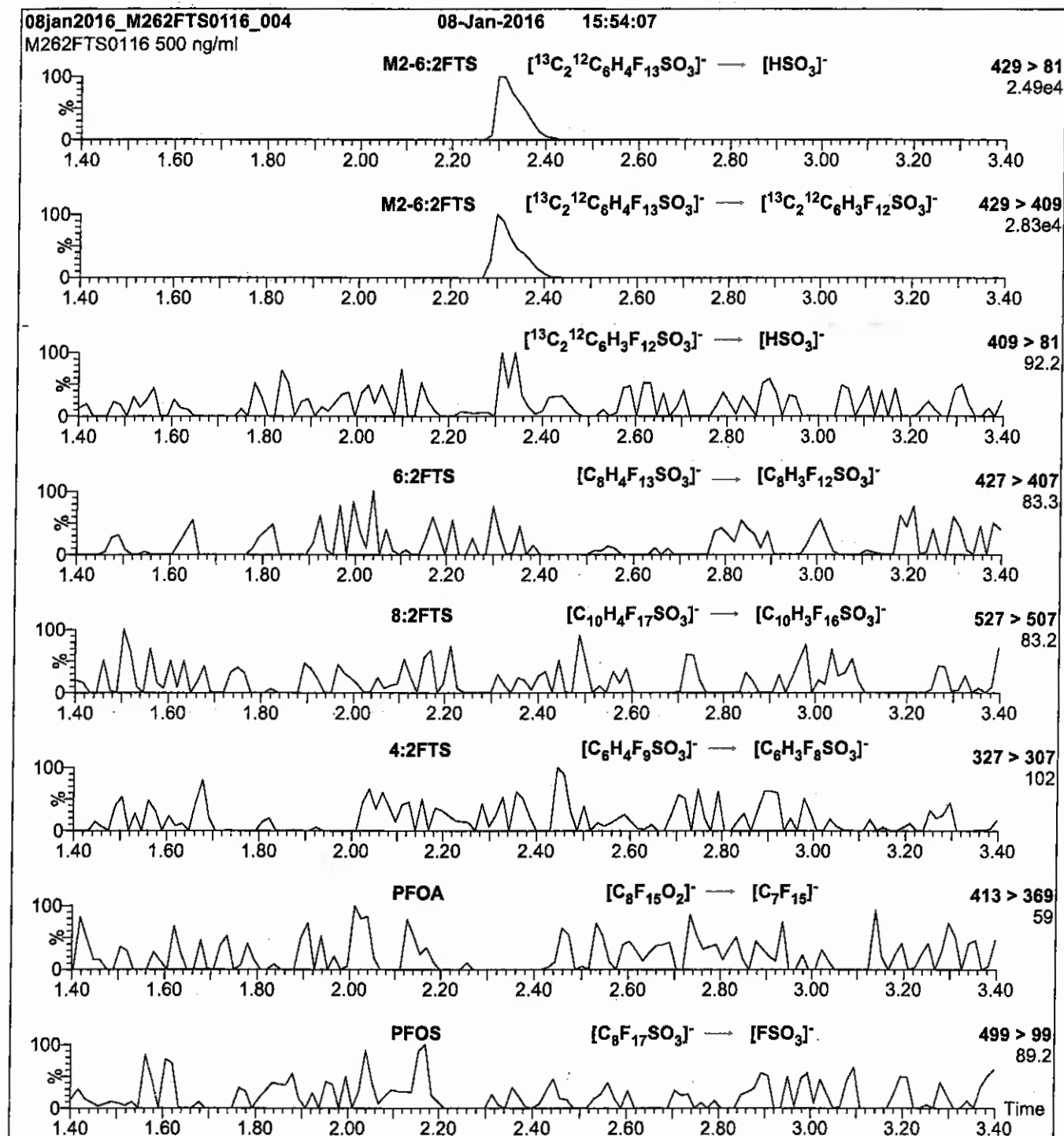
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2-6:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2-6:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 25

Reagent

LCM2-8:2FTS_00001

r: 7/16/15 B/
8: 7/22/15 STV

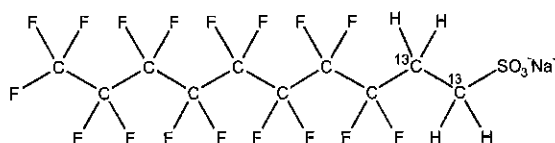


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0414
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-¹³C₂]decane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈H₄F₁₇SO₃Na **MOLECULAR WEIGHT:** 552.15
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.9 ± 2.4 µg/ml (M2-8:2FTS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 04/13/2014 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 04/13/2017
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 8:2FTS contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 8:2FTS and M2-8:2FTS will produce signals in the m/z 529 to m/z 509 channel during SRM analysis. We recommend using the m/z 529 to m/z 81 transition to monitor for M2-8:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 03/27/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

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$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

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TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

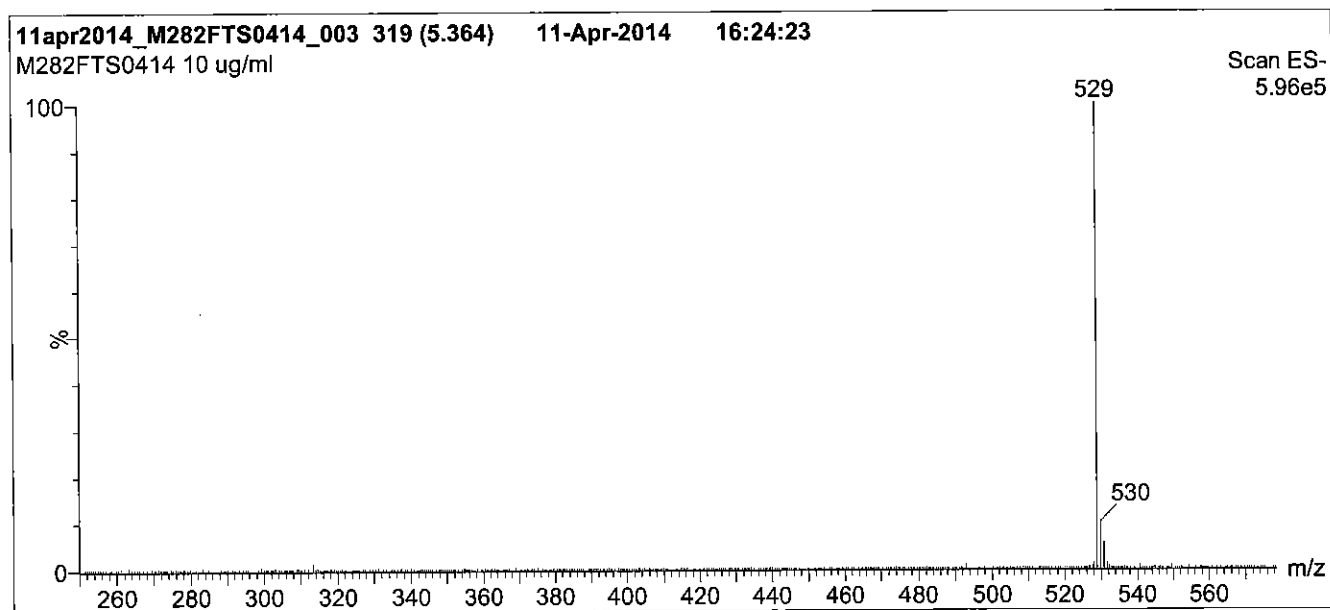
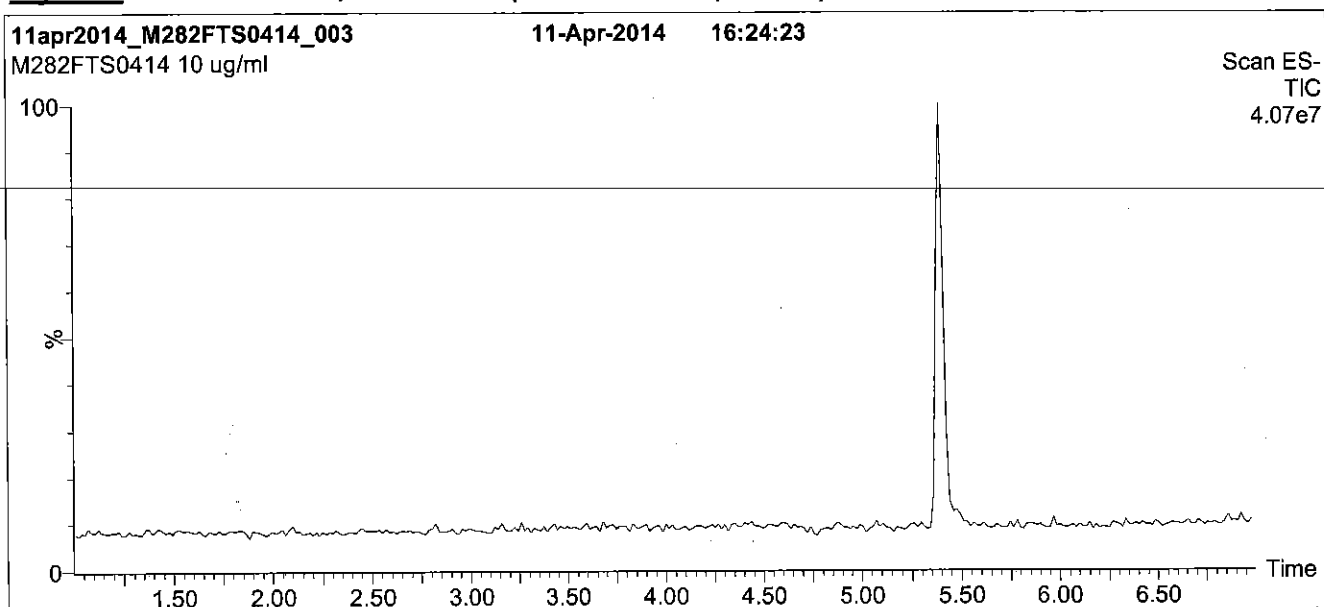
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min
and hold for 2 min before returning
to initial conditions in 0.5 min.
Time: 10 min

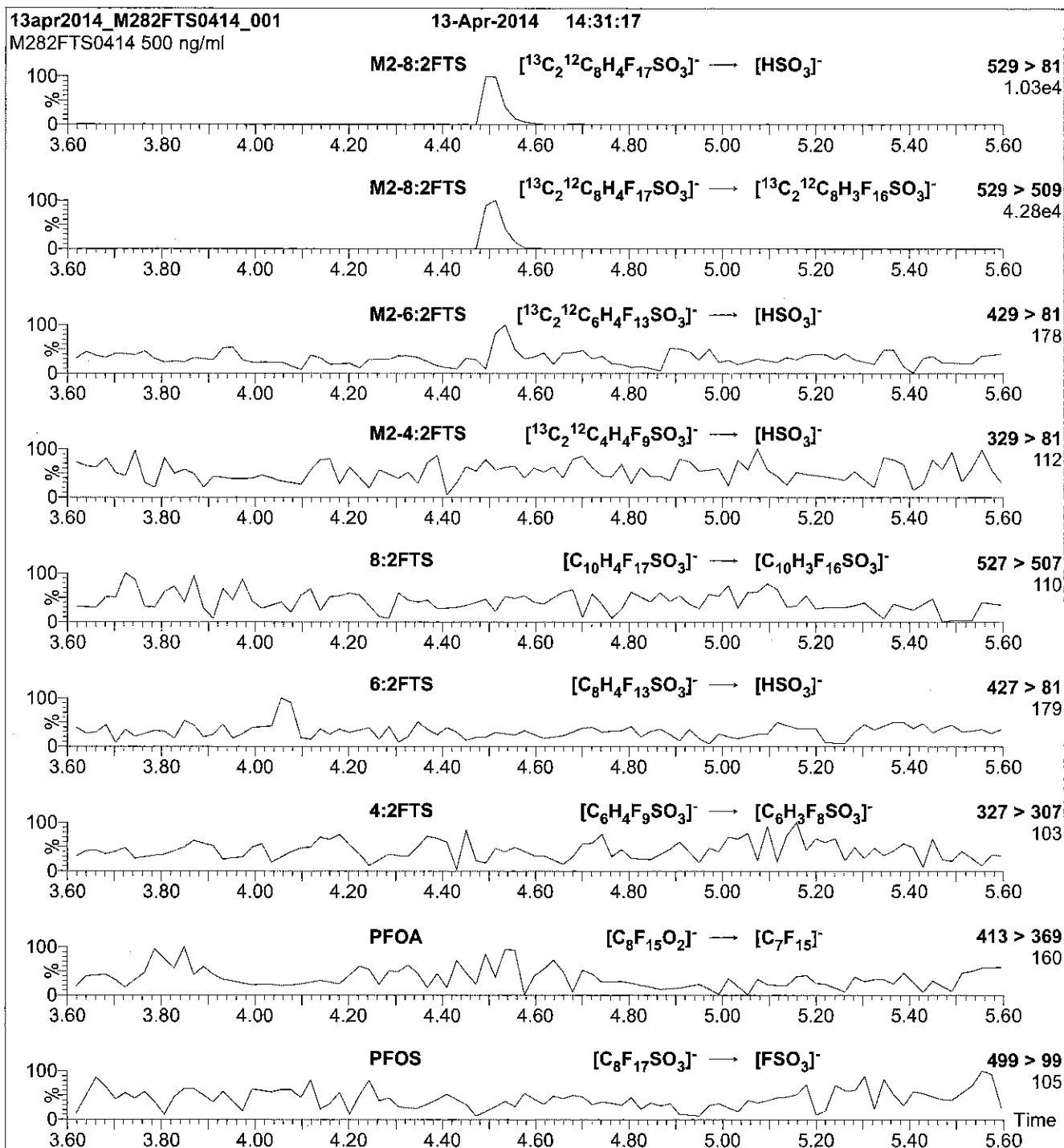
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2-8:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2-8:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 25

Reagent

LCM2-8 : 2FTS_00002

R: 7/16/16 can

671602
 ID: LCM2-8:2FTS_00002
 Exp: 01/08/21 Prod: CBW
 M2-8:2FTS



WELLINGTON
 LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0116
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-¹³C₂]decane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈H₄F₁₇SO₃Na **MOLECULAR WEIGHT:** 552.15
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 47.9 ± 2.4 µg/ml (M2-8:2FTS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 01/08/2016 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 01/08/2021
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 8:2FTS contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 8:2FTS and M2-8:2FTS will produce signals in the m/z 529 to m/z 509 channel during SRM analysis. We recommend using the m/z 529 to m/z 81 transition to monitor for M2-8:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 01/18/2016
 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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EXPIRY DATE / PERIOD OF VALIDITY:

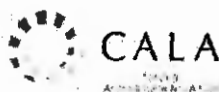
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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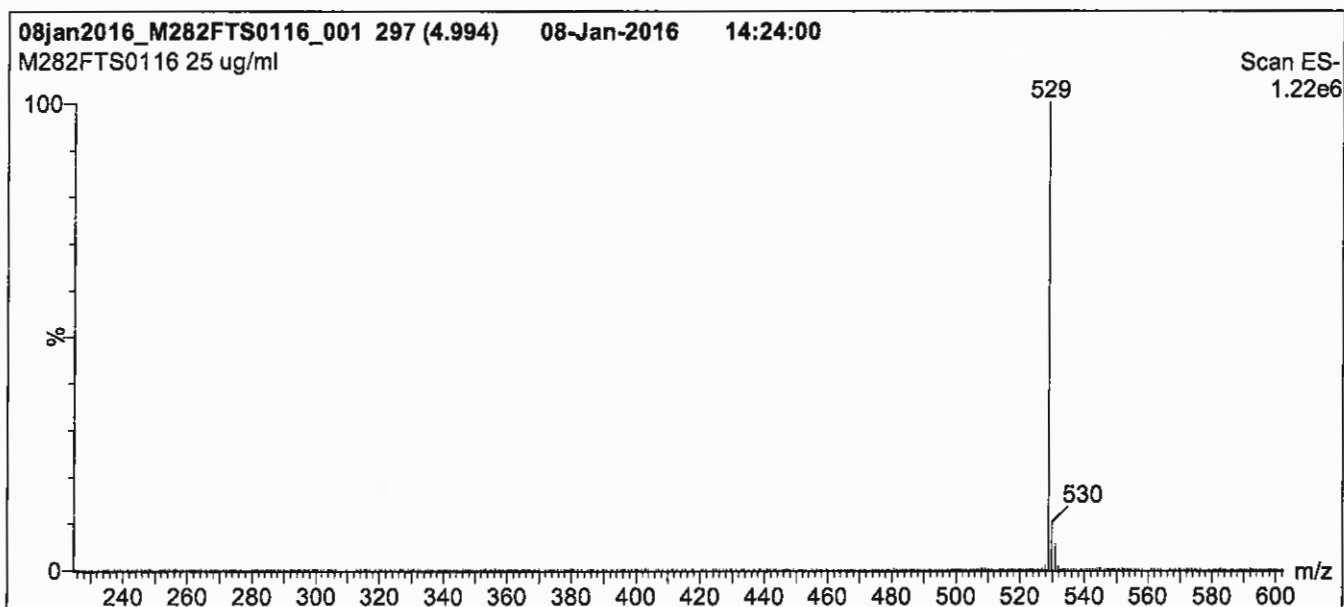
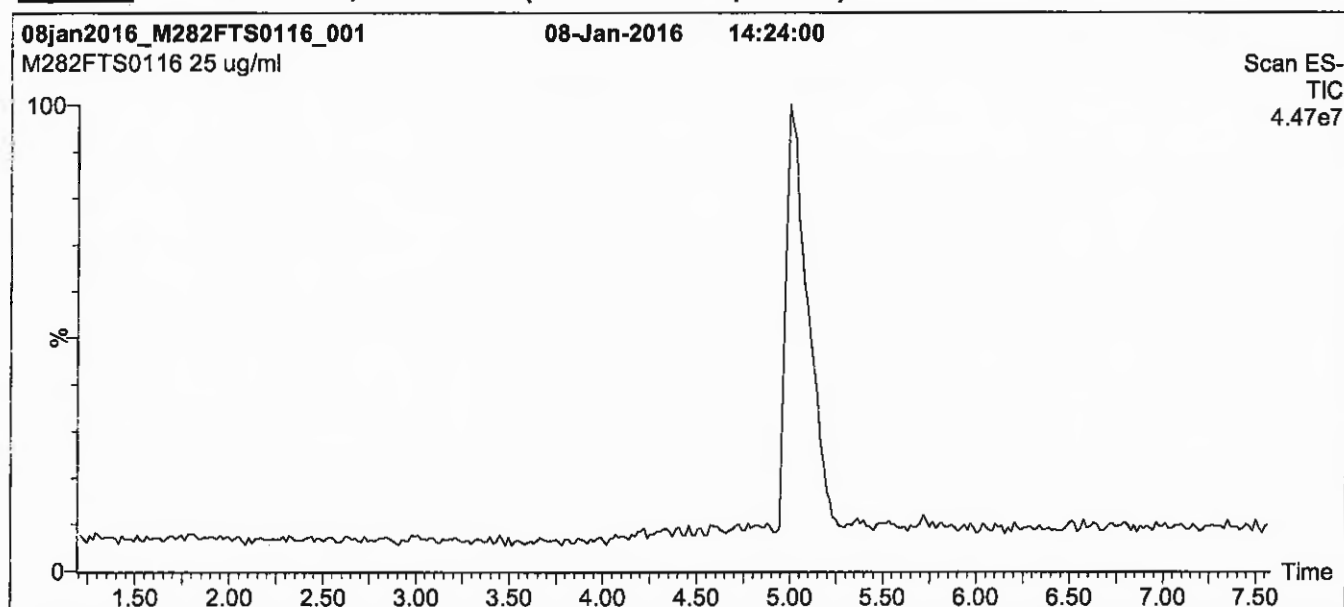
QUALITY MANAGEMENT:

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Figure 1: M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min
and hold for 2 min before returning
to initial conditions in 0.5 min.
Time: 10 min

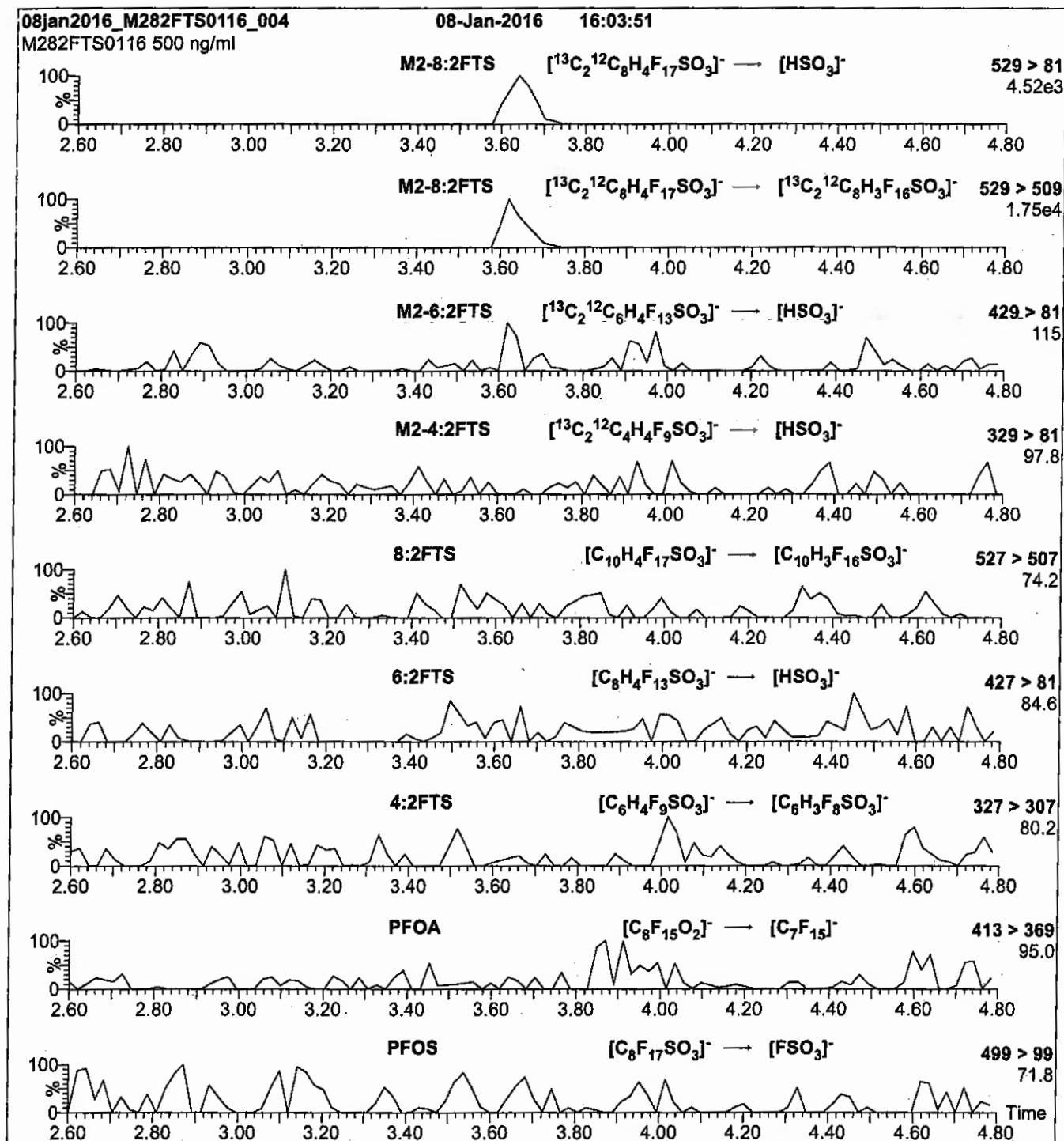
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2-8:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2-8:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 30

Reagent

LCM2PFHxDA_00008

R: 8BC 9/22/16



739512

ID: LCM2PFHxDA_00008

Exp: 01/07/21 Prod: SBC

¹³C2-PFHxDA at 50ug/mL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

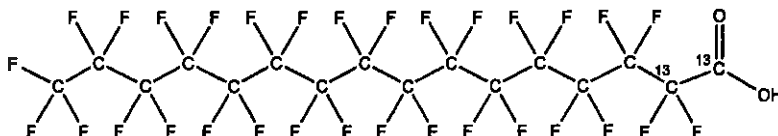
M2PFHxDA

LOT NUMBER:

M2PFHxDA1112

COMPOUND:Perfluoro-n-[1,2-¹³C₂]hexadecanoic acid**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**¹³C₂¹²C₁₄HF₃₁O₂**CONCENTRATION:**

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

816.11

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:≥99% ¹³C**LAST TESTED:** (mm/dd/yyyy)

01/07/2016

EXPIRY DATE: (mm/dd/yyyy)

01/07/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

(1,2-¹³C₂)**DOCUMENTATION/ DATA ATTACHED:**

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of native perfluoro-n-hexadecanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 01/11/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

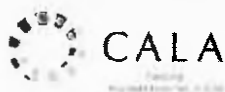
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

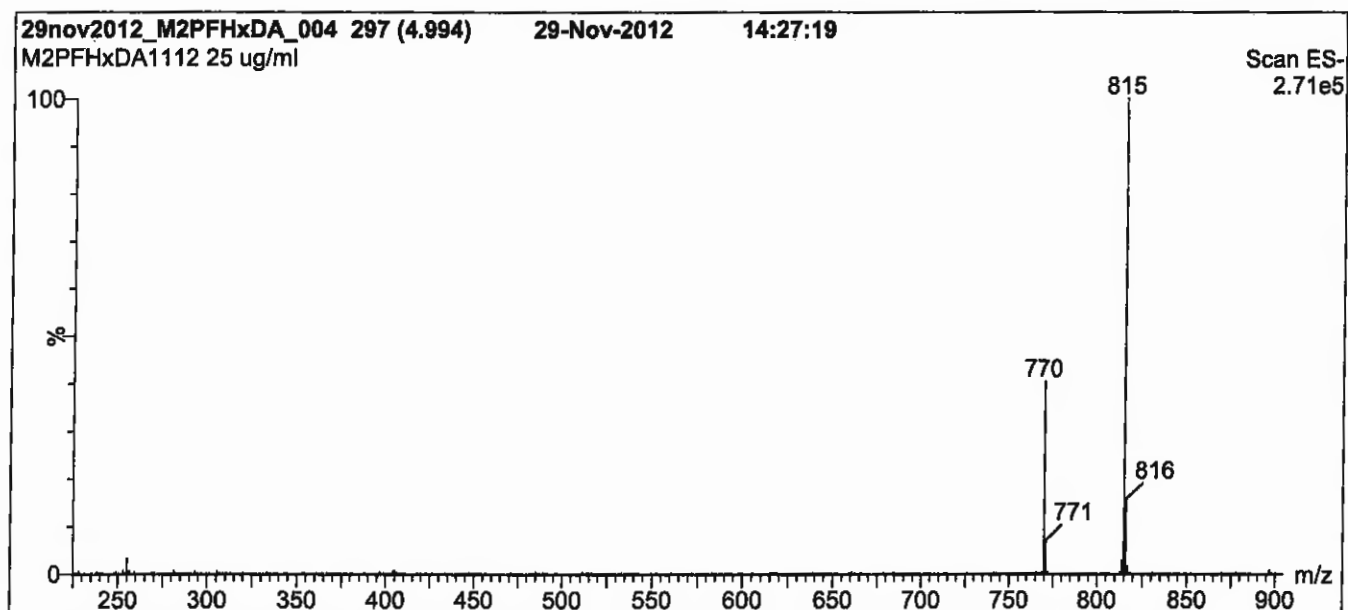
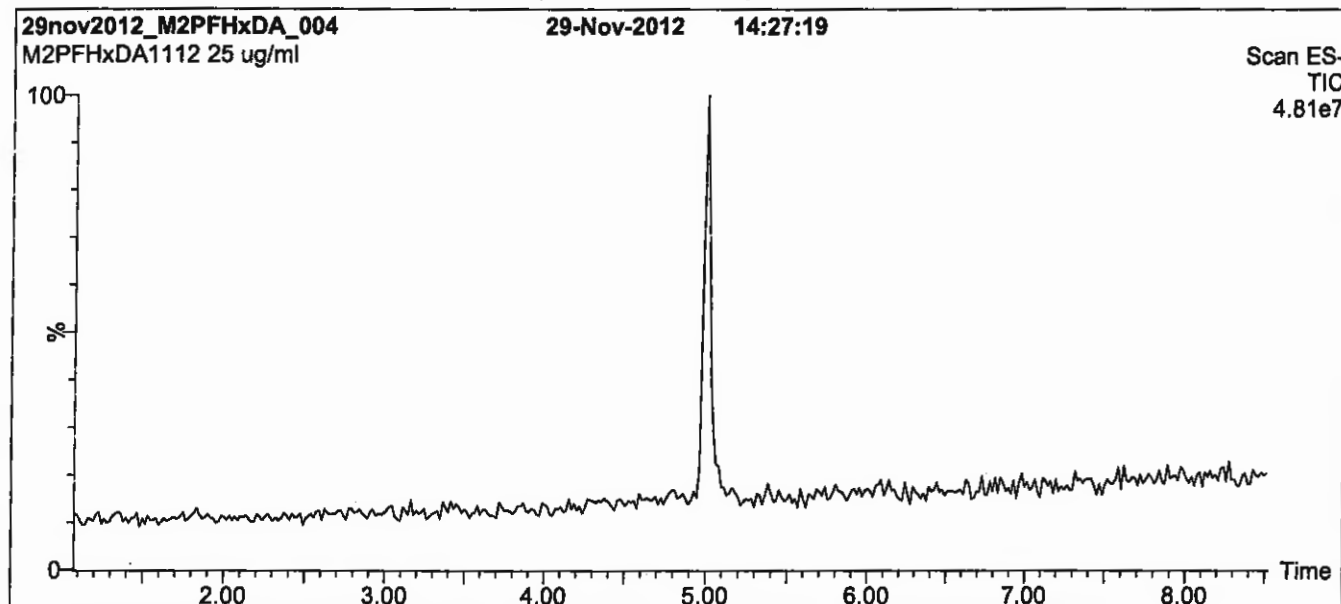
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: M2PFHxDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 100% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

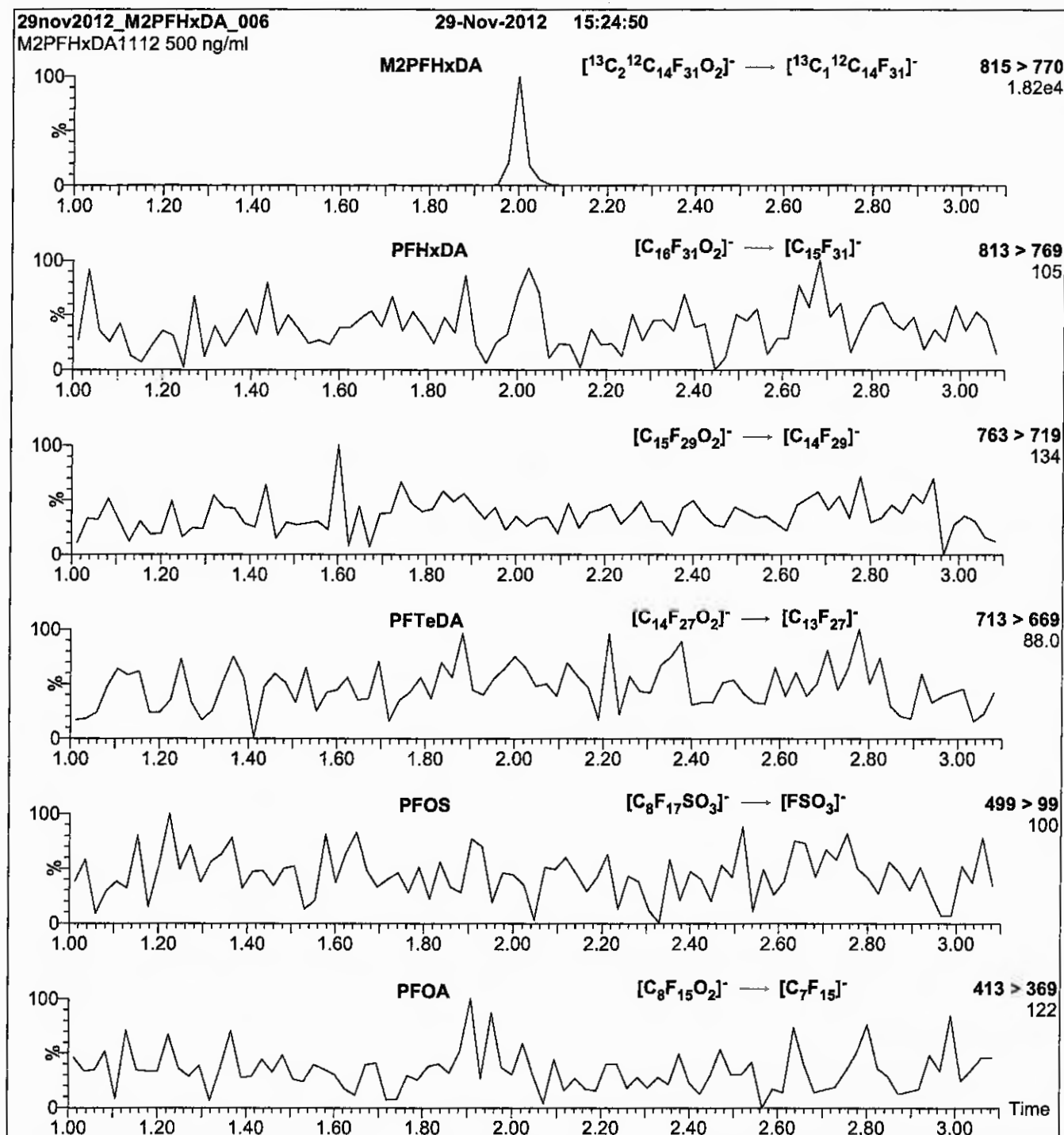
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2PFHxDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2PFHxDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 15

Reagent

LCM2PFTeDA_00007



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CERTIFICATE OF ANALYSIS
DOCUMENTATION



739563

ID: LCM2PFTeDA_00007

Exp: 12/07/20 Prod: SBC

13C2-PFTeDA at 50ug/mL

PRODUCT CODE:

M2PFTeDA

LOT NUMBER:

M2PFTeDA1115

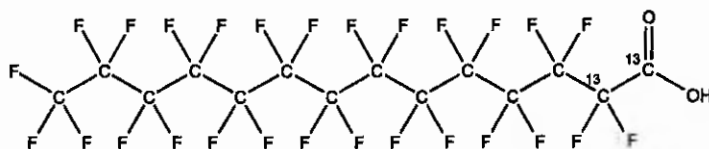
COMPOUND:

Perfluoro-n-[1,2-¹³C₂]tetradecanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₂¹²C₁₂H₂₇O₂

CONCENTRATION:

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

716.10

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

LAST TESTED: (mm/dd/yyyy)

12/07/2015

(1,2-¹³C₂)

EXPIRY DATE: (mm/dd/yyyy)

12/07/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/08/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • Info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

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EXPIRY DATE / PERIOD OF VALIDITY:

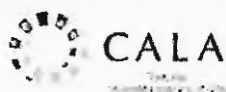
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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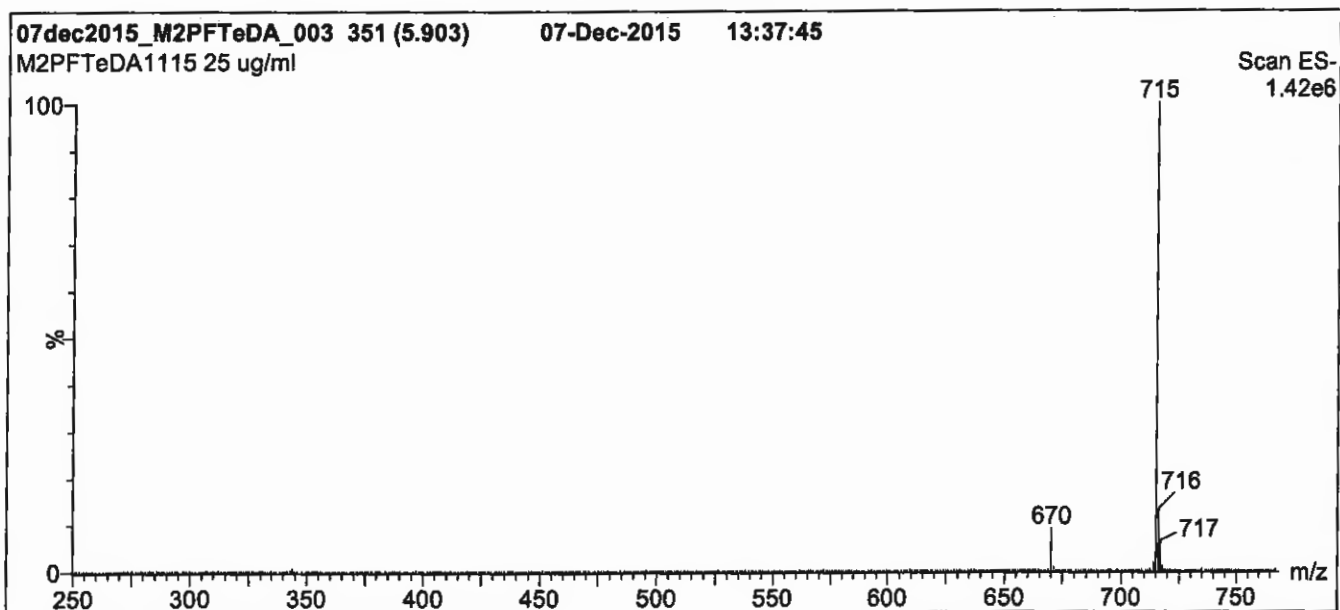
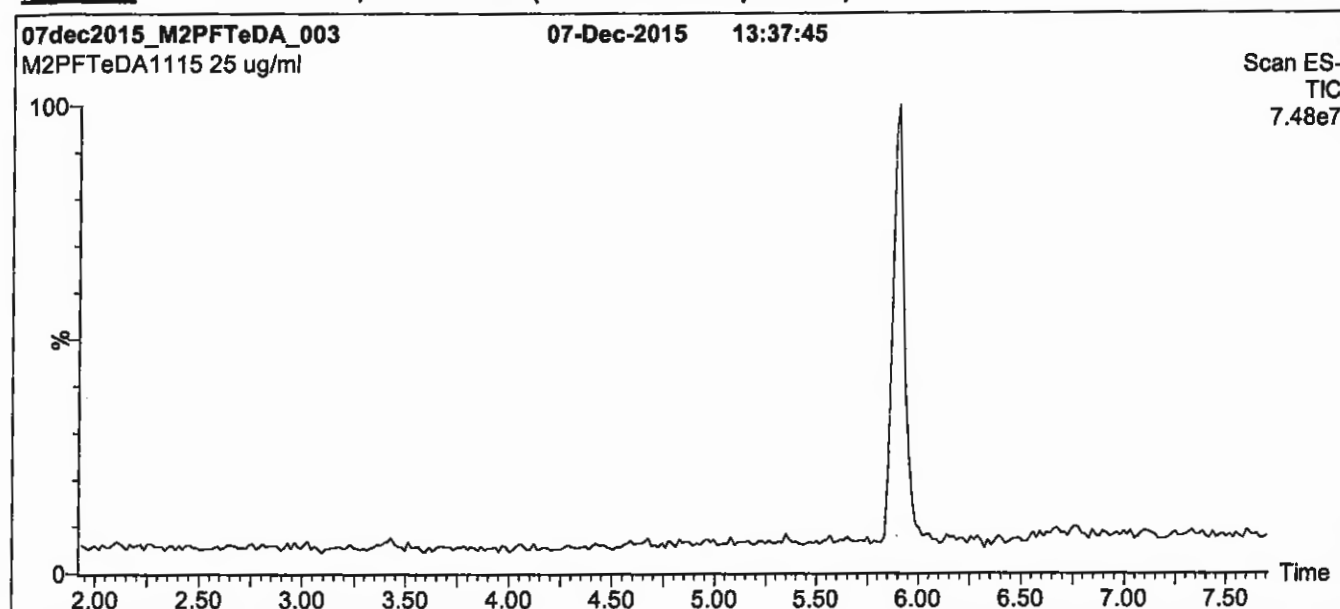
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: M2PFTeDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

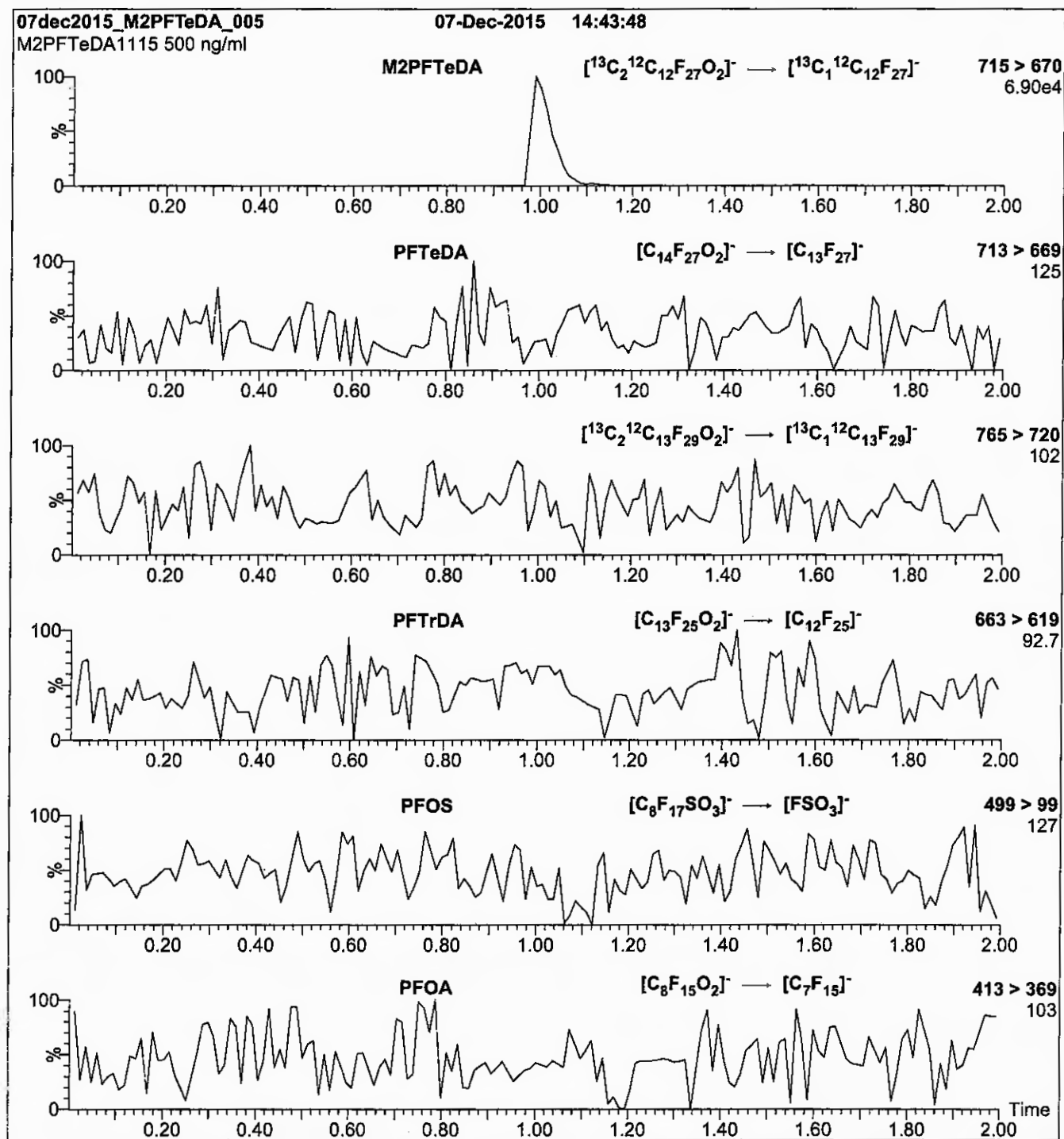
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV): 3.00
Cone Voltage (V): 15.00
Cone Gas Flow (l/hr): 60
Desolvation Gas Flow (l/hr): 750

Figure 2: M2PFTeDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μl (500 ng/ml M2PFTeDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
 (both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = $3.28\text{e-}3$
 Collision Energy (eV) = 14

Reagent

LCM4PFHPA_00007

f: SSC 7/22/16



739567

ID: LCM4PFHPA_00007

Exp: 05/27/21 Prod: SSC

¹³C₄-Perfluoroheptanoic a



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CERTIFICATE OF ANALYSIS
DOCUMENTATION

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PRODUCT CODE:

M4PFHpA

LOT NUMBER:

M4PFHpA0516

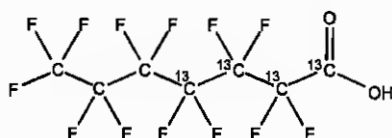
COMPOUND:

Perfluoro-n-[1,2,3,4-¹³C₄]heptanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₄¹²C₃HF₁₃O₂

CONCENTRATION:

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

368.03

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99%¹³C

LAST TESTED: (mm/dd/yyyy)

05/27/2016

EXPIRY DATE: (mm/dd/yyyy)

05/27/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

(1,2,3,4-¹³C₄)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 07/05/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HAZARDS:

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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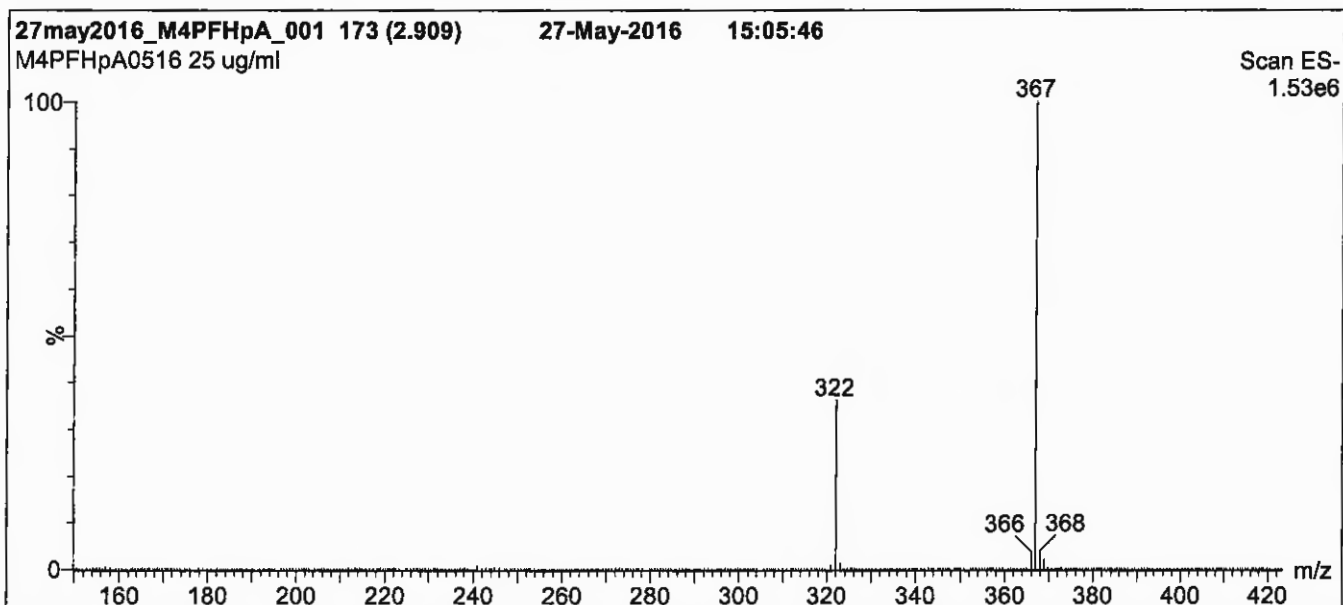
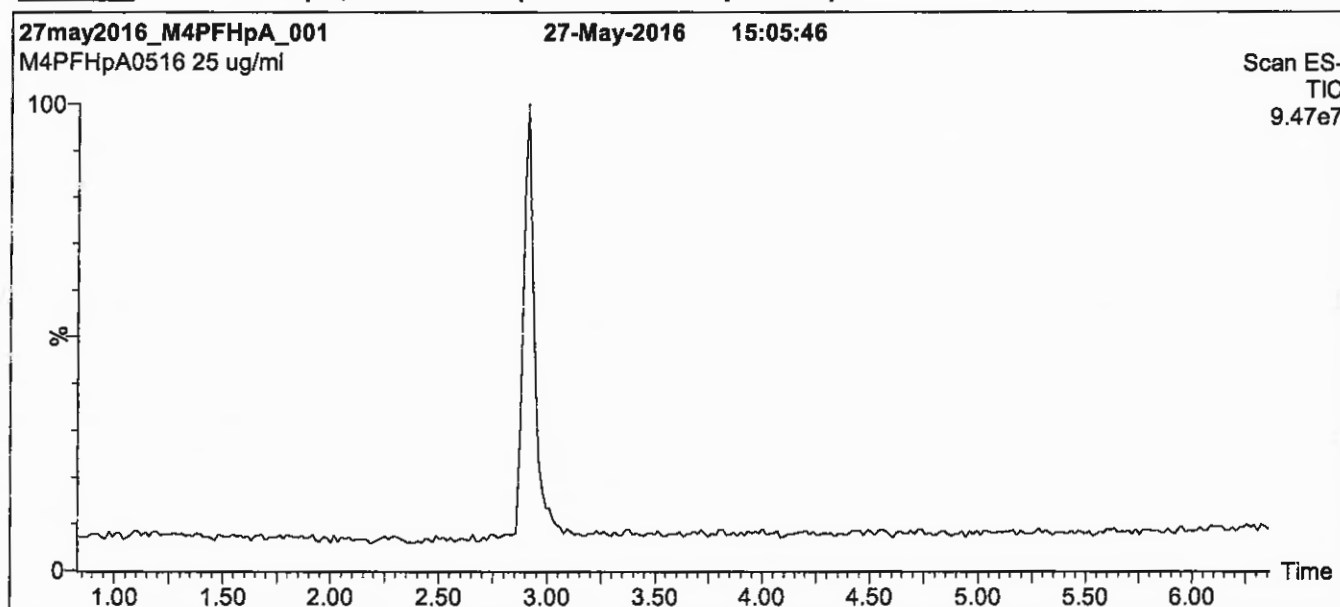
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: M4PFHpA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

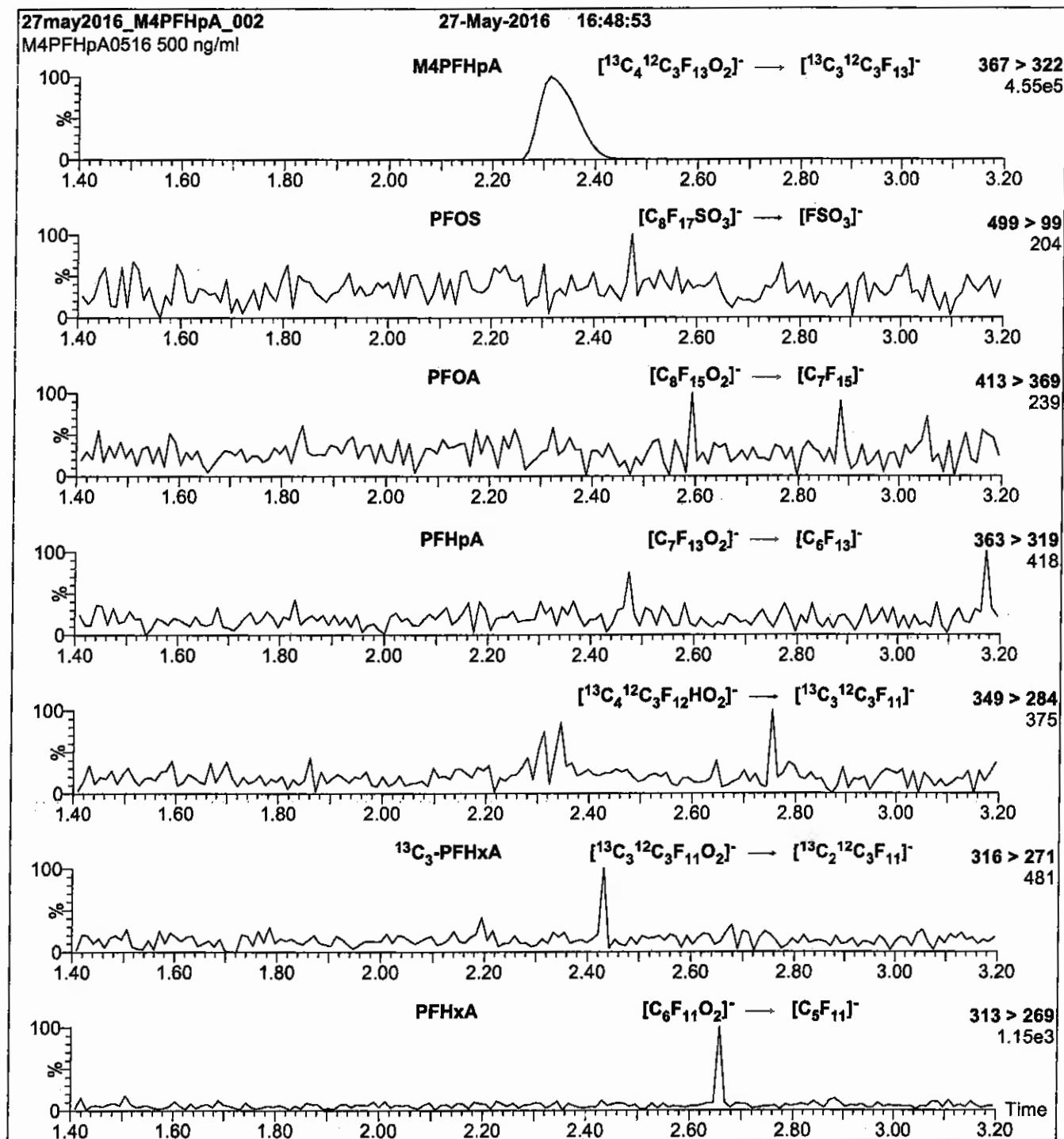
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: M4PFHpA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M4PFHpA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 11

Reagent

LCM5PFPEA_00008

R: 8BC 9/22/16



739590
ID: LCM5PFPEA_00008
Exp: 05/22/20 Prod: SBC
13C5-Perfluoropentanoic a



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LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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PRODUCT CODE:

M5PFPeA

LOT NUMBER:

M5PFPeA0515

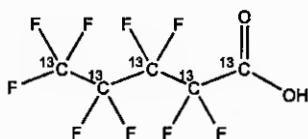
COMPOUND:

Perfluoro-n-[¹³C₅]pentanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₅HF₉O₂

CONCENTRATION:

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

269.01

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

LAST TESTED: (mm/dd/yyyy)

05/22/2015

(¹³C₅)

EXPIRY DATE: (mm/dd/yyyy)

05/22/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of perfluoro-n-pentanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/25/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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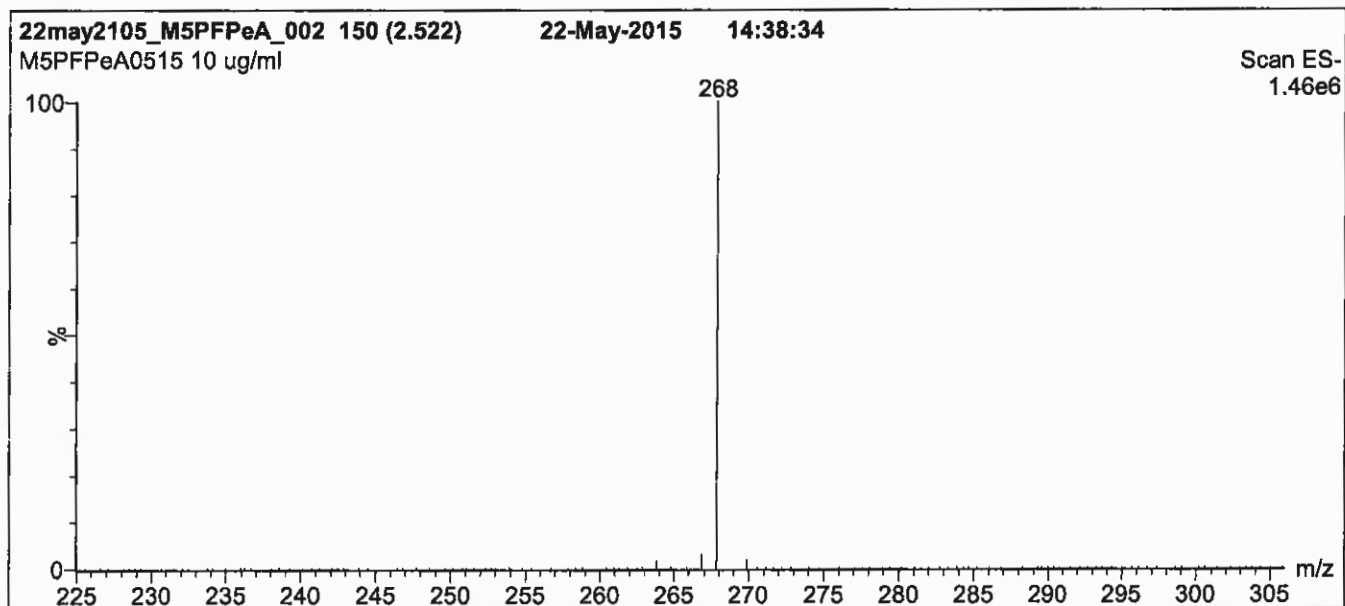
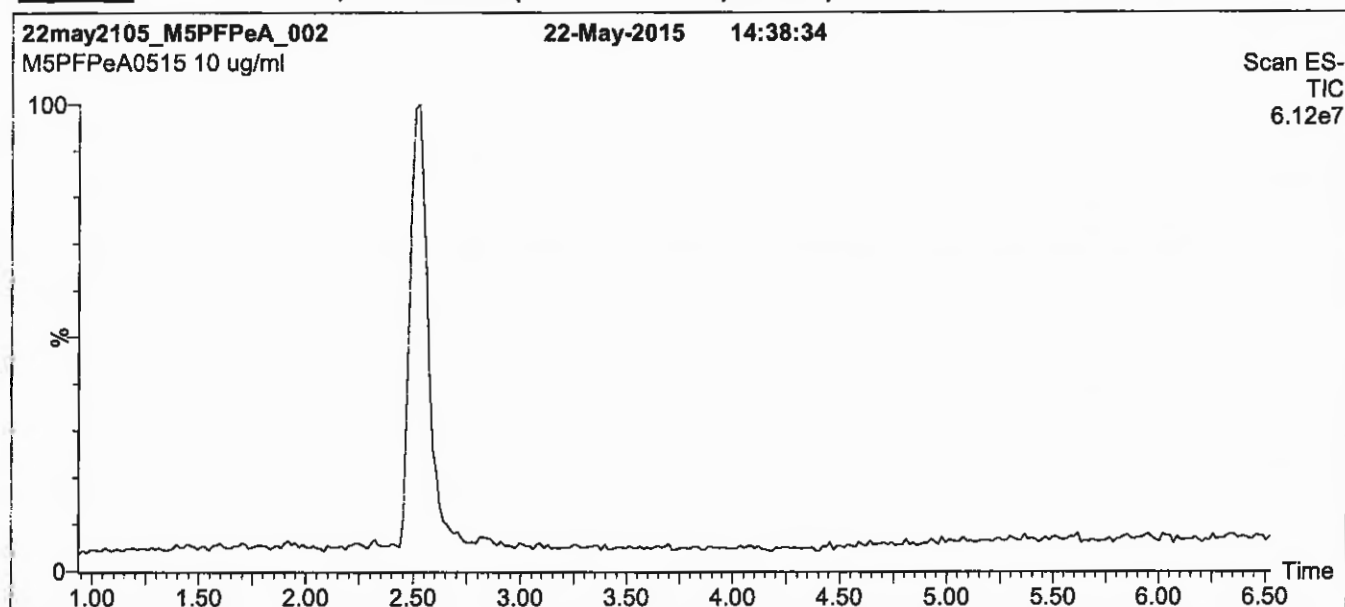
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Figure 1: M5PFPeA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

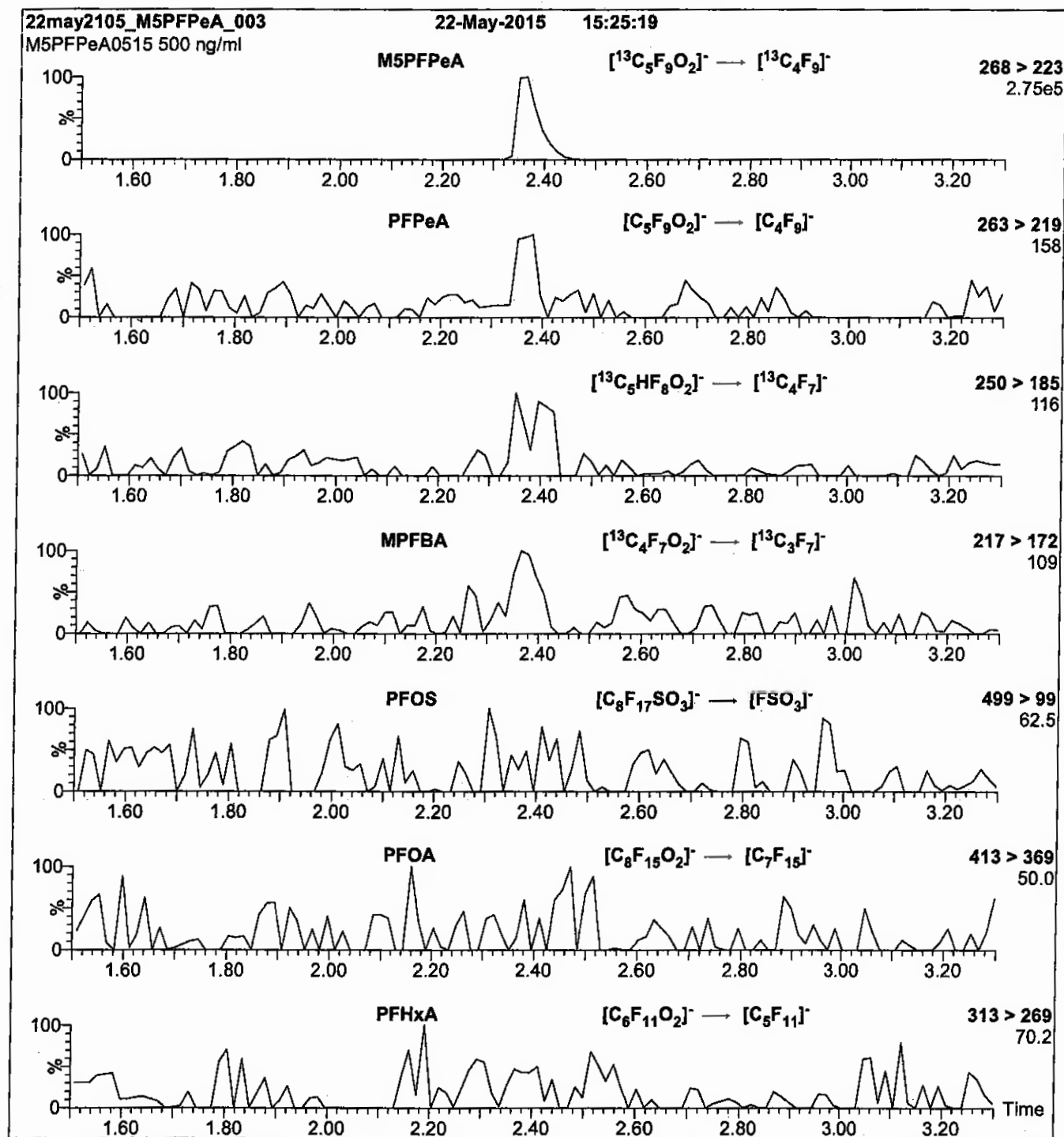
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: M5PFPeA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M5PFPeA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 9

Reagent

LCM8FOSA_00011



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION



739615

ID: LCM8FOSA_00011

Exp: 12/22/17 Prod: SBC
13C8-PerfluorooctanesulfoR: SBC 9/22/16
Scanned 10/14/16**PRODUCT CODE:**

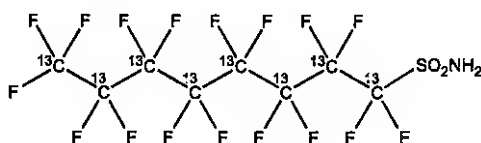
M8FOSA-I

LOT NUMBER:

M8FOSA1215I

COMPOUND:Perfluoro-1-[¹³C₈]octanesulfonamide**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**¹³C₈H₂F₁₇NO₂S**CONCENTRATION:**

50 ± 2.5 µg/ml

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/22/2015

EXPIRY DATE: (mm/dd/yyyy)

12/22/2017

RECOMMENDED STORAGE:

Refrigerate ampoule

MOLECULAR WEIGHT:

507.09

SOLVENT(S):

Isopropanol

ISOTOPIC PURITY:≥99% ¹³C
(¹³C₈)**DOCUMENTATION/ DATA ATTACHED:**

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 01/14/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

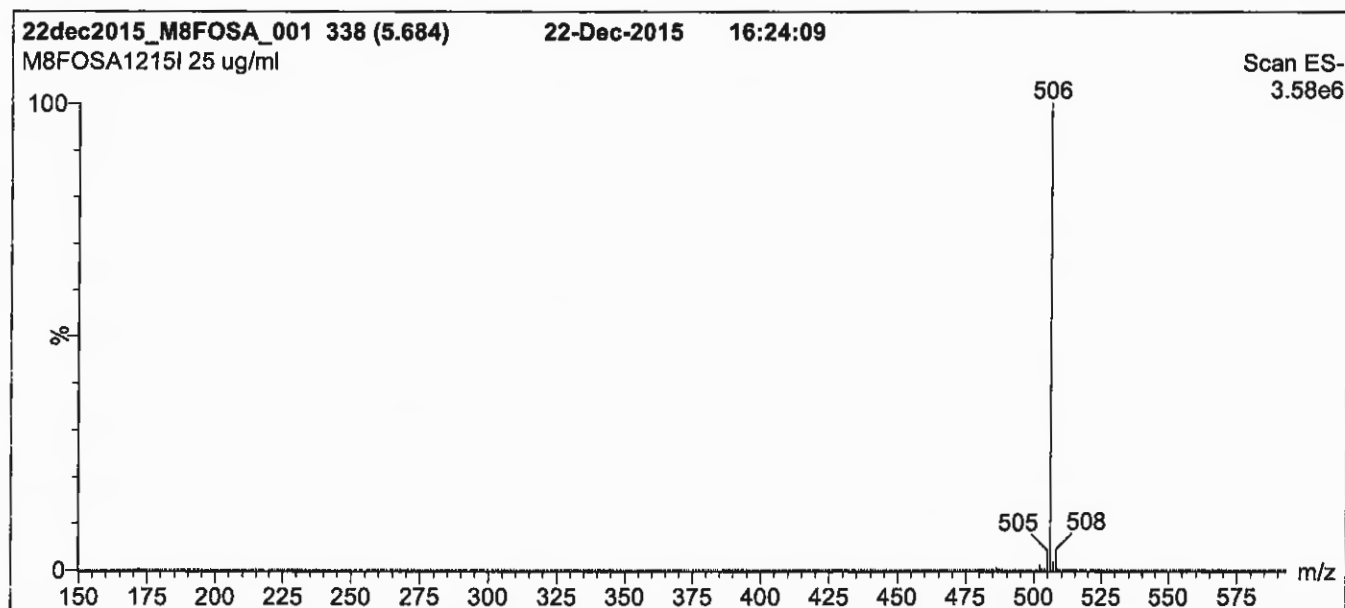
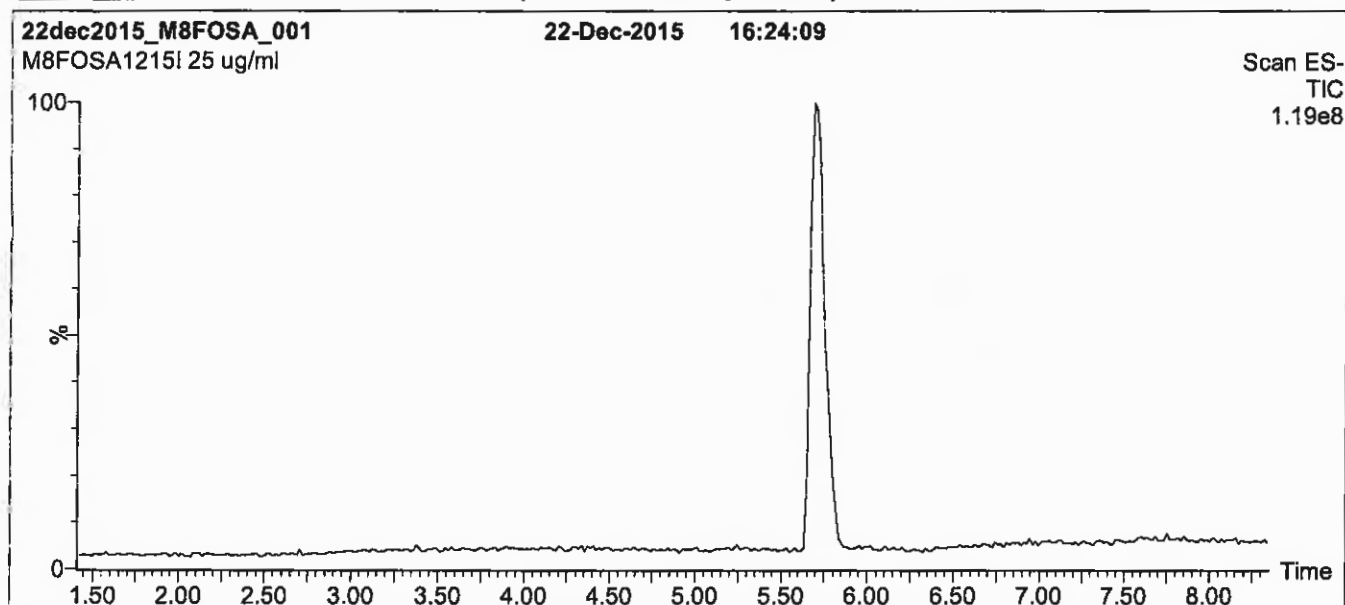
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: M8FOSA-I; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

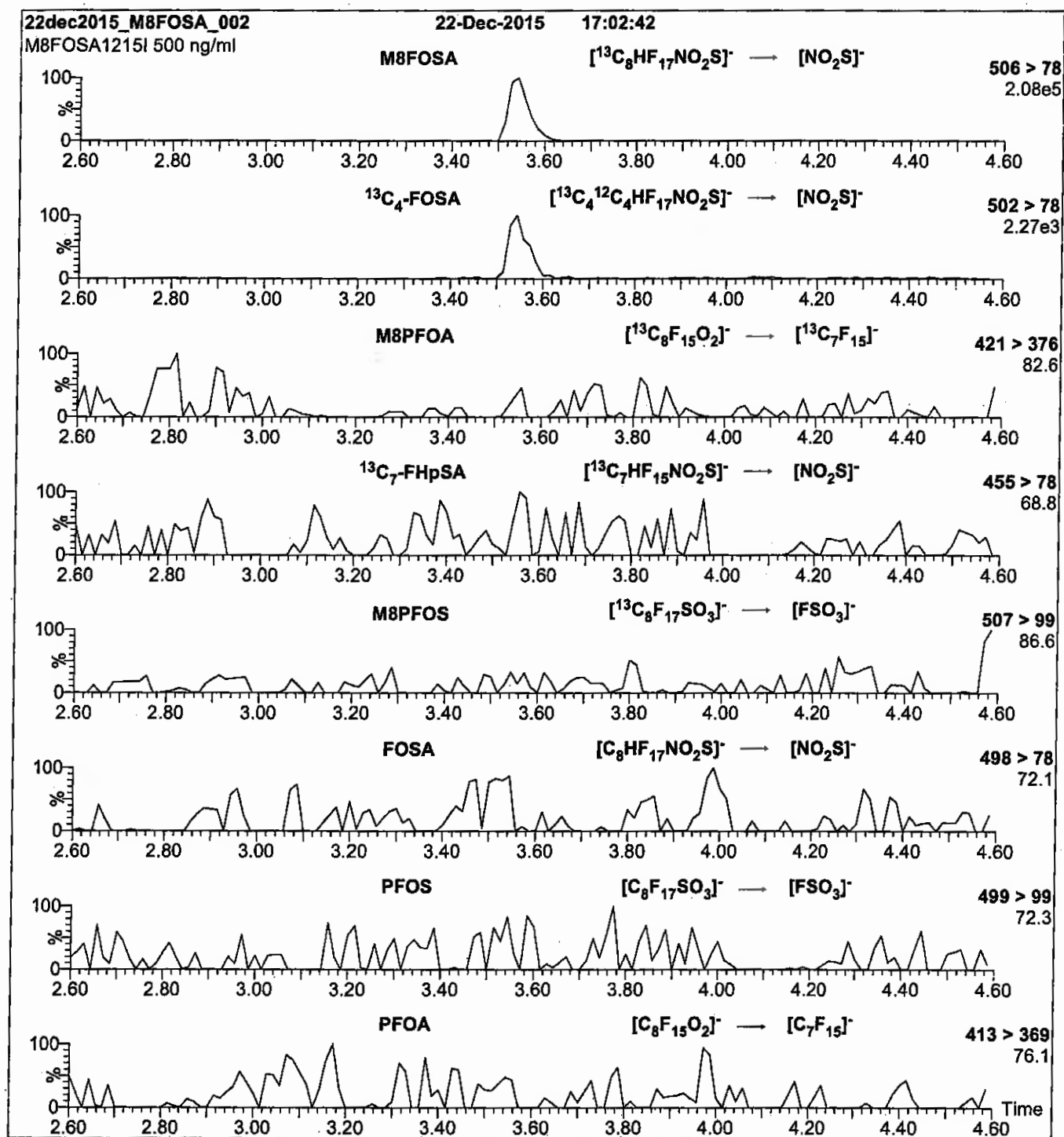
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: M8FOSA-I; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M8FOSA-I)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 30

Reagent

LCMPFBA_00008

R: 8BC 9/22/16



739593

ID: LCMFBA_00008

Exp: 05/24/21 Prod: SEC

13C4-Perfluorobutanoic ac



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

Scanned 10/14/16 SP

PRODUCT CODE:

MPFBA

LOT NUMBER:

MPFBA0516

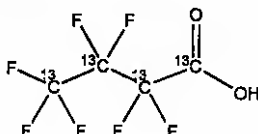
COMPOUND:

Perfluoro-n-[1,2,3,4-¹³C₄]butanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₄HF₉O₂

CONCENTRATION:

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

218.01

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99%¹³C

LAST TESTED: (mm/dd/yyyy)

05/24/2016

(1,2,3,4-¹³C₄)

EXPIRY DATE: (mm/dd/yyyy)

05/24/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/30/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

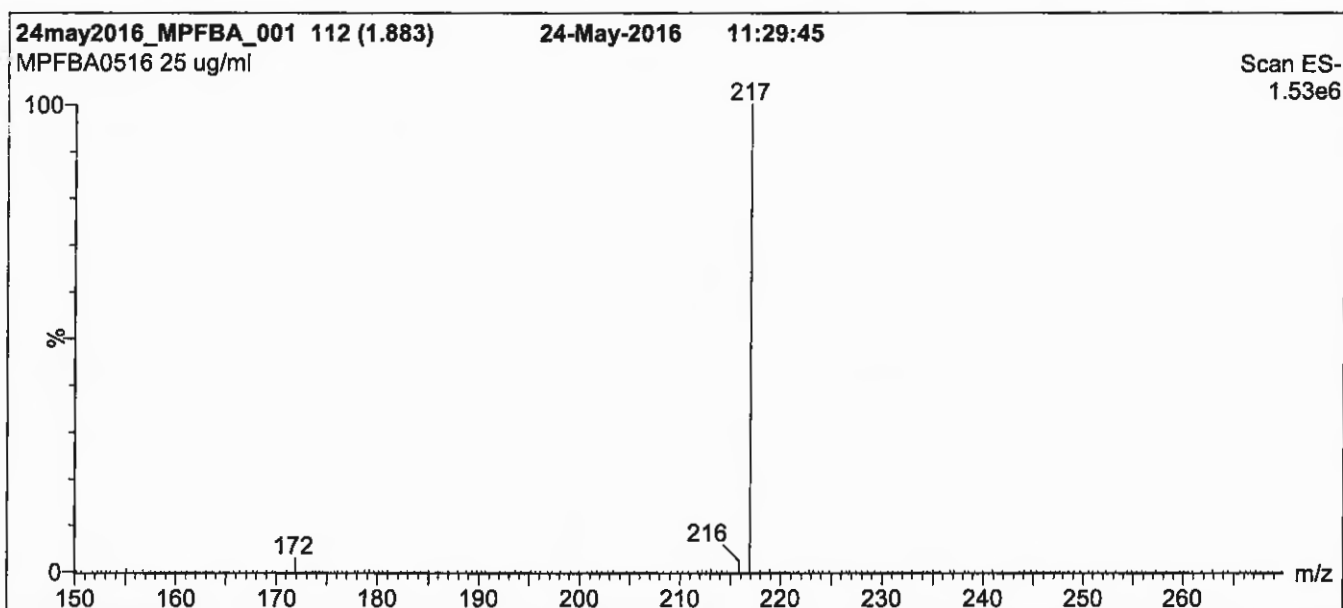
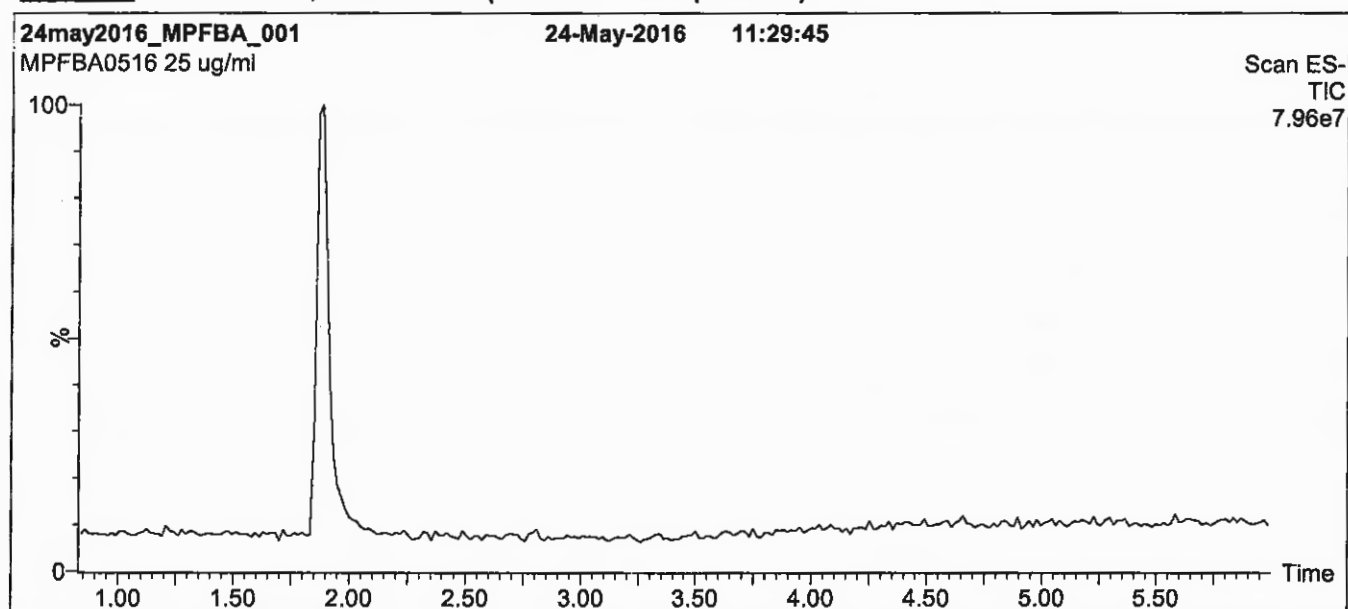
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: MPFBA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm
Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

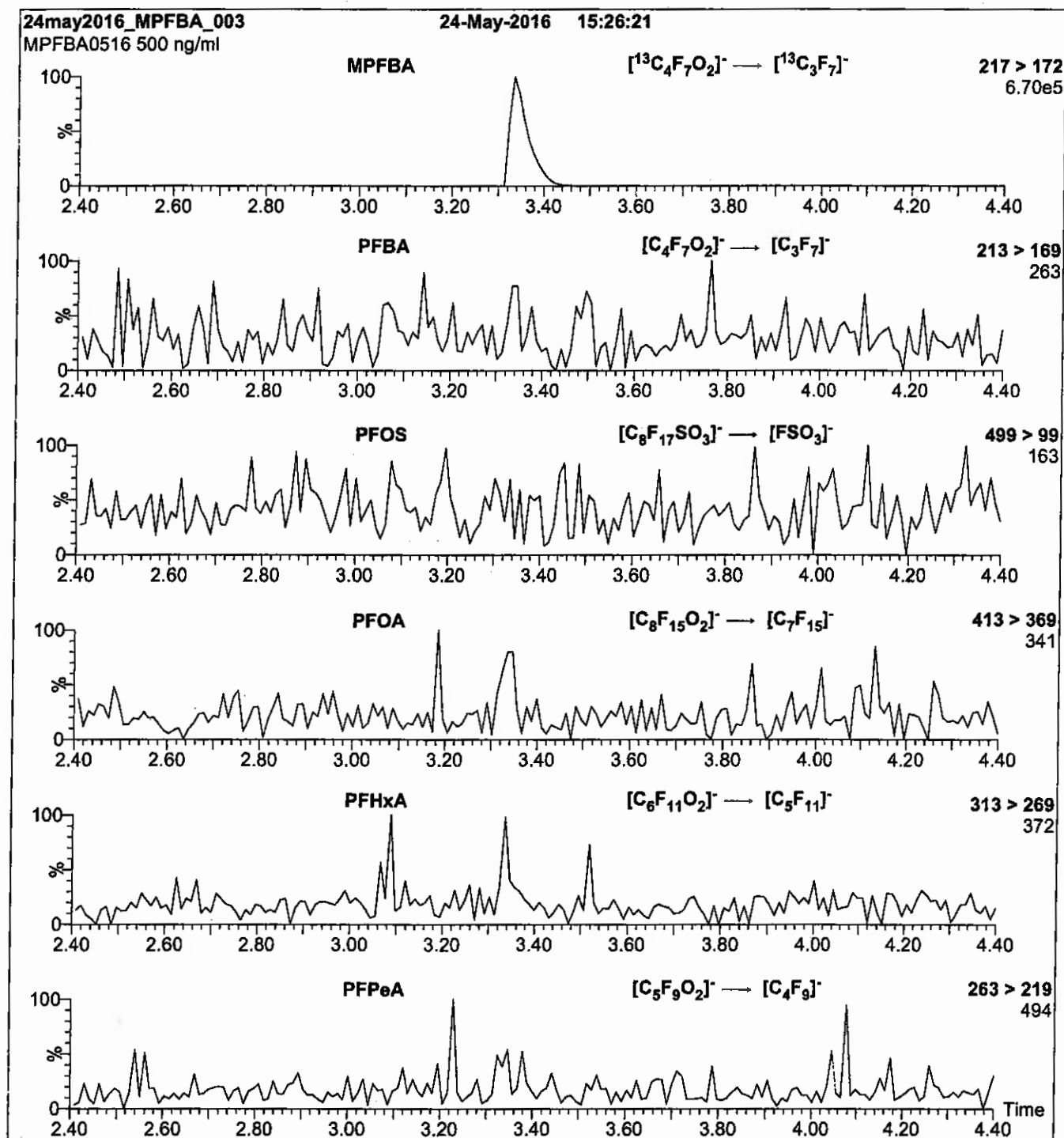
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFBA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop Injection
10 μl (500 ng/ml MPFBA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 10

Reagent

LCMPFDA_00011



Scanned 10/14/16 R: SBC 9/22/16
WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

739609
ID: LCMFDA_00011
Exp: 08/19/20 Prod: SBC
13C2-Perfluorodecanoic a

PRODUCT CODE:

MPFDA

LOT NUMBER:

MPFDA0815

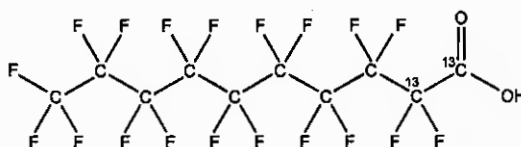
COMPOUND:

Perfluoro-n-[1,2-¹³C₂]decanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₂¹²C₈H₁₉O₂

MOLECULAR WEIGHT:

516.07

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

LAST TESTED: (mm/dd/yyyy)

08/19/2015

(1,2-¹³C₂)

EXPIRY DATE: (mm/dd/yyyy)

08/19/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of ¹³C₁-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 08/21/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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EXPIRY DATE / PERIOD OF VALIDITY:

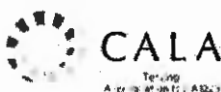
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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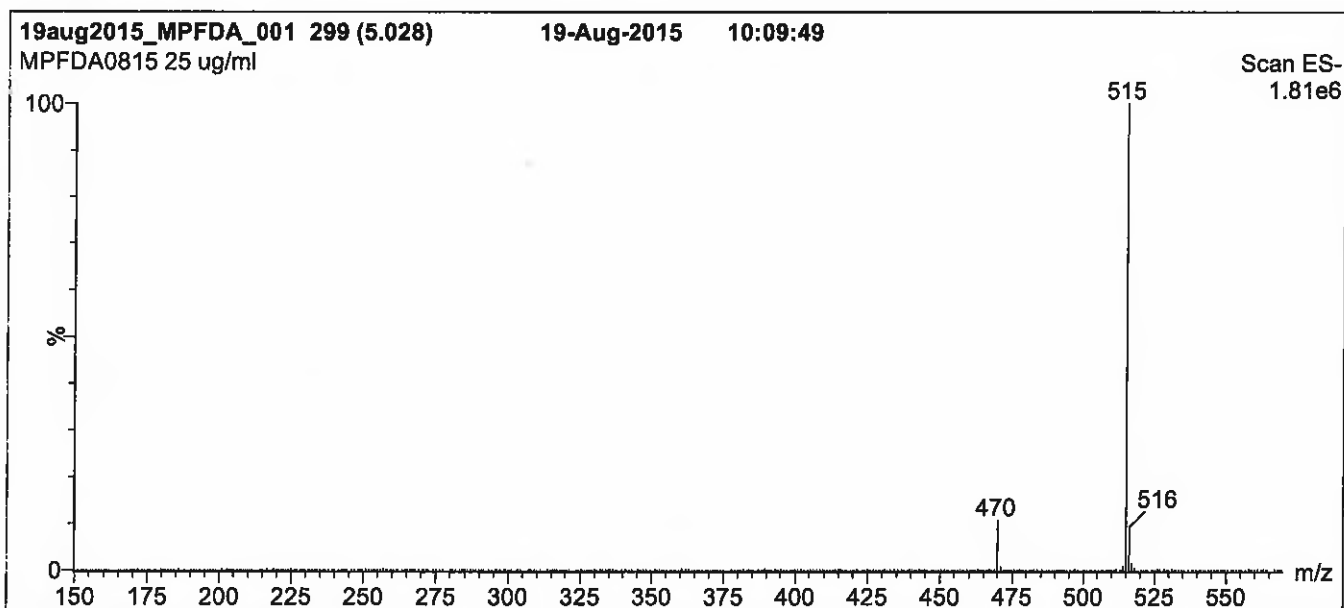
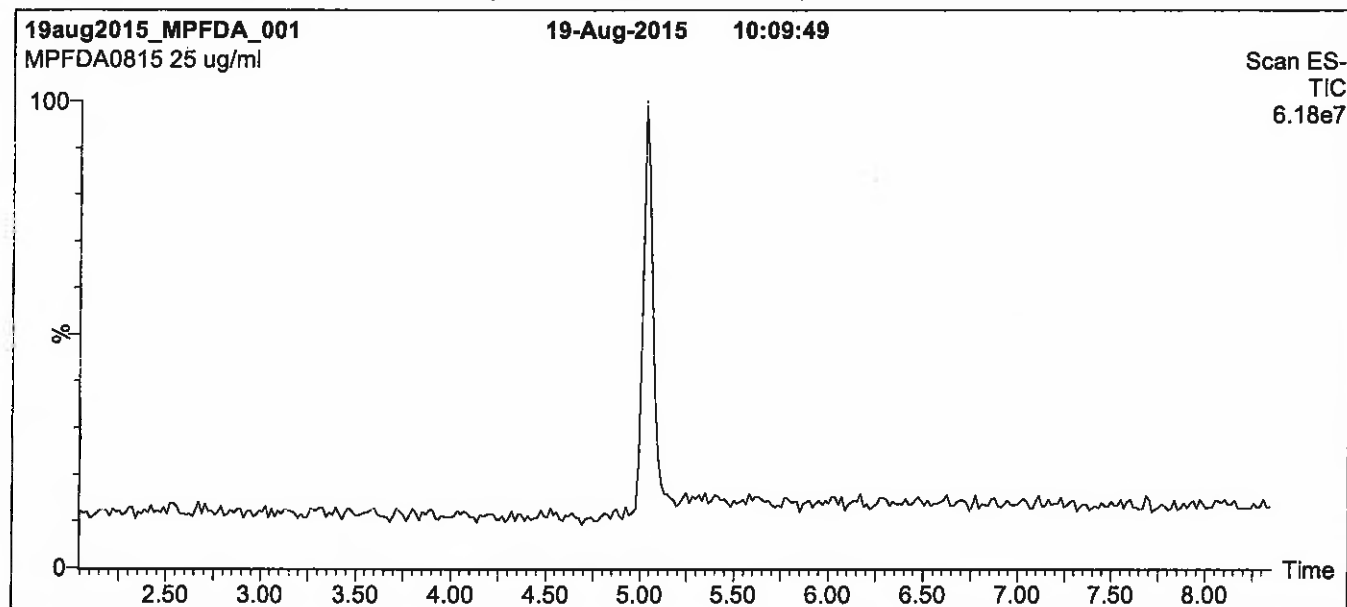
QUALITY MANAGEMENT:

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Figure 1: MPFDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

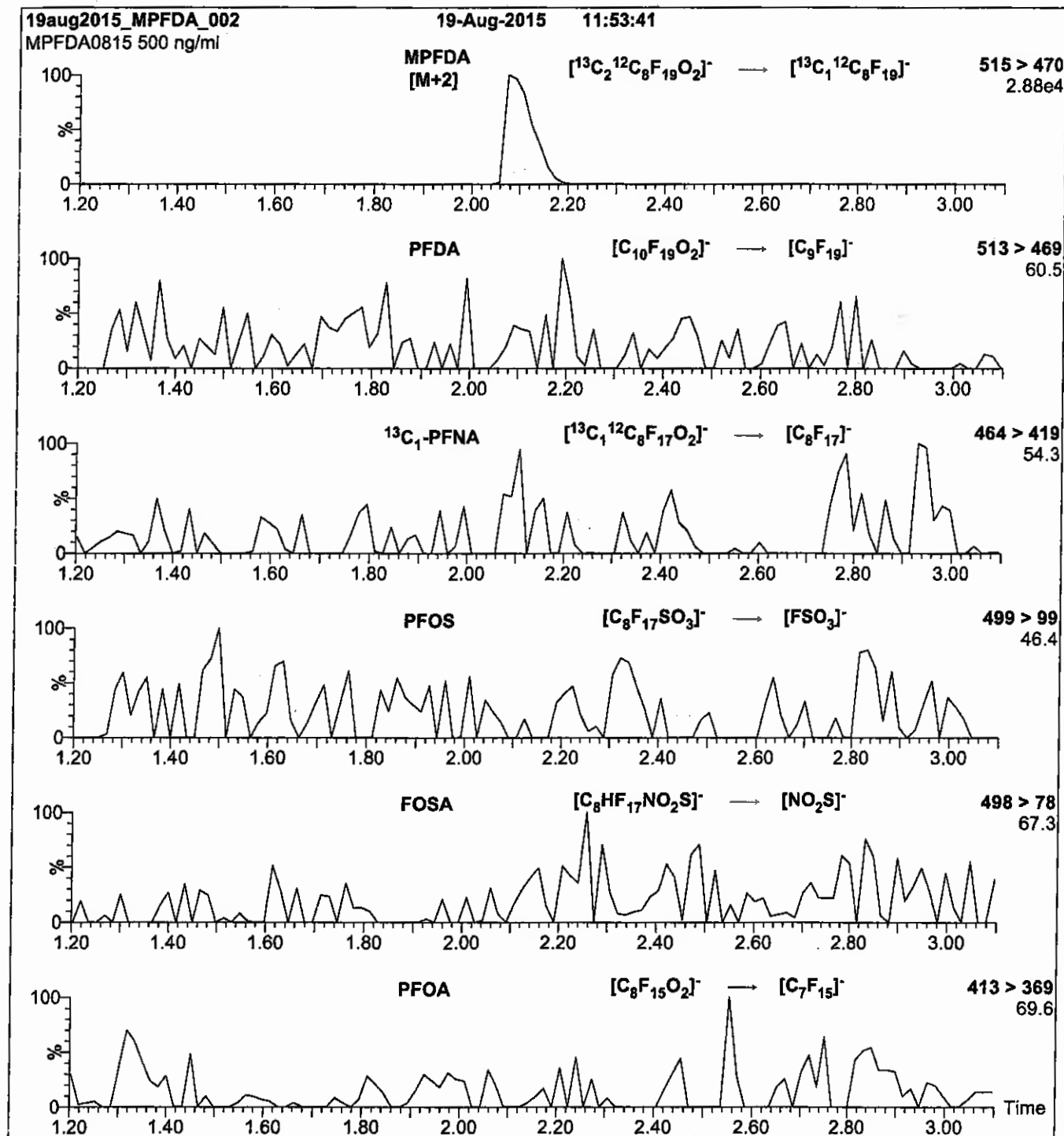
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml MPFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 13

Reagent

LCMPFD_oA_00008

R: 888 9/22/16



739598

ID: LCMFDoA_00008

Exp: 04/08/21 Prod: SBC

13C2-Perfluorododecanoic



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

Scanned 10/14/16 SR

PRODUCT CODE:

MPFDoA

LOT NUMBER:

MPFDoA0416

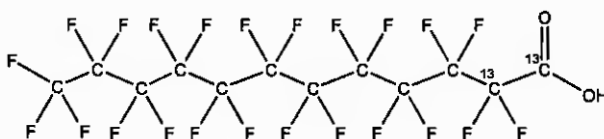
COMPOUND:

Perfluoro-n-[1,2-¹³C₂]dodecanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₂¹²C₁₀HF₂₃O₂

CONCENTRATION:

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

616.08

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

LAST TESTED: (mm/dd/yyyy)

04/08/2016

(1,2-¹³C₂)

EXPIRY DATE: (mm/dd/yyyy)

04/08/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/15/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • Info@well-labs.com

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HOMOGENEITY:

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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

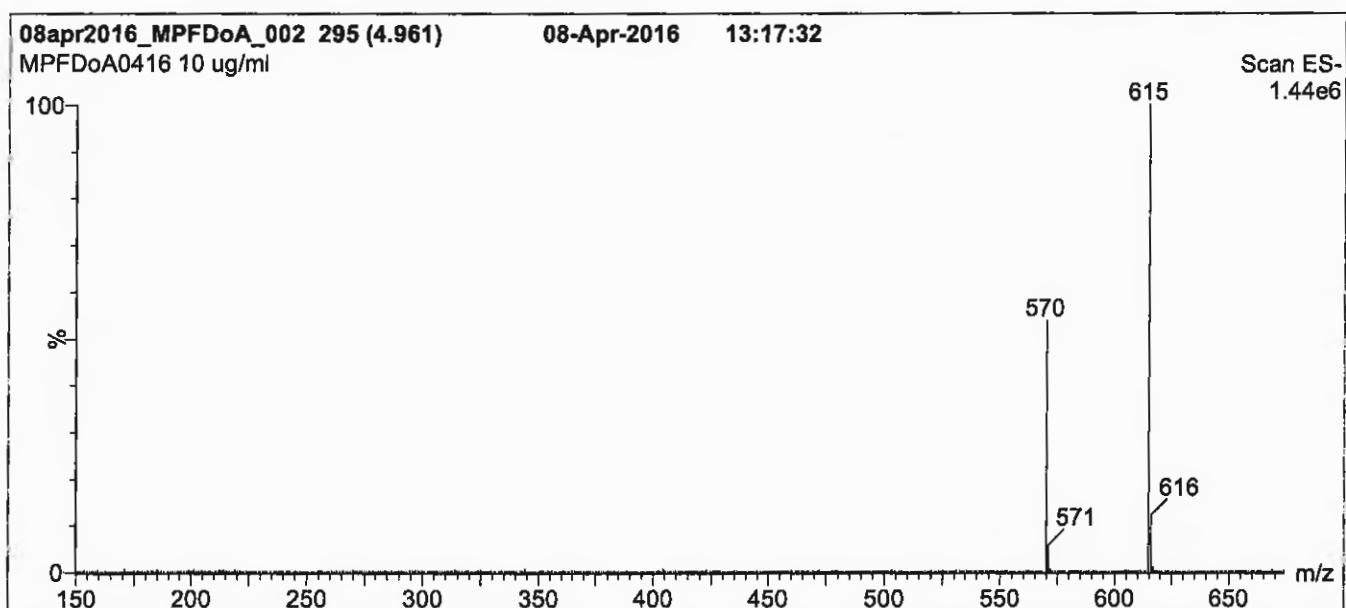
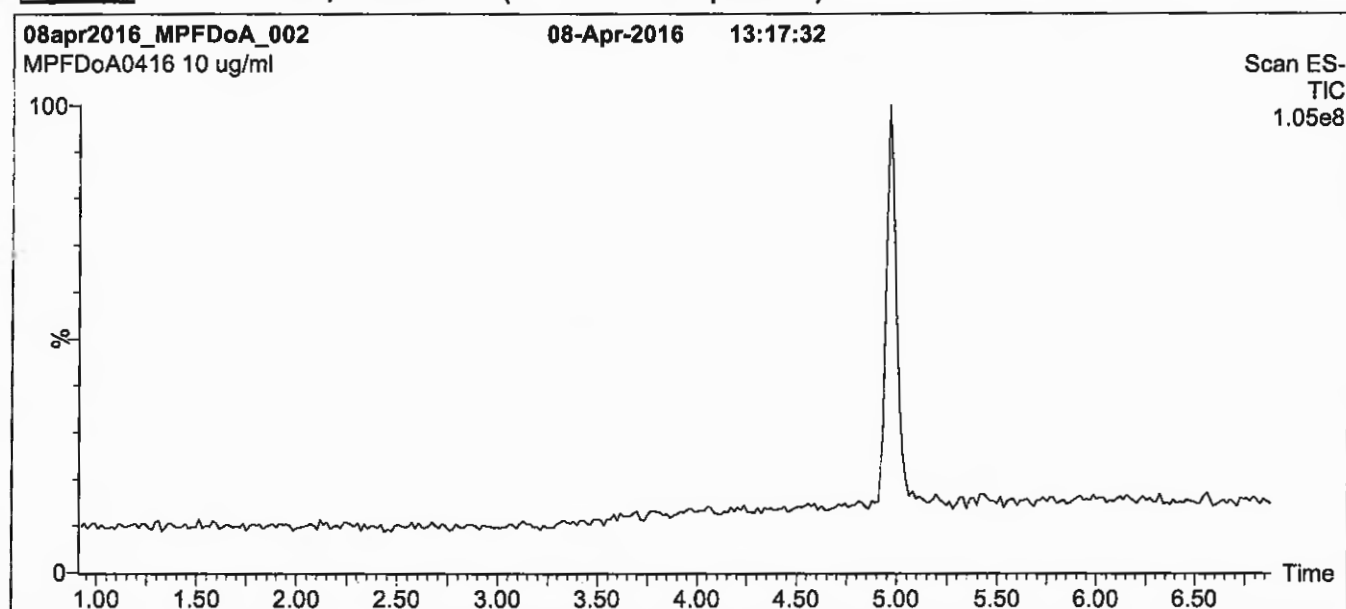
QUALITY MANAGEMENT:

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Figure 1: MPFDoA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

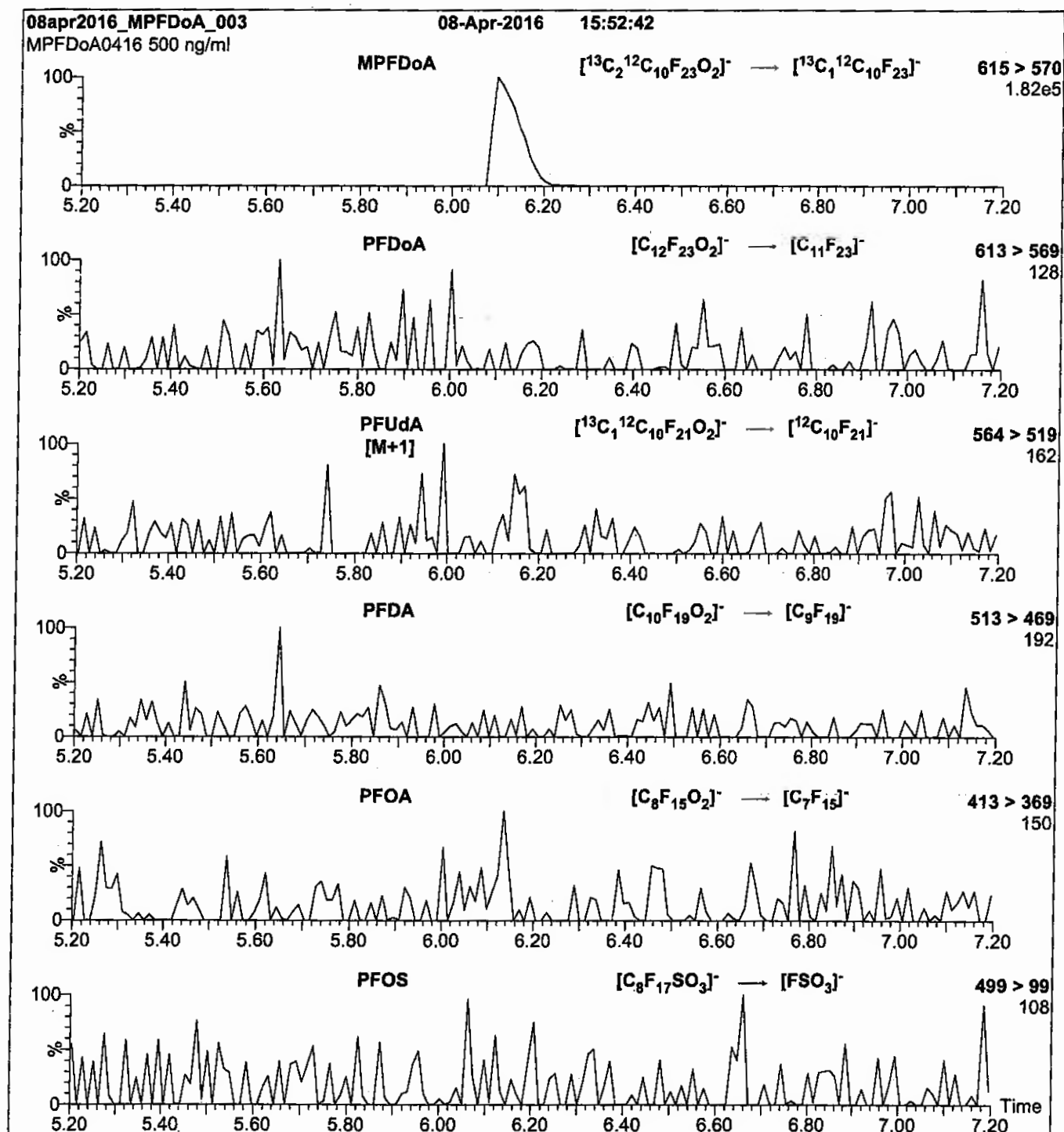
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFDoA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFDoA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 13

Reagent

LCMPFHxA_00012

Scanned 10/14/16 R: SBC 9/22/16

739612
ID: LCMPFHxA_00012
Exp: 04/08/21 Prep: SBC
13C2-Perfluorohexanoic ac



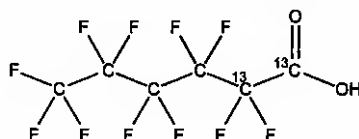
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxA
COMPOUND: Perfluoro-n-[1,2-¹³C₂]hexanoic acid

LOT NUMBER: MPFHxA0416

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₄HF₁₁O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 316.04
SOLVENT(S): Methanol
Water (<1%)
ISOTOPIC PURITY: ≥99%¹³C
(1,2-¹³C₂)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/08/2016
EXPIRY DATE: (mm/dd/yyyy) 04/08/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of perfluoro-n-hexanoic acid and ~ 0.3% of perfluoro-n-octanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/29/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

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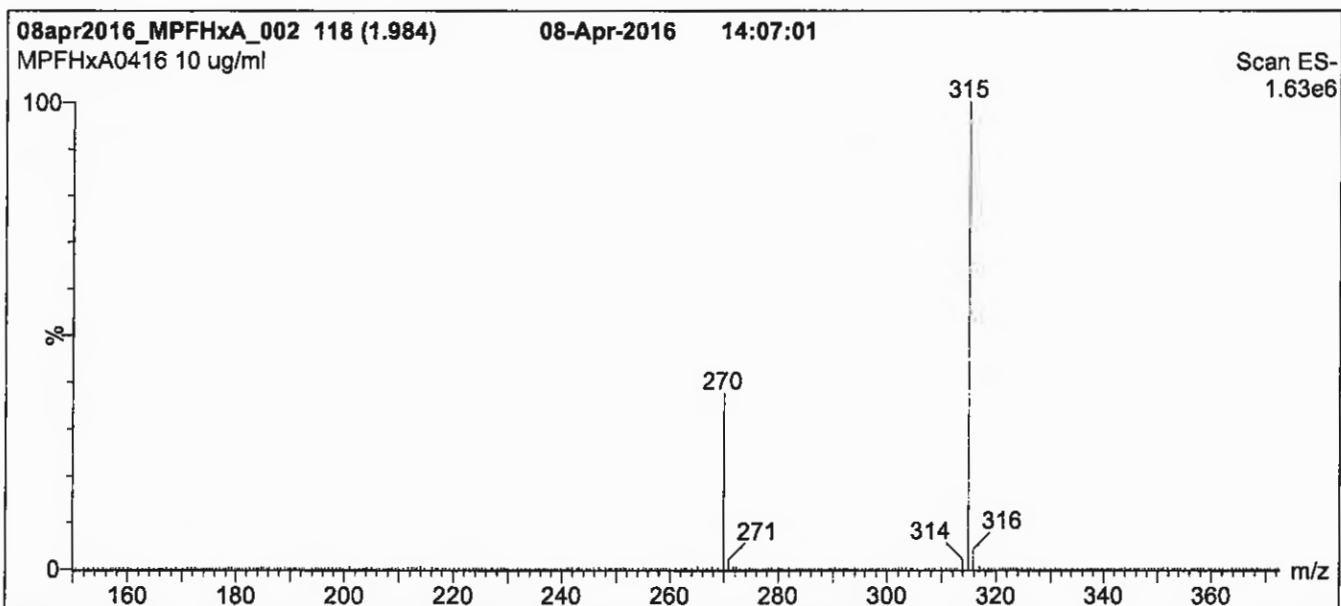
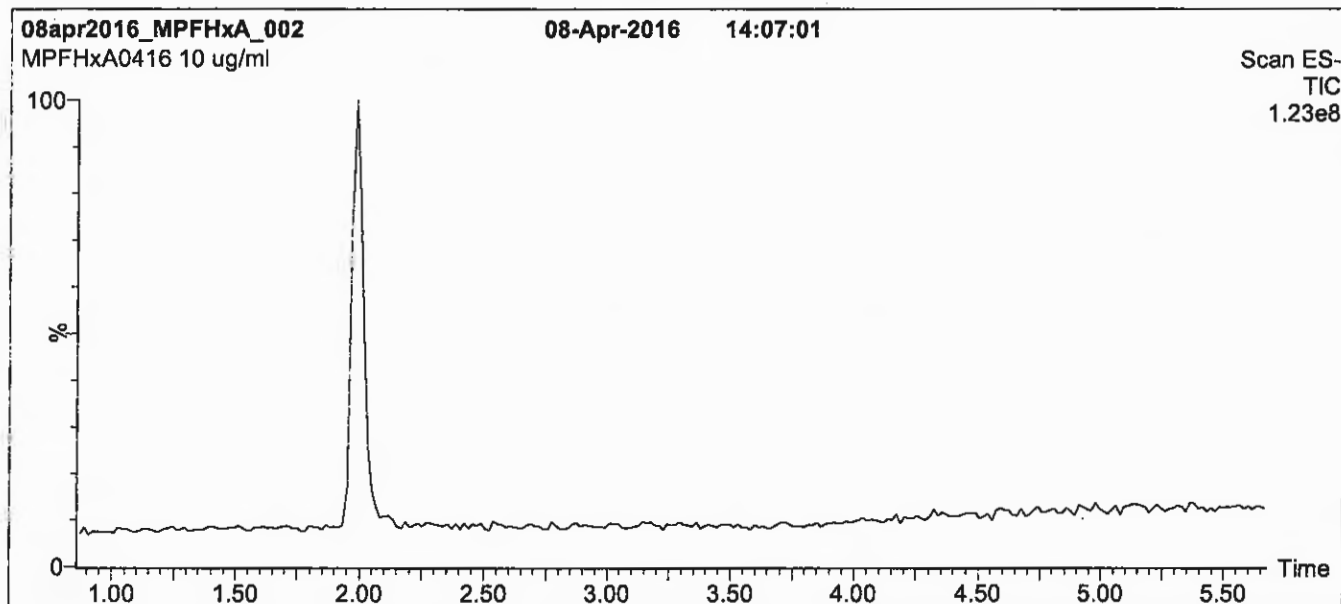
QUALITY MANAGEMENT:

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Figure 1: MPFHxA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions over 0.5 min.
Time: 10 min

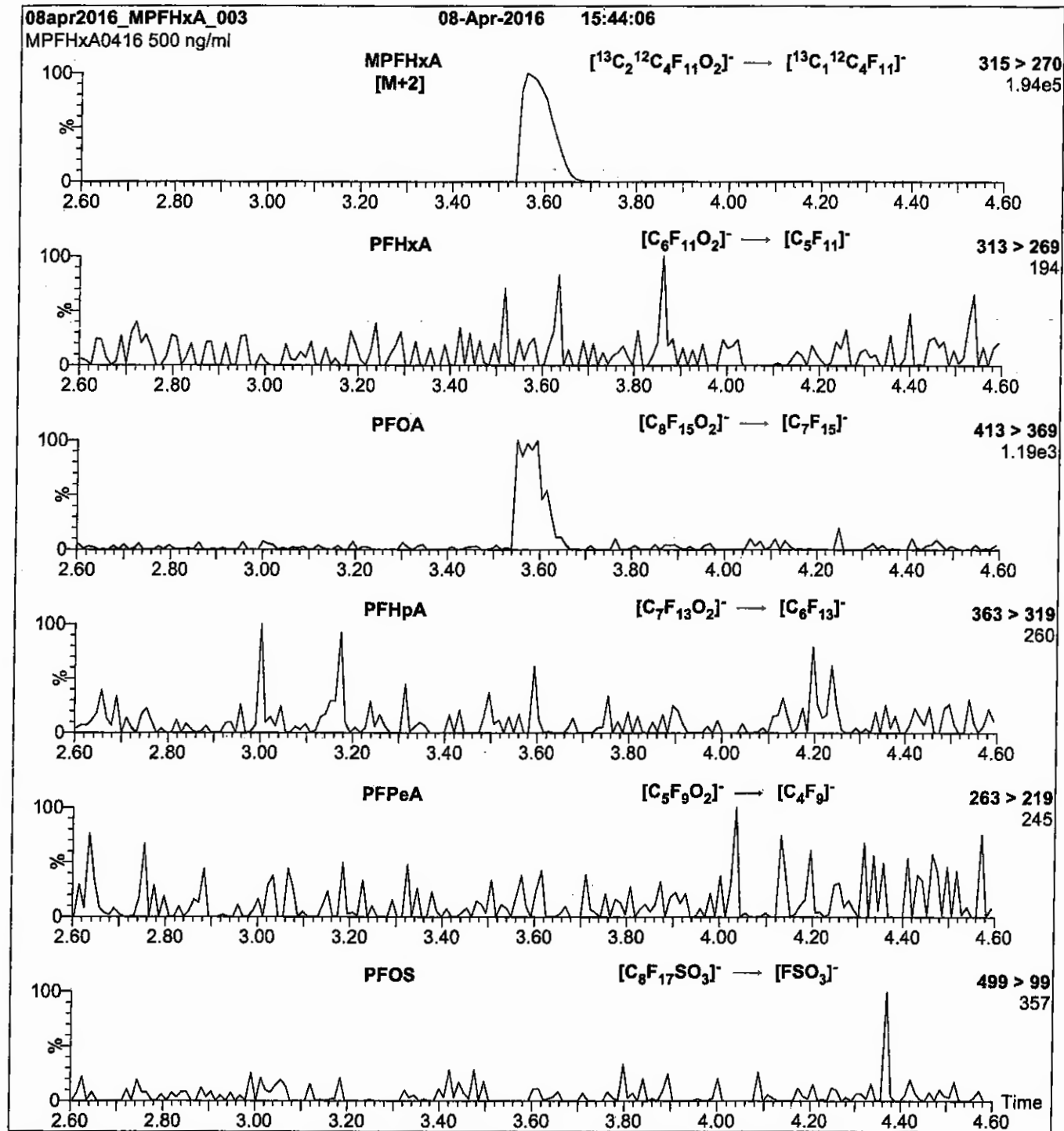
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFHxA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml MPFHxA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 10

Reagent

LCMPFHXS_00008

2: 8BC 9/22/16



739601

ID: LCMPFHxS_00008

Exp: 10/23/20 Prod: SBC

18O₂-Perfluorohexanesulfo



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

Scanned 10/14/16 SK

PRODUCT CODE:

MPFHxS

LOT NUMBER:

MPFHxS1015

COMPOUND:

Sodium perfluoro-1-hexane[¹⁸O₂]sulfonate

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

C₆F₁₃S¹⁸O₂¹⁶ONa

MOLECULAR WEIGHT:

426.10

CONCENTRATION:

50.0 ± 2.5 µg/ml (Na salt)

SOLVENT(S):

Methanol

47.3 ± 2.4 µg/ml (MPFHxS anion)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

>94% (¹⁸O₂)

LAST TESTED: (mm/dd/yyyy)

10/23/2015

EXPIRY DATE: (mm/dd/yyyy)

10/23/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The response factor for MPFHxS (C₆F₁₃S¹⁸O₂¹⁶O⁻) has been observed to be up to 10% lower than for PFHxS (C₆F₁₃S¹⁶O₃⁻) when both compounds are injected together. This difference may vary between instruments.
- Due to the isotopic purity of the starting material (¹⁸O₂ >94%), MPFHxS contains ~ 0.3% of PFHxS. This value agrees with the theoretical percent relative abundance that is expected based on the stated isotopic purity.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 10/28/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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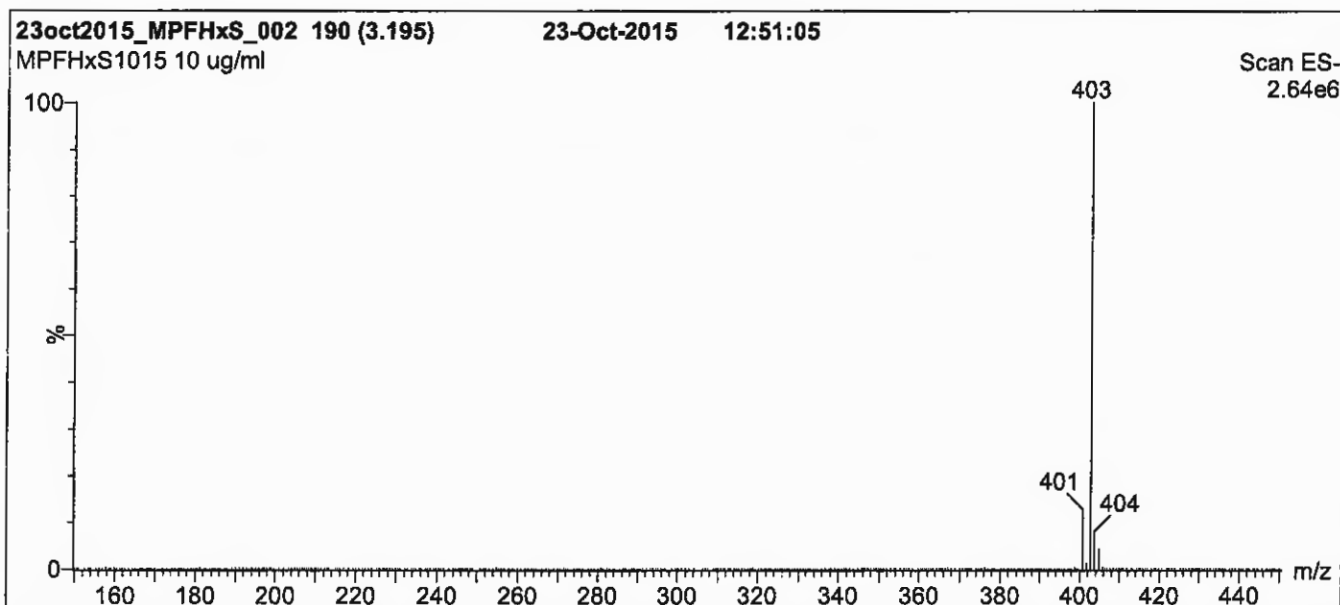
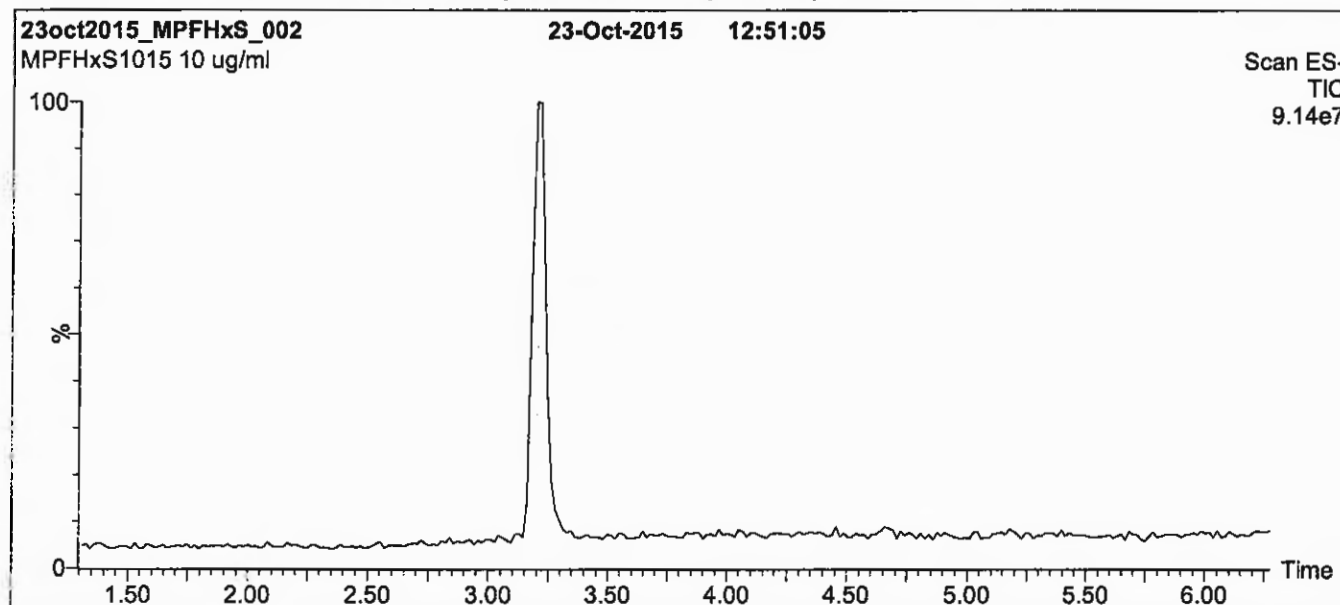
QUALITY MANAGEMENT:

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Figure 1: MPFHxS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

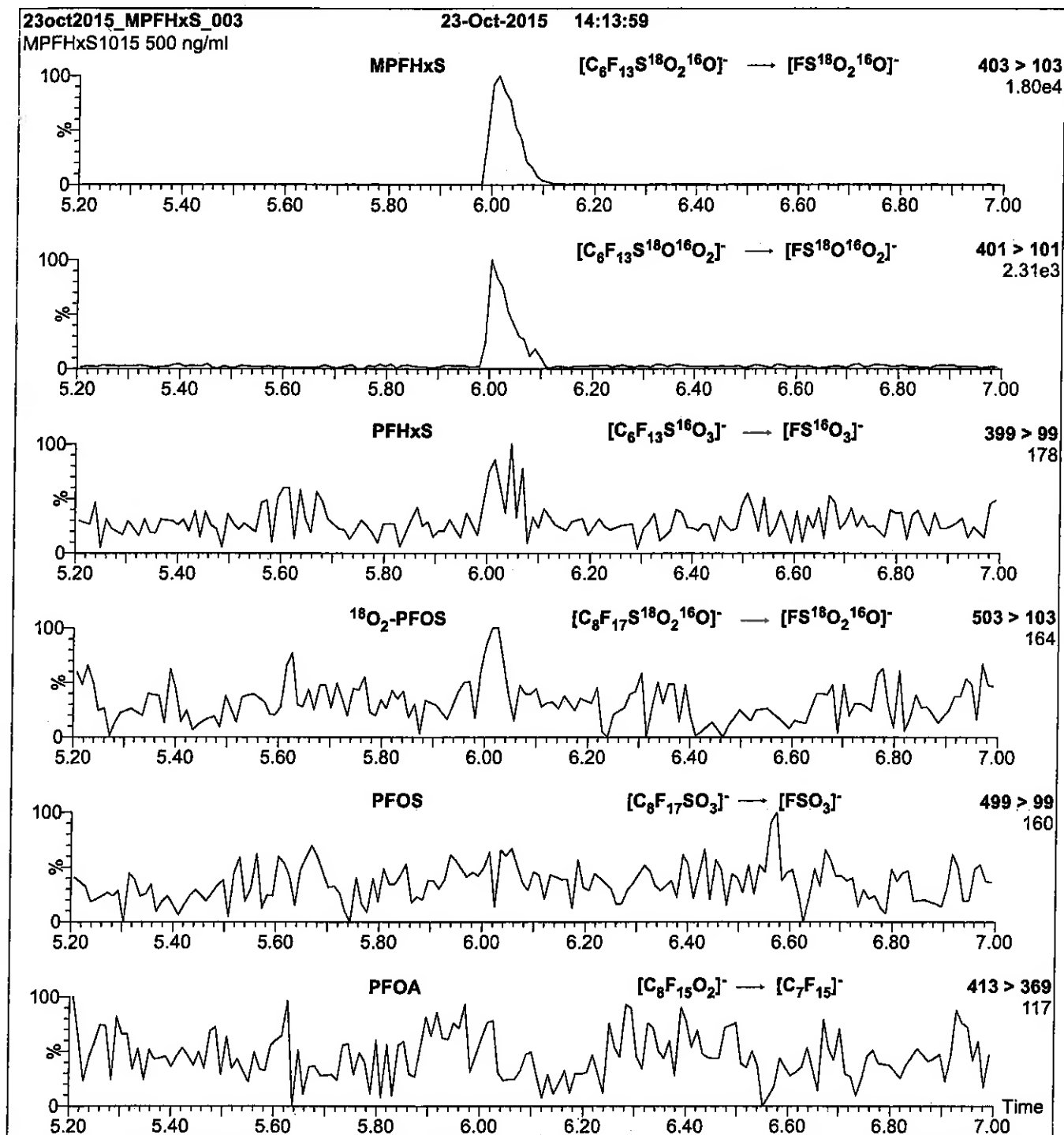
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFHxS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml MPFHxS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 30

Reagent

LCMPFNA_00008

Scanned 10/14/16 R: SBC 9/22/16



739637
ID: LCM-PFNA_00008
Exp: 04/13/19 Prep: SBC
13C5-Perfluoronanoic acid



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

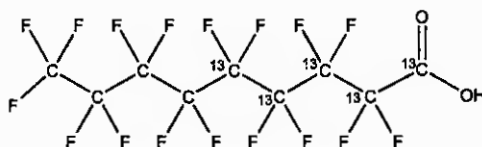
MPFNA

LOT NUMBER:

MPFNA0414

COMPOUND:Perfluoro-n-[1,2,3,4,5-¹³C₅]nonanoic acid**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:** $^{13}\text{C}_5^{12}\text{C}_4\text{HF}_{17}\text{O}_2$ **CONCENTRATION:**

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

469.04

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:≥99%¹³C**LAST TESTED:** (mm/dd/yyyy)

04/13/2014

EXPIRY DATE: (mm/dd/yyyy)

04/13/2019

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/01/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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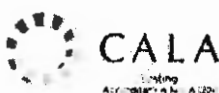
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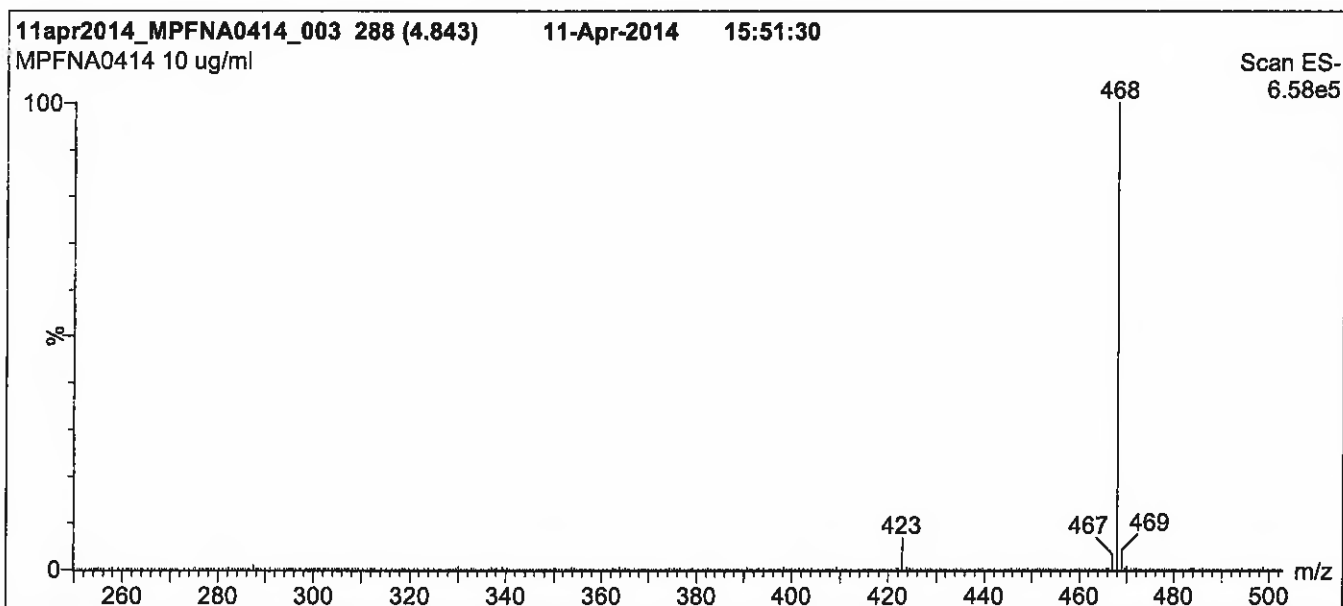
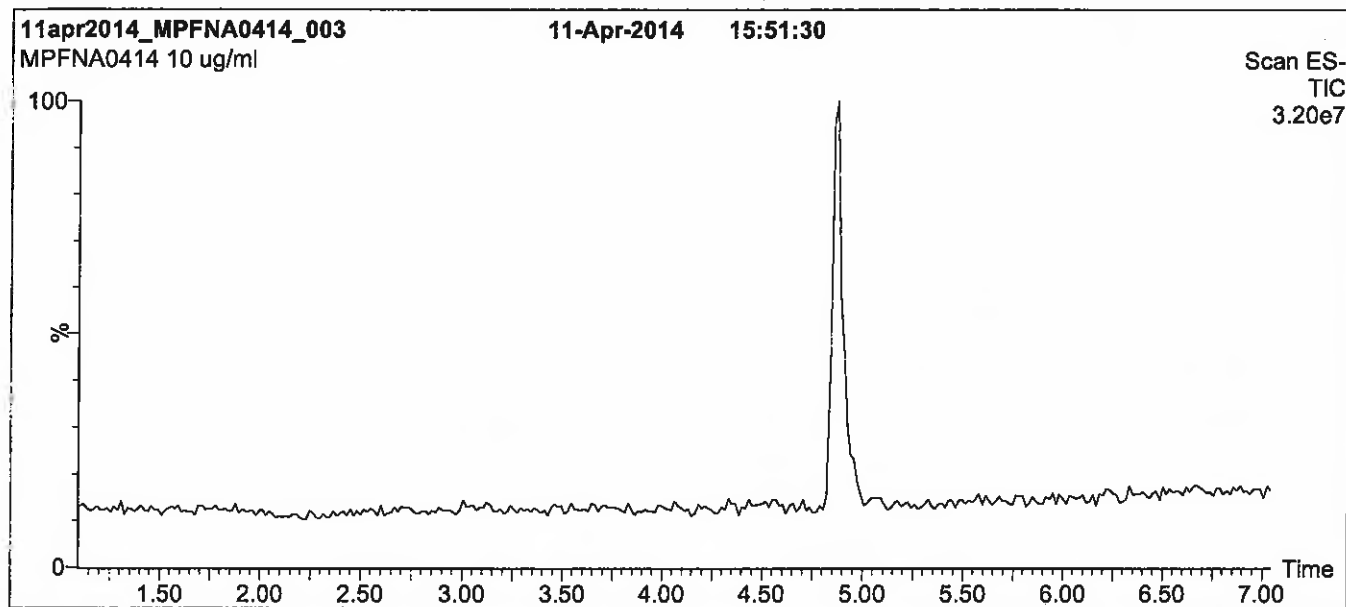
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Figure 1: MPFNA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

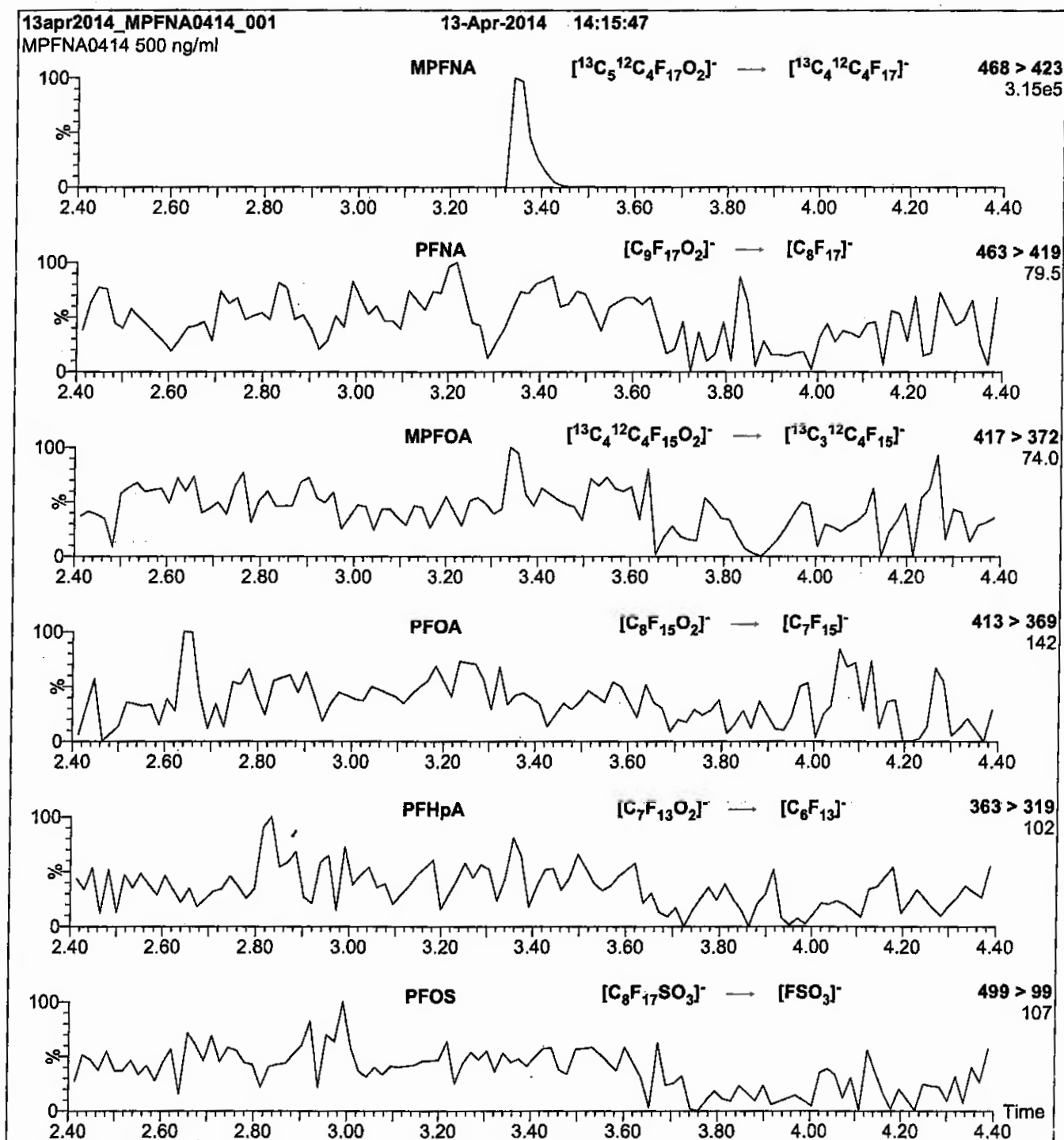
Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFNA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFNA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 11

Reagent

LCMPFOA_00012

R: 88c 9/22/16



738683

ID: LCMFPOA_00012

Exp: 01/22/21 Prod: SBC

¹³C4-Perfluorooctanoic ac



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

MPFOA

LOT NUMBER:

MPFOA0116

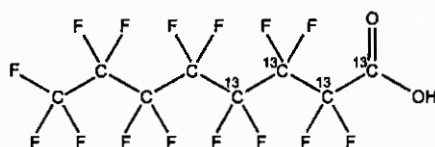
COMPOUND:

Perfluoro-n-[1,2,3,4-¹³C₄]octanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₄¹²C₄HF₁₀O₂

CONCENTRATION:

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

418.04

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

LAST TESTED: (mm/dd/yyyy)

01/22/2016

(1,2,3,4-¹³C₄)

EXPIRY DATE: (mm/dd/yyyy)

01/22/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of native perfluoro-n-octanoic acid (PFOA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 02/01/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

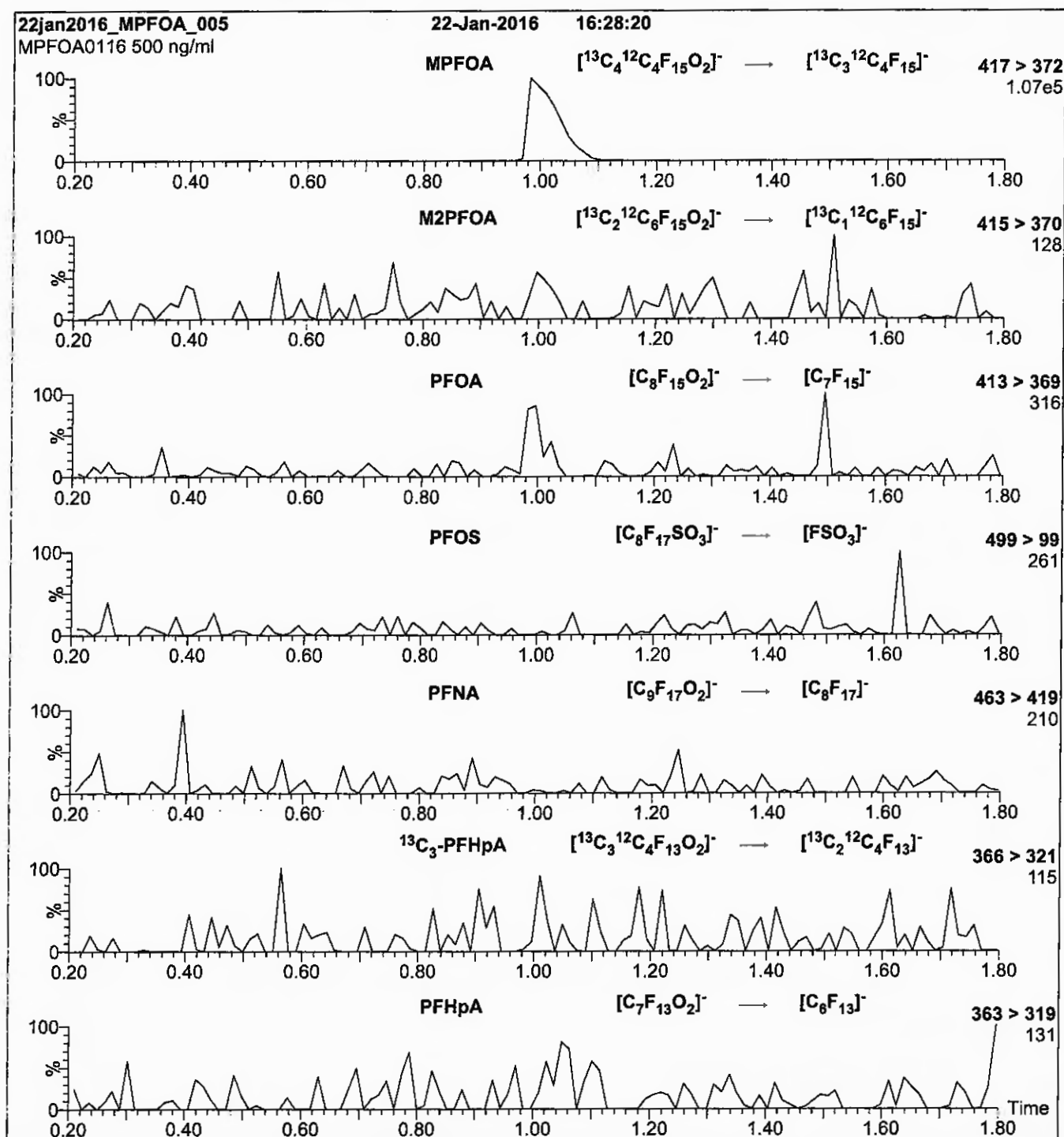
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 2: MPFOA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFOA)

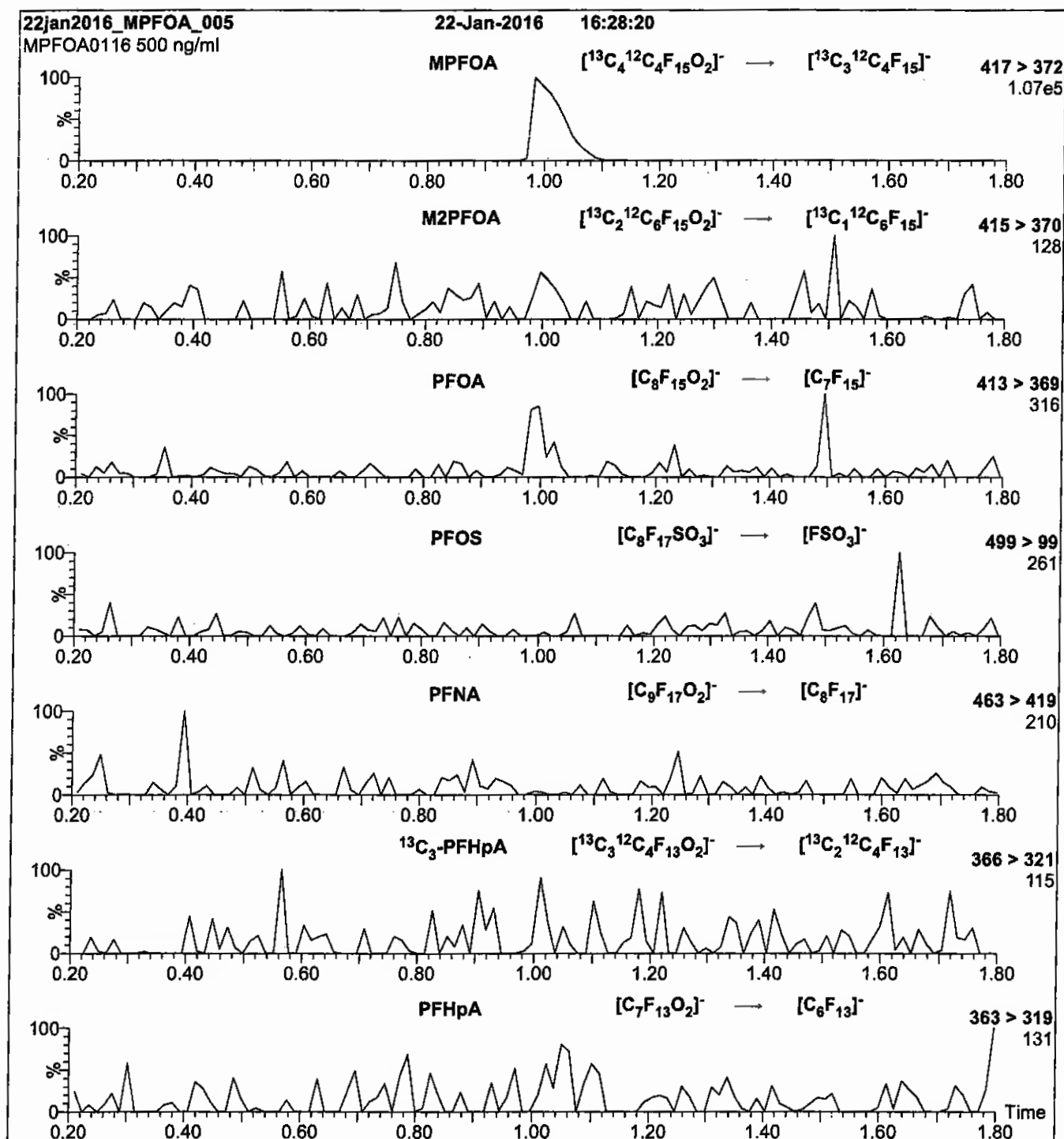
Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = $3.58\text{e-}3$
Collision Energy (eV) = 10

Figure 2: MPFOA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFOA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = $3.58\text{e-}3$
Collision Energy (eV) = 10

Reagent

LCMPFOS_00017

R: 9/9/16 802

728309
ID: LCMFOS_00017
Exp: 08/03/21 Prod: SBC
13C4-Perfluorooctanesulfonate

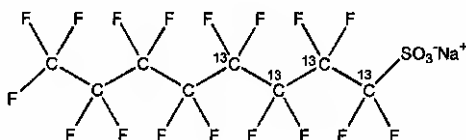


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0816
COMPOUND: Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	¹³ C ₄ ¹² C ₄ F ₁₇ SO ₃ Na	MOLECULAR WEIGHT:	526.08
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion)	SOLVENT(S):	Methanol
CHEMICAL PURITY:	>98%	ISOTOPIC PURITY:	≥99% ¹³ C (1,2,3,4- ¹³ C ₄)
LAST TESTED: (mm/dd/yyyy)	08/03/2016		
EXPIRY DATE: (mm/dd/yyyy)	08/03/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.8% Sodium perfluoro-1-[1,2,3-¹³C₃]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 08/05/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

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where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

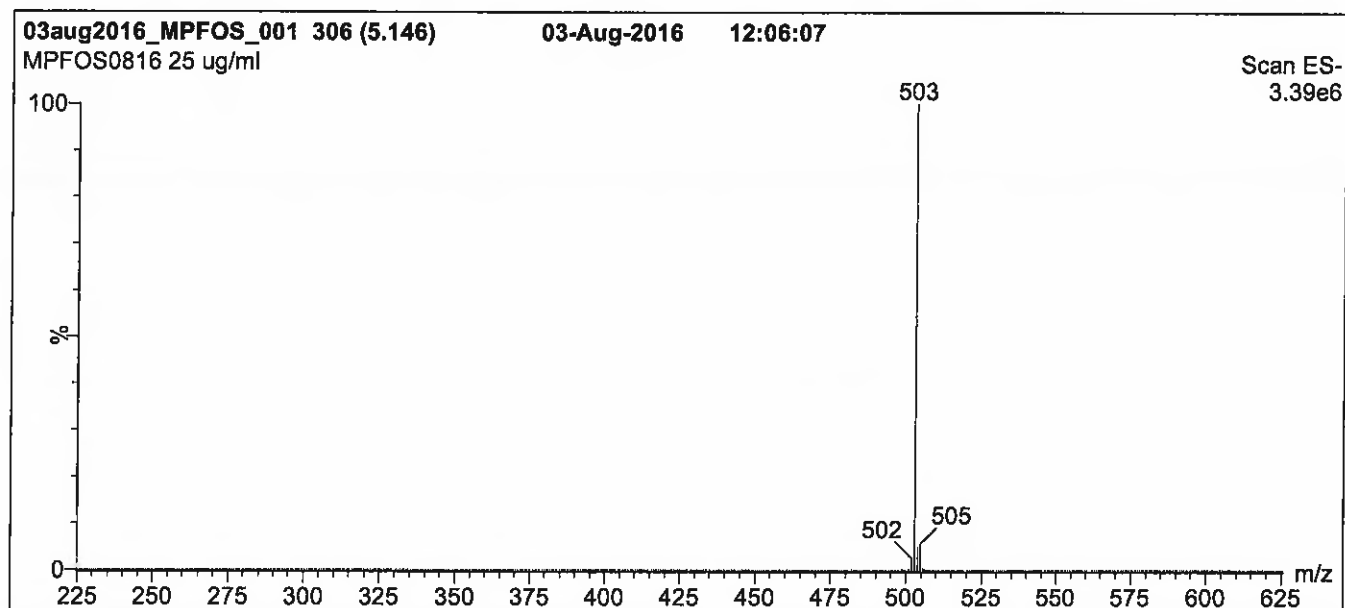
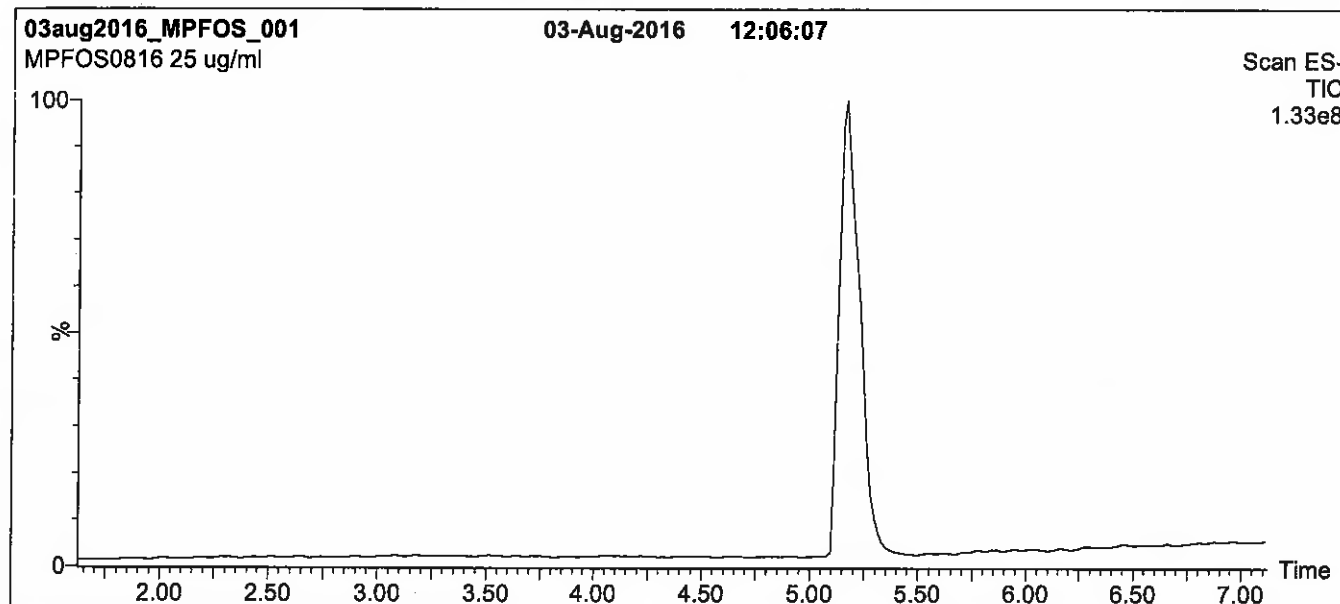
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: MPFOS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

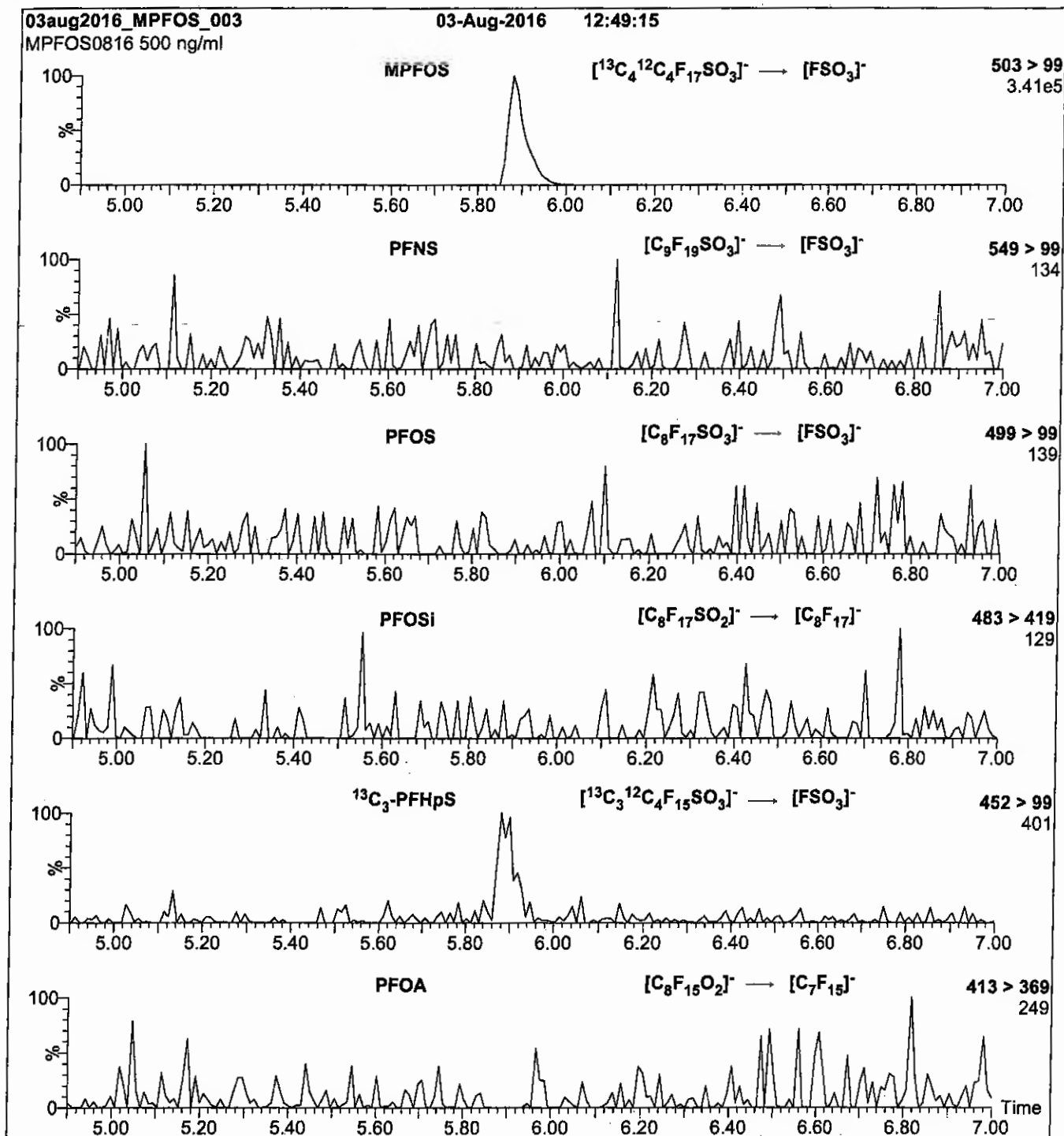
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFOS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFOS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = $3.46\text{e-}3$
Collision Energy (eV) = 40

Reagent

LCMPFUdA_00009

R: SBC 9/22/16



739604

ID: LCMFUDa_00009

Exp: 02/12/21 Prod: SBC

¹³C2-Perfluoroundecanoic



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

Scanned 10/14/16 SK

PRODUCT CODE:

MPFUDa

LOT NUMBER:

MPFUDa0216

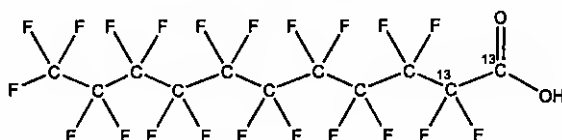
COMPOUND:

Perfluoro-n-[1,2-¹³C₂]undecanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₂¹²C₉HF₂₁O₂

CONCENTRATION:

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

566.08

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

LAST TESTED: (mm/dd/yyyy)

02/12/2016

(1,2-¹³C₂)

EXPIRY DATE: (mm/dd/yyyy)

02/12/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Presence of 1-¹³C₁-PFUDa (~1%; see Figure 2), 2-¹³C₁-PFUDa (~1%), and PFUDa (~0.2%; see Figure 2) are due to the isotopic purity of the ¹³C-precursor.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 02/24/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

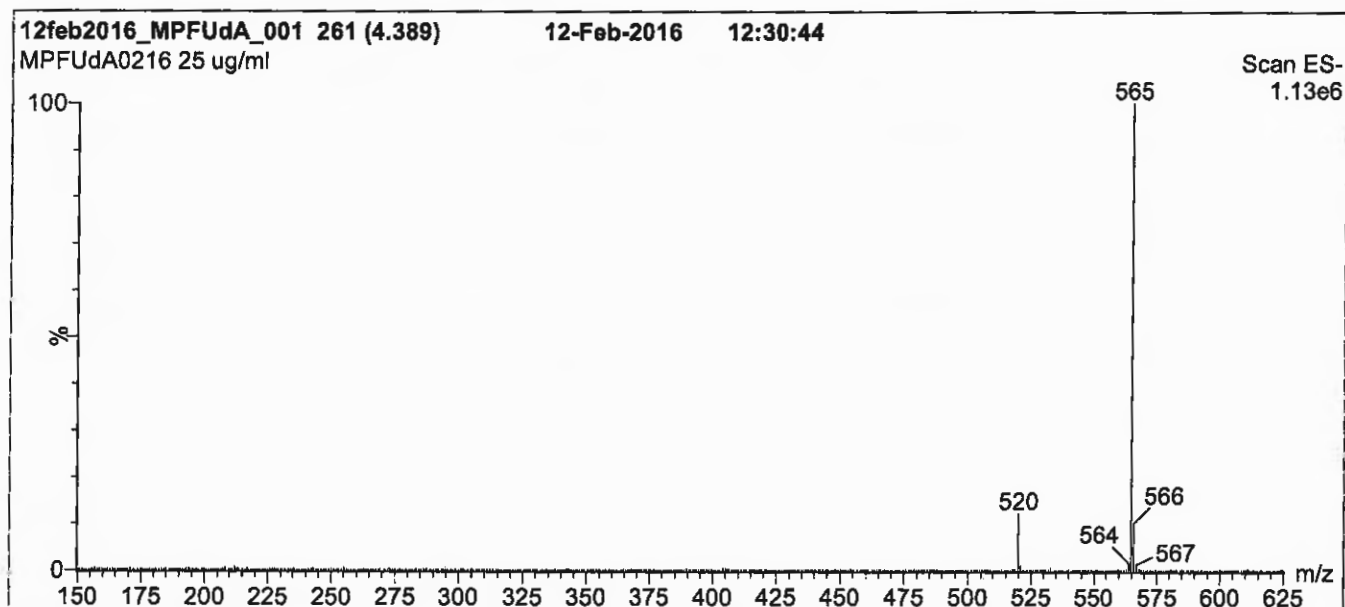
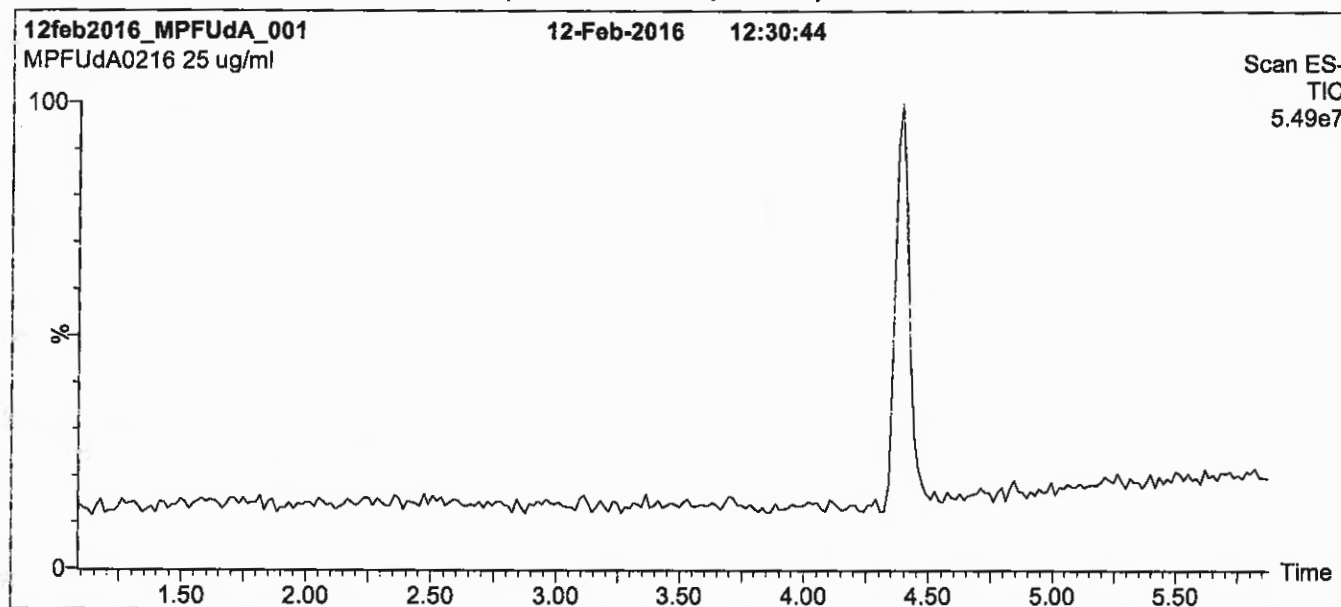
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: MPFUdA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

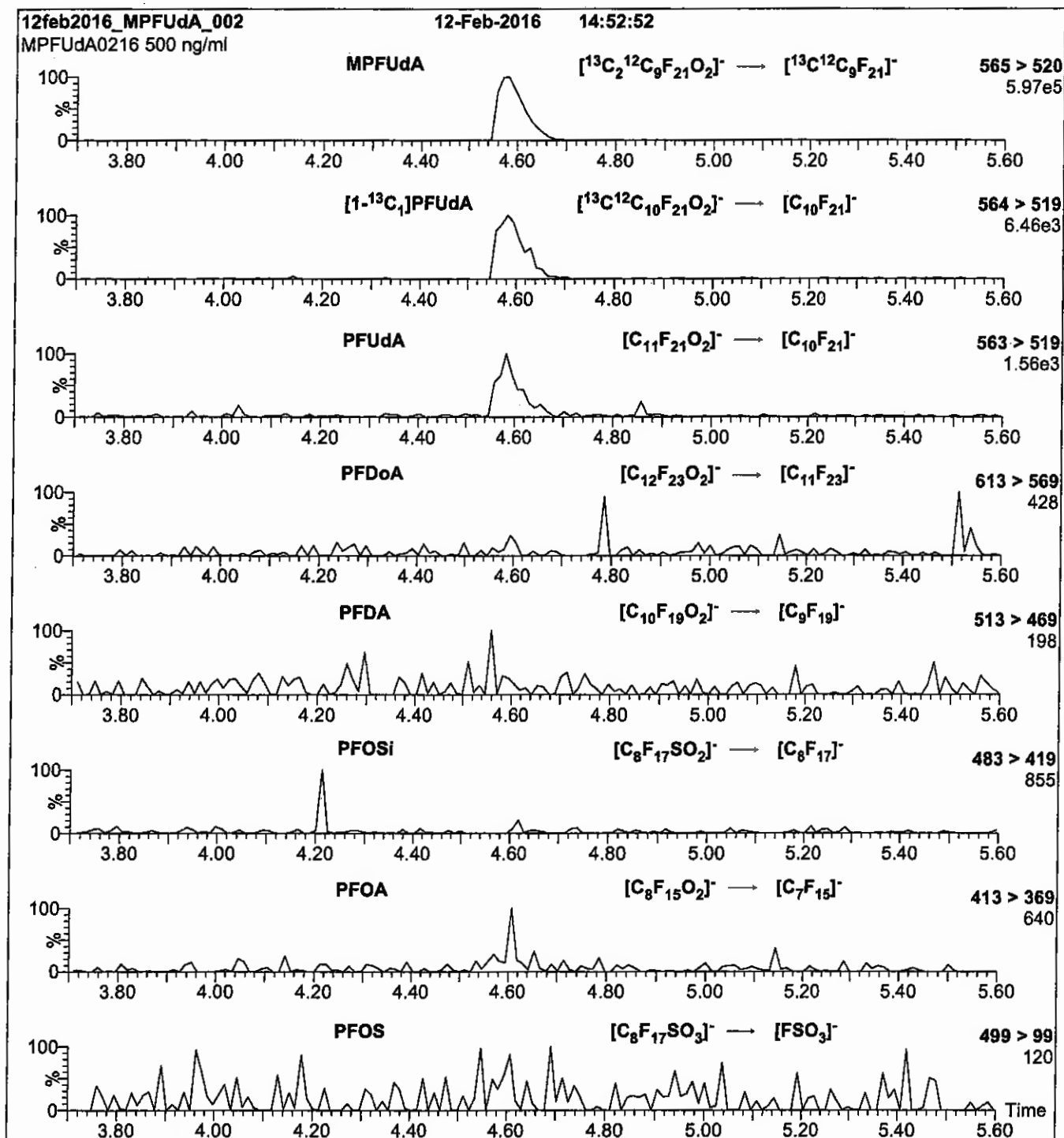
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFUDa; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFUDa)

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 11

Reagent

LCN-EtFOSA-M_00002

P: 7/16/15 SW



WELLINGTON LABORATORIES

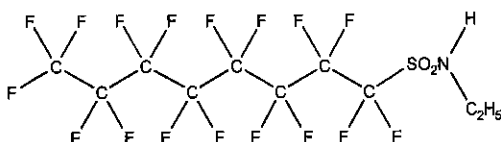
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSA-M
COMPOUND: N-ethylperfluoro-1-octanesulfonamide

LOT NUMBER: NEtFOSA0714M

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA: $C_{10}H_6F_{17}NO_2S$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/14/2014
EXPIRY DATE: (mm/dd/yyyy) 07/14/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 527.20
SOLVENT(S): Methanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/01/2015
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

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Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

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$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

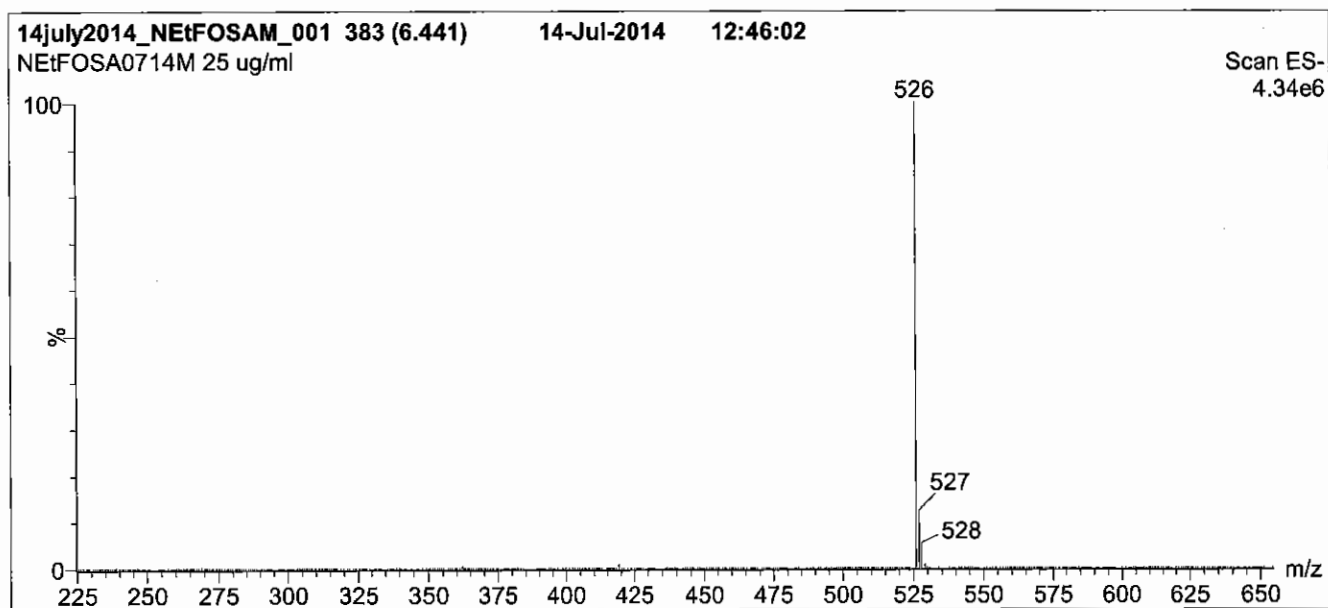
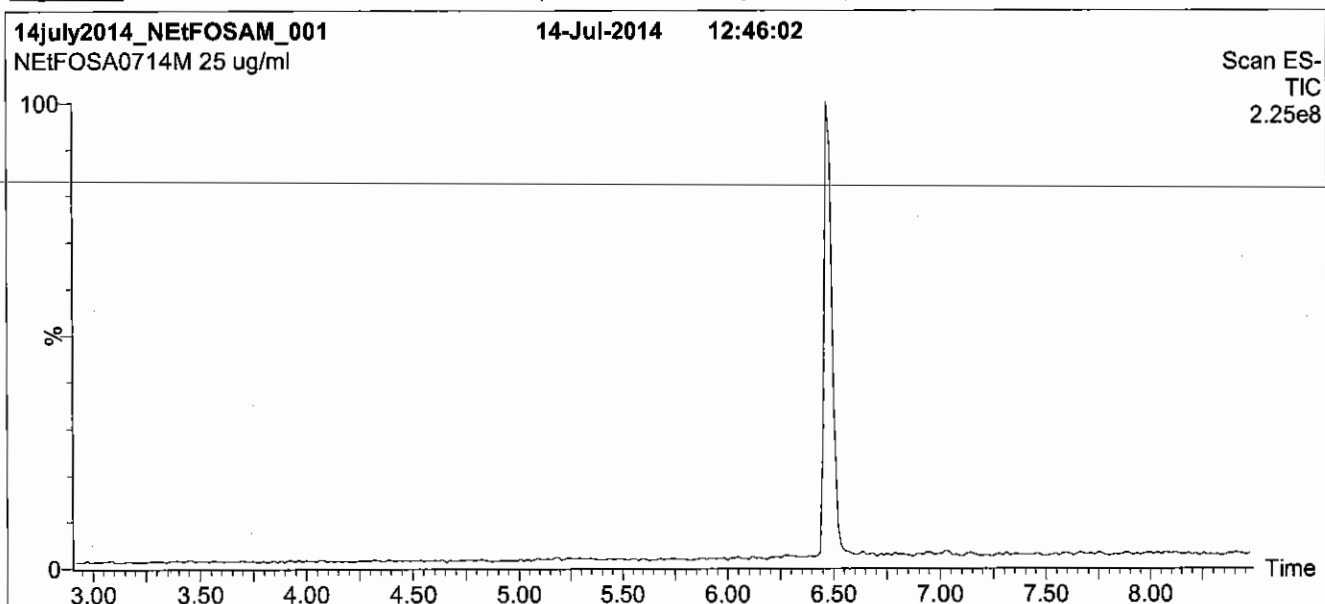
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H₂O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

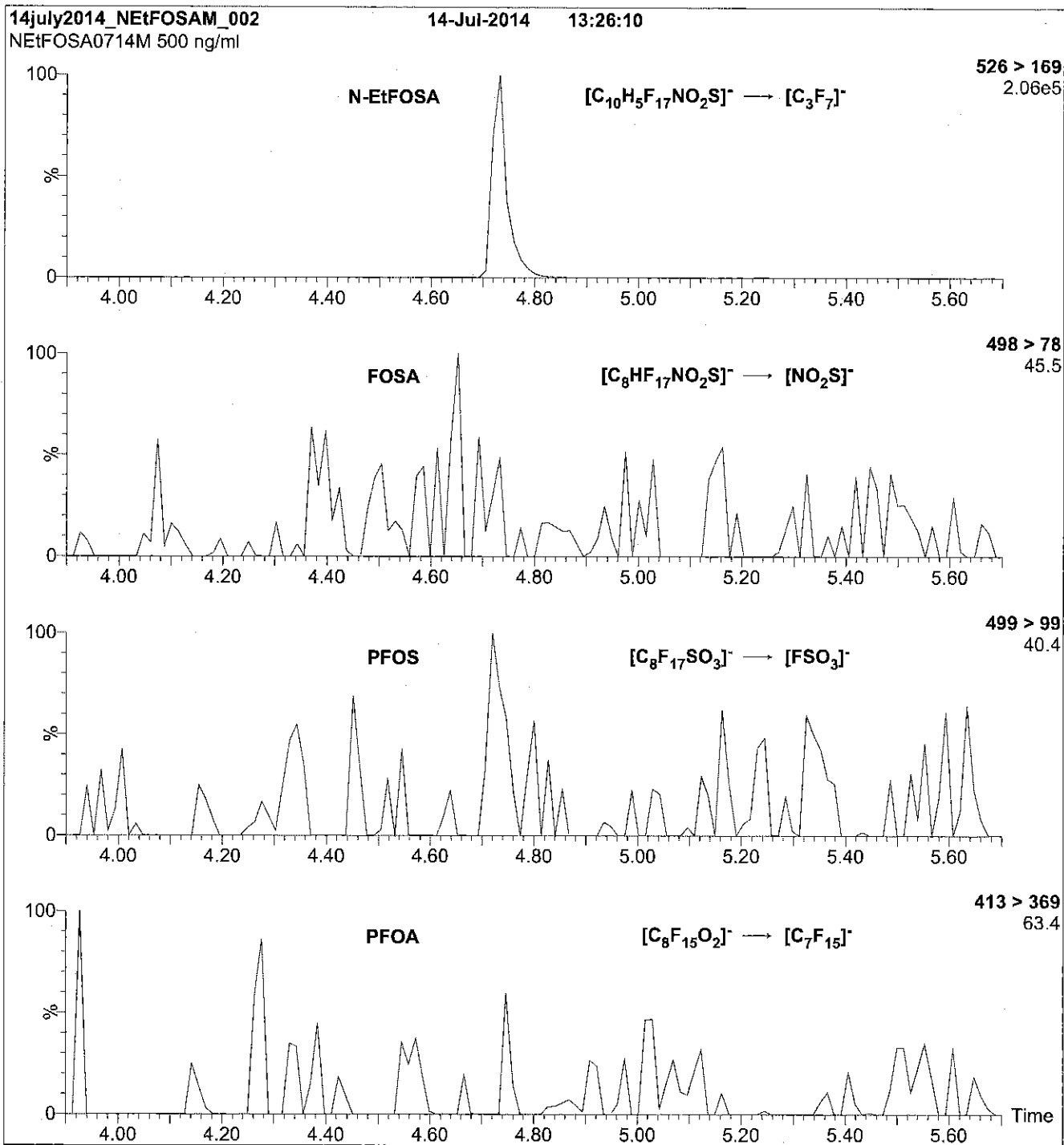
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: N-EtFOSA-M; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-EtFOSA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 30

Reagent

LCN-EtFOSA-M_00003

R: 8/23/16 SBC



715563
ID: LCN-EtFOSA-M_00003
Exp: 05/24/21 Prod: SBC
N-EtFOSA-M



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-EtFOSA-M

LOT NUMBER:

NEtFOSA0516M

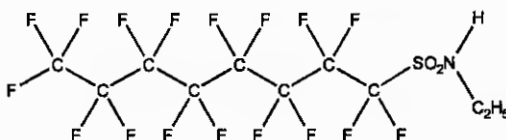
COMPOUND:

N-ethylperfluoro-1-octanesulfonamide

STRUCTURE:

CAS #:

4151-50-2



MOLECULAR FORMULA:

C₁₀H₈F₁₇NO₂S

MOLECULAR WEIGHT:

527.20

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/24/2016

EXPIRY DATE: (mm/dd/yyyy)

05/24/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/27/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

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EXPIRY DATE / PERIOD OF VALIDITY:

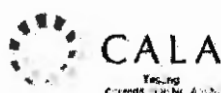
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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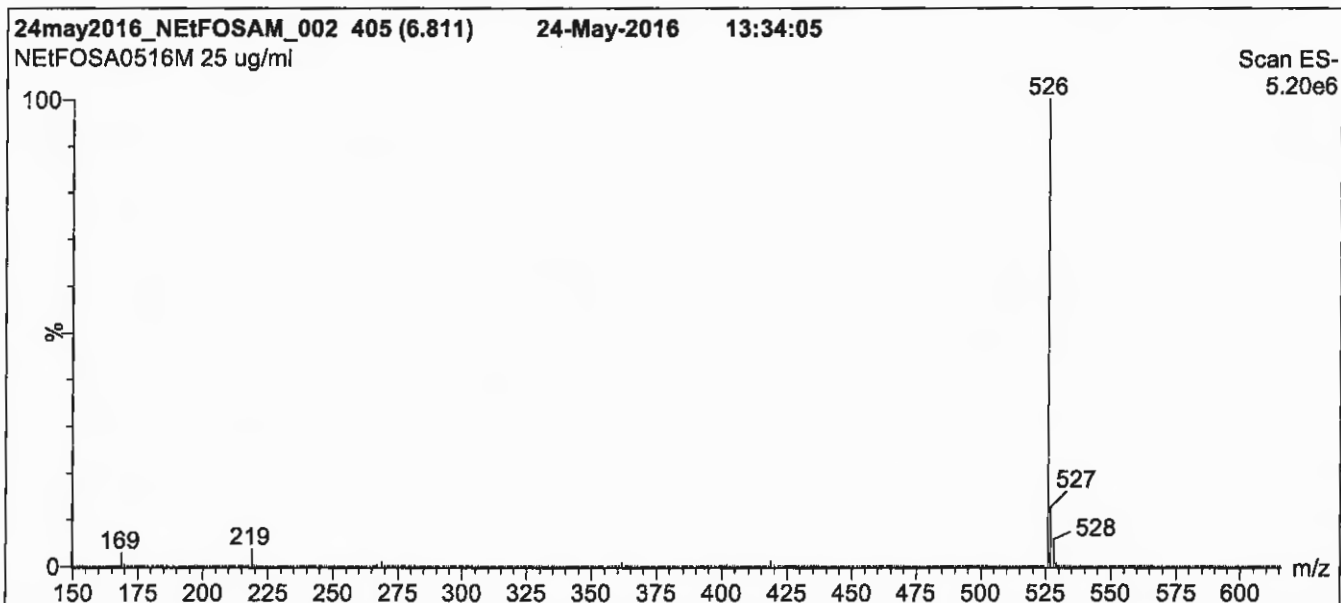
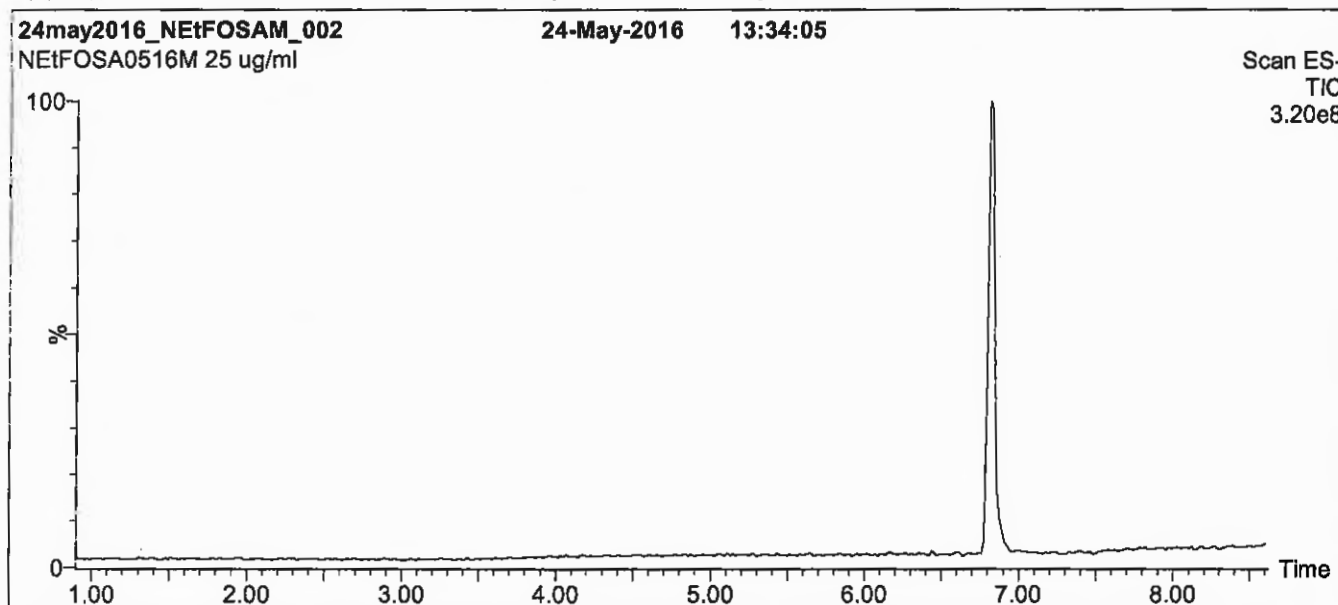
QUALITY MANAGEMENT:

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Figure 1: N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H₂O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

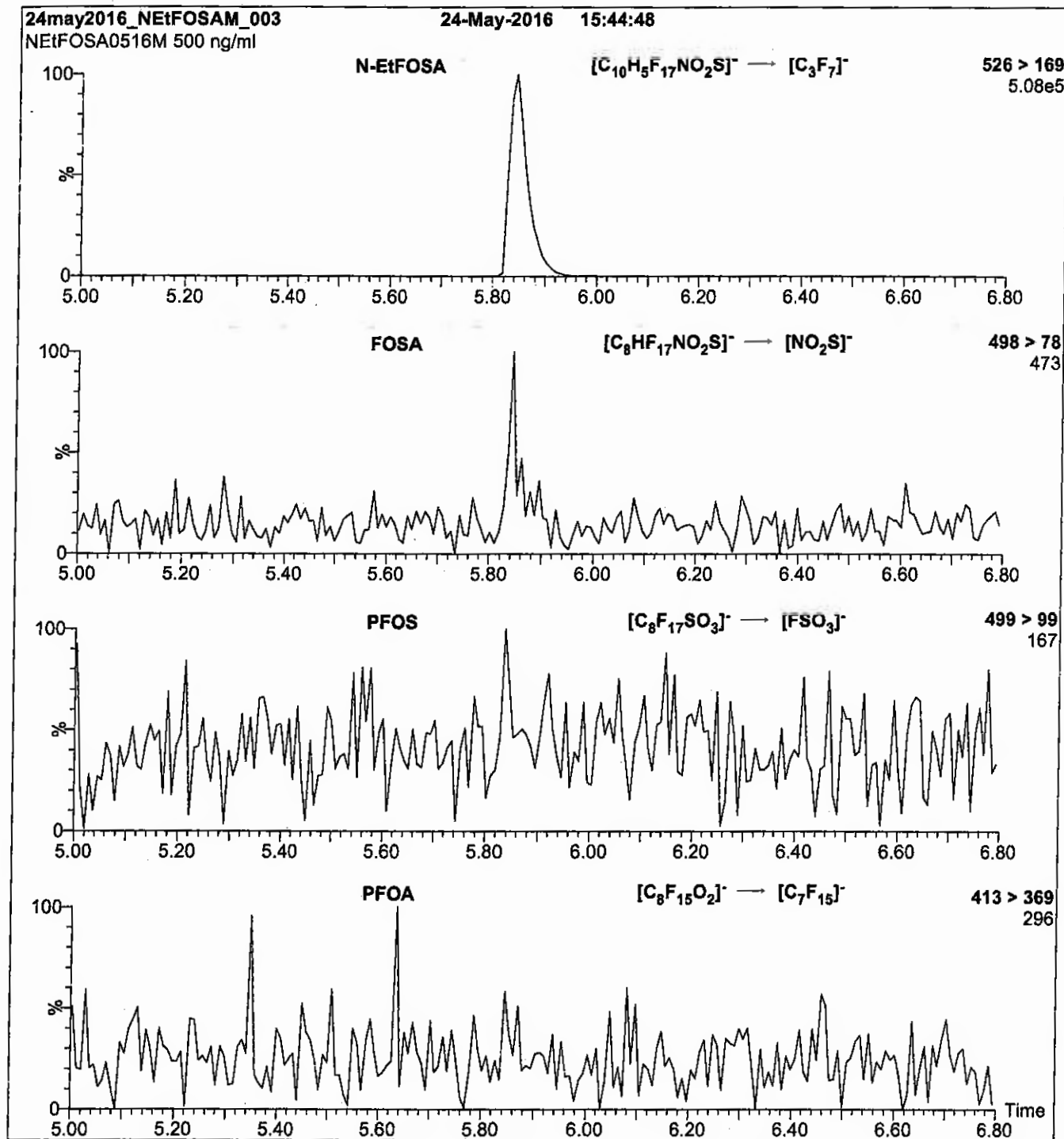
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: N-EtFOSA-M; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop Injection
10 μ l (500 ng/ml N-EtFOSA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCN-EtFOSAA_00001

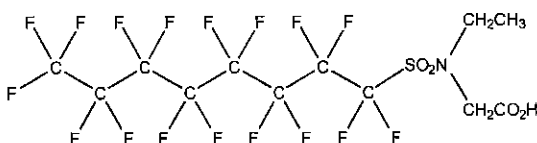


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSAA **LOT NUMBER:** NEtFOSAA0113
COMPOUND: N-ethylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2991-50-6



MOLECULAR FORMULA: $C_{12}H_8F_{17}NO_4S$ **MOLECULAR WEIGHT:** 585.23
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/29/2013
EXPIRY DATE: (mm/dd/yyyy) 01/29/2018
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/06/2015
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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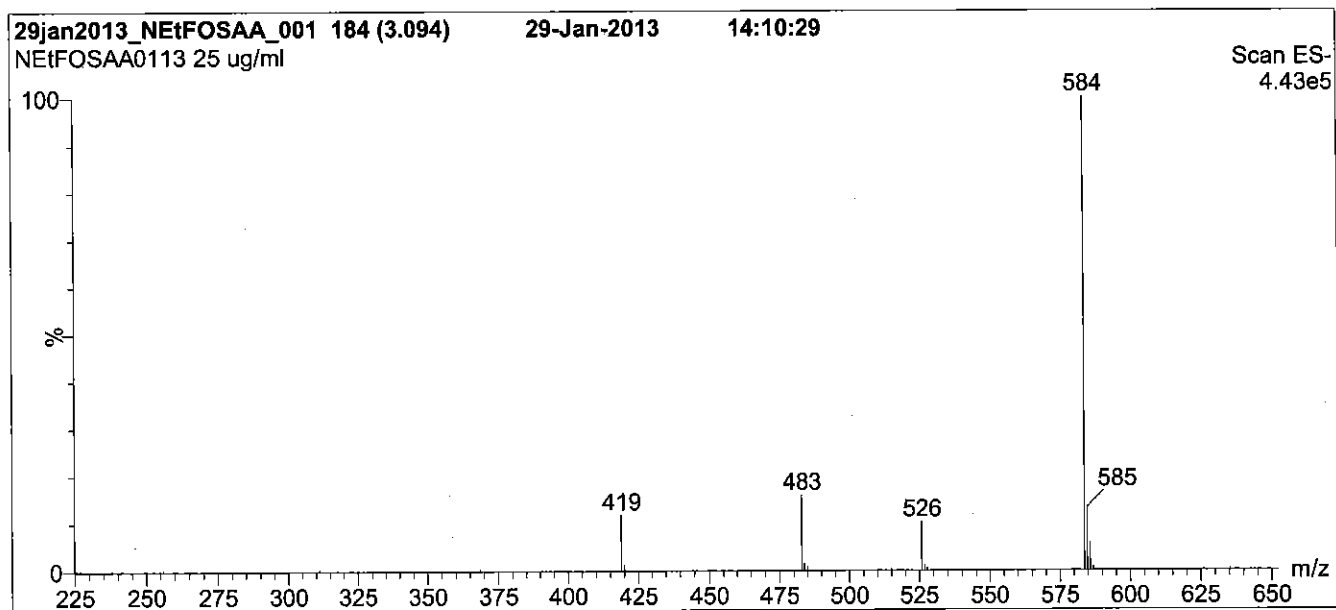
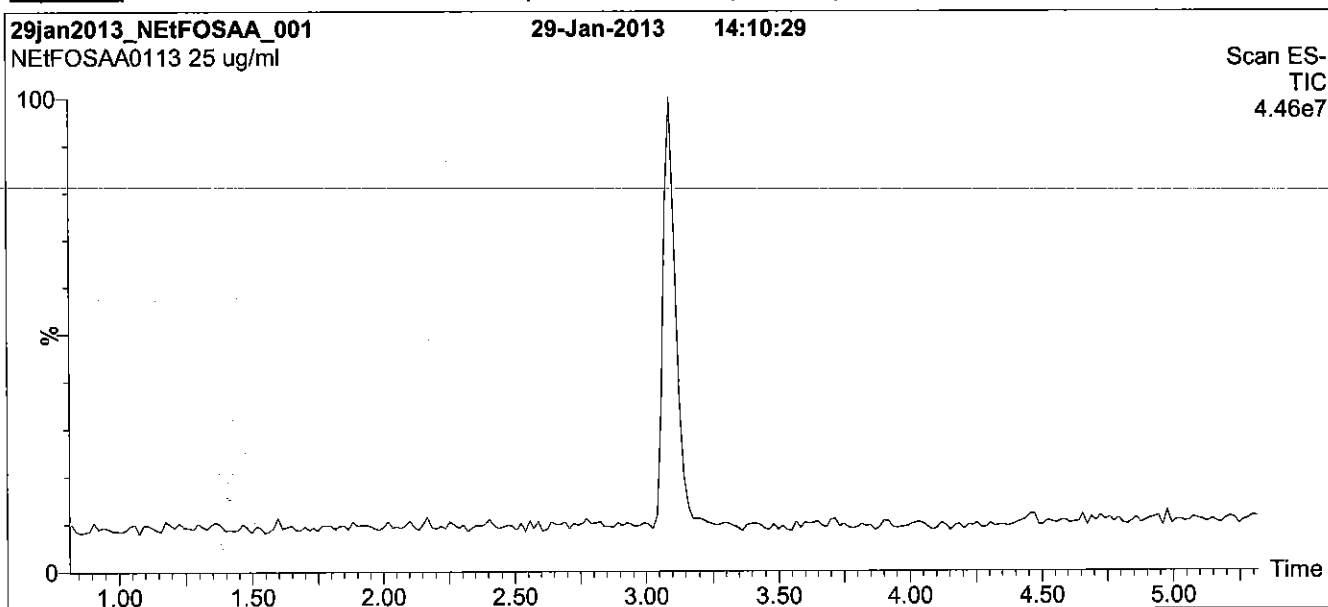
QUALITY MANAGEMENT:

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Figure 1: N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

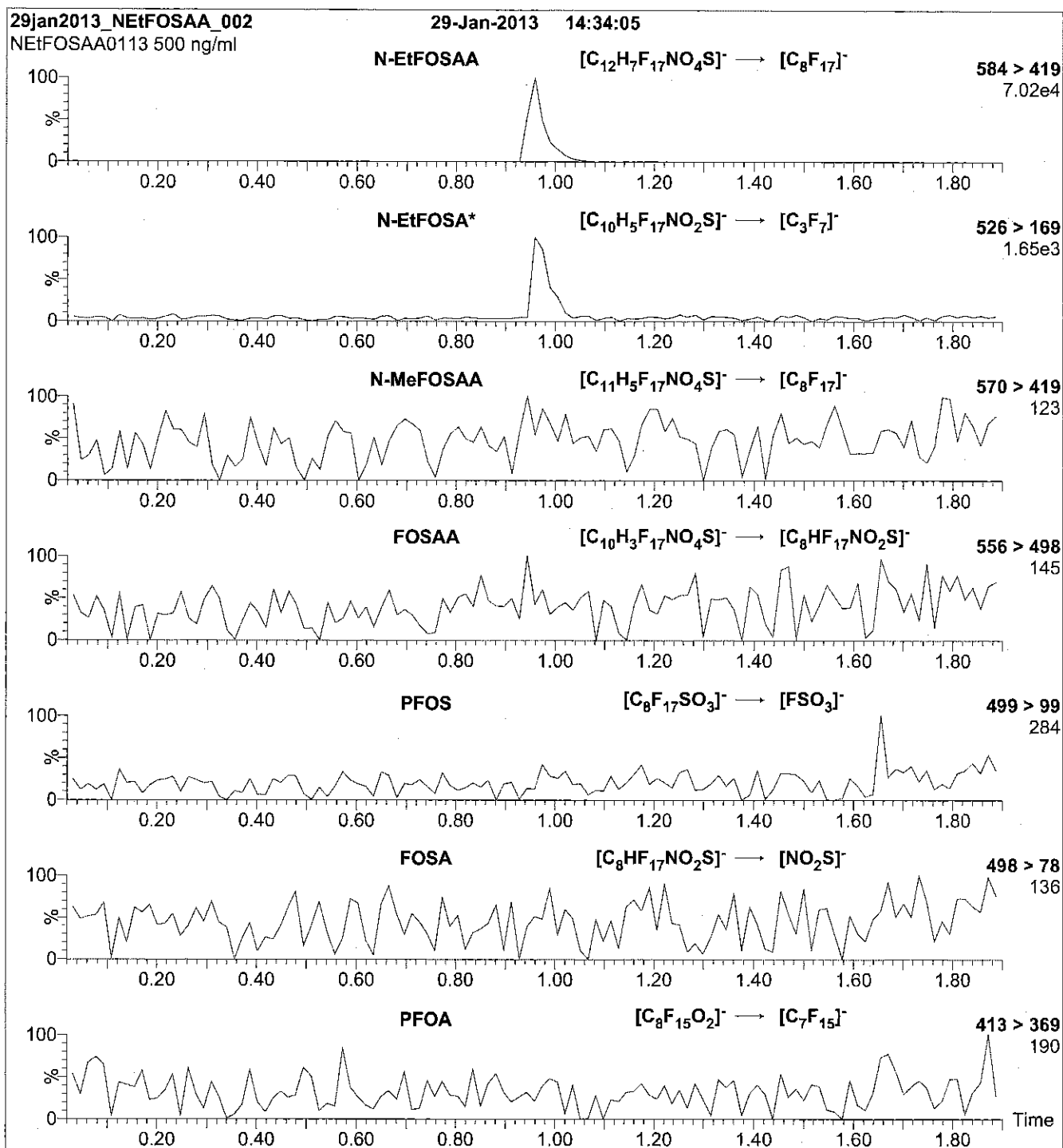
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)



Note: N-EtFOSA is formed by fragmentation of N-EtFOSAA.

Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-EtFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = $3.43e-3$
Collision Energy (eV) = 25

Reagent

LCN-EtFOSAA_00002

R: 8/23/16 SBC



715561
ID: LCN-EtFOSAA_00002
Exp: 01/20/21 Ppd: SBC
N-EtFOSAA

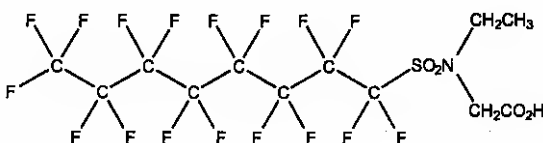


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSAA **LOT NUMBER:** NEtFOSAA0116
COMPOUND: N-ethylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2991-50-6



MOLECULAR FORMULA: $C_{12}H_8F_{17}NO_4S$ **MOLECULAR WEIGHT:** 585.23
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/20/2016
EXPIRY DATE: (mm/dd/yyyy) 01/20/2021
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 01/21/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • Info@well-labs.com

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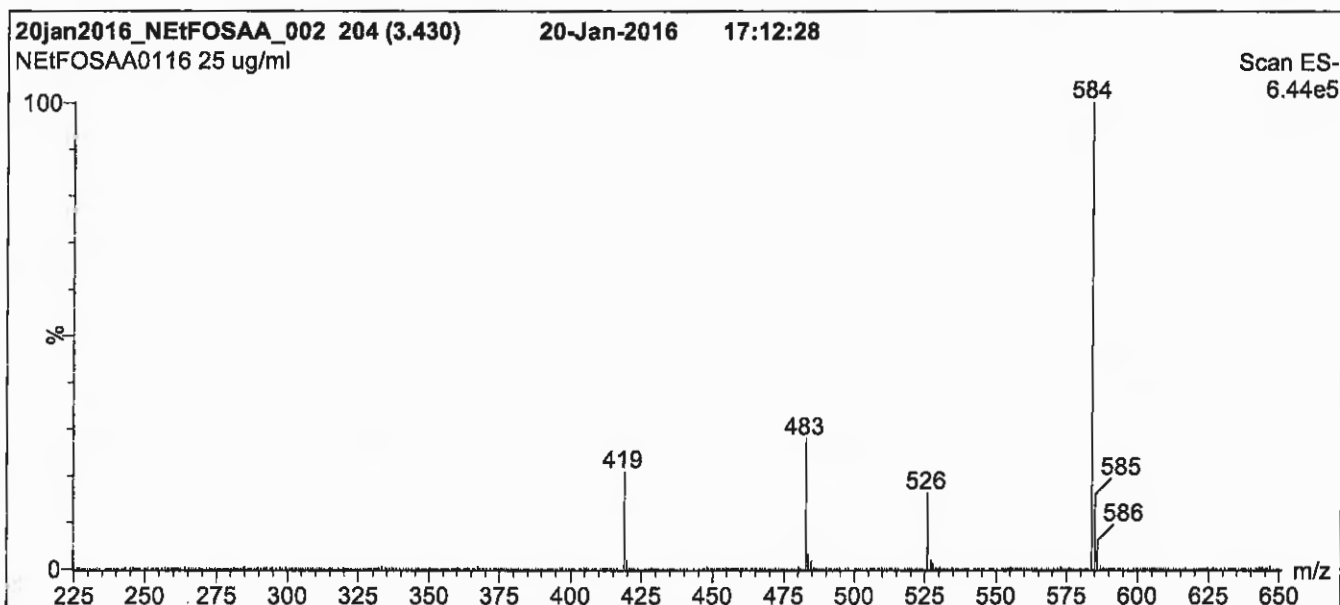
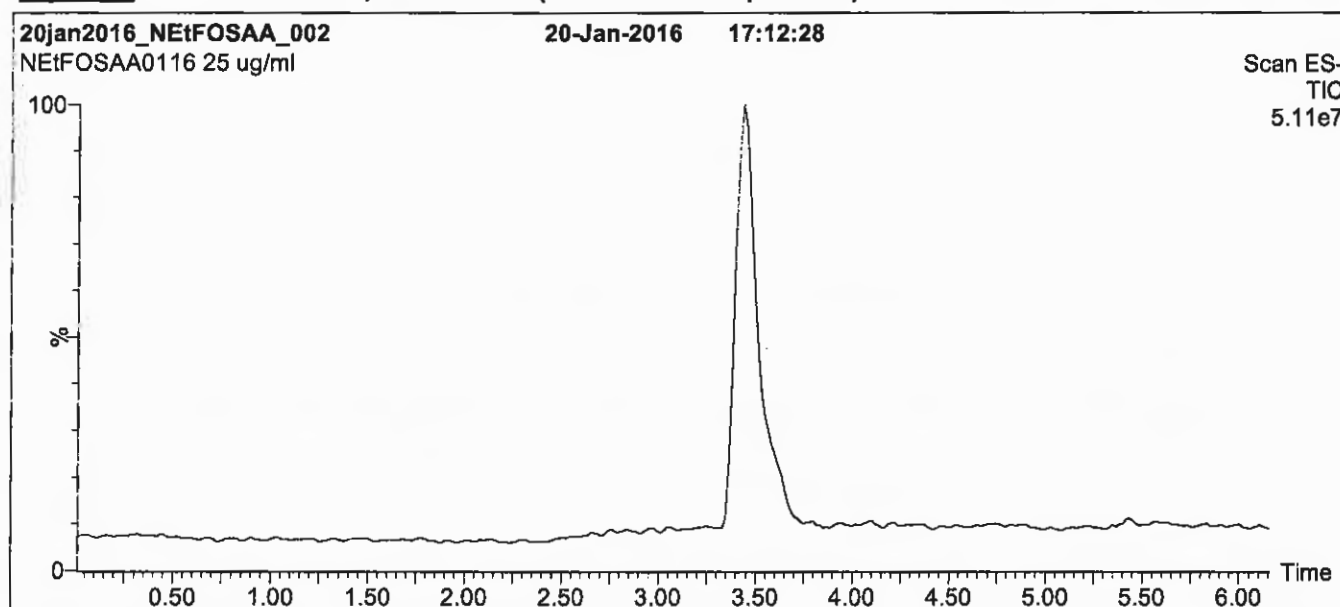
QUALITY MANAGEMENT:

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Figure 1: N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

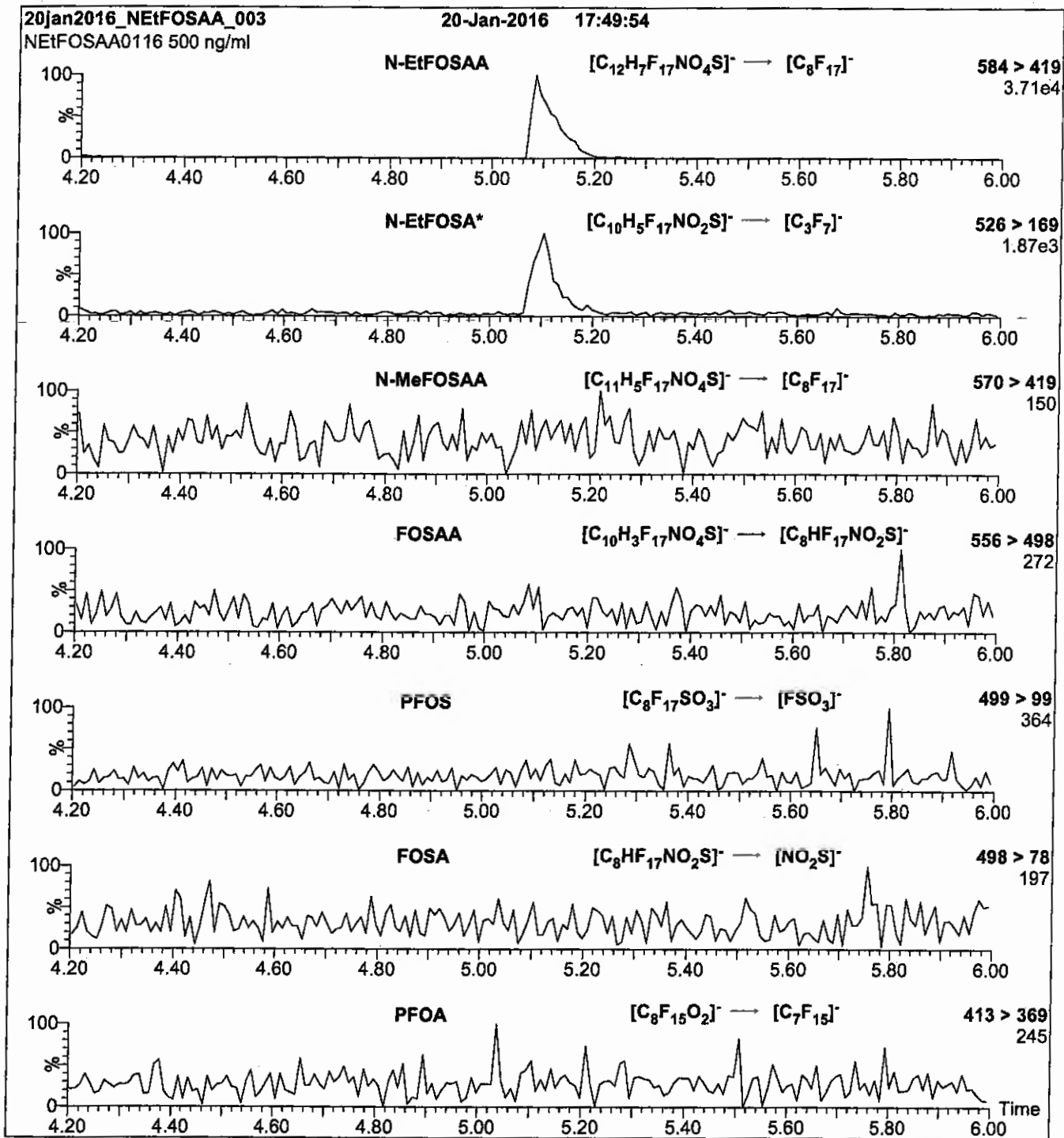
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)



Note: N-EtFOSA is formed by fragmentation of N-EtFOSAA.

Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-EtFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 25

Reagent

LCN-MeFOSA-M_00001

R: 7/16/15 SPW



WELLINGTON LABORATORIES

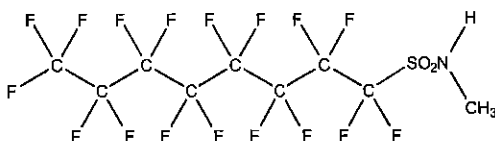
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSA-M
COMPOUND: N-methylperfluoro-1-octanesulfonamide

LOT NUMBER: NMeFOSA0714M

STRUCTURE:

CAS #: 31506-32-8



MOLECULAR FORMULA: $C_9H_4F_{17}NO_2S$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/15/2014
EXPIRY DATE: (mm/dd/yyyy) 07/15/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 513.17
SOLVENT(S): Methanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/01/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

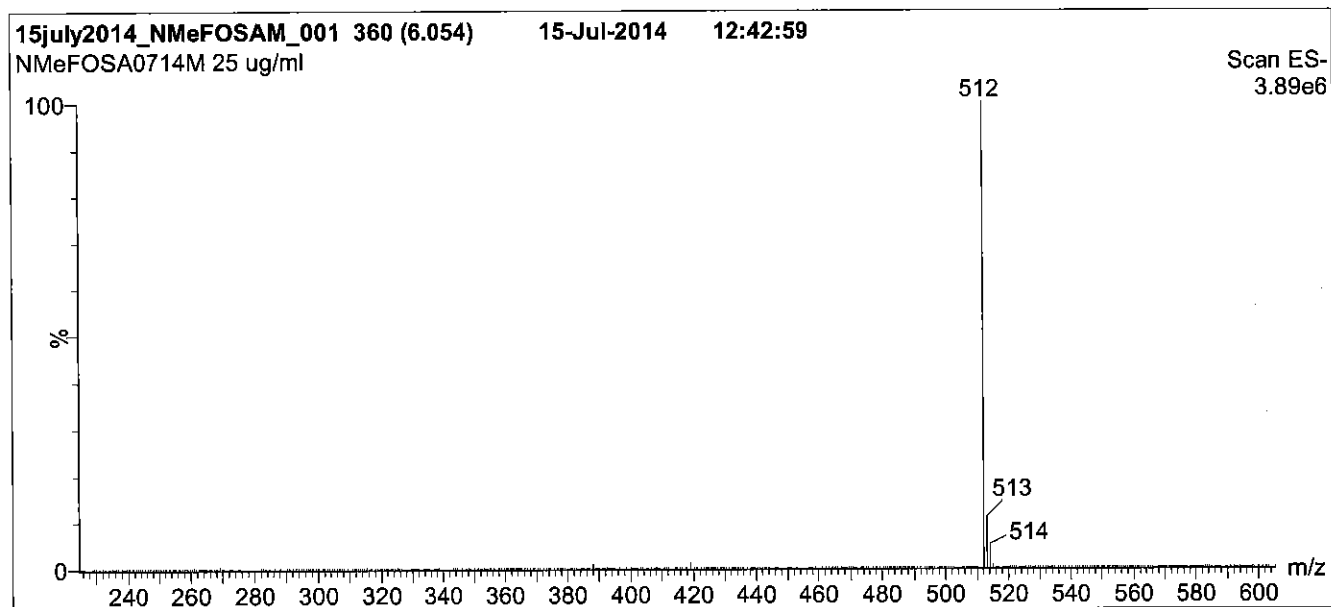
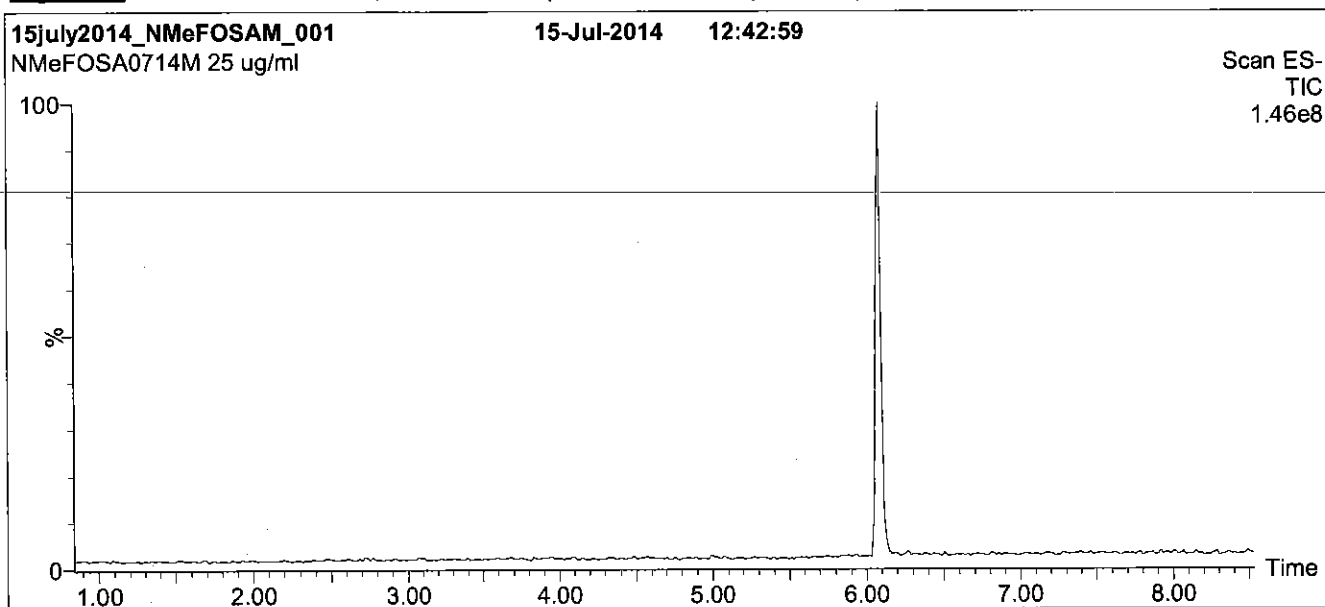
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H₂O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

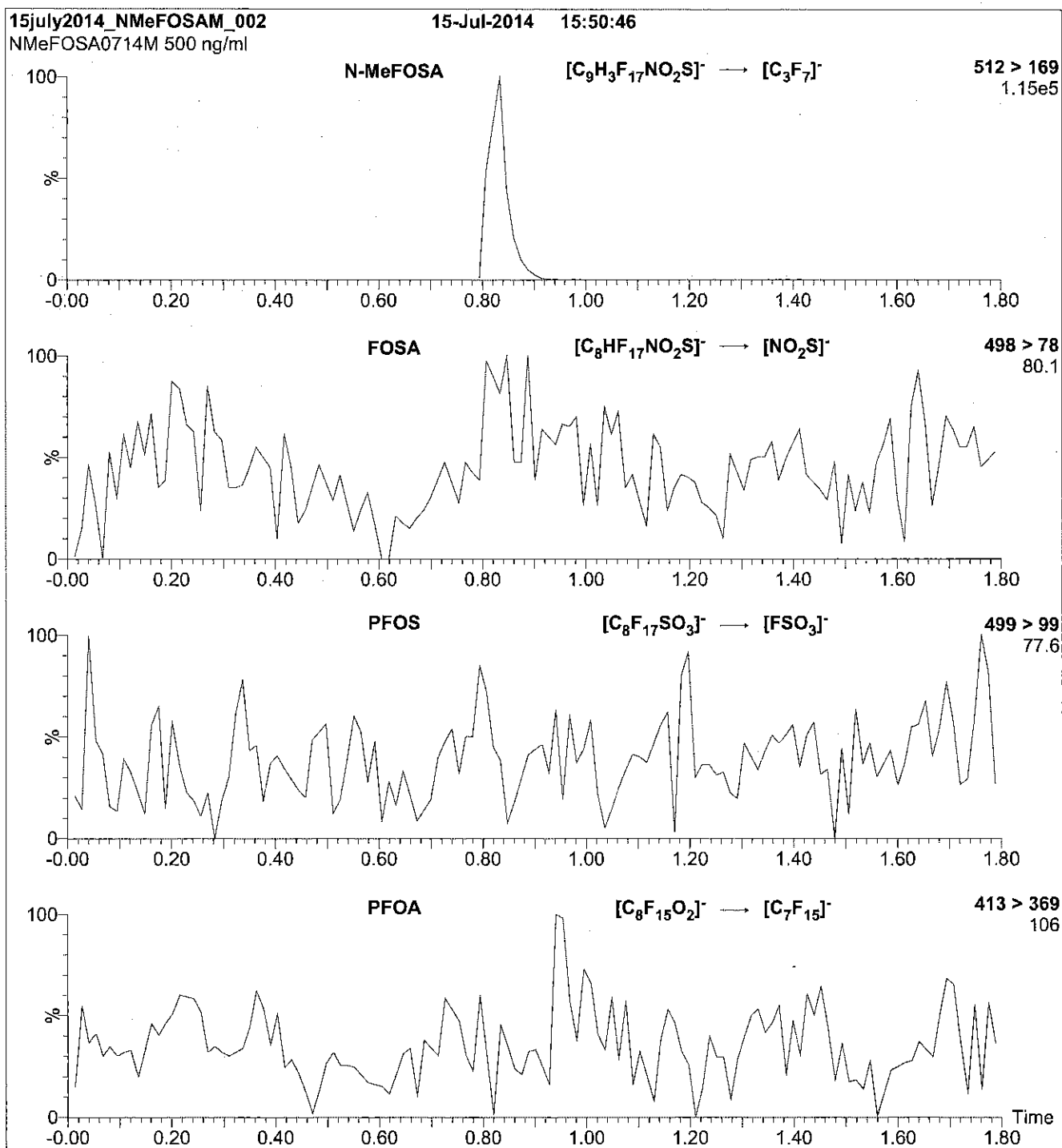
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: N-MeFOSA-M; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-MeFOSA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCN-MeFOSA-M_00002

R: 8/23/16 SBC



715564

ID: LCN-MeFOSA-M_00002

Exp: 05/24/21 Prpt: SBC

N-MeFOSA-M



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-MeFOSA-M

LOT NUMBER:

NMeFOSA0516M

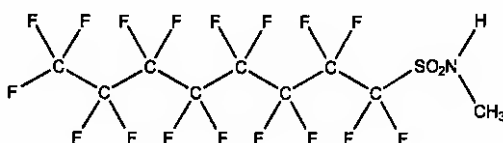
COMPOUND:

N-methylperfluoro-1-octanesulfonamide

STRUCTURE:

CAS #:

31506-32-8



MOLECULAR FORMULA:

C₈H₄F₁₇NO₂S

CONCENTRATION:

50 ± 2.5 µg/ml

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/24/2016

EXPIRY DATE: (mm/dd/yyyy)

05/24/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

MOLECULAR WEIGHT:

513.17

SOLVENT(S):

Methanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/26/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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EXPIRY DATE / PERIOD OF VALIDITY:

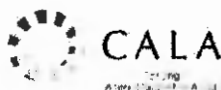
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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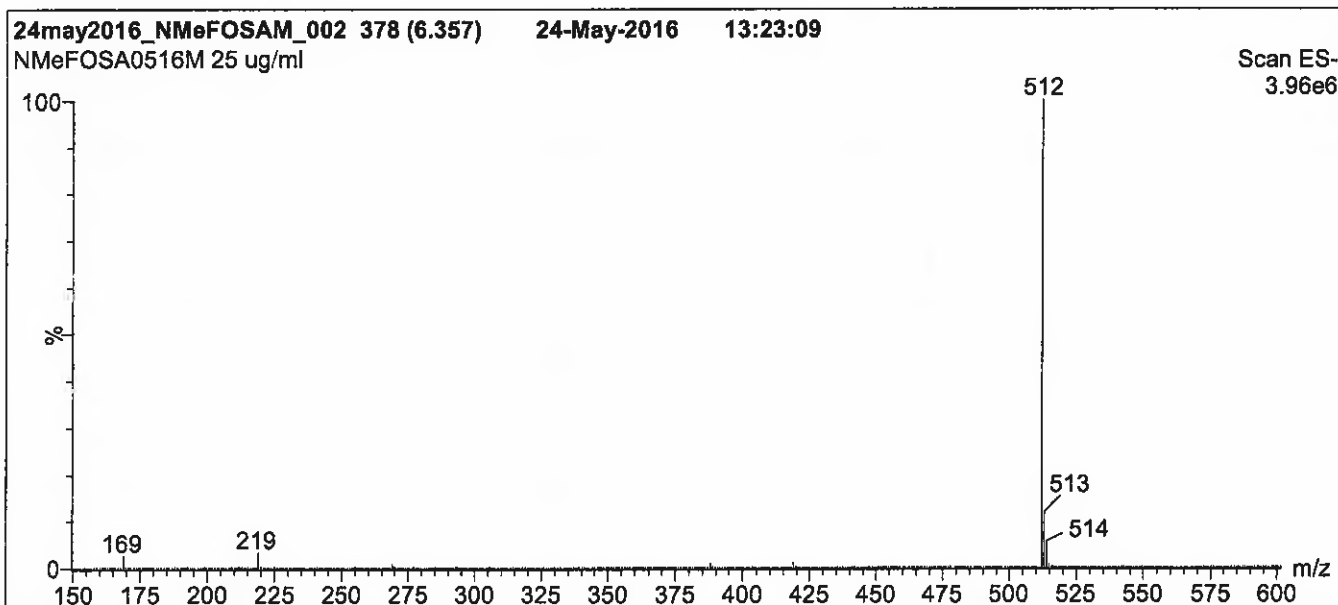
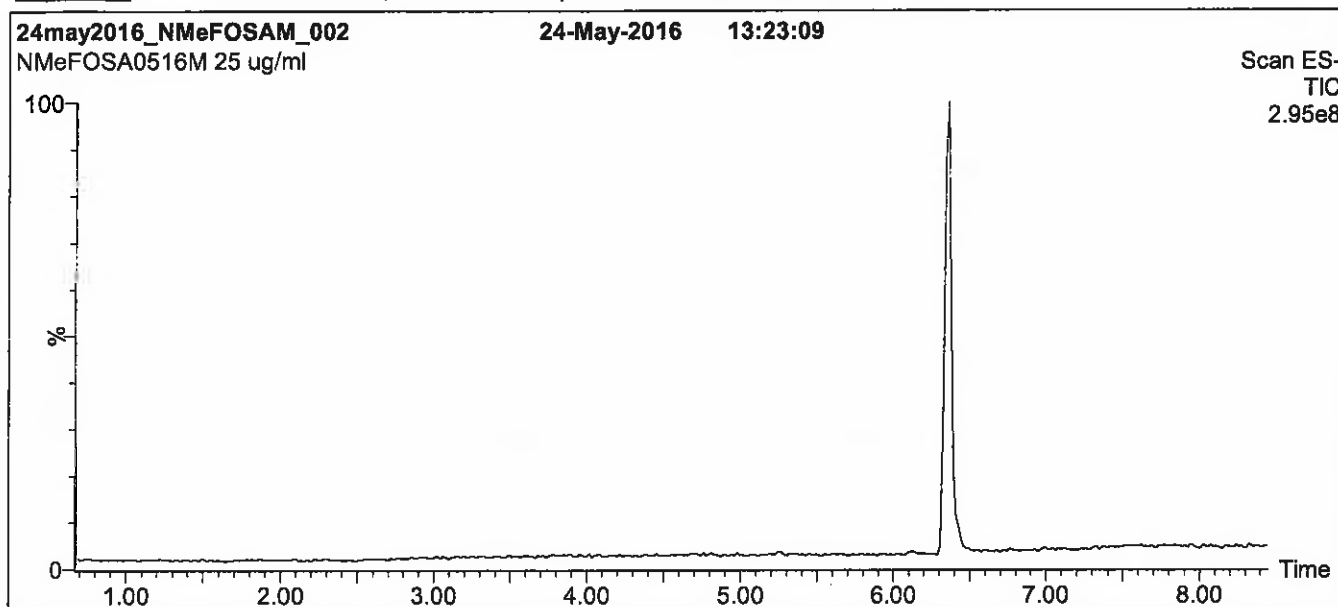
QUALITY MANAGEMENT:

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Figure 1: N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H₂O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

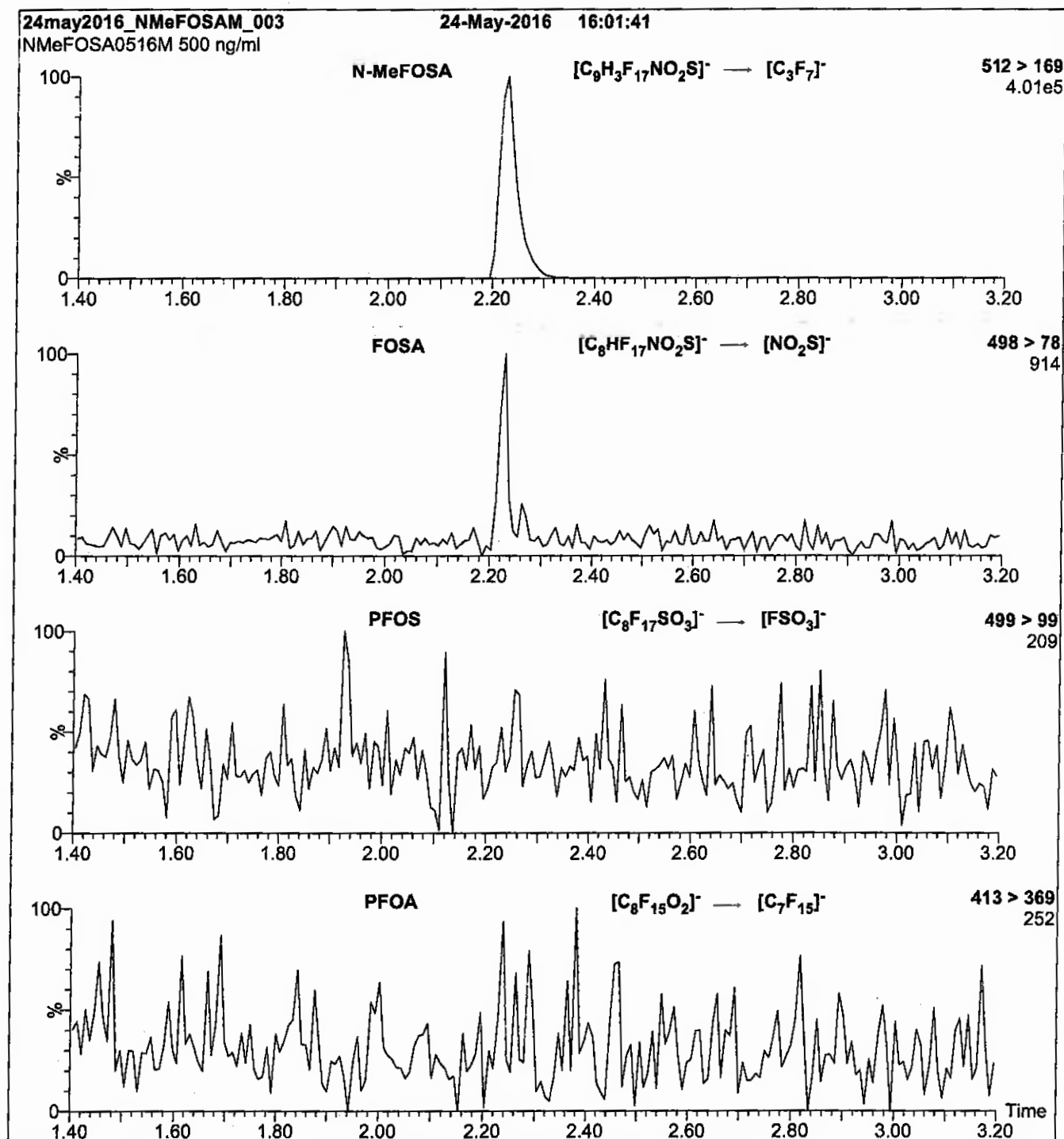
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: N-MeFOSA-M; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-MeFOSA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCN-MeFOSAA_00001

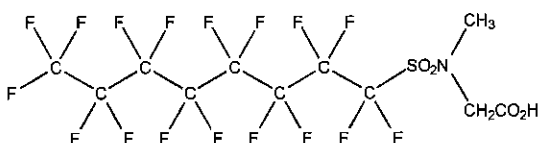


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSAA **LOT NUMBER:** NMeFOSAA1214
COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2355-31-9



MOLECULAR FORMULA: $C_{11}H_6F_{17}NO_4S$ **MOLECULAR WEIGHT:** 571.21
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/09/2014
EXPIRY DATE: (mm/dd/yyyy) 12/09/2019
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 04/06/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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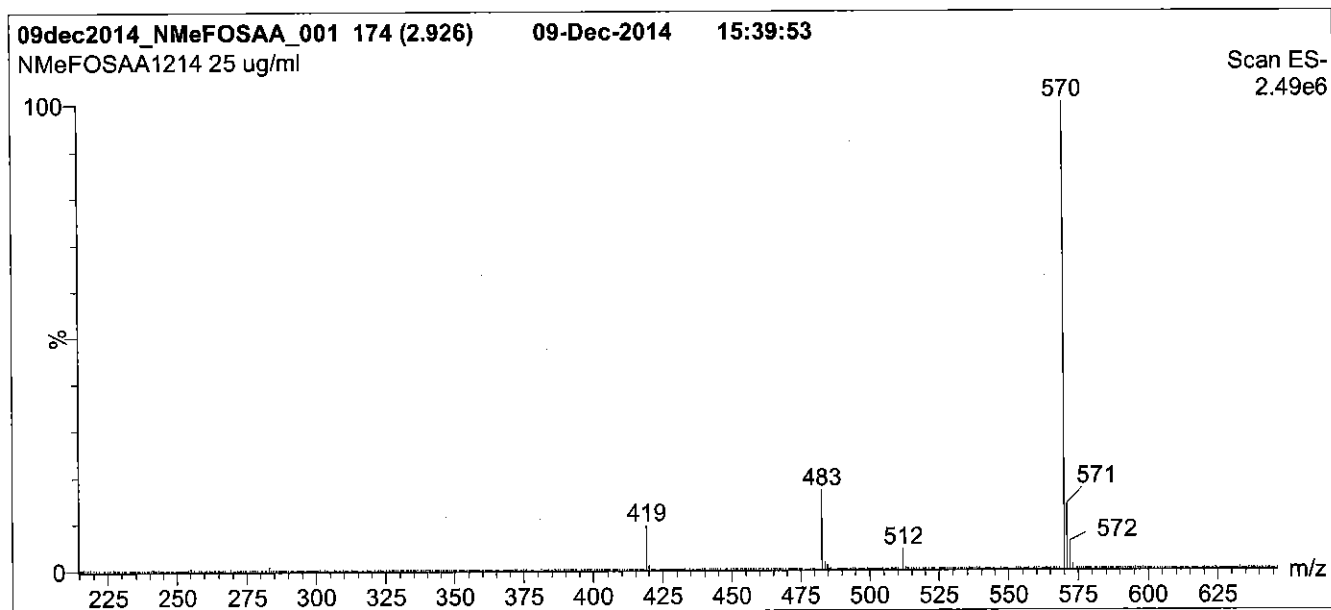
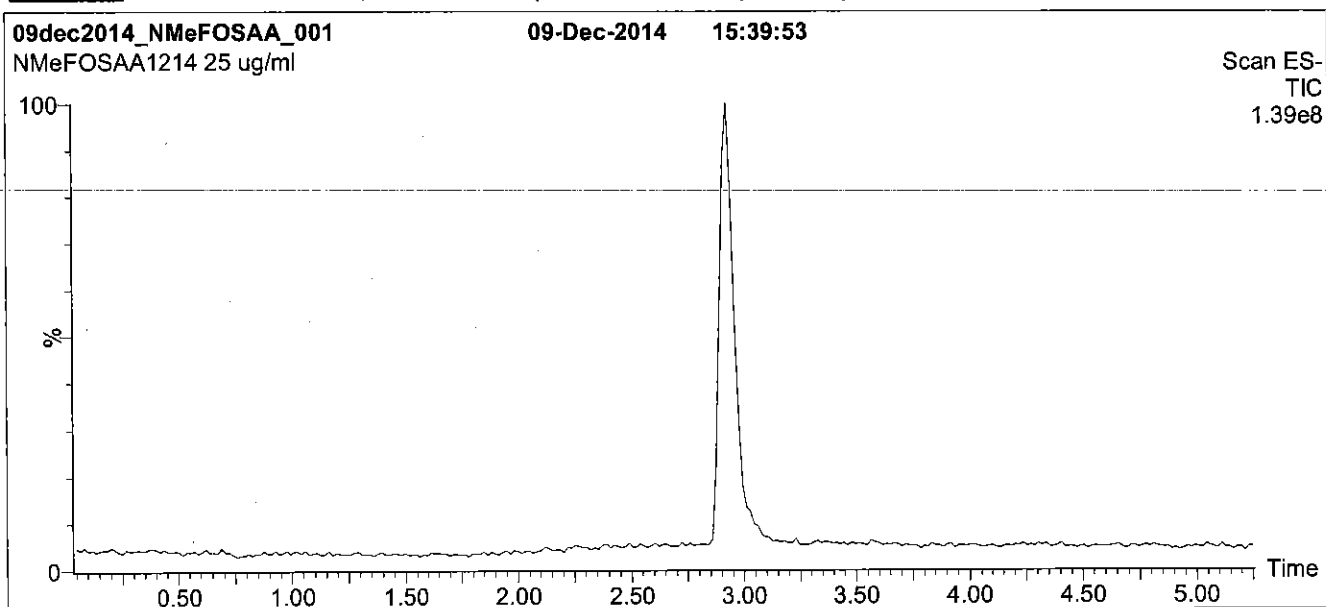
QUALITY MANAGEMENT:

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Figure 1: N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

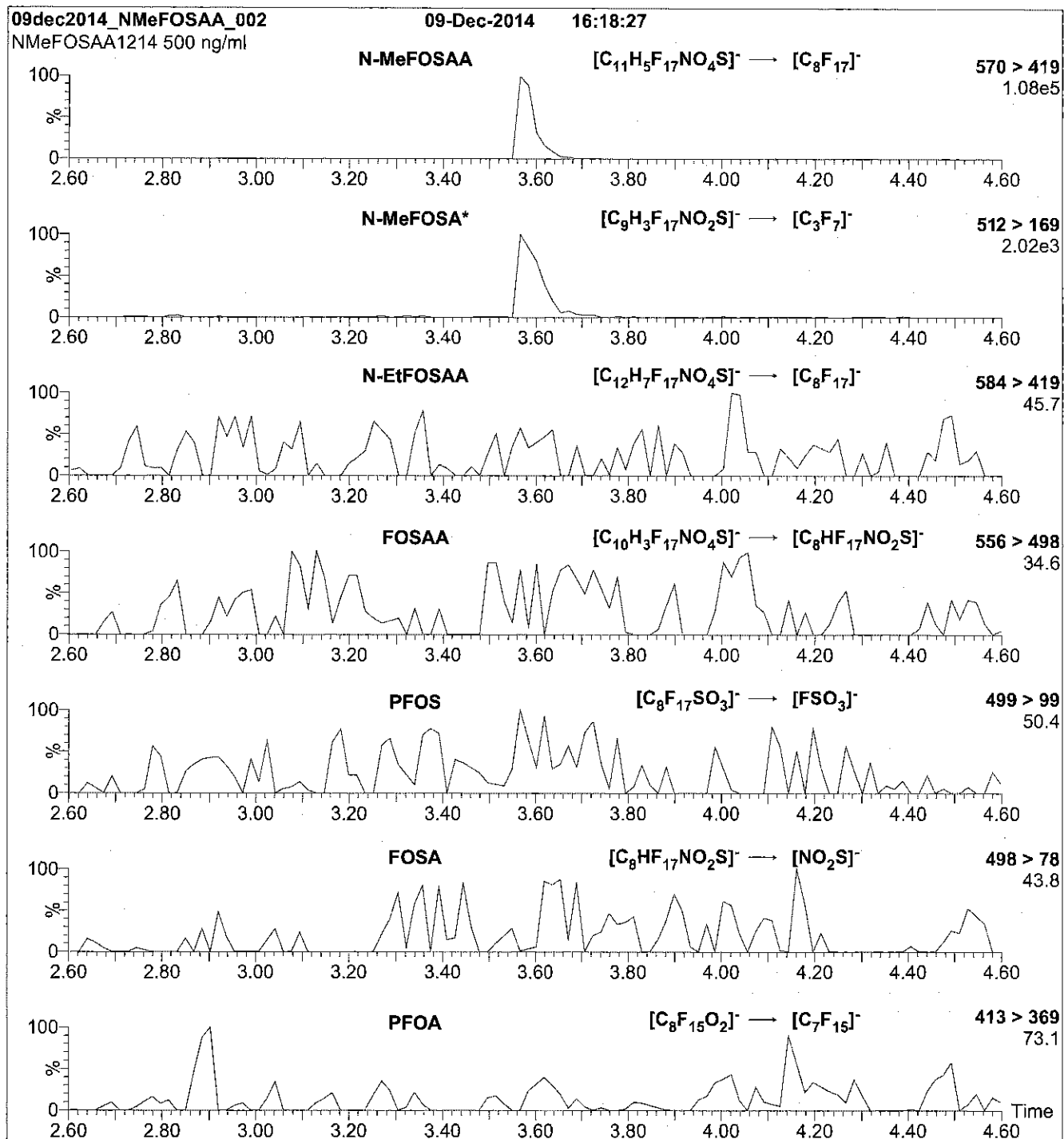
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (215 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)



***Note:** N-MeFOSA is formed by fragmentation of N-MeFOSAA.

Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-MeFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 25

Reagent

LCN-MeFOSAA_00003

R: 8/23/16 JAL

715562
ID: LCN-MeFOSAA_00003
Exp: 01/20/21 Prod: SBC
N-MeFOSAA

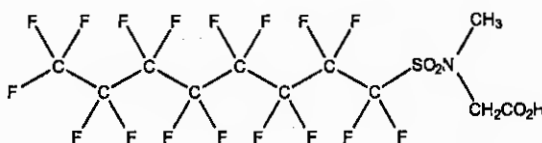


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSAA **LOT NUMBER:** NMeFOSAA0116
COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2355-31-9



MOLECULAR FORMULA: $C_{11}H_8F_{17}NO_4S$ **MOLECULAR WEIGHT:** 571.21
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/20/2016
EXPIRY DATE: (mm/dd/yyyy) 01/20/2021
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 01/21/2016
(mm/dd/yyyy)

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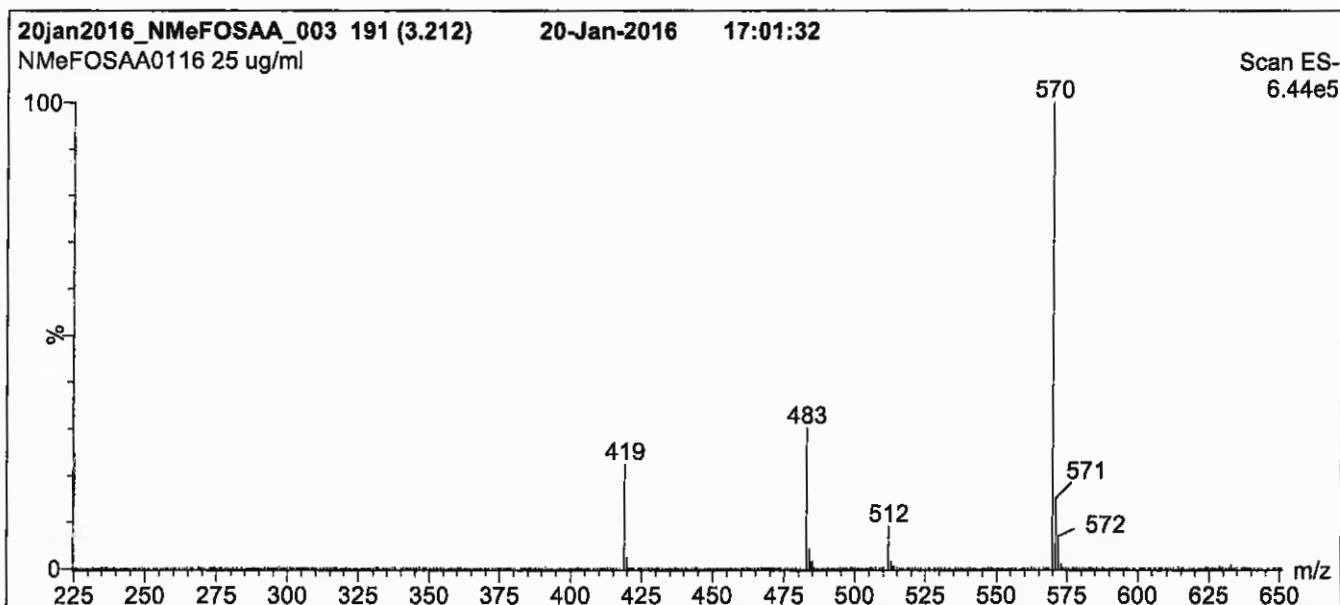
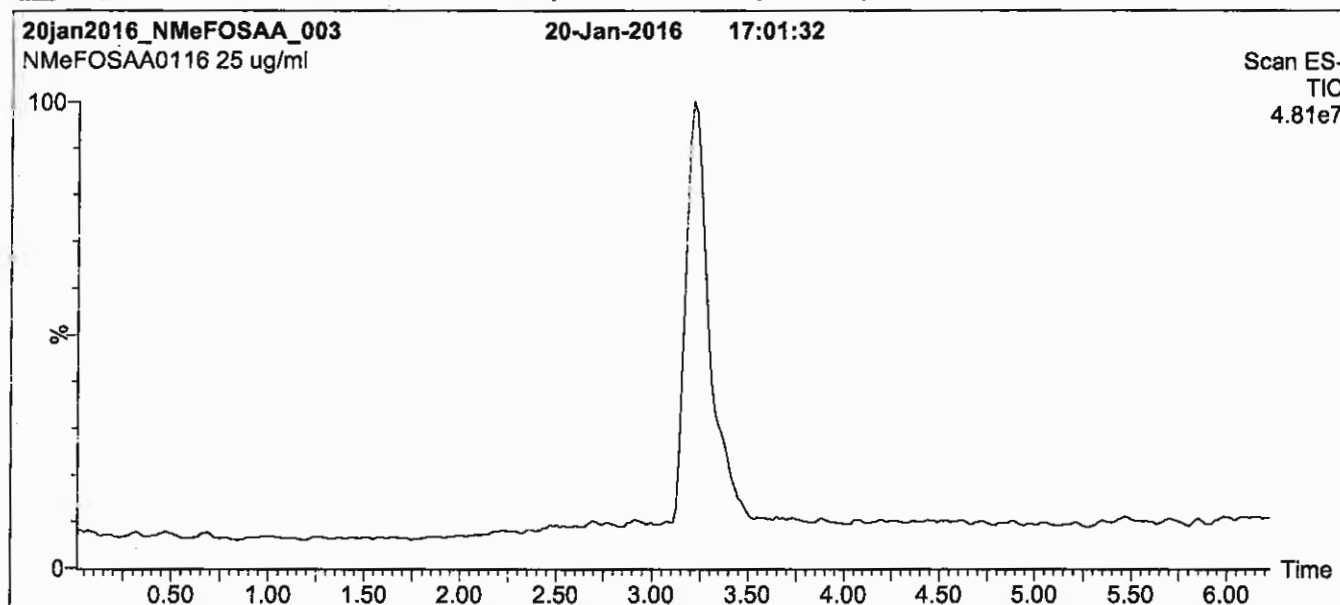
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1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

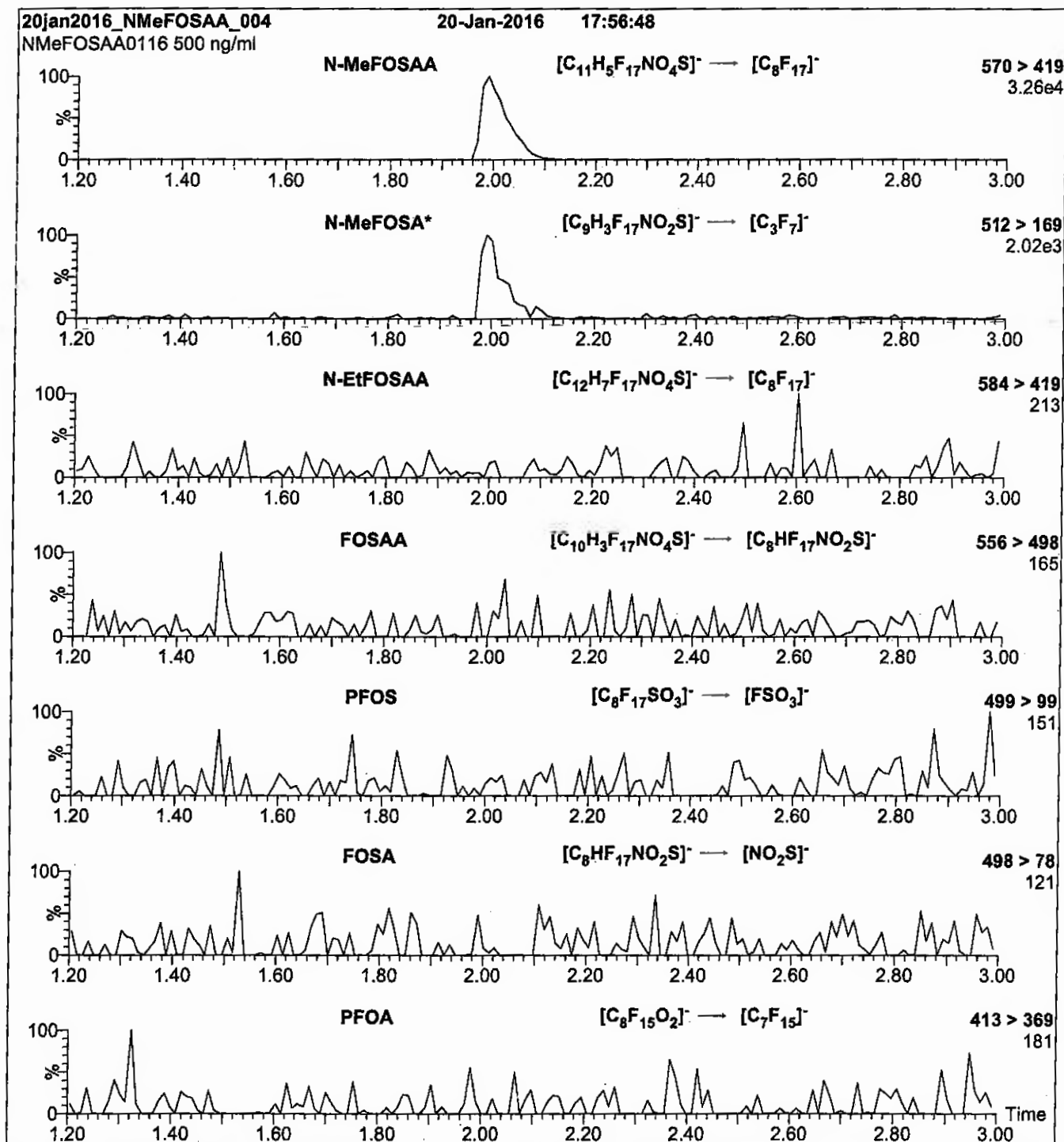
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)



*Note: N-MeFOSA is formed by in-source fragmentation.

Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-MeFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 25

Reagent

LCPFACMXB_00007



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXB

**Solution/Mixture of Native
Perfluoroalkylcarboxylic Acids and
Native Perfluoroalkylsulfonates**

PRODUCT CODE: PFAC-MXB
LOT NUMBER: PFACMXB1115
SOLVENT(S): Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 11/04/2015
LAST TESTED: (mm/dd/yyyy) 11/06/2015
EXPIRY DATE: (mm/dd/yyyy) 11/06/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXB is a solution/mixture of thirteen native perfluoroalkylcarboxylic acids (C₄-C₁₄, C₁₆, and C₁₈) and four native perfluoroalkylsulfonates (C₄, C₆, C₈ and C₁₀). The full name, abbreviation and concentration for each of the components are given in Table A.

The individual perfluoroalkylcarboxylic acids and perfluoroalkylsulfonates all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
 Figure 1: LC/MS Data (SiR)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)
 Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

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 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com**

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Table A: PFAC-MXB; Components and Concentrations (ng/ml, $\pm$ 5% in Methanol / Water (<1%))

Name	Abbreviation	Concentration (ng/ml)		Peak Assignment In Figure 1
Perfluoro-n-butanoic acid	PFBA	2000		A
Perfluoro-n-pentanoic acid	PFPeA	2000		B
Perfluoro-n-hexanoic acid	PFHxA	2000		D
Perfluoro-n-heptanoic acid	PFHpA	2000		E
Perfluoro-n-octanoic acid	PFOA	2000		G
Perfluoro-n-nonanoic acid	PFNA	2000		H
Perfluoro-n-decanoic acid	PFDA	2000		J
Perfluoro-n-undecanoic acid	PFUdA	2000		K
Perfluoro-n-dodecanoic acid	PFDoA	2000		M
Perfluoro-n-tridecanoic acid	PFTrDA	2000		N
Perfluoro-n-tetradecanoic acid	PFTeDA	2000		O
Perfluoro-n-hexadecanoic acid	PFHxDA	2000		P
Perfluoro-n-octadecanoic acid	PFODA	2000		Q
Name	Abbreviation	Concentration (ng/ml)		Peak Assignment In Figure 1
		as the salt	as the anion	
Potassium perfluoro-1-buthanesulfonate	L-PFBS	2000	1770	C
Sodium perfluoro-1-hexanesulfonate	L-PFHxS	2000	1890	F
Sodium perfluoro-1-octanesulfonate	L-PFOS	2000	1910	I
Sodium perfluoro-1-decanesulfonate	L-PFDS	2000	1930	L

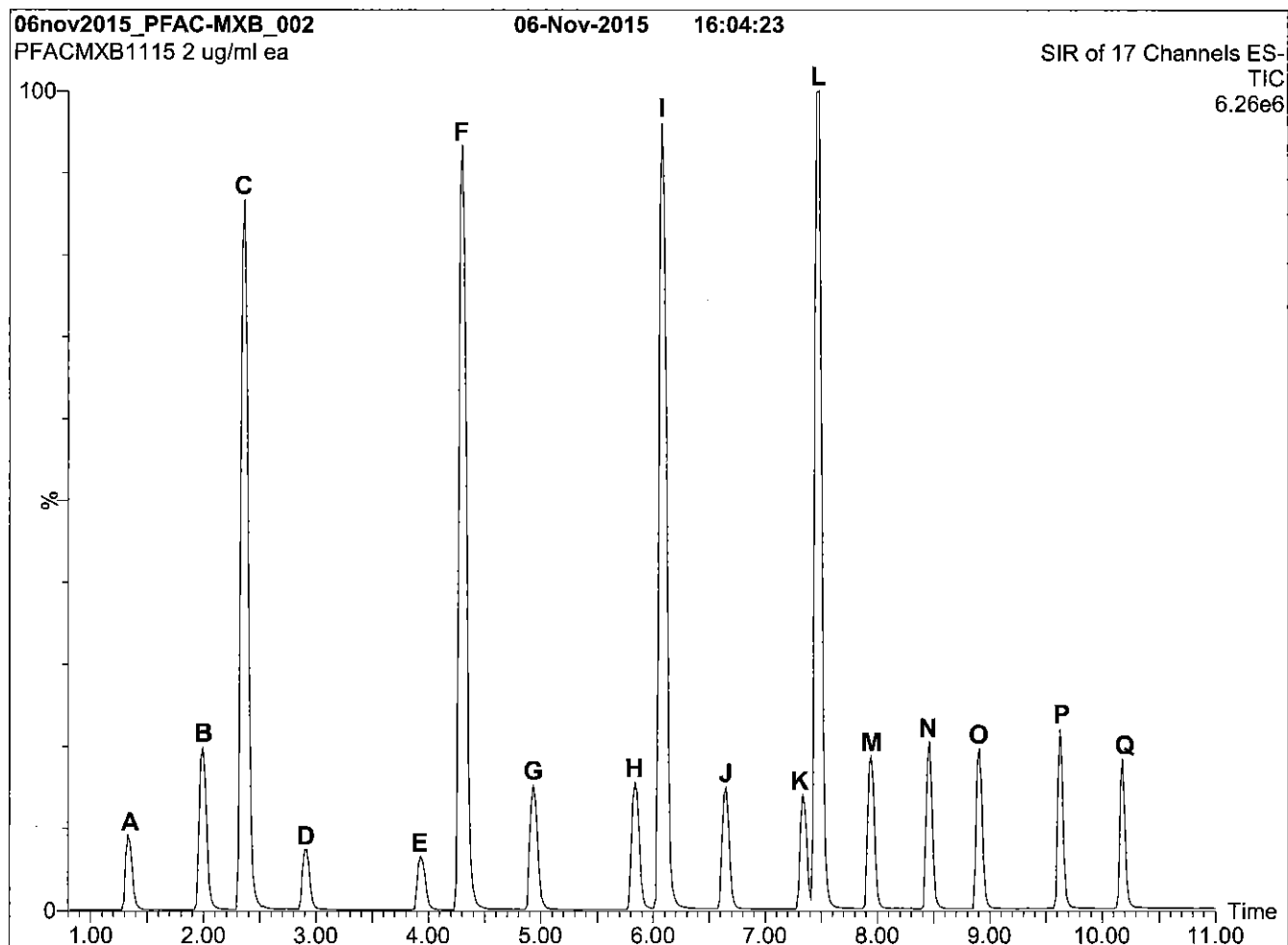
Certified By:


B.G. Chittim

Date: 11/11/2015

(mm/dd/yyyy)

Figure 1: PFAC-MXB; LC/MS Data (Total Ion Current Chromatogram; SIR)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient

Start: 55% H₂O / 45% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 95% organic over 10 min and hold for 1 min
before returning to initial conditions in 0.5 min.

Time: 12 min

Flow: 300 μ l/min

MS Parameters

Experiment: SIR of 17 Channels

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (10-70)
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)

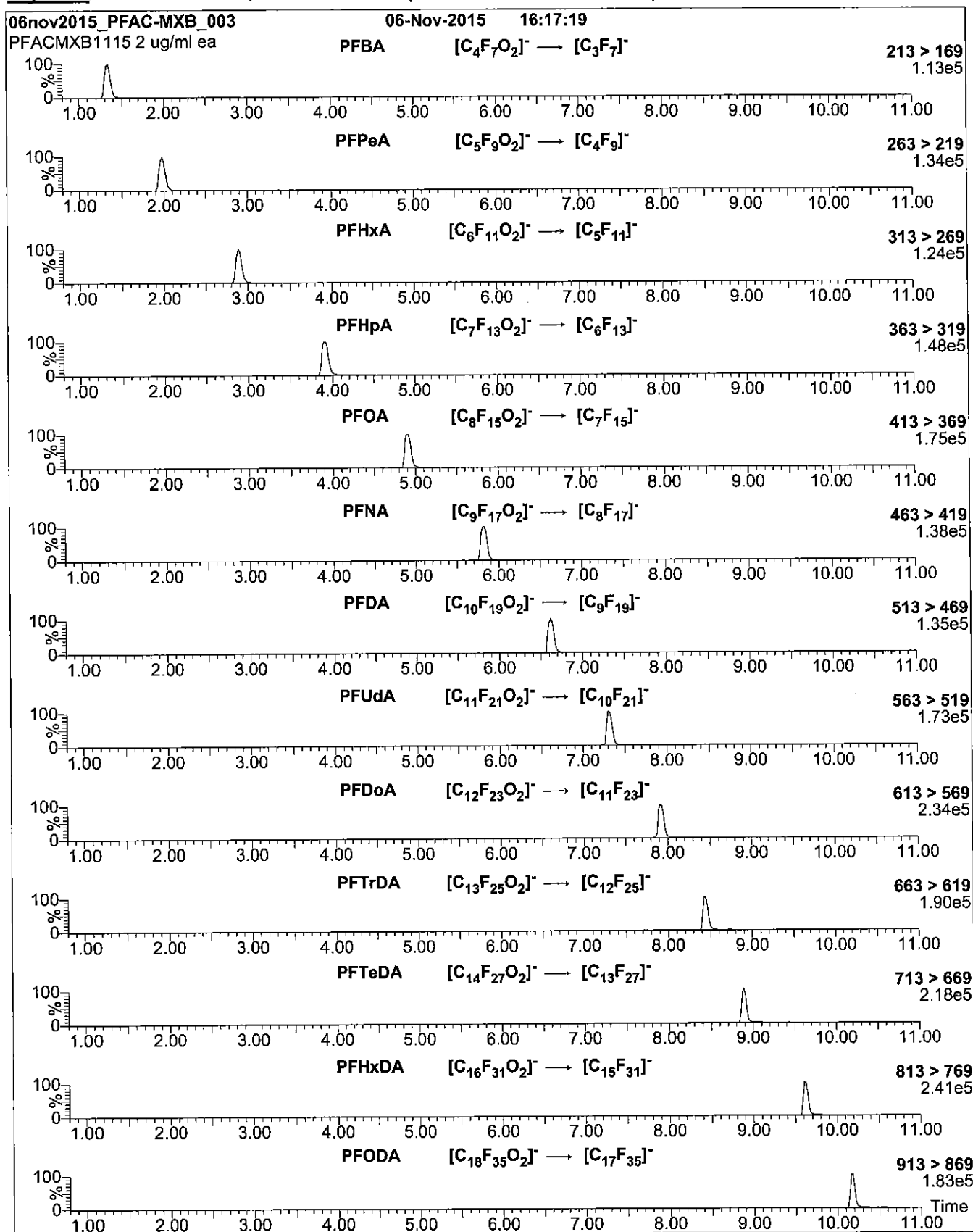
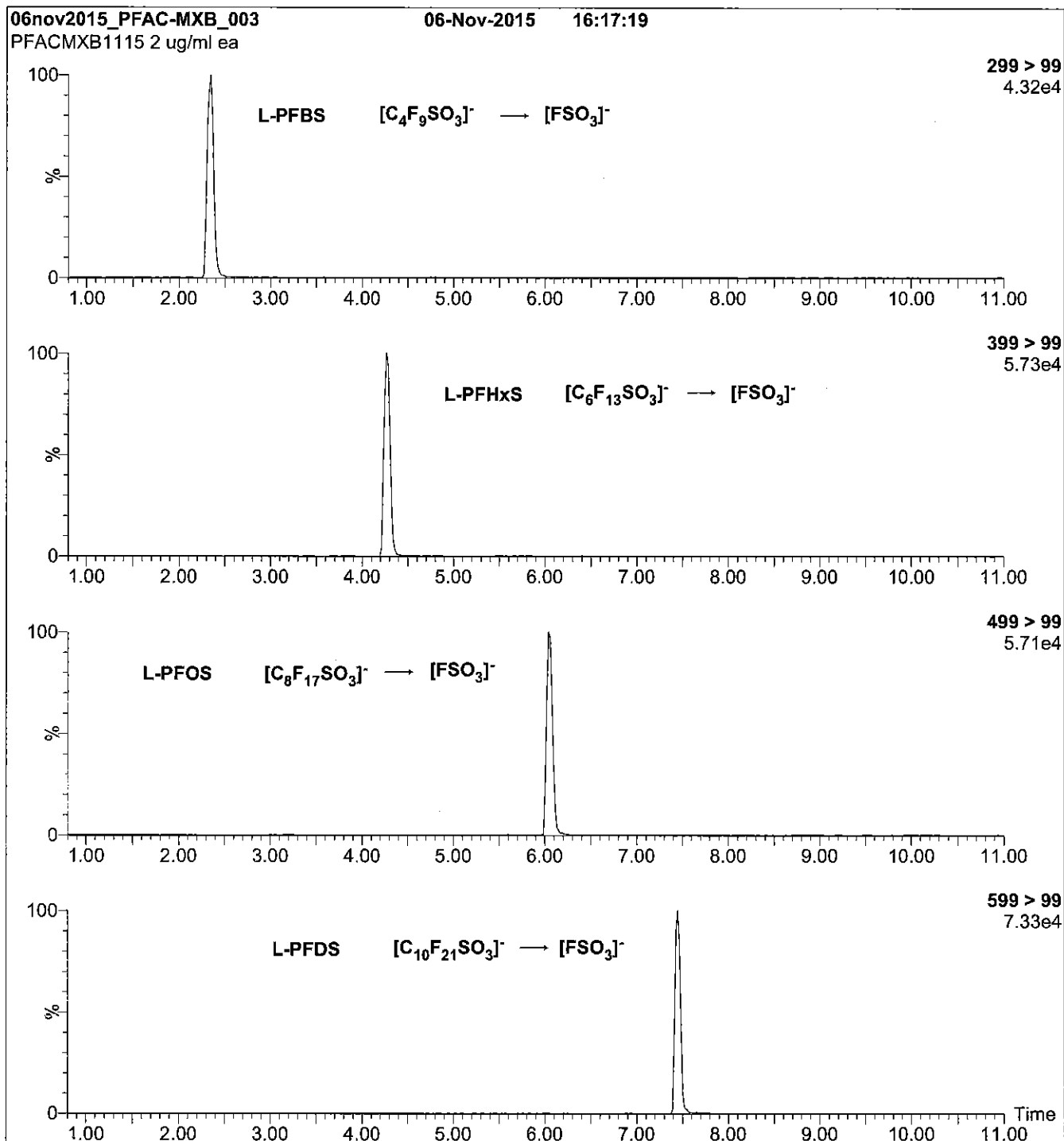


Figure 3: PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figures 2 and 3:

Injection: on-column (PFAC-MXB)

Mobile phase: Same as Figure 1

Flow: 300 μ /min

MS Parameters

Collision Gas (mbar) = 3.24e-3

Collision Energy (eV) = 8-50 (variable)

Reagent

LCPFBA_00005

Scanned
10/16/14

R: SBC 9/13/16



730531
ID: LCPFBFA_00005
Exp: 05/27/21 Ppd: SBC
PF-n-butanoic acid



730532
ID: LCPFBFA_00006
Exp: 05/27/21 Ppd: SBC
PF-n-butanoic acid



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

PFBA

LOT NUMBER:

PFBA0516

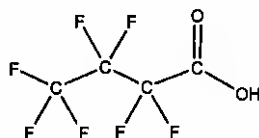
COMPOUND:

Perfluoro-n-butanoic acid

STRUCTURE:

CAS #:

375-22-4



MOLECULAR FORMULA:

C₄HF₇O₂

MOLECULAR WEIGHT:

214.04

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/27/2016

EXPIRY DATE: (mm/dd/yyyy)

05/27/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole.eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By:

B.G. Chittim

Date: 05/31/2016

(mm/dd/yyyy)

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

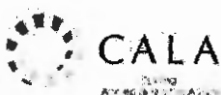
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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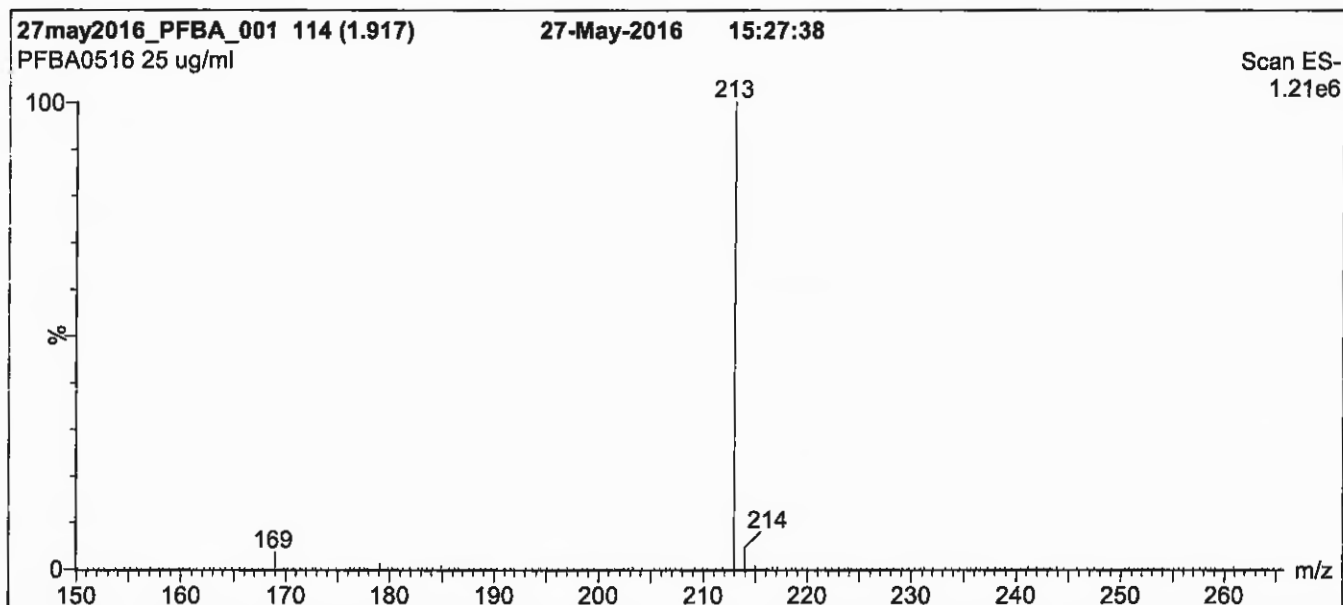
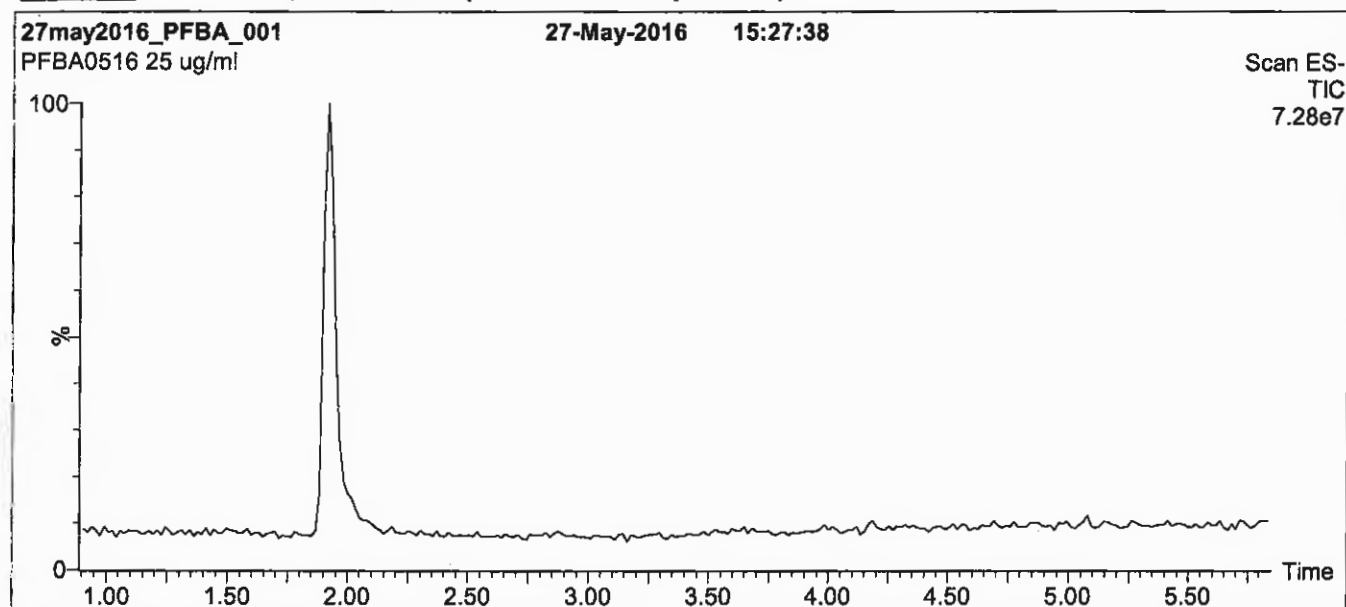
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: PFBA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

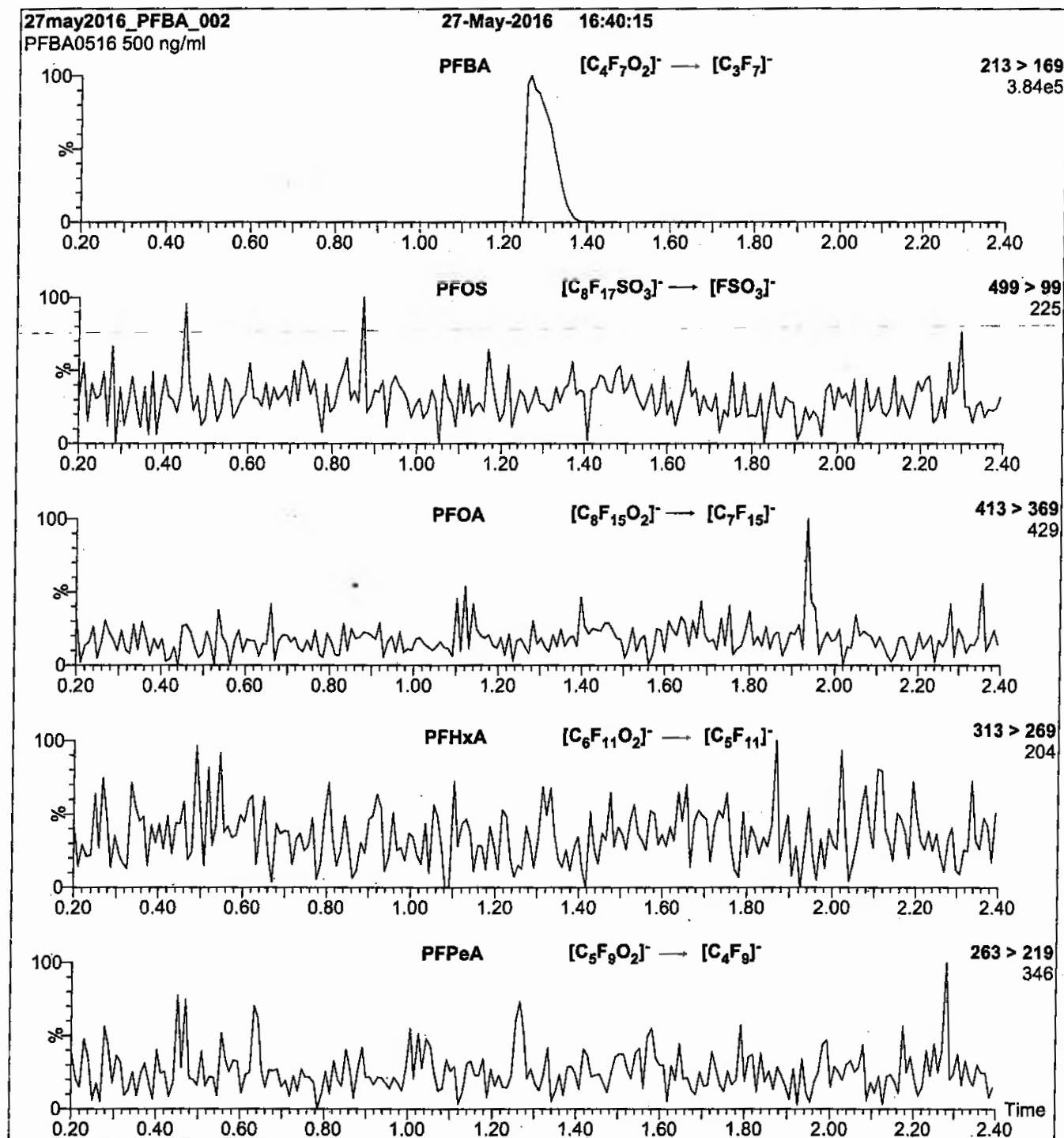
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFBA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFBA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.62e-3
Collision Energy (eV) = 10

Reagent

LCPFBS_00005

R: 9/9/16 gbx



728306

ID: LCM2-8:2FTS_00003

Exp: 01/08/21 Prod: SBC

M2-8:2FTS

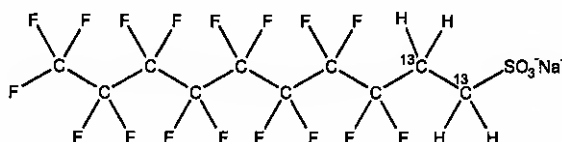


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0116
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-¹³C₂]decane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈H₄F₁₇SO₃Na **MOLECULAR WEIGHT:** 552.15
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 47.9 ± 2.4 µg/ml (M2-8:2FTS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 01/08/2016 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 01/08/2021
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 8:2FTS contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 8:2FTS and M2-8:2FTS will produce signals in the m/z 529 to m/z 509 channel during SRM analysis. We recommend using the m/z 529 to m/z 81 transition to monitor for M2-8:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

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Certified By:

B.G. Chittim

Date: 01/18/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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UNCERTAINTY:

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$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

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EXPIRY DATE / PERIOD OF VALIDITY:

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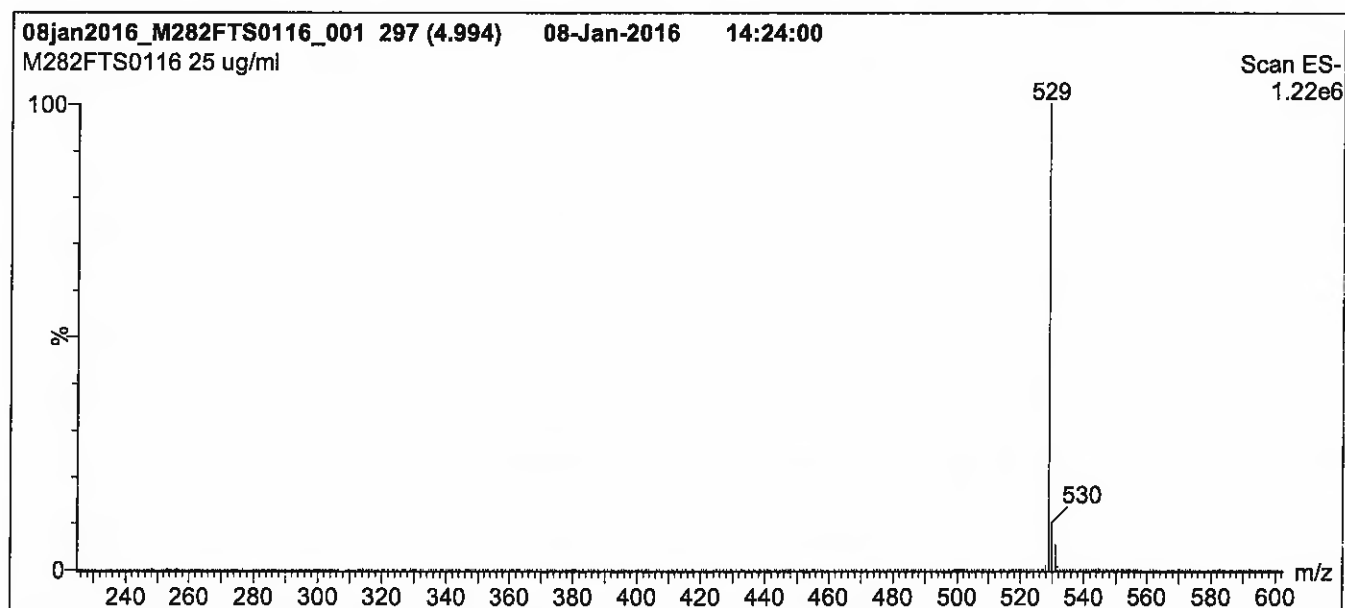
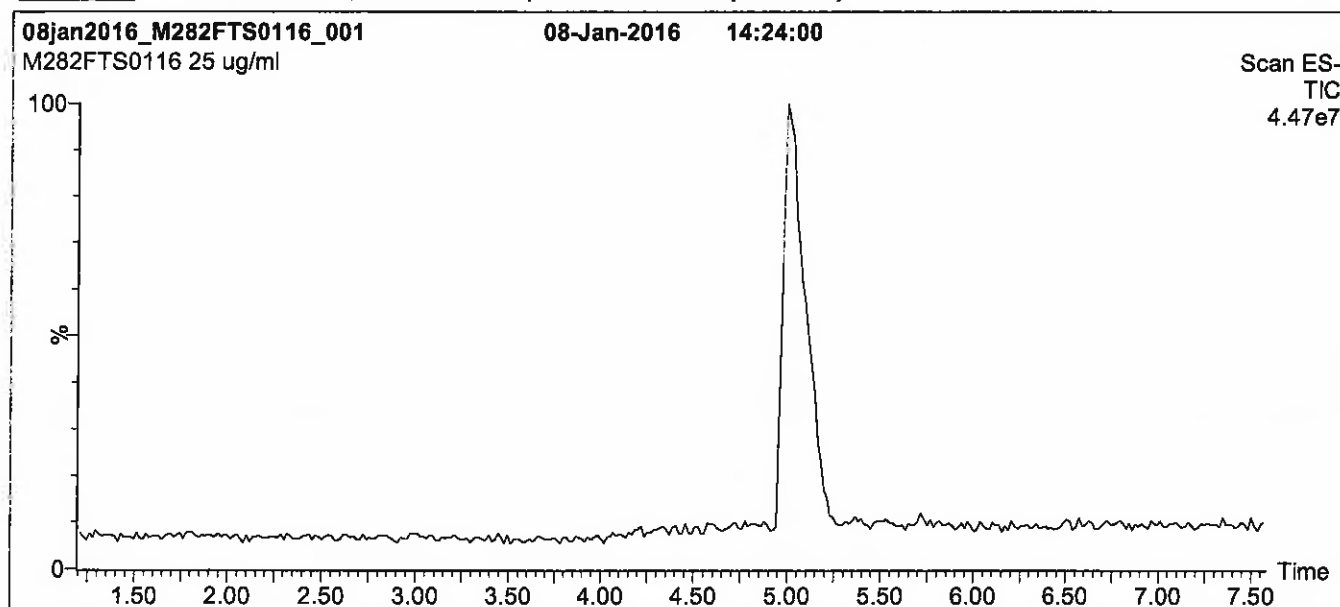
QUALITY MANAGEMENT:

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Figure 1: M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min
and hold for 2 min before returning
to initial conditions in 0.5 min.
Time: 10 min

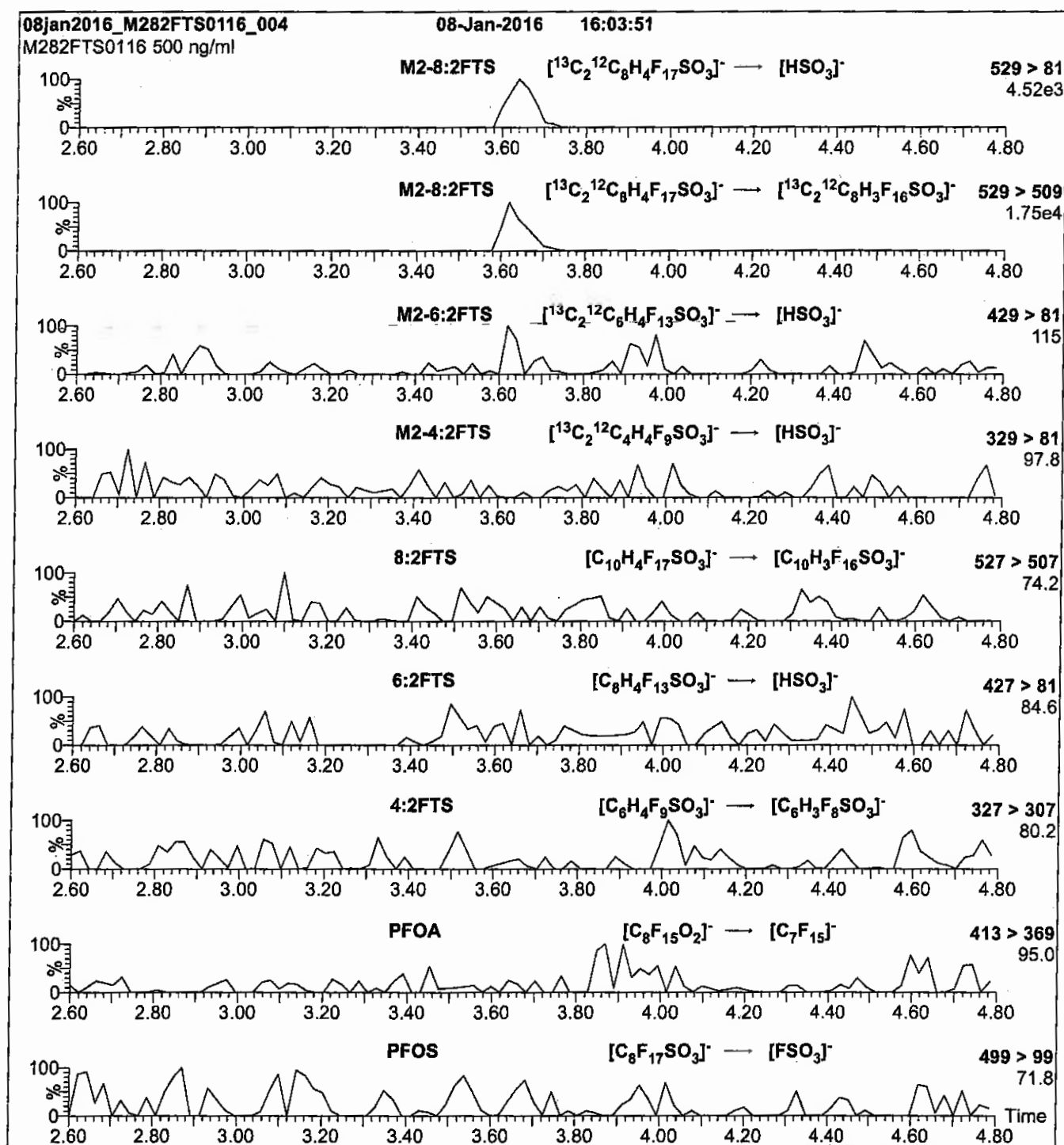
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2-8:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2-8:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 30

R: SBC 9/13/16



730511

ID: LCPFBFS_00005

Exp: 03/15/21 Prod: SBC
PF-1-butanedisulfonate K sa



730512

ID: LCPFBFS_00006

Exp: 03/15/21 Prod: SBC
PF-1-butanedisulfonate K sa



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

L-PFBS

COMPOUND:

Potassium perfluoro-1-butanedisulfonate

LOT NUMBER:

LPFBS0316

STRUCTURE:

CAS #:

29420-49-3



MOLECULAR FORMULA:

C₄F₉SO₃K

CONCENTRATION:

50.0 ± 2.5 µg/ml (K salt)
44.2 ± 2.2 µg/ml (PFBS anion)

MOLECULAR WEIGHT:

338.19

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/15/2016

EXPIRY DATE: (mm/dd/yyyy)

03/15/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 03/21/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

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UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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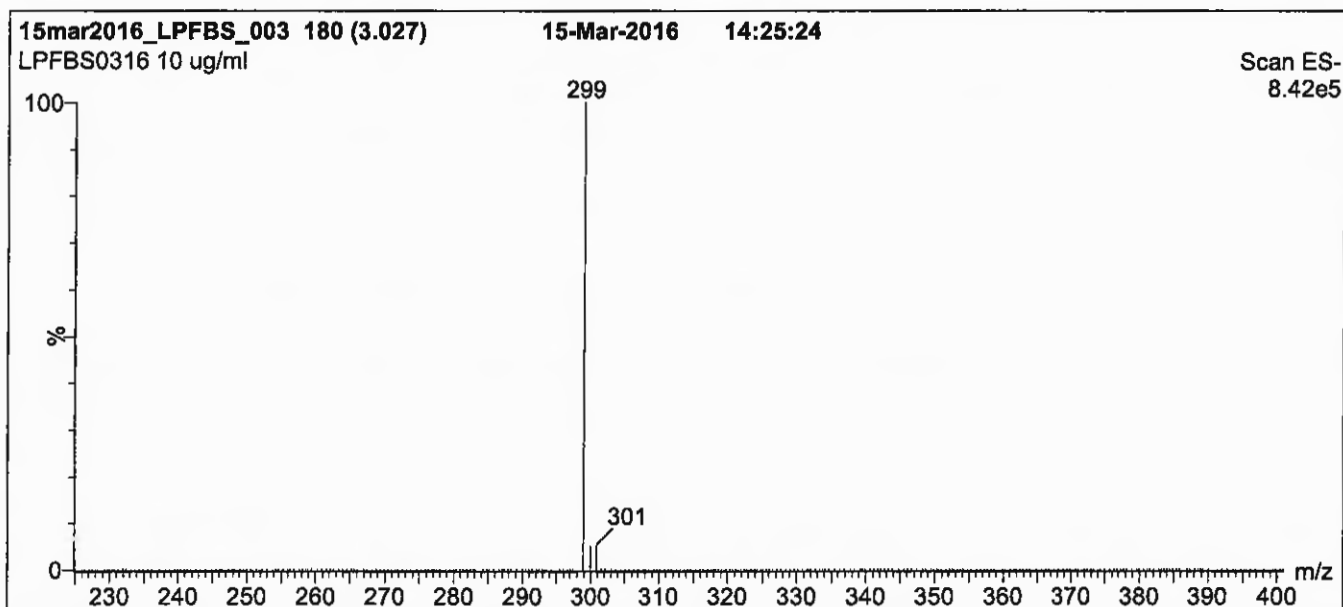
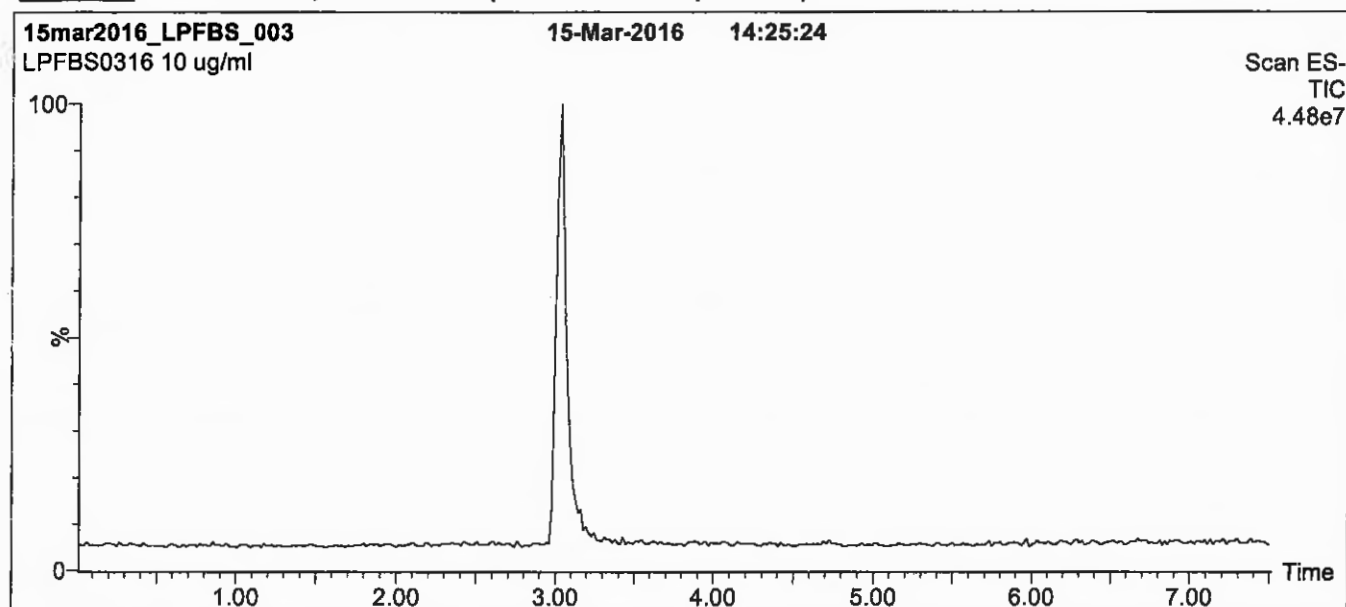
QUALITY MANAGEMENT:

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Figure 1: L-PFBS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

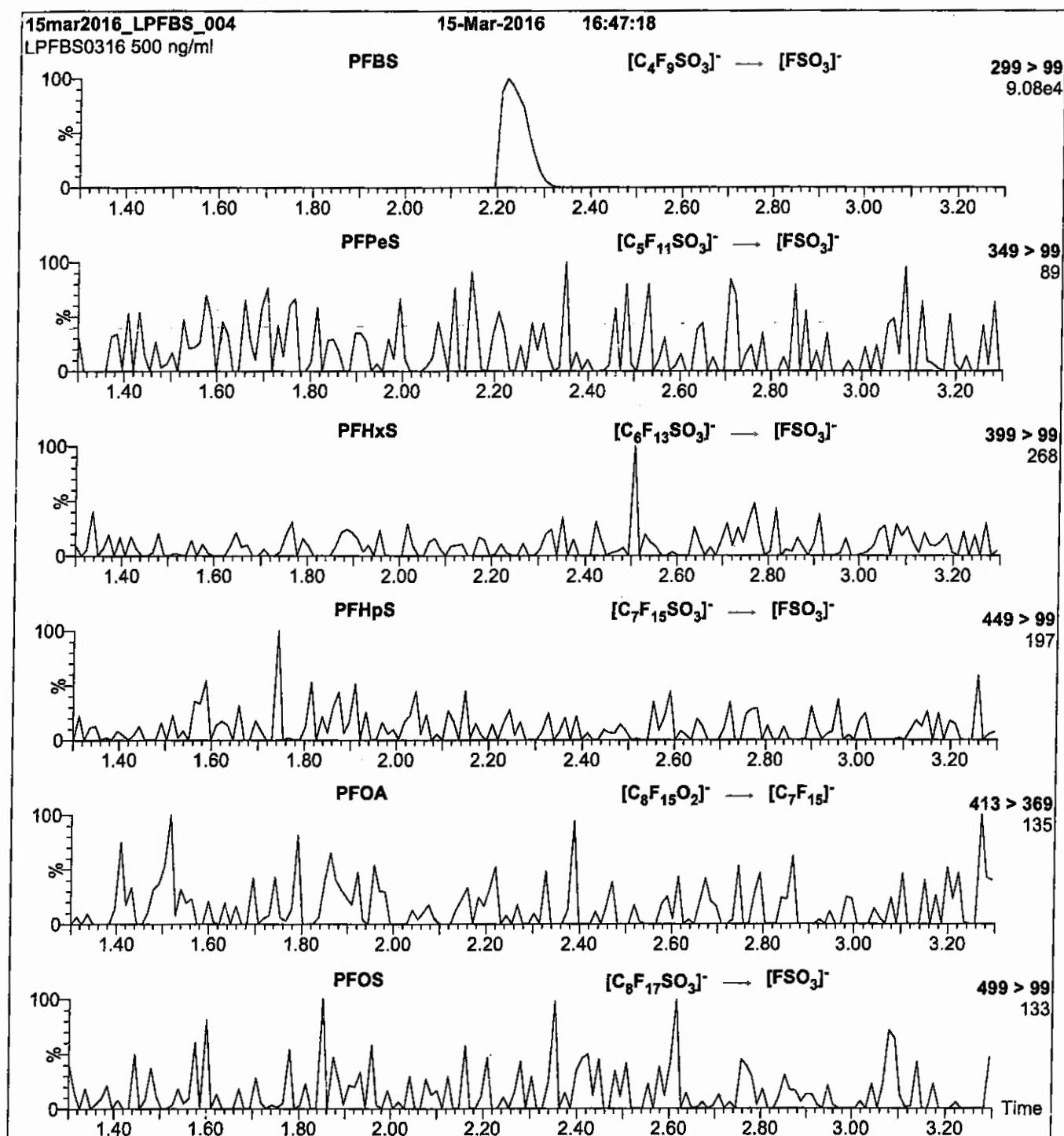
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: L-PFBS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop Injection
10 μ l (500 ng/ml L-PFBS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 25

Reagent

LCPFDA_00005

R: 7/16/16 CBW



671576
ID: LCPFDA_00305
Exp: 07/02/20 Prod: CBW
PF-n-decanoic acid



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFDA

LOT NUMBER:

PFDA0615

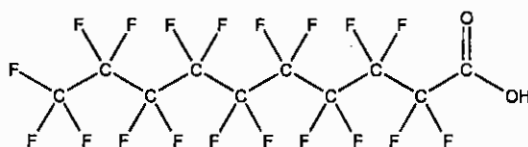
COMPOUND:

Perfluoro-n-decanoic acid

STRUCTURE:

CAS #:

335-76-2



MOLECULAR FORMULA:

$C_{10}H_{19}O_2$

MOLECULAR WEIGHT:

514.08

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

07/02/2015

EXPIRY DATE: (mm/dd/yyyy)

07/02/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.6% PFNA and ~ 0.3% PFOA.

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Certified By:

B.G. Chittim

Date: 07/24/2015

(mm/dd/yyyy)

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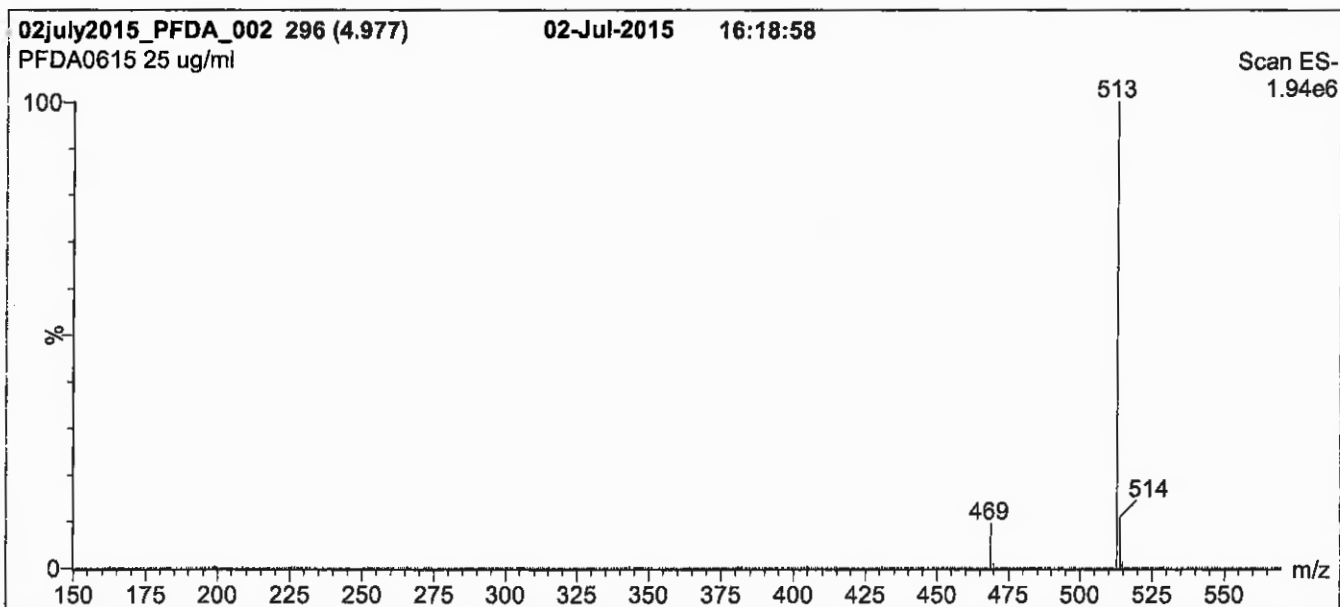
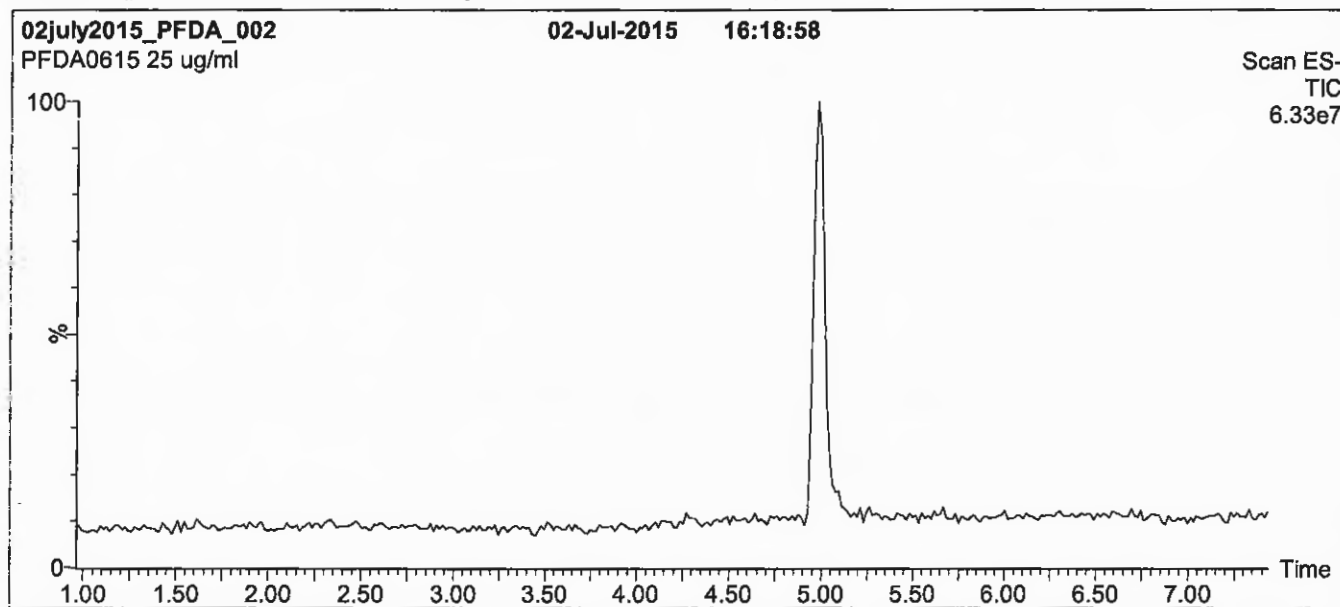
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Figure 1: PFDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

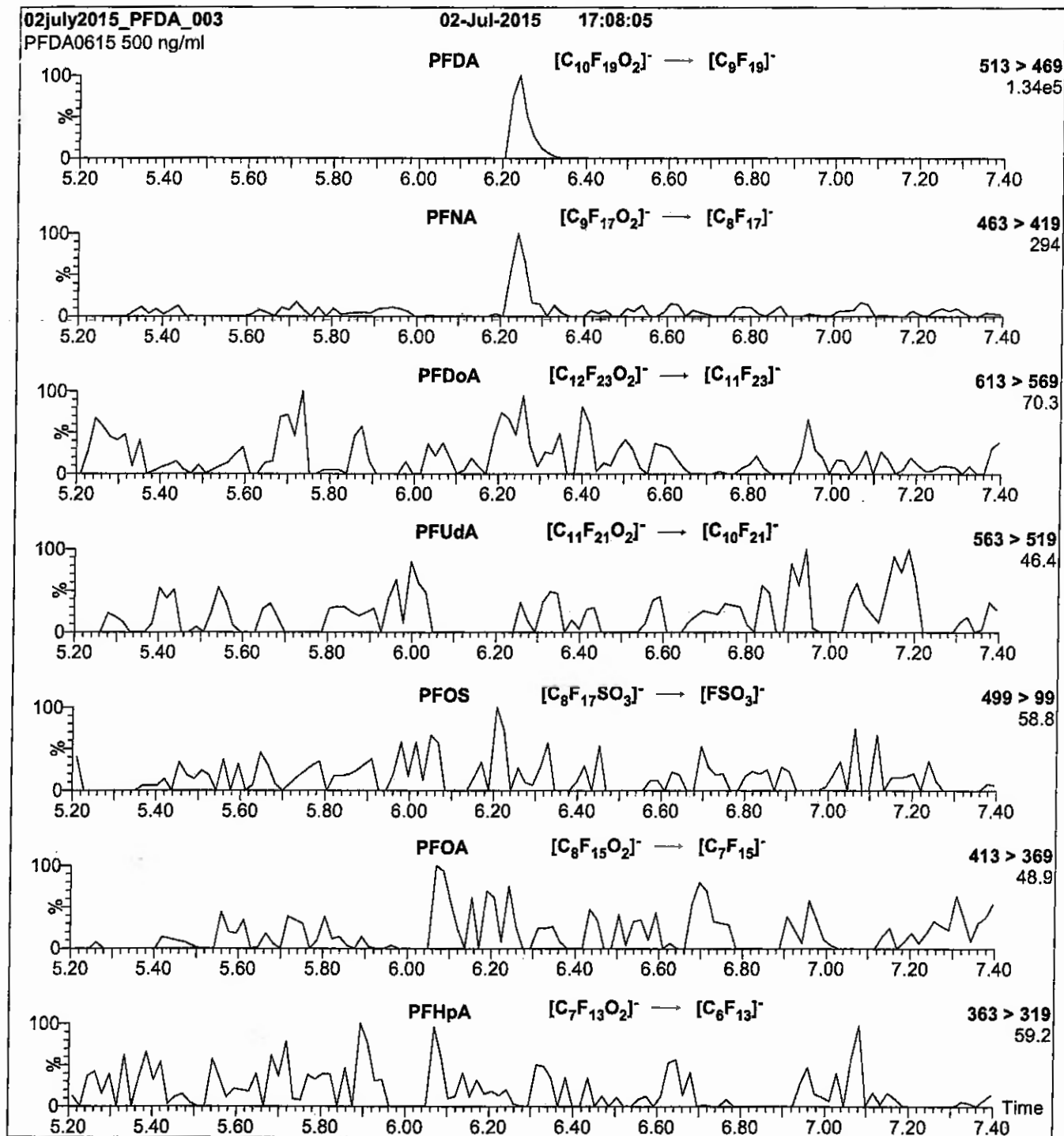
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.62e-3
Collision Energy (eV) = 13

Reagent

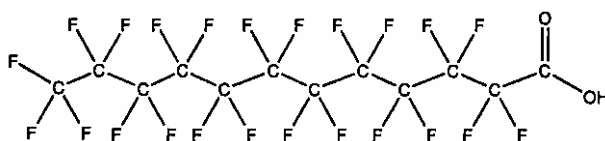
LCPFDoA_00005

R: 7/6/16 car


671601
ID: LCPFD0A_00005
Exp: 01/30/20 Pripd: CSW
PF-n-dodecanoic acid**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION

PRODUCT CODE: PFD0A **LOT NUMBER:** PFD0A0115
COMPOUND: Perfluoro-n-dodecanoic acid

STRUCTURE: **CAS #:** 307-55-1



MOLECULAR FORMULA: $C_{12}H_{23}O_2$ **MOLECULAR WEIGHT:** 614.10
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/30/2015
EXPIRY DATE: (mm/dd/yyyy) 01/30/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By:


B.G. ChittimDate: 03/25/2015
(mm/dd/yyyy)

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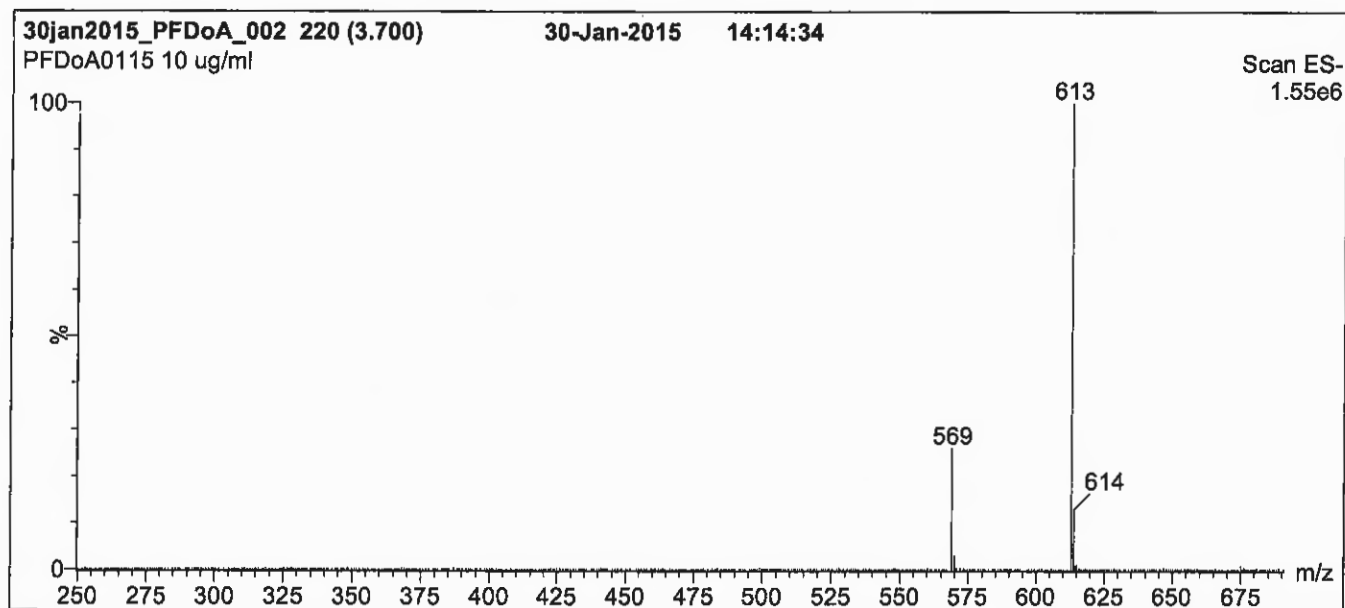
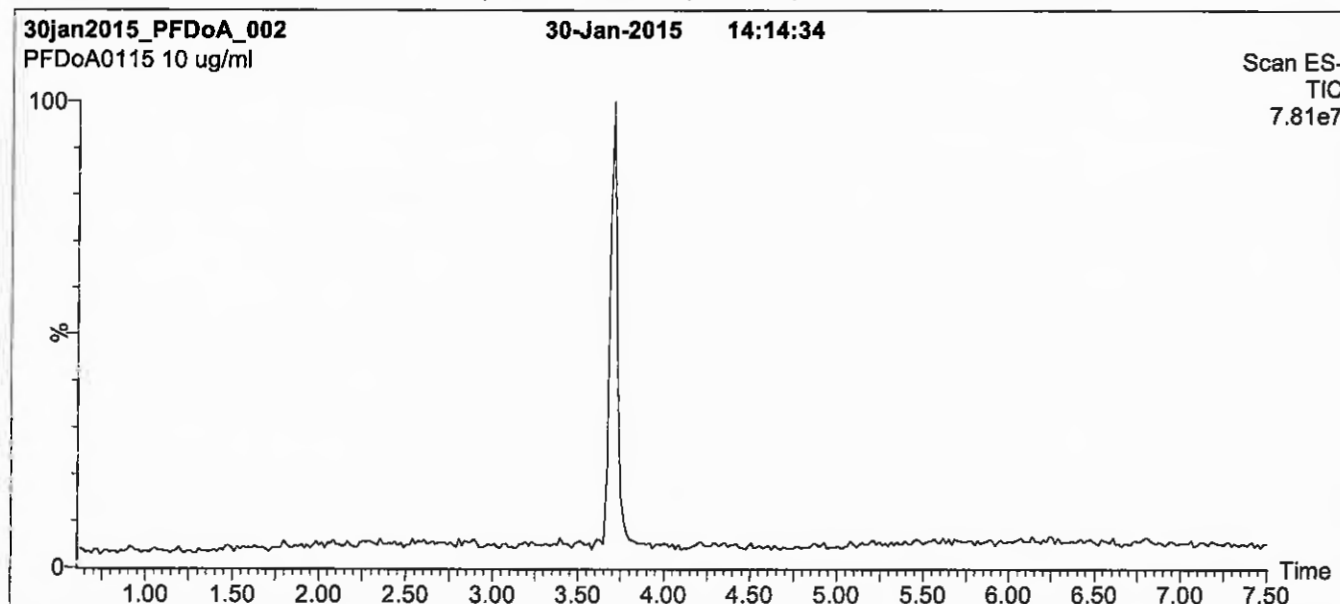
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Figure 1: PFDaA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

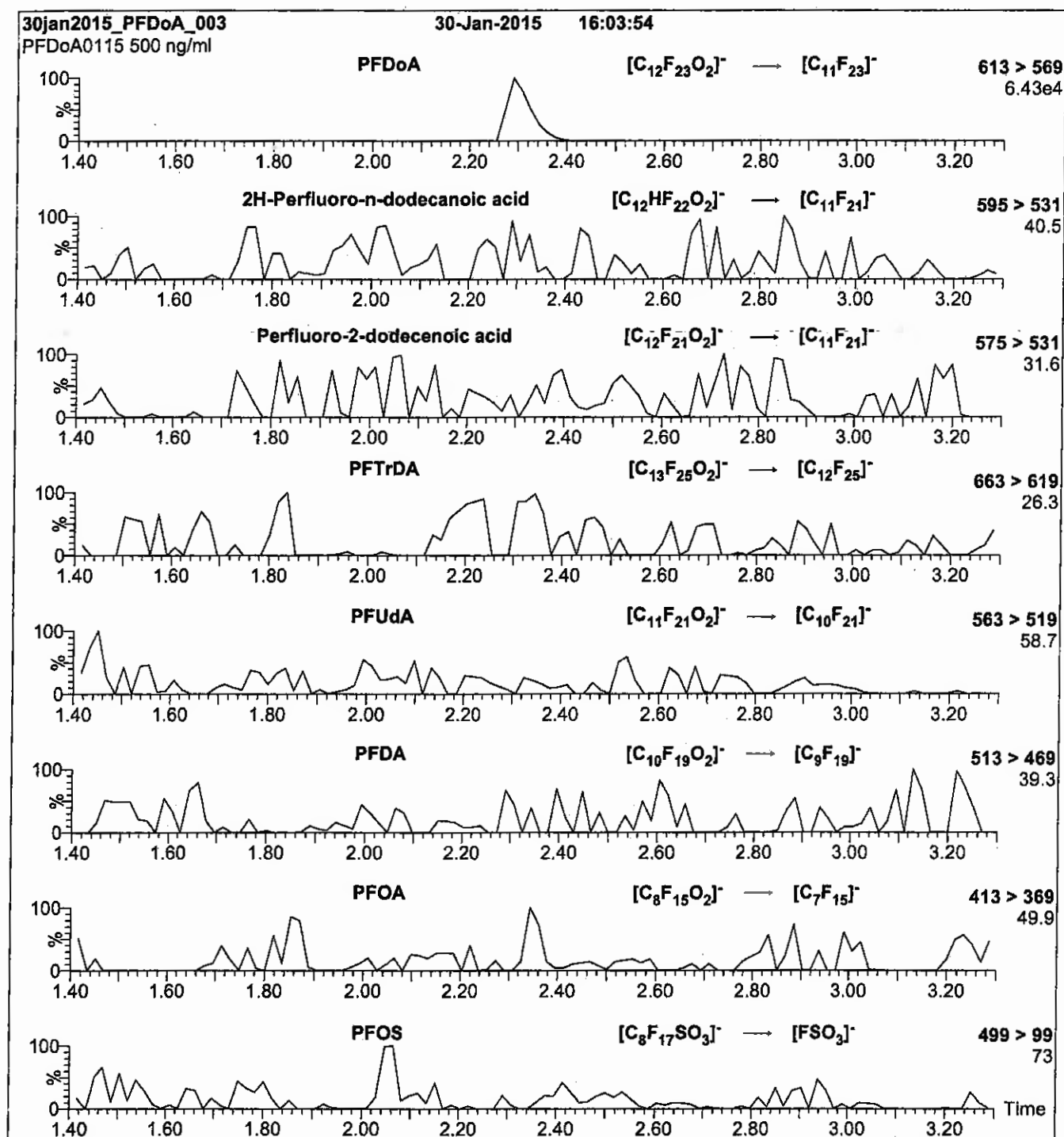
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 1000 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFDoA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFDoA)

MS Parameters

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 13

Flow: 300 μ l/min

Reagent

LCPFHpA_00005



609639

ID: LCPFHpA_00005

Exp: 01/22/21 Prpd: CBW

PF-n-heptanoic acid

R: 4/7/16 CBW



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFHpA

LOT NUMBER:

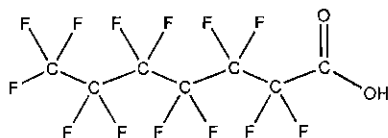
PFHpA0116

COMPOUND:

Perfluoro-n-heptanoic acid

STRUCTURE:**CAS #:**

375-85-9

**MOLECULAR FORMULA:** $C_7H_{13}O_2$ **MOLECULAR WEIGHT:**

364.06

CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**Methanol
Water (<1%)**CHEMICAL PURITY:**

>98%

LAST TESTED: (mm/dd/yyyy)

01/22/2016

EXPIRY DATE: (mm/dd/yyyy)

01/22/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By:

B.G. Chittim

Date: 02/02/2016

(mm/dd/yyyy)

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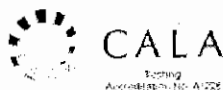
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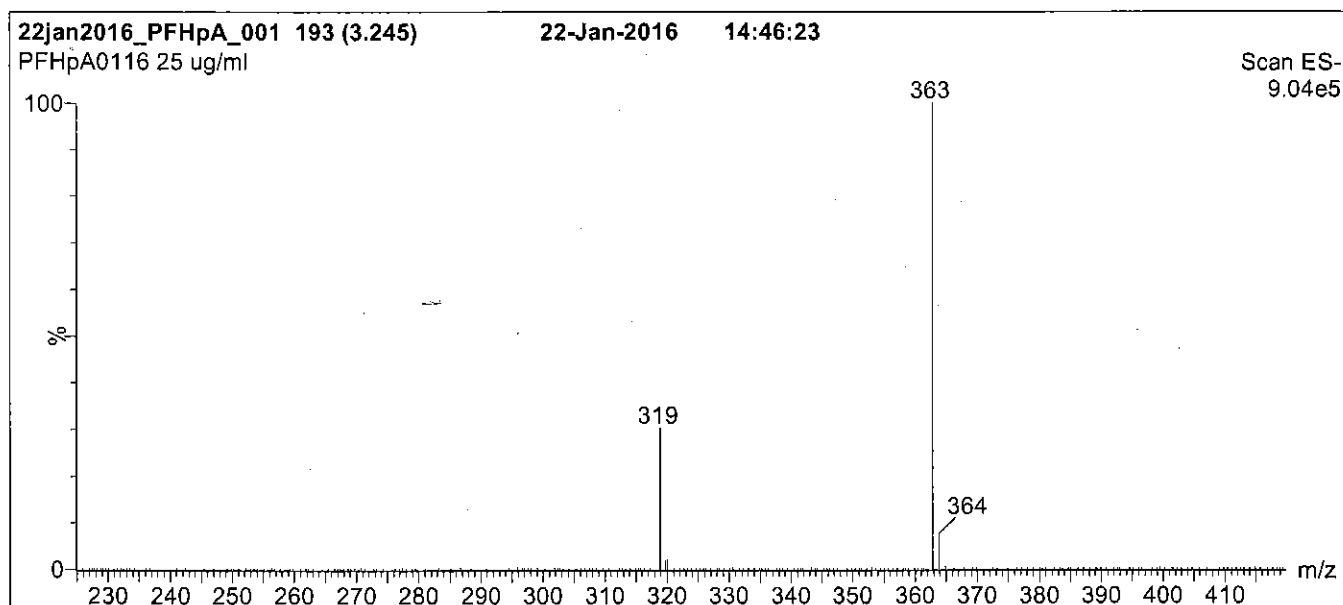
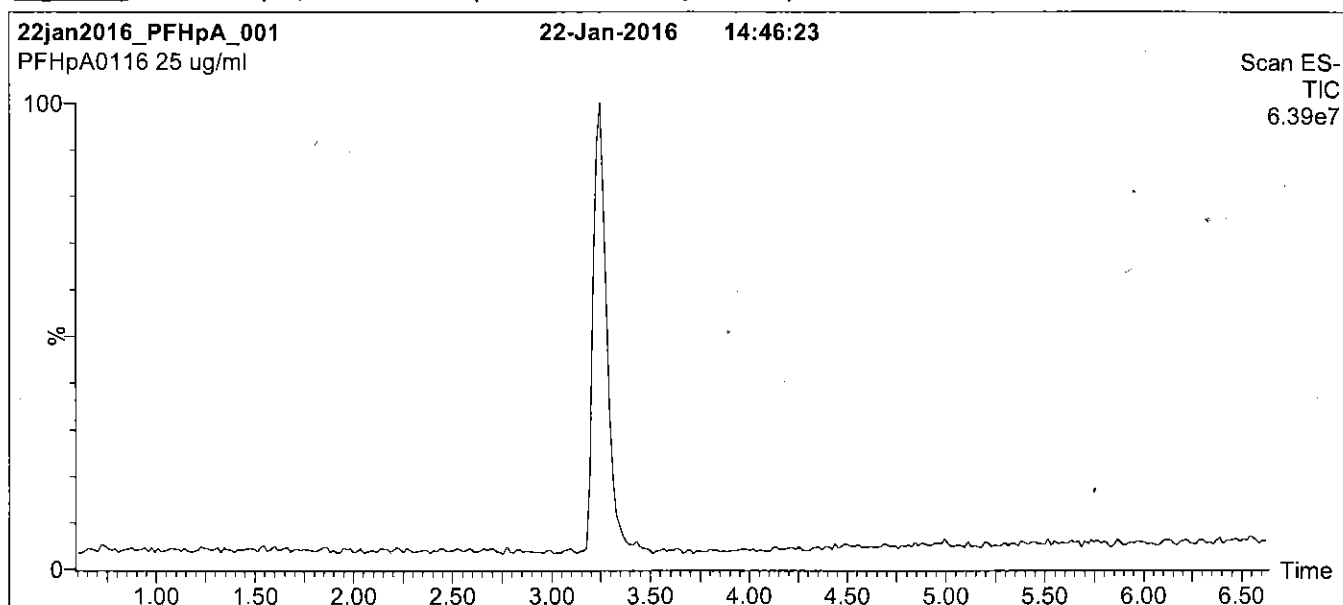
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1.7 μ m, 2.1 x 100 mm

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Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
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2 min before returning to initial conditions in 0.5 min.
Time: 10 min

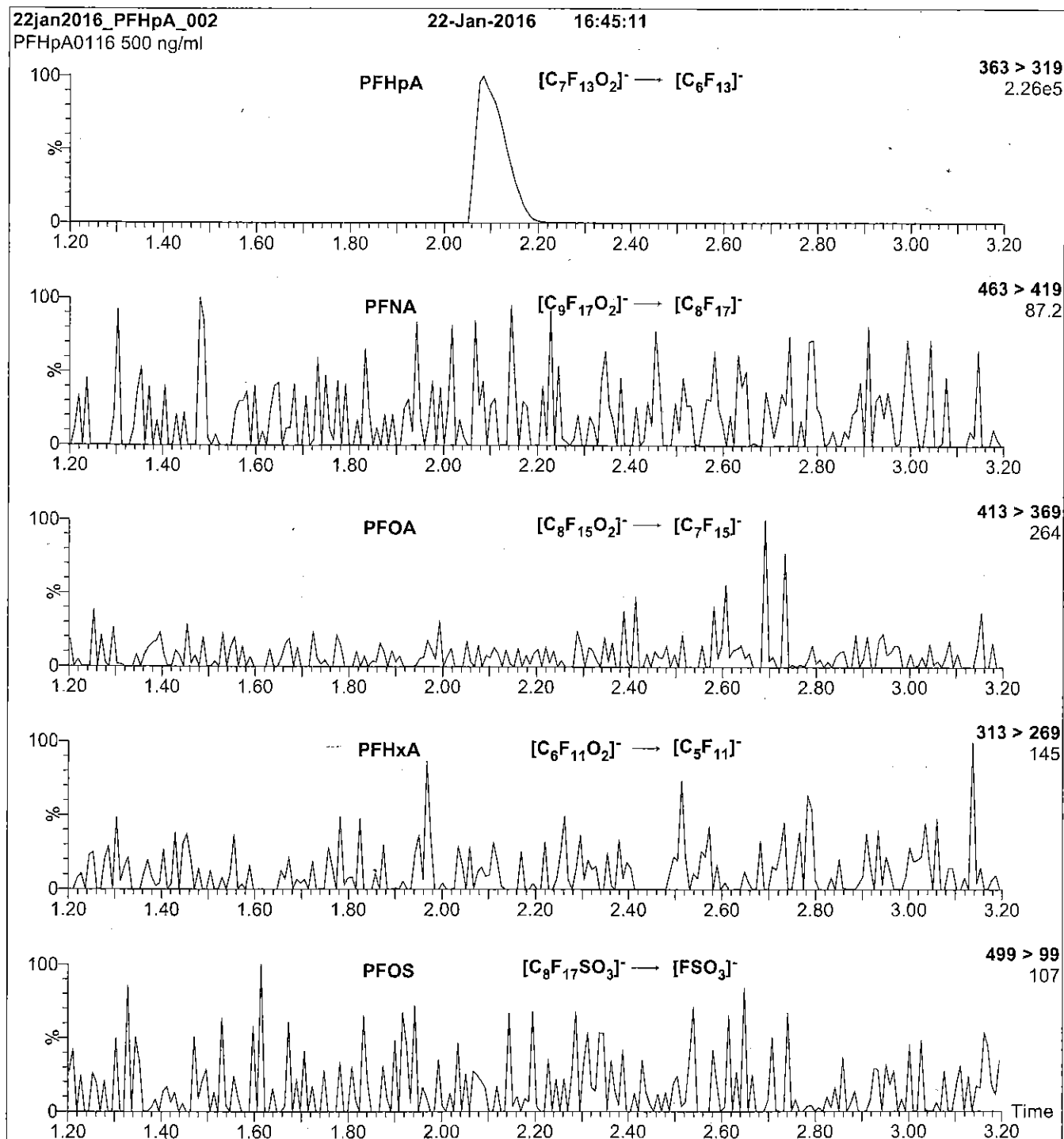
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFHpA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFHpA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 11

Reagent

LCPFHpA_00006

Scanned R: SBC 9/13/16
10/14/16 JK



730517
ID: LCPFHpa_00006
Exp: 01/22/21 Prpd: SBC
PF-n-heptanoic acid



730518
ID: LCPFHpa_00007
Exp: 01/22/21 Prpd: SBC
PF-n-heptanoic acid



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CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

PFHpA

LOT NUMBER:

PFHpA0116

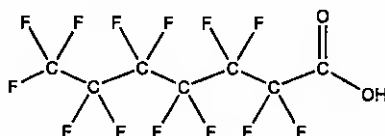
COMPOUND:

Perfluoro-n-heptanoic acid

STRUCTURE:

CAS #:

375-85-9



MOLECULAR FORMULA:

C₇H₁₃O₂

MOLECULAR WEIGHT:

364.06

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

01/22/2016

EXPIRY DATE: (mm/dd/yyyy)

01/22/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 02/02/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

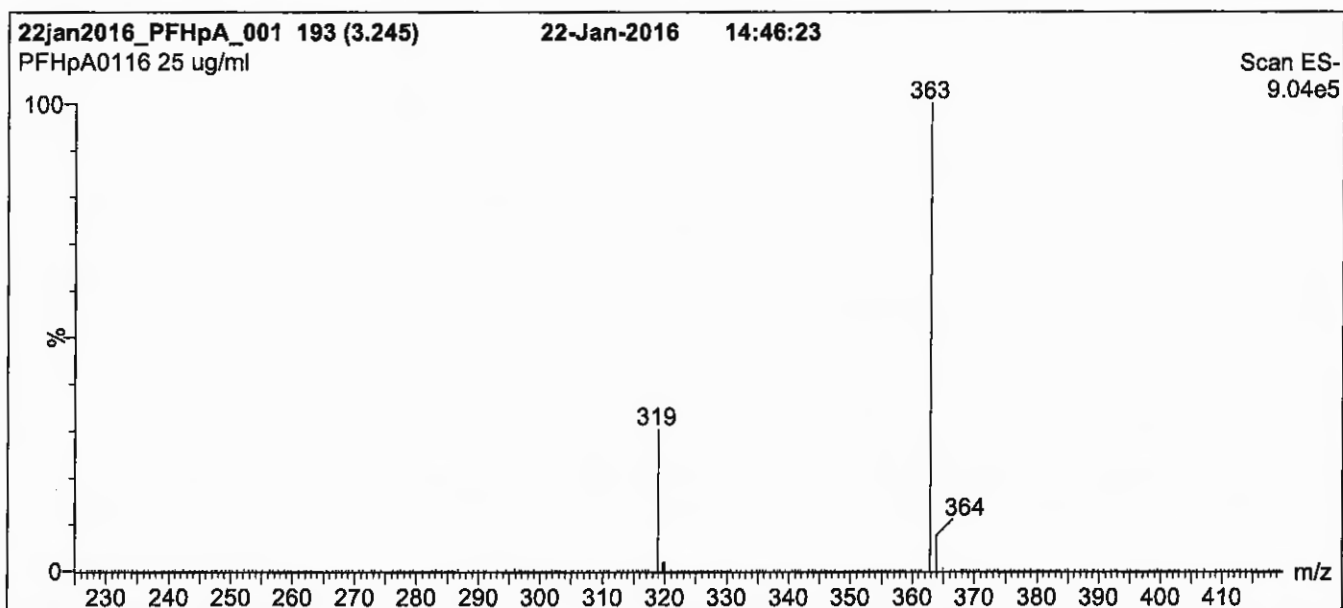
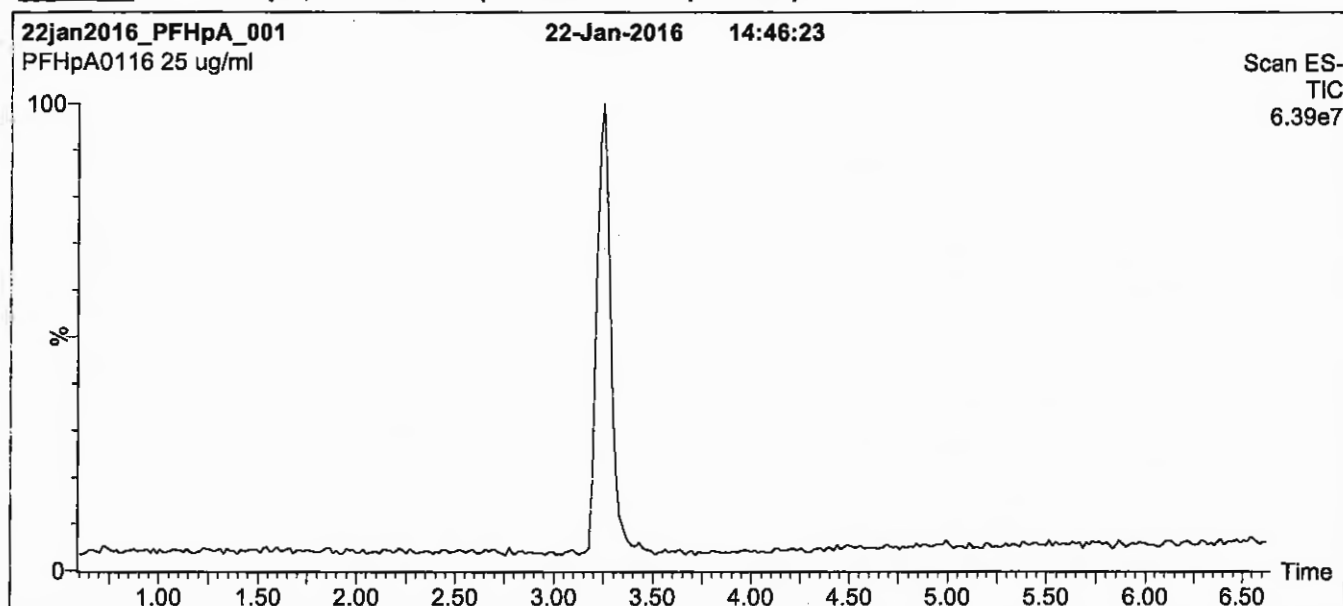
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: PFHpA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

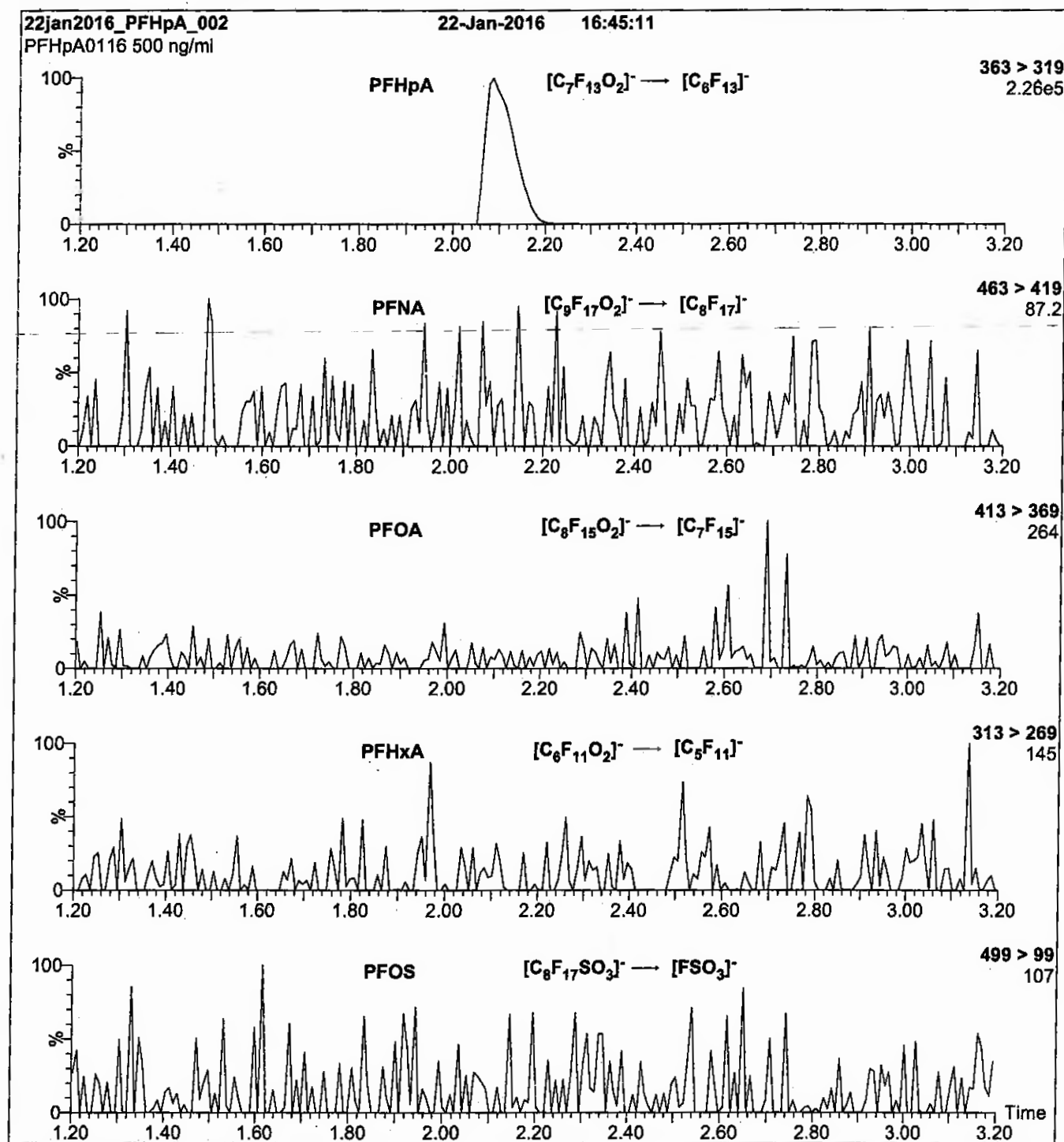
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFHpA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFHpA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 11

Reagent

LCPFHpS_00009

Scanned
10/14/16 SP
R: SBC 9/13/16

730635
ID: LCPFHPS_00009
Exp: 11/06/20 Prpd: SBC
PFHpS at 47.6ug/mL

730639
ID: LCPFHPS_00010
Exp: 11/06/20 Prpd: SBC
PFHpS at 47.6ug/mL



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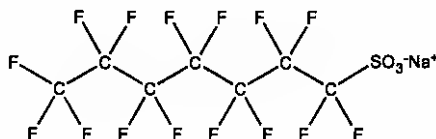
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFHpS
COMPOUND: Sodium perfluoro-1-heptanesulfonate

LOT NUMBER: LPFHpS1115

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $C_7F_{15}SO_3Na$
CONCENTRATION: $50.0 \pm 2.5 \mu g/mL$ (Na salt)
 $47.6 \pm 2.4 \mu g/mL$ (PFHpS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/06/2015
EXPIRY DATE: (mm/dd/yyyy) 11/06/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 472.10
SOLVENT(S): Methanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.1% of L-PFHxS ($C_6F_{13}SO_3Na$) and ~ 0.2% of L-PFOS ($C_8F_{17}SO_3Na$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 11/09/2015
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HAZARDS:

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HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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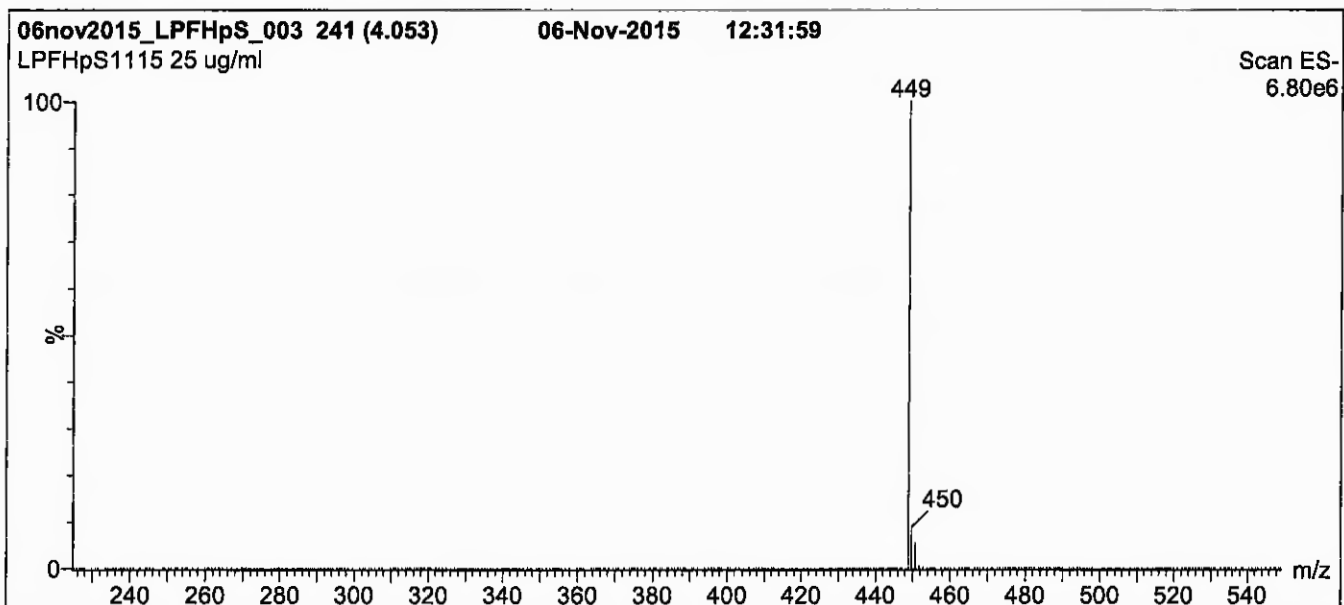
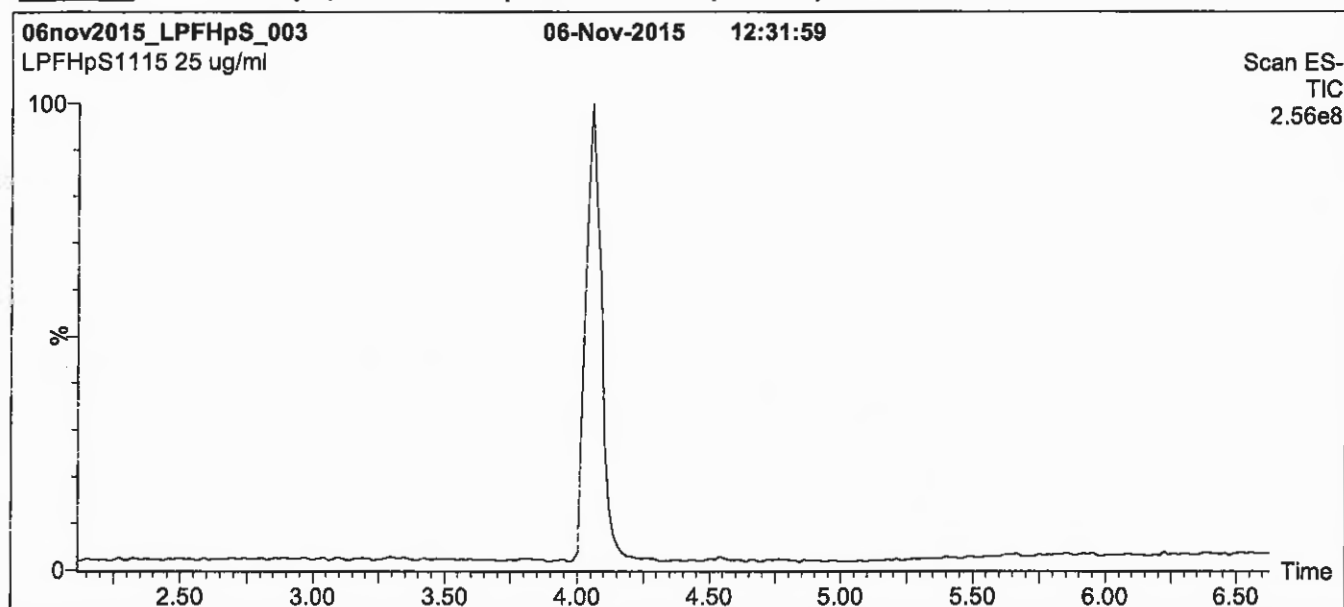
QUALITY MANAGEMENT:

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Figure 1: L-PFHpS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient

Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold
for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

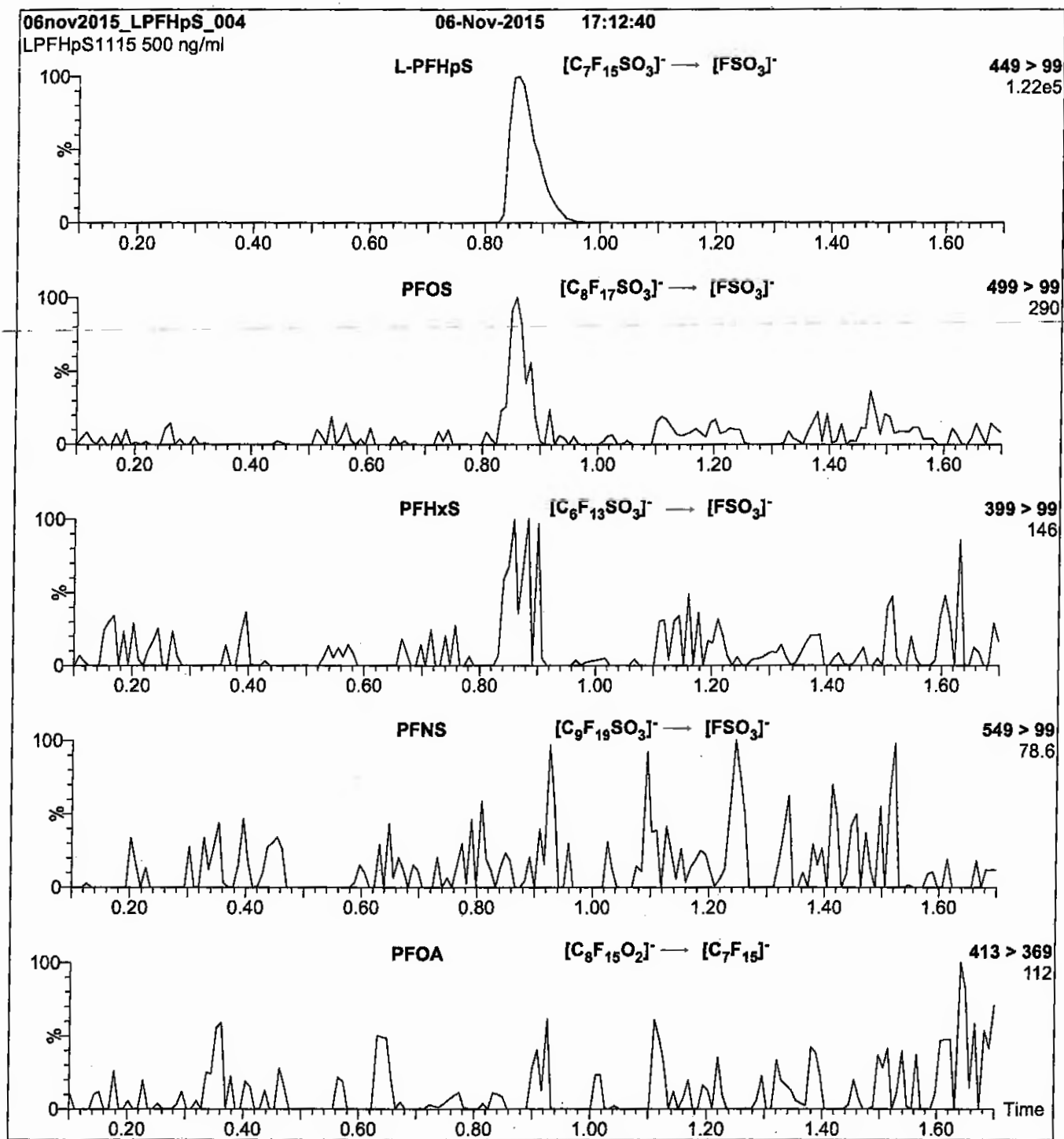
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: L-PFHpS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml L-PFHpS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = $3.31e-3$
Collision Energy (eV) = 35

Reagent

LCPFHxA_00004



609702

ID: LCPFHxA_00004

Exp: 12/22/20 Ppd: CBW

PF-n-hexanoic acid

R: 4/7/16 CBW

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:**

PFHxA

LOT NUMBER:

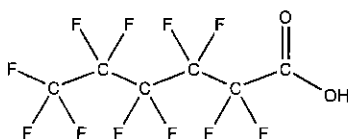
PFHxA1215

COMPOUND:

Perfluoro-n-hexanoic acid

STRUCTURE:**CAS #:**

307-24-4

**MOLECULAR FORMULA:** $C_6HF_{11}O_2$ **CONCENTRATION:** $50 \pm 2.5 \mu\text{g/ml}$ **MOLECULAR WEIGHT:**

314.05

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/22/2015

EXPIRY DATE: (mm/dd/yyyy)

12/22/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of Perfluoro-n-pentanoic acid (PFPeA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/23/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

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Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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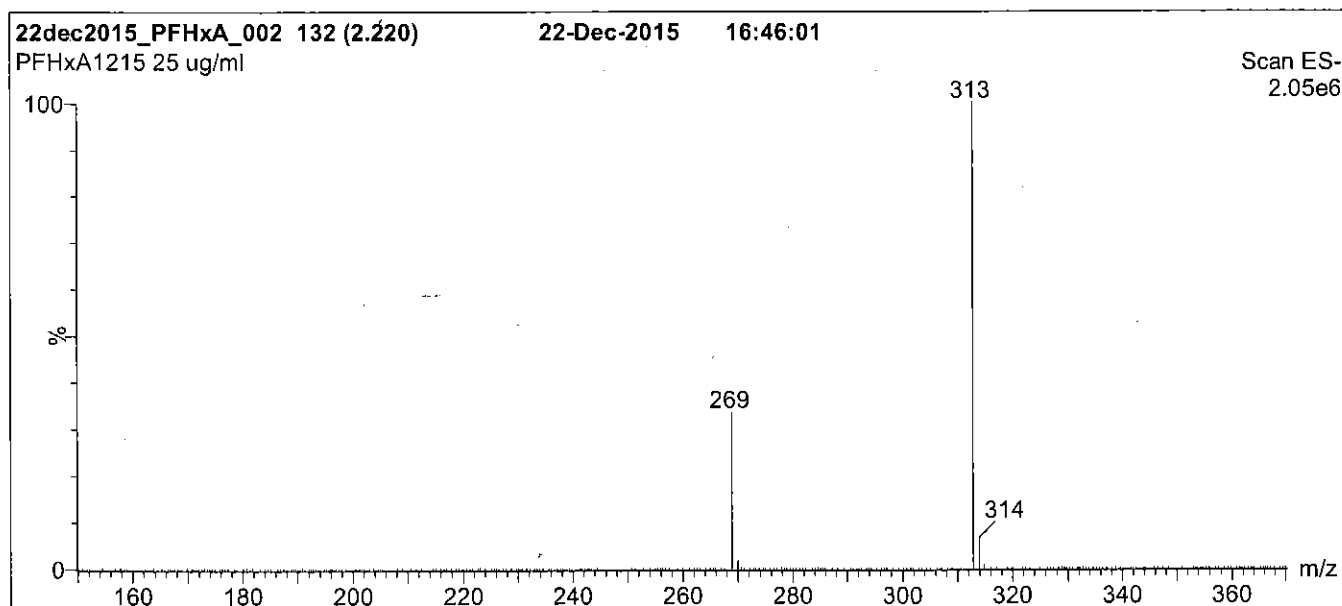
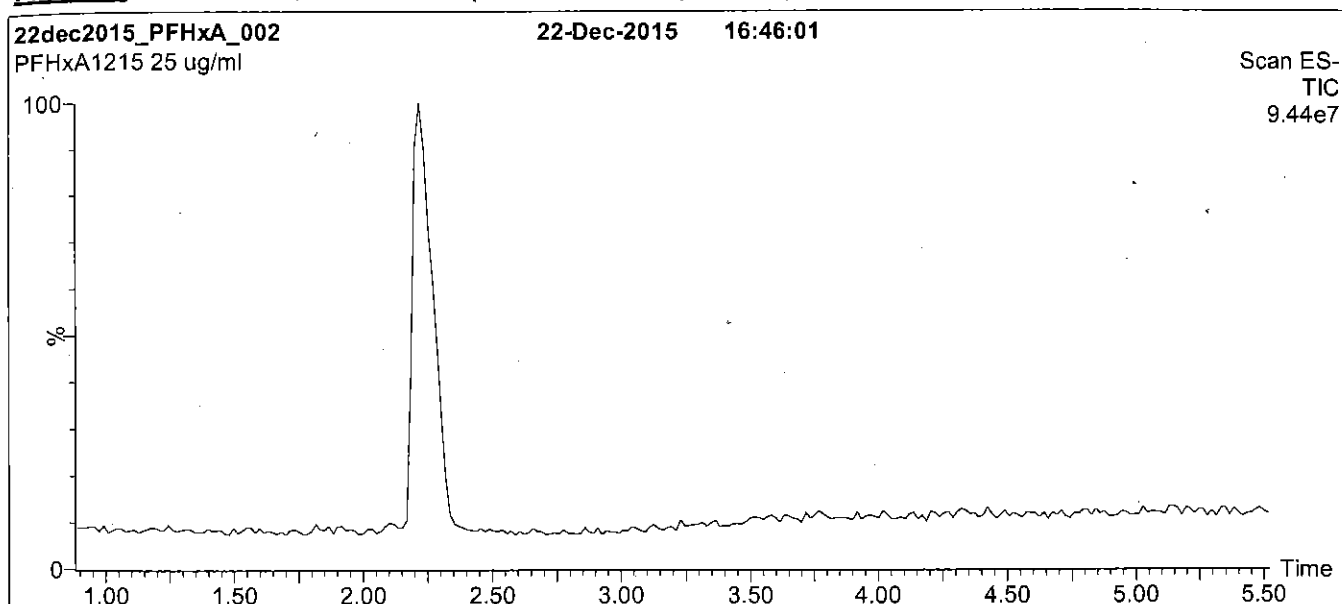
QUALITY MANAGEMENT:

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Figure 1: PFHxA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

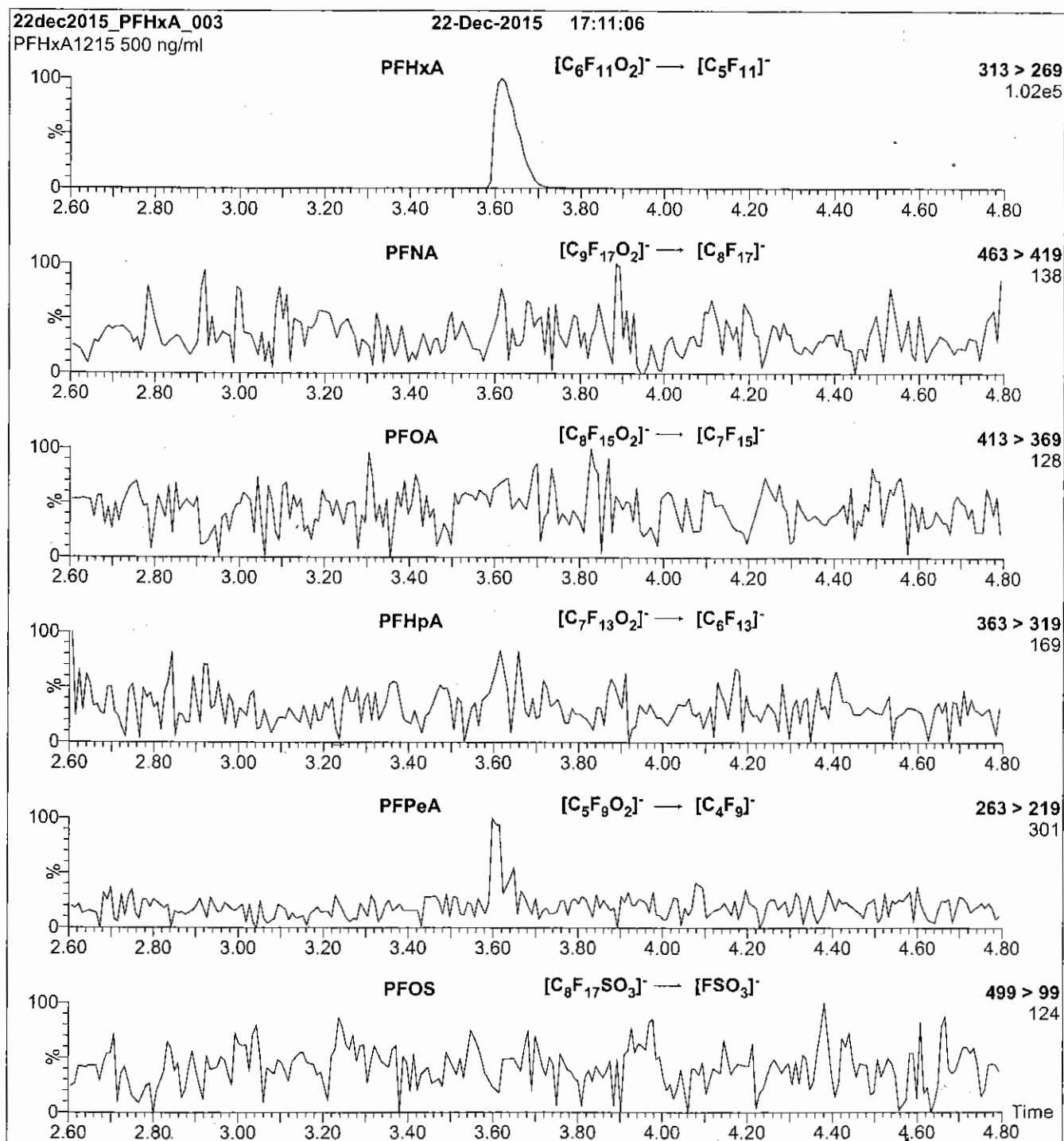
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFHxA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFHxA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 10

Reagent

LCPFHxA_00005

R: 832 9/13/16



730551
ID: LCPFHxA_00005
Exp: 12/22/20 Pp'd: SBC
PF-n-hexanoic acid



730552
ID: LCPFHxA_00006
Exp: 12/22/20 Pp'd: SBC
PF-n-hexanoic acid



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

PFHxA

LOT NUMBER:

PFHxA1215

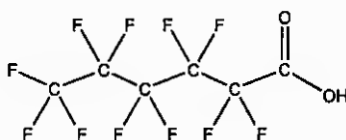
COMPOUND:

Perfluoro-n-hexanoic acid

STRUCTURE:

CAS #:

307-24-4



MOLECULAR FORMULA:

$C_6H_5F_{11}O_2$

MOLECULAR WEIGHT:

314.05

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/22/2015

EXPIRY DATE: (mm/dd/yyyy)

12/22/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of Perfluoro-n-pentanoic acid (PFPeA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/23/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

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where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

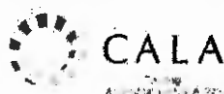
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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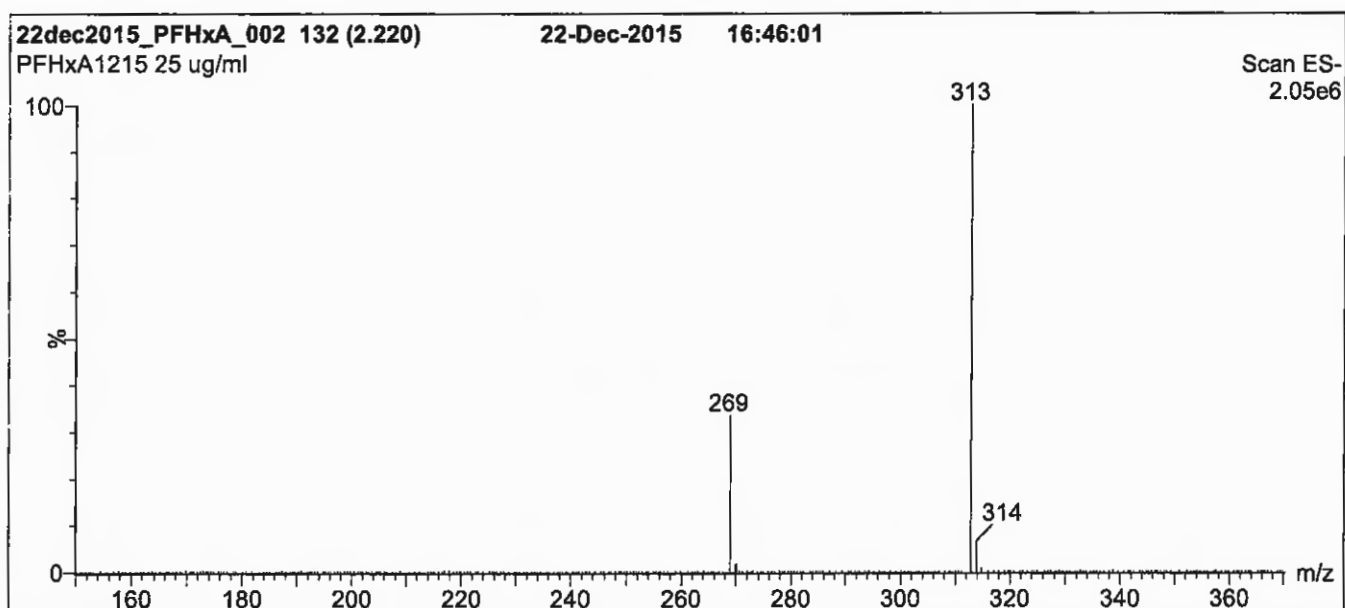
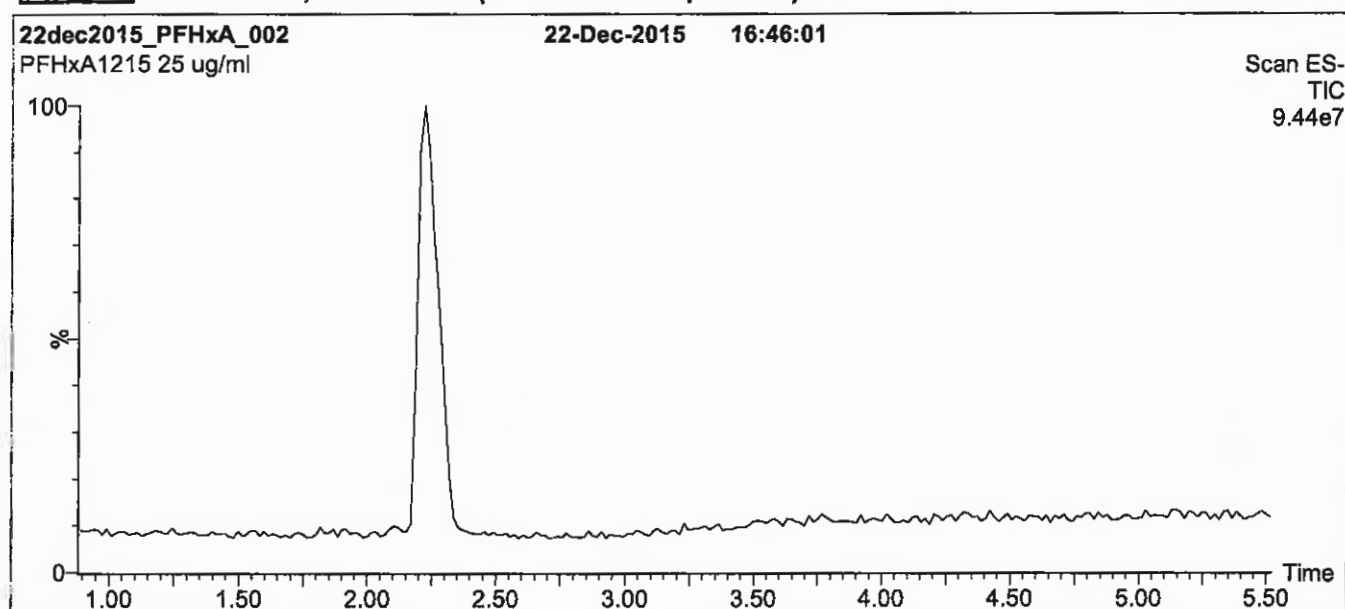
QUALITY MANAGEMENT:

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Figure 1: PFHxA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

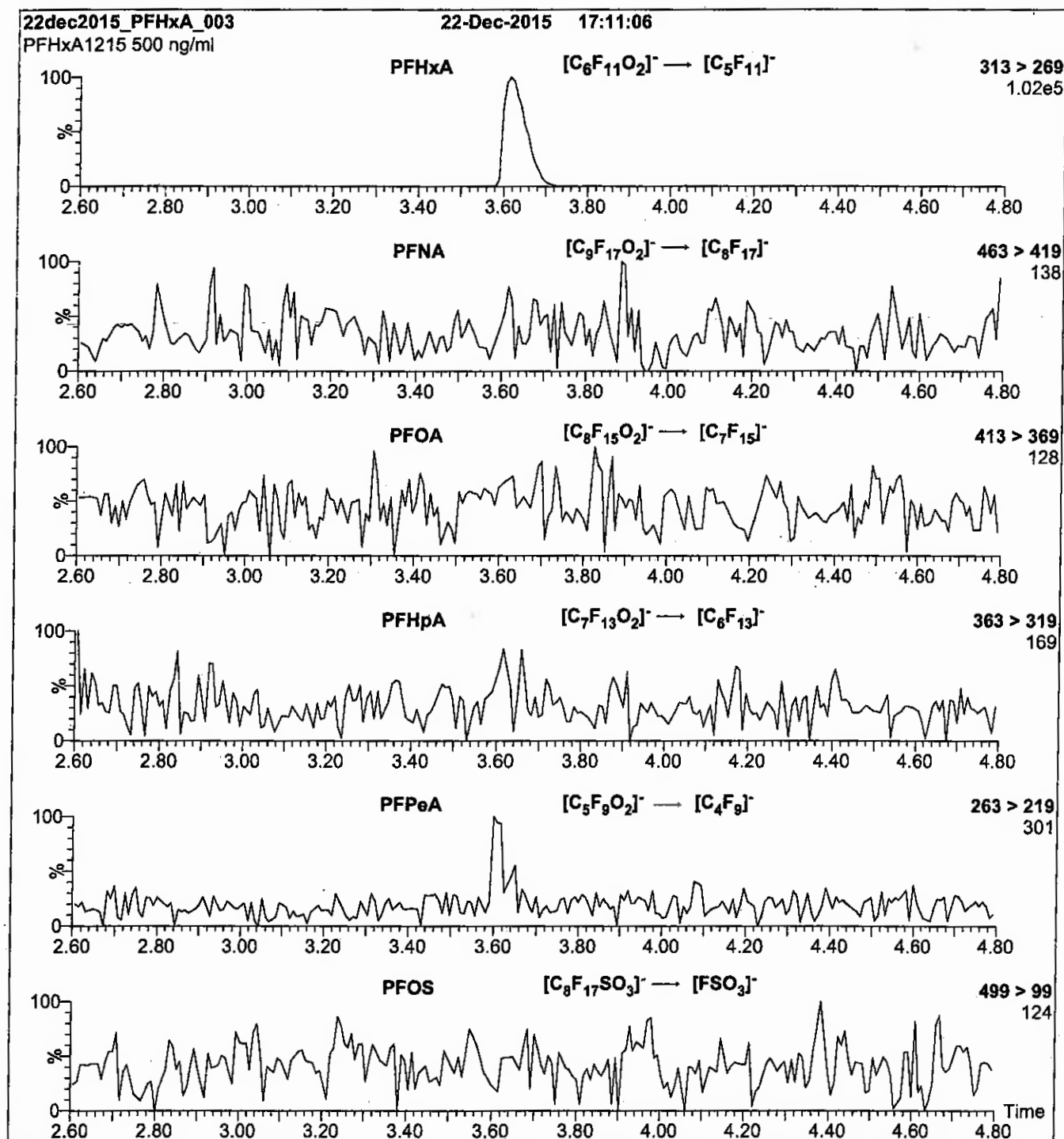
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFHxA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFHxA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 10

Reagent

LCPFHxDA_00006

INTENDED USE:

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HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

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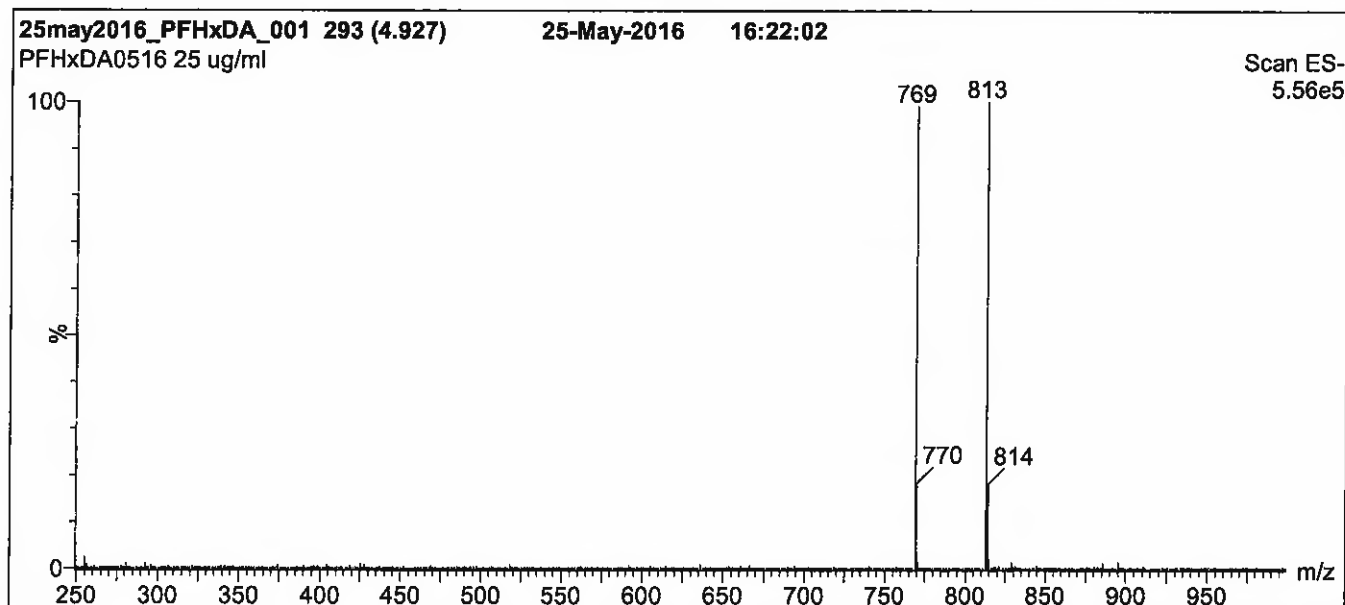
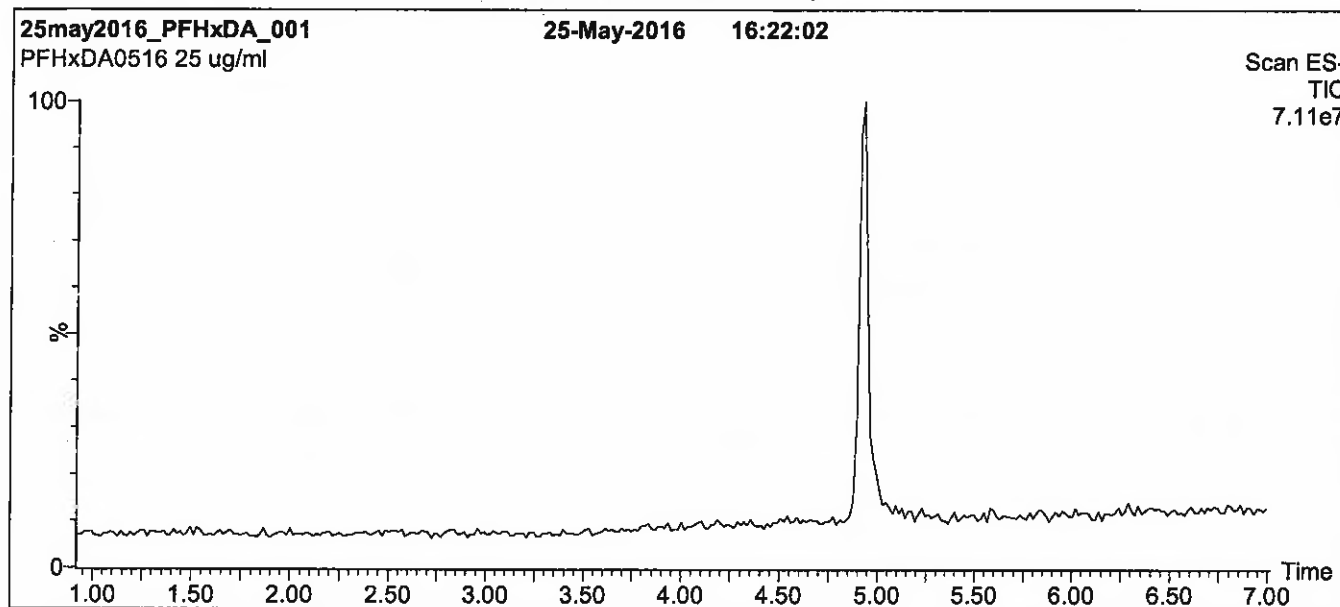
QUALITY MANAGEMENT:

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Figure 1: PFHxDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 70% (80:20 MeOH:ACN) / 30% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 95% organic over 6 min and hold for 2.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

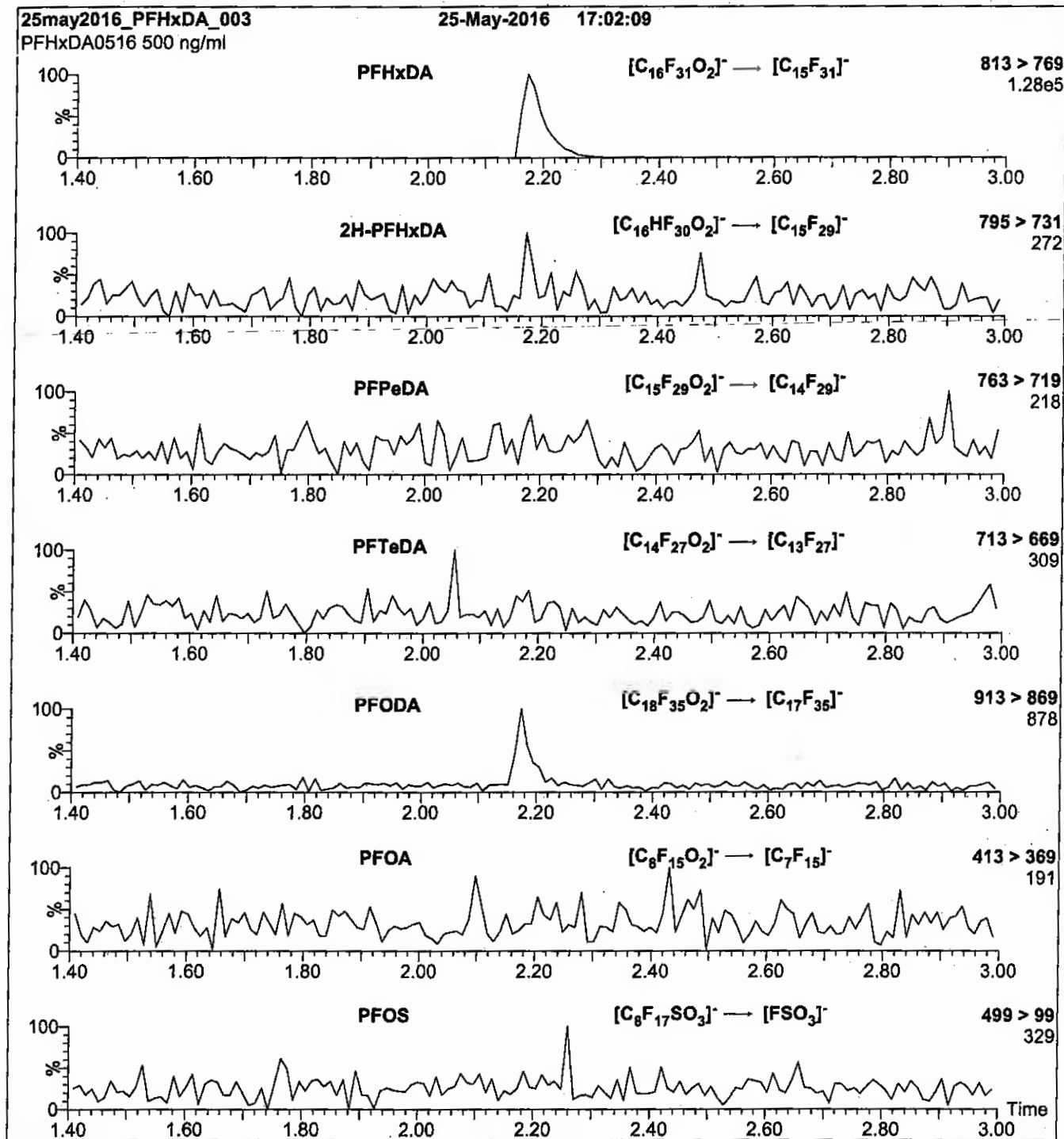
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFHxDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFHxDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 15

Reagent

LCPFHxS-br_00002

SBC
R: 9/13/16



730513
ID: LCPFHxS-br_00002
Exp: 07/03/20 Pripd: SBC
Potassium Perfluorohexane



730514
ID: LCPFHxS-br_00003
Exp: 07/03/20 Pripd: SBC
Potassium Perfluorohexane



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CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate
Solution/Mixture of Linear and
Branched Isomers

PRODUCT CODE: br-PFHxSK
LOT NUMBER: brPFHxSK0615
CONCENTRATION: 50.0 ± 2.5 µg/ml (total potassium salt)
45.5 ± 2.3 µg/ml (total PFHxS anion)
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 06/29/2015
LAST TESTED: (mm/dd/yyyy) 07/03/2015
EXPIRY DATE: (mm/dd/yyyy) 07/03/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorohexanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.5% of perfluoro-1-pentanesulfonate and ~ 0.2% of perfluoro-1-octanesulfonate.
- CAS#: 3871-99-6 (for linear isomer; potassium salt).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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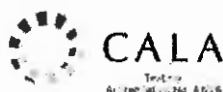
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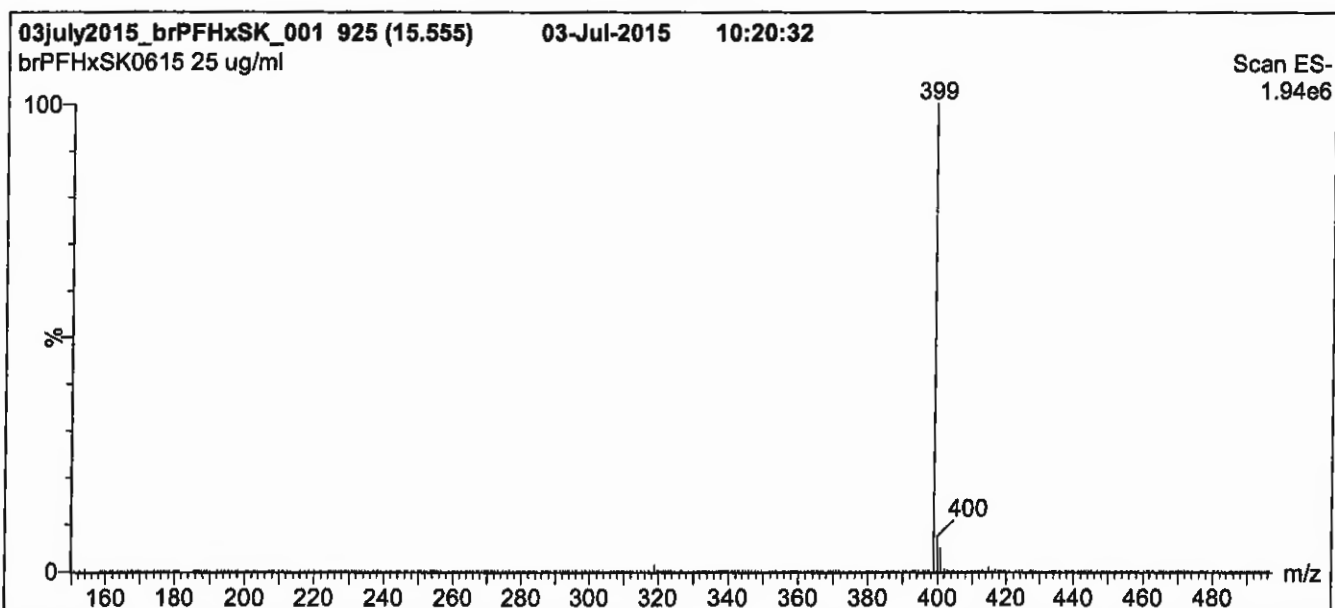
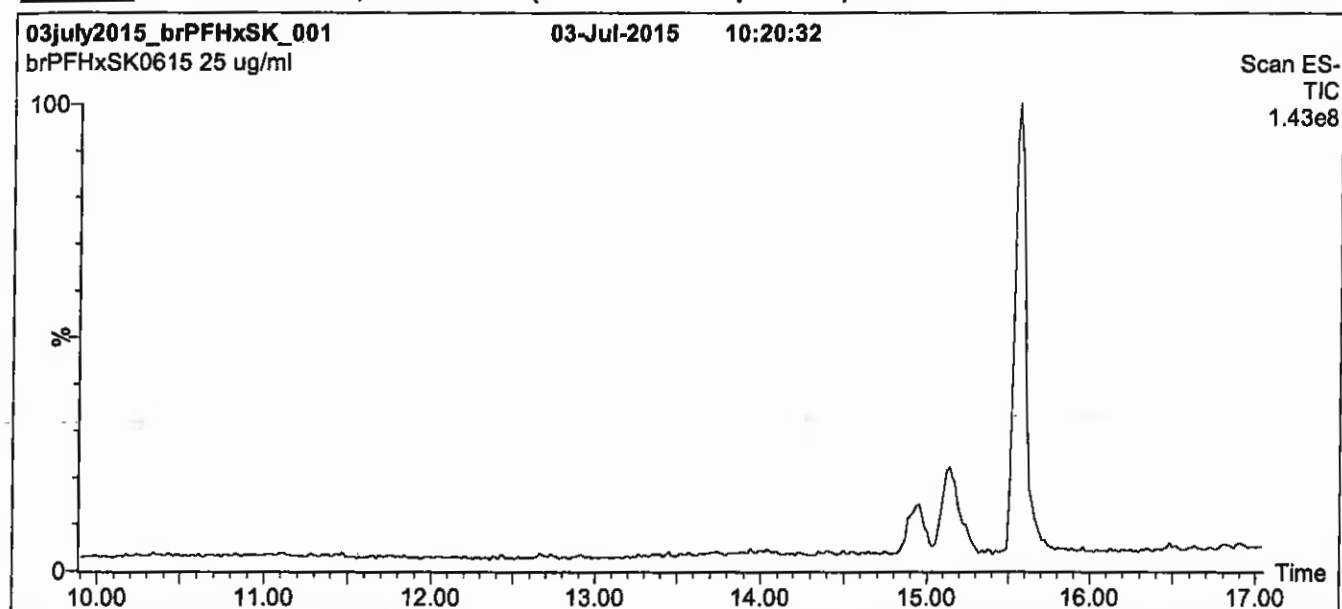
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Figure 1: br-PFHxSK; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient

Start: 20% (80:20 MeOH:ACN) / 80% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 50% organic over 14 min. Ramp to
90% organic over 3 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 20 min

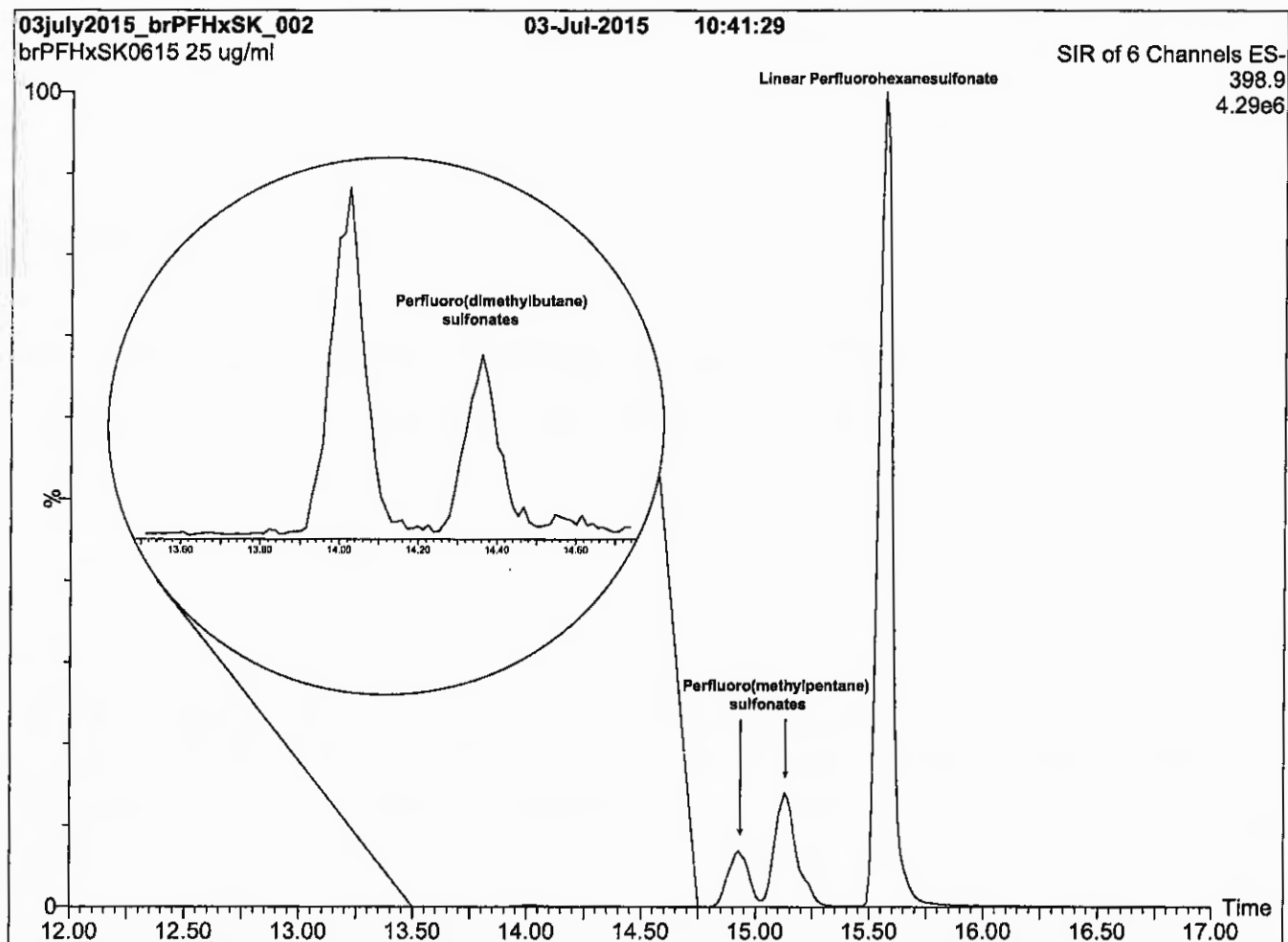
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: br-PFHxSK; LC/MS Data



Conditions for Figure 2:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient

Start: 20% (80:20 MeOH:ACN) / 80% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 50% organic over 14 min. Ramp to
90% organic over 3 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 20 min

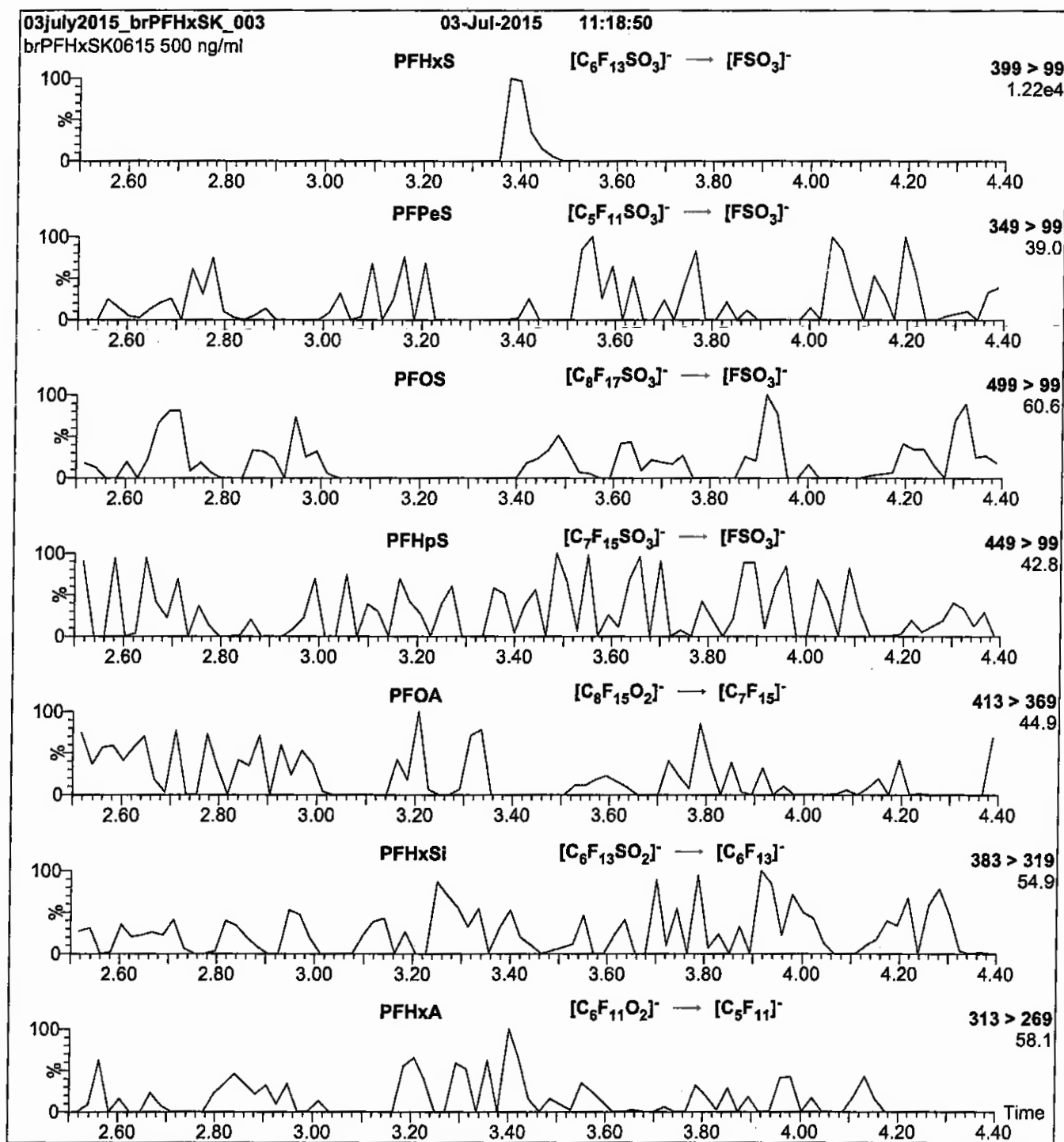
Flow: 300 μ l/min

MS Parameters

Experiment: SIR (6 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 3: br-PFHxSK; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 3:

Injection: Direct loop injection
10 μ l (500 ng/ml br-PFHxSK)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = $3.54e-3$
Collision Energy (eV) = 30

Reagent

LCPFNA_00005



609703

ID: LCPFNA_00005

Exp: 10/23/20 Prod: CBW

PF-n-nonanoic acid

R: 4/7/16 CBW



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFNA

LOT NUMBER:

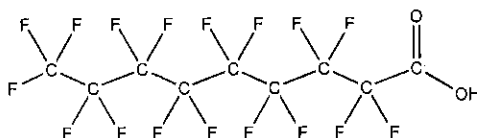
PFNA1015

COMPOUND:

Perfluoro-n-nonanoic acid

STRUCTURE:**CAS #:**

375-95-1

**MOLECULAR FORMULA:** $C_9H_{17}O_2$ **MOLECULAR WEIGHT:**

464.08

CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

10/23/2015

EXPIRY DATE: (mm/dd/yyyy)

10/23/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of perfluoro-n-octanoic acid (PFOA) and < 0.1% of perfluoro-n-heptanoic acid (PFHpA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date:

10/30/2015
(mm/dd/yyyy)

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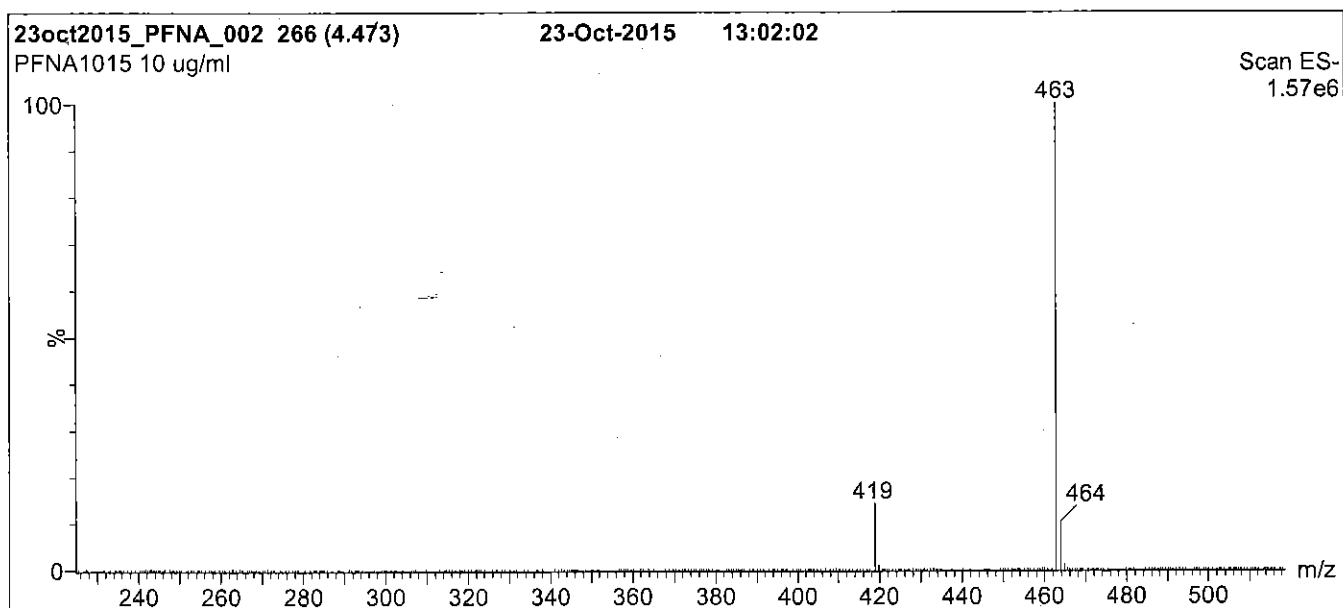
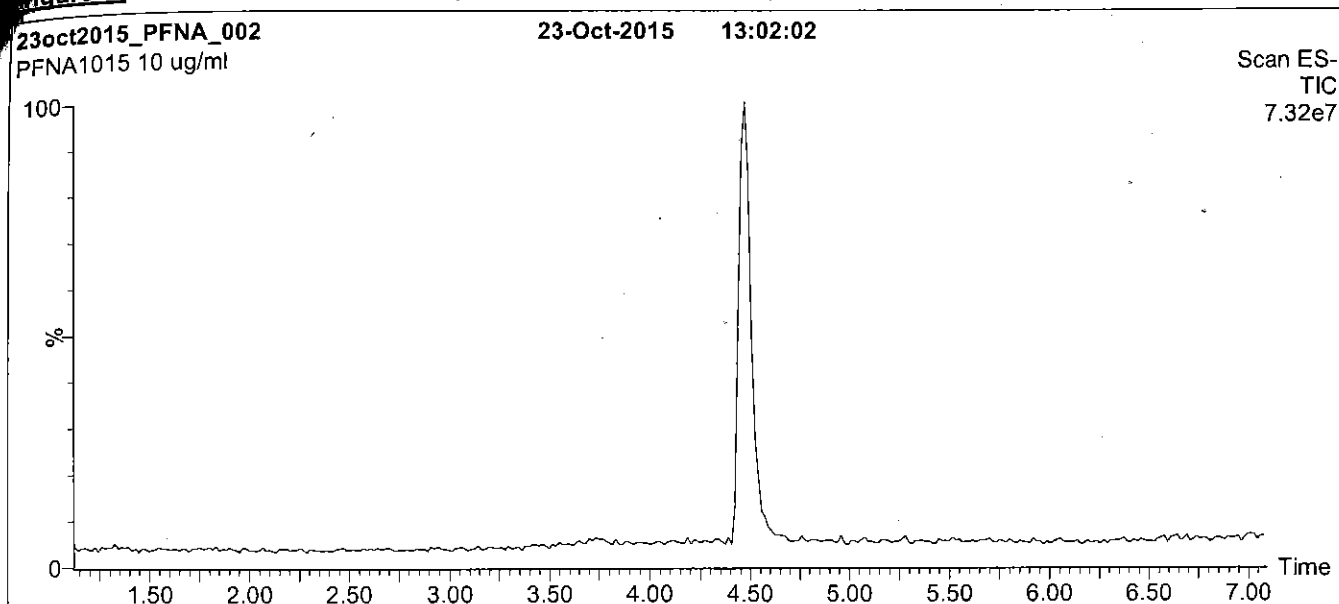
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Figure 1: PFNA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

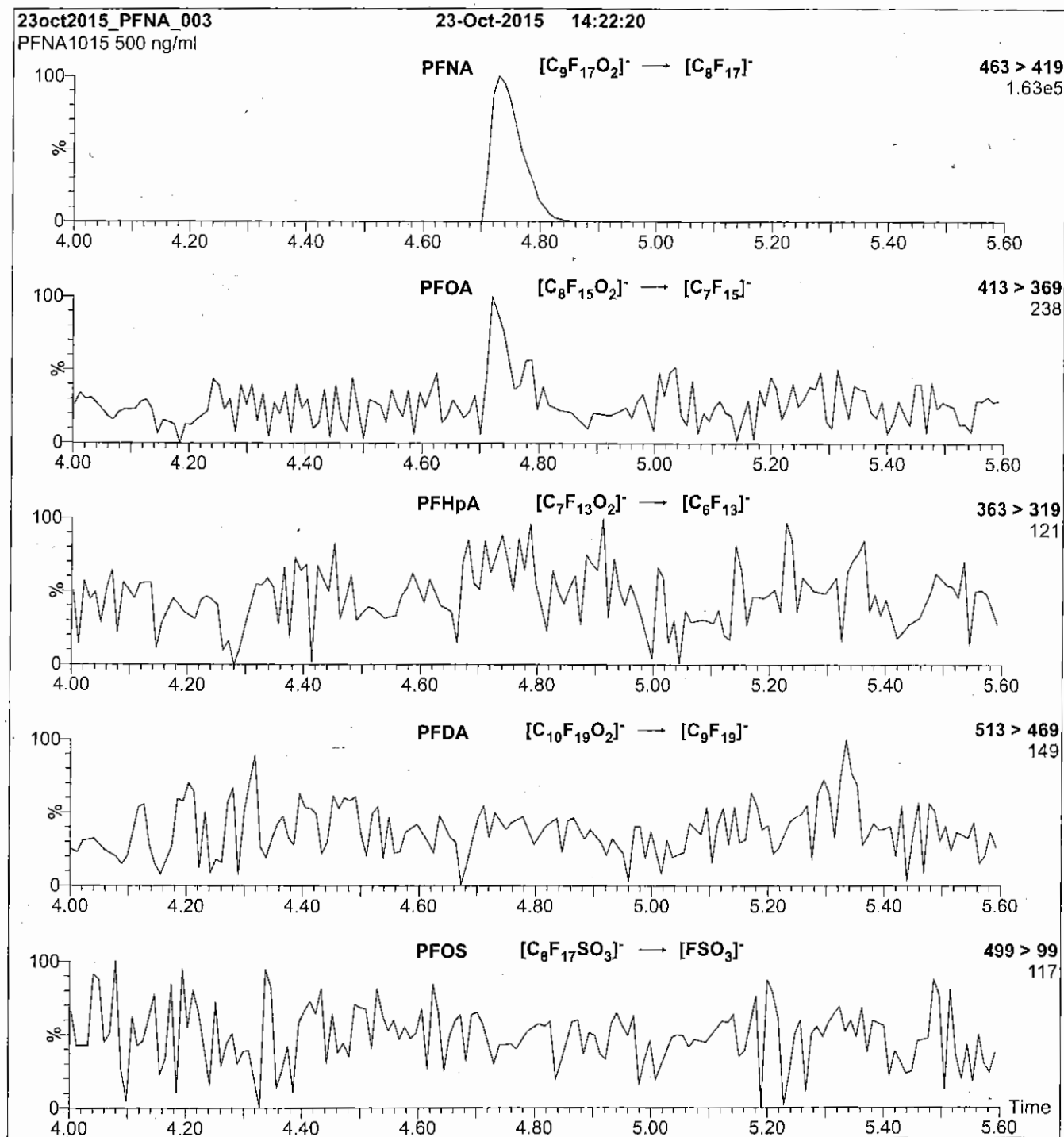
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFNA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFNA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 11

Reagent

LCPFNA_00006

R: SBC 9/13/16

Scanned 10/14/16



730559
ID: LCPFNA_00006
Exp: 10/23/20 Ppfd: SBC
PF-n-nonanoic acid



730560
ID: LCPFNA_00007
Exp: 10/23/20 Ppfd: SBC
PF-n-nonanoic acid



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

PFNA

LOT NUMBER:

PFNA1015

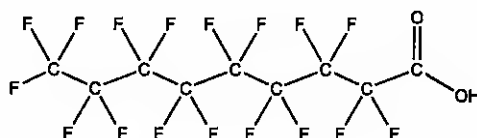
COMPOUND:

Perfluoro-n-nonanoic acid

STRUCTURE:

CAS #:

375-95-1



MOLECULAR FORMULA:

$C_9H_{17}O_2$

MOLECULAR WEIGHT:

464.08

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

10/23/2015

EXPIRY DATE: (mm/dd/yyyy)

10/23/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of perfluoro-n-octanoic acid (PFOA) and < 0.1% of perfluoro-n-heptanoic acid (PFHpA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 10/30/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

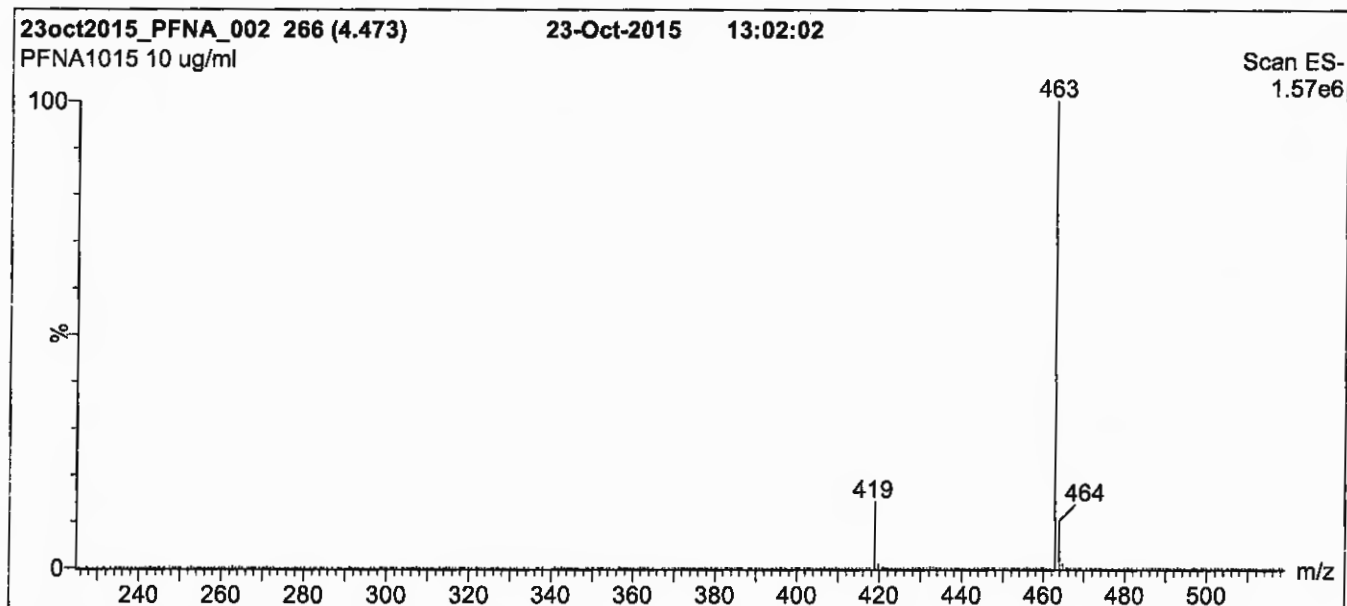
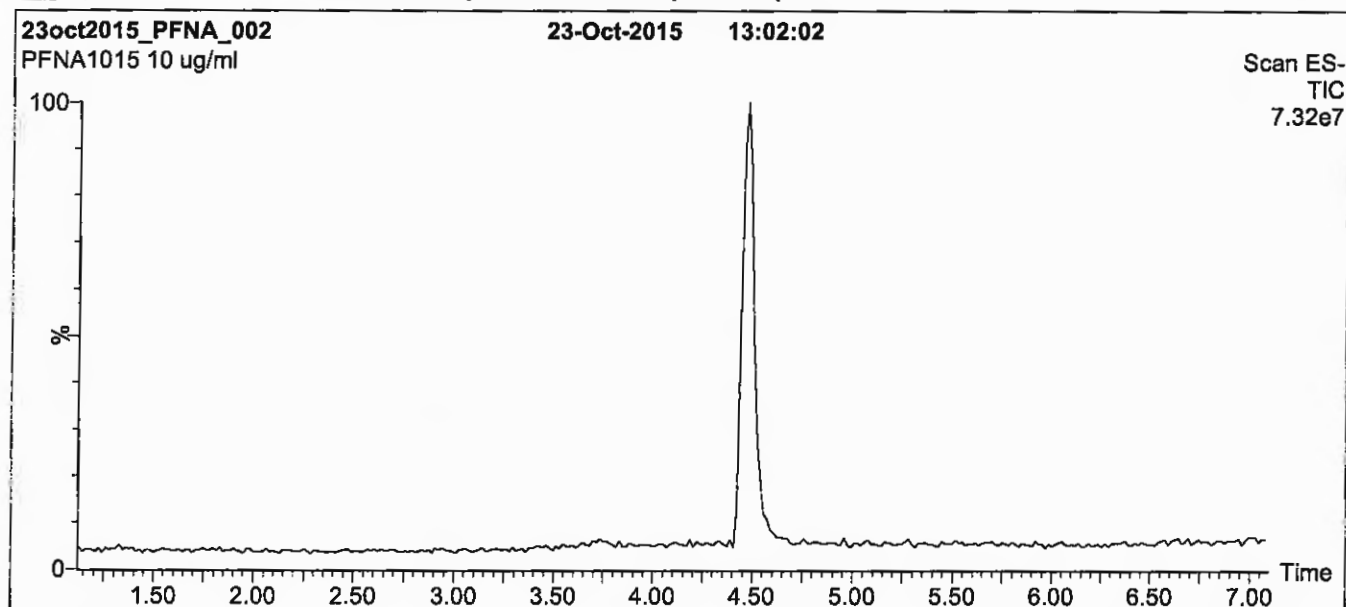
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: PFNA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

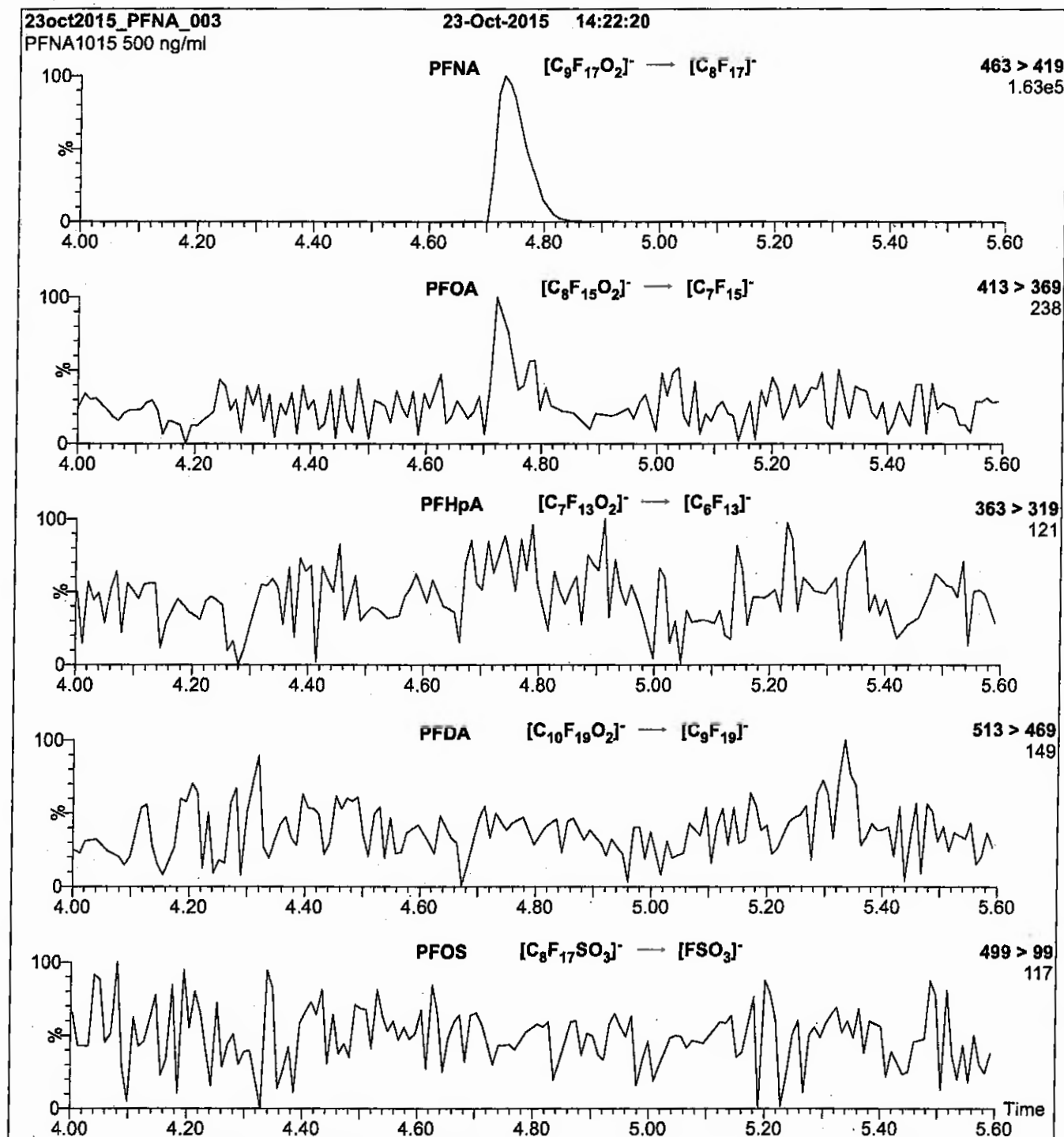
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFNA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFNA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 11

Reagent

LCPFOA_00006

R-716/16CBW

671577
 ID: LCPFOA_00006
 Exp: 11/06/20 Prod: CBW
 PF-n-octanoic acid



WELLINGTON
 LABORATORIES

CERTIFICATE OF ANALYSIS
 DOCUMENTATION

PRODUCT CODE:

PFOA

LOT NUMBER:

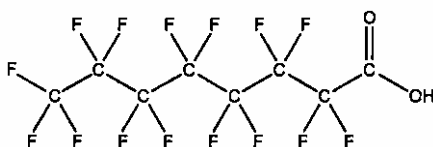
PFOA1115

COMPOUND:

Perfluoro-n-octanoic acid

STRUCTURE:**CAS #:**

335-67-1

**MOLECULAR FORMULA:** $C_8H_2F_{15}O_2$ **MOLECULAR WEIGHT:**

414.07

CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/06/2015

EXPIRY DATE: (mm/dd/yyyy)

11/06/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 11/11/2015

(mm/dd/yyyy)

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 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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EXPIRY DATE / PERIOD OF VALIDITY:

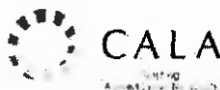
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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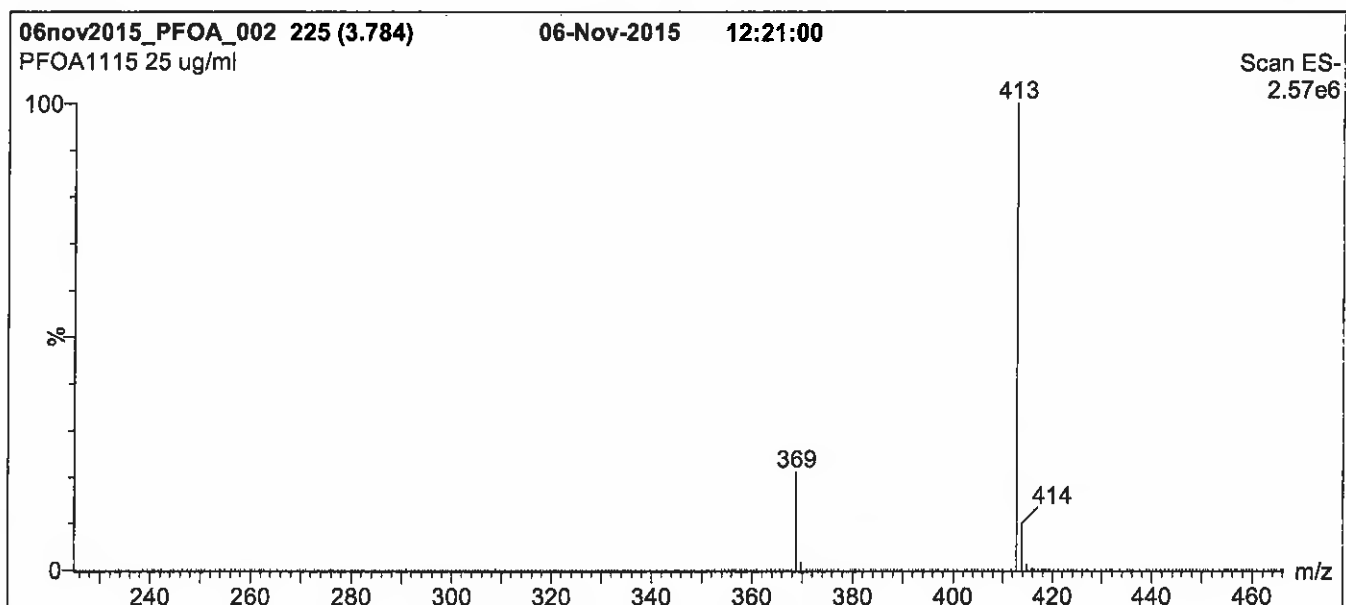
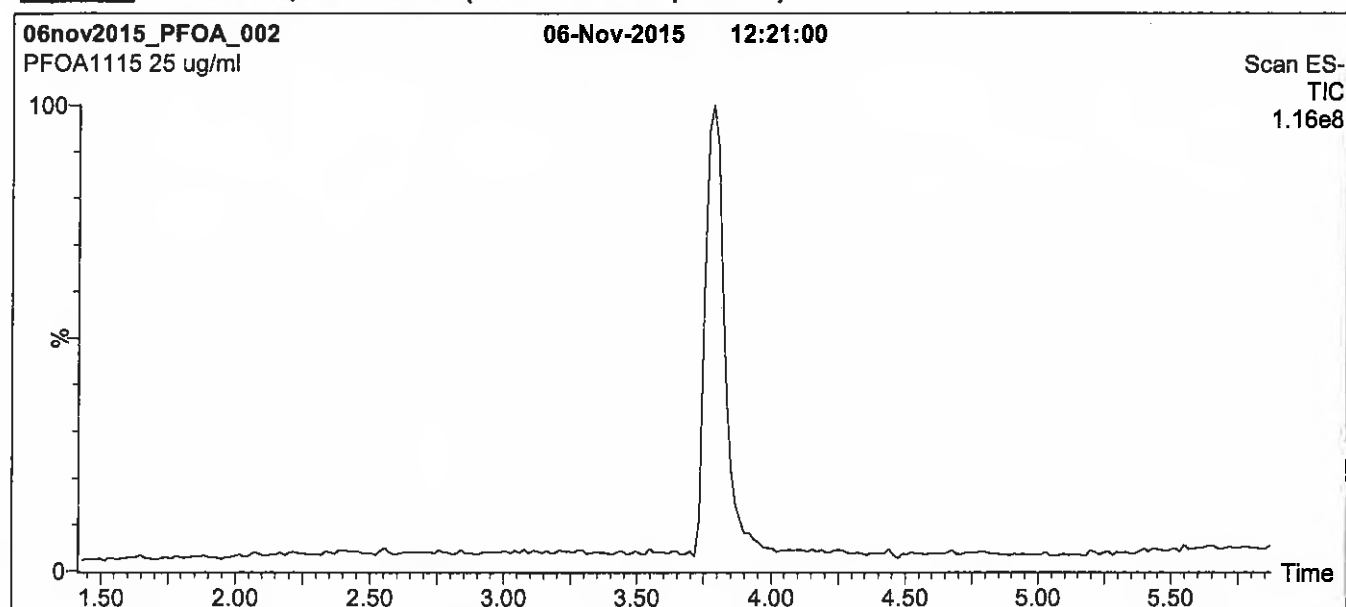
QUALITY MANAGEMENT:

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Figure 1: PFOA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

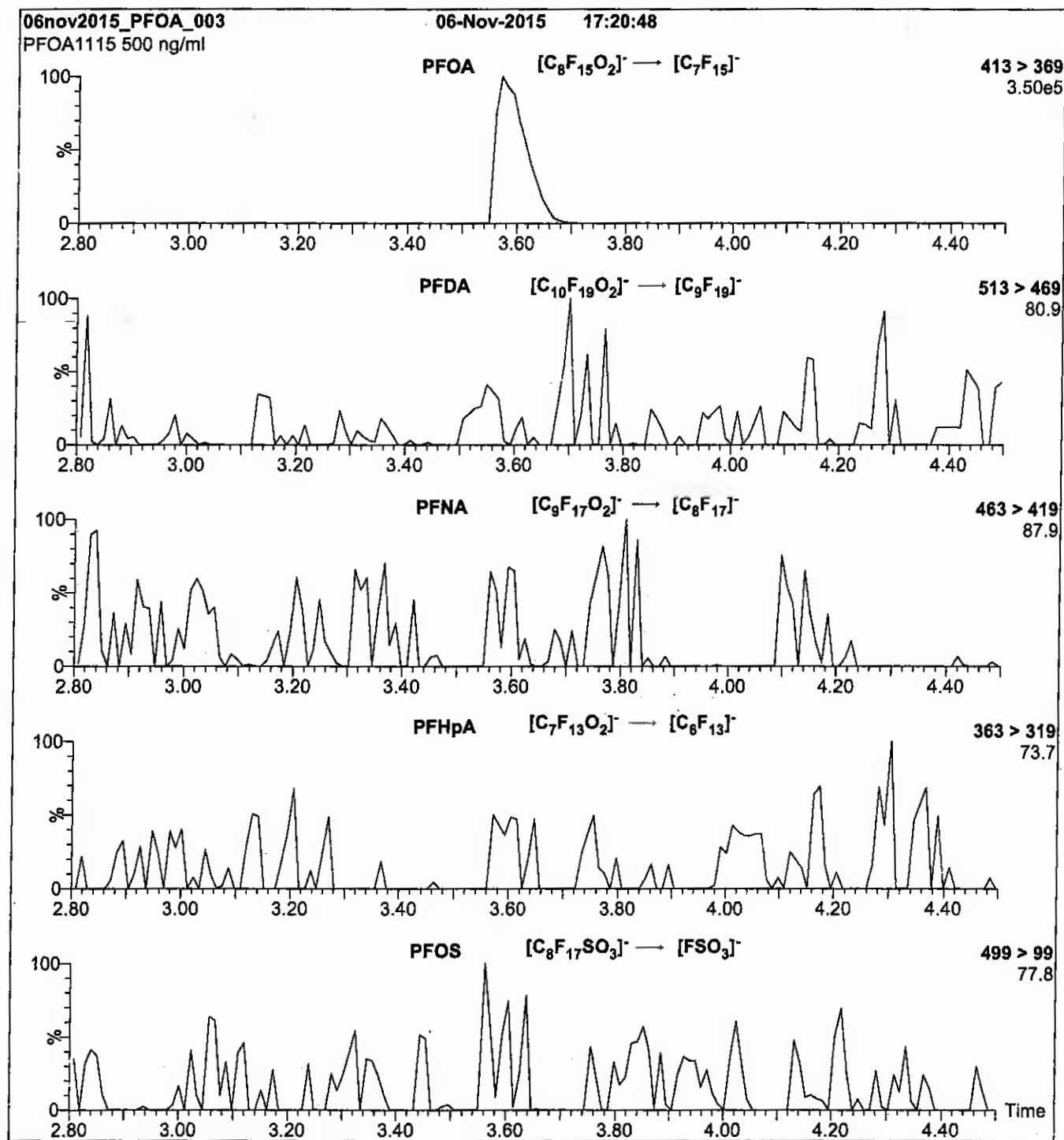
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFOA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop Injection
10 μ l (500 ng/ml PFOA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = $3.17e-3$
Collision Energy (eV) = 10

Reagent

LCPFODA_00005

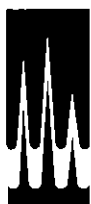


605234

ID: LCPFOA_00005

Exp: 01/30/20 Prod: CBW
PFODA stock 50ug/mL

Rec. 3/20/16 JRB

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:**

PFODA

LOT NUMBER:

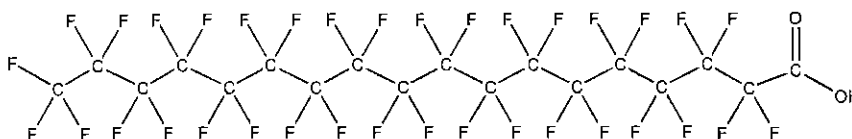
PFODA0115

COMPOUND:

Perfluoro-n-octadecanoic acid

STRUCTURE:**CAS #:**

16517-11-6

**MOLECULAR FORMULA:** $C_{18}H_{35}O_2$ **MOLECULAR WEIGHT:**

914.14

CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

01/30/2015

EXPIRY DATE: (mm/dd/yyyy)

01/30/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 03/25/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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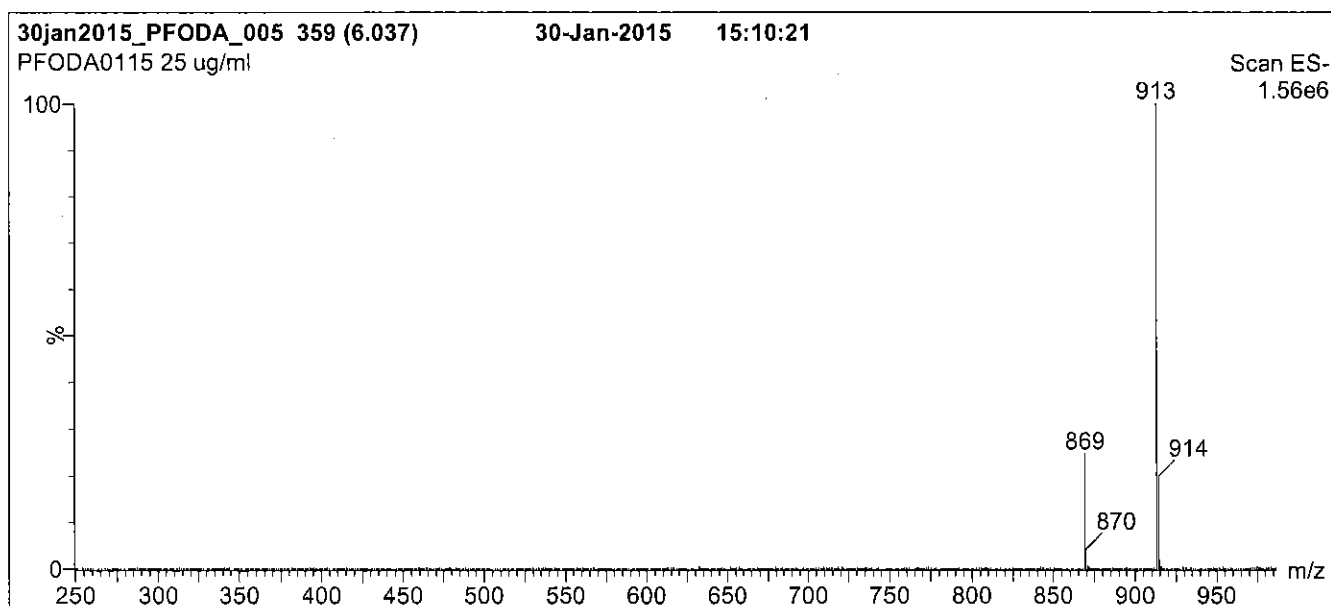
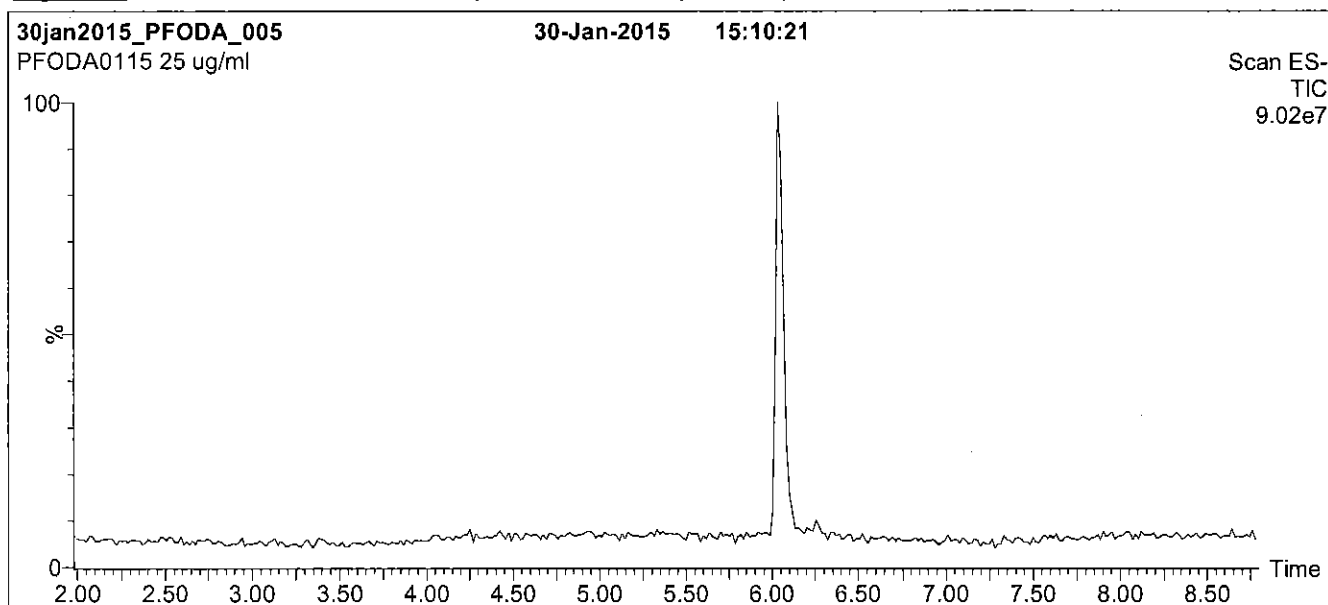
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Figure 1: PFODA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

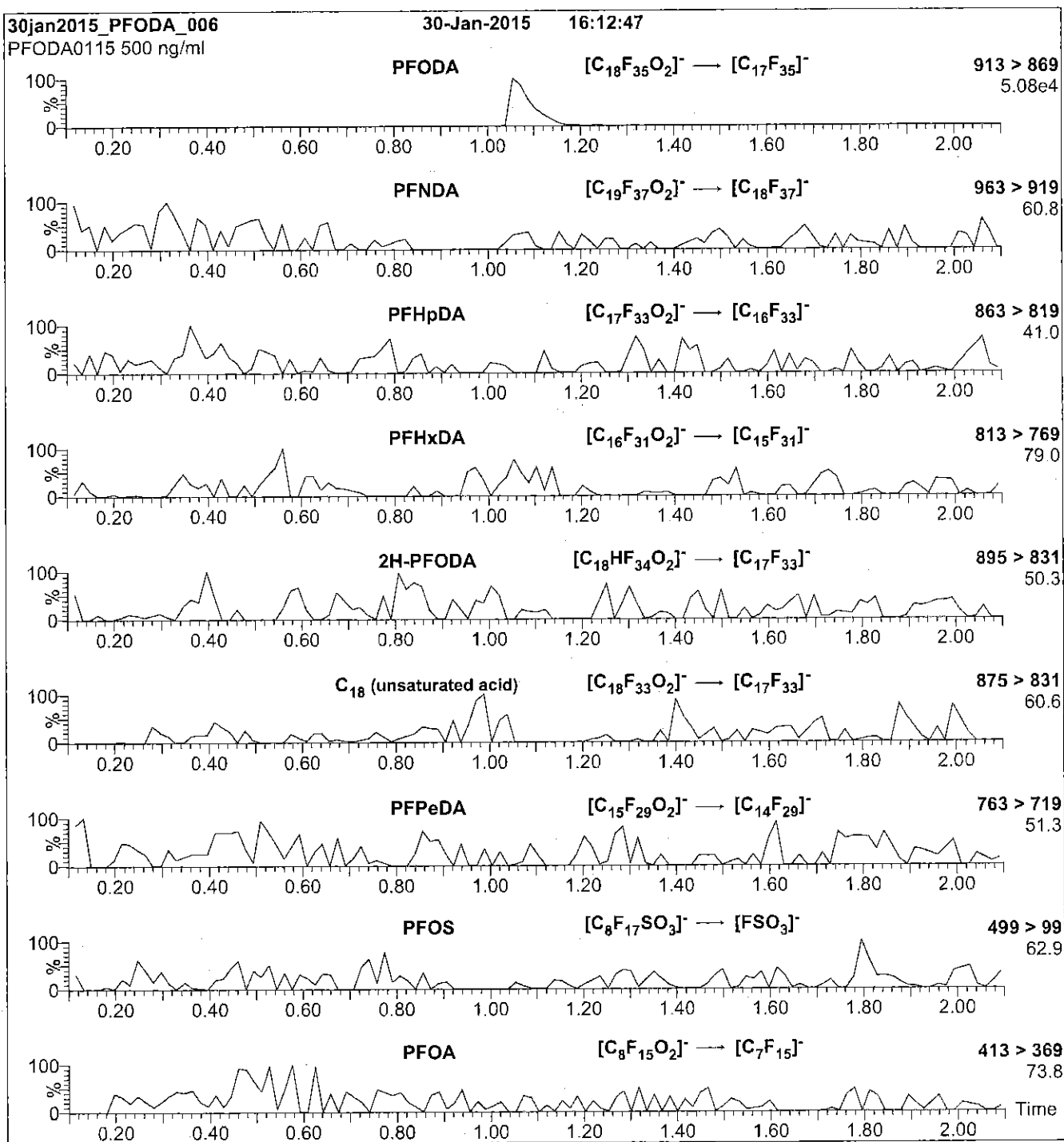
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 1000 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFODA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFODA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 15

Reagent

LCPFODA_00006



Scanned 10/14/16
P: SBC 9/13/16

**WELLINGTON
LABORATORIES**

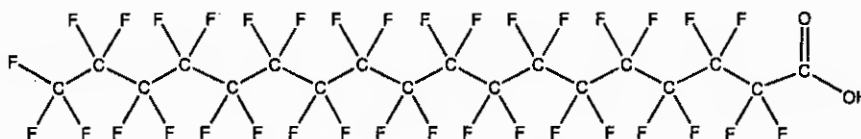
730632
ID: LCPFODA_00006
Exp: 04/29/21 Prpd: SBC
PFODA stock 50ug/mL

730633
ID: LCPFODA_00007
Exp: 04/29/21 Prpd: SBC
PFODA stock 50ug/mL

**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PRODUCT CODE: PFODA
COMPOUND: Perfluoro-n-octadecanoic acid
LOT NUMBER: PFODA0416

STRUCTURE:
CAS #: 16517-11-6



MOLECULAR FORMULA: $C_{18}H_{36}O_2$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/mL}$
MOLECULAR WEIGHT: 914.14
SOLVENT(S): Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/29/2016
EXPIRY DATE: (mm/dd/yyyy) 04/29/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/20/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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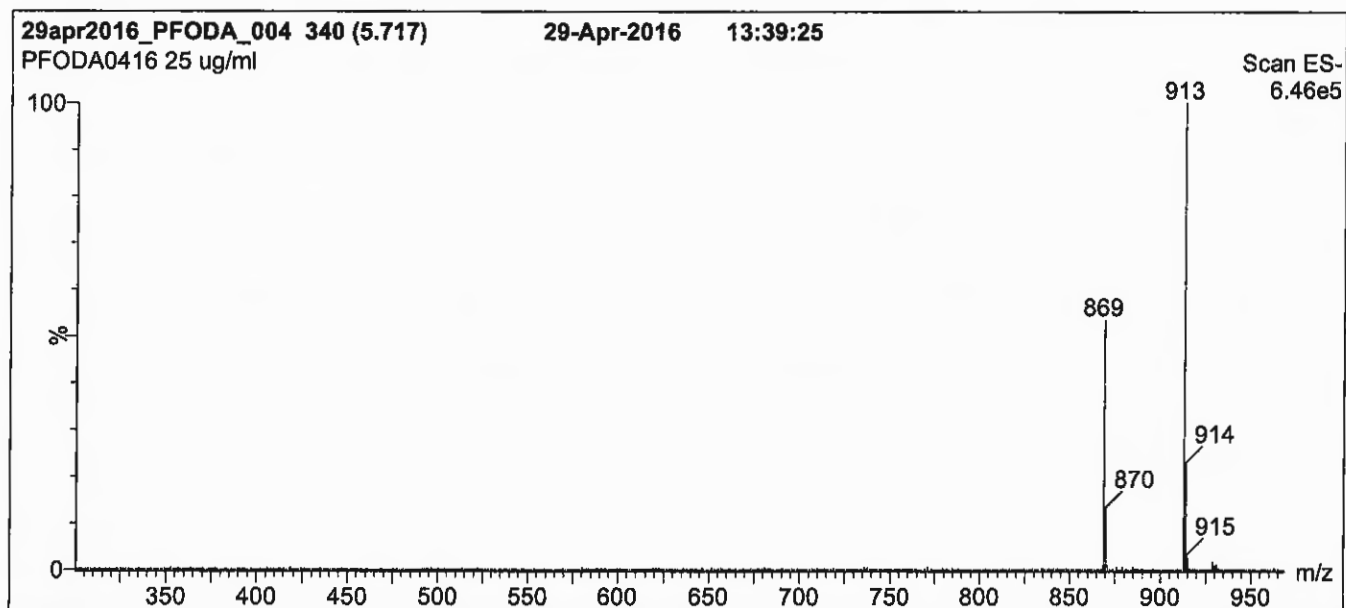
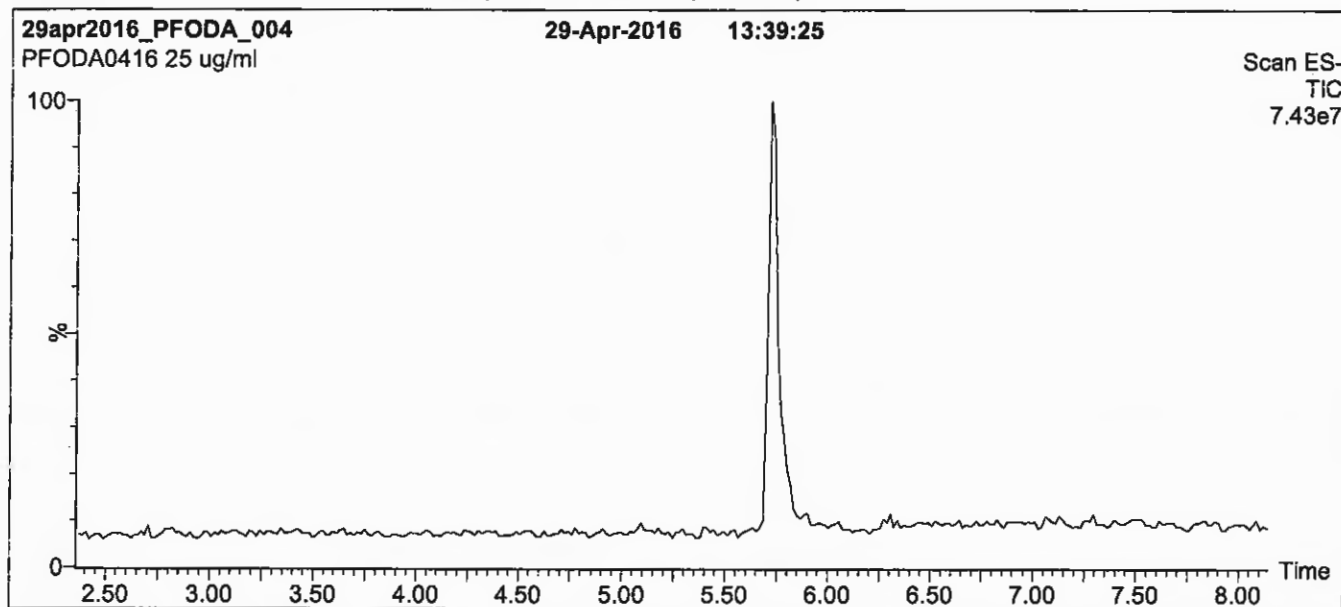
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: PFODA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 70% (80:20 MeOH:ACN) / 30% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 95% organic over 6 min and hold for
2.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

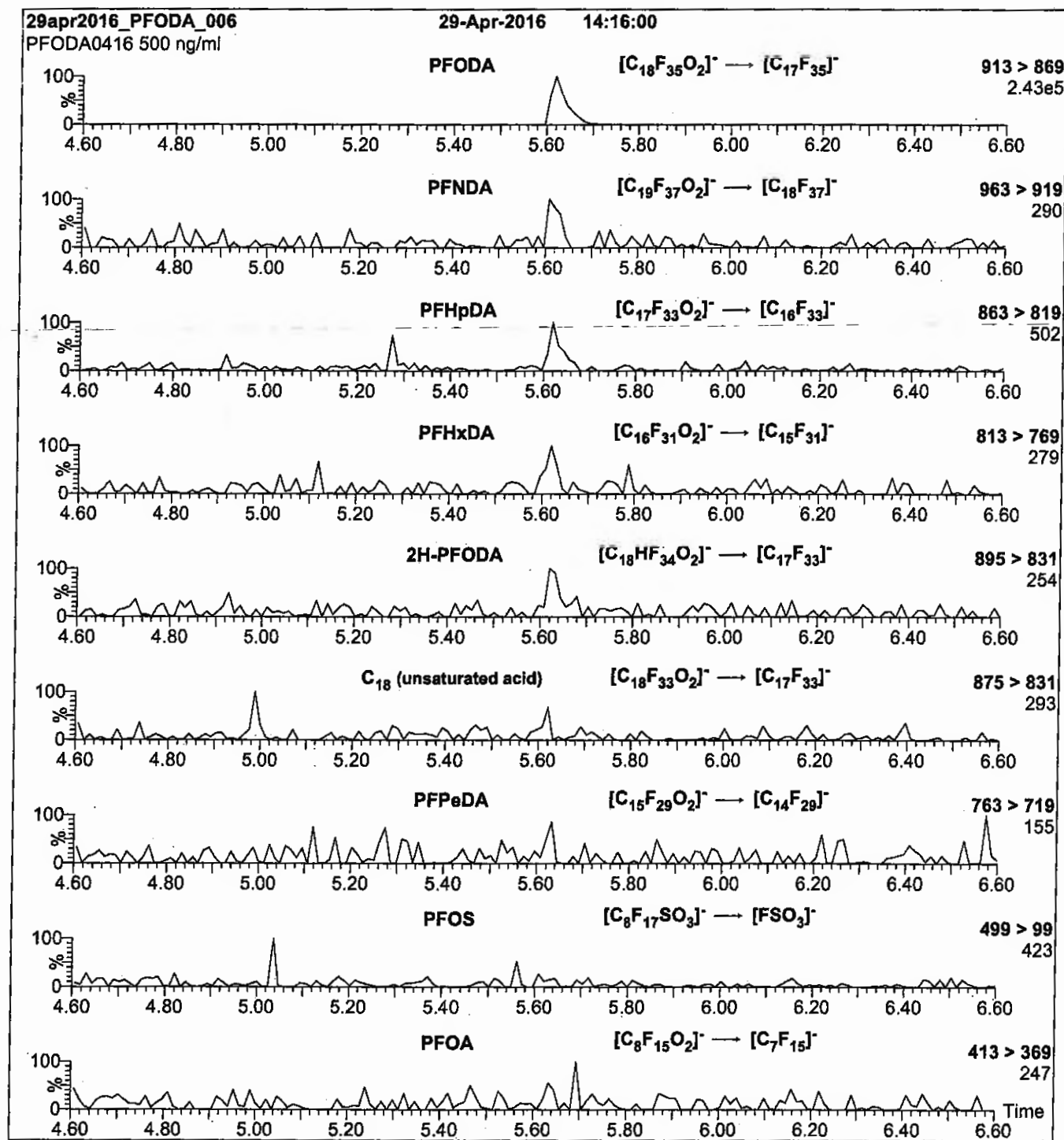
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 1000 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFODA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFODA)

Mobile phase: Isocratic 90% (80:20 MeOH:ACN) / 10% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 15

Reagent

LCPFOS-br_00002

Scanned
10/14/16 S.R.

R: SBC 9/13/16



730515

ID: LCPFOS-br_00002

Exp: 10/14/20 Ppt: SBC

Potassium Perfluorooctane



730516

ID: LCPFOS-br_00003

Exp: 10/14/20 Ppt: SBC

Potassium Perfluorooctane



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CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate
Solution/Mixture of Linear and
Branched Isomers

PRODUCT CODE: br-PFOSK
LOT NUMBER: brPFOSK1015
CONCENTRATION: 50 ± 2.5 µg/ml (total potassium salt)
46.4 ± 2.3 µg/ml (total PFOS anion)
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 10/13/2015
LAST TESTED: (mm/dd/yyyy) 10/14/2015
EXPIRY DATE: (mm/dd/yyyy) 10/14/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorooctanesulfonate linear and branched isomers.
The full name, structure and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- A 5-point calibration curve was generated using linear PFOS (potassium salt) and mass-labelled PFOS as an internal standard to enable quantitation of br-PFOSK using isotopic dilution.
- CAS#: 2795-39-3 (for linear isomer; potassium salt).

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INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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Table A: br-PFOSK; Isomeric Components and Percent Composition (by ¹⁹F-NMR)*

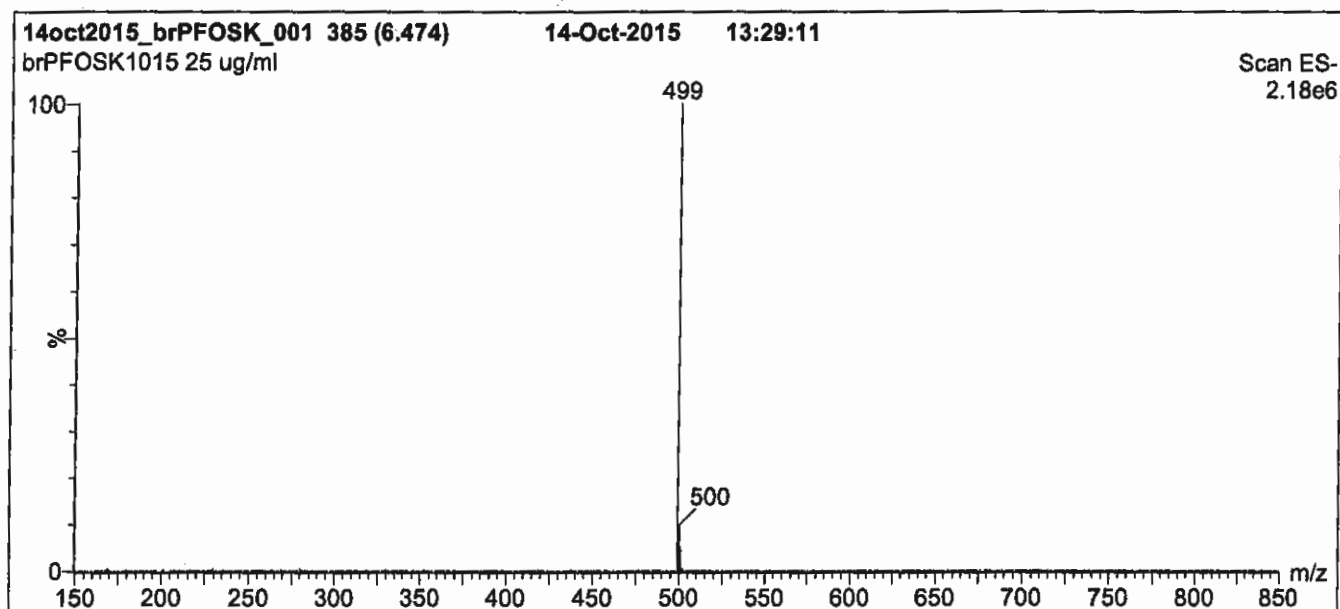
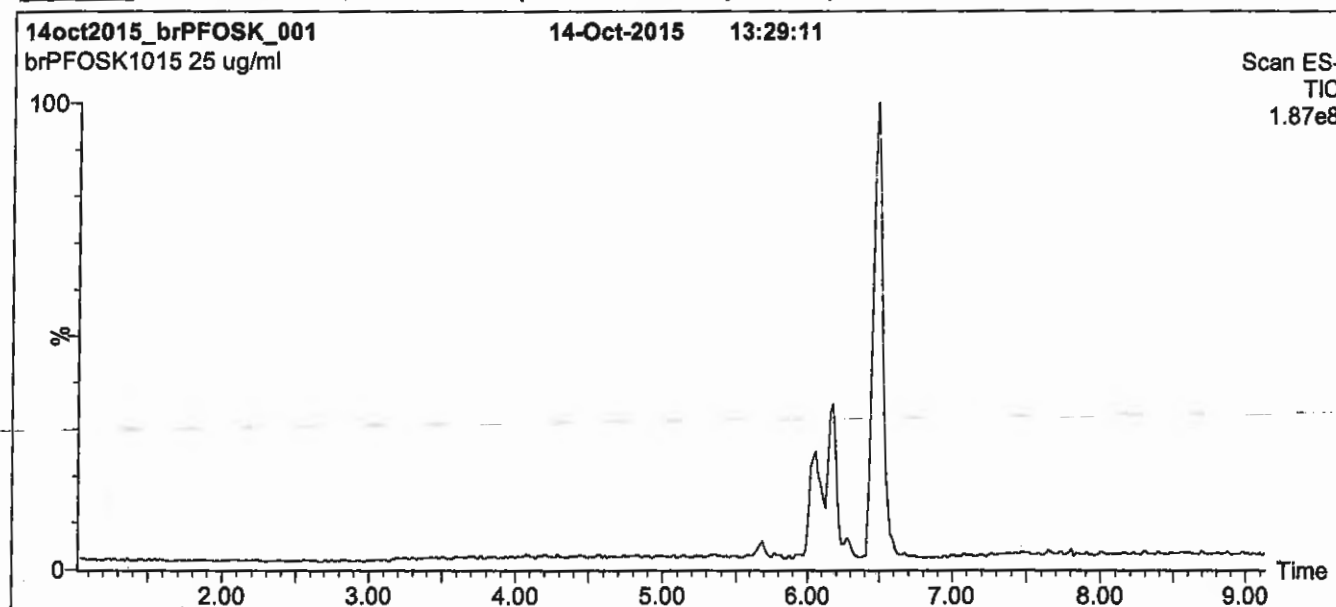
Isomer	Name	Structure	Percent Composition by ¹⁹ F-NMR
1	Potassium perfluoro-1-octanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ K ⁺	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}(\text{SO}_3\text{K}^+)\text{CF}_3 \\ \\ \text{CF}_3 \end{array}$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}(\text{SO}_3\text{K}^+)\text{CF}_2\text{CF}_3 \\ \\ \text{CF}_3 \end{array}$	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}(\text{SO}_3\text{K}^+)\text{CF}_2\text{CF}_2\text{CF}_3 \\ \\ \text{CF}_3 \end{array}$	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}(\text{SO}_3\text{K}^+)\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_3 \\ \\ \text{CF}_3 \end{array}$	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}(\text{SO}_3\text{K}^+)\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_3 \\ \\ \text{CF}_3 \end{array}$	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}(\text{SO}_3\text{K}^+)\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_3 \\ \\ \text{CF}_3 \end{array}$	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	$\begin{array}{c} \text{CF}_3 \\ \\ \text{CF}_3-\text{C}-\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$\begin{array}{c} \text{CF}_3 \\ \\ \text{CF}_3\text{CF}_2-\text{C}-\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$\begin{array}{c} \text{CF}_3-\text{CF}(\text{CF}_3)-\text{CF}(\text{CF}_3)-\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \end{array}$	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$\begin{array}{c} \text{CF}_3-\text{CF}(\text{CF}_3)-\text{CF}_2-\text{CF}(\text{CF}_3)-\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \end{array}$	0.07

* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.
 ** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By: 
 B.G. Chittim

Date: 10/15/2015
 (mm/dd/yyyy)

Figure 1: br-PFOSK; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 12 min and hold for 2 min.
Return to initial conditions over 0.5 min.
Time: 16 min

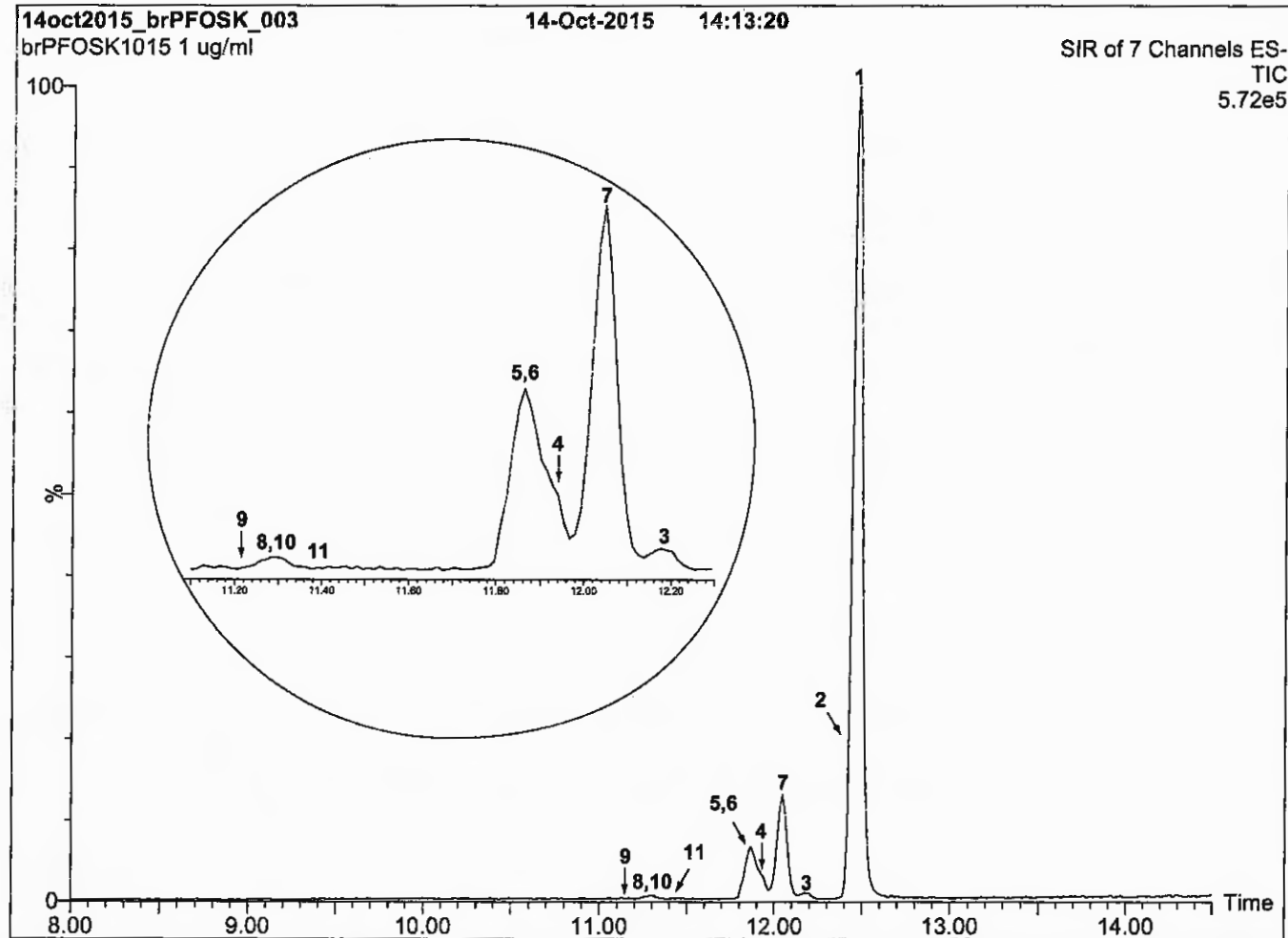
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: br-PFOSK; LC/MS Data (SIR)



Conditions for Figure 2:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

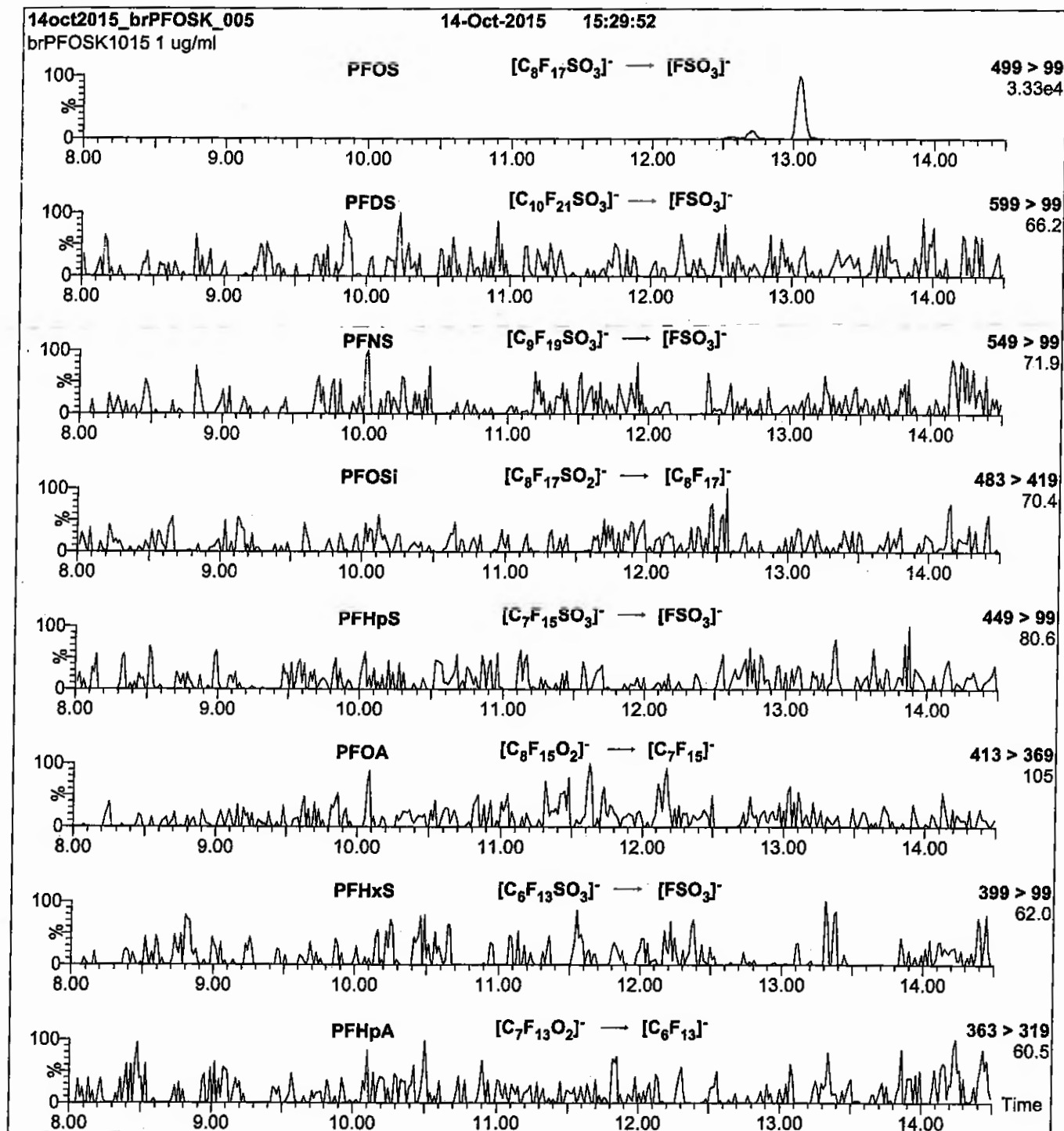
Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP₁₈ (1.7 μ m, 2.1 x 100 mm)
Injection: 1.0 μ g/ml of br-PFOSK
Mobile Phase: Gradient
45% (80:20 MeOH:ACN) / 55% H₂O (both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 15 min and hold for 3 min.
Return to initial conditions over 1 min.
Time: 20 min
Flow: 300 μ l/min

MS Conditions:

SIR (ES⁻)
Source = 110 °C
Desolvation = 325 °C
Cone Voltage = 60V

Figure 3: br-PFOSK; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.06e-3

Collision Energy (eV) = 11-50 (variable)

Reagent

LCPFOSA_00006



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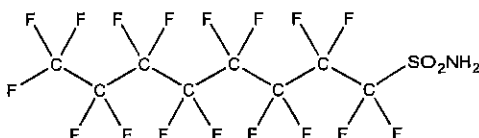
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: FOSA-I
COMPOUND: Perfluoro-1-octanesulfonamide

LOT NUMBER: FOSA0815I

STRUCTURE:

CAS #: 754-91-6



MOLECULAR FORMULA: $C_8H_2F_{17}NO_2S$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/02/2015
EXPIRY DATE: (mm/dd/yyyy) 09/02/2017
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 499.14
SOLVENT(S): Isopropanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 09/11/2015
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

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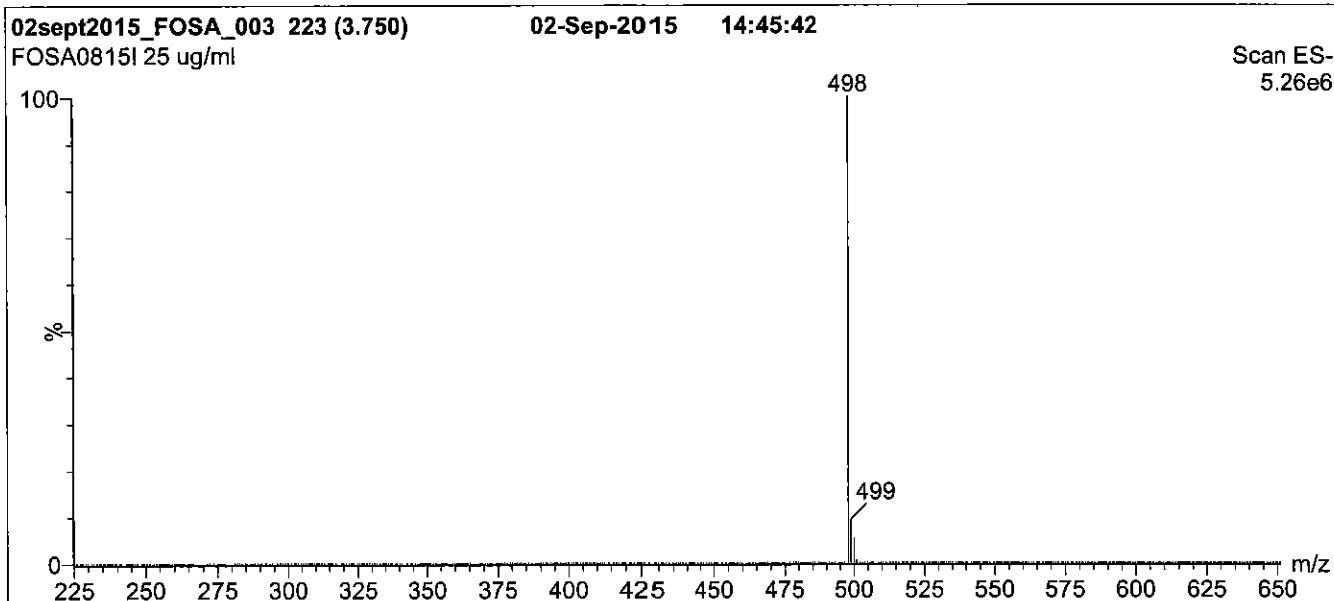
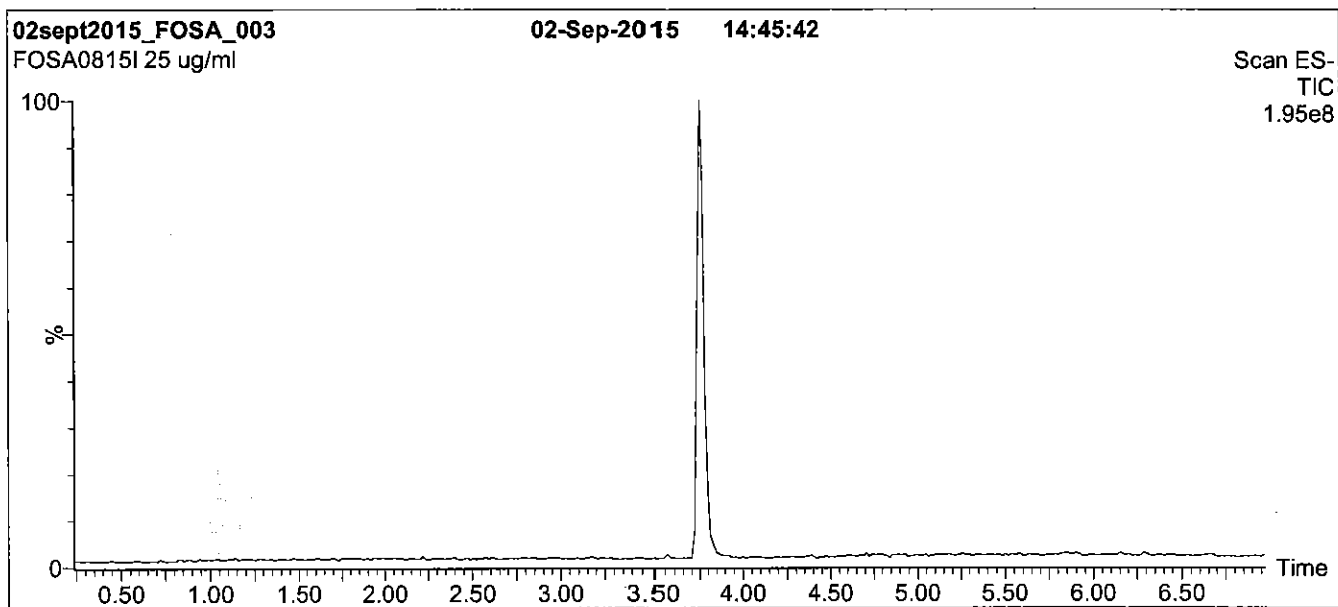
QUALITY MANAGEMENT:

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Figure 1: FOSA-I; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

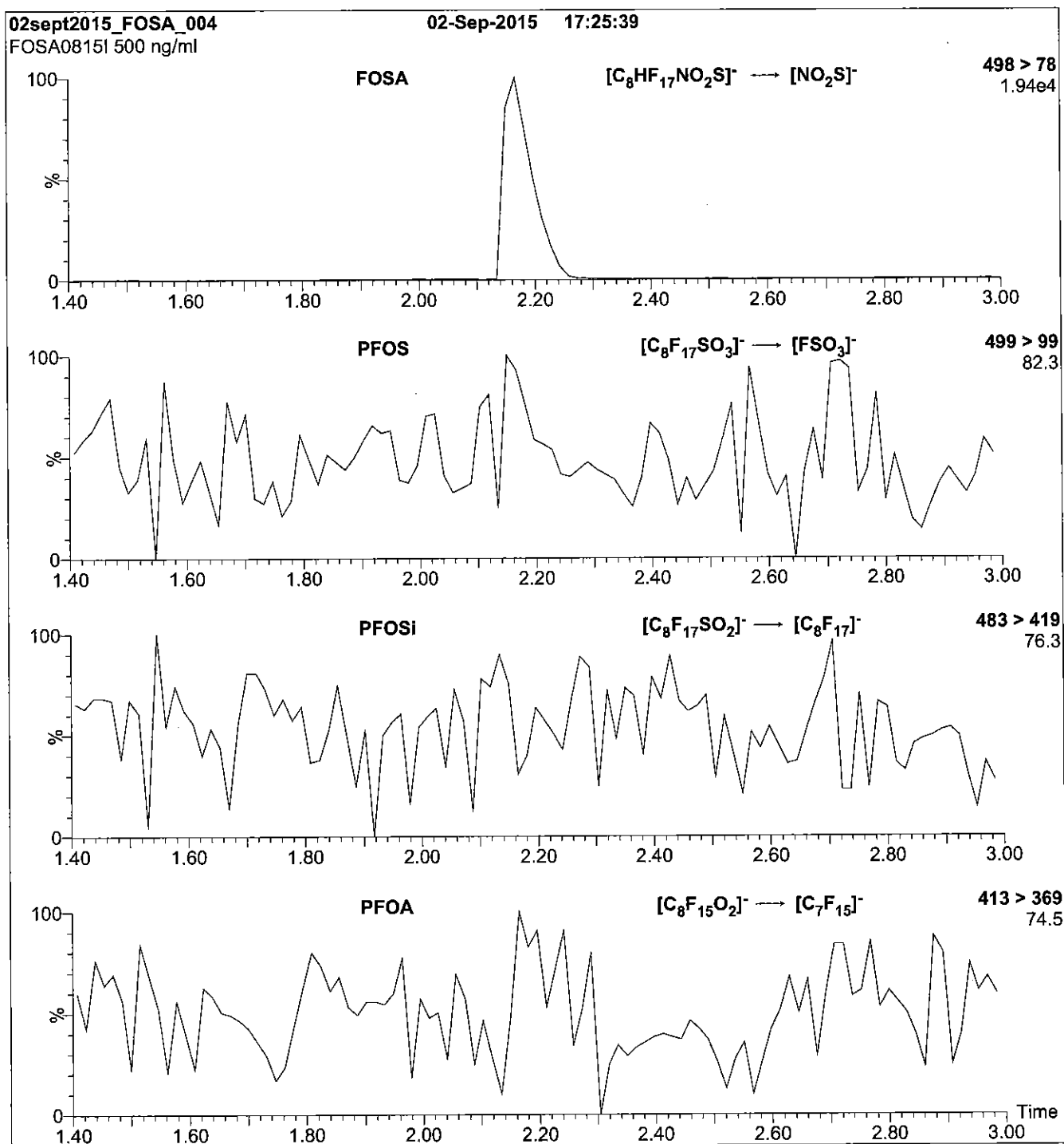
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: FOSA-I; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml FOSA-I)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCPFOSA_00008

Scanned
10/14/16

R: SBC 9/13/16



730534
ID: LCPFOSA_00009
Exp: 09/02/17 Prod: SBC
PF-1-octanesulfonamide



730533
ID: LCPFOSA_00008
Exp: 09/02/17 Prod: SBC
PF-1-octanesulfonamide



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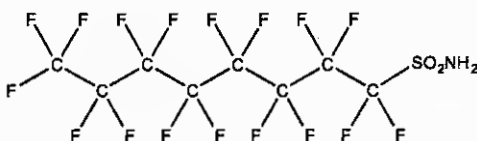
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: FOSA-I
COMPOUND: Perfluoro-1-octanesulfonamide

LOT NUMBER: FOSA0815I

STRUCTURE:

CAS #: 754-91-6



MOLECULAR FORMULA: C₈H₂F₁₇NO₂S
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/02/2015
EXPIRY DATE: (mm/dd/yyyy) 09/02/2017
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 499.14
SOLVENT(S): Isopropanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:

B.G. Chittim

Date: 09/11/2015
(mm/dd/yyyy)

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where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

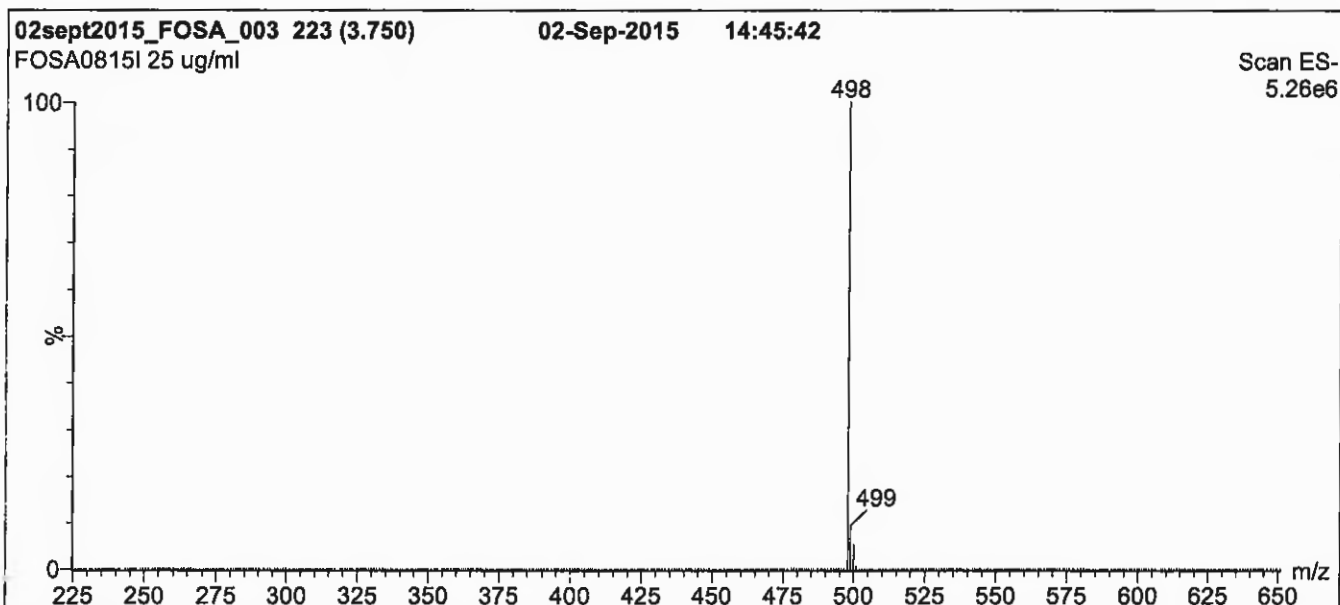
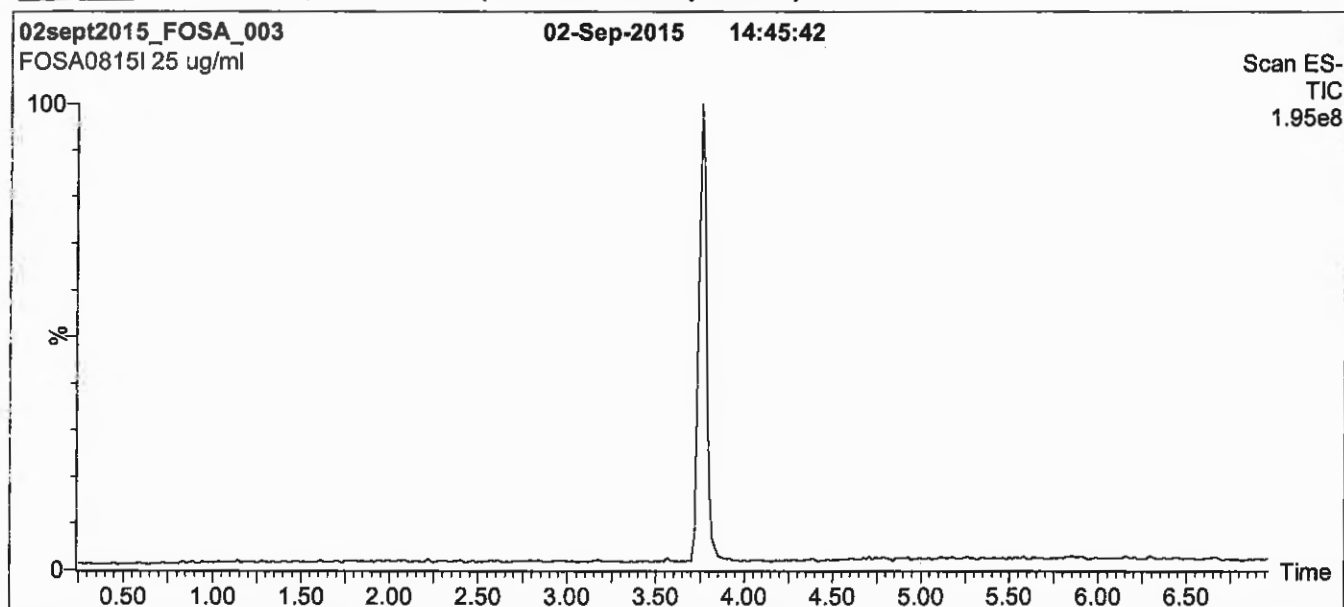
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: FOSA-I; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

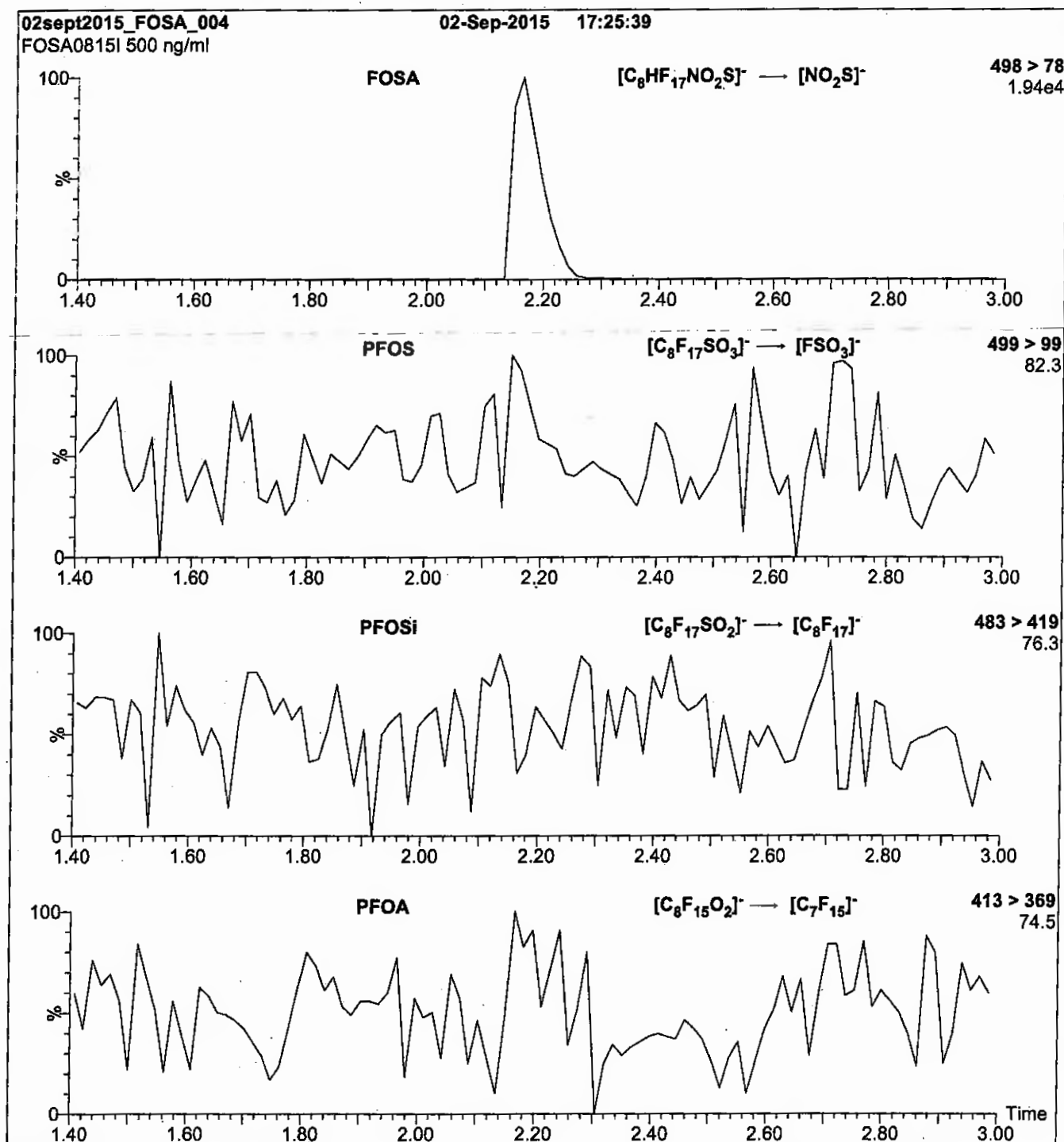
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: FOSA-I; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml FOSA-I)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCPFPeA_00005

R: 7/6/16 CBW



671579

ID: LCPFPeA_00005

Exp: 01/30/20 Prod: CBW

PF-n-pentanoic acid

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:**

PFPeA

LOT NUMBER:

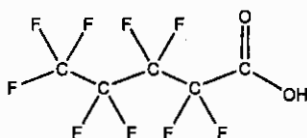
PFPeA0115

COMPOUND:

Perfluoro-n-pentanoic acid

STRUCTURE:**CAS #:**

2706-90-3

**MOLECULAR FORMULA:** $C_5H_2F_9O_2$ **MOLECULAR WEIGHT:**

264.05

CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

01/30/2015

EXPIRY DATE: (mm/dd/yyyy)

01/30/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of $C_5H_2F_8O_2$ (hydrido - derivative) as measured by ^{19}F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 03/26/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

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UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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LIMITED WARRANTY:

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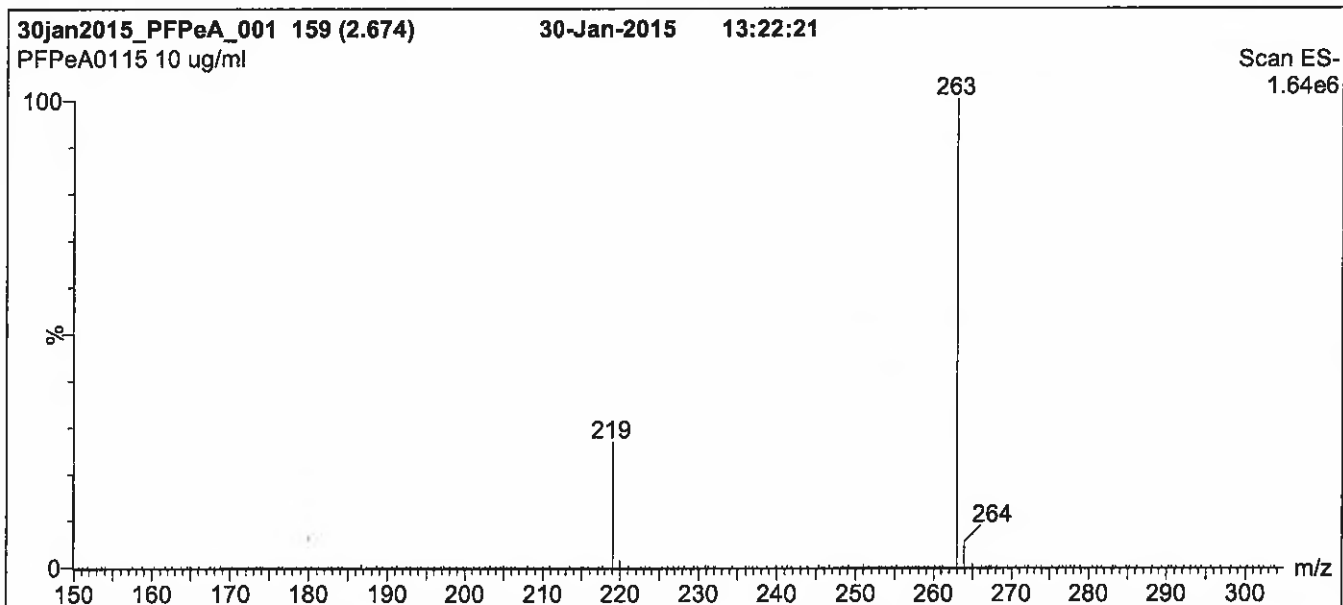
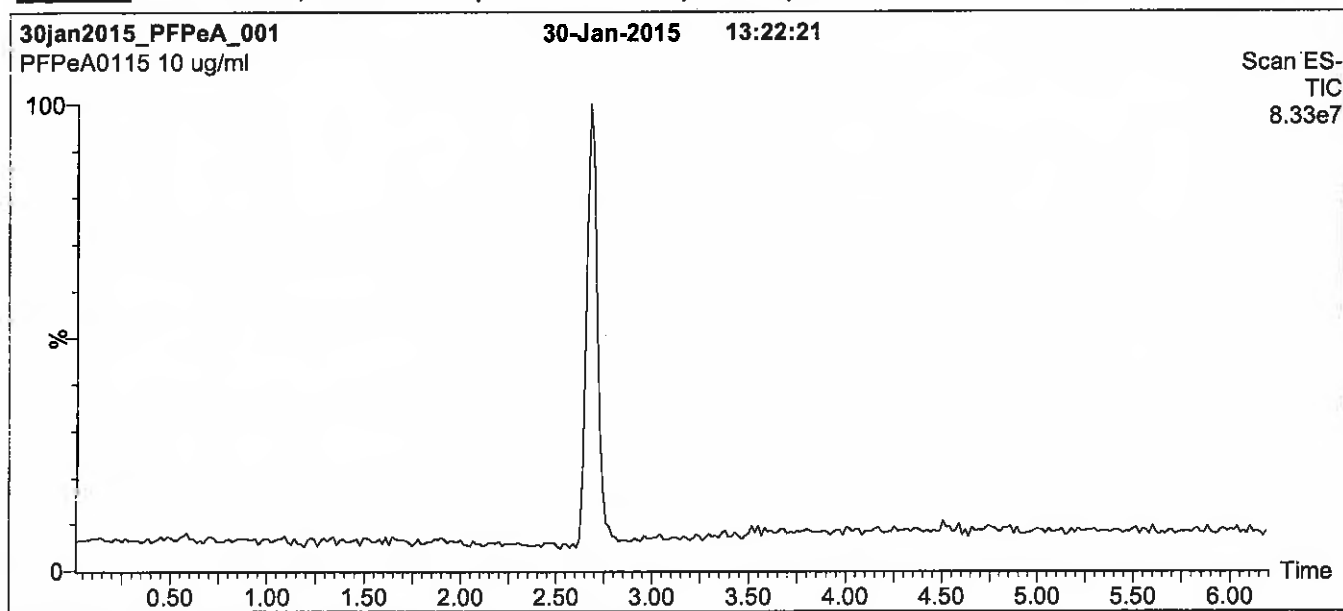
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: PFPeA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

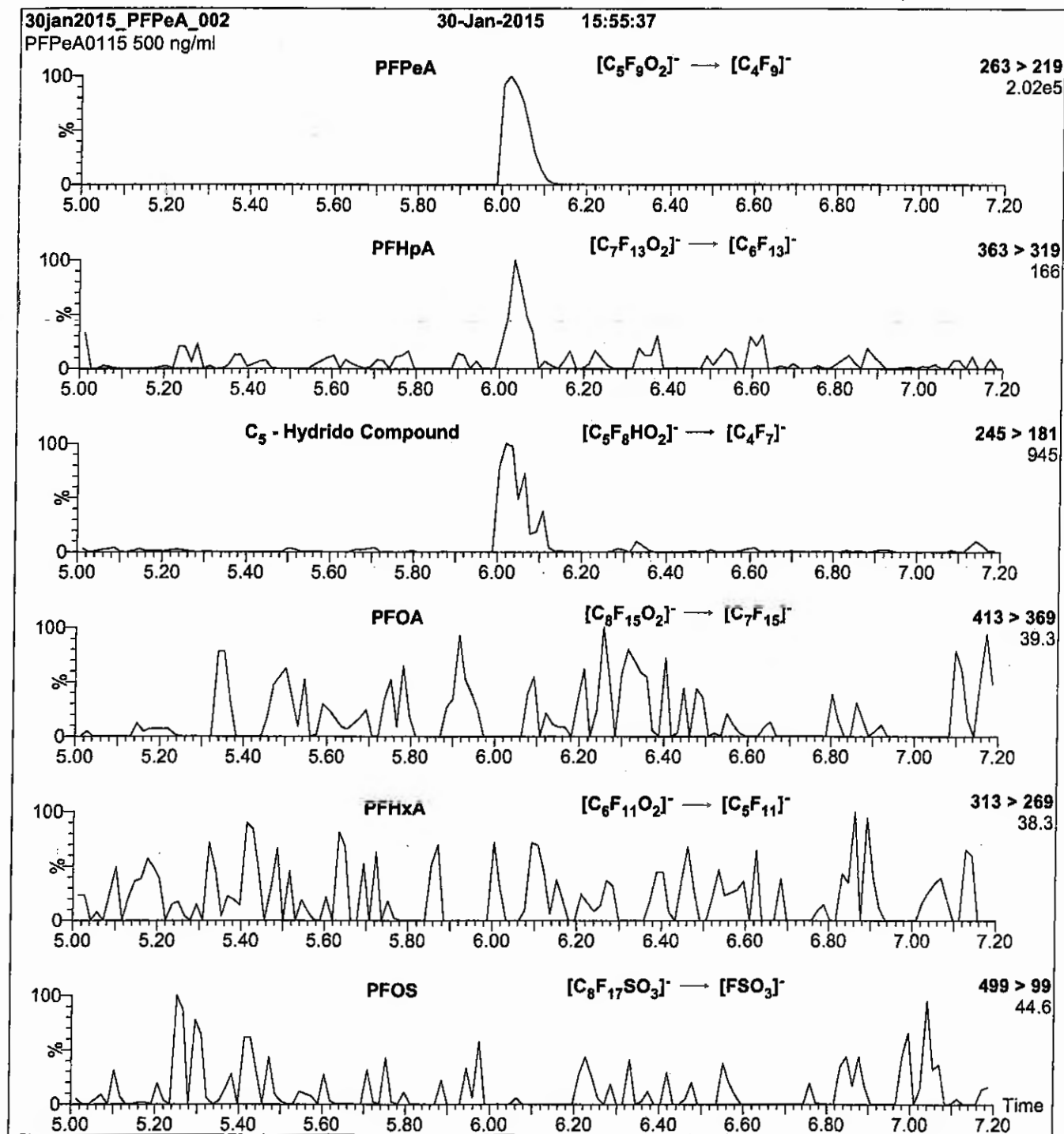
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFPeA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFPeA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 9

Reagent

LCPFTeDA_00004



609696

ID: LCPFTeDA_00004

Exp: 12/09/20 Pripd: CBW

PF-n-tetradecanoic acid

R: 4/7/16 CBW



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFTeDA

LOT NUMBER:

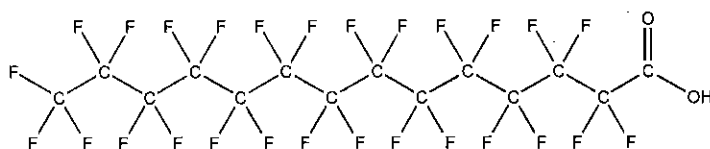
PFTeDA1215

COMPOUND:

Perfluoro-n-tetradecanoic acid

STRUCTURE:**CAS #:**

376-06-7

**MOLECULAR FORMULA:** $C_{14}H_{27}O_2$ **MOLECULAR WEIGHT:**

714.11

CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/09/2015

EXPIRY DATE: (mm/dd/yyyy)

12/09/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of PFDa ($C_{12}H_{23}O_2$) and ~ 0.2% of PFPeDA ($C_{15}H_{29}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date:

12/09/2015
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

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EXPIRY DATE / PERIOD OF VALIDITY:

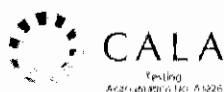
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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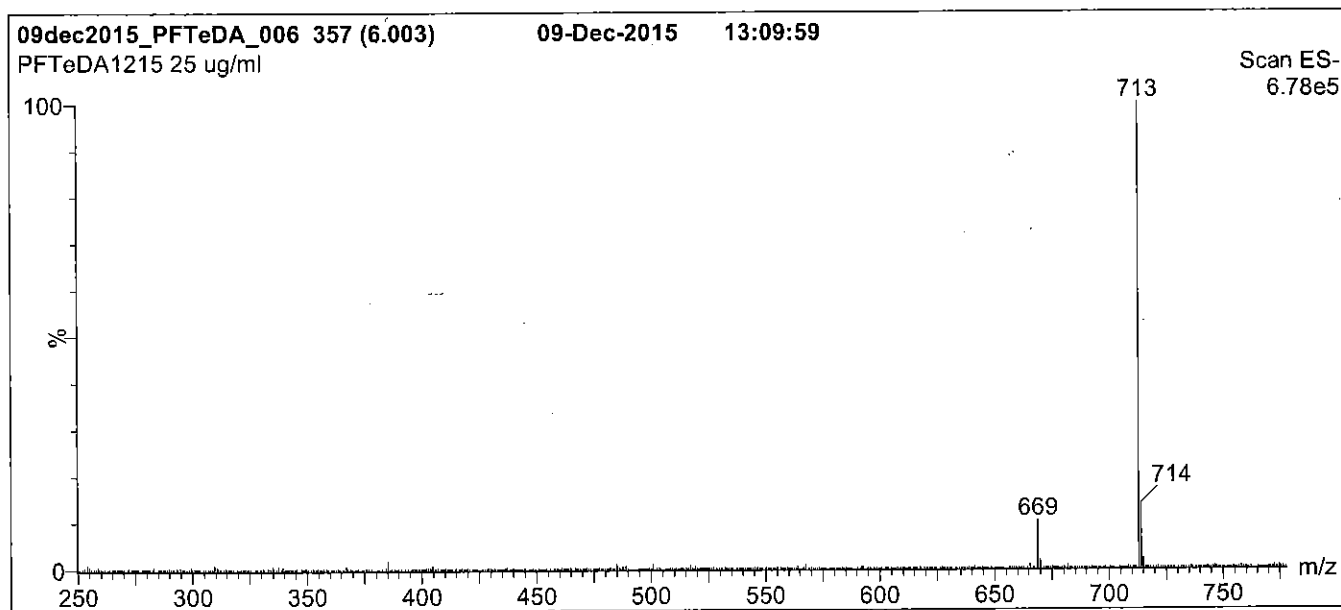
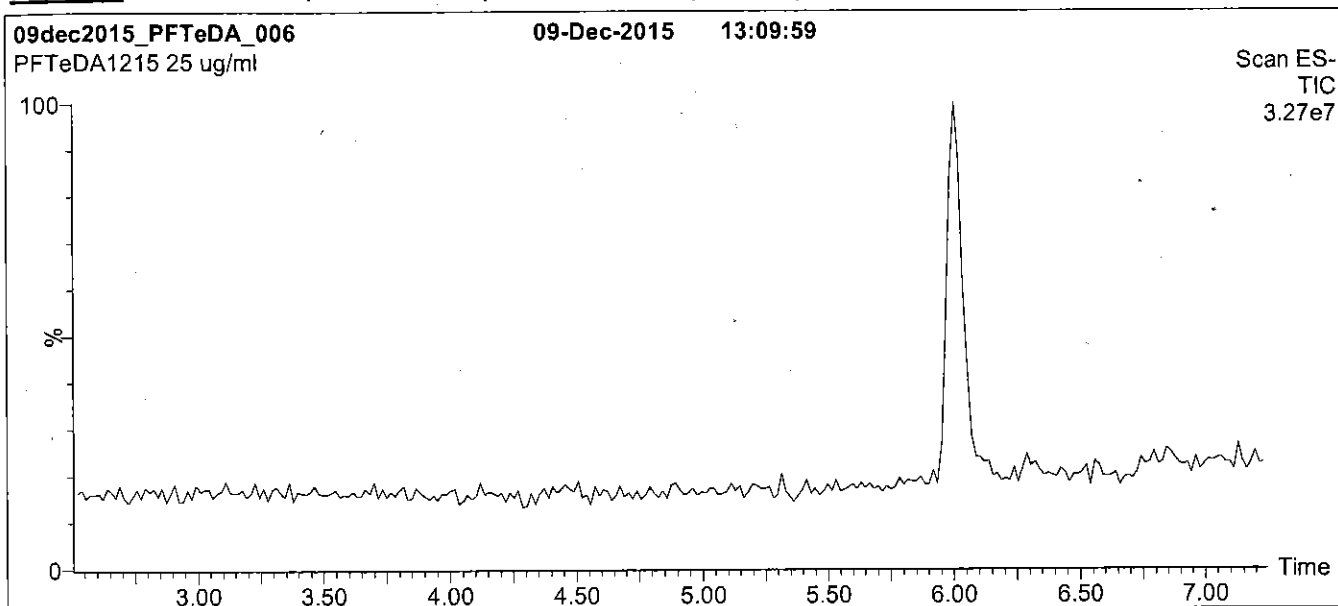
QUALITY MANAGEMENT:

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Figure 1: PFTeDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

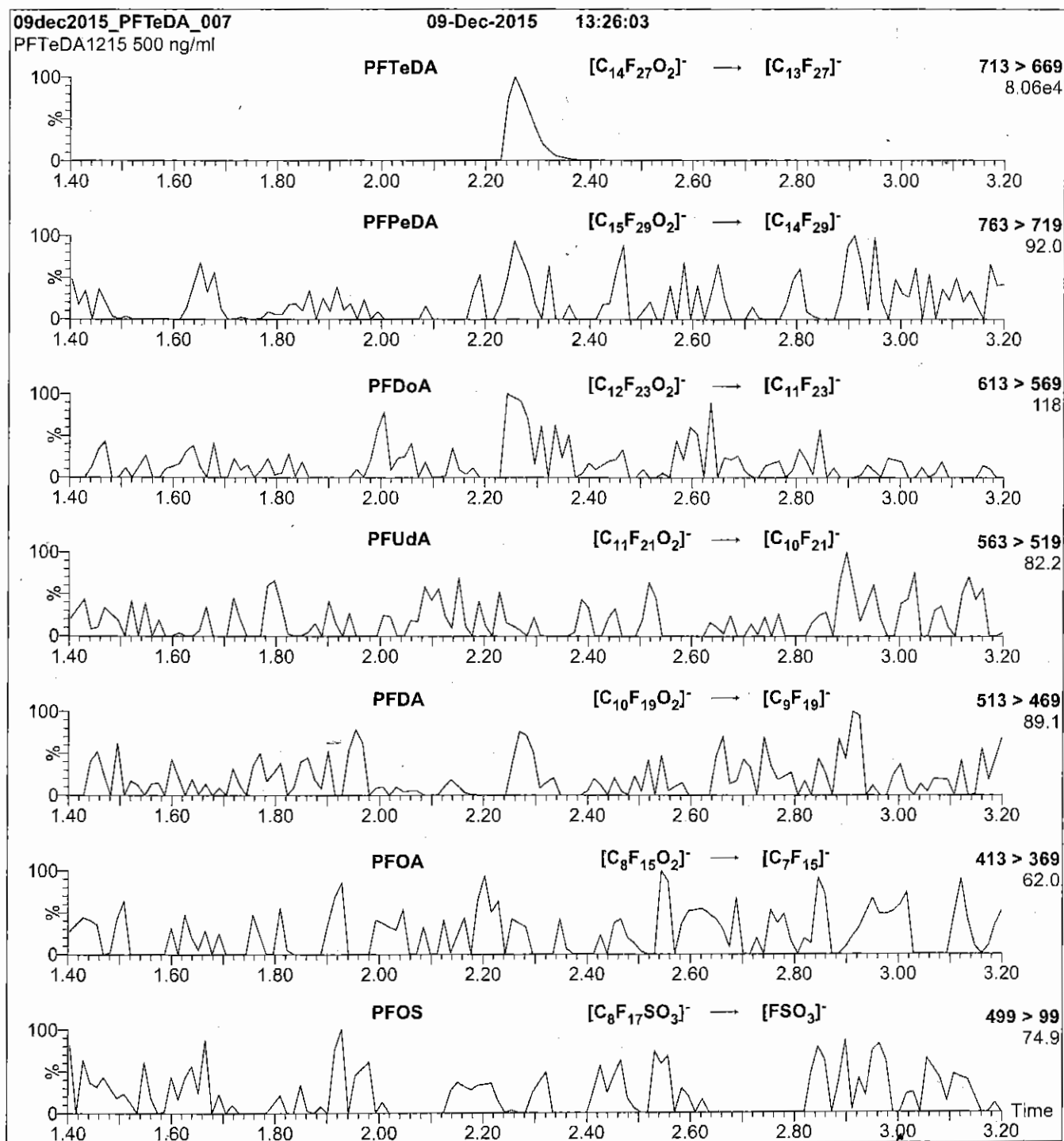
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFTeDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFTeDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 14

Reagent

LCPFTeDA_00005

R: SBG 9/13/16



730645

ID: LCPFTeDA_00005
Exp: 12/09/20 Prod: SBC
PF-n-tetradecanoic acid



730659

ID: LCPFTeDA_00006
Exp: 12/09/20 Prod: SBC
PF-n-tetradecanoic acid



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

PFTeDA

LOT NUMBER:

PFTeDA1215

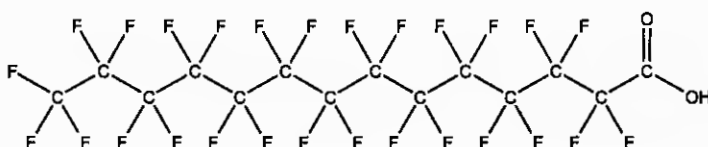
COMPOUND:

Perfluoro-n-tetradecanoic acid

STRUCTURE:

CAS #:

376-06-7



MOLECULAR FORMULA:

$C_{14}H_{27}F_{29}O_2$

MOLECULAR WEIGHT:

714.11

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/09/2015

EXPIRY DATE: (mm/dd/yyyy)

12/09/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of PFDoA ($C_{12}H_{23}F_{23}O_2$) and ~ 0.2% of PFPeDA ($C_{16}H_{29}F_{29}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/09/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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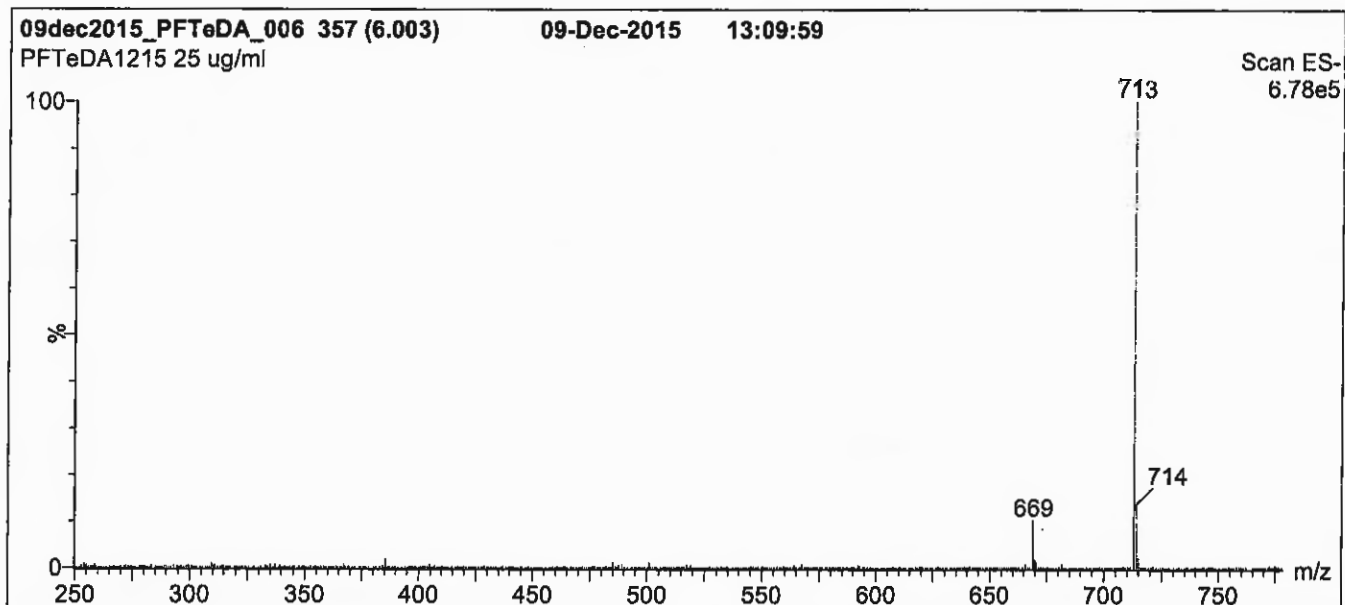
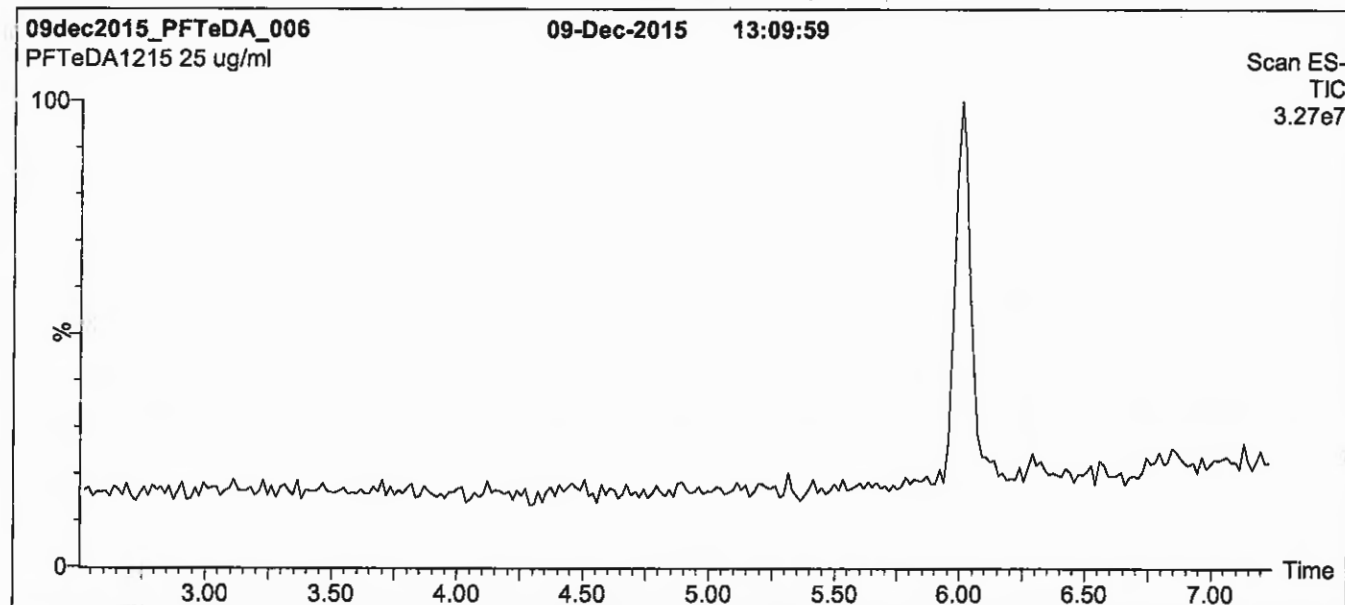
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Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

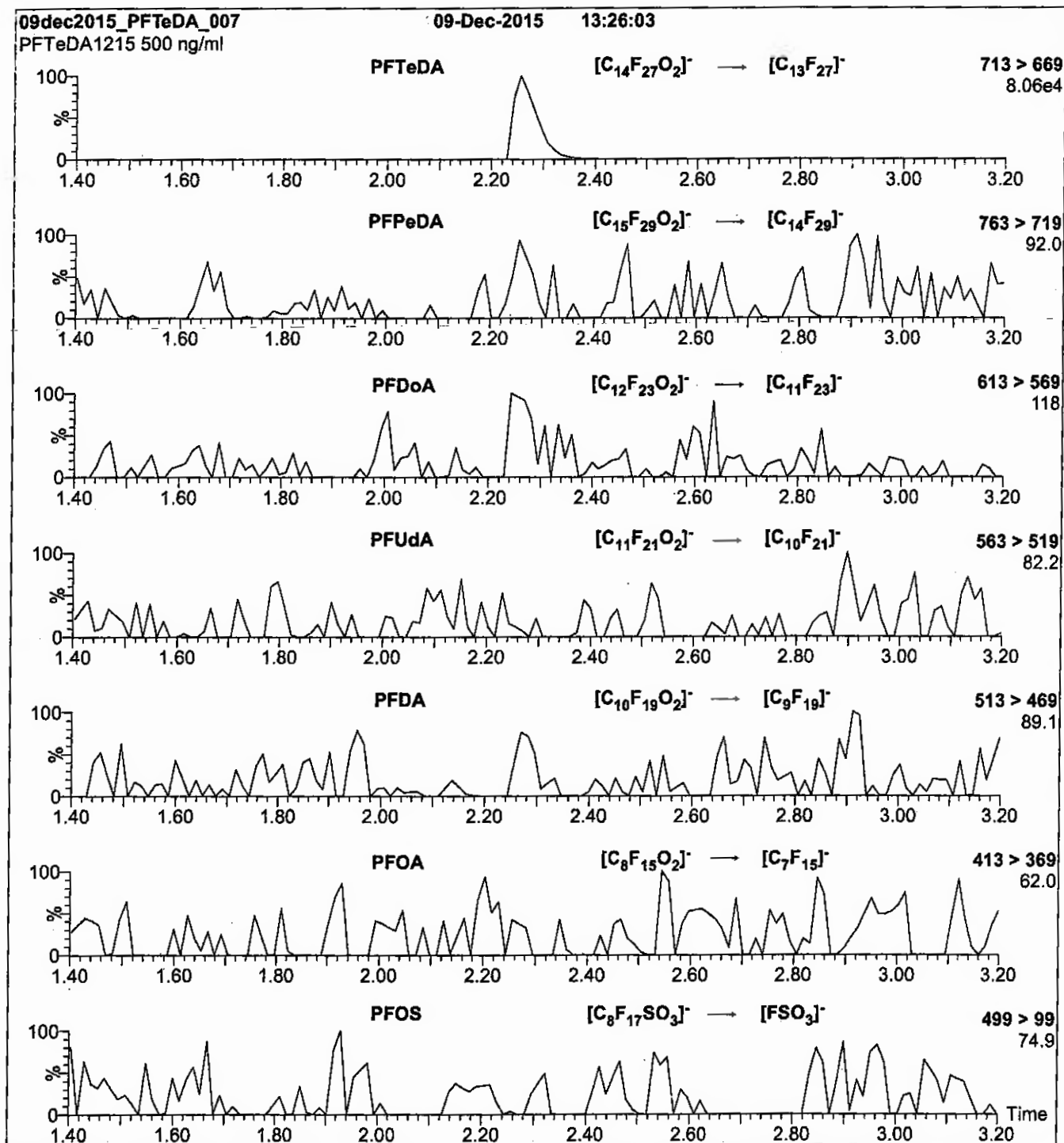
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFTeDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFTeDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 14

Reagent

LCPFT_rDA_00004



R: 4/7/16 CBW

609697

ID: LCPFTDA_00004

Exp: 12/10/18 Prod: CBW

PF-n-tridecanoic acid

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:**

PFTTrDA

LOT NUMBER:

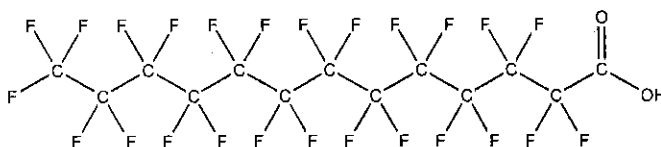
PFTTrDA1213

COMPOUND:

Perfluoro-n-tridecanoic acid

STRUCTURE:**CAS #:**

72629-94-8

**MOLECULAR FORMULA:** $C_{13}H_{25}O_2$ **MOLECULAR WEIGHT:**

664.11

CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/10/2013

EXPIRY DATE: (mm/dd/yyyy)

12/10/2018

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUDa ($C_{11}H_{21}F_{21}O_2$); ~ 0.4% of PFDa ($C_{12}H_{23}F_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}H_{27}F_{27}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date:

03/25/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON 'N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

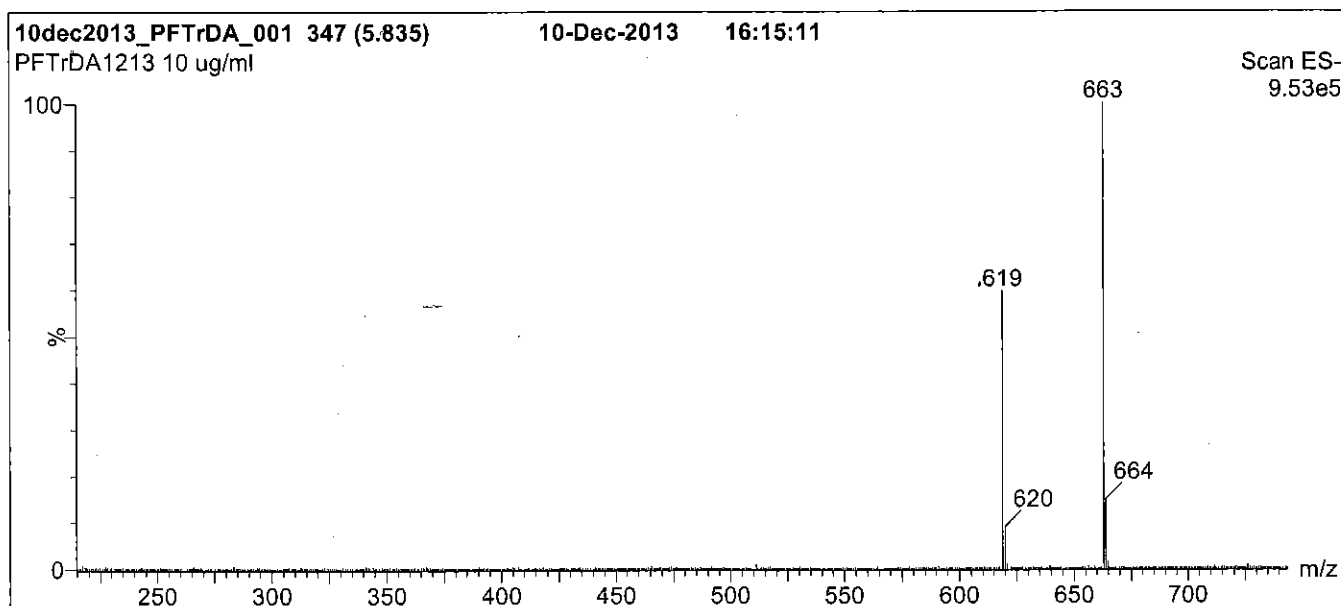
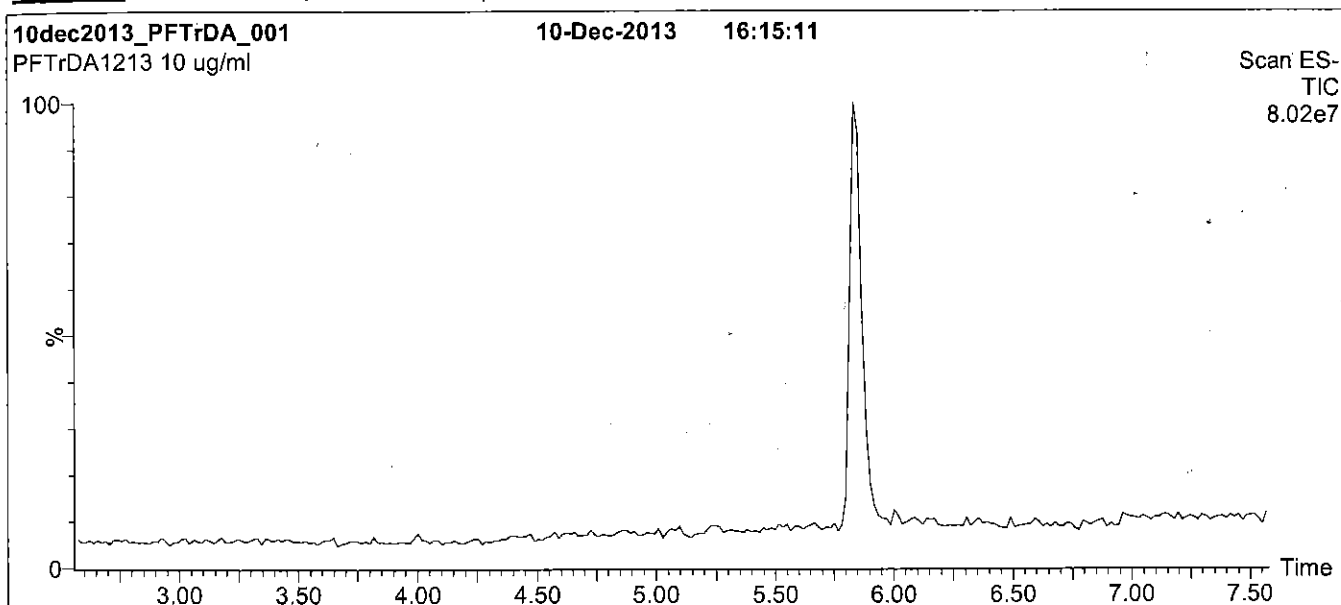
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: PFTrDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

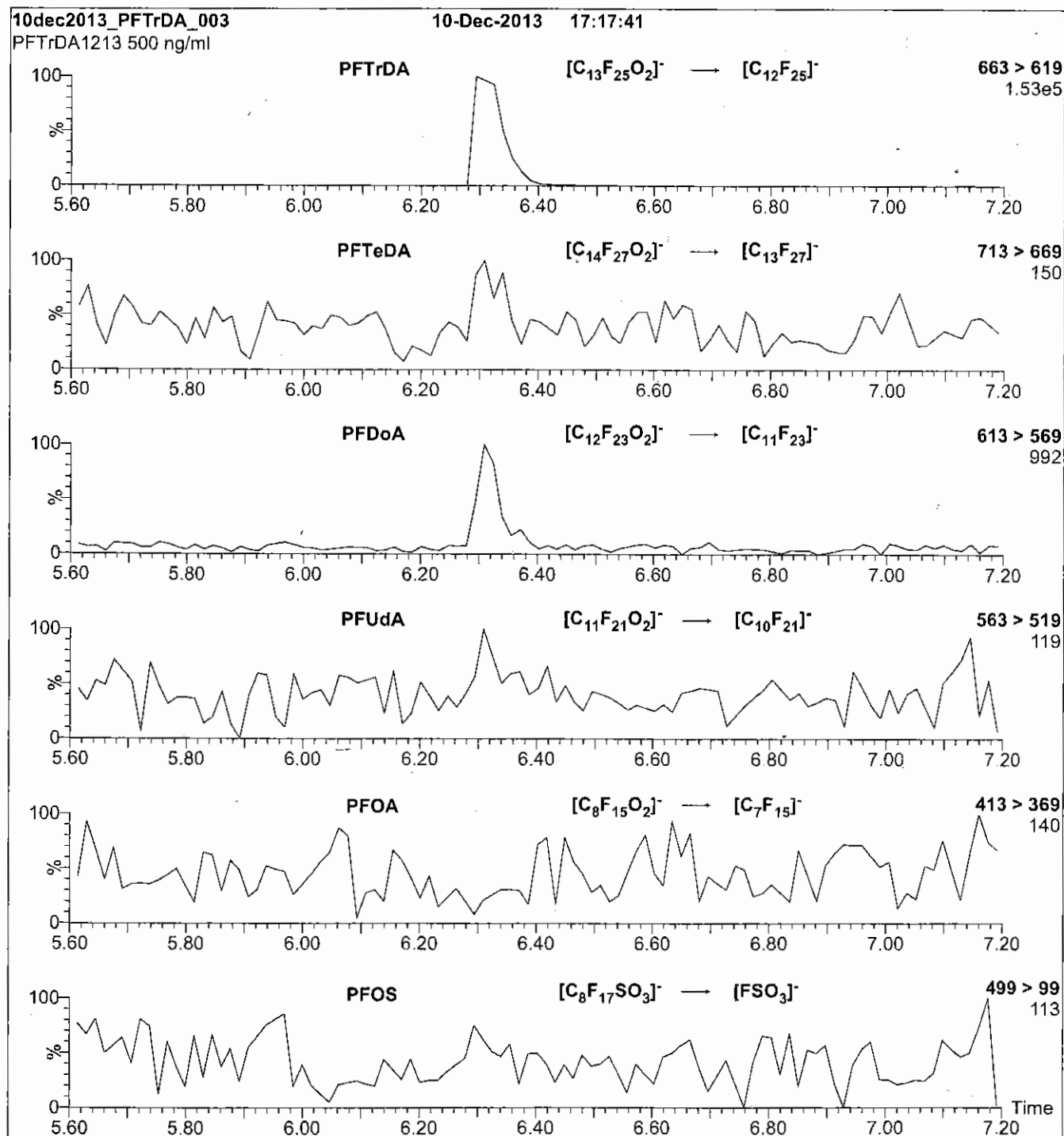
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (215 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 22.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

Figure 2: PFTrDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFTrDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 15

Reagent

LCPFT_rDA_00005

R: 8BC 9/13/16



730665

ID: LCPFTDA_00005

Exp: 02/12/21 Prod: SBC
PF-n-tridecanoic acid



730666

ID: LCPFTDA_00006

Exp: 02/12/21 Prod: SBC
PF-n-tridecanoic acid



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFTTrDA

LOT NUMBER:

PFTTrDA0216

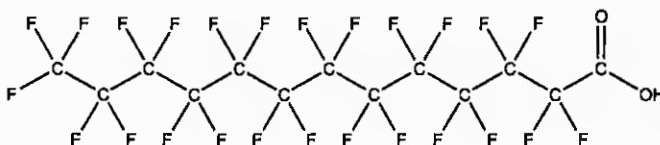
COMPOUND:

Perfluoro-n-tridecanoic acid

STRUCTURE:

CAS #:

72629-94-8



MOLECULAR FORMULA:

$C_{13}H_{25}O_2$

MOLECULAR WEIGHT:

664.11

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

02/12/2016

EXPIRY DATE: (mm/dd/yyyy)

02/12/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUdA ($C_{11}H_{21}O_2$), ~ 0.4% of PFDoA ($C_{12}H_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}H_{27}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 02/16/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

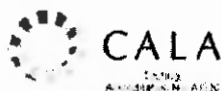
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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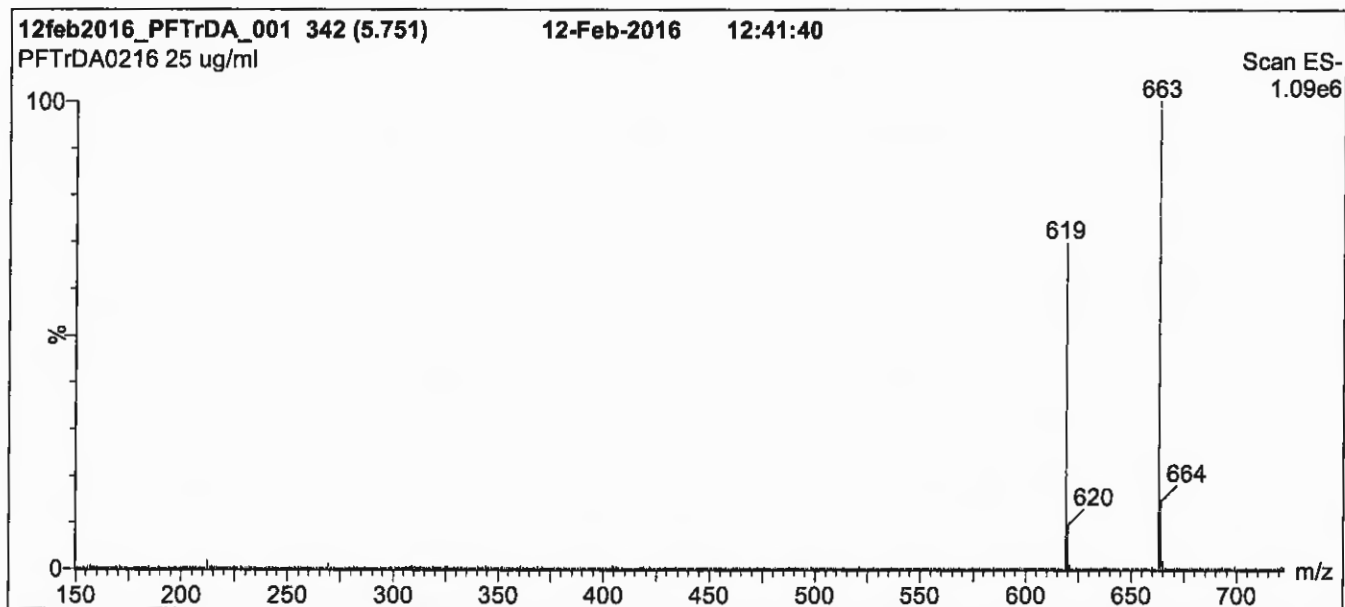
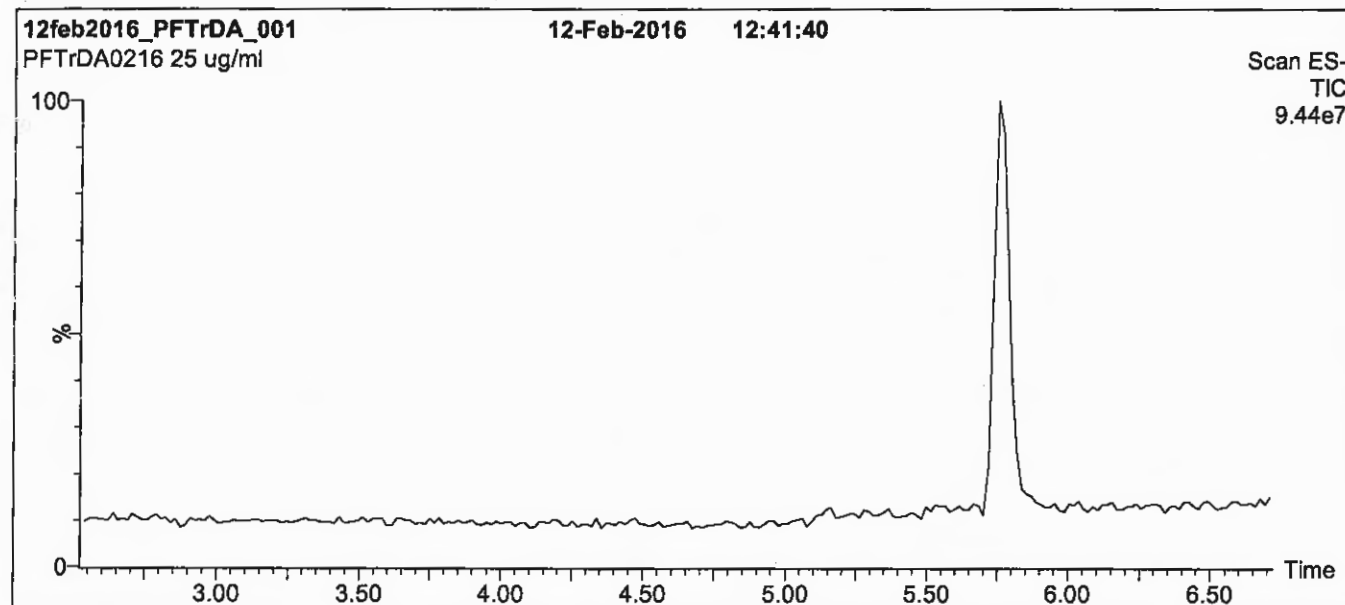
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: PFTTrDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

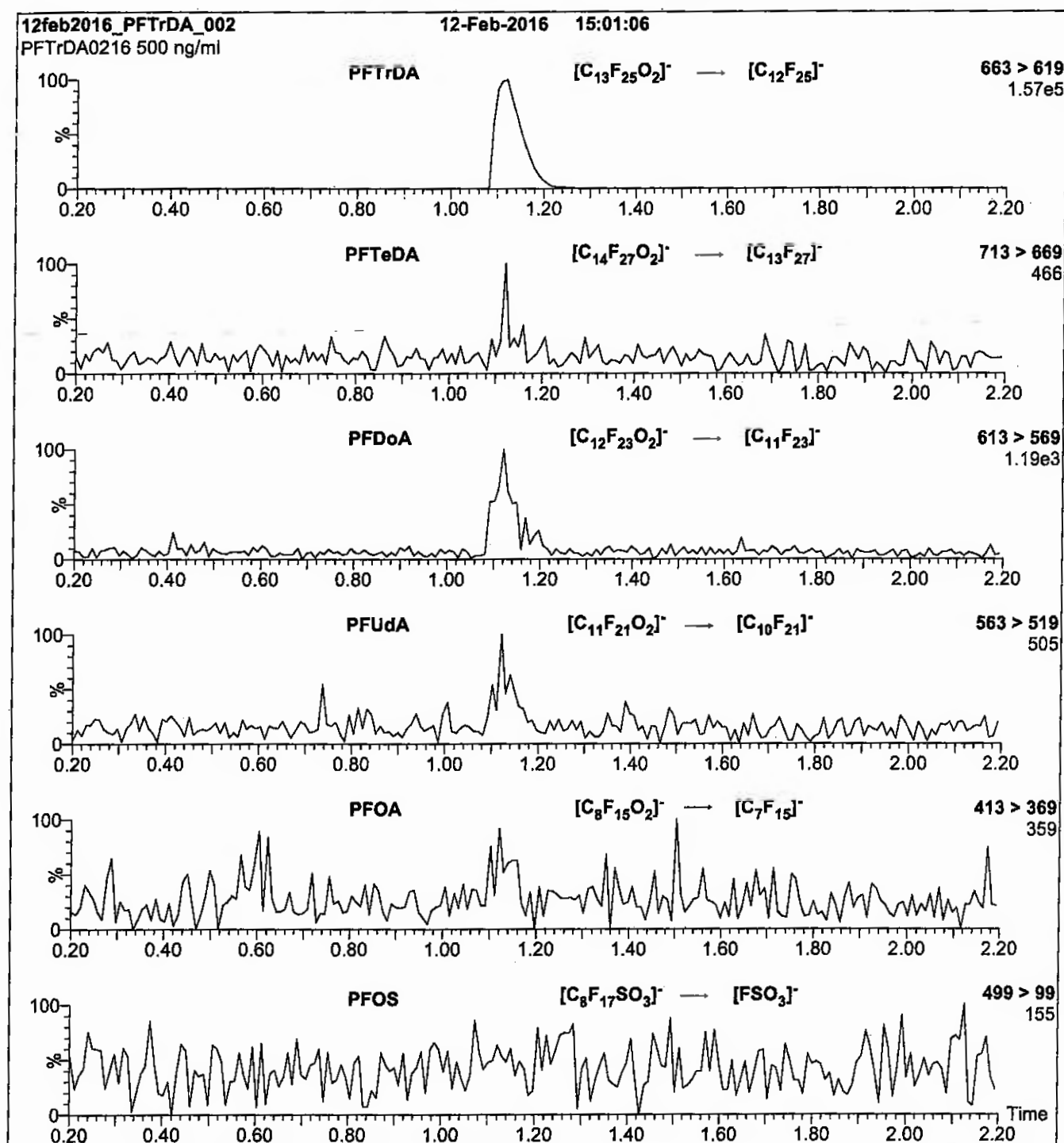
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 22.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

Figure 2: PFTrDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFTTrDA)

Mobile phase: Isocratic 80% MeOH / 20% H₂O

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 15

Reagent

LCPFUdA_00005

Scanned
10/14/16 R: SBC 9/13/16



730535
ID: LCPFUdA_00005
Exp: 08/19/20 Prpd: SBC
PF-n-undecanoic acid



730536
ID: LCPFUdA_00006
Exp: 08/19/20 Prpd: SBC
PF-n-undecanoic acid



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

PFUdA

LOT NUMBER:

PFUdA0815

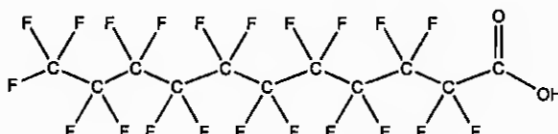
COMPOUND:

Perfluoro-n-undecanoic acid

STRUCTURE:

CAS #:

2058-94-8



MOLECULAR FORMULA:

$C_{11}HF_{21}O_2$

MOLECULAR WEIGHT:

564.09

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/19/2015

EXPIRY DATE: (mm/dd/yyyy)

08/19/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 08/21/2015

(mm/dd/yyyy)

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519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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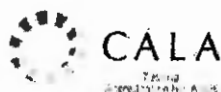
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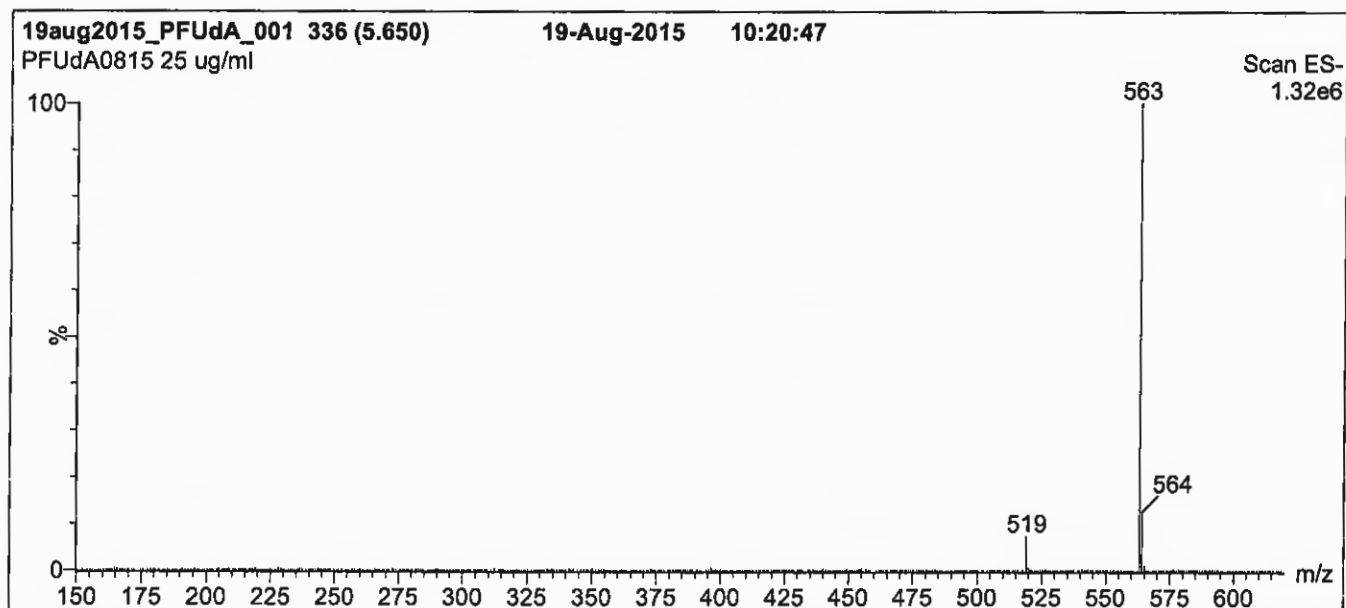
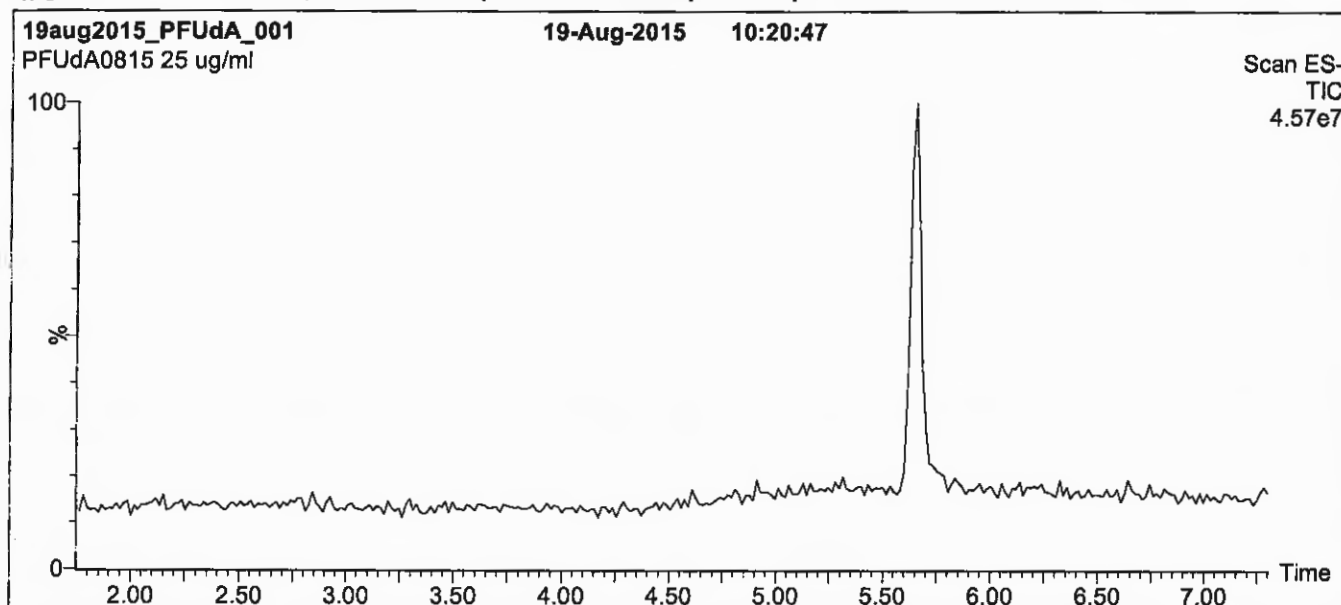
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Figure 1: PFUdA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

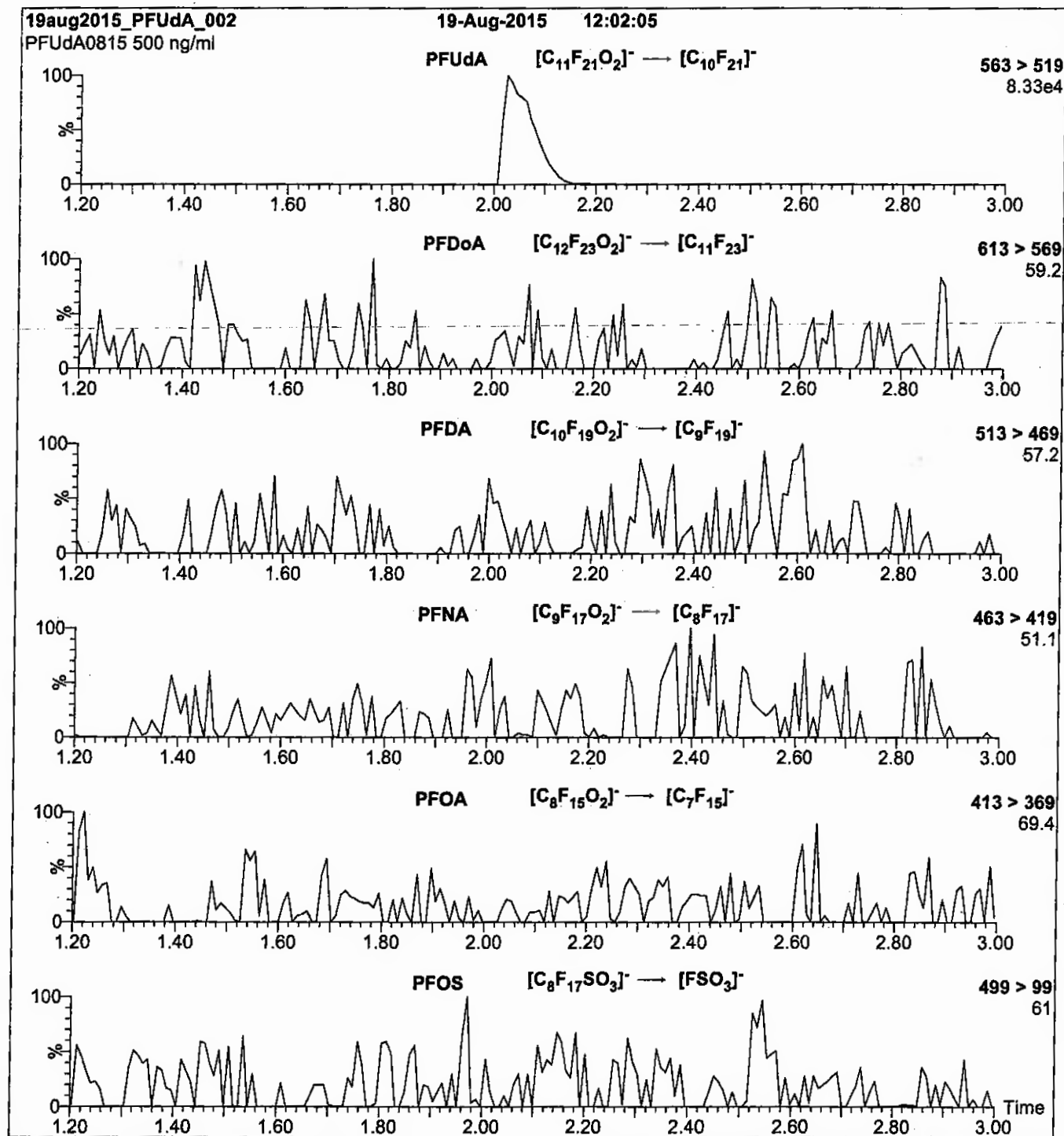
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFUdA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFUdA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 11

Method PFC DOD

Perfluronated Hydrocarbons (LC/MS)
by Method PFC_DOD

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	PFBA #	13CPeA #	PFHxA #	13CHpA #	PFHxS #	PFOA #	PFNA #	13C8FOS #
FFTA2TMW-1216	320-24236-3	32	63	68	41	38	31	72	4 Q
FB120816	320-24236-4	139	137	135	133	135	135	132	77
EBWC120816-a	320-24236-5	123	129	123	124	127	126	122	64
EBWC120816-b	320-24236-6	124	129	120	128	125	125	123	36
EBDPT120816-a	320-24236-7	126	134	127	133	130	134	127	68
FFTA2TMW-1216 MSD	320-24236-3 MSD	34	67	72	45	43	33	88	3 Q

	<u>QC LIMITS</u>
PFBA = 13C4 PFBA	25-150
13CPeA = 13C5-PFPeA	25-150
PFHxA = 13C2 PFHxA	25-150
13CHpA = 13C4-PFHpA	25-150
PFHxS = 18O2 PFHxS	25-150
PFOA = 13C4 PFOA	25-150
PFNA = 13C5 PFNA	25-150
13C8FOS = 13C8 FOSA	25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	PFDA #	PFUnA #	PFDoA #
FFTA2TMW-1216	320-24236-3	111	118	106
FB120816	320-24236-4	144	143	134
EBWC120816-a	320-24236-5	124	125	117
EBWC120816-b	320-24236-6	121	124	112
EBDPT120816-a	320-24236-7	132	133	123
FFTA2TMW-1216 MSD	320-24236-3 MSD	107	111	102

PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA

QC LIMITS
25-150
25-150
25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	PFBA #	13CPeA #	PFHxA #	13CHpA #	PFHxS #	PFOA #	PFNA #	PFOS #
FSS6TMW-1216	320-24236-1	19 Q	34	34	19 Q	17 Q	42	52	54
FSS2TMW-1216	320-24236-2	13 Q	15 Q	15 Q	6 Q	9 Q	10 Q	6 Q	4 Q
FSS2TMW-1216 DL	320-24236-2 DL	124	121	147	81	149	95	51	54
FFTA2TMW-1216 DL	320-24236-3 DL	119	142	124	101	115	94	121	125
EBDPT120816-b	320-24236-8	123	127	125	127	124	126	121	121
FFTA4TMW-1216	320-24236-9	38	61	43	30	25	23 Q	126	130
FFTA4TMW-1216 DL	320-24236-9 DL	148	149	133	122	138	138	175 Q	136
FFTA4TMW-1216-D	320-24236-10	34	56	40	29	24 Q	21 Q	120	124
FFTA4TMW-1216-D DL	320-24236-10 DL	143	143	122	120	138	139	173 Q	133
	MB	131	137	131	132	130	133	126	126
	320-142967/1-A								
	LCS	131	132	126	128	128	127	123	128
	320-142967/2-A								
FFTA2TMW-1216 MS	320-24236-3 MS	34	66	70	43	41	33	83	99
FFTA2TMW-1216 MS DL	320-24236-3 MS DL	117	141	119	102	119	96	129	122
FFTA2TMW-1216 MSD DL	320-24236-3 MSD DL	126	149	129	108	125	100	138	127

QC LIMITS

PFBA = 13C4 PFBA	25-150
13CPeA = 13C5-PFPeA	25-150
PFHxA = 13C2 PFHxA	25-150
13CHpA = 13C4-PFHpA	25-150
PFHxS = 18O2 PFHxS	25-150
PFOA = 13C4 PFOA	25-150
PFNA = 13C5 PFNA	25-150
PFOS = 13C4 PFOS	25-150

Column to be used to flag recovery values

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	13C8FOS #	PFDA #	PFUnA #	PFDoA #
FSS6TMW-1216	320-24236-1	13 Q	132	123	110
FSS2TMW-1216	320-24236-2	42	60	122	119
FSS2TMW-1216 DL	320-24236-2 DL	97	129	129	129
FFTA2TMW-1216 DL	320-24236-3 DL	4 Q	126	126	123
EBDPT120816-b	320-24236-8	53	129	134	122
FFTA4TMW-1216	320-24236-9	2 Q	130	135	116
FFTA4TMW-1216 DL	320-24236-9 DL	4 Q	175 Q	151 Q	150
FFTA4TMW-1216-D	320-24236-10	2 Q	129	133	122
FFTA4TMW-1216-D DL	320-24236-10 DL	3 Q	181 Q	172 Q	161 Q
	MB 320-142967/1-A	64	130	127	112
	LCS 320-142967/2-A	62	127	119	114
FFTA2TMW-1216 MS	320-24236-3 MS	3 Q	112	111	106
FFTA2TMW-1216 MS DL	320-24236-3 MS DL	3 Q	124	123	119
FFTA2TMW-1216 MSD DL	320-24236-3 MSD DL	3 Q	131	131	125

13C8FOS = 13C8 FOSA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA

QC LIMITS
25-150
25-150
25-150
25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	PFBA #	13CPeA #	PFHxA #	13CHpA #	PFHxS #	PFOA #	PFOS #	PFNA #
FSS6TMW-1216 DL	320-24236-1 DL	139	143	119	96	120	149	126	150

	<u>QC LIMITS</u>
PFBA = 13C4 PFBA	25-150
13CPeA = 13C5-PFPeA	25-150
PFHxA = 13C2 PFHxA	25-150
13CHpA = 13C4-PFHpA	25-150
PFHxS = 18O2 PFHxS	25-150
PFOA = 13C4 PFOA	25-150
PFOS = 13C4 PFOS	25-150
PFNA = 13C5 PFNA	25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	13C8FOS #	PFDA #	PFUnA #	PFDoA #
FSS6TMW-1216 DL	320-24236-1 DL	18 Q	158 Q	154 Q	145

13C8FOS = 13C8 FOSA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA

QC LIMITS
25-150
25-150
25-150
25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	PFHxS #	PFOS #
FSS2TMW-1216 DL2	320-24236-2 DL2	116	119

PFHxS = 1802 PFHxS
PFOS = 13C4 PFOS

QC LIMITS
25-150
25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Matrix: Water

Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	PFOS #
FBI20816 RA	320-24236-4 RA	128
EBWC120816-a RA	320-24236-5 RA	131
EBWC120816-b RA	320-24236-6 RA	132
EBDPT120816-a RA	320-24236-7 RA	118
	MB 320-142967/1-A RA	113
	LCS 320-142967/2-A RA	126

PFOS = 13C4 PFOS

QC LIMITS
25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 28DEC2016C_004.d
 Lab ID: LCS 320-142967/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	0.0400	0.0441	110	60-140	
Perfluoropentanoic acid (PFPeA)	0.0400	0.0422	105	60-140	
Perfluorohexanoic acid (PFHxA)	0.0400	0.0413	103	60-140	
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0418	104	60-140	
Perfluorooctanoic acid (PFOA)	0.0400	0.0406	101	60-140	
Perfluorononanoic acid (PFNA)	0.0400	0.0384	96	60-140	
Perfluorodecanoic acid (PFDA)	0.0400	0.0399	100	60-140	
Perfluoroundecanoic acid (PFUnA)	0.0400	0.0382	95	60-140	
Perfluorododecanoic acid (PFDoA)	0.0400	0.0386	96	60-140	
Perfluorotridecanoic Acid (PFTriA)	0.0400	0.0384	96	50-150	
Perfluorotetradecanoic acid (PFTeA)	0.0400	0.0478	120	50-150	
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0432	122	50-150	
Perfluorohexanesulfonic acid (PFHxS)	0.0364	0.0397	109	60-140	
Perfluorodecanesulfonic acid (PFDS)	0.0386	0.0385	100	50-150	
Perfluorooctane Sulfonamide (FOSA)	0.0400	0.0384	96	60-140	
13C8 FOSA	0.100	0.0621	62	25-150	
13C4 PFBA	0.100	0.131	131	25-150	
13C5-PFPeA	0.100	0.132	132	25-150	
13C2 PFHxA	0.100	0.126	126	25-150	
13C4-PFHpA	0.100	0.128	128	25-150	
13C4 PFOA	0.100	0.127	127	25-150	
13C5 PFNA	0.100	0.123	123	25-150	
13C2 PFDA	0.100	0.127	127	25-150	
13C2 PFUnA	0.100	0.119	119	25-150	
13C2 PFDoA	0.100	0.114	114	25-150	
18O2 PFHxS	0.0946	0.121	128	25-150	
13C4 PFOS	0.0956	0.123	128	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 30DEC2016B_033.d

Lab ID: LCS 320-142967/2-A RA Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid (PFOS)	0.0371	0.0511	138	60-140	
13C4 PFOS	0.0956	0.121	126	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 28DEC2016C_018.d
 Lab ID: 320-24236-3 MS Client ID: FFTA2TMW-1216 MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	0.0428	0.31	0.334	62	60-140	4
Perfluoropentanoic acid (PFPeA)	0.0428	0.58	0.582	13	60-140	E 4
Perfluorohexanoic acid (PFHxA)	0.0428	0.87	0.852	-37	60-140	E 4
Perfluoroheptanoic acid (PFHpA)	0.0428	0.66	0.667	10	60-140	E 4
Perfluorooctanoic acid (PFOA)	0.0428	3.8	3.73	-104	60-140	E 4 M
Perfluorononanoic acid (PFNA)	0.0428	0.029	0.0667	87	60-140	
Perfluorodecanoic acid (PFDA)	0.0428	0.017	0.0503	79	60-140	
Perfluoroundecanoic acid (PFUnA)	0.0428	0.0021 U	0.0453	106	60-140	
Perfluorododecanoic acid (PFDoA)	0.0428	0.0021 U	0.0427	100	60-140	
Perfluorotridecanoic Acid (PFTriA)	0.0428	0.0021 U	0.0436	102	50-150	
Perfluorotetradecanoic acid (PFTeA)	0.0428	0.00059 J	0.0633	147	50-150	
Perfluorobutanesulfonic acid (PFBS)	0.0378	0.26	0.299	115	50-150	4
Perfluorohexanesulfonic acid (PFHxS)	0.0389	2.5	2.34	-345	60-140	E 4
Perfluorooctanesulfonic acid (PFOS)	0.0397	1.2	0.701	-1329	60-140	E 4
Perfluorodecanesulfonic acid (PFDS)	0.0412	0.0031 U	0.0513	124	50-150	
Perfluorooctane Sulfonamide (FOSA)	0.0428	0.088	0.0780	-24	60-140	J
13C8 FOSA	0.107	0.0037	0.00306	3	25-150	Q
13C4 PFBA	0.107	0.033	0.0359	34	25-150	
13C5-PFPeA	0.107	0.065	0.0706	66	25-150	
13C2 PFHxA	0.107	0.070	0.0745	70	25-150	
13C4-PFHpA	0.107	0.043	0.0464	43	25-150	
13C4 PFOA	0.107	0.033	0.0349	33	25-150	
13C5 PFNA	0.107	0.074	0.0886	83	25-150	
13C2 PFDA	0.107	0.11	0.120	112	25-150	
13C2 PFUnA	0.107	0.12	0.118	111	25-150	
13C2 PFDoA	0.107	0.11	0.113	106	25-150	
18O2 PFHxS	0.101	0.037	0.0416	41	25-150	
13C4 PFOS	0.102	0.083	0.102	99	25-150	

Column to be used to flag recovery and RPD values

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Matrix: Water Level: Low

Lab File ID: 30DEC2016B_019.d

Lab ID: 320-24236-3 MS DL

Client ID: FFTA2TMW-1216 MS DL

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	0.0428	0.31	0.346	87	60-140	D 4
Perfluoropentanoic acid (PFPeA)	0.0428	1.0	0.992	-22	60-140	D 4
Perfluorohexanoic acid (PFHxA)	0.0428	1.7	1.66	-73	60-140	D 4
Perfluoroheptanoic acid (PFHpA)	0.0428	0.74	0.753	41	60-140	D 4
Perfluorooctanoic acid (PFOA)	0.0428	7.1	6.84	-545	60-140	D M 4
Perfluorononanoic acid (PFNA)	0.0428	0.030 J	0.0660	83	60-140	D
Perfluorodecanoic acid (PFDA)	0.0428	0.016 J	0.0472 J	73	60-140	D
Perfluoroundecanoic acid (PFUnA)	0.0428	0.041 U	0.0450 J	105	60-140	D
Perfluorododecanoic acid (PFDoA)	0.0428	0.041 U	0.0437 J	102	60-140	D
Perfluorotridecanoic Acid (PFTriA)	0.0428	0.041 U	0.0411 J	96	50-150	D
Perfluorotetradecanoic acid (PFTeA)	0.0428	0.021 U	0.0544	127	50-150	D
Perfluorobutanesulfonic acid (PFBS)	0.0378	0.13	0.177	114	50-150	D
Perfluorohexanesulfonic acid (PFHxS)	0.0389	5.0	4.73	-747	60-140	D M 4
Perfluorooctanesulfonic acid (PFOS)	0.0397	1.3	0.695	-1640	60-140	D 4
Perfluorodecanesulfonic acid (PFDS)	0.0412	0.062 U	0.0399 J	97	50-150	D
Perfluorooctane Sulfonamide (FOSA)	0.0428	0.087	0.0716	-37	60-140	D J
13C8 FOSA	0.107	0.0041	0.00351	3	25-150	Q
13C4 PFBA	0.107	0.12	0.125	117	25-150	
13C5-PFPeA	0.107	0.15	0.151	141	25-150	
13C2 PFHxA	0.107	0.13	0.127	119	25-150	
13C4-PFHpA	0.107	0.10	0.109	102	25-150	
13C4 PFOA	0.107	0.098	0.102	96	25-150	
13C5 PFNA	0.107	0.13	0.138	129	25-150	
13C2 PFDA	0.107	0.13	0.133	124	25-150	
13C2 PFUnA	0.107	0.13	0.132	123	25-150	
13C2 PFDoA	0.107	0.13	0.127	119	25-150	
18O2 PFHxS	0.101	0.11	0.121	119	25-150	
13C4 PFOS	0.102	0.12	0.125	122	25-150	

Column to be used to flag recovery and RPD values

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Matrix: Water Level: Low

Lab File ID: 28DEC2016C_019.d

Lab ID: 320-24236-3 MSD

Client ID: FFTA2TMW-1216 MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorobutanoic acid (PFBA)	0.0424	0.341	78	2	30	60-140	4
Perfluoropentanoic acid (PFPeA)	0.0424	0.569	-18	2	30	60-140	E 4
Perfluorohexanoic acid (PFHxA)	0.0424	0.835	-78	2	30	60-140	E 4
Perfluoroheptanoic acid (PFHpA)	0.0424	0.649	-32	3	30	60-140	E 4
Perfluorooctanoic acid (PFOA)	0.0424	3.62	-353	3	30	60-140	E 4 M
Perfluorononanoic acid (PFNA)	0.0424	0.0649	84	3	30	60-140	
Perfluorodecanoic acid (PFDA)	0.0424	0.0508	81	1	30	60-140	
Perfluoroundecanoic acid (PFUnA)	0.0424	0.0451	106	0	30	60-140	
Perfluorododecanoic acid (PFDoA)	0.0424	0.0461	109	8	30	60-140	
Perfluorotridecanoic Acid (PFTriA)	0.0424	0.0484	114	10	30	50-150	
Perfluorotetradecanoic acid (PFTeA)	0.0424	0.0697	163	10	30	50-150	J
Perfluorobutanesulfonic acid (PFBS)	0.0375	0.298	112	1	30	50-150	4
Perfluorohexanesulfonic acid (PFHxS)	0.0386	2.24	-590	4	30	60-140	E 4
Perfluorooctanesulfonic acid (PFOS)	0.0393	0.577	-1658	19	30	60-140	E 4
Perfluorodecanesulfonic acid (PFDS)	0.0408	0.0503	123	2	30	50-150	
Perfluorooctane Sulfonamide (FOSA)	0.0424	0.0723	-38	8	30	60-140	J
13C8 FOSA	0.106	0.00286	3			25-150	Q
13C4 PFBA	0.106	0.0364	34			25-150	
13C5-PFPeA	0.106	0.0707	67			25-150	
13C2 PFHxA	0.106	0.0766	72			25-150	
13C4-PFHpA	0.106	0.0475	45			25-150	
13C4 PFOA	0.106	0.0355	33			25-150	
13C5 PFNA	0.106	0.0930	88			25-150	
13C2 PFDA	0.106	0.114	107			25-150	
13C2 PFUnA	0.106	0.118	111			25-150	
13C2 PFDoA	0.106	0.108	102			25-150	
18O2 PFHxS	0.100	0.0430	43			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-24236-1

SDG No.: _____

Matrix: Water Level: Low

Lab File ID: 30DEC2016B_020.d

Lab ID: 320-24236-3 MSD DL

Client ID: FFTA2TMW-1216 MSD DL

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorobutanoic acid (PFBA)	0.0424	0.347	89	0	30	60-140	D 4
Perfluoropentanoic acid (PFPeA)	0.0424	0.982	-46	1	30	60-140	D 4
Perfluorohexanoic acid (PFHxA)	0.0424	1.65	-110	1	30	60-140	D 4
Perfluoroheptanoic acid (PFHpA)	0.0424	0.743	16	1	30	60-140	D 4
Perfluorooctanoic acid (PFOA)	0.0424	6.88	-441	1	30	60-140	D M 4
Perfluorononanoic acid (PFNA)	0.0424	0.0658	84	0	30	60-140	D
Perfluorodecanoic acid (PFDA)	0.0424	0.0499 J	80	6	30	60-140	D
Perfluoroundecanoic acid (PFUnA)	0.0424	0.0449 J	106	0	30	60-140	D
Perfluorododecanoic acid (PFDoA)	0.0424	0.0448 J	106	3	30	60-140	D
Perfluorotridecanoic Acid (PFTriA)	0.0424	0.0406 J	96	1	30	50-150	D
Perfluorotetradecanoic acid (PFTeA)	0.0424	0.0581	137	7	30	50-150	D
Perfluorobutanesulfonic acid (PFBS)	0.0375	0.182	128	3	30	50-150	D
Perfluorohexanesulfonic acid (PFHxS)	0.0386	4.67	-905	1	30	60-140	D M 4
Perfluorooctanesulfonic acid (PFOS)	0.0393	0.577	-1957	19	30	60-140	D 4
Perfluorodecanesulfonic acid (PFDS)	0.0408	0.0420 J	103	5	30	50-150	D
Perfluorooctane Sulfonamide (FOSA)	0.0424	0.0749	-30	4	30	60-140	D J
13C8 FOSA	0.106	0.00325	3			25-150	Q
13C4 PFBA	0.106	0.134	126			25-150	
13C5-PFPeA	0.106	0.158	149			25-150	
13C2 PFHxA	0.106	0.137	129			25-150	
13C4-PFHpA	0.106	0.115	108			25-150	
13C4 PFOA	0.106	0.106	100			25-150	
13C5 PFNA	0.106	0.147	138			25-150	
13C2 PFDA	0.106	0.139	131			25-150	
13C2 PFUnA	0.106	0.139	131			25-150	
13C2 PFDoA	0.106	0.132	125			25-150	
18O2 PFHxS	0.100	0.125	125			25-150	
13C4 PFOS	0.101	0.129	127			25-150	

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1
 SDG No.: _____
 Lab File ID: 28DEC2016C_003.d Lab Sample ID: MB 320-142967/1-A
 Matrix: Water Date Extracted: 12/19/2016 14:38
 Instrument ID: A8_N Date Analyzed: 12/29/2016 00:06
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-142967/2-A	28DEC2016C_ 004.d	12/29/2016 00:14
FSS6TMW-1216	320-24236-1	28DEC2016C_ 015.d	12/29/2016 01:37
FSS2TMW-1216	320-24236-2	28DEC2016C_ 016.d	12/29/2016 01:44
FFTA2TMW-1216	320-24236-3	28DEC2016C_ 017.d	12/29/2016 01:52
FFTA2TMW-1216 MS	320-24236-3 MS	28DEC2016C_ 018.d	12/29/2016 01:59
FFTA2TMW-1216 MSD	320-24236-3 MSD	28DEC2016C_ 019.d	12/29/2016 02:07
FB120816	320-24236-4	28DEC2016C_ 020.d	12/29/2016 02:14
EBWC120816-a	320-24236-5	28DEC2016C_ 021.d	12/29/2016 02:22
EBWC120816-b	320-24236-6	28DEC2016C_ 022.d	12/29/2016 02:29
EBDPT120816-a	320-24236-7	28DEC2016C_ 023.d	12/29/2016 02:37
EBDPT120816-b	320-24236-8	28DEC2016C_ 026.d	12/29/2016 02:59
FFTA4TMW-1216	320-24236-9	28DEC2016C_ 027.d	12/29/2016 03:07
FFTA4TMW-1216-D	320-24236-10	28DEC2016C_ 028.d	12/29/2016 03:14
FFTA4TMW-1216 DL	320-24236-9 DL	03JAN2017C_ 024.d	01/03/2017 17:06
FFTA4TMW-1216-D DL	320-24236-10 DL	03JAN2017C_ 025.d	01/03/2017 17:13

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1
 SDG No.: _____
 Lab File ID: 30DEC2016B_032.d Lab Sample ID: MB 320-142967/1-A
 Matrix: Water Date Extracted: 12/19/2016 14:38
 Instrument ID: A8_N Date Analyzed: 12/30/2016 16:11
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
FSS2TMW-1216 DL	320-24236-2 DL	30DEC2016B_005.d	12/30/2016 12:48
FFTA2TMW-1216 DL	320-24236-3 DL	30DEC2016B_018.d	12/30/2016 14:26
FFTA2TMW-1216 MS DL	320-24236-3 MS DL	30DEC2016B_019.d	12/30/2016 14:34
FFTA2TMW-1216 MSD DL	320-24236-3 MSD DL	30DEC2016B_020.d	12/30/2016 14:41
FB120816 RA	320-24236-4 RA	30DEC2016B_021.d	12/30/2016 14:49
	LCS 320-142967/2-A RA	30DEC2016B_033.d	12/30/2016 16:19
EBWC120816-a RA	320-24236-5 RA	30DEC2016B_035.d	12/30/2016 16:34
EBWC120816-b RA	320-24236-6 RA	30DEC2016B_036.d	12/30/2016 16:41
EBDPT120816-a RA	320-24236-7 RA	30DEC2016B_037.d	12/30/2016 16:49
FSS6TMW-1216 DL	320-24236-1 DL	03JAN2017C_023.d	01/03/2017 16:58
FSS2TMW-1216 DL2	320-24236-2 DL2	04JAN2017A_046.d	01/04/2017 21:40

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FSS6TMW-1216</u>	Lab Sample ID: <u>320-24236-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_015.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 09:30</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>245.3 (mL)</u>	Date Analyzed: <u>12/29/2016 01:37</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	1.6	E	0.0025	0.0010	0.00047
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.98	E	0.0025	0.0020	0.0010
307-24-4	Perfluorohexanoic acid (PFHxA)	1.4	E B	0.0025	0.0020	0.00080
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.7	E	0.0025	0.0020	0.00082
335-67-1	Perfluorooctanoic acid (PFOA)	2.5	E	0.0025	0.0020	0.00076
375-95-1	Perfluorononanoic acid (PFNA)	0.13		0.0025	0.0020	0.00067
335-76-2	Perfluorodecanoic acid (PFDA)	0.0014	J	0.0025	0.0010	0.00045
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0020	U	0.0025	0.0020	0.00076
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0020	U	0.0025	0.0020	0.00060
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0020	U	0.0025	0.0020	0.00056
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00068	J	0.0025	0.0010	0.00041
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	E M	0.0025	0.0020	0.00094
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.5	E	0.0025	0.0020	0.00089
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0031	U	0.0041	0.0031	0.0012
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0057		0.0025	0.0020	0.00065

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FSS6TMW-1216</u>	Lab Sample ID: <u>320-24236-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_015.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 09:30</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>245.3 (mL)</u>	Date Analyzed: <u>12/29/2016 01:37</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	13	Q	25-150
STL00992	13C4 PFBA	19	Q	25-150
STL01893	13C5-PFPeA	34		25-150
STL00993	13C2 PFHxA	34		25-150
STL01892	13C4-PFHpA	19	Q	25-150
STL00990	13C4 PFOA	42		25-150
STL00995	13C5 PFNA	52		25-150
STL00996	13C2 PFDA	132		25-150
STL00997	13C2 PFUnA	123		25-150
STL00998	13C2 PFDoA	110		25-150
STL00994	18O2 PFHxS	17	Q	25-150
STL00991	13C4 PFOS	54		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_015.d
 Lims ID: 320-24236-A-1-A
 Client ID: FSS6TMW-1216
 Sample Type: Client
 Inject. Date: 29-Dec-2016 01:37:01 ALS Bottle#: 11 Worklist Smp#: 15
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24236-a-1-a
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2017 09:11:30 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK020

First Level Reviewer: phomsophat

Date: 29-Dec-2016 17:49:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.529	1.525	0.004		3322749	9.56		19.1	229992	
1 Perfluorobutyric acid										E
212.90 > 169.00	1.529	1.525	0.004	1.000	43567208	767.9			107487	E
D 4 13C5-PFPeA										
267.90 > 223.00	1.804	1.800	0.004		4489678	16.9		33.7	170712	
3 Perfluoropentanoic acid										E
262.90 > 219.00	1.823	1.800	0.023	1.000	42588978	480.6			5701	E
5 Perfluorobutanesulfonic acid										EM
298.90 > 80.00	1.871	1.839	0.032	1.000	77931895	989.6				EM
298.90 > 99.00	1.842	1.839	0.003	0.985	70687489		1.10(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.096	2.091	0.005		4118094	16.8		33.6	232699	
7 Perfluorohexanoic acid										E
313.00 > 269.00	2.115	2.091	0.024	1.000	52760195	689.7			1495	E
9 Perfluorohexanesulfonic acid										E
399.00 > 80.00	2.327	2.409	-0.082	1.000	181799300	3175.9				E
D 11 13C4-PFHpA										
367.00 > 322.00	2.410	2.420	-0.010		2195421	9.70		19.4	127650	
12 Perfluoroheptanoic acid										E
363.00 > 319.00	2.410	2.420	-0.010	1.000	55947729	1301.8			14845	E
D 10 18O2 PFHxS										
403.00 > 84.00	2.435	2.440	-0.005		2628810	8.04		17.0	18707	
D 14 13C4 PFOA										
417.00 > 372.00	2.776	2.776	0.0		4826278	21.0		41.9	174843	
15 Perfluorooctanoic acid										E
413.00 > 369.00	2.748	2.783	-0.035	1.000	119507076	1234.2			39219	E
413.00 > 169.00	2.680	2.783	-0.103	0.975	113910689		1.05(0.90-1.10)		321137	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.141	3.040	0.101	1.000	261131370	1960.1			267899	E
499.00 > 99.00	3.040	3.040	0.0	0.968	93812370		2.78(0.90-1.10)		329300	
D 17 13C4 PFOS										
503.00 > 80.00	3.149	3.145	0.004		6403574	25.7		53.8	50220	
20 Perfluorononanoic acid										
463.00 > 419.00	3.158	3.153	0.005	1.000	5568167	62.8			17392	
D 19 13C5 PFNA										
468.00 > 423.00	3.158	3.153	0.005		4660248	26.2		52.5	233500	
D 21 13C8 FOSA										
506.00 > 78.00	3.481	3.475	0.006		2582281	6.72		13.4	166037	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.481	3.475	0.006	1.000	135066	2.80			1959	
D 23 13C2 PFDA										
515.00 > 470.00	3.507	3.509	-0.002		10404091	66.1		132	437989	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.507	3.509	-0.002	1.000	136296	0.6940			1277	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.817	3.825	-0.008	1.000	11339	0.1449				
D 27 13C2 PFUnA										
565.00 > 520.00	3.834	3.834	0.0		7193661	61.4		123	458148	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.826	3.834	-0.008	1.000	25748	0.1871			370	
D 30 13C2 PFDaA										
615.00 > 570.00	4.126	4.126	0.0		6120497	55.2		110	286552	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.404	4.404	0.0	1.000	12354	0.1113			294	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.643	4.644	-0.001	1.000	65134	0.3357			733	
713.00 > 169.00	4.643	4.644	-0.001	1.000	10415		6.25(0.00-0.00)		2311	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_015.d

Injection Date: 29-Dec-2016 01:37:01

Instrument ID: A8_N

Lims ID: 320-24236-A-1-A

Lab Sample ID: 320-24236-1

Client ID: FSS6TMW-1216

Operator ID: A8-PC\A8

ALS Bottle#: 11

Worklist Smp#: 15

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

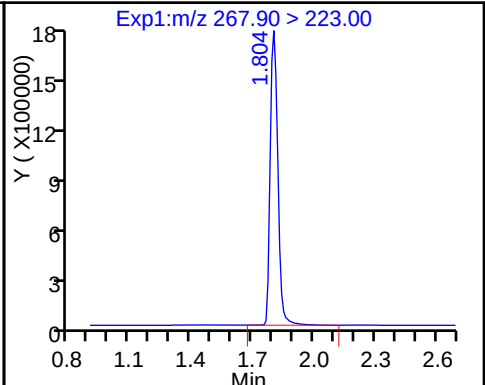
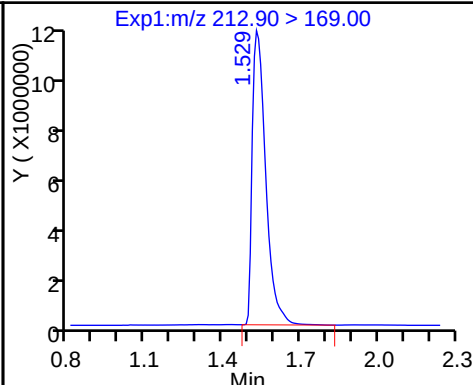
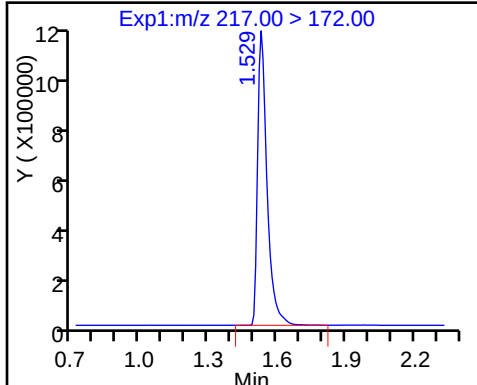
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

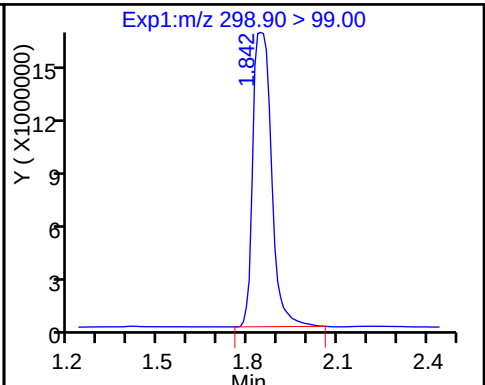
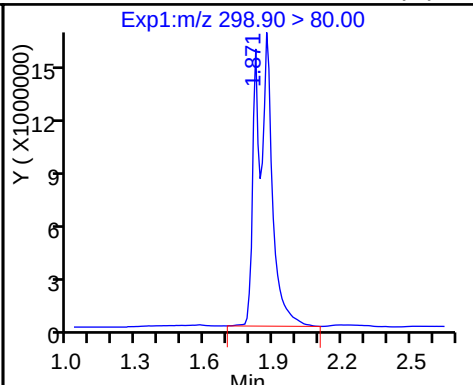
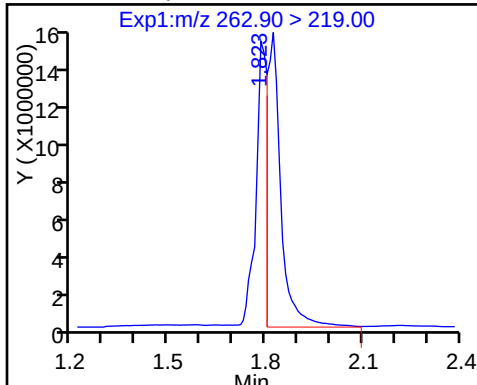
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid (M)

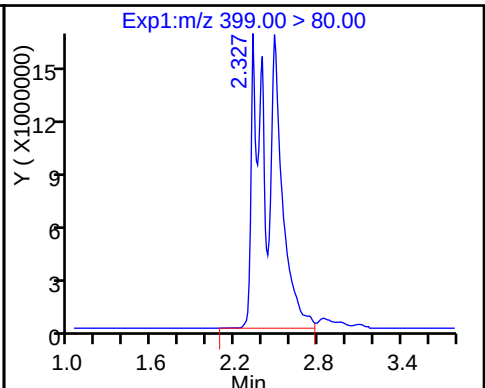
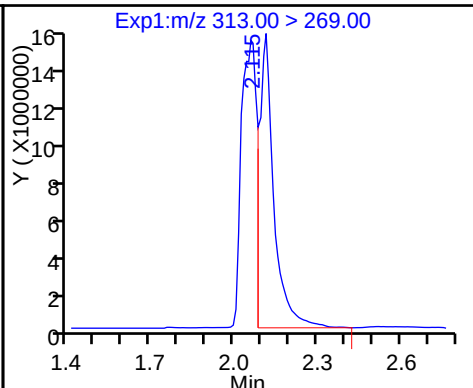
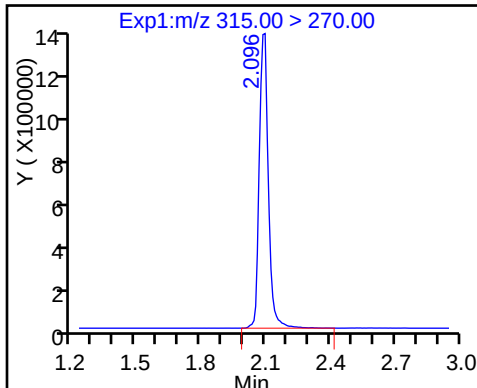
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

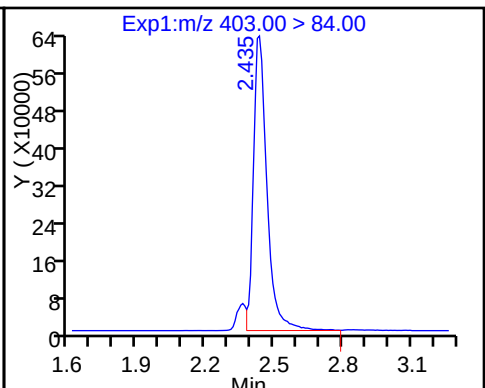
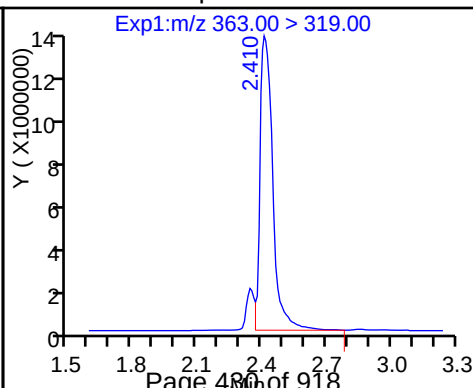
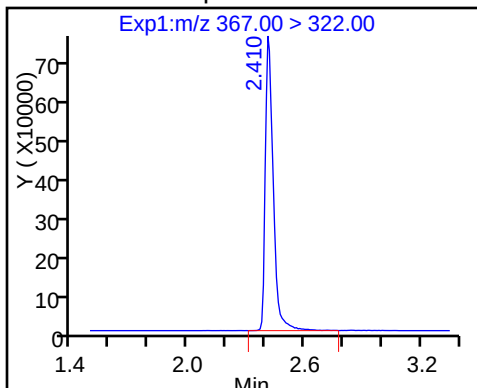
9 Perfluorohexanesulfonic acid



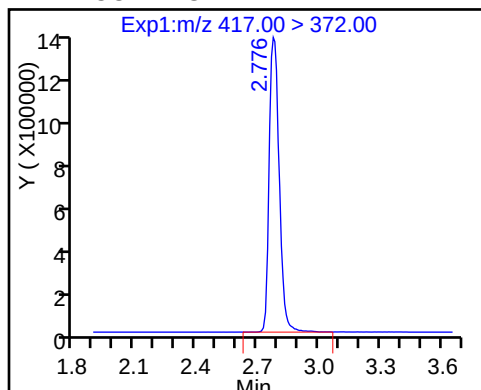
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid

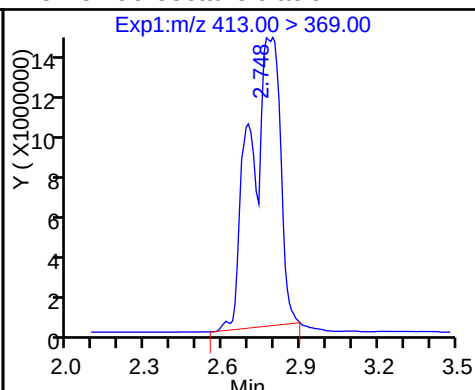
D 10 18O2 PFHxS



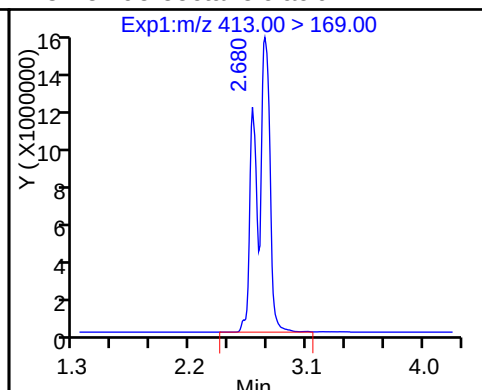
D 14 13C4 PFOA



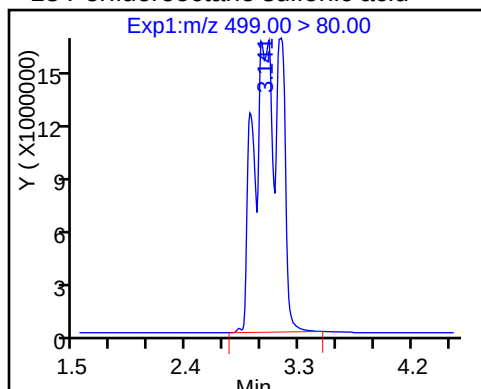
15 Perfluorooctanoic acid



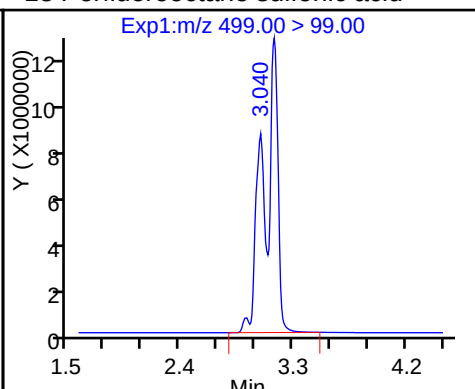
15 Perfluorooctanoic acid



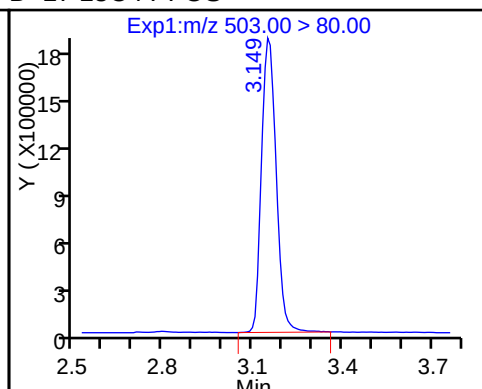
18 Perfluorooctane sulfonic acid



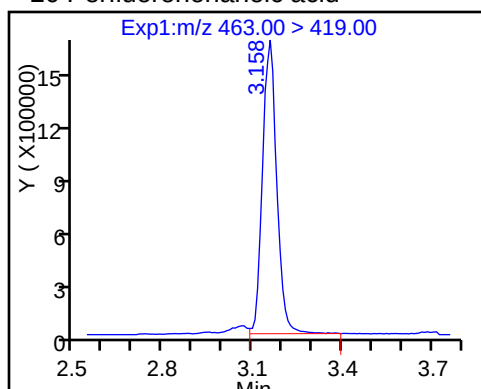
18 Perfluorooctane sulfonic acid



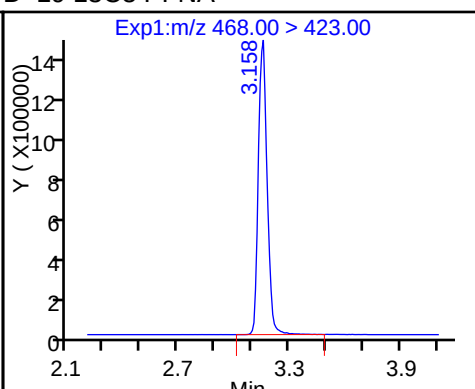
D 17 13C4 PFOS



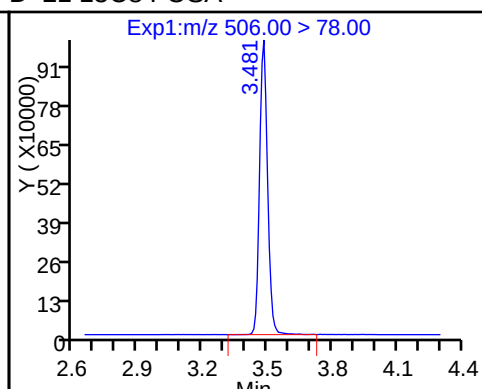
20 Perfluorononanoic acid



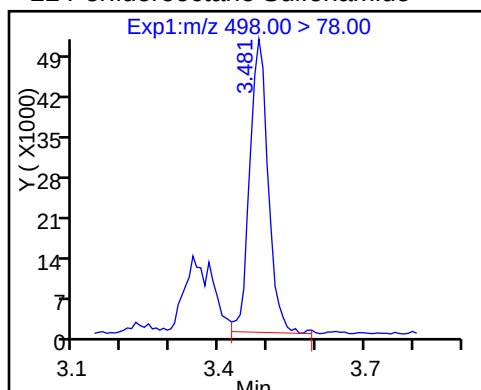
D 19 13C5 PFNA



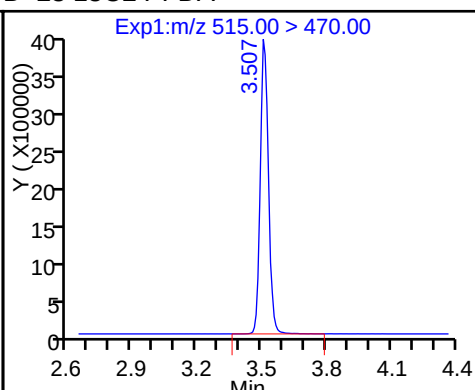
D 21 13C8 FOSA



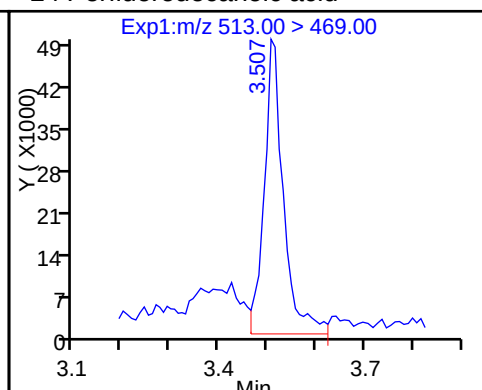
22 Perfluorooctane Sulfonamide



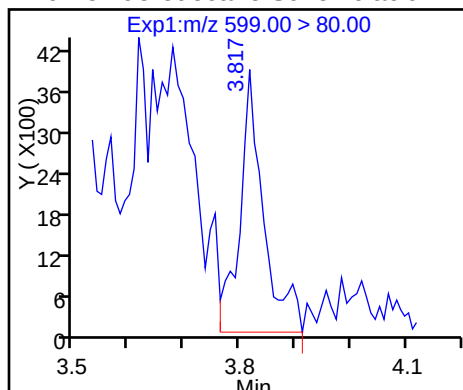
D 23 13C2 PFDA



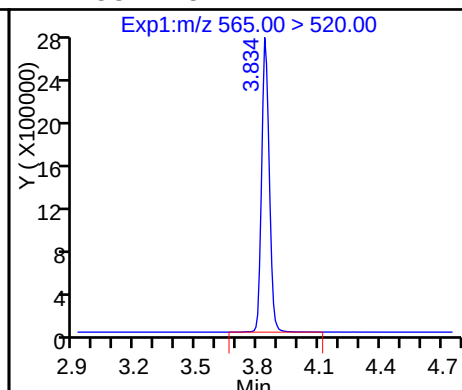
24 Perfluorodecanoic acid



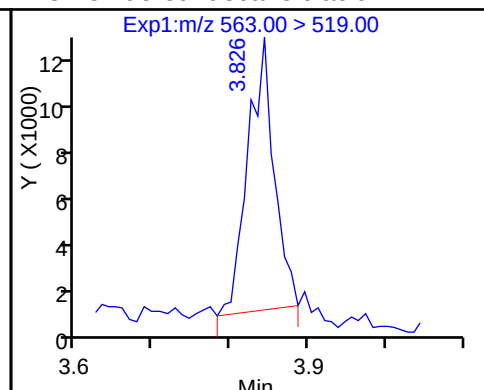
26 Perfluorodecane Sulfonic acid



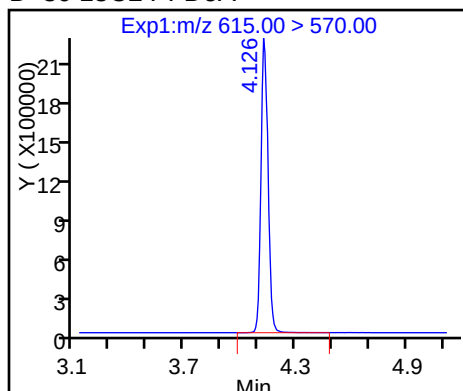
D 27 13C2 PFUnA



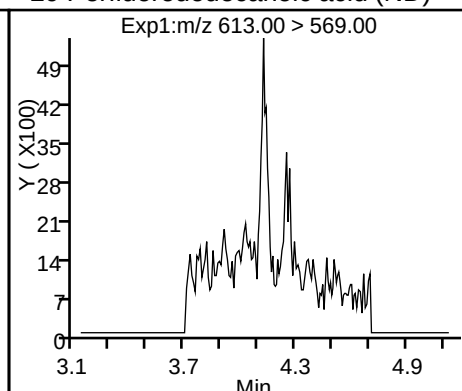
28 Perfluoroundecanoic acid



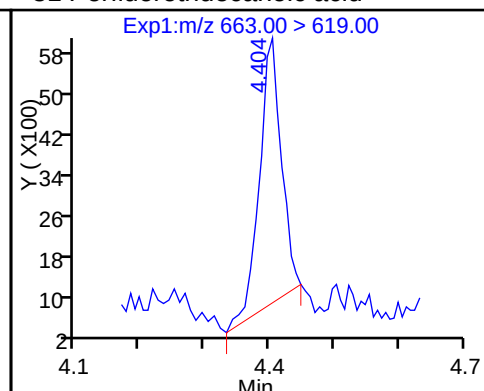
D 30 13C2 PFDaA



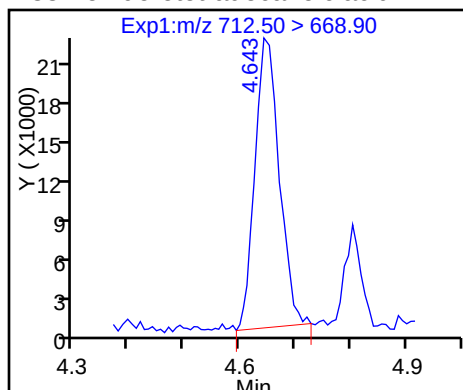
29 Perfluorododecanoic acid (ND)



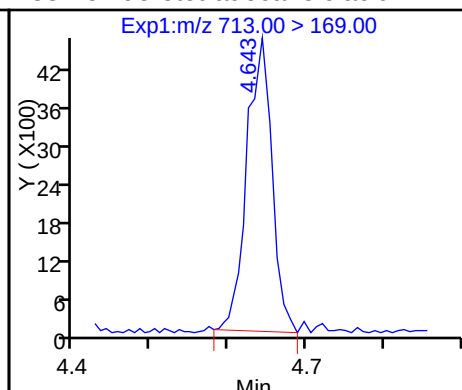
31 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Sacramento

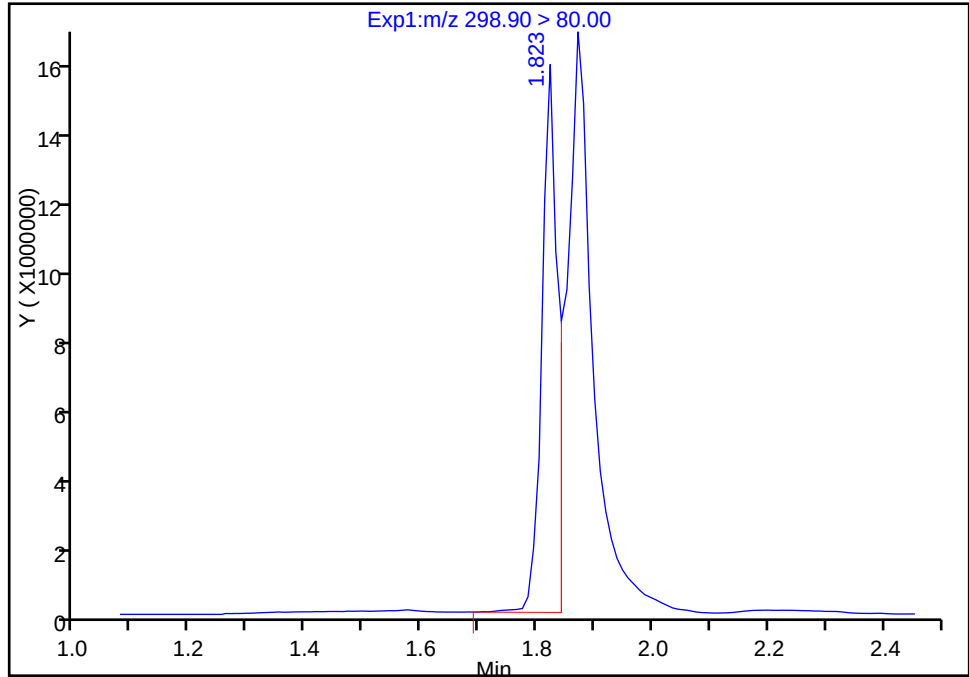
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Injection Date:	29-Dec-2016 01:37:01	Instrument ID:	A8_N		
Lims ID:	320-24236-A-1-A	Lab Sample ID:	320-24236-1		
Client ID:	FSS6TMW-1216				
Operator ID:	A8-PC\A8	ALS Bottle#:	11	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

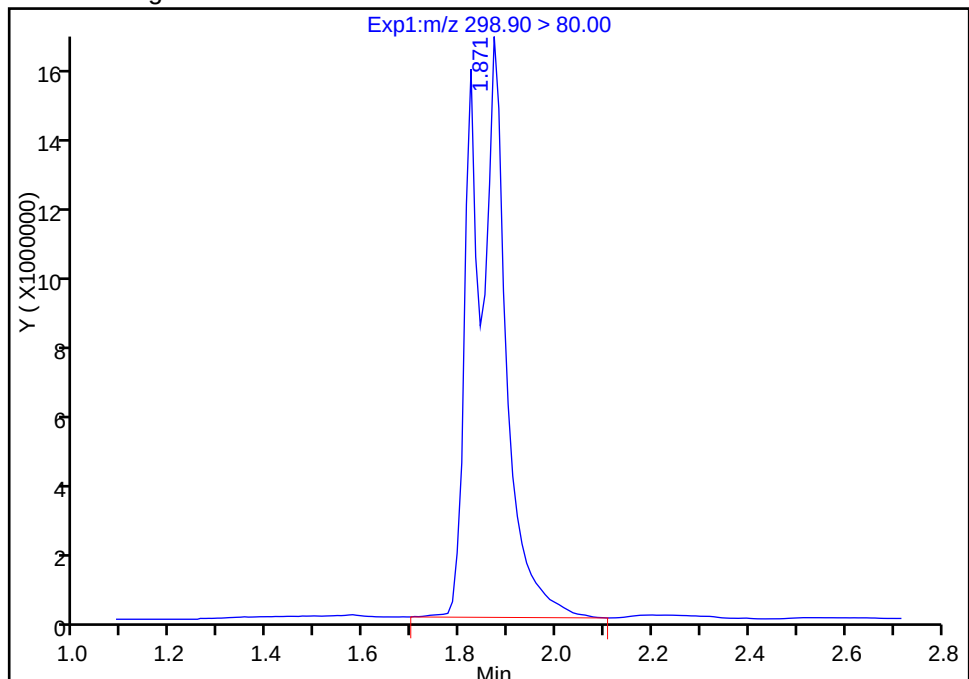
RT: 1.82
Area: 27702691
Amount: 351.7775
Amount Units: ng/ml

Processing Integration Results



RT: 1.87
Area: 77931895
Amount: 989.6037
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 29-Dec-2016 17:49:22

Audit Action: Assigned Compound ID

Audit Reason:

TestAmerica Sacramento

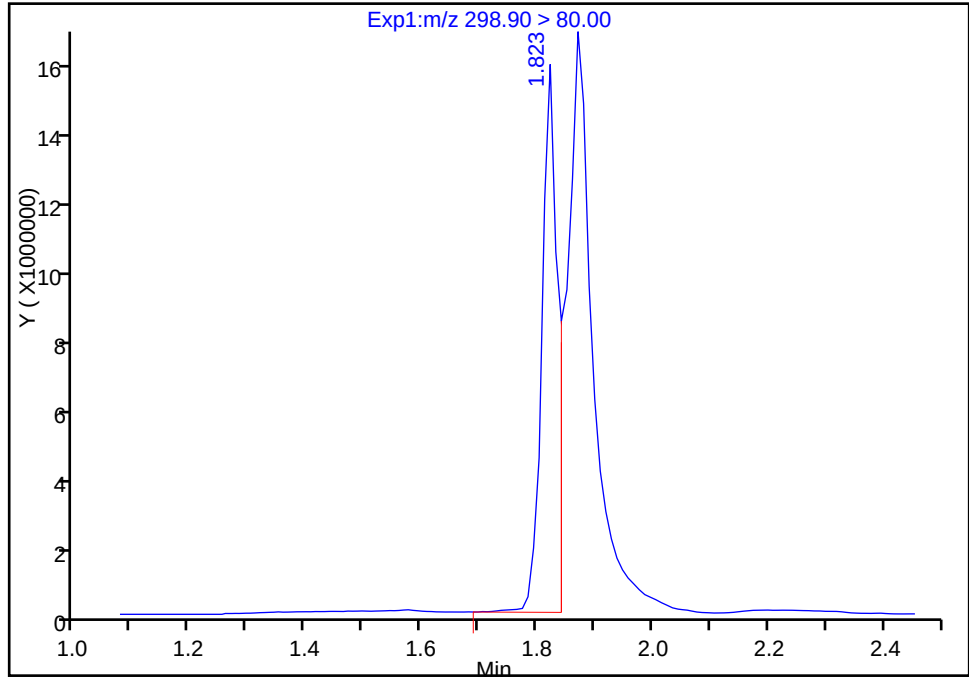
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Injection Date:	29-Dec-2016 01:37:01	Instrument ID:	A8_N		
Lims ID:	320-24236-A-1-A	Lab Sample ID:	320-24236-1		
Client ID:	FSS6TMW-1216				
Operator ID:	A8-PCVA8	ALS Bottle#:	11	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

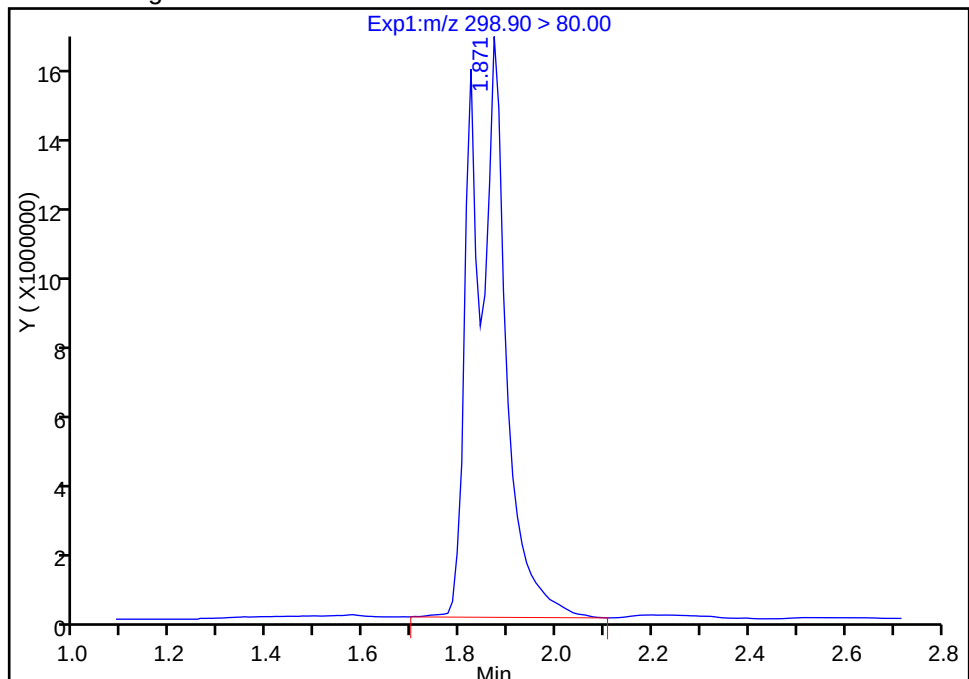
RT: 1.82
Area: 27702691
Amount: 351.7775
Amount Units: ng/ml

Processing Integration Results



RT: 1.87
Area: 77931895
Amount: 989.6037
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 06-Jan-2017 09:11:30

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FSS6TMW-1216 DL</u>	Lab Sample ID: <u>320-24236-1 DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>03JAN2017C_023.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 09:30</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>245.3 (mL)</u>	Date Analyzed: <u>01/03/2017 16:58</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>100</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144867</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	2.1	D	0.25	0.10	0.047
2706-90-3	Perfluoropentanoic acid (PFPeA)	5.5	D	0.25	0.20	0.10
307-24-4	Perfluorohexanoic acid (PFHxA)	10	D B	0.25	0.20	0.080
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.4	D	0.25	0.20	0.082
335-67-1	Perfluorooctanoic acid (PFOA)	4.1	D	0.25	0.20	0.076
375-95-1	Perfluorononanoic acid (PFNA)	0.12	J D	0.25	0.20	0.067
335-76-2	Perfluorodecanoic acid (PFDA)	0.10	U	0.25	0.10	0.045
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.20	U	0.25	0.20	0.076
307-55-1	Perfluorododecanoic acid (PFDoA)	0.20	U	0.25	0.20	0.060
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.20	U	0.25	0.20	0.056
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.10	U	0.25	0.10	0.041
375-73-5	Perfluorobutanesulfonic acid (PFBS)	4.3	D	0.25	0.20	0.094
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	29	D	0.25	0.20	0.089
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	6.5	D	0.41	0.31	0.13
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.31	U	0.41	0.31	0.12
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.20	U	0.25	0.20	0.065

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FSS6TMW-1216 DL</u>	Lab Sample ID: <u>320-24236-1 DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>03JAN2017C_023.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 09:30</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>245.3 (mL)</u>	Date Analyzed: <u>01/03/2017 16:58</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>100</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144867</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	18	Q	25-150
STL00992	13C4 PFBA	139		25-150
STL01893	13C5-PFPeA	143		25-150
STL00993	13C2 PFHxA	119		25-150
STL01892	13C4-PFHpA	96		25-150
STL00990	13C4 PFOA	149		25-150
STL00995	13C5 PFNA	150		25-150
STL00996	13C2 PFDA	158	Q	25-150
STL00997	13C2 PFUnA	154	Q	25-150
STL00998	13C2 PFDoA	145		25-150
STL00994	18O2 PFHxS	120		25-150
STL00991	13C4 PFOS	126		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170104-38437.b\03JAN2017C_023.d
 Lims ID: 320-24236-A-1-A
 Client ID: FSS6TMW-1216
 Sample Type: Client
 Inject. Date: 03-Jan-2017 16:58:33 ALS Bottle#: 49 Worklist Smp#: 23
 Injection Vol: 2.0 ul Dil. Factor: 100.0000
 Sample Info: 320-24236-a-1-a
 Misc. Info.: Plate: 1 Rack: 5
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170104-38437.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2017 10:20:51 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 04-Jan-2017 10:13:12

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.622	1.630	-0.008		241346	0.6940		1.4	18765	
1 Perfluorobutyric acid										
212.90 > 169.00	1.622	1.638	-0.016	1.000	4173321	10.1			28012	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.916	1.935	-0.019	1.000	10199317	27.1			86505	
D 4 13C5-PFPeA										
267.90 > 223.00	1.906	1.935	-0.029		190518	0.7160		1.4	22780	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.954	1.974	-0.020	1.000	11718437	21.1				
298.90 > 99.00	1.954	1.974	-0.020	1.000	5119275		2.29(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.214	2.239	-0.025		145700	0.5944		1.2	26531	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.214	2.239	-0.025	1.000	13785898	50.9			241698	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.573	2.576	-0.003	1.000	58050264	143.5				
D 11 13C4-PFHpA										
367.00 > 322.00	2.557	2.591	-0.034		108829	0.4808		1.0	19323	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.557	2.591	-0.034	1.000	4630747	21.7			33530	
D 10 18O2 PFHxS										
403.00 > 84.00	2.573	2.606	-0.033		185808	0.5683		1.2	20439	
D 14 13C4 PFOA										
417.00 > 372.00	2.934	2.955	-0.021		171457	0.7443		1.5	20450	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.926	2.963	-0.037	1.000	7002995	20.4			10963	
413.00 > 169.00	2.902	2.963	-0.061	0.992	5349964		1.31(0.90-1.10)		55819	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.184	3.224	-0.040	1.000	9877757	31.7			127916	
499.00 > 99.00	3.192	3.224	-0.032	1.003	2029808		4.87(0.90-1.10)		87960	
D 17 13C4 PFOS										
503.00 > 80.00	3.300	3.328	-0.028		150003	0.6028		1.3	9211	
20 Perfluorononanoic acid										
463.00 > 419.00	3.300	3.328	-0.028	1.000	154950	0.6103			3179	
D 19 13C5 PFNA										
468.00 > 423.00	3.307	3.343	-0.036		133367	0.7506		1.5	14744	
D 21 13C8 FOSA										
506.00 > 78.00	3.635	3.659	-0.024		34218	0.0891		0.2	1752	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.652	3.688	-0.036	1.000	2929	0.0125			106	
D 23 13C2 PFDA										
515.00 > 470.00	3.662	3.688	-0.026		124340	0.7905		1.6	3018	
D 27 13C2 PFUnA										
565.00 > 520.00	3.990	4.016	-0.026		90447	0.7714		1.5	11170	
D 30 13C2 PFDaA										
615.00 > 570.00	4.283	4.298	-0.015		80468	0.7252		1.5	2882	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170104-38437.b\03JAN2017C_023.d

Injection Date: 03-Jan-2017 16:58:33

Instrument ID: A8_N

Lims ID: 320-24236-A-1-A

Lab Sample ID: 320-24236-1

Client ID: FSS6TMW-1216

Operator ID: A8-PC\A8

ALS Bottle#: 49

Worklist Smp#: 23

Injection Vol: 2.0 ul

Dil. Factor: 100.0000

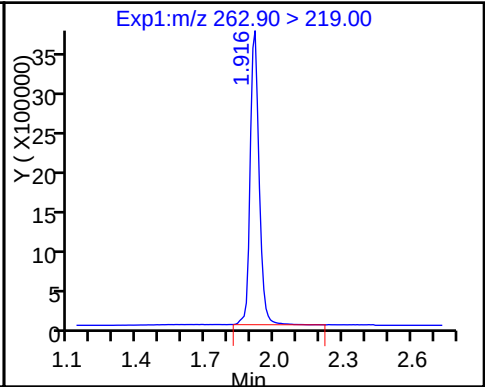
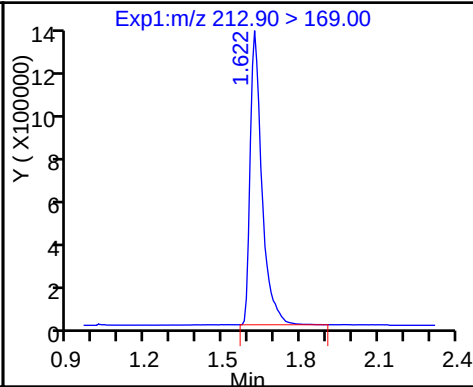
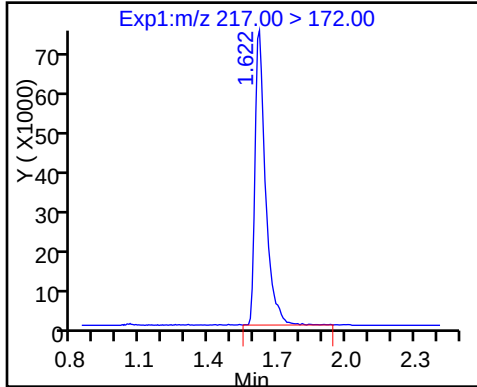
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

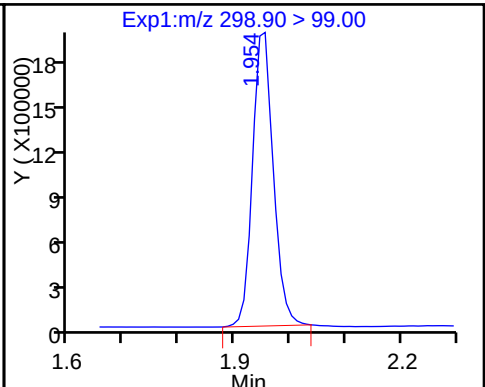
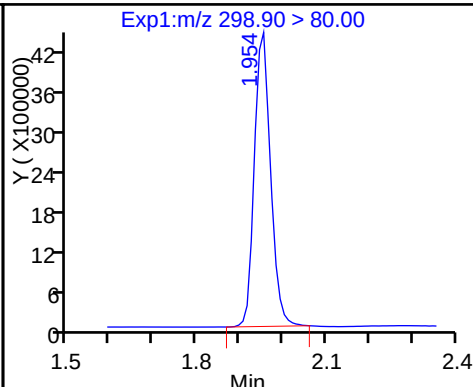
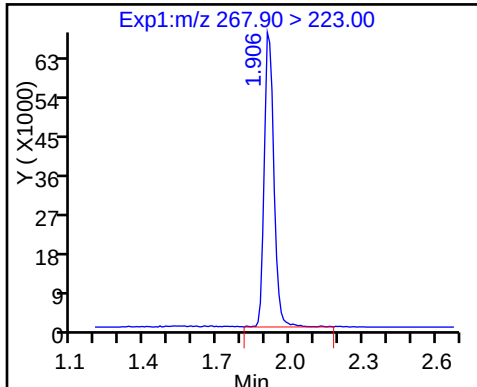
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

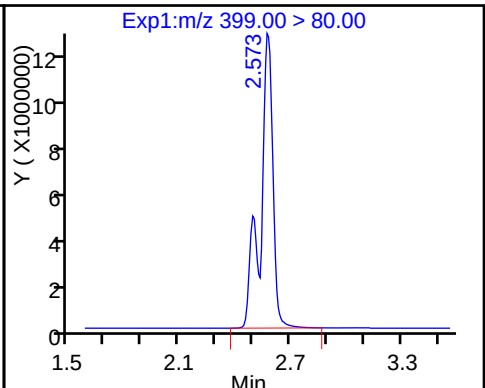
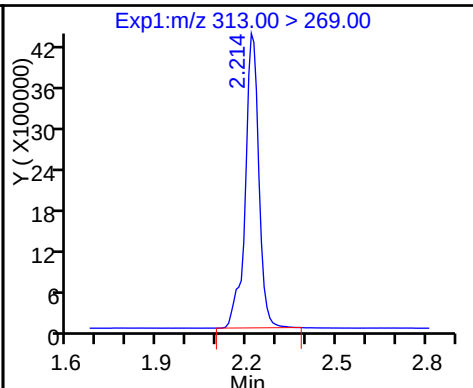
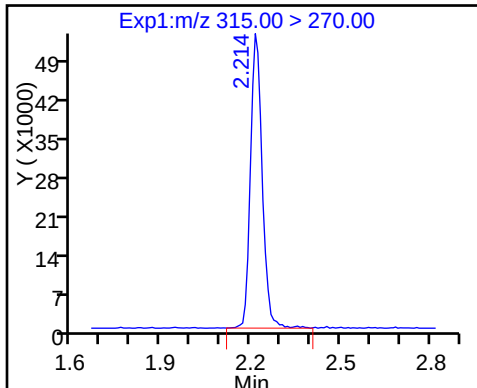
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

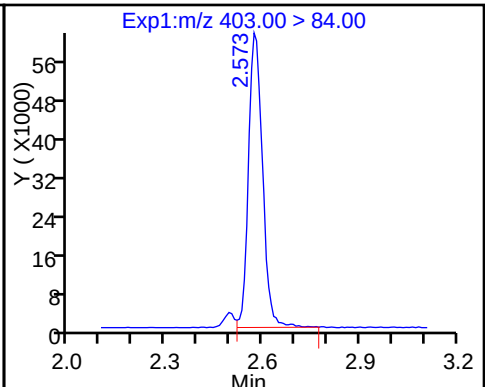
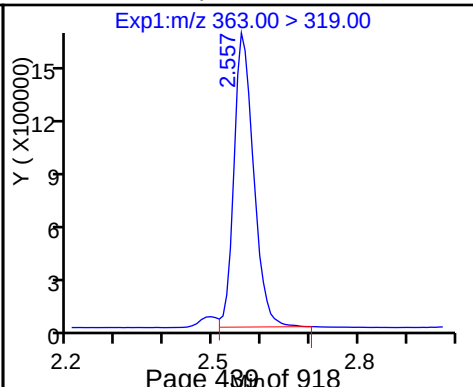
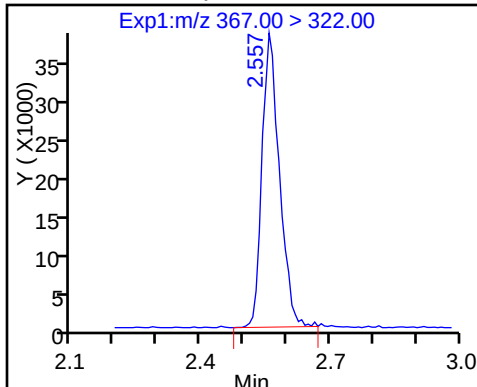
9 Perfluorohexanesulfonic acid



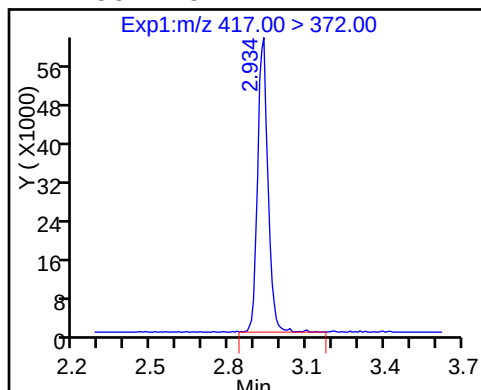
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid

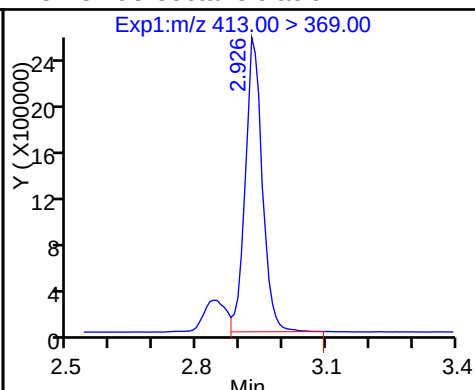
D 10 18O2 PFHxS



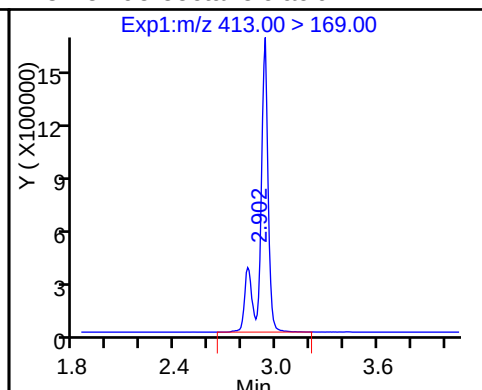
D 14 13C4 PFOA



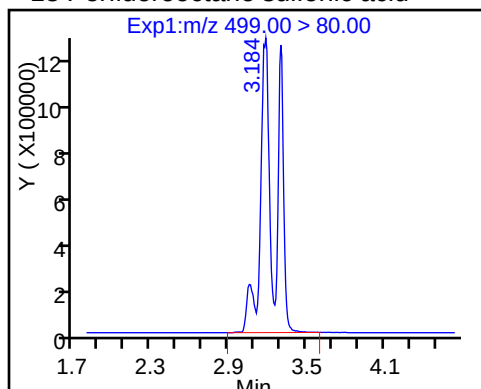
15 Perfluorooctanoic acid



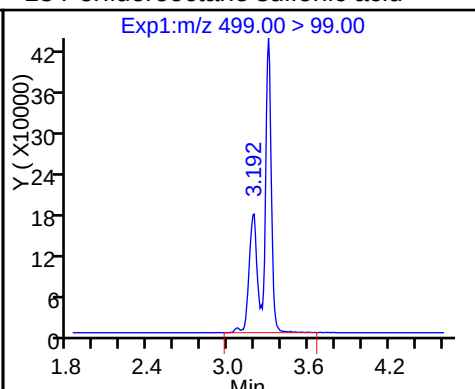
15 Perfluorooctanoic acid



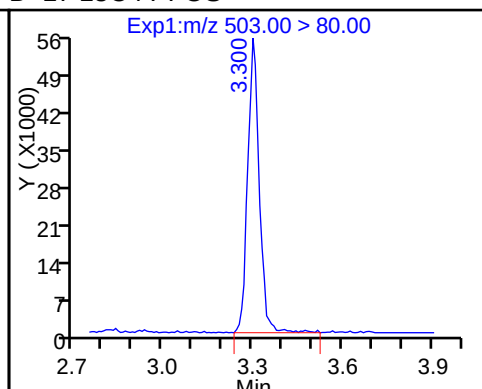
18 Perfluorooctane sulfonic acid



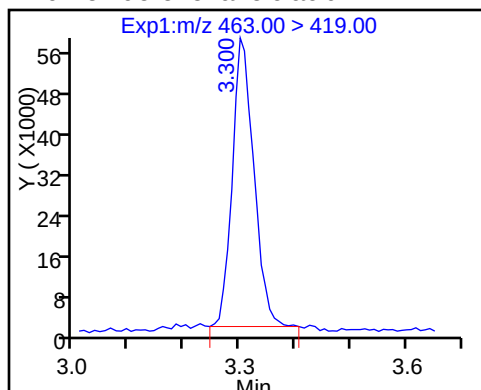
18 Perfluorooctane sulfonic acid



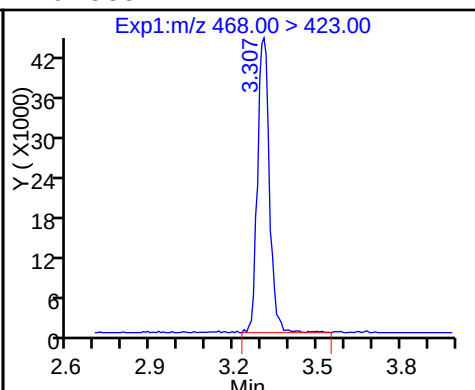
D 17 13C4 PFOS



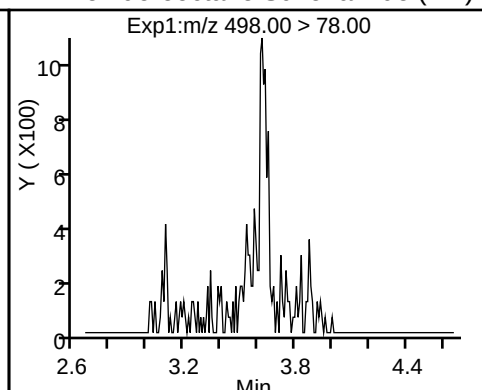
20 Perfluorononanoic acid



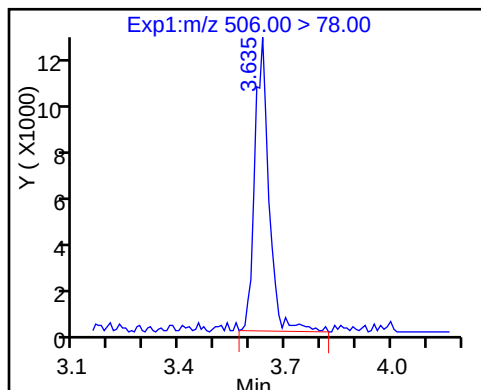
D 19 13C5 PFNA



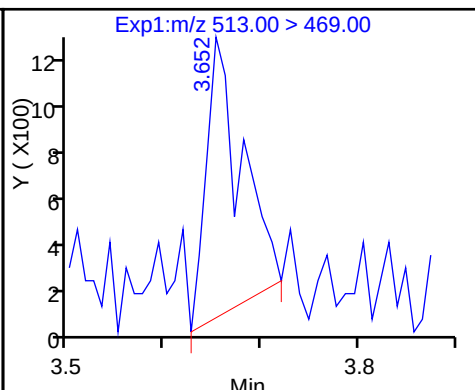
22 Perfluorooctane Sulfonamide (ND)



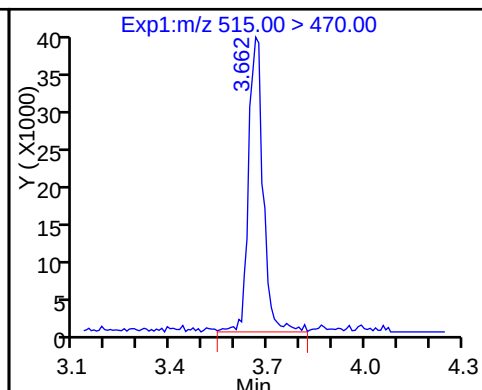
D 21 13C8 FOSA



24 Perfluorodecanoic acid



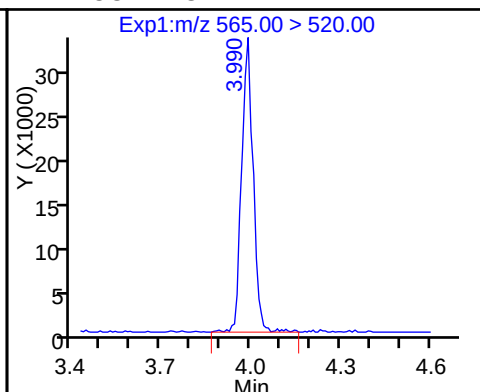
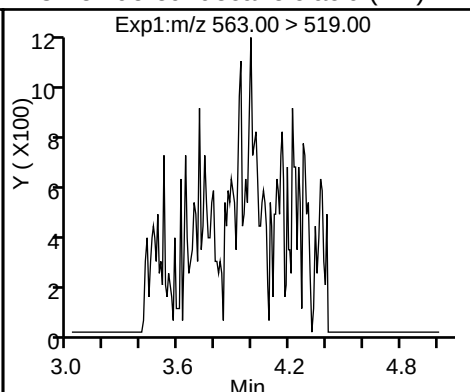
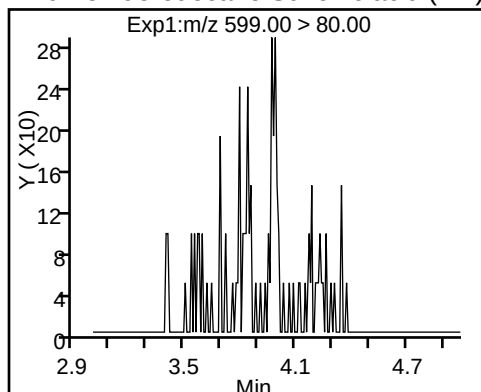
D 23 13C2 PFDA



26 Perfluorodecane Sulfonic acid (ND)

28 Perfluoroundecanoic acid (ND)

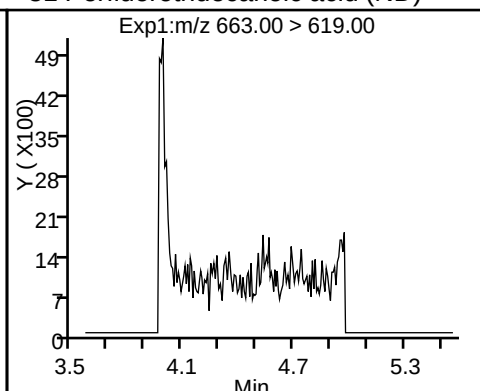
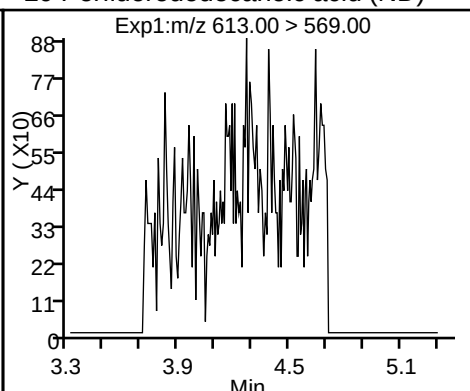
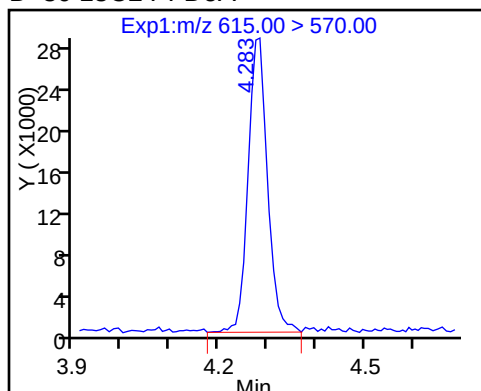
D 27 13C2 PFUnA



D 30 13C2 PFDaA

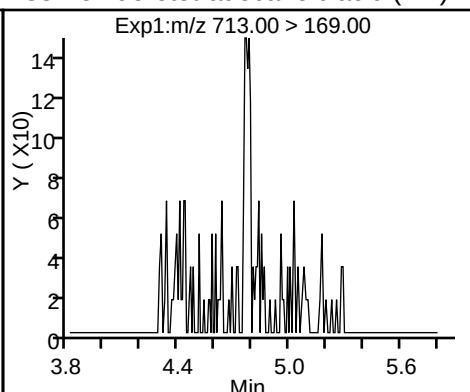
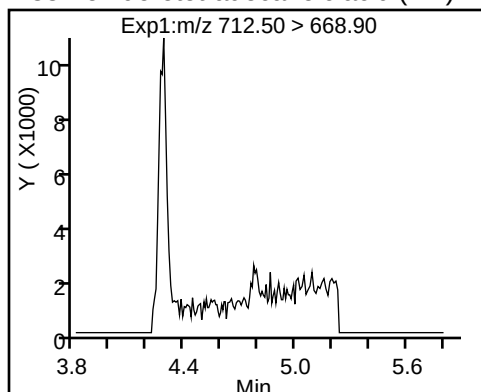
29 Perfluorododecanoic acid (ND)

31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND)

33 Perfluorotetradecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FSS2TMW-1216</u>	Lab Sample ID: <u>320-24236-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_016.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 11:35</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>253 (mL)</u>	Date Analyzed: <u>12/29/2016 01:44</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	3.3	E	0.0025	0.00099	0.00045
2706-90-3	Perfluoropentanoic acid (PFPeA)	2.3	E	0.0025	0.0020	0.00098
307-24-4	Perfluorohexanoic acid (PFHxA)	4.4	E B	0.0025	0.0020	0.00078
375-85-9	Perfluoroheptanoic acid (PFHpA)	5.1	E	0.0025	0.0020	0.00079
335-67-1	Perfluorooctanoic acid (PFOA)	11	E M	0.0025	0.0020	0.00074
375-95-1	Perfluorononanoic acid (PFNA)	0.61	E	0.0025	0.0020	0.00065
335-76-2	Perfluorodecanoic acid (PFDA)	0.046		0.0025	0.00099	0.00043
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0049		0.0025	0.0020	0.00074
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0020	U	0.0025	0.0020	0.00058
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0020	U	0.0025	0.0020	0.00054
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00069	J	0.0025	0.00099	0.00040
375-73-5	Perfluorobutanesulfonic acid (PFBS)	5.0	E M	0.0025	0.0020	0.00091
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	6.8	E	0.0025	0.0020	0.00086
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	62	E Q	0.0040	0.0030	0.0013
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.63	E	0.0040	0.0030	0.0012
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.60	E	0.0025	0.0020	0.00063

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FSS2TMW-1216</u>	Lab Sample ID: <u>320-24236-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_016.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 11:35</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>253 (mL)</u>	Date Analyzed: <u>12/29/2016 01:44</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	42		25-150
STL00992	13C4 PFBA	13	Q	25-150
STL01893	13C5-PFPeA	15	Q	25-150
STL00993	13C2 PFHxA	15	Q	25-150
STL01892	13C4-PFHpA	6	Q	25-150
STL00990	13C4 PFOA	10	Q	25-150
STL00995	13C5 PFNA	6	Q	25-150
STL00996	13C2 PFDA	60		25-150
STL00997	13C2 PFUnA	122		25-150
STL00998	13C2 PFDoA	119		25-150
STL00994	18O2 PFHxS	9	Q	25-150
STL00991	13C4 PFOS	4	Q	25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_016.d
 Lims ID: 320-24236-A-2-A
 Client ID: FSS2TMW-1216
 Sample Type: Client
 Inject. Date: 29-Dec-2016 01:44:33 ALS Bottle#: 12 Worklist Smp#: 16
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24236-a-2-a
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2017 09:09:31 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK020

First Level Reviewer: phomsophat

Date: 29-Dec-2016 17:52:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.525	1.525	0.0		2188624	6.29		12.6	214084	
1 Perfluorobutyric acid										E
212.90 > 169.00	1.566	1.525	0.041	1.000	62261338	1666.1			15549	E
D 4 13C5-PFPeA										
267.90 > 223.00	1.800	1.800	0.0		1996376	7.50		15.0	48509	
3 Perfluoropentanoic acid										E
262.90 > 219.00	1.829	1.800	0.029	1.000	45727260	1160.6			1306	E
5 Perfluorobutanesulfonic acid										EM
298.90 > 80.00	1.897	1.839	0.058	1.000	103236437	2506.1				EM
298.90 > 99.00	1.868	1.839	0.029	0.985	72828239		1.42(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.078	2.091	-0.013		1802656	7.35		14.7	135376	
7 Perfluorohexanoic acid										E
313.00 > 269.00	2.118	2.091	0.027	1.000	73761820	2202.8			1193	E
9 Perfluorohexanesulfonic acid										E
399.00 > 80.00	2.458	2.409	0.049	1.000	103566954	3458.8				E
D 11 13C4-PFHpA										
367.00 > 322.00	2.378	2.420	-0.042		712019	3.15		6.3	76827	
12 Perfluoroheptanoic acid										E
363.00 > 319.00	2.378	2.420	-0.042	1.000	35793862	2567.9			8774	E
D 10 18O2 PFHxS										
403.00 > 84.00	2.395	2.440	-0.045		1375108	4.21		8.9	6973	
D 14 13C4 PFOA										
417.00 > 372.00	2.761	2.776	-0.015		1106196	4.80		9.6	73498	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.772	2.783	-0.011	1.000	122621939	5525.1			111494	EM
413.00 > 169.00	2.761	2.783	-0.022	0.996	114050594		1.08(0.90-1.10)		236811	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.206	3.040	0.166	1.000	336246160	31372			644	E
499.00 > 99.00	2.979	3.040	-0.061	0.929	276848144		1.21(0.90-1.10)		14855	
D 17 13C4 PFOS										
503.00 > 80.00	3.057	3.145	-0.089		515184	2.07		4.3	1759	
20 Perfluorononanoic acid										E
463.00 > 419.00	3.057	3.153	-0.097	1.000	2877138	308.3			8622	E
D 19 13C5 PFNA										
468.00 > 423.00	3.057	3.153	-0.097		490168	2.76		5.5	15313	
D 21 13C8 FOSA										
506.00 > 78.00	3.477	3.475	0.002		8081182	21.0		42.1	37469	
22 Perfluorooctane Sulfonamide										E
498.00 > 78.00	3.477	3.475	0.002	1.000	45858538	304.2			921	E
24 Perfluorodecanoic acid										
513.00 > 469.00	3.519	3.509	0.010	1.000	2087660	23.4			4098	
D 23 13C2 PFDA										
515.00 > 470.00	3.511	3.509	0.002		4719373	30.0		60.0	202817	
26 Perfluorodecane Sulfonic acid										E
599.00 > 80.00	3.828	3.825	0.003	1.000	2020266	321.0				E
D 27 13C2 PFUnA										
565.00 > 520.00	3.837	3.834	0.003		7161160	61.1		122	302179	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.847	3.834	0.013	1.000	340727	2.49			1460	
D 30 13C2 PFDaA										
615.00 > 570.00	4.133	4.126	0.007		6604646	59.5		119	308411	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.133	4.133	0.0	1.000	21940	0.1809			216	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.400	4.404	-0.004	1.000	14857	0.1240			259	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.649	4.644	0.005	1.000	73089	0.3491			779	
713.00 > 169.00	4.638	4.644	-0.006	0.998	12287		5.95(0.00-0.00)		2148	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_016.d

Injection Date: 29-Dec-2016 01:44:33

Instrument ID: A8_N

Lims ID: 320-24236-A-2-A

Lab Sample ID: 320-24236-2

Client ID: FSS2TMW-1216

Operator ID: A8-PC\A8

ALS Bottle#: 12

Worklist Smp#: 16

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

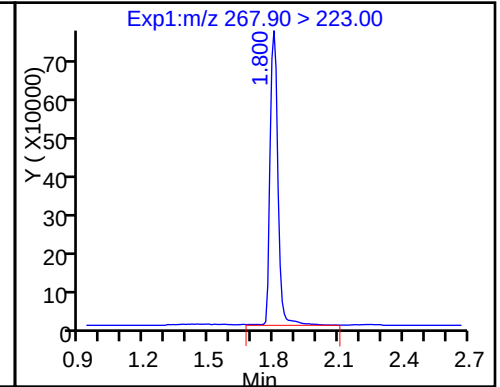
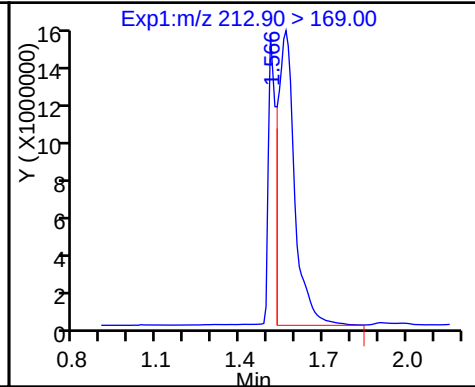
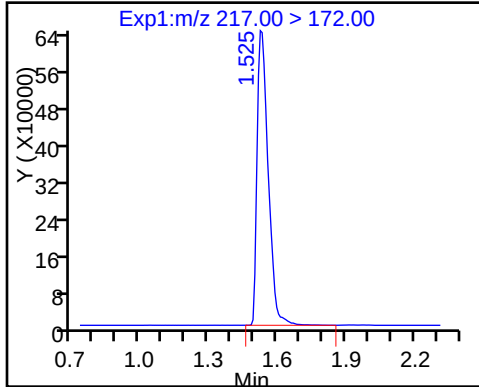
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

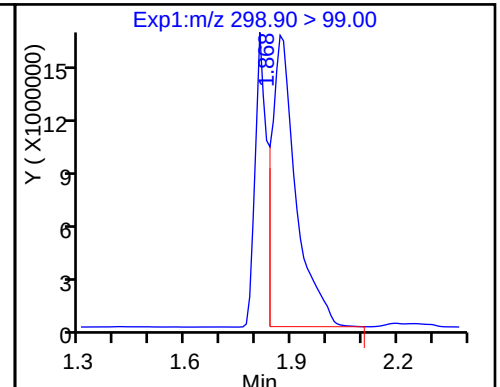
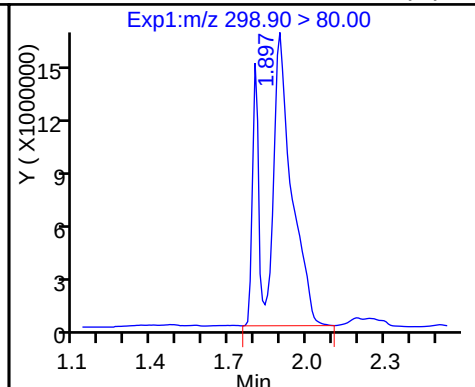
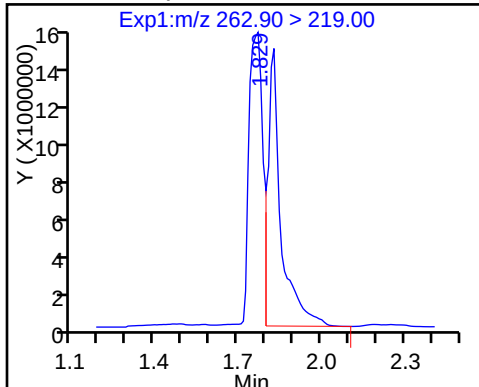
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid (M)

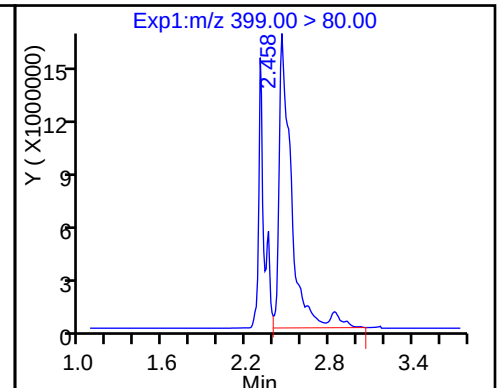
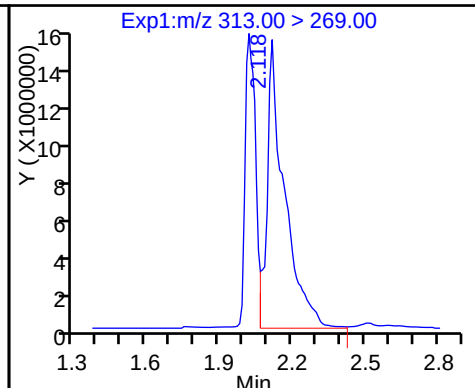
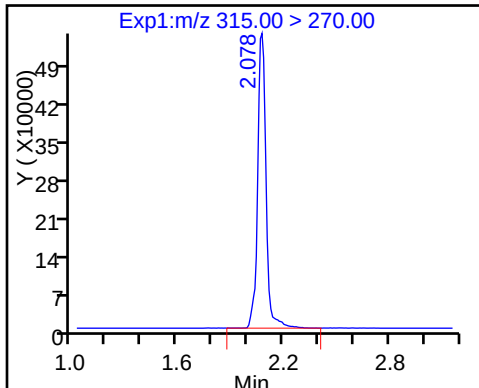
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

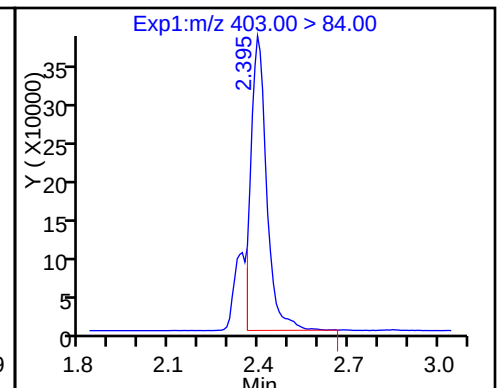
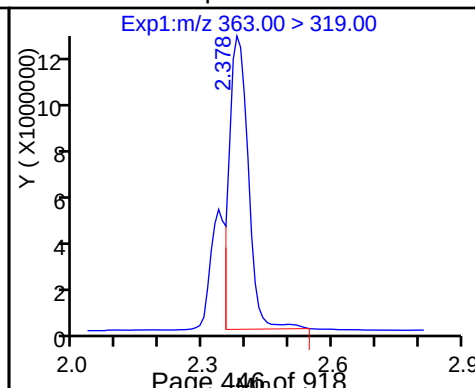
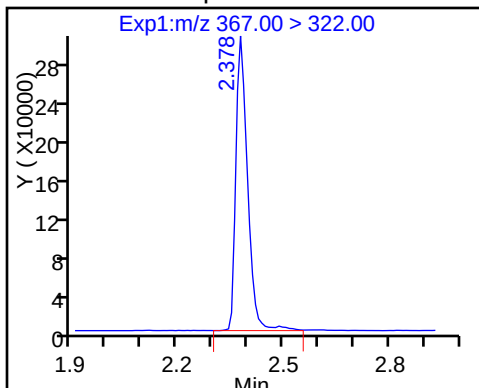
9 Perfluorohexanesulfonic acid



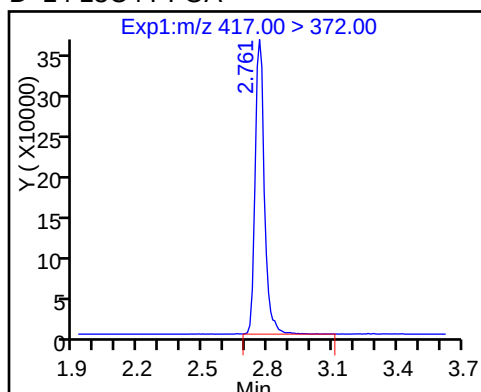
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid

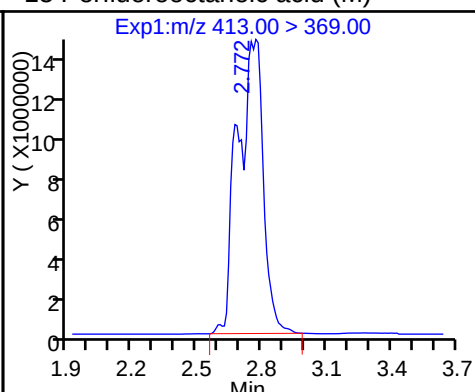
D 10 18O2 PFHxS



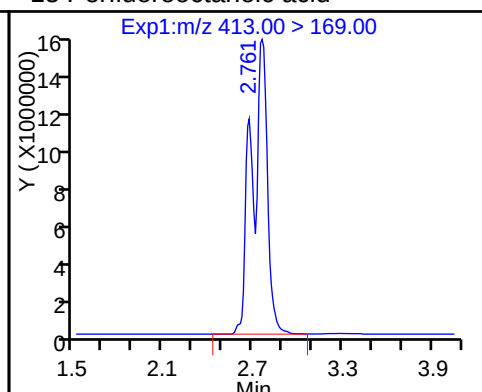
D 14 13C4 PFOA



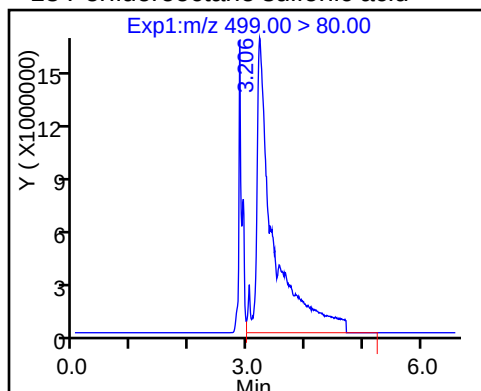
15 Perfluorooctanoic acid (M)



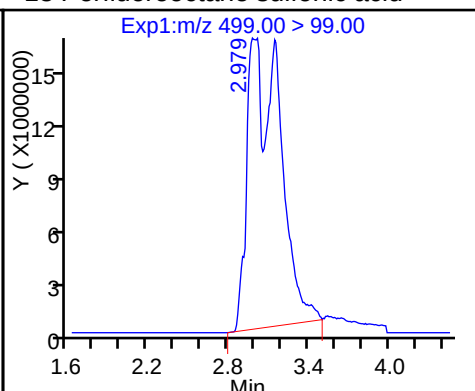
15 Perfluorooctanoic acid



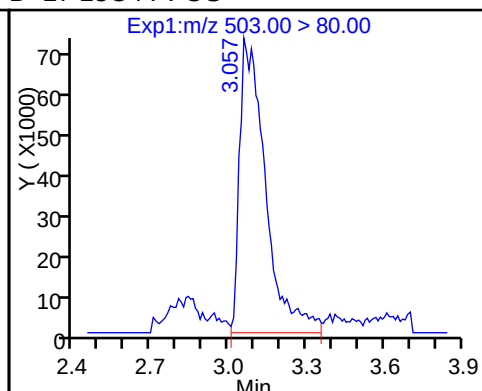
18 Perfluorooctane sulfonic acid



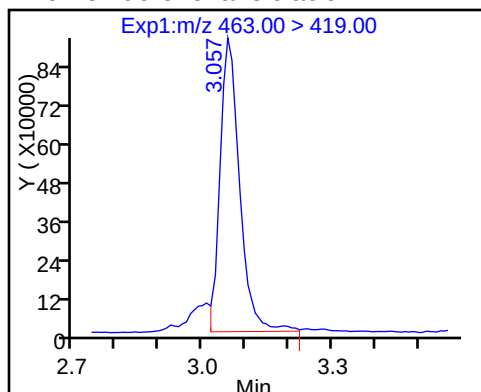
18 Perfluorooctane sulfonic acid



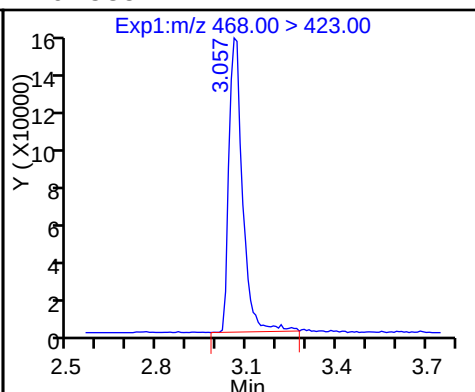
D 17 13C4 PFOS



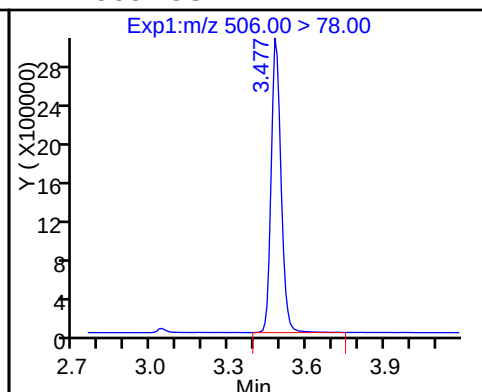
20 Perfluorononanoic acid



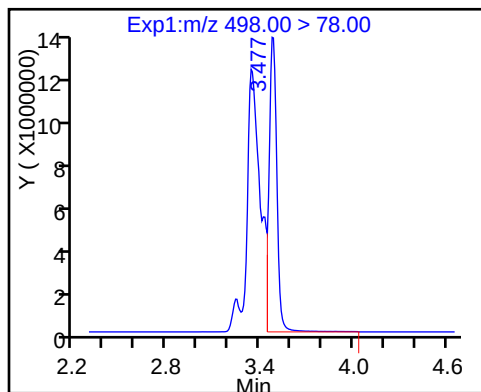
D 19 13C5 PFNA



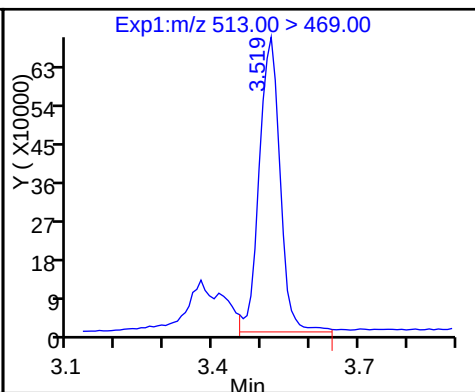
D 21 13C8 FOSA



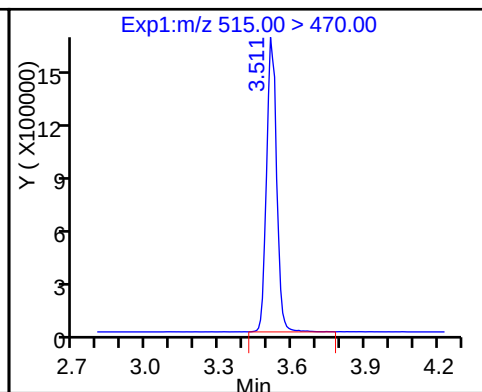
22 Perfluorooctane Sulfonamide



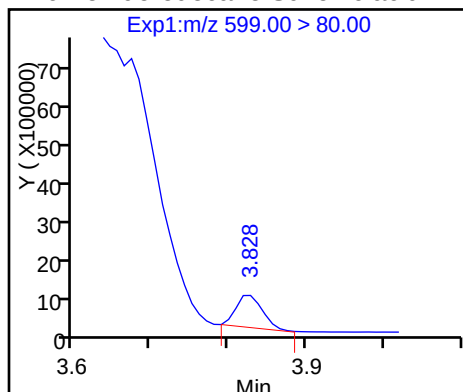
24 Perfluorodecanoic acid



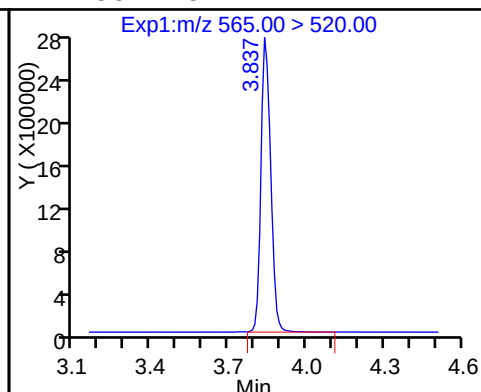
D 23 13C2 PFDA



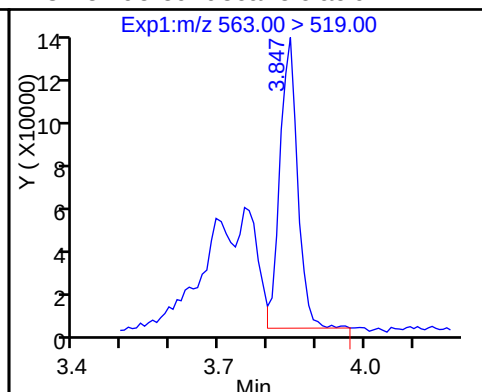
26 Perfluorodecane Sulfonic acid



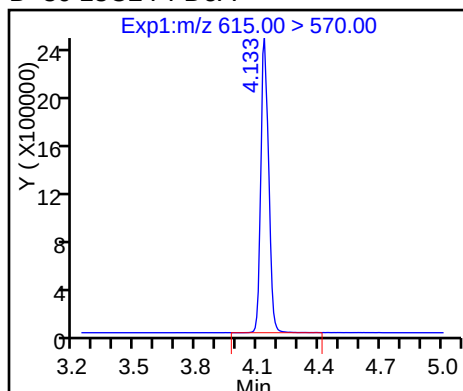
D 27 13C2 PFUnA



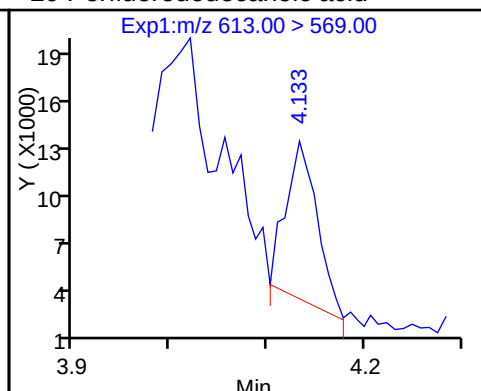
28 Perfluoroundecanoic acid



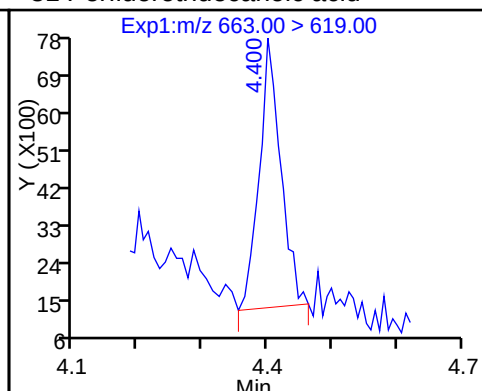
D 30 13C2 PFDaA



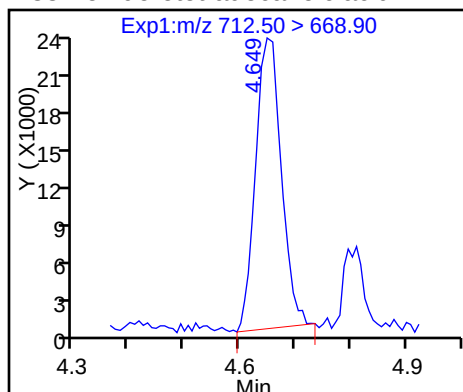
29 Perfluorododecanoic acid



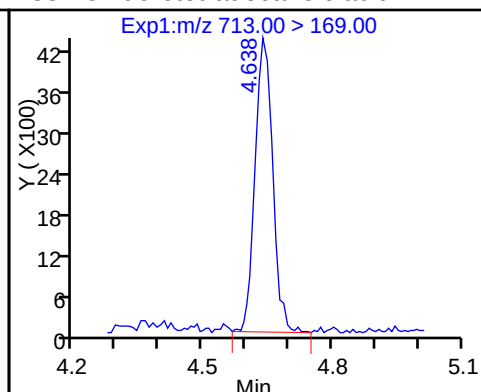
31 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Sacramento

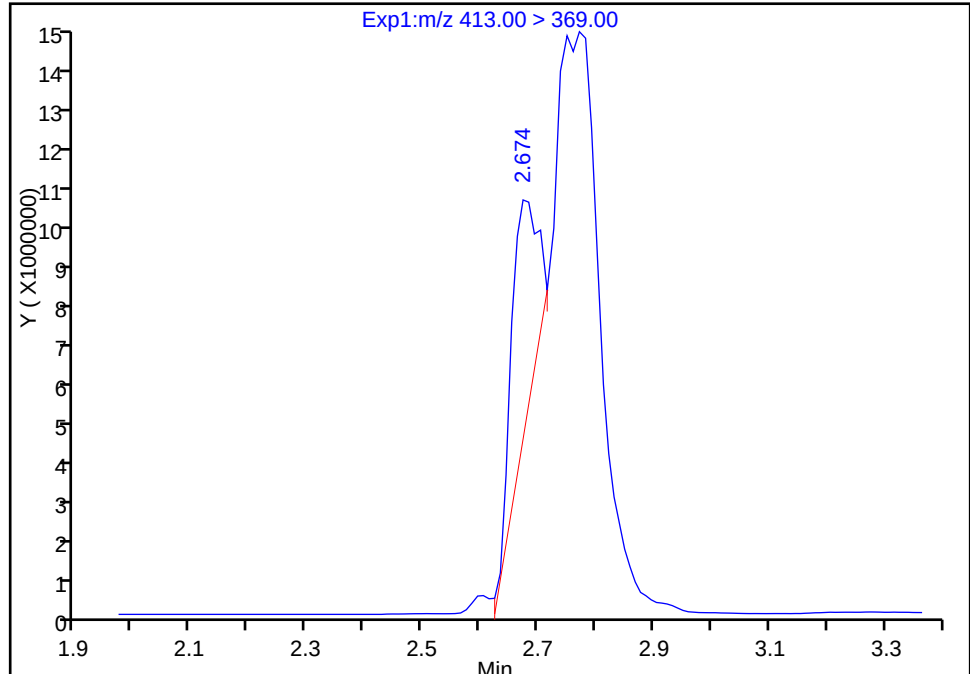
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_016.d				
Injection Date:	29-Dec-2016 01:44:33	Instrument ID:	A8_N		
Lims ID:	320-24236-A-2-A	Lab Sample ID:	320-24236-2		
Client ID:	FSS2TMW-1216				
Operator ID:	A8-PC\A8	ALS Bottle#:	12	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

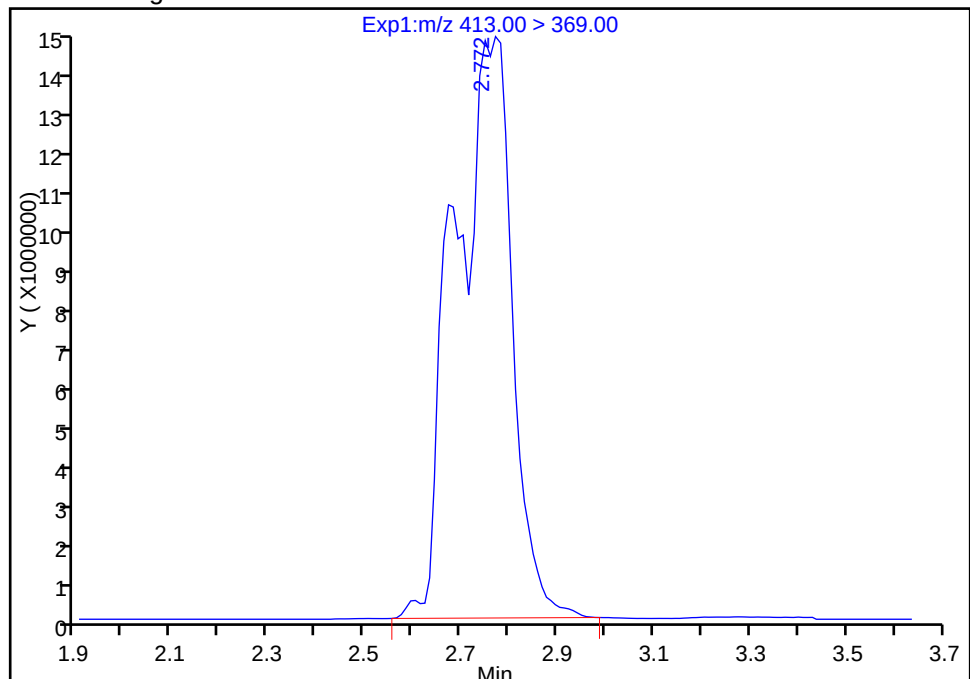
RT: 2.67
Area: 17974501
Amount: 809.9007
Amount Units: ng/ml

Processing Integration Results



RT: 2.77
Area: 122621939
Amount: 5525.1376
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 29-Dec-2016 17:52:50

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento

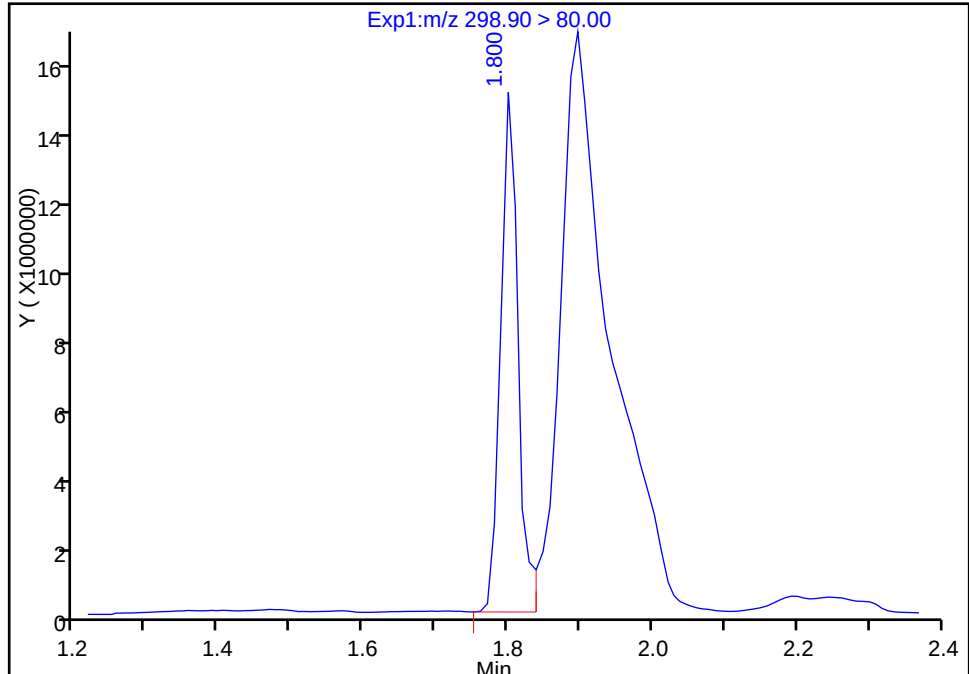
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Injection Date:	29-Dec-2016 01:44:33	Instrument ID:	A8_N		
Lims ID:	320-24236-A-2-A	Lab Sample ID:	320-24236-2		
Client ID:	FSS2TMW-1216				
Operator ID:	A8-PC\A8	ALS Bottle#:	12	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

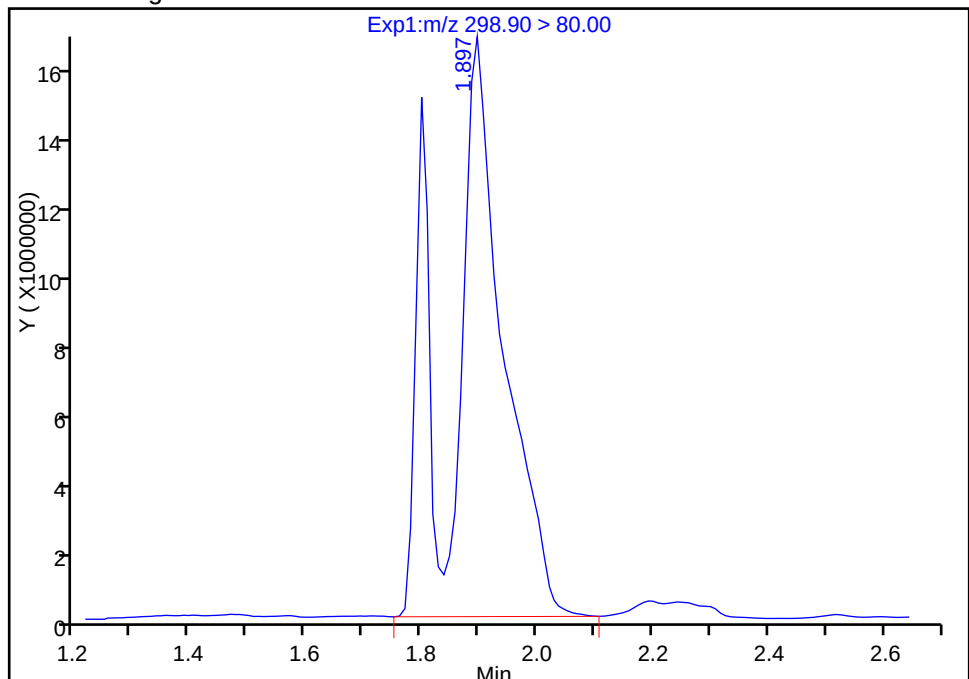
RT: 1.80
Area: 24537875
Amount: 595.6696
Amount Units: ng/ml

Processing Integration Results



RT: 1.90
Area: 103236437
Amount: 2506.1177
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 06-Jan-2017 09:09:31

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1
 SDG No.: _____
 Client Sample ID: FSS2TMW-1216 DL2 Lab Sample ID: 320-24236-2 DL2
 Matrix: Water Lab File ID: 04JAN2017A_046.d
 Analysis Method: 537 (Modified) Date Collected: 12/08/2016 11:35
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 253 (mL) Date Analyzed: 01/04/2017 21:40
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 145022 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	240		9.9	7.9	3.4
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	680	M	16	12	5.0

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00994	18O2 PFHxS	116		25-150
STL00991	13C4 PFOS	119		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170105-38480.b\04JAN2017A_046.d
 Lims ID: 320-24236-A-2-G
 Client ID: FSS2TMW-1216
 Sample Type: Client
 Inject. Date: 04-Jan-2017 21:40:38 ALS Bottle#: 25 Worklist Smp#: 45
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24236-a-2-a 4000X CD
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170105-38480.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 10-Jan-2017 11:02:07 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK032

First Level Reviewer: phomsophat

Date: 10-Jan-2017 11:14:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.609	1.617	-0.008		21643187	62.2		124	1603624	
1 Perfluorobutyric acid										
212.90 > 169.00	1.617	1.617	0.0	1.000	706751	1.91			5324	
D 4 13C5-PFPeA										
267.90 > 223.00	1.899	1.909	-0.010		16514990	62.1		124	983478	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.899	1.909	-0.010	1.000	852998	2.62			11324	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.938	1.948	-0.010	1.000	3391814	6.32				
298.90 > 99.00	1.938	1.948	-0.010	1.000	1383361		2.45(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.208	2.209	-0.001	1.000	2769332	9.89			92482	
D 6 13C2 PFHxA										
315.00 > 270.00	2.208	2.217	-0.009		15083441	61.5		123	922663	
D 11 13C4-PFHpA										
367.00 > 322.00	2.553	2.558	-0.005		12843155	56.7		113	1181059	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.553	2.558	-0.005	1.000	158889	0.6321			1835	
D 10 18O2 PFHxS										
403.00 > 84.00	2.568	2.573	-0.005		17913558	54.8		116	1062066	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.492	2.573	-0.081	1.000	11648680	29.9				
D 14 13C4 PFOA										
417.00 > 372.00	2.912	2.927	-0.015		14358967	62.3		125	586544	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.920	2.927	-0.007	1.000	707854	2.46			5469	M
413.00 > 169.00	2.920	2.927	-0.007	1.000	458788		1.54(0.90-1.10)		20571	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.294	3.271	0.023	1.000	25339094	86.1			222090	M
499.00 > 99.00	3.294	3.271	0.023	1.000	5790138		4.38(0.90-1.10)		183185	
D 17 13C4 PFOS										
503.00 > 80.00	3.287	3.294	-0.007		14142280	56.8		119	688845	
D 19 13C5 PFNA										
468.00 > 423.00	3.294	3.301	-0.007		10091092	56.8		114	684391	
20 Perfluorononanoic acid										
463.00 > 419.00	3.287	3.301	-0.014	1.000	14373	0.0748			264	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.620	3.621	-0.001	1.000	34331	0.0745			944	
D 21 13C8 FOSA										
506.00 > 78.00	3.612	3.621	-0.009		24711938	64.3		129	524765	
D 23 13C2 PFDA										
515.00 > 470.00	3.655	3.665	-0.010		10822135	68.8		138	197852	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.637	3.665	-0.028	1.000	6052	0.0296			159	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.966	3.971	-0.005	1.000	1001	0.005795				
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.985	3.990	-0.005	1.000	18139	0.1135			507	
D 27 13C2 PFUnA										
565.00 > 520.00	3.976	3.990	-0.014		8357759	71.3		143	426523	
D 30 13C2 PFDaA										
615.00 > 570.00	4.268	4.284	-0.016		7983951	72.0		144	319740	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.769	4.783	-0.014	1.000	14951	0.0591			4.7	
713.00 > 169.00	4.761	4.783	-0.022	0.998	7095		2.11(0.00-0.00)		593	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170105-38480.b\04JAN2017A_046.d

Injection Date: 04-Jan-2017 21:40:38

Instrument ID: A8_N

Lims ID: 320-24236-A-2-G

Lab Sample ID: 320-24236-2

Client ID: FSS2TMW-1216

Operator ID: A8-PC\A8

ALS Bottle#: 25

Worklist Smp#: 45

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

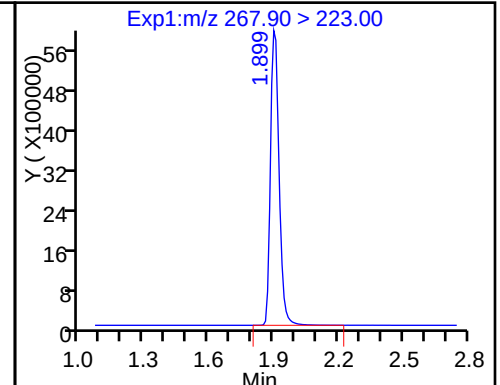
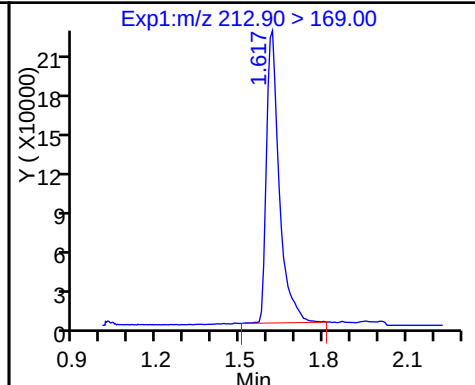
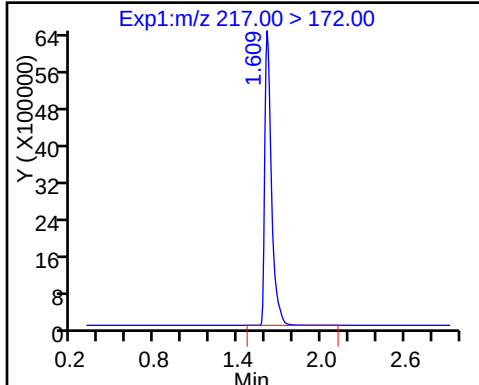
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

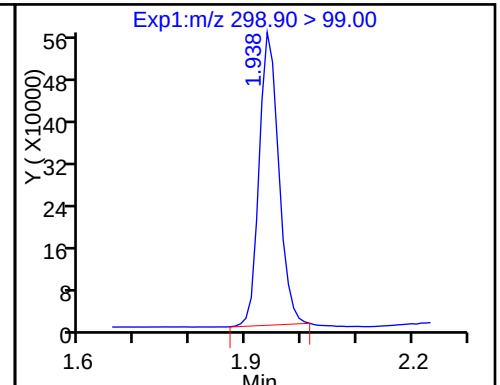
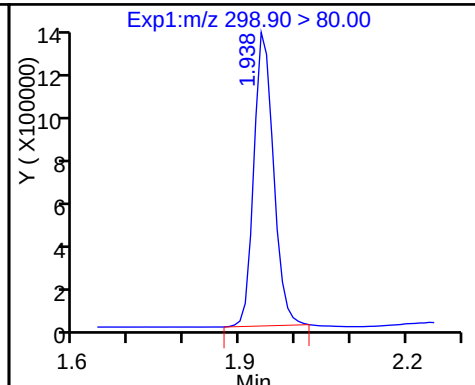
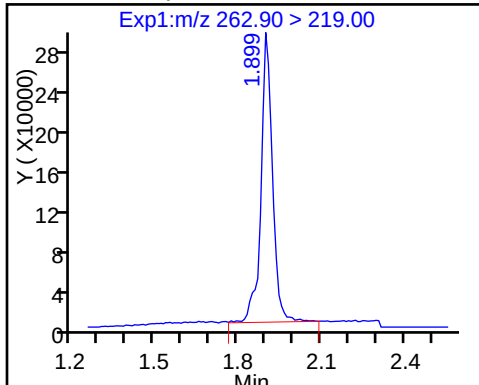
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

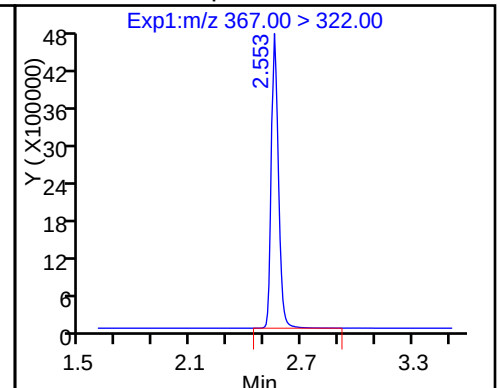
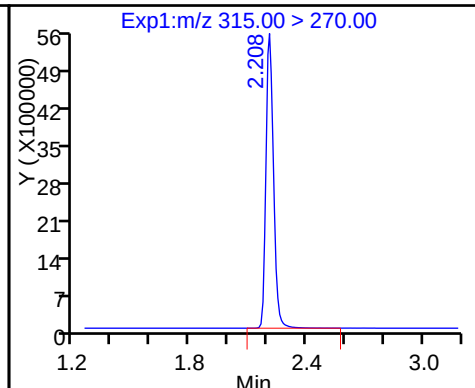
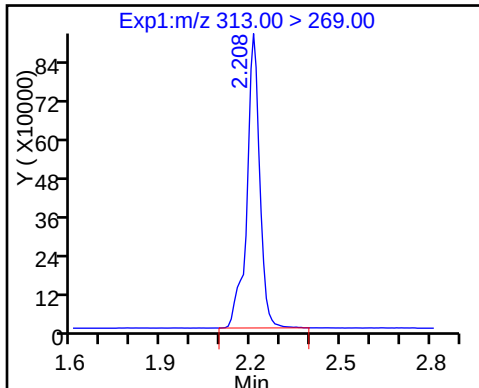
5 Perfluorobutanesulfonic acid



7 Perfluorohexanoic acid

D 6 13C2 PFHxA

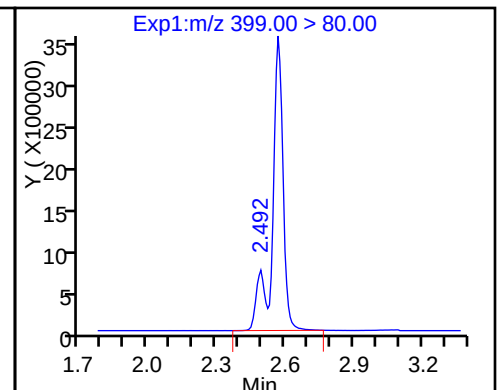
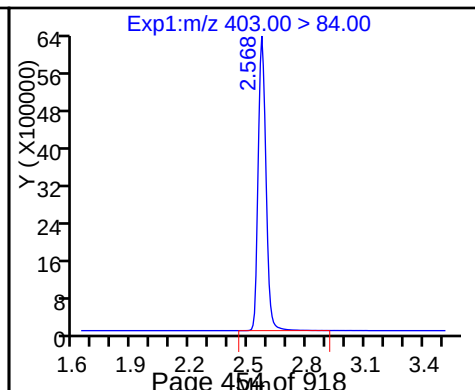
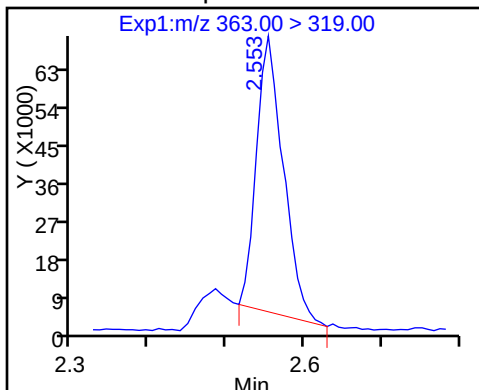
D 11 13C4-PFHpA



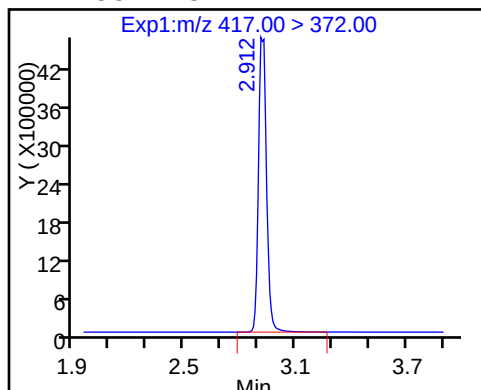
12 Perfluoroheptanoic acid

D 10 18O2 PFHxS

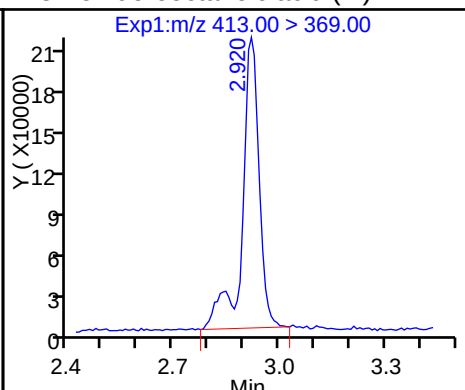
9 Perfluorohexanesulfonic acid



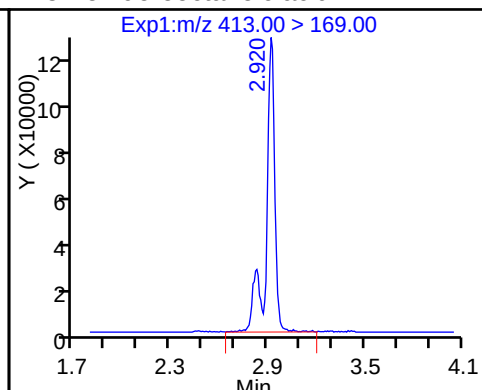
D 14 13C4 PFOA



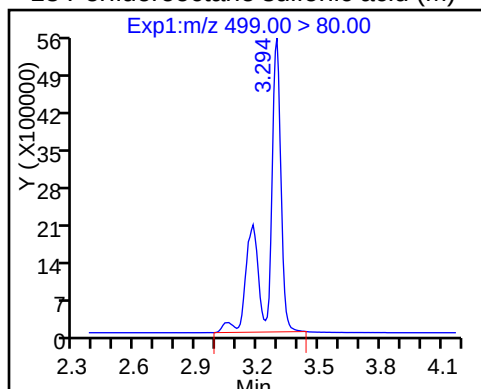
15 Perfluorooctanoic acid (M)



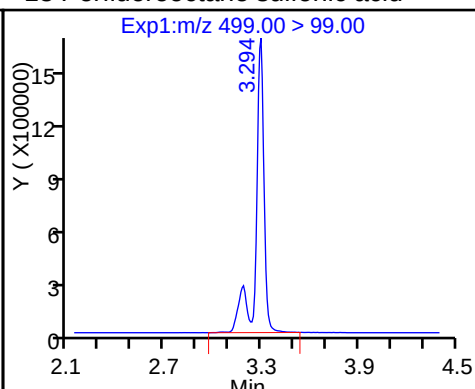
15 Perfluorooctanoic acid



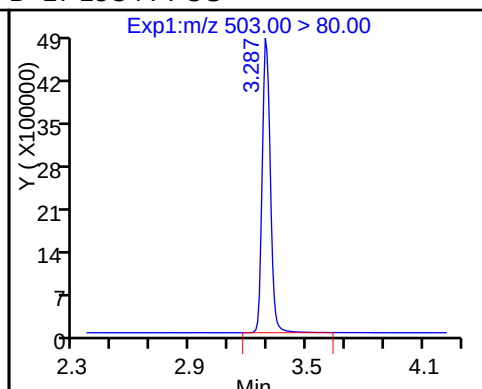
18 Perfluorooctane sulfonic acid (M)



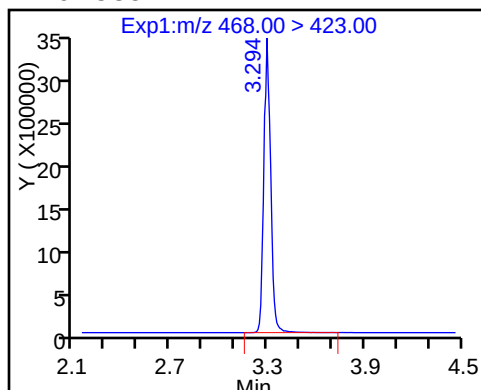
18 Perfluorooctane sulfonic acid



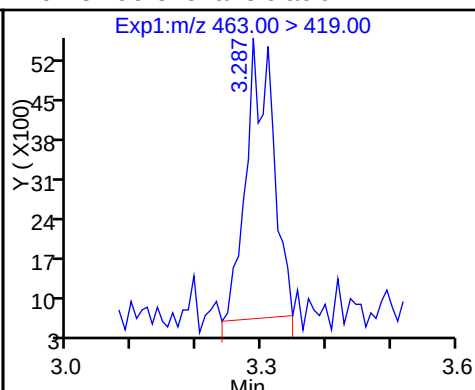
D 17 13C4 PFOS



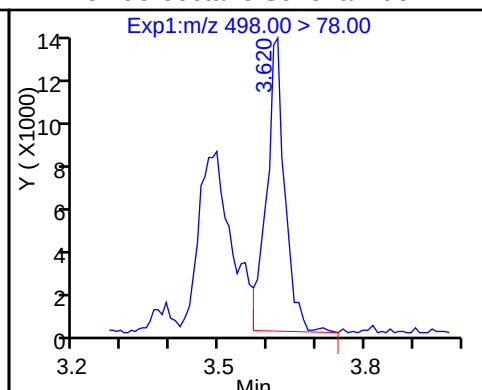
D 19 13C5 PFNA



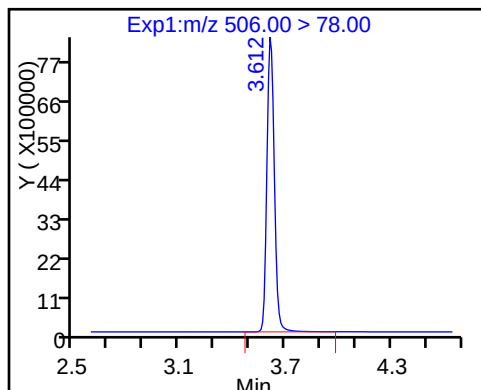
20 Perfluorononanoic acid



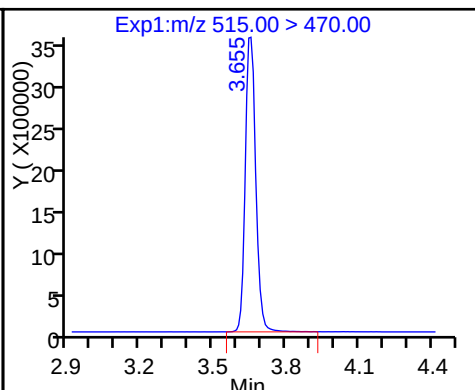
22 Perfluorooctane Sulfonamide



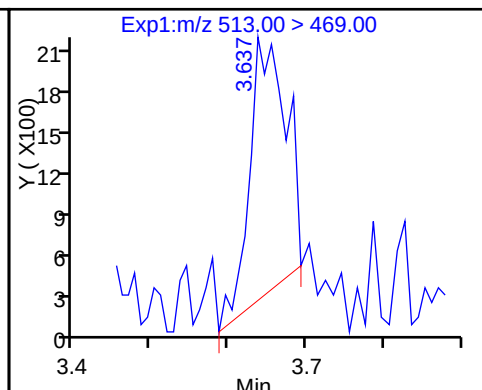
D 21 13C8 FOSA



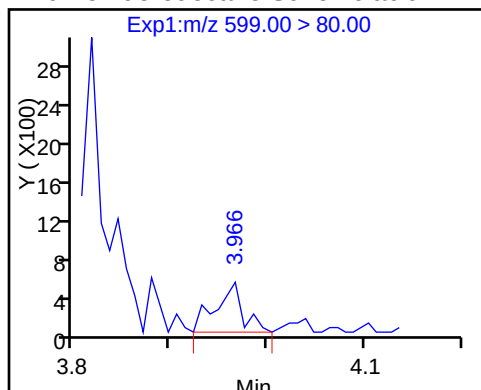
D 23 13C2 PFDA



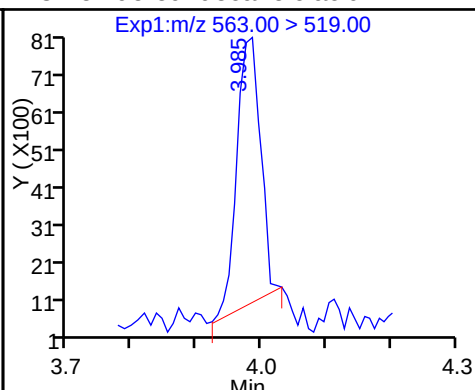
24 Perfluorodecanoic acid



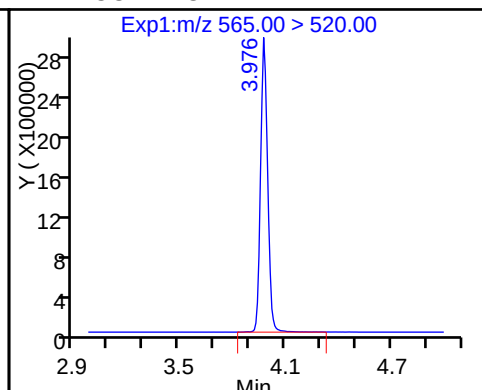
26 Perfluorodecane Sulfonic acid



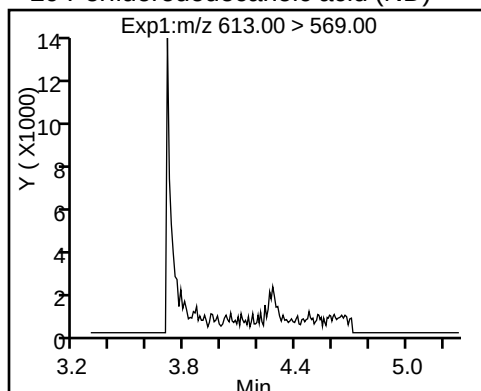
28 Perfluoroundecanoic acid



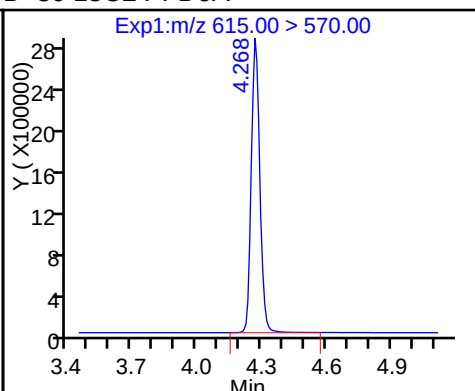
D 27 13C2 PFUnA



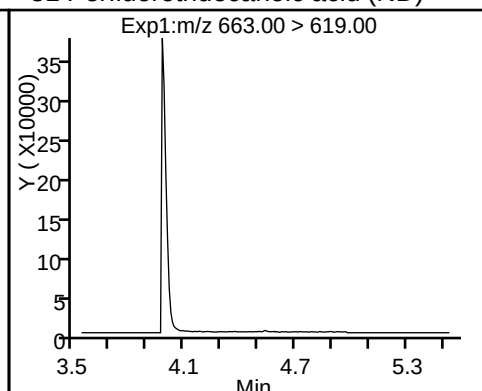
29 Perfluorododecanoic acid (ND)



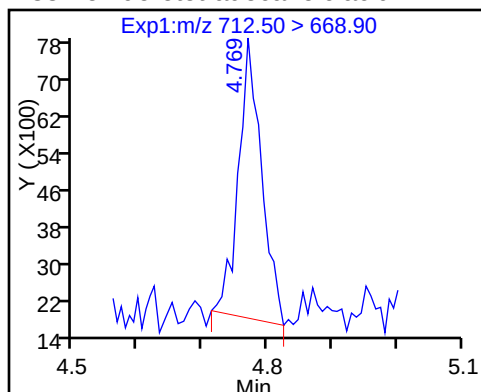
D 30 13C2 PFDaA



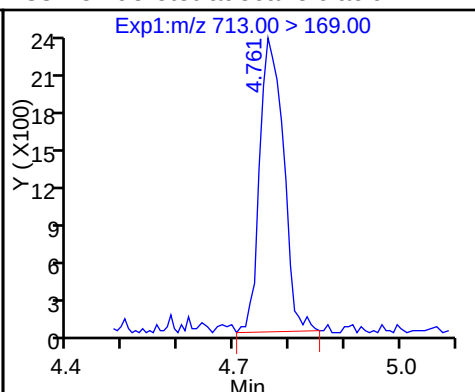
31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Sacramento

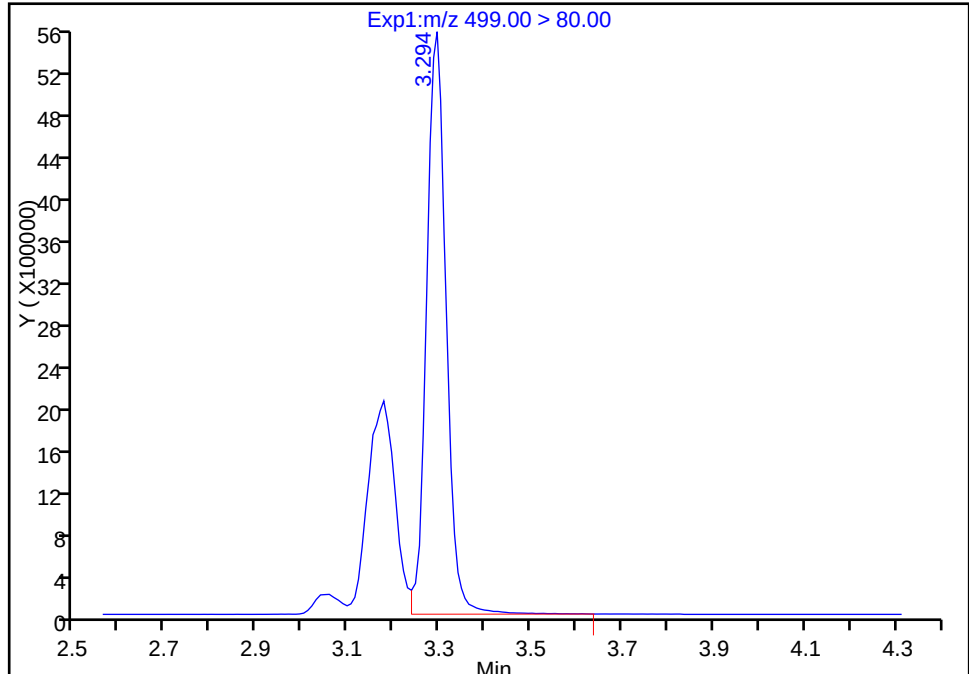
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170105-38480.b\04JAN2017A_046.d
Injection Date: 04-Jan-2017 21:40:38 Instrument ID: A8_N
Lims ID: 320-24236-A-2-G Lab Sample ID: 320-24236-2
Client ID: FSS2TMW-1216
Operator ID: A8-PC\A8 ALS Bottle#: 25 Worklist Smp#: 45
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

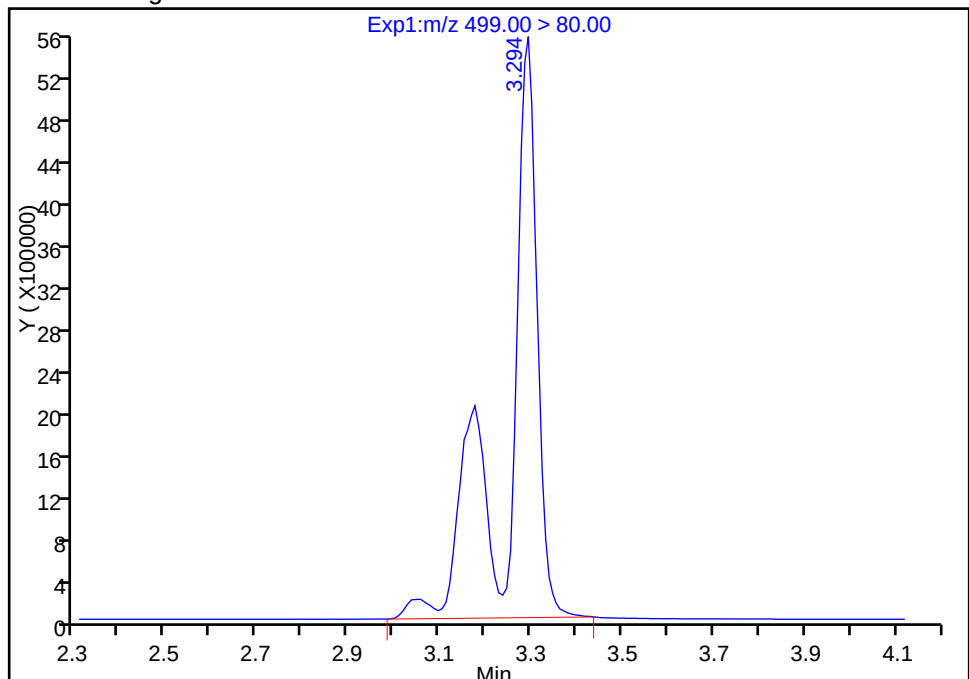
RT: 3.29
Area: 16530862
Amount: 56.198961
Amount Units: ng/ml

Processing Integration Results



RT: 3.29
Area: 25339094
Amount: 86.143769
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 10-Jan-2017 11:01:12

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FSS2TMW-1216 DL</u>	Lab Sample ID: <u>320-24236-2 DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>30DEC2016B_005.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 11:35</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>253 (mL)</u>	Date Analyzed: <u>12/30/2016 12:48</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>200</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144510</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	18	D	0.49	0.20	0.091
2706-90-3	Perfluoropentanoic acid (PFPeA)	21	D	0.49	0.40	0.20
307-24-4	Perfluorohexanoic acid (PFHxA)	50	D B	0.49	0.40	0.16
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.4	D	0.49	0.40	0.16
335-67-1	Perfluorooctanoic acid (PFOA)	23	D M	0.49	0.40	0.15
375-95-1	Perfluorononanoic acid (PFNA)	0.61	D	0.49	0.40	0.13
335-76-2	Perfluorodecanoic acid (PFDA)	0.20	U	0.49	0.20	0.087
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.40	U	0.49	0.40	0.15
307-55-1	Perfluorododecanoic acid (PFDoA)	0.40	U	0.49	0.40	0.12
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.40	U	0.49	0.40	0.11
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.20	U	0.49	0.20	0.079
375-73-5	Perfluorobutanesulfonic acid (PFBS)	26	D	0.49	0.40	0.18
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	82	E D	0.49	0.40	0.17
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	580	E D	0.79	0.59	0.25
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.59	U	0.79	0.59	0.24
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.76	D	0.49	0.40	0.13

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FSS2TMW-1216 DL</u>	Lab Sample ID: <u>320-24236-2 DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>30DEC2016B_005.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 11:35</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>253 (mL)</u>	Date Analyzed: <u>12/30/2016 12:48</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>200</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144510</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	97		25-150
STL00992	13C4 PFBA	124		25-150
STL01893	13C5-PFPeA	121		25-150
STL00993	13C2 PFHxA	147		25-150
STL01892	13C4-PFHpA	81		25-150
STL00990	13C4 PFOA	95		25-150
STL00995	13C5 PFNA	51		25-150
STL00996	13C2 PFDA	129		25-150
STL00997	13C2 PFUnA	129		25-150
STL00998	13C2 PFDoA	129		25-150
STL00994	18O2 PFHxS	149		25-150
STL00991	13C4 PFOS	54		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_005.d
 Lims ID: 320-24236-A-2-A
 Client ID: FSS2TMW-1216
 Sample Type: Client
 Inject. Date: 30-Dec-2016 12:48:55 ALS Bottle#: 3 Worklist Smp#: 15
 Injection Vol: 2.0 ul Dil. Factor: 200.0000
 Sample Info: 320-24236-a-2-a 200X
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 03-Jan-2017 14:28:00 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: phomsophat

Date: 03-Jan-2017 13:49:06

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.533	1.534	-0.001		108006	0.3106		0.6	9309	
1 Perfluorobutyric acid										
212.90 > 169.00	1.533	1.534	-0.001	1.000	16872912	45.7			89924	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.810	0.0		80495	0.3025		0.6	11415	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.810	0.0	1.000	17160937	54.0			133532	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.849	-0.001	1.000	45991345	66.7				
298.90 > 99.00	1.848	1.849	-0.001	1.000	25384012		1.81(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.093	2.098	-0.005		89950	0.3670		0.7	16670	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.093	2.098	-0.005	1.000	42043595	125.8			699510	
9 Perfluorohexanesulfonic acid										E
399.00 > 80.00	2.361	2.424	-0.063	1.000	103446057	206.3				E
D 11 13C4-PFHpA										
367.00 > 322.00	2.420	2.431	-0.011		45769	0.2022		0.4	8471	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.420	2.431	-0.011	1.000	2900133	16.2			7684	
D 10 18O2 PFHxS										
403.00 > 84.00	2.445	2.454	-0.009		115153	0.3522		0.7	6107	
D 14 13C4 PFOA										
417.00 > 372.00	2.783	2.791	-0.008		54593	0.2370		0.5	9364	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.791	2.791	0.0	1.000	12889148	58.8			197599	M
413.00 > 169.00	2.783	2.791	-0.008	0.997	8735292		1.48(0.90-1.10)		235461	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.040	3.135	-0.095	1.000	193446138	1460.2			176720	E
499.00 > 99.00	3.049	3.135	-0.086	1.003	60249371		3.21(0.90-1.10)		144928	
D 17 13C4 PFOS										
503.00 > 80.00	3.145	3.159	-0.014		31840	0.1279		0.3	665	
20 Perfluorononanoic acid										
463.00 > 419.00	3.161	3.159	0.002	1.000	133026	1.54			1976	
D 19 13C5 PFNA										
468.00 > 423.00	3.153	3.167	-0.014		22697	0.1277		0.3	3716	
D 21 13C8 FOSA										
506.00 > 78.00	3.477	3.474	0.003		93585	0.2436		0.5	2427	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.485	3.482	0.003	1.000	672091	1.93			1010	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.519	3.524	-0.005	1.000	22630	0.1180			580	
D 23 13C2 PFDA										
515.00 > 470.00	3.519	3.524	-0.005		50781	0.3228		0.6	2013	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.831	3.836	-0.005	1.000	13719	0.1763				
D 27 13C2 PFUnA										
565.00 > 520.00	3.848	3.853	-0.005		37675	0.3213		0.6	3474	
D 30 13C2 PFDoA										
615.00 > 570.00	4.145	4.149	-0.004		35836	0.3230		0.6	1309	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_005.d

Injection Date: 30-Dec-2016 12:48:55

Instrument ID: A8_N

Lims ID: 320-24236-A-2-A

Lab Sample ID: 320-24236-2

Client ID: FSS2TMW-1216

Operator ID: A8-PC\A8

ALS Bottle#: 3

Worklist Smp#: 15

Injection Vol: 2.0 ul

Dil. Factor: 200.0000

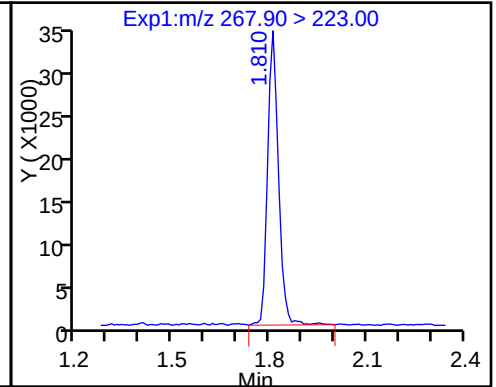
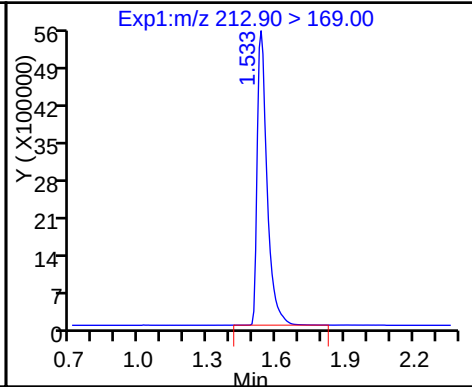
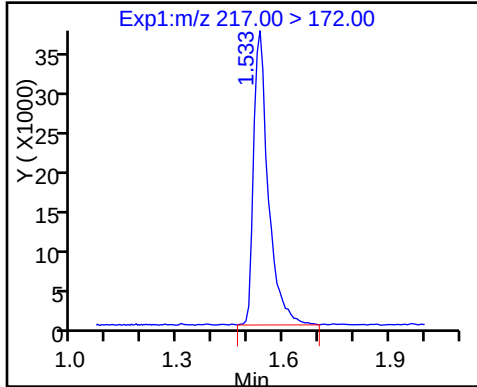
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

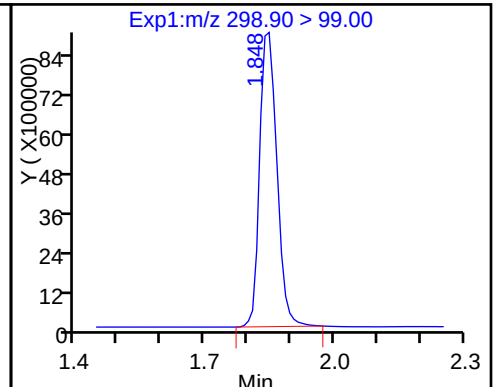
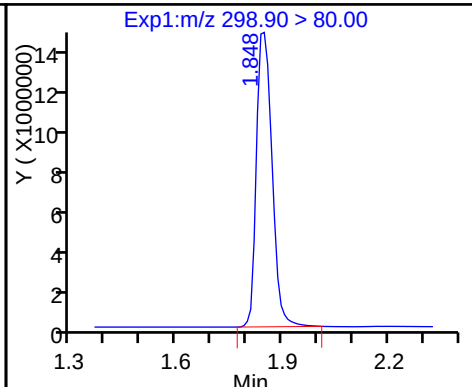
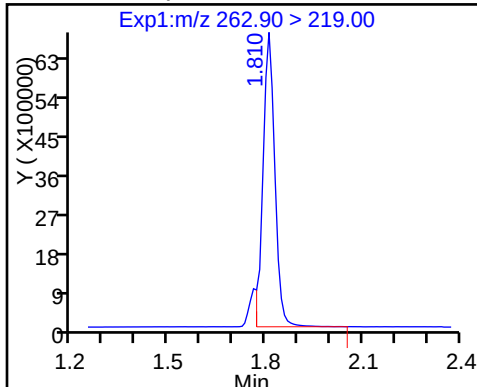
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

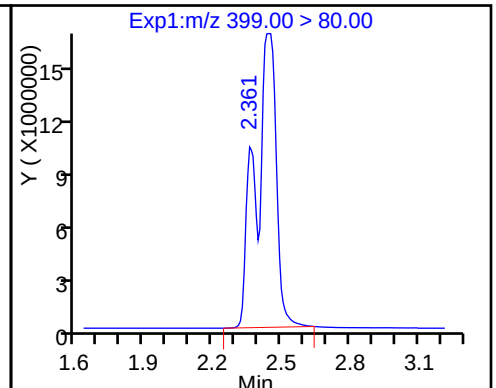
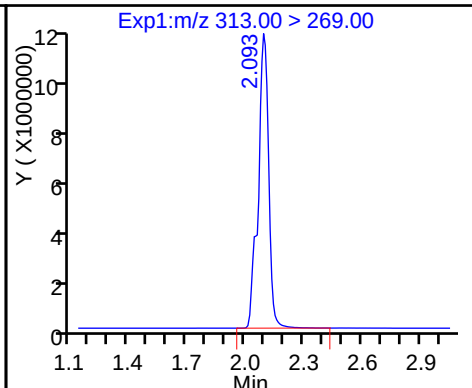
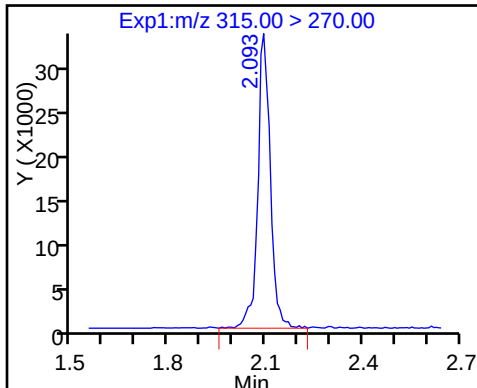
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

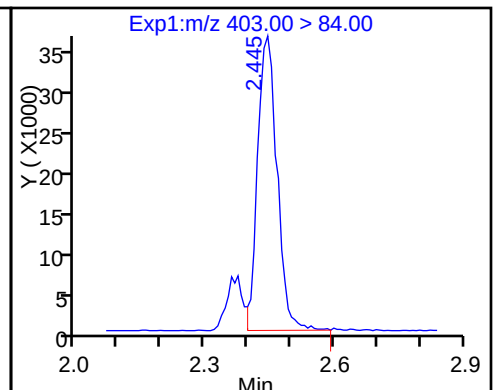
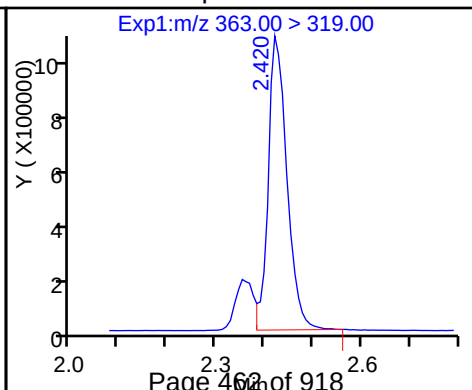
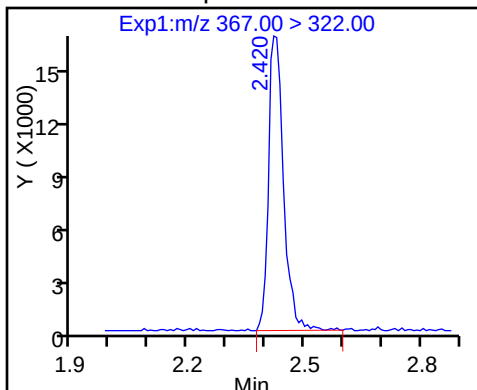
9 Perfluorohexanesulfonic acid



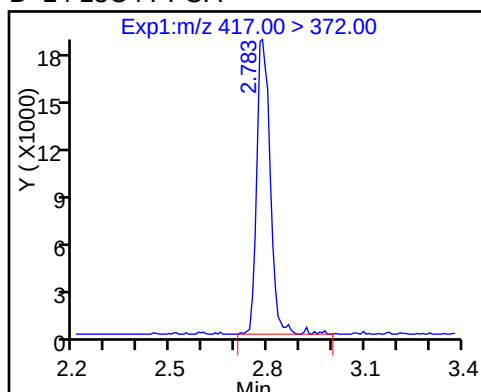
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid

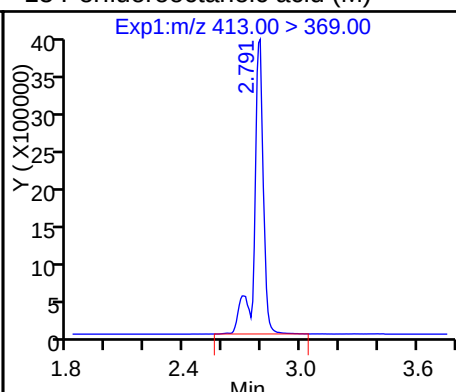
D 10 18O2 PFHxS



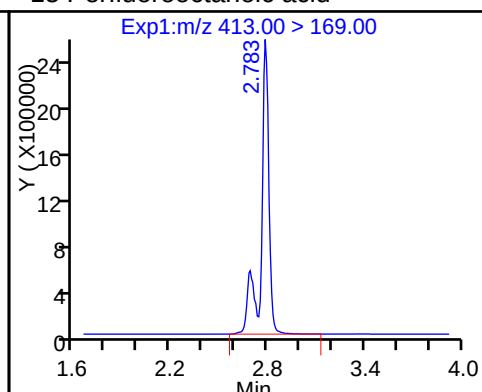
D 14 13C4 PFOA



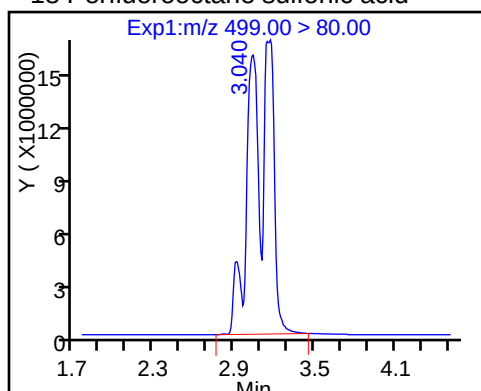
15 Perfluorooctanoic acid (M)



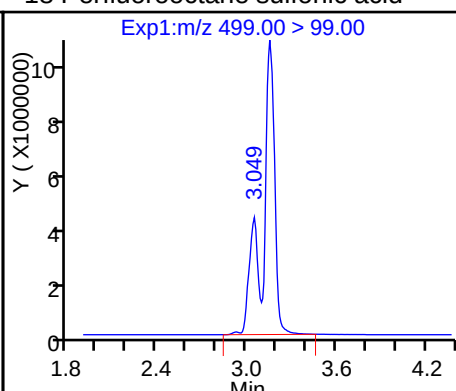
15 Perfluorooctanoic acid



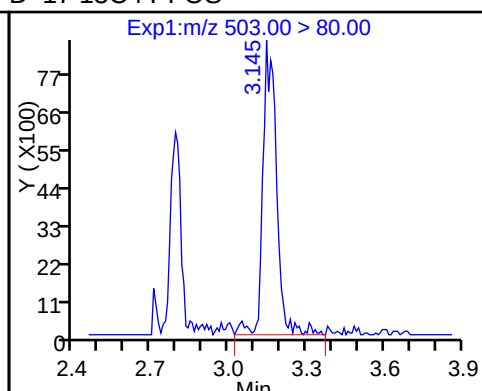
18 Perfluorooctane sulfonic acid



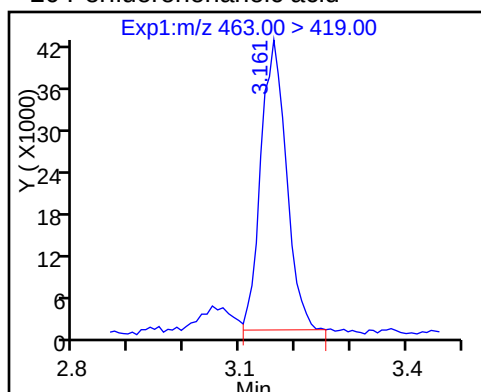
18 Perfluorooctane sulfonic acid



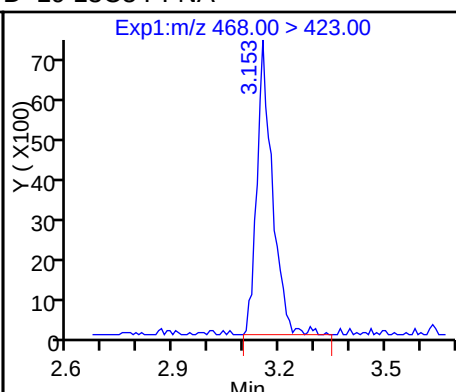
D 17 13C4 PFOS



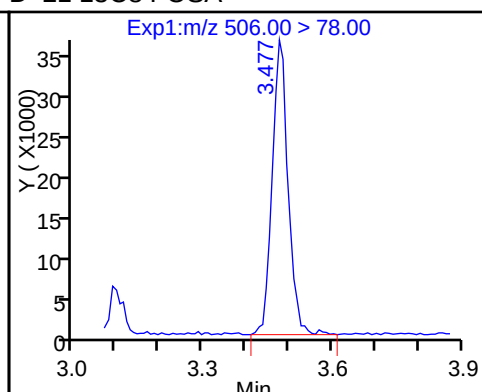
20 Perfluorononanoic acid



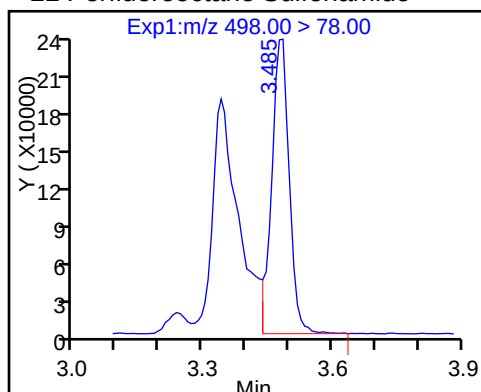
D 19 13C5 PFNA



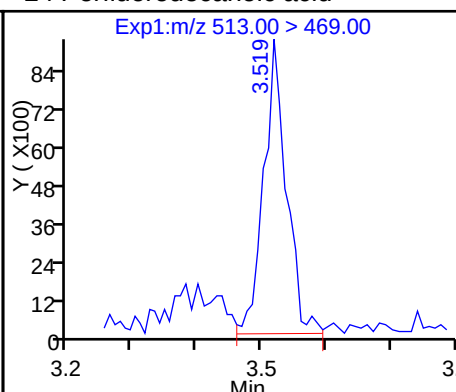
D 21 13C8 FOSA



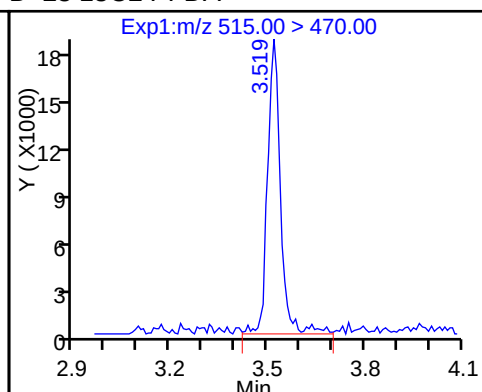
22 Perfluorooctane Sulfonamide



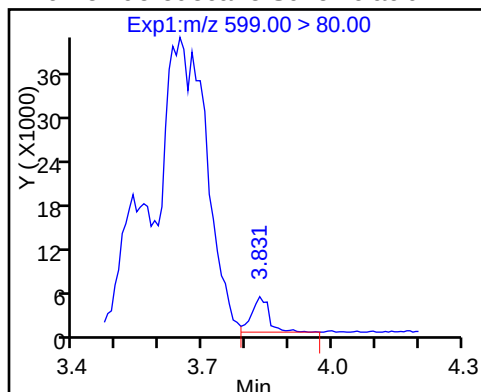
24 Perfluorodecanoic acid



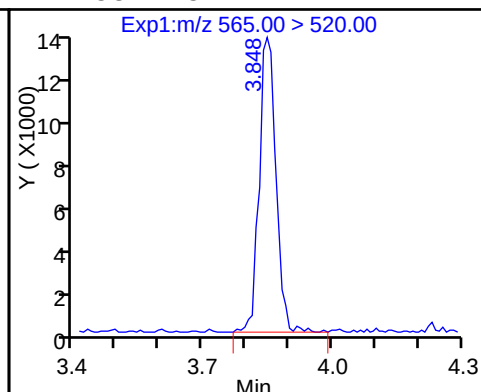
D 23 13C2 PFDA



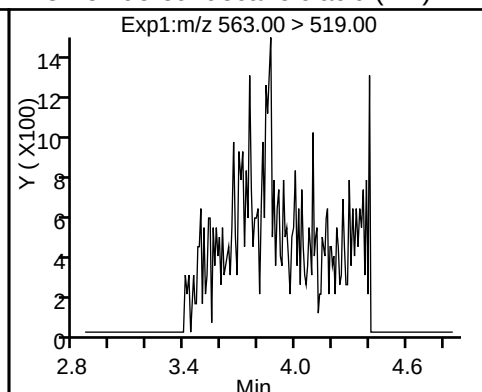
26 Perfluorodecane Sulfonic acid



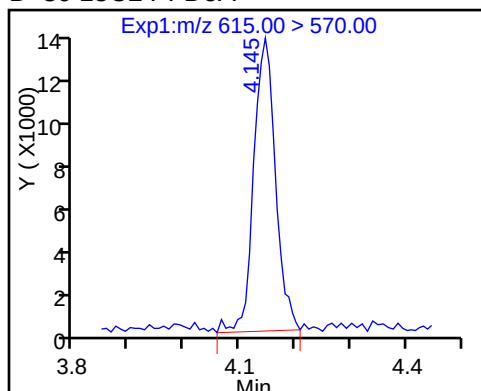
D 27 13C2 PFUnA



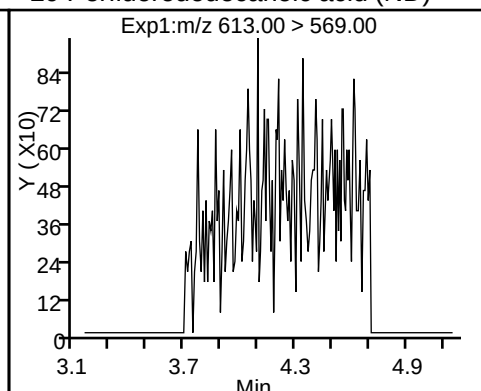
28 Perfluoroundecanoic acid (ND)



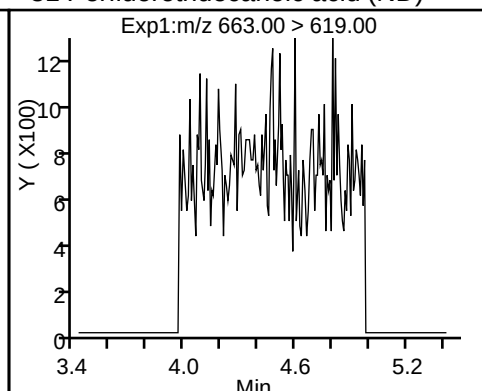
D 30 13C2 PFDaA



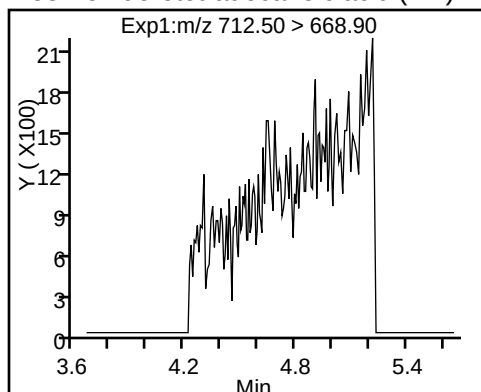
29 Perfluorododecanoic acid (ND)



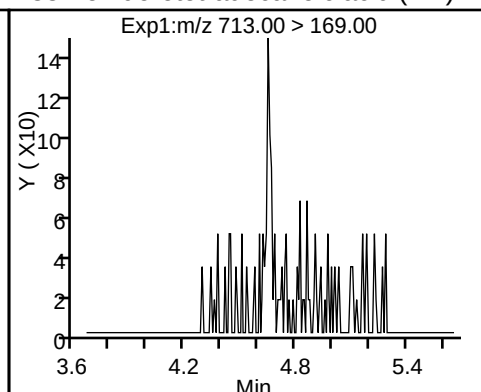
31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND)



TestAmerica Sacramento

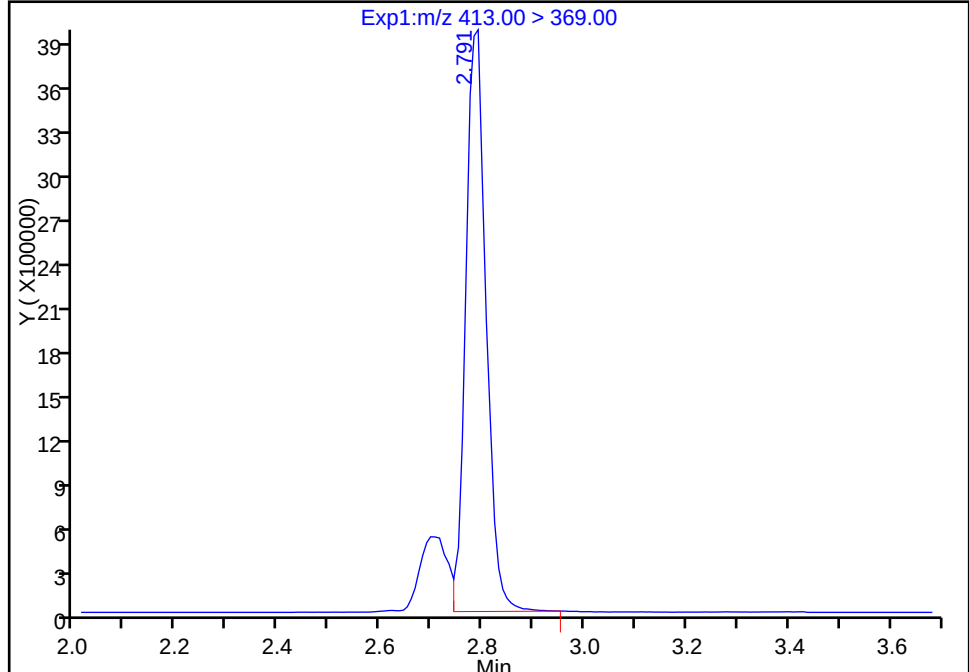
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_005.d				
Injection Date:	30-Dec-2016 12:48:55	Instrument ID:	A8_N		
Lims ID:	320-24236-A-2-A	Lab Sample ID:	320-24236-2		
Client ID:	FSS2TMW-1216				
Operator ID:	A8-PC\A8	ALS Bottle#:	3	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	200.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector:	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

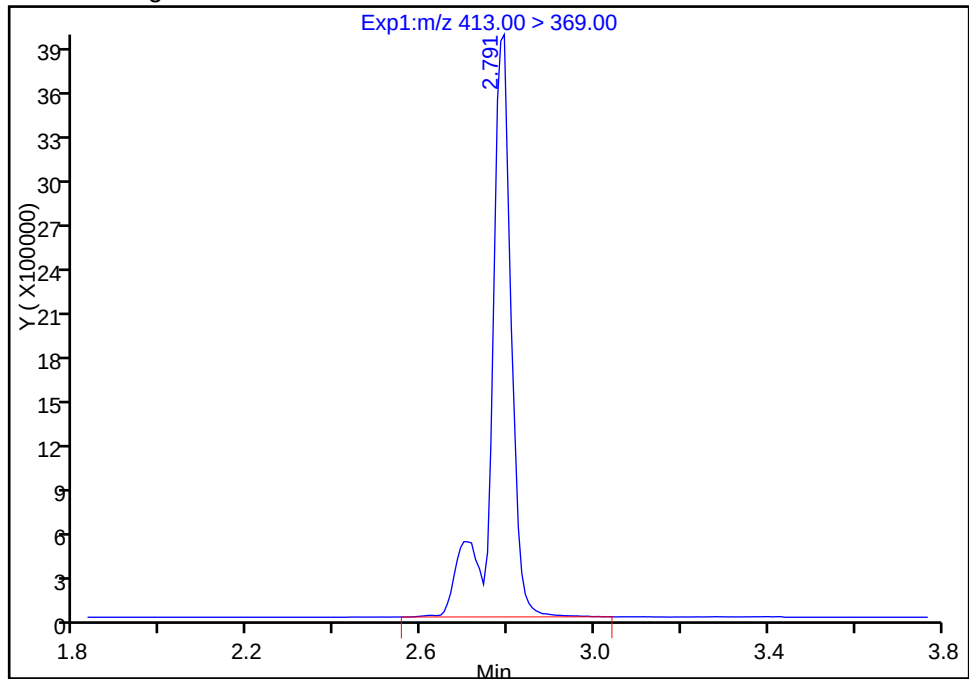
RT: 2.79
Area: 10882657
Amount: 49.679245
Amount Units: ng/ml

Processing Integration Results



RT: 2.79
Area: 12889148
Amount: 58.838861
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 03-Jan-2017 13:49:06

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FFTA2TMW-1216</u>	Lab Sample ID: <u>320-24236-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_017.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 12:40</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>241.5 (mL)</u>	Date Analyzed: <u>12/29/2016 01:52</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.31		0.0026	0.0010	0.00047
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.58	E J	0.0026	0.0021	0.0010
307-24-4	Perfluorohexanoic acid (PFHxA)	0.87	E J B	0.0026	0.0021	0.00081
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.66	E J	0.0026	0.0021	0.00083
335-67-1	Perfluorooctanoic acid (PFOA)	3.8	E J M	0.0026	0.0021	0.00077
375-95-1	Perfluorononanoic acid (PFNA)	0.029		0.0026	0.0021	0.00068
335-76-2	Perfluorodecanoic acid (PFDA)	0.017		0.0026	0.0010	0.00046
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0021	U	0.0026	0.0021	0.00077
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0021	U	0.0026	0.0021	0.00060
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0021	U	0.0026	0.0021	0.00057
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00059	J	0.0026	0.0010	0.00041
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.26		0.0026	0.0021	0.00095
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.5	E J	0.0026	0.0021	0.00090
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.2	Q E J	0.0041	0.0031	0.0013
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0031	U	0.0041	0.0031	0.0013
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.088	J	0.0026	0.0021	0.00066

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FFTA2TMW-1216</u>	Lab Sample ID: <u>320-24236-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_017.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 12:40</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>241.5 (mL)</u>	Date Analyzed: <u>12/29/2016 01:52</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	4	Q	25-150
STL00992	13C4 PFBA	32		25-150
STL01893	13C5-PFPeA	63		25-150
STL00993	13C2 PFHxA	68		25-150
STL01892	13C4-PFHpA	41		25-150
STL00990	13C4 PFOA	31		25-150
STL00995	13C5 PFNA	72		25-150
STL00996	13C2 PFDA	111		25-150
STL00997	13C2 PFUnA	118		25-150
STL00998	13C2 PFDoA	106		25-150
STL00994	18O2 PFHxS	38		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_017.d
 Lims ID: 320-24236-A-3-A
 Client ID: FFTA2TMW-1216
 Sample Type: Client
 Inject. Date: 29-Dec-2016 01:52:03 ALS Bottle#: 13 Worklist Smp#: 17
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24236-a-3-a
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Dec-2016 17:56:26 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK027

First Level Reviewer: phomsophat

Date: 29-Dec-2016 17:56:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.533	1.525	0.008		5527213	15.9		31.8	474167	
1 Perfluorobutyric acid										
212.90 > 169.00	1.533	1.525	0.008	1.000	14008686	148.4			26062	
D 4 13C5-PFPeA										
267.90 > 223.00	1.800	1.800	0.0		8412613	31.6		63.2	290377	
3 Perfluoropentanoic acid										E
262.90 > 219.00	1.810	1.800	0.010	1.000	46228276	278.4			47291	E
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.839	1.839	0.0	1.000	21721517	123.6				
298.90 > 99.00	1.839	1.839	0.0	1.000	9746873		2.23(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.091	2.091	0.0		8307208	33.9		67.8	616412	
7 Perfluorohexanoic acid										E
313.00 > 269.00	2.091	2.091	0.0	1.000	64679285	419.1			127094	E
9 Perfluorohexanesulfonic acid										E
399.00 > 80.00	2.414	2.409	0.005	1.000	152536105	1193.7				E
D 11 13C4-PFHpA										
367.00 > 322.00	2.414	2.420	-0.006		4696320	20.7		41.5	431982	
12 Perfluoroheptanoic acid										E
363.00 > 319.00	2.414	2.420	-0.006	1.000	29434412	320.2			51512	E
D 10 18O2 PFHxS										
403.00 > 84.00	2.440	2.440	0.0		5868394	17.9		37.9	200048	
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.735	2.773	-0.038	1.000	45569468	NR				
D 14 13C4 PFOA										
417.00 > 372.00	2.777	2.776	0.001		3621920	15.7		31.4	158847	
D 47 M2-6:2FTS										
429.00 > 409.00	2.745	2.781	-0.036		9779073	83.6		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.762	2.783	-0.021	1.000	132475668	1823.1			222316	EM
413.00 > 169.00	2.683	2.783	-0.100	0.972	124552317		1.06(0.90-1.10)		228174	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.793	2.783	0.010	1.000	2993347	13.0				
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.031	3.040	-0.009	1.000	123134198	593.4			218124	E
499.00 > 99.00	3.122	3.040	0.082	1.030	28772915		4.28(0.90-1.10)		90881	
D 17 13C4 PFOS										
503.00 > 80.00	3.146	3.145	0.001		9973630	40.1		83.8	203407	
20 Perfluorononanoic acid										
463.00 > 419.00	3.154	3.153	0.001	1.000	1731486	14.2			2600	
D 19 13C5 PFNA										
468.00 > 423.00	3.146	3.153	-0.007		6383719	35.9		71.9	220529	
D 21 13C8 FOSA										
506.00 > 78.00	3.477	3.475	0.002		692229	1.80		3.6	29147	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.477	3.475	0.002	1.000	550734	42.7			961	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.511	3.509	0.002	1.000	1316553	7.99			4475	
D 23 13C2 PFDA										
515.00 > 470.00	3.511	3.509	0.002		8731588	55.5		111	356496	
D 42 M2-8:2FTS										
529.00 > 509.00	3.486	3.519	-0.033		9178	0.0854		0.0		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.494	3.519	-0.025	1.002	140584	NR				
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.654	3.683	-0.029		3123	0.0415		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.683	3.692	-0.009	1.008	2294	NR				
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.821	3.825	-0.004	1.000	5281	0.0433				
D 27 13C2 PFUnA										
565.00 > 520.00	3.839	3.834	0.005		6931983	59.1		118	475520	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.830	3.834	-0.004	1.000	23219	0.1751			209	
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.891	3.855	0.036		2158	0.0275		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.839	3.864	-0.025	0.987	4816	NR				
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.007	3.997	0.010		891	0.009372		0.0		
54 MeFOSA										
512.00 > 169.00	3.926	4.006	-0.080	1.000	761	NR				
D 30 13C2 PFDoA										
615.00 > 570.00	4.129	4.126	0.003		5897120	53.1		106	199782	
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.165	4.180	-0.015		659	0.007682		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
31 Perfluorotridecanoic acid	663.00 > 619.00	4.399	4.404	-0.005	1.000	5677	0.0531		165	
D 32 13C2-PFTeDA	715.00 > 670.00	4.637	4.644	-0.007		16943114	74.5	149	2018345	
33 Perfluorotetradecanoic acid	712.50 > 668.90	4.647	4.644	0.003	1.000	52869	0.2828		538	
713.00 > 169.00	4.621	4.644	-0.023	0.994	7961		6.64(0.00-0.00)		2408	
D 34 13C2-PFHxDA	815.00 > 770.00	5.060	5.058	0.002		6473377	52.0	104	175140	
35 Perfluorohexadecanoic acid	813.00 > 769.00	5.060	5.058	0.002	1.000	78494	0.0974		162	
36 Perfluorooctadecanoic acid	913.00 > 869.00	5.415	5.414	0.001	1.000	6230	0.0513		5.6	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_017.d

Injection Date: 29-Dec-2016 01:52:03

Instrument ID: A8_N

Lims ID: 320-24236-A-3-A

Lab Sample ID: 320-24236-3

Client ID: FFTA2TMW-1216

Operator ID: A8-PC\A8

ALS Bottle#: 13

Worklist Smp#: 17

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

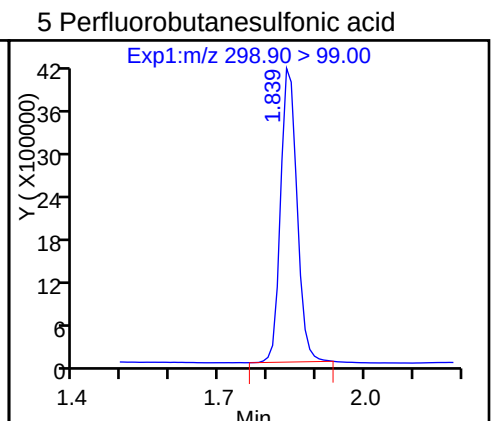
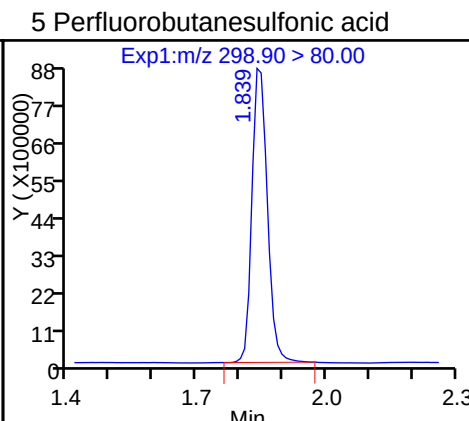
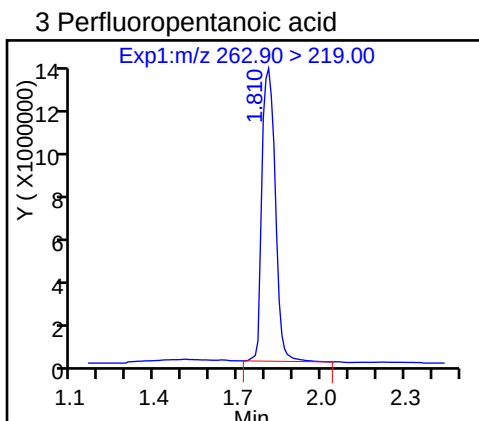
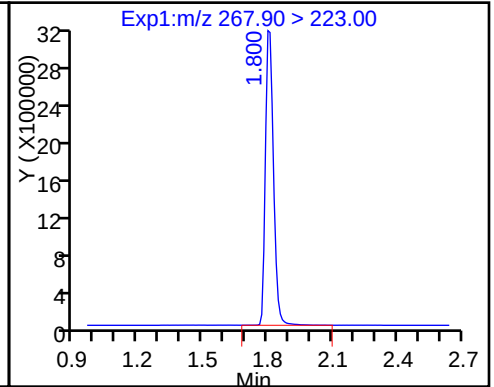
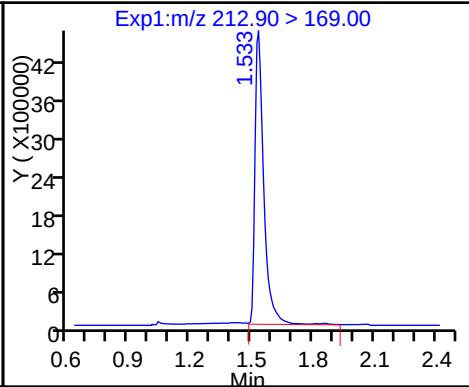
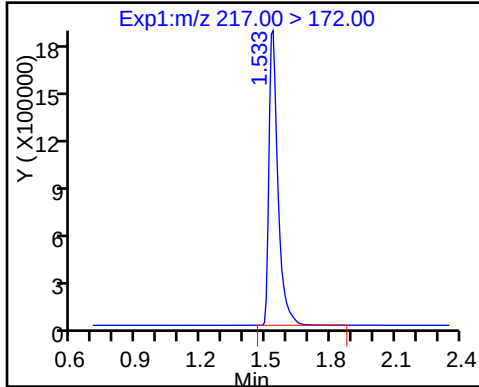
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

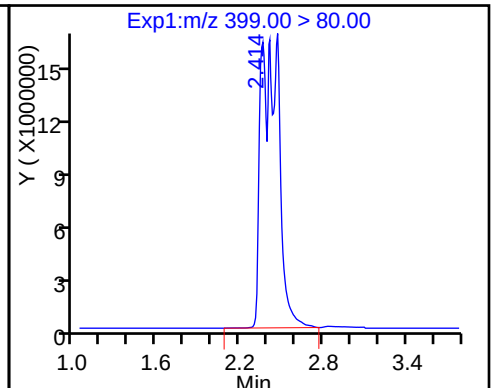
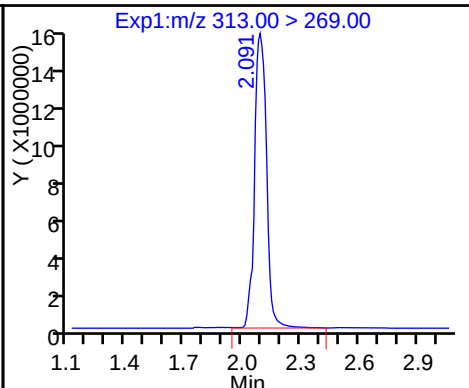
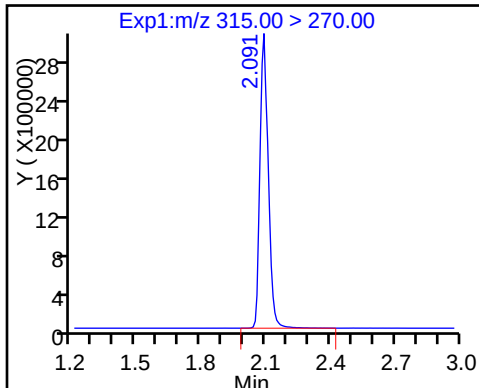
D 4 13C5-PFPeA



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

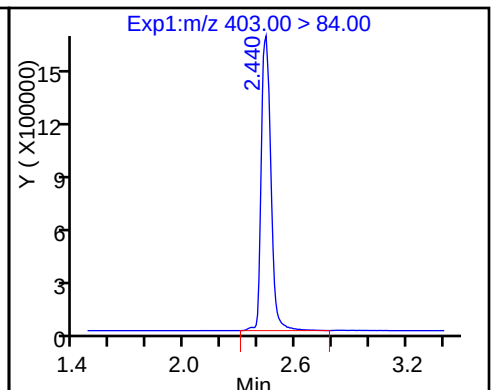
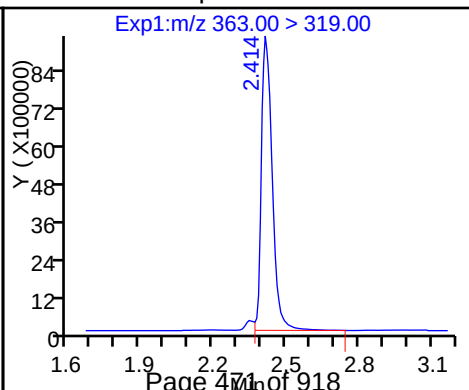
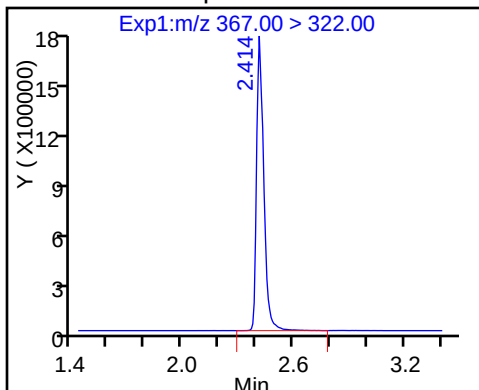
9 Perfluorohexanesulfonic acid



D 11 13C4-PFHpA

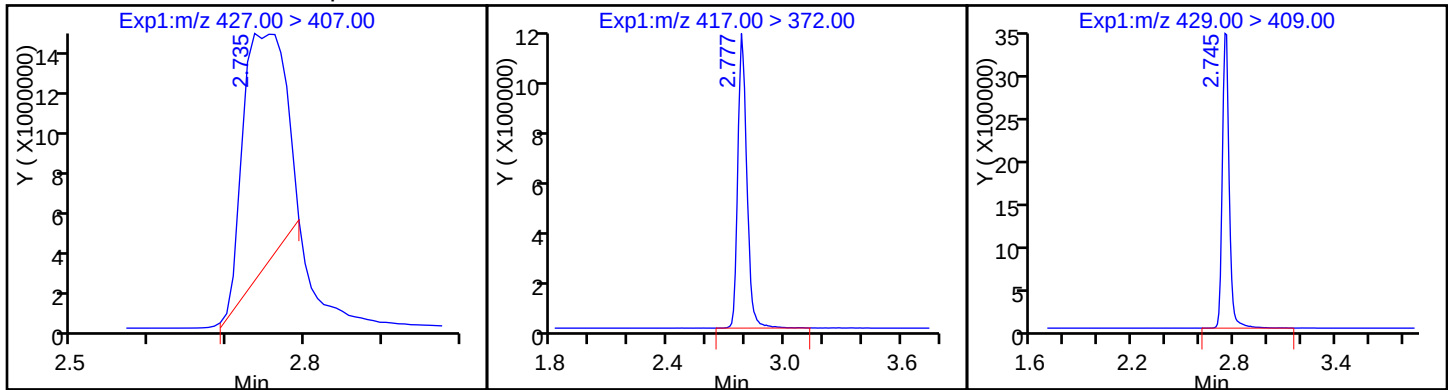
12 Perfluoroheptanoic acid

D 10 18O2 PFHxS



48 Sodium 1H,1H,2H,2H-perfluorooctadec-14 13C4 PFOA

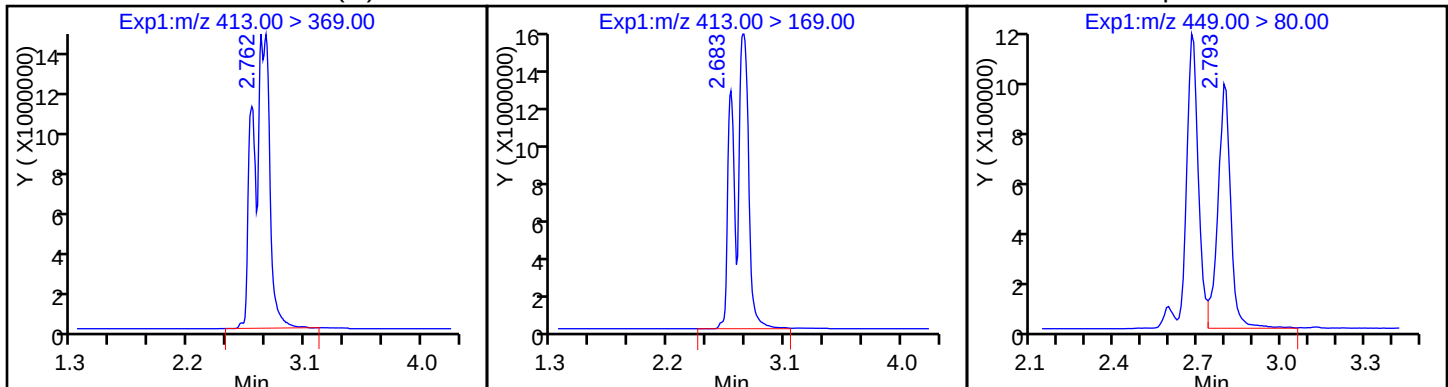
D 47 M2-6:2FTS



15 Perfluorooctanoic acid (M)

15 Perfluorooctanoic acid

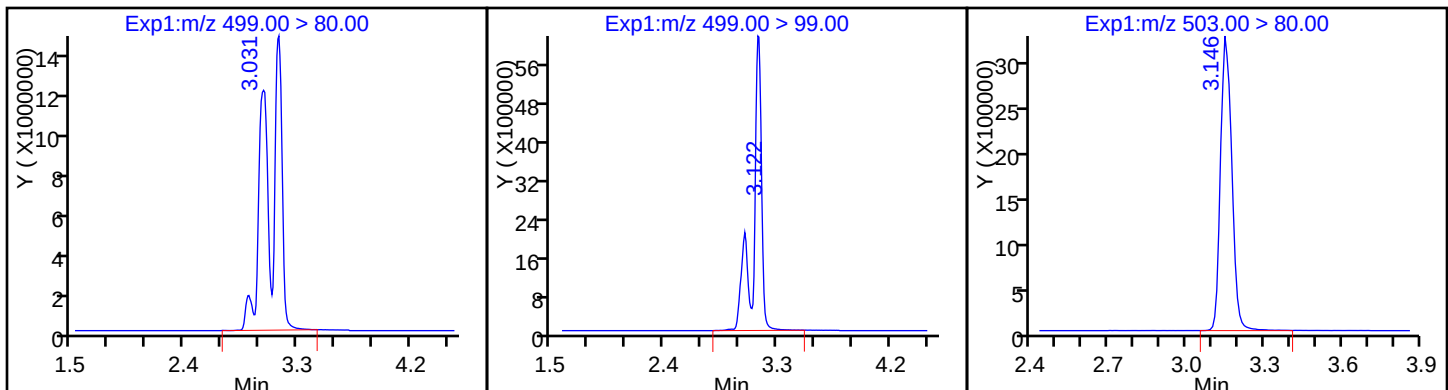
13 Perfluoroheptanesulfonic Acid



18 Perfluorooctane sulfonic acid

18 Perfluorooctane sulfonic acid

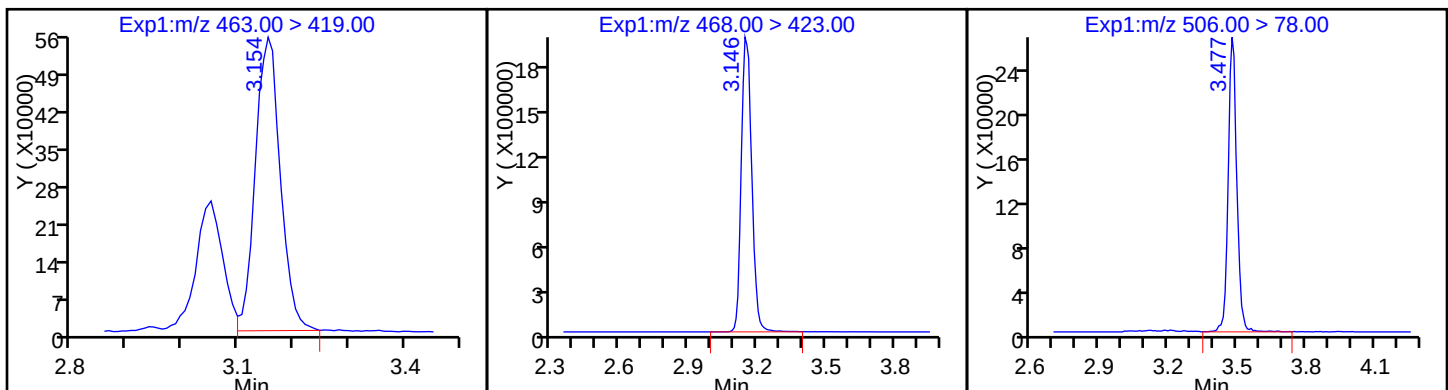
D 17 13C4 PFOS



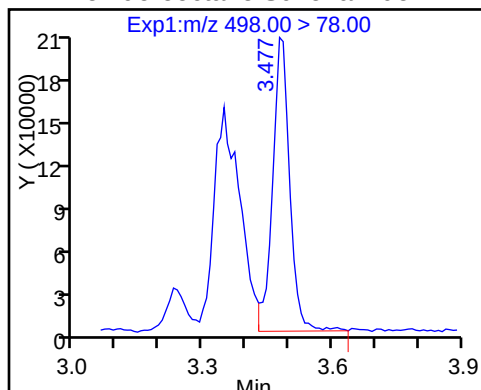
20 Perfluorononanoic acid

D 19 13C5 PFNA

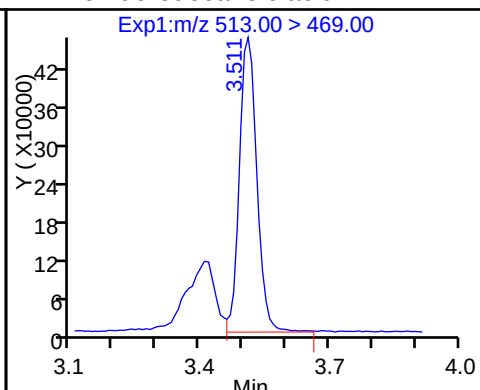
D 21 13C8 FOSA



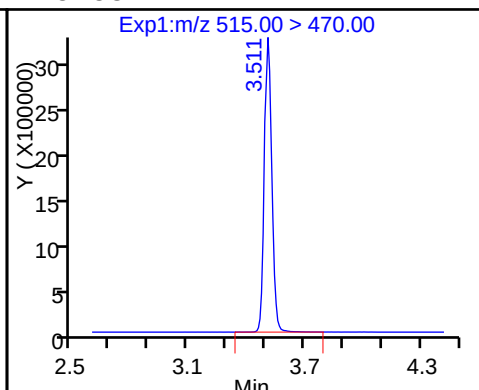
22 Perfluorooctane Sulfonamide



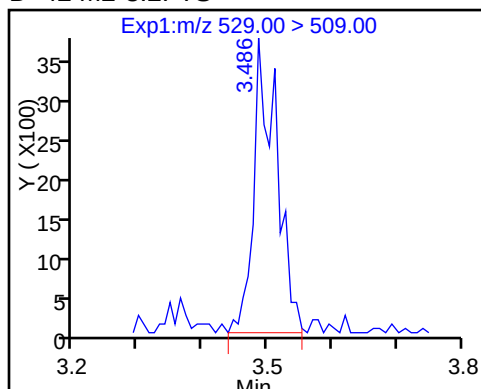
24 Perfluorodecanoic acid



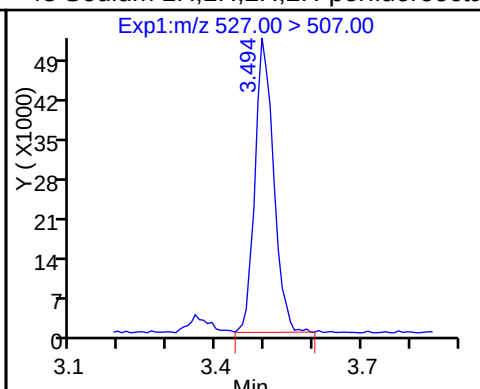
D 23 13C2 PFDA



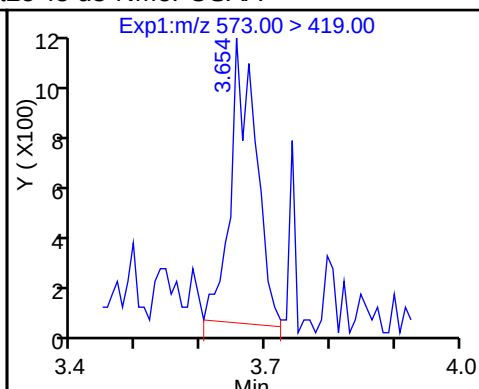
D 42 M2-8:2FTS



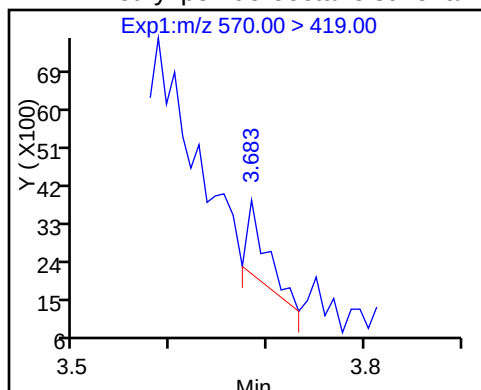
43 Sodium 1H,1H,2H,2H-perfluorooctane



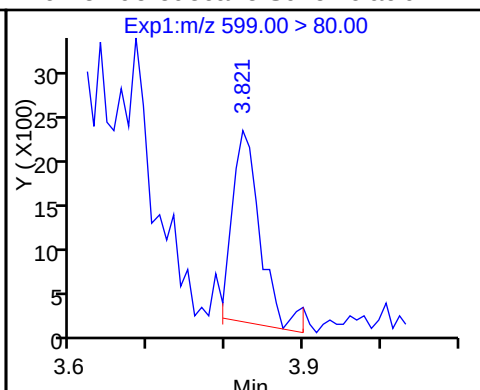
D 45 d3-NMeFOSAA



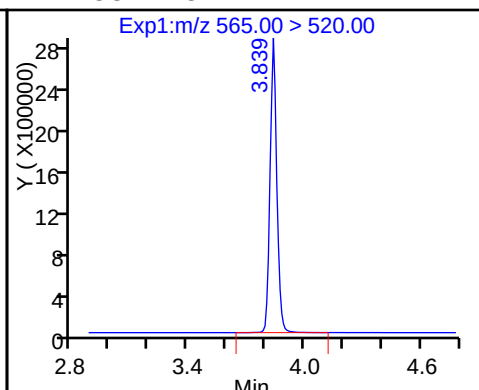
44 N-methyl perfluorooctane sulfonami



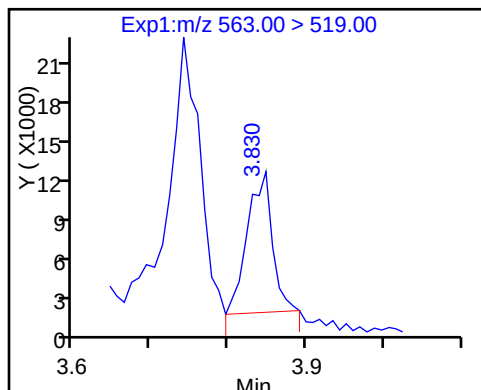
26 Perfluorodecane Sulfonic acid



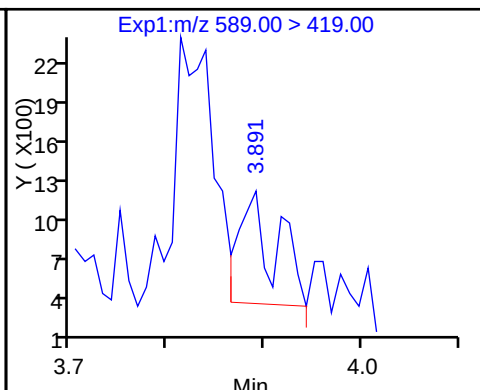
D 27 13C2 PFUnA



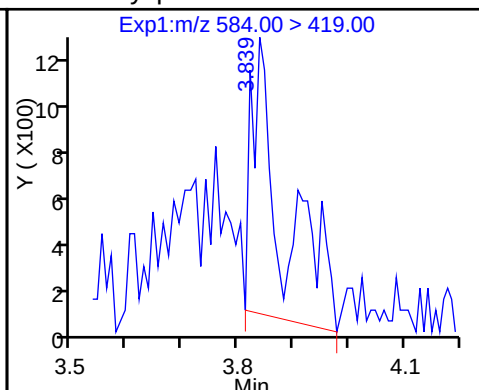
28 Perfluoroundecanoic acid



D 46 d5-NEtFOSAA



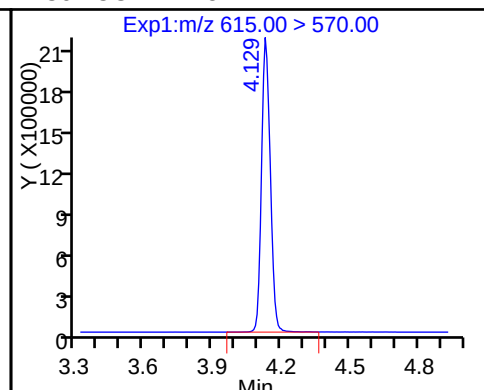
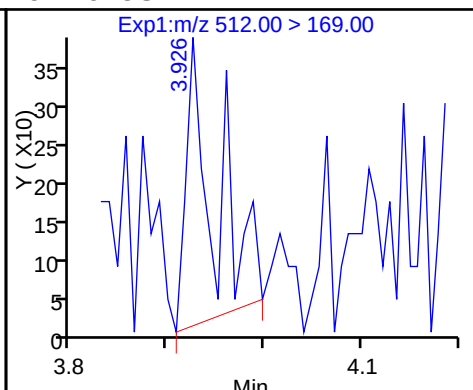
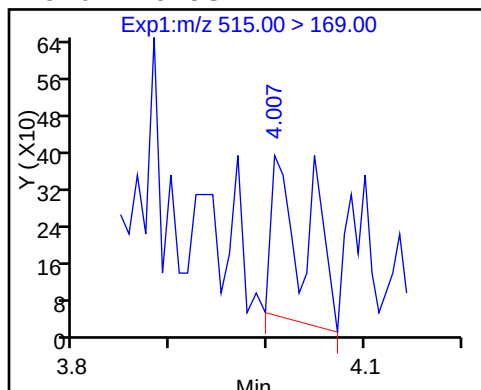
49 N-ethyl perfluorooctane sulfonamid



D 52 d-N-MeFOSA-M

54 MeFOSA

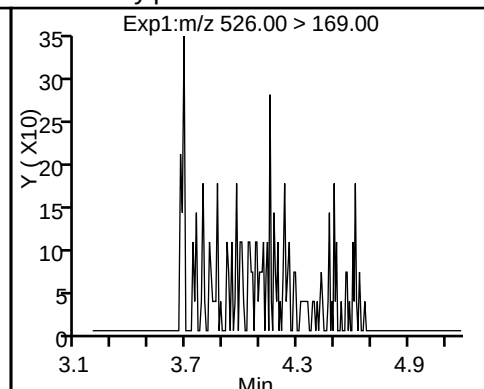
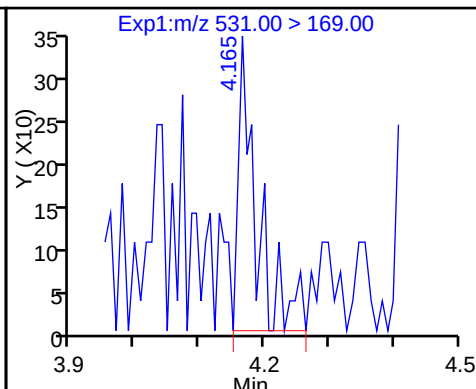
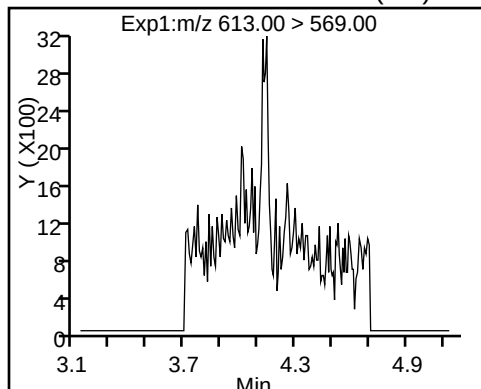
D 30 13C2 PFDaA



29 Perfluorododecanoic acid (ND)

D 51 d-N-EtFOSA-M

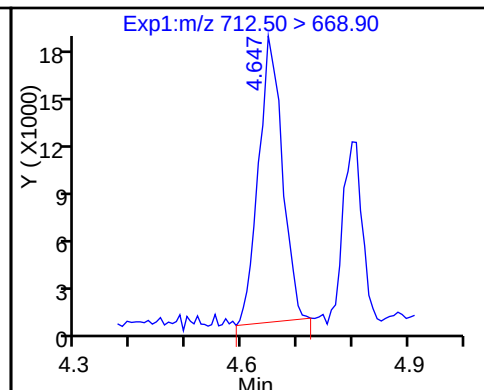
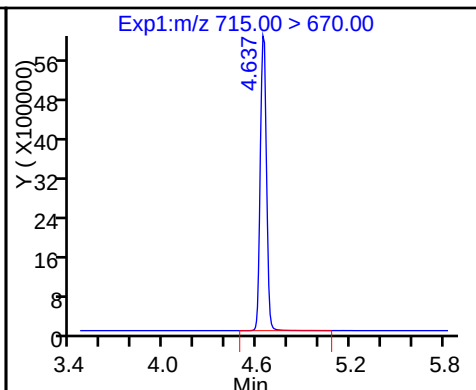
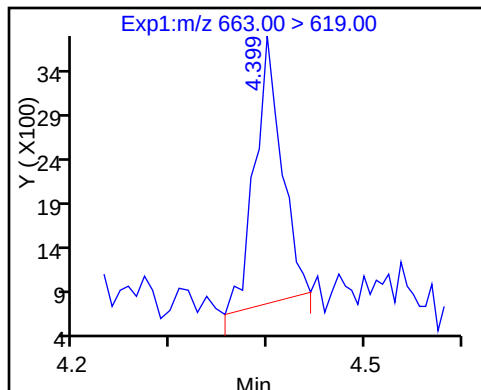
53 N-ethylperfluoro-1-octanesulfonami (ND)



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

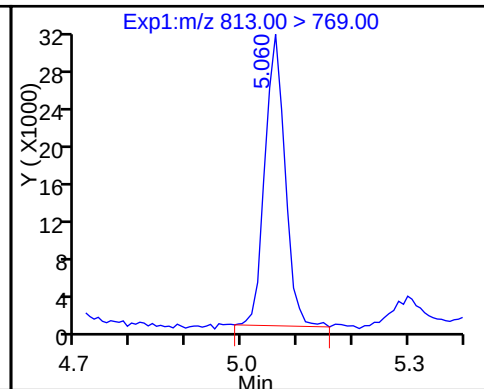
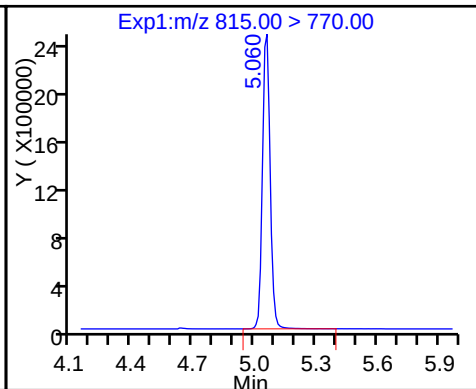
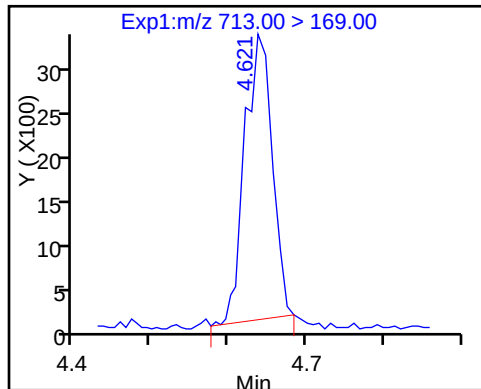
33 Perfluorotetradecanoic acid



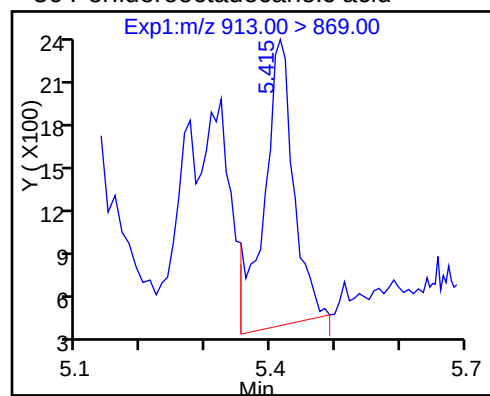
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

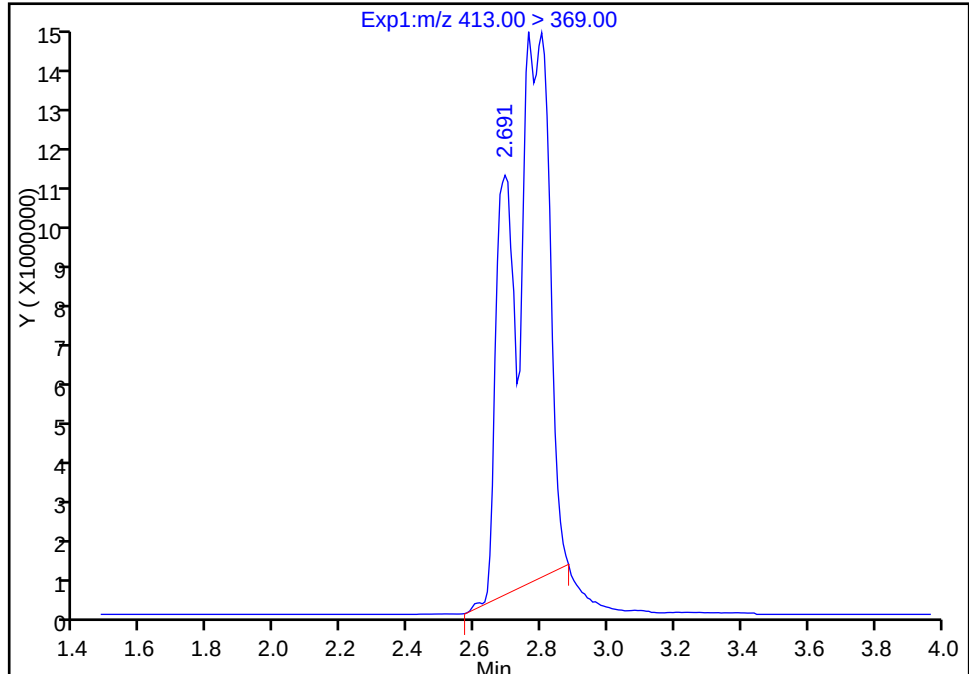
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_017.d
Injection Date: 29-Dec-2016 01:52:03 Instrument ID: A8_N
Lims ID: 320-24236-A-3-A Lab Sample ID: 320-24236-3
Client ID: FFTA2TMW-1216
Operator ID: A8-PC\A8 ALS Bottle#: 13 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

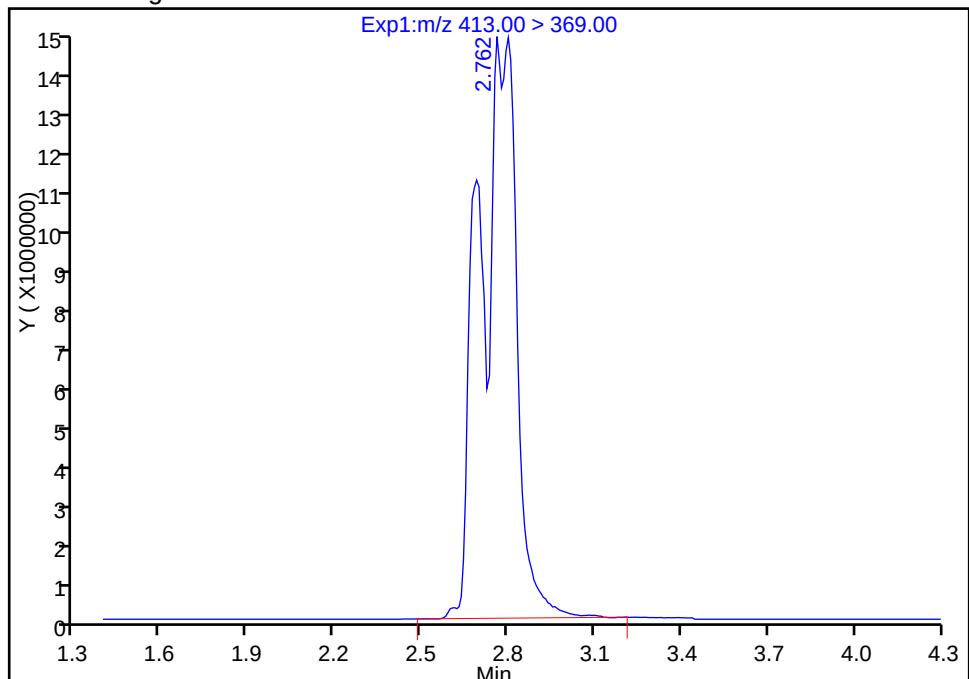
RT: 2.69
Area: 117091795
Amount: 1611.3675
Amount Units: ng/ml

Processing Integration Results



RT: 2.76
Area: 132475668
Amount: 1823.0739
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 29-Dec-2016 17:56:26

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FFTA2TMW-1216 DL</u>	Lab Sample ID: <u>320-24236-3 DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>30DEC2016B_018.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 12:40</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>241.5 (mL)</u>	Date Analyzed: <u>12/30/2016 14:26</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>20</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144510</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.31	D	0.052	0.021	0.0095
2706-90-3	Perfluoropentanoic acid (PFPeA)	1.0	D J	0.052	0.041	0.020
307-24-4	Perfluorohexanoic acid (PFHxA)	1.7	D B J	0.052	0.041	0.016
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.74	D J	0.052	0.041	0.017
335-67-1	Perfluorooctanoic acid (PFOA)	7.1	D M J	0.052	0.041	0.015
375-95-1	Perfluorononanoic acid (PFNA)	0.030	J D	0.052	0.041	0.014
335-76-2	Perfluorodecanoic acid (PFDA)	0.016	J D	0.052	0.021	0.0091
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.041	U	0.052	0.041	0.015
307-55-1	Perfluorododecanoic acid (PFDoA)	0.041	U	0.052	0.041	0.012
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.041	U	0.052	0.041	0.011
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.021	U	0.052	0.021	0.0083
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.13	D	0.052	0.041	0.019
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.0	D J	0.052	0.041	0.018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.3	D J	0.083	0.062	0.026
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.062	U	0.083	0.062	0.025
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.087	D J	0.052	0.041	0.013

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FFTA2TMW-1216 DL</u>	Lab Sample ID: <u>320-24236-3 DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>30DEC2016B_018.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 12:40</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>241.5 (mL)</u>	Date Analyzed: <u>12/30/2016 14:26</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>20</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144510</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	4	Q	25-150
STL00992	13C4 PFBA	119		25-150
STL01893	13C5-PFPeA	142		25-150
STL00993	13C2 PFHxA	124		25-150
STL01892	13C4-PFHpA	101		25-150
STL00990	13C4 PFOA	94		25-150
STL00995	13C5 PFNA	121		25-150
STL00996	13C2 PFDA	126		25-150
STL00997	13C2 PFUnA	126		25-150
STL00998	13C2 PFDoA	123		25-150
STL00994	18O2 PFHxS	115		25-150
STL00991	13C4 PFOS	125		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_018.d
 Lims ID: 320-24236-A-3-A
 Client ID: FFTA2TMW-1216
 Sample Type: Client
 Inject. Date: 30-Dec-2016 14:26:30 ALS Bottle#: 12 Worklist Smp#: 28
 Injection Vol: 2.0 ul Dil. Factor: 20.0000
 Sample Info: 320-24236-a-3-a 20X
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 03-Jan-2017 14:28:20 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: phomsophat

Date: 03-Jan-2017 14:04:19

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.526	1.526	0.0		1033424	2.97		5.9	90829	
1 Perfluorobutyric acid										
212.90 > 169.00	1.526	1.534	-0.008	1.000	2633679	7.46			12878	
D 4 13C5-PFPeA										
267.90 > 223.00	1.801	1.801	0.0		945981	3.56		7.1	78163	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.801	1.811	-0.010	1.000	9026066	24.2			49847	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.839	1.840	-0.001	1.000	1721510	3.24				
298.90 > 99.00	1.839	1.840	-0.001	1.000	720659		2.39(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.095	2.092	0.003		758825	3.10		6.2	76671	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.095	2.092	0.003	1.000	11534114	40.9			202335	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.440	2.410	0.030	1.000	46882825	121.2				
D 11 13C4-PFHpA										
367.00 > 322.00	2.420	2.421	-0.001		571629	2.53		5.1	57437	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.420	2.421	-0.001	1.000	3978242	17.8			31200	
D 10 18O2 PFHxS										
403.00 > 84.00	2.440	2.443	-0.003		888161	2.72		5.7	152462	
D 14 13C4 PFOA										
417.00 > 372.00	2.776	2.773	0.003		543058	2.36		4.7	47949	
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.753	2.773	-0.020	1.000	15333548	NR				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.776	2.780	-0.004	1.000	37212393	170.8			245459	M
413.00 > 169.00	2.683	2.780	-0.097	0.967	26985367		1.38(0.90-1.10)		88613	
D 47 M2-6:2FTS										
429.00 > 409.00	2.753	2.781	-0.028		861228	7.36		0.0		
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.783	2.788	-0.005	1.000	396635	1.16				
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.137	3.044	0.093	1.000	10034096	32.5			294958	
499.00 > 99.00	3.145	3.044	0.101	1.003	1857074		5.40(0.90-1.10)		89278	
D 17 13C4 PFOS										
503.00 > 80.00	3.145	3.148	-0.003		741710	2.98		6.2	58193	
D 19 13C5 PFNA										
468.00 > 423.00	3.153	3.148	0.005		537213	3.02		6.0	66913	
20 Perfluorononanoic acid										
463.00 > 419.00	3.145	3.156	-0.011	1.000	150169	0.7342			1748	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.470	3.470	0.0	1.000	29692	2.11			622	
D 21 13C8 FOSA										
506.00 > 78.00	3.470	3.478	-0.008		37704	0.0982		0.2	3769	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.511	3.504	0.007	1.000	71835	0.3837			1498	
D 23 13C2 PFDA										
515.00 > 470.00	3.503	3.512	-0.009		495900	3.15		6.3	16824	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.503	3.519	-0.016	1.000	7031	NR				
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.646	3.683	-0.037		526	0.006983		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.822	3.822	0.0	1.000	487	0.002687				
D 27 13C2 PFUnA										
565.00 > 520.00	3.839	3.839	0.0		369466	3.15		6.3	35079	
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.839	3.855	-0.016		1723	0.0220		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.830	3.864	-0.034	0.998	495	NR				
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.979	3.997	-0.018		247	0.002598		0.0		
D 30 13C2 PFDaA										
615.00 > 570.00	4.130	4.138	-0.008		342099	3.08		6.2	20167	
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.158	4.180	-0.022		396	0.004616		0.0		
D 32 13C2-PFTeDA										
715.00 > 670.00	4.637	4.641	-0.004		781255	3.44		6.9	146992	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.061	5.057	0.004		385414	3.09		6.2	38250	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.071	5.067	0.004	1.000	6729	0.5482			74.7	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctadecanoic acid	913.00	5.284	5.421	-0.137	1.000	437	0.003099		9.5	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_018.d

Injection Date: 30-Dec-2016 14:26:30

Instrument ID: A8_N

Lims ID: 320-24236-A-3-A

Lab Sample ID: 320-24236-3

Client ID: FFTA2TMW-1216

Operator ID: A8-PC\A8

ALS Bottle#: 12

Worklist Smp#: 28

Injection Vol: 2.0 ul

Dil. Factor: 20.0000

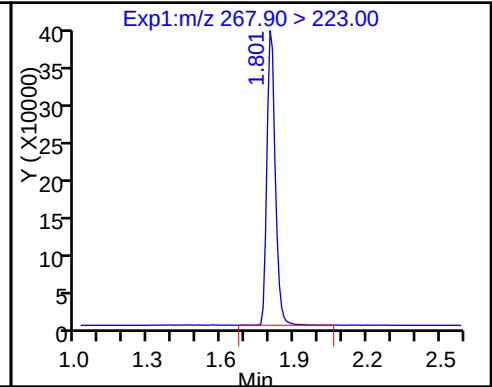
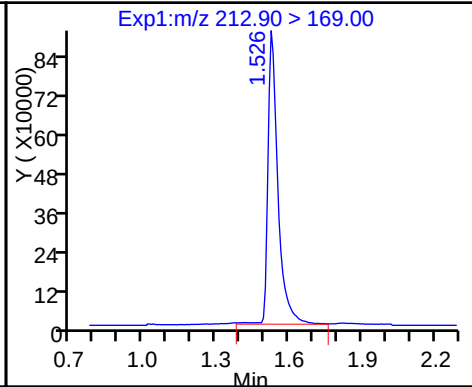
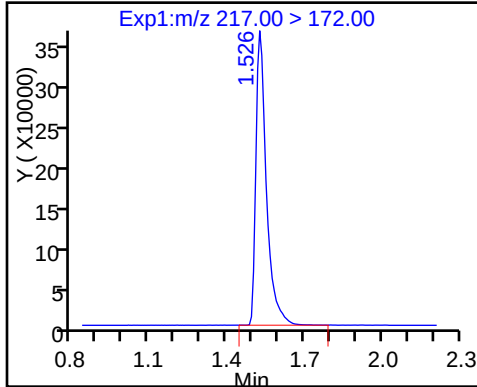
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

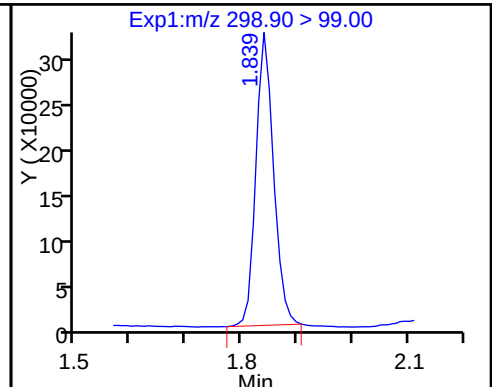
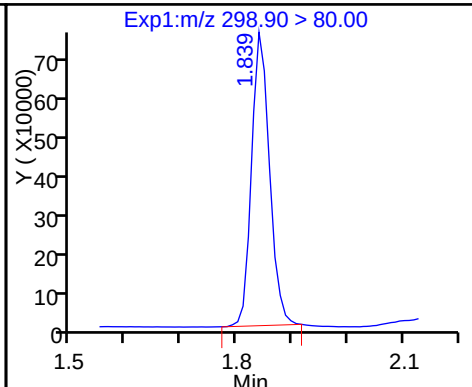
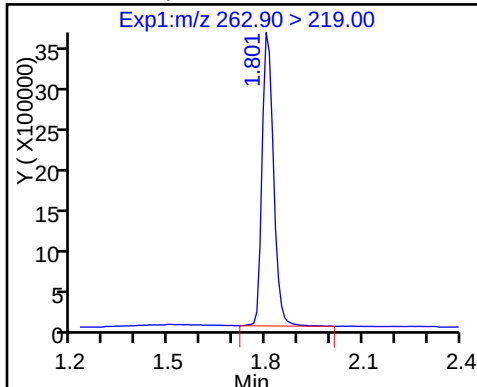
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

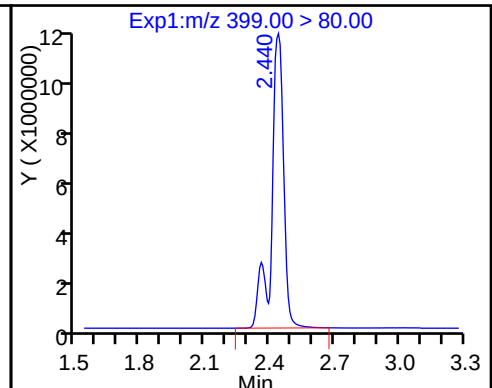
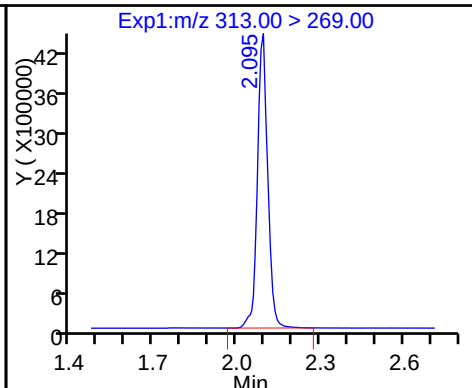
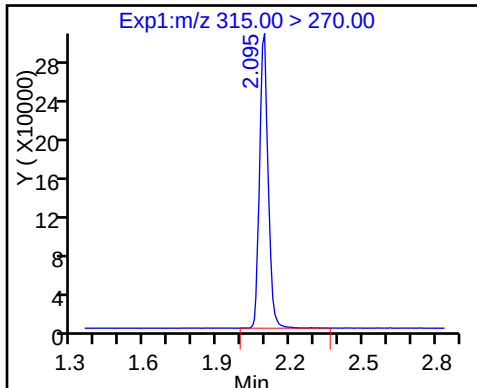
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

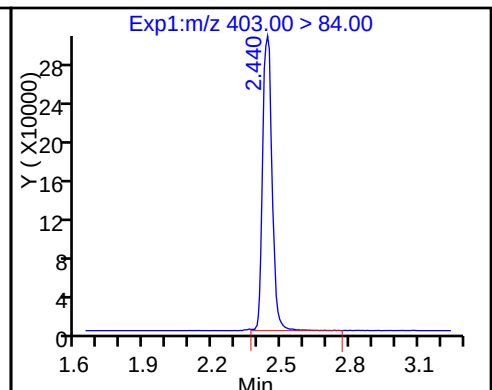
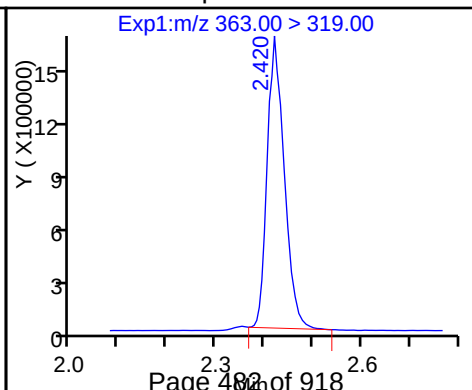
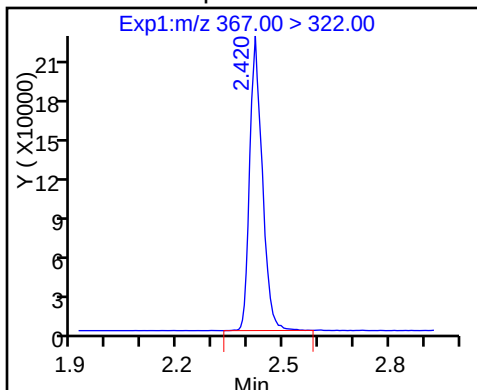
9 Perfluorohexanesulfonic acid



D 11 13C4-PFHpA

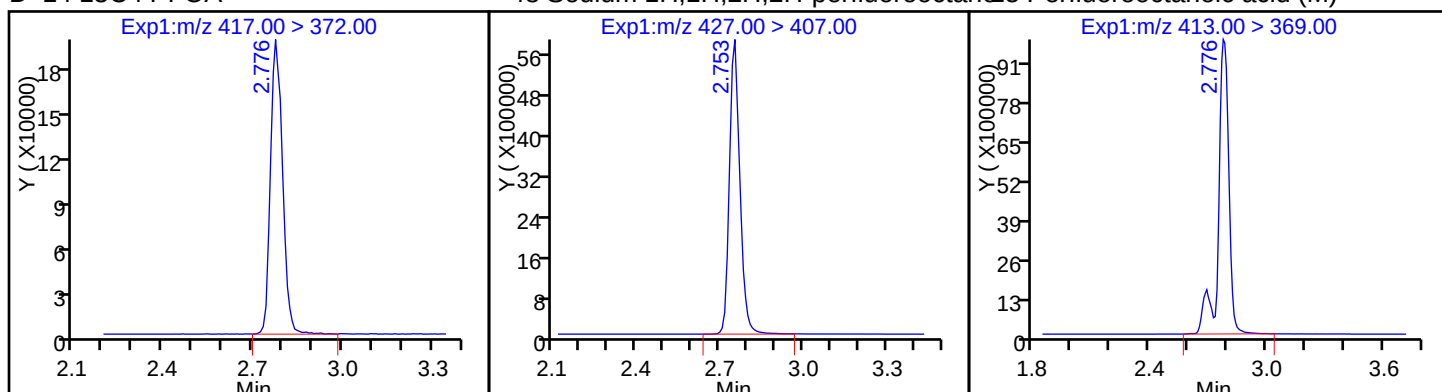
12 Perfluoroheptanoic acid

D 10 18O2 PFHxS



D 14 13C4 PFOA

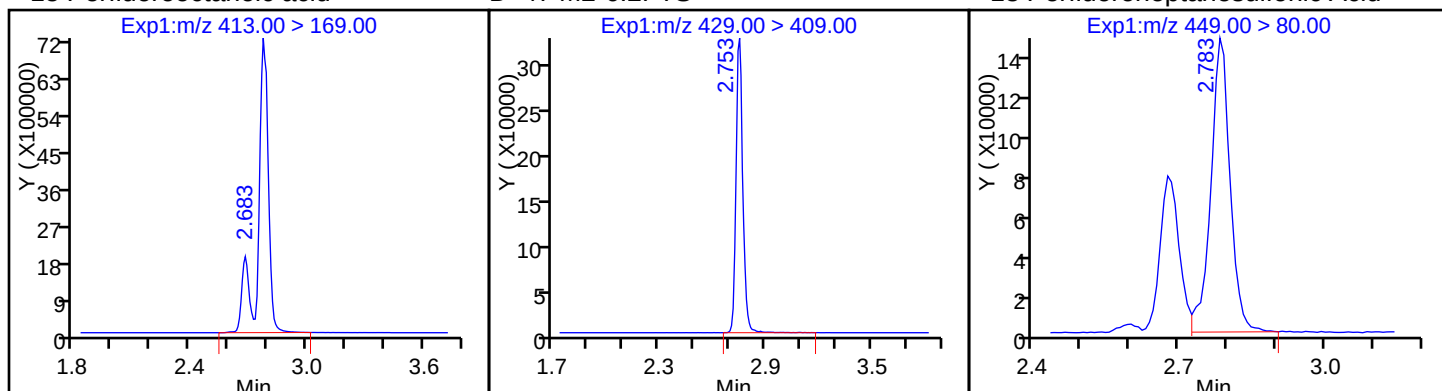
48 Sodium 1H,1H,2H,2H-perfluorooctan-1-ol 15 Perfluorooctanoic acid (M)



15 Perfluorooctanoic acid

D 47 M2-6:2FTS

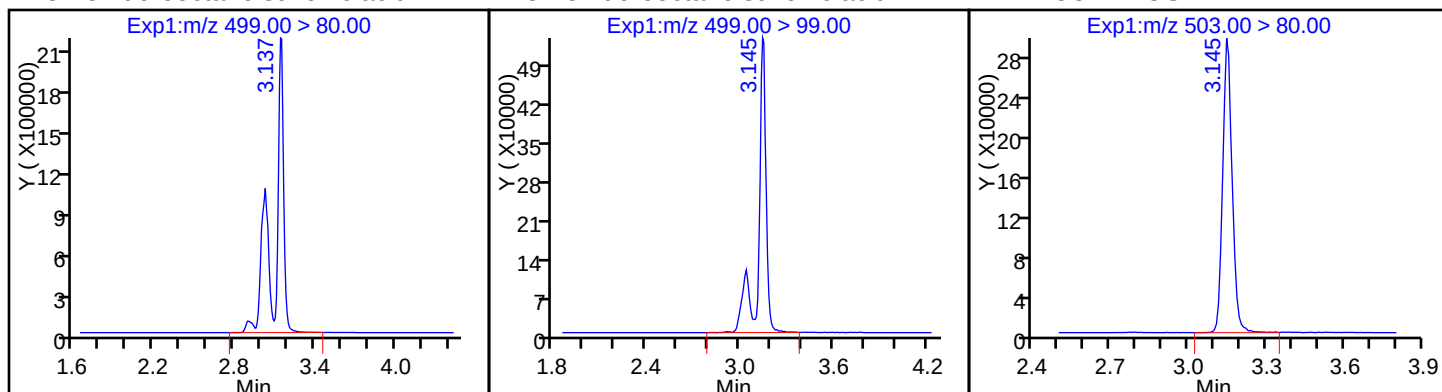
13 Perfluoroheptanesulfonic Acid



18 Perfluorooctane sulfonic acid

18 Perfluorooctane sulfonic acid

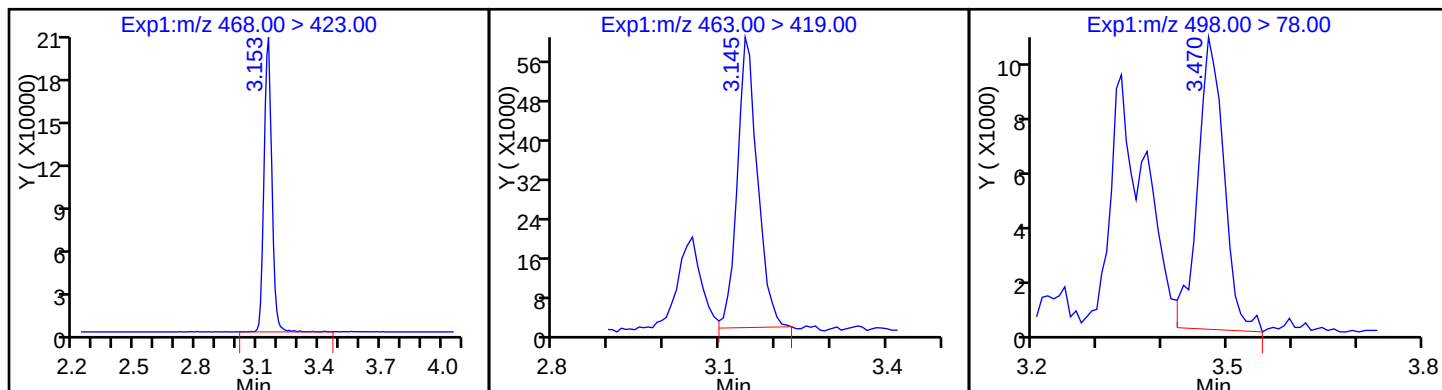
D 17 13C4 PFOS



D 19 13C5 PFNA

20 Perfluorononanoic acid

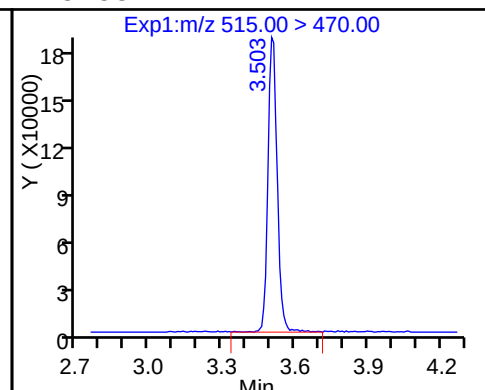
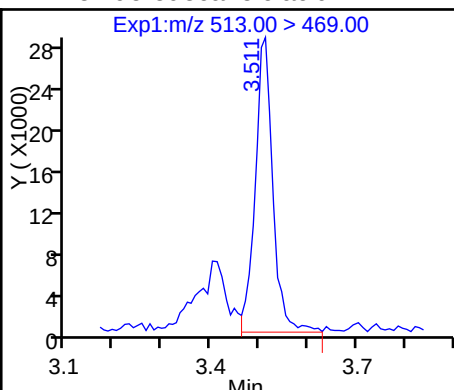
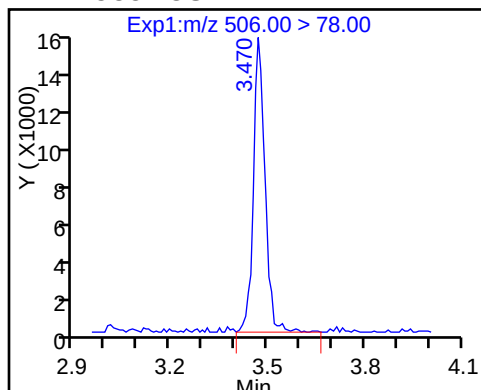
22 Perfluorooctane Sulfonamide



D 21 13C8 FOSA

24 Perfluorodecanoic acid

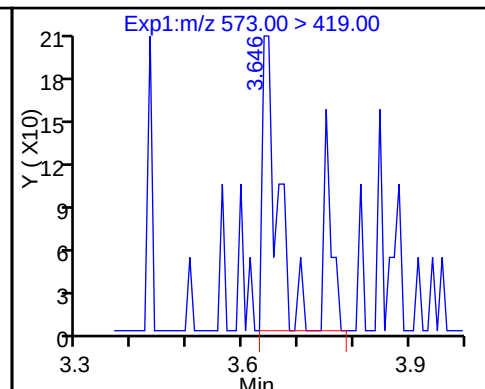
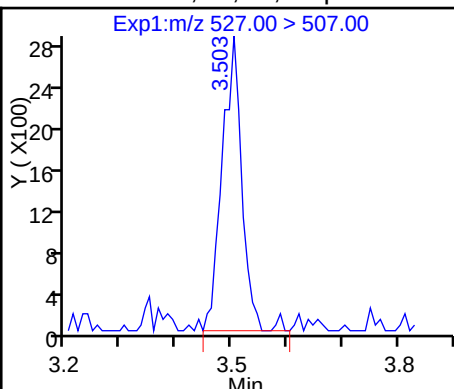
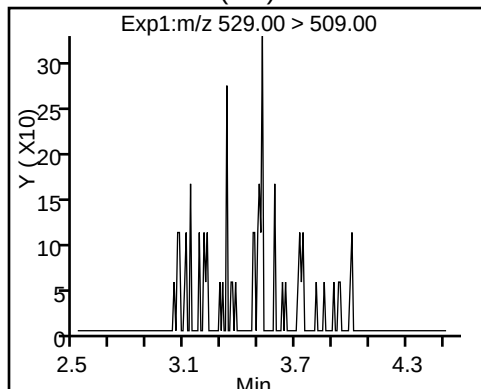
D 23 13C2 PFDA



D 42 M2-8:2FTS (ND)

43 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

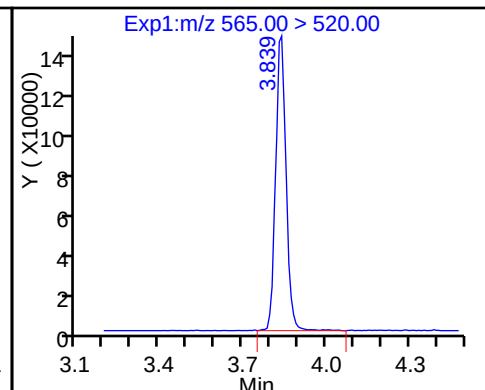
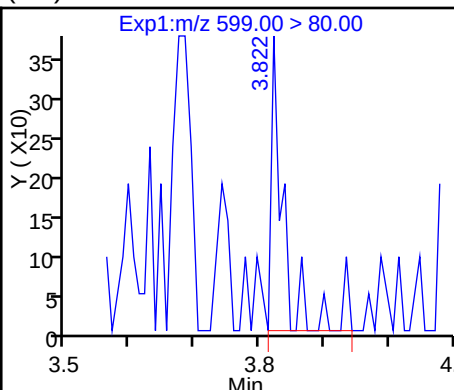
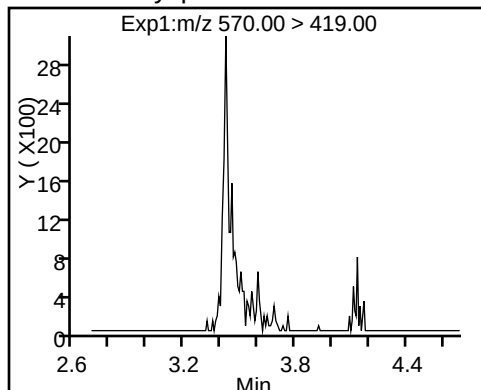
D 45 d3-NMeFOSAA



44 N-methyl perfluorooctane sulfonamide (ND)

46 Perfluorodecane Sulfonic acid

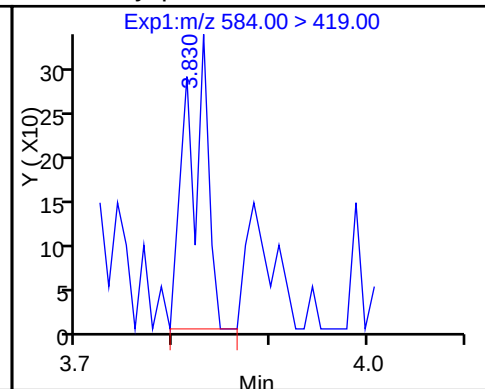
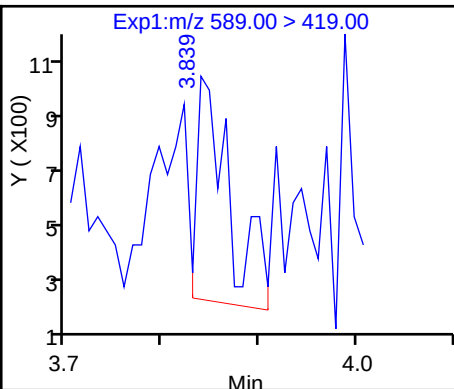
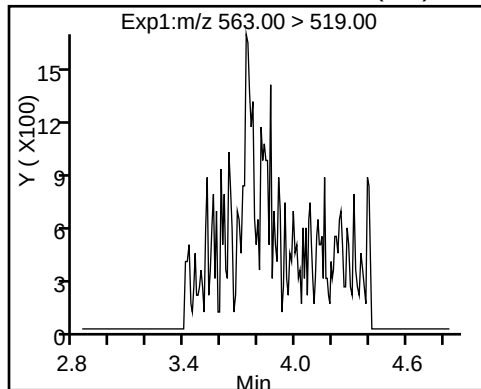
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid (ND)

D 46 d5-NEtFOSAA

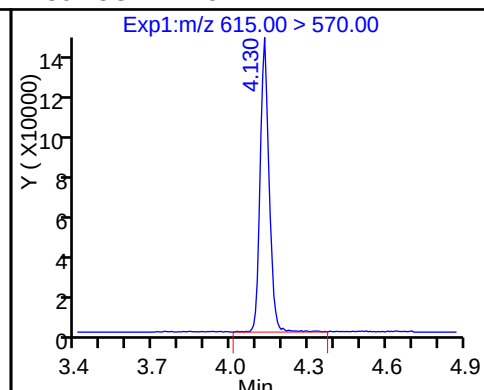
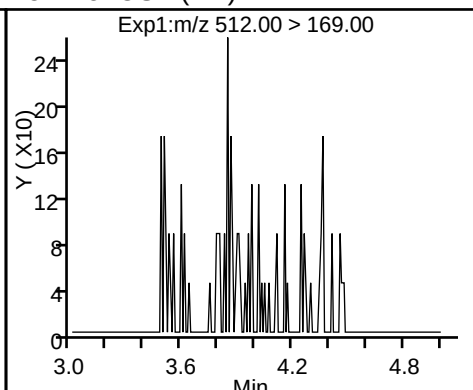
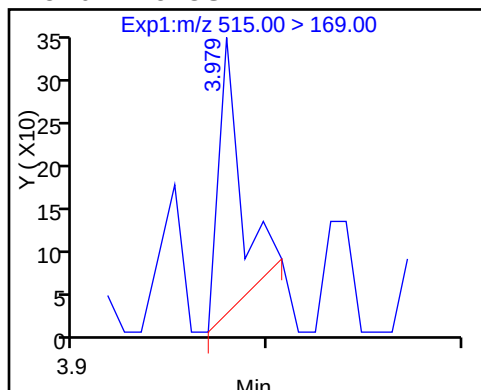
49 N-ethyl perfluorooctane sulfonamid



D 52 d-N-MeFOSA-M

54 MeFOSA (ND)

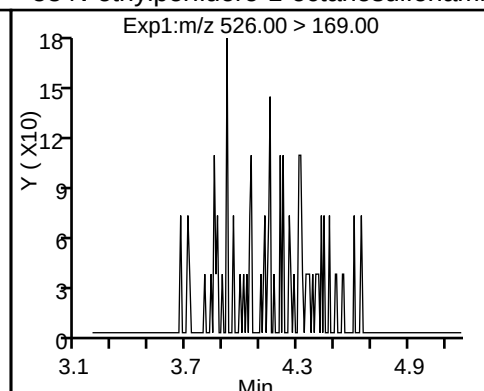
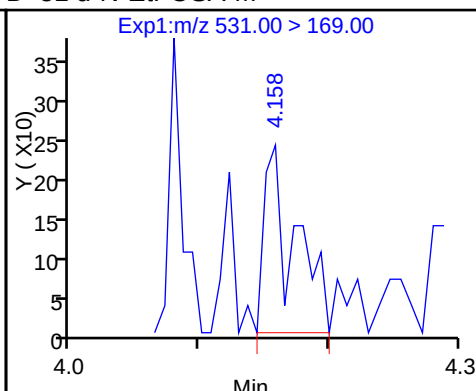
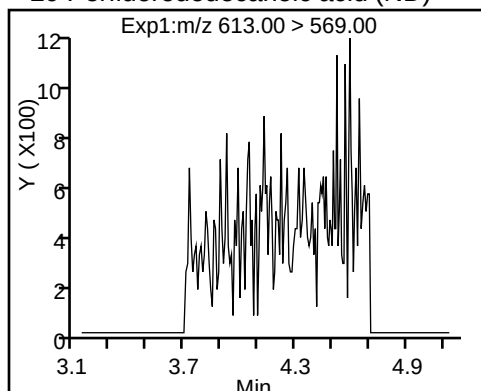
D 30 13C2 PFDaA



29 Perfluorododecanoic acid (ND)

D 51 d-N-EtFOSA-M

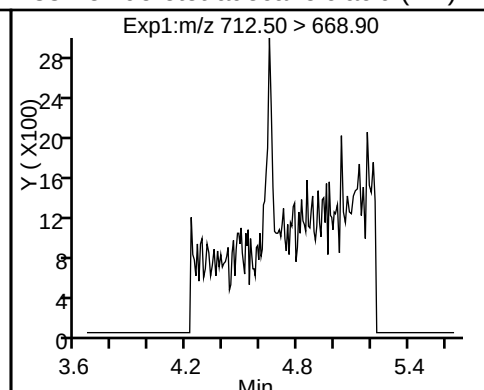
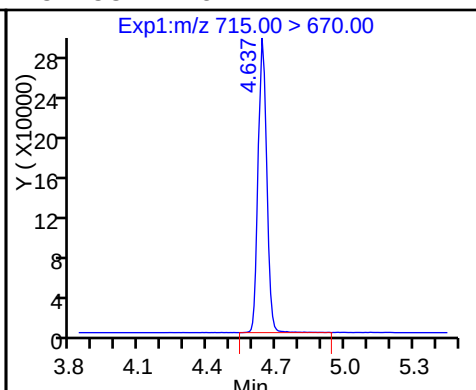
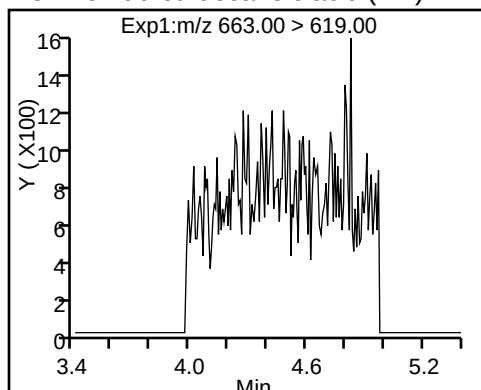
53 N-ethylperfluoro-1-octanesulfonami (ND)



31 Perfluorotridecanoic acid (ND)

D 32 13C2-PFTeDA

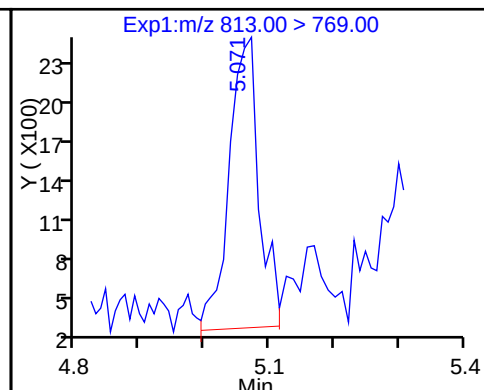
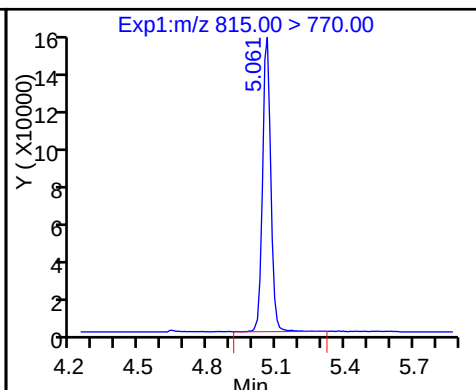
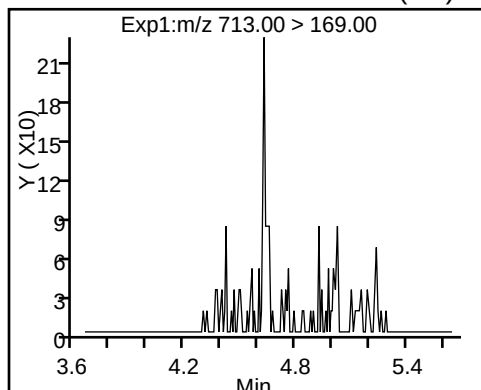
33 Perfluorotetradecanoic acid (ND)



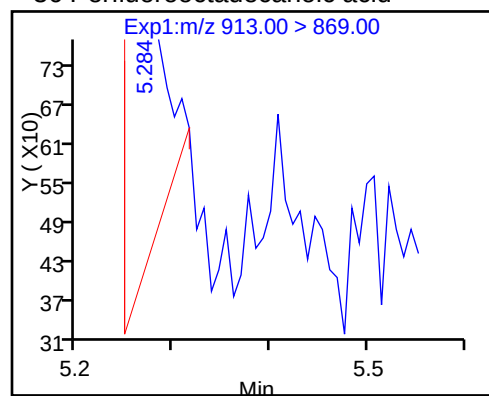
33 Perfluorotetradecanoic acid (ND)

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

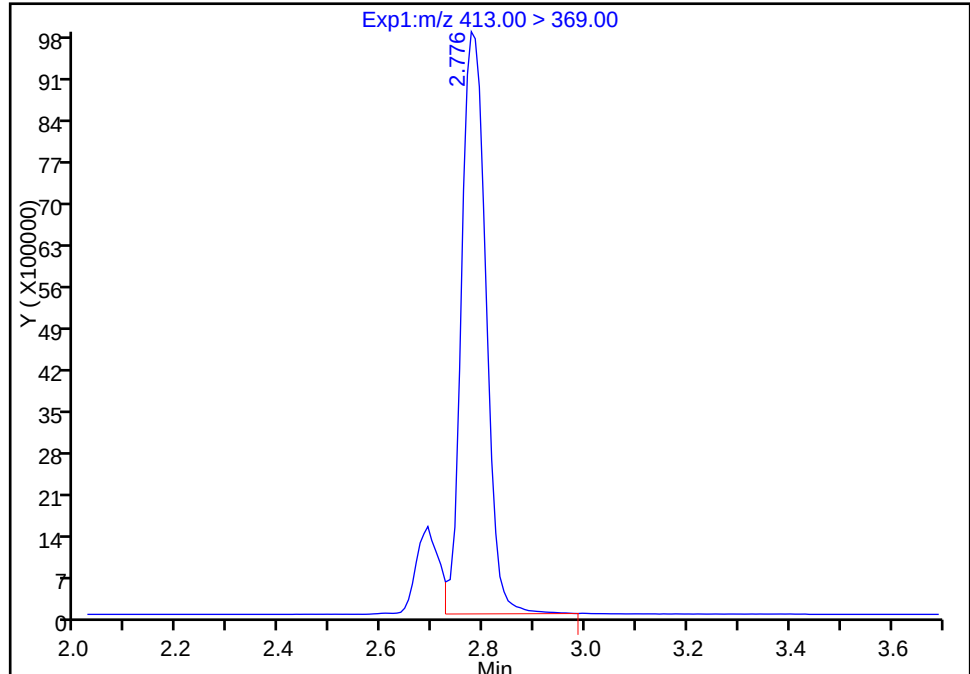
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_018.d
Injection Date: 30-Dec-2016 14:26:30 Instrument ID: A8_N
Lims ID: 320-24236-A-3-A Lab Sample ID: 320-24236-3
Client ID: FFTA2TMW-1216
Operator ID: A8-PC\A8 ALS Bottle#: 12 Worklist Smp#: 28
Injection Vol: 2.0 ul Dil. Factor: 20.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

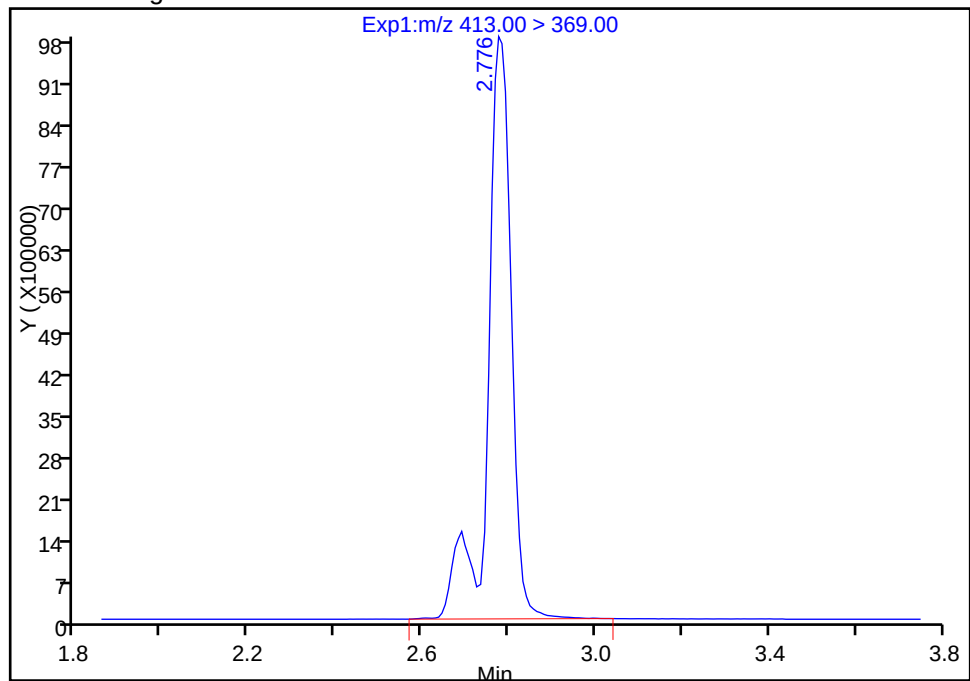
RT: 2.78
Area: 32701315
Amount: 150.0707
Amount Units: ng/ml

Processing Integration Results



RT: 2.78
Area: 37212393
Amount: 170.7727
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 03-Jan-2017 14:04:19

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FB120816</u>	Lab Sample ID: <u>320-24236-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_020.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 13:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>279.2 (mL)</u>	Date Analyzed: <u>12/29/2016 02:14</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.00090	U	0.0022	0.00090	0.00041
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0018	U	0.0022	0.0018	0.00089
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0018	U	0.0022	0.0018	0.00070
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0022	0.0018	0.00072
335-67-1	Perfluorooctanoic acid (PFOA)	0.0018	U	0.0022	0.0018	0.00067
375-95-1	Perfluorononanoic acid (PFNA)	0.0018	U	0.0022	0.0018	0.00059
335-76-2	Perfluorodecanoic acid (PFDA)	0.00090	U	0.0022	0.00090	0.00039
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0018	U	0.0022	0.0018	0.00067
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0018	U	0.0022	0.0018	0.00052
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0018	U	0.0022	0.0018	0.00049
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00090	U	0.0022	0.00090	0.00036
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0022	0.0018	0.00082
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0011	J	0.0022	0.0018	0.00078
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0027	U	0.0036	0.0027	0.0011
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0018	U	0.0022	0.0018	0.00057

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FB120816</u>	Lab Sample ID: <u>320-24236-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_020.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 13:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>279.2 (mL)</u>	Date Analyzed: <u>12/29/2016 02:14</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	77		25-150
STL00992	13C4 PFBA	139		25-150
STL01893	13C5-PFPeA	137		25-150
STL00993	13C2 PFHxA	135		25-150
STL01892	13C4-PFHpA	133		25-150
STL00990	13C4 PFOA	135		25-150
STL00995	13C5 PFNA	132		25-150
STL00996	13C2 PFDA	144		25-150
STL00997	13C2 PFUnA	143		25-150
STL00998	13C2 PFDoA	134		25-150
STL00994	18O2 PFHxS	135		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_020.d
 Lims ID: 320-24236-A-4-A
 Client ID: FB120816
 Sample Type: Client
 Inject. Date: 29-Dec-2016 02:14:36 ALS Bottle#: 16 Worklist Smp#: 20
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24236-a-4-a
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Dec-2016 18:14:32 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK027

First Level Reviewer: phomsophat

Date: 29-Dec-2016 18:15:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 2 13C4 PFBA

217.00 > 172.00 1.525 1.525 0.0 24140125 69.4 139 1579815

1 Perfluorobutyric acid

212.90 > 169.00 1.525 1.525 0.0 1.000 29628 0.0719 150

D 4 13C5-PFPeA

267.90 > 223.00 1.800 1.800 0.0 18226587 68.5 137 1208548

3 Perfluoropentanoic acid

262.90 > 219.00 1.800 1.800 0.0 1.000 37504 0.1043 380

D 6 13C2 PFHxA

315.00 > 270.00 2.093 2.091 0.002 16568595 67.6 135 875423

7 Perfluorohexanoic acid

313.00 > 269.00 2.093 2.091 0.002 1.000 45863 0.1490 392

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.437 2.409 0.028 1.000 285869 0.6270

D 11 13C4-PFHpA

367.00 > 322.00 2.412 2.420 -0.008 15043675 66.5 133 1353075

D 10 18O2 PFHxS

403.00 > 84.00 2.437 2.440 -0.003 20939360 64.0 135 1468706

D 14 13C4 PFOA

417.00 > 372.00 2.774 2.776 -0.002 15495886 67.3 135 946589

15 Perfluorooctanoic acid

413.00 > 369.00 2.774 2.783 -0.009 1.000 113942 0.3665 790

413.00 > 169.00 2.774 2.783 -0.009 1.000 93813 1.21(0.90-1.10) 1920

D 17 13C4 PFOS

503.00 > 80.00 3.143 3.145 -0.002 15817514 63.6 133 566815

D 19 13C5 PFNA

468.00 > 423.00 3.151 3.153 -0.002 11757525 66.2 132 996586

D 21 13C8 FOSA

506.00 > 78.00 3.473 3.475 -0.002 14885365 38.7 77.5 809808

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
24 Perfluorodecanoic acid										
513.00 > 469.00	3.507	3.509	-0.002	1.000	8196	0.0384			263	
D 23 13C2 PFDA										
515.00 > 470.00	3.507	3.509	-0.002		11303758	71.9		144	404123	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.834	3.825	0.009	1.000	1436	0.007431				
D 27 13C2 PFUnA										
565.00 > 520.00	3.834	3.834	0.0		8383694	71.5		143	434380	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.834	3.834	0.0	1.000	24293	0.1515			601	
D 30 13C2 PFDoA										
615.00 > 570.00	4.127	4.126	0.001		7424418	66.9		134	253733	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.652	4.644	0.008	1.000	44065	0.1872			378	
713.00 > 169.00	4.625	4.644	-0.019	0.994	10141		4.35(0.00-0.00)		4447	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_020.d

Injection Date: 29-Dec-2016 02:14:36

Instrument ID: A8_N

Lims ID: 320-24236-A-4-A

Lab Sample ID: 320-24236-4

Client ID: FB120816

Operator ID: A8-PC\A8

ALS Bottle#: 16

Worklist Smp#: 20

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

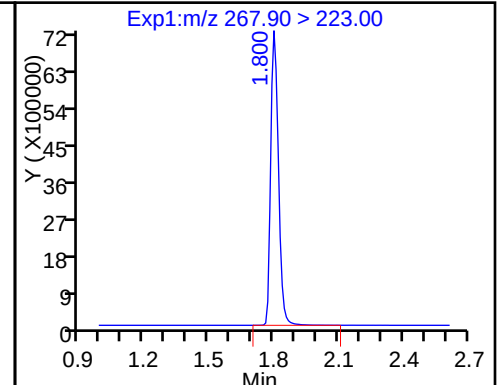
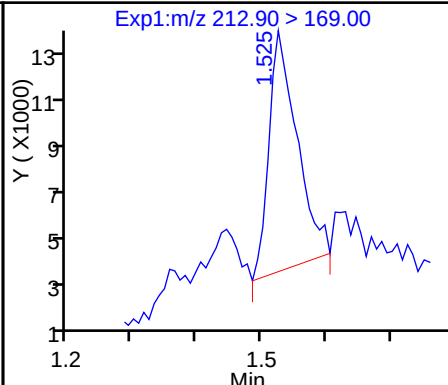
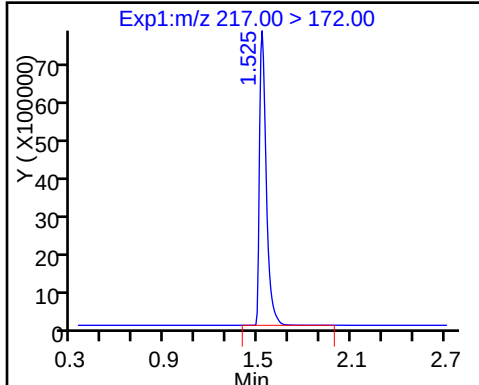
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

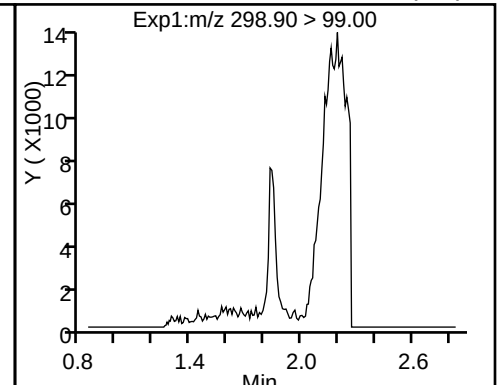
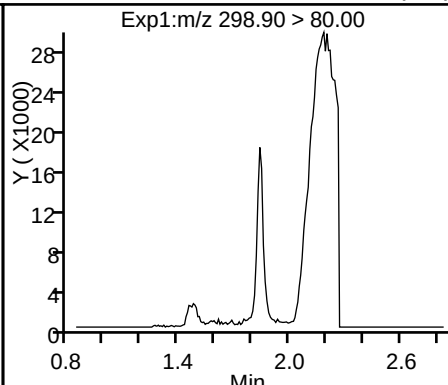
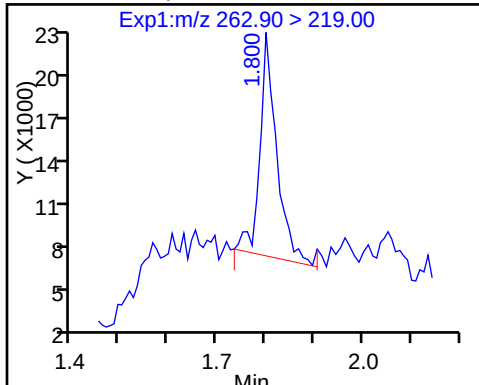
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid (ND)

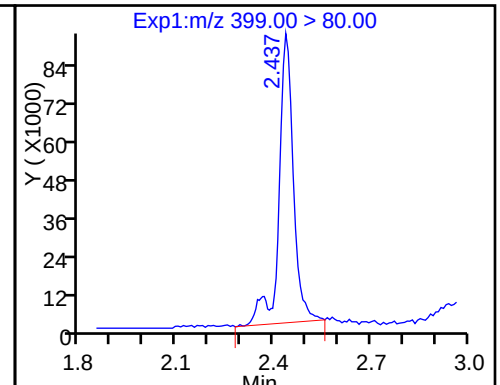
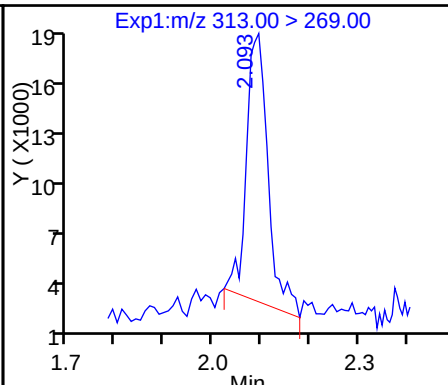
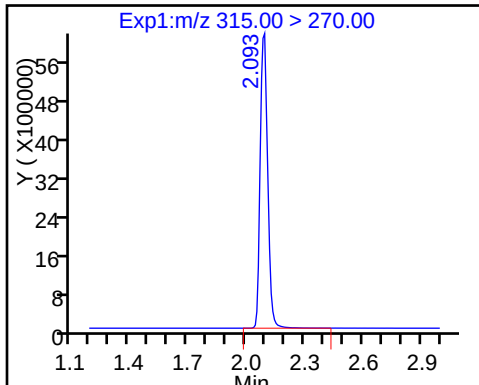
5 Perfluorobutanesulfonic acid (ND)



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

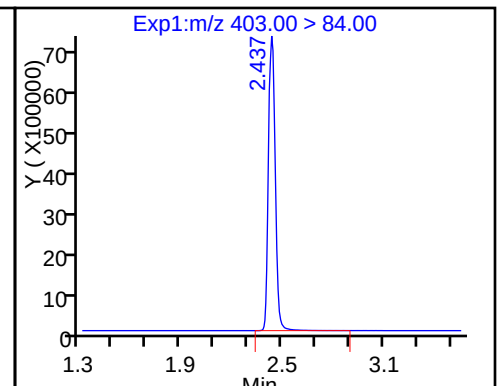
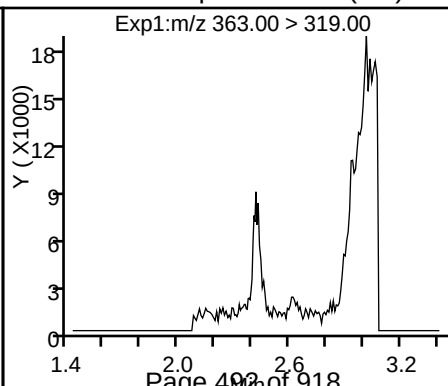
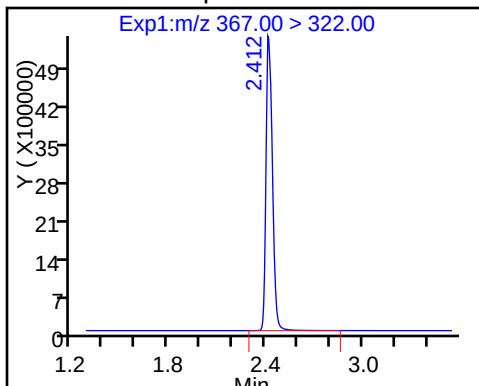
9 Perfluorohexanesulfonic acid



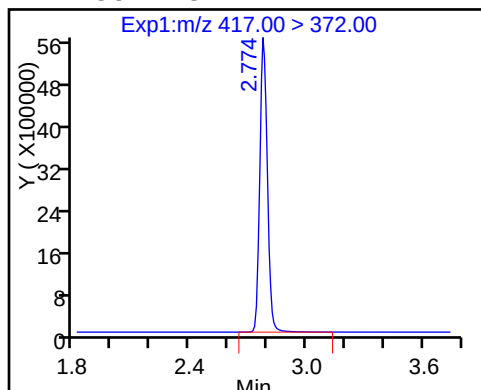
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid (ND)

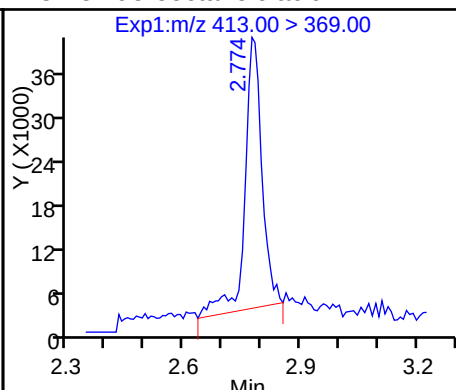
D 10 18O2 PFHxS



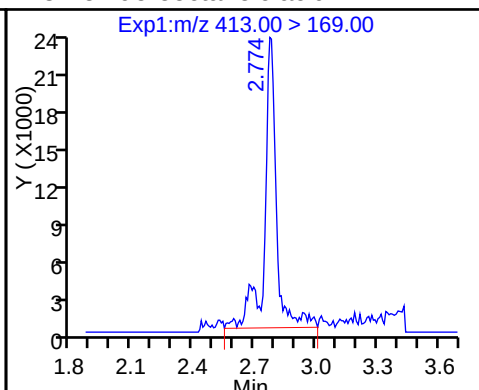
D 14 13C4 PFOA



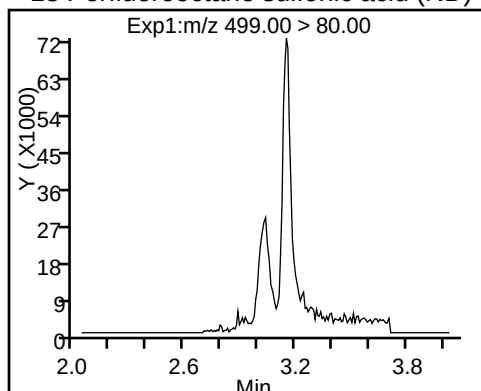
15 Perfluorooctanoic acid



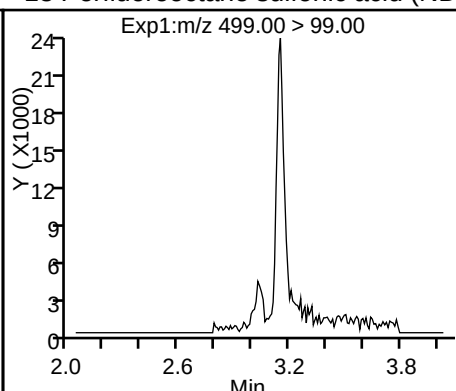
15 Perfluorooctanoic acid



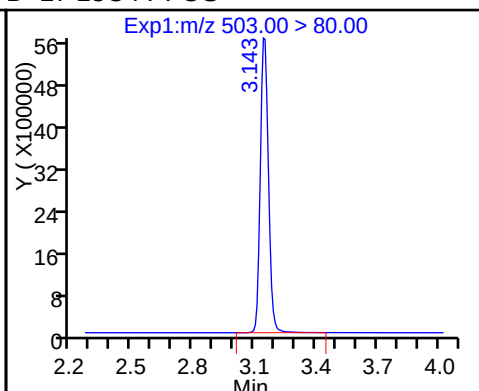
18 Perfluorooctane sulfonic acid (ND)



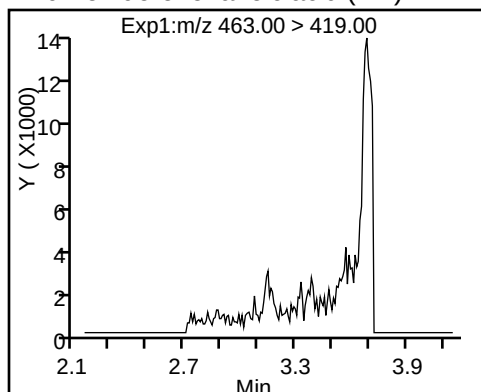
18 Perfluorooctane sulfonic acid (ND)



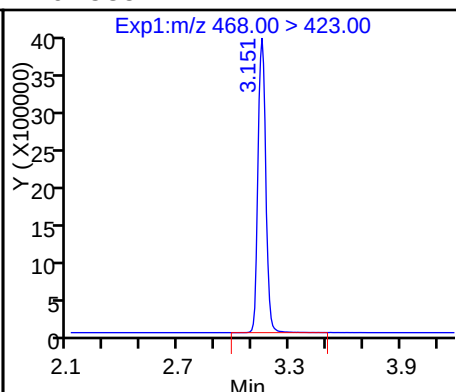
D 17 13C4 PFOS



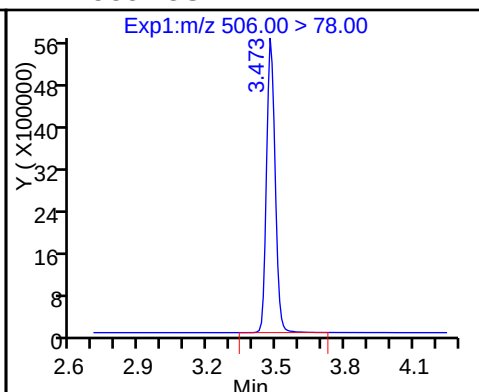
20 Perfluorononanoic acid (ND)



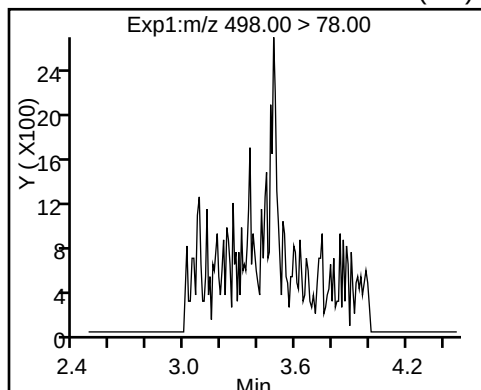
D 19 13C5 PFNA



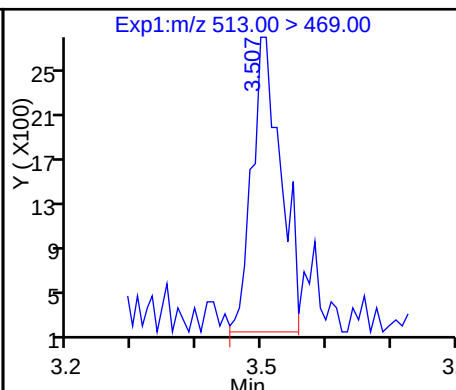
D 21 13C8 FOSA



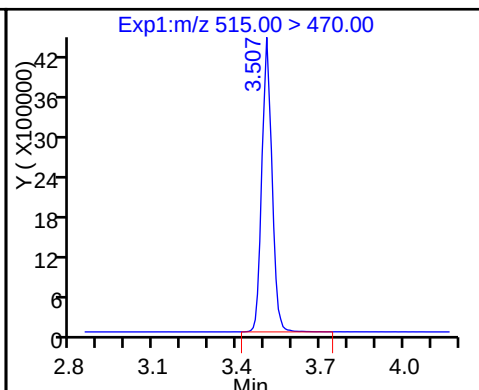
22 Perfluorooctane Sulfonamide (ND)



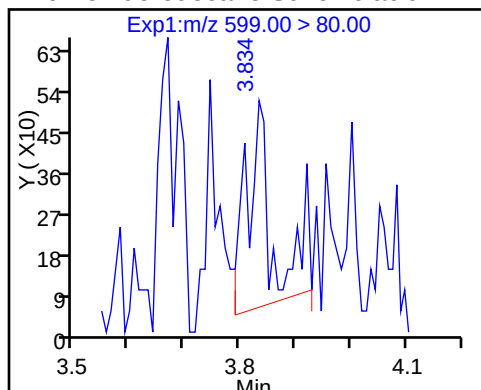
24 Perfluorodecanoic acid



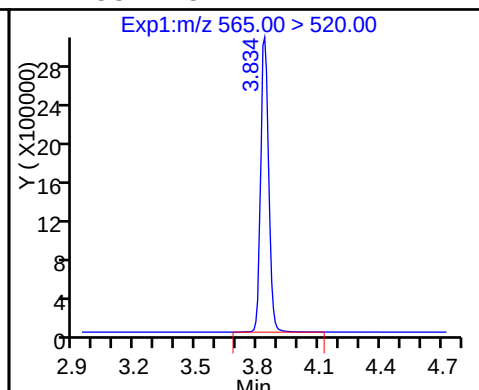
D 23 13C2 PFDA



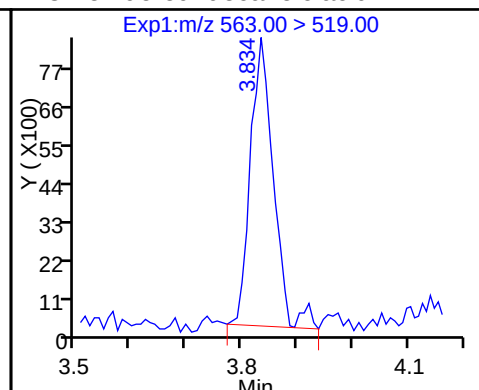
26 Perfluorodecane Sulfonic acid



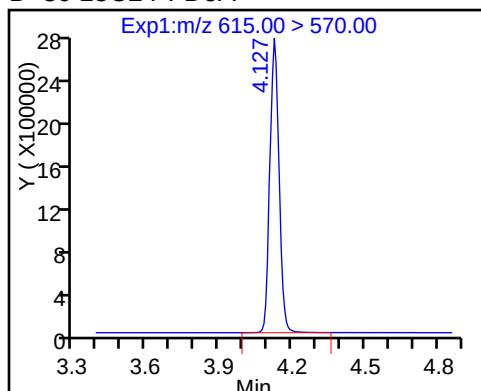
D 27 13C2 PFUnA



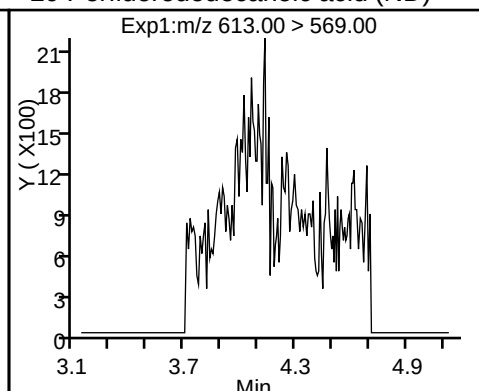
28 Perfluoroundecanoic acid



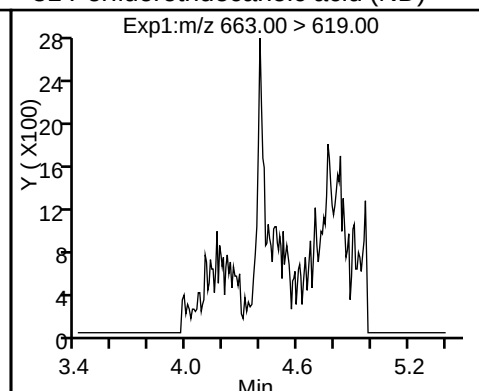
D 30 13C2 PFDaA



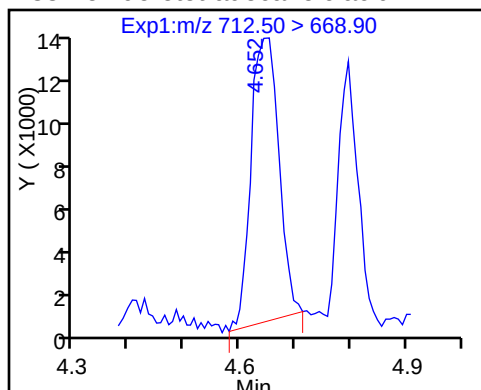
29 Perfluorododecanoic acid (ND)



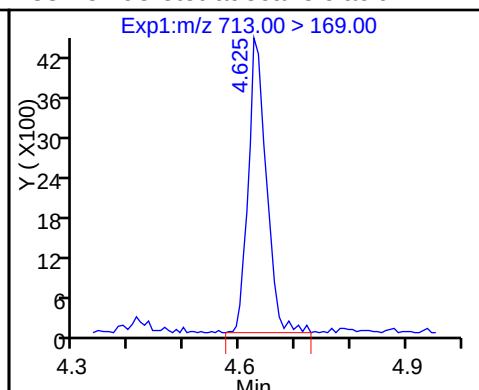
31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FB120816 RA</u>	Lab Sample ID: <u>320-24236-4 RA</u>
Matrix: <u>Water</u>	Lab File ID: <u>30DEC2016B_021.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 13:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>279.2 (mL)</u>	Date Analyzed: <u>12/30/2016 14:49</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144510</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0027	U	0.0036	0.0027	0.0011

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	128		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_021.d
 Lims ID: 320-24236-A-4-A
 Client ID: FB120816
 Sample Type: Client
 Inject. Date: 30-Dec-2016 14:49:02 ALS Bottle#: 15 Worklist Smp#: 31
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24236-a-4-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 03-Jan-2017 14:28:20 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: phomsophat

Date: 03-Jan-2017 14:06:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.526	1.526	0.0		24130417	69.4		139	1123351	
1 Perfluorobutyric acid										
212.90 > 169.00	1.526	1.534	-0.008	1.000	28127	0.0683			111	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.801	0.009		18251497	68.6		137	1179730	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.811	-0.001	1.000	29777	0.0827			239	
D 6 13C2 PFHxA										
315.00 > 270.00	2.097	2.092	0.005		15599258	63.6		127	645449	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.097	2.092	0.005	1.000	16657	0.0575			547	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.436	2.410	0.026	1.000	110544	0.2558				
D 11 13C4-PFHpA										
367.00 > 322.00	2.422	2.421	0.001		15078040	66.6		133	590579	
D 10 18O2 PFHxS										
403.00 > 84.00	2.436	2.443	-0.007		19846562	60.7		128	1736388	
D 14 13C4 PFOA										
417.00 > 372.00	2.782	2.773	0.009		15326589	66.5		133	687372	
D 17 13C4 PFOS										
503.00 > 80.00	3.151	3.148	0.002		15284627	61.4		128	1075998	
D 19 13C5 PFNA										
468.00 > 423.00	3.151	3.148	0.002		11645981	65.5		131	397916	
D 21 13C8 FOSA										
506.00 > 78.00	3.481	3.478	0.003		14429426	37.6		75.1	662158	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.507	3.504	0.003	1.000	6192	0.0291			220	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 23 13C2 PFDA										
515.00 > 470.00	3.515	3.512	0.003		11258374	71.6		143	402465	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.727	3.822	-0.095	1.000	1001	0.005361				
D 27 13C2 PFUnA										
565.00 > 520.00	3.843	3.839	0.004		9055928	77.2		154	653780	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.843	3.839	0.004	1.000	23256	0.1343			807	
D 30 13C2 PFDaA										
615.00 > 570.00	4.133	4.138	-0.005		7794437	70.2		140	384036	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.652	4.651	0.001	1.000	45498	0.1842			508	
713.00 > 169.00	4.643	4.651	-0.008	0.998	8772		5.19(0.00-0.00)		1813	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_021.d

Injection Date: 30-Dec-2016 14:49:02

Instrument ID: A8_N

Lims ID: 320-24236-A-4-A

Lab Sample ID: 320-24236-4

Client ID: FB120816

Operator ID: A8-PC\A8

ALS Bottle#: 15

Worklist Smp#: 31

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

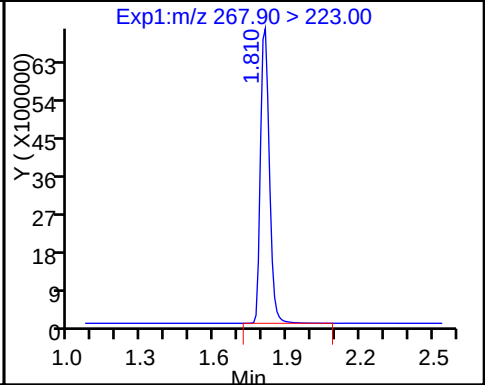
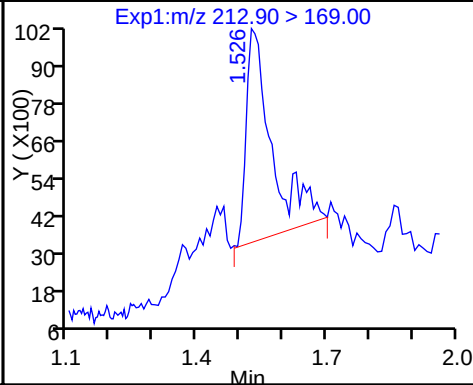
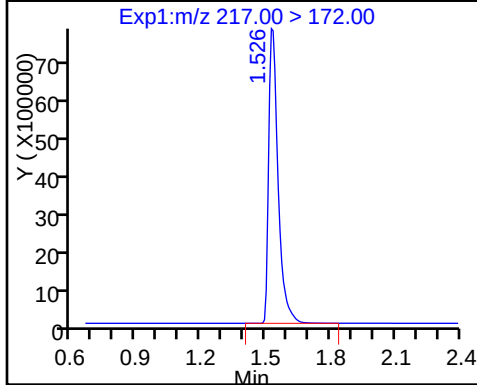
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

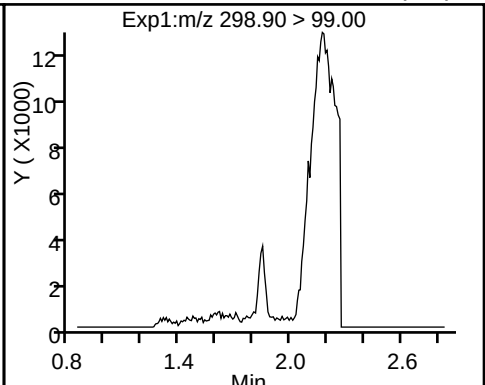
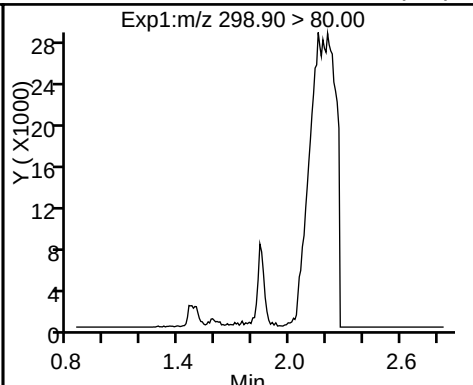
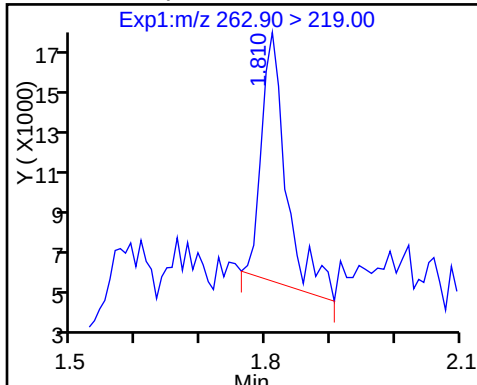
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid (ND)

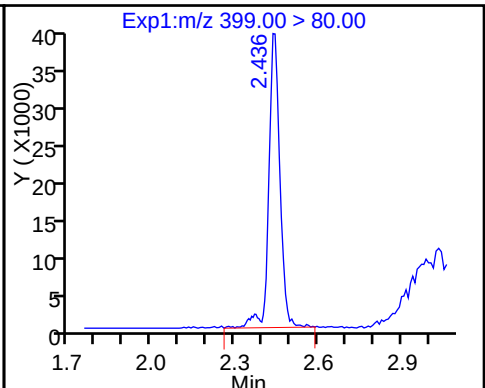
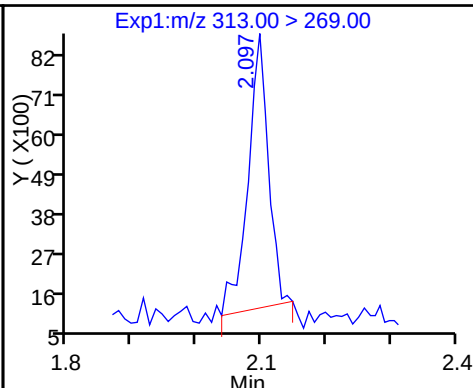
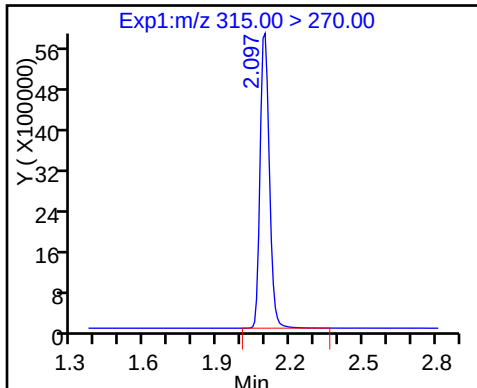
5 Perfluorobutanesulfonic acid (ND)



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

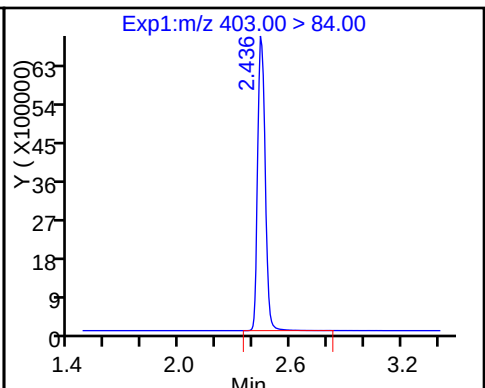
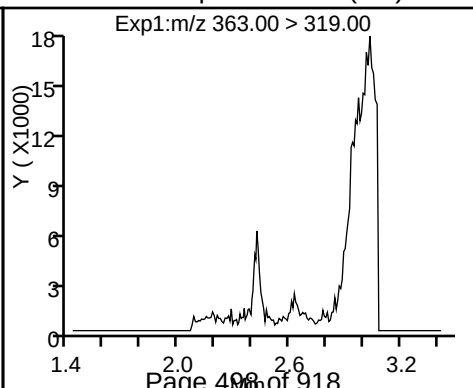
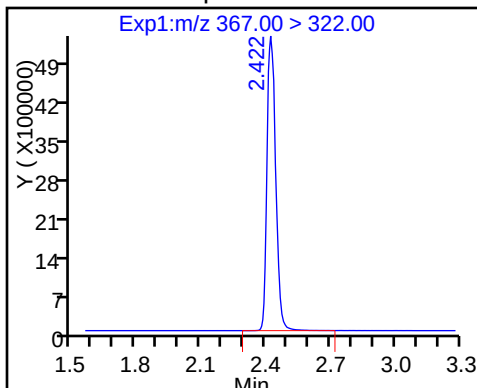
9 Perfluorohexanesulfonic acid



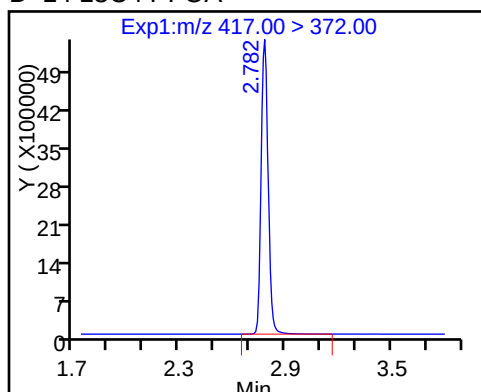
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid (ND)

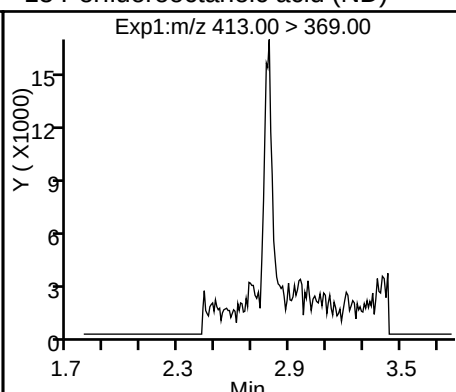
D 10 18O2 PFHxS



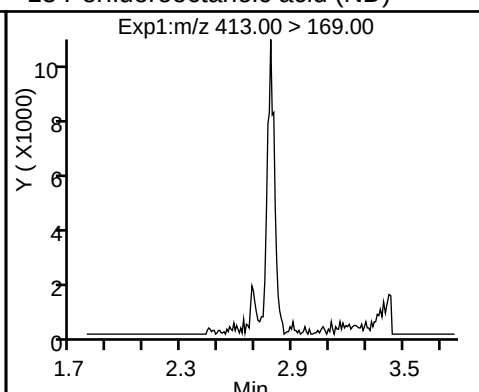
D 14 13C4 PFOA



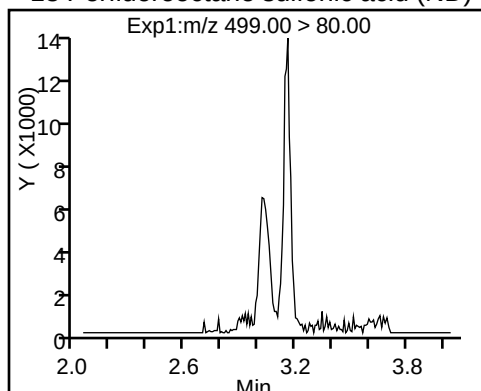
15 Perfluorooctanoic acid (ND)



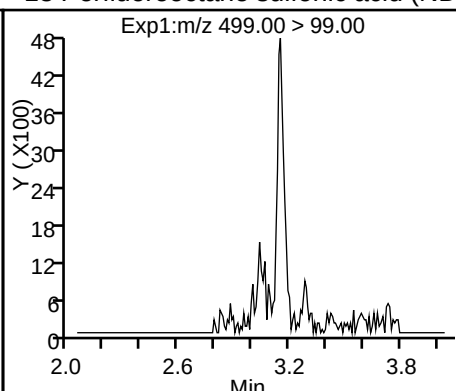
15 Perfluorooctanoic acid (ND)



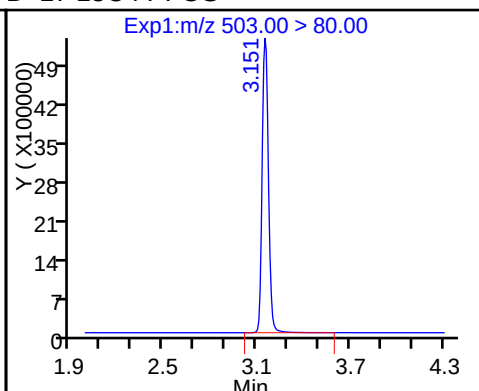
18 Perfluorooctane sulfonic acid (ND)



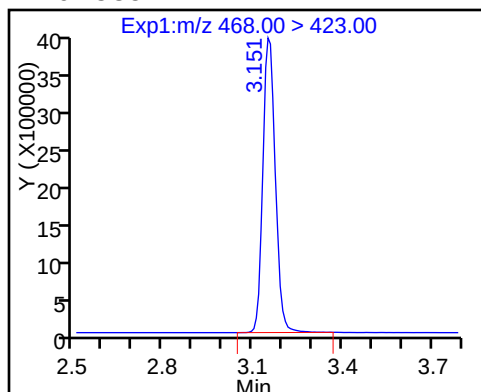
18 Perfluorooctane sulfonic acid (ND)



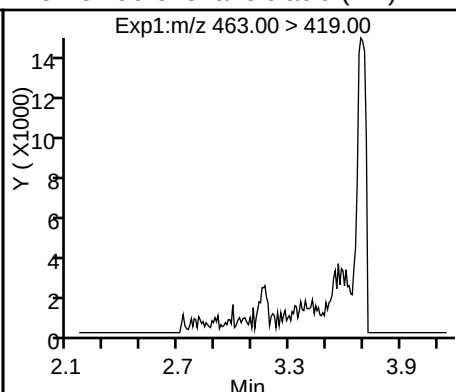
D 17 13C4 PFOS



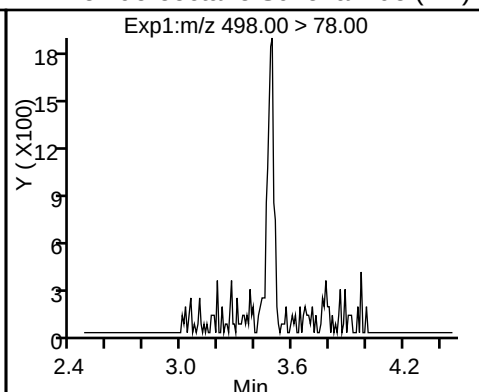
D 19 13C5 PFNA



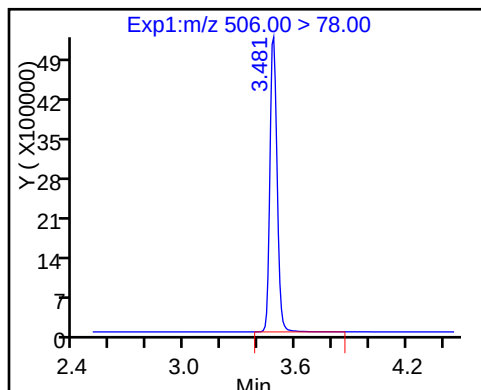
20 Perfluorononanoic acid (ND)



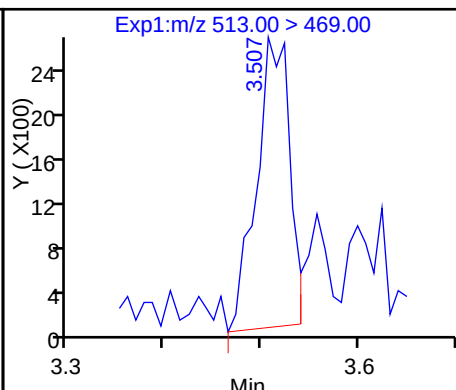
22 Perfluorooctane Sulfonamide (ND)



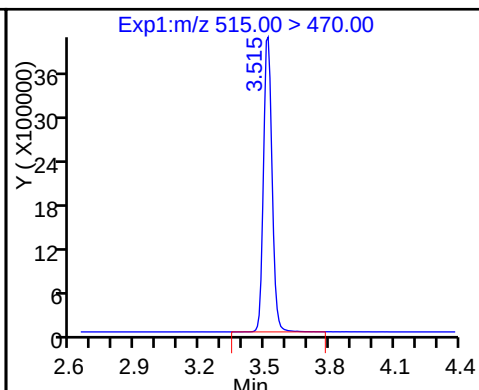
D 21 13C8 FOSA



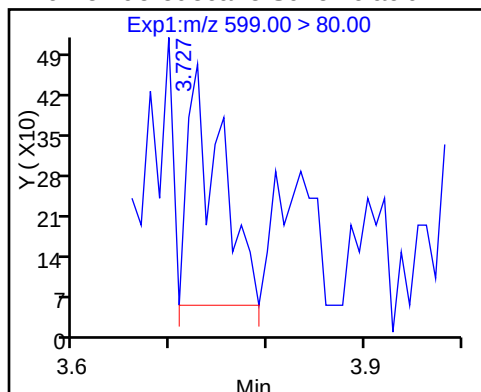
24 Perfluorodecanoic acid



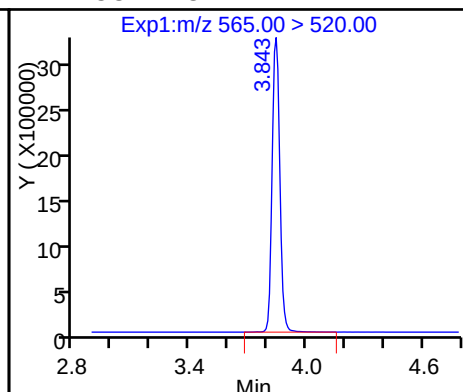
D 23 13C2 PFDA



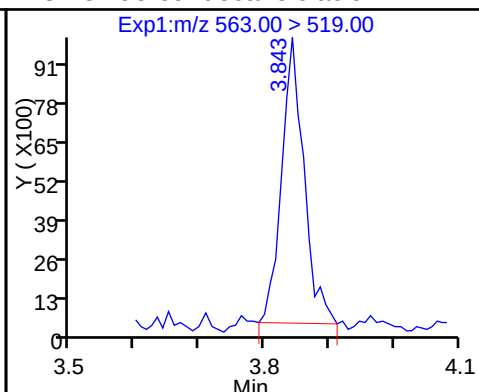
26 Perfluorodecane Sulfonic acid



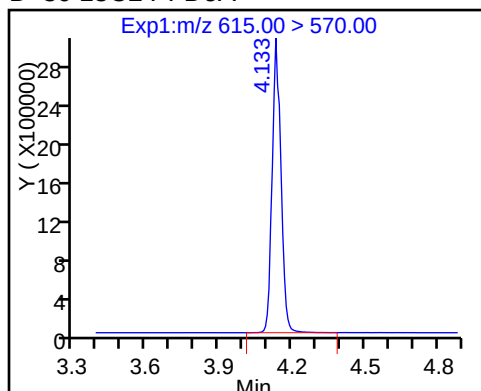
D 27 13C2 PFUnA



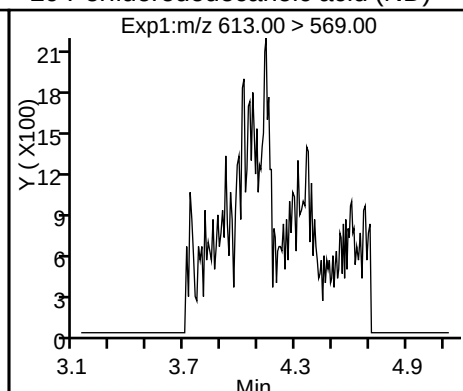
28 Perfluoroundecanoic acid



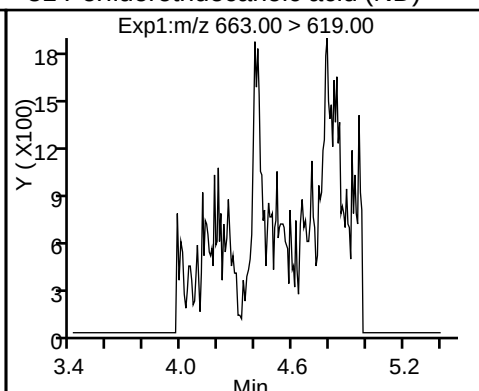
D 30 13C2 PFDaA



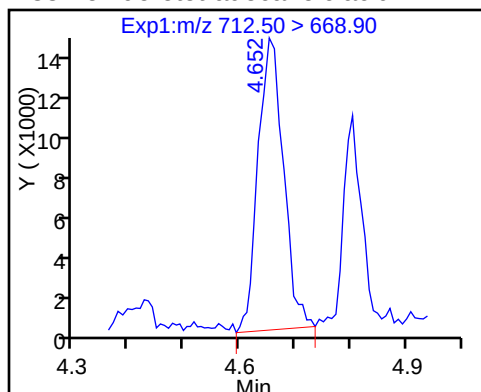
29 Perfluorododecanoic acid (ND)



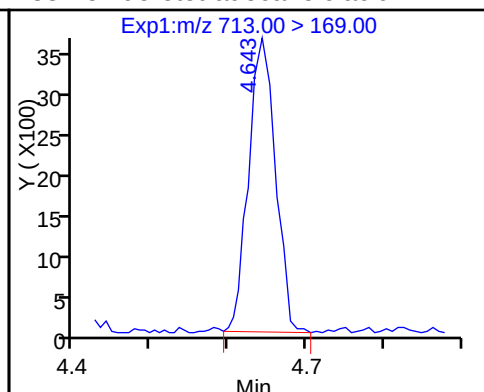
31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>EBWC120816-a</u>	Lab Sample ID: <u>320-24236-5</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_021.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 07:50</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>259.2 (mL)</u>	Date Analyzed: <u>12/29/2016 02:22</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.00096	U	0.0024	0.00096	0.00044
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0019	U	0.0024	0.0019	0.00095
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0019	U	0.0024	0.0019	0.00076
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0024	0.0019	0.00077
335-67-1	Perfluorooctanoic acid (PFOA)	0.0019	U	0.0024	0.0019	0.00072
375-95-1	Perfluorononanoic acid (PFNA)	0.0019	U	0.0024	0.0019	0.00063
335-76-2	Perfluorodecanoic acid (PFDA)	0.00096	U	0.0024	0.00096	0.00042
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0019	U	0.0024	0.0019	0.00072
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0019	U	0.0024	0.0019	0.00056
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0019	U	0.0024	0.0019	0.00053
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00042	J	0.0024	0.00096	0.00039
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0024	0.0019	0.00089
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00087	J	0.0024	0.0019	0.00084
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0029	U	0.0039	0.0029	0.0012
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0019	U	0.0024	0.0019	0.00062

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>EBWC120816-a</u>	Lab Sample ID: <u>320-24236-5</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_021.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 07:50</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>259.2 (mL)</u>	Date Analyzed: <u>12/29/2016 02:22</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	64		25-150
STL00992	13C4 PFBA	123		25-150
STL01893	13C5-PFPeA	129		25-150
STL00993	13C2 PFHxA	123		25-150
STL01892	13C4-PFHpA	124		25-150
STL00990	13C4 PFOA	126		25-150
STL00995	13C5 PFNA	122		25-150
STL00996	13C2 PFDA	124		25-150
STL00997	13C2 PFUnA	125		25-150
STL00998	13C2 PFDoA	117		25-150
STL00994	18O2 PFHxS	127		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_021.d
 Lims ID: 320-24236-A-5-A
 Client ID: EBWC120816-a
 Sample Type: Client
 Inject. Date: 29-Dec-2016 02:22:06 ALS Bottle#: 17 Worklist Smp#: 21
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24236-a-5-a
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Dec-2016 18:14:32 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK027

First Level Reviewer: phomsophat

Date: 29-Dec-2016 18:16:06

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.526	1.525	0.001		21405946	61.6		123	1011449	
1 Perfluorobutyric acid										
212.90 > 169.00	1.526	1.525	0.001	1.000	33001	0.0903			144	
D 4 13C5-PFPeA										
267.90 > 223.00	1.800	1.800	0.0		17198725	64.6		129	965492	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.800	1.800	0.0	1.000	32823	0.0967			299	
D 6 13C2 PFHxA										
315.00 > 270.00	2.086	2.091	-0.005		15117840	61.7		123	710509	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.086	2.091	-0.005	1.000	35967	0.1281			421	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.440	2.409	0.031	1.000	193149	0.4530				
D 11 13C4-PFHpA										
367.00 > 322.00	2.420	2.420	0.0		14023803	62.0		124	626141	
D 10 18O2 PFHxS										
403.00 > 84.00	2.440	2.440	0.0		19582174	59.9		127	2342958	
D 14 13C4 PFOA										
417.00 > 372.00	2.776	2.776	0.0		14456119	62.8		126	629588	
D 17 13C4 PFOS										
503.00 > 80.00	3.145	3.145	0.0		14426939	58.0		121	2623772	
D 19 13C5 PFNA										
468.00 > 423.00	3.145	3.153	-0.008		10849951	61.1		122	544814	
D 21 13C8 FOSA										
506.00 > 78.00	3.475	3.475	0.0		12236623	31.9		63.7	568792	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.509	3.509	0.0	1.000	5630	0.0306			260	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 23 13C2 PFDA										
515.00 > 470.00	3.509	3.509	0.0		9750949	62.0		124	358643	
D 27 13C2 PFUnA										
565.00 > 520.00	3.835	3.834	0.001		7333889	62.5		125	334668	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.835	3.834	0.001	1.000	21772	0.1552			468	
D 30 13C2 PFDoA										
615.00 > 570.00	4.127	4.126	0.001		6503360	58.6		117	272321	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.662	4.644	0.018	1.000	44503	0.2159			471	
713.00 > 169.00	4.633	4.644	-0.011	0.994	7243		6.14(0.00-0.00)		3013	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_021.d

Injection Date: 29-Dec-2016 02:22:06

Instrument ID: A8_N

Lims ID: 320-24236-A-5-A

Lab Sample ID: 320-24236-5

Client ID: EBWC120816-a

Operator ID: A8-PC\A8

ALS Bottle#: 17

Worklist Smp#: 21

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

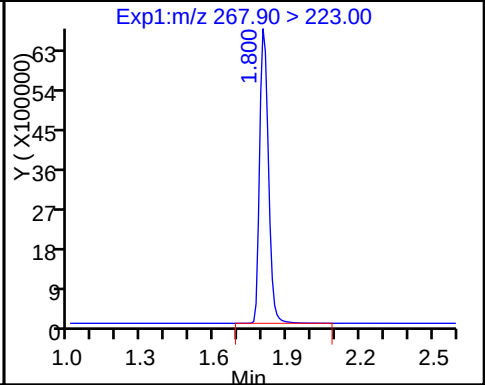
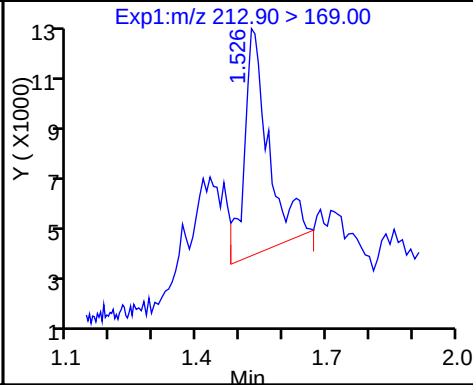
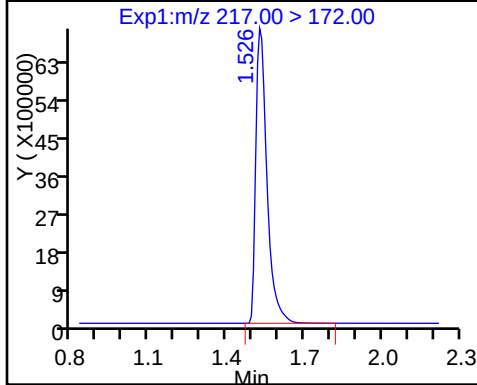
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

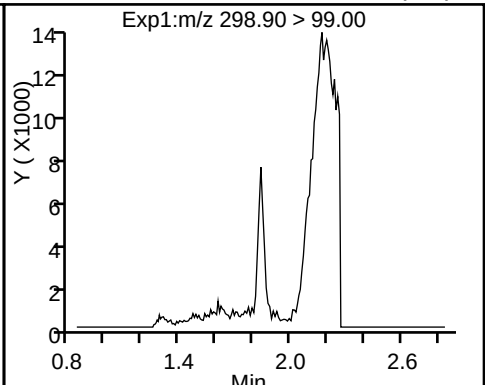
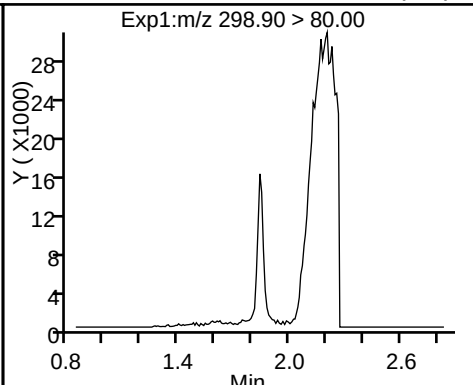
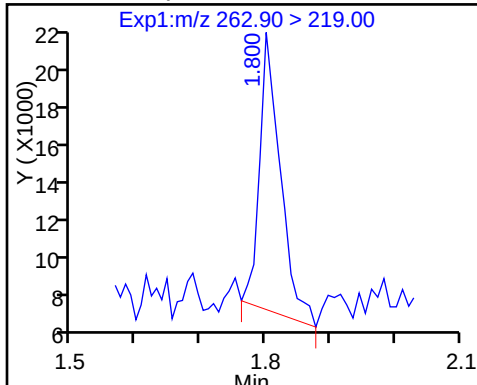
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid (ND)

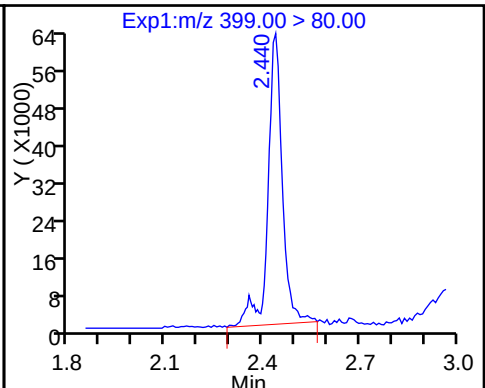
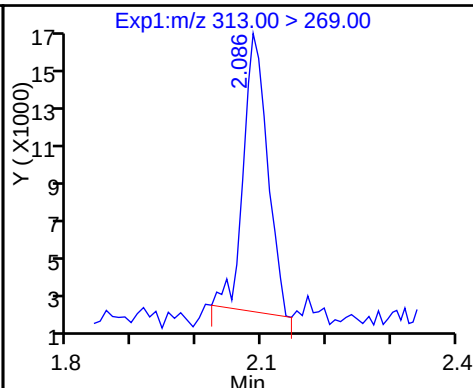
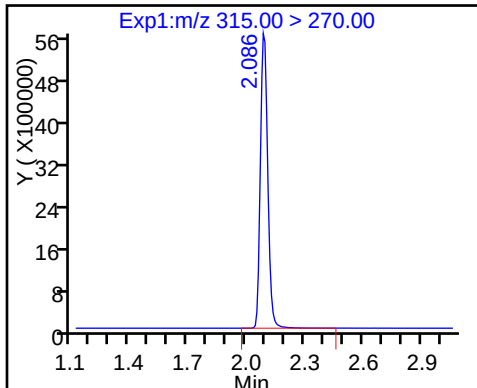
5 Perfluorobutanesulfonic acid (ND)



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

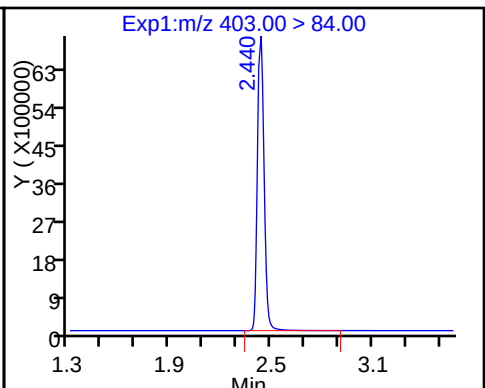
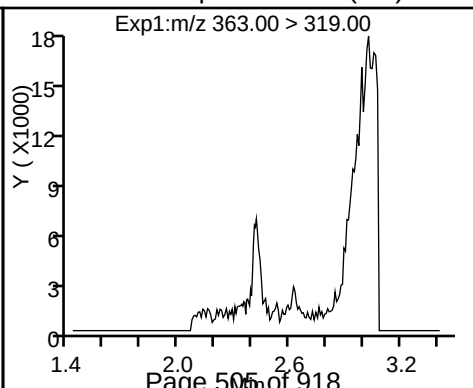
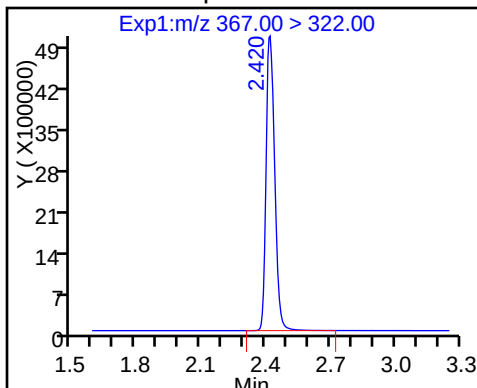
9 Perfluorohexanesulfonic acid



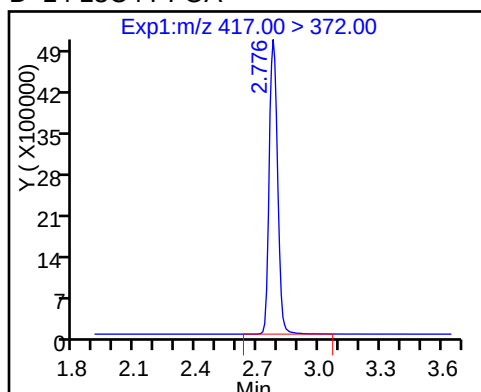
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid (ND)

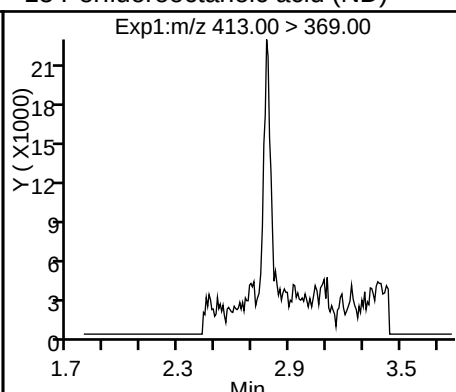
D 10 18O2 PFHxS



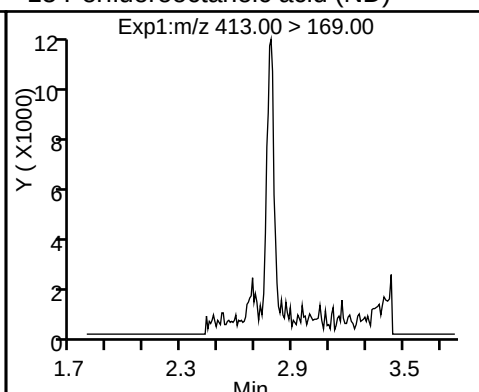
D 14 13C4 PFOA



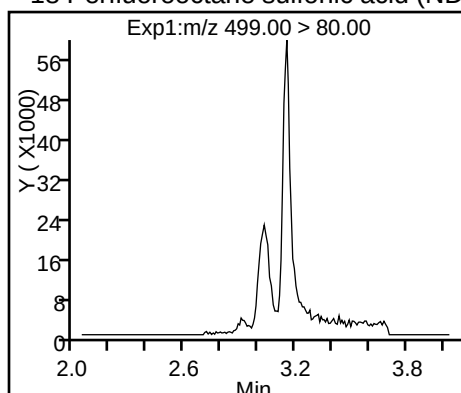
15 Perfluorooctanoic acid (ND)



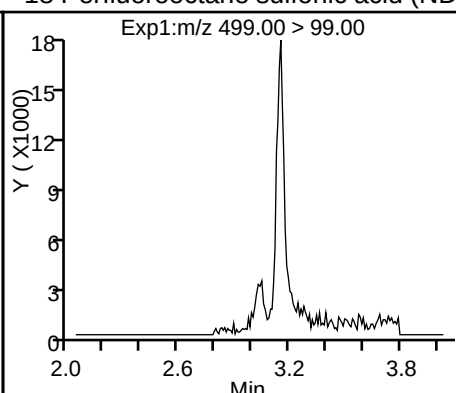
15 Perfluorooctanoic acid (ND)



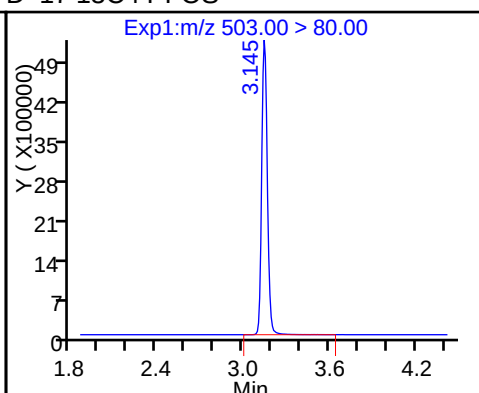
18 Perfluorooctane sulfonic acid (ND)



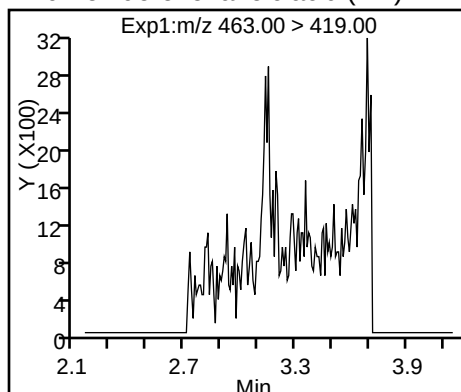
18 Perfluorooctane sulfonic acid (ND)



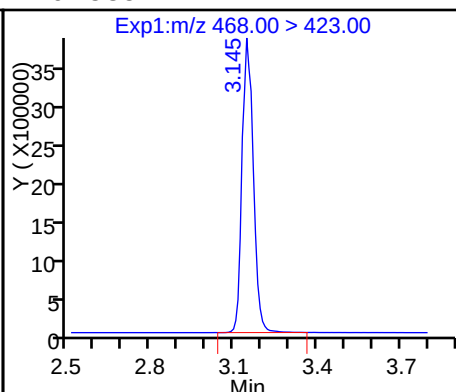
D 17 13C4 PFOS



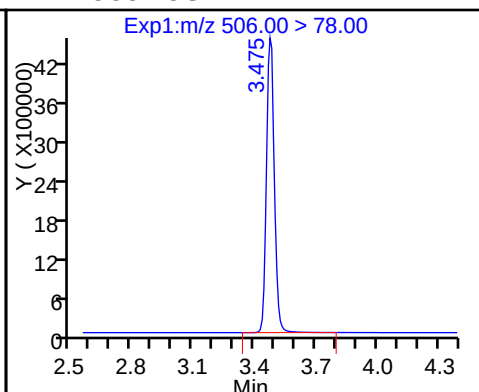
20 Perfluorononanoic acid (ND)



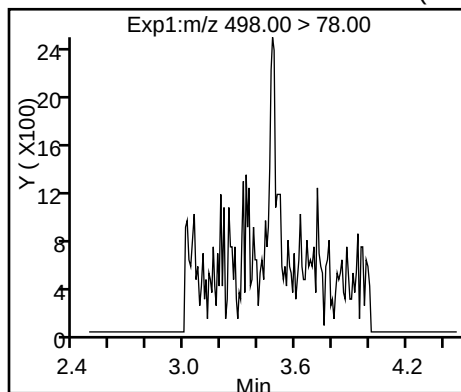
D 19 13C5 PFNA



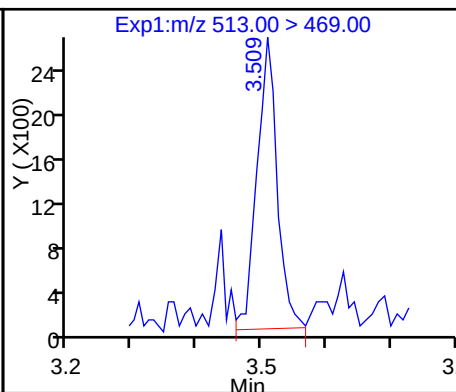
D 21 13C8 FOSA



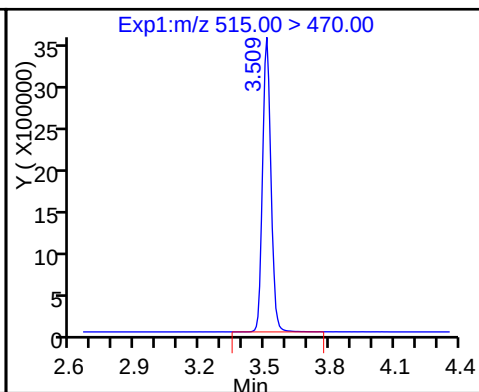
22 Perfluorooctane Sulfonamide (ND)



24 Perfluorodecanoic acid

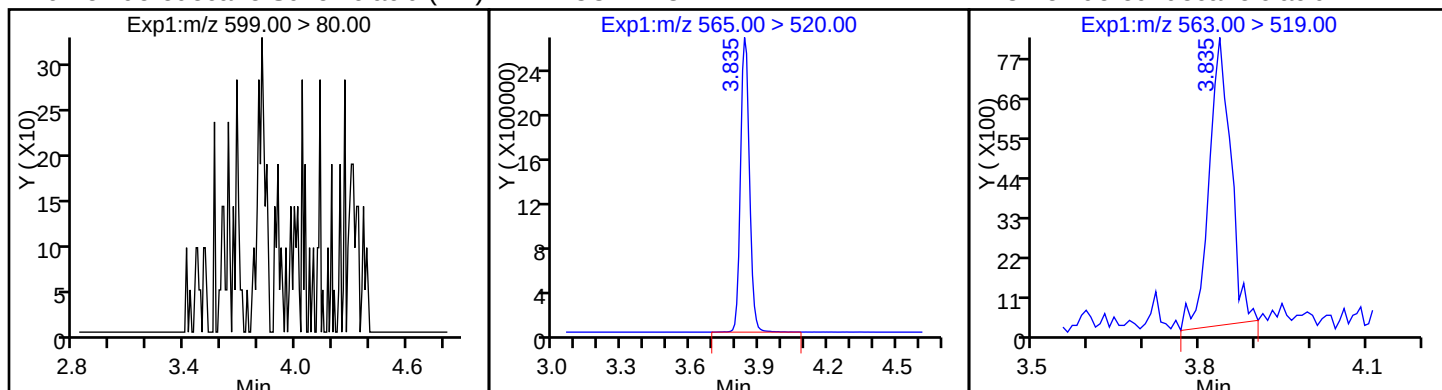


D 23 13C2 PFDA



26 Perfluorodecane Sulfonic acid (ND) D 27 13C2 PFUnA

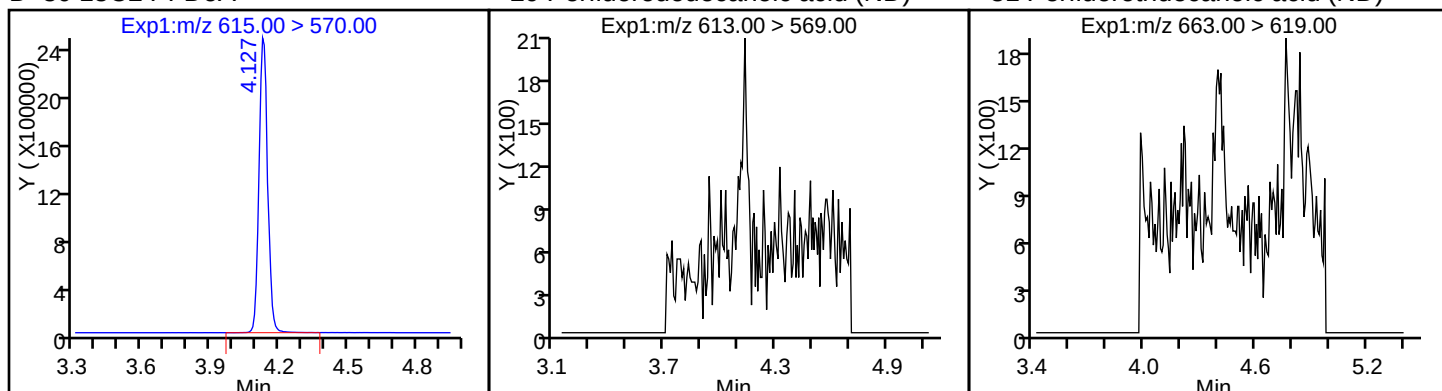
28 Perfluoroundecanoic acid



D 30 13C2 PFDaA

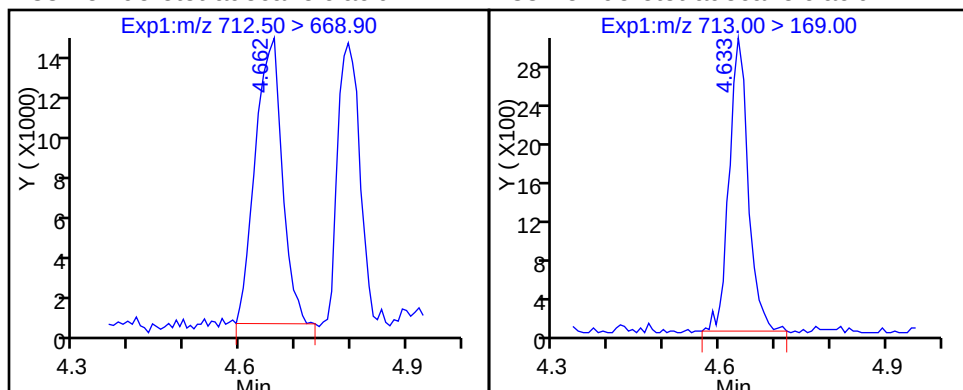
29 Perfluorododecanoic acid (ND)

31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1
 SDG No.: _____
 Client Sample ID: EBWC120816-a RA Lab Sample ID: 320-24236-5 RA
 Matrix: Water Lab File ID: 30DEC2016B_035.d
 Analysis Method: 537 (Modified) Date Collected: 12/08/2016 07:50
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 259.2 (mL) Date Analyzed: 12/30/2016 16:34
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 144510 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0029	U	0.0039	0.0029	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	131		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_035.d
 Lims ID: 320-24236-A-5-A
 Client ID: EBWC120816-a
 Sample Type: Client
 Inject. Date: 30-Dec-2016 16:34:10 ALS Bottle#: 25 Worklist Smp#: 45
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24236-a-5-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 03-Jan-2017 14:28:47 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: phomsophat

Date: 03-Jan-2017 14:24:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.534	1.534	0.0		22971973	66.1		132	1247667	
D 4 13C5-PFPeA										
267.90 > 223.00	1.811	1.810	0.001		18155305	68.2		136	993806	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.811	1.810	0.001	1.000	33189	0.0926			354	
D 6 13C2 PFHxA										
315.00 > 270.00	2.097	2.093	0.004		14966562	61.1		122	651320	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.106	2.093	0.013	1.000	20317	0.0731			481	
D 11 13C4-PFHpA										
367.00 > 322.00	2.430	2.424	0.006		14385066	63.6		127	2600056	
D 10 18O2 PFHxS										
403.00 > 84.00	2.452	2.447	0.005		19704855	60.3		127	536488	
D 14 13C4 PFOA										
417.00 > 372.00	2.788	2.791	-0.003		15132679	65.7		131	903153	
D 17 13C4 PFOS										
503.00 > 80.00	3.164	3.160	0.004		15561832	62.5		131	927065	
D 19 13C5 PFNA										
468.00 > 423.00	3.164	3.160	0.004		11151862	62.8		126	559279	
D 21 13C8 FOSA										
506.00 > 78.00	3.495	3.491	0.004		12698875	33.1		66.1	482306	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.529	3.524	0.005	1.000	6022	0.0301			278	
D 23 13C2 PFDA										
515.00 > 470.00	3.521	3.524	-0.003		10593472	67.3		135	432563	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.831	3.836	-0.005	1.000	657	0.003456				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 27 13C2 PFUnA										
565.00 > 520.00	3.857	3.853	0.004		7927570	67.6		135	469132	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.857	3.853	0.004	1.000	21990	0.1450			580	
D 30 13C2 PFDoA										
615.00 > 570.00	4.153	4.144	0.009		6930056	62.5		125	323905	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.670	4.658	0.012	1.000	42890	0.1953			458	
713.00 > 169.00	4.652	4.658	-0.006	0.996	7075		6.06(0.00-0.00)		2726	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_035.d

Injection Date: 30-Dec-2016 16:34:10

Instrument ID: A8_N

Lims ID: 320-24236-A-5-A

Lab Sample ID: 320-24236-5

Client ID: EBWC120816-a

Operator ID: A8-PC\A8

ALS Bottle#: 25

Worklist Smp#: 45

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

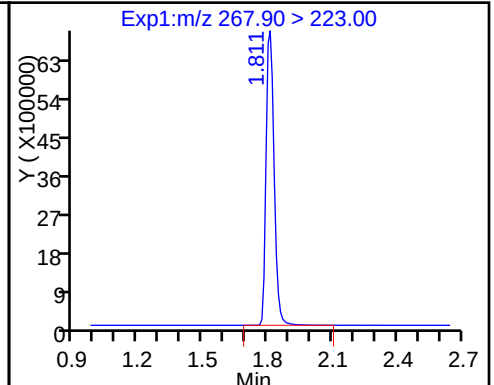
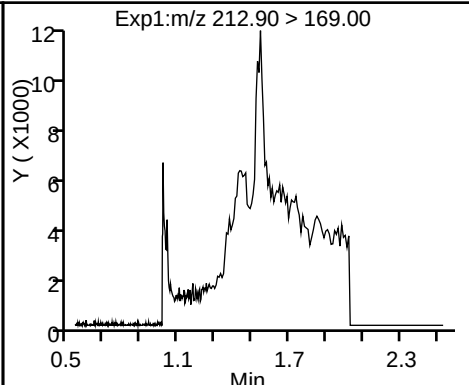
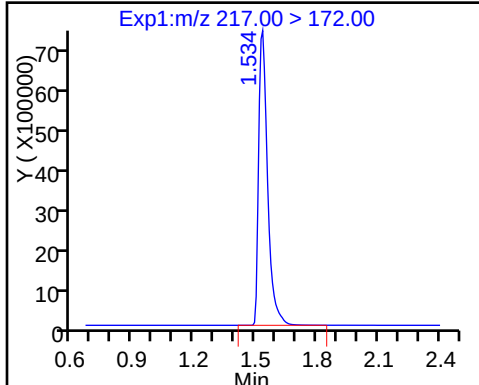
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid (ND)

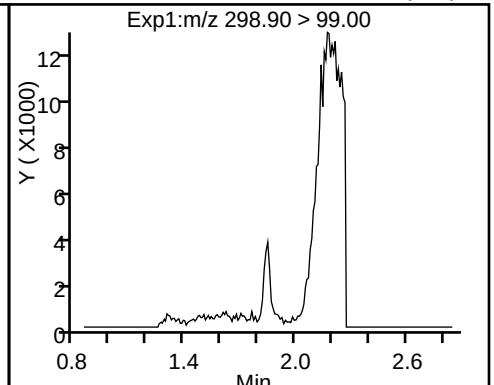
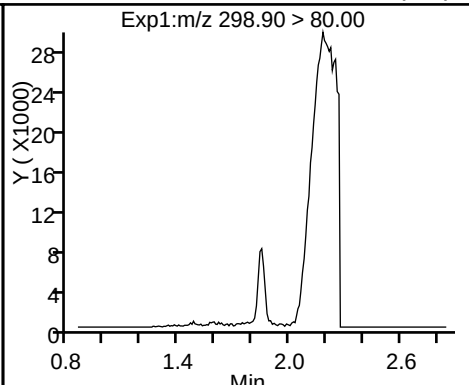
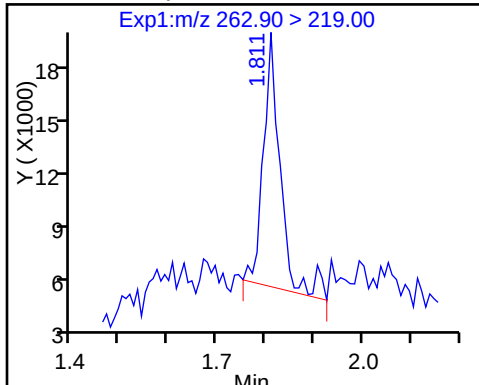
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid (ND)

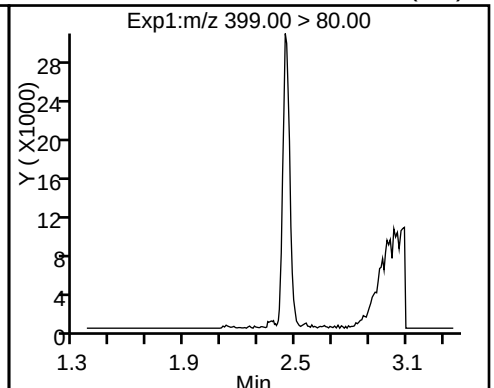
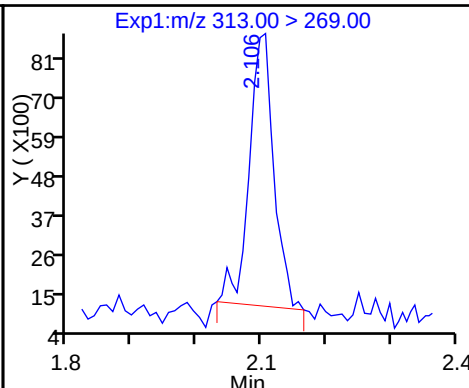
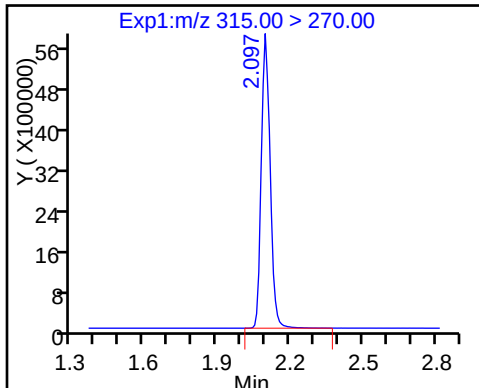
5 Perfluorobutanesulfonic acid (ND)



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

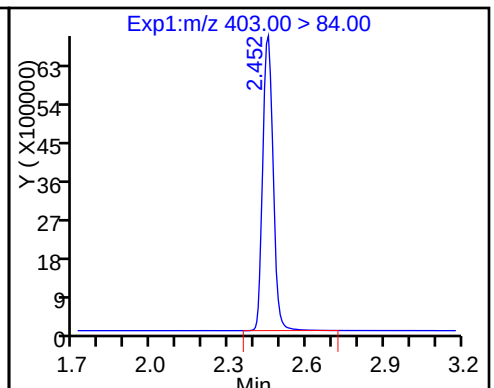
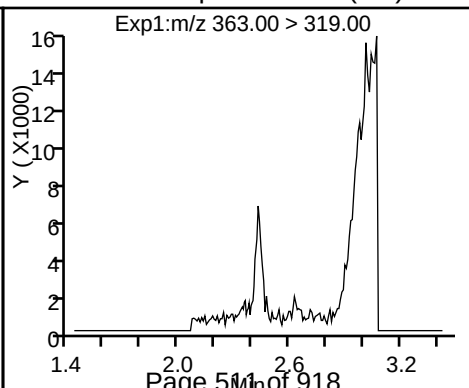
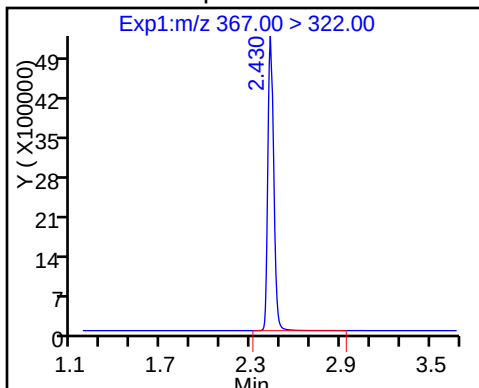
9 Perfluorohexanesulfonic acid (ND)



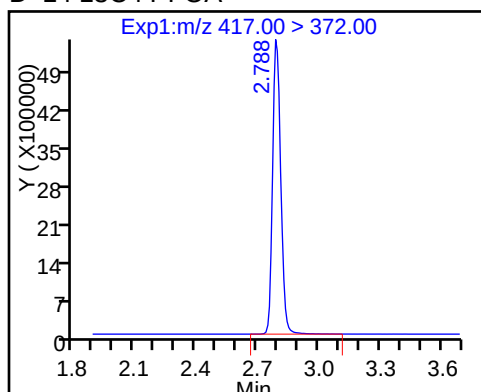
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid (ND)

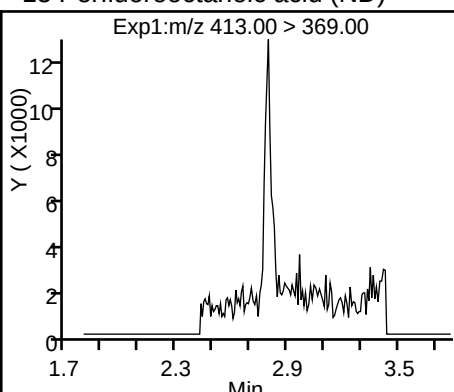
D 10 18O2 PFHxS



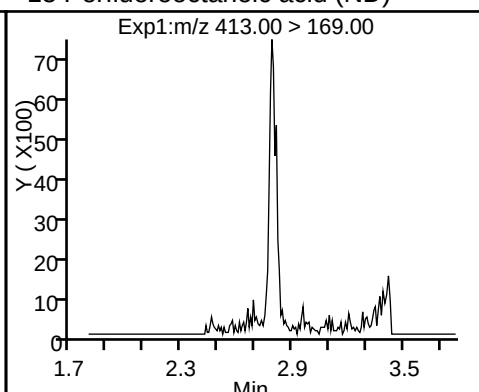
D 14 13C4 PFOA



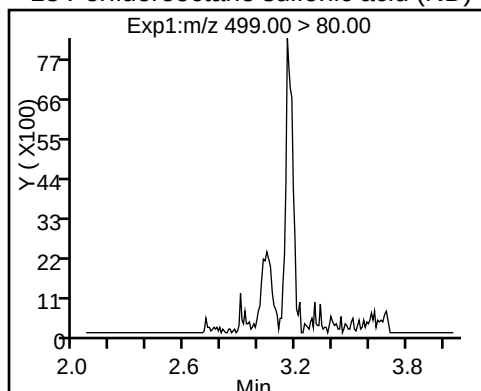
15 Perfluorooctanoic acid (ND)



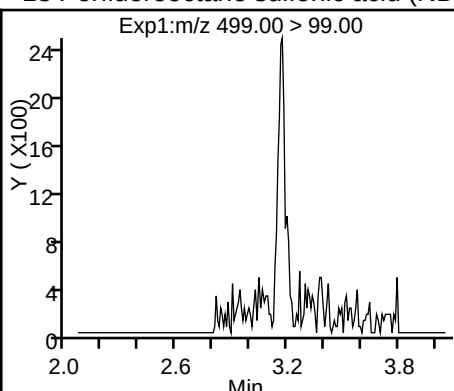
15 Perfluorooctanoic acid (ND)



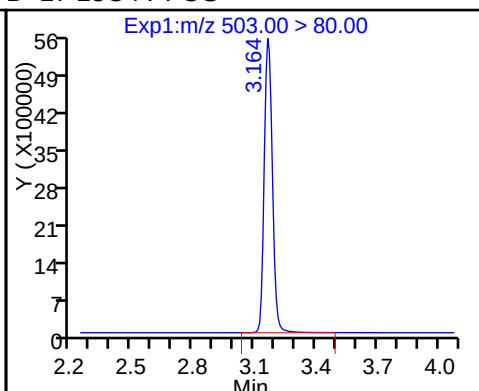
18 Perfluorooctane sulfonic acid (ND)



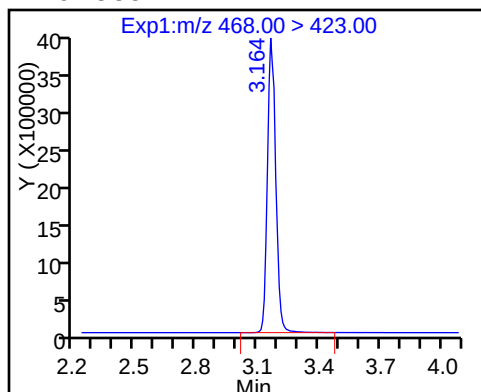
18 Perfluorooctane sulfonic acid (ND)



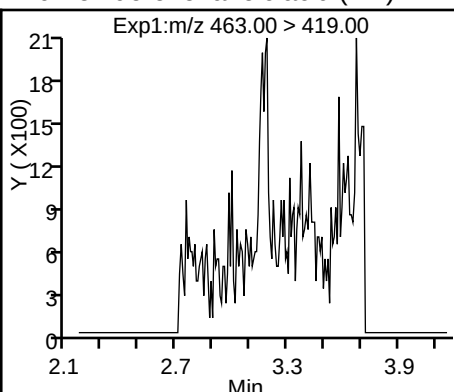
D 17 13C4 PFOS



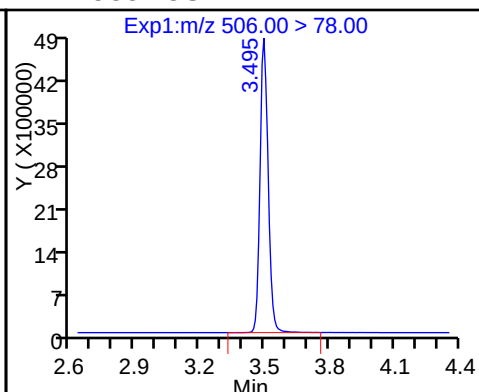
D 19 13C5 PFNA



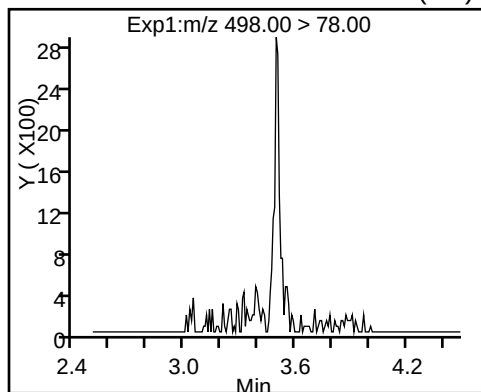
20 Perfluorononanoic acid (ND)



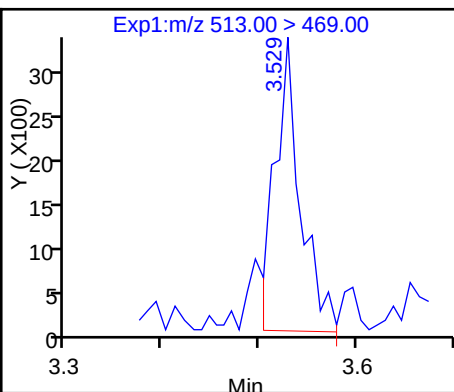
D 21 13C8 FOSA



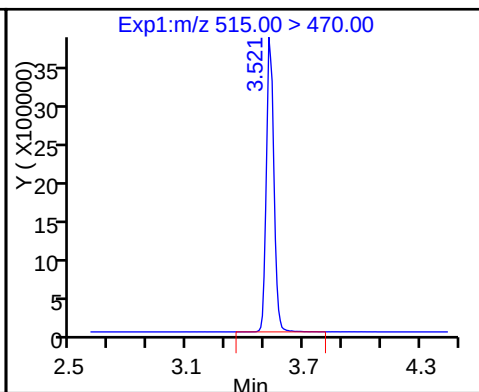
22 Perfluorooctane Sulfonamide (ND)



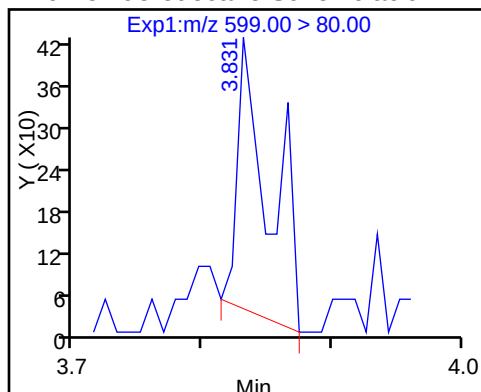
24 Perfluorodecanoic acid



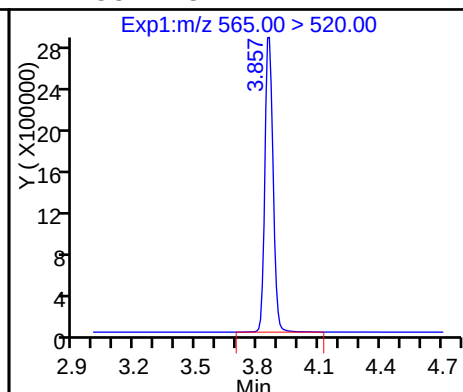
D 23 13C2 PFDA



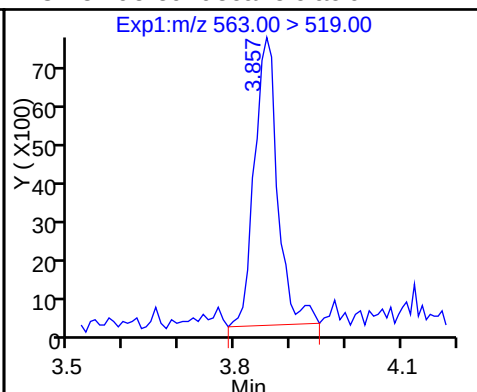
26 Perfluorodecane Sulfonic acid



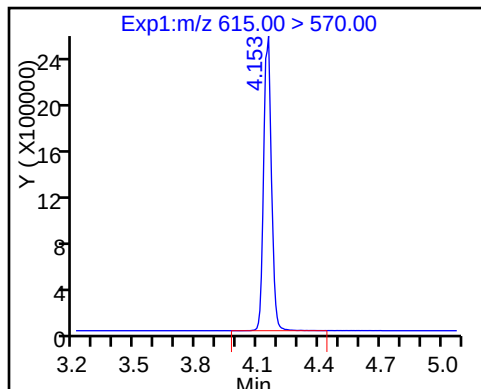
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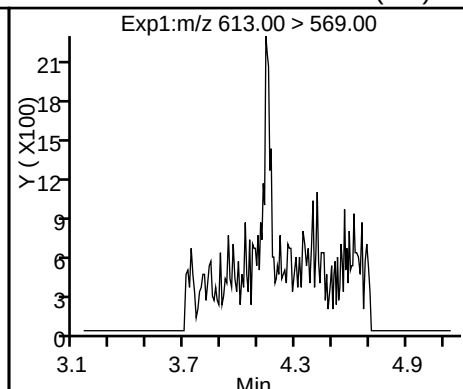
28 Perfluoroundecanoic acid



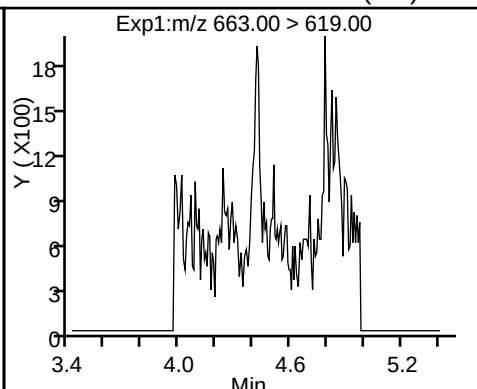
D 30 13C2 PFDaA



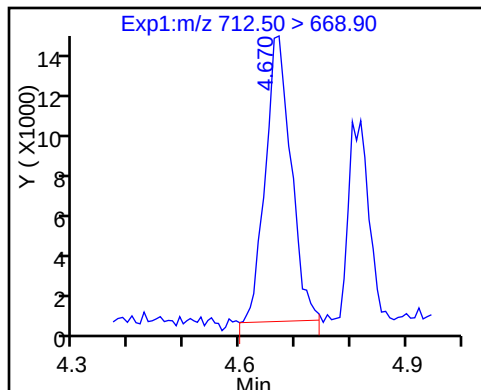
29 Perfluorododecanoic acid (ND)



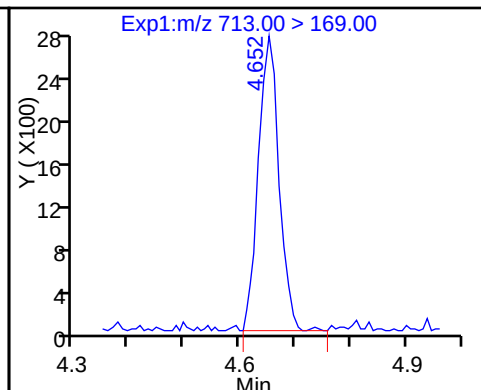
31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>EBWC120816-b</u>	Lab Sample ID: <u>320-24236-6</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_022.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 09:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>241.5 (mL)</u>	Date Analyzed: <u>12/29/2016 02:29</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.0010	U	0.0026	0.0010	0.00047
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0021	U	0.0026	0.0021	0.0010
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0021	U	0.0026	0.0021	0.00081
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0021	U	0.0026	0.0021	0.00083
335-67-1	Perfluorooctanoic acid (PFOA)	0.0021	U	0.0026	0.0021	0.00077
375-95-1	Perfluorononanoic acid (PFNA)	0.0021	U	0.0026	0.0021	0.00068
335-76-2	Perfluorodecanoic acid (PFDA)	0.0010	U	0.0026	0.0010	0.00046
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0021	U	0.0026	0.0021	0.00077
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0021	U	0.0026	0.0021	0.00060
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0021	U	0.0026	0.0021	0.00057
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00057	J	0.0026	0.0010	0.00041
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0021	U	0.0026	0.0021	0.00095
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00092	J	0.0026	0.0021	0.00090
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0031	U	0.0041	0.0031	0.0013
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0021	U	0.0026	0.0021	0.00066

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>EBWC120816-b</u>	Lab Sample ID: <u>320-24236-6</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_022.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 09:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>241.5 (mL)</u>	Date Analyzed: <u>12/29/2016 02:29</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	36		25-150
STL00992	13C4 PFBA	124		25-150
STL01893	13C5-PFPeA	129		25-150
STL00993	13C2 PFHxA	120		25-150
STL01892	13C4-PFHpA	128		25-150
STL00990	13C4 PFOA	125		25-150
STL00995	13C5 PFNA	123		25-150
STL00996	13C2 PFDA	121		25-150
STL00997	13C2 PFUnA	124		25-150
STL00998	13C2 PFDoA	112		25-150
STL00994	18O2 PFHxS	125		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_022.d
 Lims ID: 320-24236-A-6-A
 Client ID: EBWC120816-b
 Sample Type: Client
 Inject. Date: 29-Dec-2016 02:29:34 ALS Bottle#: 18 Worklist Smp#: 22
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24236-a-6-a
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Dec-2016 18:14:32 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK027

First Level Reviewer: phomsophat

Date: 29-Dec-2016 18:17:40

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.525	1.525	0.0		21525393	61.9		124	901984	
1 Perfluorobutyric acid										
212.90 > 169.00	1.534	1.525	0.009	1.000	31537	0.0858			122	
D 4 13C5-PFPeA										
267.90 > 223.00	1.800	1.800	0.0		17138852	64.4		129	966482	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.800	0.010	1.000	29155	0.0862			240	
D 6 13C2 PFHxA										
315.00 > 270.00	2.086	2.091	-0.005		14724519	60.1		120	634462	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.079	2.091	-0.012	1.000	28156	0.1029			308	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.439	2.409	0.030	1.000	186780	0.4420				
D 11 13C4-PFHpA										
367.00 > 322.00	2.419	2.420	-0.001		14467762	63.9		128	597691	
D 10 18O2 PFHxS										
403.00 > 84.00	2.439	2.440	-0.001		19406434	59.4		125	1389763	
D 14 13C4 PFOA										
417.00 > 372.00	2.775	2.776	-0.001		14351549	62.3		125	1233974	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.775	2.783	-0.008	1.000	89083	0.3094			672	
413.00 > 169.00	2.782	2.783	-0.001	1.003	55366		1.61(0.90-1.10)		1163	
D 17 13C4 PFOS										
503.00 > 80.00	3.143	3.145	-0.002		14562031	58.5		122	1054501	
D 19 13C5 PFNA										
468.00 > 423.00	3.151	3.153	-0.002		10937556	61.6		123	750905	
D 21 13C8 FOSA										
506.00 > 78.00	3.482	3.475	0.007		6955802	18.1		36.2	293243	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
22 Perfluorooctane Sulfonamide	498.00 > 78.00	3.490	3.475	0.015	1.000	8910	0.0687		212	
24 Perfluorodecanoic acid	513.00 > 469.00	3.507	3.509	-0.002	1.000	5824	0.0323		207	
D 23 13C2 PFDA	515.00 > 470.00	3.507	3.509	-0.002		9555409	60.7	121	302324	
26 Perfluorodecane Sulfonic acid	599.00 > 80.00	3.808	3.825	-0.017	1.000	936	0.005261			
D 27 13C2 PFUnA	565.00 > 520.00	3.834	3.834	0.0		7259264	61.9	124	543346	
28 Perfluoroundecanoic acid	563.00 > 519.00	3.834	3.834	0.0	1.000	16771	0.1208		545	
D 30 13C2 PFDaA	615.00 > 570.00	4.134	4.126	0.008		6229442	56.1	112	350757	
33 Perfluorotetradecanoic acid	712.50 > 668.90	4.653	4.644	0.009	1.000	54543	0.2762		504	
	713.00 > 169.00	4.625	4.644	-0.019	0.994	7605	7.17(0.00-0.00)		1450	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_022.d

Injection Date: 29-Dec-2016 02:29:34

Instrument ID: A8_N

Lims ID: 320-24236-A-6-A

Lab Sample ID: 320-24236-6

Client ID: EBWC120816-b

Operator ID: A8-PC\A8

ALS Bottle#: 18

Worklist Smp#: 22

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

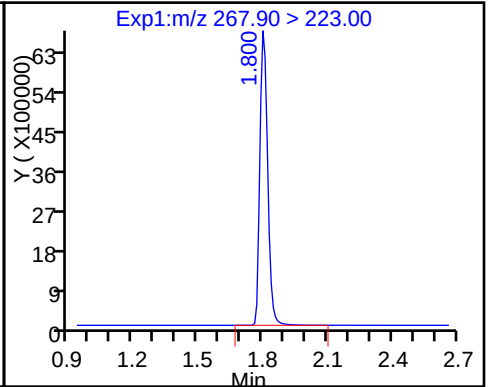
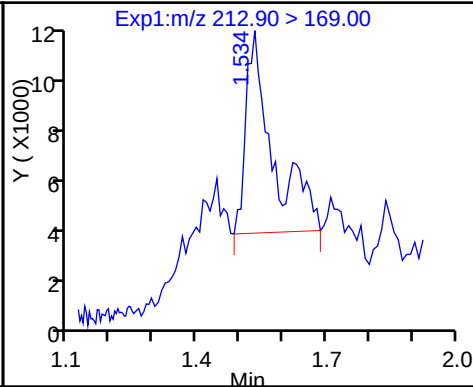
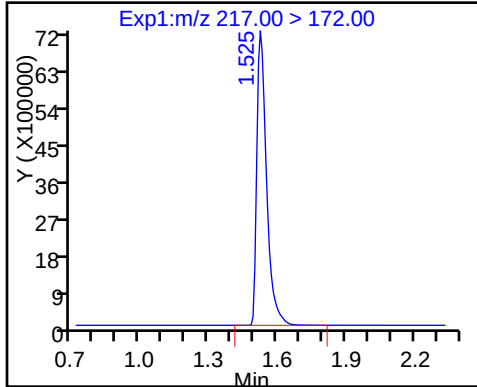
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

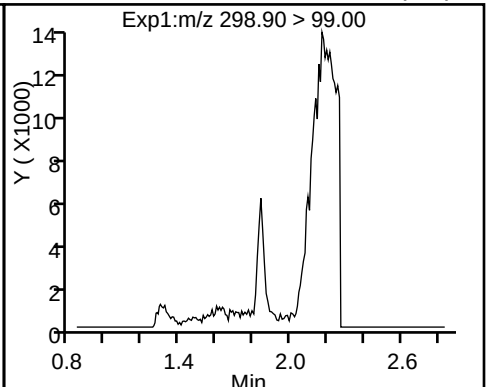
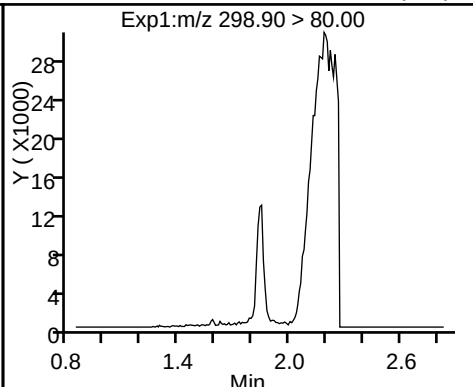
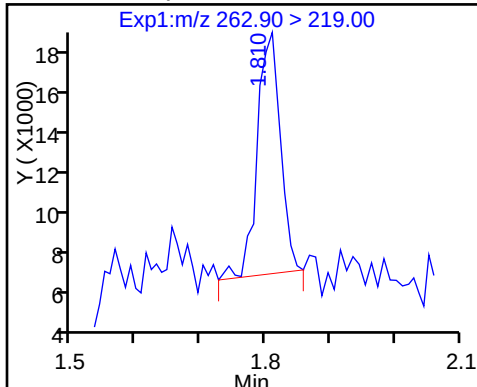
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid (ND)

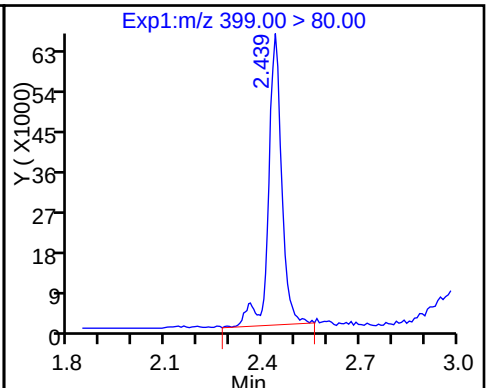
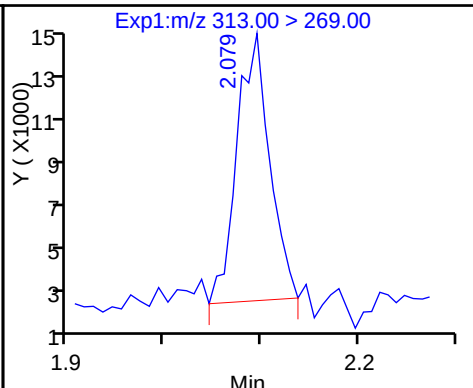
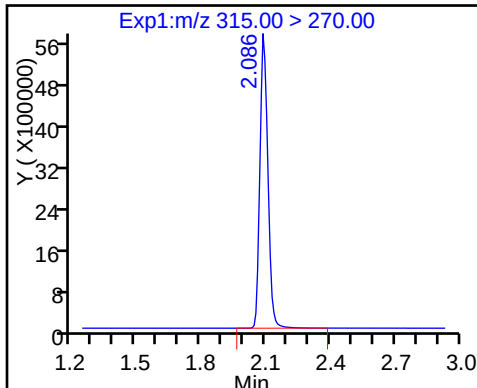
5 Perfluorobutanesulfonic acid (ND)



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

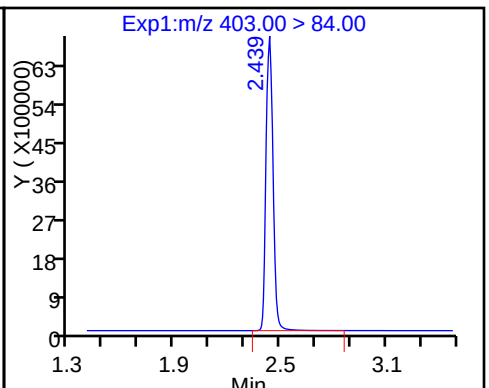
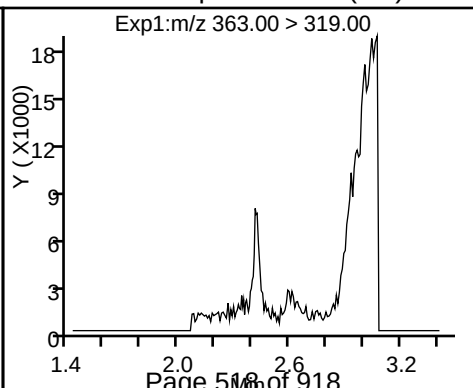
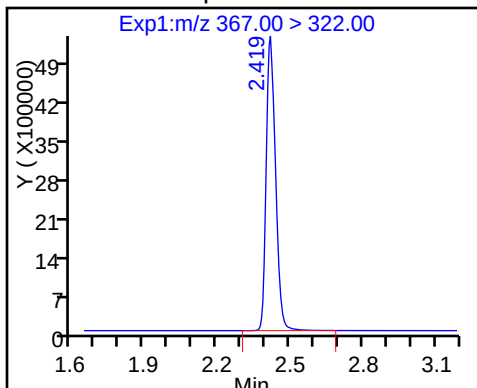
9 Perfluorohexanesulfonic acid



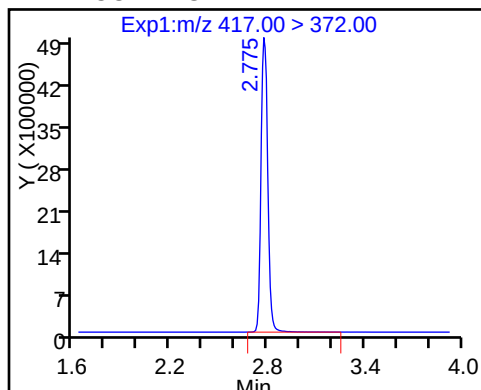
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid (ND)

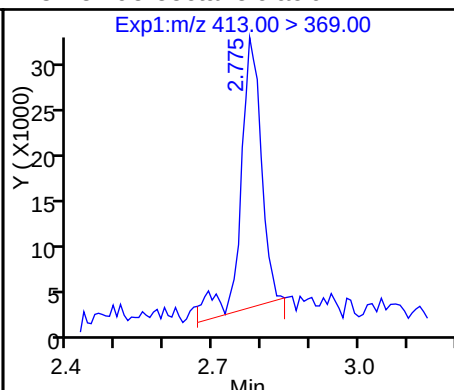
D 10 18O2 PFHxS



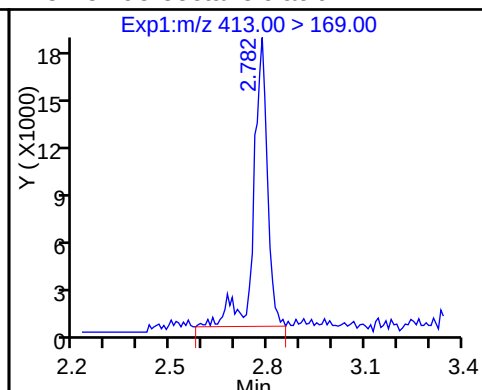
D 14 13C4 PFOA



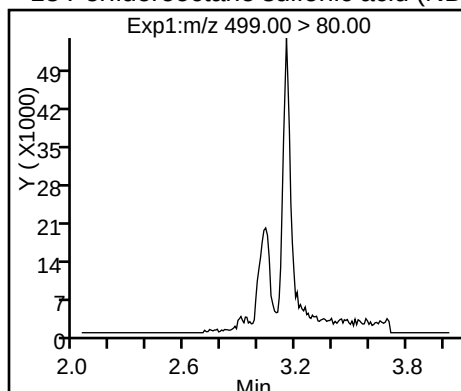
15 Perfluorooctanoic acid



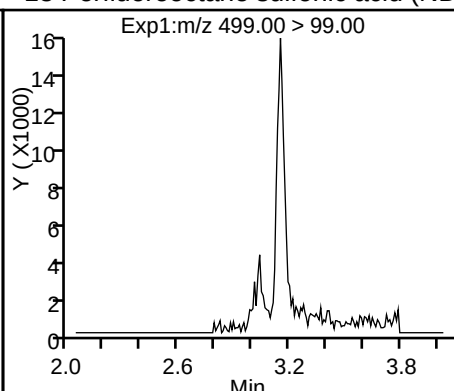
15 Perfluorooctanoic acid



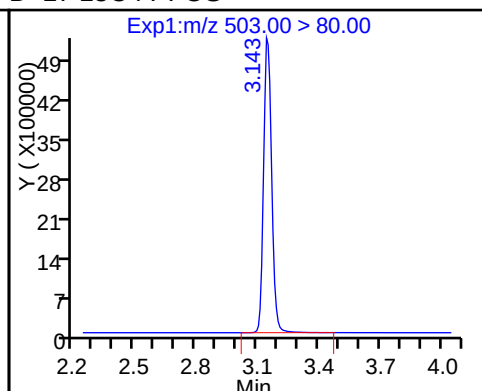
18 Perfluorooctane sulfonic acid (ND)



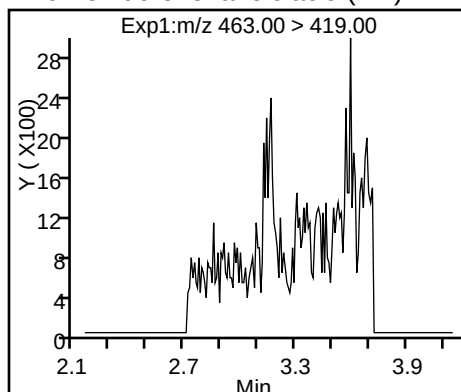
18 Perfluorooctane sulfonic acid (ND)



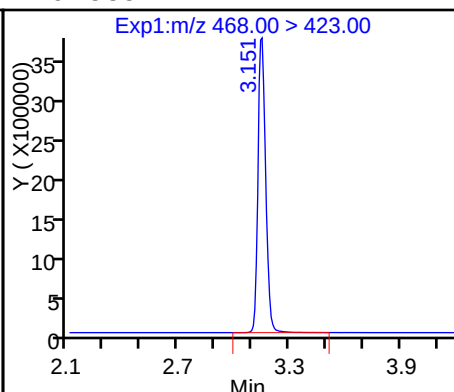
D 17 13C4 PFOS



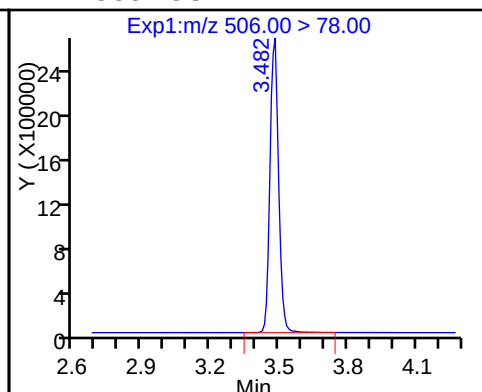
20 Perfluorononanoic acid (ND)



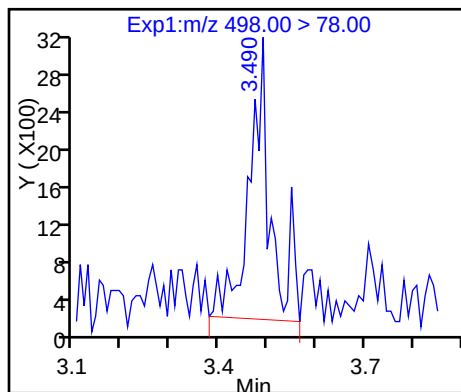
D 19 13C5 PFNA



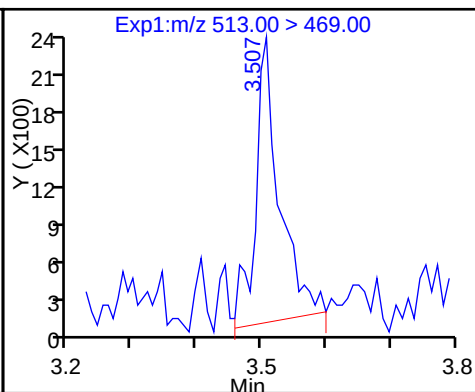
D 21 13C8 FOSA



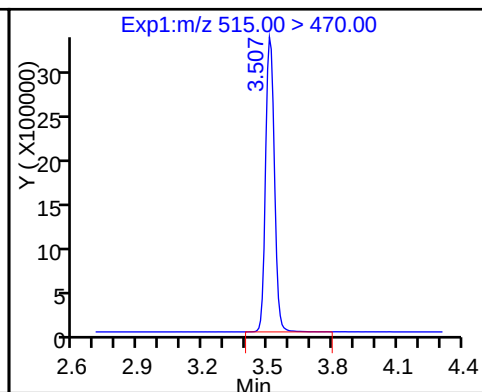
22 Perfluorooctane Sulfonamide



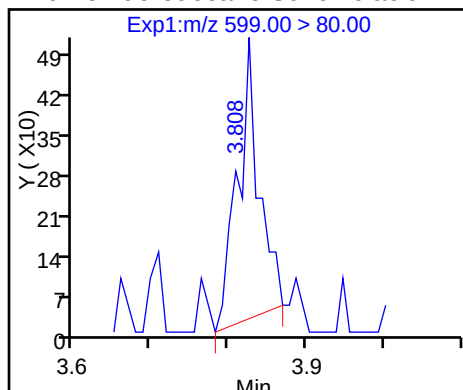
24 Perfluorodecanoic acid



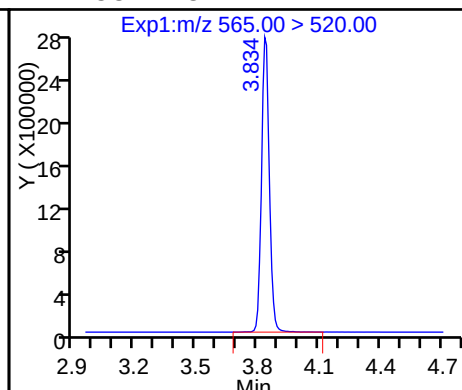
D 23 13C2 PFDA



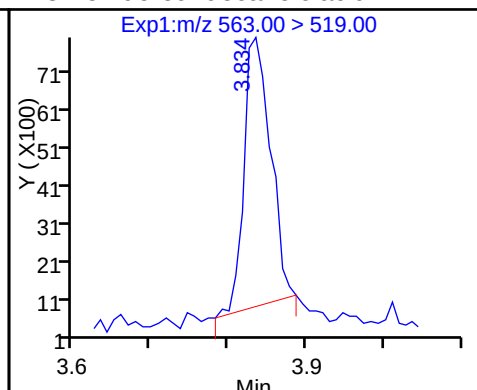
26 Perfluorodecane Sulfonic acid



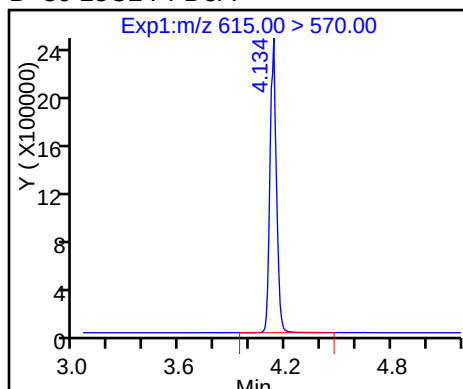
D 27 13C2 PFUnA



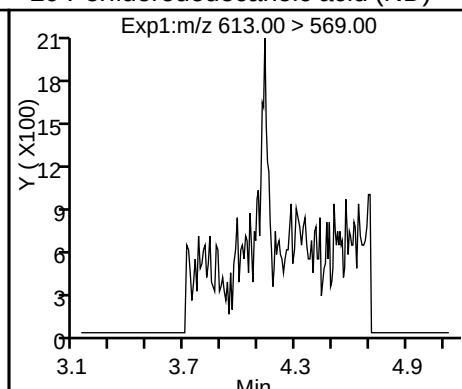
28 Perfluoroundecanoic acid



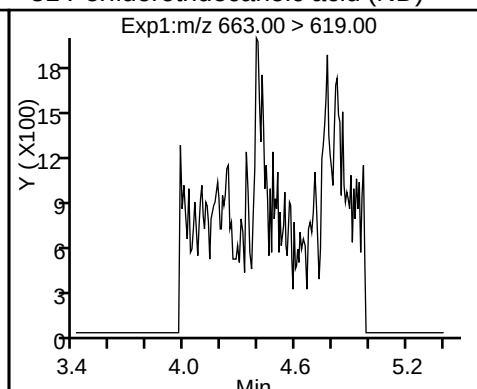
D 30 13C2 PFDaA



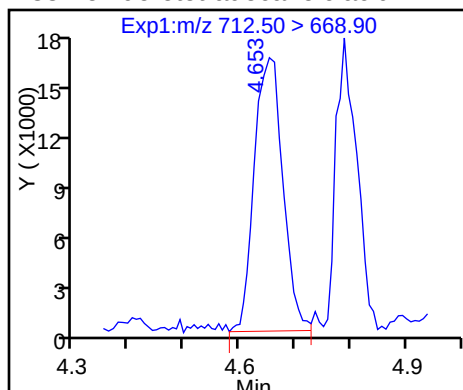
29 Perfluorododecanoic acid (ND)



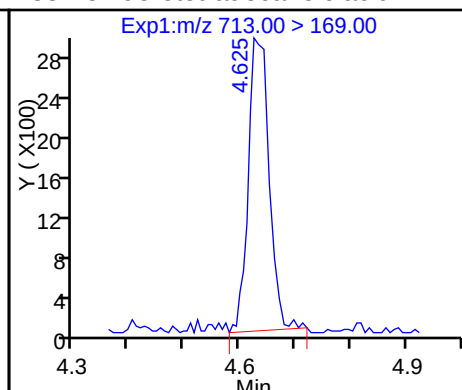
31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1
 SDG No.: _____
 Client Sample ID: EBWC120816-b RA Lab Sample ID: 320-24236-6 RA
 Matrix: Water Lab File ID: 30DEC2016B_036.d
 Analysis Method: 537 (Modified) Date Collected: 12/08/2016 09:20
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 241.5 (mL) Date Analyzed: 12/30/2016 16:41
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 144510 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0031	U	0.0041	0.0031	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	132		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_036.d
 Lims ID: 320-24236-A-6-A
 Client ID: EBWC120816-b
 Sample Type: Client
 Inject. Date: 30-Dec-2016 16:41:41 ALS Bottle#: 26 Worklist Smp#: 46
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24236-a-6-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 03-Jan-2017 14:28:47 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: phomsophat

Date: 03-Jan-2017 14:24:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.534	1.534	0.0		23916551	68.8		138	1277889	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.810	0.0		18427376	69.3		139	1384761	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.810	0.0	1.000	32042	0.0881			295	
D 6 13C2 PFHxA										
315.00 > 270.00	2.097	2.093	0.004		15428293	62.9		126	741580	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.097	2.093	0.004	1.000	17170	0.0599			395	
D 11 13C4-PFHpA										
367.00 > 322.00	2.422	2.424	-0.002		15204224	67.2		134	900286	
D 10 18O2 PFHxS										
403.00 > 84.00	2.444	2.447	-0.003		20824851	63.7		135	1231884	
D 14 13C4 PFOA										
417.00 > 372.00	2.774	2.791	-0.017		15437471	67.0		134	786299	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.774	2.791	-0.017	1.000	74178	0.2395			1089	
413.00 > 169.00	2.782	2.791	-0.009	1.003	49071		1.51(0.90-1.10)		1991	
D 17 13C4 PFOS										
503.00 > 80.00	3.151	3.160	-0.009		15736369	63.2		132	951135	
D 19 13C5 PFNA										
468.00 > 423.00	3.151	3.160	-0.009		11565013	65.1		130	691880	
D 21 13C8 FOSA										
506.00 > 78.00	3.481	3.491	-0.010		7393071	19.2		38.5	354405	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.481	3.499	-0.018	1.000	5878	0.0426			272	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.498	3.524	-0.026	1.000	6247	0.0314			171	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 23 13C2 PFDA										
515.00 > 470.00	3.507	3.524	-0.017		10546786	67.0		134	432140	
D 27 13C2 PFUnA										
565.00 > 520.00	3.834	3.853	-0.019		7947862	67.8		136	480057	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.834	3.853	-0.019	1.000	23240	0.1529			578	
D 30 13C2 PFDaA										
615.00 > 570.00	4.126	4.144	-0.018		7017966	63.2		126	351874	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.652	4.658	-0.006	1.000	50709	0.2280			598	
713.00 > 169.00	4.633	4.658	-0.025	0.996	7159		7.08(0.00-0.00)		2423	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_036.d

Injection Date: 30-Dec-2016 16:41:41

Instrument ID: A8_N

Lims ID: 320-24236-A-6-A

Lab Sample ID: 320-24236-6

Client ID: EBWC120816-b

Operator ID: A8-PC\A8

ALS Bottle#: 26

Worklist Smp#: 46

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

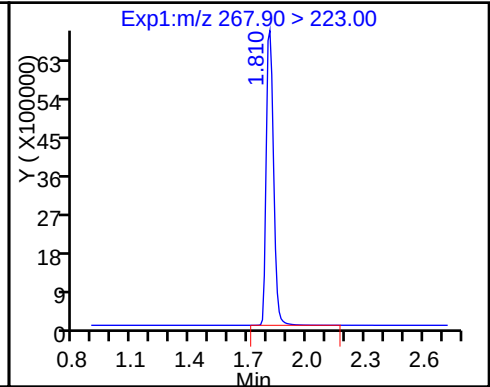
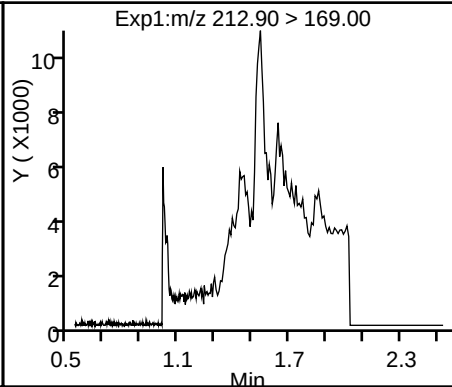
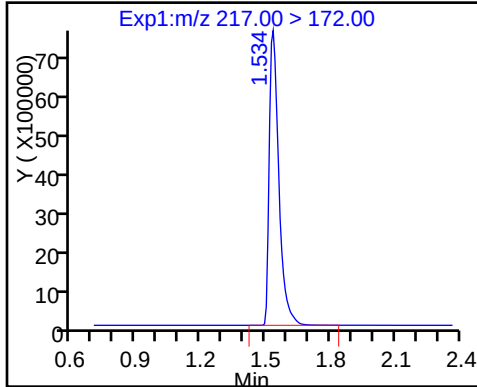
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid (ND)

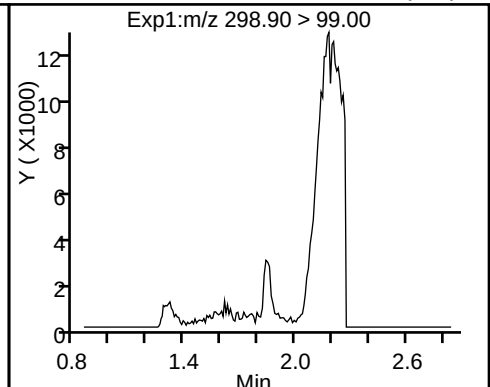
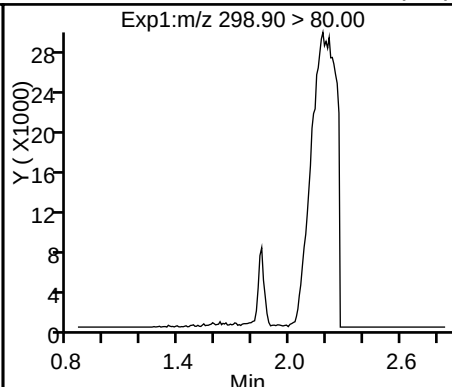
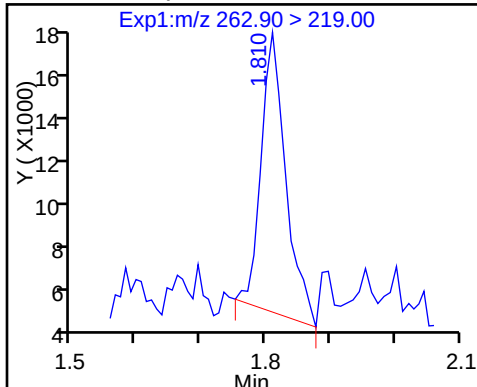
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid (ND)

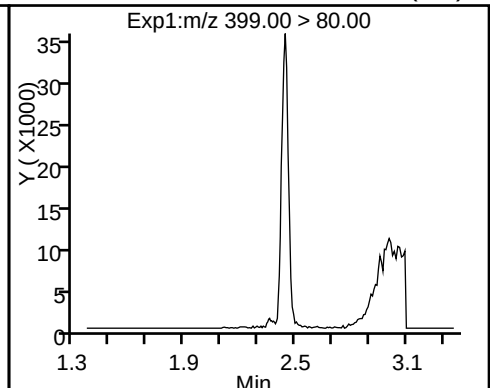
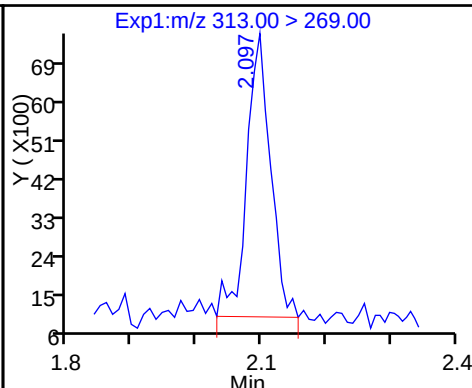
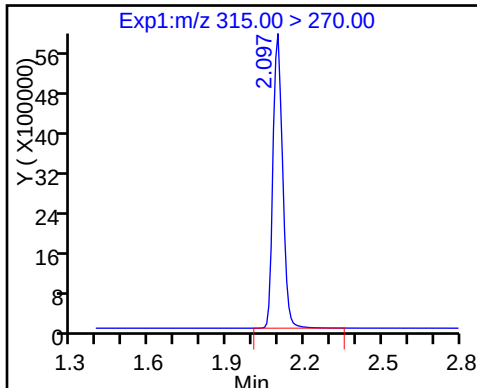
5 Perfluorobutanesulfonic acid (ND)



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

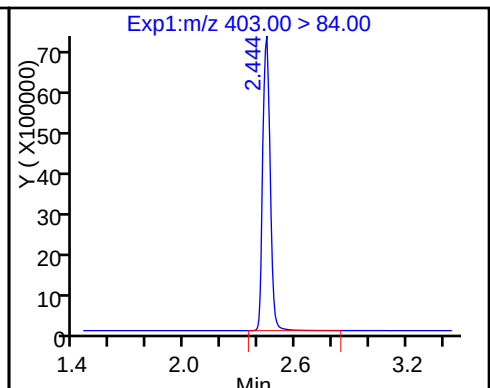
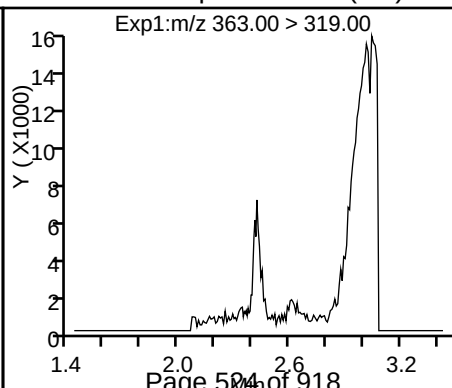
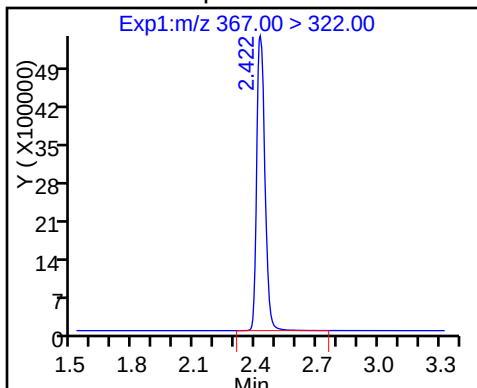
9 Perfluorohexanesulfonic acid (ND)



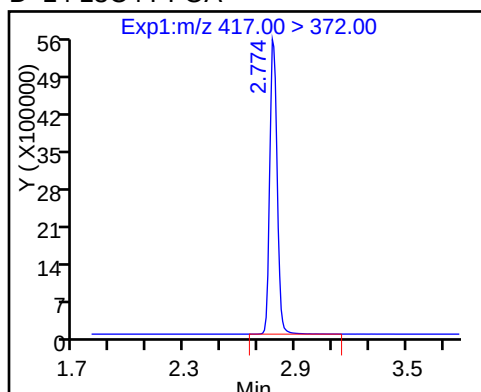
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid (ND)

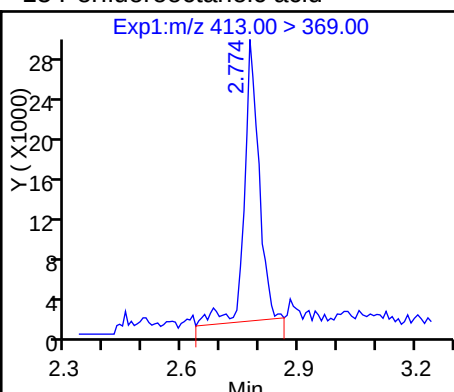
D 10 18O2 PFHxS



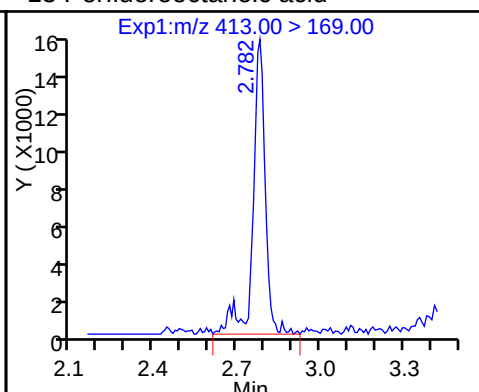
D 14 13C4 PFOA



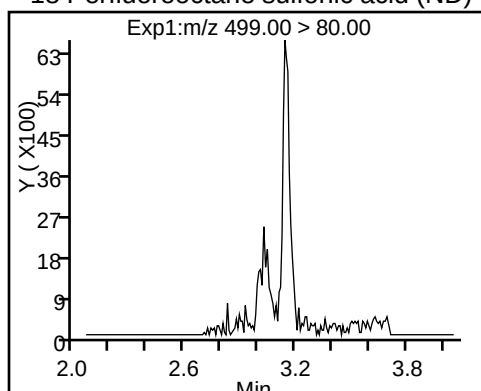
15 Perfluorooctanoic acid



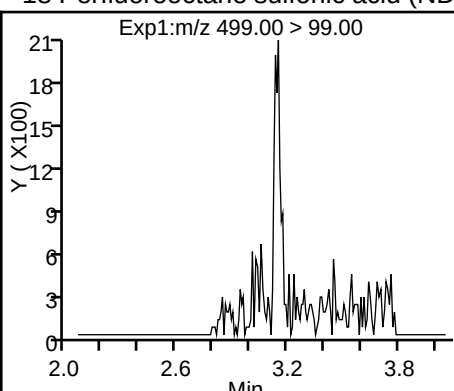
15 Perfluorooctanoic acid



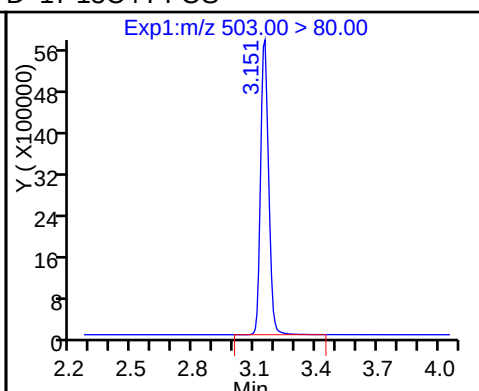
18 Perfluorooctane sulfonic acid (ND)



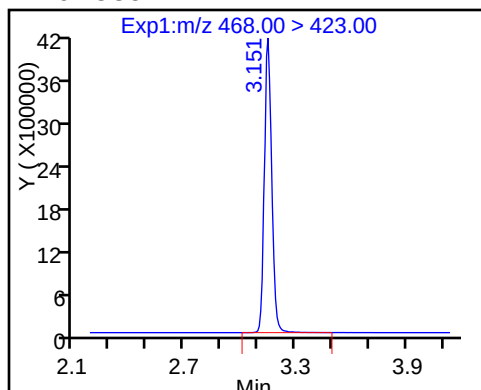
18 Perfluorooctane sulfonic acid (ND)



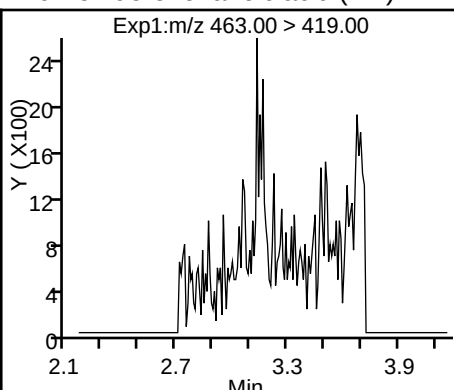
D 17 13C4 PFOS



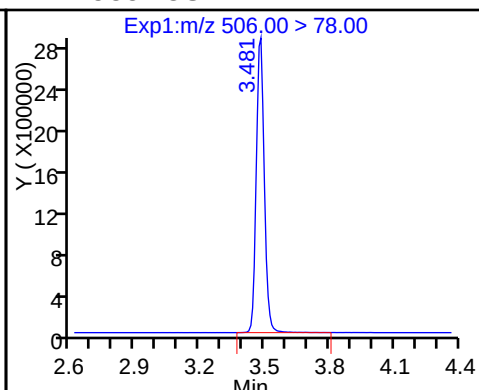
D 19 13C5 PFNA



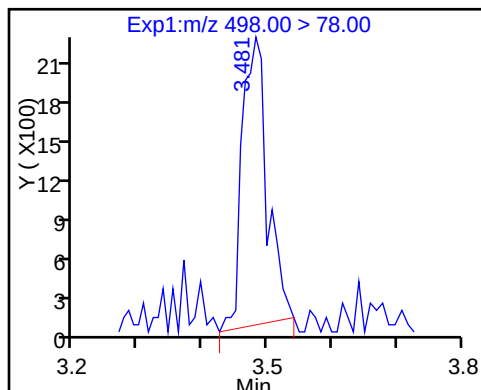
20 Perfluorononanoic acid (ND)



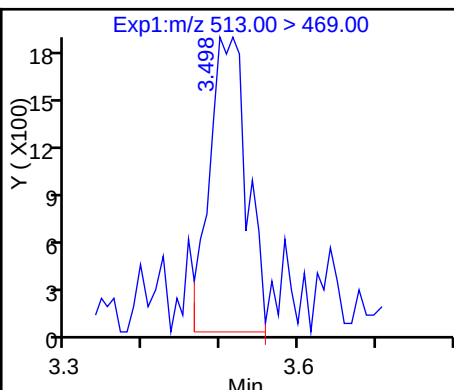
D 21 13C8 FOSA



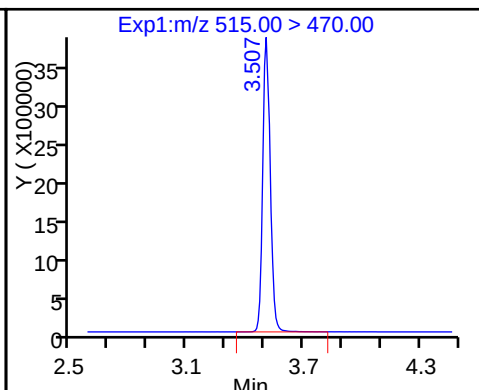
22 Perfluorooctane Sulfonamide



24 Perfluorodecanoic acid

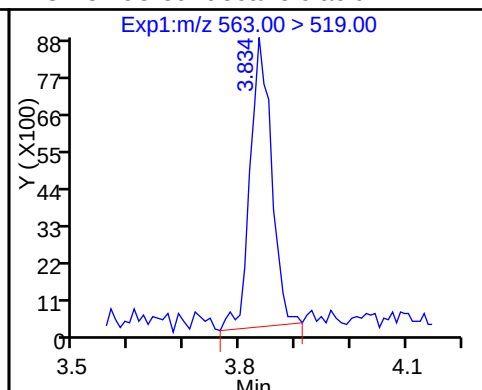
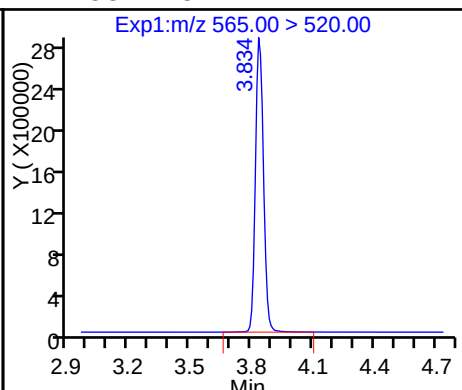
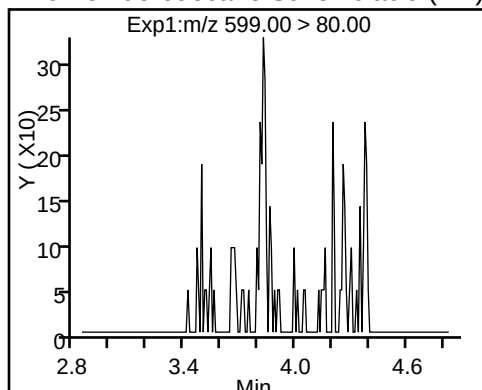


D 23 13C2 PFDA



26 Perfluorodecane Sulfonic acid (ND) D 27 13C2 PFUnA

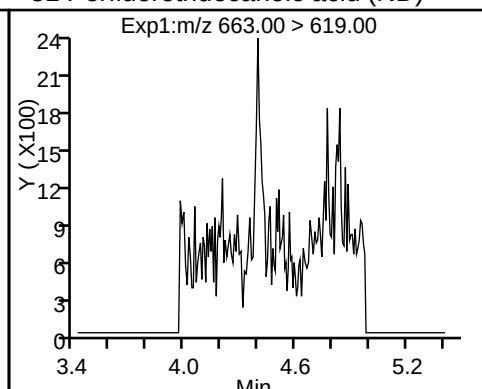
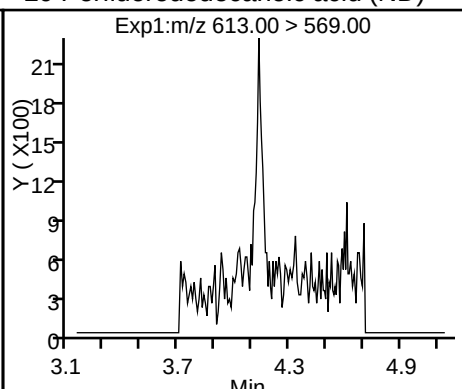
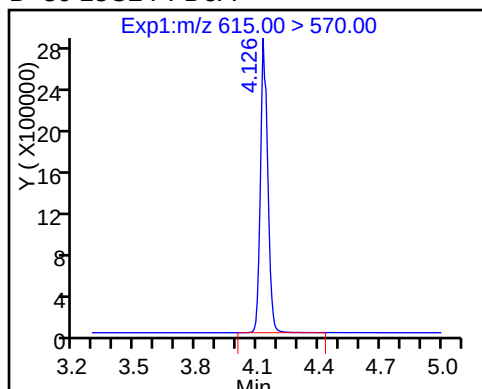
28 Perfluoroundecanoic acid



D 30 13C2 PFDaA

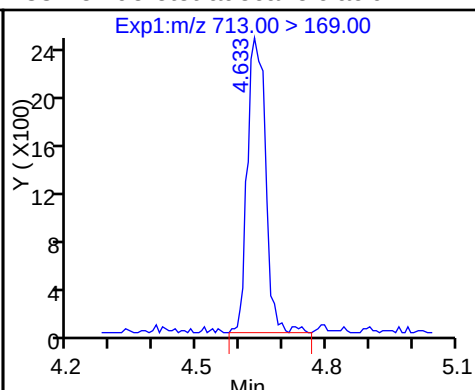
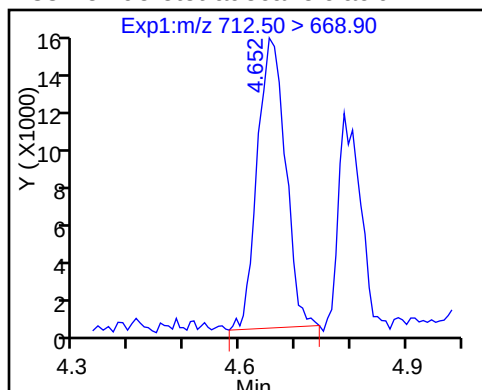
29 Perfluorododecanoic acid (ND)

31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>EBDPT120816-a</u>	Lab Sample ID: <u>320-24236-7</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_023.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 08:10</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>266.1 (mL)</u>	Date Analyzed: <u>12/29/2016 02:37</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.00094	U	0.0023	0.00094	0.00043
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0019	U	0.0023	0.0019	0.00093
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0019	U	0.0023	0.0019	0.00074
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0019	U	0.0023	0.0019	0.00075
335-67-1	Perfluorooctanoic acid (PFOA)	0.0019	U	0.0023	0.0019	0.00070
375-95-1	Perfluorononanoic acid (PFNA)	0.0019	U	0.0023	0.0019	0.00061
335-76-2	Perfluorodecanoic acid (PFDA)	0.00094	U	0.0023	0.00094	0.00041
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0019	U	0.0023	0.0019	0.00070
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0019	U	0.0023	0.0019	0.00055
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0019	U	0.0023	0.0019	0.00052
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00044	J	0.0023	0.00094	0.00038
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0019	U	0.0023	0.0019	0.00086
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00089	J	0.0023	0.0019	0.00082
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0028	U	0.0038	0.0028	0.0011
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0019	U	0.0023	0.0019	0.00060

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>EBDPT120816-a</u>	Lab Sample ID: <u>320-24236-7</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_023.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 08:10</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>266.1 (mL)</u>	Date Analyzed: <u>12/29/2016 02:37</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	68		25-150
STL00992	13C4 PFBA	126		25-150
STL01893	13C5-PFPeA	134		25-150
STL00993	13C2 PFHxA	127		25-150
STL01892	13C4-PFHpA	133		25-150
STL00990	13C4 PFOA	134		25-150
STL00995	13C5 PFNA	127		25-150
STL00996	13C2 PFDA	132		25-150
STL00997	13C2 PFUnA	133		25-150
STL00998	13C2 PFDoA	123		25-150
STL00994	18O2 PFHxS	130		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_023.d
 Lims ID: 320-24236-A-7-A
 Client ID: EBDPT120816-a
 Sample Type: Client
 Inject. Date: 29-Dec-2016 02:37:04 ALS Bottle#: 19 Worklist Smp#: 23
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24236-a-7-a
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Dec-2016 18:18:51 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK027

First Level Reviewer: phomsophat

Date: 29-Dec-2016 18:18:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.529	1.525	0.004		21963099	63.2		126	1045857	
1 Perfluorobutyric acid										
212.90 > 169.00	1.529	1.525	0.004	1.000	26130	0.0697			158	
D 4 13C5-PFPeA										
267.90 > 223.00	1.804	1.800	0.004		17840280	67.1		134	984656	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.804	1.800	0.004	1.000	36213	0.1029			321	
D 6 13C2 PFHxA										
315.00 > 270.00	2.091	2.091	0.0		15609855	63.7		127	522290	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.099	2.091	0.008	1.000	38827	0.1339			436	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.436	2.409	0.027	1.000	208586	0.4756				
D 11 13C4-PFHpA										
367.00 > 322.00	2.422	2.420	0.002		15040771	66.5		133	1808247	
D 10 18O2 PFHxS										
403.00 > 84.00	2.444	2.440	0.004		20140475	61.6		130	3533750	
D 14 13C4 PFOA										
417.00 > 372.00	2.781	2.776	0.005		15478247	67.2		134	1124413	
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.150	3.040	0.110	1.000	752551	2.35			11631	
499.00 > 99.00	3.150	3.040	0.110	1.000	155700		4.83(0.90-1.10)		2798	M
D 17 13C4 PFOS										
503.00 > 80.00	3.150	3.145	0.005		15409693	61.9		130	495396	
D 19 13C5 PFNA										
468.00 > 423.00	3.150	3.153	-0.003		11244492	63.3		127	1284584	
D 21 13C8 FOSA										
506.00 > 78.00	3.481	3.475	0.006		12030485	33.9		67.8	441561	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
22 Perfluorooctane Sulfonamide	498.00 > 78.00	3.489	3.475	0.014	1.000	13629	0.0561		312	
24 Perfluorodecanoic acid	513.00 > 469.00	3.498	3.509	-0.011	1.000	6720	0.0343		210	
D 23 13C2 PFDA	515.00 > 470.00	3.506	3.509	-0.003		10369468	65.9	132	326568	
26 Perfluorodecane Sulfonic acid	599.00 > 80.00	3.816	3.825	-0.009	1.000	1487	0.007899			
D 27 13C2 PFUnA	565.00 > 520.00	3.833	3.834	-0.001		7776253	66.3	133	479204	
28 Perfluoroundecanoic acid	563.00 > 519.00	3.833	3.834	-0.001	1.000	24485	0.1646		763	
D 30 13C2 PFDaA	615.00 > 570.00	4.126	4.126	0.0		6808296	61.4	123	266789	
33 Perfluorotetradecanoic acid	712.50 > 668.90	4.652	4.644	0.008	1.000	50450	0.2338		513	
	713.00 > 169.00	4.633	4.644	-0.011	0.996	7676	6.57(0.00-0.00)		1714	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_023.d

Injection Date: 29-Dec-2016 02:37:04

Instrument ID: A8_N

Lims ID: 320-24236-A-7-A

Lab Sample ID: 320-24236-7

Client ID: EBDPT120816-a

Operator ID: A8-PC\A8

ALS Bottle#: 19

Worklist Smp#: 23

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

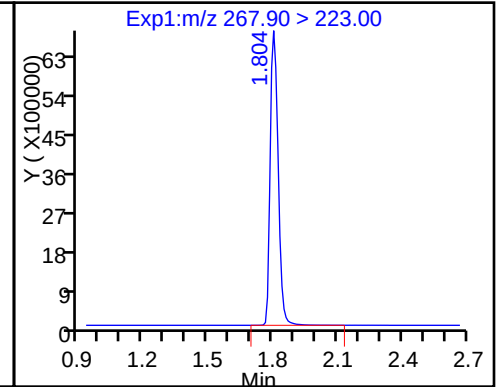
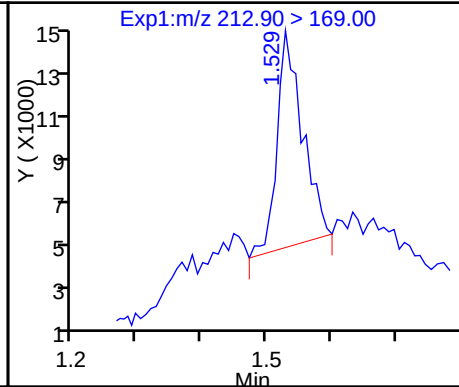
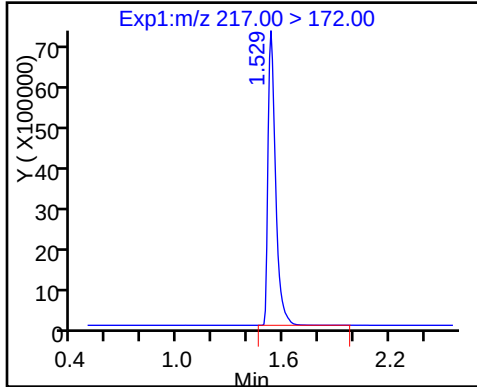
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

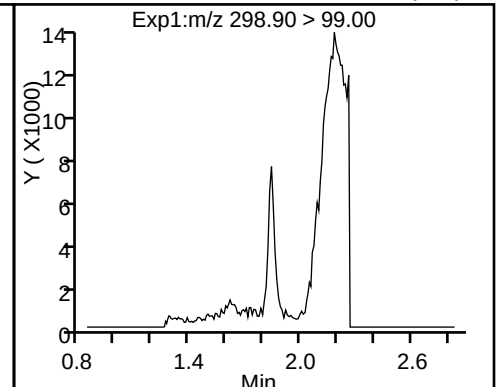
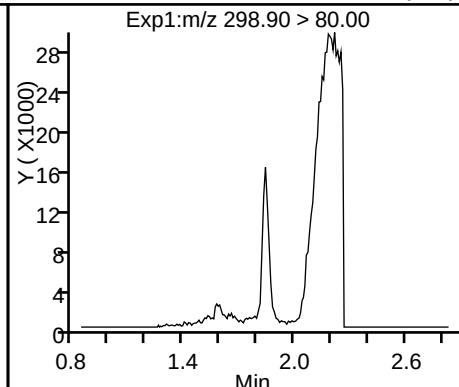
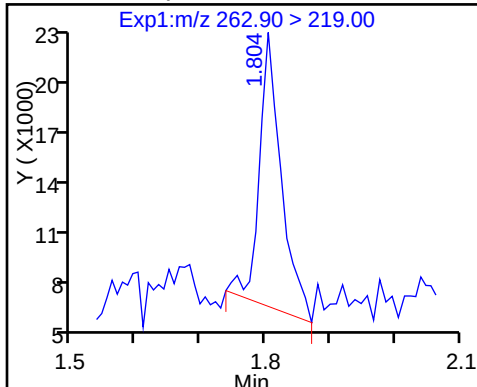
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid (ND)

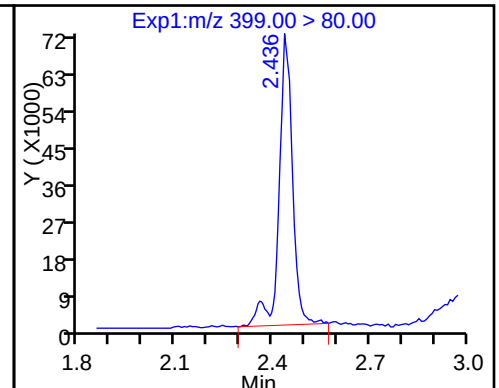
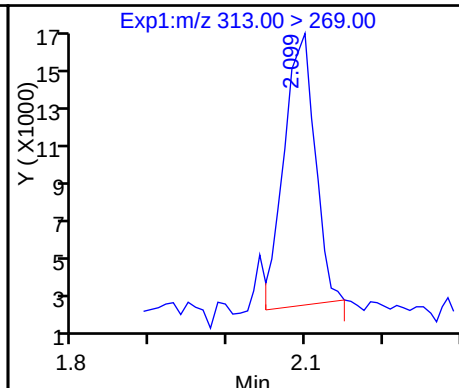
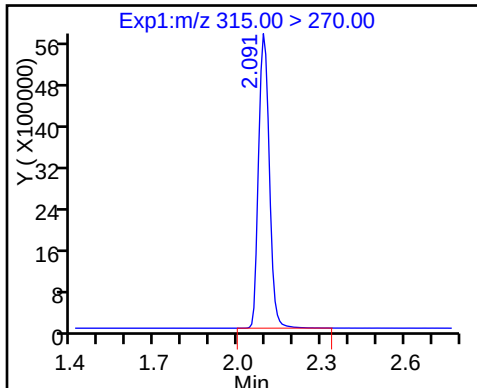
5 Perfluorobutanesulfonic acid (ND)



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

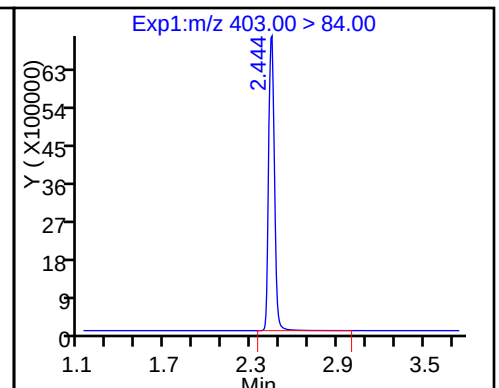
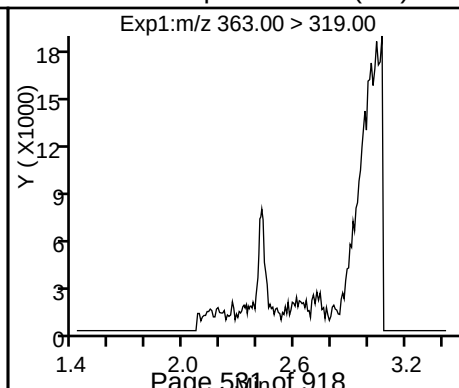
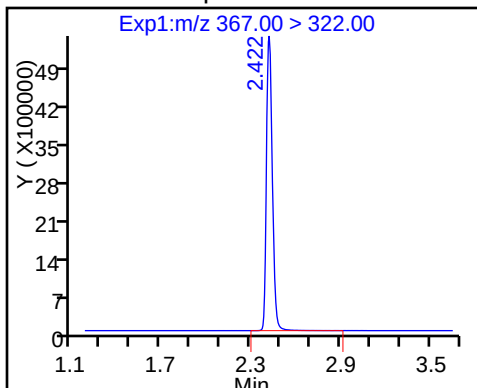
9 Perfluorohexanesulfonic acid



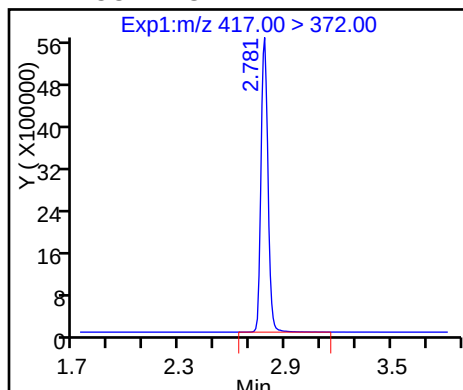
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid (ND)

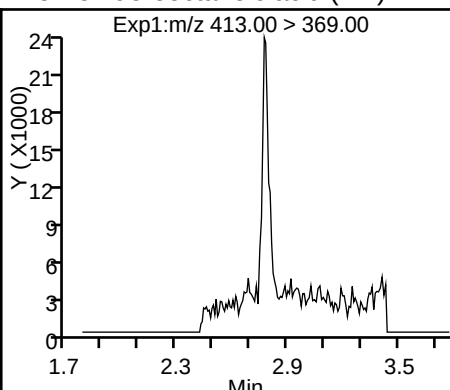
D 10 18O2 PFHxS



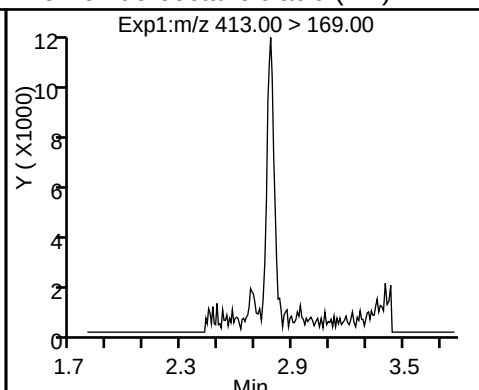
D 14 13C4 PFOA



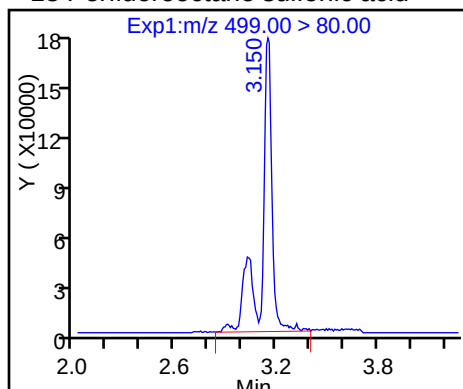
15 Perfluorooctanoic acid (ND)



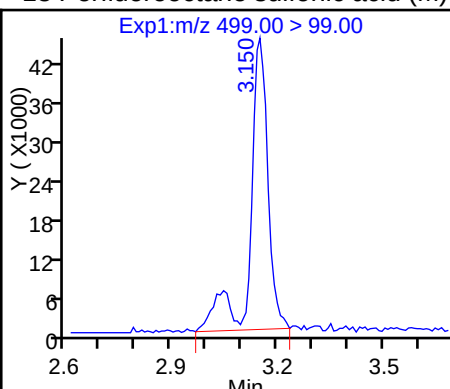
15 Perfluorooctanoic acid (ND)



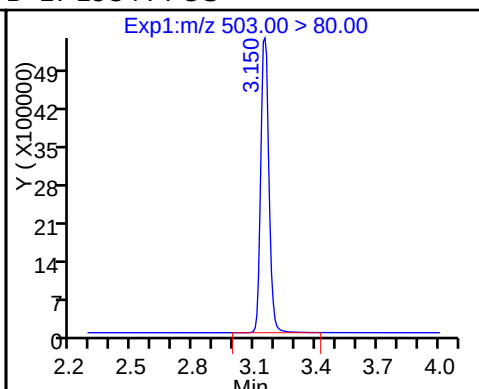
18 Perfluorooctane sulfonic acid



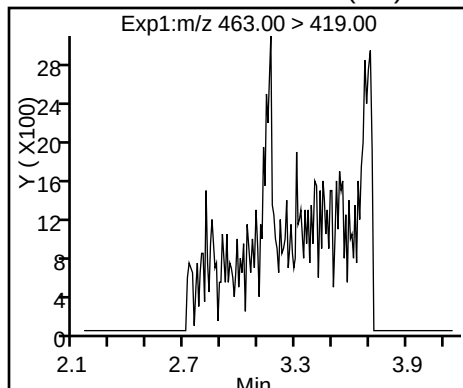
18 Perfluorooctane sulfonic acid (M)



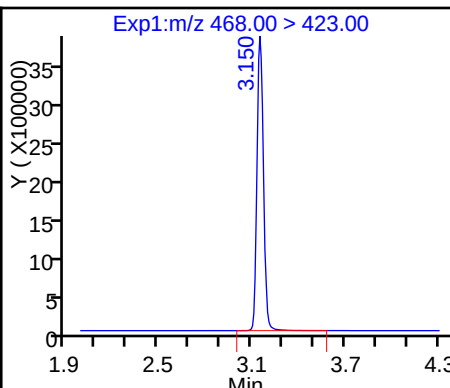
D 17 13C4 PFOS



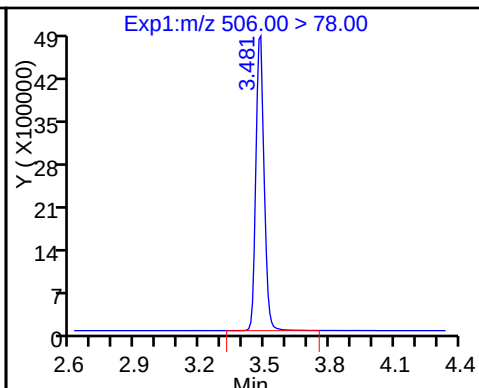
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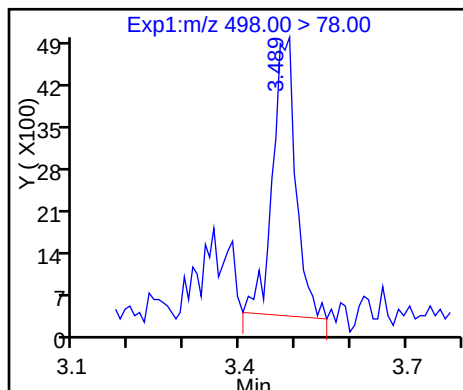
D 19 13C5 PFNA



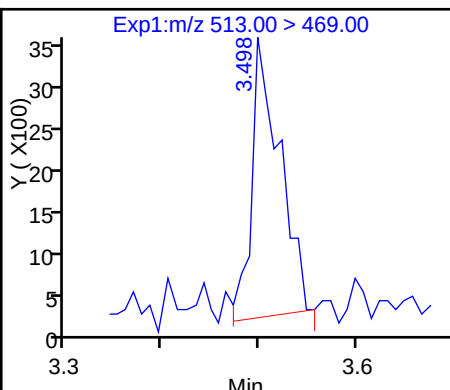
D 21 13C8 FOSA



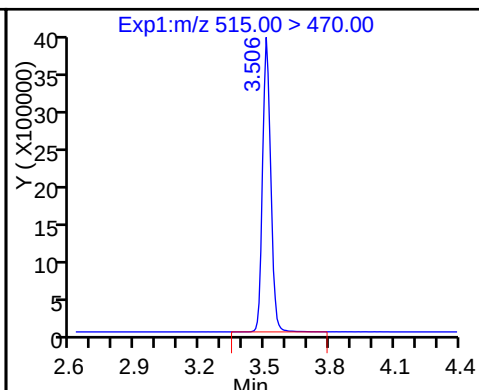
22 Perfluorooctane Sulfonamide



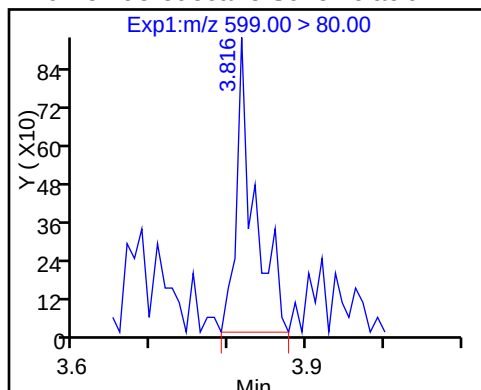
24 Perfluorodecanoic acid



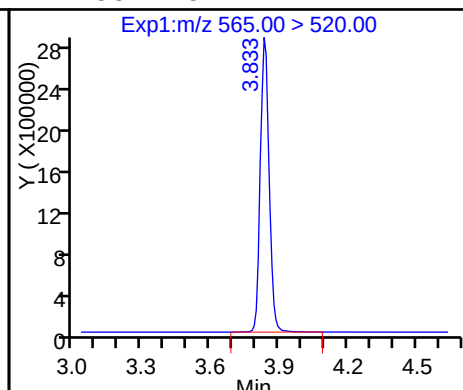
D 23 13C2 PFDA



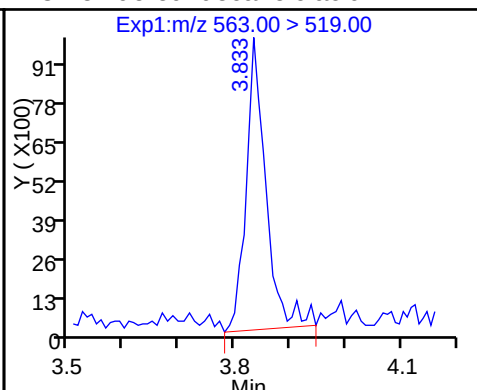
26 Perfluorodecane Sulfonic acid



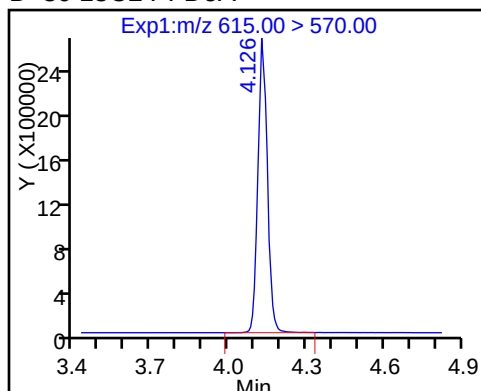
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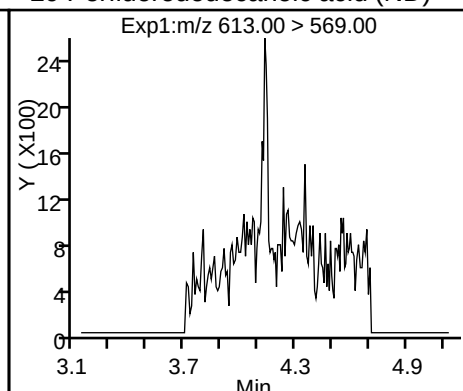
28 Perfluoroundecanoic acid



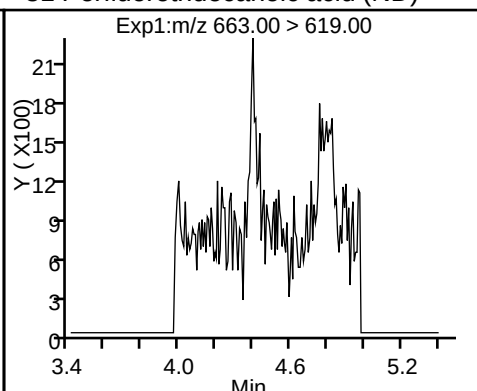
D 30 13C2 PFDaA



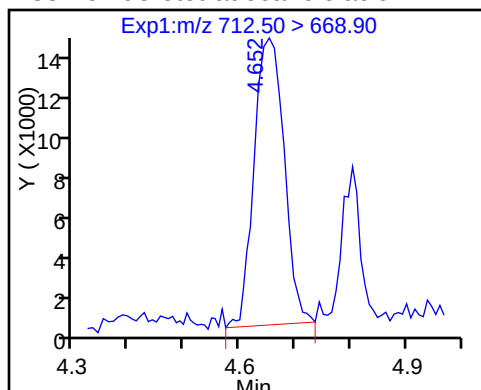
29 Perfluorododecanoic acid (ND)



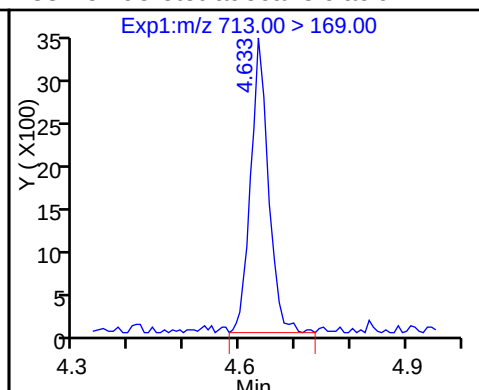
31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>EBDPT120816-a RA</u>	Lab Sample ID: <u>320-24236-7 RA</u>
Matrix: <u>Water</u>	Lab File ID: <u>30DEC2016B_037.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 08:10</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>266.1 (mL)</u>	Date Analyzed: <u>12/30/2016 16:49</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144510</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0033	J M	0.0038	0.0028	0.0012

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	118		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_037.d
 Lims ID: 320-24236-A-7-A
 Client ID: EBDPT120816-a
 Sample Type: Client
 Inject. Date: 30-Dec-2016 16:49:12 ALS Bottle#: 27 Worklist Smp#: 47
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24236-a-7-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 03-Jan-2017 14:28:47 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: phomsophat

Date: 03-Jan-2017 14:25:41

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.528	1.534	-0.006		21021792	60.5		121	997615	
1 Perfluorobutyric acid										
212.90 > 169.00	1.528	1.534	-0.006	1.000	24647	0.0687			112	
D 4 13C5-PFPeA										M
267.90 > 223.00	1.803	1.810	-0.007		16796234	63.1		126	929346	M
3 Perfluoropentanoic acid										
262.90 > 219.00	1.813	1.810	0.003	1.000	34240	0.1033			319	
D 6 13C2 PFHxA										
315.00 > 270.00	2.099	2.093	0.006		13994937	57.1		114	525110	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.099	2.093	0.006	1.000	23233	0.0894			554	
D 11 13C4-PFHpA										
367.00 > 322.00	2.430	2.424	0.006		13318931	58.8		118	479310	
D 10 18O2 PFHxS										
403.00 > 84.00	2.444	2.447	-0.003		18660681	57.1		121	562051	
D 14 13C4 PFOA										
417.00 > 372.00	2.790	2.791	-0.001		13610612	59.1		118	828850	
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.167	3.058	0.109	1.000	510601	1.75			24540	
499.00 > 99.00	3.159	3.058	0.101	0.998	110006		4.64(0.90-1.10)		5241	M
D 17 13C4 PFOS										
503.00 > 80.00	3.167	3.160	0.007		13991816	56.2		118	849416	
D 19 13C5 PFNA										
468.00 > 423.00	3.167	3.160	0.007		10370387	58.4		117	461023	
20 Perfluorononanoic acid										
463.00 > 419.00	3.167	3.167	0.0	1.000	6891	0.0349			124	
D 21 13C8 FOSA										
506.00 > 78.00	3.499	3.491	0.008		12026648	31.3		62.6	931680	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
22 Perfluorooctane Sulfonamide	498.00 > 78.00	3.499	3.499	0.0	1.000	10823	0.0482		578	
24 Perfluorodecanoic acid	513.00 > 469.00	3.524	3.524	0.0	1.000	7805	0.0417		247	
D 23 13C2 PFDA	515.00 > 470.00	3.524	3.524	0.0		9927647	63.1	126	415571	
26 Perfluorodecane Sulfonic acid	599.00 > 80.00	3.826	3.836	-0.010	1.000	1095	0.006406			
D 27 13C2 PFUnA	565.00 > 520.00	3.861	3.853	0.008		7471772	63.7	127	346781	
28 Perfluoroundecanoic acid	563.00 > 519.00	3.852	3.853	-0.001	1.000	20623	0.1443		830	
D 30 13C2 PFDaA	615.00 > 570.00	4.149	4.144	0.005		6504583	58.6	117	247410	
33 Perfluorotetradecanoic acid	712.50 > 668.90	4.654	4.658	-0.004	1.000	36284	0.1760		514	
	713.00 > 169.00	4.654	4.658	-0.004	1.000	6167	5.88(0.00-0.00)		2538	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_037.d

Injection Date: 30-Dec-2016 16:49:12

Instrument ID: A8_N

Lims ID: 320-24236-A-7-A

Lab Sample ID: 320-24236-7

Client ID: EBDPT120816-a

Operator ID: A8-PC\A8

ALS Bottle#: 27

Worklist Smp#: 47

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

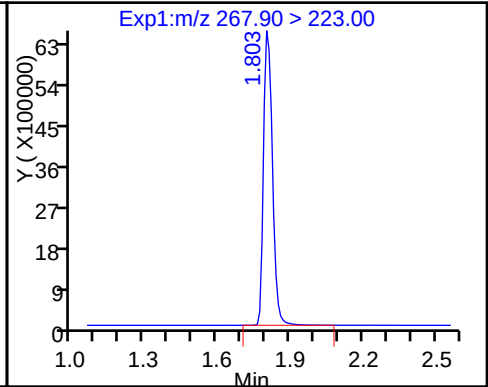
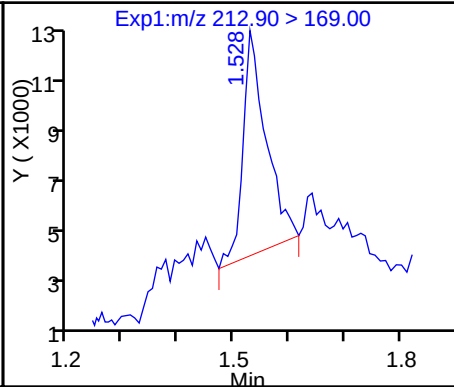
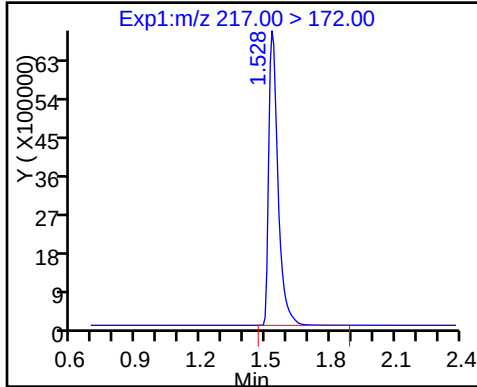
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

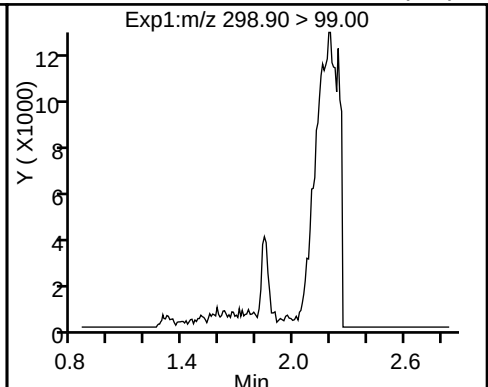
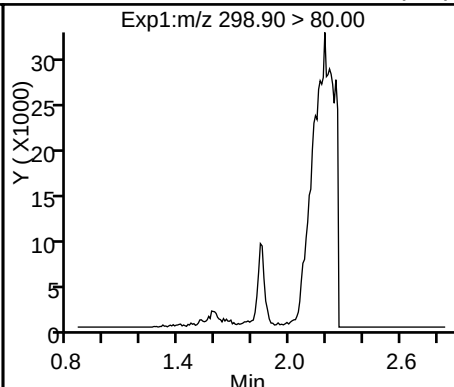
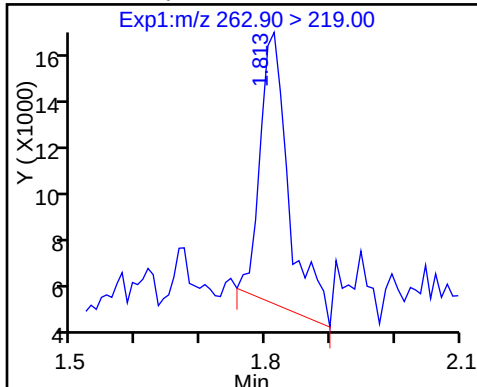
D 4 13C5-PFPeA (M)



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid (ND)

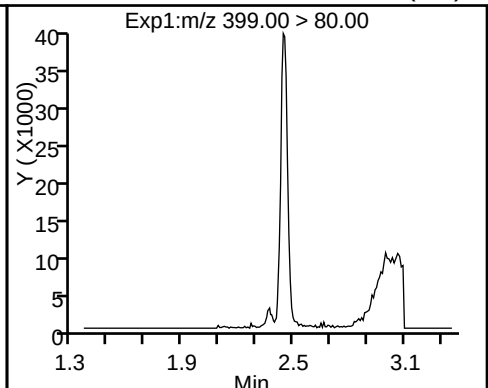
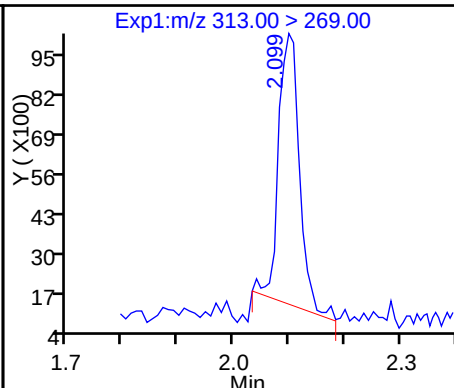
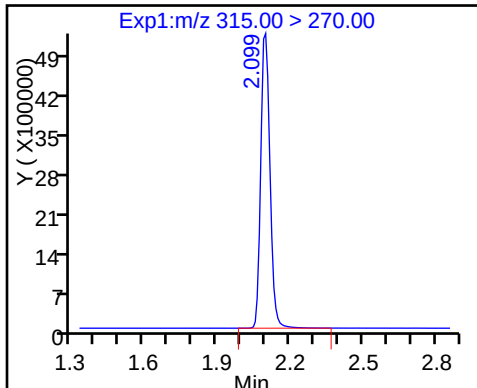
5 Perfluorobutanesulfonic acid (ND)



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

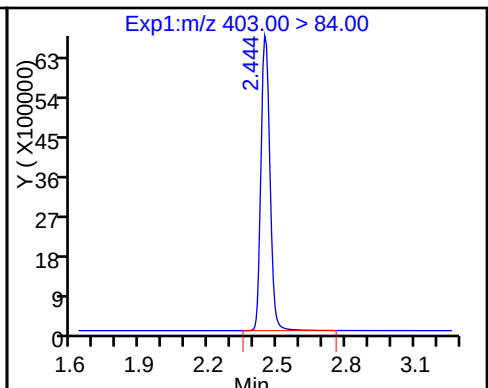
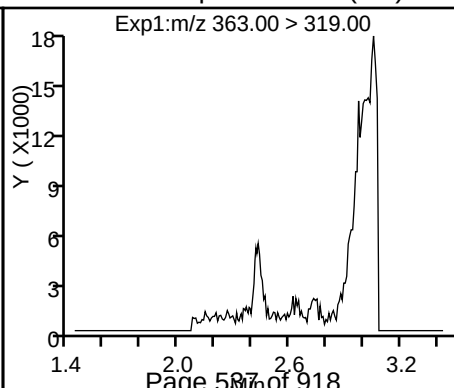
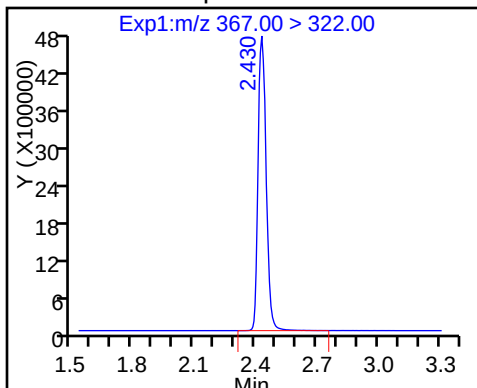
9 Perfluorohexanesulfonic acid (ND)



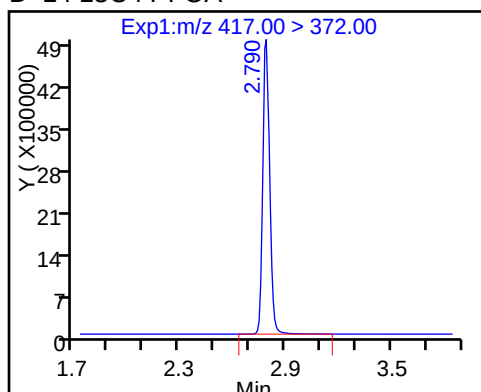
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid (ND)

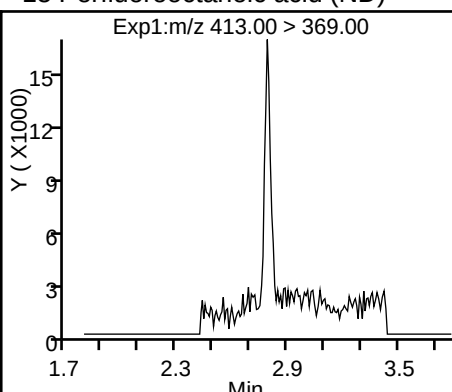
D 10 18O2 PFHxS



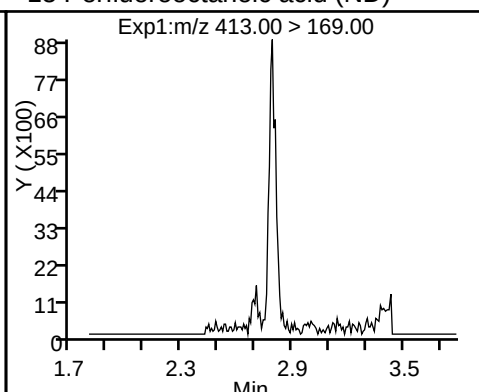
D 14 13C4 PFOA



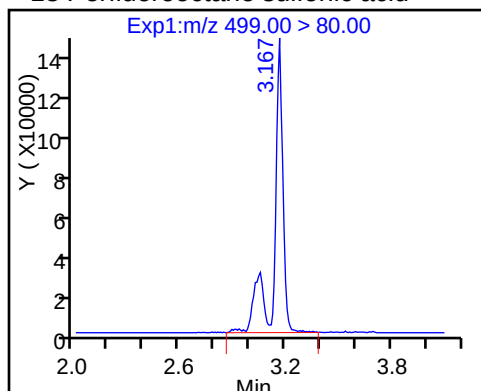
15 Perfluorooctanoic acid (ND)



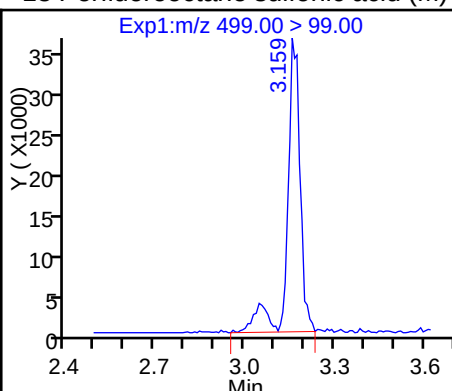
15 Perfluorooctanoic acid (ND)



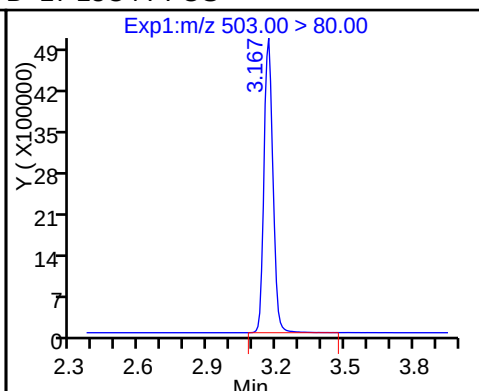
18 Perfluorooctane sulfonic acid



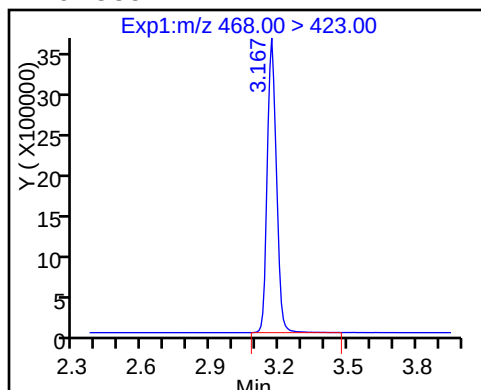
18 Perfluorooctane sulfonic acid (M)



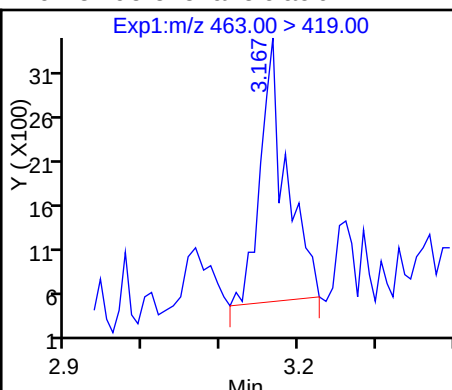
D 17 13C4 PFOS



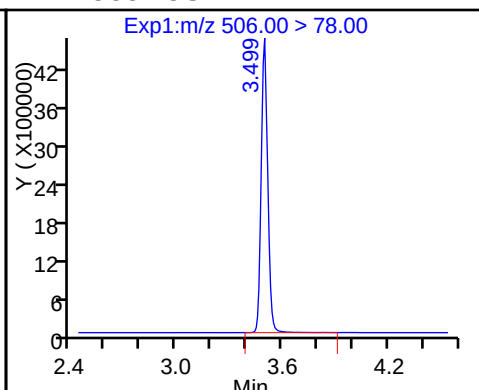
D 19 13C5 PFNA



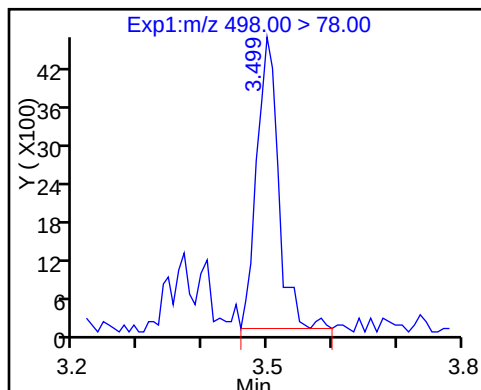
20 Perfluorononanoic acid



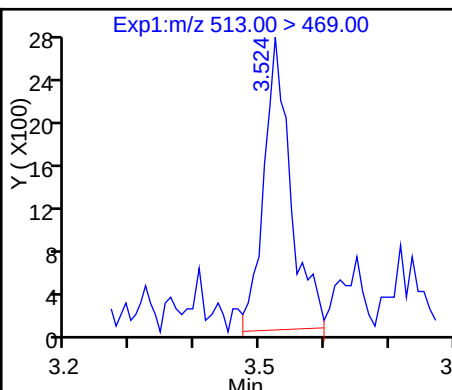
D 21 13C8 FOSA



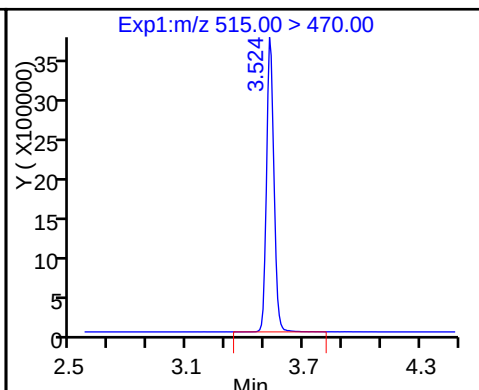
22 Perfluorooctane Sulfonamide



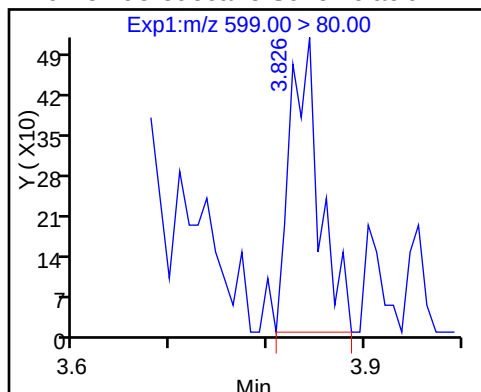
24 Perfluorodecanoic acid



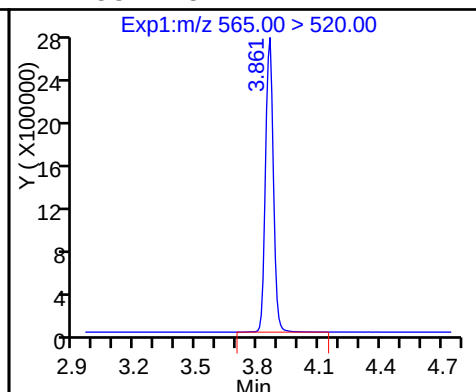
D 23 13C2 PFDA



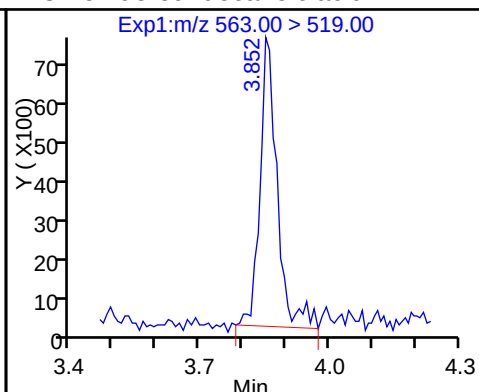
26 Perfluorodecane Sulfonic acid



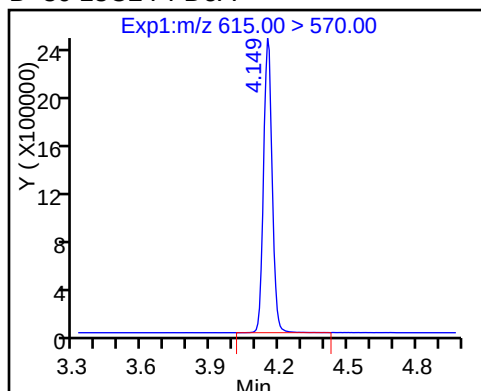
D 27 13C2 PFUnA



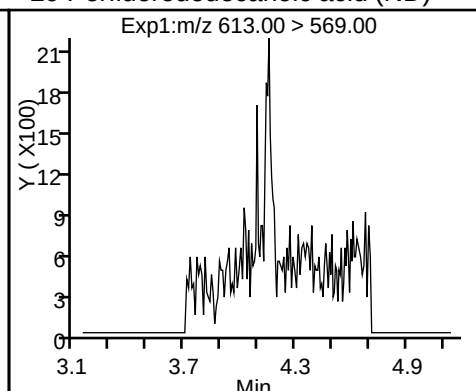
28 Perfluoroundecanoic acid



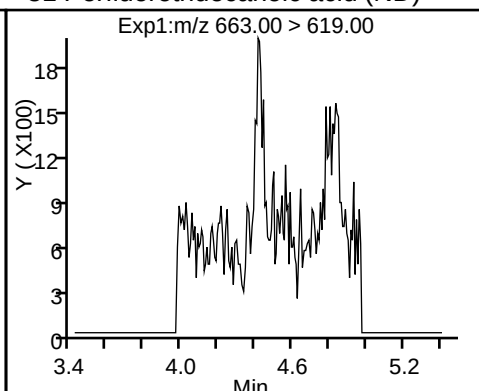
D 30 13C2 PFDaA



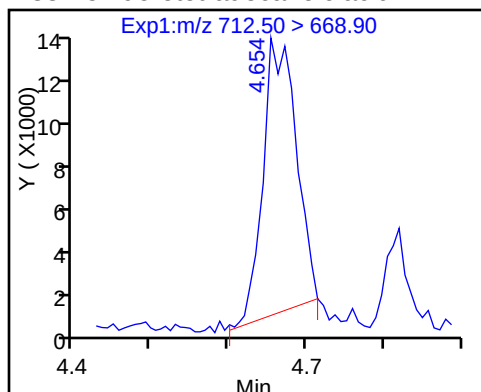
29 Perfluorododecanoic acid (ND)



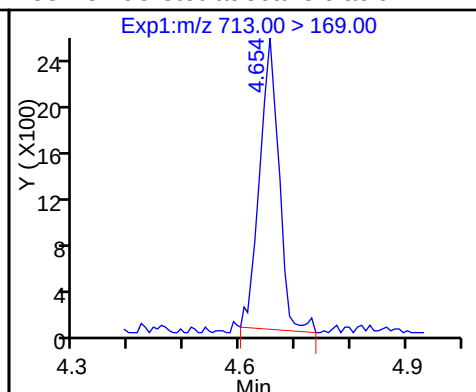
31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Sacramento

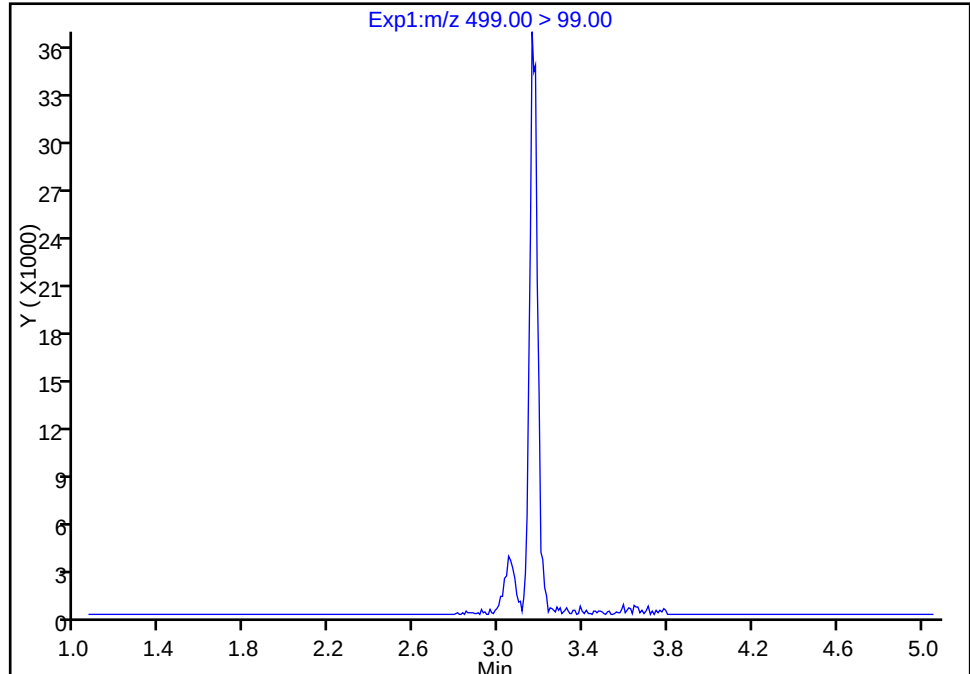
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_037.d				
Injection Date:	30-Dec-2016 16:49:12	Instrument ID:	A8_N		
Lims ID:	320-24236-A-7-A	Lab Sample ID:	320-24236-7		
Client ID:	EBDPT120816-a				
Operator ID:	A8-PC\A8	ALS Bottle#:	27	Worklist Smp#:	47
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

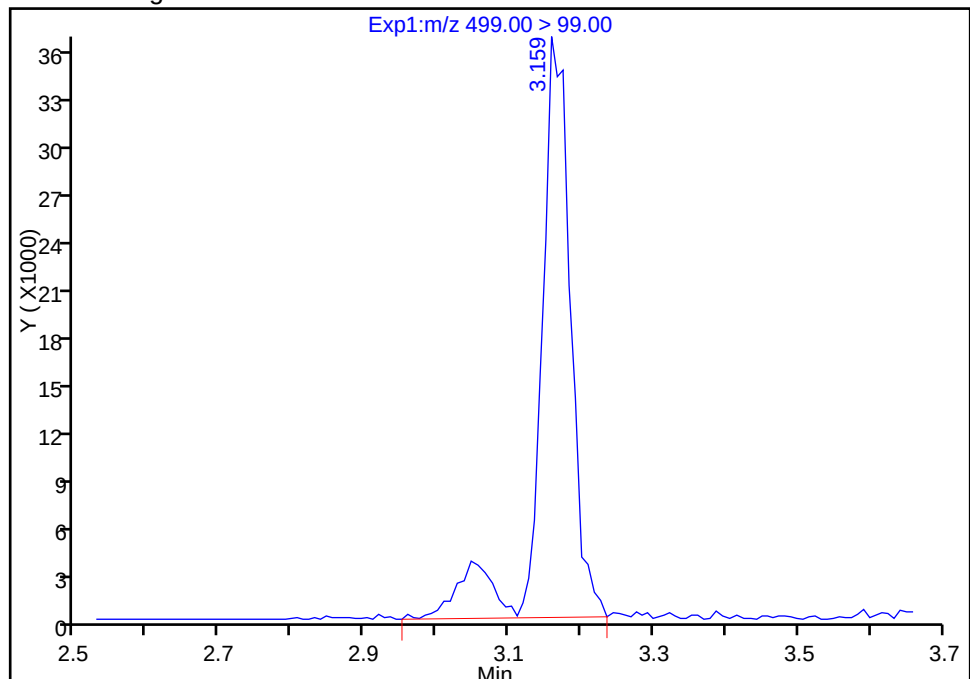
RT: 3.06
Area: 0
Amount: 1.754087
Amount Units: ng/ml

Processing Integration Results



RT: 3.16
Area: 110006
Amount: 1.754087
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 03-Jan-2017 14:25:41

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>EBDPT120816-b</u>	Lab Sample ID: <u>320-24236-8</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_026.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 09:30</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>273 (mL)</u>	Date Analyzed: <u>12/29/2016 02:59</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.00092	U	0.0023	0.00092	0.00042
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0018	U	0.0023	0.0018	0.00091
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0018	U	0.0023	0.0018	0.00072
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0018	U	0.0023	0.0018	0.00073
335-67-1	Perfluorooctanoic acid (PFOA)	0.0018	U	0.0023	0.0018	0.00068
375-95-1	Perfluorononanoic acid (PFNA)	0.0018	U	0.0023	0.0018	0.00060
335-76-2	Perfluorodecanoic acid (PFDA)	0.00092	U	0.0023	0.00092	0.00040
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0018	U	0.0023	0.0018	0.00068
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0018	U	0.0023	0.0018	0.00053
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0018	U	0.0023	0.0018	0.00050
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00040	J	0.0023	0.00092	0.00037
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0018	U	0.0023	0.0018	0.00084
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0018	U	0.0023	0.0018	0.00080
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0027	U	0.0037	0.0027	0.0012
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0027	U	0.0037	0.0027	0.0011
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0018	U	0.0023	0.0018	0.00058

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>EBDPT120816-b</u>	Lab Sample ID: <u>320-24236-8</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_026.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 09:30</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>273 (mL)</u>	Date Analyzed: <u>12/29/2016 02:59</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	53		25-150
STL00992	13C4 PFBA	123		25-150
STL01893	13C5-PFPeA	127		25-150
STL00993	13C2 PFHxA	125		25-150
STL01892	13C4-PFHpA	127		25-150
STL00990	13C4 PFOA	126		25-150
STL00995	13C5 PFNA	121		25-150
STL00996	13C2 PFDA	129		25-150
STL00997	13C2 PFUnA	134		25-150
STL00998	13C2 PFDoA	122		25-150
STL00994	18O2 PFHxS	124		25-150
STL00991	13C4 PFOS	121		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_026.d
 Lims ID: 320-24236-A-8-A
 Client ID: EBDPT120816-b
 Sample Type: Client
 Inject. Date: 29-Dec-2016 02:59:35 ALS Bottle#: 20 Worklist Smp#: 26
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24236-a-8-a
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Dec-2016 18:20:03 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK027

First Level Reviewer: phomsophat

Date: 29-Dec-2016 18:21:06

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.525	1.534	-0.009		21416872	61.6		123	804973	
1 Perfluorobutyric acid										
212.90 > 169.00	1.525	1.534	-0.009	1.000	19523	0.0534			106	
D 4 13C5-PFPeA										
267.90 > 223.00	1.800	1.810	-0.010		16887841	63.5		127	1099642	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.810	0.0	1.000	32753	0.0983			279	
D 6 13C2 PFHxA										
315.00 > 270.00	2.093	2.097	-0.004		15292852	62.4		125	820432	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.093	2.097	-0.004	1.000	28298	0.0996			373	
D 11 13C4-PFHpA										
367.00 > 322.00	2.418	2.429	-0.011		14329903	63.3		127	668686	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.438	2.444	-0.006	1.000	142160	0.3392				
D 10 18O2 PFHxS										
403.00 > 84.00	2.438	2.444	-0.006		19249554	58.9		124	1394888	
D 14 13C4 PFOA										
417.00 > 372.00	2.774	2.782	-0.008		14509908	63.0		126	863565	
D 17 13C4 PFOS										
503.00 > 80.00	3.142	3.150	-0.008		14408237	57.9		121	592443	
D 19 13C5 PFNA										
468.00 > 423.00	3.150	3.150	0.0		10726866	60.4		121	531650	
D 21 13C8 FOSA										
506.00 > 78.00	3.472	3.481	-0.009		10128671	26.4		52.7	490389	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.515	3.515	-0.001	1.000	6514	0.0341			184	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 23 13C2 PFDA										
515.00 > 470.00	3.498	3.515	-0.017		10134721	64.4		129	376062	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.790	3.825	-0.035	1.000	204	0.001159				
D 27 13C2 PFUnA										
565.00 > 520.00	3.833	3.842	-0.009		7837366	66.8		134	473427	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.825	3.842	-0.017	1.000	24029	0.1603			651	
D 30 13C2 PFDaA										
615.00 > 570.00	4.126	4.134	-0.008		6793278	61.2		122	200842	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.118	4.134	-0.016	1.000	3821	0.0306			98.4	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.652	4.643	0.009	1.000	46478	0.2159			607	
713.00 > 169.00	4.618	4.643	-0.025	0.993	8850		5.25(0.00-0.00)		2656	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_026.d

Injection Date: 29-Dec-2016 02:59:35

Instrument ID: A8_N

Lims ID: 320-24236-A-8-A

Lab Sample ID: 320-24236-8

Client ID: EBDPT120816-b

Operator ID: A8-PC\A8

ALS Bottle#: 20

Worklist Smp#: 26

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

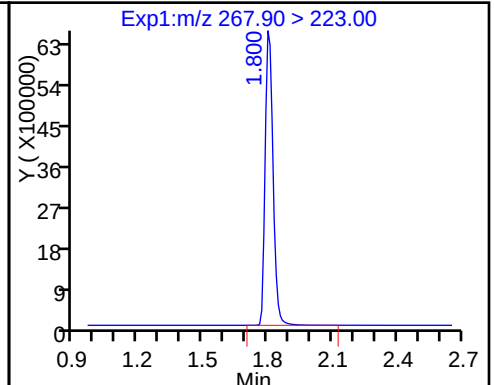
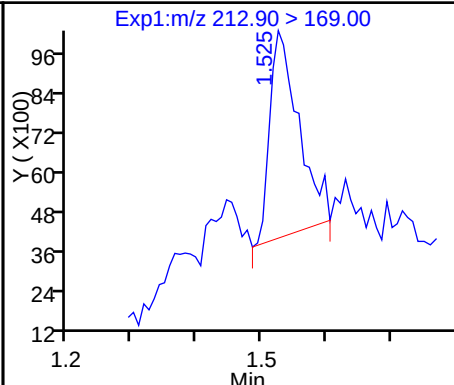
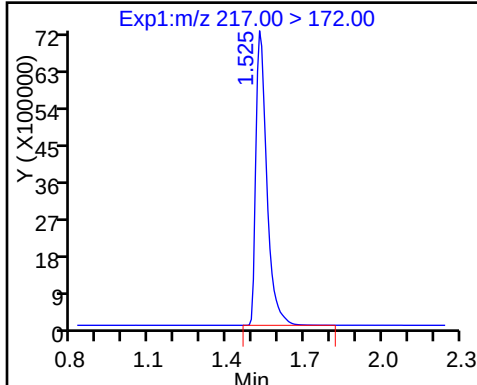
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

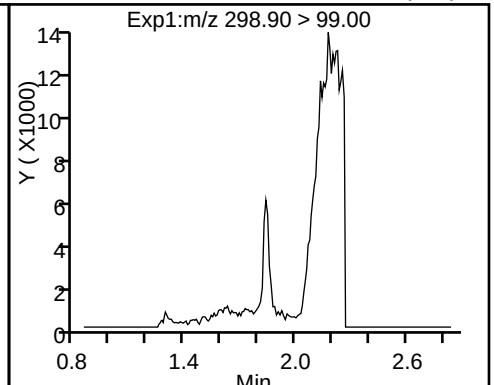
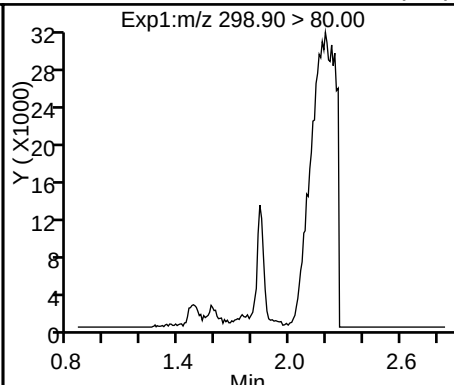
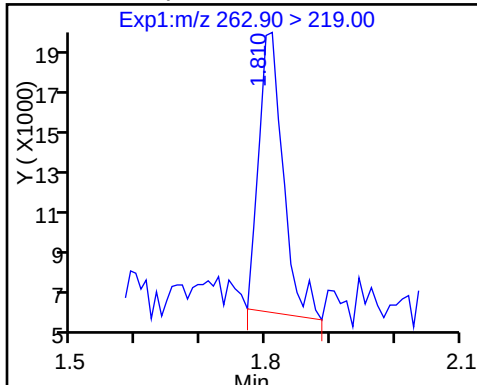
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid (ND)

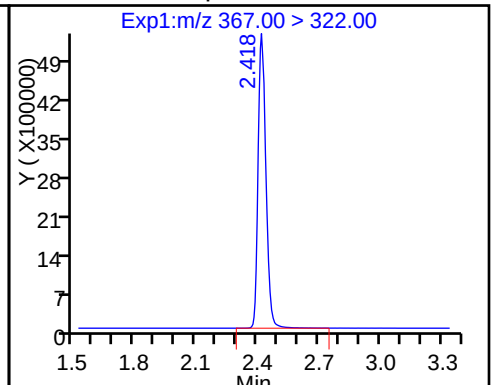
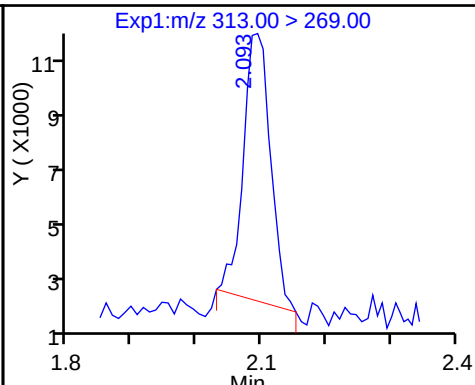
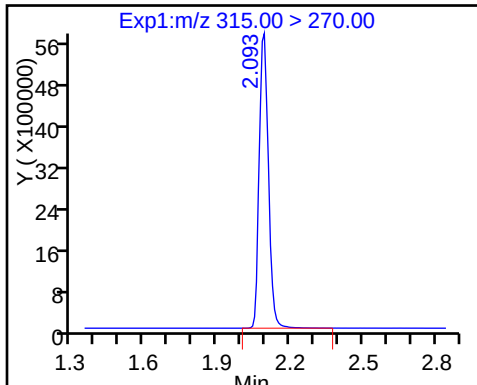
5 Perfluorobutanesulfonic acid (ND)



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

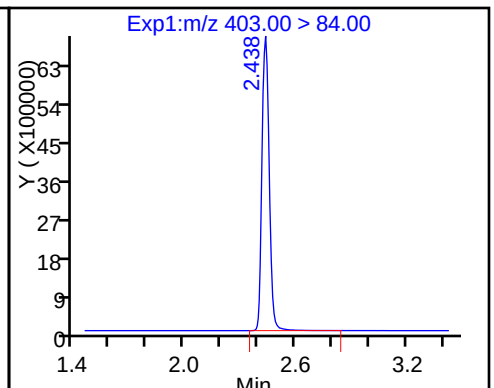
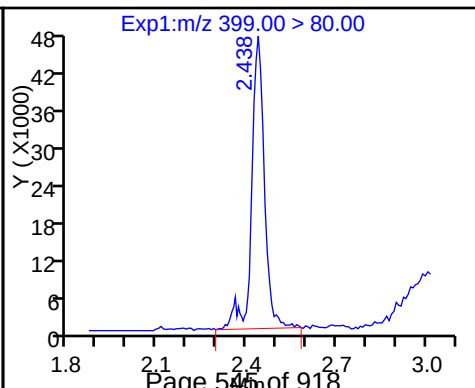
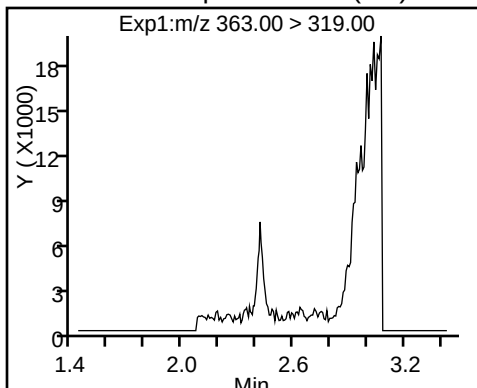
D 11 13C4-PFHpA



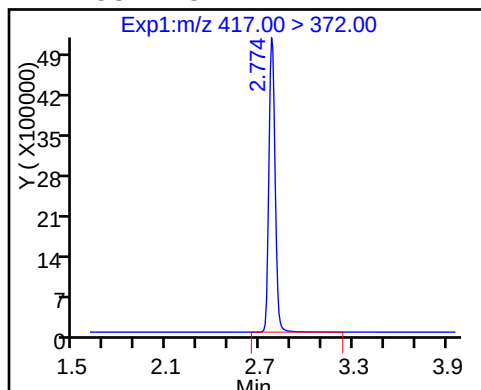
12 Perfluoroheptanoic acid (ND)

9 Perfluorohexanesulfonic acid

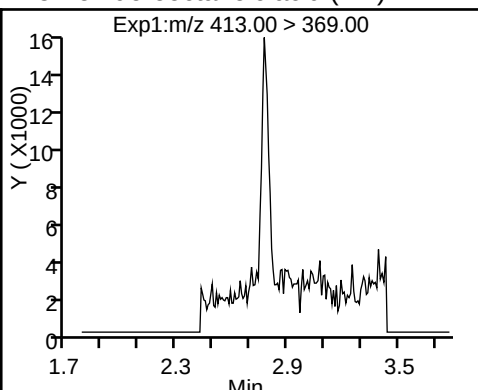
D 10 18O2 PFHxS



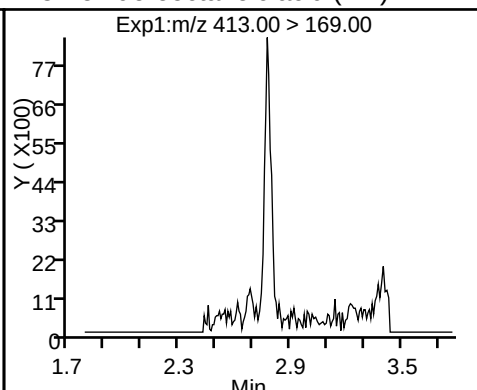
D 14 13C4 PFOA



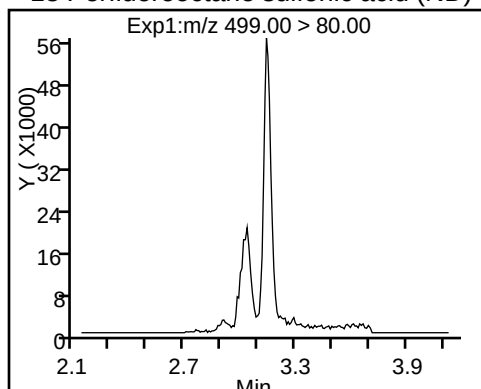
15 Perfluorooctanoic acid (ND)



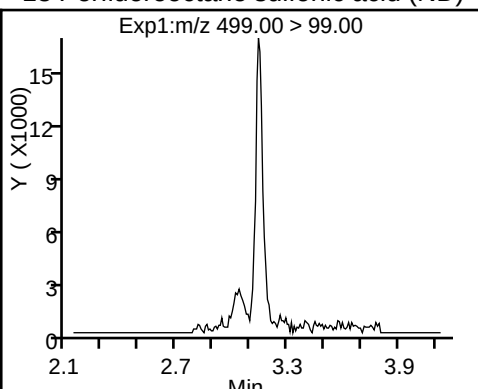
15 Perfluorooctanoic acid (ND)



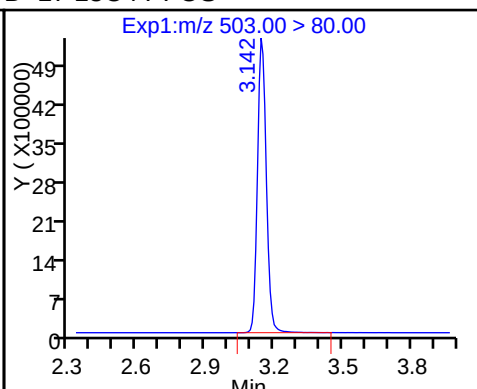
18 Perfluorooctane sulfonic acid (ND)



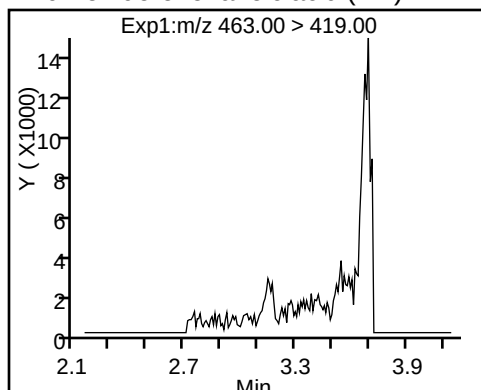
18 Perfluorooctane sulfonic acid (ND)



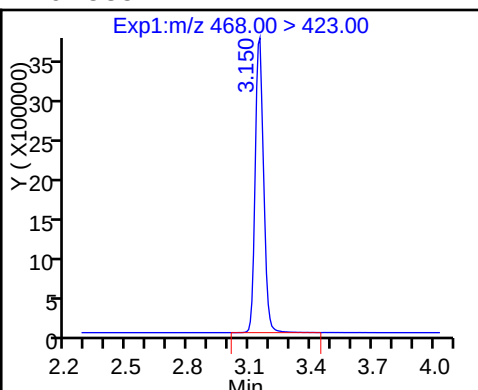
D 17 13C4 PFOS



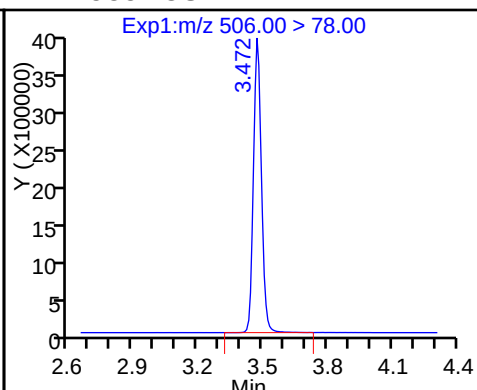
20 Perfluorononanoic acid (ND)



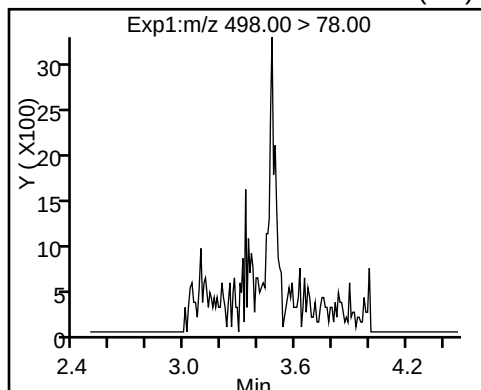
D 19 13C5 PFNA



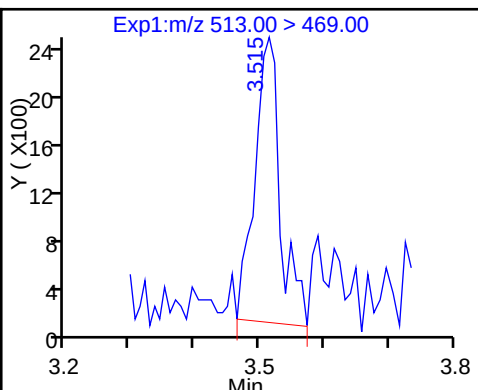
D 21 13C8 FOSA



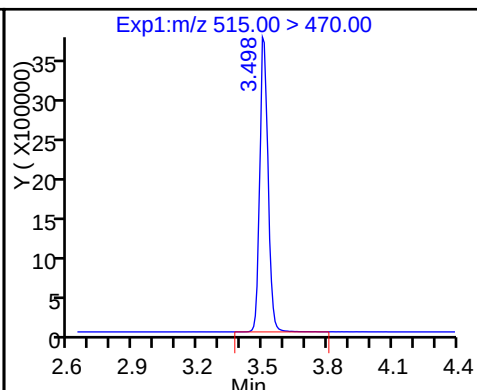
22 Perfluorooctane Sulfonamide (ND)



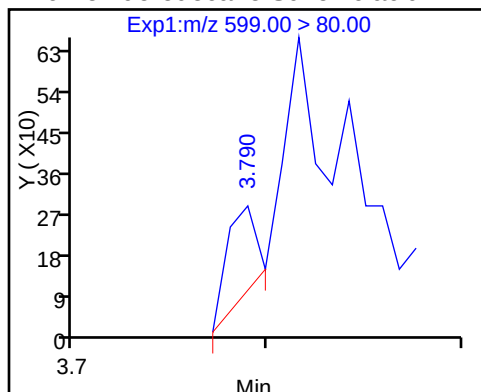
24 Perfluorodecanoic acid



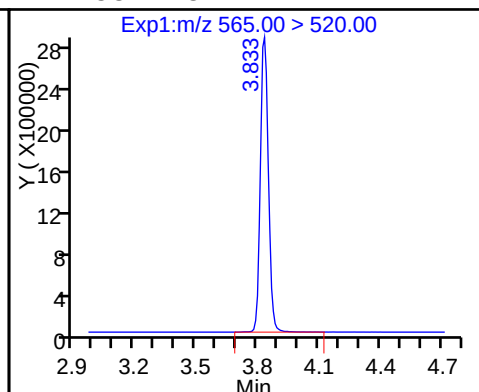
D 23 13C2 PFDA



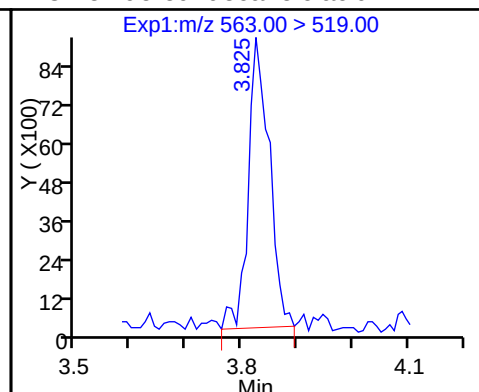
26 Perfluorodecane Sulfonic acid



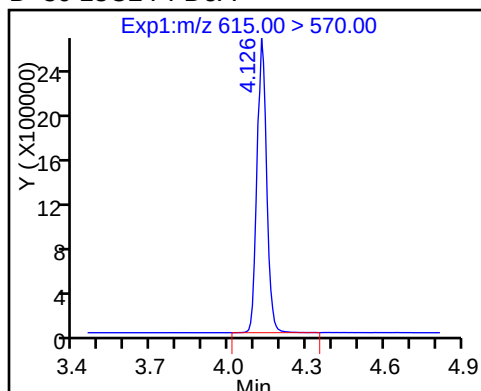
D 27 13C2 PFUnA



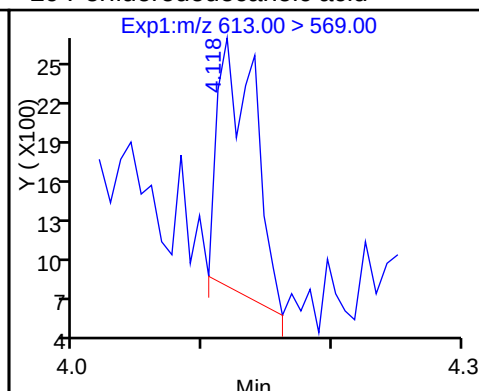
28 Perfluoroundecanoic acid



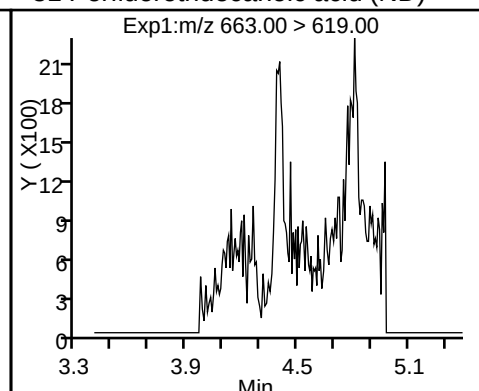
D 30 13C2 PFDaA



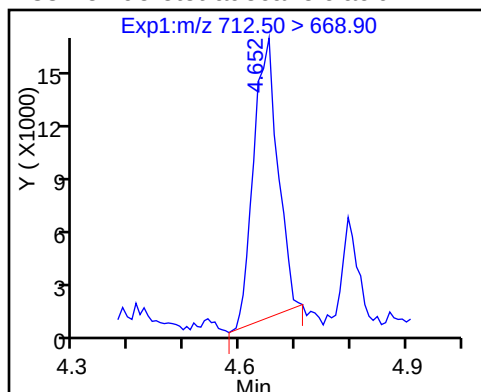
29 Perfluorododecanoic acid



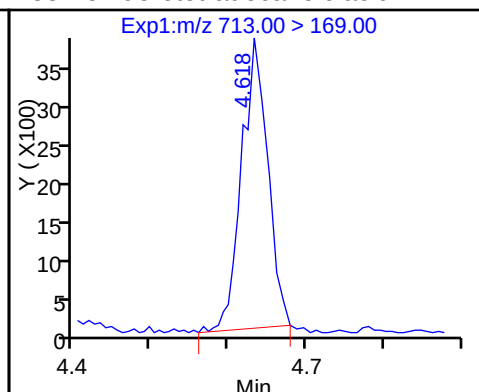
31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FFTA4TMW-1216</u>	Lab Sample ID: <u>320-24236-9</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_027.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 14:10</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>261.1 (mL)</u>	Date Analyzed: <u>12/29/2016 03:07</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.40	E	0.0024	0.00096	0.00044
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.74	E	0.0024	0.0019	0.00095
307-24-4	Perfluorohexanoic acid (PFHxA)	1.1	E B	0.0024	0.0019	0.00075
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.0	E	0.0024	0.0019	0.00077
335-67-1	Perfluorooctanoic acid (PFOA)	7.3	E M	0.0024	0.0019	0.00072
375-95-1	Perfluorononanoic acid (PFNA)	0.0055		0.0024	0.0019	0.00063
335-76-2	Perfluorodecanoic acid (PFDA)	0.00096	U	0.0024	0.00096	0.00042
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0019	U	0.0024	0.0019	0.00072
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0019	U	0.0024	0.0019	0.00056
72629-94-8	Perfluorotridecanoic Acid (PFTrIA)	0.0019	U	0.0024	0.0019	0.00053
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00048	J	0.0024	0.00096	0.00038
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.0	E M	0.0024	0.0019	0.00088
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	3.9	E	0.0024	0.0019	0.00083
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.068		0.0038	0.0029	0.0012
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0029	U	0.0038	0.0029	0.0012
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0019	U	0.0024	0.0019	0.00061

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FFTA4TMW-1216</u>	Lab Sample ID: <u>320-24236-9</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_027.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 14:10</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>261.1(mL)</u>	Date Analyzed: <u>12/29/2016 03:07</u>
Con. Extract Vol.: <u>0.5(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	2	Q	25-150
STL00992	13C4 PFBA	38		25-150
STL01893	13C5-PFPeA	61		25-150
STL00993	13C2 PFHxA	43		25-150
STL01892	13C4-PFHpA	30		25-150
STL00990	13C4 PFOA	23	Q	25-150
STL00995	13C5 PFNA	126		25-150
STL00996	13C2 PFDA	130		25-150
STL00997	13C2 PFUnA	135		25-150
STL00998	13C2 PFDoA	116		25-150
STL00994	18O2 PFHxS	25		25-150
STL00991	13C4 PFOS	130		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_027.d
 Lims ID: 320-24236-A-9-A
 Client ID: FFTA4TMW-1216
 Sample Type: Client
 Inject. Date: 29-Dec-2016 03:07:06 ALS Bottle#: 21 Worklist Smp#: 27
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24236-a-9-a
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2017 09:09:50 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK020

First Level Reviewer: phomsophat

Date: 29-Dec-2016 18:22:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.533	1.534	-0.001		6679538	19.2		38.4	385944	
1 Perfluorobutyric acid										E
212.90 > 169.00	1.533	1.534	-0.001	1.000	23737515	208.1			74672	E
D 4 13C5-PFPeA										
267.90 > 223.00	1.800	1.810	-0.010		8112212	30.5		61.0	271016	
3 Perfluoropentanoic acid										E
262.90 > 219.00	1.810	1.810	0.0	1.000	61511438	384.2			112411	E
5 Perfluorobutanesulfonic acid										EM
298.90 > 80.00	1.858	1.849	0.009	1.000	63814305	541.2				EM
298.90 > 99.00	1.839	1.849	-0.010	0.990	50947772		1.25(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.086	2.097	-0.011		5209249	21.3		42.5	246922	
7 Perfluorohexanoic acid										E
313.00 > 269.00	2.113	2.097	0.016	1.000	55229348	570.8			1455	E
9 Perfluorohexanesulfonic acid										E
399.00 > 80.00	2.398	2.444	-0.046	1.000	175499380	2047.7				E
D 11 13C4-PFHpA										
367.00 > 322.00	2.413	2.429	-0.016		3394738	15.0		30.0	199608	
12 Perfluoroheptanoic acid										E
363.00 > 319.00	2.413	2.429	-0.016	1.000	35609387	535.8			3835	E
D 10 18O2 PFHxS										
403.00 > 84.00	2.437	2.444	-0.007		3935838	12.0		25.4	41215	
D 14 13C4 PFOA										
417.00 > 372.00	2.770	2.782	-0.012		2600861	11.3		22.6	95119	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.691	2.782	-0.091	1.000	200120419	3835.1			7430	EM
413.00 > 169.00	2.700	2.782	-0.082	1.003	194122000		1.03(0.90-1.10)		58789	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	2.906	3.134	-0.228	1.000	11413502	35.5			20118	
499.00 > 99.00	3.157	3.134	0.023	1.086	1876809		6.08(0.90-1.10)		47119	
D 17 13C4 PFOS										
503.00 > 80.00	3.149	3.150	-0.001		15433297	62.0		130	640451	
20 Perfluorononanoic acid										
463.00 > 419.00	3.157	3.150	0.007	1.000	615897	2.88			1065	
D 19 13C5 PFNA										
468.00 > 423.00	3.157	3.150	0.007		11234209	63.2		126	651500	
D 21 13C8 FOSA										
506.00 > 78.00	3.483	3.481	0.002		473300	1.23		2.5	34807	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.517	3.515	0.001	1.000	23411	0.1216			407	
D 23 13C2 PFDA										
515.00 > 470.00	3.517	3.515	0.001		10202688	64.9		130	288967	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.827	3.825	0.002	1.000	2351	0.0125				
D 27 13C2 PFUnA										
565.00 > 520.00	3.835	3.842	-0.007		7885381	67.3		135	483687	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.835	3.842	-0.007	1.000	21596	0.1432			376	
D 30 13C2 PFDoA										
615.00 > 570.00	4.134	4.134	0.0		6446996	58.1		116	205769	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.652	4.643	0.009	1.000	50702	0.2481			655	
713.00 > 169.00	4.633	4.643	-0.010	0.996	7726		6.56(0.00-0.00)		2862	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_027.d

Injection Date: 29-Dec-2016 03:07:06

Instrument ID: A8_N

Lims ID: 320-24236-A-9-A

Lab Sample ID: 320-24236-9

Client ID: FFTA4TMW-1216

Operator ID: A8-PC\A8

ALS Bottle#: 21

Worklist Smp#: 27

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

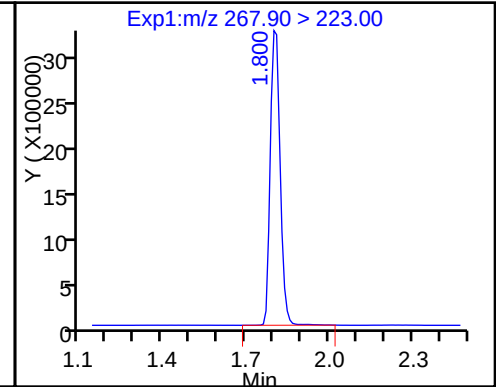
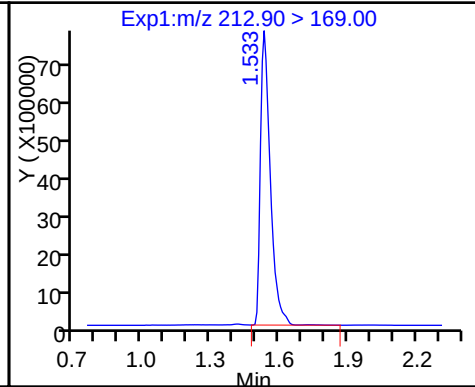
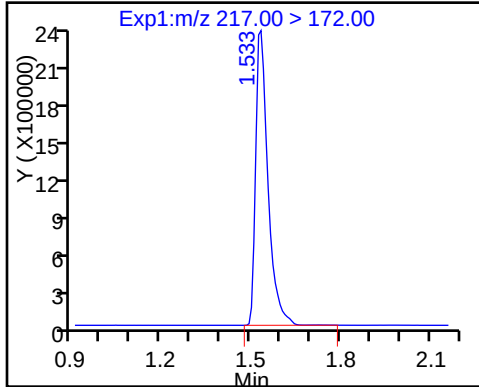
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

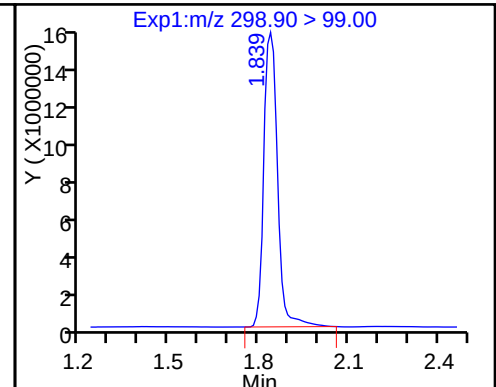
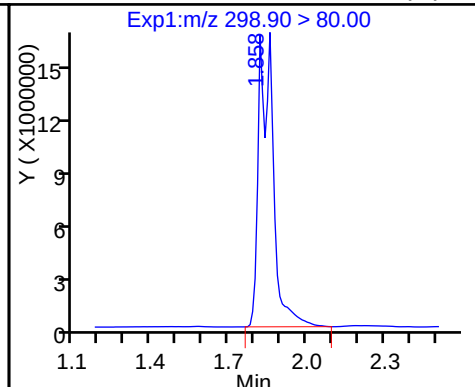
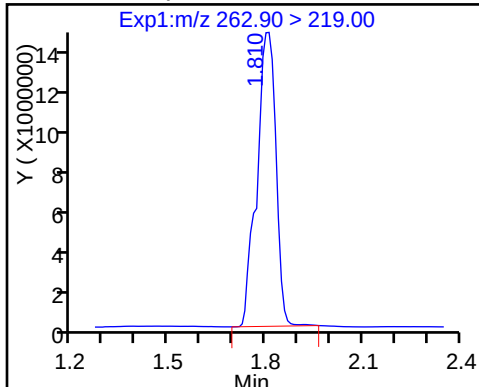
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid (M)

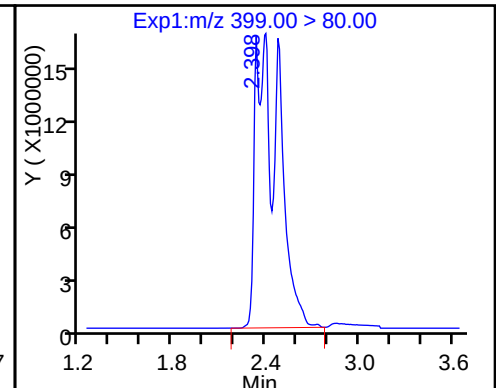
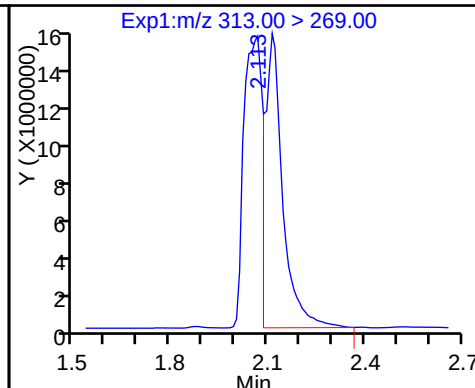
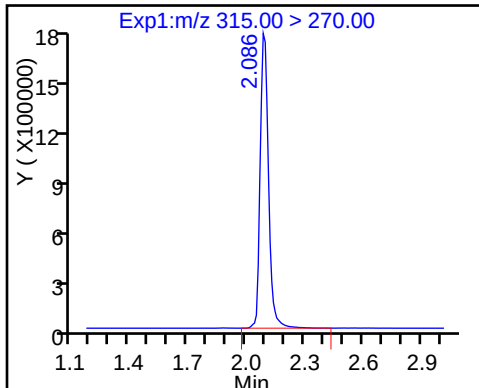
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

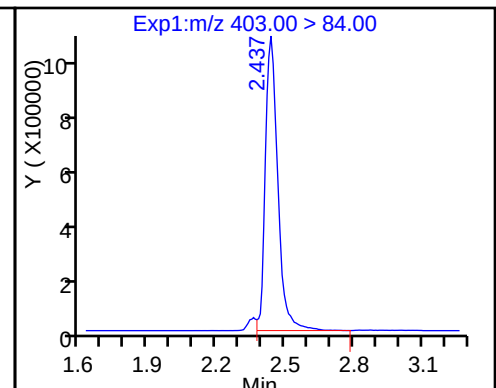
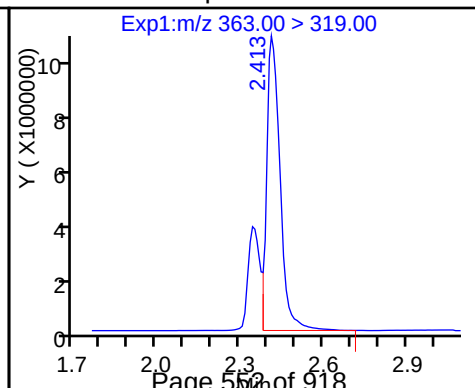
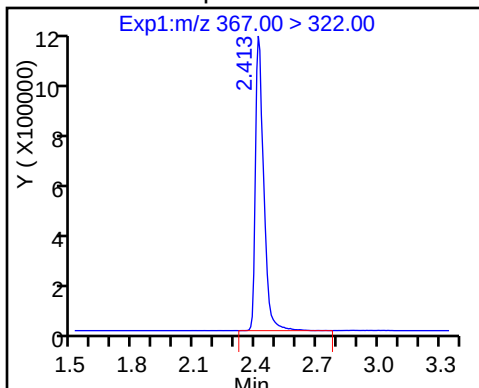
9 Perfluorohexanesulfonic acid



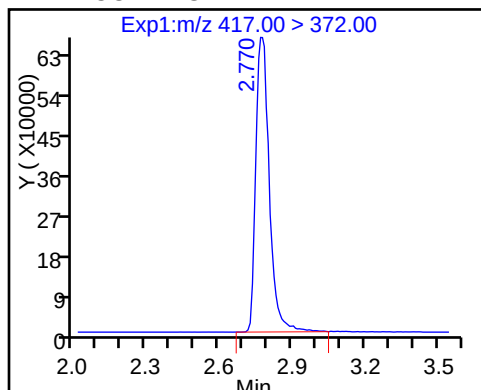
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid

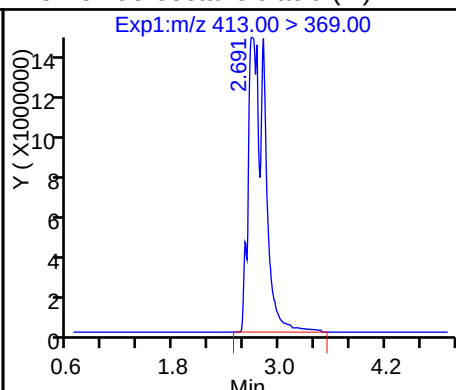
D 10 18O2 PFHxS



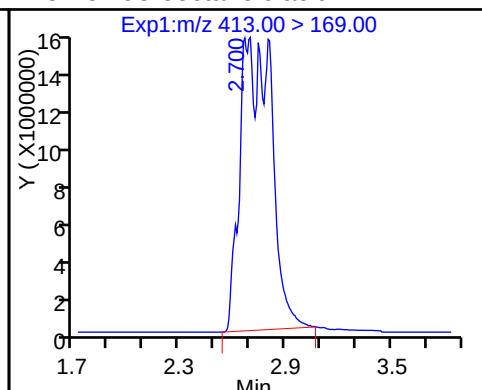
D 14 13C4 PFOA



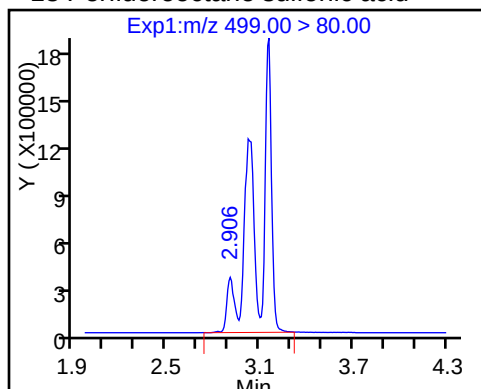
15 Perfluorooctanoic acid (M)



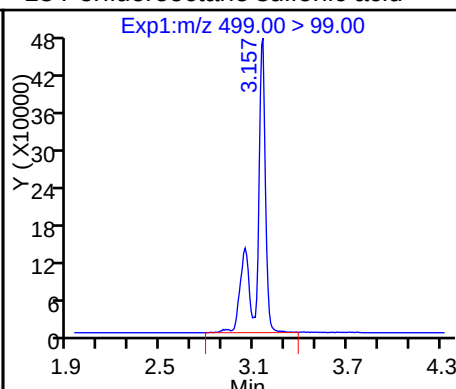
15 Perfluorooctanoic acid



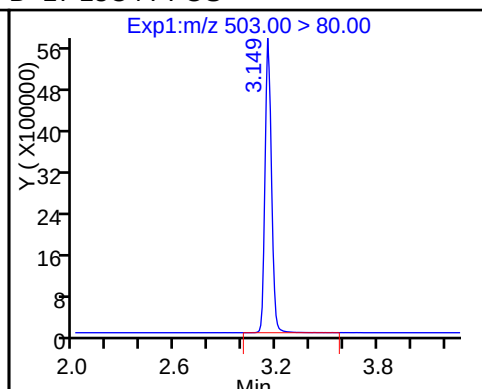
18 Perfluorooctane sulfonic acid



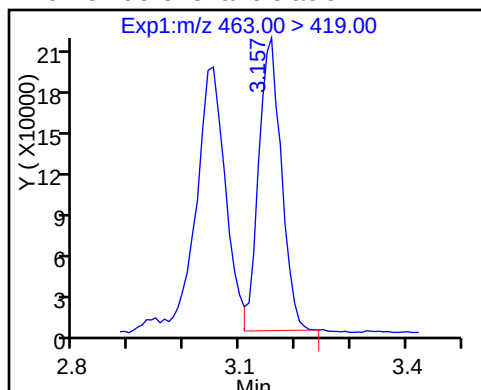
18 Perfluorooctane sulfonic acid



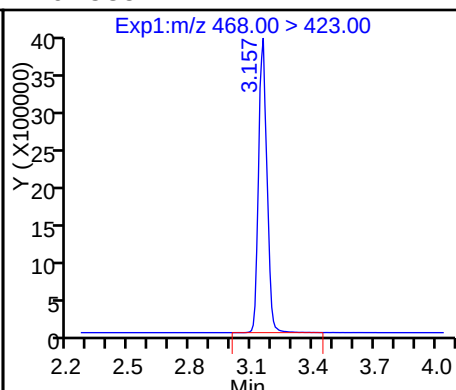
D 17 13C4 PFOS



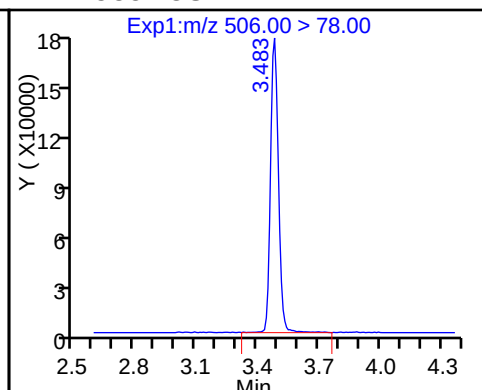
20 Perfluorononanoic acid



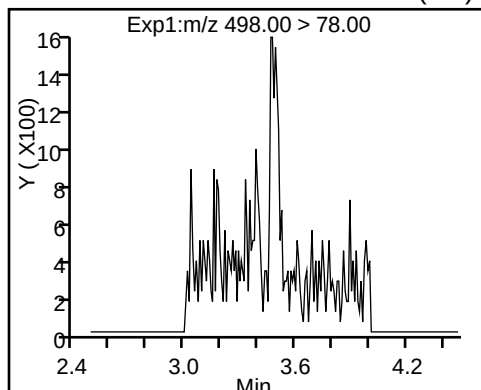
D 19 13C5 PFNA



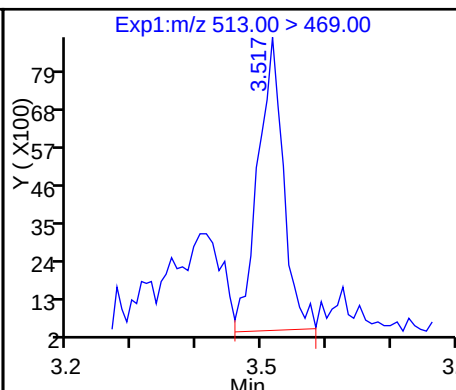
D 21 13C8 FOSA



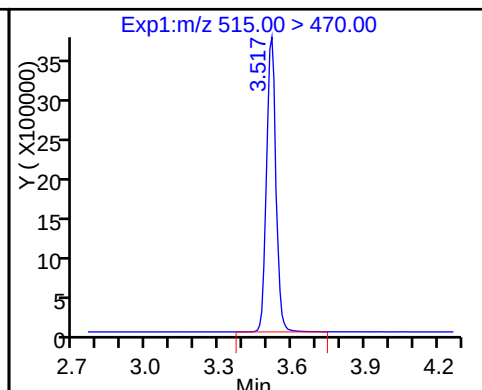
22 Perfluorooctane Sulfonamide (ND)



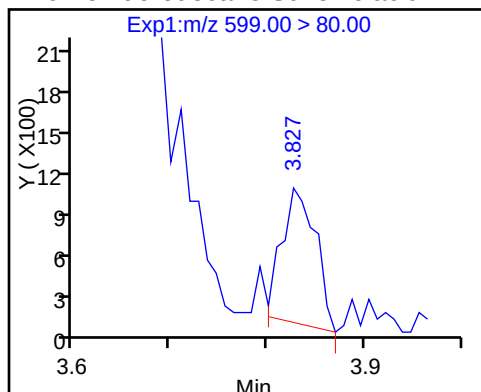
24 Perfluorodecanoic acid



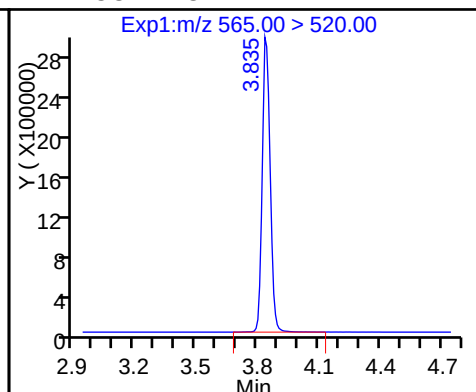
D 23 13C2 PFDA



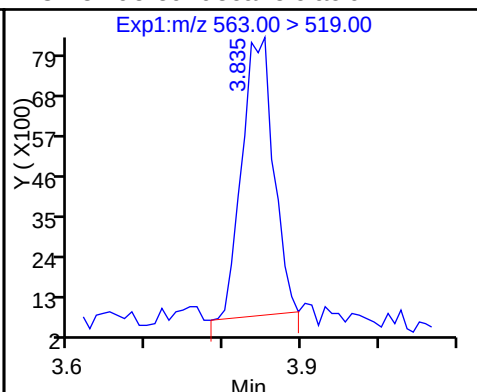
26 Perfluorodecane Sulfonic acid



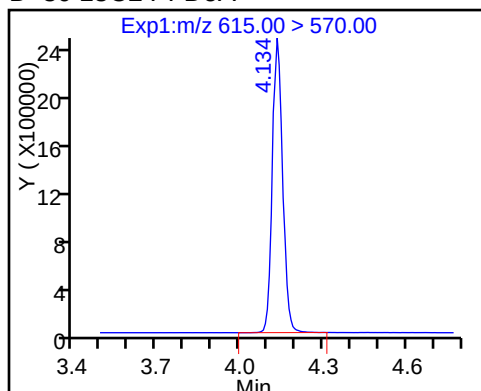
D 27 13C2 PFUnA



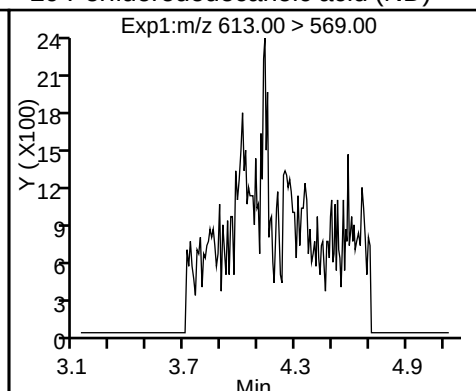
28 Perfluoroundecanoic acid



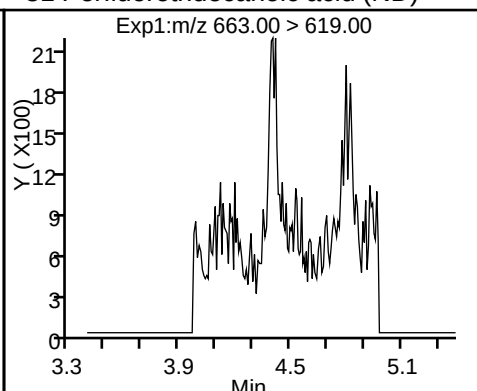
D 30 13C2 PFDaA



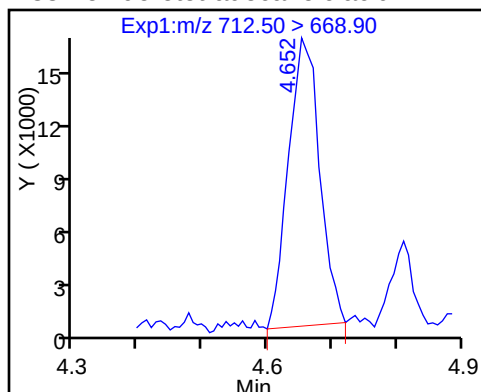
29 Perfluorododecanoic acid (ND)



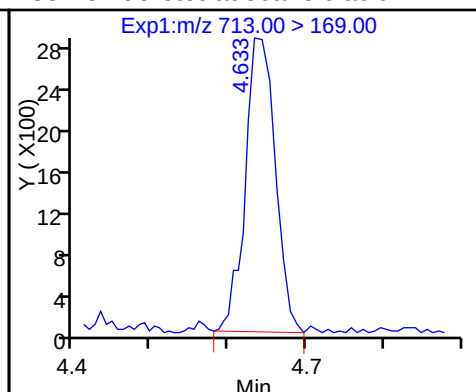
31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Sacramento

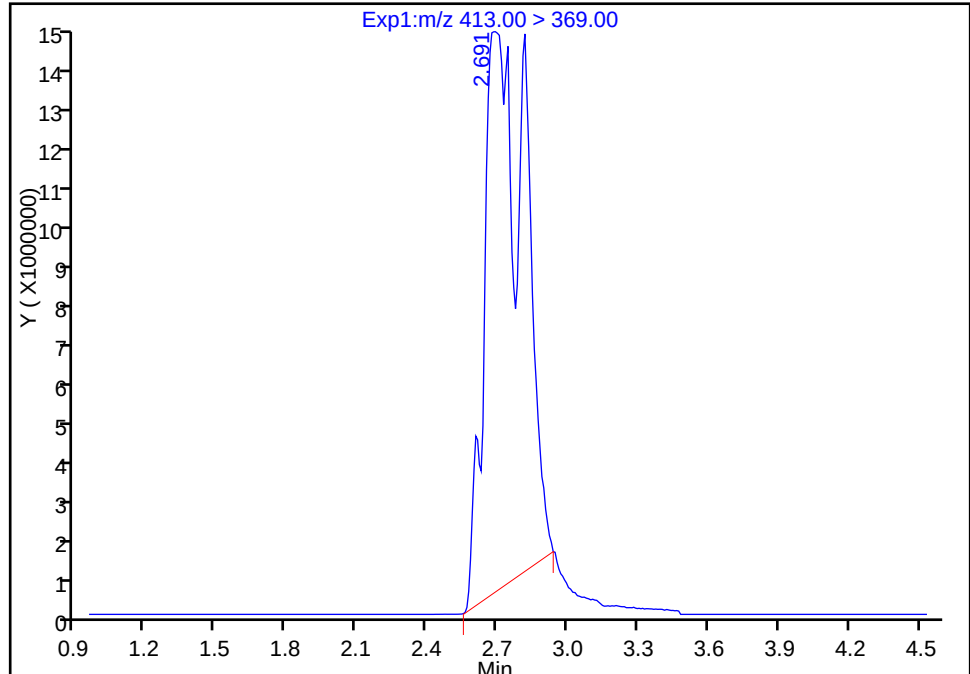
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_027.d		
Injection Date:	29-Dec-2016 03:07:06	Instrument ID:	A8_N
Lims ID:	320-24236-A-9-A	Lab Sample ID:	320-24236-9
Client ID:	FFTA4TMW-1216		
Operator ID:	A8-PC\A8	ALS Bottle#:	21
Injection Vol:	2.0 ul	Dil. Factor:	1.0000
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL
Column:		Detector:	EXP1
		Worklist Smp#:	27

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

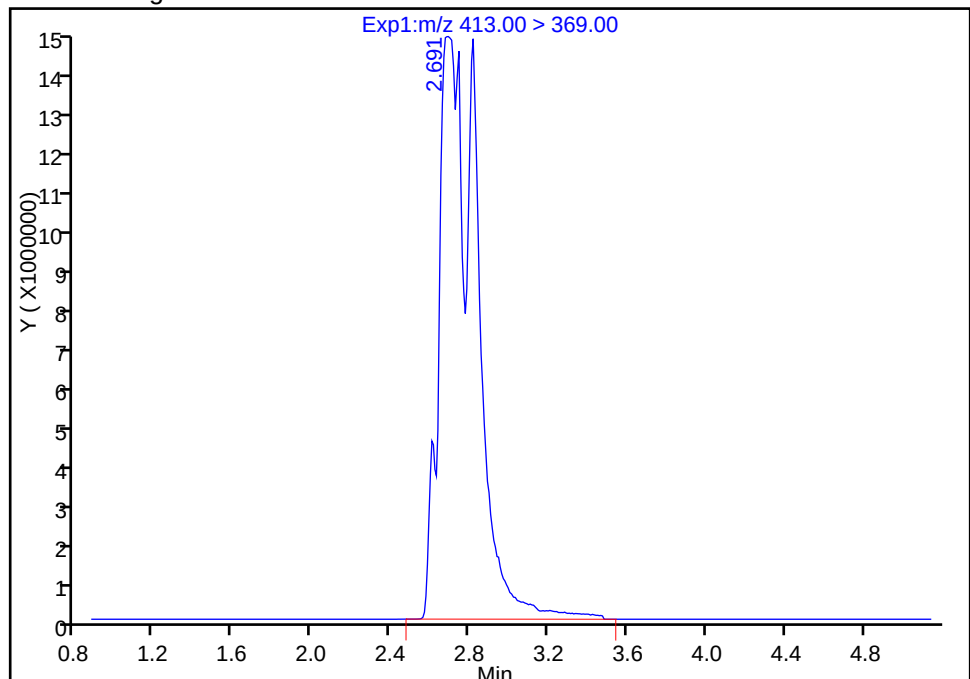
RT: 2.69
Area: 170366375
Amount: 3264.9290
Amount Units: ng/ml

Processing Integration Results



RT: 2.69
Area: 200120419
Amount: 3835.1403
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 29-Dec-2016 18:22:29

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento

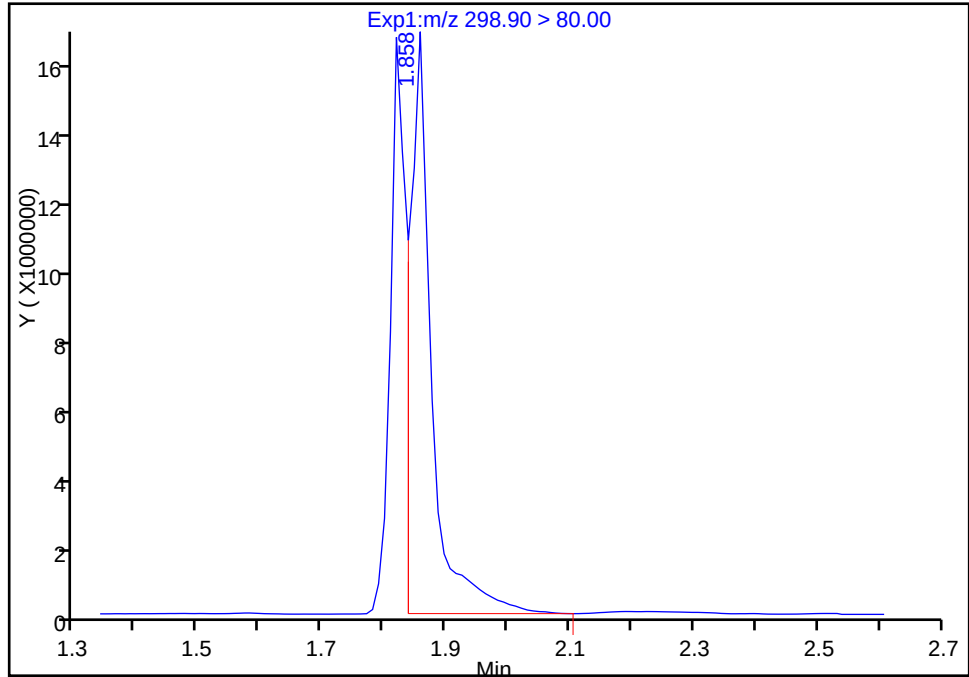
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Injection Date:	29-Dec-2016 03:07:06	Instrument ID:	A8_N		
Lims ID:	320-24236-A-9-A	Lab Sample ID:	320-24236-9		
Client ID:	FFTA4TMW-1216				
Operator ID:	A8-PC\A8	ALS Bottle#:	21	Worklist Smp#:	27
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

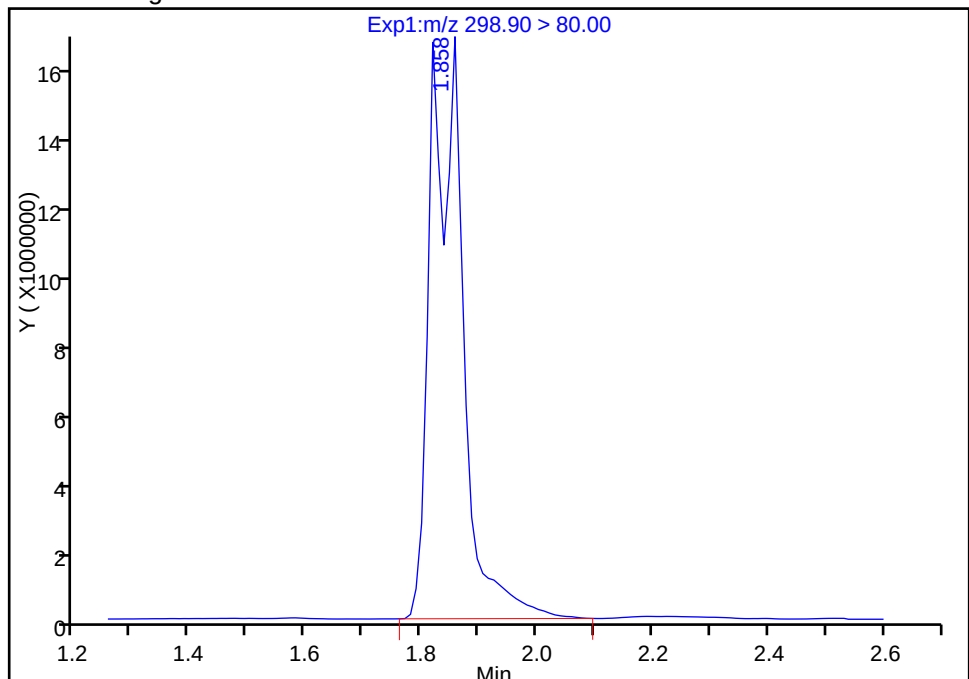
RT: 1.86
Area: 37171949
Amount: 315.2705
Amount Units: ng/ml

Processing Integration Results



RT: 1.86
Area: 63814305
Amount: 541.2353
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 06-Jan-2017 09:09:50

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FFTA4TMW-1216 DL</u>	Lab Sample ID: <u>320-24236-9 DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>03JAN2017C_024.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 14:10</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>261.1 (mL)</u>	Date Analyzed: <u>01/03/2017 17:06</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>100</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144867</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.43	D	0.24	0.096	0.044
2706-90-3	Perfluoropentanoic acid (PFPeA)	1.4	D	0.24	0.19	0.095
307-24-4	Perfluorohexanoic acid (PFHxA)	7.6	B D	0.24	0.19	0.075
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.2	D	0.24	0.19	0.077
335-67-1	Perfluorooctanoic acid (PFOA)	23	D M	0.24	0.19	0.072
375-95-1	Perfluorononanoic acid (PFNA)	0.19	U	0.24	0.19	0.063
335-76-2	Perfluorodecanoic acid (PFDA)	0.096	U	0.24	0.096	0.042
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.19	U	0.24	0.19	0.072
307-55-1	Perfluorododecanoic acid (PFDoA)	0.19	U	0.24	0.19	0.056
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.19	U	0.24	0.19	0.053
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.096	U	0.24	0.096	0.038
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	D	0.24	0.19	0.088
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	15	D	0.24	0.19	0.083
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.29	U	0.38	0.29	0.12
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.29	U	0.38	0.29	0.12
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.19	U	0.24	0.19	0.061

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FFTA4TMW-1216 DL</u>	Lab Sample ID: <u>320-24236-9 DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>03JAN2017C_024.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 14:10</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>261.1(mL)</u>	Date Analyzed: <u>01/03/2017 17:06</u>
Con. Extract Vol.: <u>0.5(mL)</u>	Dilution Factor: <u>100</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144867</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	4	Q	25-150
STL00992	13C4 PFBA	148		25-150
STL01893	13C5-PFPeA	149		25-150
STL00993	13C2 PFHxA	133		25-150
STL01892	13C4-PFHpA	122		25-150
STL00990	13C4 PFOA	138		25-150
STL00995	13C5 PFNA	175	Q	25-150
STL00996	13C2 PFDA	175	Q	25-150
STL00997	13C2 PFUnA	151	Q	25-150
STL00998	13C2 PFDoA	150		25-150
STL00994	18O2 PFHxS	138		25-150
STL00991	13C4 PFOS	136		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170104-38437.b\03JAN2017C_024.d
 Lims ID: 320-24236-A-9-A
 Client ID: FFTA4TMW-1216
 Sample Type: Client
 Inject. Date: 03-Jan-2017 17:06:03 ALS Bottle#: 50 Worklist Smp#: 24
 Injection Vol: 2.0 ul Dil. Factor: 100.0000
 Sample Info: 320-24236-a-9-a
 Misc. Info.: Plate: 1 Rack: 5
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170104-38437.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2017 10:14:47 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: chandrasenas

Date: 04-Jan-2017 10:13:36

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.614	1.630	-0.016		257509	0.7405		1.5	39485	
1 Perfluorobutyric acid										
212.90 > 169.00	1.623	1.638	-0.016	1.000	976790	2.22			6848	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.907	1.935	-0.028	1.000	2853872	7.28			25194	
D 4 13C5-PFPeA										
267.90 > 223.00	1.907	1.935	-0.028		198605	0.7464		1.5	24707	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.955	1.974	-0.019	1.000	6758182	10.6				
298.90 > 99.00	1.945	1.974	-0.029	0.995	2885126		2.34(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.214	2.239	-0.025		163003	0.6650		1.3	28657	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.214	2.239	-0.025	1.000	11948023	39.5			350276	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.562	2.591	-0.029	1.000	1703905	6.30			7997	
D 11 13C4-PFHpA										
367.00 > 322.00	2.555	2.591	-0.036		138139	0.6103		1.2	15763	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.570	2.576	-0.006	1.000	35631506	76.7				
D 10 18O2 PFHxS										
403.00 > 84.00	2.570	2.606	-0.036		213330	0.6524		1.4	74875	
D 14 13C4 PFOA										
417.00 > 372.00	2.922	2.955	-0.033		158965	0.6901		1.4	54633	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.930	2.963	-0.033	1.000	38627652	121.1			227391	M
413.00 > 169.00	2.826	2.963	-0.137	0.964	28160757		1.37(0.90-1.10)		143010	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 17 13C4 PFOS										
503.00 > 80.00	3.296	3.328	-0.032		161880	0.6505		1.4	18567	
D 19 13C5 PFNA										
468.00 > 423.00	3.296	3.343	-0.047		155323	0.8741		1.7	18451	
D 21 13C8 FOSA										
506.00 > 78.00	3.625	3.659	-0.034		7133	0.0186		0.0	667	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.699	3.688	0.011	1.000	2243	0.008653			49.5	
D 23 13C2 PFDA										
515.00 > 470.00	3.661	3.688	-0.027		137319	0.8730		1.7	3624	
D 27 13C2 PFUnA										
565.00 > 520.00	3.975	4.016	-0.041		88349	0.7535		1.5	7327	
D 30 13C2 PFDaA										
615.00 > 570.00	4.269	4.298	-0.029		83099	0.7489		1.5	3168	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170104-38437.b\03JAN2017C_024.d

Injection Date: 03-Jan-2017 17:06:03

Instrument ID: A8_N

Lims ID: 320-24236-A-9-A

Lab Sample ID: 320-24236-9

Client ID: FFTA4TMW-1216

Operator ID: A8-PC\A8

ALS Bottle#: 50

Worklist Smp#: 24

Injection Vol: 2.0 ul

Dil. Factor: 100.0000

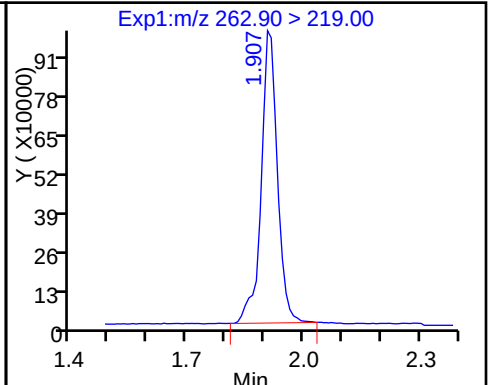
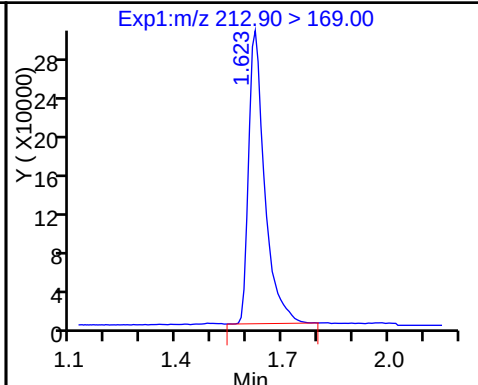
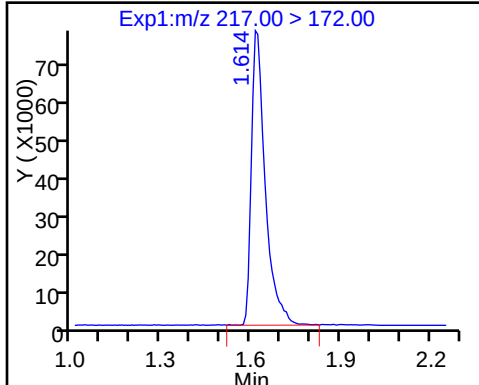
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

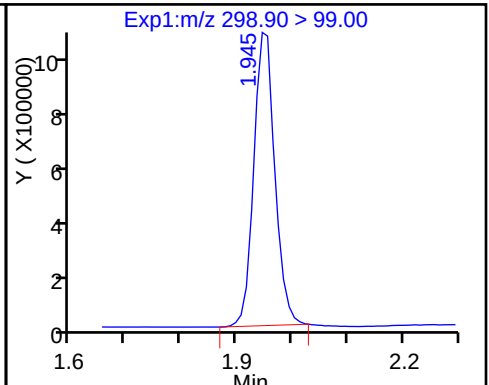
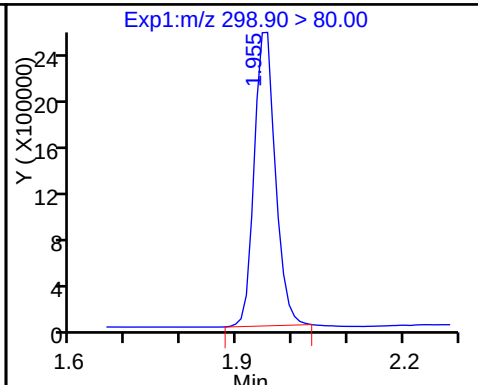
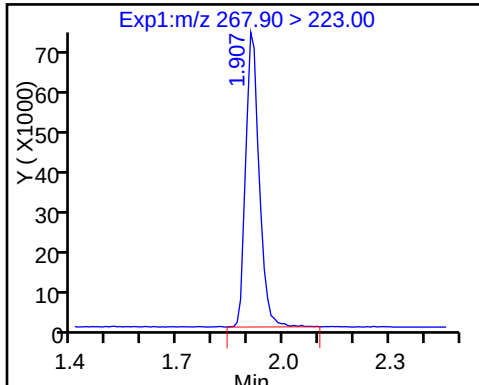
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

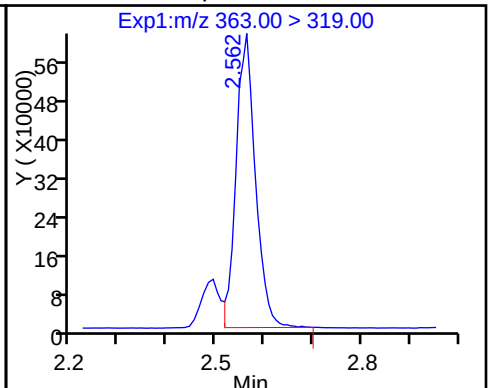
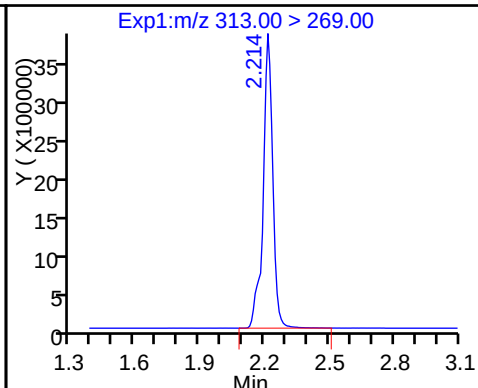
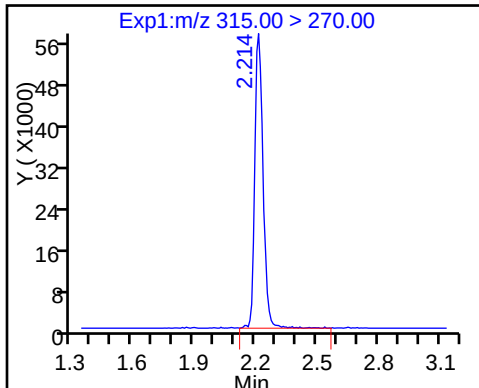
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

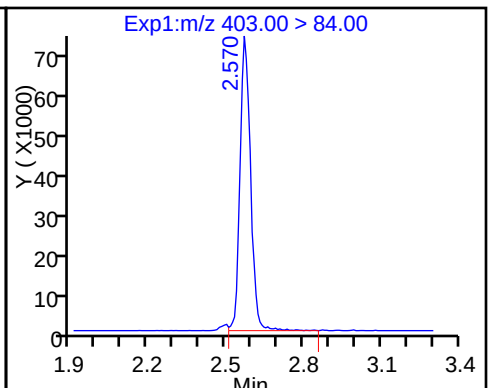
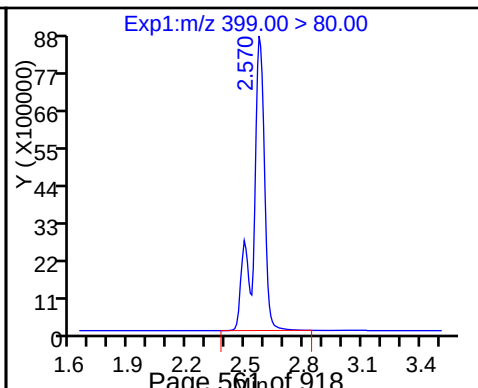
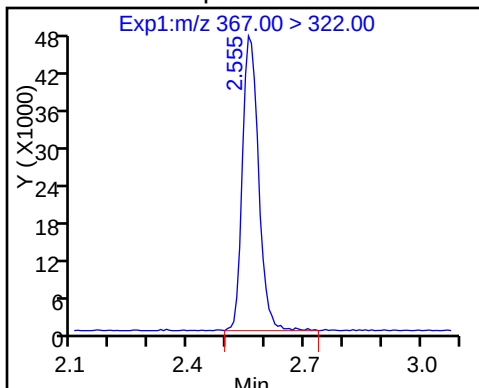
12 Perfluoroheptanoic acid



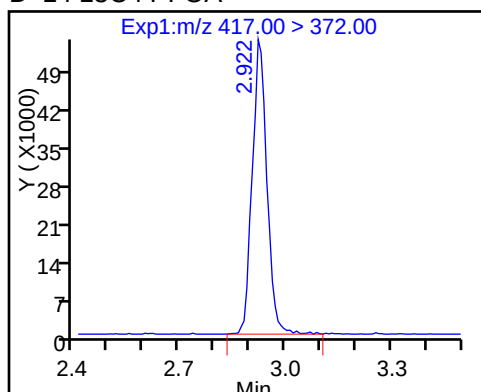
D 11 13C4-PFHpA

9 Perfluorohexanesulfonic acid

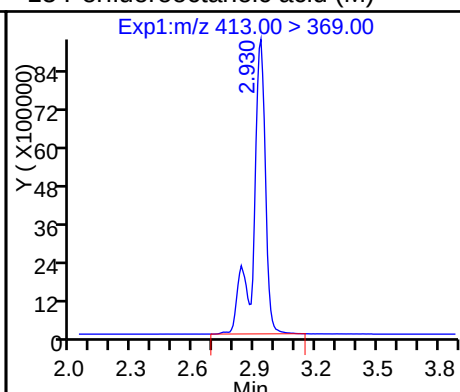
D 10 18O2 PFHxS



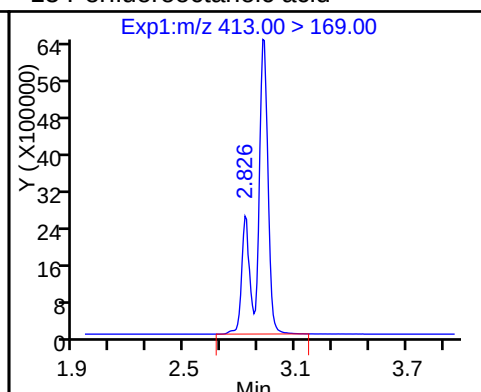
D 14 13C4 PFOA



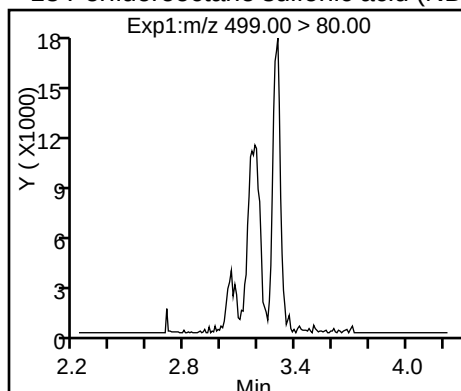
15 Perfluorooctanoic acid (M)



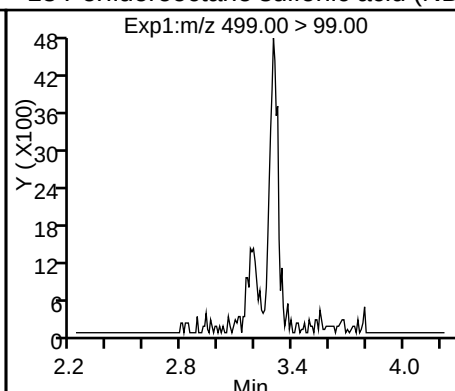
15 Perfluorooctanoic acid



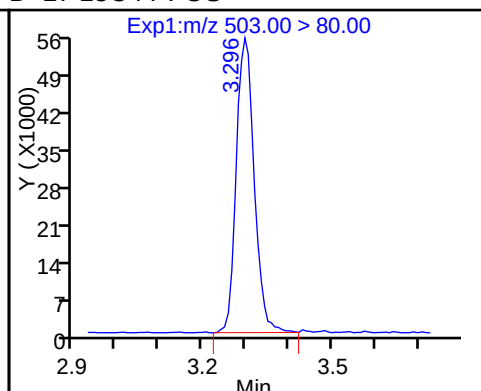
18 Perfluorooctane sulfonic acid (ND)



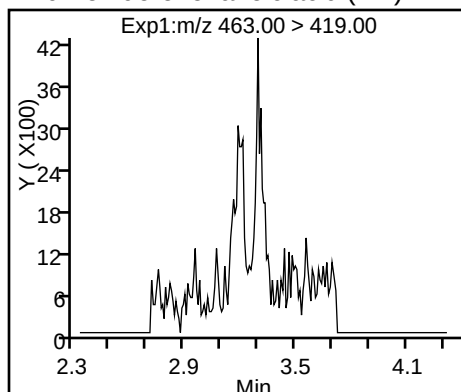
18 Perfluorooctane sulfonic acid (ND)



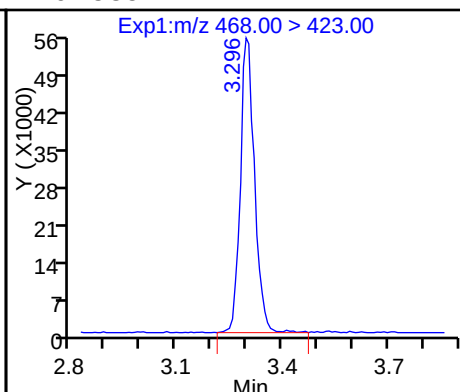
D 17 13C4 PFOS



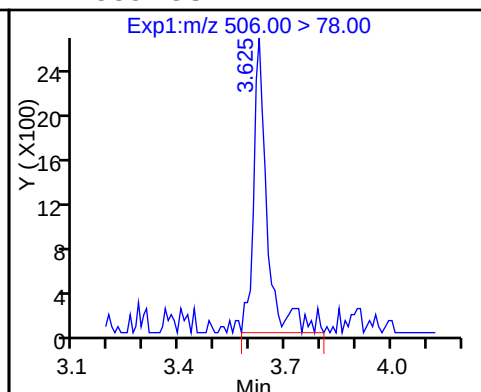
20 Perfluorononanoic acid (ND)



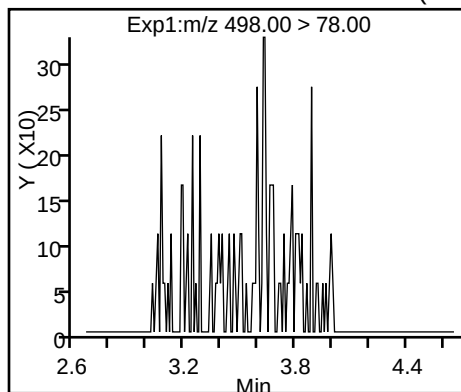
D 19 13C5 PFNA



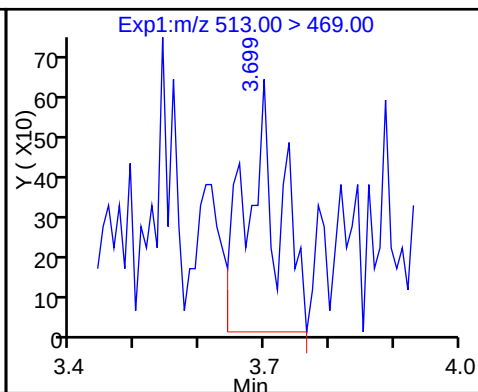
D 21 13C8 FOSA



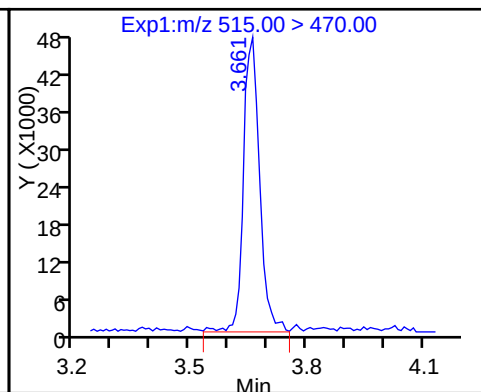
22 Perfluorooctane Sulfonamide (ND)



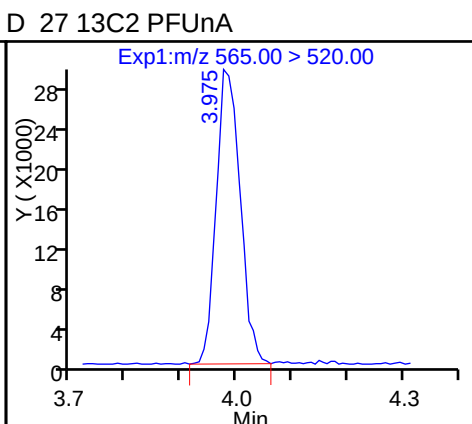
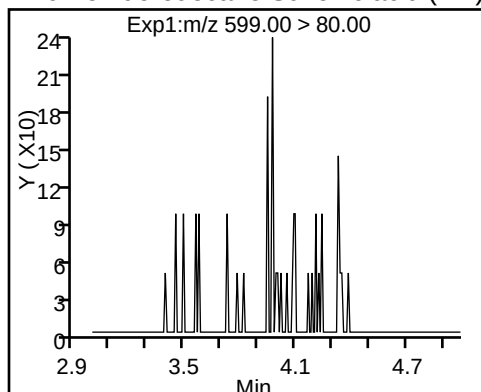
24 Perfluorodecanoic acid



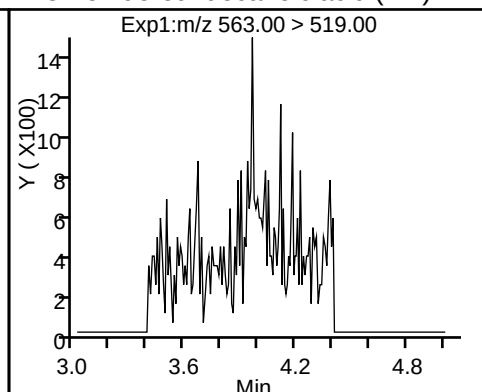
D 23 13C2 PFDA



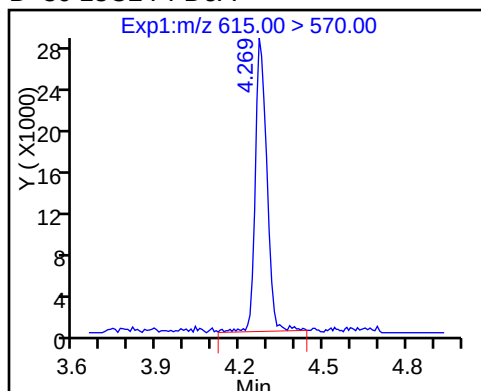
26 Perfluorodecane Sulfonic acid (ND) D 27 13C2 PFUnA



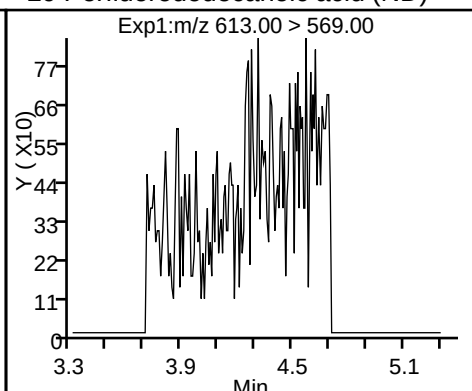
28 Perfluoroundecanoic acid (ND)



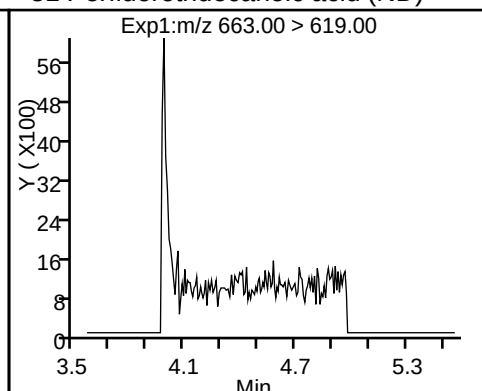
D 30 13C2 PFDaA



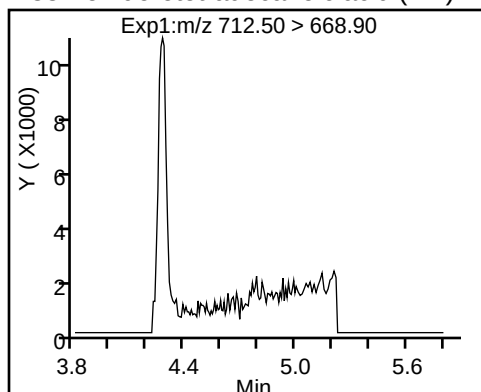
29 Perfluorododecanoic acid (ND)



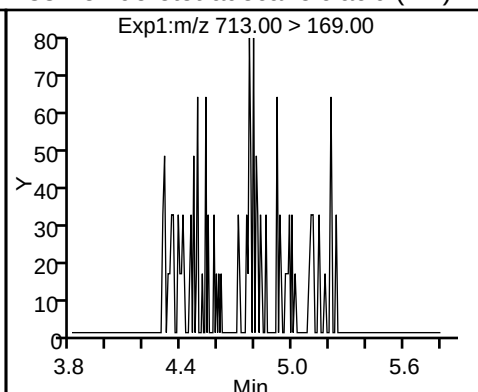
31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND)



TestAmerica Sacramento

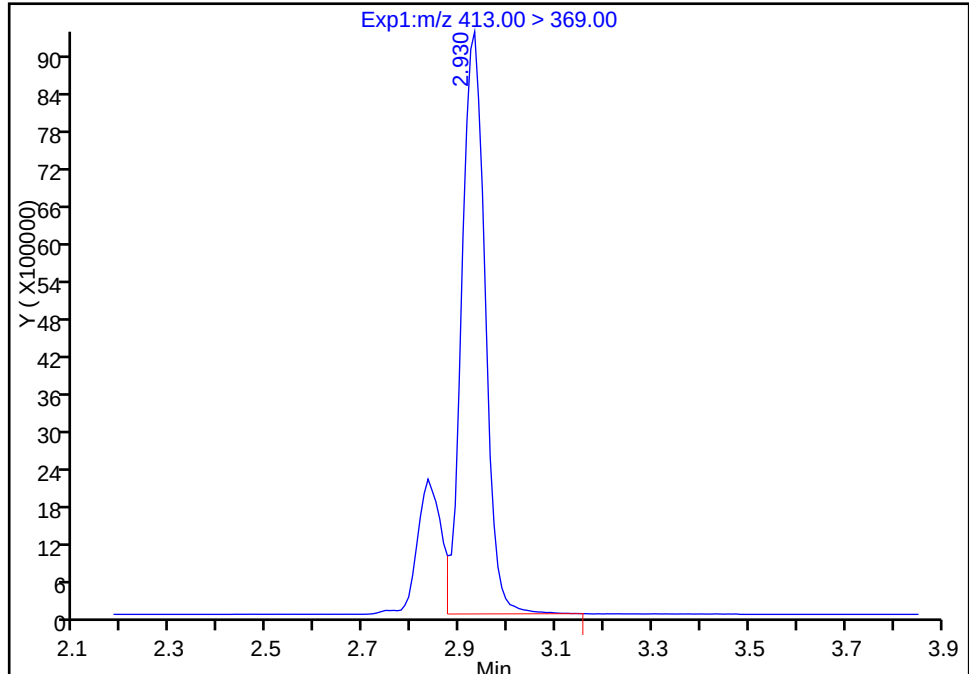
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170104-38437.b\03JAN2017C_024.d				
Injection Date:	03-Jan-2017 17:06:03	Instrument ID:	A8_N		
Lims ID:	320-24236-A-9-A	Lab Sample ID:	320-24236-9		
Client ID:	FFTA4TMW-1216				
Operator ID:	A8-PC\A8	ALS Bottle#:	50	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. Factor:	100.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

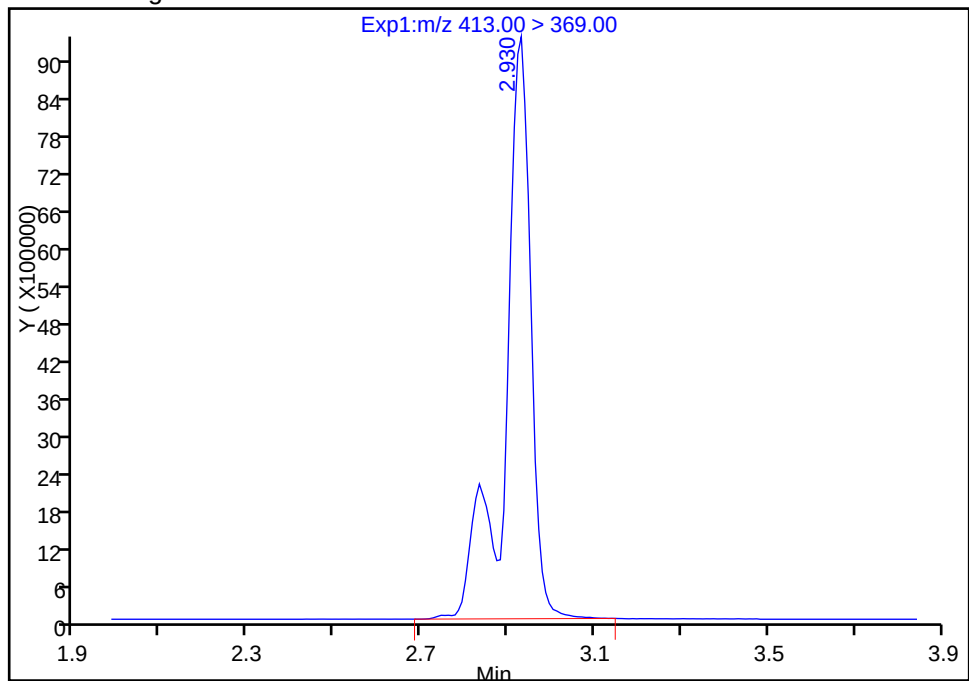
RT: 2.93
Area: 31379457
Amount: 98.389988
Amount Units: ng/ml

Processing Integration Results



RT: 2.93
Area: 38627652
Amount: 121.1166
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 04-Jan-2017 10:13:36

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FFTA4TMW-1216-D</u>	Lab Sample ID: <u>320-24236-10</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_028.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 00:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>260.7 (mL)</u>	Date Analyzed: <u>12/29/2016 03:14</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.42	E	0.0024	0.00096	0.00044
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.76	E	0.0024	0.0019	0.00095
307-24-4	Perfluorohexanoic acid (PFHxA)	1.0	E B	0.0024	0.0019	0.00075
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.1	E	0.0024	0.0019	0.00077
335-67-1	Perfluorooctanoic acid (PFOA)	7.5	E M	0.0024	0.0019	0.00072
375-95-1	Perfluorononanoic acid (PFNA)	0.0050		0.0024	0.0019	0.00063
335-76-2	Perfluorodecanoic acid (PFDA)	0.00096	U	0.0024	0.00096	0.00042
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0019	U	0.0024	0.0019	0.00072
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0019	U	0.0024	0.0019	0.00056
72629-94-8	Perfluorotridecanoic Acid (PFTrIA)	0.0019	U	0.0024	0.0019	0.00053
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00091	J	0.0024	0.00096	0.00038
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.1	E M	0.0024	0.0019	0.00088
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	4.2	E	0.0024	0.0019	0.00083
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.064		0.0038	0.0029	0.0012
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0029	U	0.0038	0.0029	0.0012
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0019	U	0.0024	0.0019	0.00061

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FFTA4TMW-1216-D</u>	Lab Sample ID: <u>320-24236-10</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_028.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 00:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>260.7(mL)</u>	Date Analyzed: <u>12/29/2016 03:14</u>
Con. Extract Vol.: <u>0.5(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	2	Q	25-150
STL00992	13C4 PFBA	34		25-150
STL01893	13C5-PFPeA	56		25-150
STL00993	13C2 PFHxA	40		25-150
STL01892	13C4-PFHpA	29		25-150
STL00990	13C4 PFOA	21	Q	25-150
STL00995	13C5 PFNA	120		25-150
STL00996	13C2 PFDA	129		25-150
STL00997	13C2 PFUnA	133		25-150
STL00998	13C2 PFDoA	122		25-150
STL00994	18O2 PFHxS	24	Q	25-150
STL00991	13C4 PFOS	124		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_028.d
 Lims ID: 320-24236-A-10-A
 Client ID: FFTA4TMW-1216-D
 Sample Type: Client
 Inject. Date: 29-Dec-2016 03:14:36 ALS Bottle#: 22 Worklist Smp#: 28
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24236-a-10-a
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Dec-2016 18:23:44 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK027

First Level Reviewer: phomsophat

Date: 29-Dec-2016 18:23:44

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.525	1.534	-0.009		5988707	17.2		34.4	349606	
1 Perfluorobutyric acid										E
212.90 > 169.00	1.533	1.534	-0.001	1.000	22133694	216.5			75299	E
D 4 13C5-PFPeA										
267.90 > 223.00	1.800	1.810	-0.010		7426870	27.9		55.8	276855	
3 Perfluoropentanoic acid										E
262.90 > 219.00	1.800	1.810	-0.010	1.000	58114921	396.5			86369	E
5 Perfluorobutanesulfonic acid										EM
298.90 > 80.00	1.819	1.849	-0.030	1.000	62455070	552.9				EM
298.90 > 99.00	1.838	1.849	-0.011	1.011	48136661		1.30(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.093	2.097	-0.004		4938024	20.1		40.3	209242	
7 Perfluorohexanoic acid										E
313.00 > 269.00	2.109	2.097	0.012	1.000	49050856	534.7			1417	E
D 11 13C4-PFHpA										
367.00 > 322.00	2.416	2.429	-0.013		3253023	14.4		28.7	229849	
12 Perfluoroheptanoic acid										E
363.00 > 319.00	2.416	2.429	-0.013	1.000	34922936	548.4			4165	E
9 Perfluorohexanesulfonic acid										E
399.00 > 80.00	2.393	2.444	-0.051	1.000	177843902	2166.0				E
D 10 18O2 PFHxS										
403.00 > 84.00	2.432	2.444	-0.012		3770686	11.5		24.4	29114	
D 14 13C4 PFOA										
417.00 > 372.00	2.767	2.782	-0.015		2463100	10.7		21.4	79949	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.681	2.782	-0.101	1.000	192312206	3891.6			48459	EM
413.00 > 169.00	2.666	2.782	-0.116	0.994	193437089		0.99(0.90-1.10)		50807	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	2.903	3.134	-0.231	1.000	10288958	33.6			24391	
499.00 > 99.00	3.154	3.134	0.020	1.086	1705071		6.03(0.90-1.10)		84082	
D 17 13C4 PFOS										
503.00 > 80.00	3.146	3.150	-0.004		14738671	59.2		124	658083	
20 Perfluorononanoic acid										
463.00 > 419.00	3.146	3.150	-0.004	1.000	525511	2.60			1044	
D 19 13C5 PFNA										
468.00 > 423.00	3.146	3.150	-0.004		10617568	59.8		120	467689	
D 21 13C8 FOSA										
506.00 > 78.00	3.480	3.481	-0.001		455116	1.18		2.4	28927	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.514	3.515	-0.001	1.000	21183	0.1108			495	
D 23 13C2 PFDA										
515.00 > 470.00	3.505	3.515	-0.010		10126210	64.4		129	330029	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.806	3.825	-0.019	1.000	7495	0.0416				
D 27 13C2 PFUnA										
565.00 > 520.00	3.841	3.842	-0.001		7806905	66.6		133	425548	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.841	3.842	-0.001	1.000	26966	0.1806			531	
D 30 13C2 PFDoA										
615.00 > 570.00	4.132	4.134	-0.002		6755200	60.9		122	315491	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.132	4.134	-0.002	1.000	17548	0.1415			403	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.395	4.396	-0.001	1.000	25507	0.2082			665	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.642	4.643	-0.001	1.000	102070	0.4767			1395	
713.00 > 169.00	4.632	4.643	-0.011	0.998	16030		6.37(0.00-0.00)		5860	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_028.d

Injection Date: 29-Dec-2016 03:14:36

Instrument ID: A8_N

Lims ID: 320-24236-A-10-A

Lab Sample ID: 320-24236-10

Client ID: FFTA4TMW-1216-D

Operator ID: A8-PC\A8

ALS Bottle#: 22

Worklist Smp#: 28

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

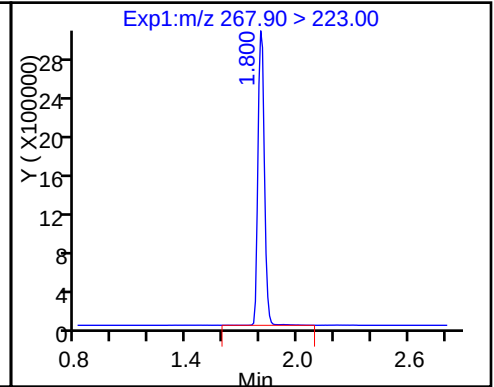
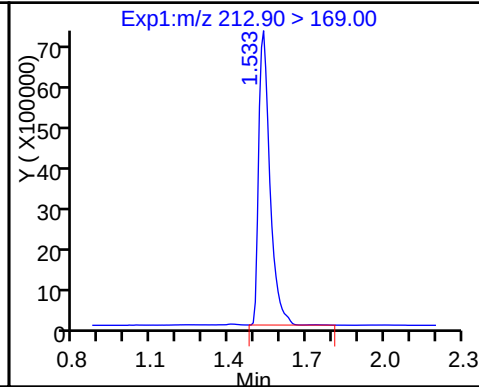
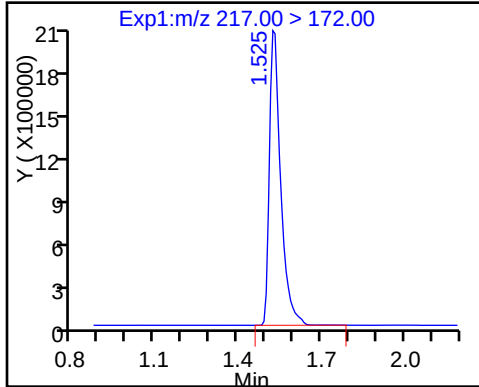
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

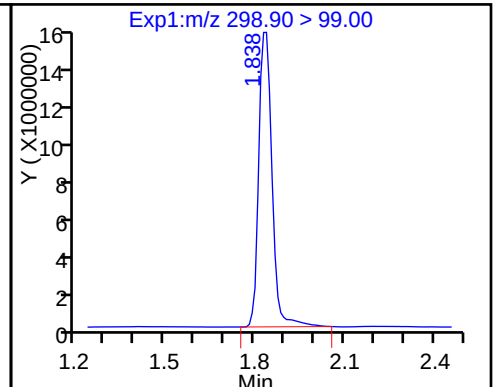
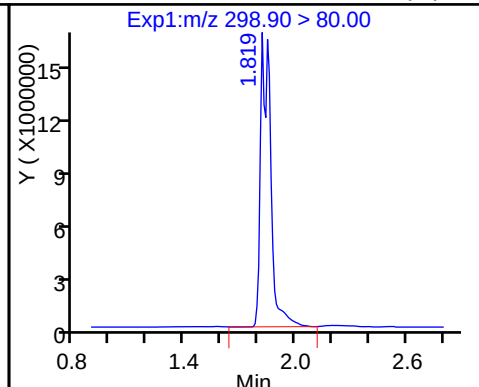
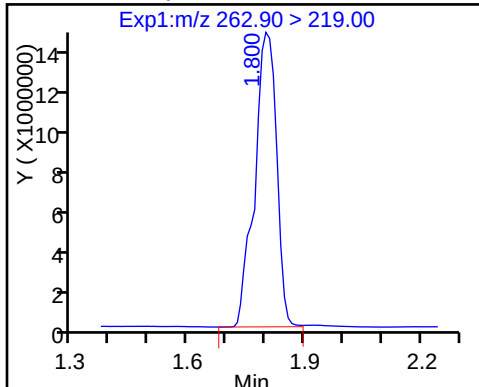
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid (M)

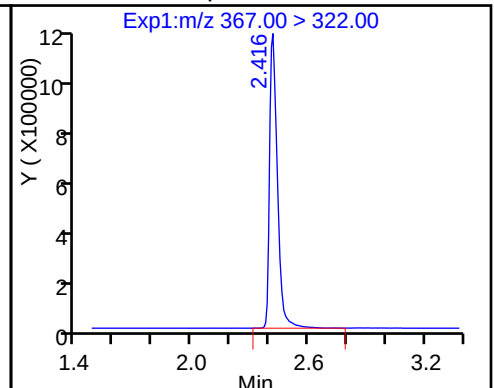
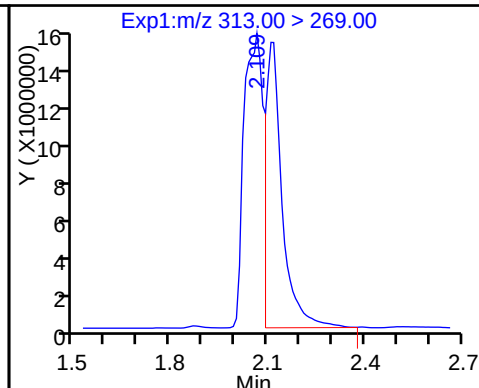
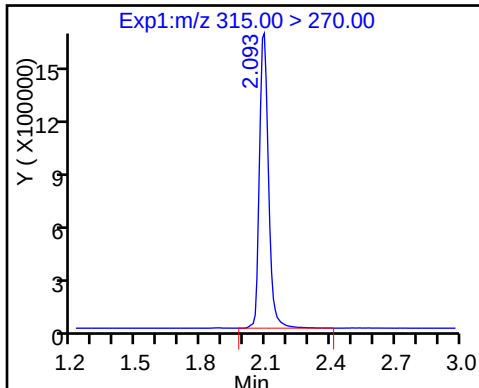
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

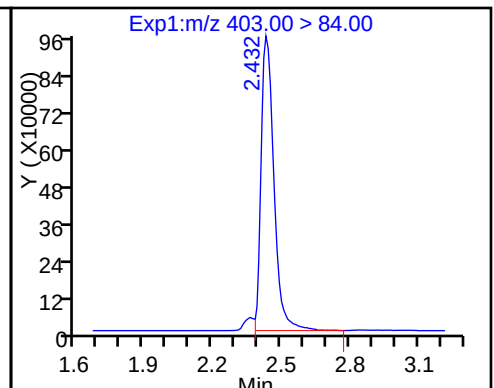
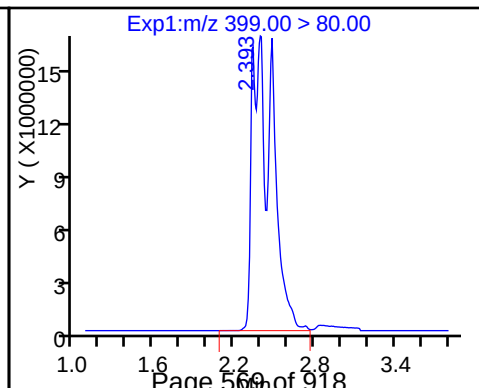
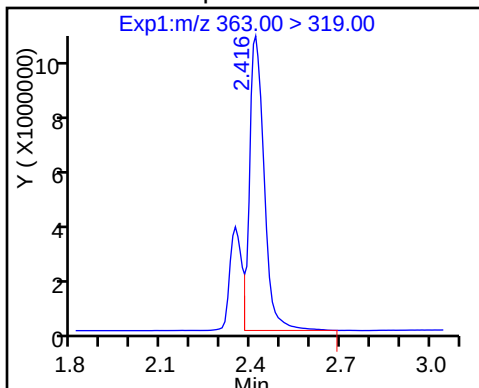
D 11 13C4-PFHpA



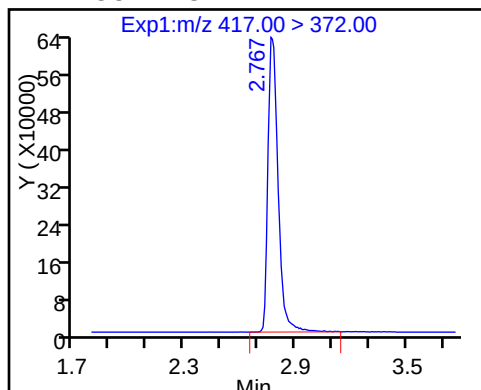
12 Perfluoroheptanoic acid

9 Perfluorohexanesulfonic acid

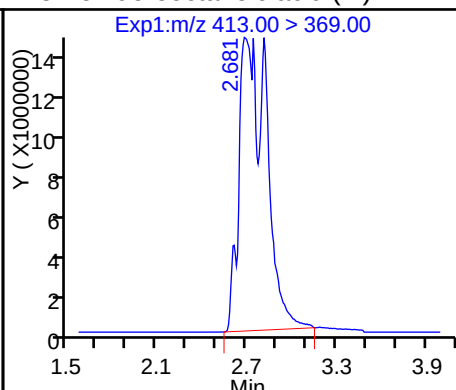
D 10 18O2 PFHxS



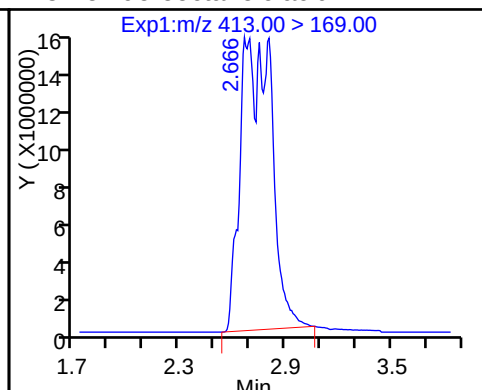
D 14 13C4 PFOA



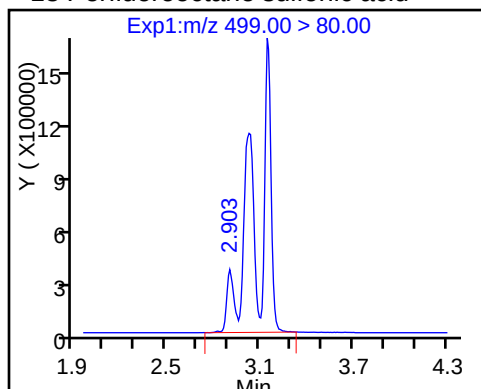
15 Perfluorooctanoic acid (M)



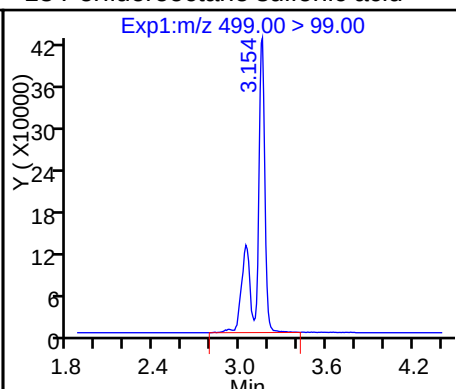
15 Perfluorooctanoic acid



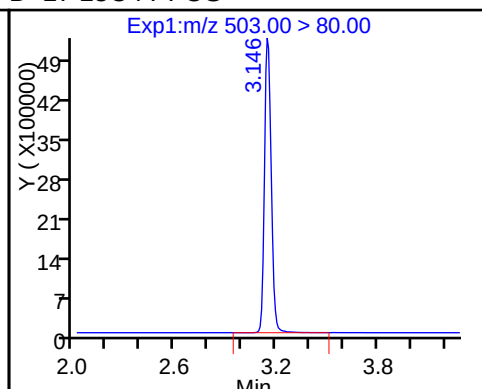
18 Perfluorooctane sulfonic acid



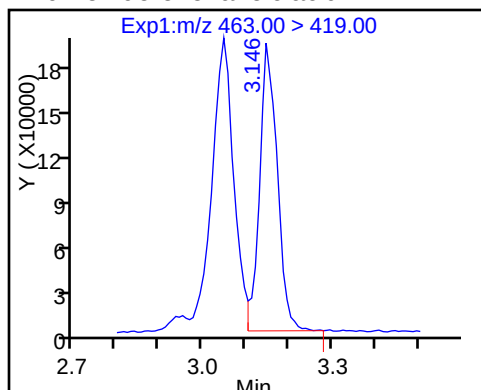
18 Perfluorooctane sulfonic acid



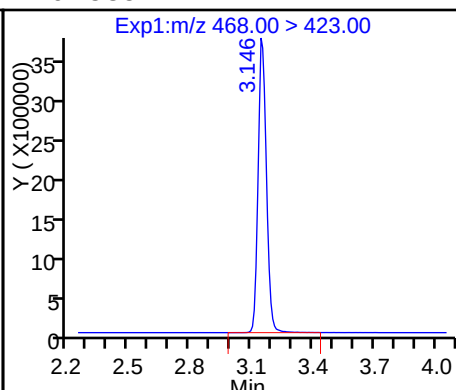
D 17 13C4 PFOS



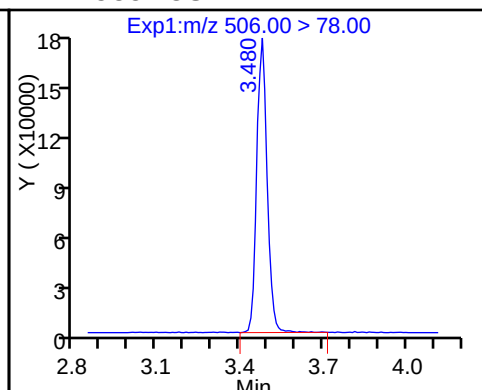
20 Perfluorononanoic acid



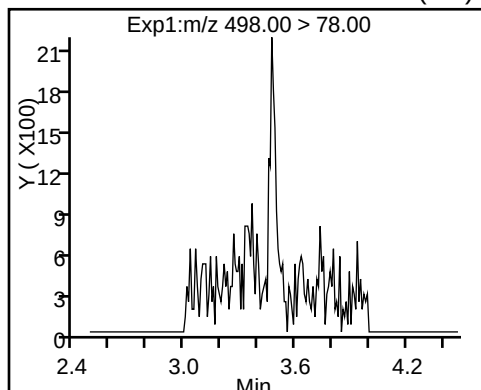
D 19 13C5 PFNA



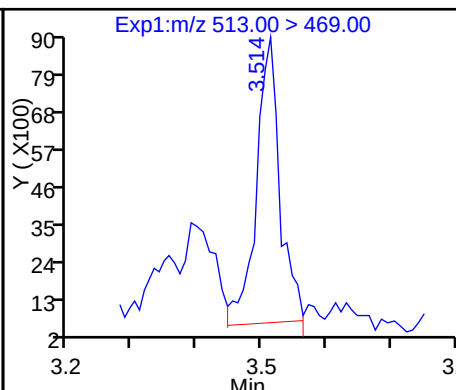
D 21 13C8 FOSA



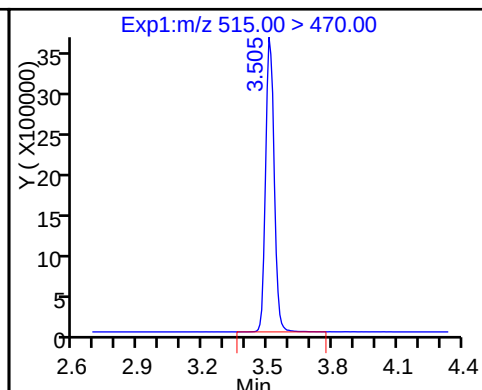
22 Perfluorooctane Sulfonamide (ND)



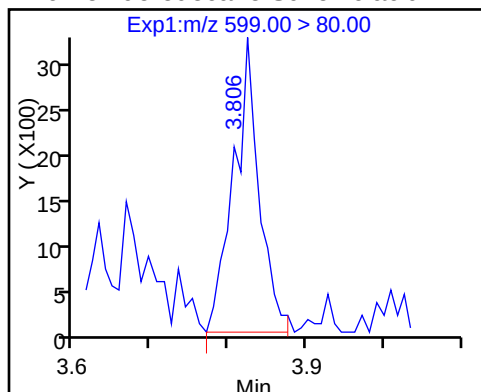
24 Perfluorodecanoic acid



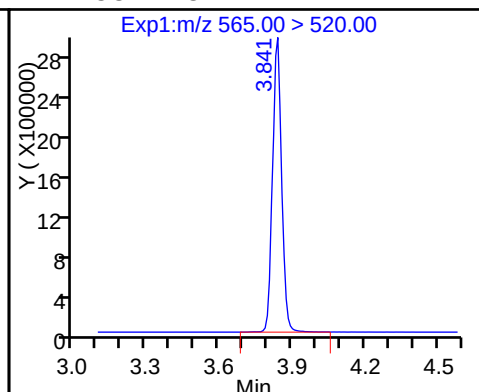
D 23 13C2 PFDA



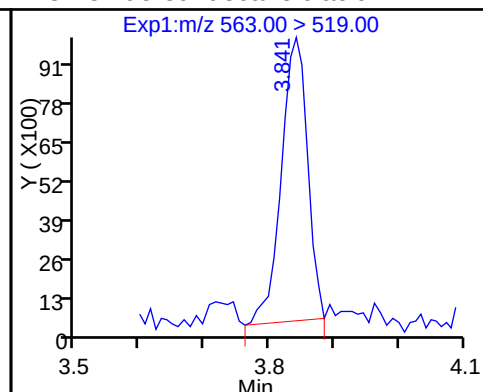
26 Perfluorodecane Sulfonic acid



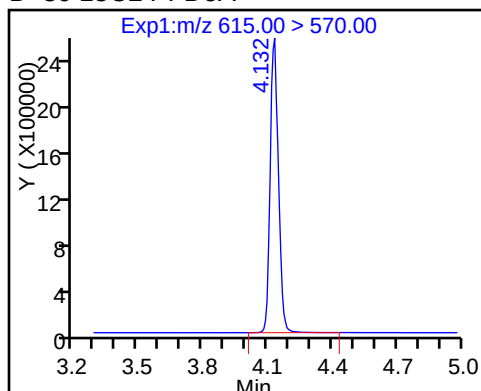
D 27 13C2 PFUnA



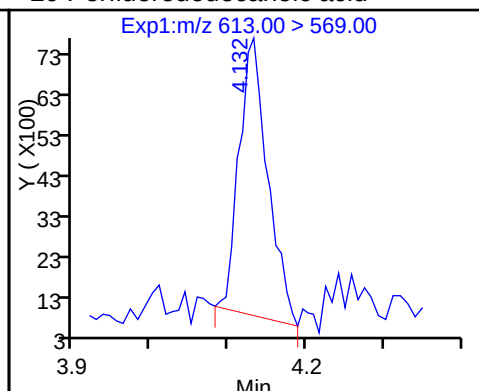
28 Perfluoroundecanoic acid



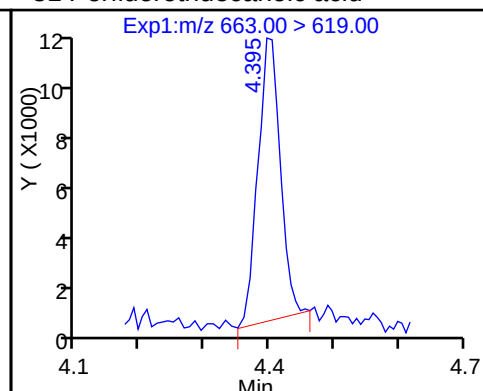
D 30 13C2 PFDaA



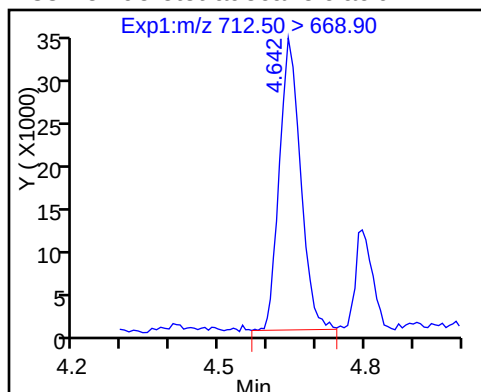
29 Perfluorododecanoic acid



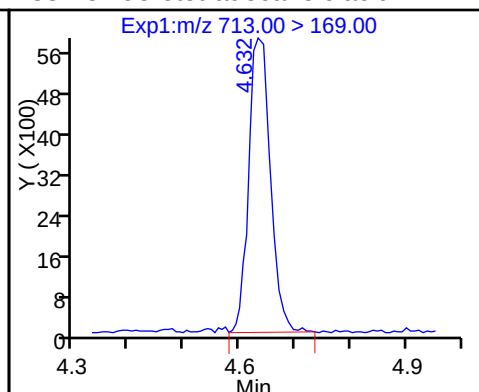
31 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Sacramento

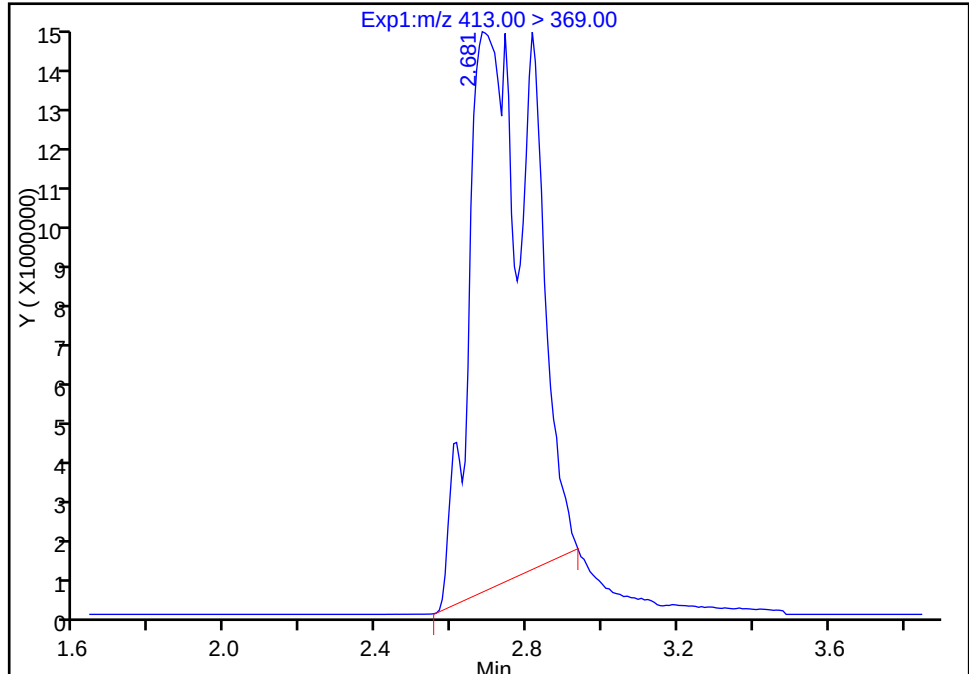
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Injection Date: 29-Dec-2016 03:14:36 Instrument ID: A8_N
Lims ID: 320-24236-A-10-A Lab Sample ID: 320-24236-10
Client ID: FFTA4TMW-1216-D
Operator ID: A8-PC\A8 ALS Bottle#: 22 Worklist Smp#: 28
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

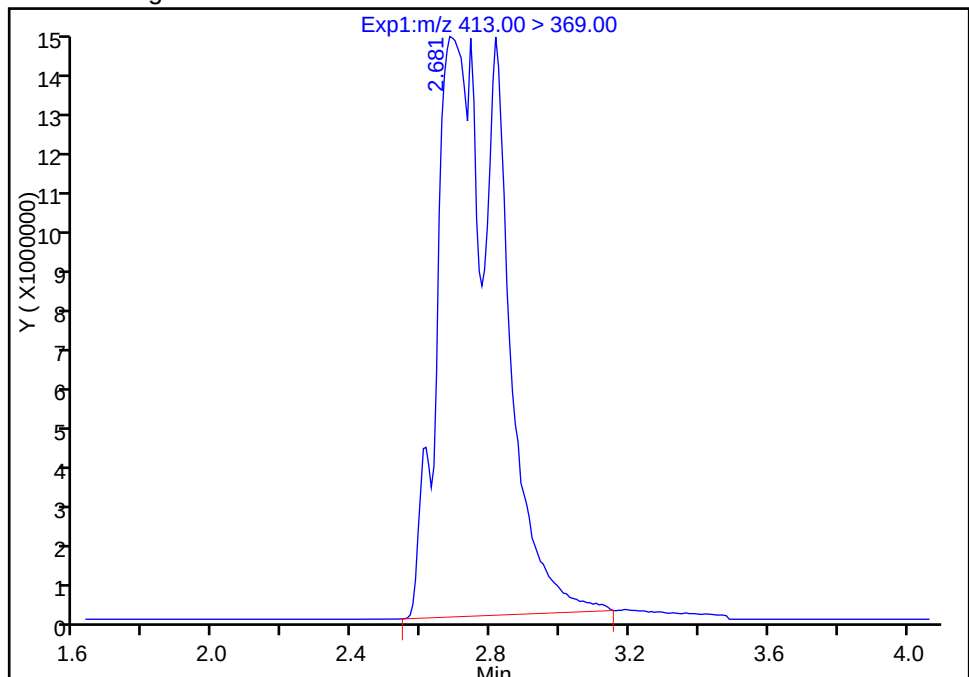
RT: 2.68
Area: 168477647
Amount: 3409.3159
Amount Units: ng/ml

Processing Integration Results



RT: 2.68
Area: 192312206
Amount: 3891.6323
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 29-Dec-2016 18:23:44

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento

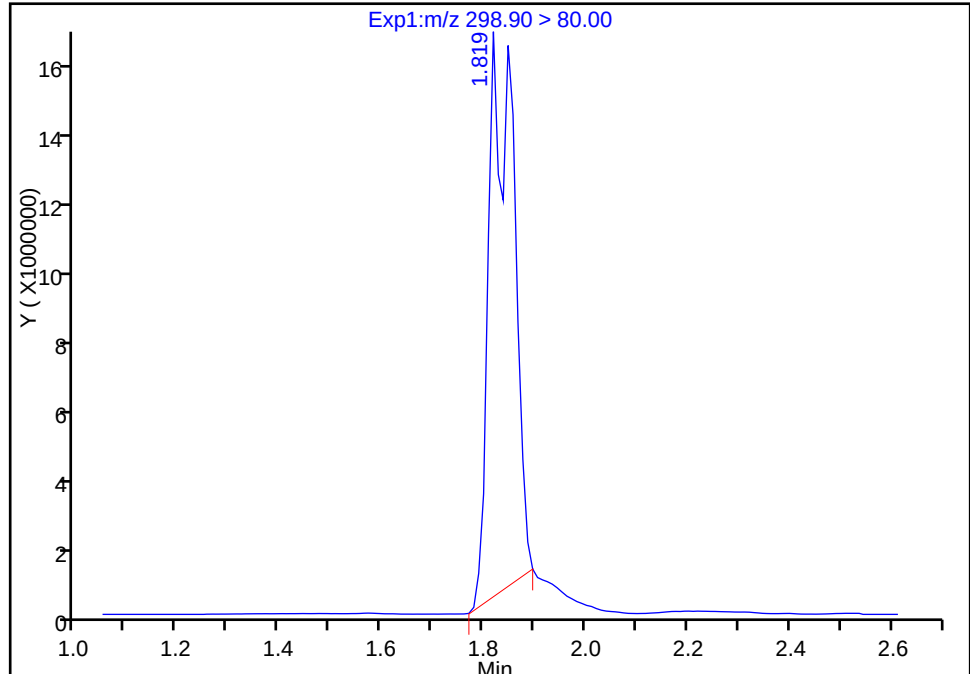
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_028.d				
Injection Date:	29-Dec-2016 03:14:36	Instrument ID:	A8_N		
Lims ID:	320-24236-A-10-A	Lab Sample ID:	320-24236-10		
Client ID:	FFTA4TMW-1216-D				
Operator ID:	A8-PC\A8	ALS Bottle#:	22	Worklist Smp#:	28
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

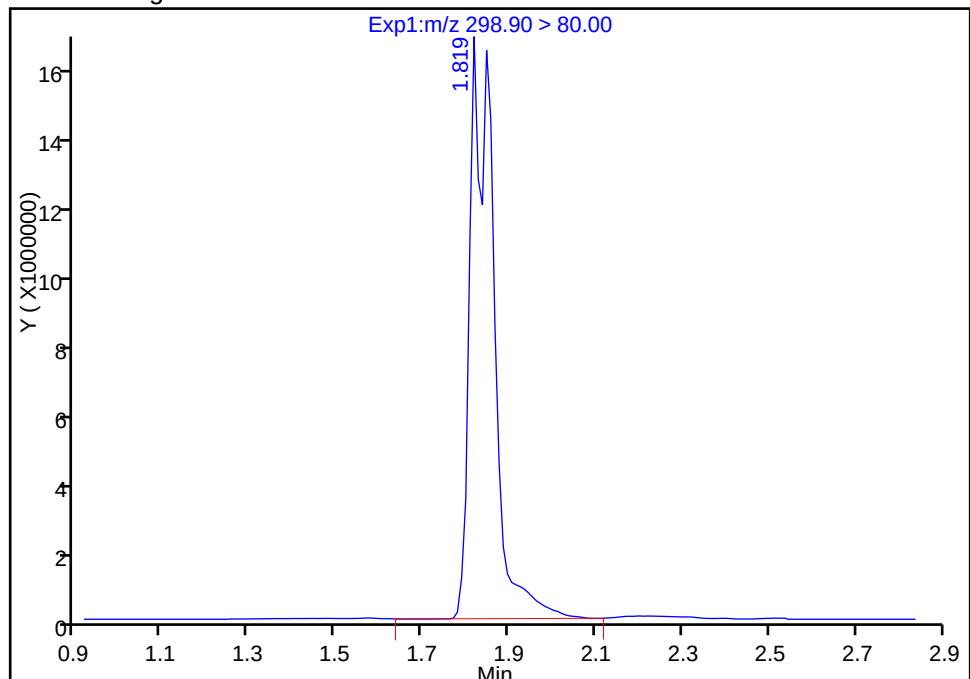
RT: 1.82
Area: 53178949
Amount: 470.7872
Amount Units: ng/ml

Processing Integration Results



RT: 1.82
Area: 62455070
Amount: 552.9076
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 29-Dec-2016 18:23:44

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FFTA4TMW-1216-D DL</u>	Lab Sample ID: <u>320-24236-10 DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>03JAN2017C_025.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 00:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>260.7 (mL)</u>	Date Analyzed: <u>01/03/2017 17:13</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>100</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144867</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.44	D	0.24	0.096	0.044
2706-90-3	Perfluoropentanoic acid (PFPeA)	1.4	D	0.24	0.19	0.095
307-24-4	Perfluorohexanoic acid (PFHxA)	8.1	B D	0.24	0.19	0.075
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.2	D	0.24	0.19	0.077
335-67-1	Perfluorooctanoic acid (PFOA)	23	D M	0.24	0.19	0.072
375-95-1	Perfluorononanoic acid (PFNA)	0.19	U	0.24	0.19	0.063
335-76-2	Perfluorodecanoic acid (PFDA)	0.096	U	0.24	0.096	0.042
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.19	U	0.24	0.19	0.072
307-55-1	Perfluorododecanoic acid (PFDoA)	0.19	U	0.24	0.19	0.056
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.19	U	0.24	0.19	0.053
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.096	U	0.24	0.096	0.038
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.1	D	0.24	0.19	0.088
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	15	D	0.24	0.19	0.083
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.29	U	0.38	0.29	0.12
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.29	U	0.38	0.29	0.12
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.19	U	0.24	0.19	0.061

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FFTA4TMW-1216-D DL</u>	Lab Sample ID: <u>320-24236-10 DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>03JAN2017C_025.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 00:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>260.7(mL)</u>	Date Analyzed: <u>01/03/2017 17:13</u>
Con. Extract Vol.: <u>0.5(mL)</u>	Dilution Factor: <u>100</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144867</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	3	Q	25-150
STL00992	13C4 PFBA	143		25-150
STL01893	13C5-PFPeA	143		25-150
STL00993	13C2 PFHxA	122		25-150
STL01892	13C4-PFHpA	120		25-150
STL00990	13C4 PFOA	139		25-150
STL00995	13C5 PFNA	173	Q	25-150
STL00996	13C2 PFDA	181	Q	25-150
STL00997	13C2 PFUnA	172	Q	25-150
STL00998	13C2 PFDoA	161	Q	25-150
STL00994	18O2 PFHxS	138		25-150
STL00991	13C4 PFOS	133		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170104-38437.b\03JAN2017C_025.d
 Lims ID: 320-24236-A-10-A
 Client ID: FFTA4TMW-1216-D
 Sample Type: Client
 Inject. Date: 03-Jan-2017 17:13:32 ALS Bottle#: 51 Worklist Smp#: 25
 Injection Vol: 2.0 ul Dil. Factor: 100.0000
 Sample Info: 320-24236-a-10-a
 Misc. Info.: Plate: 1 Rack: 5
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170104-38437.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2017 10:14:47 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: chandrasenas

Date: 04-Jan-2017 10:13:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.614	1.630	-0.016		247982	0.7131		1.4	25940	
1 Perfluorobutyric acid										
212.90 > 169.00	1.622	1.638	-0.016	1.000	975044	2.30			7595	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.907	1.935	-0.028	1.000	2831215	7.53			32789	
D 4 13C5-PFPeA										
267.90 > 223.00	1.907	1.935	-0.028		190419	0.7157		1.4	35712	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.945	1.974	-0.029	1.000	6979403	10.9				
298.90 > 99.00	1.945	1.974	-0.029	1.000	2966506		2.35(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.213	2.239	-0.026		149305	0.6091		1.2	27349	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.213	2.239	-0.026	1.000	11644509	42.0			249862	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.554	2.591	-0.037	1.000	1662708	6.27			7500	
D 11 13C4-PFHpA										
367.00 > 322.00	2.554	2.591	-0.037		135376	0.5981		1.2	24717	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.577	2.576	0.001	1.000	36465981	78.2				
D 10 18O2 PFHxS										
403.00 > 84.00	2.569	2.606	-0.037		214025	0.6546		1.4	71034	
D 14 13C4 PFOA										
417.00 > 372.00	2.930	2.955	-0.025		159559	0.6926		1.4	26047	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.930	2.963	-0.033	1.000	38681270	120.8			329967	M
413.00 > 169.00	2.930	2.963	-0.033	1.000	28409962		1.36(0.90-1.10)		6192712	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 17 13C4 PFOS										
503.00 > 80.00	3.297	3.328	-0.031		158601	0.6373		1.3	26879	
20 Perfluorononanoic acid										
463.00 > 419.00	3.205	3.328	-0.123	1.000	8715	0.0297			164	
D 19 13C5 PFNA										
468.00 > 423.00	3.304	3.343	-0.039		154115	0.8673		1.7	27652	
D 21 13C8 FOSA										
506.00 > 78.00	3.626	3.659	-0.033		6617	0.0172		0.0	1143	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.699	3.688	0.011	1.000	712	0.002653			66.5	
D 23 13C2 PFDA										
515.00 > 470.00	3.661	3.688	-0.027		142202	0.9040		1.8	4444	
D 27 13C2 PFUnA										
565.00 > 520.00	3.985	4.016	-0.031		100826	0.8599		1.7	19125	
D 30 13C2 PFDaA										
615.00 > 570.00	4.278	4.298	-0.020		89111	0.8031		1.6	4048	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170104-38437.b\03JAN2017C_025.d

Injection Date: 03-Jan-2017 17:13:32

Instrument ID: A8_N

Lims ID: 320-24236-A-10-A

Lab Sample ID: 320-24236-10

Client ID: FFTA4TMW-1216-D

Operator ID: A8-PC\A8

ALS Bottle#: 51

Worklist Smp#: 25

Injection Vol: 2.0 ul

Dil. Factor: 100.0000

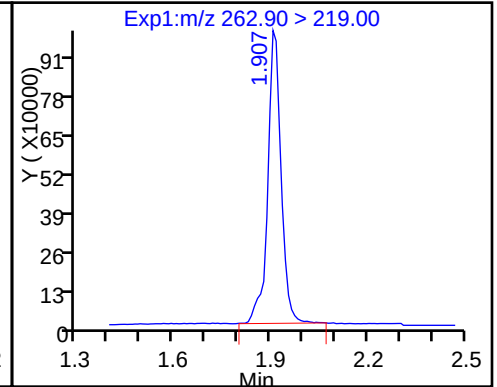
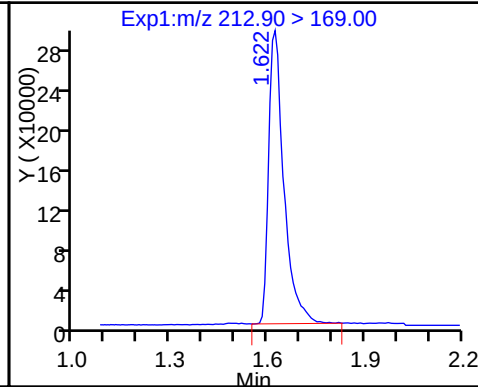
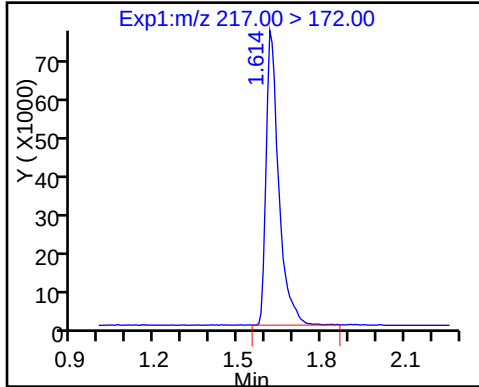
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

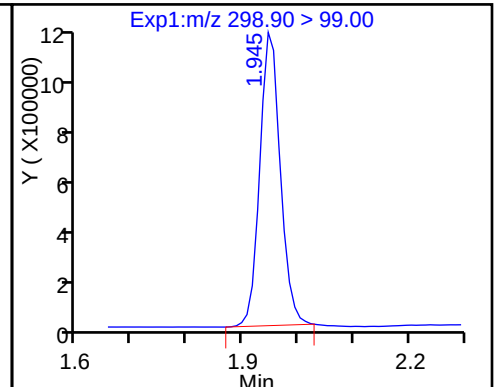
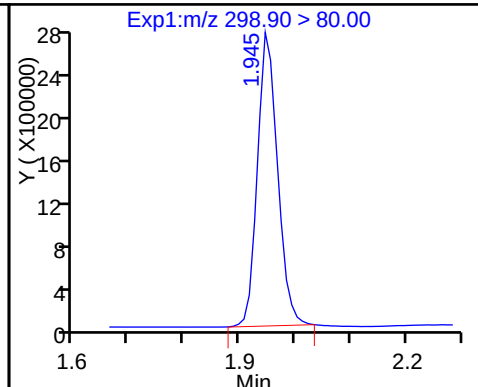
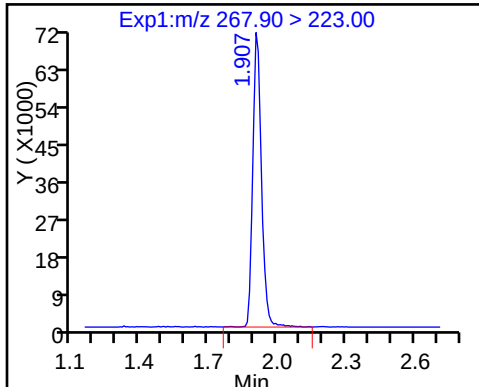
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

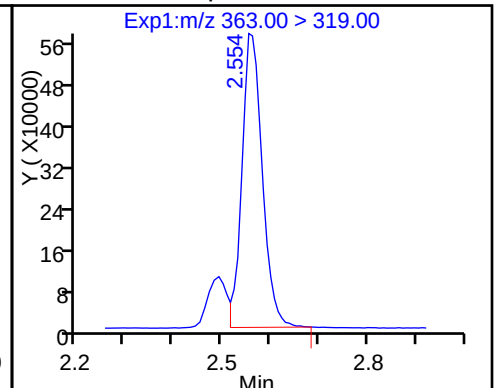
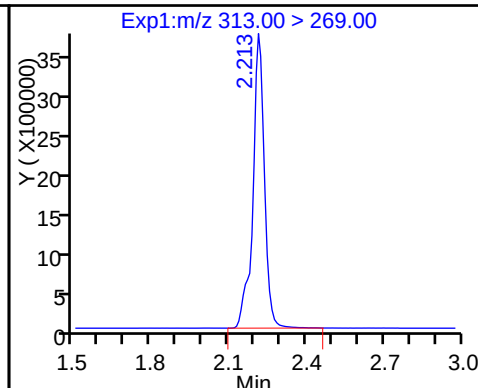
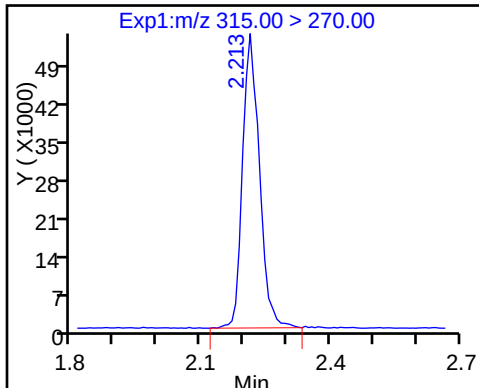
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

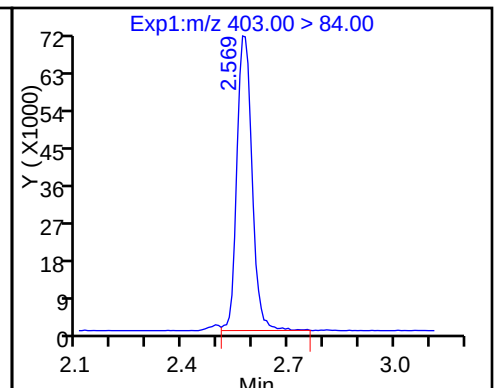
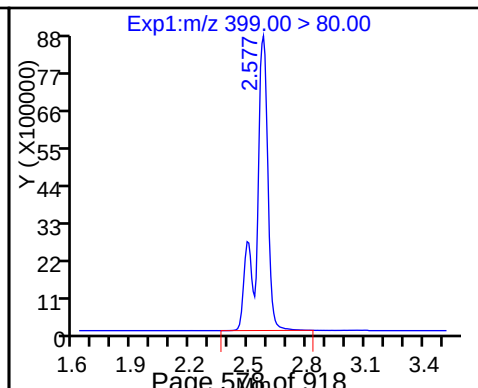
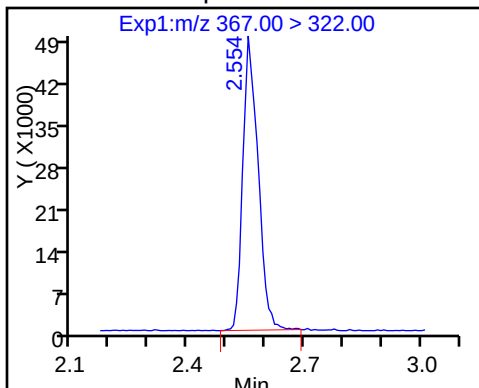
12 Perfluoroheptanoic acid



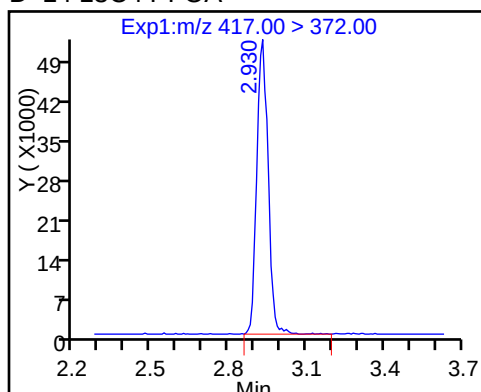
D 11 13C4-PFHpA

9 Perfluorohexanesulfonic acid

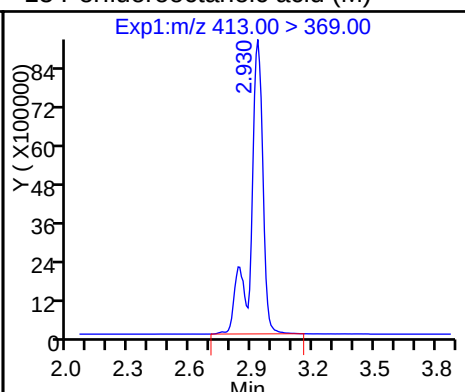
D 10 18O2 PFHxS



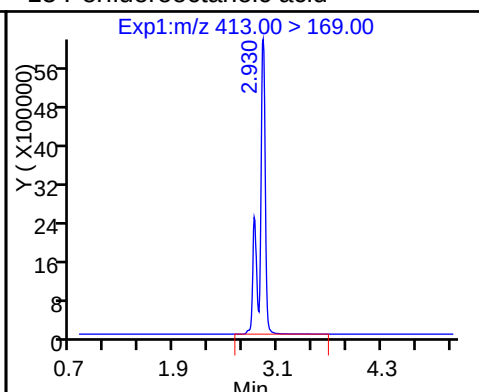
D 14 13C4 PFOA



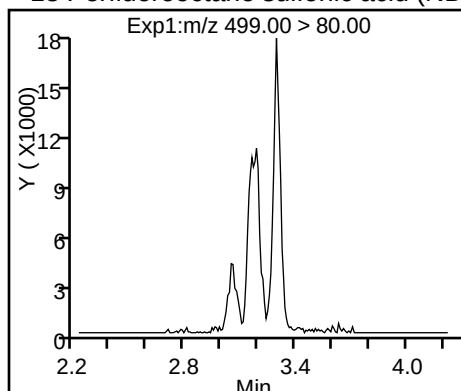
15 Perfluorooctanoic acid (M)



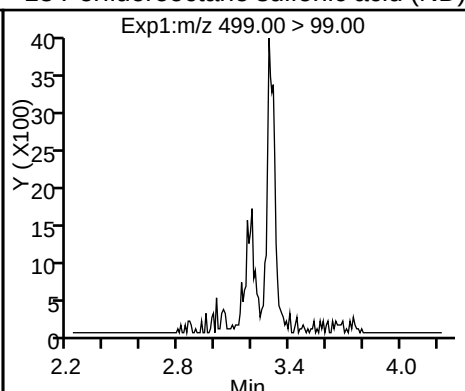
15 Perfluorooctanoic acid



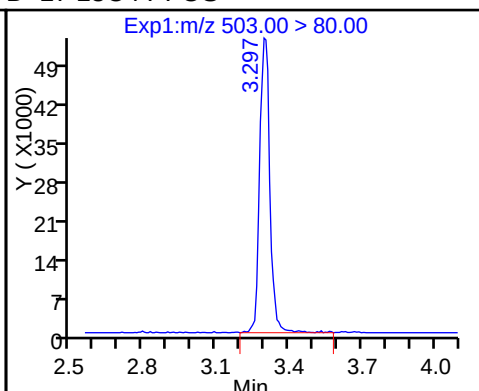
18 Perfluorooctane sulfonic acid (ND)



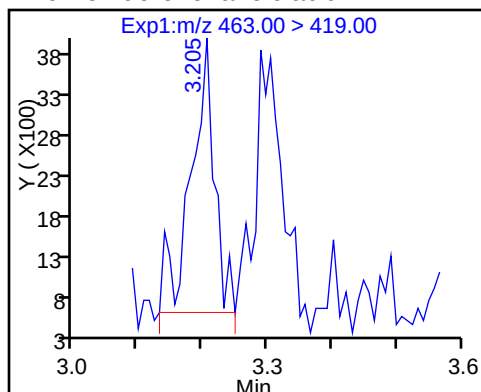
18 Perfluorooctane sulfonic acid (ND)



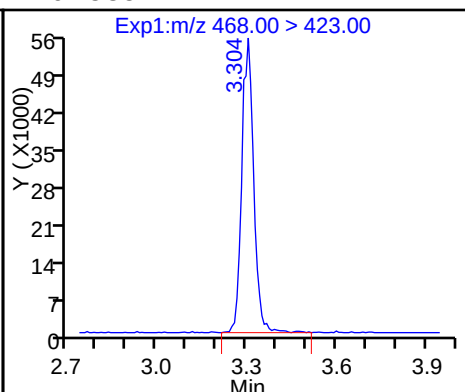
D 17 13C4 PFOS



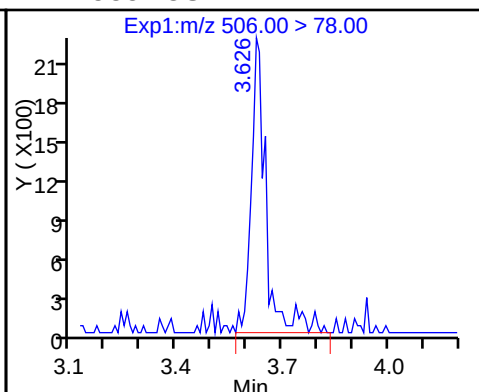
20 Perfluorononanoic acid



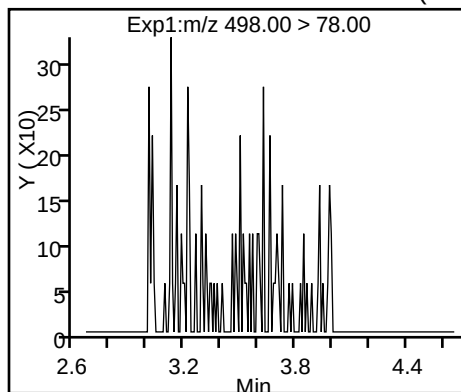
D 19 13C5 PFNA



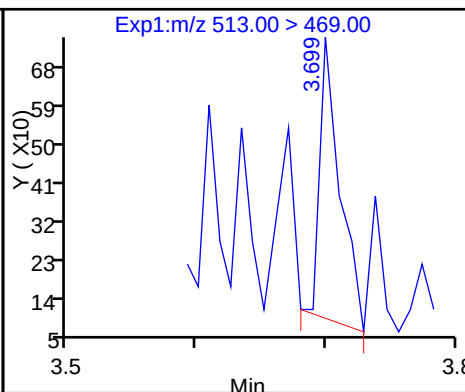
D 21 13C8 FOSA



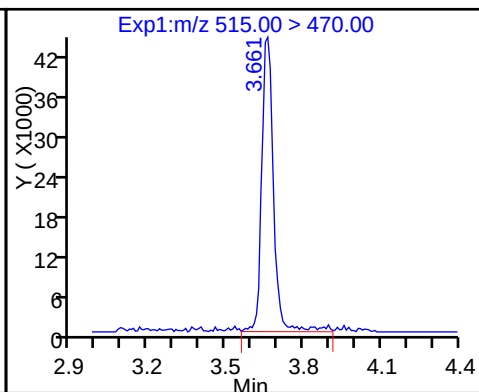
22 Perfluorooctane Sulfonamide (ND)



24 Perfluorodecanoic acid

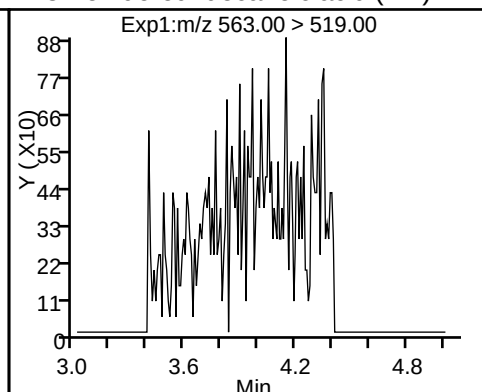
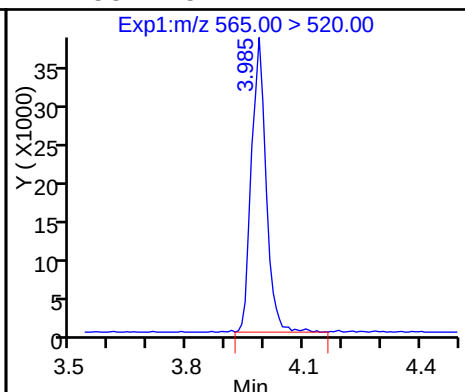
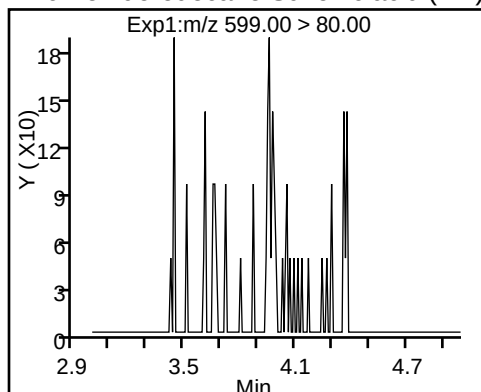


D 23 13C2 PFDA



26 Perfluorodecane Sulfonic acid (ND) D 27 13C2 PFUnA

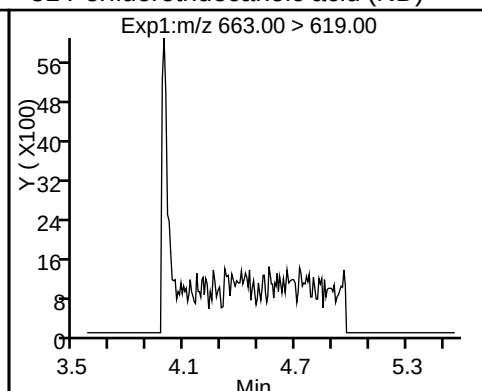
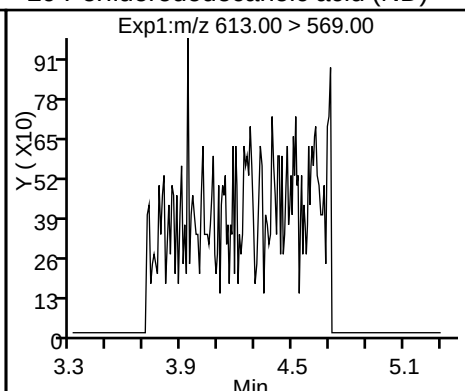
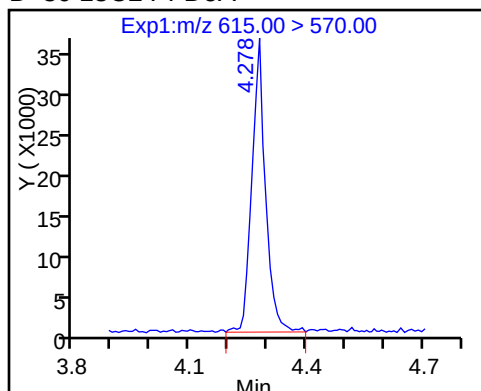
28 Perfluoroundecanoic acid (ND)



D 30 13C2 PFDaA

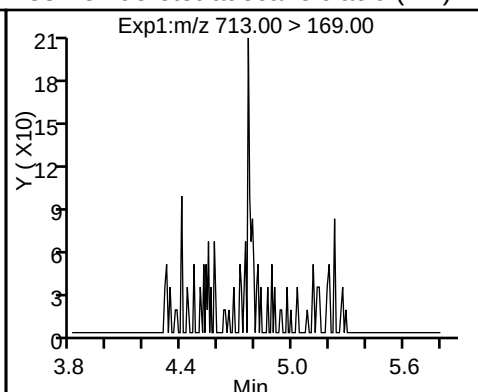
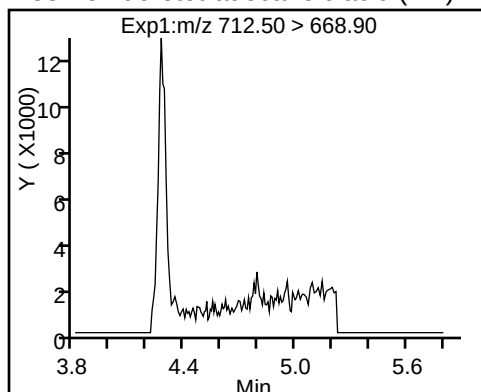
29 Perfluorododecanoic acid (ND)

31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND)

33 Perfluorotetradecanoic acid (ND)



TestAmerica Sacramento

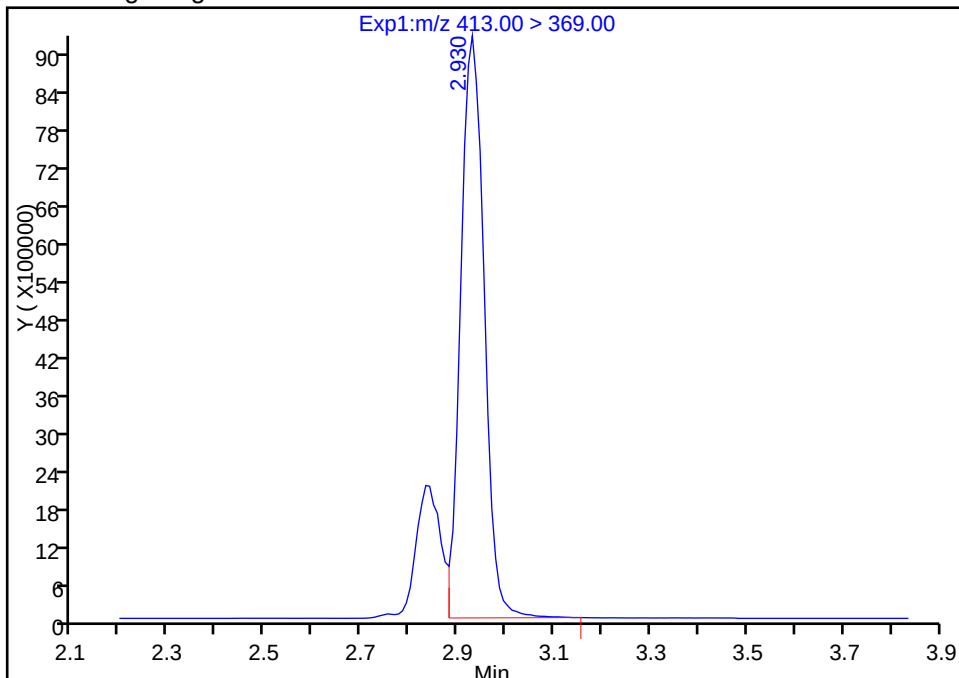
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Injection Date: 03-Jan-2017 17:13:32 Instrument ID: A8_N
Lims ID: 320-24236-A-10-A Lab Sample ID: 320-24236-10
Client ID: FFTA4TMW-1216-D
Operator ID: A8-PC\A8 ALS Bottle#: 51 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 100.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

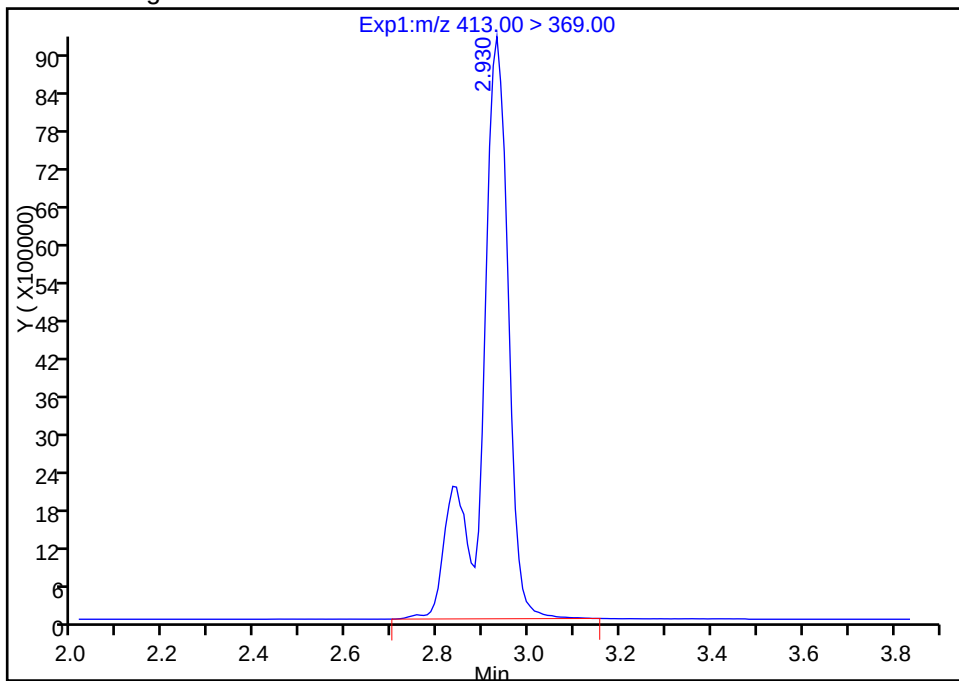
RT: 2.93
Area: 31146233
Amount: 97.295157
Amount Units: ng/ml

Processing Integration Results



RT: 2.93
Area: 38681270
Amount: 120.8332
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 04-Jan-2017 10:13:55

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1 Analy Batch No.: 142379

SDG No.: _____

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-142379/4	15DEC2016B_004.d
Level 2	IC 320-142379/13	15DEC2016BB_013.d
Level 3	IC 320-142379/5	15DEC2016B_005.d
Level 4	IC 320-142379/14	15DEC2016B_014.d
Level 5	IC 320-142379/6	15DEC2016B_006.d
Level 6	IC 320-142379/15	15DEC2016B_015.d
Level 7	IC 320-142379/7	15DEC2016B_007.d
Level 8	IC 320-142379/16	15DEC2016B_016.d
Level 9	IC 320-142379/8	15DEC2016B_008.d
Level 10	IC 320-142379/17	15DEC2016B_017.d
Level 11	IC 320-142379/9	15DEC2016B_009.d
Level 12	IC 320-142379/18	15DEC2016B_018.d

ANALYTE	LVL 1 LVL 11	LVL 2 LVL 12	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	RT WINDOW	AVG RT
Perfluorobutanoic acid (PFBA)	1.542 1.537		1.530		1.534		1.534		1.533		1.285 - 1.785	1.535
Perfluoropentanoic acid (PFPeA)	1.810 1.813		1.805		1.810		1.810		1.810		1.560 - 2.060	1.810
Perfluorobutanesulfonic acid (PFBS)	1.849 1.852		1.844		1.849		1.849		1.848		1.668 - 2.028	1.849
Perfluorohexanoic acid (PFHxA)	2.097 2.096		2.092		2.097		2.093		2.098		1.846 - 2.346	2.096
Perfluorohexanesulfonic acid (PFHxS)	++++ 2.444		2.445		2.364		2.440		2.446		2.181 - 2.681	2.428
Perfluoroheptanoic acid (PFHpA)	2.430 2.426		2.430		2.432		2.426		2.424		2.178 - 2.678	2.428
6:2FTS		++++ 2.769		2.761		2.768		2.767		2.767	2.518 - 3.018	2.766
Perfluorooctanoic acid (PFOA)	++++ 2.783		2.781		2.783		2.785		2.782		2.533 - 3.033	2.783
Perfluoroheptanesulfonic Acid (PFHpS)	2.790 2.791		2.789		2.792		2.785		2.791		2.540 - 3.040	2.790
Perfluorooctanesulfonic acid (PFOS)	++++ 2.977		3.149		3.153		3.129		3.151		2.868 - 3.368	3.112
Perfluorononanoic acid (PFNA)	3.159 3.160		3.157		3.153		3.153		3.151		2.905 - 3.405	3.156
Perfluorooctane Sulfonamide (FOSA)	3.490 3.491		3.489		3.492		3.492		3.490		3.241 - 3.741	3.491
Perfluorodecanoic acid (PFDA)	3.515 3.516		3.506		3.509		3.509		3.507		3.260 - 3.760	3.510
8:2FTS		3.511 3.516		3.502		3.511		3.511		3.512	3.261 - 3.761	3.511

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1 Analy Batch No.: 142379

SDG No.: _____

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

ANALYTE	LVL 1 LVL 11	LVL 2 LVL 12	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	RT WINDOW	AVG RT
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		3.684 3.680		3.673		3.683		3.683		3.684	3.431 - 3.931	3.681
Perfluorodecanesulfonic acid (PFDS)	3.826 3.819		3.824		3.819		3.827		3.818		3.572 - 4.072	3.822
Perfluoroundecanoic acid (PFUnA)	3.834 3.845		3.833		3.837		3.844		3.844		3.589 - 4.089	3.840
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		3.865 3.853		3.855		3.847		3.847		3.857	3.604 - 4.104	3.854
MeFOSA		3.998 4.004		3.997		3.997		3.997		3.999	3.749 - 4.249	3.999
Perfluorododecanoic acid (PFDoA)	4.141 4.136		4.133		4.136		4.135		4.135		3.886 - 4.386	4.136
N-EtFOSA-M		4.187 4.193		4.179		4.186		4.186		4.189	3.937 - 4.437	4.187
Perfluorotridecanoic Acid (PFTriA)	4.404 4.407		4.396		4.398		4.398		4.398		4.150 - 4.650	4.400
Perfluorotetradecanoic acid (PFTeA)	4.643 4.635		4.643		4.645		4.644		4.645		4.392 - 4.892	4.643
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++ 5.060		5.058		5.059		5.059		5.059		4.809 - 5.309	5.059
Perfluoro-n-octadecanoic acid (PFODA)	5.413 5.414		5.413		5.414		5.413		5.413		5.164 - 5.664	5.413
13C4 PFBA	1.534 1.537		1.530		1.534		1.534		1.533		1.284 - 1.784	1.534
13C5-PFPeA	1.810 1.813		1.805		1.810		1.810		1.810		1.560 - 2.060	1.810
13C2 PFHxA	2.097 2.096		2.092		2.097		2.102		2.098		1.847 - 2.347	2.097
13C4-PFHpA	2.430 2.426		2.423		2.425		2.426		2.424		2.176 - 2.676	2.426
18O2 PFHxS	2.452 2.444		2.445		2.447		2.440		2.446		2.196 - 2.696	2.446
M2-6:2FTS		2.760 2.776		2.761		2.768		2.767		2.767	2.517 - 3.017	2.767
13C4 PFOA	2.782 2.783		2.781		2.783		2.785		2.782		2.533 - 3.033	2.783
13C4 PFOS	3.151 3.152		3.149		3.153		3.153		3.151		2.901 - 3.401	3.152
13C5 PFNA	3.159 3.152		3.149		3.153		3.153		3.151		2.903 - 3.403	3.153
13C8 FOSA	3.490 3.491		3.489		3.484		3.484		3.490		3.238 - 3.738	3.488
13C2 PFDA	3.515 3.508		3.514		3.509		3.517		3.516		3.263 - 3.763	3.513

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1 Analy Batch No.: 142379

SDG No.: _____

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

ANALYTE	LVL 1 LVL 11	LVL 2 LVL 12	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	RT WINDOW	AVG RT
M2-8:2FTS		3.511 3.516		3.511		3.511		3.511		3.520	3.263 - 3.763	3.513
d3-NMeFOSAA		3.684 3.680		3.673		3.673		3.673		3.675	3.426 - 3.926	3.676
13C2 PFUnA	3.843 3.845		3.842		3.845		3.835		3.844		3.592 - 4.092	3.842
d5-NEtFOSAA		3.848 3.845		3.838		3.838		3.838		3.848	3.592 - 4.092	3.843
d-N-MeFOSA-M		3.988 3.995		3.987		3.987		3.997		3.999	3.742 - 4.242	3.992
13C2 PFDoA	4.134 4.129		4.133		4.129		4.135		4.135		3.882 - 4.382	4.133
d-N-EtFOSA-M		4.180 4.186		4.172		4.179		4.179		4.182	3.930 - 4.430	4.180
13C2-PFTeDA	4.643 4.635		4.633		4.645		4.644		4.645		4.391 - 4.891	4.641
13C2-PFHxDA	5.058 5.060		5.047		5.059		5.059		5.059		4.807 - 5.307	5.057

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1 Analy Batch No.: 142379

SDG No.: _____

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-142379/4	15DEC2016B_004.d
Level 2	IC 320-142379/13	15DEC2016B_013.d
Level 3	IC 320-142379/5	15DEC2016B_005.d
Level 4	IC 320-142379/14	15DEC2016B_014.d
Level 5	IC 320-142379/6	15DEC2016B_006.d
Level 6	IC 320-142379/15	15DEC2016B_015.d
Level 7	IC 320-142379/7	15DEC2016B_007.d
Level 8	IC 320-142379/16	15DEC2016B_016.d
Level 9	IC 320-142379/8	15DEC2016B_008.d
Level 10	IC 320-142379/17	15DEC2016B_017.d
Level 11	IC 320-142379/9	15DEC2016B_009.d
Level 12	IC 320-142379/18	15DEC2016B_018.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4		B	M1	M2								
	LVL 5 LVL 9	LVL 6 LVL 10	LVL 7 LVL 11	LVL 8 LVL 12												
13C4 PFBA	365277 360742 345484		364028 351708 299221		Ave		347743.167				7.2		50.0			
13C5-PFPeA	282426 281261 261073		281354 272343 217976		Ave		266072.353				9.4		50.0			
13C2 PFHxA	253106 254198 247986		256296 252164 206910		Ave		245109.910				7.7		50.0			
13C4-PFHpA	244814 245211 216032		244964 235764 171281		Ave		226344.393				12.9		50.0			
18O2 PFHxS	341723 342975 323020		340234 339593 274309		Ave		326975.747				8.2		50.0			
M2-6:2FTS		112694 117279 110718		107543 136249 117410	Ave		116982.140				8.7		50.0			
13C4 PFOA	250090 252701 222856		252554 236364 167605		Ave		230361.637				14.3		50.0			

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1 Analy Batch No.: 142379

SDG No.: _____

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5 LVL 9	LVL 2 LVL 6 LVL 10	LVL 3 LVL 7 LVL 11	LVL 4 LVL 8 LVL 12		B	M1	M2								
13C4 PFOS	256822 261188 249930		260657 254876 209612		Ave		248847.249				7.9		50.0			
13C5 PFNA	189110 195552 171630		190741 184721 134367		Ave		177686.923				12.8		50.0			
13C8 FOSA	407109 400699 376084		404776 394065 322114		Ave		384141.077				8.4		50.0			
13C2 PFDA	168454 164694 153437		169609 162695 124922		Ave		157301.833				10.7		50.0			
M2-8:2FTS		100584 111541 99917		96024 124933 111666	Ave		107444.339				10.0		50.0			
d3-NMeFOSAA		72700 80292 68450		71182 87583 71744	Ave		75324.9433				9.6		50.0			
13C2 PFUnA	127043 125252 113156		124385 124531 89132		Ave		117249.927				12.5		50.0			
d5-NMeFOSAA		77796 84707 69727		75140 88209 74518	Ave		78349.4833				8.8		50.0			
d-N-MeFOSA-M		86501 102439 90246		92791 105280 93163	Ave		95069.8233				7.6		50.0			
13C2 PFDoA	116302 115598 108083		116442 116336 92982		Ave		110957.213				8.5		50.0			
d-N-EtFOSA-M		75857 91238 82985		82198 93456 88971	Ave		85784.0067				7.7		50.0			
13C2-PFTeDA	239125 244965 219010		237709 233101 190415		Ave		227387.480				8.8		50.0			
13C2-PFHxDA	131492 130859 120547		133987 126716 103803		Ave		124567.543				9.0		50.0			

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI

CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1 Analy Batch No.: 142379

SDG No.: _____

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) NCalibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6 LVL 11	LVL 7 LVL 12	LVL 8	LVL 9	LVL 10												
Perfluorobutanoic acid (PFBA)	310962 213818	334546	310647	308231	310088	AveID		0.8537				9.1		35.0			
Perfluoropentanoic acid (PFPeA)	304642 171455	288512	287573	263221	271648	AveID		0.9868				10.7		35.0			
Perfluorobutanesulfonic acid (PFBS)	490041 286903	557732	479895	487779	500362	AveID		1.4170				14.1		50.0			
Perfluorohexanoic acid (PFHxA)	252858 166120	246488	239458	230141	236657	AveID		0.9288				7.3		35.0			
Perfluorohexanesulfonic acid (PFHxS)	++++ 253974	363991	382940	335246	339121	AveID		1.0300				7.4		35.0			
Perfluoroheptanoic acid (PFHpA)	258208 151171	237386	237734	215989	235022	AveID		0.9788				5.9		35.0			
6:2FTS	85456	++++ 89174	127446	112813	109001	AveID		0.8914				15.8		35.0			
Perfluorooctanoic acid (PFOA)	++++ 153922	255488	254861	228712	247908	AveID		1.0031				6.0		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	283576 201995	315862	279184	286553	283857	AveID		1.1019				8.2		50.0			
Perfluorooctanesulfonic acid (PFOS)	++++ 215911	272566	237468	253058	247933	AveID		0.9945				6.4		35.0			
Perfluorononanoic acid (PFNA)	180132 123966	178149	188341	164925	180502	AveID		0.9518				2.7		35.0			
Perfluorooctane Sulfonamide (FOSA)	391498 239019	399542	381363	354739	397863	AveID		0.9327				10.5		35.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

CURVE EVALUATION

Lab Name: TestAmerica SacramentoJob No.: 320-24236-1Analy Batch No.: 142379

SDG No.: _____

Instrument ID: A8_NGC Column: AcquityID: 2.1(mm)Heated Purge: (Y/N) NCalibration Start Date: 12/15/2016 12:29Calibration End Date: 12/15/2016 14:18Calibration ID: 27089

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10		B	M1	M2								
Perfluorodecanoic acid (PFDA)	164274 113084	158337	155537	146490	154381	AveID		0.9438				3.1		35.0			
8:2FTS	83185	83106 84092	116095	79051	100536	AveID		0.8473				12.1		35.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	57133	59646 64621	85412	57389	74839	AveID		0.8846				15.4		35.0			
Perfluorodecanesulfonic acid (PFDS)	143714 124235	159960	145051	150246	147895	AveID		0.5840				4.8		50.0			
Perfluoroundecanoic acid (PFUnA)	130000 84265	121036	119189	108755	109942	AveID		0.9563				4.9		35.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	53544	59930 59690	75946	53623	68286	AveID		0.7929				15.1		35.0			
MeFOSA	68699	72138 80570	97349	70049	88147	AveID		0.8376				13.3		35.0			
Perfluorododecanoic acid (PFDoA)	105614 87129	111590	103481	101460	101274	AveID		0.9180				3.5		35.0			
N-EtFOSA-M	65375	61986 78901	90659	62962	85286	AveID		0.8640				13.9		35.0			
Perfluorotridecanoic Acid (PFTriA)	106640 80194	104393	109461	99013	105018	AveID		0.9069				2.9		50.0			
Perfluorotetradecanoic acid (PFTeA)	197042 136554	183949	187123	172910	180115	AveID		1.5848				4.6		50.0			
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++ 88775	113395	173261	106364	119906	L1ID	0.5185	0.9555							1.0000		0.9900
Perfluoro-n-octadecanoic acid (PFODA)	123098 91965	122262	114997	117393	116752	AveID		1.0304				3.9		50.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1 Analy Batch No.: 142379

SDG No.: _____

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-142379/4	15DEC2016B_004.d
Level 2	IC 320-142379/13	15DEC2016B_013.d
Level 3	IC 320-142379/5	15DEC2016B_005.d
Level 4	IC 320-142379/14	15DEC2016B_014.d
Level 5	IC 320-142379/6	15DEC2016B_006.d
Level 6	IC 320-142379/15	15DEC2016B_015.d
Level 7	IC 320-142379/7	15DEC2016B_007.d
Level 8	IC 320-142379/16	15DEC2016B_016.d
Level 9	IC 320-142379/8	15DEC2016B_008.d
Level 10	IC 320-142379/17	15DEC2016B_017.d
Level 11	IC 320-142379/9	15DEC2016B_009.d
Level 12	IC 320-142379/18	15DEC2016B_018.d

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
		LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10
13C4 PFBA	Ave	18263829 14961055	17585378	18201393	17274187	18037108	50.0 50.0	50.0	50.0	50.0	50.0
13C5-PFPeA	Ave	14121285 10898820	13617158	14067714	13053659	14063070	50.0 50.0	50.0	50.0	50.0	50.0
13C2 PFHxA	Ave	12655304 10345480	12608210	12814780	12399280	12709919	50.0 50.0	50.0	50.0	50.0	50.0
13C4-PFHpA	Ave	12240718 8564025	11788221	12248222	10801604	12260528	50.0 50.0	50.0	50.0	50.0	50.0
18O2 PFHxS	Ave	16163510 12974829	16062766	16093048	15278828	16222736	47.3 47.3	47.3	47.3	47.3	47.3
M2-6:2FTS	Ave	5570739	5352965 5576967	6471813	5108306	5259120	47.5	47.5 47.5	47.5	47.5	47.5
13C4 PFOA	Ave	12504504 8380251	11818203	12627691	11142777	12635065	50.0 50.0	50.0	50.0	50.0	50.0
13C4 PFOS	Ave	12276070 10019454	12183062	12459383	11946650	12484772	47.8 47.8	47.8	47.8	47.8	47.8

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1 Analy Batch No.: 142379

SDG No.: _____

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
		LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10
13C5 PFNA	Ave	9455492 6718354	9236073	9537045	8581504	9777609	50.0 50.0	50.0	50.0	50.0	50.0
13C8 FOSA	Ave	20355431 16105707	19703272	20238792	18804188	20034933	50.0 50.0	50.0	50.0	50.0	50.0
13C2 PFDA	Ave	8422718 6246112	8134734	8480447	7671861	8234678	50.0 50.0	50.0	50.0	50.0	50.0
M2-8:2FTS	Ave	5342826	4817997 5348797	5984276	4599569	4786038	47.9	47.9 47.9	47.9	47.9	47.9
d3-NMeFOSAA	Ave	4014623	3634985 3587176	4379131	3559083	3422485	50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFUnA	Ave	6352135 4456593	6226562	6219248	5657823	6262617	50.0 50.0	50.0	50.0	50.0	50.0
d5-NEtFOSAA	Ave	4235352	3889792 3725902	4410456	3757014	3486329	50.0	50.0 50.0	50.0	50.0	50.0
d-N-MeFOSA-M	Ave	5121953	4325034 4658153	5263980	4639527	4512300	50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDoA	Ave	5815120 4649092	5816809	5822114	5404154	5779875	50.0 50.0	50.0	50.0	50.0	50.0
d-N-EtFOSA-M	Ave	4561882	3792851 4448546	4672820	4109875	4149228	50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFTeDA	Ave	11956257 9520749	11655048	11885446	10950502	12248242	50.0 50.0	50.0	50.0	50.0	50.0
13C2-PFHxDA	Ave	6574607 5190172	6335821	6699329	6027362	6542972	50.0 50.0	50.0	50.0	50.0	50.0

Curve Type Legend:

Ave = Average

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1 Analy Batch No.: 142379

SDG No.: _____

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) NCalibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-142379/4	15DEC2016B_004.d
Level 2	IC 320-142379/13	15DEC2016BB_013.d
Level 3	IC 320-142379/5	15DEC2016B_005.d
Level 4	IC 320-142379/14	15DEC2016B_014.d
Level 5	IC 320-142379/6	15DEC2016B_006.d
Level 6	IC 320-142379/15	15DEC2016B_015.d
Level 7	IC 320-142379/7	15DEC2016B_007.d
Level 8	IC 320-142379/16	15DEC2016B_016.d
Level 9	IC 320-142379/8	15DEC2016B_008.d
Level 10	IC 320-142379/17	15DEC2016B_017.d
Level 11	IC 320-142379/9	15DEC2016B_009.d
Level 12	IC 320-142379/18	15DEC2016B_018.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10
Perfluorobutanoic acid (PFBA)		AveID	155481 42763611	6690917	310647	15411527	1550440	0.500 200	20.0	1.00	50.0	5.00
Perfluoropentanoic acid (PFPeA)		AveID	152321 34291076	5770240	287573	13161065	1358239	0.500 200	20.0	1.00	50.0	5.00
Perfluorobutanesulfonic acid (PFBS)		AveID	216598 50724469	9860707	424227	21559838	2211602	0.442 177	17.7	0.884	44.2	4.42
Perfluorohexanoic acid (PFHxA)		AveID	126429 33223923	4929766	239458	11507044	1183286	0.500 200	20.0	1.00	50.0	5.00
Perfluorohexanesulfonic acid (PFHxS)		AveID	++++ 46223186	6624638	348475	15253691	1543002	++++ 182	18.2	0.910	45.5	4.55
Perfluoroheptanoic acid (PFHpA)		AveID	129104 30234194	4747711	237734	10799449	1175112	0.500 200	20.0	1.00	50.0	5.00
6:2FTS		AveID	405060	++++ 16907459	2416384	106947	5166665	4.74	++++ 190	19.0	0.948	47.4
Perfluorooctanoic acid (PFOA)		AveID	++++ 30784387	5109766	254861	11435583	1239541	++++ 200	20.0	1.00	50.0	5.00

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1 Analy Batch No.: 142379

SDG No.: _____

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) NCalibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	134982 38459925	6014021	265783	13639927	1351160	0.476 190	19.0	0.952	47.6	4.76
Perfluorooctanesulfonic acid (PFOS)		AveID	++++ 40073141	5058824	220370	11741891	1150410	++++ 186	18.6	0.928	46.4	4.64
Perfluorononanoic acid (PFNA)		AveID	90066 24793148	3562981	188341	8246252	902512	0.500 200	20.0	1.00	50.0	5.00
Perfluorooctane Sulfonamide (FOSA)		AveID	195749 47803717	7990835	381363	17736944	1989314	0.500 200	20.0	1.00	50.0	5.00
Perfluorodecanoic acid (PFDA)		AveID	82137 22616781	3166735	155537	7324495	771905	0.500 200	20.0	1.00	50.0	5.00
8:2FTS		AveID	398457 16111959	39808	2224381	75731	4815680	4.79 192	0.479	19.2	0.958	47.9
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	285665 12924122	29823	1708231	57389	3741936	5.00 200	0.500	20.0	1.00	50.0
Perfluorodecanesulfonic acid (PFDS)		AveID	69270 23952412	3084031	139829	7241868	712852	0.482 193	19.3	0.964	48.2	4.82
Perfluoroundecanoic acid (PFUnA)		AveID	65000 16852945	2420719	119189	5437764	549708	0.500 200	20.0	1.00	50.0	5.00
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	267721 11938061	29965	1518918	53623	3414301	5.00 200	0.500	20.0	1.00	50.0
MeFOSA		AveID	343493 16114020	36069	1946985	70049	4407328	5.00 200	0.500	20.0	1.00	50.0
Perfluorododecanoic acid (PFDoA)		AveID	52807 17425873	2231794	103481	5072994	506369	0.500 200	20.0	1.00	50.0	5.00
N-EtFOSA-M		AveID	326877 15780196	30993	1813178	62962	4264314	5.00 200	0.500	20.0	1.00	50.0

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1 Analy Batch No.: 142379

SDG No.: _____

Instrument ID: A8_N GC Column: Acquity ID: 2.1 (mm) Heated Purge: (Y/N) NCalibration Start Date: 12/15/2016 12:29 Calibration End Date: 12/15/2016 14:18 Calibration ID: 27089

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10
Perfluorotridecanoic Acid (PFTriA)		AveID	53320 16038809	2087859	109461	4950651	525090	0.500 200	20.0	1.00	50.0	5.00
Perfluorotetradecanoic acid (PFTeA)		AveID	98521 27310864	3678976	187123	8645519	900575	0.500 200	20.0	1.00	50.0	5.00
Perfluoro-n-hexadecanoic acid (PFHxDA)		L1ID	+++++ 17754908	2267892	173261	5318207	599529	+++++ 200	20.0	1.00	50.0	5.00
Perfluoro-n-octadecanoic acid (PFODA)		AveID	61549 18392980	2445236	114997	5869666	583761	0.500 200	20.0	1.00	50.0	5.00

Curve Type Legend:

AveID = Average isotope dilution L1ID = Linear 1/conc IsoDil

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d
 Lims ID: IC L1
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 15-Dec-2016 12:29:18 ALS Bottle#: 37 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L1_b
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub6
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 16-Dec-2016 14:34:11 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK007

First Level Reviewer: chandrasenas

Date: 15-Dec-2016 13:48:59

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 2 13C4 PFBA

217.00 > 172.00 1.534 1.534 0.0 18263829 52.5 105 1469089

1 Perfluorobutyric acid

212.90 > 169.00 1.542 1.535 0.007 1.000 155481 0.4986 99.7 1121

D 4 13C5-PFPeA

267.90 > 223.00 1.810 1.810 0.0 14121285 53.1 106 1079323

3 Perfluoropentanoic acid

262.90 > 219.00 1.810 1.810 0.0 1.000 152321 0.5465 109 1332

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.849 1.848 0.001 1.000 216598 0.4473 101

298.90 > 99.00 1.849 1.848 0.001 1.000 87630 2.47(0.00-0.00) 101

7 Perfluorohexanoic acid

313.00 > 269.00 2.097 2.096 0.001 1.000 126429 0.5378 108 4416

D 6 13C2 PFHxA

315.00 > 270.00 2.097 2.097 0.0 12655304 51.6 103 589404

D 11 13C4-PFHpA

367.00 > 322.00 2.430 2.426 0.004 12240718 54.1 108 647338

12 Perfluoroheptanoic acid

363.00 > 319.00 2.430 2.428 0.002 1.000 129104 0.5388 108 1246 M

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.444 2.431 0.013 1.000 204063 0.5798 127 M

D 10 18O2 PFHxS

403.00 > 84.00 2.452 2.446 0.006 16163510 49.4 105 1405328

D 14 13C4 PFOA

417.00 > 372.00 2.782 2.783 -0.001 12504504 54.3 109 532215

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.782	2.783	-0.001	1.000	145696	0.5807		116	1257	
413.00 > 169.00	2.790	2.783	0.007	1.003	87089		1.67(0.90-1.10)	116	4416	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.790	2.790	0.0	1.000	134982	0.4770		100		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.151	3.118	0.033	1.000	116569	0.4564		98.4	7996	M
499.00 > 99.00	3.159	3.118	0.041	1.003	24244		4.81(0.90-1.10)	98.4	1329	M
D 17 13C4 PFOS										
503.00 > 80.00	3.151	3.151	0.0		12276070	49.3		103	1128009	
D 19 13C5 PFNA										
468.00 > 423.00	3.159	3.153	0.006		9455492	53.2		106	520740	
20 Perfluorononanoic acid										
463.00 > 419.00	3.159	3.155	0.004	1.000	90066	0.5004		100	1349	
D 21 13C8 FOSA										
506.00 > 78.00	3.490	3.488	0.002		20355431	53.0		106	727464	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.490	3.491	-0.001	1.000	195749	0.5155		103	25454	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.515	3.510	0.005	1.000	82137	0.5166		103	2772	
D 23 13C2 PFDA										
515.00 > 470.00	3.515	3.513	0.002		8422718	53.5		107	284895	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.826	3.822	0.004	1.000	69270	0.4619		95.8		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.834	3.839	-0.005	1.000	65000	0.5350		107	1918	
D 27 13C2 PFUnA										
565.00 > 520.00	3.843	3.842	0.001		6352135	54.2		108	398643	
D 30 13C2 PFDaA										
615.00 > 570.00	4.134	4.132	0.002		5815120	52.4		105	205155	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.141	4.136	0.005	1.000	52807	0.4946		98.9	1204	M
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.404	4.400	0.004	1.000	53320	0.5055		101	1256	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.643	4.641	0.002		11956257	52.6		105	663687	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.643	4.642	0.001	1.000	98521	0.5345		107	1284	
713.00 > 169.00	4.633	4.642	-0.009	0.998	17902		5.50(0.00-0.00)	107	7022	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.058	5.057	0.001		6574607	52.8		106	132486	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.058	5.059	-0.001	1.000	125860	0.5899		118	92.5	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.413	5.414	-0.001	1.000	61549	0.5136		103	54.0	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L1_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d

Injection Date: 15-Dec-2016 12:29:18

Instrument ID: A8_N

Lims ID: IC L1

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 37

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

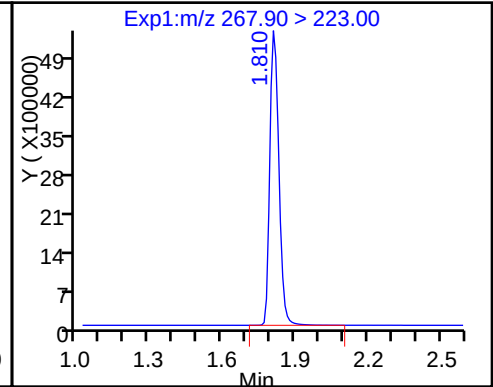
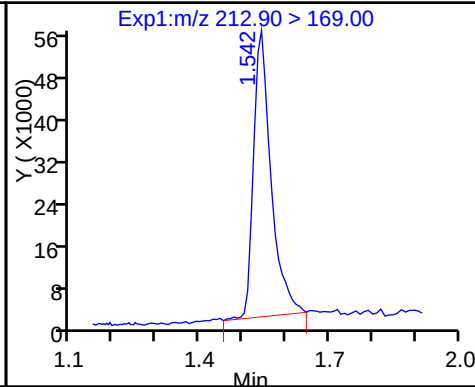
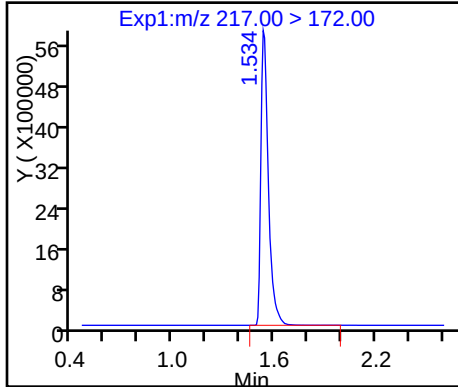
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

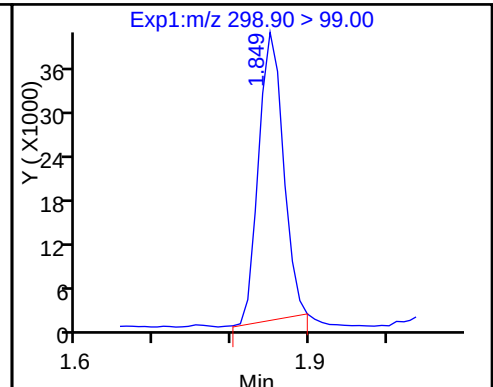
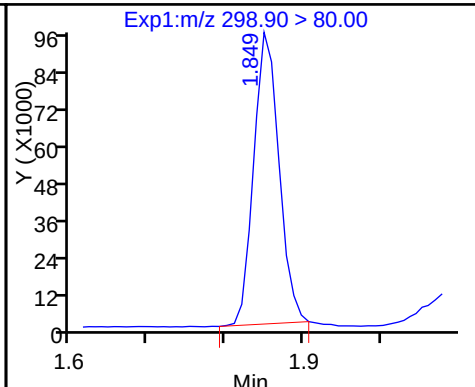
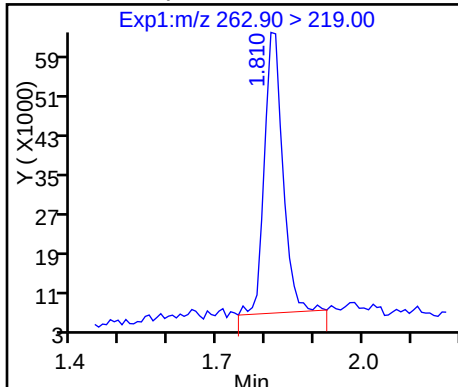
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

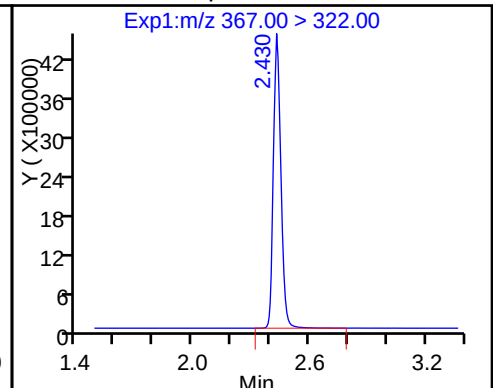
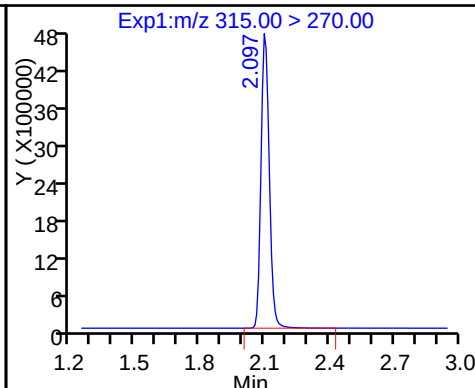
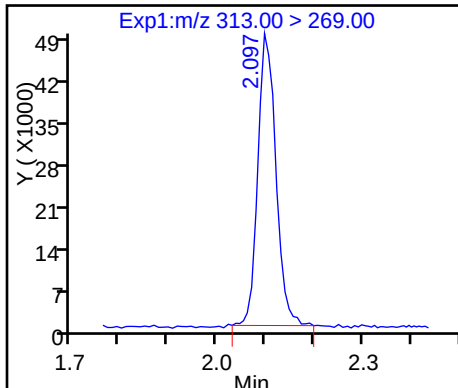
5 Perfluorobutanesulfonic acid



7 Perfluorohexanoic acid

D 6 13C2 PFHxA

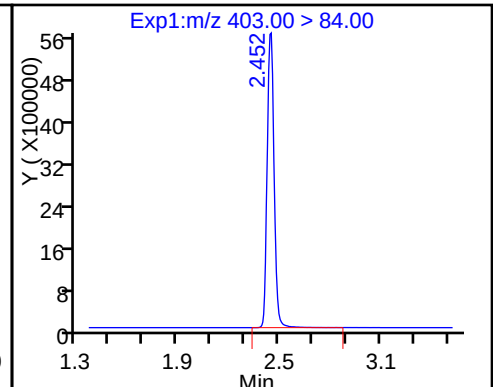
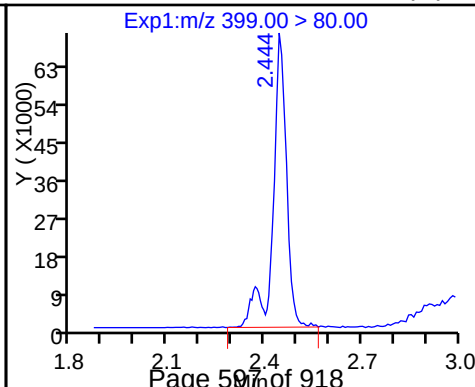
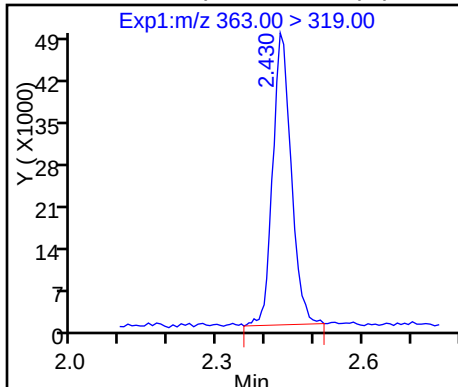
D 11 13C4-PFHpA



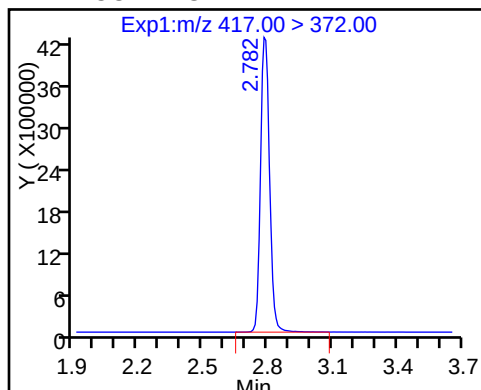
12 Perfluoroheptanoic acid (M)

9 Perfluorohexanesulfonic acid (M)

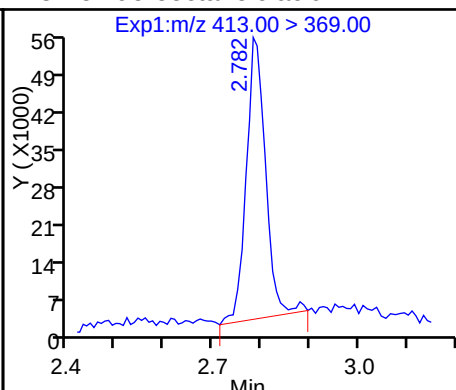
D 10 18O2 PFHxS



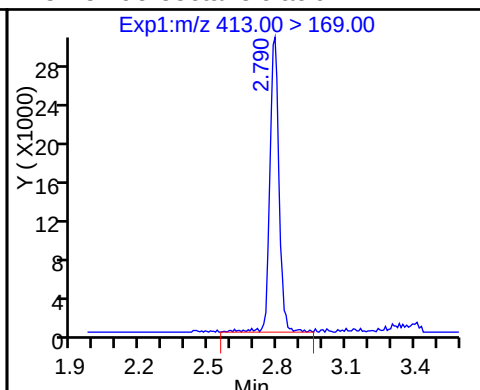
D 14 13C4 PFOA



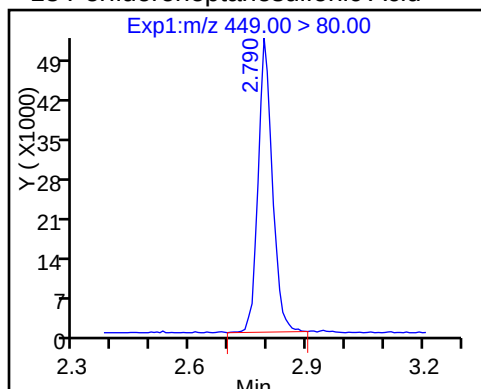
15 Perfluorooctanoic acid



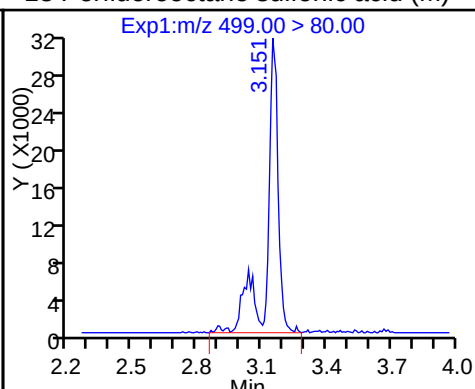
15 Perfluorooctanoic acid



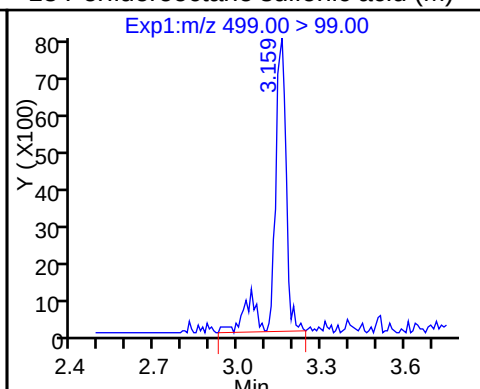
13 Perfluoroheptanesulfonic Acid



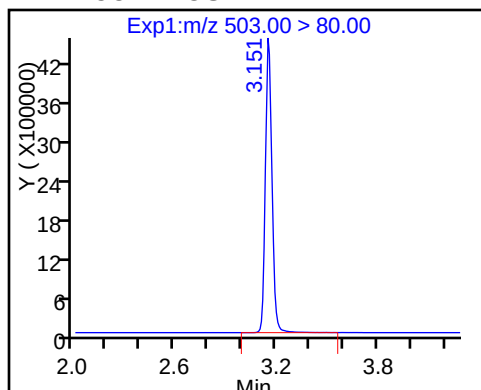
18 Perfluorooctane sulfonic acid (M)



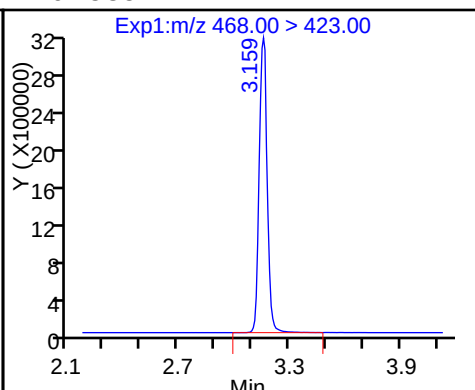
18 Perfluorooctane sulfonic acid (M)



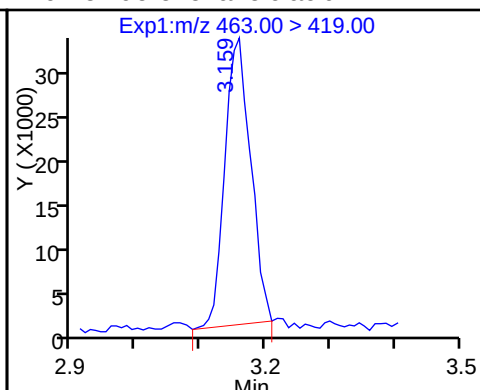
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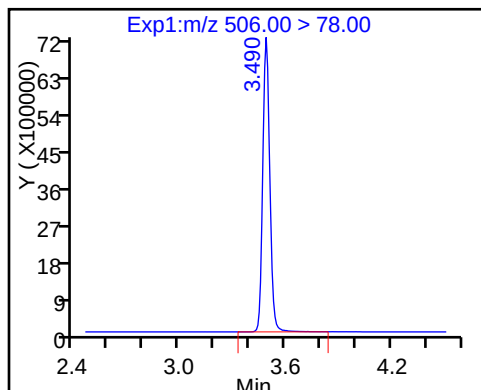
D 19 13C5 PFNA



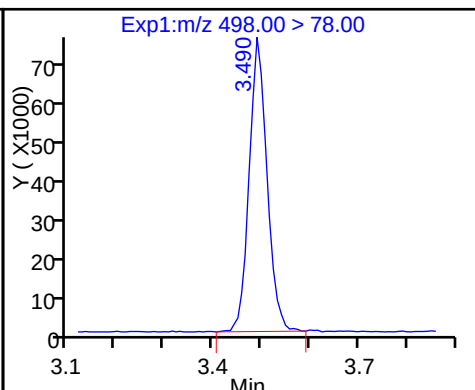
20 Perfluorononanoic acid



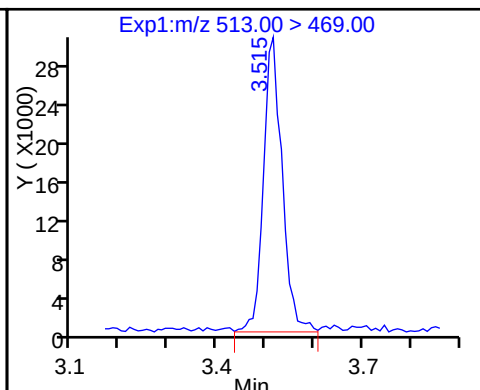
D 21 13C8 FOSA



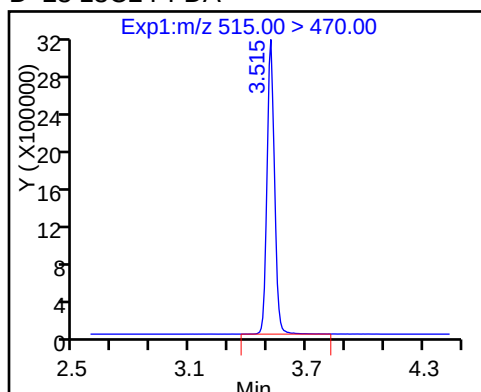
22 Perfluorooctane Sulfonamide



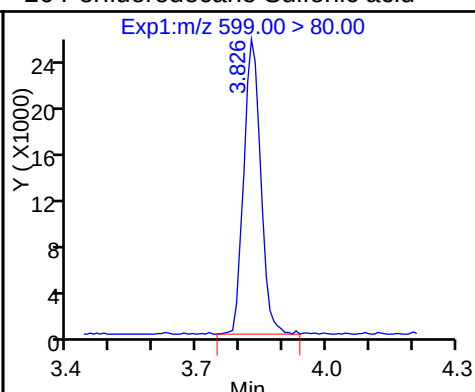
24 Perfluorodecanoic acid



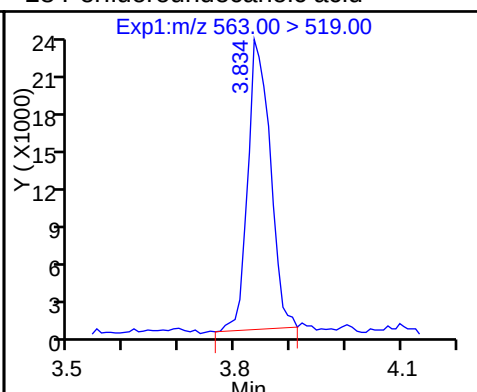
D 23 13C2 PFDA



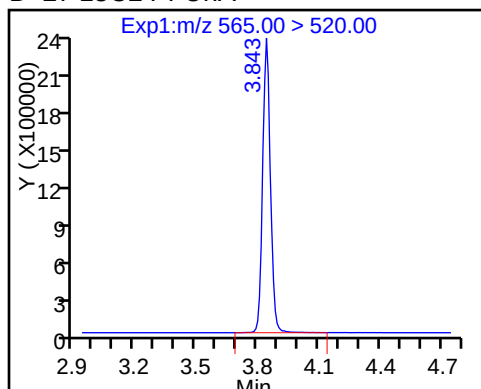
26 Perfluorodecane Sulfonic acid



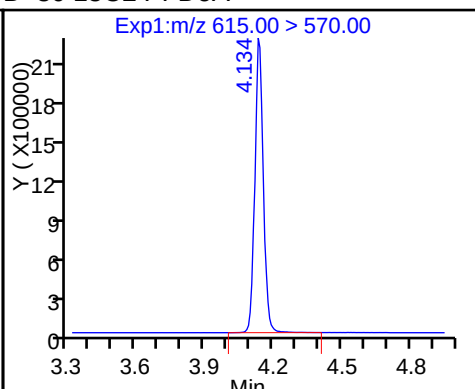
28 Perfluoroundecanoic acid



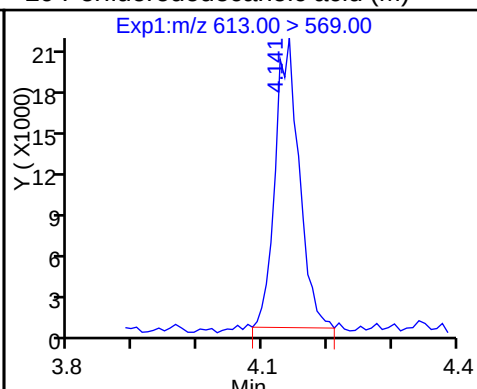
D 27 13C2 PFUnA



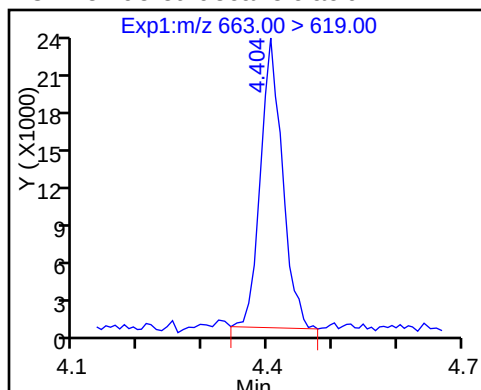
D 30 13C2 PFDaA



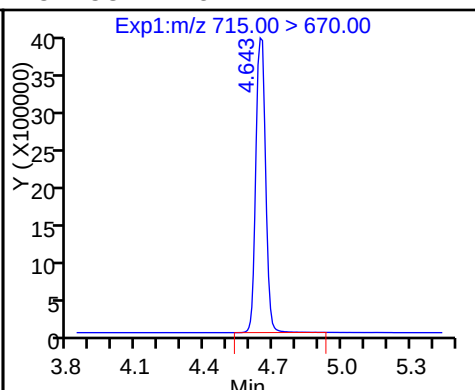
29 Perfluorododecanoic acid (M)



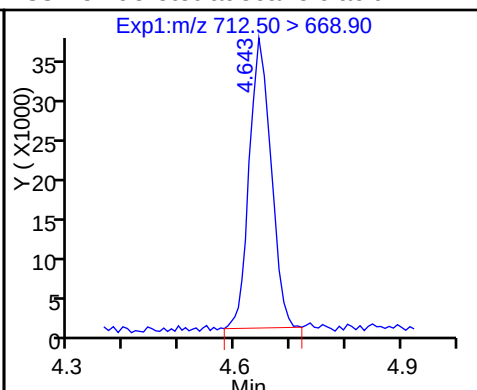
31 Perfluorotridecanoic acid



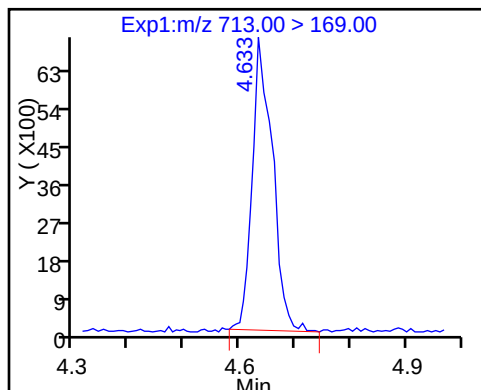
D 32 13C2-PFTeDA



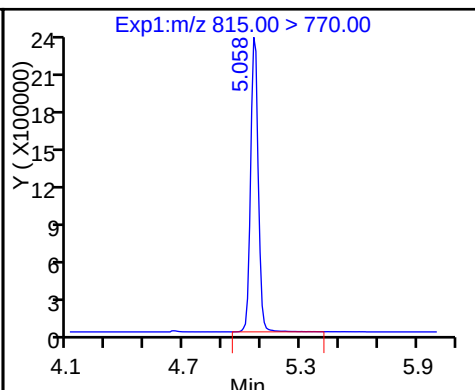
33 Perfluorotetradecanoic acid



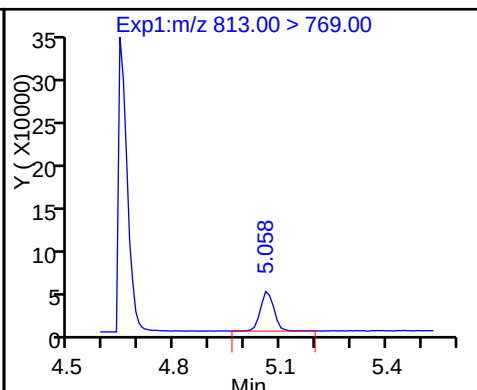
33 Perfluorotetradecanoic acid



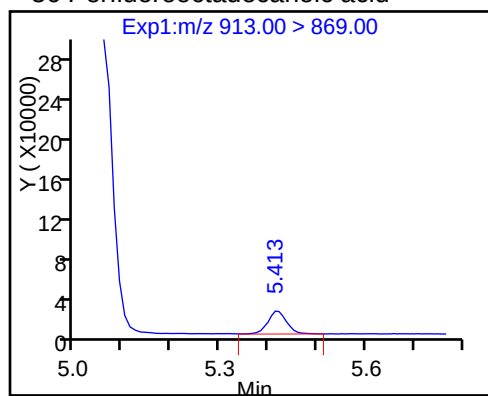
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



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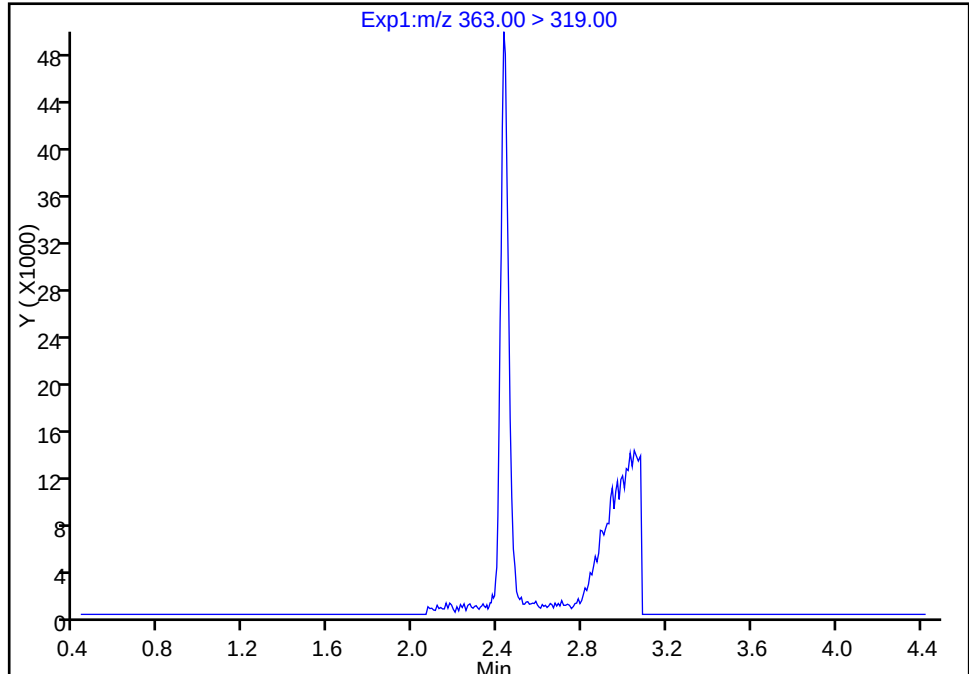
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d
Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

12 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

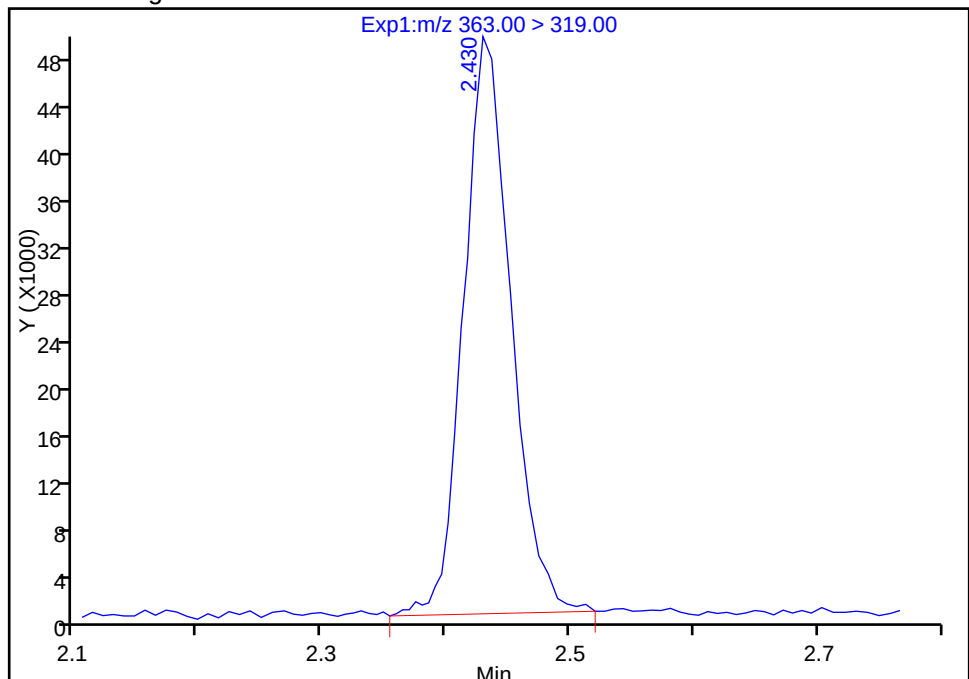
Not Detected
Expected RT: 2.43

Processing Integration Results



Manual Integration Results

RT: 2.43
Area: 129104
Amount: 0.538766
Amount Units: ng/ml



Reviewer: chandrasenas, 15-Dec-2016 13:48:59

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

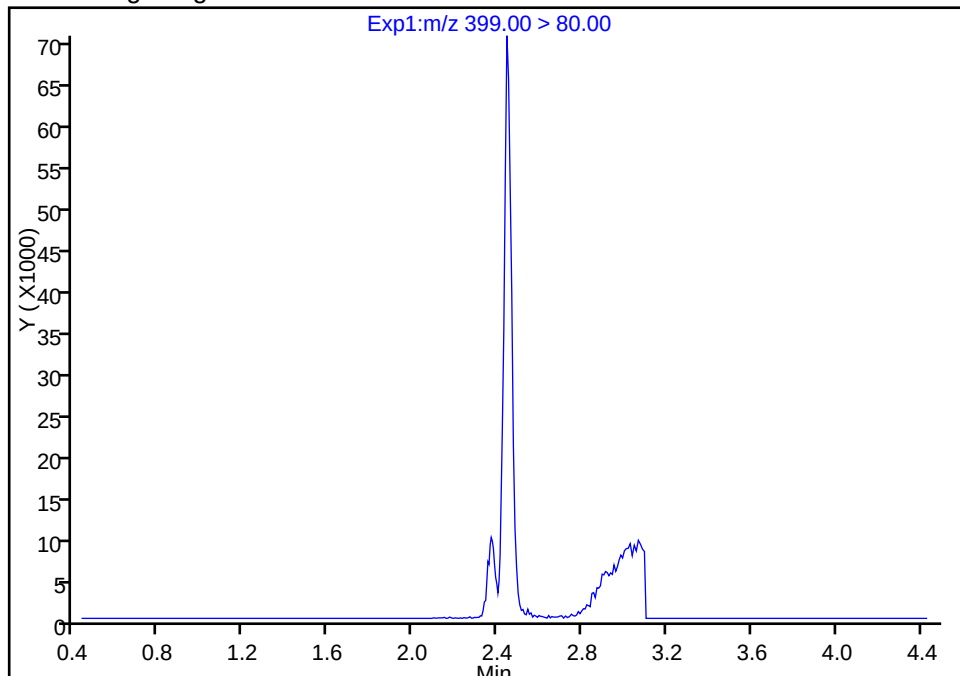
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Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

9 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

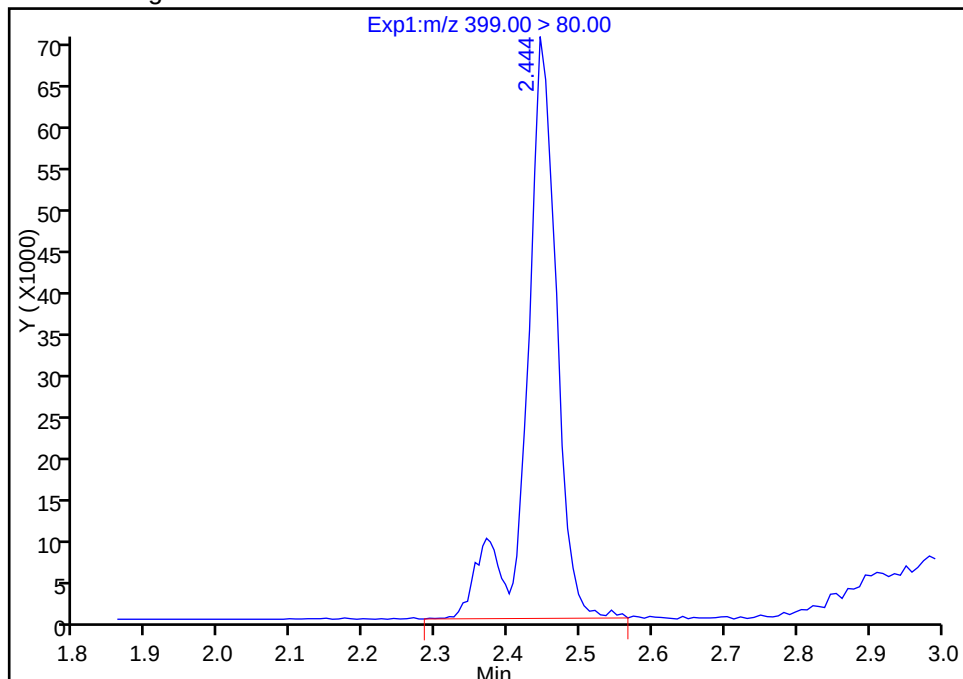
Not Detected
Expected RT: 2.43

Processing Integration Results



RT: 2.44
Area: 204063
Amount: 0.579783
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 15-Dec-2016 13:48:59

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

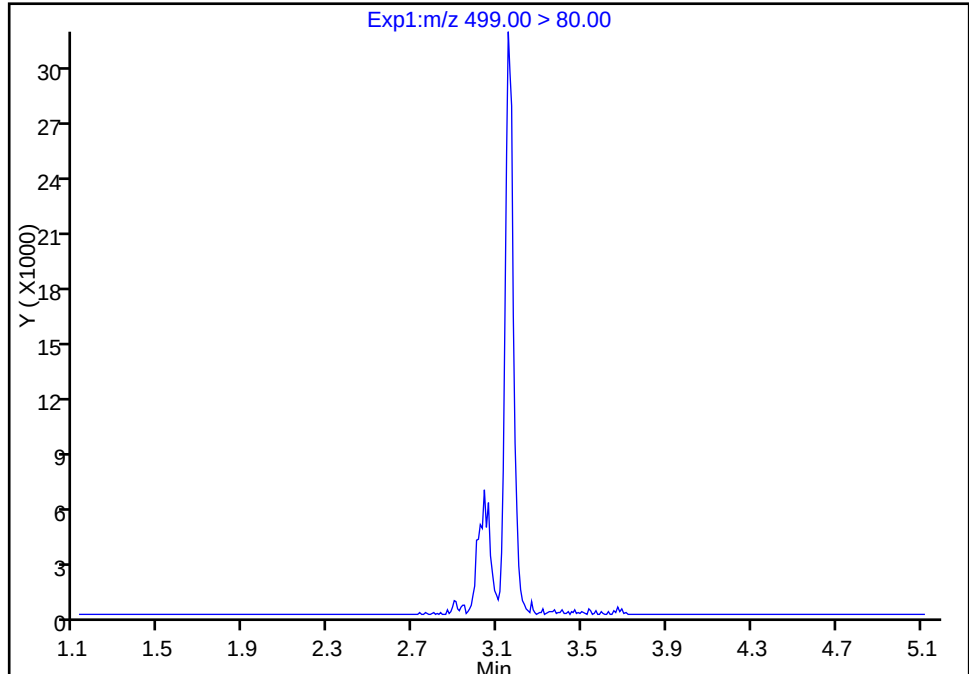
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Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

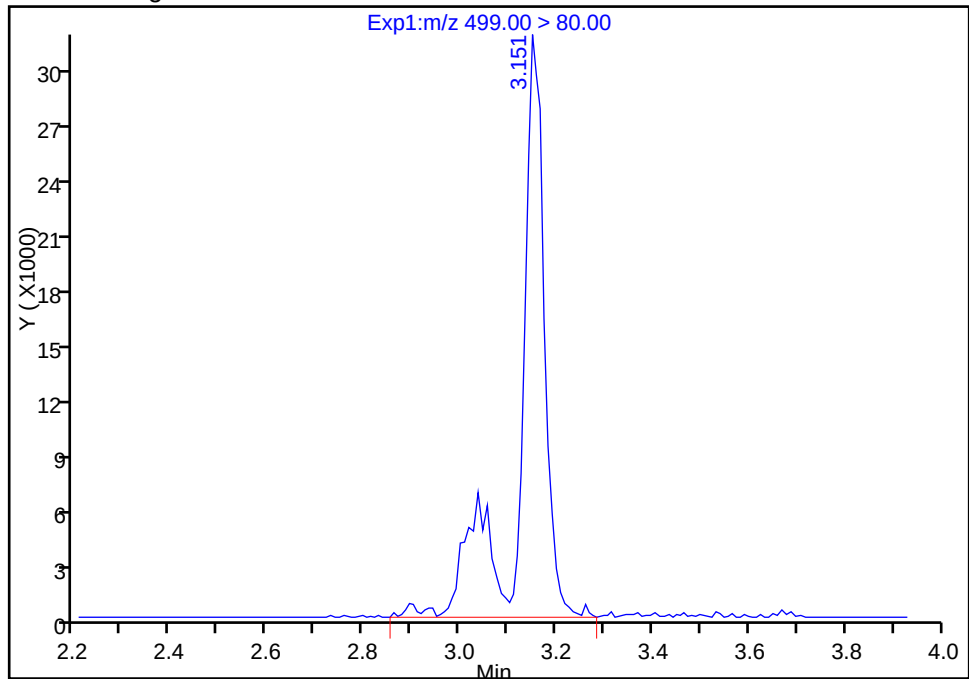
Not Detected
Expected RT: 3.12

Processing Integration Results



RT: 3.15
Area: 116569
Amount: 0.456423
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 15-Dec-2016 13:48:59

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

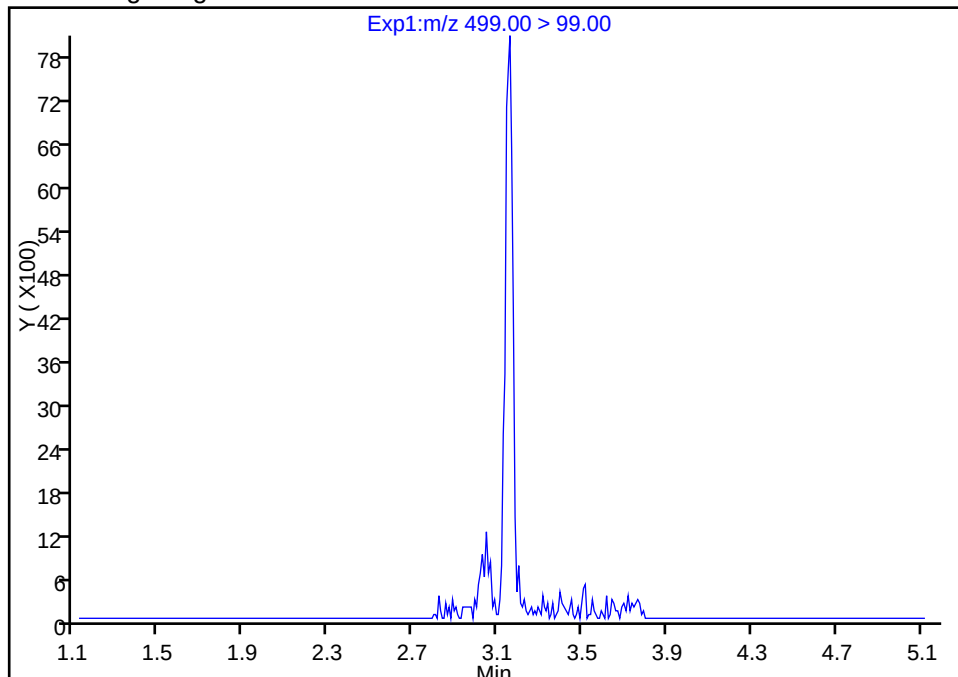
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Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

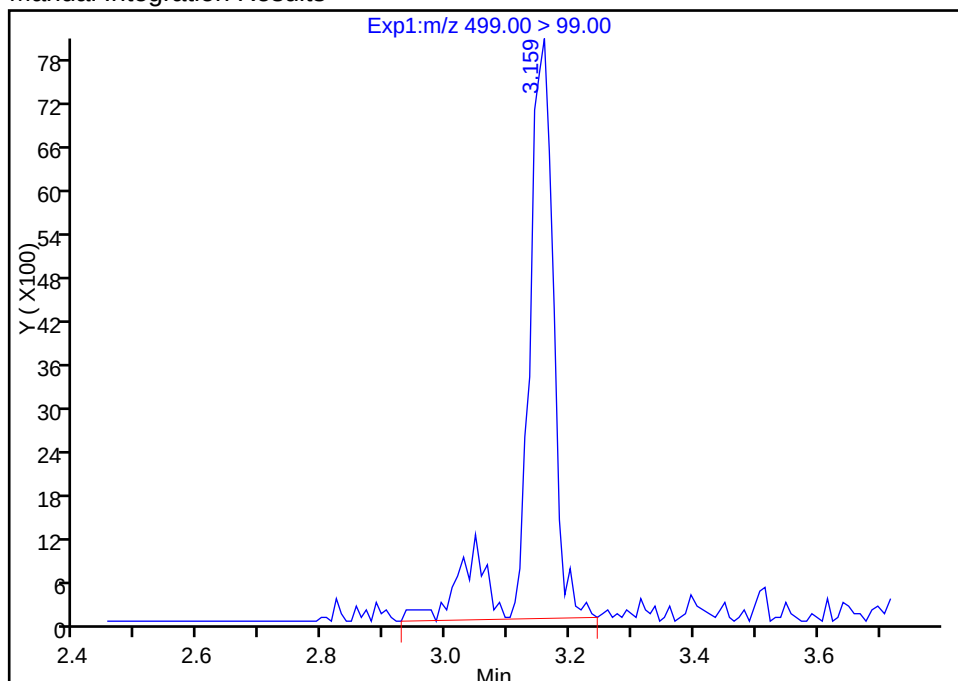
Not Detected
Expected RT: 3.12

Processing Integration Results



Manual Integration Results

RT: 3.16
Area: 24244
Amount: 0.456423
Amount Units: ng/ml



Reviewer: chandrasenas, 15-Dec-2016 13:48:59

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

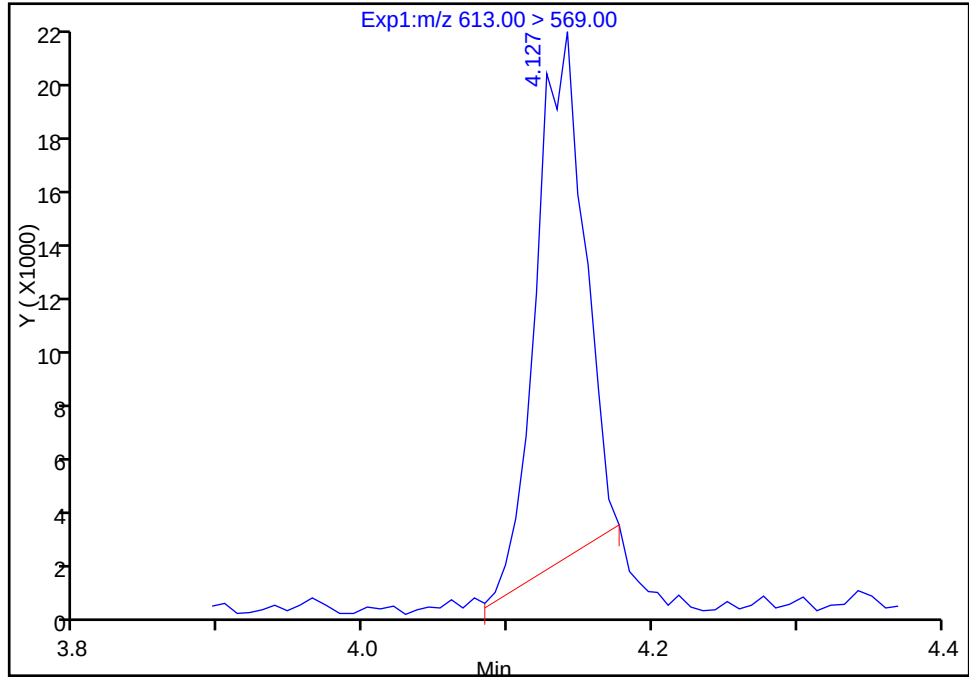
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Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

29 Perfluorododecanoic acid, CAS: 307-55-1

Signal: 1

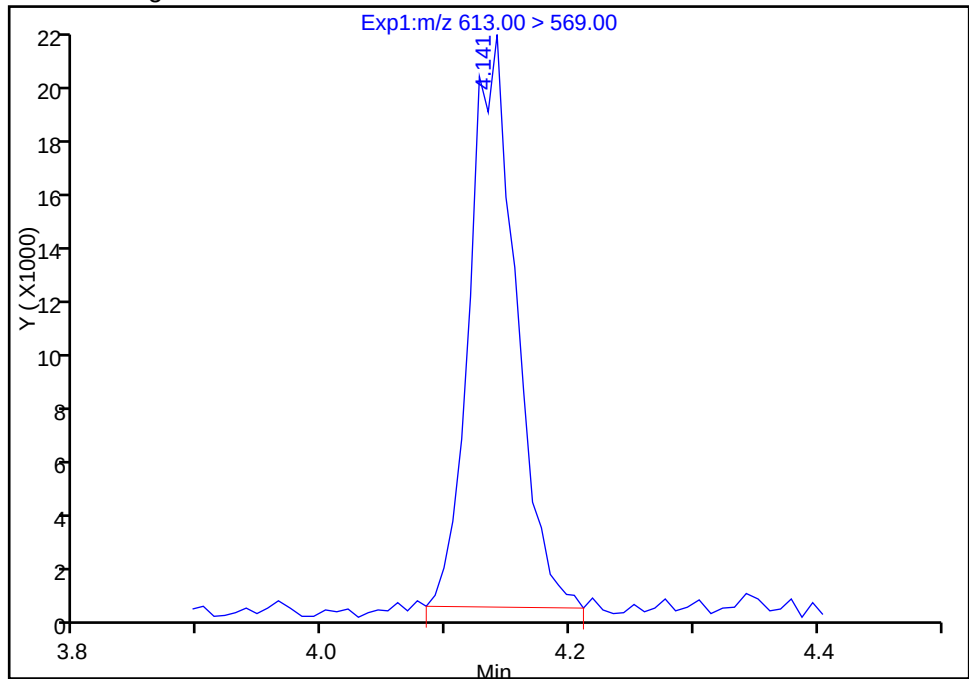
RT: 4.13
Area: 43489
Amount: 0.419548
Amount Units: ng/ml

Processing Integration Results



RT: 4.14
Area: 52807
Amount: 0.494620
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 15-Dec-2016 13:48:59

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_005.d
 Lims ID: IC L2
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 15-Dec-2016 12:36:48 ALS Bottle#: 38 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L2_b
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub6
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 16-Dec-2016 14:34:15 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK007

First Level Reviewer: chandrasenas

Date: 15-Dec-2016 13:50:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 2 13C4 PFBA

217.00 > 172.00 1.530 1.534 -0.004 18201393 52.3 105 1000291

1 Perfluorobutyric acid

212.90 > 169.00 1.530 1.535 -0.005 1.000 310647 1.00 100.0 2583

D 4 13C5-PFPeA

267.90 > 223.00 1.805 1.810 -0.005 14067714 52.9 106 1093447

3 Perfluoropentanoic acid

262.90 > 219.00 1.805 1.810 -0.005 1.000 287573 1.04 104 2935

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.844 1.848 -0.004 1.000 424227 0.8800 99.5

298.90 > 99.00 1.844 1.848 -0.004 1.000 171864 2.47(0.00-0.00) 99.5

7 Perfluorohexanoic acid

313.00 > 269.00 2.092 2.096 -0.004 1.000 239458 1.01 101 6854

D 6 13C2 PFHxA

315.00 > 270.00 2.092 2.097 -0.005 12814780 52.3 105 582538

D 11 13C4-PFHpA

367.00 > 322.00 2.423 2.426 -0.003 12248222 54.1 108 431068

12 Perfluoroheptanoic acid

363.00 > 319.00 2.430 2.428 0.002 1.000 237734 0.99 99.1 1884

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.445 2.431 0.014 1.000 348475 0.99 109

D 10 18O2 PFHxS

403.00 > 84.00 2.445 2.446 -0.001 16093048 49.2 104 960828

D 14 13C4 PFOA

417.00 > 372.00 2.781 2.783 -0.002 12627691 54.8 110 657205

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.781	2.783	-0.002	1.000	254861	1.01		101	2003	
413.00 > 169.00	2.781	2.783	-0.002	1.000	159259		1.60(0.90-1.10)	101	7007	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.789	2.790	-0.001	1.000	265783	0.9254		97.2		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.149	3.118	0.031	1.000	220370	0.8502		91.6	15877	M
499.00 > 99.00	3.157	3.118	0.039	1.003	52990		4.16(0.90-1.10)	91.6	5530	M
D 17 13C4 PFOS										
503.00 > 80.00	3.149	3.151	-0.002		12459383	50.1		105	1105467	
D 19 13C5 PFNA										
468.00 > 423.00	3.149	3.153	-0.004		9537045	53.7		107	472742	
20 Perfluorononanoic acid										
463.00 > 419.00	3.157	3.155	0.002	1.000	188341	1.04		104	2906	
D 21 13C8 FOSA										
506.00 > 78.00	3.489	3.488	0.001		20238792	52.7		105	766772	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.489	3.491	-0.002	1.000	381363	1.01		101	46576	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.506	3.510	-0.004	1.000	155537	0.9716		97.2	5243	
D 23 13C2 PFDA										
515.00 > 470.00	3.514	3.513	0.001		8480447	53.9		108	439565	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.824	3.822	0.002	1.000	139829	0.9186		95.3		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.833	3.839	-0.006	1.000	119189	1.00		100	2937	
D 27 13C2 PFUnA										
565.00 > 520.00	3.842	3.842	0.0		6219248	53.0		106	280274	
D 30 13C2 PFDaA										
615.00 > 570.00	4.133	4.132	0.001		5822114	52.5		105	270055	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.133	4.136	-0.003	1.000	103481	0.9681		96.8	2745	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.396	4.400	-0.004	1.000	109461	1.04		104	2155	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.633	4.641	-0.008		11885446	52.3		105	710542	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.643	4.642	0.001	1.000	187123	1.01		101	2896	
713.00 > 169.00	4.633	4.642	-0.009	0.998	31916		5.86(0.00-0.00)	101	12057	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.047	5.057	-0.010		6699329	53.8		108	126940	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.058	5.059	-0.001	1.000	173261	1.01		101	135	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.413	5.414	-0.001	1.000	114997	0.9585		95.8	91.0	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L2_00023

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_005.d

Injection Date: 15-Dec-2016 12:36:48

Instrument ID: A8_N

Lims ID: IC L2

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#:

38

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor:

1.0000

Method: A8_N

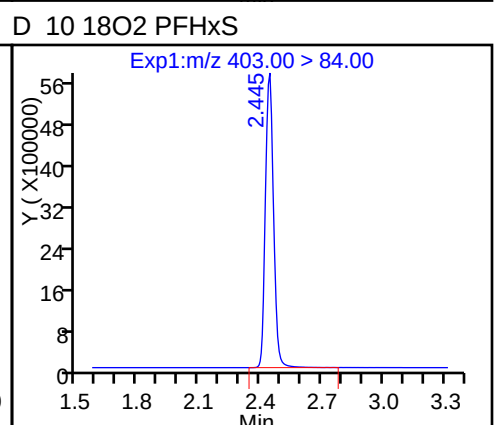
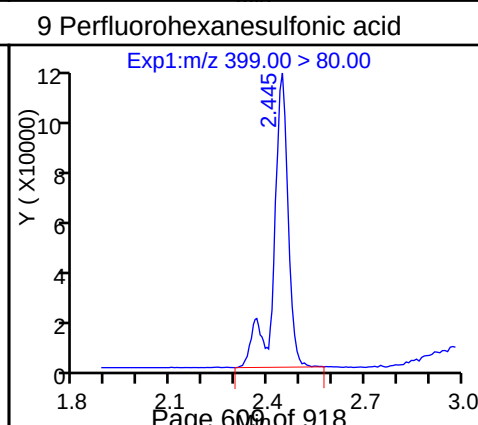
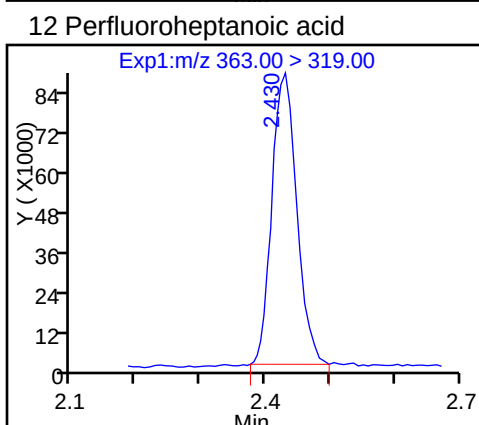
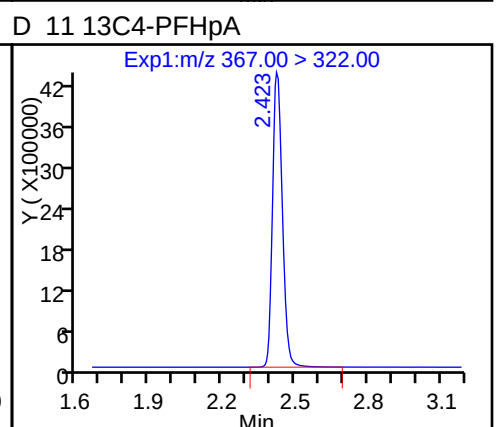
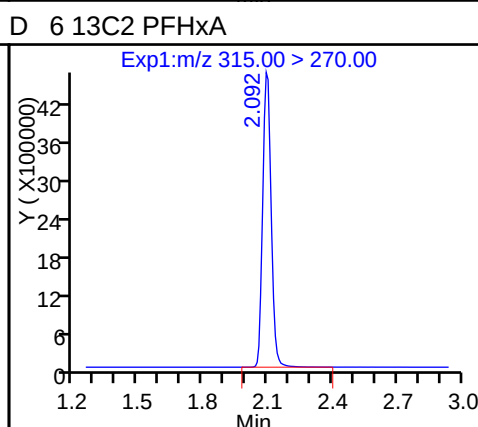
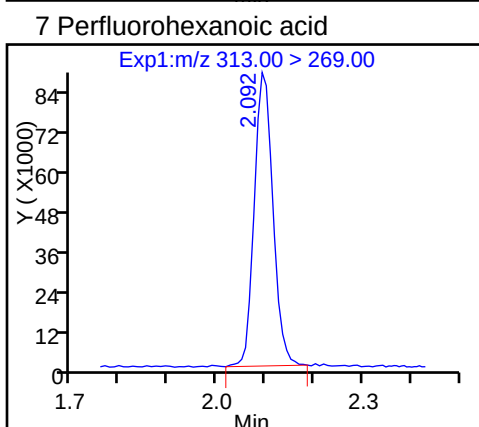
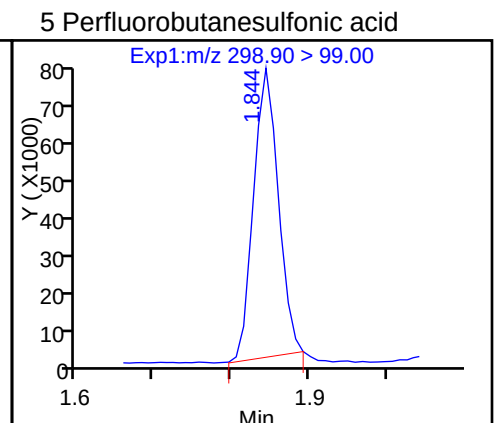
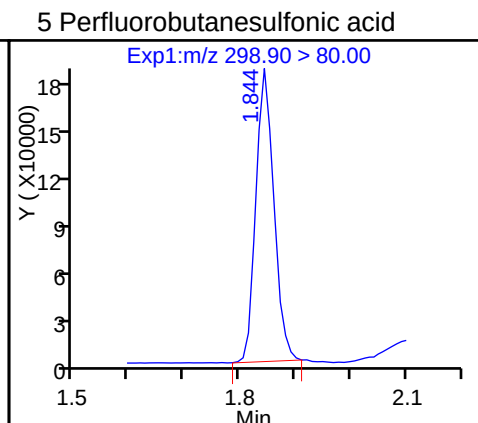
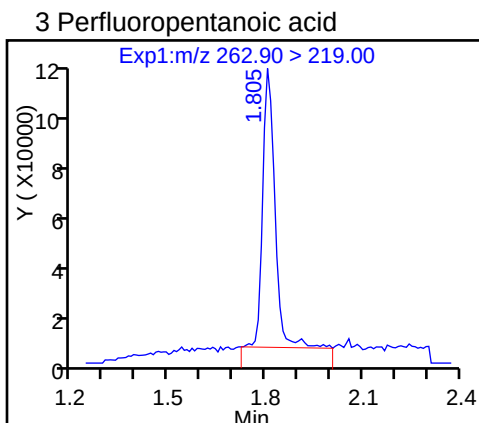
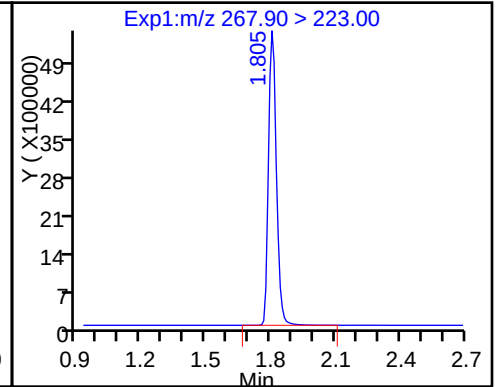
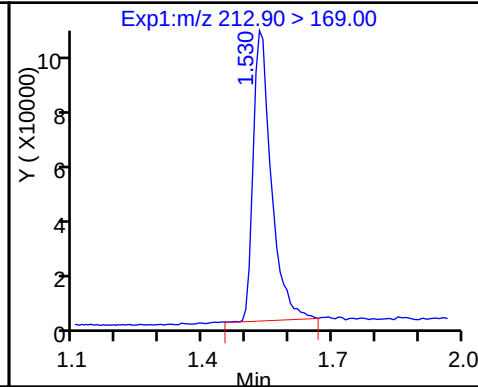
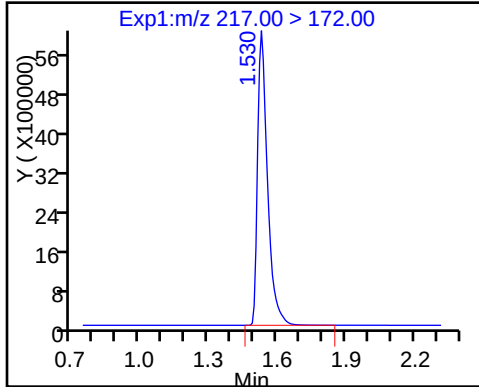
Limit Group:

LC PFC_DOD ICAL

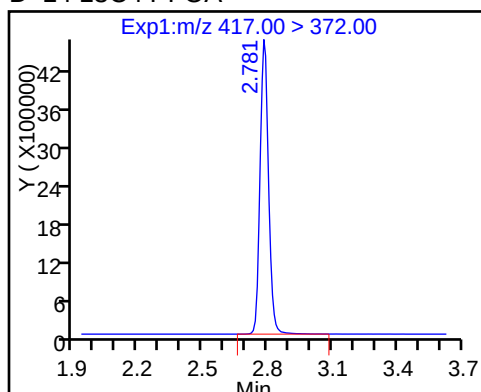
D 2 13C4 PFBA

1 Perfluorobutyric acid

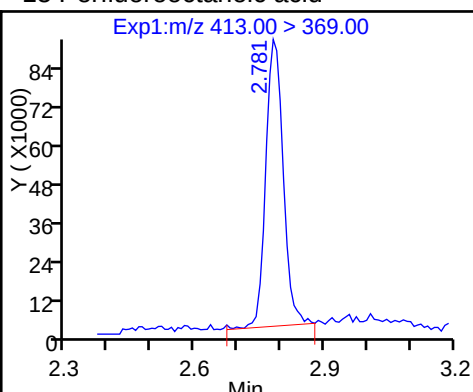
D 4 13C5-PFPeA



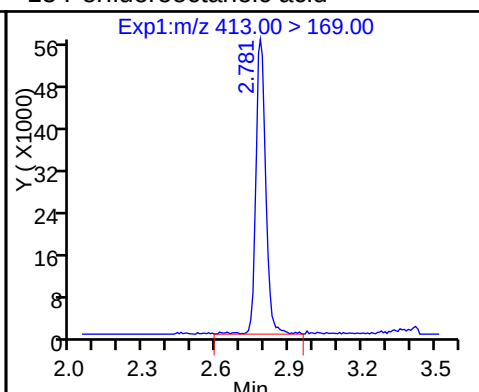
D 14 13C4 PFOA



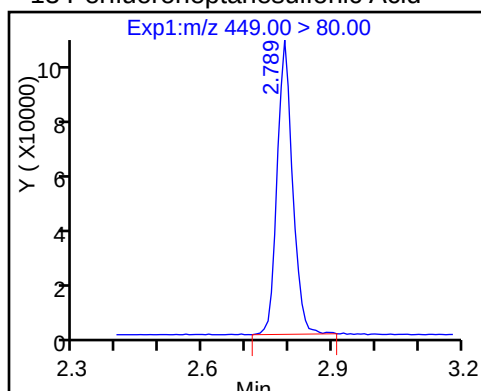
15 Perfluorooctanoic acid



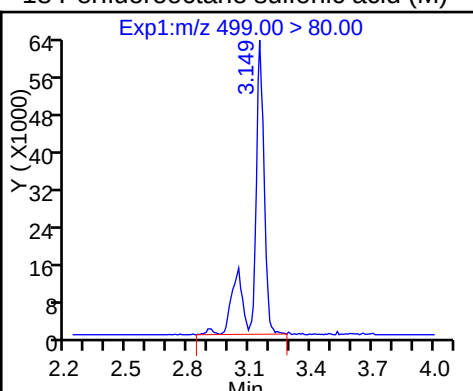
15 Perfluorooctanoic acid



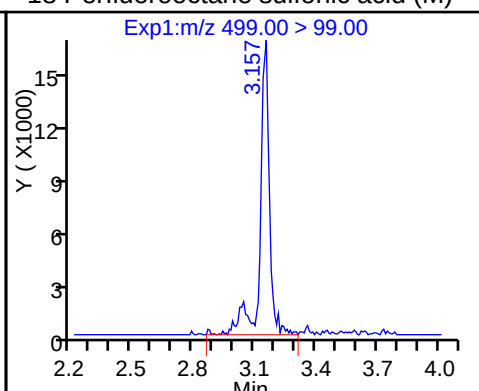
13 Perfluoroheptanesulfonic Acid



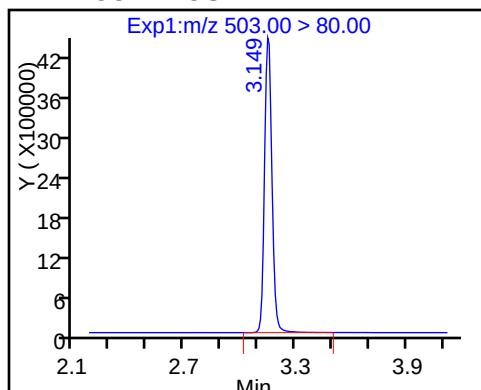
18 Perfluorooctane sulfonic acid (M)



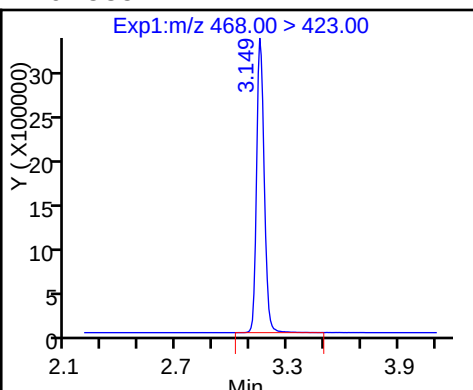
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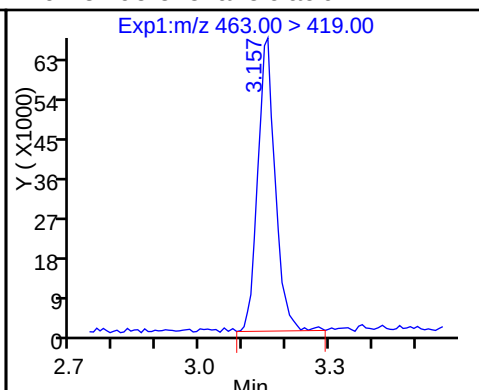
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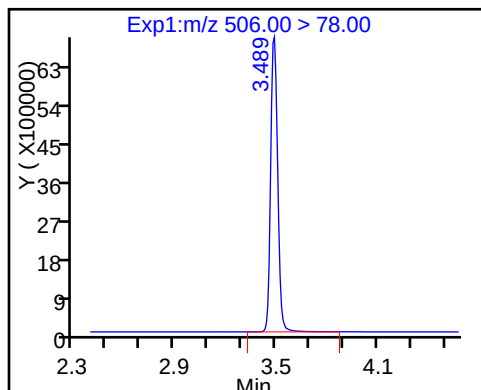
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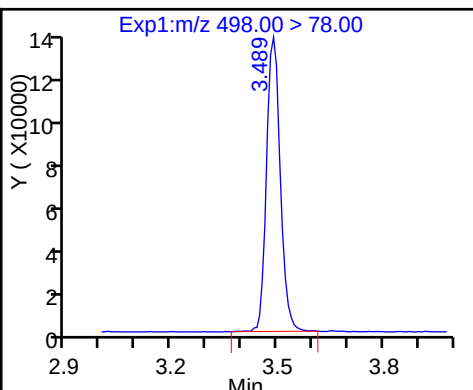
20 Perfluorononanoic acid



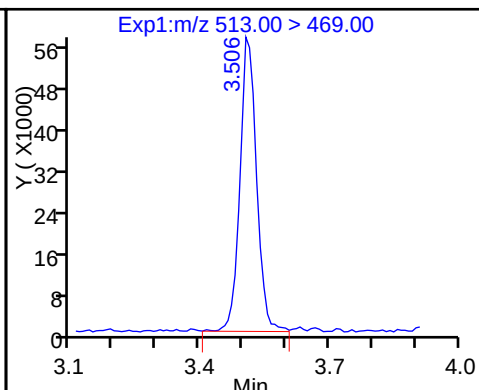
D 21 13C8 FOSA



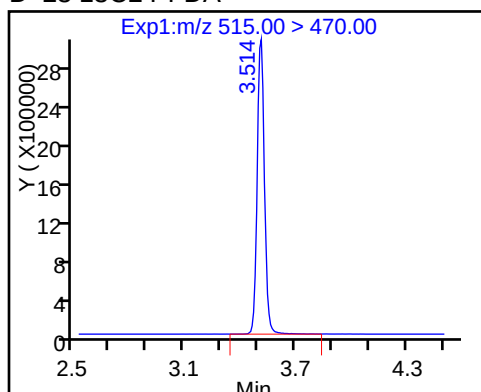
22 Perfluorooctane Sulfonamide



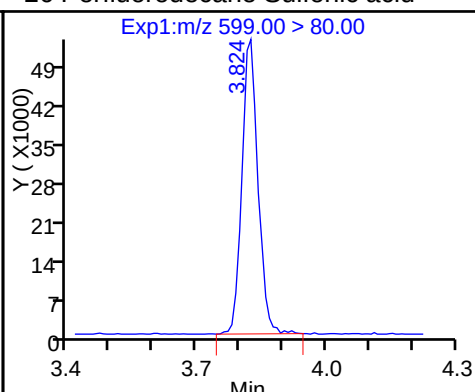
24 Perfluorodecanoic acid



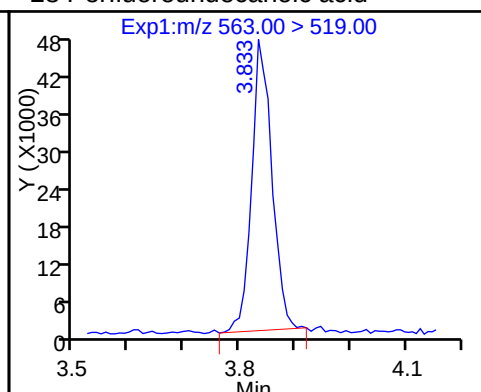
D 23 13C2 PFDA



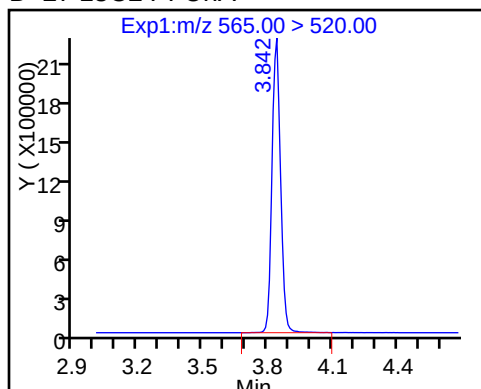
26 Perfluorodecane Sulfonic acid



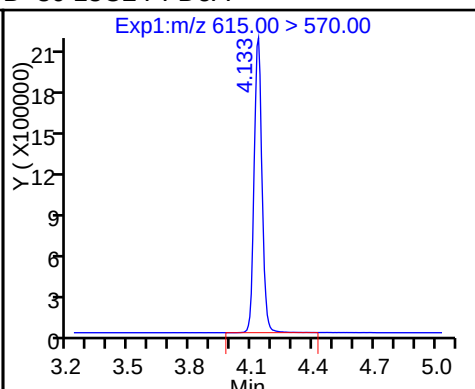
28 Perfluoroundecanoic acid



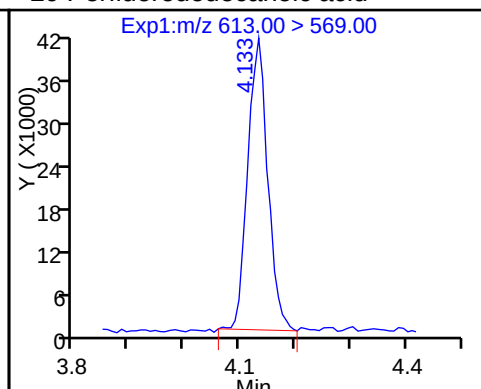
D 27 13C2 PFUnA



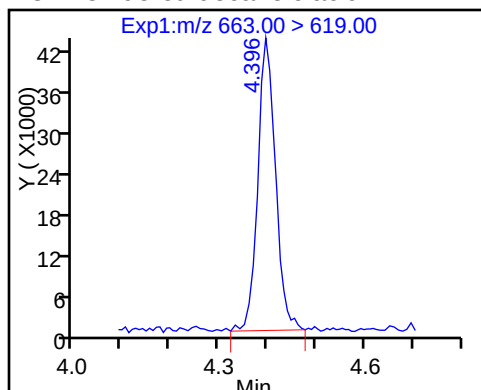
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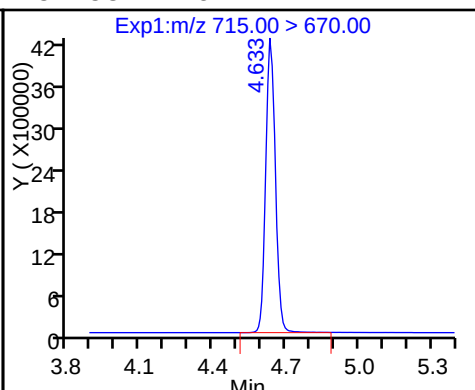
29 Perfluorododecanoic acid



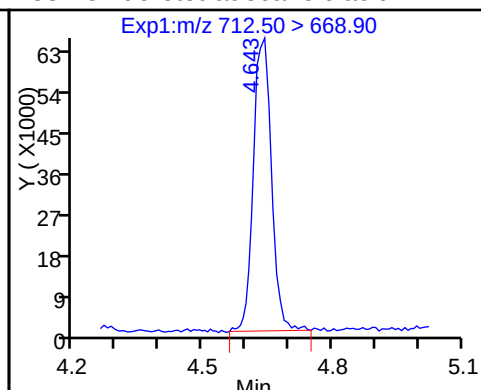
31 Perfluorotridecanoic acid



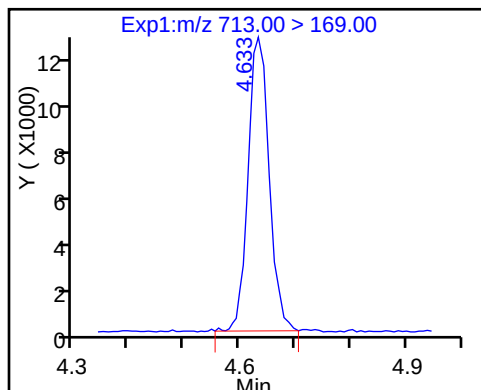
D 32 13C2-PFTeDA



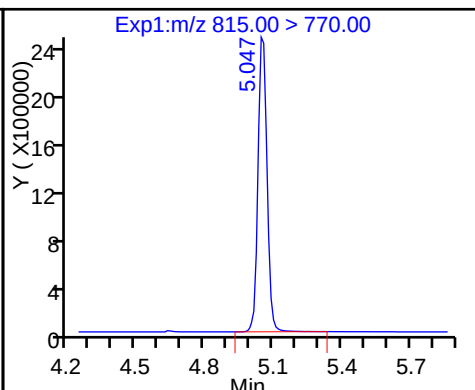
33 Perfluorotetradecanoic acid



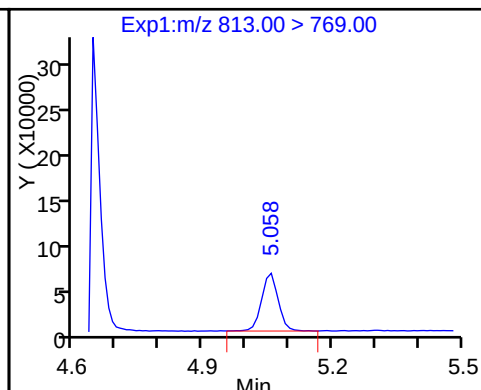
33 Perfluorotetradecanoic acid



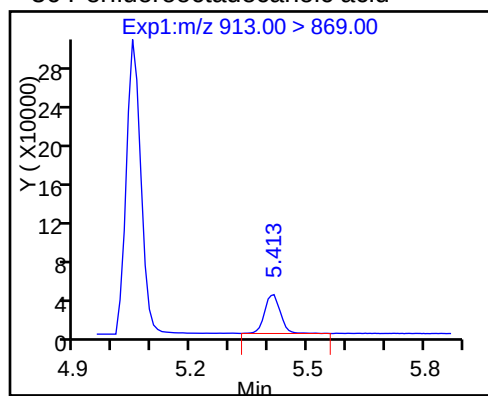
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



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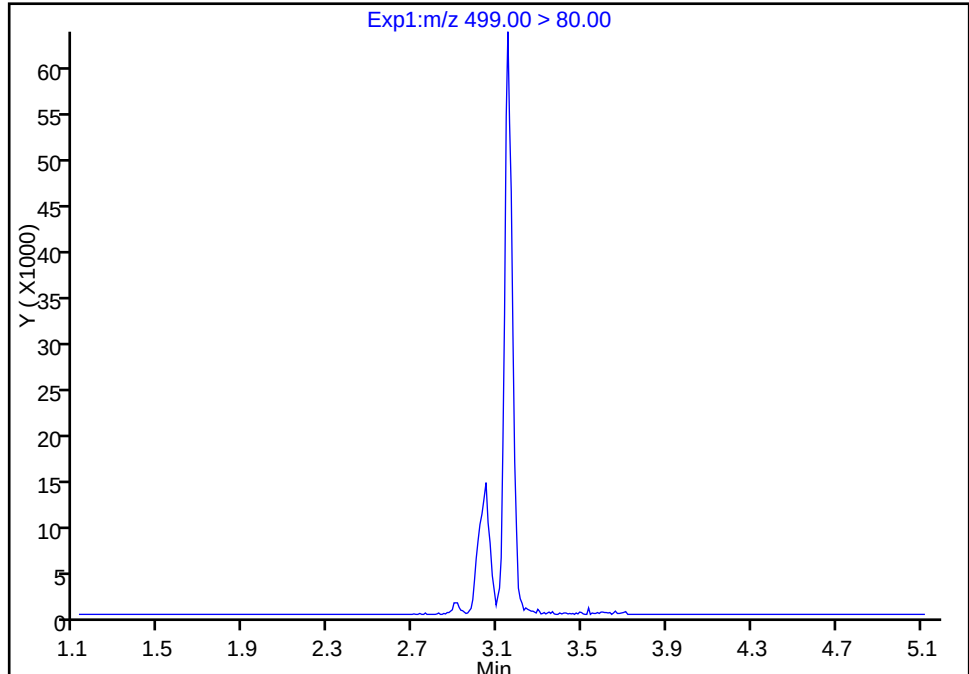
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Injection Date: 15-Dec-2016 12:36:48 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

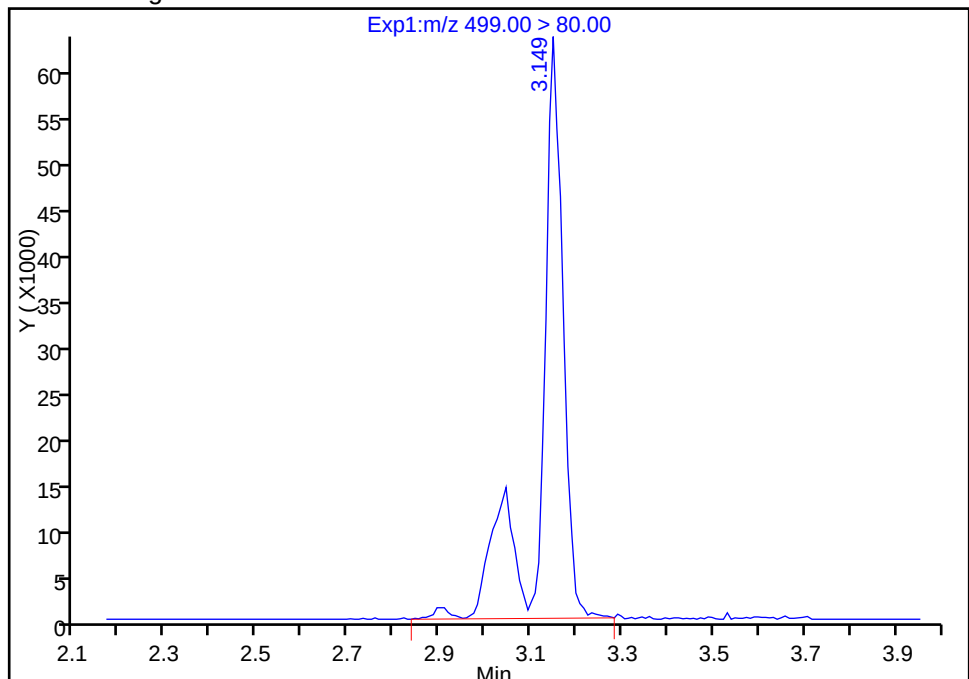
Not Detected
Expected RT: 3.12

Processing Integration Results



RT: 3.15
Area: 220370
Amount: 0.850158
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 15-Dec-2016 13:50:02

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

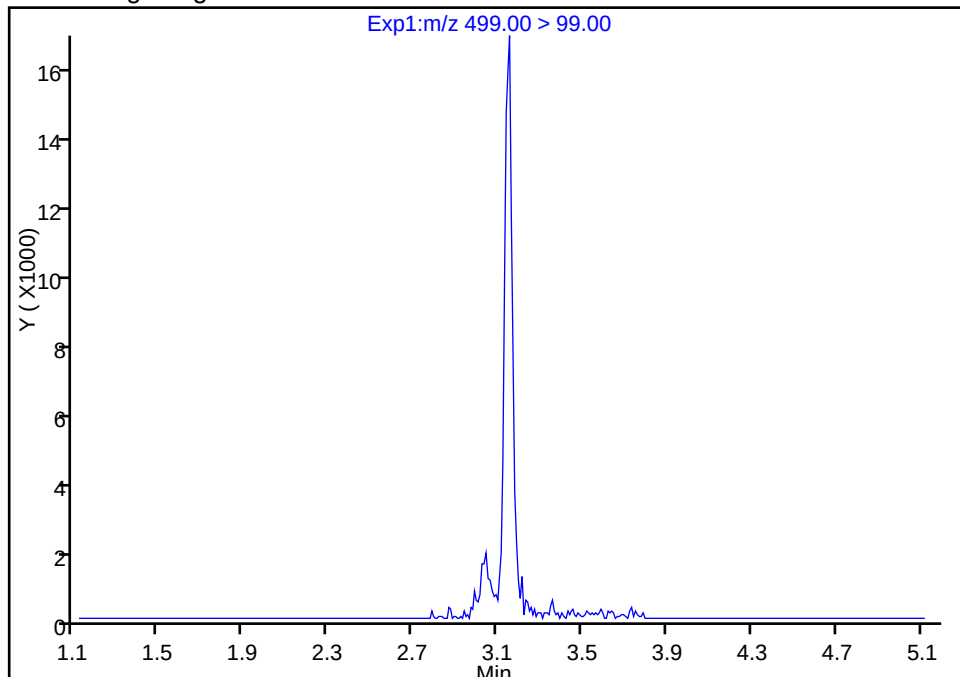
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Injection Date: 15-Dec-2016 12:36:48 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

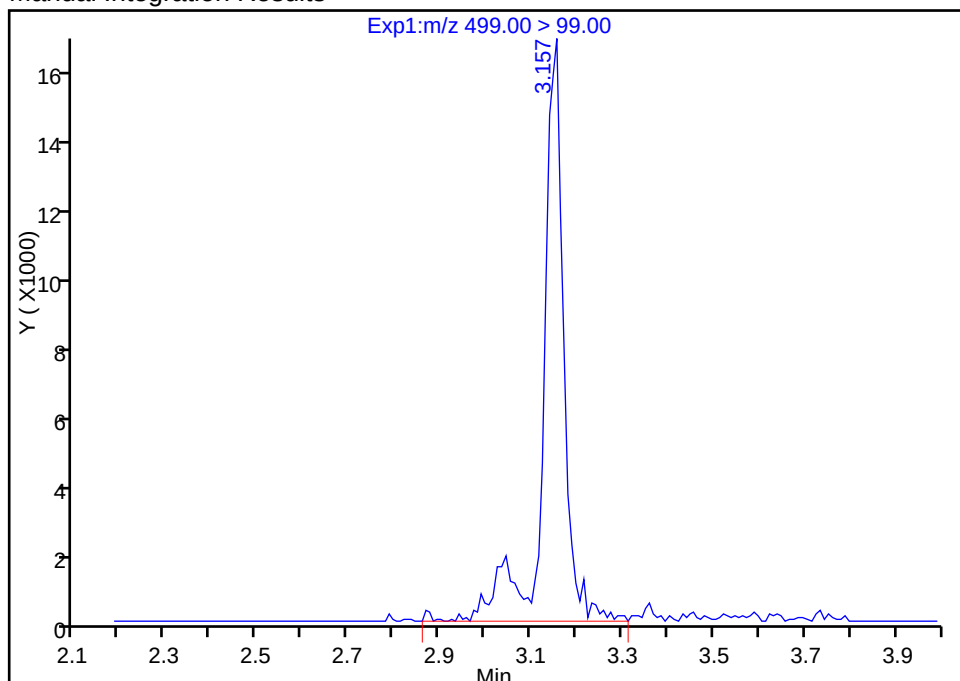
Not Detected
Expected RT: 3.12

Processing Integration Results



Manual Integration Results

RT: 3.16
Area: 52990
Amount: 0.850158
Amount Units: ng/ml



Reviewer: chandrasenas, 15-Dec-2016 13:50:02

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_006.d
 Lims ID: IC L3
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 15-Dec-2016 12:44:16 ALS Bottle#: 39 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L3_b
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub6
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 16-Dec-2016 14:34:18 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK007

First Level Reviewer: chandrasenas

Date: 15-Dec-2016 13:50:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.534	1.534	0.0		18037108	51.9		104	828248	
1 Perfluorobutyric acid										
212.90 > 169.00	1.534	1.535	-0.001	1.000	1550440	5.03		101	13427	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.810	0.0		14063070	52.9		106	1078697	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.810	0.0	1.000	1358239	4.89		97.9	15178	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.849	1.848	0.001	1.000	2211602	4.55		103		
298.90 > 99.00	1.849	1.848	0.001	1.000	918055		2.41(0.00-0.00)	103		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.097	2.096	0.001	1.000	1183286	5.01		100	39266	
D 6 13C2 PFHxA										
315.00 > 270.00	2.097	2.097	0.0		12709919	51.9		104	753338	
D 11 13C4-PFHpA										
367.00 > 322.00	2.425	2.426	-0.001		12260528	54.2		108	1467079	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.432	2.428	0.004	1.000	1175112	4.90		97.9	8914	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.364	2.431	-0.067	1.000	1543002	4.37		96.0		
D 10 18O2 PFHxS										
403.00 > 84.00	2.447	2.446	0.001		16222736	49.6		105	651458	
D 14 13C4 PFOA										
417.00 > 372.00	2.783	2.783	0.0		12635065	54.8		110	746410	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.783	2.783	0.0	1.000	1239541	4.89		97.8	9812	
413.00 > 169.00	2.783	2.783	0.0	1.000	731249		1.70(0.90-1.10)	97.8	28264	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.792	2.790	0.002	1.000	1351160	4.69		98.6		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.153	3.118	0.035	1.000	1150410	4.43		95.5	65030	
499.00 > 99.00	3.153	3.118	0.035	1.000	246751		4.66(0.90-1.10)	95.5	15530	
D 17 13C4 PFOS										
503.00 > 80.00	3.153	3.151	0.002		12484772	50.2		105	473035	
D 19 13C5 PFNA										
468.00 > 423.00	3.153	3.153	0.0		9777609	55.0		110	653324	
20 Perfluorononanoic acid										
463.00 > 419.00	3.153	3.155	-0.002	1.000	902512	4.85		97.0	13825	
D 21 13C8 FOSA										
506.00 > 78.00	3.484	3.488	-0.004		20034933	52.2		104	309657	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.492	3.491	0.001	1.000	1989314	5.32		106	140153	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.509	3.510	-0.001	1.000	771905	4.97		99.3	27905	
D 23 13C2 PFDA										
515.00 > 470.00	3.509	3.513	-0.004		8234678	52.3		105	259288	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.819	3.822	-0.003	1.000	712852	4.67		97.0		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.837	3.839	-0.002	1.000	549708	4.59		91.8	14816	
D 27 13C2 PFUnA										
565.00 > 520.00	3.845	3.842	0.003		6262617	53.4		107	379922	
D 30 13C2 PFDaA										
615.00 > 570.00	4.129	4.132	-0.003		5779875	52.1		104	227122	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.136	4.136	0.0	1.000	506369	4.77		95.4	11299	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.398	4.400	-0.002	1.000	525090	5.01		100	10475	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.645	4.641	0.004		12248242	53.9		108	1049274	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.645	4.642	0.003	1.000	900575	4.92		98.3	12522	
713.00 > 169.00	4.635	4.642	-0.007	0.998	149199		6.04(0.00-0.00)	98.3	58819	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.059	5.057	0.002		6542972	52.5		105	140605	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.059	5.059	0.0	1.000	599529	4.89		97.7	502	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.414	5.414	0.0	1.000	583761	4.90		98.0	536	

Reagents:

LCPFC-L3_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_006.d

Injection Date: 15-Dec-2016 12:44:16

Instrument ID: A8_N

Lims ID: IC L3

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#:

39

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor:

1.0000

Method: A8_N

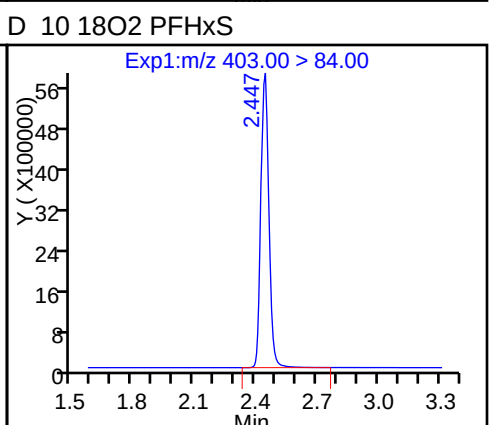
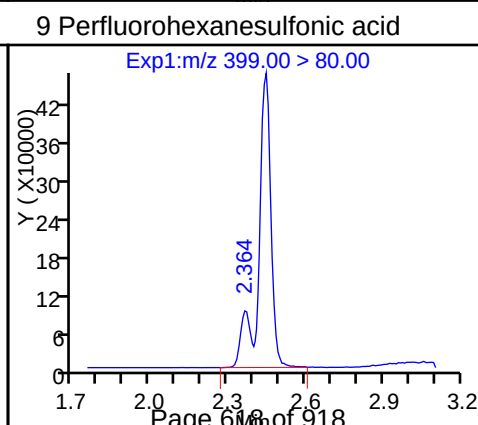
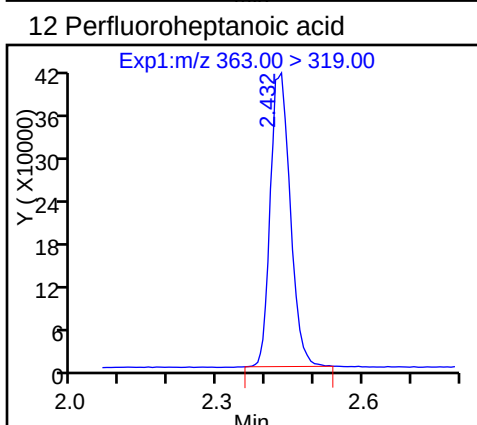
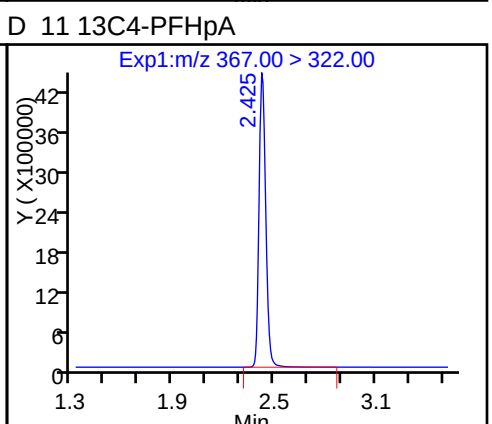
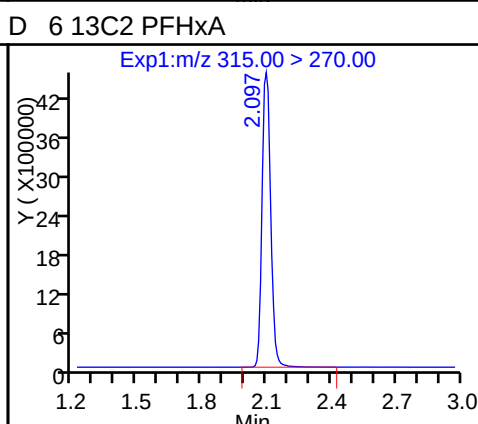
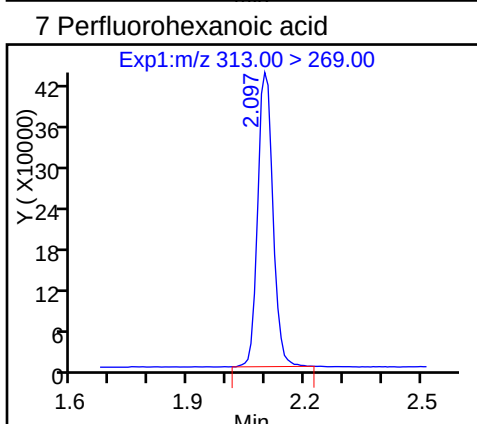
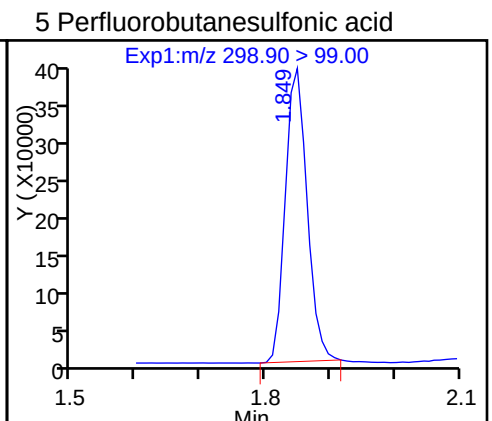
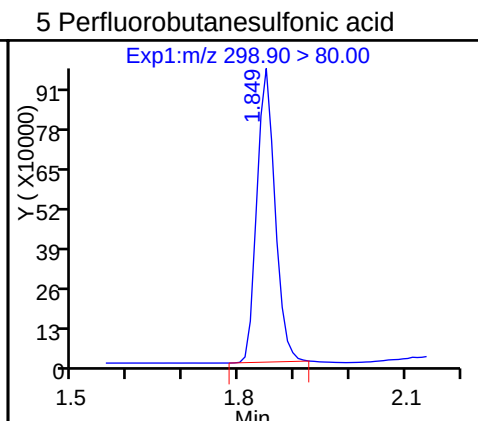
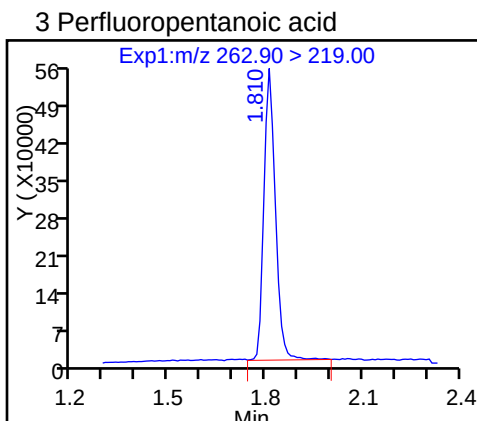
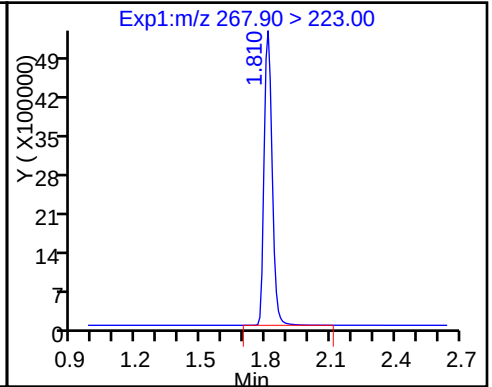
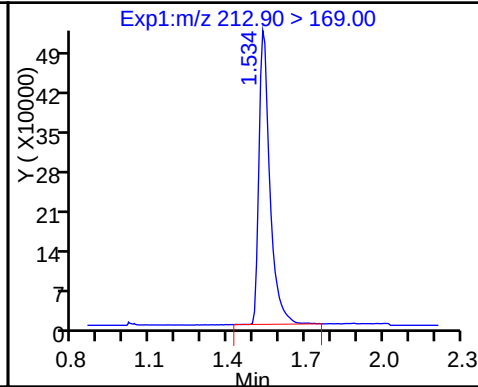
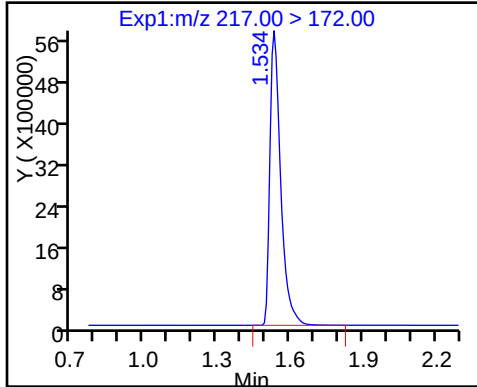
Limit Group:

LC PFC_DOD ICAL

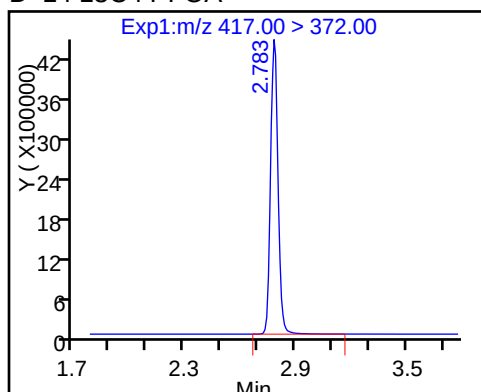
D 2 13C4 PFBA

1 Perfluorobutyric acid

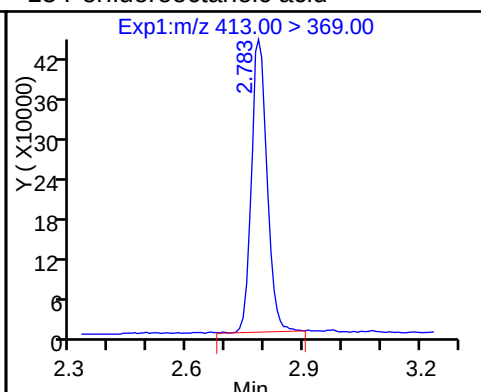
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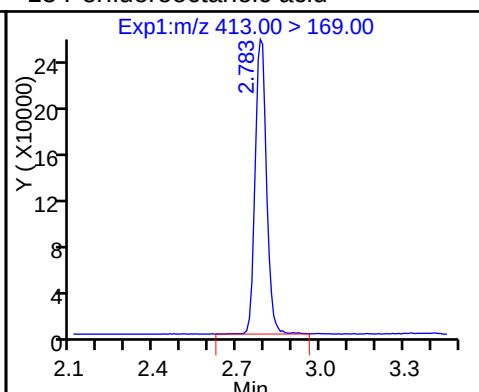
D 14 13C4 PFOA



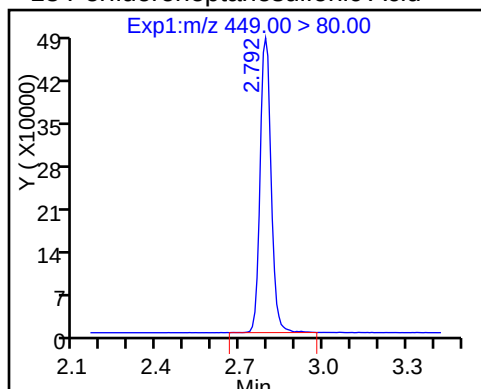
15 Perfluorooctanoic acid



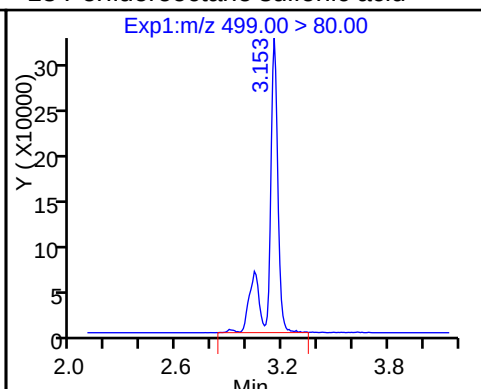
15 Perfluorooctanoic acid



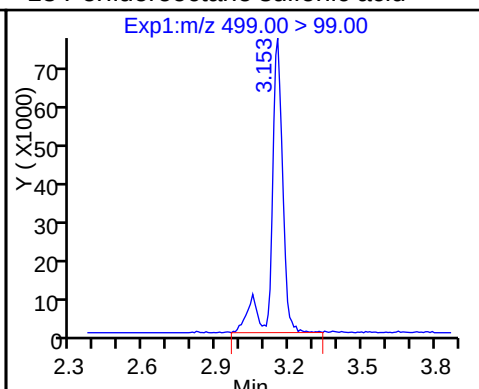
13 Perfluoroheptanesulfonic Acid



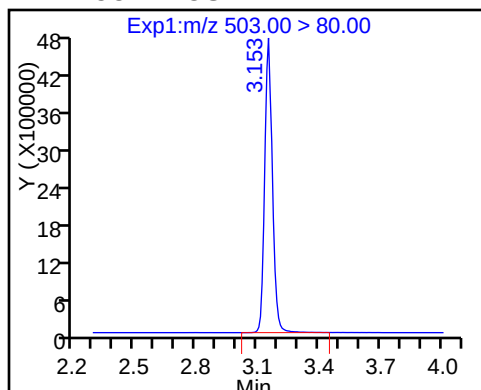
18 Perfluorooctane sulfonic acid



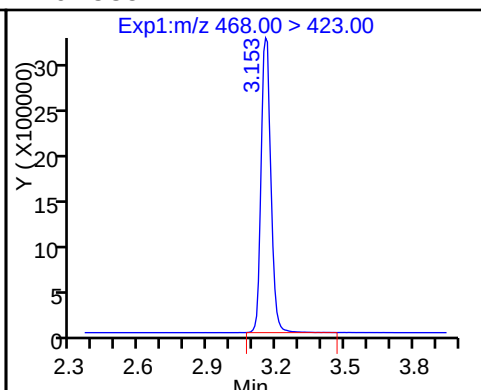
18 Perfluorooctane sulfonic acid



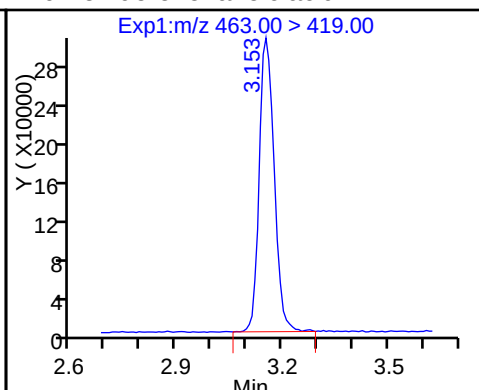
D 17 13C4 PFOS



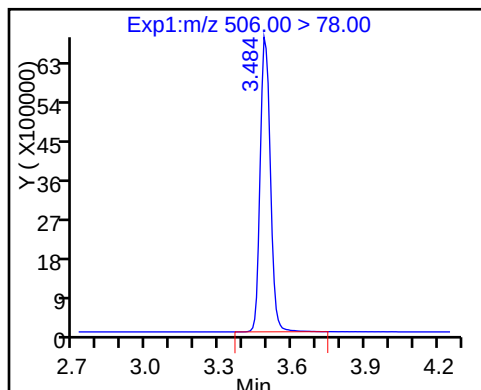
D 19 13C5 PFNA



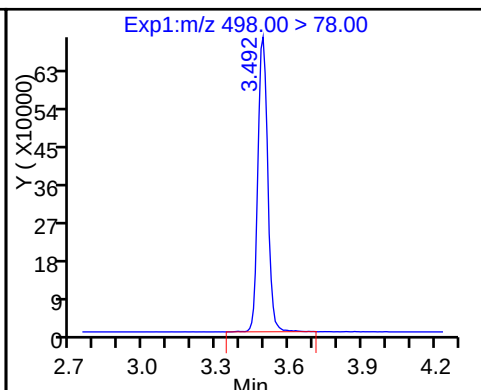
20 Perfluorononanoic acid



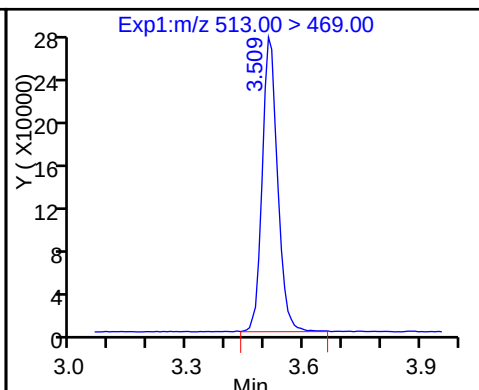
D 21 13C8 FOSA



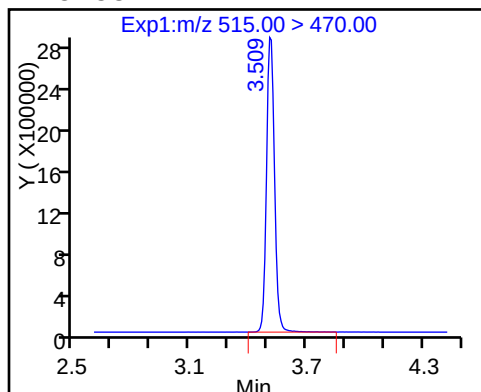
22 Perfluorooctane Sulfonamide



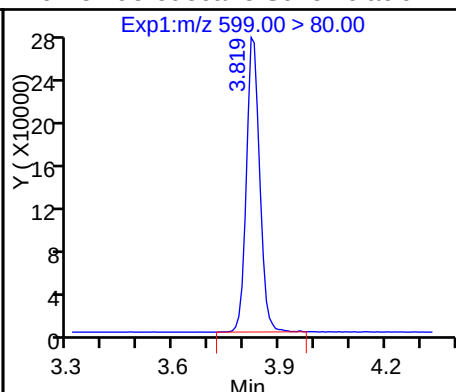
24 Perfluorodecanoic acid



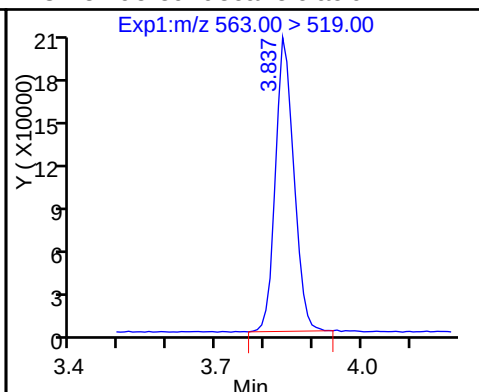
D 23 13C2 PFDA



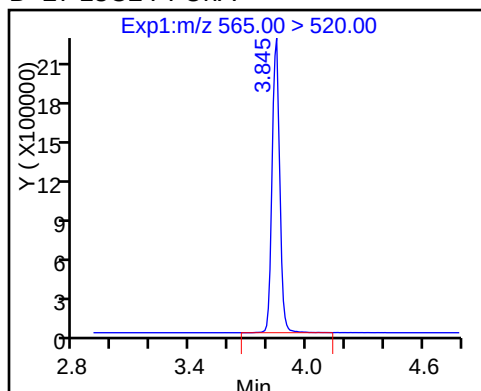
26 Perfluorodecane Sulfonic acid



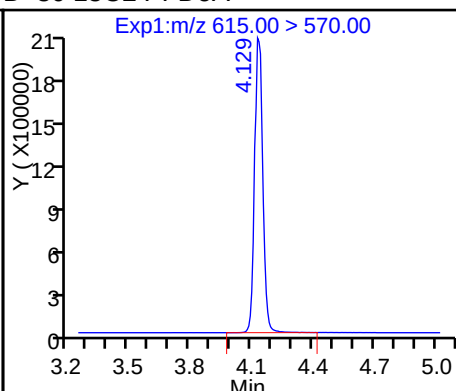
28 Perfluoroundecanoic acid



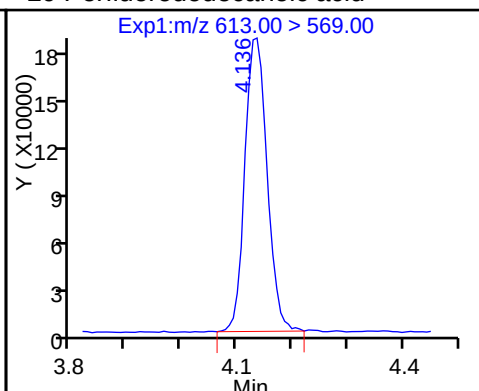
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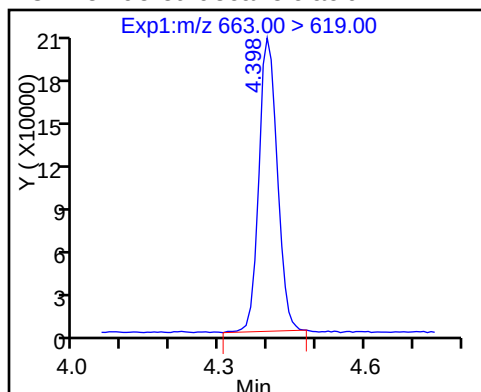
D 30 13C2 PFDaA



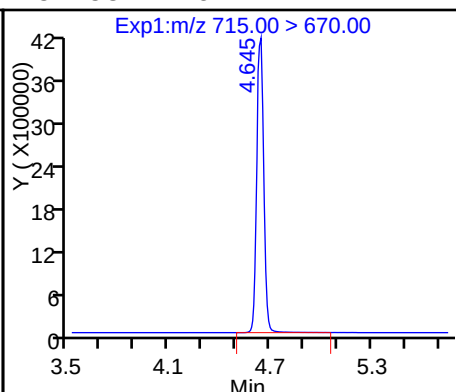
29 Perfluorododecanoic acid



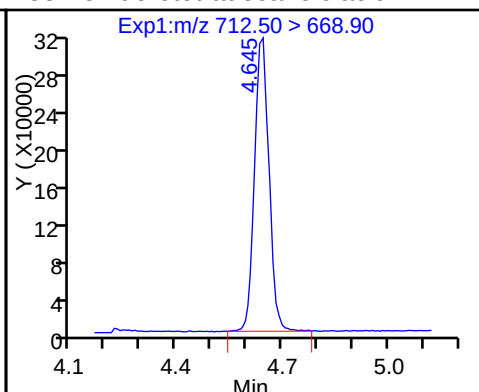
31 Perfluorotridecanoic acid



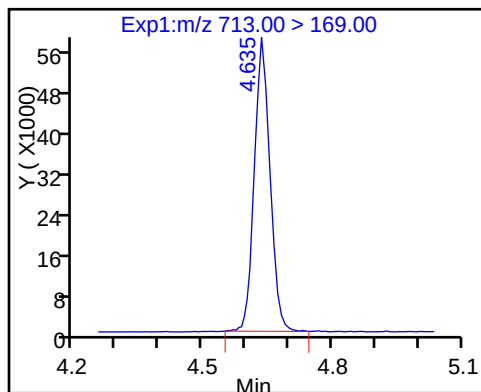
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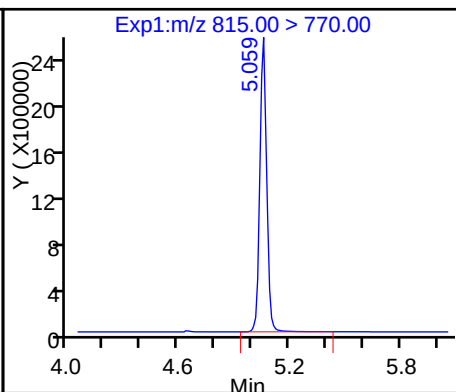
33 Perfluorotetradecanoic acid



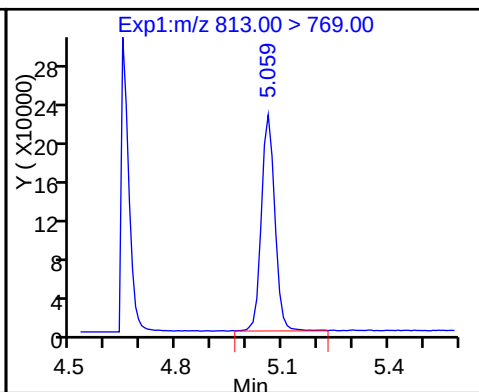
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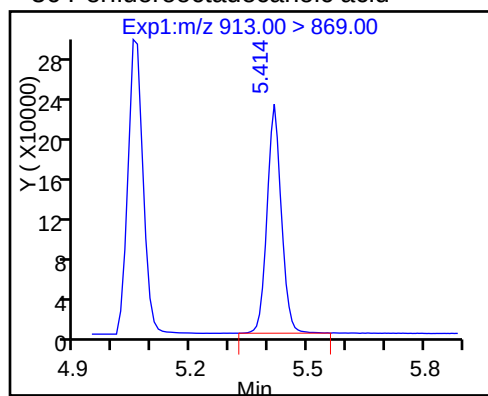
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_007.d
 Lims ID: IC L4
 Client ID:
 Sample Type: IC Calib Level: 4
 Inject. Date: 15-Dec-2016 12:51:47 ALS Bottle#: 40 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L4_b
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub6
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 16-Dec-2016 14:34:21 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK007

First Level Reviewer: chandrasenas

Date: 15-Dec-2016 13:46:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 2 13C4 PFBA

217.00 > 172.00 1.534 1.534 0.0 17585378 50.6 101 1140977

1 Perfluorobutyric acid

212.90 > 169.00 1.534 1.535 -0.001 1.000 6690917 22.3 111 52374

D 4 13C5-PFPeA

267.90 > 223.00 1.810 1.810 0.0 13617158 51.2 102 860552

3 Perfluoropentanoic acid

262.90 > 219.00 1.810 1.810 0.0 1.000 5770240 21.5 107 61088

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.849 1.848 0.001 1.000 9860707 20.5 116

298.90 > 99.00 1.849 1.848 0.001 1.000 4111615 2.40(0.00-0.00) 116

7 Perfluorohexanoic acid

313.00 > 269.00 2.093 2.096 -0.003 1.000 4929766 21.0 105 144495

D 6 13C2 PFHxA

315.00 > 270.00 2.102 2.097 0.005 12608210 51.4 103 627430

D 11 13C4-PFHpA

367.00 > 322.00 2.426 2.426 0.0 11788221 52.1 104 459454

12 Perfluoroheptanoic acid

363.00 > 319.00 2.426 2.428 -0.002 1.000 4747711 20.6 103 44179

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.440 2.431 0.009 1.000 6624638 18.9 104

D 10 18O2 PFHxS

403.00 > 84.00 2.440 2.446 -0.006 16062766 49.1 104 697379

D 14 13C4 PFOA

417.00 > 372.00 2.785 2.783 0.002 11818203 51.3 103 403727

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.785	2.783	0.002	1.000	5109766	21.6		108	40900	
413.00 > 169.00	2.785	2.783	0.002	1.000	3083663		1.66(0.90-1.10)	108	124075	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.785	2.790	-0.005	1.000	6014021	21.4		112		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.129	3.118	0.011	1.000	5058824	20.0		108	109804	
499.00 > 99.00	3.153	3.118	0.035	1.008	1125313		4.50(0.90-1.10)	108	92390	
D 17 13C4 PFOS										
503.00 > 80.00	3.153	3.151	0.002		12183062	49.0		102	250792	
D 19 13C5 PFNA										
468.00 > 423.00	3.153	3.153	0.0		9236073	52.0		104	341338	
20 Perfluorononanoic acid										
463.00 > 419.00	3.153	3.155	-0.002	1.000	3562981	20.3		101	53054	
D 21 13C8 FOSA										
506.00 > 78.00	3.484	3.488	-0.004		19703272	51.3		103	612200	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.492	3.491	0.001	1.000	7990835	21.7		109	298669	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.509	3.510	-0.001	1.000	3166735	20.6		103	81817	
D 23 13C2 PFDA										
515.00 > 470.00	3.517	3.513	0.004		8134734	51.7		103	195073	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.827	3.822	0.005	1.000	3084031	20.7		107		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.844	3.839	0.005	1.000	2420719	20.3		102	65024	
D 27 13C2 PFUnA										
565.00 > 520.00	3.835	3.842	-0.007		6226562	53.1		106	471162	
D 30 13C2 PFDaA										
615.00 > 570.00	4.135	4.132	0.003		5816809	52.4		105	222845	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.135	4.136	-0.001	1.000	2231794	20.9		104	47124	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.398	4.400	-0.002	1.000	2087859	19.8		98.9	37986	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.644	4.641	0.003		11655048	51.3		103	471362	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.644	4.642	0.002	1.000	3678976	20.0		99.8	48461	
713.00 > 169.00	4.635	4.642	-0.007	0.998	596997		6.16(0.00-0.00)	99.8	56132	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.059	5.057	0.002		6335821	50.9		102	120381	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.059	5.059	0.0	1.000	2267892	19.9		99.3	1990	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.413	5.414	-0.001	1.000	2445236	20.4		102	2369	

Reagents:

LCPFC-L4_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_007.d

Injection Date: 15-Dec-2016 12:51:47

Instrument ID: A8_N

Lims ID: IC L4

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 40

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

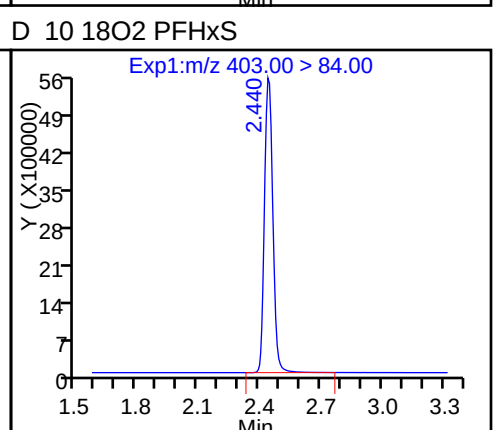
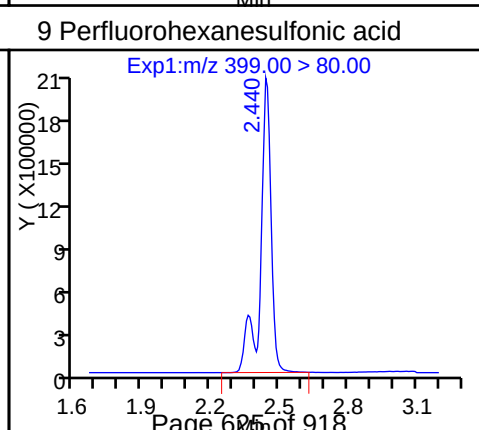
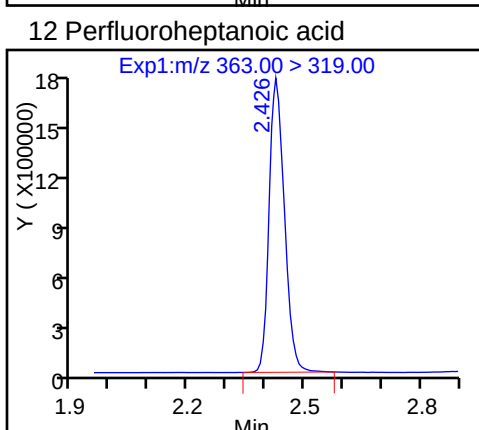
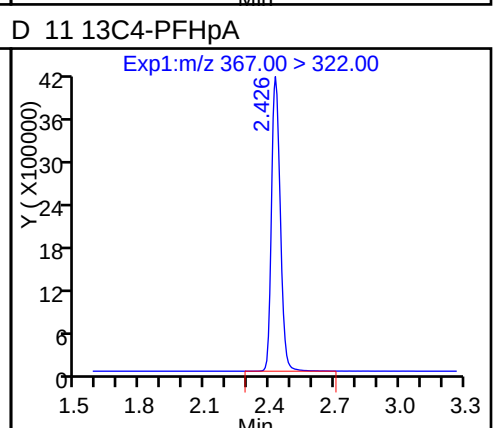
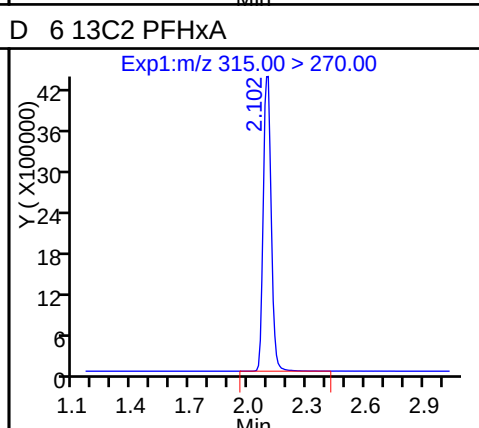
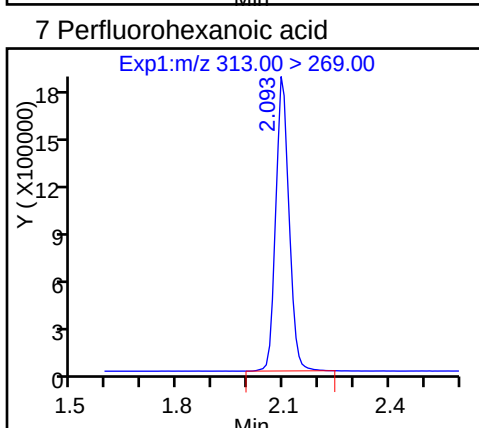
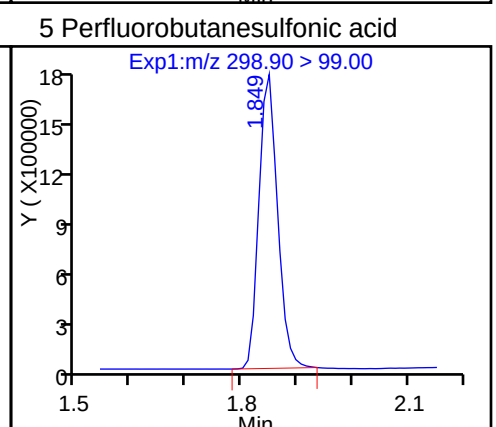
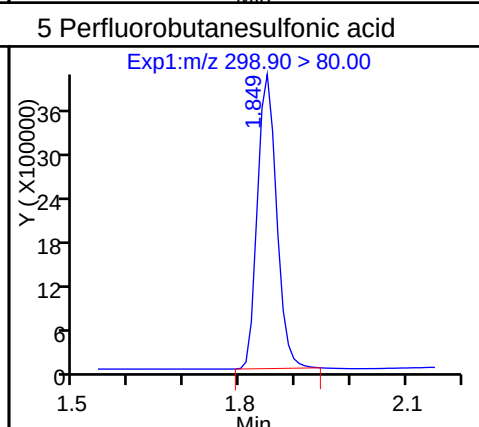
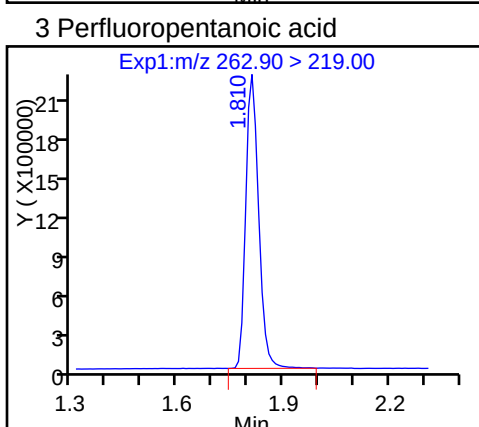
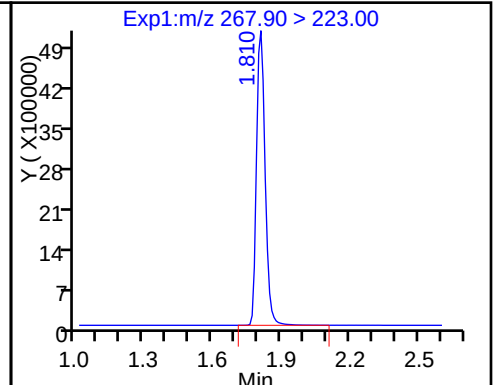
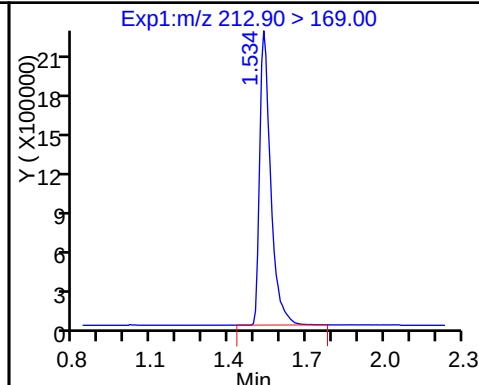
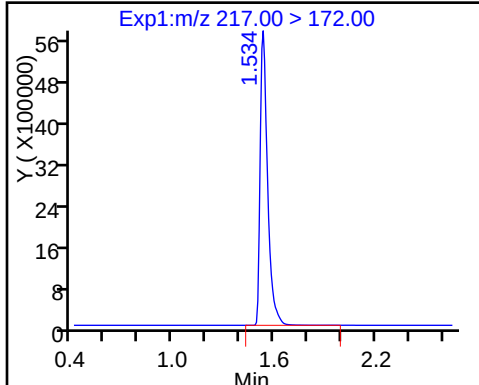
Method: A8_N

Limit Group: LC PFC_DOD ICAL

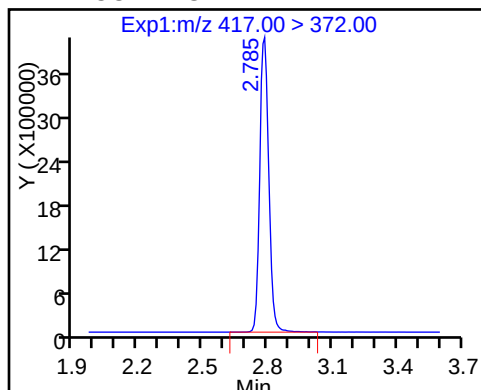
D 2 13C4 PFBA

1 Perfluorobutyric acid

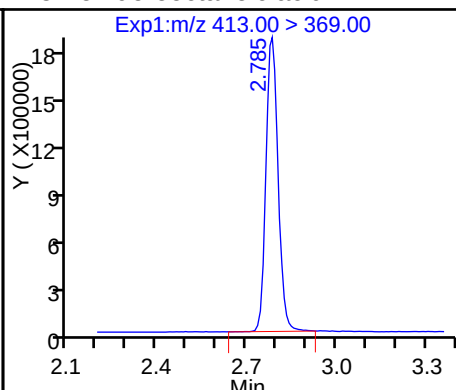
D 4 13C5-PFPeA



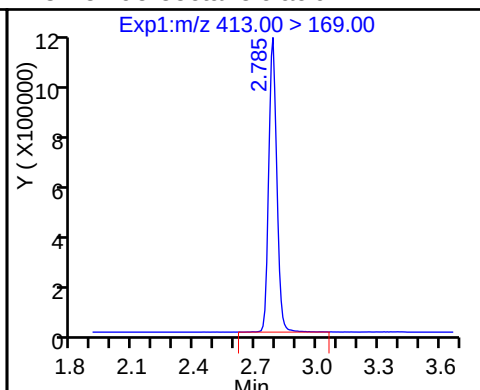
D 14 13C4 PFOA



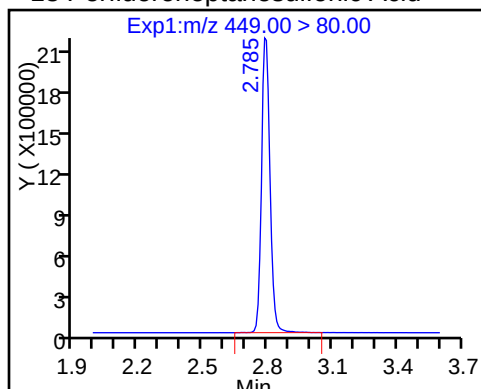
15 Perfluorooctanoic acid



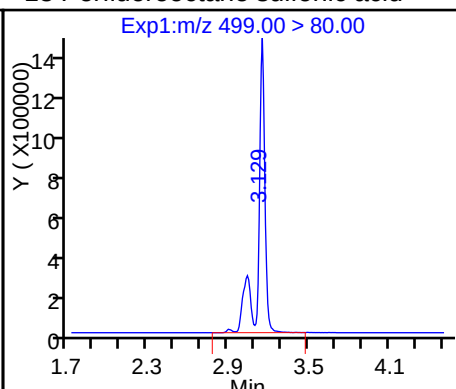
15 Perfluorooctanoic acid



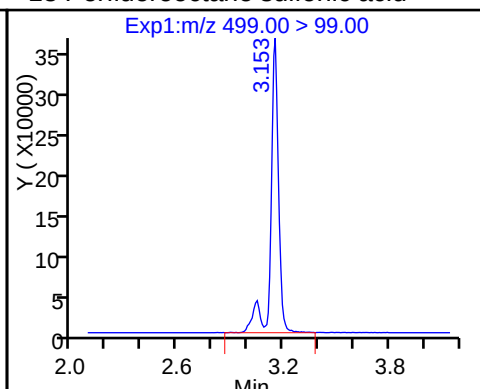
13 Perfluoroheptanesulfonic Acid



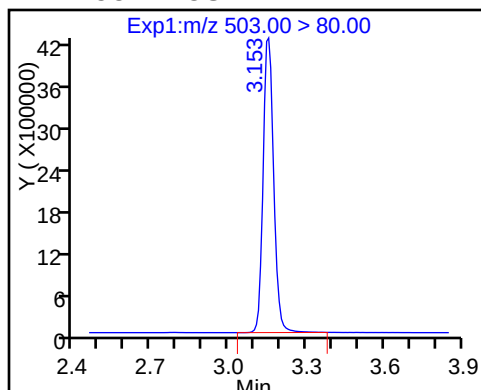
18 Perfluorooctane sulfonic acid



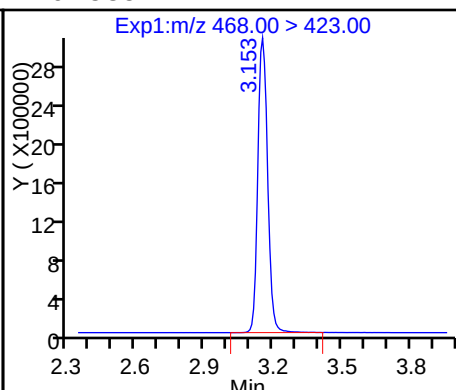
18 Perfluorooctane sulfonic acid



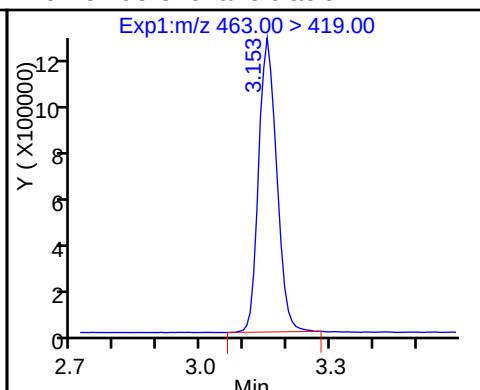
D 17 13C4 PFOS



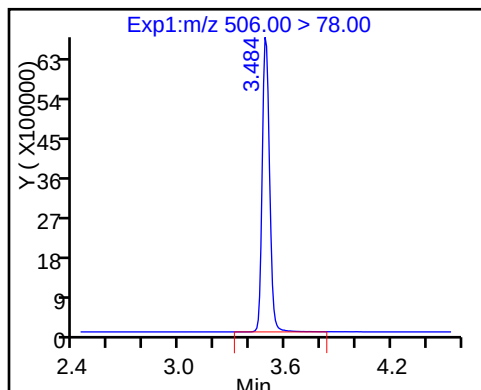
D 19 13C5 PFNA



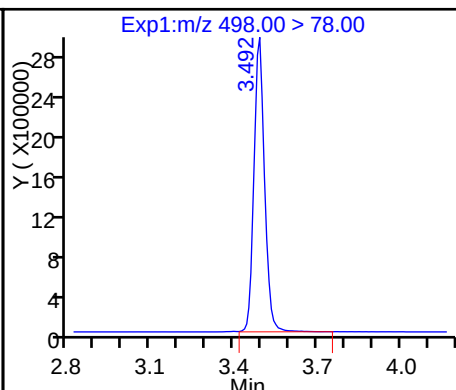
20 Perfluorononanoic acid



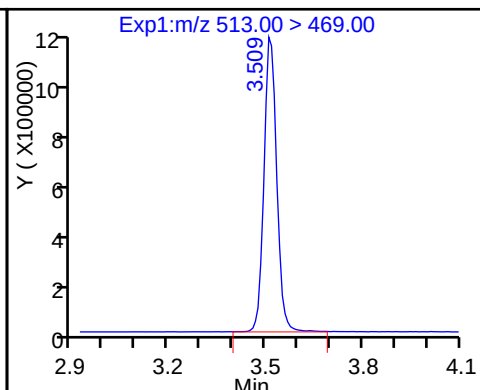
D 21 13C8 FOSA



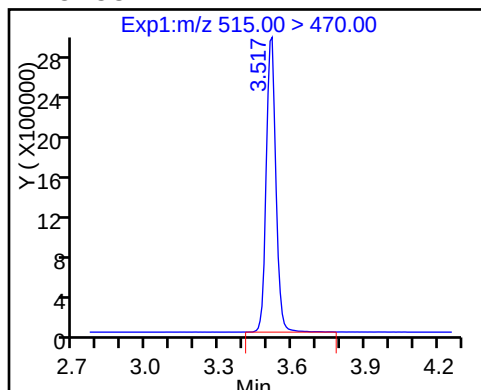
22 Perfluorooctane Sulfonamide



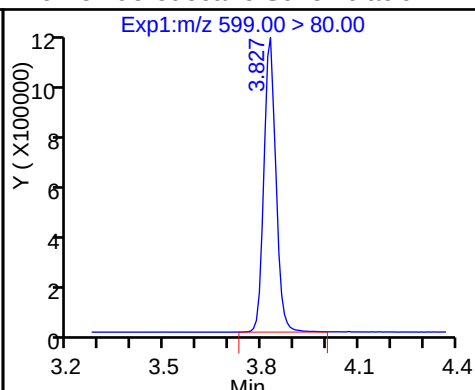
24 Perfluorodecanoic acid



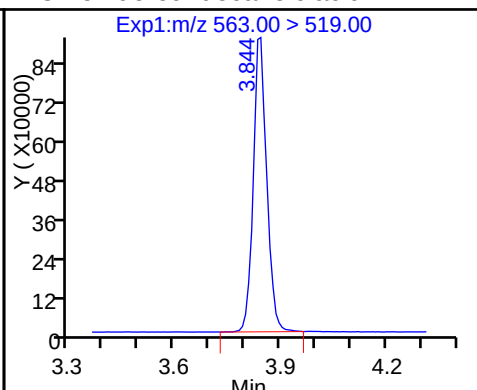
D 23 13C2 PFDA



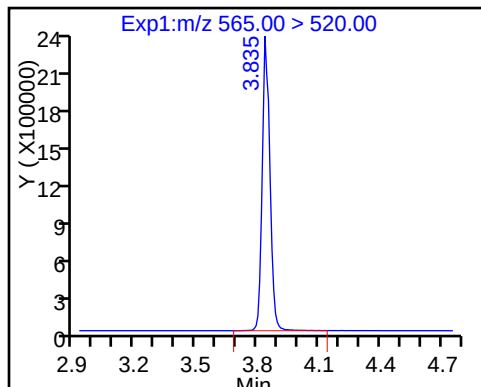
26 Perfluorodecane Sulfonic acid



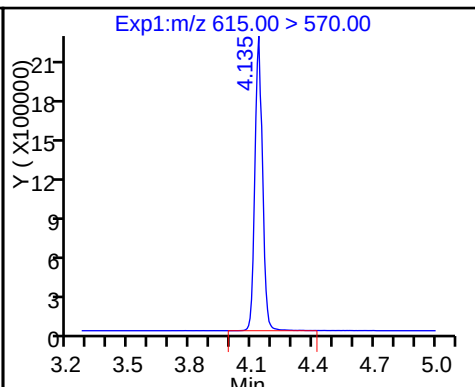
28 Perfluoroundecanoic acid



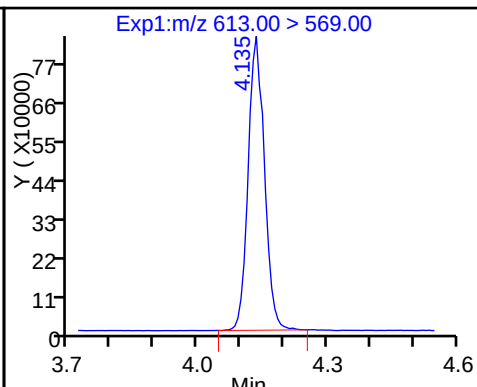
D 27 13C2 PFUnA



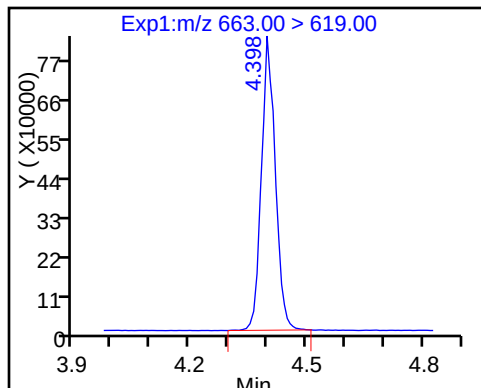
D 30 13C2 PFDaA



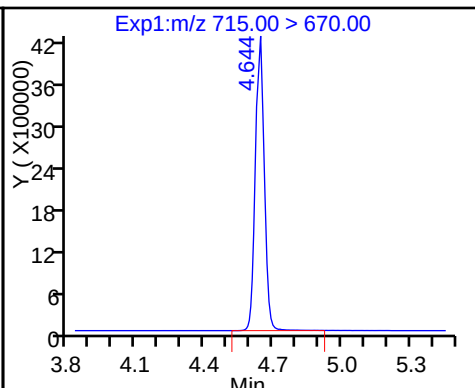
29 Perfluorododecanoic acid



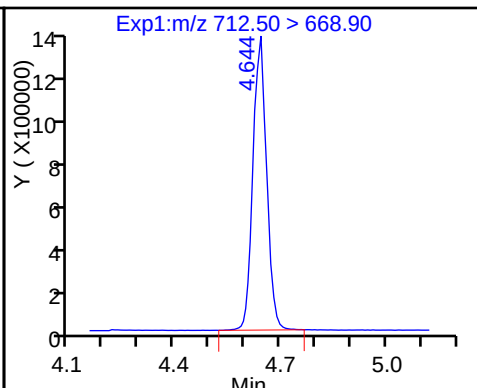
31 Perfluorotridecanoic acid



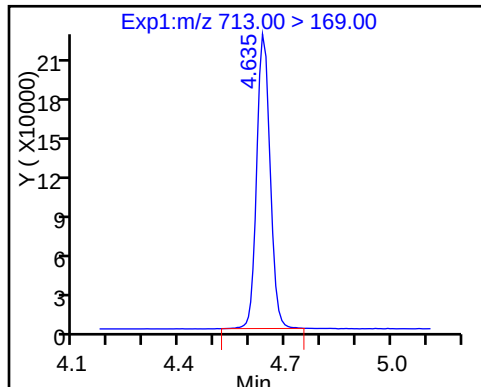
D 32 13C2-PFTeDA



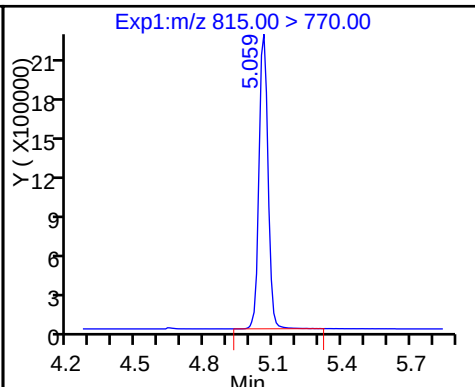
33 Perfluorotetradecanoic acid



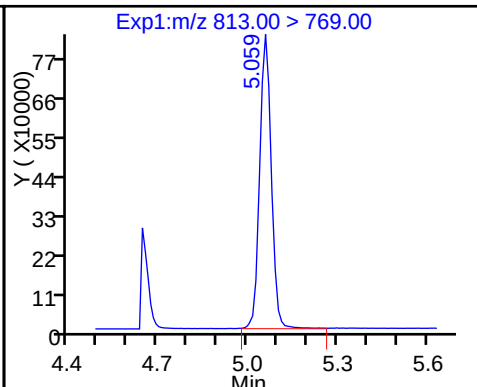
33 Perfluorotetradecanoic acid



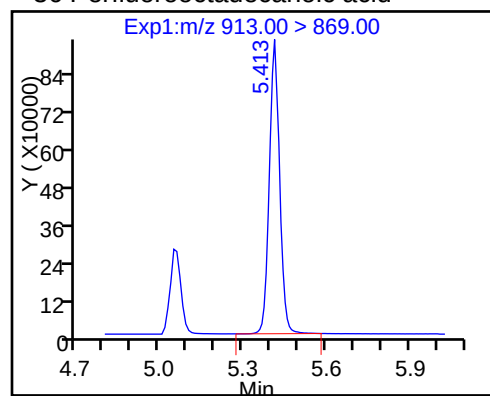
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_008.d
 Lims ID: IC L5
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 15-Dec-2016 12:59:16 ALS Bottle#: 41 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L5_b
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub6
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 16-Dec-2016 14:34:24 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK007

First Level Reviewer: chandrasenas

Date: 15-Dec-2016 13:51:06

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 2 13C4 PFBA

217.00 > 172.00 1.533 1.534 -0.001 17274187 49.7 99.4 927175

1 Perfluorobutyric acid

212.90 > 169.00 1.533 1.535 -0.002 1.000 15411527 52.3 105 124871

D 4 13C5-PFPeA

267.90 > 223.00 1.810 1.810 0.0 13053659 49.1 98.1 1261104

3 Perfluoropentanoic acid

262.90 > 219.00 1.810 1.810 0.0 1.000 13161065 51.1 102 158308

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.848 1.848 0.0 1.000 21559838 47.1 107

298.90 > 99.00 1.848 1.848 0.0 1.000 10128422 2.13(0.00-0.00) 107

7 Perfluorohexanoic acid

313.00 > 269.00 2.098 2.096 0.002 1.000 11507044 50.0 99.9 330809

D 6 13C2 PFHxA

315.00 > 270.00 2.098 2.097 0.001 12399280 50.6 101 688050

D 11 13C4-PFHpA

367.00 > 322.00 2.424 2.426 -0.002 10801604 47.7 95.4 530896

12 Perfluoroheptanoic acid

363.00 > 319.00 2.424 2.428 -0.004 1.000 10799449 51.1 102 85838

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.446 2.431 0.015 1.000 15253691 45.8 101

D 10 18O2 PFHxS

403.00 > 84.00 2.446 2.446 0.0 15278828 46.7 98.8 1046737

D 14 13C4 PFOA

417.00 > 372.00 2.782 2.783 -0.001 11142777 48.4 96.7 755641

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.782	2.783	-0.001	1.000	11435583	51.2		102	92940	
413.00 > 169.00	2.782	2.783	-0.001	1.000	6849991		1.67(0.90-1.10)	102	293728	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.791	2.790	0.001	1.000	13639927	49.5		104		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.151	3.118	0.033	1.000	11741891	47.2		102	399791	
499.00 > 99.00	3.151	3.118	0.033	1.000	2632984		4.46(0.90-1.10)	102	139087	
D 17 13C4 PFOS										
503.00 > 80.00	3.151	3.151	0.0		11946650	48.0		100	237614	
D 19 13C5 PFNA										
468.00 > 423.00	3.151	3.153	-0.002		8581504	48.3		96.6	574194	
20 Perfluorononanoic acid										
463.00 > 419.00	3.151	3.155	-0.004	1.000	8246252	50.5		101	123521	
D 21 13C8 FOSA										
506.00 > 78.00	3.490	3.488	0.002		18804188	49.0		97.9	642404	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.490	3.491	-0.001	1.000	17736944	50.6		101	676782	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.507	3.510	-0.003	1.000	7324495	50.6		101	172410	
D 23 13C2 PFDA										
515.00 > 470.00	3.516	3.513	0.003		7671861	48.8		97.5	212001	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.818	3.822	-0.004	1.000	7241868	49.6		103		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.844	3.839	0.005	1.000	5437764	50.3		101	105822	
D 27 13C2 PFUnA										
565.00 > 520.00	3.844	3.842	0.002		5657823	48.3		96.5	259964	
D 30 13C2 PFDaA										
615.00 > 570.00	4.135	4.132	0.003		5404154	48.7		97.4	211794	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.135	4.136	-0.001	1.000	5072994	51.1		102	98593	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.398	4.400	-0.002	1.000	4950651	50.5		101	84213	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.645	4.641	0.004		10950502	48.2		96.3	504805	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.645	4.642	0.003	1.000	8645519	50.5		101	145963	
713.00 > 169.00	4.635	4.642	-0.007	0.998	1380699		6.26(0.00-0.00)	101	249413	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.059	5.057	0.002		6027362	48.4		96.8	112750	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.059	5.059	0.0	1.000	5318207	51.0		102	4484	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.413	5.414	-0.001	1.000	5869666	52.7		105	5549	

Reagents:

LCPFC-L5_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_008.d

Injection Date: 15-Dec-2016 12:59:16

Instrument ID: A8_N

Lims ID: IC L5

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#:

41

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

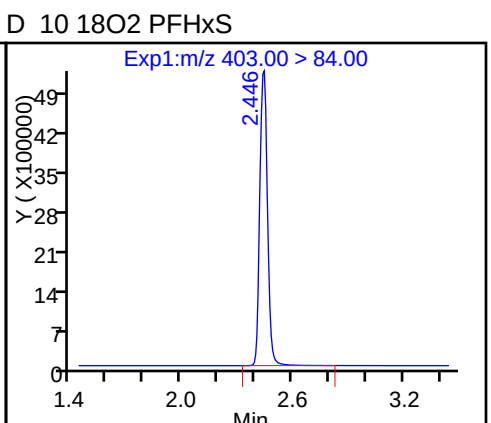
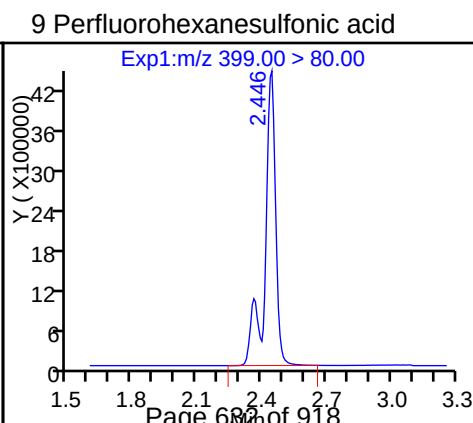
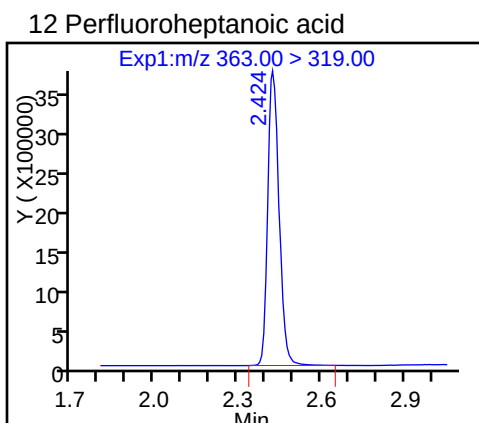
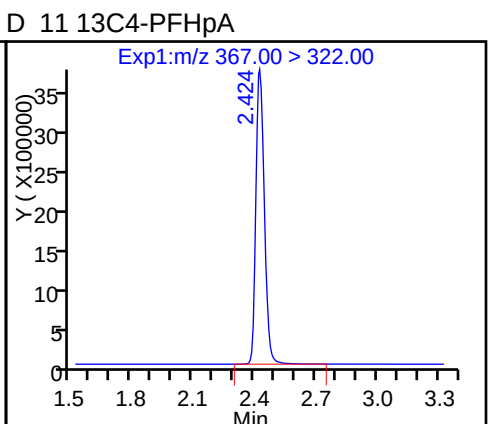
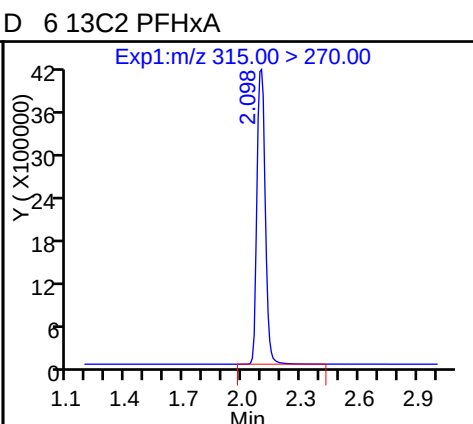
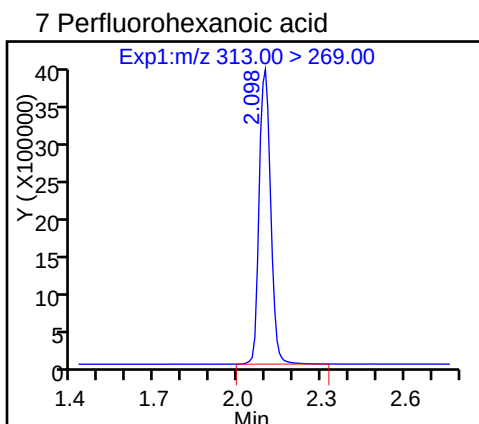
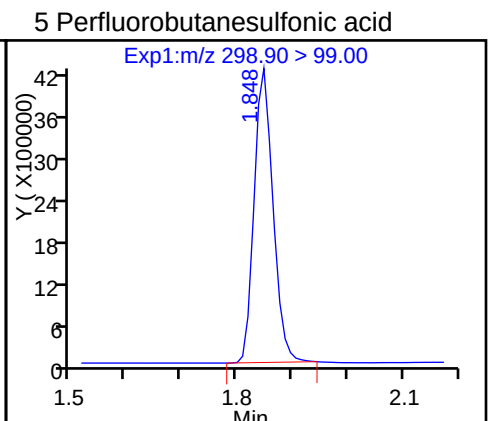
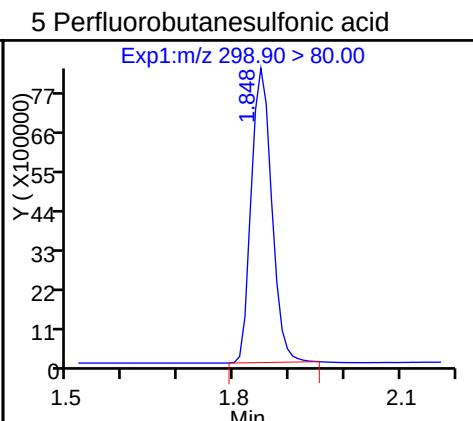
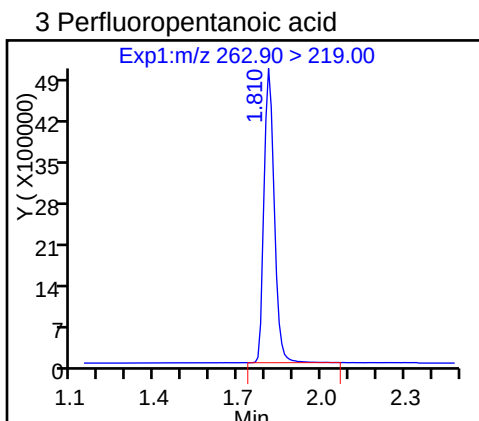
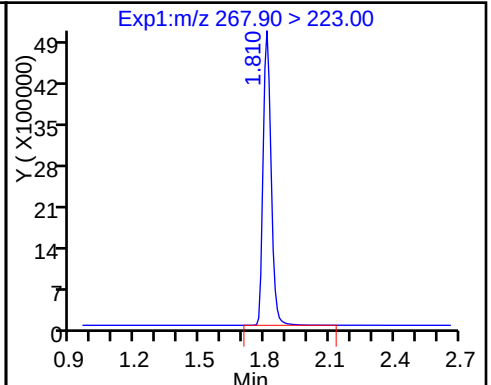
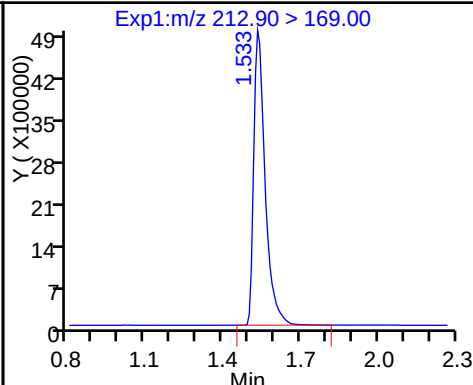
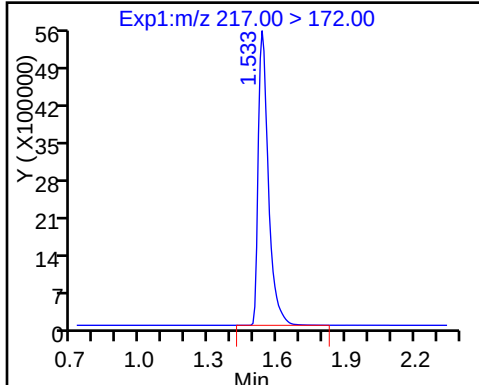
Method: A8_N

Limit Group: LC PFC_DOD ICAL

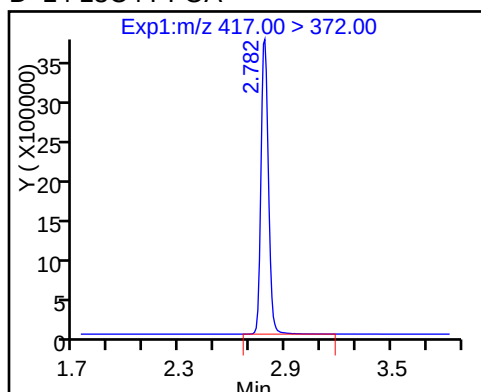
D 2 13C4 PFBA

1 Perfluorobutyric acid

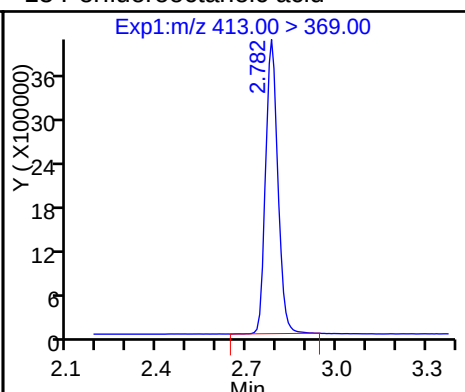
D 4 13C5-PFPeA



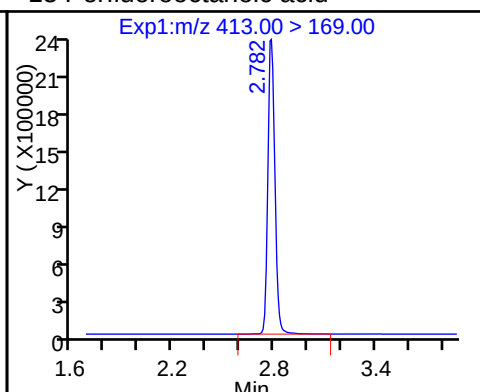
D 14 13C4 PFOA



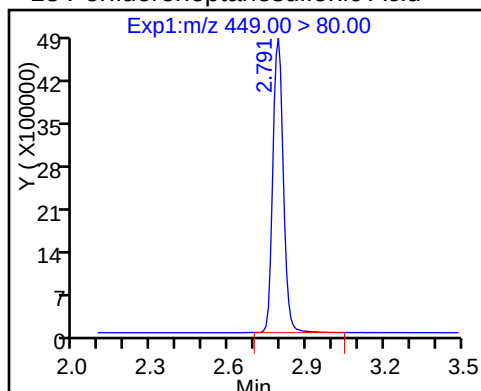
15 Perfluorooctanoic acid



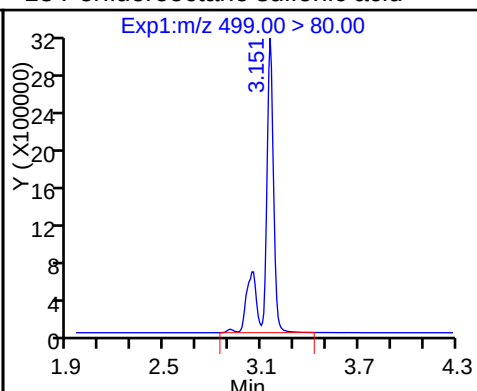
15 Perfluorooctanoic acid



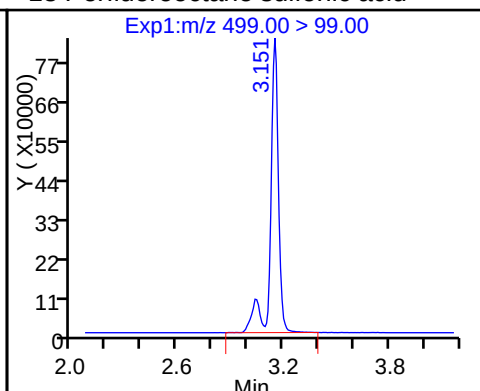
13 Perfluoroheptanesulfonic Acid



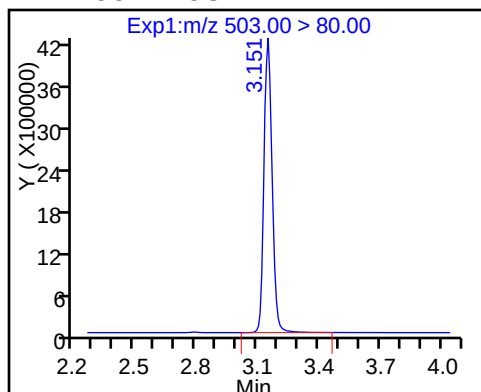
18 Perfluorooctane sulfonic acid



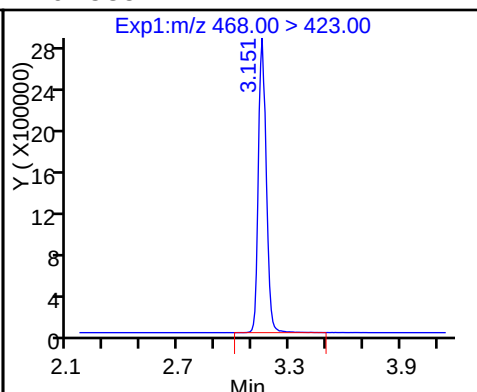
18 Perfluorooctane sulfonic acid



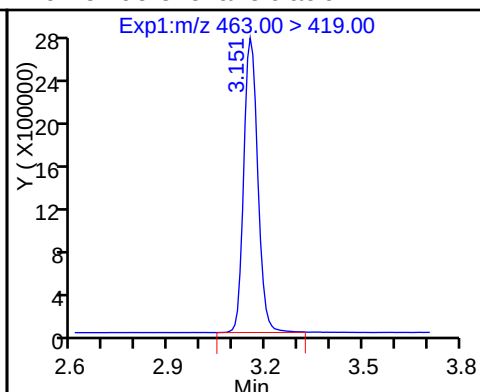
D 17 13C4 PFOS



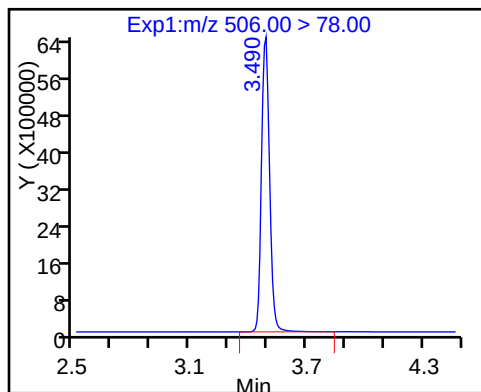
D 19 13C5 PFNA



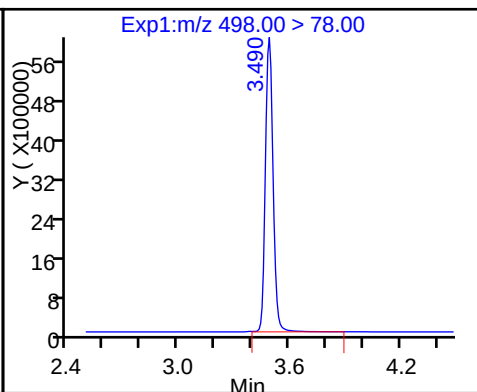
20 Perfluorononanoic acid



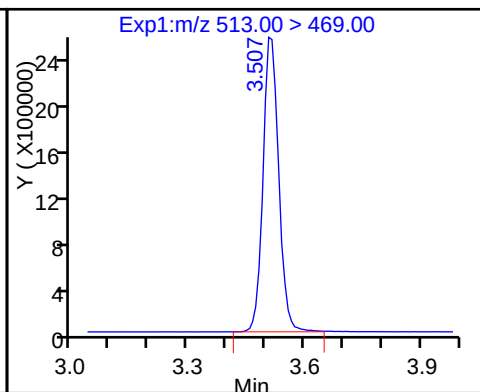
D 21 13C8 FOSA



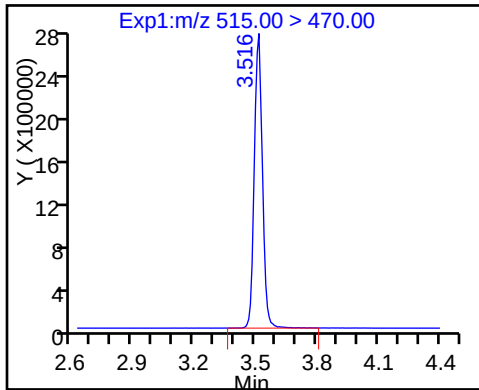
22 Perfluorooctane Sulfonamide



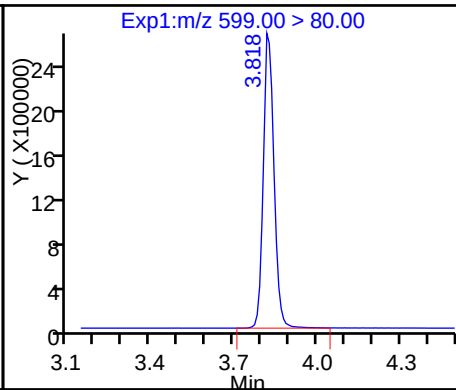
24 Perfluorodecanoic acid



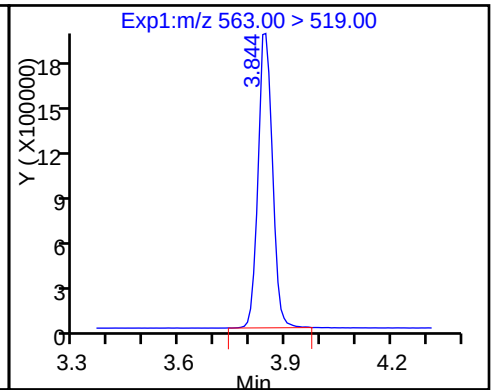
D 23 13C2 PFDA



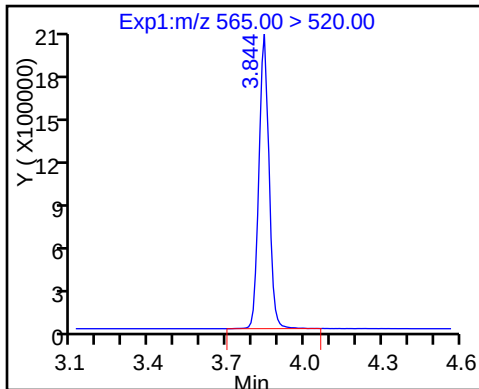
26 Perfluorodecane Sulfonic acid



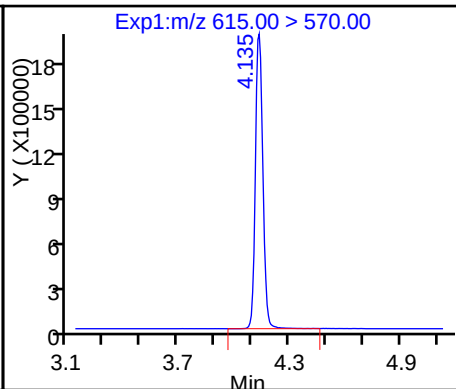
28 Perfluoroundecanoic acid



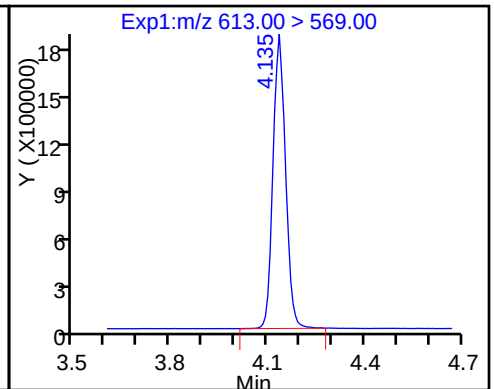
D 27 13C2 PFUnA



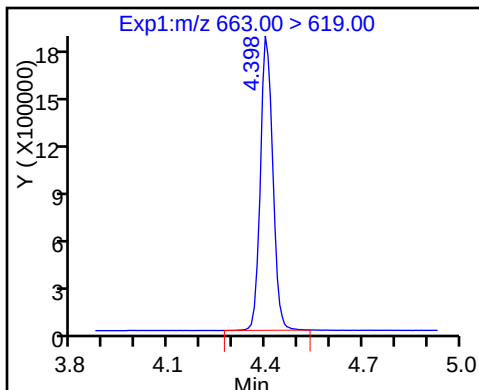
D 30 13C2 PFDaA



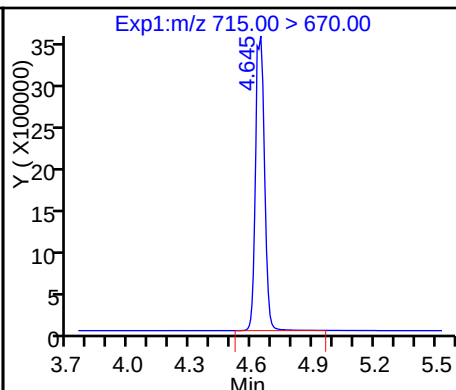
29 Perfluorododecanoic acid



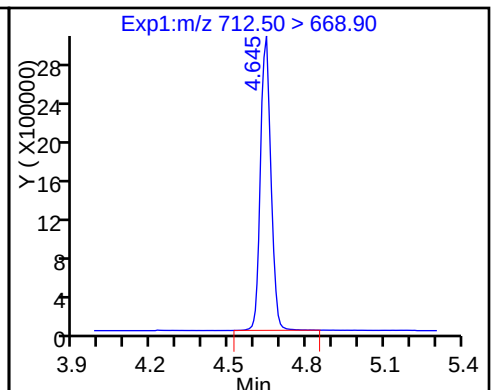
31 Perfluorotridecanoic acid



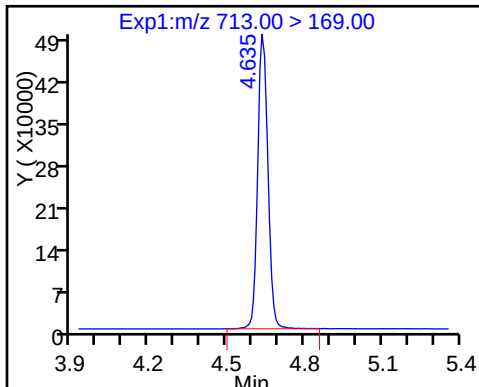
D 32 13C2-PFTeDA



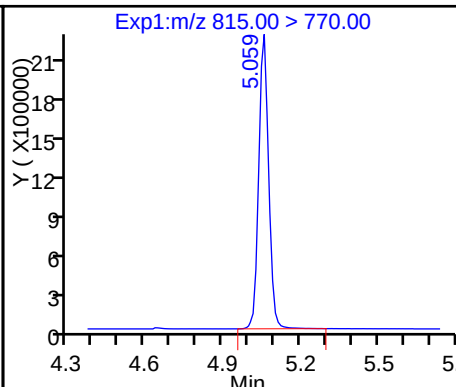
33 Perfluorotetradecanoic acid



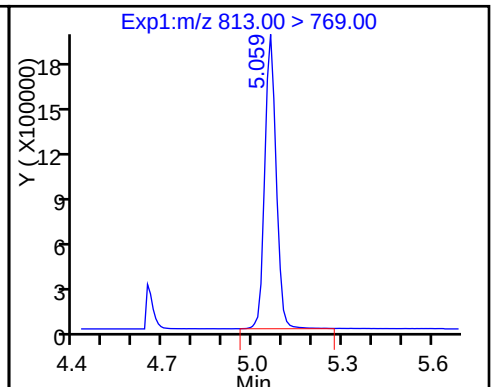
33 Perfluorotetradecanoic acid



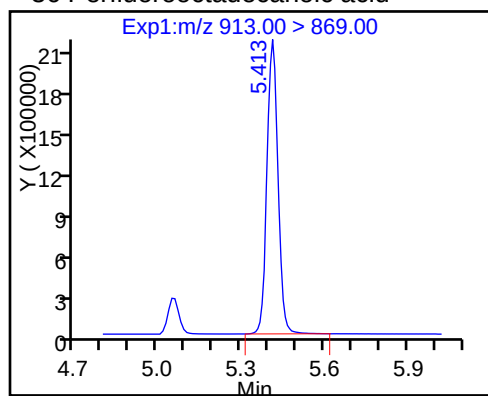
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_009.d
 Lims ID: IC L6
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 15-Dec-2016 13:06:46 ALS Bottle#: 42 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L6_b
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub6
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 16-Dec-2016 14:34:27 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK007

First Level Reviewer: chandrasenas

Date: 15-Dec-2016 13:51:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 2 13C4 PFBA

217.00 > 172.00 1.537 1.534 0.003 14961055 43.0 86.0 920014

1 Perfluorobutyric acid

212.90 > 169.00 1.537 1.535 0.002 1.000 42763611 167.4 83.7 246189

D 4 13C5-PFPeA

267.90 > 223.00 1.813 1.810 0.003 10898820 41.0 81.9 1007026

3 Perfluoropentanoic acid

262.90 > 219.00 1.813 1.810 0.003 1.000 34291076 159.4 79.7 297823

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.852 1.848 0.004 1.000 50724469 130.5 73.8

298.90 > 99.00 1.842 1.848 -0.006 0.995 28243355 1.80(0.00-0.00) 73.8

7 Perfluorohexanoic acid

313.00 > 269.00 2.096 2.096 0.0 1.000 33223923 172.9 86.4 549724

D 6 13C2 PFHxA

315.00 > 270.00 2.096 2.097 -0.001 10345480 42.2 84.4 508201

D 11 13C4-PFHpA

367.00 > 322.00 2.426 2.426 0.0 8564025 37.8 75.7 487796

12 Perfluoroheptanoic acid

363.00 > 319.00 2.426 2.428 -0.002 1.000 30234194 180.3 90.2 213534

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.444 2.431 0.013 1.000 46223186 163.6 89.9

D 10 18O2 PFHxS

403.00 > 84.00 2.444 2.446 -0.002 12974829 39.7 83.9 628886

D 14 13C4 PFOA

417.00 > 372.00 2.783 2.783 0.0 8380251 36.4 72.8 402245

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.783	2.783	0.0	1.000	30784387	183.1		91.5	229181	
413.00 > 169.00	2.783	2.783	0.0	1.000	20338648		1.51(0.90-1.10)	91.5	70063	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.791	2.790	0.001	1.000	38459925	166.5		87.5		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	2.977	3.118	-0.141	1.000	40073141	192.2		104	5896	
499.00 > 99.00	3.152	3.118	0.034	1.059	9632026		4.16(0.90-1.10)	104	407968	
D 17 13C4 PFOS										
503.00 > 80.00	3.152	3.151	0.001		10019454	40.3		84.2	105595	
D 19 13C5 PFNA										
468.00 > 423.00	3.152	3.153	-0.001		6718354	37.8		75.6	515582	
20 Perfluorononanoic acid										
463.00 > 419.00	3.160	3.155	0.005	1.000	24793148	193.9		96.9	307568	
D 21 13C8 FOSA										
506.00 > 78.00	3.491	3.488	0.003		16105707	41.9		83.9	486146	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.491	3.491	0.0	1.000	47803717	159.1		79.6	542400	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.516	3.510	0.006	1.000	22616781	191.8		95.9	376094	
D 23 13C2 PFDA										
515.00 > 470.00	3.508	3.513	-0.005		6246112	39.7		79.4	243806	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.819	3.822	-0.004	1.000	23952412	195.7		101		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.845	3.839	0.006	1.000	16852945	197.7		98.9	570796	
D 27 13C2 PFUnA										
565.00 > 520.00	3.845	3.842	0.003		4456593	38.0		76.0	208308	
D 30 13C2 PFDaA										
615.00 > 570.00	4.129	4.132	-0.003		4649092	41.9		83.8	168499	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.136	4.136	0.0	1.000	17425873	204.2		102	228085	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.407	4.400	0.007	1.000	16038809	190.2		95.1	237459	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.635	4.641	-0.006		9520749	41.9		83.7	374846	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.635	4.642	-0.007	1.000	27310864	185.3		92.7	329988	
713.00 > 169.00	4.635	4.642	-0.007	1.000	4963804		5.50(0.00-0.00)	92.7	195544	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.060	5.057	0.003		5190172	41.7		83.3	150380	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.060	5.059	0.001	1.000	17754908	199.3		99.6	19037	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.414	5.414	0.0	1.000	18392980	192.0		96.0	19845	

Reagents:

LCPFC-L6_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_009.d

Injection Date: 15-Dec-2016 13:06:46

Instrument ID: A8_N

Lims ID: IC L6

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 42

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

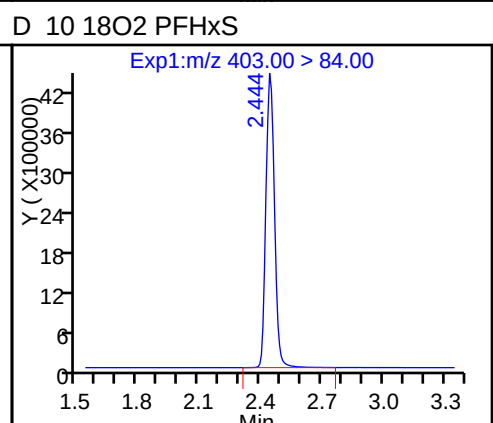
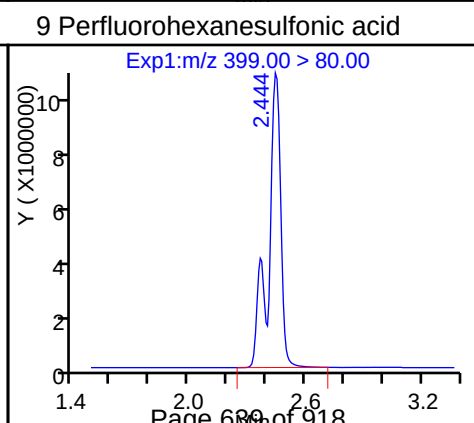
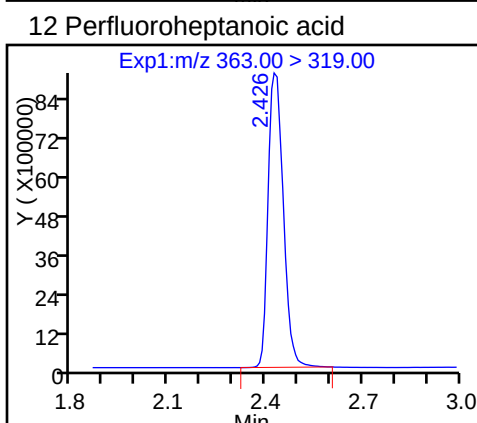
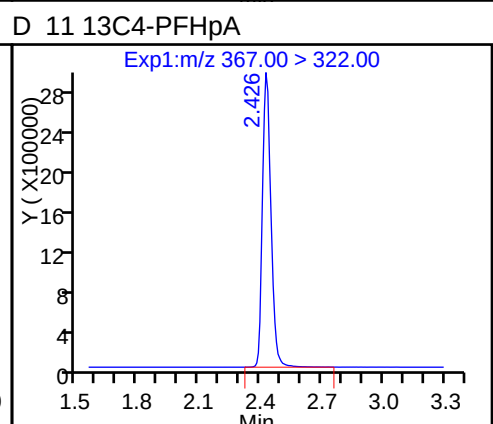
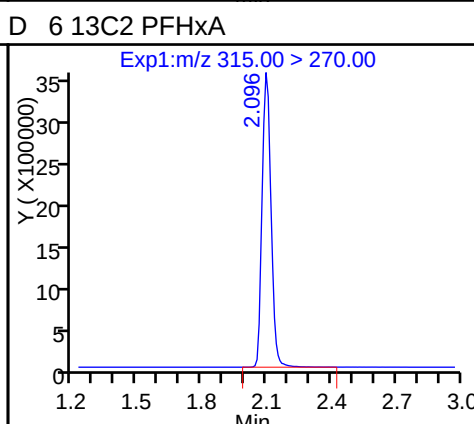
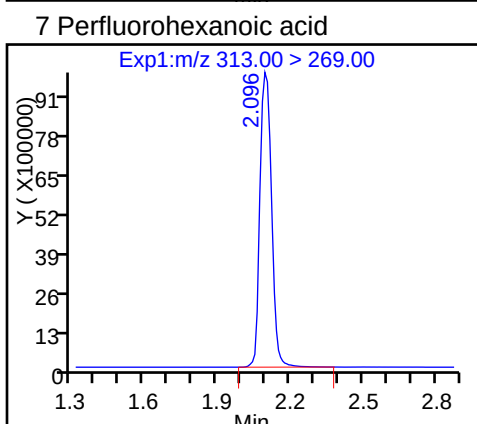
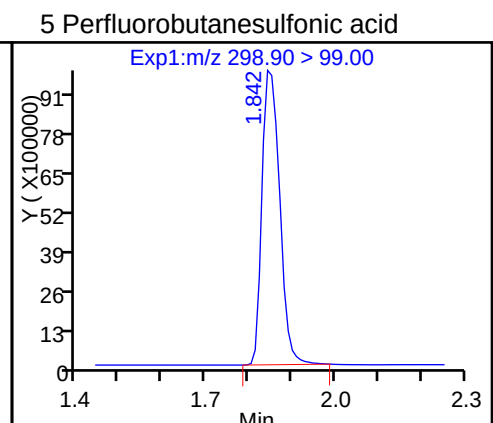
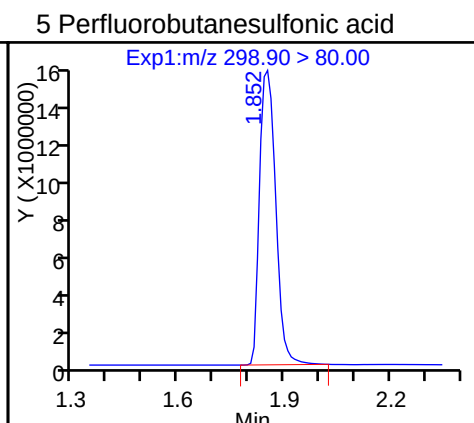
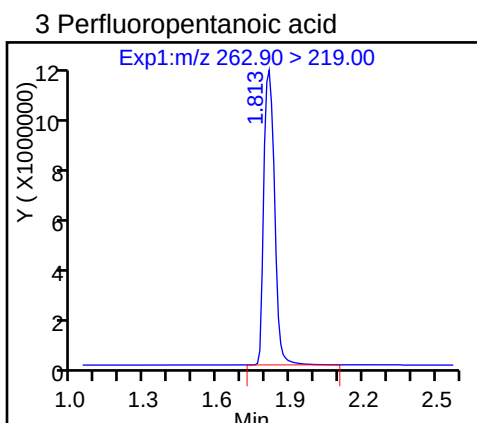
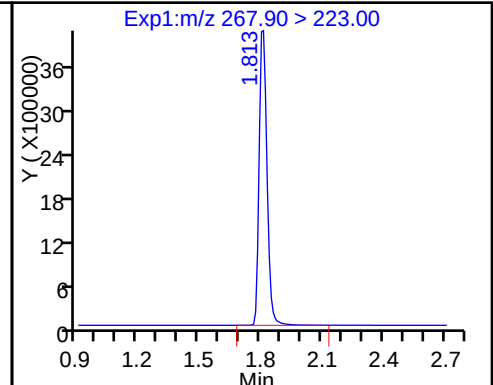
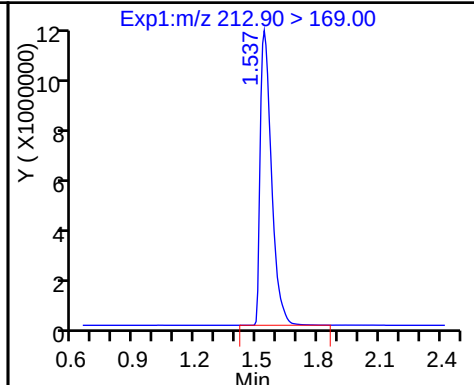
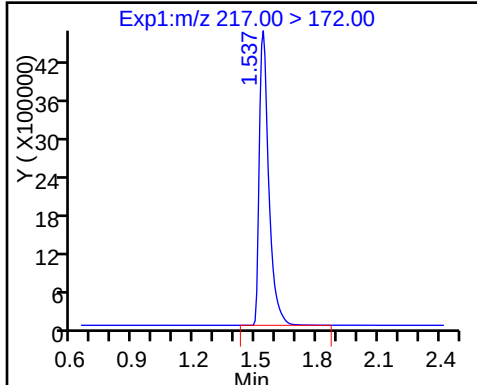
Method: A8_N

Limit Group: LC PFC_DOD ICAL

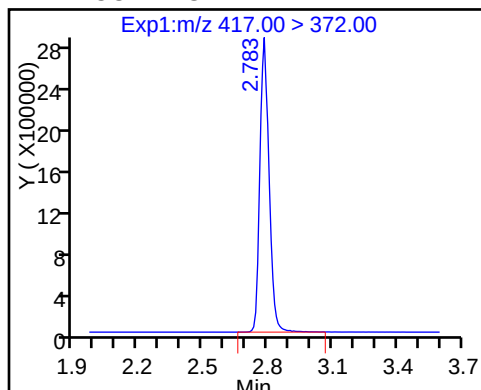
D 2 13C4 PFBA

1 Perfluorobutyric acid

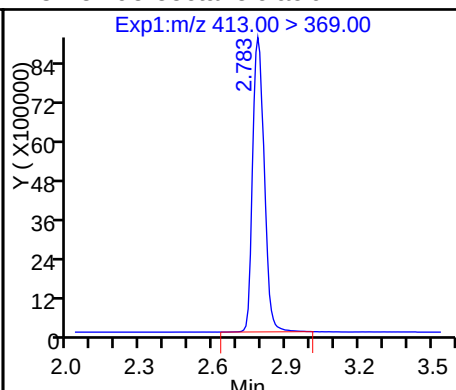
D 4 13C5-PFPeA



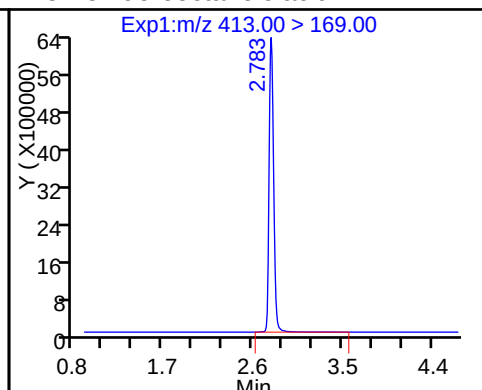
D 14 13C4 PFOA



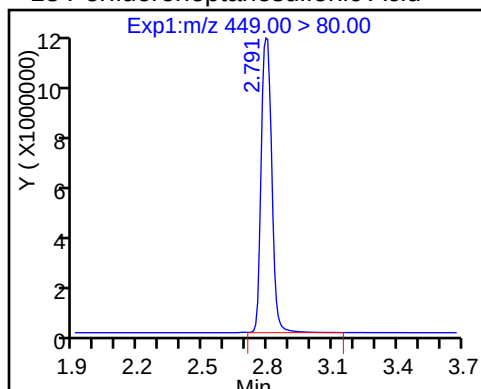
15 Perfluorooctanoic acid



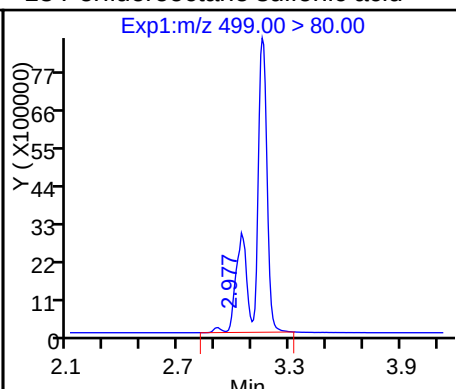
15 Perfluorooctanoic acid



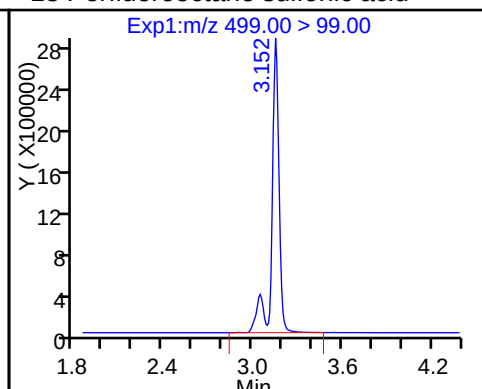
13 Perfluoroheptanesulfonic Acid



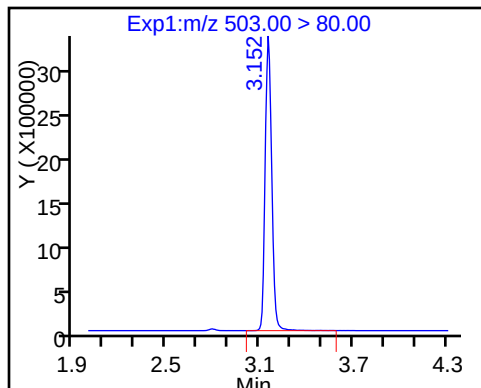
18 Perfluorooctane sulfonic acid



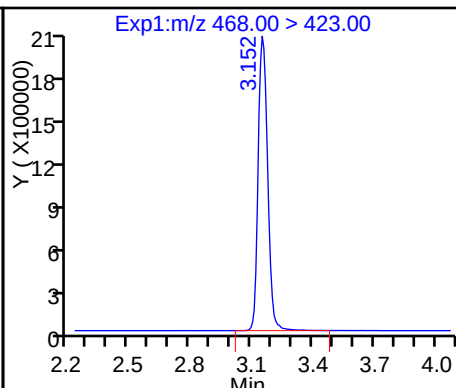
18 Perfluorooctane sulfonic acid



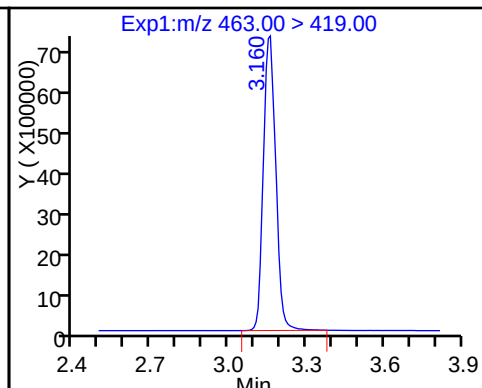
D 17 13C4 PFOS



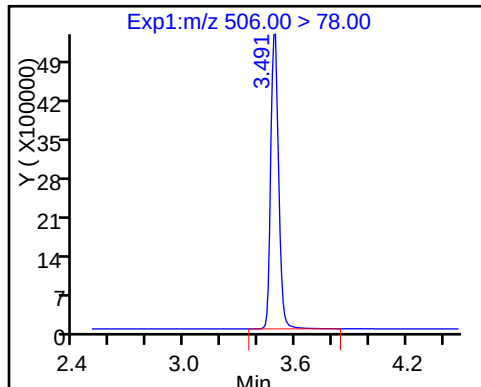
D 19 13C5 PFNA



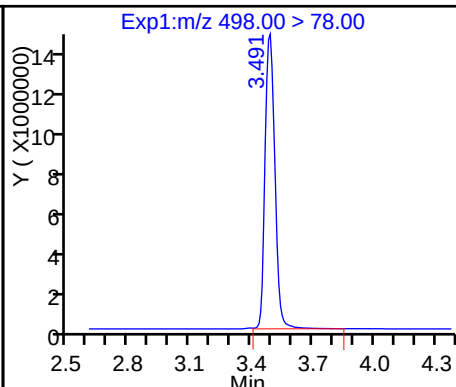
20 Perfluorononanoic acid



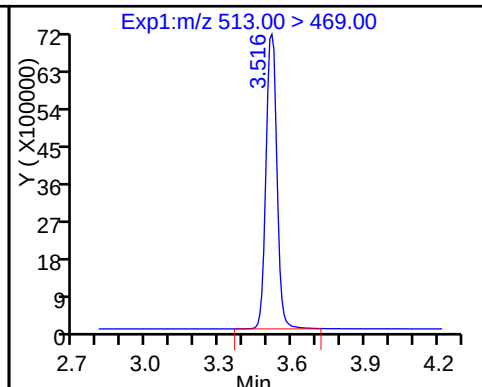
D 21 13C8 FOSA



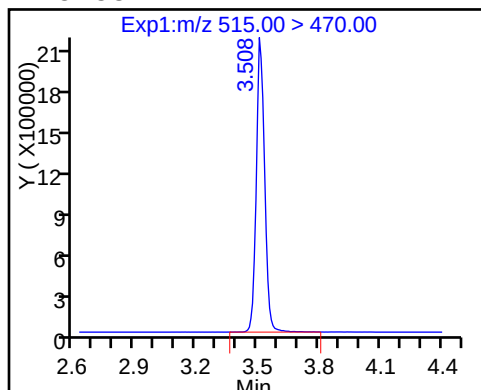
22 Perfluorooctane Sulfonamide



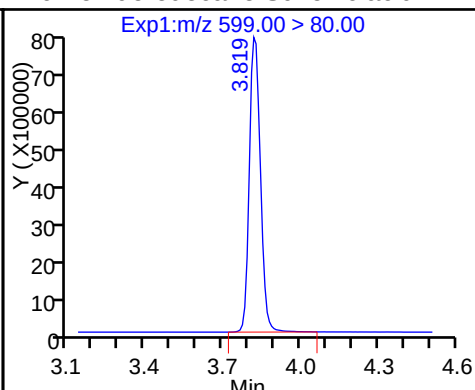
24 Perfluorodecanoic acid



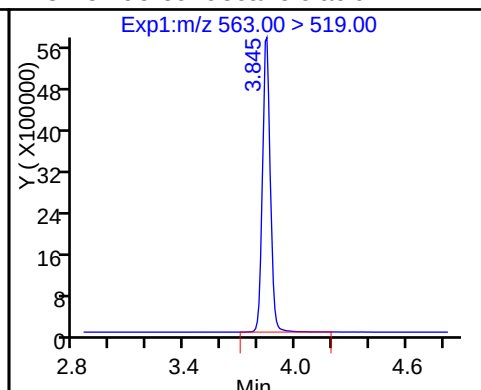
D 23 13C2 PFDA



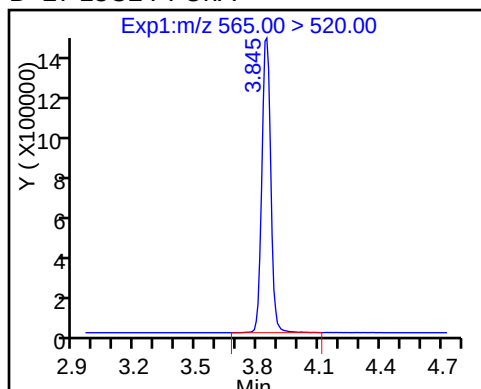
26 Perfluorodecane Sulfonic acid



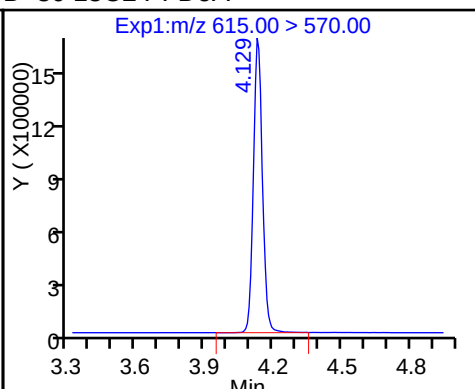
28 Perfluoroundecanoic acid



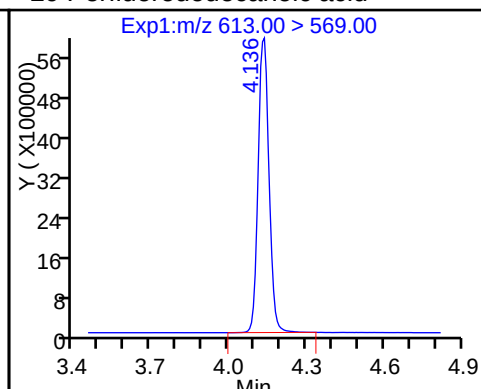
D 27 13C2 PFUnA



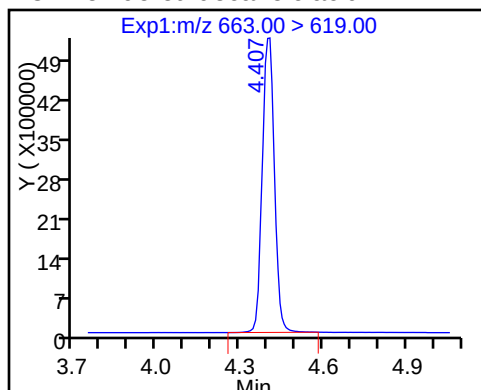
D 30 13C2 PFDaA



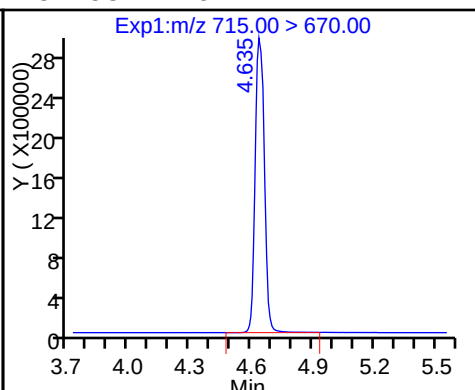
29 Perfluorododecanoic acid



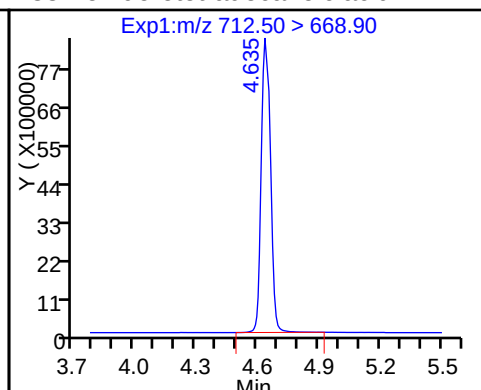
31 Perfluorotridecanoic acid



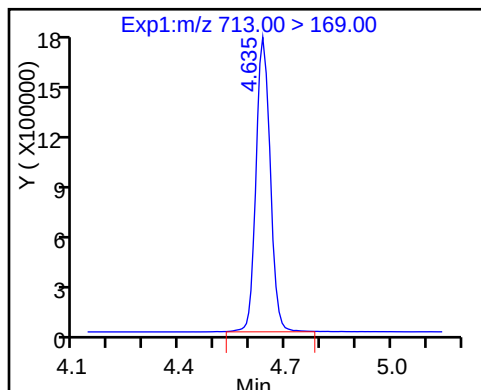
D 32 13C2-PFTeDA



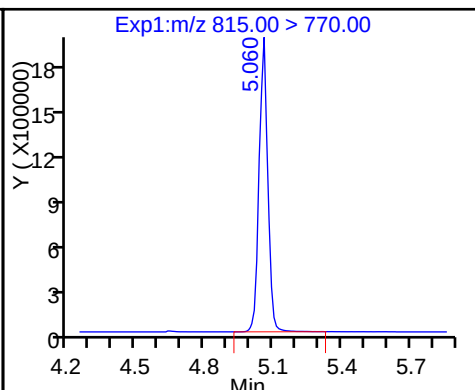
33 Perfluorotetradecanoic acid



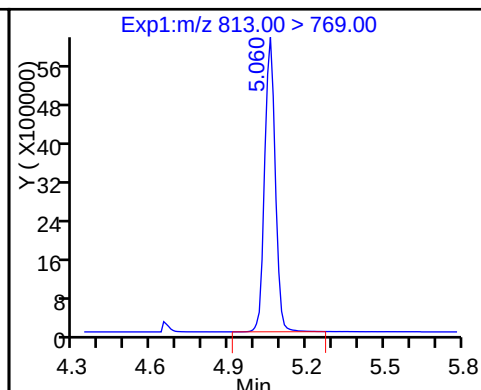
33 Perfluorotetradecanoic acid



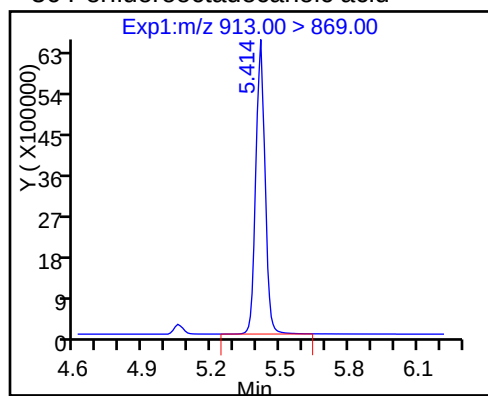
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016BB_013.d
 Lims ID: IC L1 Add-on
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 15-Dec-2016 13:41:05 ALS Bottle#: 46 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L1 ADD ON
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub6
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 16-Dec-2016 14:34:44 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK007

First Level Reviewer: chandrasenas

Date: 15-Dec-2016 16:37:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 47 M2-6:2FTS

429.00 > 409.00 2.760 2.767 -0.007 5352965 45.8 96.3

48 Sodium 1H,1H,2H,2H-perfluorooctane

427.00 > 407.00 2.776 2.768 0.008 1.000 48011 0.4779 101

43 Sodium 1H,1H,2H,2H-perfluorooctane

527.00 > 507.00 3.511 3.511 0.0 1.000 39808 0.4671 97.5

D 42 M2-8:2FTS

529.00 > 509.00 3.511 3.513 -0.002 4817997 44.8 93.6

D 45 d3-NMeFOSAA

573.00 > 419.00 3.684 3.676 0.008 3634985 48.3 96.5

44 N-methyl perfluorooctane sulfonami

570.00 > 419.00 3.684 3.681 0.003 1.000 29823 0.4637 92.7

D 46 d5-NEtFOSAA

589.00 > 419.00 3.848 3.842 0.006 3889792 49.6 99.3

49 N-ethyl perfluorooctane sulfonamid

584.00 > 419.00 3.865 3.854 0.011 1.005 29965 0.4858 97.2

D 52 d-N-MeFOSA-M

515.00 > 169.00 3.988 3.992 -0.004 4325034 45.5 91.0

54 MeFOSA

512.00 > 169.00 3.998 3.999 -0.001 1.000 36069 0.4978 99.6

D 51 d-N-EtFOSA-M

531.00 > 169.00 4.180 4.180 0.0 3792851 44.2 88.4

53 N-ethylperfluoro-1-octanesulfonami

526.00 > 169.00 4.187 4.187 0.0 1.000 30993 0.4729 94.6

Reagents:

LCPFC2-L1_00002

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016BB_013.d

Injection Date: 15-Dec-2016 13:41:05

Instrument ID: A8_N

Lims ID: IC L1 Add-on

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 46

Worklist Smp#: 13

Injection Vol: 2.0 ul

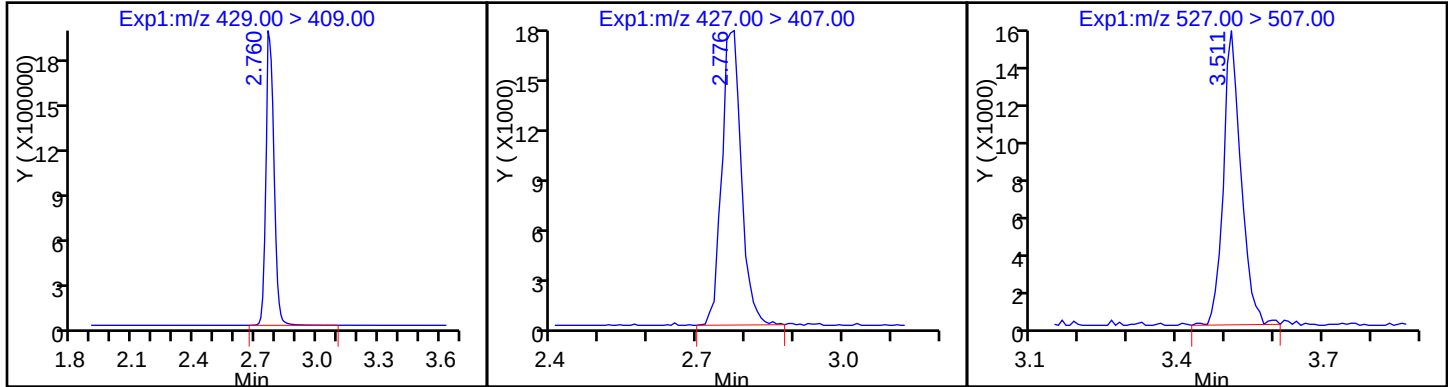
Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 47 M2-6:2FTS

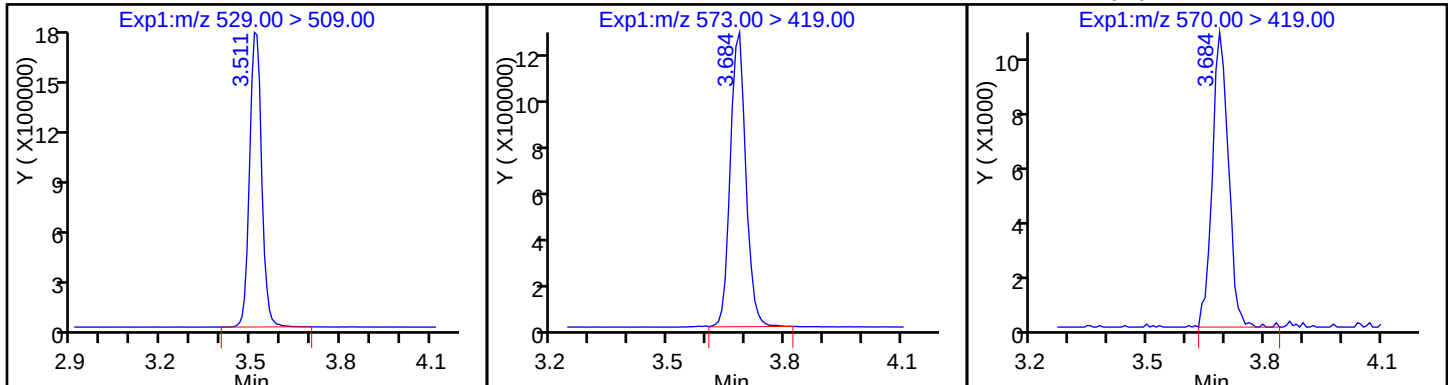
48 Sodium 1H,1H,2H,2H-perfluorooctane-43 Sodium 1H,1H,2H,2H-perfluorooctane



D 42 M2-8:2FTS

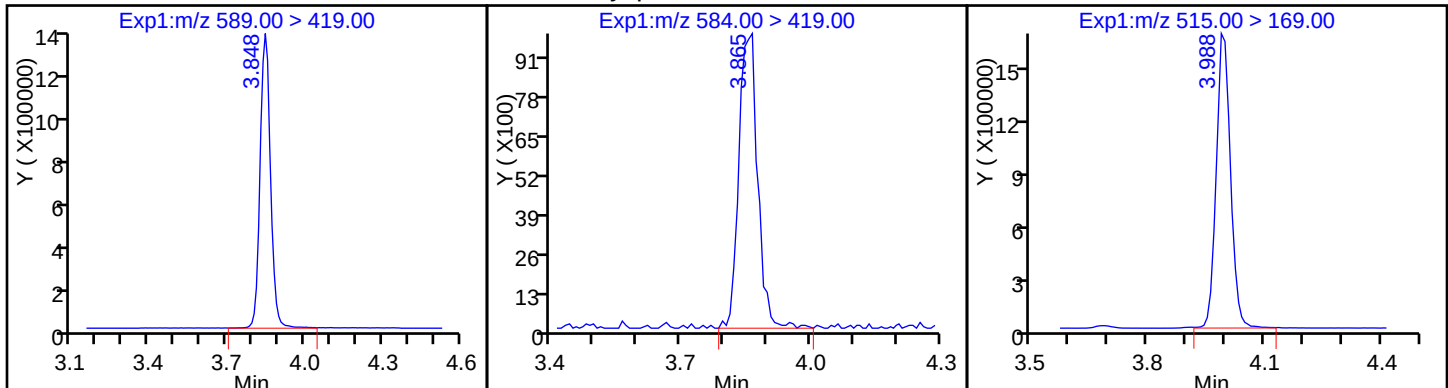
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

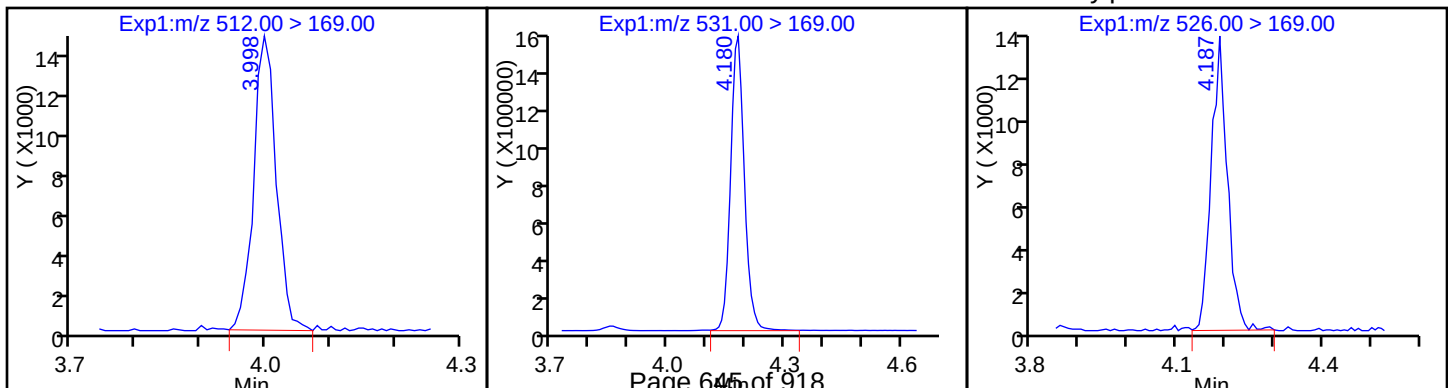
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_014.d
 Lims ID: IC L2 Add-on
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 15-Dec-2016 13:48:34 ALS Bottle#: 47 Worklist Smp#: 14
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L2 ADD ON
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub6
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 16-Dec-2016 14:34:46 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK007

First Level Reviewer: chandrasenas

Date: 15-Dec-2016 16:38:07

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 47 M2-6:2FTS

429.00 > 409.00 2.761 2.767 -0.006 5108306 43.7 91.9

48 Sodium 1H,1H,2H,2H-perfluorooctane

427.00 > 407.00 2.761 2.768 -0.007 1.000 106947 1.12 118

43 Sodium 1H,1H,2H,2H-perfluorooctane

527.00 > 507.00 3.502 3.511 -0.009 0.998 75731 0.9308 97.2

D 42 M2-8:2FTS

529.00 > 509.00 3.511 3.513 -0.002 4599569 42.8 89.4

D 45 d3-NMeFOSAA

573.00 > 419.00 3.673 3.676 -0.003 3559083 47.2 94.5

44 N-methyl perfluorooctane sulfonami

570.00 > 419.00 3.673 3.681 -0.008 1.000 57389 0.9114 91.1

D 46 d5-NEtFOSAA

589.00 > 419.00 3.838 3.842 -0.004 3757014 48.0 95.9

49 N-ethyl perfluorooctane sulfonamid

584.00 > 419.00 3.855 3.854 0.001 1.005 53623 0.9000 90.0

D 52 d-N-MeFOSA-M

515.00 > 169.00 3.987 3.992 -0.005 4639527 48.8 97.6

54 MeFOSA

512.00 > 169.00 3.997 3.999 -0.002 1.000 70049 0.9013 90.1

D 51 d-N-EtFOSA-M

531.00 > 169.00 4.172 4.180 -0.008 4109875 47.9 95.8

53 N-ethylperfluoro-1-octanesulfonami

526.00 > 169.00 4.179 4.187 -0.008 1.000 62962 0.8865 88.7

Reagents:

LCPFC2-L2_00002

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_014.d

Injection Date: 15-Dec-2016 13:48:34

Instrument ID: A8_N

Lims ID: IC L2 Add-on

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 47

Worklist Smp#: 14

Injection Vol: 2.0 ul

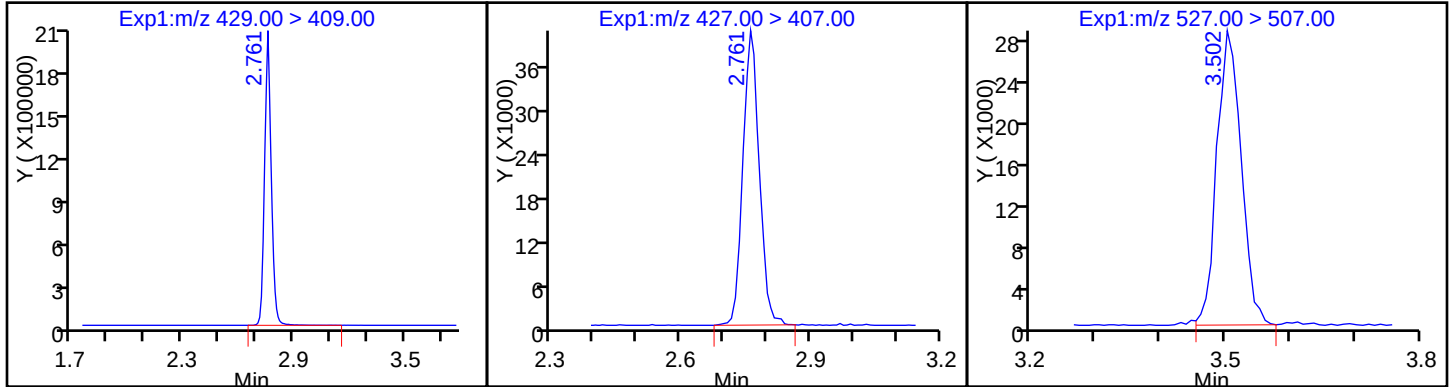
Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 47 M2-6:2FTS

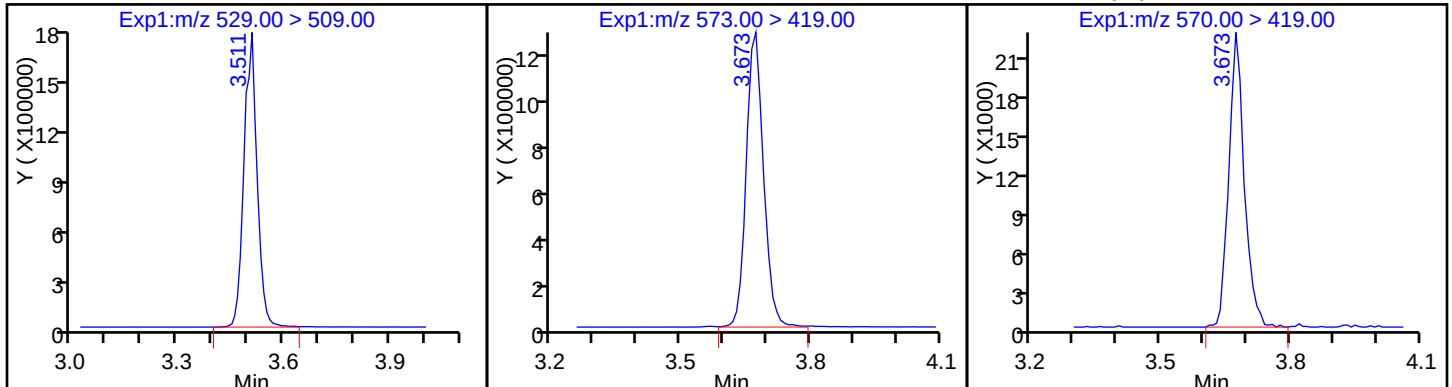
48 Sodium 1H,1H,2H,2H-perfluorooctane-43 Sodium 1H,1H,2H,2H-perfluorooctane



D 42 M2-8:2FTS

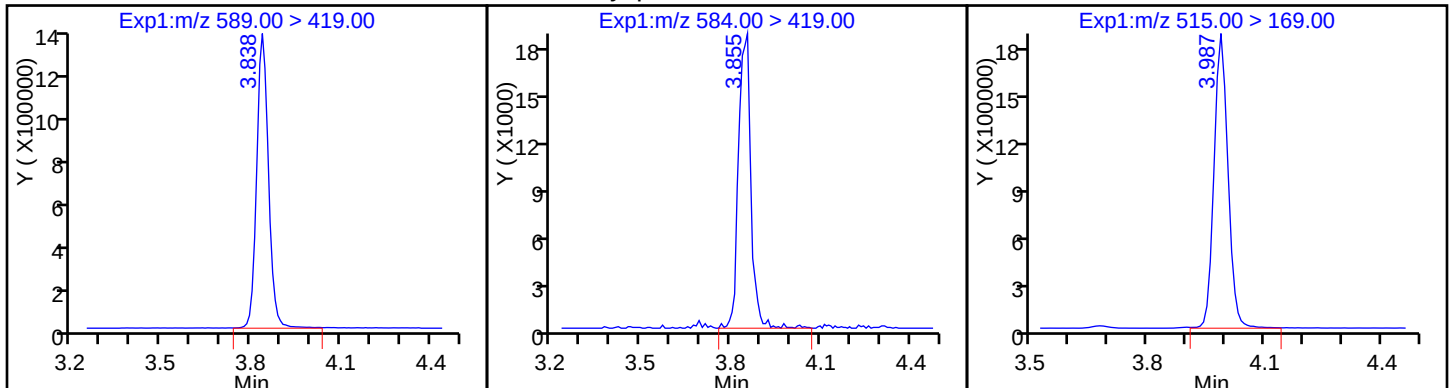
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

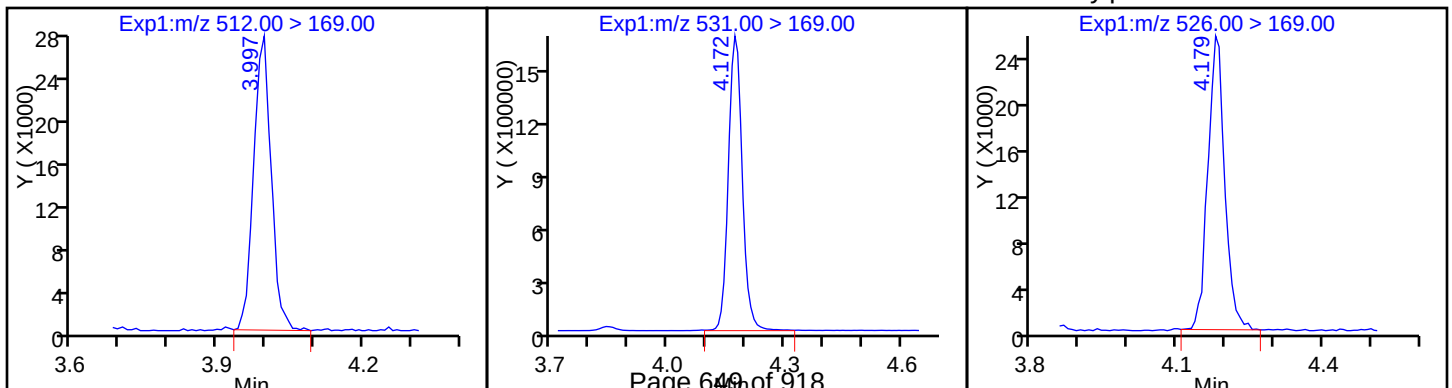
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_015.d
 Lims ID: IC L3 Add-on
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 15-Dec-2016 13:56:03 ALS Bottle#: 48 Worklist Smp#: 15
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L3 ADD ON
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub6
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 16-Dec-2016 14:34:48 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK007

First Level Reviewer: chandrasenas

Date: 15-Dec-2016 16:38:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 47 M2-6:2FTS

429.00 > 409.00 2.768 2.767 0.001 5570739 47.6 100

48 Sodium 1H,1H,2H,2H-perfluorooctane

427.00 > 407.00 2.768 2.768 0.0 1.000 405060 3.87 81.7

43 Sodium 1H,1H,2H,2H-perfluorooctane

527.00 > 507.00 3.511 3.511 0.0 1.000 398457 4.22 88.0

D 42 M2-8:2FTS

529.00 > 509.00 3.511 3.513 -0.002 5342826 49.7 104

D 45 d3-NMeFOSAA

573.00 > 419.00 3.673 3.676 -0.003 4014623 53.3 107

44 N-methyl perfluorooctane sulfonami

570.00 > 419.00 3.683 3.681 0.002 1.003 285665 4.02 80.4

D 46 d5-NEtFOSAA

589.00 > 419.00 3.838 3.842 -0.004 4235352 54.1 108

49 N-ethyl perfluorooctane sulfonamid

584.00 > 419.00 3.847 3.854 -0.007 1.002 267721 3.99 79.7

D 52 d-N-MeFOSA-M

515.00 > 169.00 3.987 3.992 -0.005 5121953 53.9 108

54 MeFOSA

512.00 > 169.00 3.997 3.999 -0.002 1.000 343493 4.00 80.1

D 51 d-N-EtFOSA-M

531.00 > 169.00 4.179 4.180 -0.001 4561882 53.2 106

53 N-ethylperfluoro-1-octanesulfonami

526.00 > 169.00 4.186 4.187 -0.001 1.000 326877 4.15 82.9

Reagents:

LCPFC2-L3_00002

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_015.d

Injection Date: 15-Dec-2016 13:56:03

Instrument ID: A8_N

Lims ID: IC L3 Add-on

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 48

Worklist Smp#: 15

Injection Vol: 2.0 ul

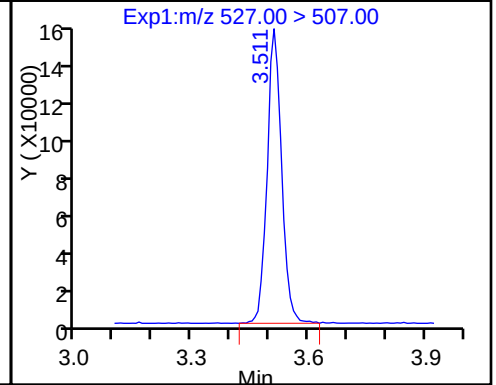
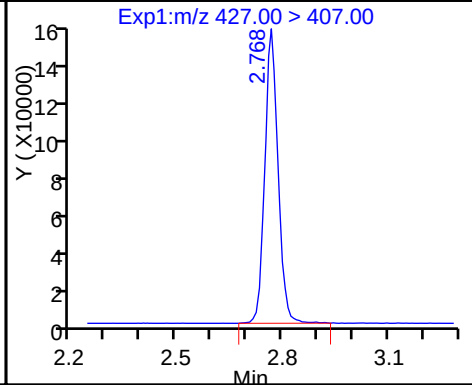
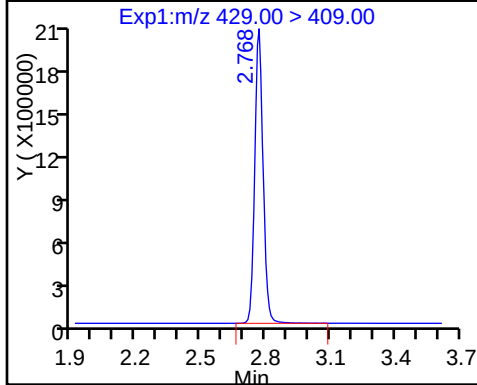
Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 47 M2-6:2FTS

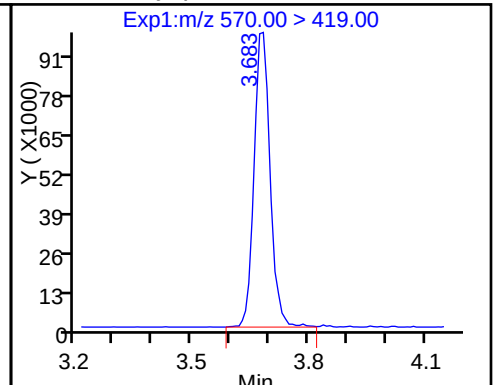
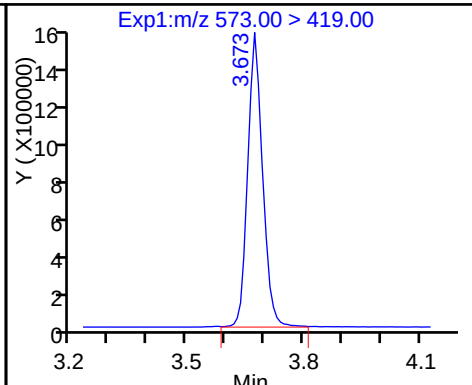
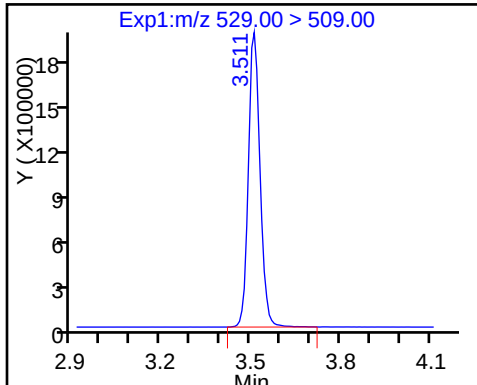
48 Sodium 1H,1H,2H,2H-perfluorooctane-43 Sodium 1H,1H,2H,2H-perfluorooctane



D 42 M2-8:2FTS

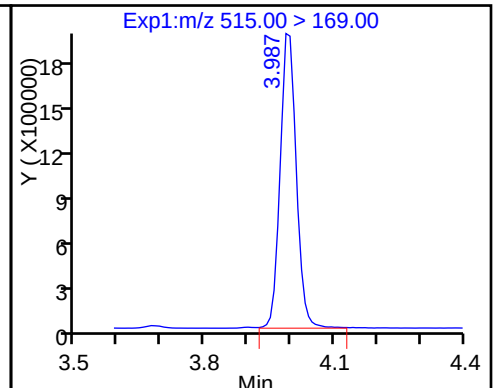
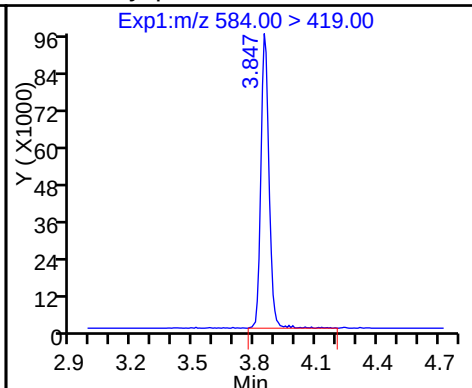
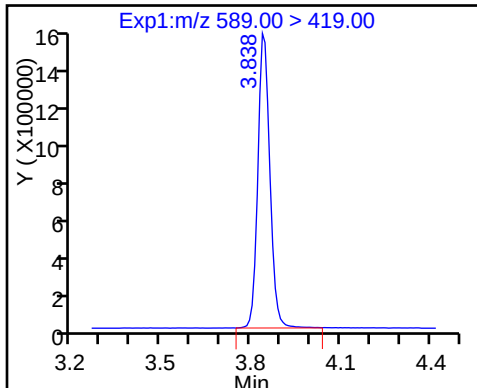
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

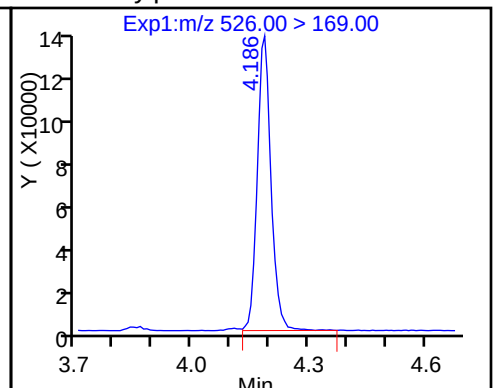
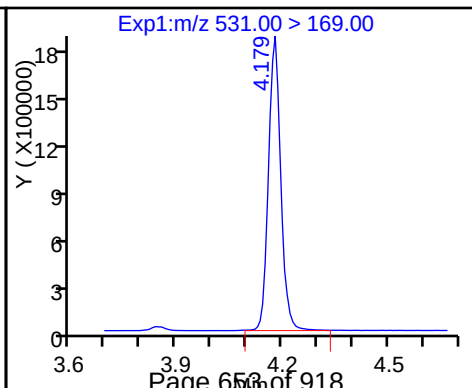
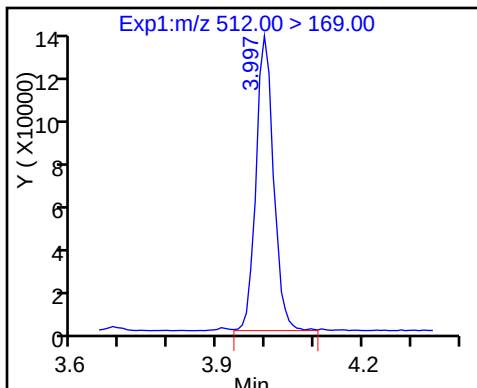
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_016.d
 Lims ID: IC L4 Add-on
 Client ID:
 Sample Type: IC Calib Level: 4
 Inject. Date: 15-Dec-2016 14:03:33 ALS Bottle#: 49 Worklist Smp#: 16
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L4 ADD ON
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub6
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 16-Dec-2016 14:34:49 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK007

First Level Reviewer: chandrasenas

Date: 15-Dec-2016 16:37:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 47 M2-6:2FTS

429.00 > 409.00 2.767 2.767 0.0 6471813 55.3 116

48 Sodium 1H,1H,2H,2H-perfluorooctane

427.00 > 407.00 2.767 2.768 -0.001 1.000 2416384 19.9 105

43 Sodium 1H,1H,2H,2H-perfluorooctane

527.00 > 507.00 3.511 3.511 0.0 1.000 2224381 21.0 110

D 42 M2-8:2FTS

529.00 > 509.00 3.511 3.513 -0.002 5984276 55.7 116

D 45 d3-NMeFOSAA

573.00 > 419.00 3.673 3.676 -0.003 4379131 58.1 116

44 N-methyl perfluorooctane sulfonami

570.00 > 419.00 3.683 3.681 0.002 1.003 1708231 22.0 110

D 46 d5-NEtFOSAA

589.00 > 419.00 3.838 3.842 -0.004 4410456 56.3 113

49 N-ethyl perfluorooctane sulfonamid

584.00 > 419.00 3.847 3.854 -0.007 1.002 1518918 21.7 109

D 52 d-N-MeFOSA-M

515.00 > 169.00 3.997 3.992 0.005 5263980 55.4 111

54 MeFOSA

512.00 > 169.00 3.997 3.999 -0.002 1.000 1946985 22.1 110

D 51 d-N-EtFOSA-M

531.00 > 169.00 4.179 4.180 -0.001 4672820 54.5 109

53 N-ethylperfluoro-1-octanesulfonami

526.00 > 169.00 4.186 4.187 -0.001 1.000 1813178 22.5 112

Reagents:

LCPFC2-L4_00003

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_016.d

Injection Date: 15-Dec-2016 14:03:33

Instrument ID: A8_N

Lims ID: IC L4 Add-on

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 49

Worklist Smp#: 16

Injection Vol: 2.0 ul

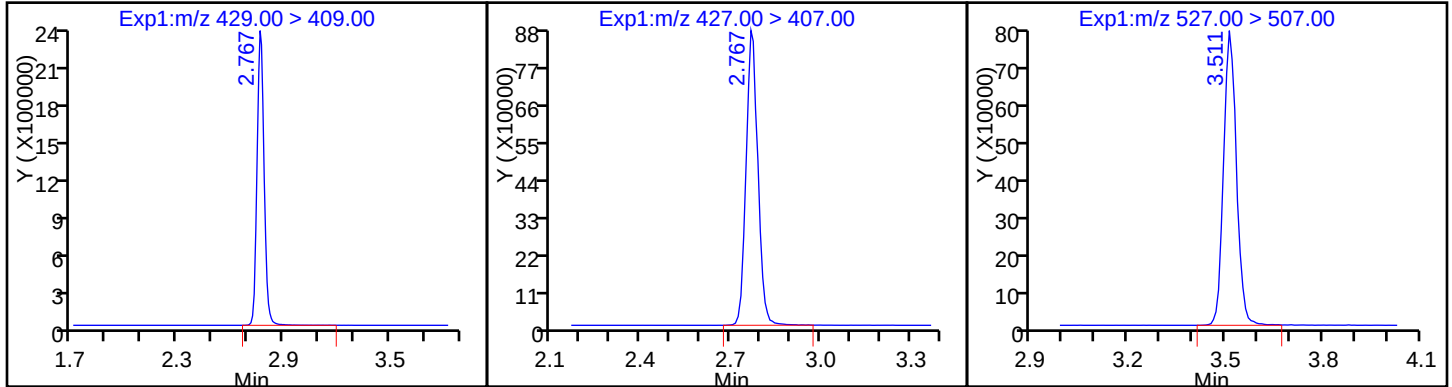
Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 47 M2-6:2FTS

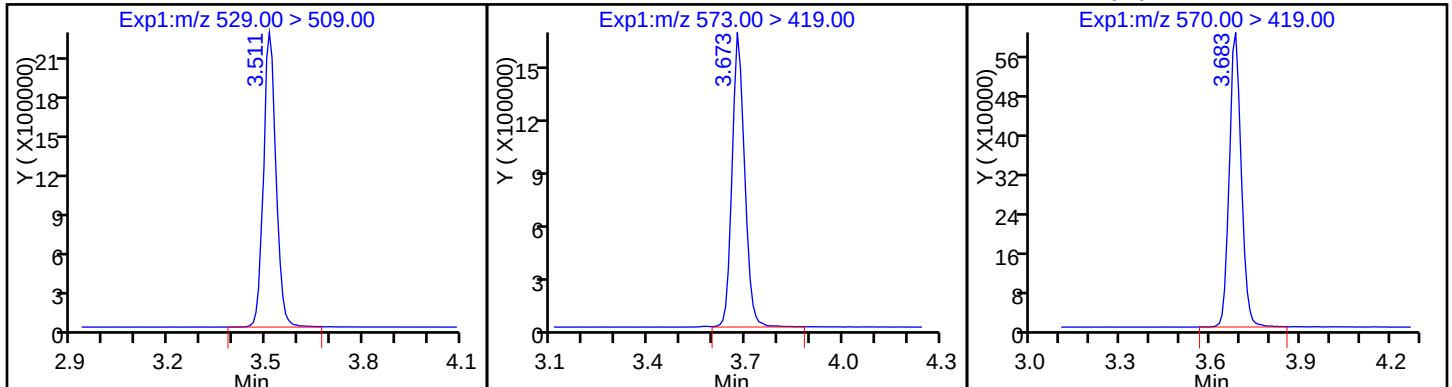
48 Sodium 1H,1H,2H,2H-perfluorooctane-43 Sodium 1H,1H,2H,2H-perfluorooctane



D 42 M2-8:2FTS

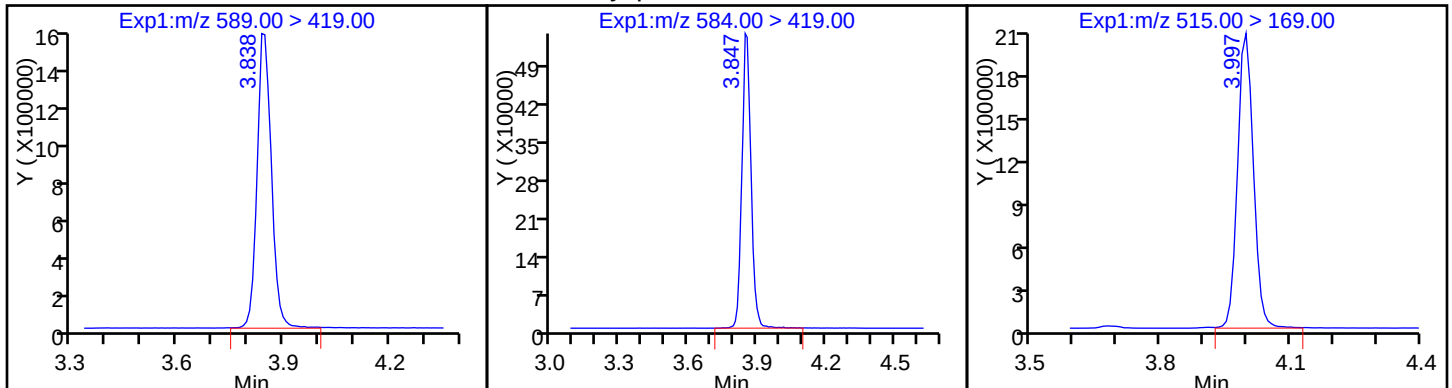
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

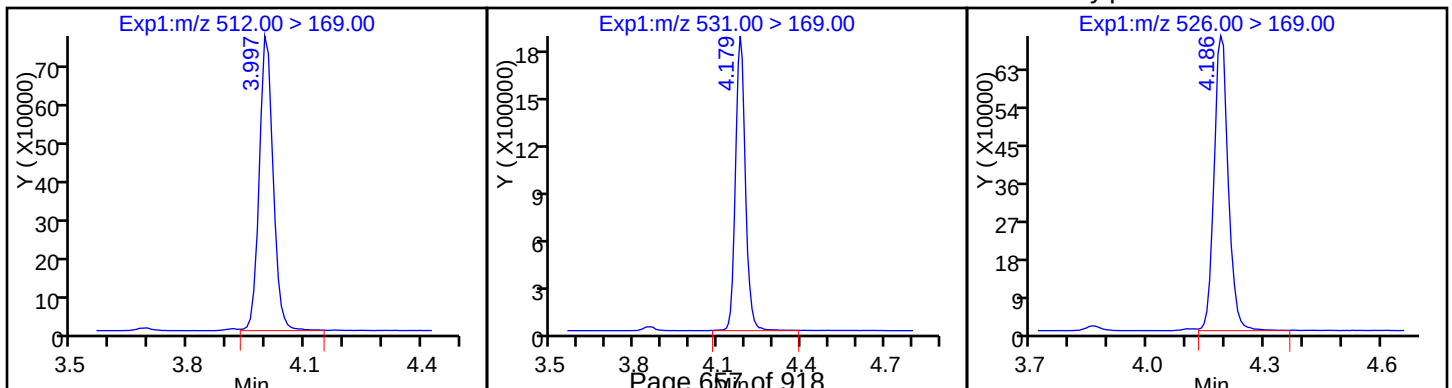
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_017.d
 Lims ID: IC L5 Add-on
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 15-Dec-2016 14:11:03 ALS Bottle#: 50 Worklist Smp#: 17
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L5 ADD ON
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub6
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 16-Dec-2016 14:34:51 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK007

First Level Reviewer: chandrasenas

Date: 15-Dec-2016 16:38:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 47 M2-6:2FTS

429.00 > 409.00 2.767 2.767 0.0 5259120 45.0 94.6

48 Sodium 1H,1H,2H,2H-perfluorooctane

427.00 > 407.00 2.767 2.768 -0.001 1.000 5166665 52.3 110

43 Sodium 1H,1H,2H,2H-perfluorooctane

527.00 > 507.00 3.512 3.511 0.001 0.998 4815680 56.9 119

D 42 M2-8:2FTS

529.00 > 509.00 3.520 3.513 0.007 4786038 44.5 93.0

D 45 d3-NMeFOSAA

573.00 > 419.00 3.675 3.676 -0.001 3422485 45.4 90.9

44 N-methyl perfluorooctane sulfonami

570.00 > 419.00 3.684 3.681 0.003 1.003 3741936 61.8 124

D 46 d5-NEtFOSAA

589.00 > 419.00 3.848 3.842 0.006 3486329 44.5 89.0

49 N-ethyl perfluorooctane sulfonamid

584.00 > 419.00 3.857 3.854 0.003 1.002 3414301 61.8 124

D 52 d-N-MeFOSA-M

515.00 > 169.00 3.999 3.992 0.007 4512300 47.5 94.9

54 MeFOSA

512.00 > 169.00 3.999 3.999 0.0 1.000 4407328 58.3 117

D 51 d-N-EtFOSA-M

531.00 > 169.00 4.182 4.180 0.002 4149228 48.4 96.7

53 N-ethylperfluoro-1-octanesulfonami

526.00 > 169.00 4.189 4.187 0.002 1.000 4264314 59.5 119

Reagents:

LCPFC2-L5_00002

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_017.d

Injection Date: 15-Dec-2016 14:11:03

Instrument ID: A8_N

Lims ID: IC L5 Add-on

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 50

Worklist Smp#: 17

Injection Vol: 2.0 ul

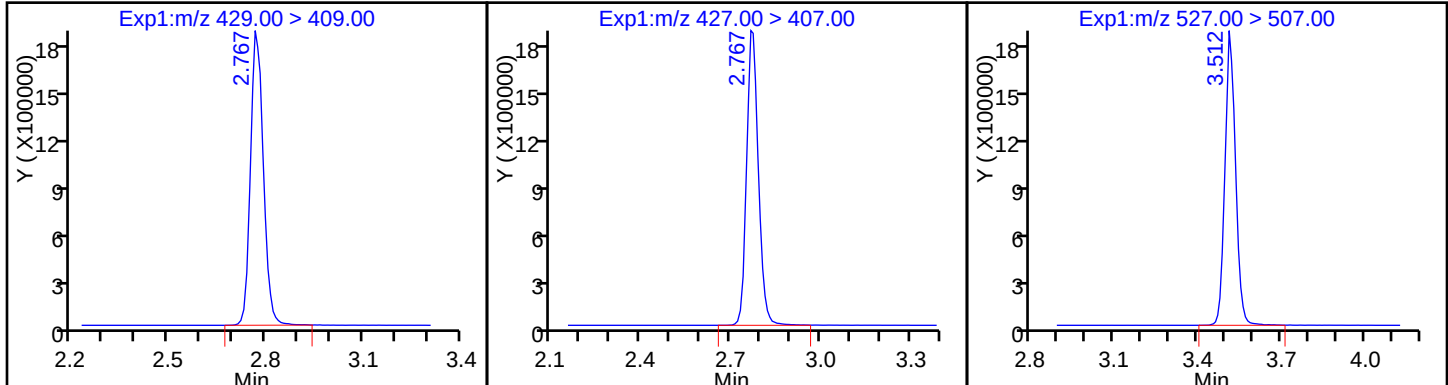
Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 47 M2-6:2FTS

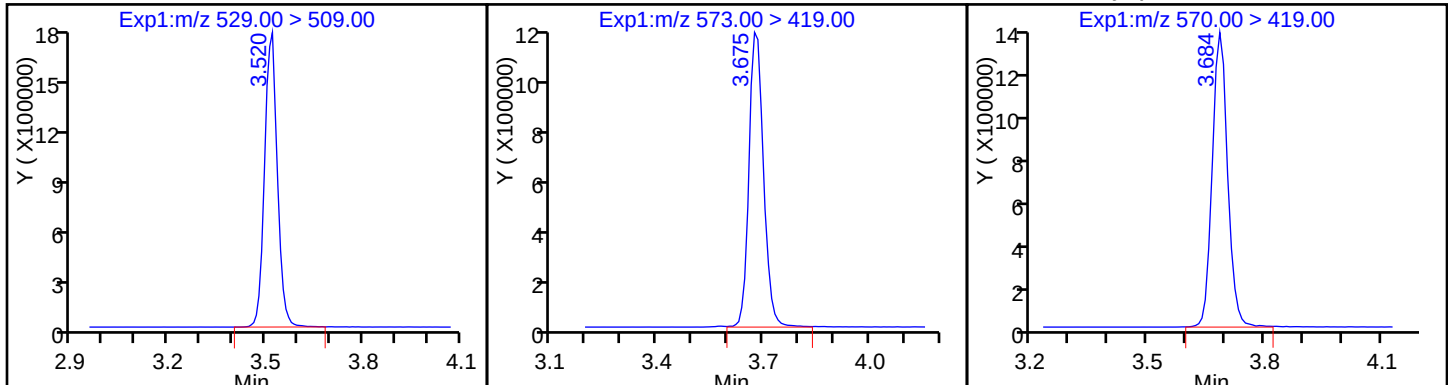
48 Sodium 1H,1H,2H,2H-perfluorooctane-43 Sodium 1H,1H,2H,2H-perfluorooctane



D 42 M2-8:2FTS

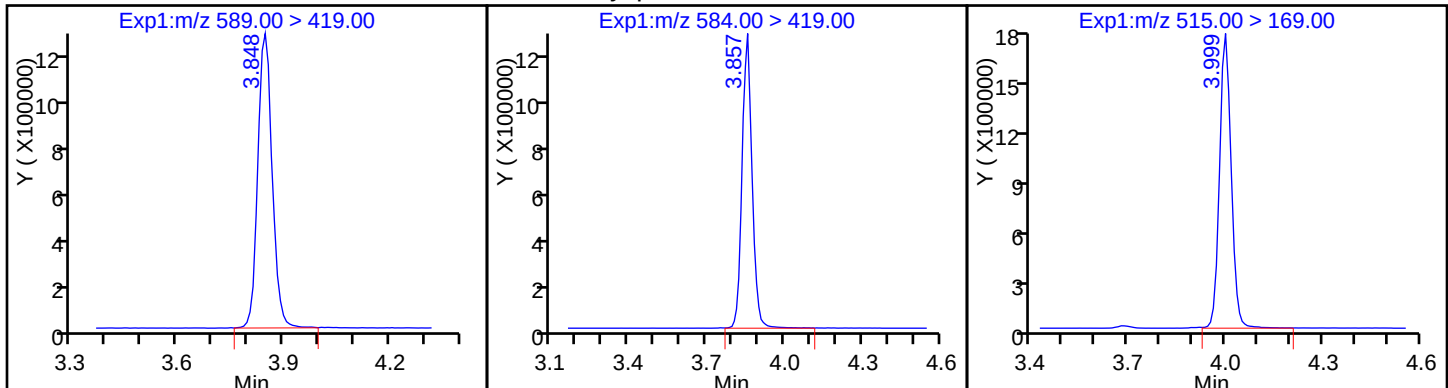
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

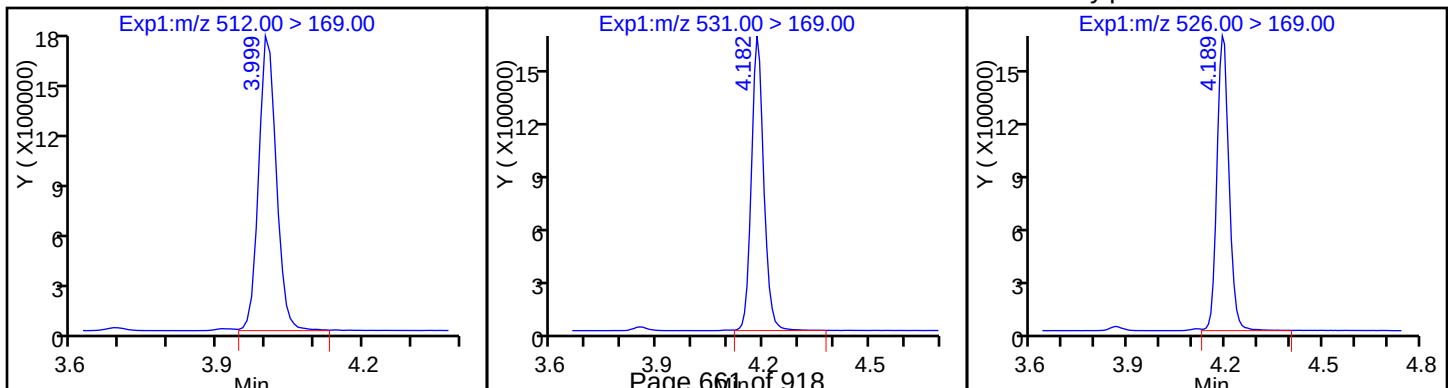
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Lims ID: IC L6 Add-on
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 15-Dec-2016 14:18:33 ALS Bottle#: 51 Worklist Smp#: 18
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L6 ADD ON
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub6
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 16-Dec-2016 14:34:52 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK007

First Level Reviewer: chandrasenas

Date: 15-Dec-2016 16:38:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 47 M2-6:2FTS

429.00 > 409.00 2.776 2.767 0.009 5576967 47.7 100

48 Sodium 1H,1H,2H,2H-perfluorooctane

427.00 > 407.00 2.769 2.768 0.001 1.000 16907459 161.5 85.2

43 Sodium 1H,1H,2H,2H-perfluorooctane

527.00 > 507.00 3.516 3.511 0.005 1.000 16111959 170.3 88.9

D 42 M2-8:2FTS

529.00 > 509.00 3.516 3.513 0.003 5348797 49.8 104

D 45 d3-NMeFOSAA

573.00 > 419.00 3.680 3.676 0.004 3587176 47.6 95.2

44 N-methyl perfluorooctane sulfonami

570.00 > 419.00 3.680 3.681 -0.001 1.000 12924122 203.6 102

D 46 d5-NEtFOSAA

589.00 > 419.00 3.845 3.842 0.003 3725902 47.6 95.1

49 N-ethyl perfluorooctane sulfonamid

584.00 > 419.00 3.853 3.854 -0.001 1.002 11938061 202.0 101

D 52 d-N-MeFOSA-M

515.00 > 169.00 3.995 3.992 0.003 4658153 49.0 98.0

54 MeFOSA

512.00 > 169.00 4.004 3.999 0.005 1.000 16114020 206.5 103

D 51 d-N-EtFOSA-M

531.00 > 169.00 4.186 4.180 0.006 4448546 51.9 104

53 N-ethylperfluoro-1-octanesulfonami

526.00 > 169.00 4.193 4.187 0.006 1.000 15780196 205.3 103

Reagents:

LCPFC2-L6_00002

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Injection Date: 15-Dec-2016 14:18:33

Instrument ID: A8_N

Lims ID: IC L6 Add-on

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 51

Worklist Smp#: 18

Injection Vol: 2.0 ul

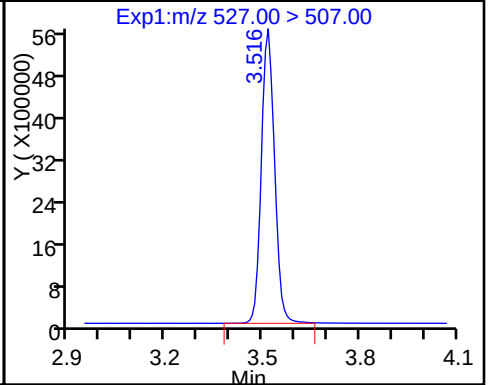
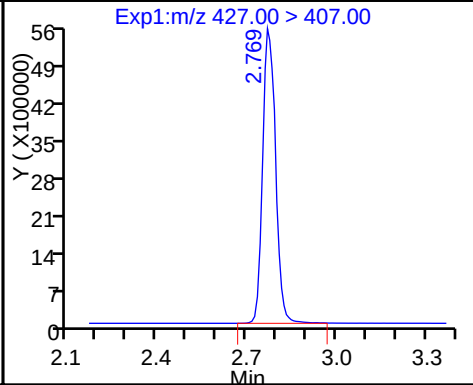
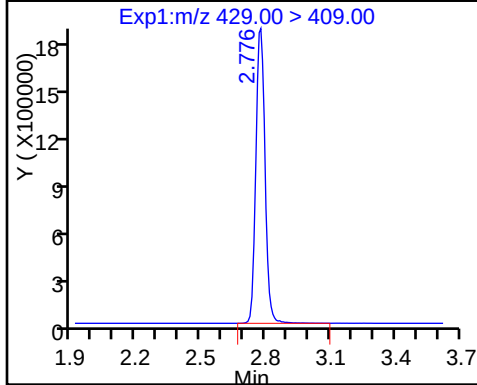
Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 47 M2-6:2FTS

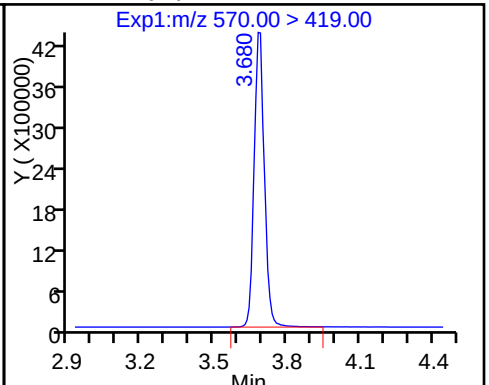
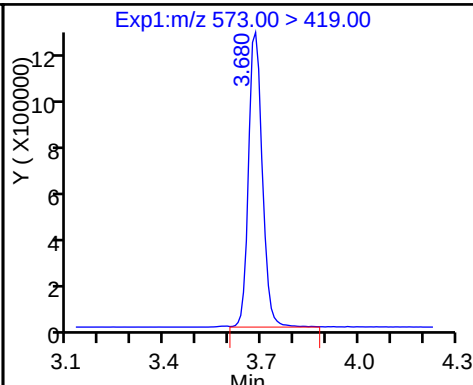
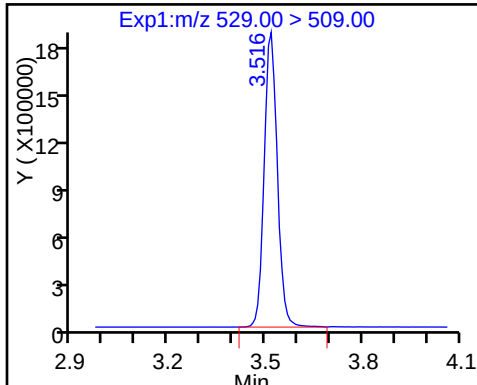
48 Sodium 1H,1H,2H,2H-perfluorooctane-43 Sodium 1H,1H,2H,2H-perfluorooctane



D 42 M2-8:2FTS

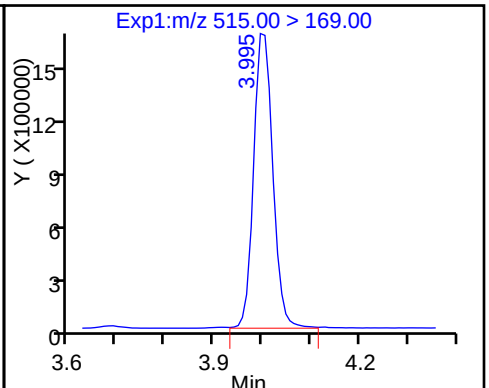
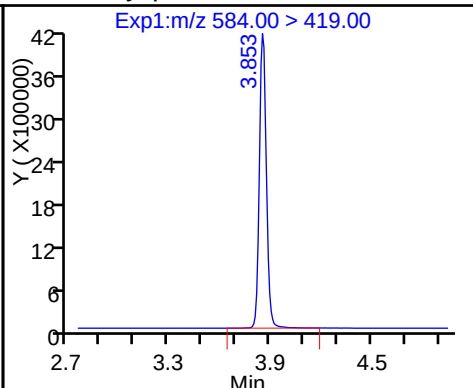
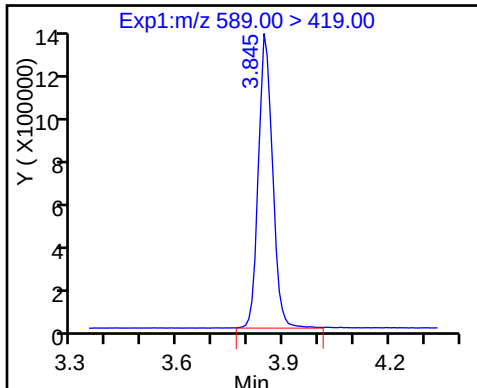
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

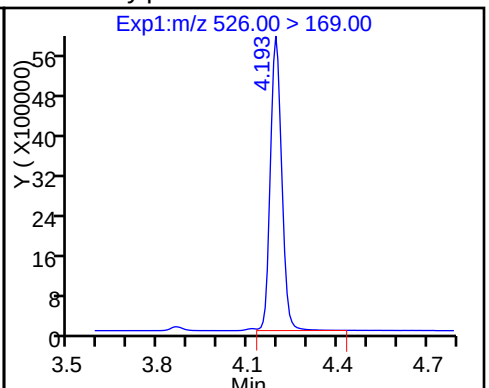
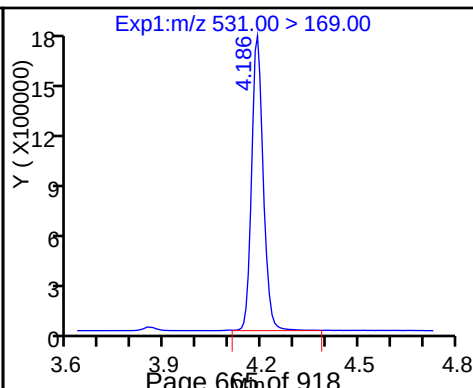
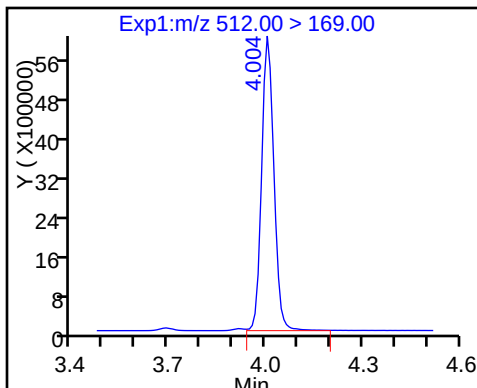
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonami



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Lab Sample ID: ICV 320-142379/11 Calibration Date: 12/15/2016 13:21

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 15DEC2016B_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.8479		49.7	50.0	-0.7	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	0.9654		48.9	50.0	-2.2	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.478		46.2	44.3	4.3	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9123		49.1	50.0	-1.8	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9679		49.4	50.0	-1.1	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	0.9556		43.8	47.3	-7.2	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.000		49.9	50.0	-0.3	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.160		50.1	47.6	5.2	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9360		49.2	50.0	-1.7	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9945	0.9040		43.4	47.8	-9.1	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9182		49.2	50.0	-1.5	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9109		48.3	50.0	-3.5	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.5921		48.9	48.3	1.4	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9285		48.5	50.0	-2.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.8958		48.8	50.0	-2.4	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9189		50.7	50.0	1.3	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.555		49.1	50.0	-1.9	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9309		48.2	50.0	-3.7	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8547		41.5	50.0	-17.0	25.0
13C4 PFBA	Ave	347743	335296		48.2	50.0	-3.6	50.0
13C5-PFPeA	Ave	266072	251719		47.3	50.0	-5.4	50.0
13C2 PFHxA	Ave	245110	240514		49.1	50.0	-1.9	50.0
13C4-PFHpA	Ave	226344	215455		47.6	50.0	-4.8	50.0
18O2 PFHxS	Ave	326976	320282		46.3	47.3	-2.0	50.0
13C4 PFOA	Ave	230362	219488		47.6	50.0	-4.7	50.0
13C4 PFOS	Ave	248847	244549		47.0	47.8	-1.7	50.0
13C5 PFNA	Ave	177687	171464		48.2	50.0	-3.5	50.0
13C8 FOSA	Ave	384141	381142		49.6	50.0	-0.8	50.0
13C2 PFDA	Ave	157302	151370		48.1	50.0	-3.8	50.0
13C2 PFUnA	Ave	117250	116265		49.6	50.0	-0.8	50.0
13C2 PFDoA	Ave	110957	105818		47.7	50.0	-4.6	50.0
13C2-PFTeDA	Ave	227387	214066		47.1	50.0	-5.9	50.0
13C2-PFHxDA	Ave	124568	118207		47.4	50.0	-5.1	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_011.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 15-Dec-2016 13:21:44 ALS Bottle#: 44 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: ICV_b
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist:
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 16-Dec-2016 14:41:15 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK007

First Level Reviewer: chandrasenas

Date: 15-Dec-2016 13:56:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 2 13C4 PFBA

217.00 > 172.00 1.533 1.534 -0.001 16764776 48.2 96.4 1068457

1 Perfluorobutyric acid

212.90 > 169.00 1.541 1.535 0.006 1.000 14214515 49.7 107570

D 4 13C5-PFPeA

267.90 > 223.00 1.810 1.810 0.0 12585925 47.3 94.6 1186150

3 Perfluoropentanoic acid

262.90 > 219.00 1.810 1.810 0.0 1.000 12149802 48.9 115067

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.848 1.848 0.0 1.000 20951066 46.2
 298.90 > 99.00 1.848 1.848 0.0 1.000 9653760 2.17(0.00-0.00)

7 Perfluorohexanoic acid

313.00 > 269.00 2.100 2.096 0.004 1.000 10971106 49.1 243419

D 6 13C2 PFHxA

315.00 > 270.00 2.100 2.097 0.003 12025693 49.1 98.1 480449

D 11 13C4-PFHpA

367.00 > 322.00 2.425 2.426 -0.001 10772772 47.6 95.2 728689

12 Perfluoroheptanoic acid

363.00 > 319.00 2.433 2.428 0.005 1.000 10426957 49.4 97176

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.449 2.431 0.018 1.000 14462013 43.8

D 10 18O2 PFHxS

403.00 > 84.00 2.449 2.446 0.003 15149334 46.3 98.0 878432

D 14 13C4 PFOA

417.00 > 372.00 2.785 2.783 0.002 10974392 47.6 95.3 756643

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.785	2.783	0.002	1.000	10976634	49.9			90975	
413.00 > 169.00	2.793	2.783	0.010	1.003	6473539		1.70(0.90-1.10)		241007	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.793	2.790	0.003	1.000	13497259	50.1				
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.162	3.118	0.044	1.000	10556247	43.4			368282	
499.00 > 99.00	3.154	3.118	0.036	0.997	2582918		4.09(0.90-1.10)		118191	
D 17 13C4 PFOS										
503.00 > 80.00	3.162	3.151	0.011		11689450	47.0		98.3	325285	
D 19 13C5 PFNA										
468.00 > 423.00	3.162	3.153	0.009		8573219	48.2		96.5	485749	
20 Perfluorononanoic acid										
463.00 > 419.00	3.162	3.155	0.007	1.000	8024621	49.2			123355	
D 21 13C8 FOSA										
506.00 > 78.00	3.495	3.488	0.007		19057117	49.6		99.2	610709	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.495	3.491	0.004	1.000	17498900	49.2			383568	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.520	3.510	0.010	1.000	6894043	48.3			189508	
D 23 13C2 PFDA										
515.00 > 470.00	3.520	3.513	0.007		7568491	48.1		96.2	377092	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.830	3.822	0.008	1.000	6986242	48.9				
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.848	3.839	0.009	1.000	5397748	48.5			115044	
D 27 13C2 PFUnA										
565.00 > 520.00	3.848	3.842	0.006		5813248	49.6		99.2	413801	
D 30 13C2 PFDaA										
615.00 > 570.00	4.139	4.132	0.007		5290885	47.7		95.4	272661	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.139	4.136	0.003	1.000	4739775	48.8			99907	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.411	4.400	0.011	1.000	4861713	50.7			113110	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.642	4.641	0.001		10703301	47.1		94.1	614243	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.652	4.642	0.010	1.000	8229099	49.1			142471	
713.00 > 169.00	4.642	4.642	0.0	0.998	1339943		6.14(0.00-0.00)		99778	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.058	5.057	0.001		5910325	47.4		94.9	128290	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.058	5.059	-0.001	1.000	4925242	48.2			4012	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.421	5.414	0.007	1.000	4522136	41.5			4448	

Reagents:

LCPFCIC_00020

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_011.d

Injection Date: 15-Dec-2016 13:21:44

Instrument ID: A8_N

Lims ID: ICV

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 44

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

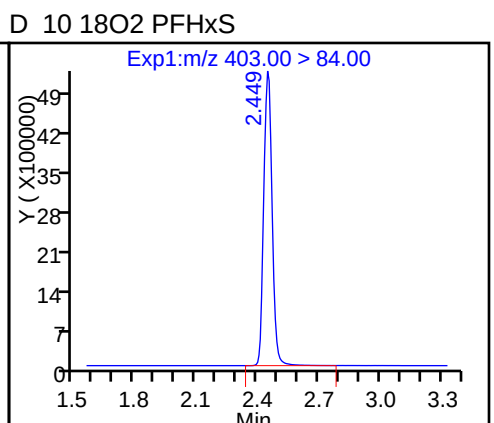
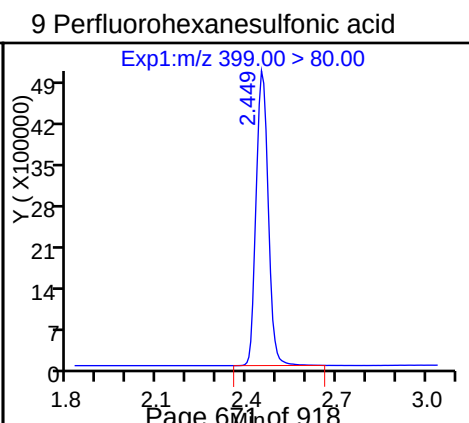
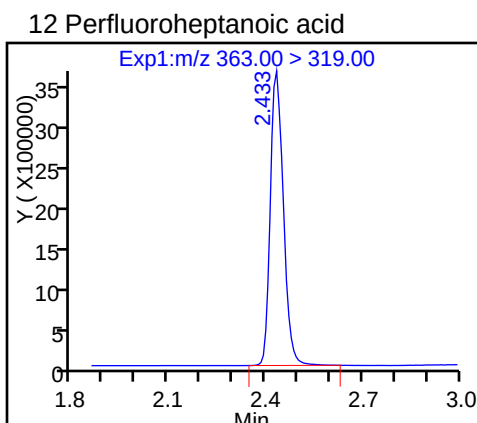
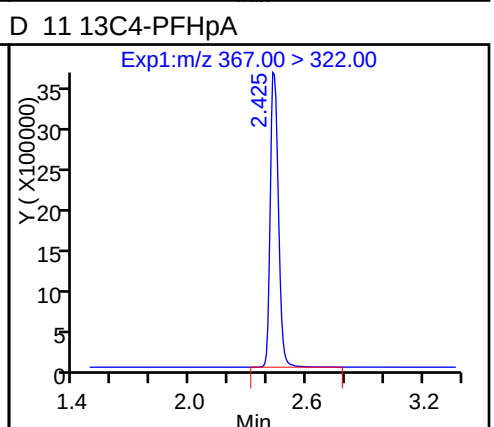
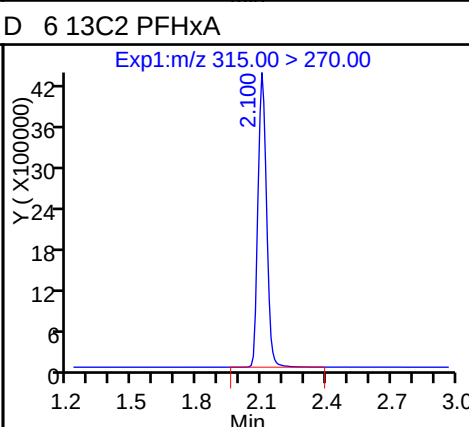
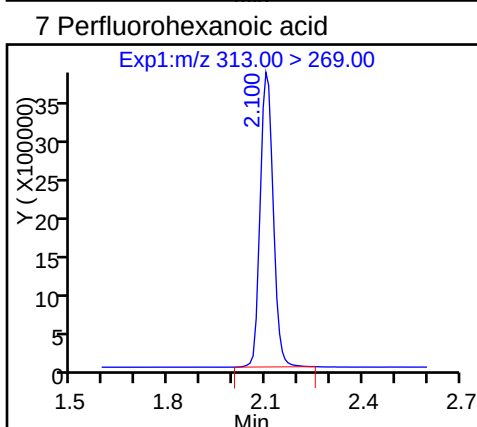
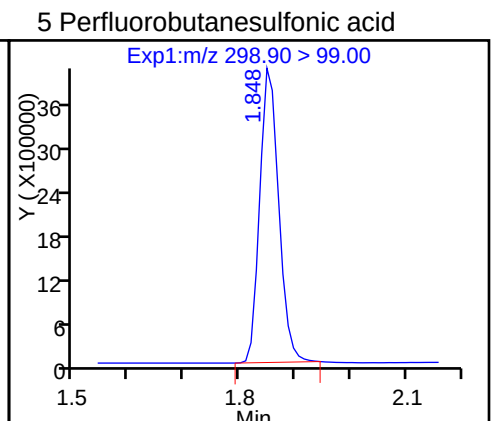
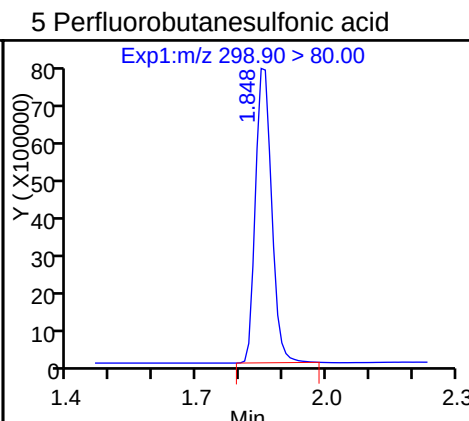
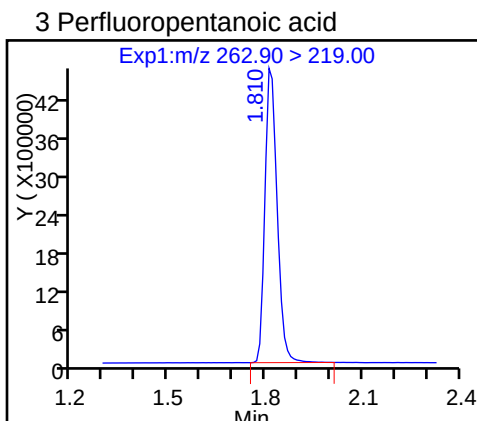
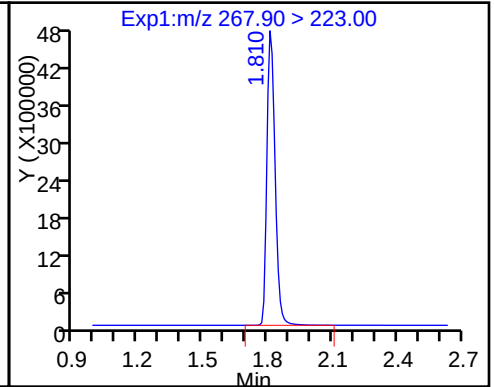
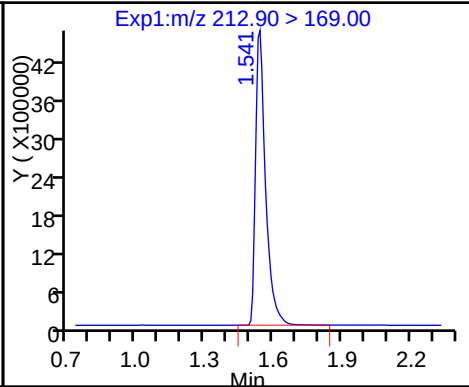
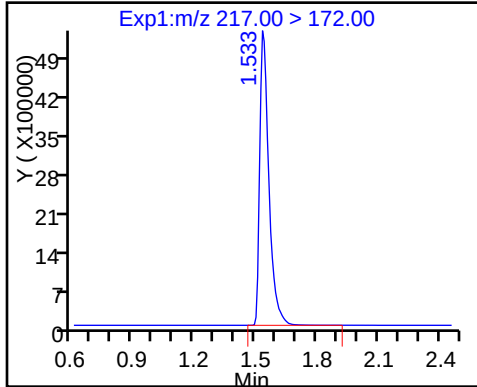
Method: A8_N

Limit Group: LC PFC_DOD ICAL

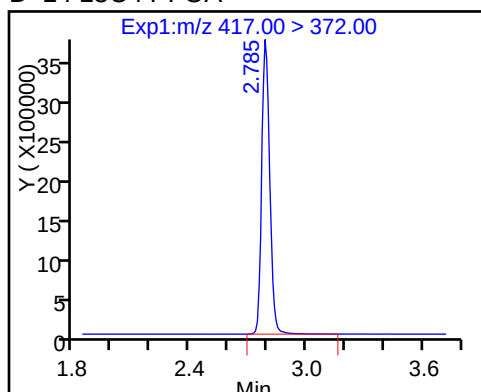
D 2 13C4 PFBA

1 Perfluorobutyric acid

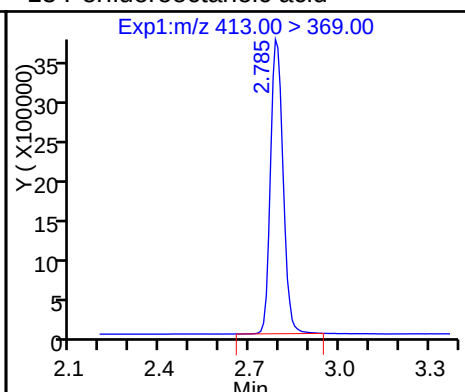
D 4 13C5-PFPeA



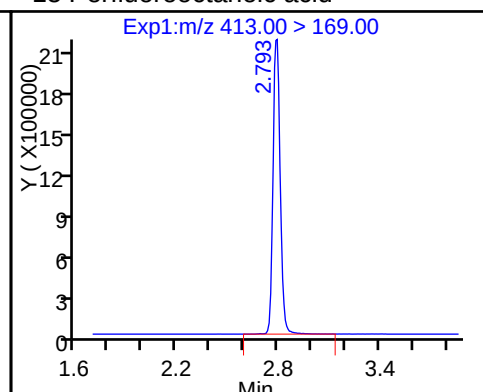
D 14 13C4 PFOA



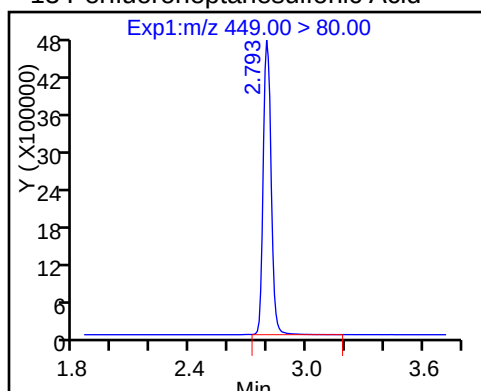
15 Perfluorooctanoic acid



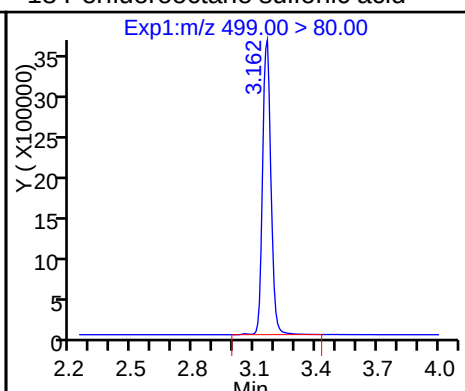
15 Perfluorooctanoic acid



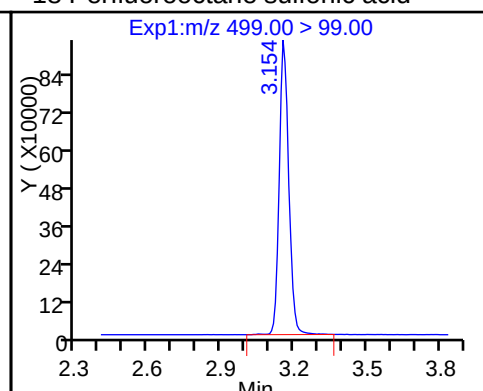
13 Perfluoroheptanesulfonic Acid



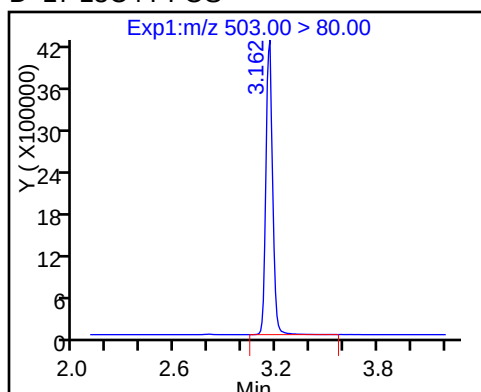
18 Perfluorooctane sulfonic acid



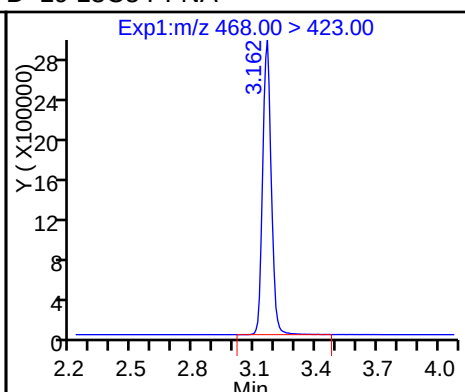
18 Perfluorooctane sulfonic acid



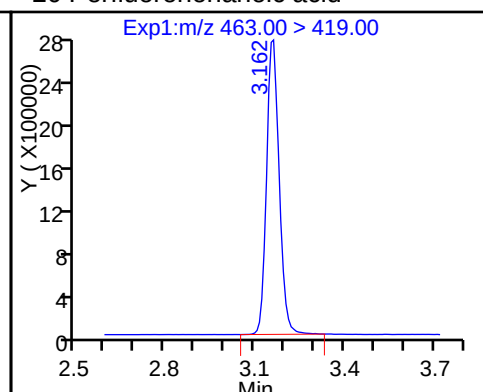
D 17 13C4 PFOS



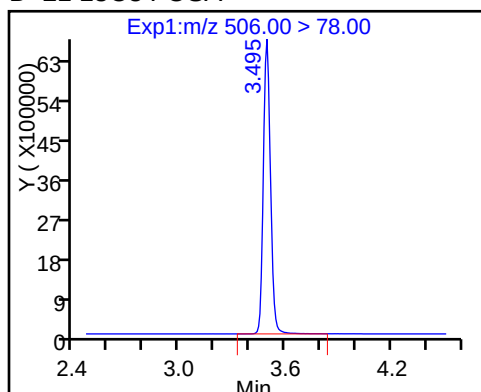
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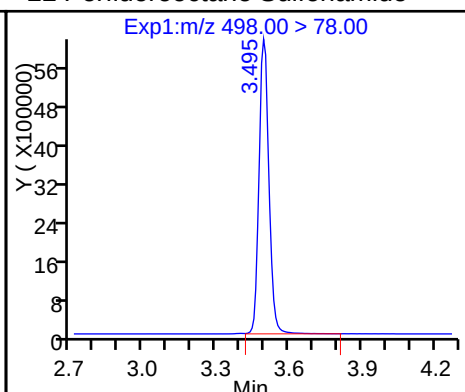
20 Perfluorononanoic acid



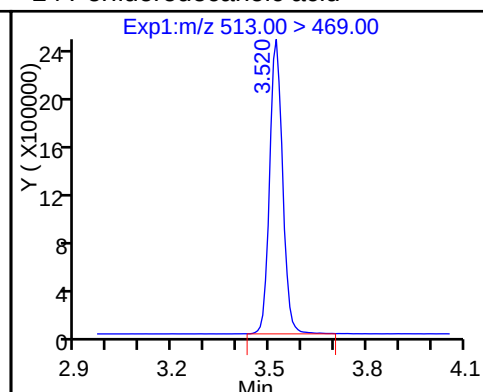
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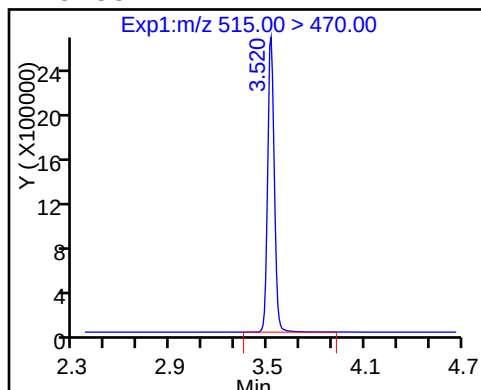
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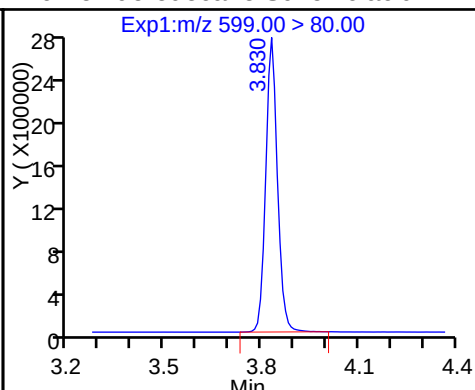
24 Perfluorodecanoic acid



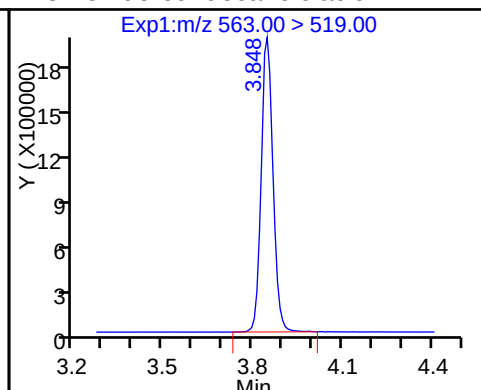
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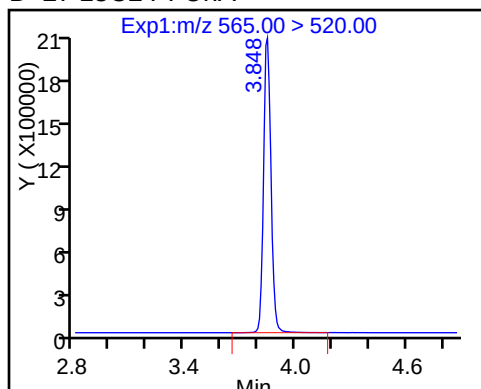
26 Perfluorodecane Sulfonic acid



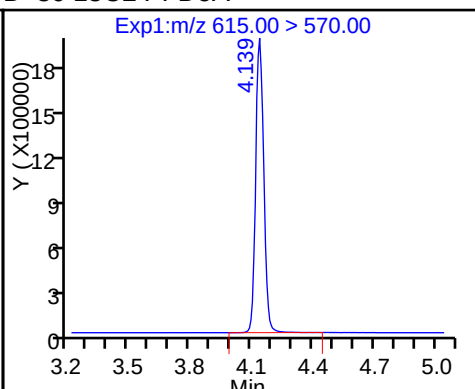
28 Perfluoroundecanoic acid



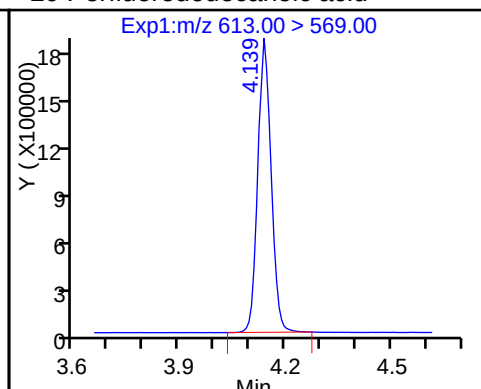
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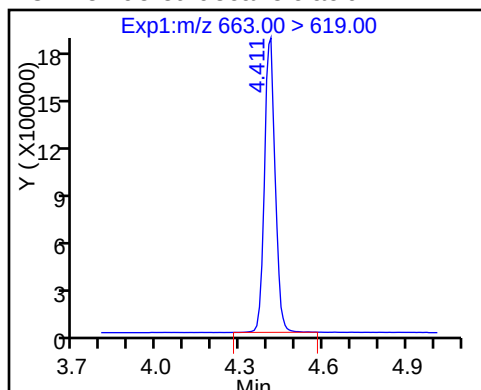
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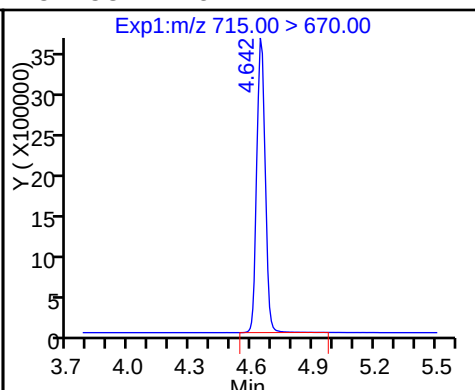
29 Perfluorododecanoic acid



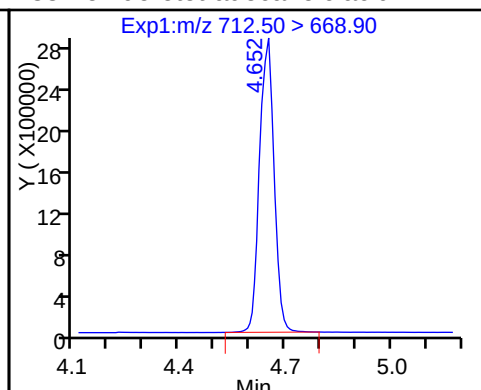
31 Perfluorotridecanoic acid



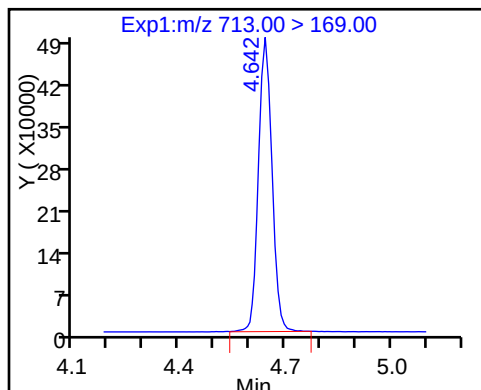
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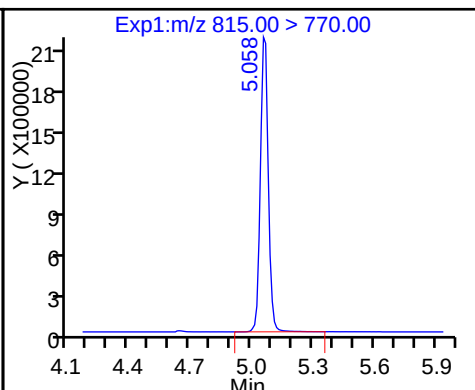
33 Perfluorotetradecanoic acid



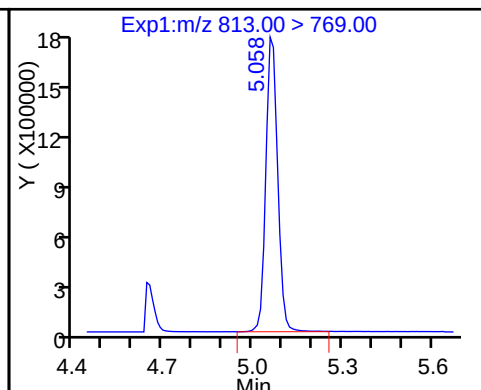
33 Perfluorotetradecanoic acid



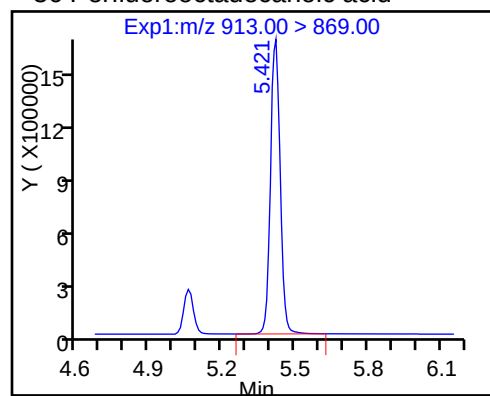
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Lab Sample ID: CCV 320-144213/5 Calibration Date: 12/28/2016 16:51

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 28DEC2016A_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.8656		1.01	1.00	1.4	50.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.001		1.01	1.00	1.4	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.456		0.908	0.884	2.7	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9272		0.998	1.00	-0.2	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	1.064		1.09	1.00	8.7	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.125		0.994	0.910	9.2	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.002		0.998	1.00	-0.2	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.048		0.906	0.952	-4.9	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9945	0.8790		0.820	0.928	-11.6	50.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9848		1.03	1.00	3.5	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9365		1.00	1.00	0.4	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9439		1.00	1.00	0.0	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.5550		0.916	0.964	-5.0	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9717		1.02	1.00	1.6	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9171		0.999	1.00	-0.1	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.8522		0.940	1.00	-6.0	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.712		1.08	1.00	8.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.417		0.884	1.00	-11.6	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.7315		0.710	1.00	-29.0	50.0
13C4 PFBA	Ave	347743	355066		51.1	50.0	2.1	50.0
13C5-PFPeA	Ave	266072	270624		50.9	50.0	1.7	50.0
13C2 PFHxA	Ave	245110	240678		49.1	50.0	-1.8	50.0
13C4-PFHpA	Ave	226344	220126		48.6	50.0	-2.7	50.0
18O2 PFHxS	Ave	326976	329704		47.7	47.3	0.8	50.0
13C4 PFOA	Ave	230362	245518		53.3	50.0	6.6	50.0
13C4 PFOS	Ave	248847	263177		50.6	47.8	5.8	50.0
13C5 PFNA	Ave	177687	180751		50.9	50.0	1.7	50.0
13C8 FOSA	Ave	384141	395895		51.5	50.0	3.1	50.0
13C2 PFDA	Ave	157302	168440		53.5	50.0	7.1	50.0
13C2 PFUnA	Ave	117250	126785		54.1	50.0	8.1	50.0
13C2 PFDoA	Ave	110957	118866		53.6	50.0	7.1	50.0
13C2-PFTeDA	Ave	227387	227697		50.1	50.0	0.1	50.0
13C2-PFHxDA	Ave	124568	120137		48.2	50.0	-3.6	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38280.b\28DEC2016A_005.d
 Lims ID: CCV L2
 Client ID:
 Sample Type: CCVL
 Inject. Date: 28-Dec-2016 16:51:42 ALS Bottle#: 38 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L2
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub5
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38280.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Dec-2016 08:18:58 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK027

First Level Reviewer: phomsophat

Date: 29-Dec-2016 08:08:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 2 13C4 PFBA

217.00 > 172.00 1.542 1.542 0.0 17753284 51.1 102 833839

1 Perfluorobutyric acid

212.90 > 169.00 1.550 1.542 0.008 1.000 307354 1.01 101 2672

D 4 13C5-PFPeA

267.90 > 223.00 1.829 1.820 0.009 13531215 50.9 102 1085895

3 Perfluoropentanoic acid

262.90 > 219.00 1.829 1.820 0.009 1.000 270830 1.01 101 2562

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.868 1.858 0.010 1.000 424261 0.9081 103

298.90 > 99.00 1.868 1.858 0.010 1.000 178637 2.37(0.00-0.00)

D 6 13C2 PFHxA

315.00 > 270.00 2.127 2.119 0.008 12033921 49.1 98.2 683858

7 Perfluorohexanoic acid

313.00 > 269.00 2.127 2.119 0.008 1.000 223163 1.00 99.8 8261

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.488 2.388 0.100 1.000 337485 0.99 109

D 11 13C4-PFHpA

367.00 > 322.00 2.465 2.456 0.009 11006279 48.6 97.3 1075770

12 Perfluoroheptanoic acid

363.00 > 319.00 2.465 2.456 0.009 1.000 234263 1.09 109 2097

D 10 18O2 PFHxS

403.00 > 84.00 2.481 2.471 0.010 15594977 47.7 101 1959657

D 14 13C4 PFOA

417.00 > 372.00 2.828 2.817 0.011 12275919 53.3 107 932197

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.828	2.817	0.011	1.000	245886	1.00		99.8	2401	
413.00 > 169.00	2.828	2.817	0.011	1.000	156155		1.57(0.90-1.10)		12227	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.836	2.817	0.019	1.000	262642	0.9057		95.1		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.206	3.079	0.127	1.000	214680	0.8203		88.4	12042	M
499.00 > 99.00	3.206	3.079	0.127	1.000	51818		4.14(0.90-1.10)		2851	M
D 17 13C4 PFOS										
503.00 > 80.00	3.206	3.185	0.021		12579869	50.6		106	336319	
20 Perfluorononanoic acid										
463.00 > 419.00	3.214	3.194	0.020	1.000	177998	1.03		103	3453	
D 19 13C5 PFNA										
468.00 > 423.00	3.206	3.194	0.012		9037543	50.9		102	752908	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.504	3.492	0.012	1.000	370736	1.00		100	35031	
D 21 13C8 FOSA										
506.00 > 78.00	3.504	3.492	0.012		19794760	51.5		103	663074	
D 23 13C2 PFDA										
515.00 > 470.00	3.571	3.551	0.020		8422000	53.5		107	302155	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.571	3.551	0.020	1.000	158994	1.00		100	5153	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.885	3.864	0.021	1.000	140805	0.9162		95.0		
D 27 13C2 PFUnA										
565.00 > 520.00	3.902	3.881	0.021		6339241	54.1		108	377702	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.902	3.890	0.012	1.000	123194	1.02		102	2930	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.199	4.182	0.017	1.000	109006	1.00		99.9	2470	
D 30 13C2 PFDaA										
615.00 > 570.00	4.199	4.182	0.017		5943315	53.6		107	136723	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.474	4.455	0.019	1.000	101293	0.9397		94.0	1670	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.718	4.688	0.030		11384865	50.1		100	1071639	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.718	4.705	0.013	1.000	203447	1.08		108	163	
713.00 > 169.00	4.709	4.705	0.004	0.998	33649		6.05(0.00-0.00)		6782	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.142	5.123	0.020		6006834	48.2		96.4	82597	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.142	5.123	0.020	1.000	168382	0.8841		88.4	139	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.522	5.492	0.030	1.000	86951	0.7100		71.0	97.5	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L2_00023

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38280.b\28DEC2016A_005.d

Injection Date: 28-Dec-2016 16:51:42

Instrument ID: A8_N

Lims ID: CCV L2

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 38

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

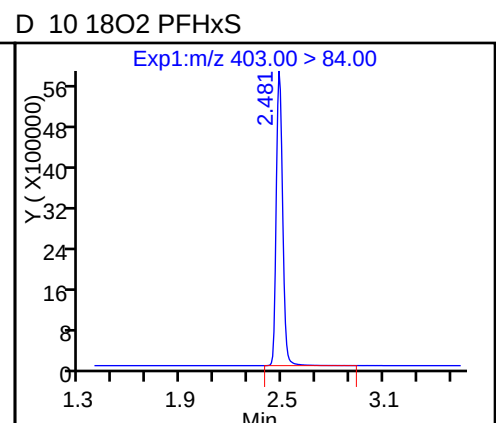
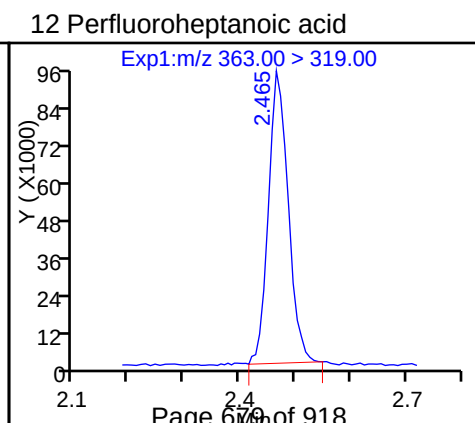
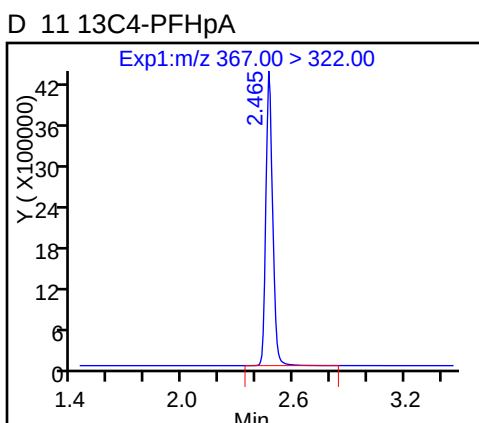
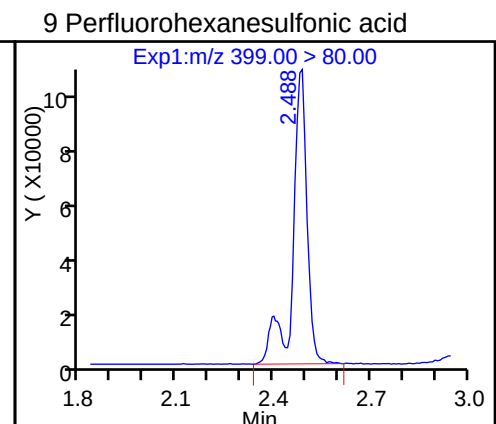
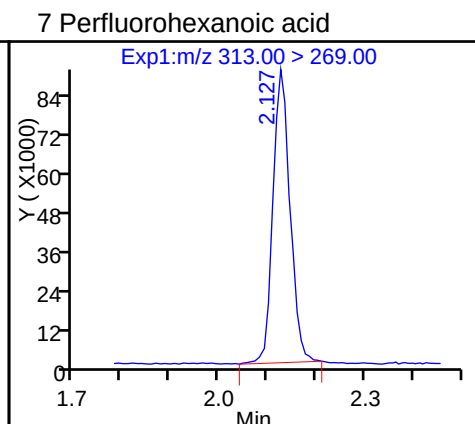
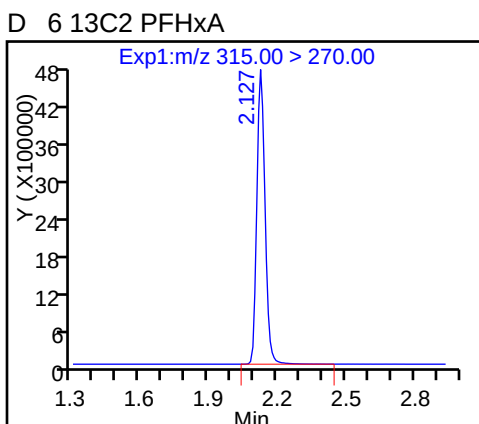
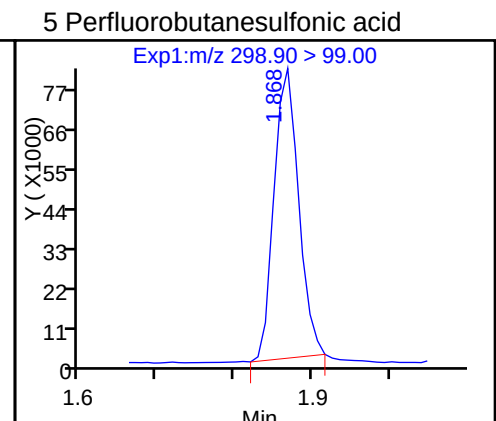
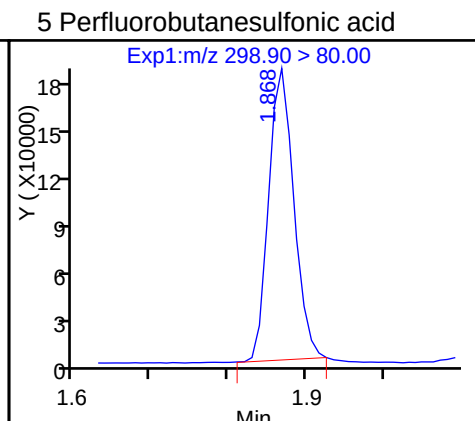
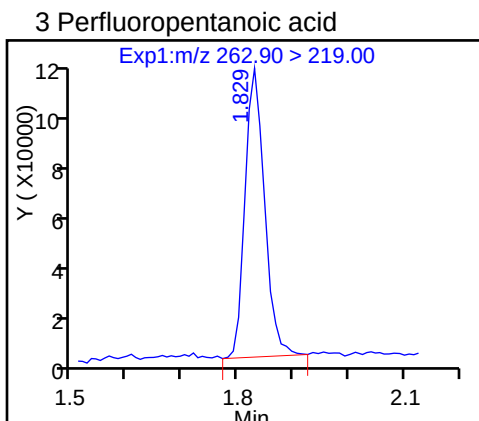
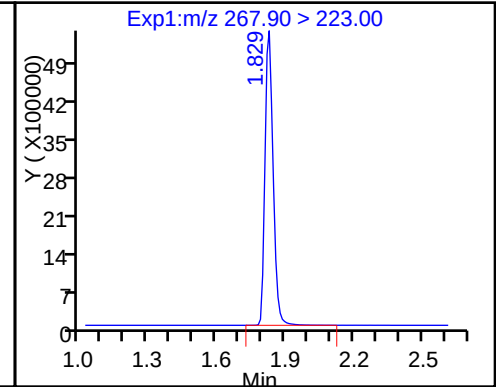
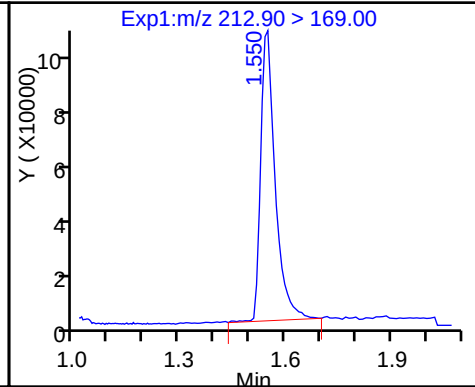
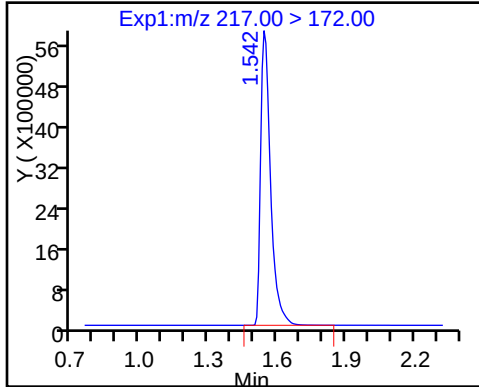
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Limit Group: LC PFC_DOD ICAL

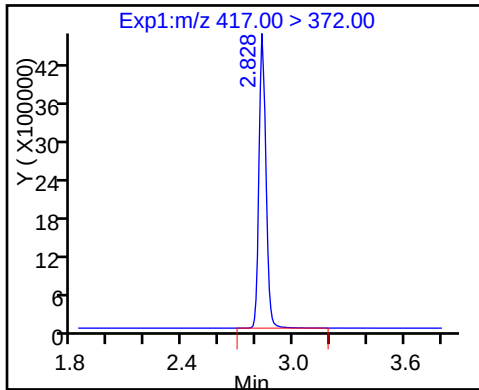
D 2 13C4 PFBA

1 Perfluorobutyric acid

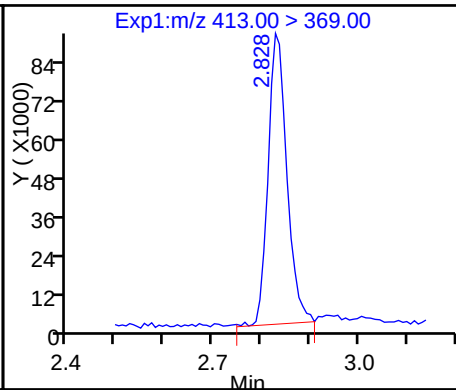
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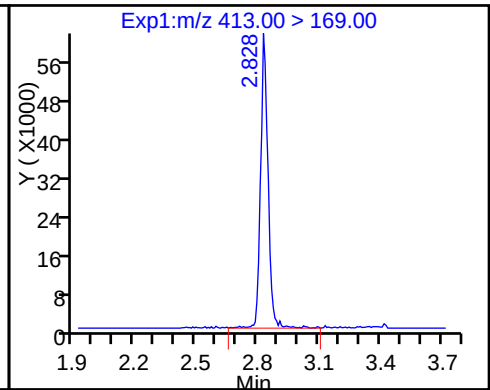
D 14 13C4 PFOA



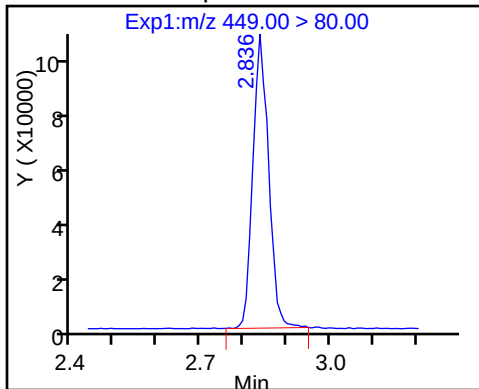
15 Perfluorooctanoic acid



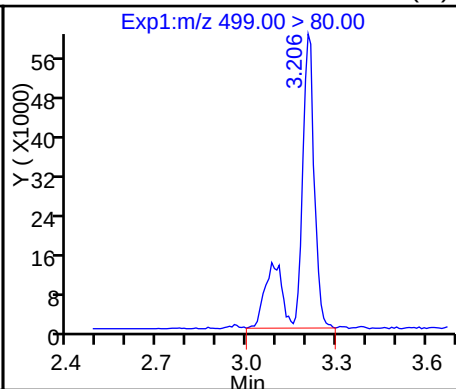
15 Perfluorooctanoic acid



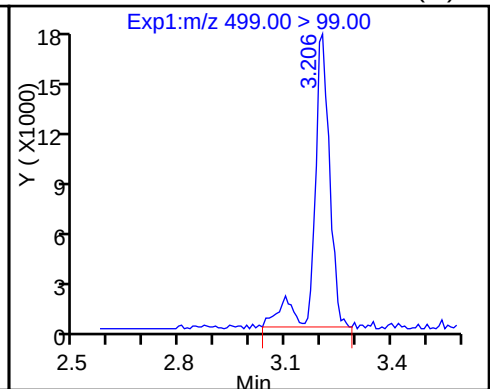
13 Perfluoroheptanesulfonic Acid



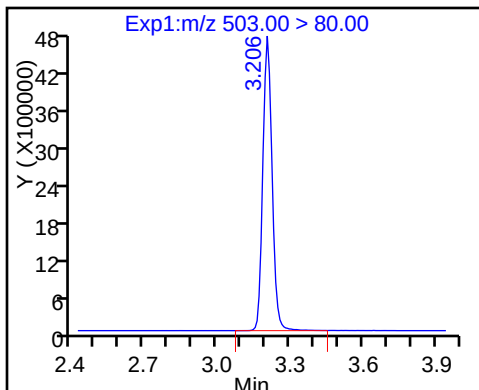
18 Perfluorooctane sulfonic acid (M)



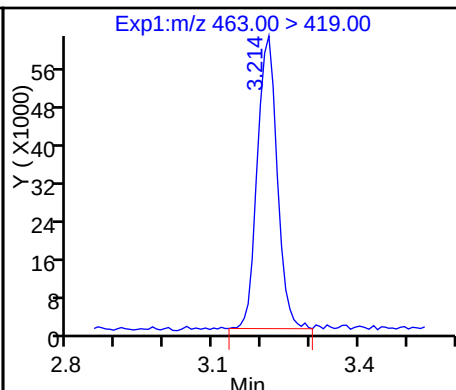
18 Perfluorooctane sulfonic acid (M)



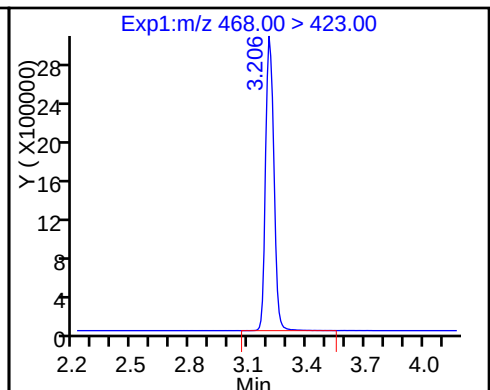
D 17 13C4 PFOS



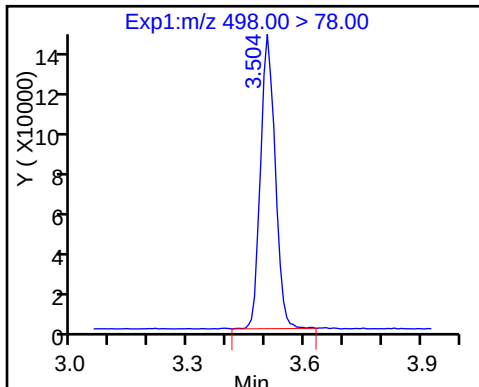
20 Perfluorononanoic acid



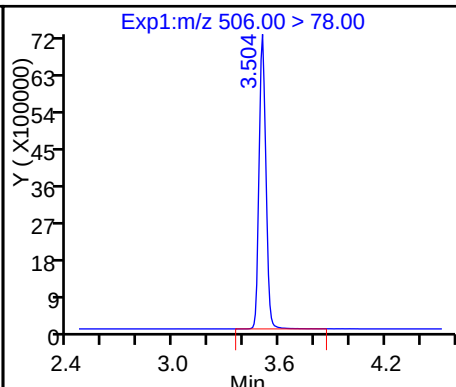
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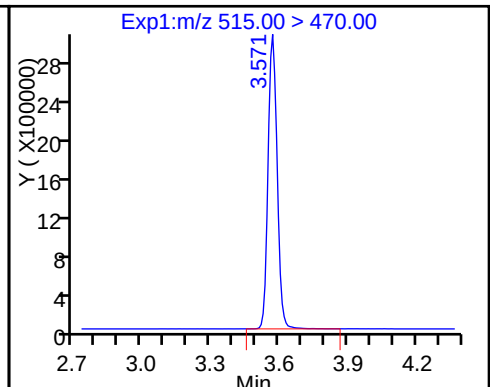
22 Perfluorooctane Sulfonamide



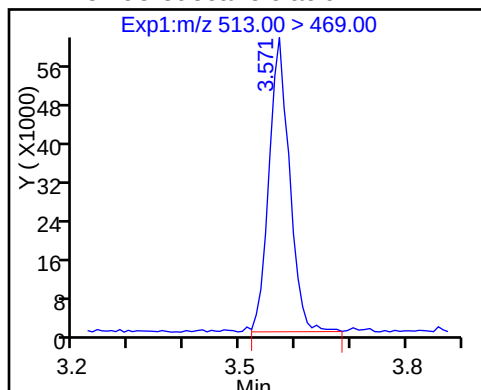
D 21 13C8 FOSA



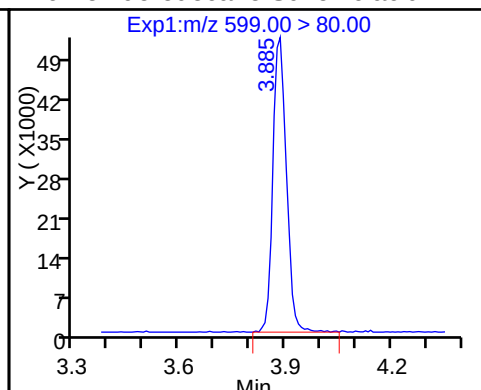
D 23 13C2 PFDA



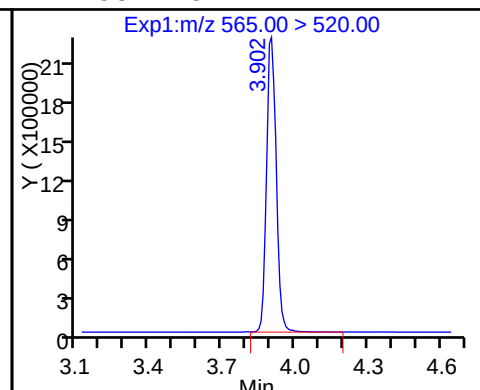
24 Perfluorodecanoic acid



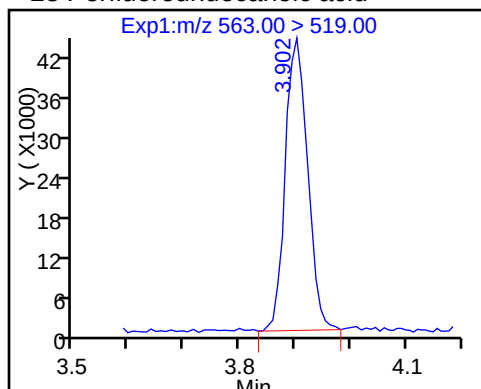
26 Perfluorodecane Sulfonic acid



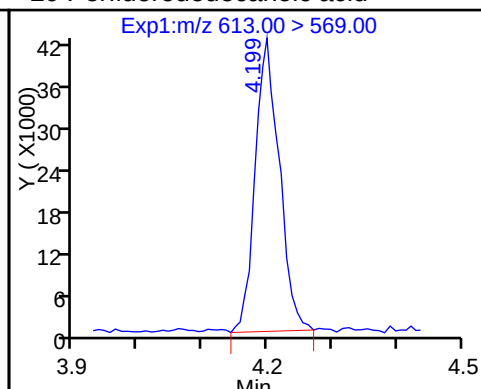
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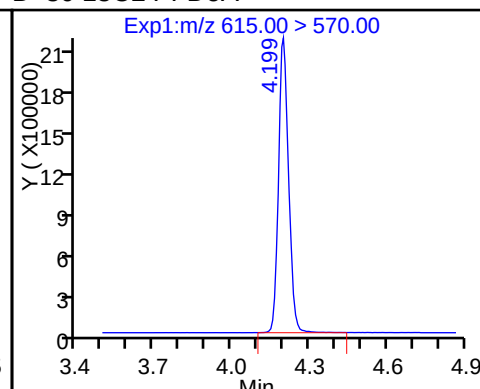
28 Perfluoroundecanoic acid



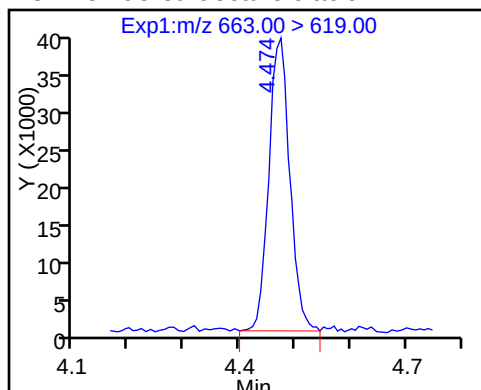
29 Perfluorododecanoic acid



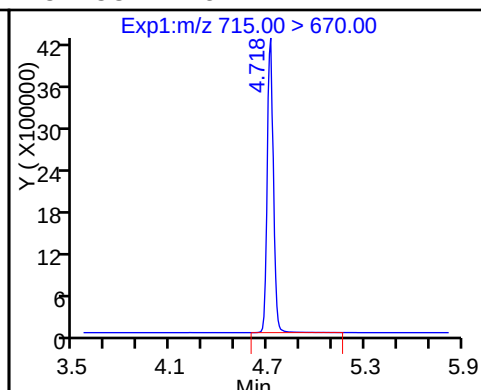
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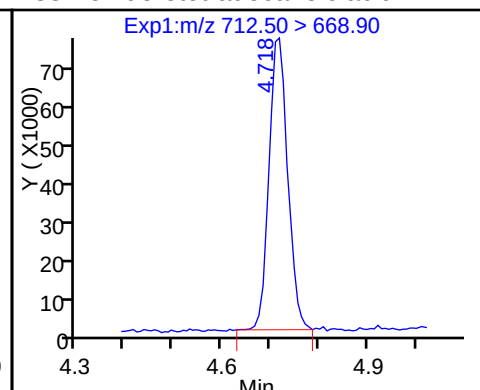
31 Perfluorotridecanoic acid



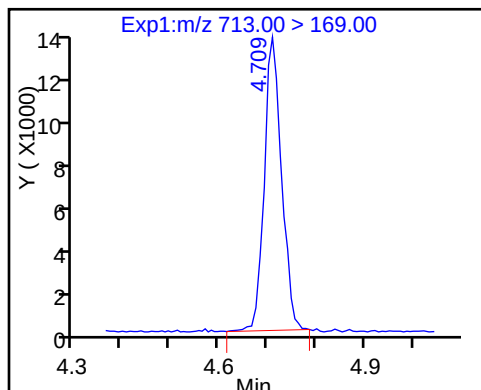
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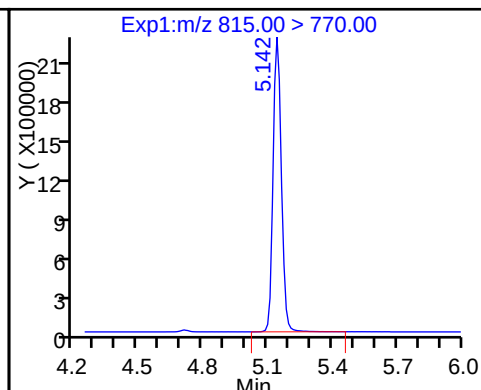
33 Perfluorotetradecanoic acid



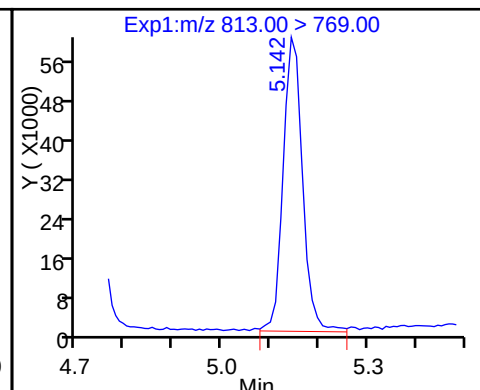
33 Perfluorotetradecanoic acid



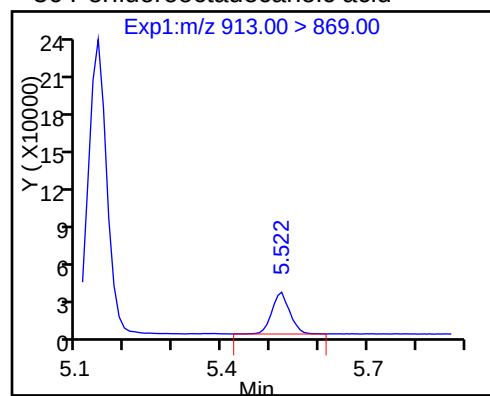
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

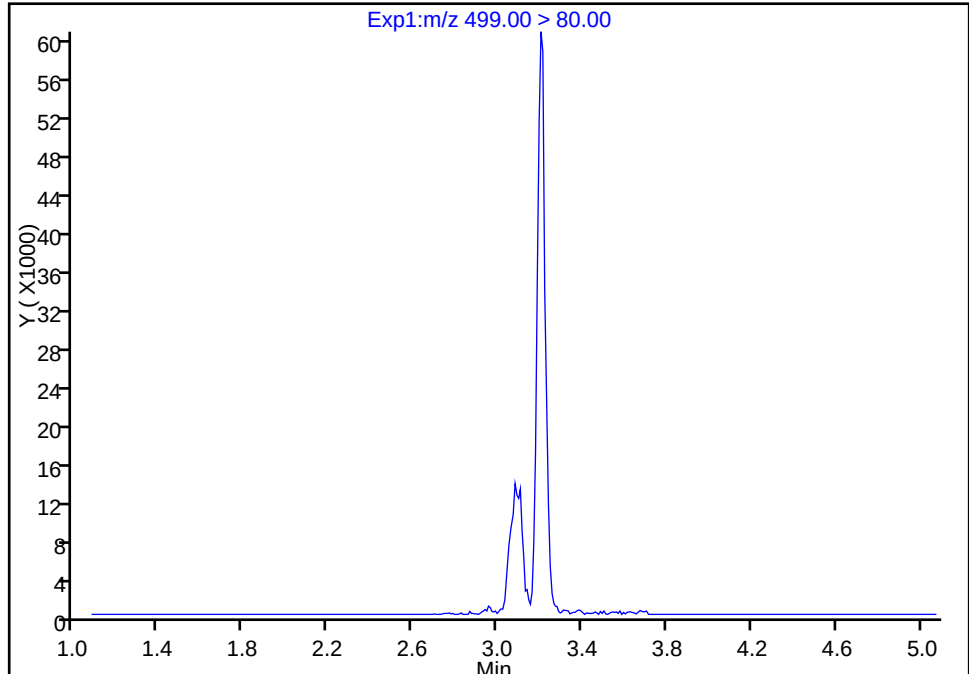
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Injection Date: 28-Dec-2016 16:51:42 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

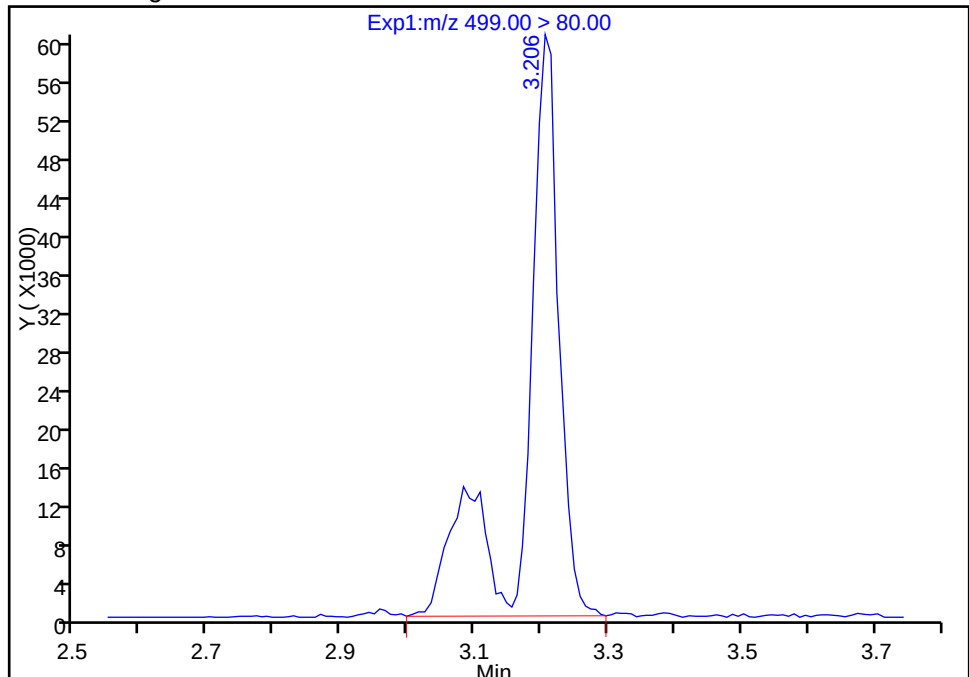
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Expected RT: 3.08

Processing Integration Results



RT: 3.21
Area: 214680
Amount: 0.820274
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 29-Dec-2016 08:10:27

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

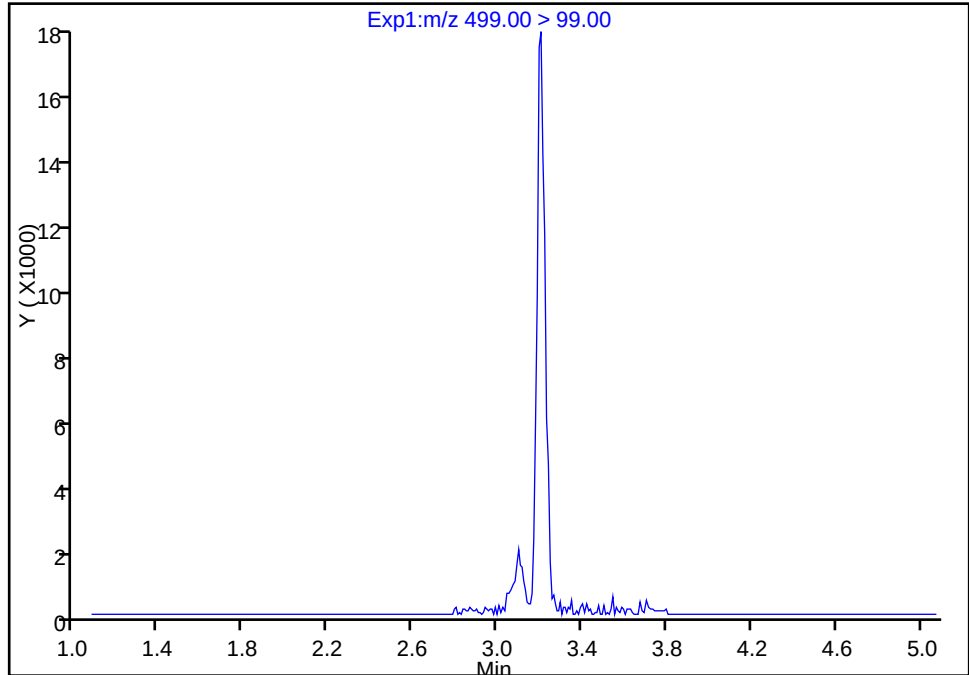
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Lims ID: CCV L2
Client ID:
Operator ID: A8-PCVA8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

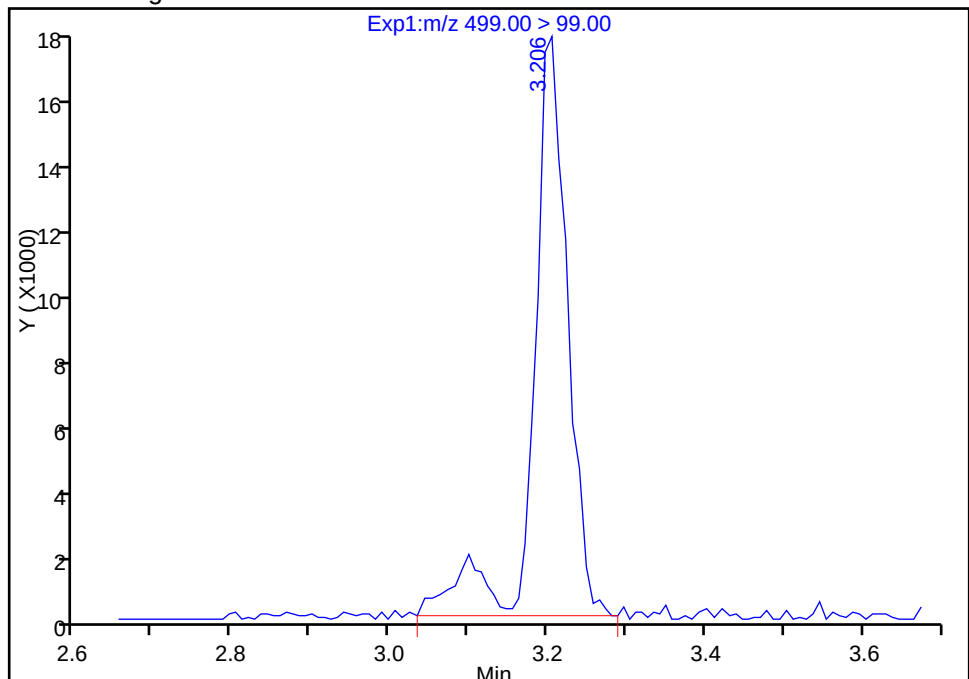
Not Detected
Expected RT: 3.08

Processing Integration Results



RT: 3.21
Area: 51818
Amount: 0.820274
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 29-Dec-2016 08:10:27

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Lab Sample ID: CCV 320-144253/1 Calibration Date: 12/28/2016 23:51

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 28DEC2016C_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9184		53.8	50.0	7.6	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.004		50.9	50.0	1.8	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.571		49.0	44.2	10.9	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9262		49.9	50.0	-0.3	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.039		45.9	45.5	0.9	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9668		49.4	50.0	-1.2	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.014		50.5	50.0	1.1	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.159		50.1	47.6	5.2	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9945	1.020		47.6	46.4	2.5	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9429		49.5	50.0	-0.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9367		50.2	50.0	0.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9134		48.4	50.0	-3.2	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6145		50.7	48.2	5.2	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9734		50.9	50.0	1.8	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9555		52.0	50.0	4.1	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9470		52.2	50.0	4.4	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.767		55.7	50.0	11.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9675		50.1	50.0	0.1	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.9509		46.1	50.0	-7.7	25.0
13C4 PFBA	Ave	347743	332486		47.8	50.0	-4.4	50.0
13C5-PFPeA	Ave	266072	256668		48.2	50.0	-3.5	50.0
13C2 PFHxA	Ave	245110	233864		47.7	50.0	-4.6	50.0
13C4-PFHpA	Ave	226344	205873		45.5	50.0	-9.0	50.0
18O2 PFHxS	Ave	326976	311153		45.0	47.3	-4.8	50.0
13C4 PFOA	Ave	230362	203726		44.2	50.0	-11.6	50.0
13C4 PFOS	Ave	248847	241553		46.4	47.8	-2.9	50.0
13C5 PFNA	Ave	177687	158038		44.5	50.0	-11.1	50.0
13C8 FOSA	Ave	384141	368886		48.0	50.0	-4.0	50.0
13C2 PFDA	Ave	157302	145119		46.1	50.0	-7.7	50.0
13C2 PFUnA	Ave	117250	102694		43.8	50.0	-12.4	50.0
13C2 PFDoA	Ave	110957	94764		42.7	50.0	-14.6	50.0
13C2-PFTeDA	Ave	227387	193811		42.6	50.0	-14.8	50.0
13C2-PFHxDA	Ave	124568	104139		41.8	50.0	-16.4	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_001.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 28-Dec-2016 23:51:58 ALS Bottle#: 41 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub5
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Dec-2016 17:01:08 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK027

First Level Reviewer: phomsophat

Date: 29-Dec-2016 17:01:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.534	1.534	0.0		16624320	47.8		95.6	925377	
1 Perfluorobutyric acid										
212.90 > 169.00	1.534	1.534	0.0	1.000	15266981	53.8		108	110446	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.810	0.0		12833423	48.2		96.5	1316019	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.810	0.0	1.000	12888689	50.9		102	177404	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.849	1.849	0.0	1.000	21604204	49.0		111		
298.90 > 99.00	1.849	1.849	0.0	1.000	10146627		2.13(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.097	2.097	0.0		11693176	47.7		95.4	619154	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.097	2.097	0.0	1.000	10830616	49.9		99.7	231755	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.422	2.422	0.0	1.000	14709912	45.9		101		
D 11 13C4-PFHpA										
367.00 > 322.00	2.429	2.429	0.0		10293642	45.5		91.0	624414	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.429	2.429	0.0	1.000	9952085	49.4		98.8	82047	
D 10 18O2 PFHxS										
403.00 > 84.00	2.452	2.452	0.0		14717535	45.0		95.2	2635796	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.790	2.790	0.0	1.000	10327177	50.5		101	125041	
413.00 > 169.00	2.790	2.790	0.0	1.000	6394459		1.62(0.90-1.10)		334298	
D 14 13C4 PFOA										
417.00 > 372.00	2.790	2.790	0.0		10186279	44.2		88.4	494871	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid	449.00 > 80.00	2.798	2.798	0.0	1.000	13327794	50.1	105		
18 Perfluorooctane sulfonic acid	499.00 > 80.00	3.134	3.134	0.0	1.000	11428139	47.6	103	102690	
	499.00 > 99.00	3.126	3.134	-0.008	0.997	2551692	4.48(0.90-1.10)		25550	
D 17 13C4 PFOS	503.00 > 80.00	3.158	3.158	0.0		11546223	46.4	97.1	228118	
20 Perfluorononanoic acid	463.00 > 419.00	3.158	3.158	0.0	1.000	7450382	49.5	99.1	133158	
D 19 13C5 PFNA	468.00 > 423.00	3.166	3.166	0.0		7901917	44.5	88.9	333521	
D 21 13C8 FOSA	506.00 > 78.00	3.481	3.481	0.0		18444294	48.0	96.0	492872	
22 Perfluorooctane Sulfonamide	498.00 > 78.00	3.481	3.481	0.0	1.000	17276703	50.2	100	384812	
24 Perfluorodecanoic acid	513.00 > 469.00	3.523	3.523	0.0	1.000	6627751	48.4	96.8	219166	
D 23 13C2 PFDA	515.00 > 470.00	3.523	3.523	0.0		7255928	46.1	92.3	267881	
26 Perfluorodecane Sulfonic acid	599.00 > 80.00	3.834	3.834	0.0	1.000	7154348	50.7	105		
D 27 13C2 PFUnA	565.00 > 520.00	3.851	3.851	0.0		5134724	43.8	87.6	381125	
28 Perfluoroundecanoic acid	563.00 > 519.00	3.851	3.851	0.0	1.000	4997905	50.9	102	127088	
D 30 13C2 PFDaA	615.00 > 570.00	4.134	4.134	0.0		4738189	42.7	85.4	135575	
29 Perfluorododecanoic acid	613.00 > 569.00	4.141	4.141	0.0	1.000	4527542	52.0	104	111125	
31 Perfluorotridecanoic acid	663.00 > 619.00	4.404	4.404	0.0	1.000	4486883	52.2	104	95678	
D 32 13C2-PFTeDA	715.00 > 670.00	4.652	4.652	0.0		9690572	42.6	85.2	825947	
33 Perfluorotetradecanoic acid	712.50 > 668.90	4.652	4.652	0.0	1.000	8371714	55.7	111	135933	
	713.00 > 169.00	4.643	4.652	-0.009	0.998	1282949	6.53(0.00-0.00)		116932	
D 34 13C2-PFHxDA	815.00 > 770.00	5.069	5.069	0.0		5206932	41.8	83.6	88741	
35 Perfluorohexadecanoic acid	813.00 > 769.00	5.069	5.069	0.0	1.000	4584090	50.1	100	4999	
36 Perfluorooctadecanoic acid	913.00 > 869.00	5.421	5.421	0.0	1.000	4505672	46.1	92.3	5951	

Reagents:

LCPFC-L5_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_001.d

Injection Date: 28-Dec-2016 23:51:58

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#:

41

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

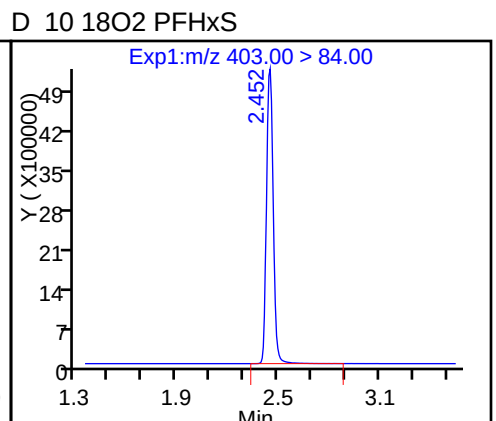
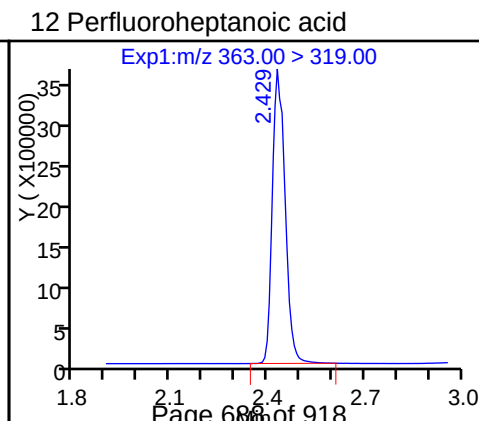
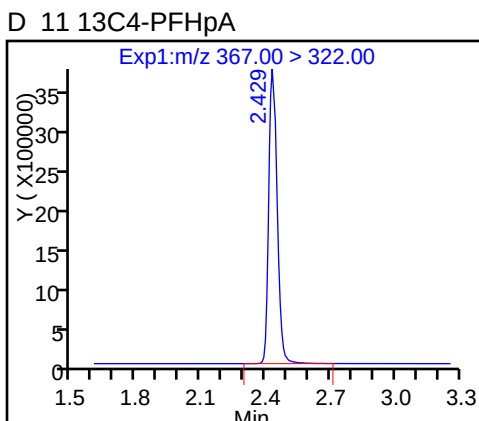
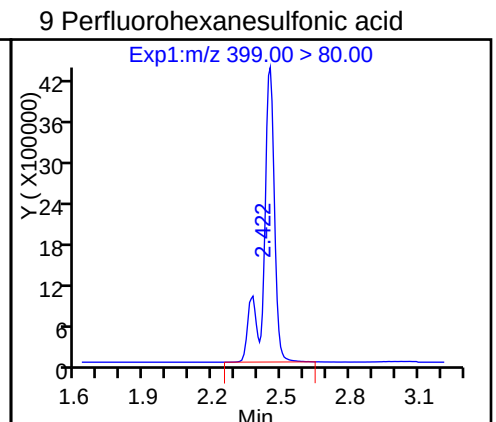
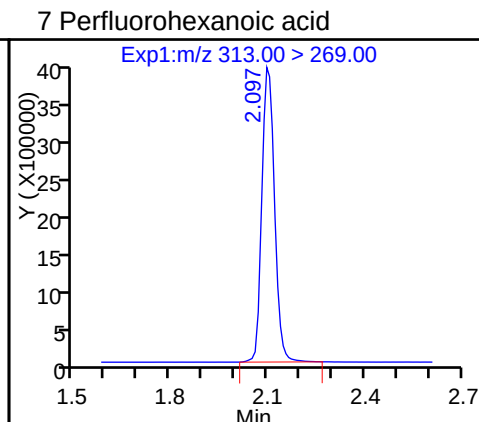
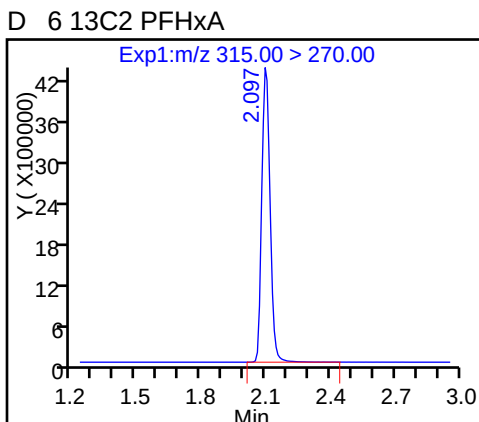
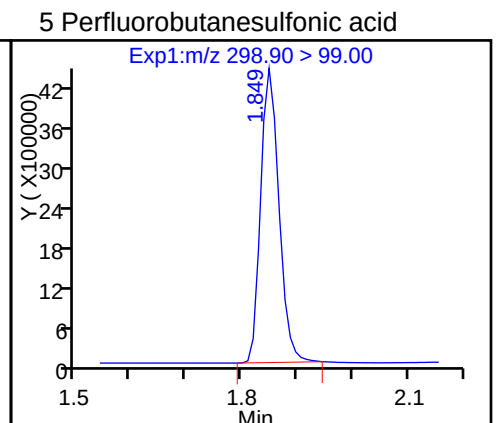
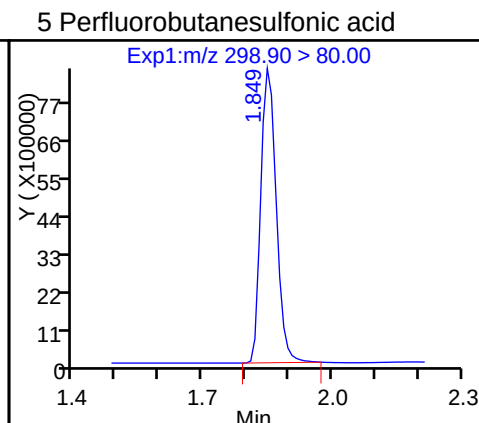
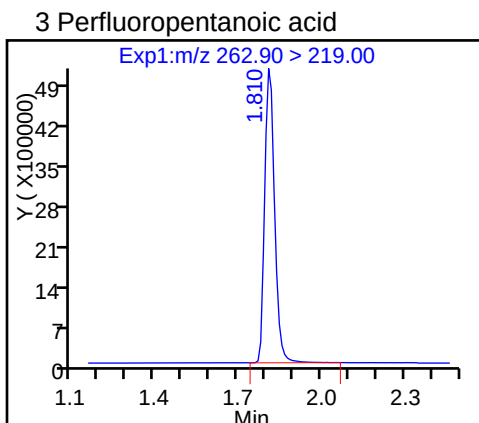
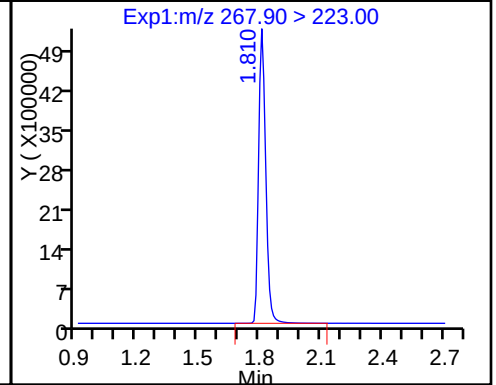
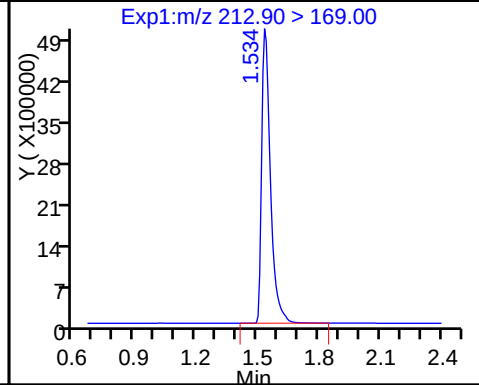
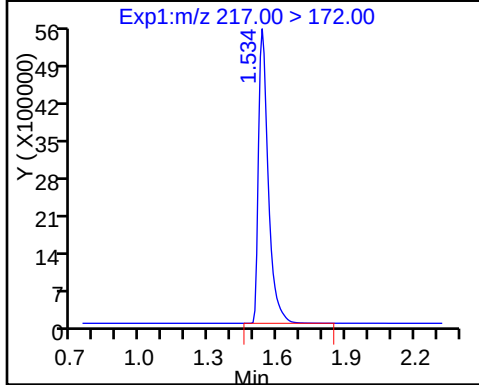
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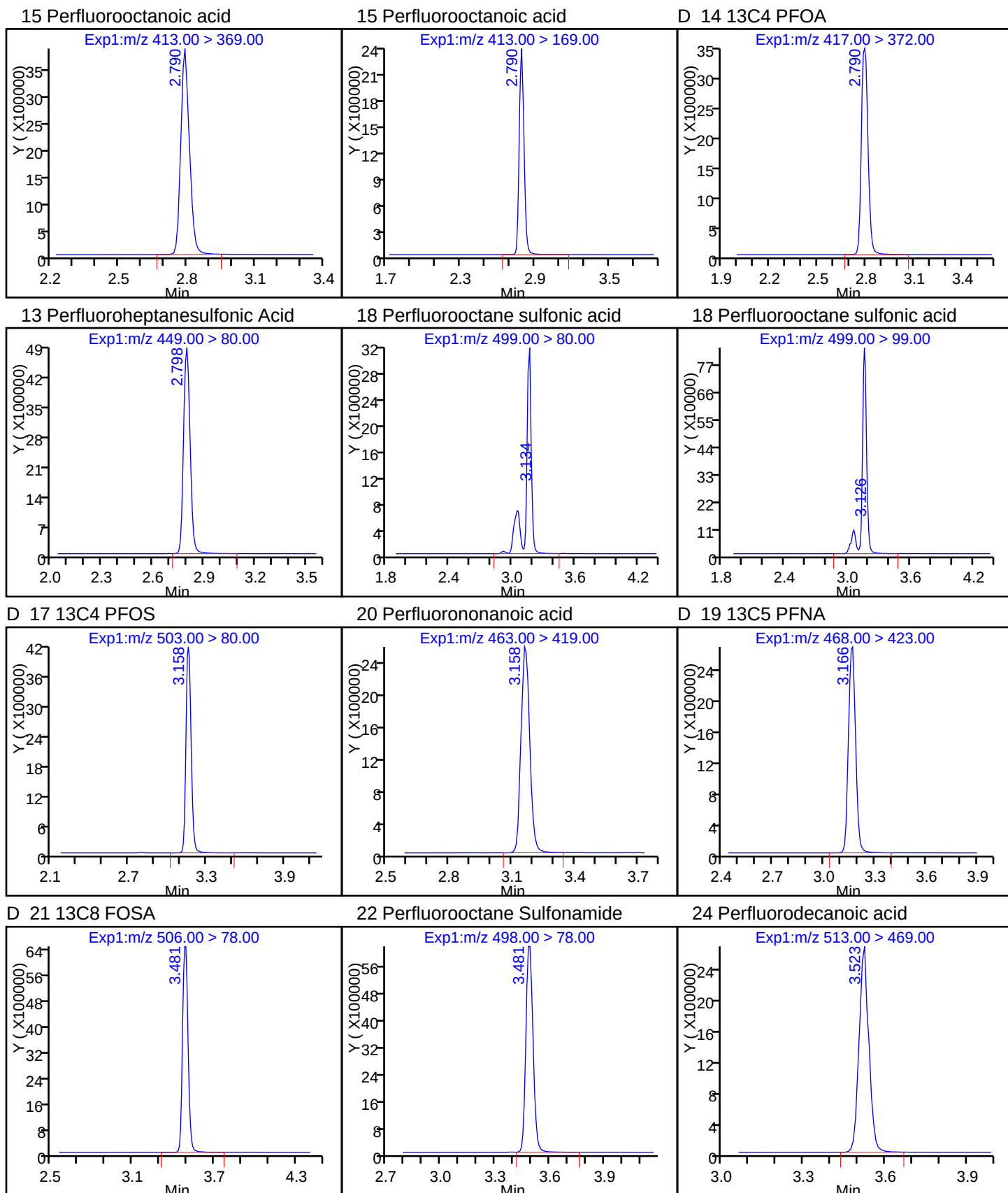
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

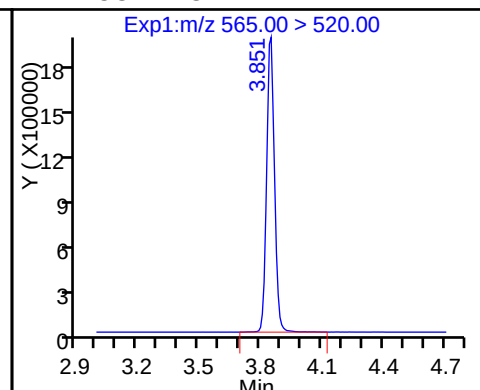
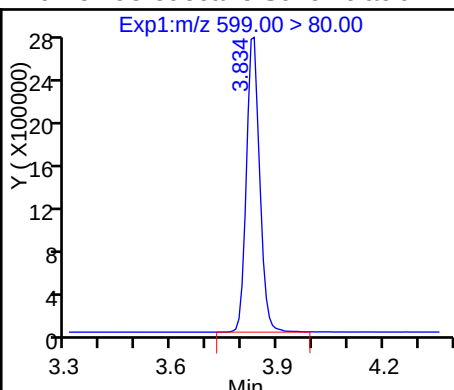
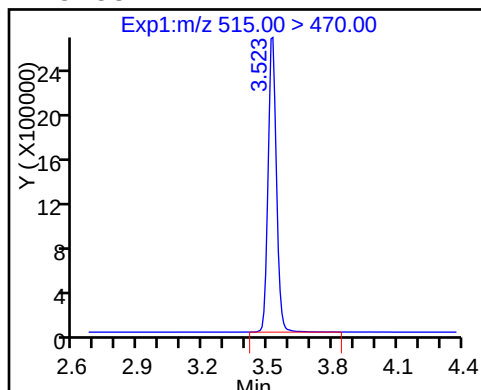




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

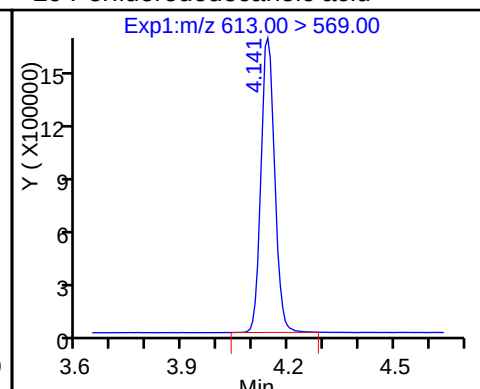
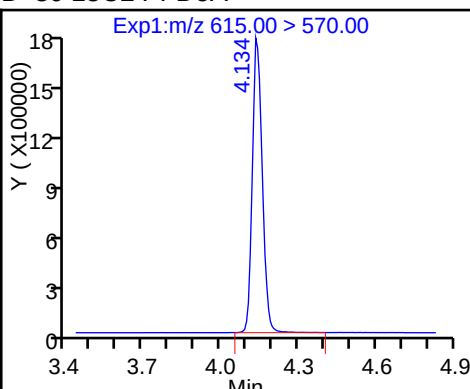
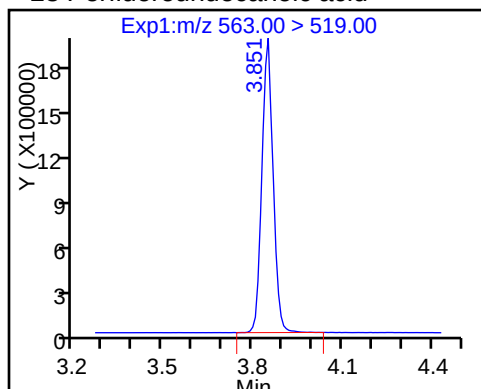
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

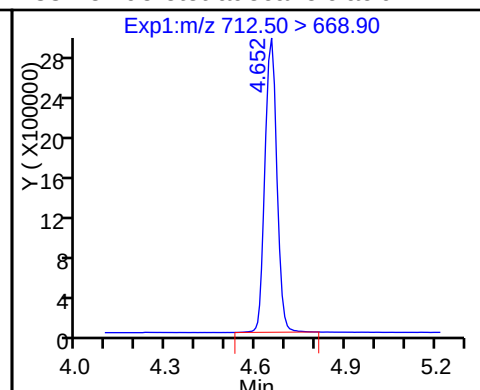
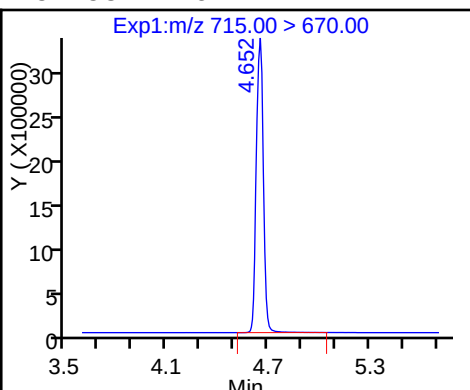
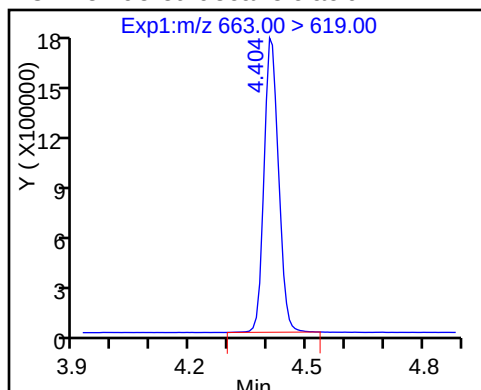
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

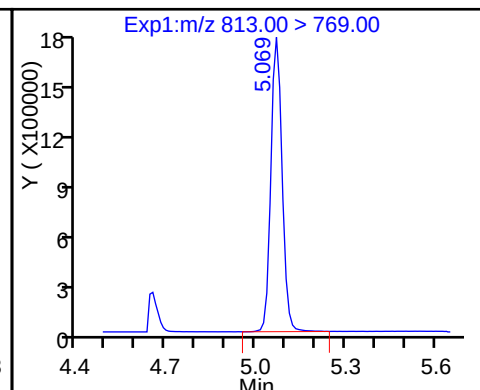
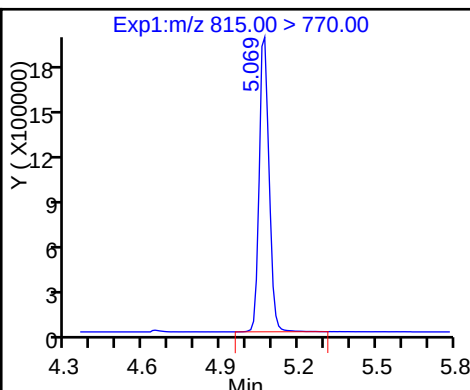
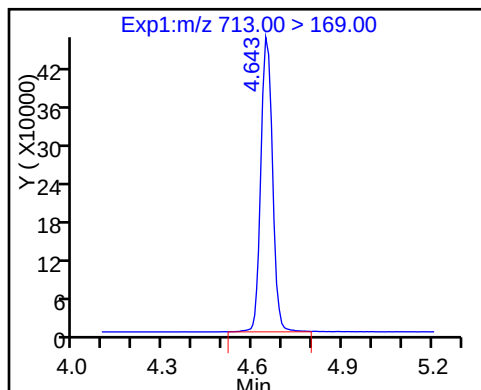
33 Perfluorotetradecanoic acid



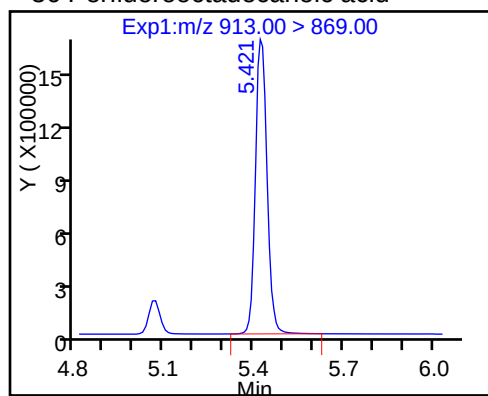
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Lab Sample ID: CCV 320-144253/13 Calibration Date: 12/29/2016 01:22

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 28DEC2016C_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9514		22.3	20.0	11.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.068		21.6	20.0	8.2	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.668		20.8	17.7	17.7	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9850		21.2	20.0	6.1	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.124		19.9	18.2	9.1	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	1.016		20.8	20.0	3.8	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.272		22.0	19.0	15.4	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.090		21.7	20.0	8.6	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9945	1.254		23.4	18.6	26.1*	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9750		20.5	20.0	2.4	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9669		20.7	20.0	3.7	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9733		20.6	20.0	3.1	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6138		20.3	19.3	5.1	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9948		20.8	20.0	4.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9697		21.1	20.0	5.6	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9223		20.3	20.0	1.7	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.902		24.0	20.0	20.0	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.009		20.5	20.0	2.7	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.9673		18.8	20.0	-6.1	25.0
13C4 PFBA	Ave	347743	342518		49.2	50.0	-1.5	50.0
13C5-PFPeA	Ave	266072	262744		49.4	50.0	-1.3	50.0
13C2 PFHxA	Ave	245110	238568		48.7	50.0	-2.7	50.0
13C4-PFHpA	Ave	226344	211766		46.8	50.0	-6.4	50.0
18O2 PFHxS	Ave	326976	335196		48.5	47.3	2.5	50.0
13C4 PFOA	Ave	230362	214043		46.5	50.0	-7.1	50.0
13C4 PFOS	Ave	248847	245728		47.2	47.8	-1.3	50.0
13C5 PFNA	Ave	177687	162840		45.8	50.0	-8.4	50.0
13C8 FOSA	Ave	384141	381422		49.6	50.0	-0.7	50.0
13C2 PFDA	Ave	157302	144495		45.9	50.0	-8.1	50.0
13C2 PFUnA	Ave	117250	107091		45.7	50.0	-8.7	50.0
13C2 PFDoA	Ave	110957	97562		44.0	50.0	-12.1	50.0
13C2-PFTeDA	Ave	227387	208904		45.9	50.0	-8.1	50.0
13C2-PFHxDA	Ave	124568	110672		44.4	50.0	-11.2	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_013.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 29-Dec-2016 01:22:01 ALS Bottle#: 40 Worklist Smp#: 13
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub5
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Dec-2016 17:46:41 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK027

First Level Reviewer: phomsophat

Date: 29-Dec-2016 17:46:41

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 2 13C4 PFBA

217.00 > 172.00 1.525 1.525 0.0 17125907 49.2 98.5 1448463

1 Perfluorobutyric acid

212.90 > 169.00 1.525 1.525 0.0 1.000 6517453 22.3 111 41917

D 4 13C5-PFPeA

267.90 > 223.00 1.800 1.800 0.0 13137184 49.4 98.7 1037768

3 Perfluoropentanoic acid

262.90 > 219.00 1.800 1.800 0.0 1.000 5610971 21.6 108 57269

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.839 1.839 0.0 1.000 9886492 20.8 118

298.90 > 99.00 1.839 1.839 0.0 1.000 4160873 2.38(0.00-0.00)

D 6 13C2 PFHxA

315.00 > 270.00 2.091 2.091 0.0 11928405 48.7 97.3 722281

7 Perfluorohexanoic acid

313.00 > 269.00 2.091 2.091 0.0 1.000 4699929 21.2 106 50077

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.409 2.409 0.0 1.000 6855996 19.9 109

D 11 13C4-PFHpA

367.00 > 322.00 2.420 2.420 0.0 10588317 46.8 93.6 426500

12 Perfluoroheptanoic acid

363.00 > 319.00 2.420 2.420 0.0 1.000 4303153 20.8 104 35744

D 10 18O2 PFHxS

403.00 > 84.00 2.440 2.440 0.0 15854752 48.5 103 1155901

D 14 13C4 PFOA

417.00 > 372.00 2.776 2.776 0.0 10702171 46.5 92.9 543495

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.783	2.783	0.0	1.000	4665690	21.7		109	40841	
413.00 > 169.00	2.783	2.783	0.0	1.000	2835945		1.65(0.90-1.10)		87156	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.783	2.783	0.0	1.000	5949735	22.0		115		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.040	3.040	0.0	1.000	5718911	23.4		126	22893	
499.00 > 99.00	3.153	3.040	0.113	1.037	1268366		4.51(0.90-1.10)		31102	
D 17 13C4 PFOS										
503.00 > 80.00	3.145	3.145	0.0		11745822	47.2		98.7	426441	
20 Perfluorononanoic acid										
463.00 > 419.00	3.153	3.153	0.0	1.000	3175364	20.5		102	69260	
D 19 13C5 PFNA										
468.00 > 423.00	3.153	3.153	0.0		8141980	45.8		91.6	371980	
D 21 13C8 FOSA										
506.00 > 78.00	3.475	3.475	0.0		19071099	49.6		99.3	1404916	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.475	3.475	0.0	1.000	7376087	20.7		104	209667	
D 23 13C2 PFDA										
515.00 > 470.00	3.509	3.509	0.0		7224747	45.9		91.9	167612	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.509	3.509	0.0	1.000	2812790	20.6		103	79992	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.825	3.825	0.0	1.000	2907866	20.3		105		
D 27 13C2 PFUnA										
565.00 > 520.00	3.834	3.834	0.0		5354567	45.7		91.3	281959	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.834	3.834	0.0	1.000	2130686	20.8		104	39405	
D 30 13C2 PFDaA										
615.00 > 570.00	4.126	4.126	0.0		4878096	44.0		87.9	160960	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.133	4.133	0.0	1.000	1892015	21.1		106	44644	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.404	4.404	0.0	1.000	1799712	20.3		102	45896	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.644	4.644	0.0		10445200	45.9		91.9	888356	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.644	4.644	0.0	1.000	3710429	24.0		120	48436	
713.00 > 169.00	4.634	4.644	-0.010	0.998	564729		6.57(0.00-0.00)		72644	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.058	5.058	0.0		5533616	44.4		88.8	97966	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.058	5.058	0.0	1.000	1968416	20.5		103	2410	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.414	5.414	0.0	1.000	1887512	18.8		93.9	2374	

Reagents:

LCPFC-L4_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_013.d

Injection Date: 29-Dec-2016 01:22:01

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 40

Worklist Smp#: 13

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

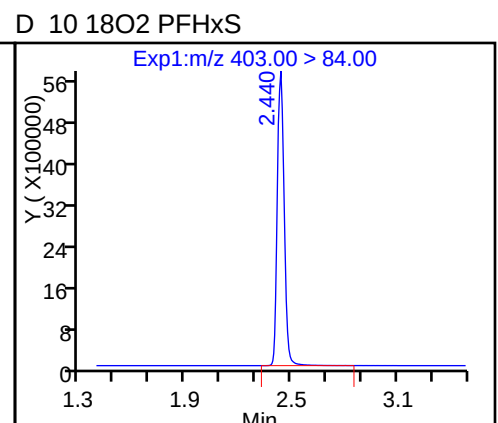
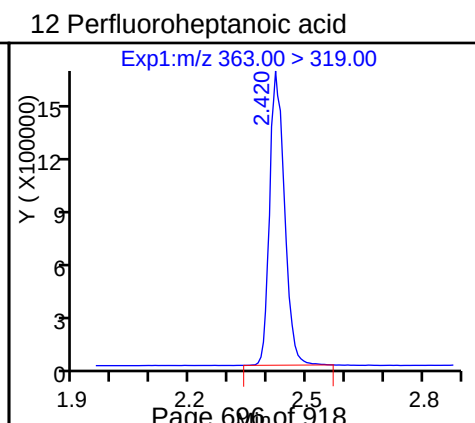
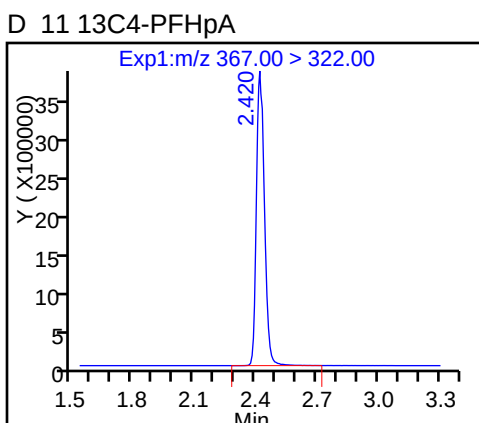
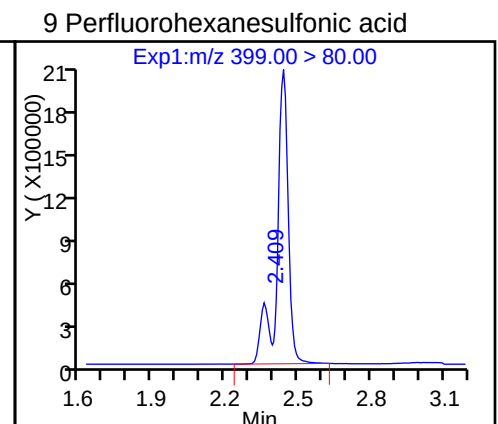
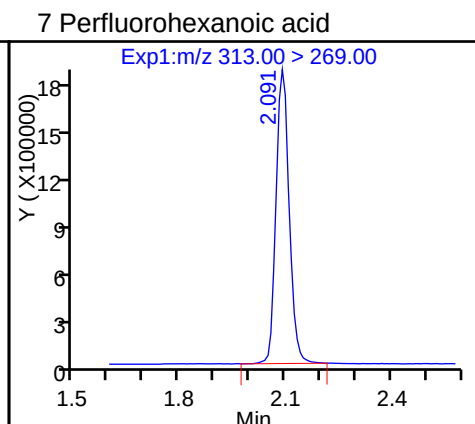
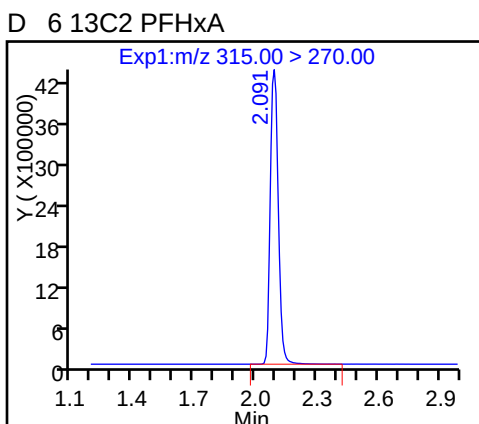
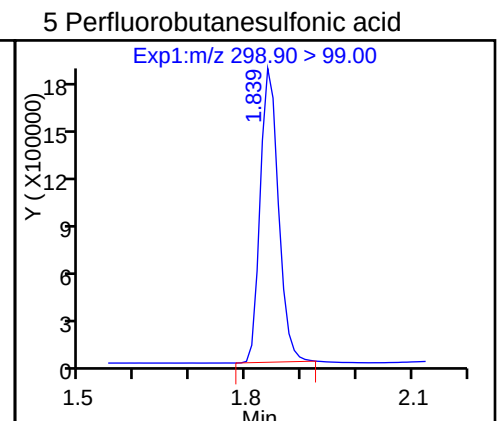
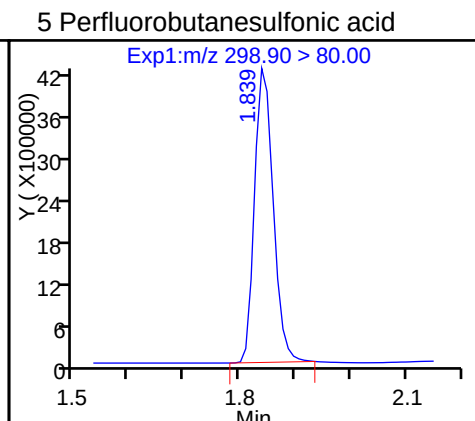
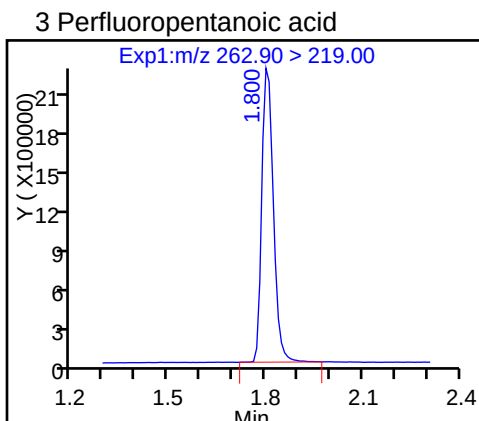
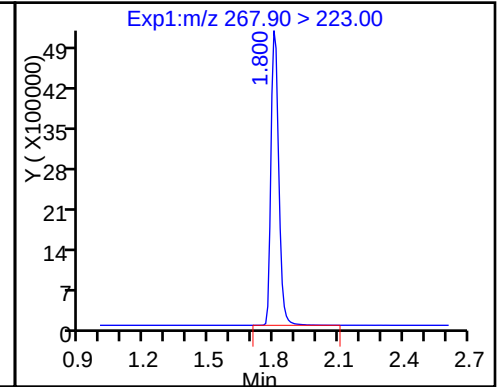
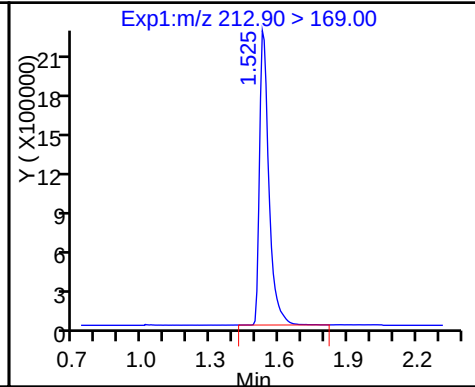
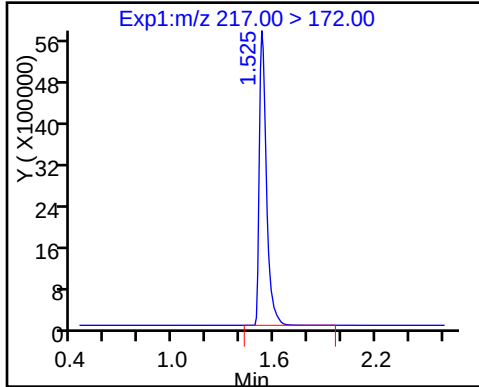
Method: A8_N

Limit Group: LC PFC_DOD ICAL

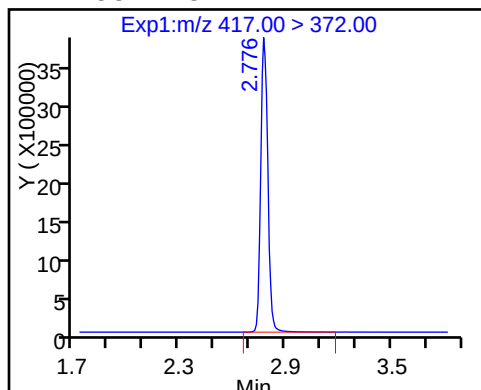
D 2 13C4 PFBA

1 Perfluorobutyric acid

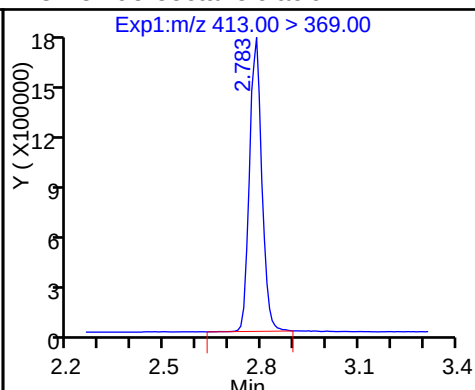
D 4 13C5-PFPeA



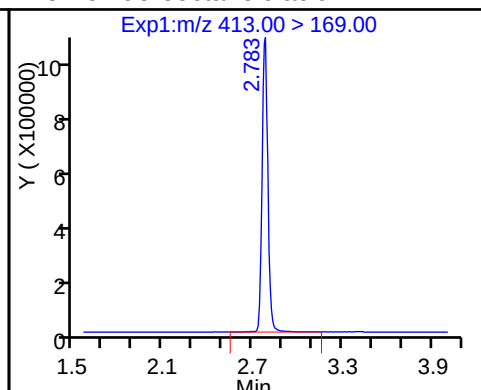
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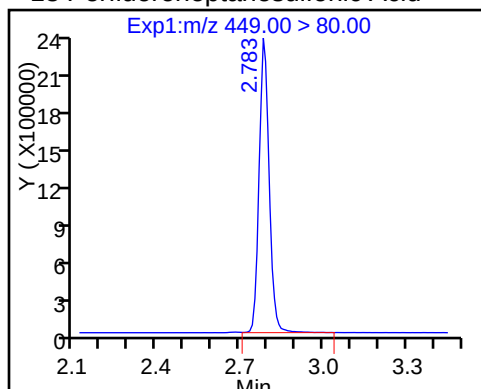
15 Perfluorooctanoic acid



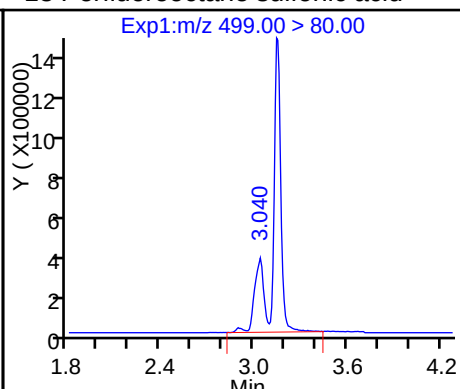
15 Perfluorooctanoic acid



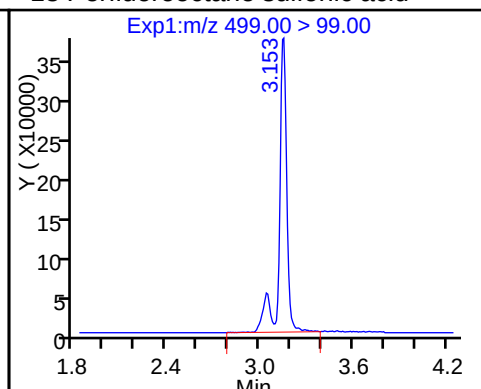
13 Perfluoroheptanesulfonic Acid



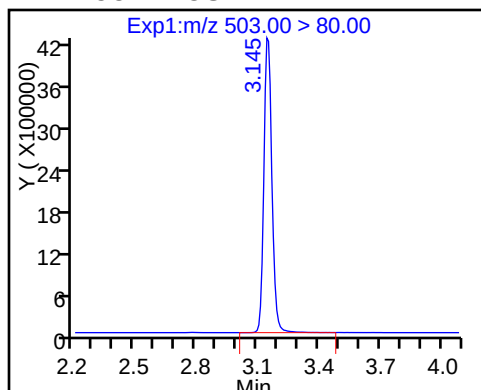
18 Perfluorooctane sulfonic acid



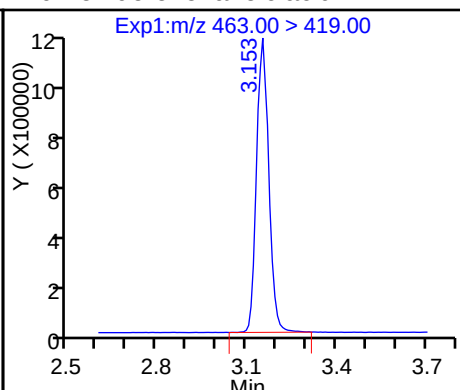
18 Perfluorooctane sulfonic acid



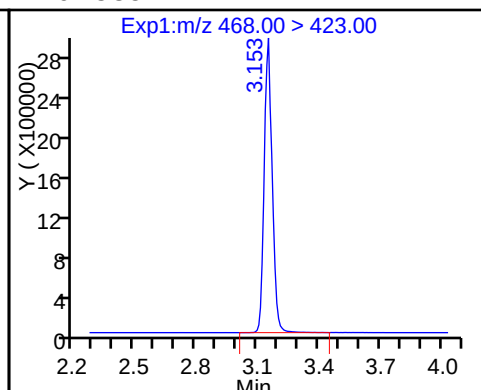
D 17 13C4 PFOS



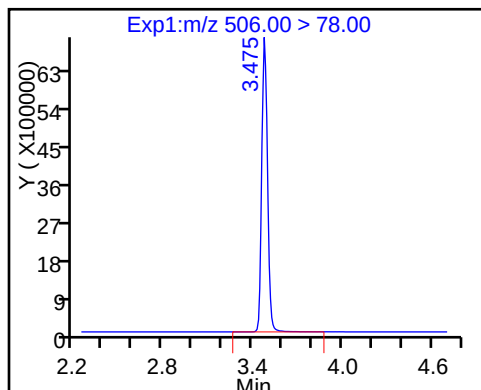
20 Perfluorononanoic acid



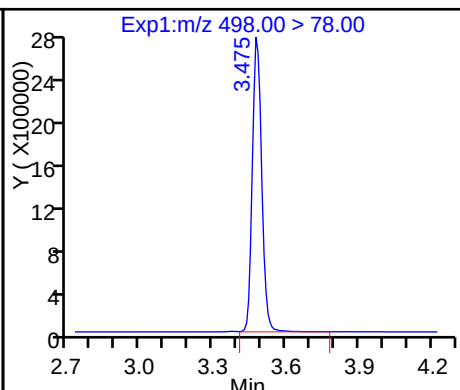
D 19 13C5 PFNA



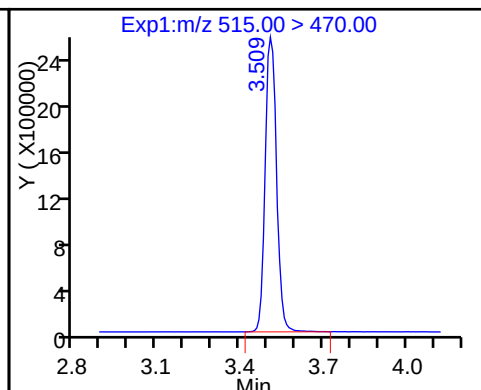
D 21 13C8 FOSA

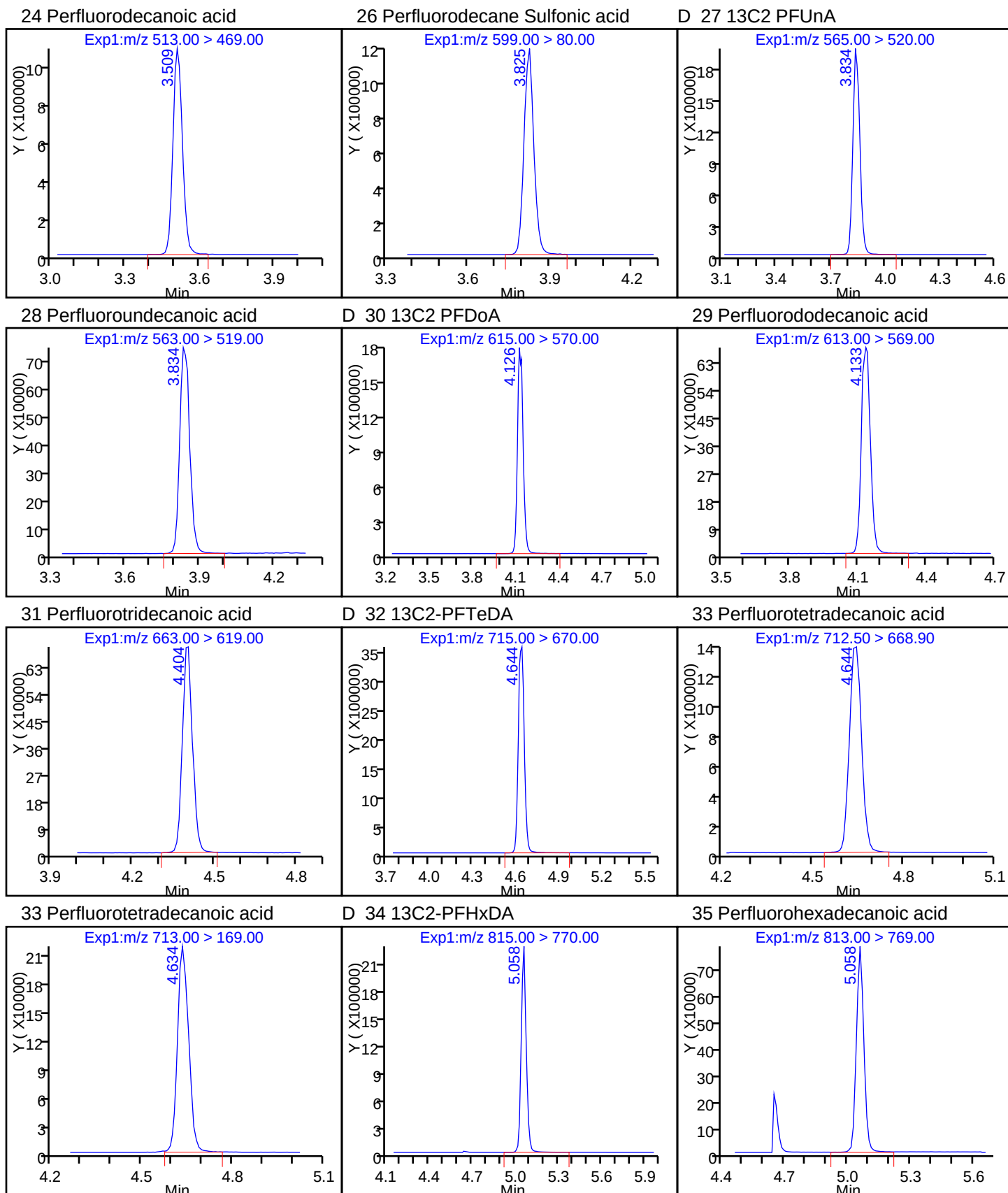


22 Perfluorooctane Sulfonamide

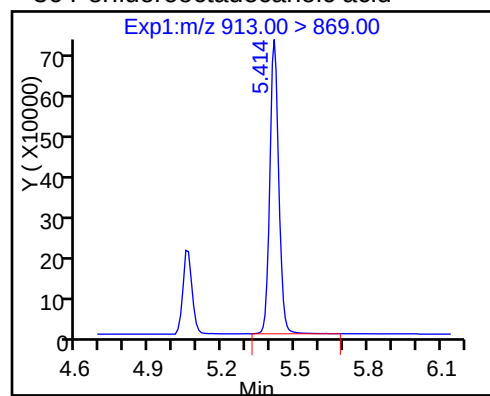


D 23 13C2 PFDA





36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1
 SDG No.: _____
 Lab Sample ID: CCV 320-144253/24 Calibration Date: 12/29/2016 02:44
 Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29
 GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/15/2016 14:18
 Lab File ID: 28DEC2016C_024.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9103		53.3	50.0	6.6	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.002		50.8	50.0	1.5	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.518		47.4	44.2	7.1	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9373		50.5	50.0	0.9	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9872		50.4	50.0	0.9	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.017		44.9	45.5	-1.3	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.014		50.5	50.0	1.1	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.146		49.5	47.6	4.0	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9945	1.039		48.5	46.4	4.5	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9749		51.2	50.0	2.4	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9299		49.9	50.0	-0.3	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9310		49.3	50.0	-1.4	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6145		50.7	48.2	5.2	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9649		50.4	50.0	0.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9297		50.6	50.0	1.3	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9277		51.1	50.0	2.3	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.822		57.5	50.0	14.9	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9504		49.2	50.0	-1.6	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8968		43.5	50.0	-13.0	25.0
13C4 PFBA	Ave	347743	325636		46.8	50.0	-6.4	50.0
13C5-PFPeA	Ave	266072	251309		47.2	50.0	-5.5	50.0
13C2 PFHxA	Ave	245110	229354		46.8	50.0	-6.4	50.0
13C4-PFHpA	Ave	226344	198107		43.8	50.0	-12.5	50.0
18O2 PFHxS	Ave	326976	316319		45.8	47.3	-3.3	50.0
13C4 PFOA	Ave	230362	201878		43.8	50.0	-12.4	50.0
13C4 PFOS	Ave	248847	239275		46.0	47.8	-3.8	50.0
13C5 PFNA	Ave	177687	153674		43.2	50.0	-13.5	50.0
13C8 FOSA	Ave	384141	369122		48.0	50.0	-3.9	50.0
13C2 PFDA	Ave	157302	142705		45.4	50.0	-9.3	50.0
13C2 PFUnA	Ave	117250	102236		43.6	50.0	-12.8	50.0
13C2 PFDoA	Ave	110957	95597		43.1	50.0	-13.8	50.0
13C2-PFTeDA	Ave	227387	200570		44.1	50.0	-11.8	50.0
13C2-PFHxDA	Ave	124568	107082		43.0	50.0	-14.0	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_024.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 29-Dec-2016 02:44:36 ALS Bottle#: 41 Worklist Smp#: 24
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub5
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Dec-2016 18:19:26 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK027

First Level Reviewer: phomsophat

Date: 29-Dec-2016 18:19:26

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 2 13C4 PFBA

217.00 > 172.00 1.534 1.534 0.0 16281815 46.8 93.6 677597

1 Perfluorobutyric acid

212.90 > 169.00 1.534 1.534 0.0 1.000 14820494 53.3 107 95898

D 4 13C5-PFPeA

267.90 > 223.00 1.810 1.810 0.0 12565456 47.2 94.5 999938

3 Perfluoropentanoic acid

262.90 > 219.00 1.810 1.810 0.0 1.000 12587077 50.8 102 156965

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.849 1.849 0.0 1.000 21225697 47.4 107

298.90 > 99.00 1.849 1.849 0.0 1.000 9866236 2.15(0.00-0.00)

D 6 13C2 PFHxA

315.00 > 270.00 2.097 2.097 0.0 11467711 46.8 93.6 833422

7 Perfluorohexanoic acid

313.00 > 269.00 2.097 2.097 0.0 1.000 10749072 50.5 101 178961

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.444 2.444 0.0 1.000 14631165 44.9 98.7

D 11 13C4-PFHpA

367.00 > 322.00 2.429 2.429 0.0 9905365 43.8 87.5 699380

12 Perfluoroheptanoic acid

363.00 > 319.00 2.429 2.429 0.0 1.000 9778298 50.4 101 78576

D 10 18O2 PFHxS

403.00 > 84.00 2.444 2.444 0.0 14961866 45.8 96.7 1088399

D 14 13C4 PFOA

417.00 > 372.00 2.782 2.782 0.0 10093908 43.8 87.6 720484

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.782	2.782	0.0	1.000	10236784	50.5		101	108198	
413.00 > 169.00	2.782	2.782	0.0	1.000	6391113		1.60(0.90-1.10)		294563	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.790	2.790	0.0	1.000	13050163	49.5		104		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.134	3.134	0.0	1.000	11536175	48.5		104	89792	
499.00 > 99.00	3.150	3.134	0.016	1.005	2519405		4.58(0.90-1.10)		111514	
D 17 13C4 PFOS										
503.00 > 80.00	3.150	3.150	0.0		11437346	46.0		96.2	317387	
20 Perfluorononanoic acid										
463.00 > 419.00	3.150	3.150	0.0	1.000	7491071	51.2		102	153620	
D 19 13C5 PFNA										
468.00 > 423.00	3.150	3.150	0.0		7683680	43.2		86.5	264525	
D 21 13C8 FOSA										
506.00 > 78.00	3.481	3.481	0.0		18456100	48.0		96.1	510613	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.481	3.481	0.0	1.000	17162031	49.9		99.7	561871	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.515	3.515	0.0	1.000	6642927	49.3		98.6	149068	
D 23 13C2 PFDA										
515.00 > 470.00	3.515	3.515	0.0		7135273	45.4		90.7	262734	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.825	3.825	0.0	1.000	7086922	50.7		105		
D 27 13C2 PFUnA										
565.00 > 520.00	3.842	3.842	0.0		5111813	43.6		87.2	231347	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.842	3.842	0.0	1.000	4932270	50.4		101	129727	
D 30 13C2 PFDaA										
615.00 > 570.00	4.134	4.134	0.0		4779865	43.1		86.2	192636	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.134	4.134	0.0	1.000	4443824	50.6		101	121756	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.396	4.396	0.0	1.000	4434488	51.1		102	103218	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.643	4.643	0.0		10028507	44.1		88.2	508850	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.643	4.643	0.0	1.000	8707596	57.5		115	154088	
713.00 > 169.00	4.633	4.643	-0.010	0.998	1309974		6.65(0.00-0.00)		161247	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.058	5.058	0.0		5354087	43.0		86.0	107062	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.058	5.058	0.0	1.000	4542769	49.2		98.4	4862	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.413	5.413	0.0	1.000	4286501	43.5		87.0	5637	

Reagents:

LCPFC-L5_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_024.d

Injection Date: 29-Dec-2016 02:44:36

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 41

Worklist Smp#: 24

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

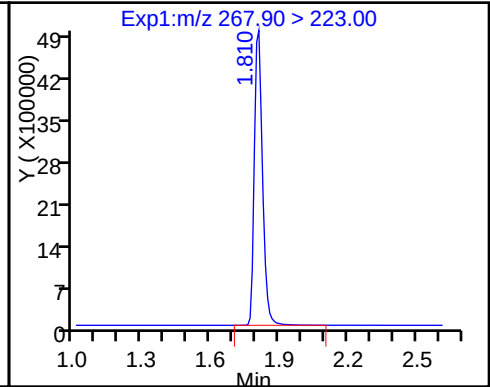
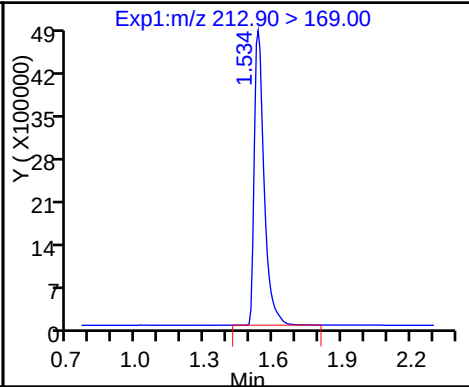
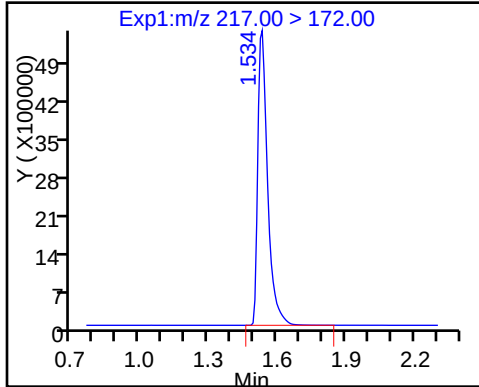
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

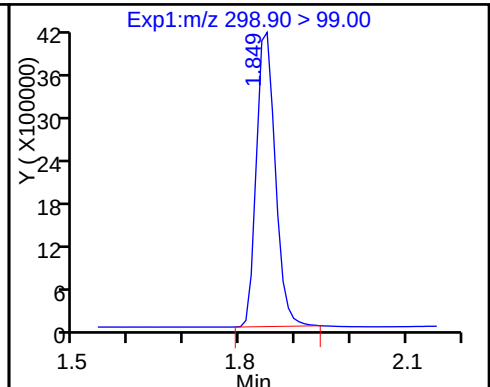
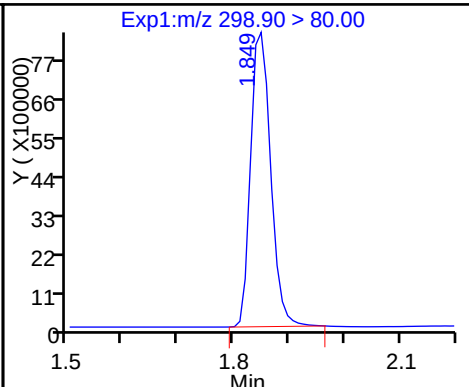
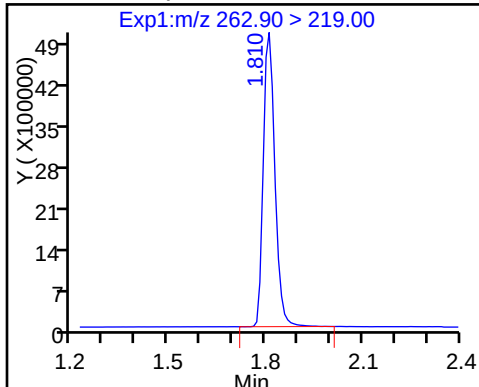
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

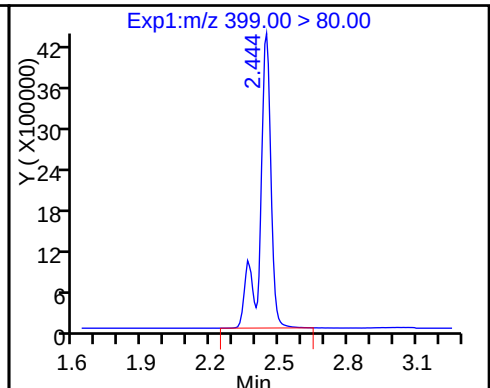
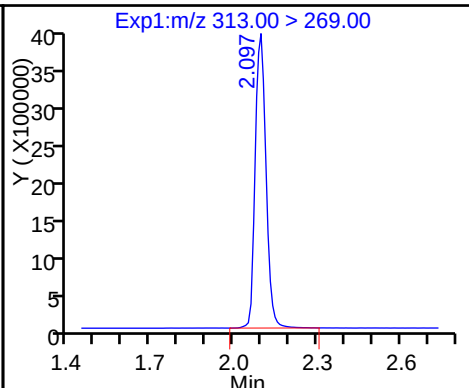
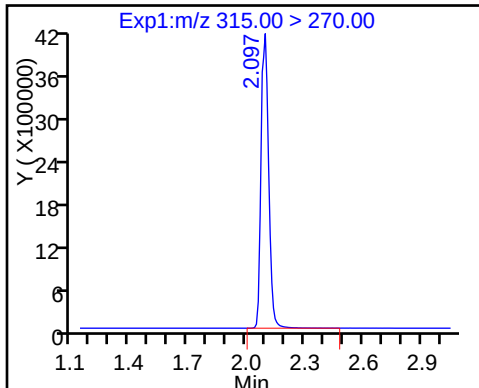
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

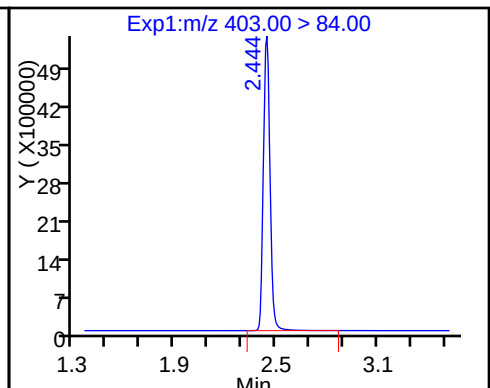
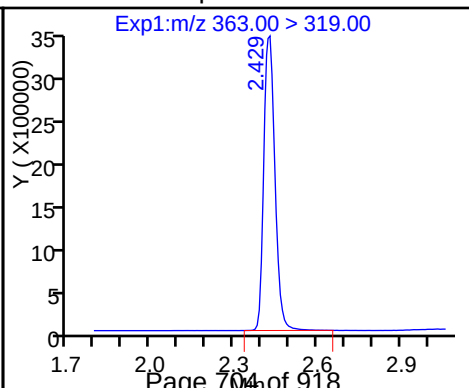
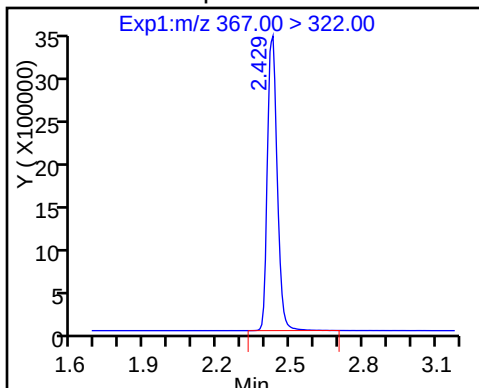
9 Perfluorohexanesulfonic acid



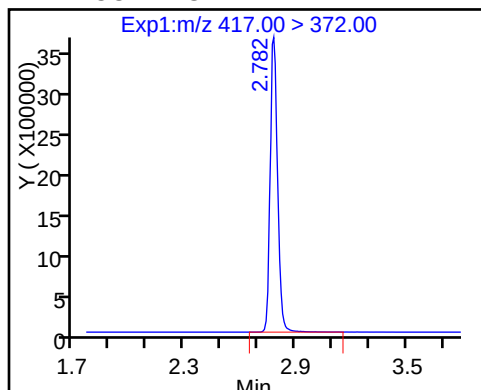
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid

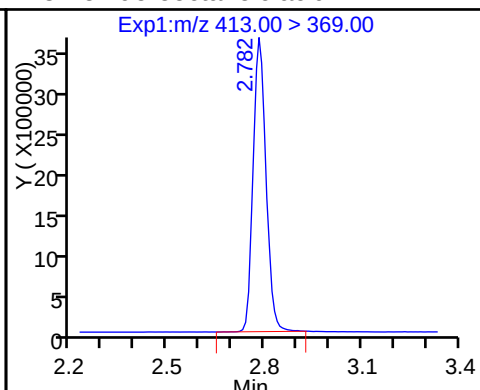
D 10 18O2 PFHxS



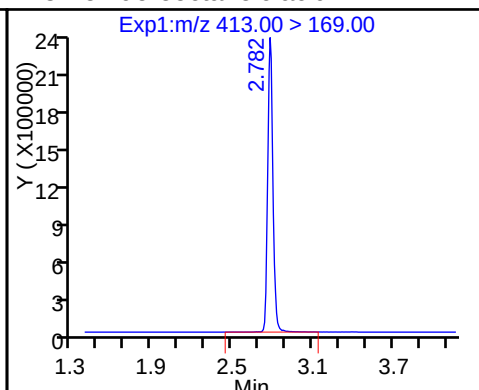
D 14 13C4 PFOA



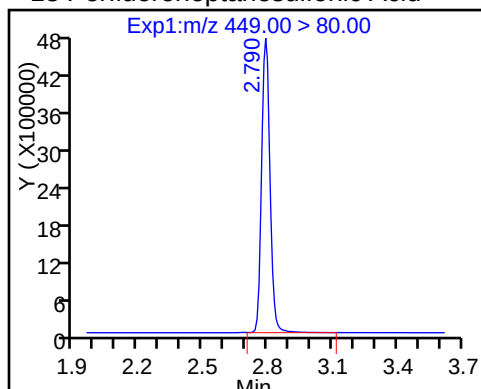
15 Perfluorooctanoic acid



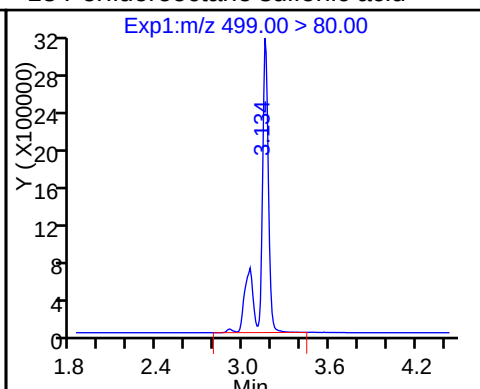
15 Perfluorooctanoic acid



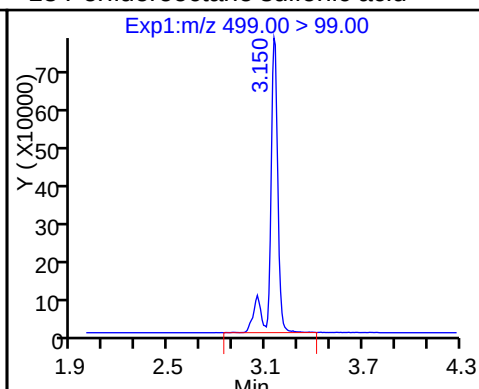
13 Perfluoroheptanesulfonic Acid



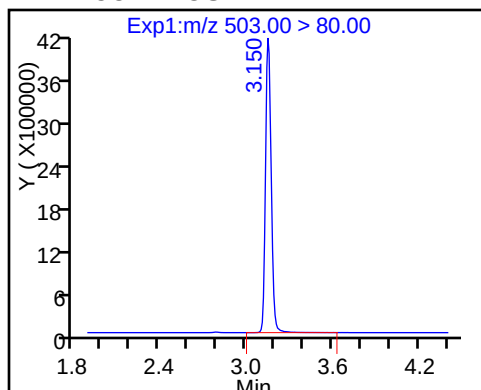
18 Perfluorooctane sulfonic acid



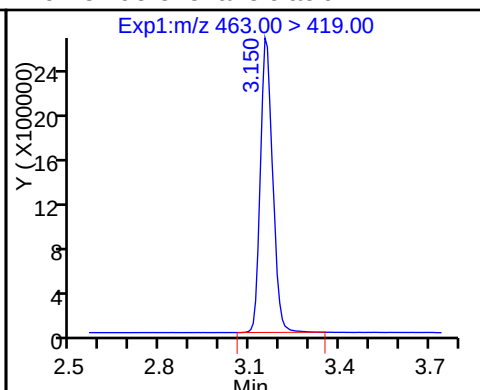
18 Perfluorooctane sulfonic acid



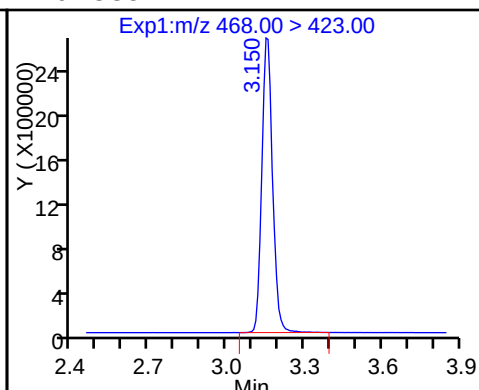
D 17 13C4 PFOS



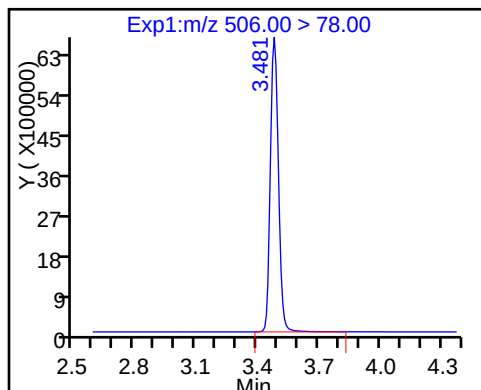
20 Perfluorononanoic acid



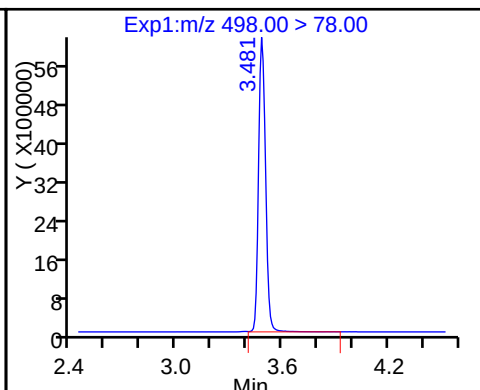
D 19 13C5 PFNA



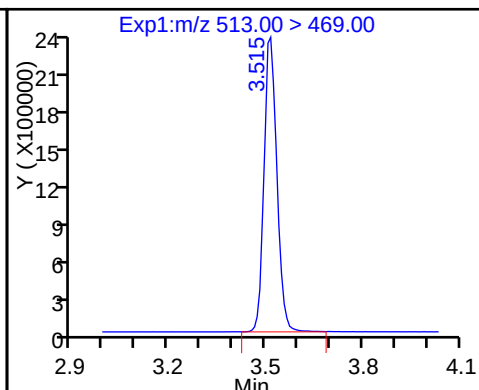
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide



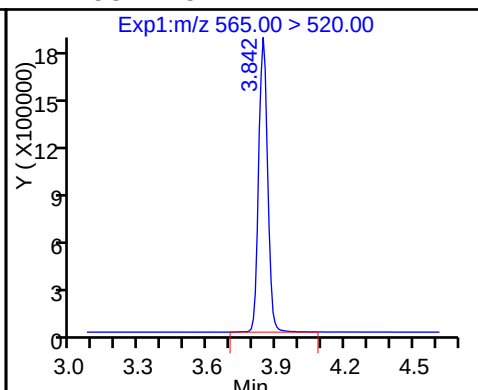
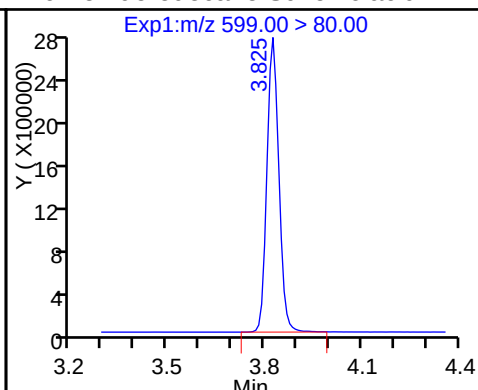
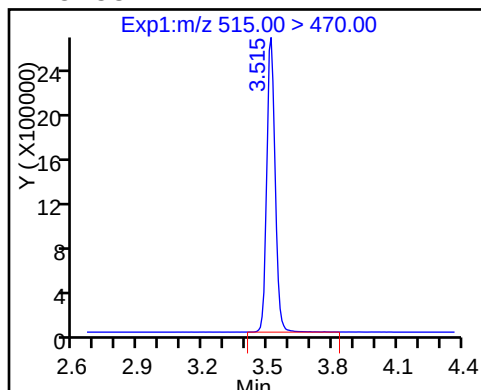
24 Perfluorodecanoic acid



D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

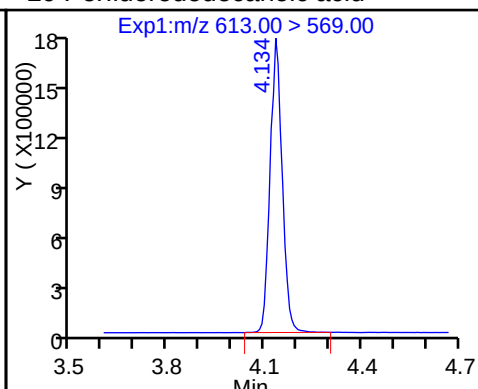
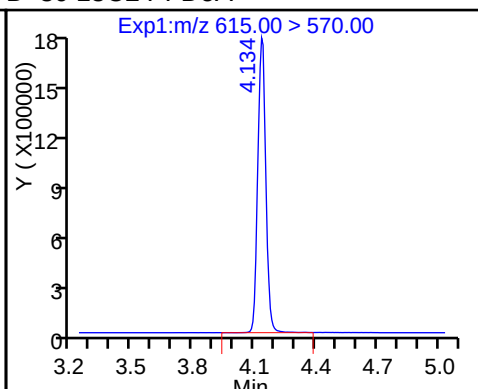
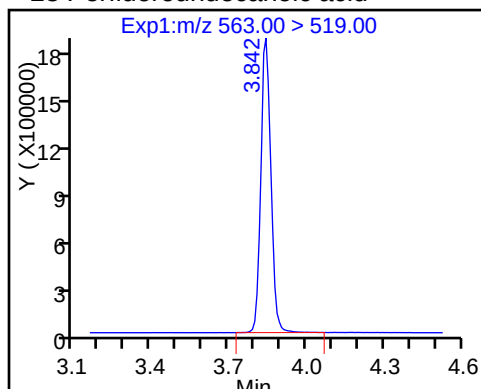
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

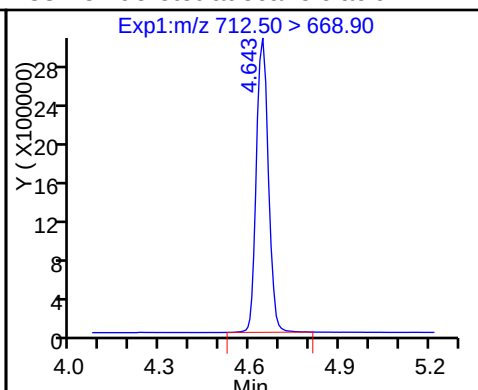
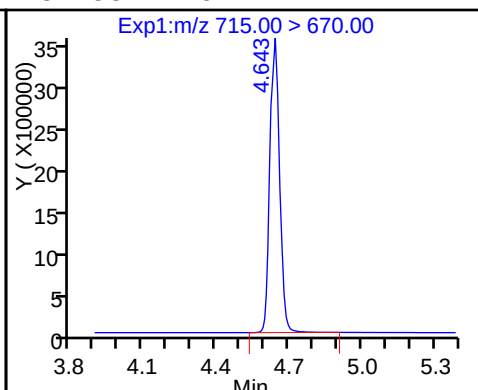
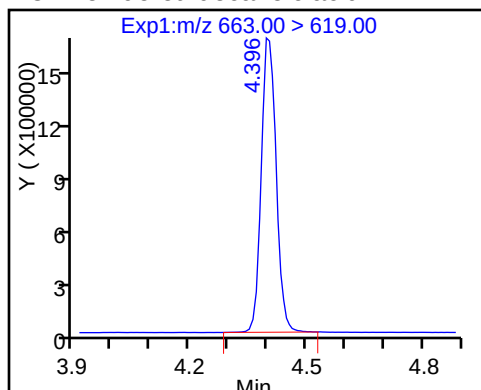
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

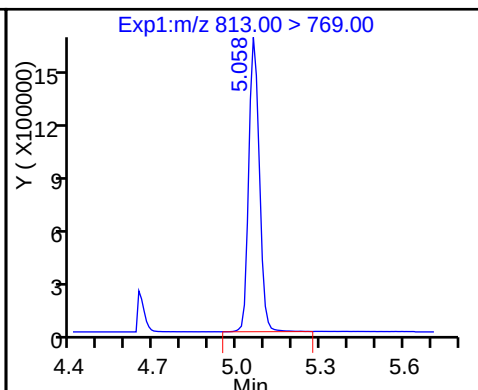
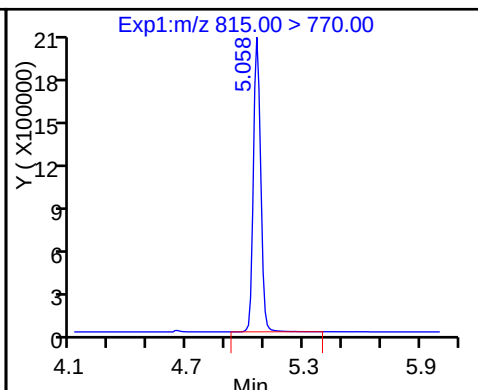
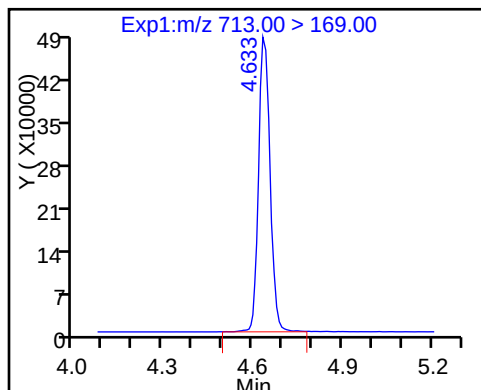
33 Perfluorotetradecanoic acid



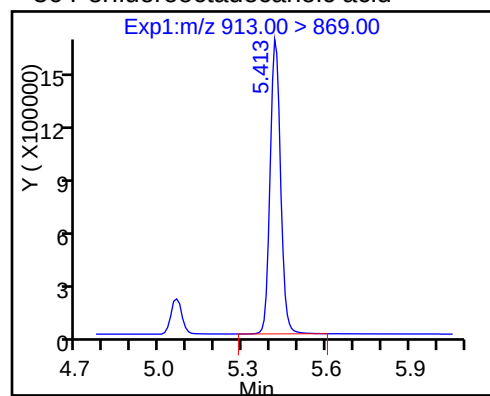
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Lab Sample ID: CCV 320-144253/29 Calibration Date: 12/29/2016 03:22

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 28DEC2016C_029.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9611		22.5	20.0	12.6	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.049		21.3	20.0	6.3	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.624		20.3	17.7	14.6	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9619		20.7	20.0	3.6	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.122		19.8	18.2	8.9	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	1.021		20.9	20.0	4.3	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.121		22.4	20.0	11.8	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.256		21.7	19.0	14.0	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9945	1.063		19.8	18.6	6.8	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	1.026		21.5	20.0	7.7	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	1.009		21.6	20.0	8.2	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9690		20.5	20.0	2.7	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6399		21.1	19.3	9.6	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9669		20.2	20.0	1.1	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9350		20.4	20.0	1.9	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9236		20.4	20.0	1.8	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.905		24.0	20.0	20.2	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9272		18.8	20.0	-5.9	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.9242		17.9	20.0	-10.3	25.0
13C4 PFBA	Ave	347743	337971		48.6	50.0	-2.8	50.0
13C5-PFPeA	Ave	266072	261839		49.2	50.0	-1.6	50.0
13C2 PFHxA	Ave	245110	242920		49.6	50.0	-0.9	50.0
13C4-PFHpA	Ave	226344	213826		47.2	50.0	-5.5	50.0
18O2 PFHxS	Ave	326976	336169		48.6	47.3	2.8	50.0
13C4 PFOA	Ave	230362	222513		48.3	50.0	-3.4	50.0
13C4 PFOS	Ave	248847	249666		48.0	47.8	0.3	50.0
13C5 PFNA	Ave	177687	166842		46.9	50.0	-6.1	50.0
13C8 FOSA	Ave	384141	386803		50.3	50.0	0.7	50.0
13C2 PFDA	Ave	157302	156183		49.6	50.0	-0.7	50.0
13C2 PFUnA	Ave	117250	115417		49.2	50.0	-1.6	50.0
13C2 PFDoA	Ave	110957	105873		47.7	50.0	-4.6	50.0
13C2-PFTeDA	Ave	227387	224937		49.5	50.0	-1.1	50.0
13C2-PFHxDA	Ave	124568	116391		46.7	50.0	-6.6	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_029.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 29-Dec-2016 03:22:08 ALS Bottle#: 40 Worklist Smp#: 29
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub5
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Dec-2016 18:24:51 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK027

First Level Reviewer: phomsophat

Date: 29-Dec-2016 18:24:10

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.526	1.526	0.0		16898544	48.6		97.2	821264	
1 Perfluorobutyric acid										
212.90 > 169.00	1.526	1.526	0.0	1.000	6496686	22.5		113	46665	
D 4 13C5-PFPeA										
267.90 > 223.00	1.800	1.800	0.0		13091959	49.2		98.4	861383	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.800	1.800	0.0	1.000	5492992	21.3		106	74177	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.839	1.839	0.0	1.000	9654341	20.3		115		
298.90 > 99.00	1.839	1.839	0.0	1.000	4109032		2.35(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.088	2.088	0.0		12145979	49.6		99.1	926804	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.088	2.088	0.0	1.000	4673206	20.7		104	64806	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.407	2.407	0.0	1.000	6861889	19.8		109		
D 11 13C4-PFHpA										
367.00 > 322.00	2.418	2.418	0.0		10691301	47.2		94.5	659810	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.418	2.418	0.0	1.000	4365263	20.9		104	36365	
D 10 18O2 PFHxS										
403.00 > 84.00	2.430	2.430	0.0		15900783	48.6		103	1148970	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.773	2.773	0.0	1.000	4989945	22.4		112	43728	
413.00 > 169.00	2.773	2.773	0.0	1.000	3159821		1.58(0.90-1.10)		81967	
D 14 13C4 PFOA										
417.00 > 372.00	2.773	2.773	0.0		11125635	48.3		96.6	799172	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid	449.00 > 80.00	2.781	2.781	0.0	1.000	5971657	21.7	114		
18 Perfluorooctane sulfonic acid	499.00 > 80.00	3.026	3.026	0.0	1.000	4923662	19.8	107	36949	
	499.00 > 99.00	3.141	3.026	0.115	1.038	1095594	4.49(0.90-1.10)		43807	
D 17 13C4 PFOS	503.00 > 80.00	3.141	3.141	0.0		11934022	48.0	100	453921	
20 Perfluorononanoic acid	463.00 > 419.00	3.141	3.141	0.0	1.000	3422199	21.5	108	57779	
D 19 13C5 PFNA	468.00 > 423.00	3.141	3.141	0.0		8342081	46.9	93.9	567804	
D 21 13C8 FOSA	506.00 > 78.00	3.464	3.464	0.0		19340126	50.3	101	851263	
22 Perfluorooctane Sulfonamide	498.00 > 78.00	3.472	3.472	0.0	1.000	7809416	21.6	108	253396	
24 Perfluorodecanoic acid	513.00 > 469.00	3.506	3.506	0.0	1.000	3026825	20.5	103	96792	
D 23 13C2 PFDA	515.00 > 470.00	3.506	3.506	0.0		7809147	49.6	99.3	288902	
26 Perfluorodecane Sulfonic acid	599.00 > 80.00	3.807	3.807	0.0	1.000	3080405	21.1	110		
D 27 13C2 PFUnA	565.00 > 520.00	3.833	3.833	0.0		5770854	49.2	98.4	359746	
28 Perfluoroundecanoic acid	563.00 > 519.00	3.833	3.833	0.0	1.000	2231938	20.2	101	55177	
D 30 13C2 PFDaA	615.00 > 570.00	4.118	4.118	0.0		5293660	47.7	95.4	201222	
29 Perfluorododecanoic acid	613.00 > 569.00	4.125	4.125	0.0	1.000	1979914	20.4	102	44558	
31 Perfluorotridecanoic acid	663.00 > 619.00	4.395	4.395	0.0	1.000	1955742	20.4	102	42421	
D 32 13C2-PFTeDA	715.00 > 670.00	4.632	4.632	0.0		11246831	49.5	98.9	806598	
33 Perfluorotetradecanoic acid	712.50 > 668.90	4.632	4.632	0.0	1.000	4033427	24.0	120	70818	
	713.00 > 169.00	4.624	4.632	-0.008	0.998	576040	7.00(0.00-0.00)		109218	
D 34 13C2-PFHxDA	815.00 > 770.00	5.046	5.046	0.0		5819558	46.7	93.4	90669	
35 Perfluorohexadecanoic acid	813.00 > 769.00	5.057	5.057	0.0	1.000	1963314	18.8	94.1	2203	
36 Perfluorooctadecanoic acid	913.00 > 869.00	5.406	5.406	0.0	1.000	1956907	17.9	89.7	2175	

Reagents:

LCPFC-L4_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_029.d

Injection Date: 29-Dec-2016 03:22:08

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 40

Worklist Smp#: 29

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

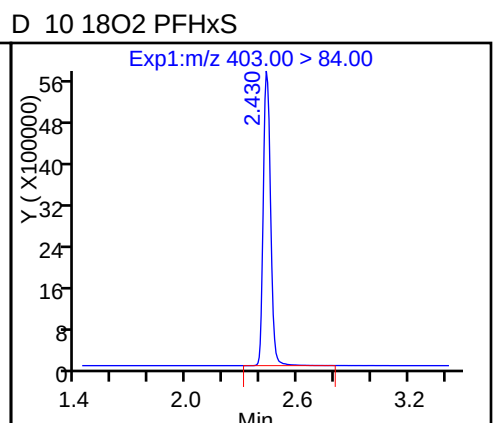
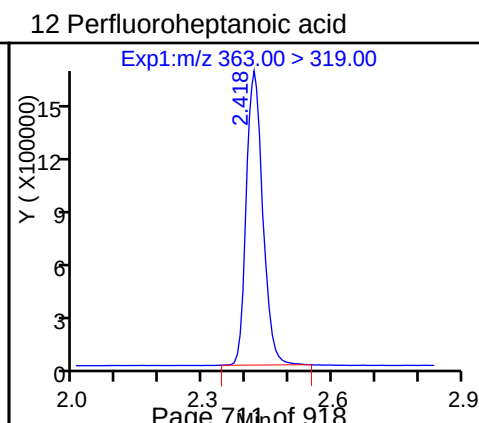
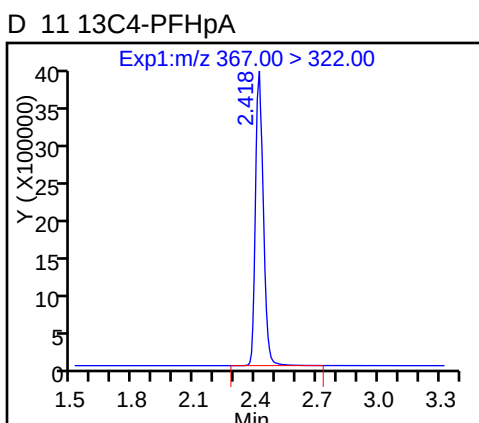
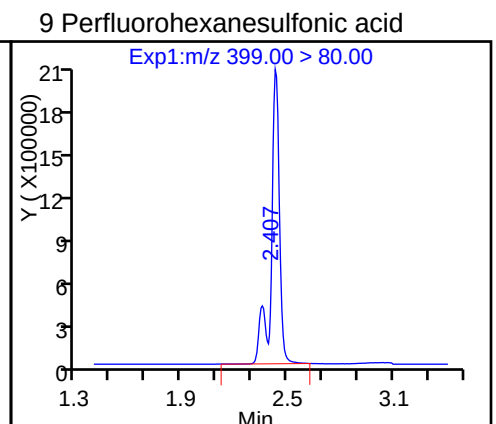
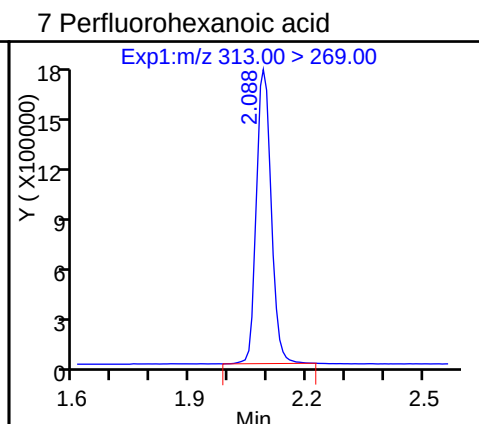
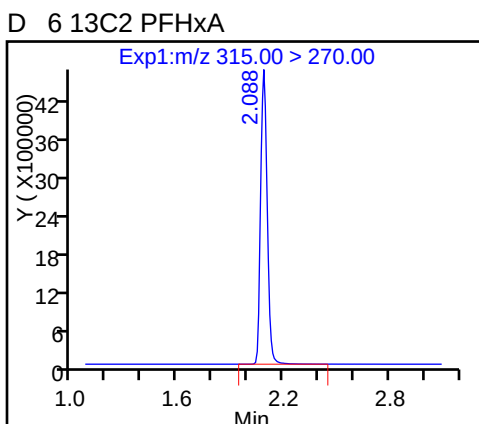
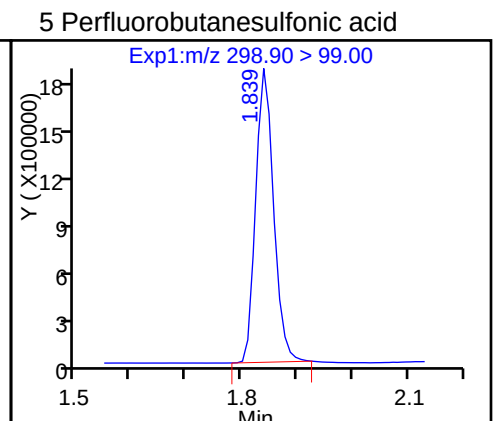
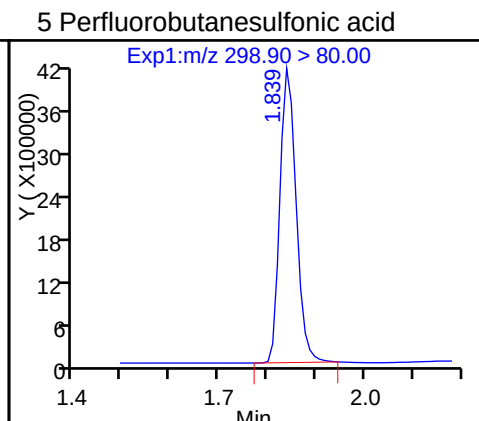
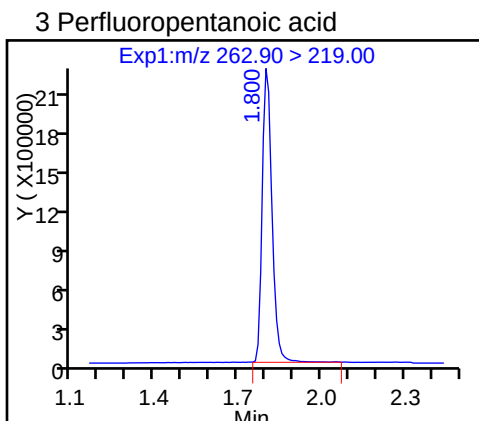
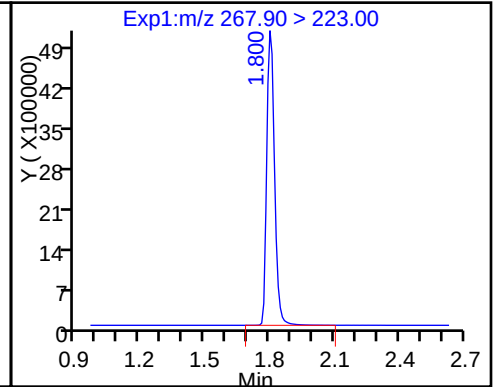
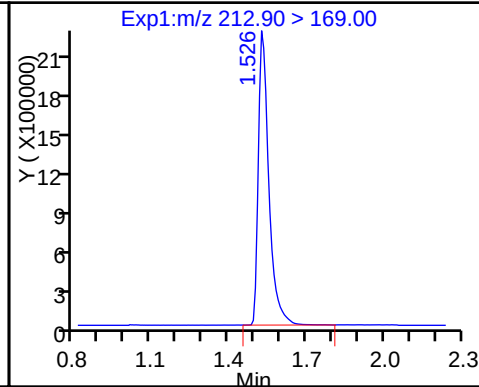
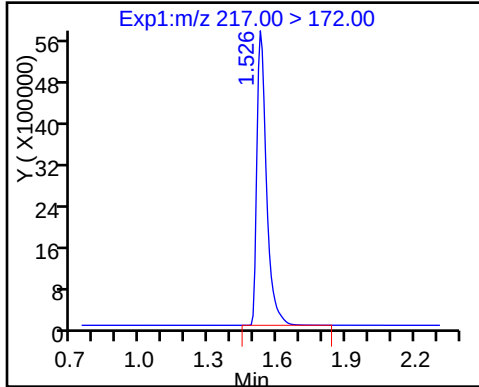
Method: A8_N

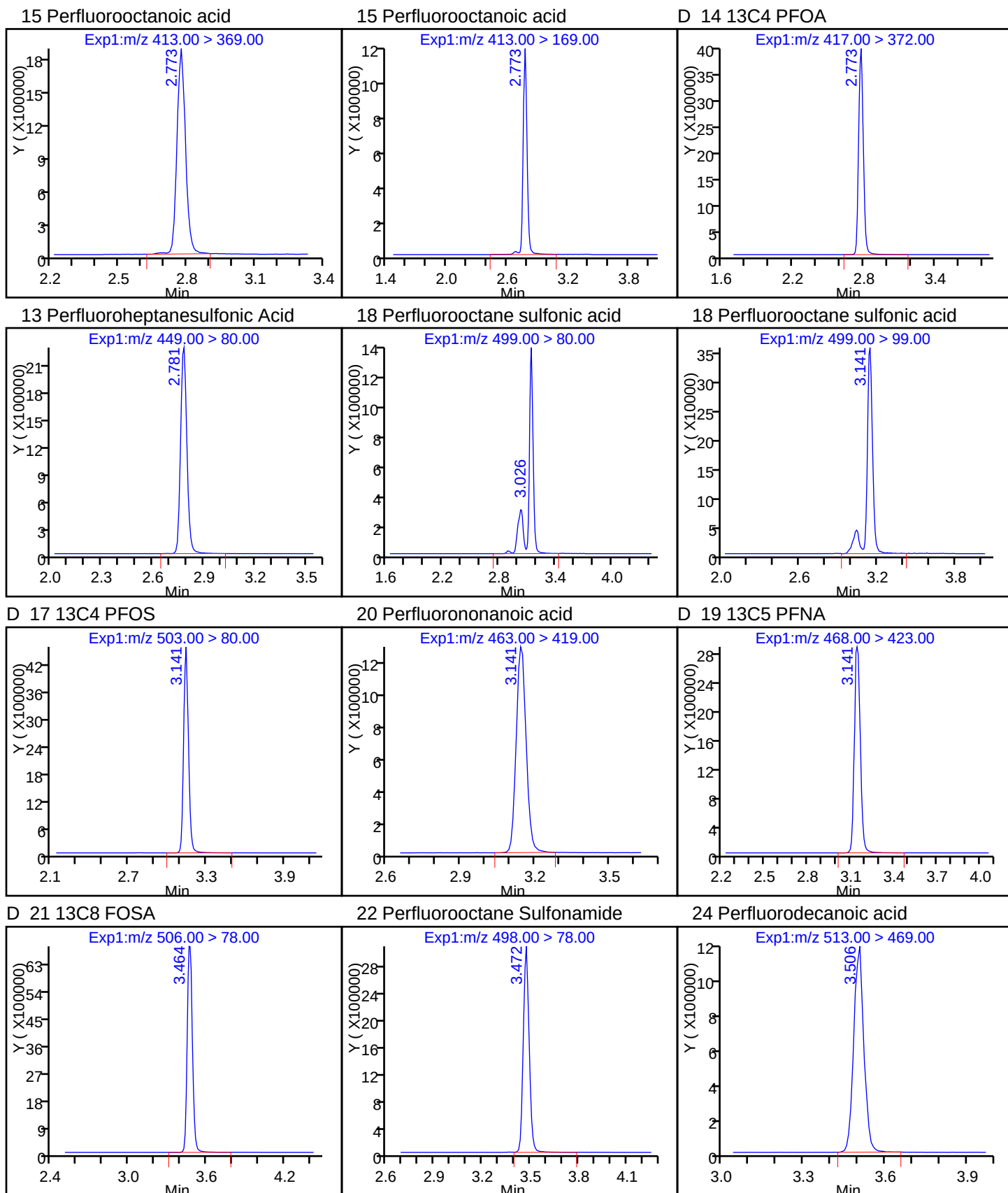
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

D 4 13C5-PFPeA

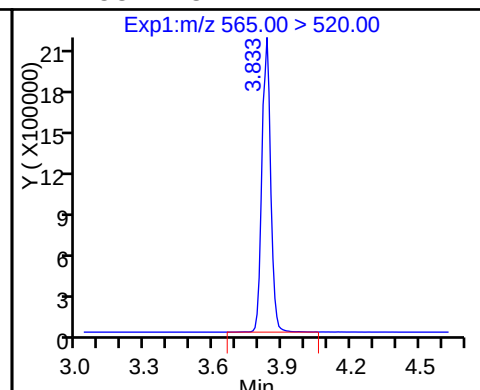
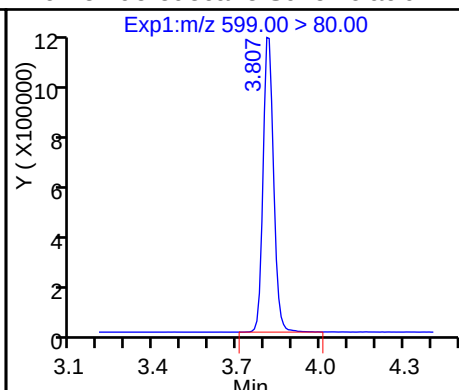
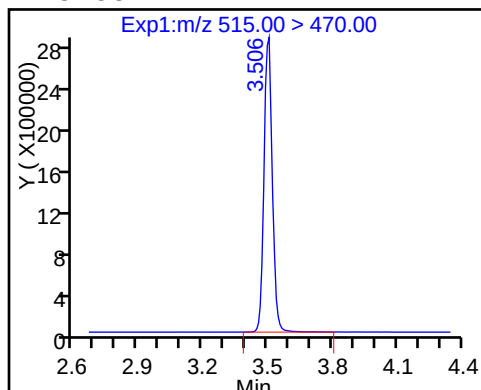




D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

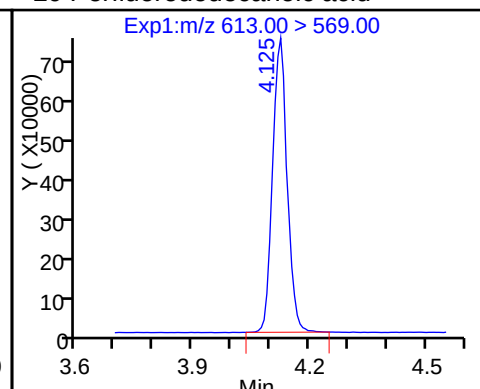
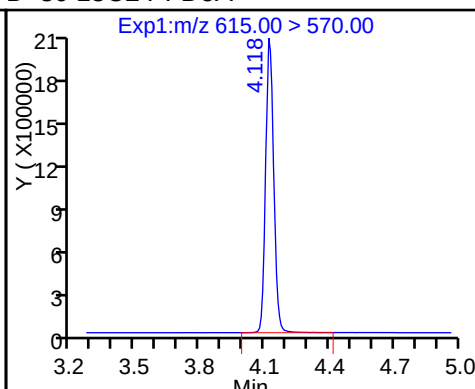
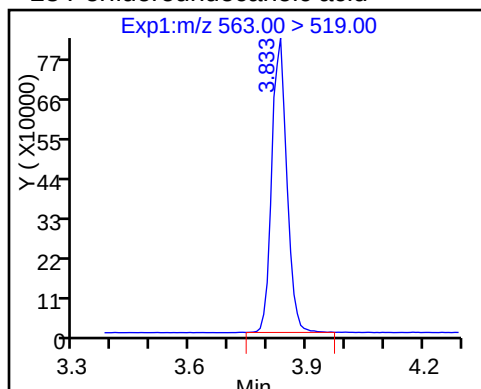
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

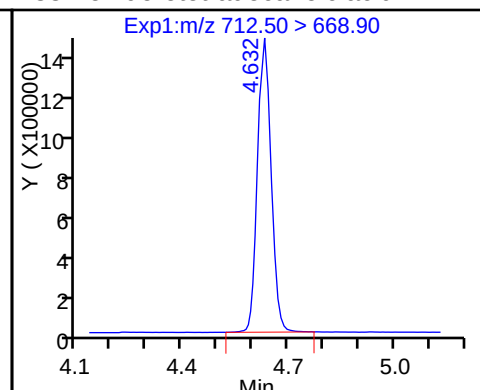
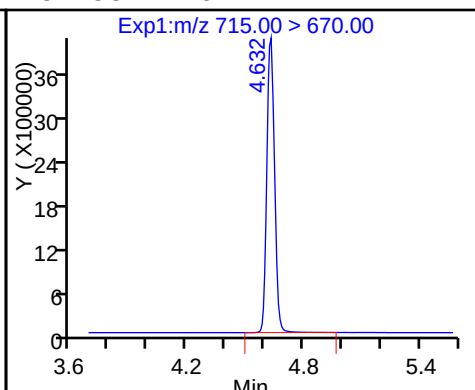
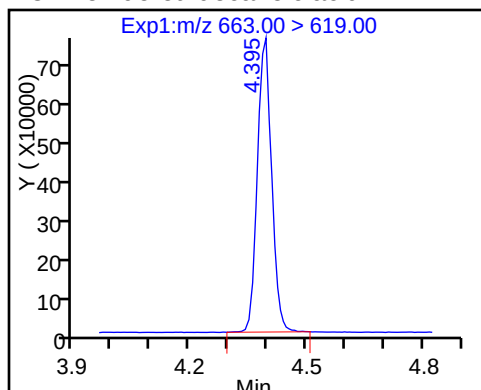
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

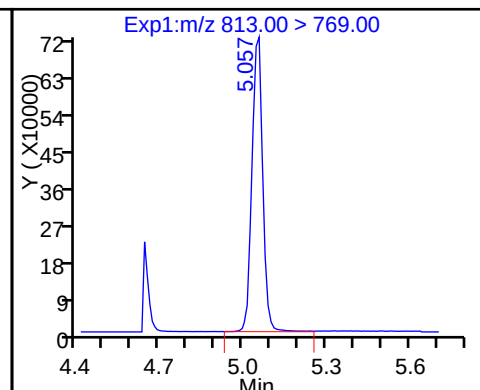
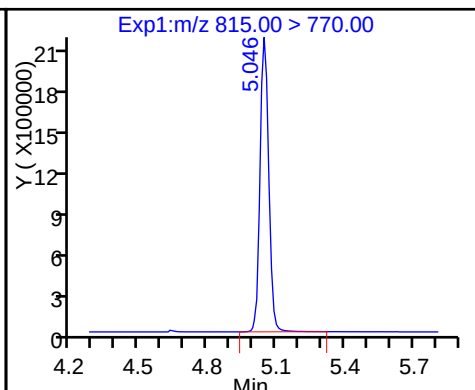
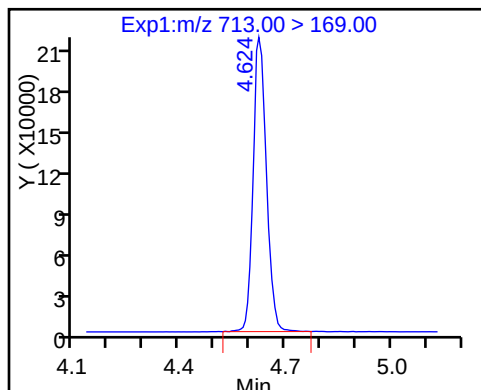
33 Perfluorotetradecanoic acid



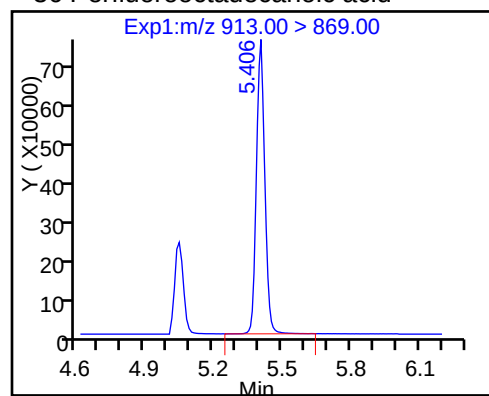
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Lab Sample ID: CCV 320-144510/5 Calibration Date: 12/30/2016 11:26

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 30DEC2016A_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.8643		1.01	1.00	1.2	50.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.009		1.02	1.00	2.3	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.429		0.892	0.884	0.9	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9073		0.977	1.00	-2.3	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	1.013		1.04	1.00	3.5	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.157		1.02	0.910	12.3	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.014		1.01	1.00	1.1	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.030		0.890	0.952	-6.6	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9945	1.149		1.07	0.928	15.6	50.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9818		1.03	1.00	3.1	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9433		1.01	1.00	1.1	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9103		0.965	1.00	-3.5	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.5594		0.923	0.964	-4.2	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9808		1.03	1.00	2.6	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.8913		0.971	1.00	-2.9	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.8794		0.970	1.00	-3.0	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.765		1.11	1.00	11.3	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.482		0.953	1.00	-4.7	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8004		0.777	1.00	-22.3	50.0
13C4 PFBA	Ave	347743	348590		50.1	50.0	0.2	50.0
13C5-PFPeA	Ave	266072	269109		50.6	50.0	1.1	50.0
13C2 PFHxA	Ave	245110	231169		47.2	50.0	-5.7	50.0
13C4-PFHpA	Ave	226344	212196		46.9	50.0	-6.3	50.0
18O2 PFHxS	Ave	326976	321838		46.6	47.3	-1.6	50.0
13C4 PFOA	Ave	230362	226735		49.2	50.0	-1.6	50.0
13C4 PFOS	Ave	248847	259288		49.8	47.8	4.2	50.0
13C5 PFNA	Ave	177687	175863		49.5	50.0	-1.0	50.0
13C8 FOSA	Ave	384141	399484		52.0	50.0	4.0	50.0
13C2 PFDA	Ave	157302	161458		51.3	50.0	2.6	50.0
13C2 PFUnA	Ave	117250	123160		52.5	50.0	5.0	50.0
13C2 PFDoA	Ave	110957	113101		51.0	50.0	1.9	50.0
13C2-PFTeDA	Ave	227387	227042		49.9	50.0	-0.2	50.0
13C2-PFHxDA	Ave	124568	117083		47.0	50.0	-6.0	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016A_005.d
 Lims ID: CCV L2
 Client ID:
 Sample Type: CCVL
 Inject. Date: 30-Dec-2016 11:26:29 ALS Bottle#: 38 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L2
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub5
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 03-Jan-2017 10:09:31 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK020

First Level Reviewer: chandrasenas

Date: 03-Jan-2017 10:09:16

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 2 13C4 PFBA

217.00 > 172.00 1.534 1.534 0.0 17429482 50.1 100 1192878

1 Perfluorobutyric acid

212.90 > 169.00 1.542 1.542 0.0 1.000 301293 1.01 101 1576

D 4 13C5-PFPeA

267.90 > 223.00 1.820 1.820 0.0 13455441 50.6 101 1077202

3 Perfluoropentanoic acid

262.90 > 219.00 1.820 1.820 0.0 1.000 271656 1.02 102 3384

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.859 1.849 0.010 1.000 406676 0.8918 101

298.90 > 99.00 1.849 1.849 0.0 0.995 167755 2.42(0.00-0.00)

D 6 13C2 PFHxA

315.00 > 270.00 2.106 2.107 -0.001 11558452 47.2 94.3 491471

7 Perfluorohexanoic acid

313.00 > 269.00 2.106 2.107 -0.001 1.000 209736 0.9769 97.7 6314

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.458 2.379 0.079 1.000 338751 1.02 112 M

D 11 13C4-PFHpA

367.00 > 322.00 2.443 2.443 0.0 10609801 46.9 93.7 644950

12 Perfluoroheptanoic acid

363.00 > 319.00 2.443 2.443 0.0 1.000 214982 1.04 104 2231

D 10 18O2 PFHxS

403.00 > 84.00 2.458 2.458 0.0 15222930 46.6 98.4 710820

D 14 13C4 PFOA

417.00 > 372.00 2.805 2.796 0.009 11336736 49.2 98.4 1041700

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.805	2.796	0.009	1.000	229992	1.01		101	2890	
413.00 > 169.00	2.805	2.796	0.009	1.000	142324		1.62(0.90-1.10)		6313	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.813	2.805	0.008	1.000	254153	0.8895		93.4		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.173	3.054	0.119	1.000	276496	1.07		116	11754	M
499.00 > 99.00	3.173	3.054	0.119	1.000	58719		4.71(0.90-1.10)		2679	M
D 17 13C4 PFOS										
503.00 > 80.00	3.173	3.172	0.001		12393983	49.8		104	1457588	
D 19 13C5 PFNA										
468.00 > 423.00	3.181	3.172	0.009		8793150	49.5		99.0	810272	
20 Perfluorononanoic acid										
463.00 > 419.00	3.181	3.172	0.009	1.000	172658	1.03		103	3650	
D 21 13C8 FOSA										
506.00 > 78.00	3.480	3.478	0.002		19974201	52.0		104	715848	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.489	3.478	0.011	1.000	376845	1.01		101	27717	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.539	3.529	0.010	1.000	146974	0.9645		96.5	7151	
D 23 13C2 PFDA										
515.00 > 470.00	3.539	3.537	0.002		8072885	51.3		103	338129	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.850	3.848	0.002	1.000	139829	0.9235		95.8		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.876	3.857	0.019	1.000	120798	1.03		103	4769	
D 27 13C2 PFUnA										
565.00 > 520.00	3.876	3.866	0.010		6158011	52.5		105	247557	
D 30 13C2 PFDoA										
615.00 > 570.00	4.170	4.160	0.010		5655073	51.0		102	236100	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.170	4.160	0.010	1.000	100811	0.9710		97.1	3925	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.442	4.433	0.009	1.000	99462	0.9697		97.0	2636	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.681	4.670	0.011		11352096	49.9		99.8	824753	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.689	4.670	0.019	1.000	199589	1.11		111	1614	
713.00 > 169.00	4.681	4.670	0.011	0.998	33300		5.99(0.00-0.00)		12401	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.113	5.090	0.023		5854167	47.0		94.0	132204	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.113	5.101	0.012	1.000	167625	0.9527		95.3	192	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.475	5.459	0.016	1.000	90527	0.7768		77.7	106	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L2_00023

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016A_005.d

Injection Date: 30-Dec-2016 11:26:29

Instrument ID: A8_N

Lims ID: CCV L2

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 38

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

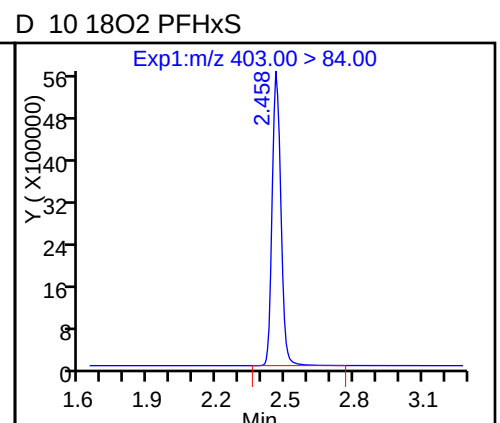
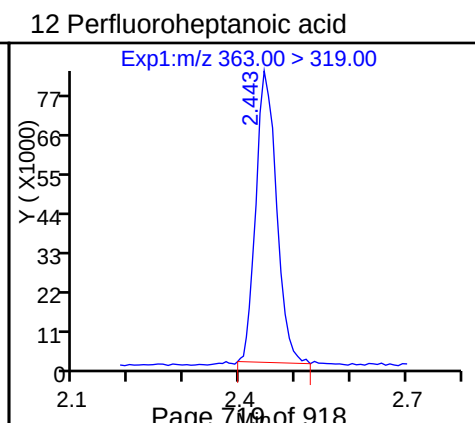
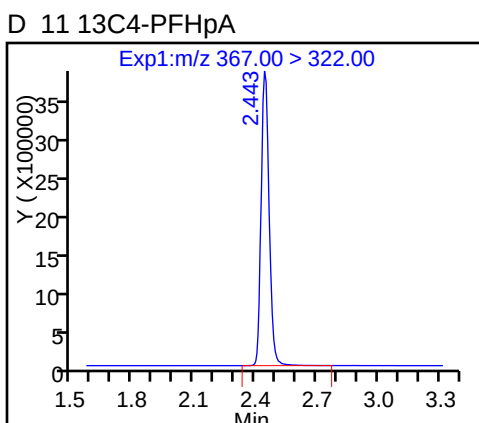
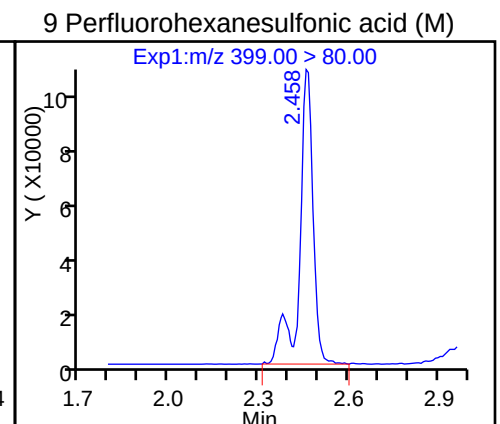
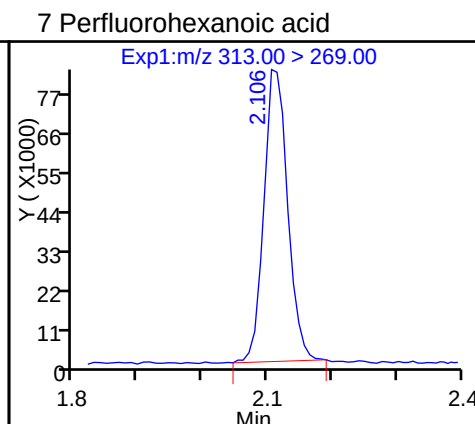
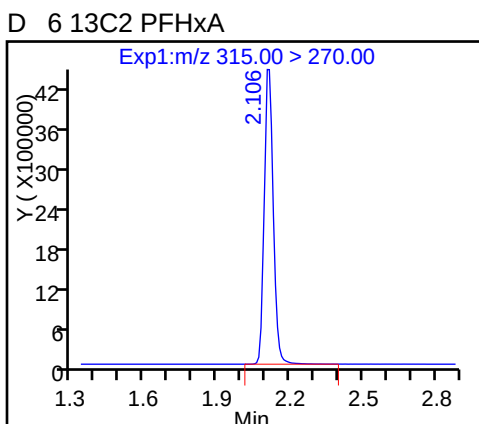
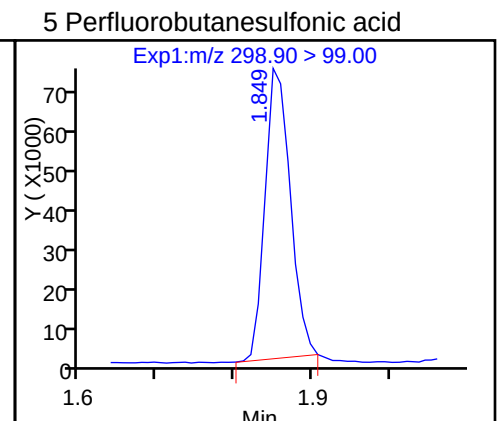
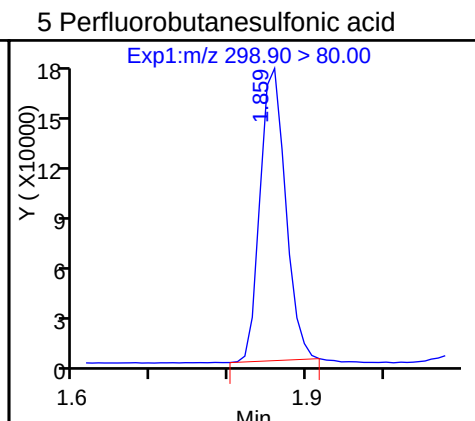
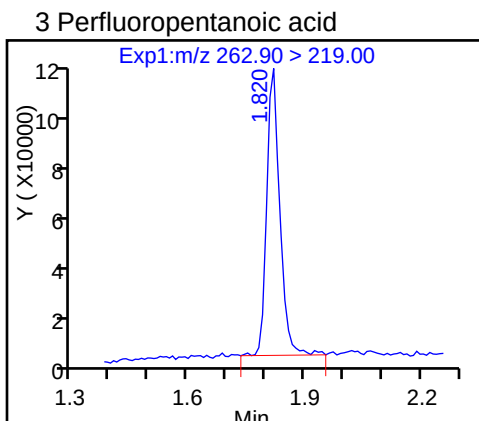
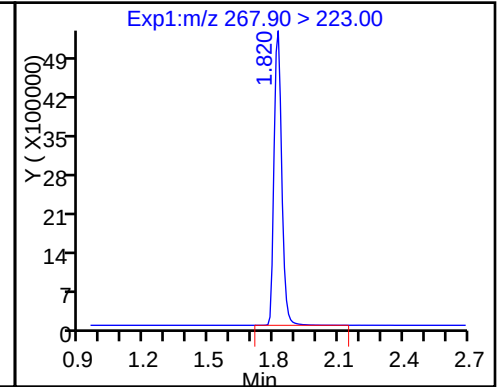
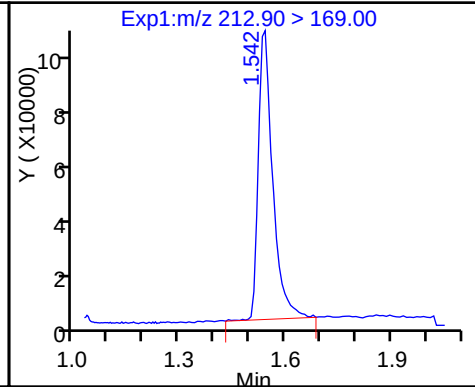
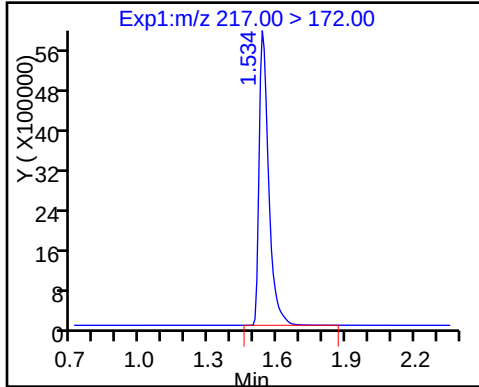
Method: A8_N

Limit Group: LC PFC_DOD ICAL

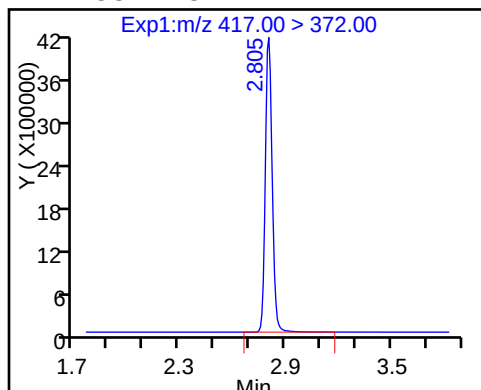
D 2 13C4 PFBA

1 Perfluorobutyric acid

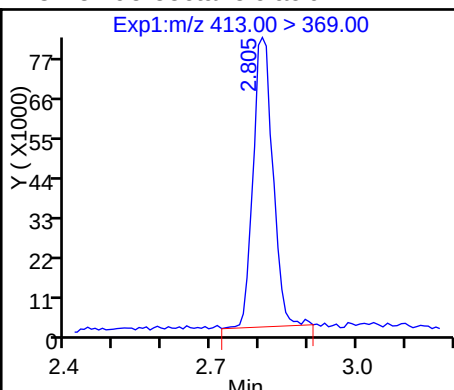
D 4 13C5-PFPeA



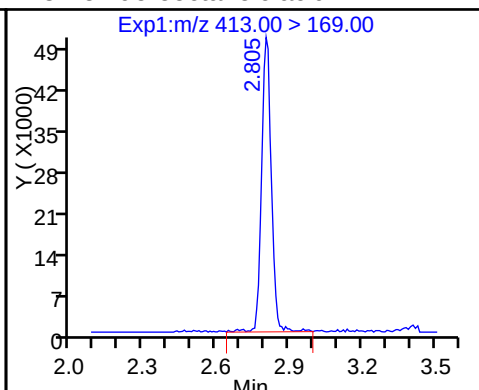
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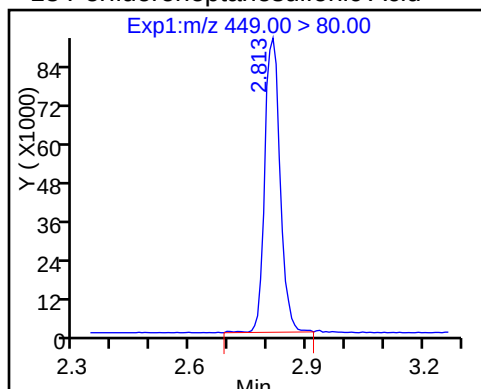
15 Perfluorooctanoic acid



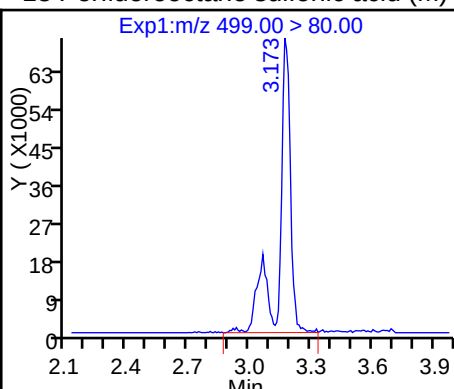
15 Perfluorooctanoic acid



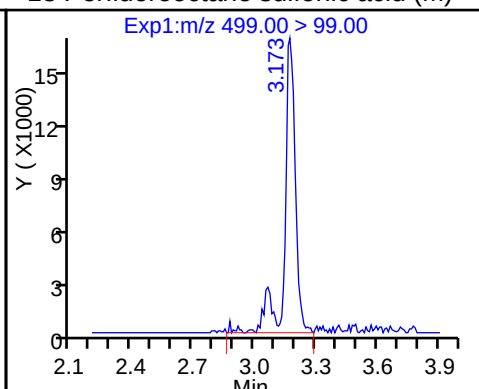
13 Perfluoroheptanesulfonic Acid



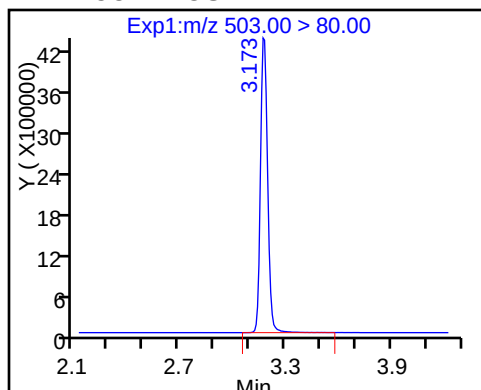
18 Perfluorooctane sulfonic acid (M)



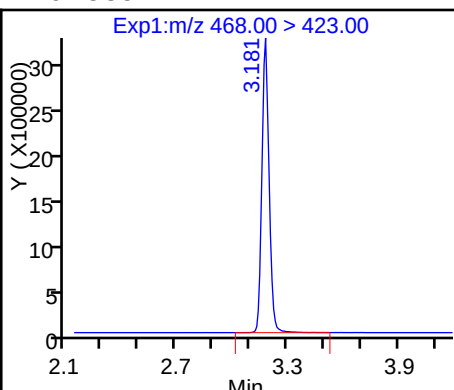
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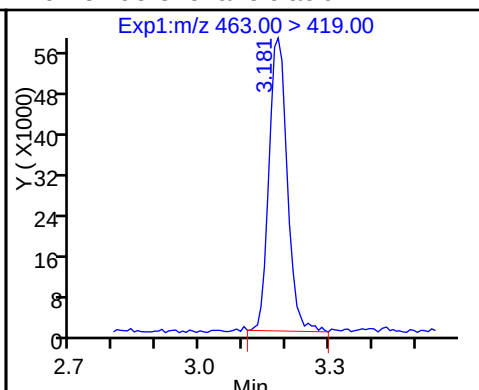
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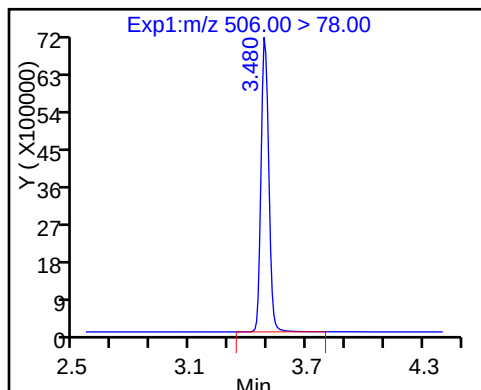
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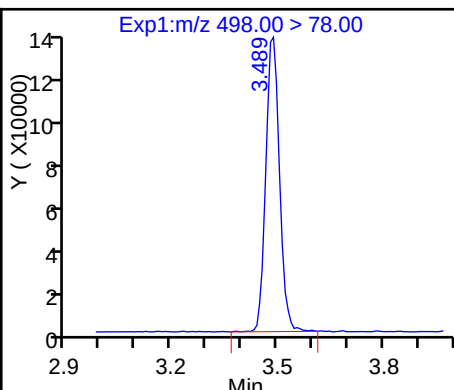
20 Perfluorononanoic acid



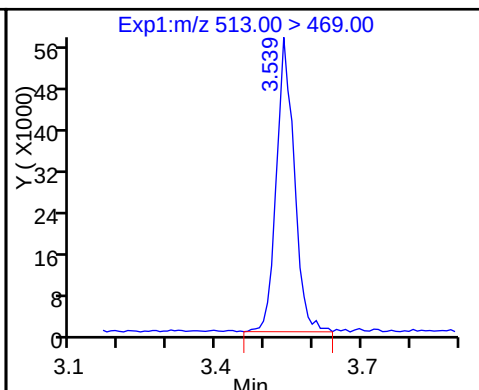
D 21 13C8 FOSA



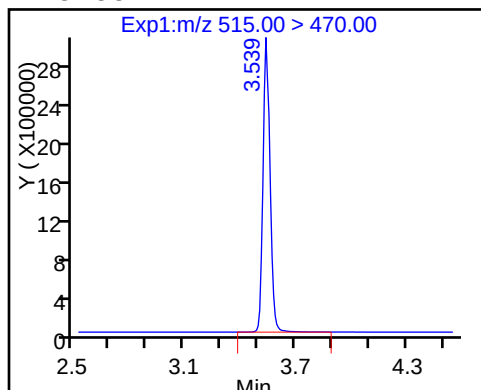
22 Perfluorooctane Sulfonamide



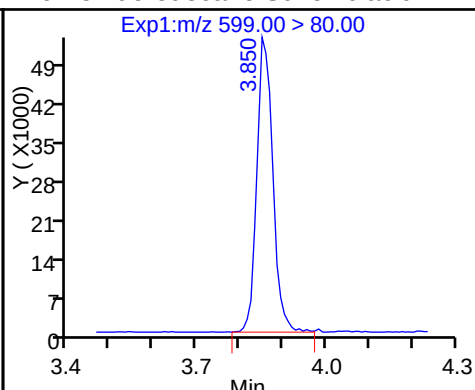
24 Perfluorodecanoic acid



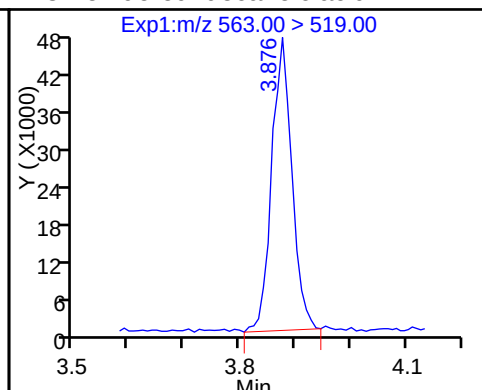
D 23 13C2 PFDA



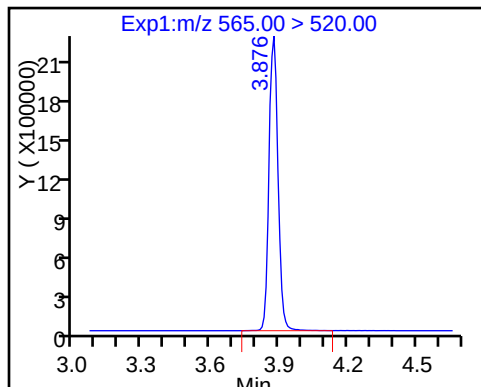
26 Perfluorodecane Sulfonic acid



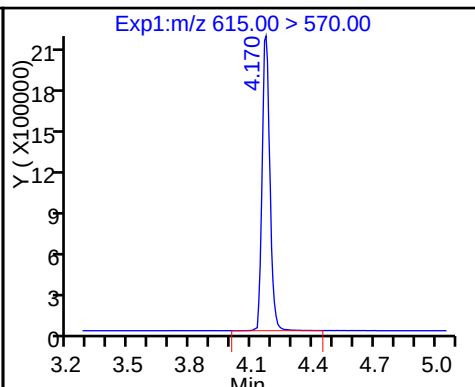
28 Perfluoroundecanoic acid



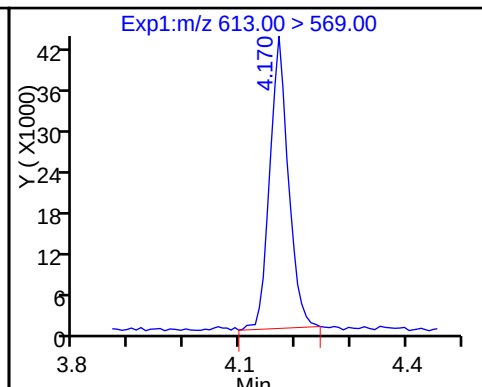
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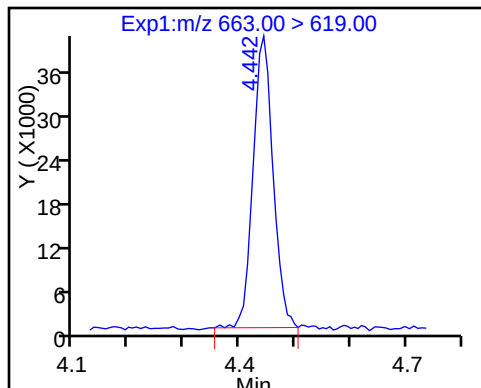
D 30 13C2 PFDaA



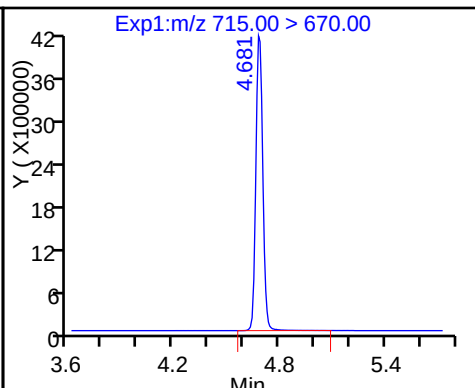
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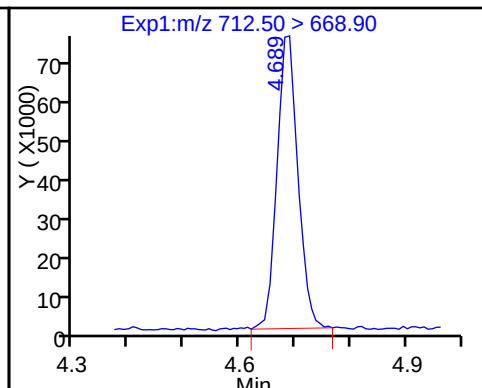
31 Perfluorotridecanoic acid



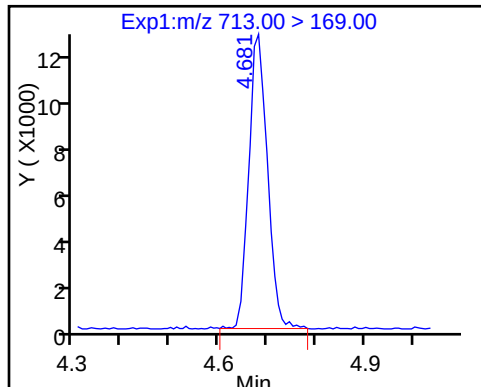
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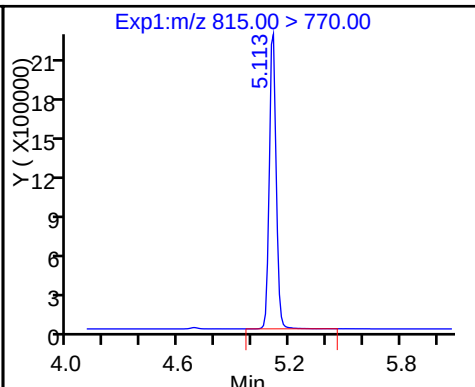
33 Perfluorotetradecanoic acid



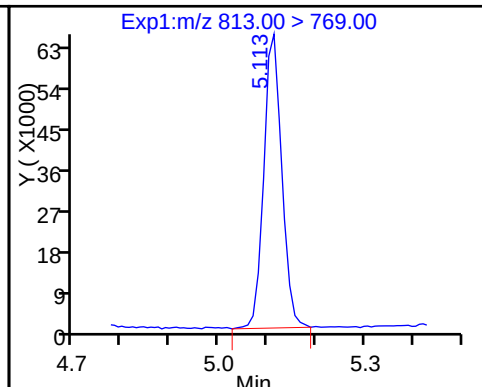
33 Perfluorotetradecanoic acid



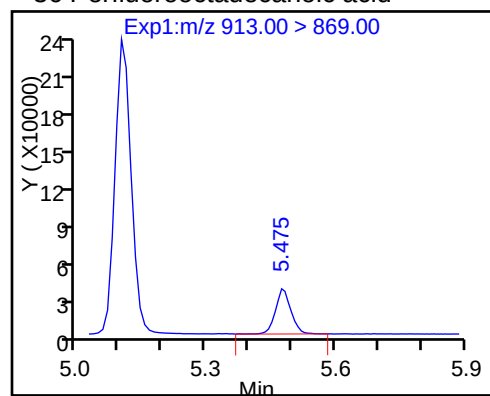
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

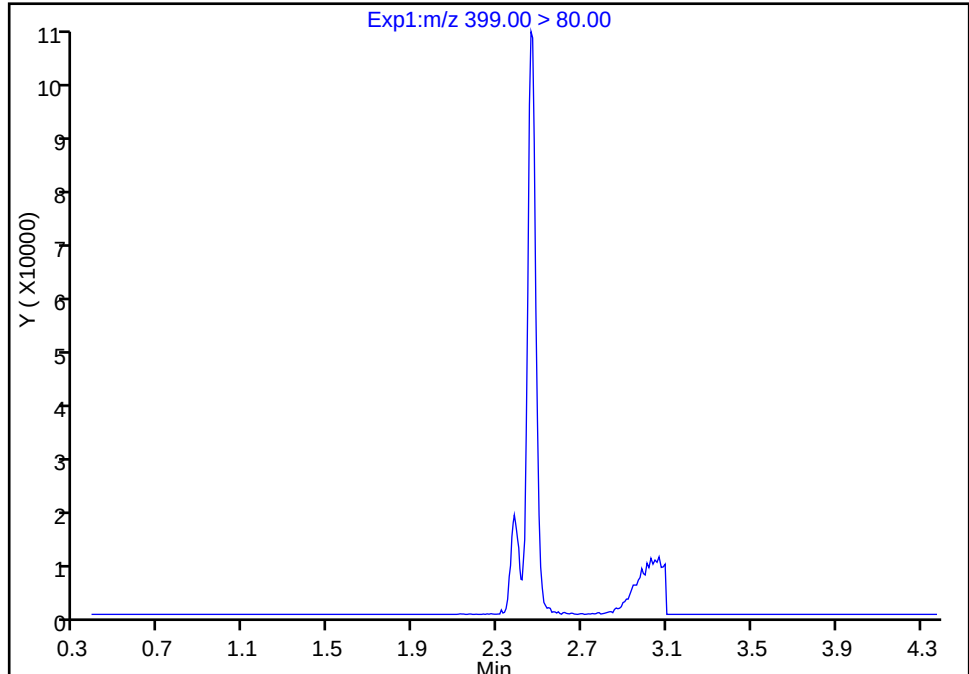
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016A_005.d
Injection Date: 30-Dec-2016 11:26:29 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

9 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

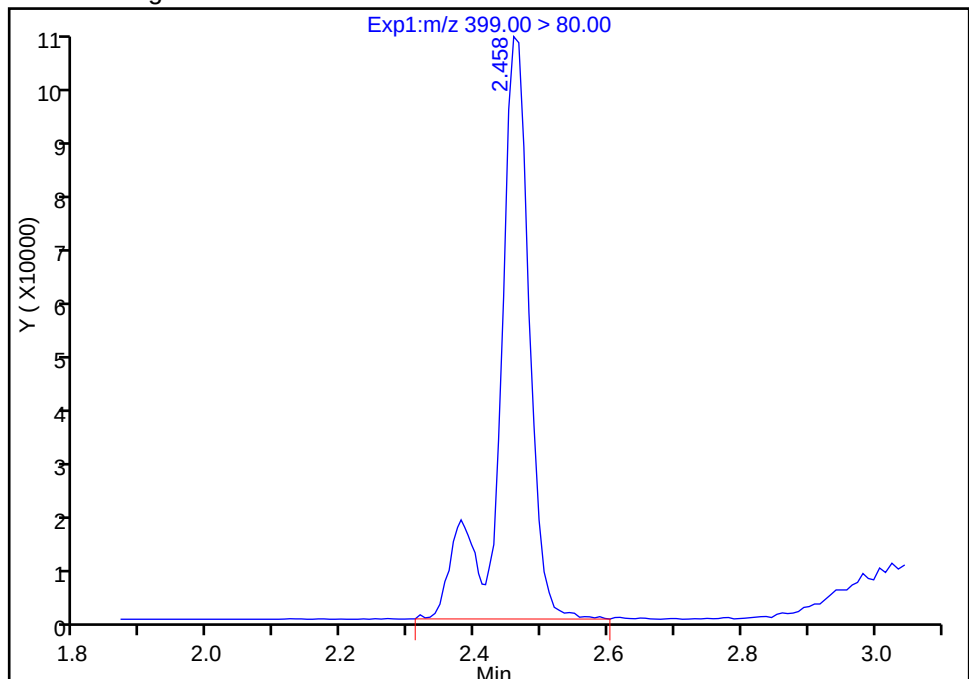
Not Detected
Expected RT: 2.38

Processing Integration Results



RT: 2.46
Area: 338751
Amount: 1.021926
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 03-Jan-2017 10:09:16

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

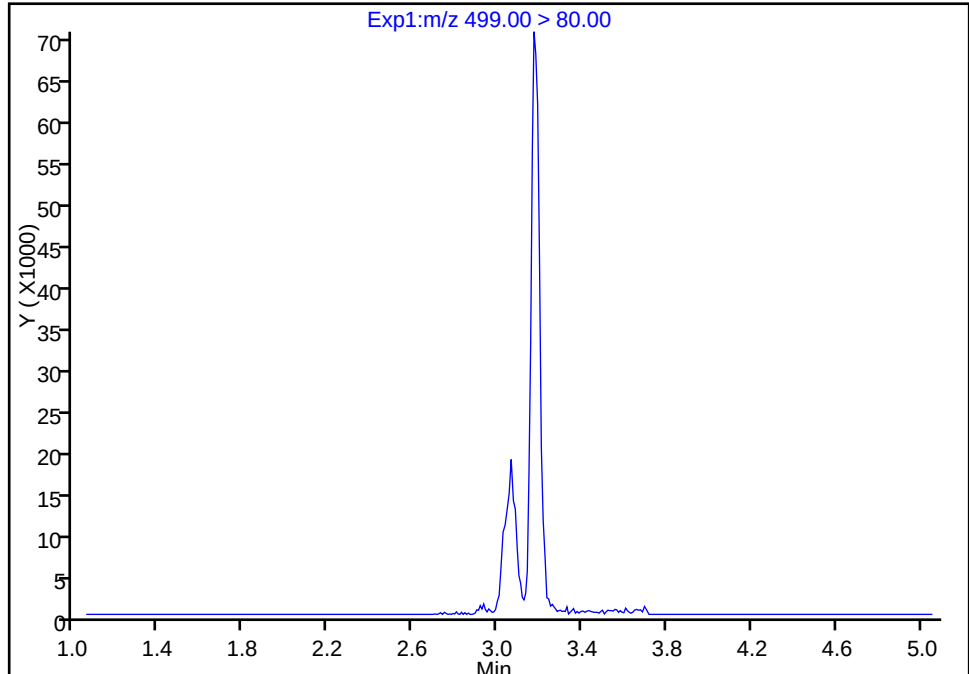
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016A_005.d
Injection Date: 30-Dec-2016 11:26:29 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

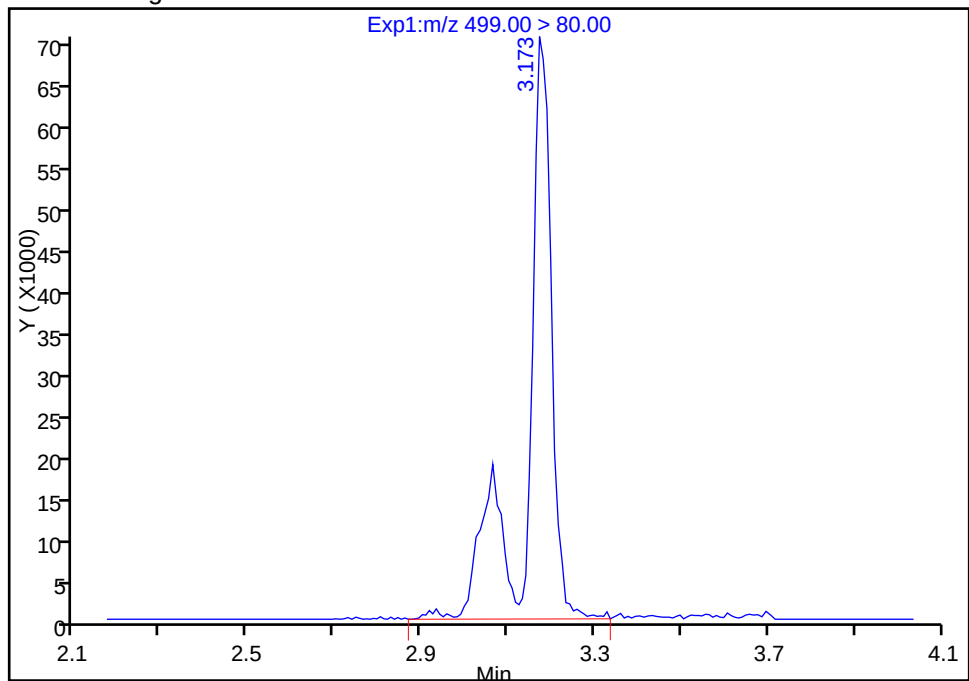
Signal: 1

Not Detected
Expected RT: 3.05

Processing Integration Results



Manual Integration Results



RT: 3.17
Area: 276496
Amount: 1.072313
Amount Units: ng/ml

Reviewer: chandrasenas, 03-Jan-2017 10:09:16

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

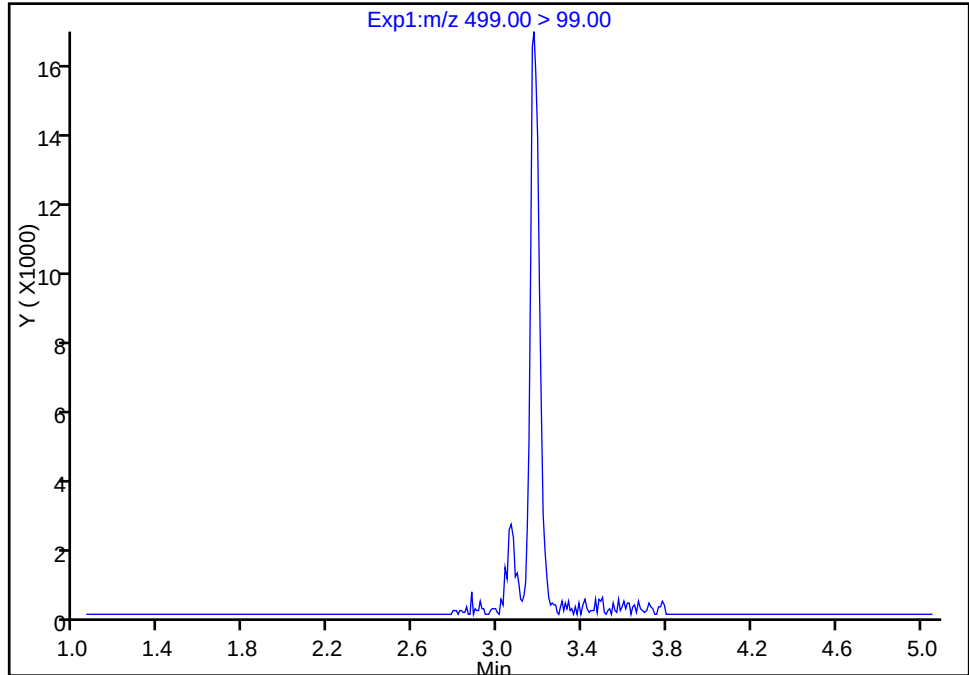
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Injection Date: 30-Dec-2016 11:26:29 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

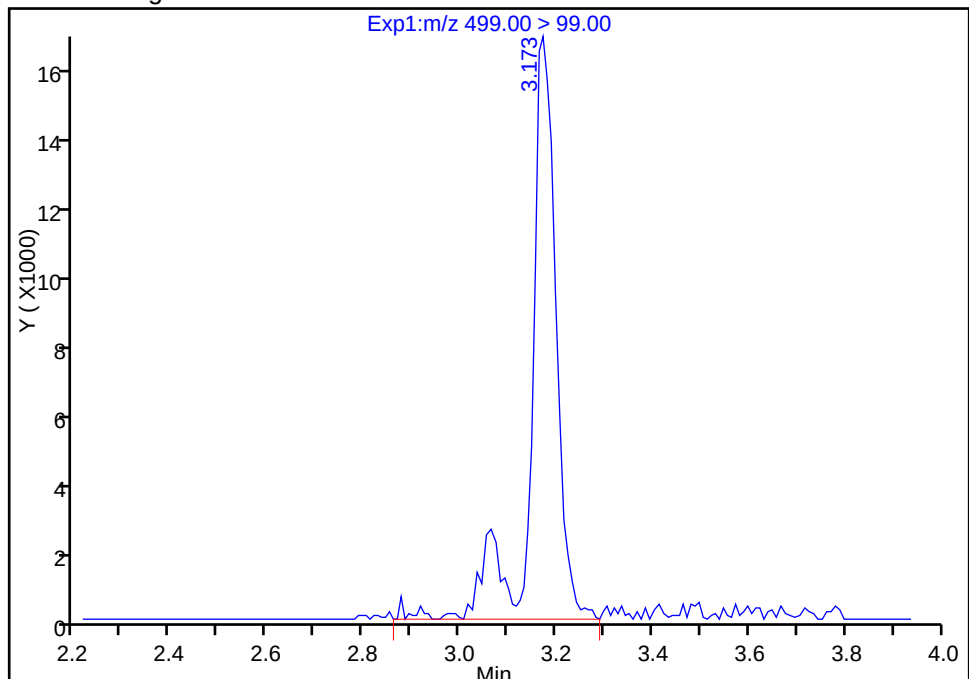
Not Detected
Expected RT: 3.05

Processing Integration Results



Manual Integration Results

RT: 3.17
Area: 58719
Amount: 1.072313
Amount Units: ng/ml



Reviewer: chandrasenas, 03-Jan-2017 10:09:16

Audit Action: Manually Integrated

Audit Reason: Assign Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Lab Sample ID: CCV 320-144510/11 Calibration Date: 12/30/2016 12:18

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 30DEC2016B_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9150		53.6	50.0	7.2	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.002		50.8	50.0	1.6	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.519		47.4	44.2	7.2	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9327		50.2	50.0	0.4	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.032		45.6	45.5	0.2	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9805		50.1	50.0	0.2	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	0.997		49.7	50.0	-0.6	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.158		50.0	47.6	5.1	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9945	1.051		49.0	46.4	5.6	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9590		50.4	50.0	0.7	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9380		50.3	50.0	0.6	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9600		50.9	50.0	1.7	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6245		51.5	48.2	6.9	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9844		51.5	50.0	2.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9512		51.8	50.0	3.6	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9195		50.7	50.0	1.4	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.738		54.8	50.0	9.7	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9588		49.6	50.0	-0.8	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8949		43.4	50.0	-13.1	25.0
13C4 PFBA	Ave	347743	324883		46.7	50.0	-6.6	50.0
13C5-PFPeA	Ave	266072	242051		45.5	50.0	-9.0	50.0
13C2 PFHxA	Ave	245110	217750		44.4	50.0	-11.2	50.0
13C4-PFHpA	Ave	226344	191733		42.4	50.0	-15.3	50.0
18O2 PFHxS	Ave	326976	295171		42.7	47.3	-9.7	50.0
13C4 PFOA	Ave	230362	196038		42.5	50.0	-14.9	50.0
13C4 PFOS	Ave	248847	237649		45.6	47.8	-4.5	50.0
13C5 PFNA	Ave	177687	149415		42.0	50.0	-15.9	50.0
13C8 FOSA	Ave	384141	372821		48.5	50.0	-2.9	50.0
13C2 PFDA	Ave	157302	143393		45.6	50.0	-8.8	50.0
13C2 PFUnA	Ave	117250	105103		44.8	50.0	-10.4	50.0
13C2 PFDoA	Ave	110957	100899		45.5	50.0	-9.1	50.0
13C2-PFTeDA	Ave	227387	207725		45.7	50.0	-8.6	50.0
13C2-PFHxDA	Ave	124568	111894		44.9	50.0	-10.2	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_001.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 30-Dec-2016 12:18:55 ALS Bottle#: 41 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub5
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 03-Jan-2017 14:28:00 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK026

First Level Reviewer: phomsophat

Date: 03-Jan-2017 13:45:15

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 2 13C4 PFBA

217.00 > 172.00 1.534 1.534 0.0 16244137 46.7 93.4 921797

1 Perfluorobutyric acid

212.90 > 169.00 1.534 1.534 0.0 1.000 14863478 53.6 107 83783

D 4 13C5-PFPeA

267.90 > 223.00 1.810 1.810 0.0 12102553 45.5 91.0 1216637

3 Perfluoropentanoic acid

262.90 > 219.00 1.810 1.810 0.0 1.000 12131372 50.8 102 141916

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.849 1.849 0.0 1.000 19819046 47.4 107

298.90 > 99.00 1.849 1.849 0.0 1.000 9168809 2.16(0.00-0.00)

D 6 13C2 PFHxA

315.00 > 270.00 2.098 2.098 0.0 10887491 44.4 88.8 1039617

7 Perfluorohexanoic acid

313.00 > 269.00 2.098 2.098 0.0 1.000 10154370 50.2 100 252812

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.424 2.424 0.0 1.000 13864224 45.6 100

D 11 13C4-PFHpA

367.00 > 322.00 2.431 2.431 0.0 9586637 42.4 84.7 381274

12 Perfluoroheptanoic acid

363.00 > 319.00 2.431 2.431 0.0 1.000 9399949 50.1 100 82536

D 10 18O2 PFHxS

403.00 > 84.00 2.454 2.454 0.0 13961607 42.7 90.3 1017056

D 14 13C4 PFOA

417.00 > 372.00 2.791 2.791 0.0 9801886 42.5 85.1 702218

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.791	2.791	0.0	1.000	9771100	49.7		99.4	112119	
413.00 > 169.00	2.791	2.791	0.0	1.000	6157508		1.59(0.90-1.10)		309395	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.799	2.799	0.0	1.000	13100197	50.0		105		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.135	3.135	0.0	1.000	11584220	49.0		106	112621	
499.00 > 99.00	3.128	3.135	-0.007	0.997	2472749		4.68(0.90-1.10)		33641	
D 17 13C4 PFOS										
503.00 > 80.00	3.159	3.159	0.0		11359619	45.6		95.5	224083	
D 19 13C5 PFNA										
468.00 > 423.00	3.167	3.167	0.0		7470749	42.0		84.1	417920	
20 Perfluorononanoic acid										
463.00 > 419.00	3.159	3.159	0.0	1.000	7164116	50.4		101	151222	
D 21 13C8 FOSA										
506.00 > 78.00	3.474	3.474	0.0		18641065	48.5		97.1	545779	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.482	3.482	0.0	1.000	17485990	50.3		101	621296	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.524	3.524	0.0	1.000	6883163	50.9		102	206646	
D 23 13C2 PFDA										
515.00 > 470.00	3.524	3.524	0.0		7169647	45.6		91.2	332690	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.836	3.836	0.0	1.000	7152869	51.5		107		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.853	3.853	0.0	1.000	5173107	51.5		103	160779	
D 27 13C2 PFUnA										
565.00 > 520.00	3.853	3.853	0.0		5255156	44.8		89.6	399741	
D 30 13C2 PFDaA										
615.00 > 570.00	4.149	4.149	0.0		5044964	45.5		90.9	285176	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.149	4.149	0.0	1.000	4798853	51.8		104	127920	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.421	4.421	0.0	1.000	4639071	50.7		101	104461	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.664	4.664	0.0		10386247	45.7		91.4	553285	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.664	4.664	0.0	1.000	8769752	54.8		110	134380	
713.00 > 169.00	4.655	4.664	-0.009	0.998	1358976		6.45(0.00-0.00)		129225	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.081	5.081	0.0		5594701	44.9		89.8	117329	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.081	5.081	0.0	1.000	4837108	49.6		99.2	5263	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.444	5.444	0.0	1.000	4514794	43.4		86.9	4927	

Reagents:

LCPFC-L5_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_001.d

Injection Date: 30-Dec-2016 12:18:55

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#:

41

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

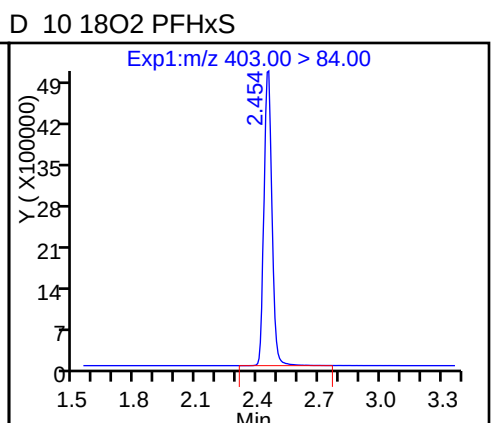
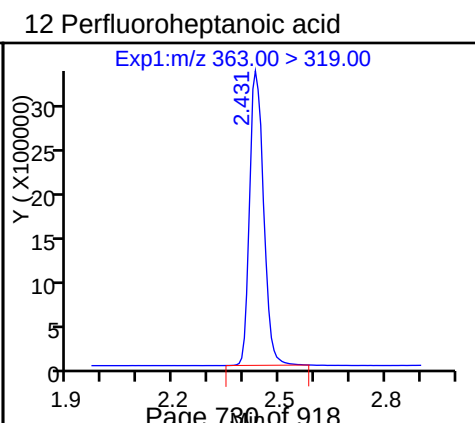
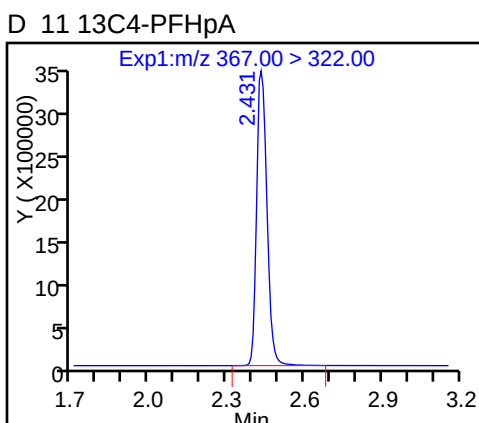
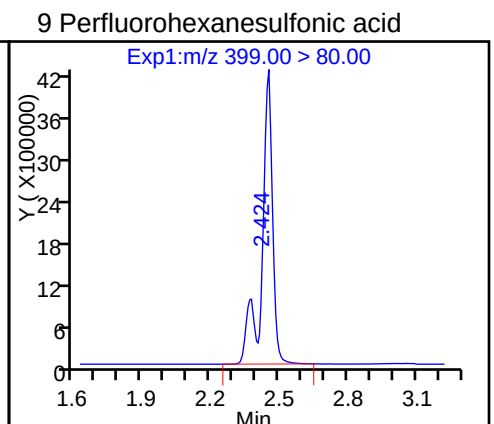
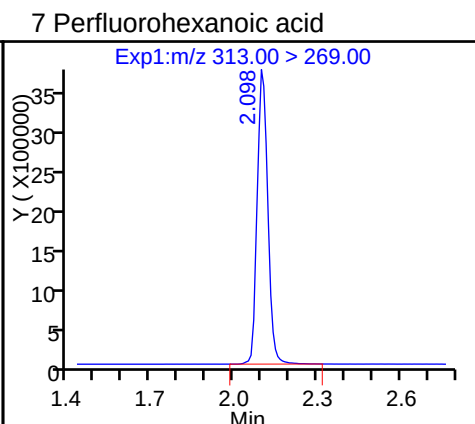
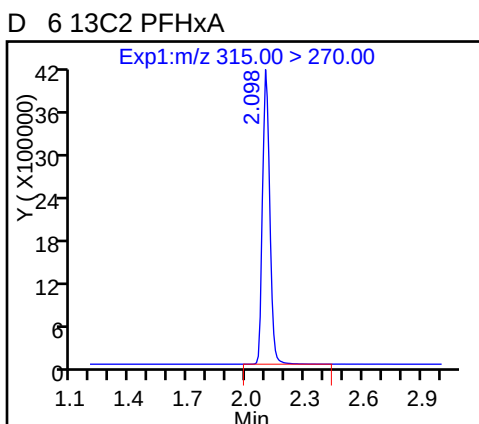
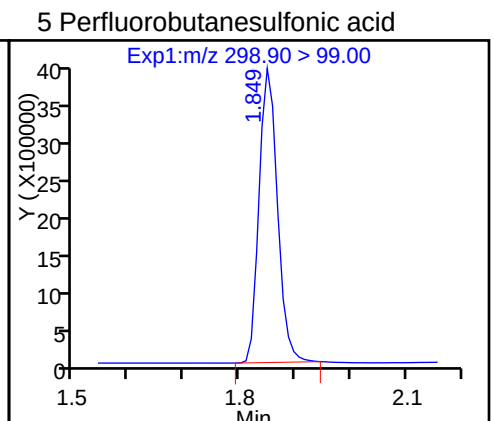
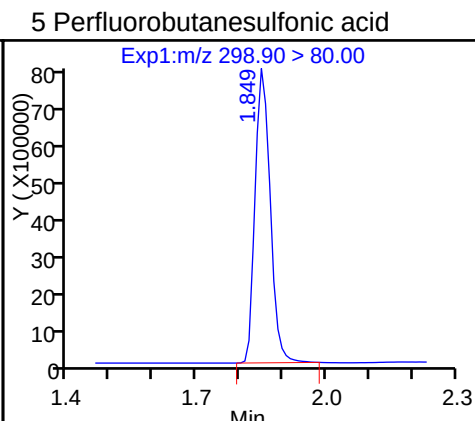
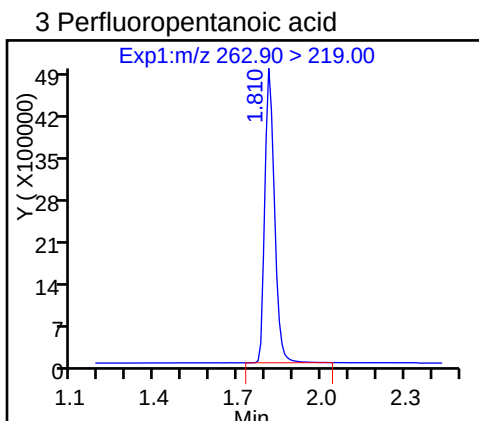
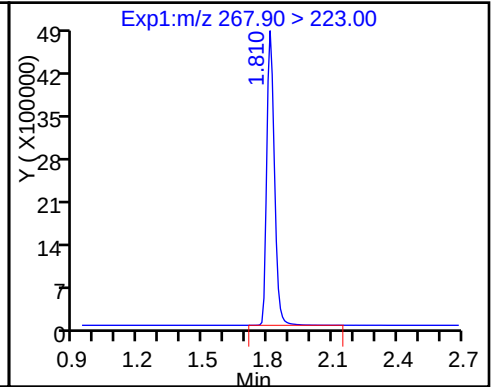
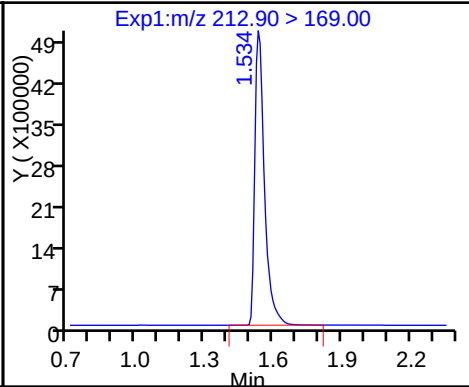
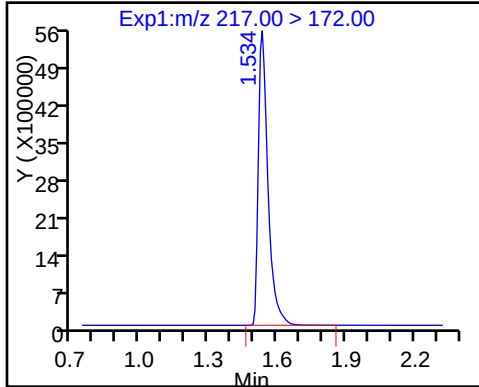
Method: A8_N

Limit Group: LC PFC_DOD ICAL

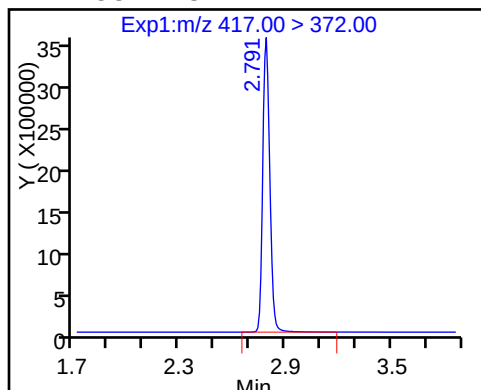
D 2 13C4 PFBA

1 Perfluorobutyric acid

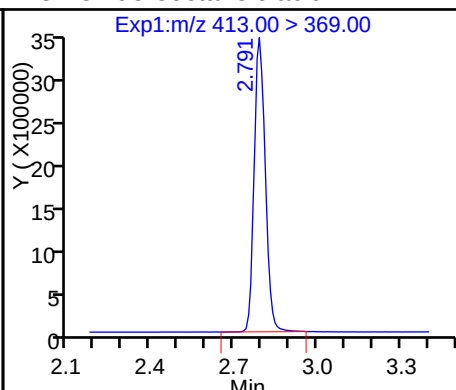
D 4 13C5-PFPeA



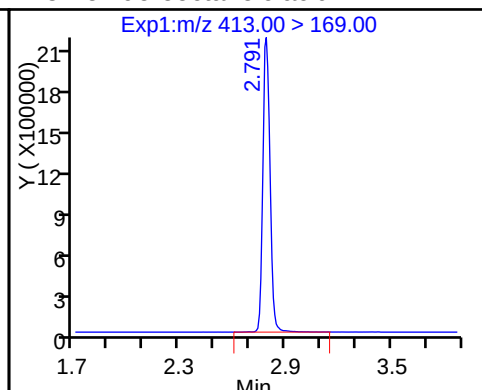
D 14 13C4 PFOA



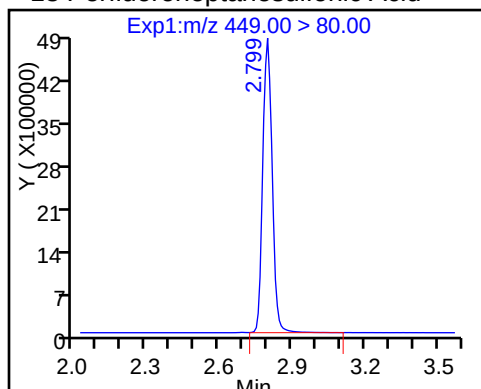
15 Perfluorooctanoic acid



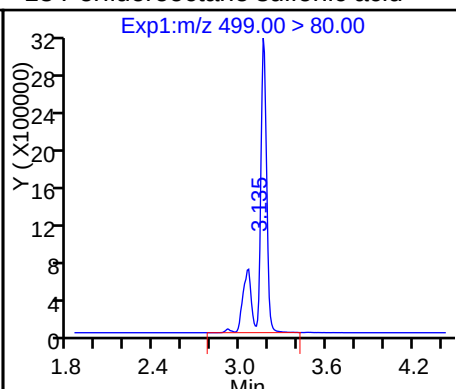
15 Perfluorooctanoic acid



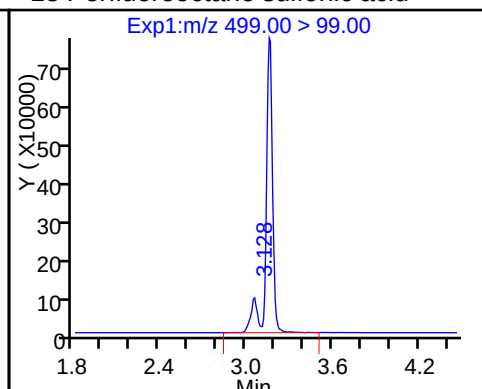
13 Perfluoroheptanesulfonic Acid



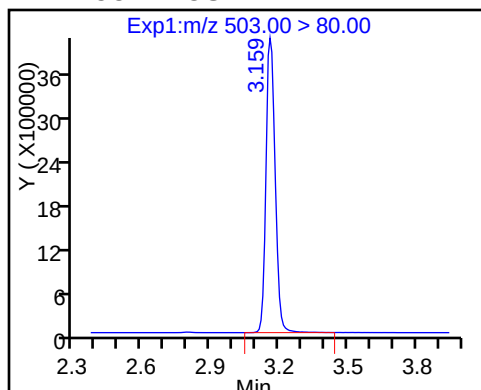
18 Perfluorooctane sulfonic acid



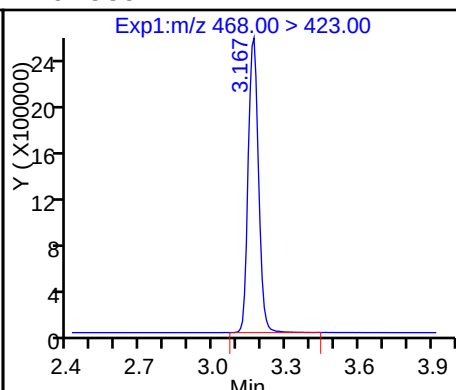
18 Perfluorooctane sulfonic acid



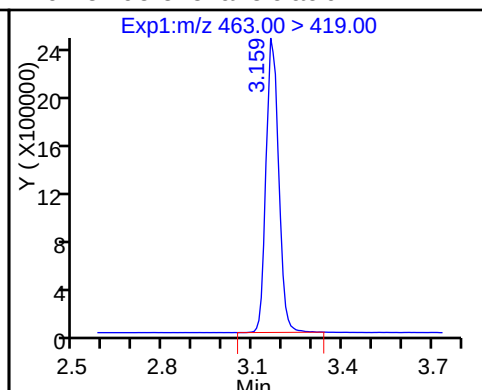
D 17 13C4 PFOS



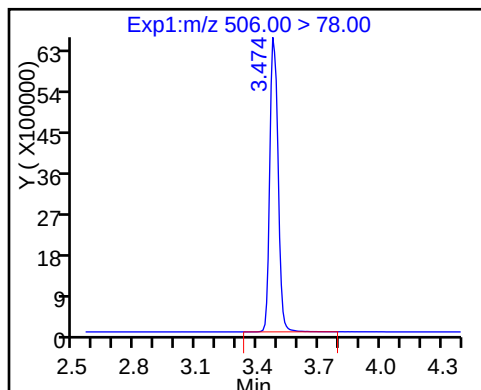
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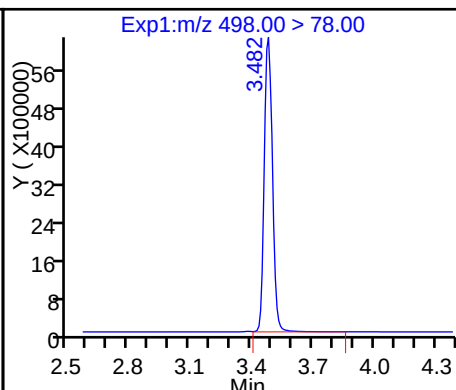
20 Perfluorononanoic acid



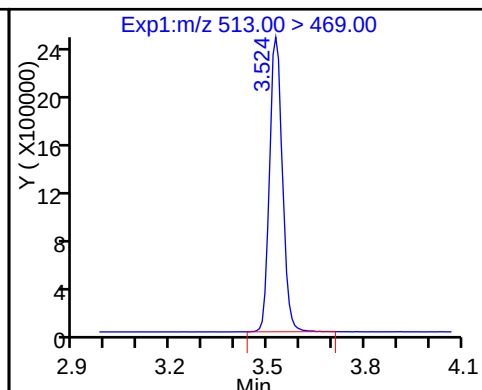
D 21 13C8 FOSA



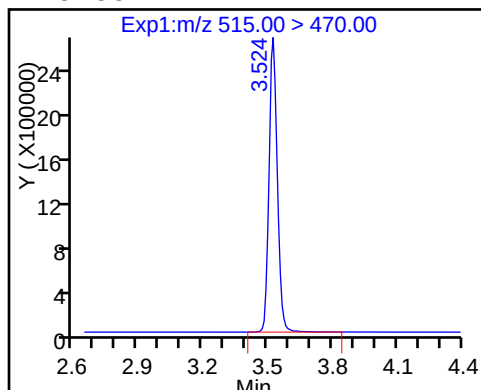
22 Perfluorooctane Sulfonamide



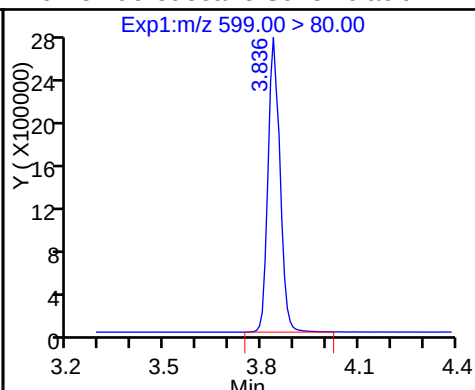
24 Perfluorodecanoic acid



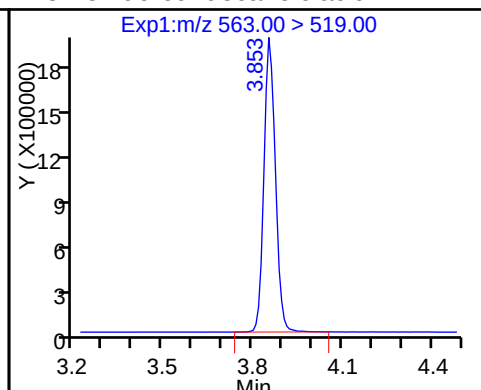
D 23 13C2 PFDA



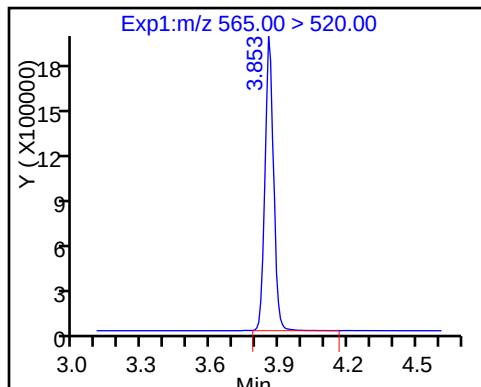
26 Perfluorodecane Sulfonic acid



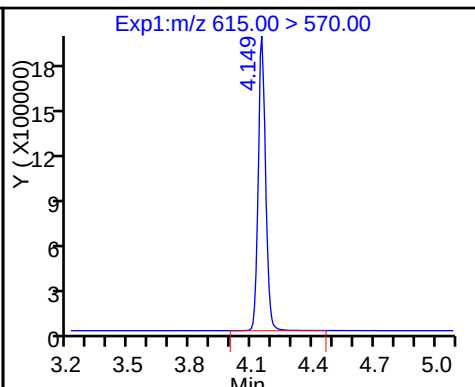
28 Perfluoroundecanoic acid



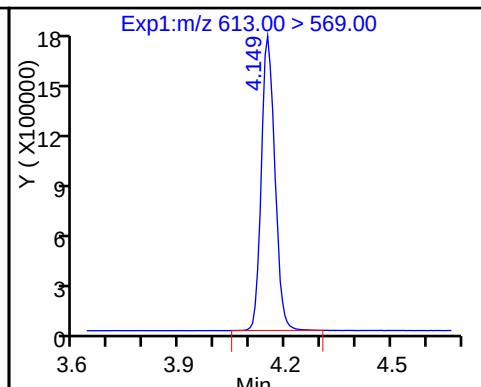
D 27 13C2 PFUnA



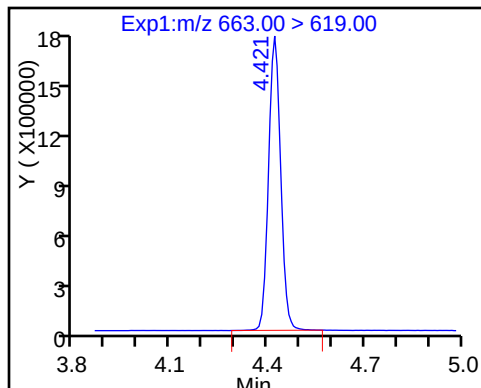
D 30 13C2 PFDaA



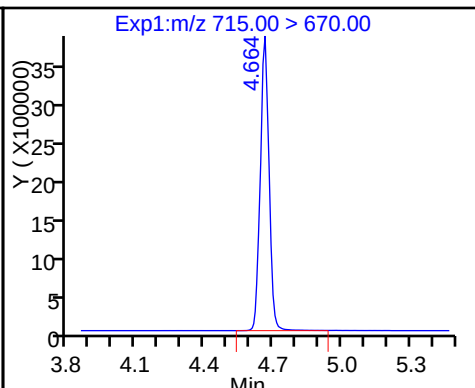
29 Perfluorododecanoic acid



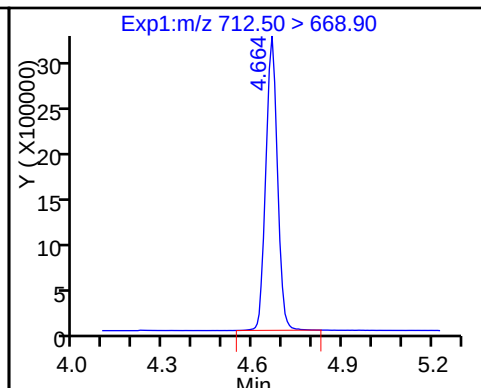
31 Perfluorotridecanoic acid



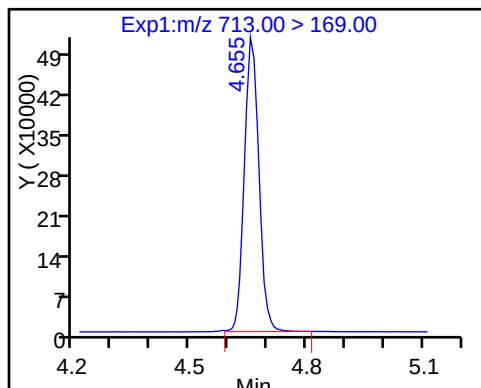
D 32 13C2-PFTeDA



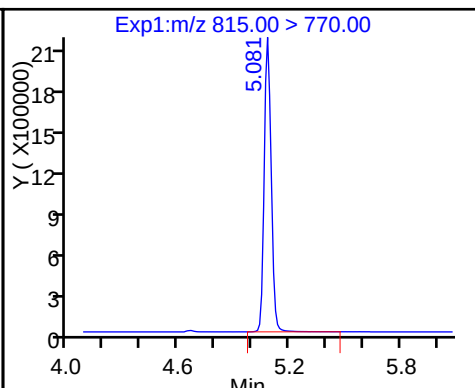
33 Perfluorotetradecanoic acid



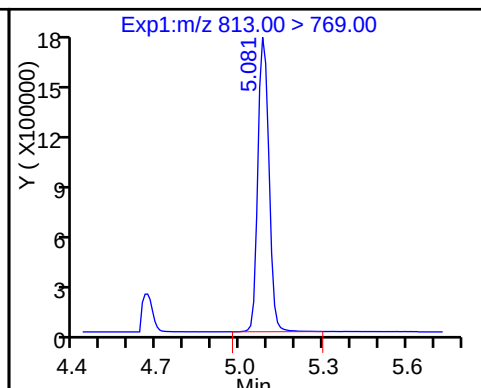
33 Perfluorotetradecanoic acid



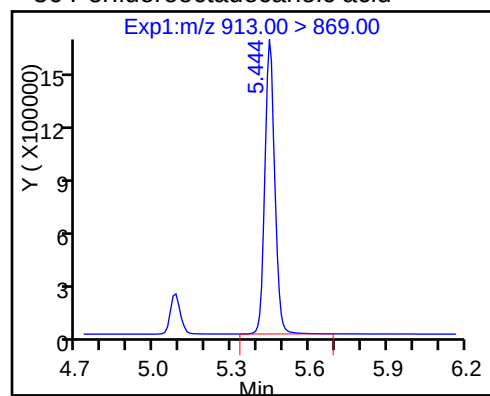
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Lab Sample ID: CCV 320-144510/23 Calibration Date: 12/30/2016 13:48

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 30DEC2016B_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9534		22.3	20.0	11.7	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.069		21.7	20.0	8.3	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.629		20.3	17.7	15.0	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9596		20.7	20.0	3.3	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.093		19.3	18.2	6.1	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	1.016		20.8	20.0	3.8	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.082		21.6	20.0	7.9	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.256		21.7	19.0	14.0	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9945	1.061		19.8	18.6	6.7	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9887		20.8	20.0	3.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9949		21.3	20.0	6.7	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9782		20.7	20.0	3.6	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6426		21.2	19.3	10.0	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9532		19.9	20.0	-0.3	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9935		21.6	20.0	8.2	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9813		21.6	20.0	8.2	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.910		24.1	20.0	20.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9790		19.9	20.0	-0.5	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8906		17.3	20.0	-13.6	25.0
13C4 PFBA	Ave	347743	347084		49.9	50.0	-0.2	50.0
13C5-PFPeA	Ave	266072	255513		48.0	50.0	-4.0	50.0
13C2 PFHxA	Ave	245110	228632		46.6	50.0	-6.7	50.0
13C4-PFHpA	Ave	226344	205754		45.5	50.0	-9.1	50.0
18O2 PFHxS	Ave	326976	313069		45.3	47.3	-4.3	50.0
13C4 PFOA	Ave	230362	211330		45.9	50.0	-8.3	50.0
13C4 PFOS	Ave	248847	240305		46.2	47.8	-3.4	50.0
13C5 PFNA	Ave	177687	161152		45.3	50.0	-9.3	50.0
13C8 FOSA	Ave	384141	372199		48.4	50.0	-3.1	50.0
13C2 PFDA	Ave	157302	153027		48.6	50.0	-2.7	50.0
13C2 PFUnA	Ave	117250	115232		49.1	50.0	-1.7	50.0
13C2 PFDoA	Ave	110957	102687		46.3	50.0	-7.5	50.0
13C2-PFTeDA	Ave	227387	224263		49.3	50.0	-1.4	50.0
13C2-PFHxDA	Ave	124568	109648		44.0	50.0	-12.0	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_013.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 30-Dec-2016 13:48:58 ALS Bottle#: 40 Worklist Smp#: 23
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub5
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 03-Jan-2017 14:28:20 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.526	1.526	0.0		17354181	49.9		99.8	1471536	
1 Perfluorobutyric acid										
212.90 > 169.00	1.534	1.534	0.0	1.000	6618387	22.3		112	39955	
D 4 13C5-PFPeA										
267.90 > 223.00	1.801	1.801	0.0		12775664	48.0		96.0	1268245	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.811	1.811	0.0	1.000	5461558	21.7		108	70924	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.840	1.840	0.0	1.000	9018675	20.3		115		
298.90 > 99.00	1.840	1.840	0.0	1.000	3803807		2.37(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.092	2.092	0.0		11431607	46.6		93.3	482267	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.092	2.092	0.0	1.000	4387890	20.7		103	123480	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.410	2.410	0.0	1.000	6229504	19.3		106		
D 11 13C4-PFHpA										
367.00 > 322.00	2.421	2.421	0.0		10287724	45.5		90.9	638332	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.421	2.421	0.0	1.000	4180596	20.8		104	43082	
D 10 18O2 PFHxS										
403.00 > 84.00	2.443	2.443	0.0		14808159	45.3		95.7	2749641	
D 14 13C4 PFOA										
417.00 > 372.00	2.773	2.773	0.0		10566500	45.9		91.7	339047	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.780	2.780	0.0	1.000	4574857	21.6		108	57655	
413.00 > 169.00	2.780	2.780	0.0	1.000	2783863		1.64(0.90-1.10)		145611	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid	449.00 > 80.00	2.788	2.788	0.0	1.000	5748483	21.7	114		
18 Perfluorooctane sulfonic acid	499.00 > 80.00	3.044	3.044	0.0	1.000	4730914	19.8	107	35230	
	499.00 > 99.00	3.148	3.044	0.104	1.034	1036506	4.56(0.90-1.10)		48186	
D 17 13C4 PFOS	503.00 > 80.00	3.148	3.148	0.0		11486595	46.2	96.6	327960	
20 Perfluorononanoic acid	463.00 > 419.00	3.156	3.156	0.0	1.000	3186454	20.8	104	69726	
D 19 13C5 PFNA	468.00 > 423.00	3.148	3.148	0.0		8057576	45.3	90.7	391742	
D 21 13C8 FOSA	506.00 > 78.00	3.478	3.478	0.0		18609948	48.4	96.9	945996	
22 Perfluorooctane Sulfonamide	498.00 > 78.00	3.470	3.470	0.0	1.000	7406316	21.3	107	272228	
24 Perfluorodecanoic acid	513.00 > 469.00	3.504	3.504	0.0	1.000	2993760	20.7	104	101040	
D 23 13C2 PFDA	515.00 > 470.00	3.512	3.512	0.0		7651347	48.6	97.3	259633	
26 Perfluorodecane Sulfonic acid	599.00 > 80.00	3.822	3.822	0.0	1.000	2977189	21.2	110		
D 27 13C2 PFUnA	565.00 > 520.00	3.839	3.839	0.0		5761609	49.1	98.3	320888	
28 Perfluoroundecanoic acid	563.00 > 519.00	3.839	3.839	0.0	1.000	2196888	19.9	99.7	58457	
D 30 13C2 PFDaA	615.00 > 570.00	4.138	4.138	0.0		5134343	46.3	92.5	165701	
29 Perfluorododecanoic acid	613.00 > 569.00	4.138	4.138	0.0	1.000	2040304	21.6	108	58082	
31 Perfluorotridecanoic acid	663.00 > 619.00	4.403	4.403	0.0	1.000	2015289	21.6	108	49581	
D 32 13C2-PFTeDA	715.00 > 670.00	4.641	4.641	0.0		11213172	49.3	98.6	996370	
33 Perfluorotetradecanoic acid	712.50 > 668.90	4.651	4.651	0.0	1.000	3921816	24.1	120	66194	
	713.00 > 169.00	4.641	4.651	-0.010	0.998	575761	6.81(0.00-0.00)		72601	
D 34 13C2-PFHxDA	815.00 > 770.00	5.057	5.057	0.0		5482396	44.0	88.0	131410	
35 Perfluorohexadecanoic acid	813.00 > 769.00	5.067	5.067	0.0	1.000	2010567	19.9	99.5	2068	
36 Perfluorooctadecanoic acid	913.00 > 869.00	5.421	5.421	0.0	1.000	1828964	17.3	86.4	2405	

Reagents:

LCPFC-L4_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_013.d

Injection Date: 30-Dec-2016 13:48:58

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 40

Worklist Smp#: 23

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

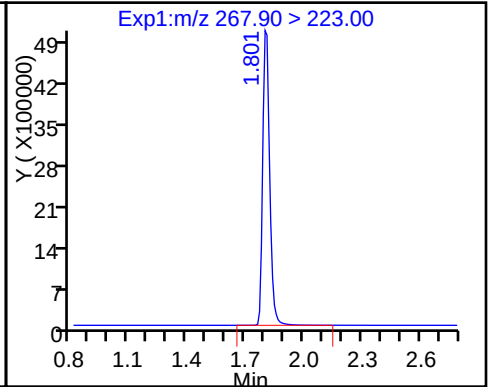
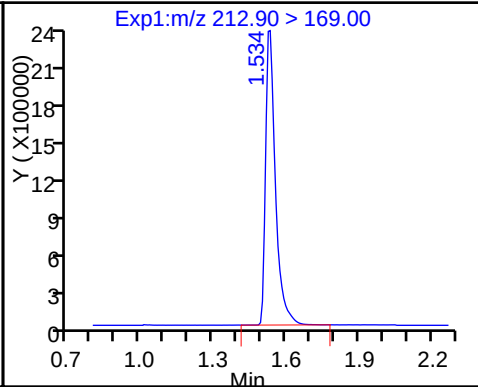
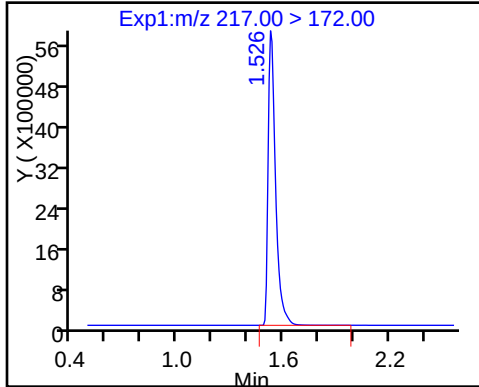
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

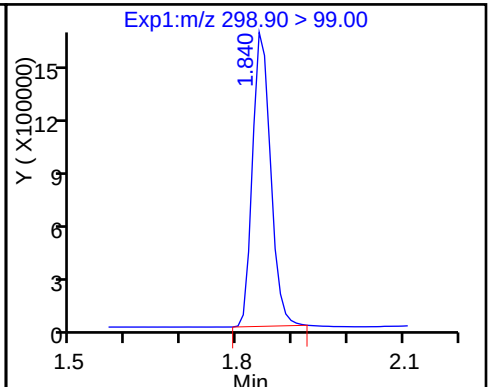
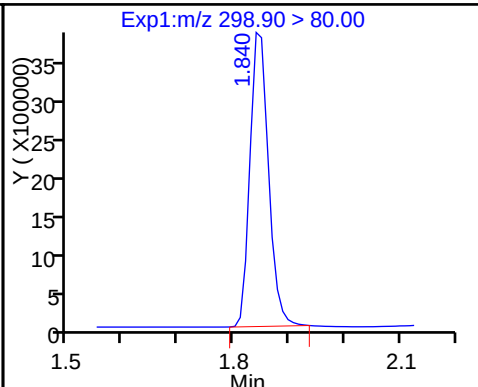
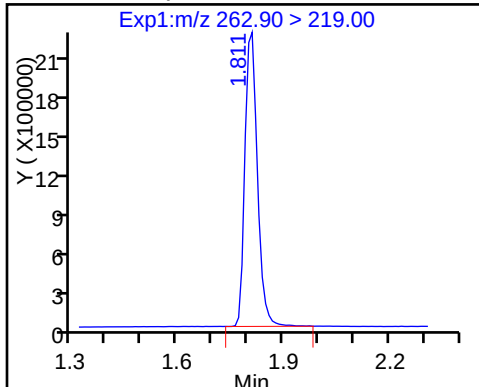
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

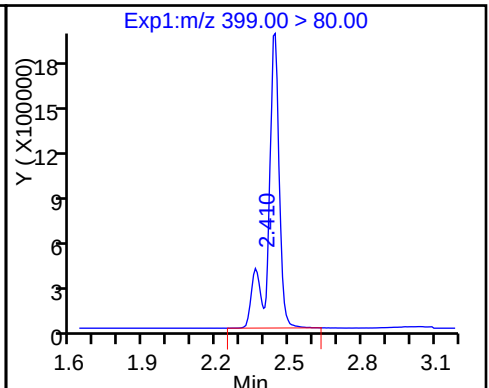
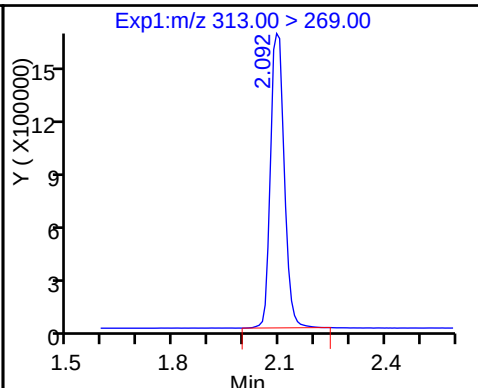
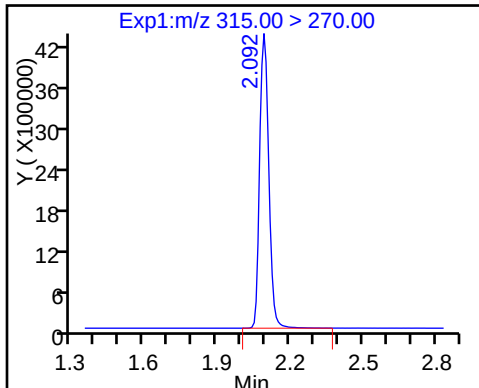
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

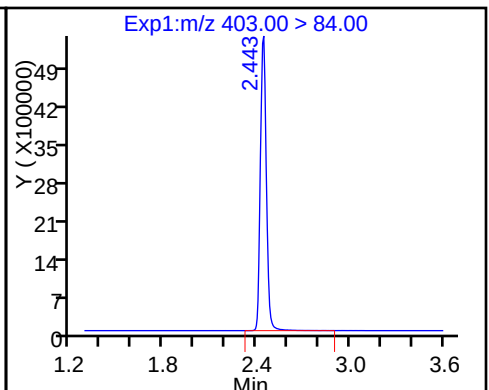
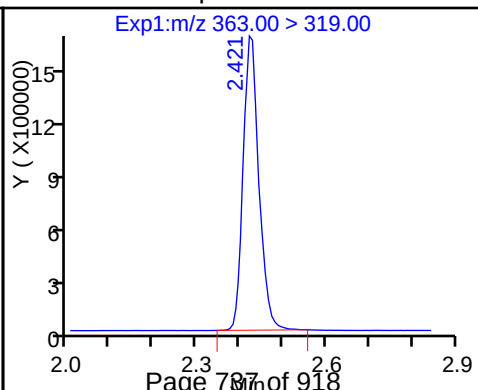
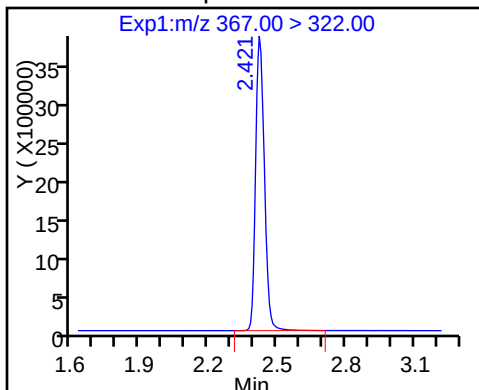
9 Perfluorohexanesulfonic acid



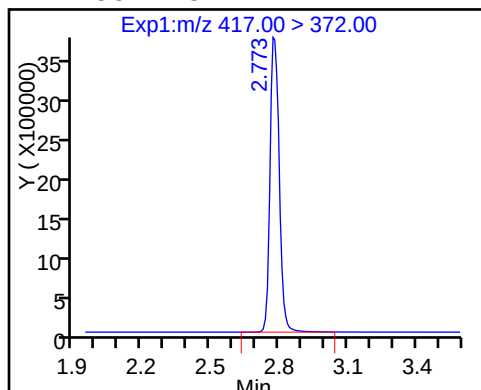
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid

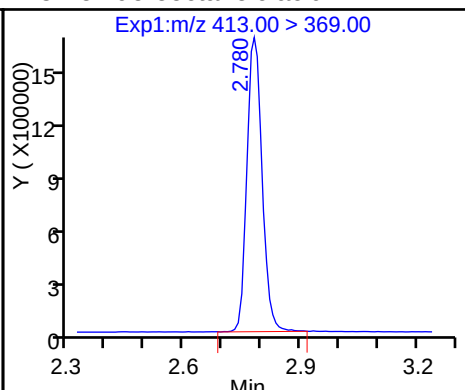
D 10 18O2 PFHxS



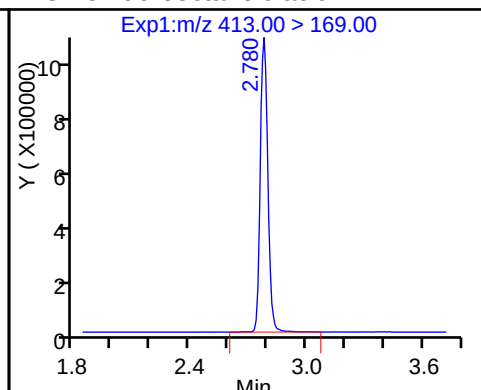
D 14 13C4 PFOA



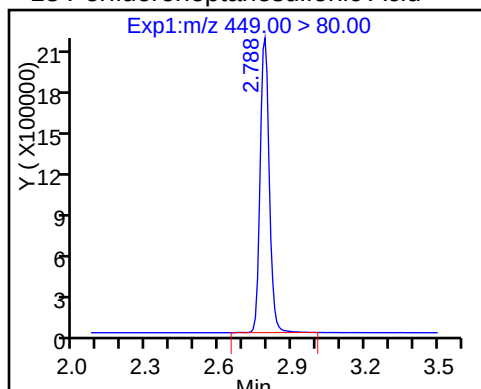
15 Perfluorooctanoic acid



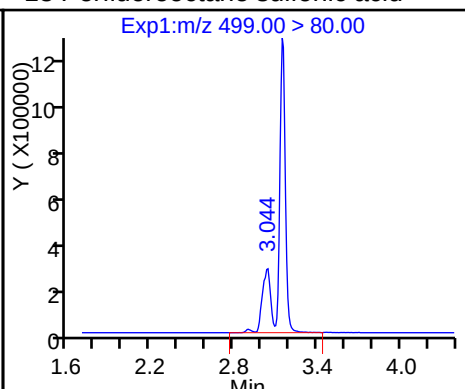
15 Perfluorooctanoic acid



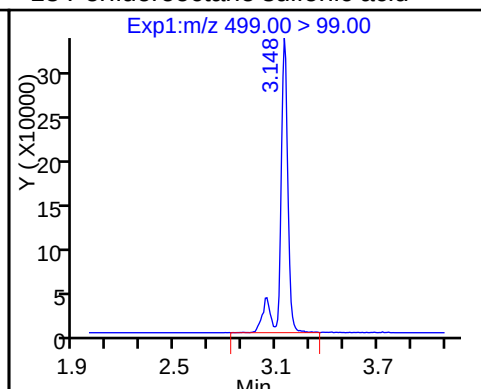
13 Perfluoroheptanesulfonic Acid



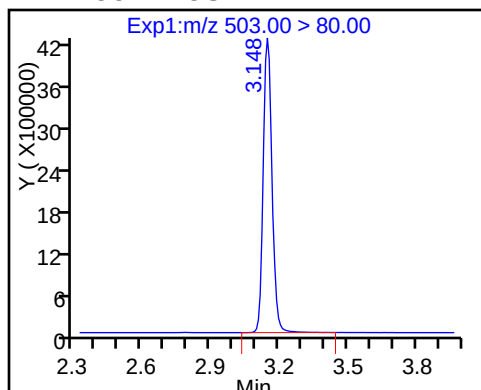
18 Perfluorooctane sulfonic acid



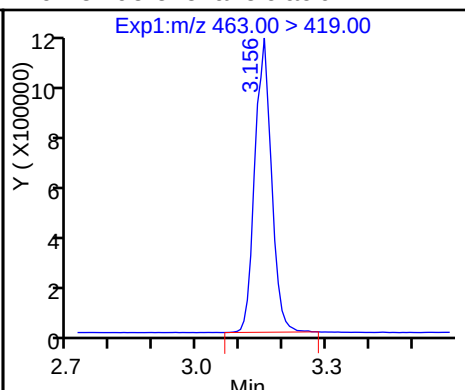
18 Perfluorooctane sulfonic acid



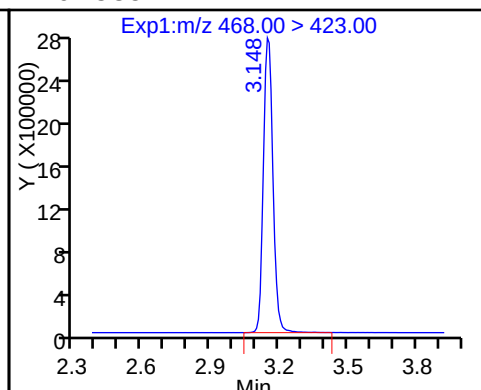
D 17 13C4 PFOS



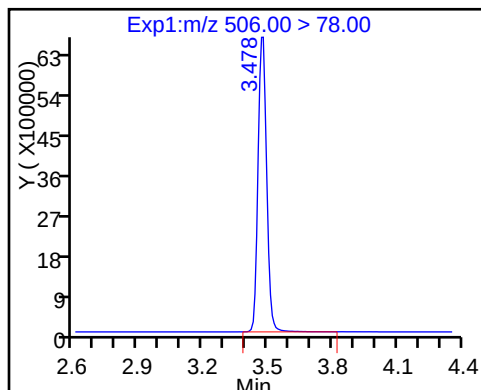
20 Perfluorononanoic acid



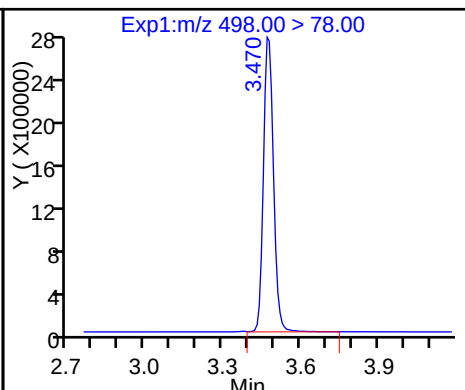
D 19 13C5 PFNA



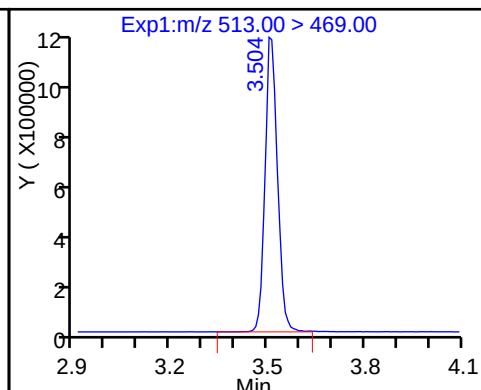
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide



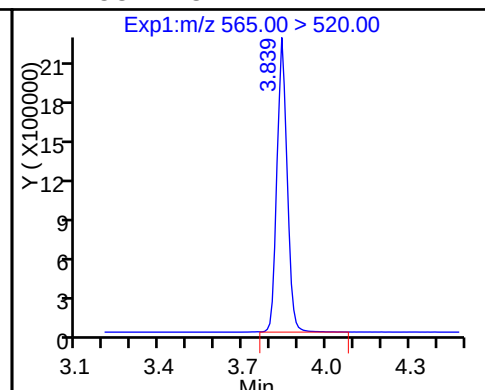
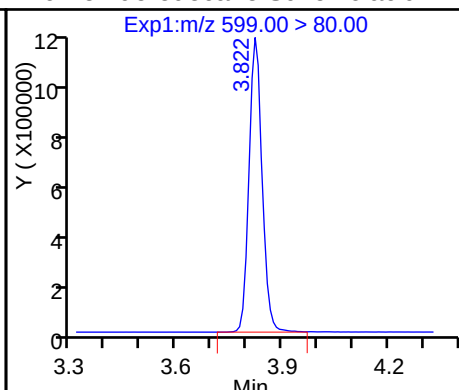
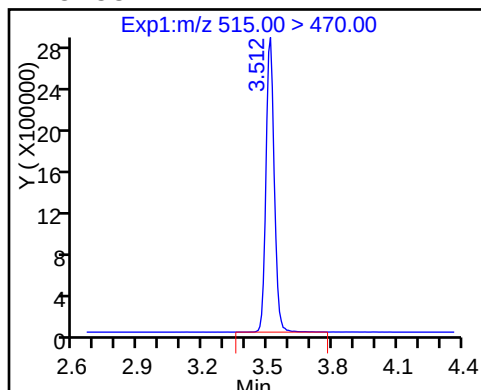
24 Perfluorodecanoic acid



D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

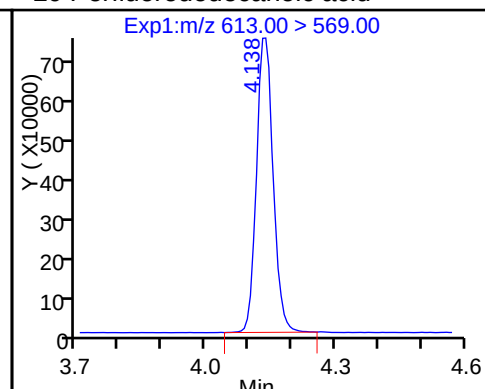
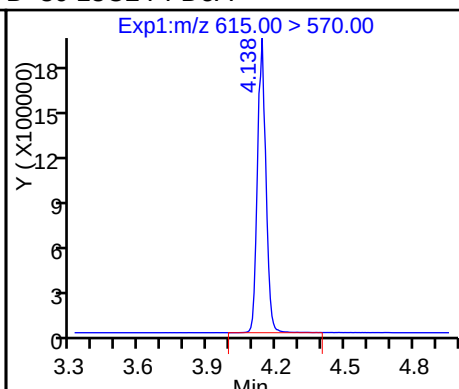
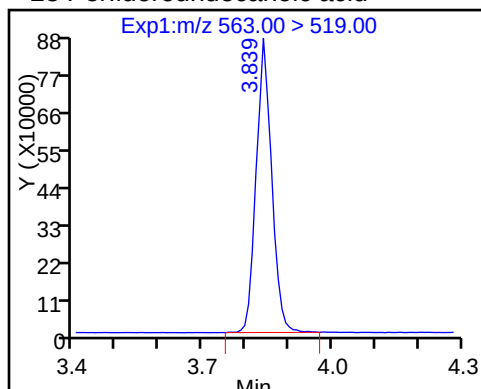
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

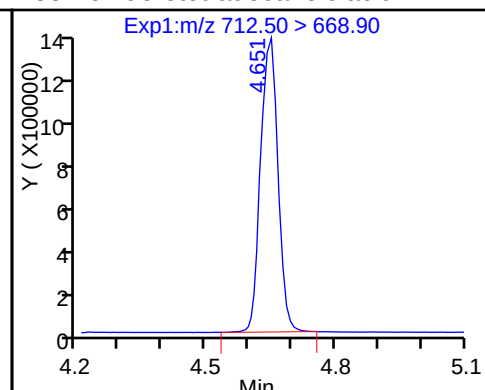
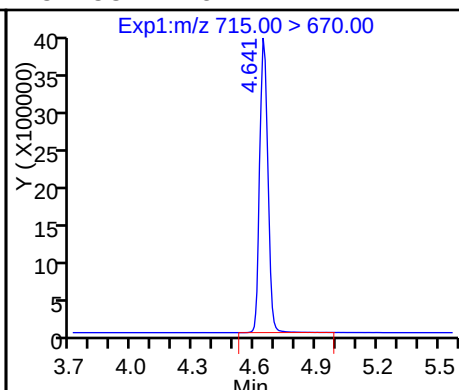
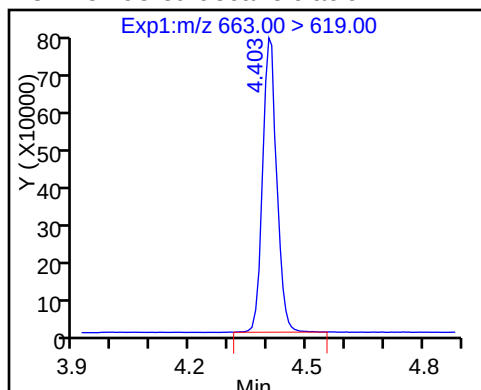
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

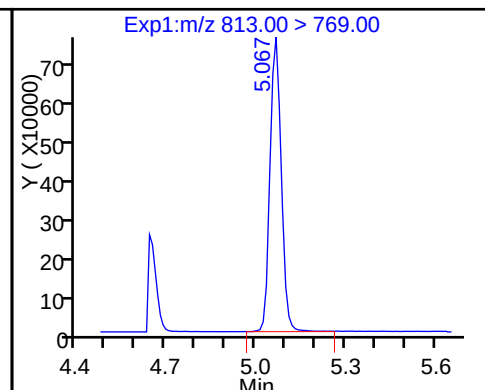
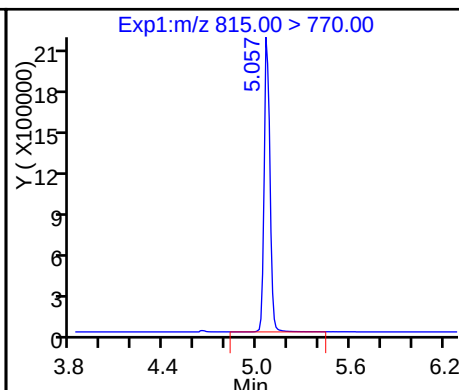
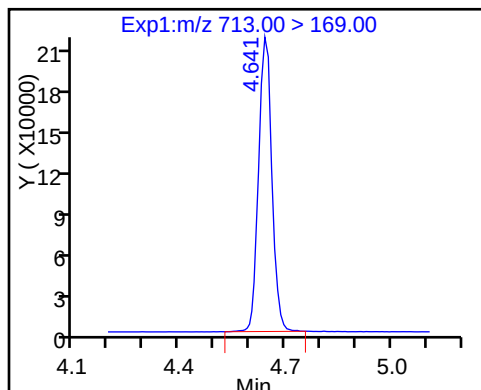
33 Perfluorotetradecanoic acid



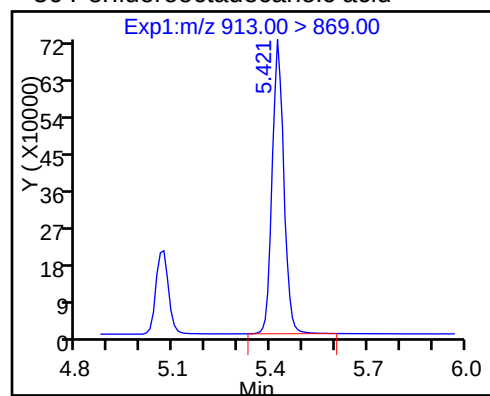
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Lab Sample ID: CCV 320-144510/34 Calibration Date: 12/30/2016 15:11

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 30DEC2016B_024.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9060		53.1	50.0	6.1	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.002		50.8	50.0	1.5	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.492		46.5	44.2	5.3	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9288		50.0	50.0	0.0	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9647		49.3	50.0	-1.4	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.016		44.9	45.5	-1.4	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.179		50.9	47.6	7.0	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.024		51.1	50.0	2.1	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9743		51.2	50.0	2.4	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9945	1.035		48.3	46.4	4.1	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9279		49.7	50.0	-0.5	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9530		50.5	50.0	1.0	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6065		50.1	48.2	3.9	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9788		51.2	50.0	2.4	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9437		51.4	50.0	2.8	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.8909		49.1	50.0	-1.8	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.778		56.1	50.0	12.2	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9509		49.2	50.0	-1.6	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8617		41.8	50.0	-16.4	25.0
13C4 PFBA	Ave	347743	319330		45.9	50.0	-8.2	50.0
13C5-PFPeA	Ave	266072	236584		44.5	50.0	-11.1	50.0
13C2 PFHxA	Ave	245110	209255		42.7	50.0	-14.6	50.0
13C4-PFHpA	Ave	226344	192958		42.6	50.0	-14.8	50.0
18O2 PFHxS	Ave	326976	289218		41.8	47.3	-11.5	50.0
13C4 PFOA	Ave	230362	188480		40.9	50.0	-18.2	50.0
13C4 PFOS	Ave	248847	222836		42.8	47.8	-10.5	50.0
13C5 PFNA	Ave	177687	146822		41.3	50.0	-17.4	50.0
13C8 FOSA	Ave	384141	352469		45.9	50.0	-8.2	50.0
13C2 PFDA	Ave	157302	138409		44.0	50.0	-12.0	50.0
13C2 PFUnA	Ave	117250	104402		44.5	50.0	-11.0	50.0
13C2 PFDoA	Ave	110957	96104		43.3	50.0	-13.4	50.0
13C2-PFTeDA	Ave	227387	199997		44.0	50.0	-12.0	50.0
13C2-PFHxDA	Ave	124568	106062		42.6	50.0	-14.9	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_024.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 30-Dec-2016 15:11:35 ALS Bottle#: 41 Worklist Smp#: 34
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub5
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 03-Jan-2017 14:28:36 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.534	1.534	0.0		15966492	45.9		91.8	889900	
1 Perfluorobutyric acid										
212.90 > 169.00	1.542	1.542	0.0	1.000	14466281	53.1		106	77794	
D 4 13C5-PFPeA										
267.90 > 223.00	1.811	1.811	0.0		11829188	44.5		88.9	1596351	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.811	1.811	0.0	1.000	11852936	50.8		102	180727	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.849	1.849	0.0	1.000	19068053	46.5		105		
298.90 > 99.00	1.849	1.849	0.0	1.000	8593710		2.22(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.100	2.100	0.0		10462764	42.7		85.4	690688	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.100	2.100	0.0	1.000	9717826	50.0		100	307055	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.448	2.448	0.0	1.000	13369545	44.9		98.6		
D 11 13C4-PFHpA										
367.00 > 322.00	2.420	2.420	0.0		9647918	42.6		85.2	695428	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.426	2.426	0.0	1.000	9306824	49.3		98.6	82233	
D 10 18O2 PFHxS										
403.00 > 84.00	2.448	2.448	0.0		13680031	41.8		88.5	1628958	
D 14 13C4 PFOA										
417.00 > 372.00	2.778	2.778	0.0		9424004	40.9		81.8	471090	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.786	2.786	0.0	1.000	9652878	51.1		102	120863	
413.00 > 169.00	2.778	2.786	-0.008	0.997	5850255		1.65(0.90-1.10)		214127	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid	449.00 > 80.00	2.786	2.786	0.0	1.000	12509326	50.9	107		
18 Perfluorooctane sulfonic acid	499.00 > 80.00	3.153	3.153	0.0	1.000	10699209	48.3	104	376250	
	499.00 > 99.00	3.153	3.153	0.0	1.000	2340753	4.57(0.90-1.10)		148153	
D 17 13C4 PFOS	503.00 > 80.00	3.146	3.146	0.0		10651583	42.8	89.5	206479	
D 19 13C5 PFNA	468.00 > 423.00	3.153	3.153	0.0		7341115	41.3	82.6	307038	
20 Perfluorononanoic acid	463.00 > 419.00	3.153	3.153	0.0	1.000	7152069	51.2	102	138815	
22 Perfluorooctane Sulfonamide	498.00 > 78.00	3.476	3.476	0.0	1.000	16352092	49.7	99.5	390206	
D 21 13C8 FOSA	506.00 > 78.00	3.476	3.476	0.0		17623448	45.9	91.8	910534	
24 Perfluorodecanoic acid	513.00 > 469.00	3.518	3.518	0.0	1.000	6595460	50.5	101	185377	
D 23 13C2 PFDA	515.00 > 470.00	3.510	3.510	0.0		6920447	44.0	88.0	229932	
26 Perfluorodecane Sulfonic acid	599.00 > 80.00	3.820	3.820	0.0	1.000	6514108	50.1	104		
D 27 13C2 PFUnA	565.00 > 520.00	3.837	3.837	0.0		5220103	44.5	89.0	270501	
28 Perfluoroundecanoic acid	563.00 > 519.00	3.837	3.837	0.0	1.000	5109489	51.2	102	160428	
D 30 13C2 PFDoA	615.00 > 570.00	4.131	4.131	0.0		4805222	43.3	86.6	222994	
29 Perfluorododecanoic acid	613.00 > 569.00	4.131	4.131	0.0	1.000	4534816	51.4	103	102487	
31 Perfluorotridecanoic acid	663.00 > 619.00	4.403	4.403	0.0	1.000	4280712	49.1	98.2	87982	
D 32 13C2-PFTeDA	715.00 > 670.00	4.641	4.641	0.0		9999849	44.0	88.0	896418	
33 Perfluorotetradecanoic acid	712.50 > 668.90	4.641	4.641	0.0	1.000	8541976	56.1	112	169018	
	713.00 > 169.00	4.641	4.641	0.0	1.000	1259708	6.78(0.00-0.00)		120161	
D 34 13C2-PFHxDA	815.00 > 770.00	5.057	5.057	0.0		5303084	42.6	85.1	117437	
35 Perfluorohexadecanoic acid	813.00 > 769.00	5.057	5.057	0.0	1.000	4569254	49.2	98.4	5550	
36 Perfluorooctadecanoic acid	913.00 > 869.00	5.413	5.413	0.0	1.000	4140756	41.8	83.6	5407	

Reagents:

LCPFC-L5_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_024.d

Injection Date: 30-Dec-2016 15:11:35

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 41

Worklist Smp#: 34

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

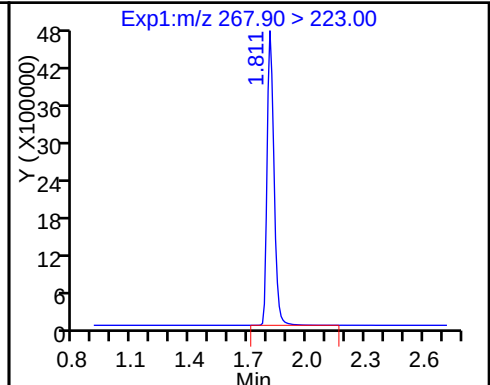
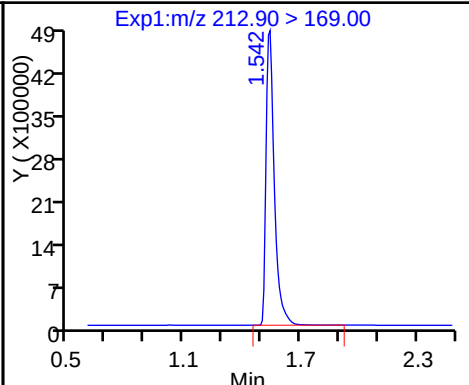
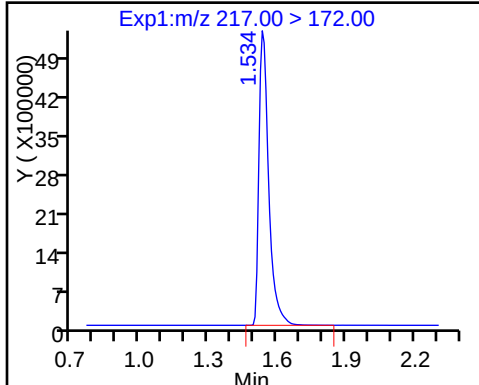
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

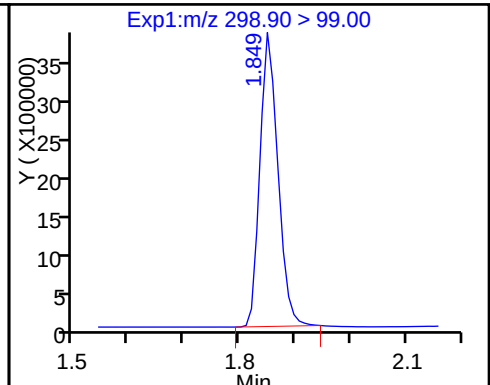
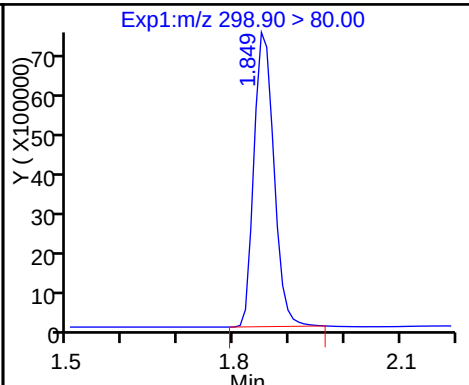
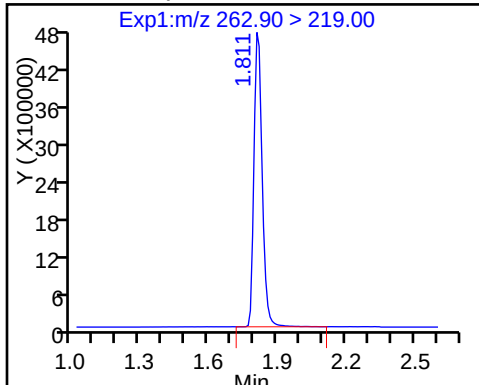
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

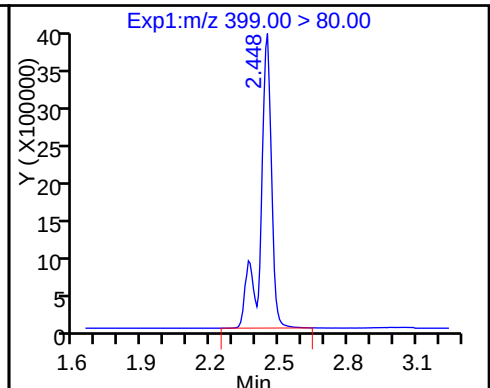
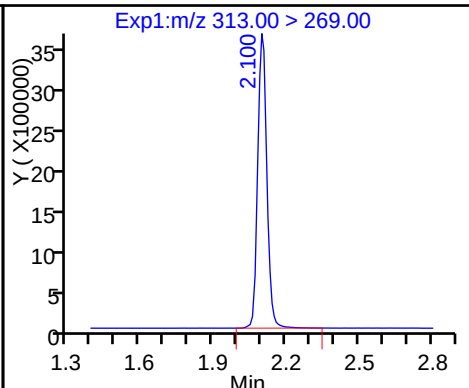
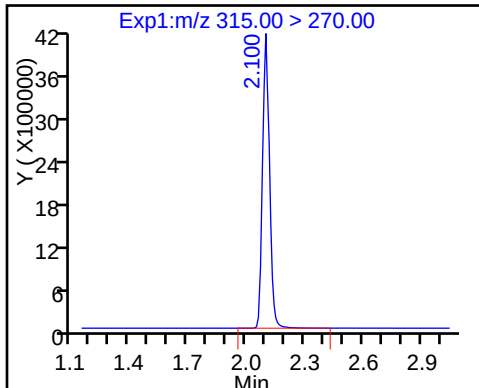
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

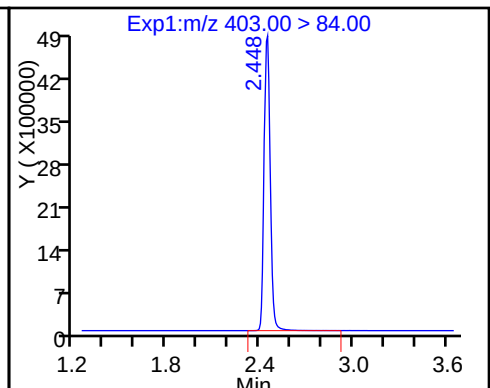
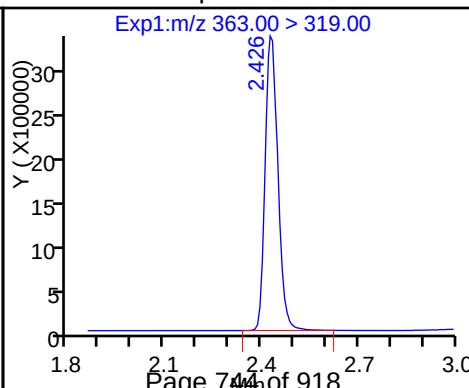
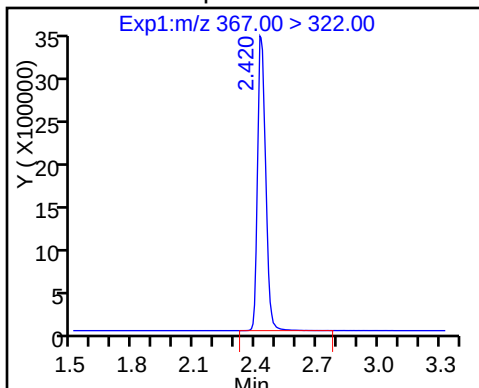
9 Perfluorohexanesulfonic acid



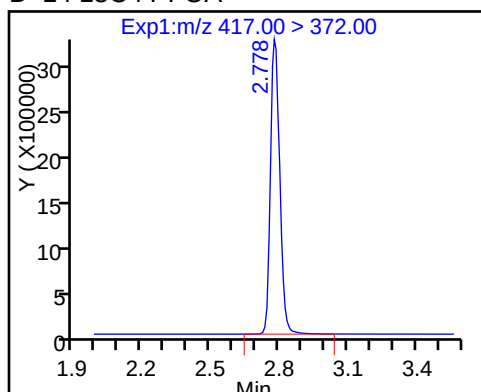
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid

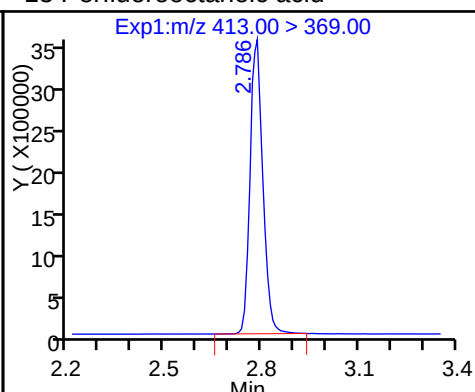
D 10 18O2 PFHxS



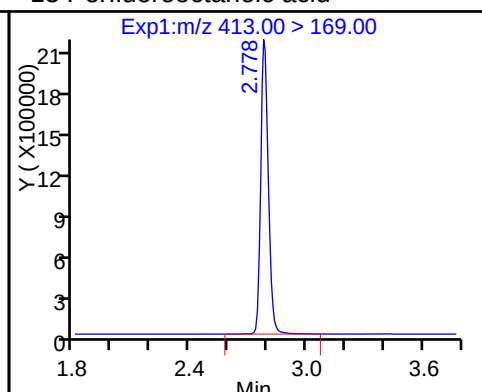
D 14 13C4 PFOA



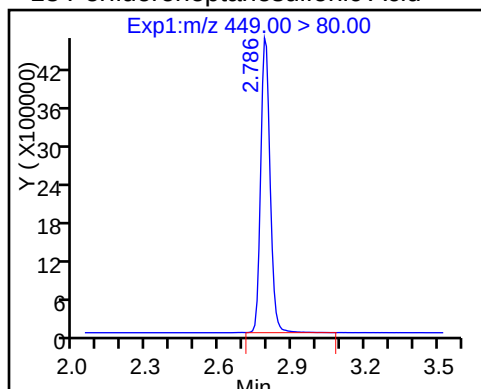
15 Perfluorooctanoic acid



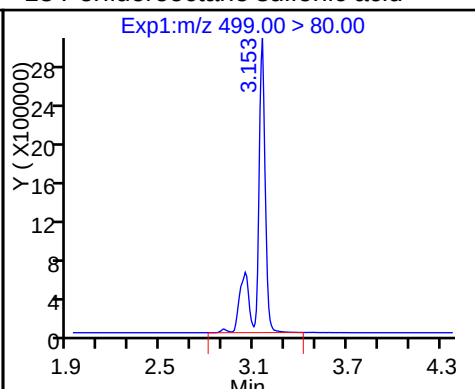
15 Perfluorooctanoic acid



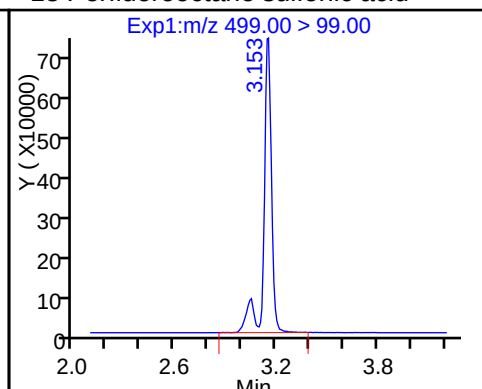
13 Perfluoroheptanesulfonic Acid



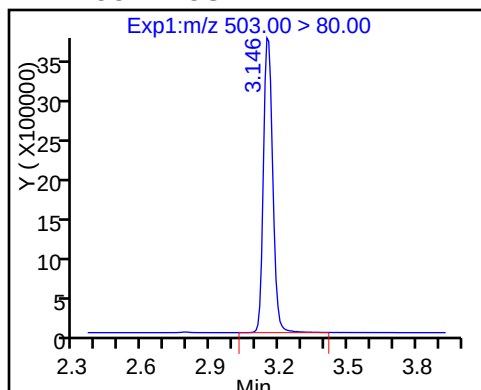
18 Perfluorooctane sulfonic acid



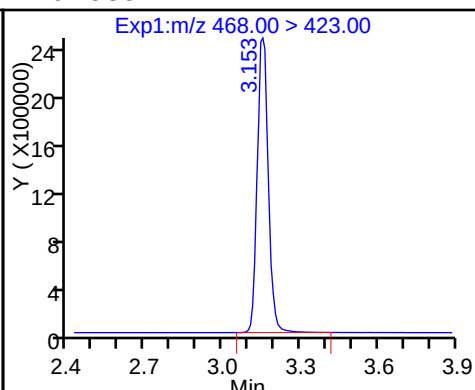
18 Perfluorooctane sulfonic acid



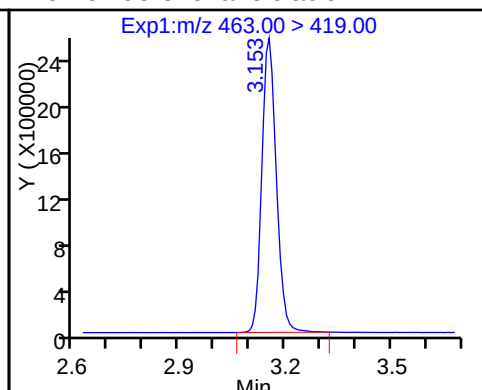
D 17 13C4 PFOS



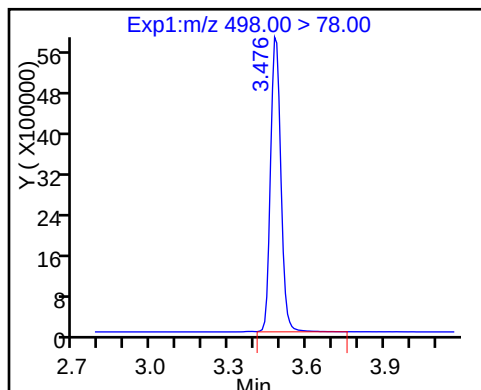
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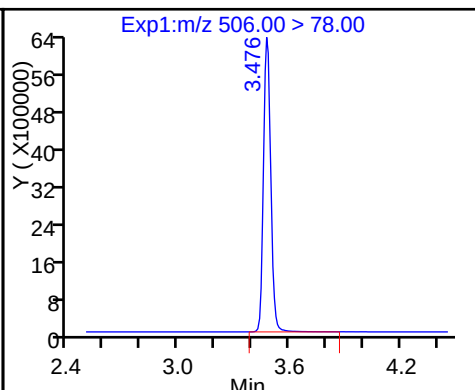
20 Perfluorononanoic acid



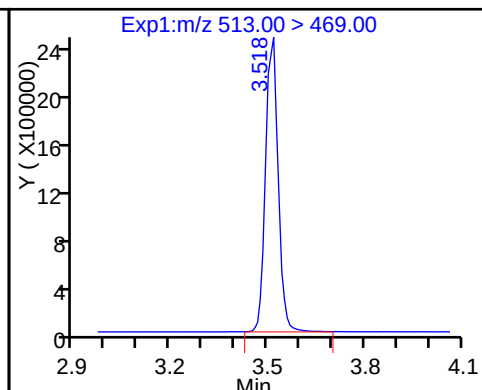
22 Perfluorooctane Sulfonamide



D 21 13C8 FOSA



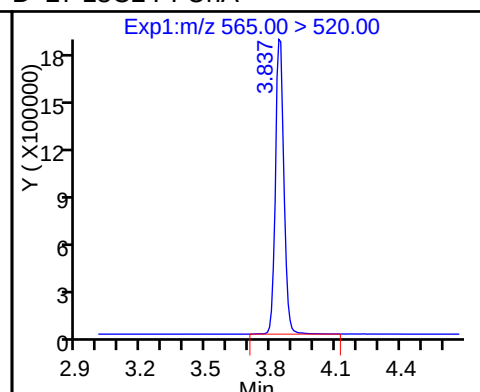
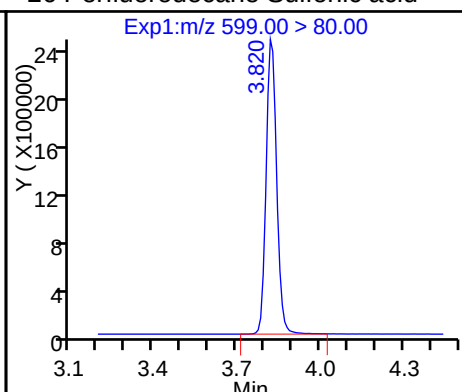
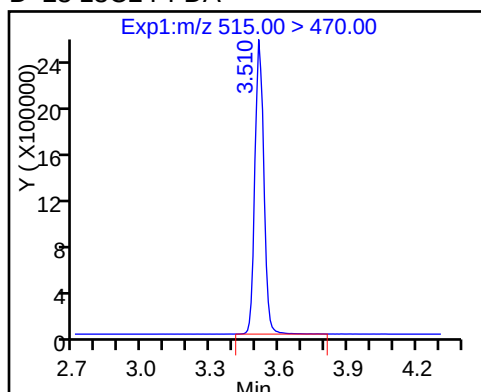
24 Perfluorodecanoic acid



D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

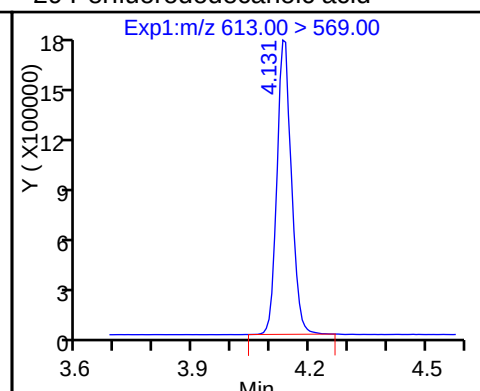
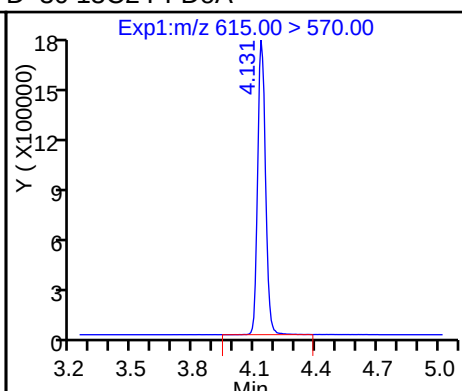
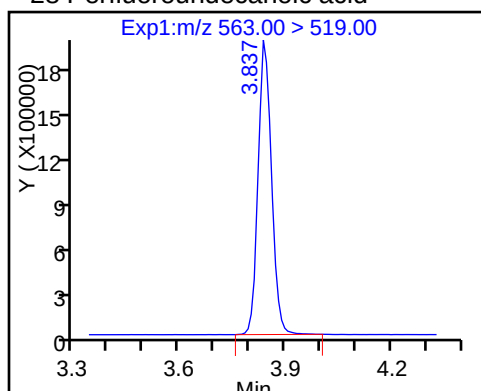
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

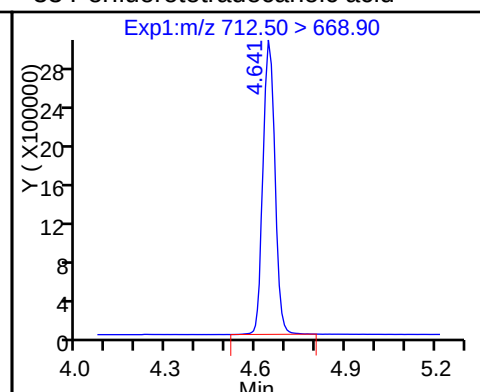
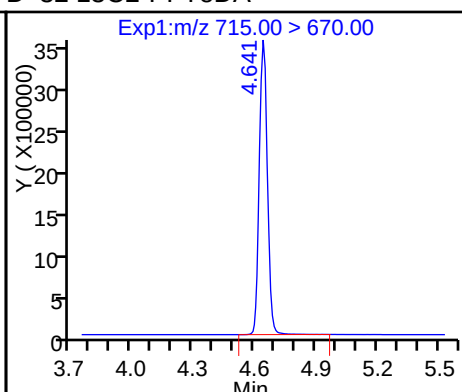
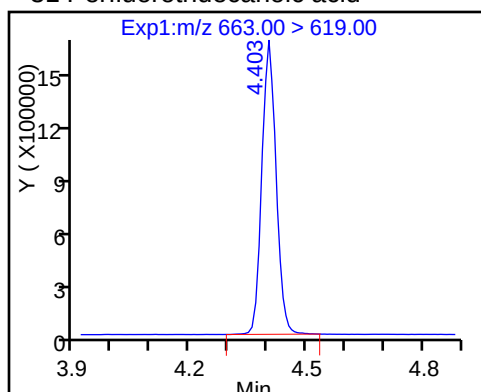
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

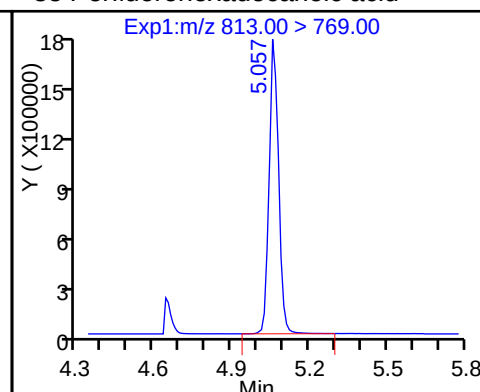
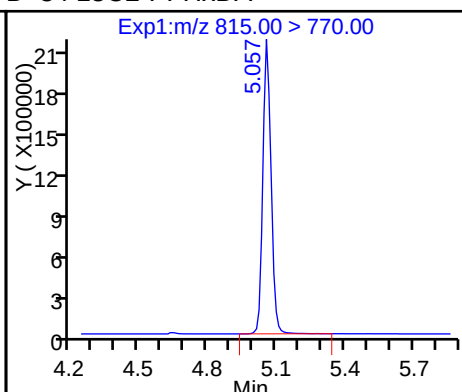
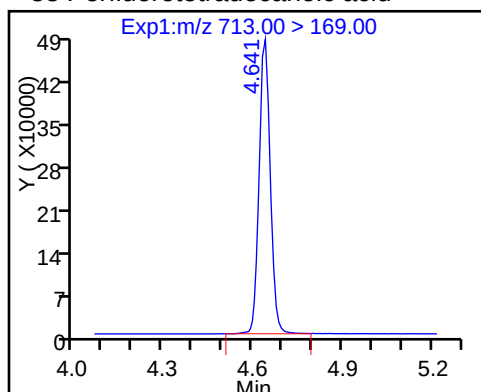
33 Perfluorotetradecanoic acid



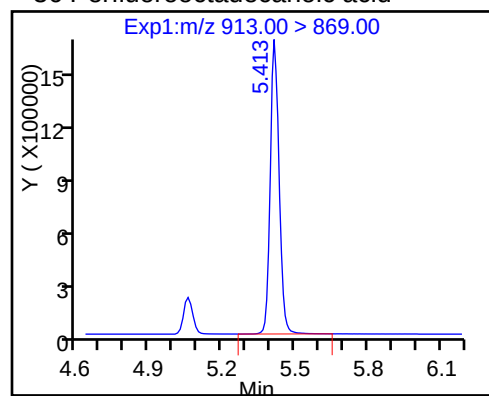
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Lab Sample ID: CCV 320-144510/40 Calibration Date: 12/30/2016 15:56

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 30DEC2016B_030.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9594		22.5	20.0	12.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.074		21.8	20.0	8.9	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.593		19.9	17.7	12.4	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9257		19.9	20.0	-0.3	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.072		18.9	18.2	4.1	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	1.000		20.4	20.0	2.2	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.038		20.7	20.0	3.5	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.209		20.9	19.0	9.7	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9945	1.039		19.4	18.6	4.5	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9805		20.6	20.0	3.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	1.007		21.6	20.0	7.9	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9676		20.5	20.0	2.5	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6194		20.5	19.3	6.1	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9441		19.7	20.0	-1.3	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9531		20.8	20.0	3.8	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9256		20.4	20.0	2.1	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.761		22.2	20.0	11.1	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.999		20.3	20.0	1.7	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8610		16.7	20.0	-16.4	25.0
13C4 PFBA	Ave	347743	341519		49.1	50.0	-1.8	50.0
13C5-PFPeA	Ave	266072	255380		48.0	50.0	-4.0	50.0
13C2 PFHxA	Ave	245110	226422		46.2	50.0	-7.6	50.0
13C4-PFHpA	Ave	226344	206560		45.6	50.0	-8.7	50.0
18O2 PFHxS	Ave	326976	311209		45.0	47.3	-4.8	50.0
13C4 PFOA	Ave	230362	208805		45.3	50.0	-9.4	50.0
13C4 PFOS	Ave	248847	248442		47.7	47.8	-0.2	50.0
13C5 PFNA	Ave	177687	164227		46.2	50.0	-7.6	50.0
13C8 FOSA	Ave	384141	361910		47.1	50.0	-5.8	50.0
13C2 PFDA	Ave	157302	147175		46.8	50.0	-6.4	50.0
13C2 PFUnA	Ave	117250	114584		48.9	50.0	-2.3	50.0
13C2 PFDoA	Ave	110957	101956		45.9	50.0	-8.1	50.0
13C2-PFTeDA	Ave	227387	211949		46.6	50.0	-6.8	50.0
13C2-PFHxDA	Ave	124568	108148		43.4	50.0	-13.2	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_030.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 30-Dec-2016 15:56:38 ALS Bottle#: 40 Worklist Smp#: 40
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub5
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 03-Jan-2017 14:28:47 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK026

First Level Reviewer: phomsophat

Date: 03-Jan-2017 14:18:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 2 13C4 PFBA

217.00 > 172.00 1.534 1.534 0.0 17075966 49.1 98.2 1412378

1 Perfluorobutyric acid

212.90 > 169.00 1.534 1.534 0.0 1.000 6552772 22.5 112 33297

D 4 13C5-PFPeA

267.90 > 223.00 1.810 1.810 0.0 12768980 48.0 96.0 1248085

3 Perfluoropentanoic acid

262.90 > 219.00 1.810 1.810 0.0 1.000 5486217 21.8 109 62469

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.849 1.849 0.0 1.000 8763438 19.9 112

298.90 > 99.00 1.849 1.849 0.0 1.000 3745932 2.34(0.00-0.00)

D 6 13C2 PFHxA

315.00 > 270.00 2.093 2.093 0.0 11321091 46.2 92.4 698736

7 Perfluorohexanoic acid

313.00 > 269.00 2.093 2.093 0.0 1.000 4191824 19.9 99.7 110478

D 11 13C4-PFHpA

367.00 > 322.00 2.424 2.424 0.0 10327993 45.6 91.3 539197

12 Perfluoroheptanoic acid

363.00 > 319.00 2.432 2.432 0.0 1.000 4132492 20.4 102 45398

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.362 2.362 0.0 1.000 6072620 18.9 104

D 10 18O2 PFHxS

403.00 > 84.00 2.447 2.447 0.0 14720183 45.0 95.2 888745

D 14 13C4 PFOA

417.00 > 372.00 2.791 2.791 0.0 10440251 45.3 90.6 522217

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.791	2.791	0.0	1.000	4336621	20.7		104	57790	
413.00 > 169.00	2.791	2.791	0.0	1.000	2590932		1.67(0.90-1.10)		106630	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.799	2.799	0.0	1.000	5717047	20.9		110		
D 17 13C4 PFOS										
503.00 > 80.00	3.160	3.160	0.0		11875524	47.7		99.8	479973	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.058	3.058	0.0	1.000	4791996	19.4		105	72778	
499.00 > 99.00	3.160	3.058	0.102	1.033	1071826		4.47(0.90-1.10)		66019	
D 19 13C5 PFNA										
468.00 > 423.00	3.160	3.160	0.0		8211358	46.2		92.4	449488	
20 Perfluorononanoic acid										
463.00 > 419.00	3.167	3.167	0.0	1.000	3220603	20.6		103	69218	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.499	3.499	0.0	1.000	7286394	21.6		108	326460	
D 21 13C8 FOSA										
506.00 > 78.00	3.491	3.491	0.0		18095510	47.1		94.2	833695	
D 23 13C2 PFDA										
515.00 > 470.00	3.524	3.524	0.0		7358769	46.8		93.6	338941	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.524	3.524	0.0	1.000	2848236	20.5		103	96014	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.836	3.836	0.0	1.000	2967013	20.5		106		
D 27 13C2 PFUnA										
565.00 > 520.00	3.853	3.853	0.0		5729203	48.9		97.7	309718	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.853	3.853	0.0	1.000	2163651	19.7		98.7	74794	
D 30 13C2 PFDaA										
615.00 > 570.00	4.144	4.144	0.0		5097778	45.9		91.9	222716	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.144	4.144	0.0	1.000	1943448	20.8		104	68308	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.416	4.416	0.0	1.000	1887364	20.4		102	48163	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.648	4.648	0.0		10597466	46.6		93.2	971253	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.658	4.658	0.0	1.000	3590915	22.2		111	64708	
713.00 > 169.00	4.648	4.658	-0.010	0.998	567305		6.33(0.00-0.00)		75619	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.072	5.072	0.0		5407394	43.4		86.8	138834	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.072	5.072	0.0	1.000	2037936	20.3		102	2633	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.415	5.415	0.0	1.000	1755603	16.7		83.6	2610	

Reagents:

LCPFC-L4_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_030.d

Injection Date: 30-Dec-2016 15:56:38

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 40

Worklist Smp#: 40

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

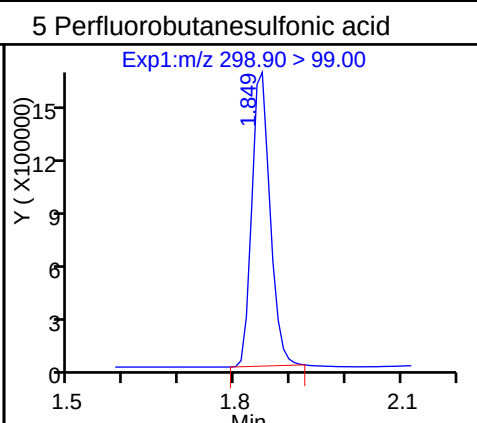
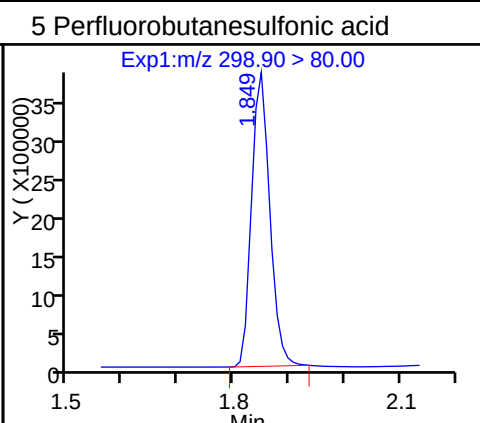
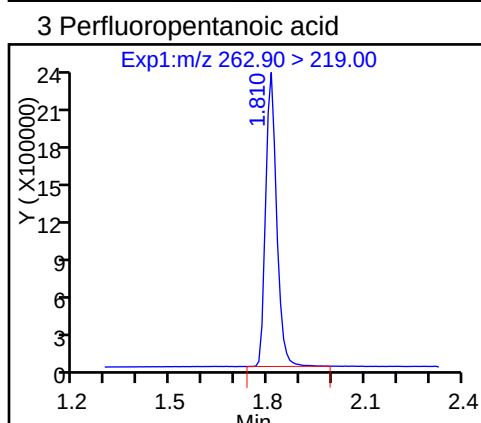
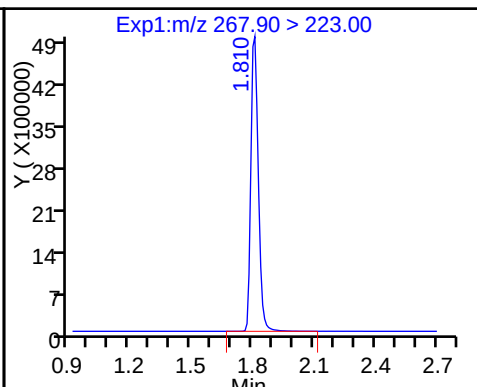
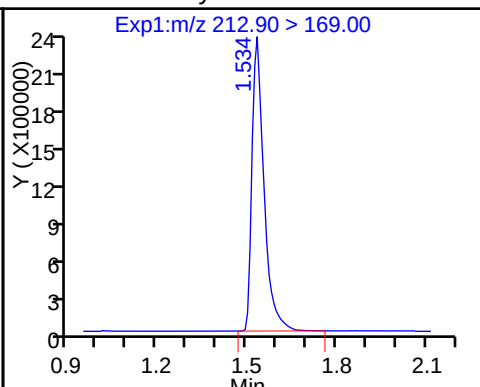
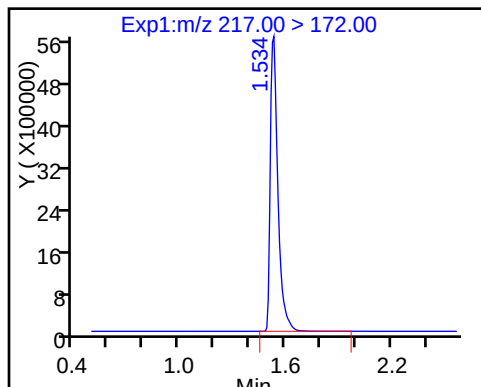
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

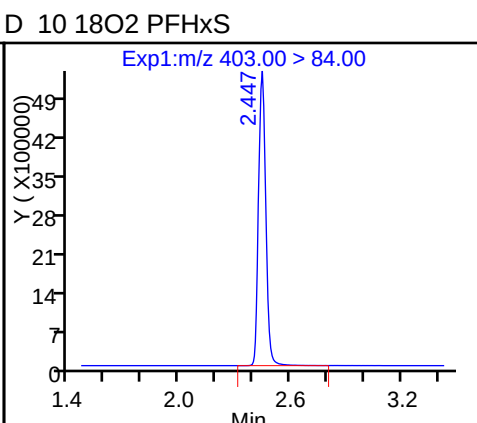
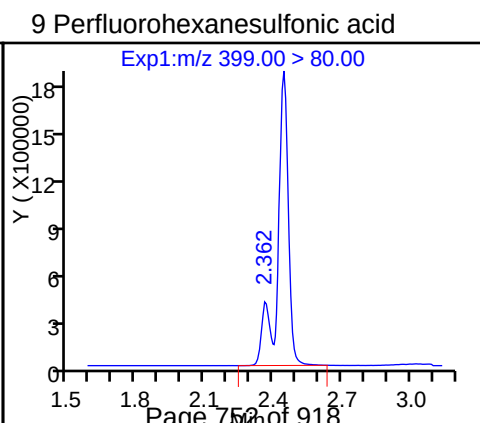
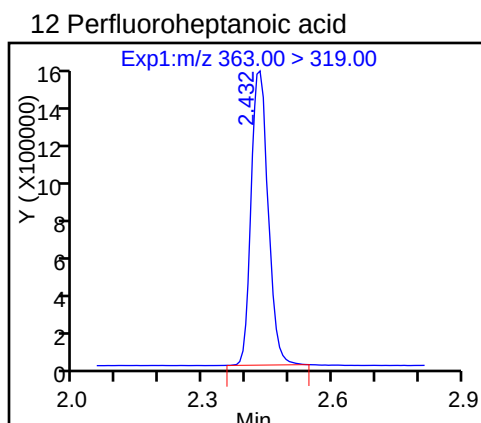
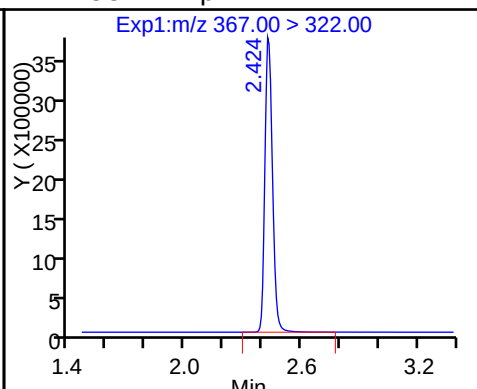
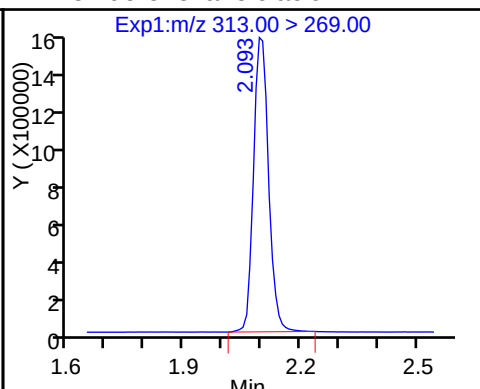
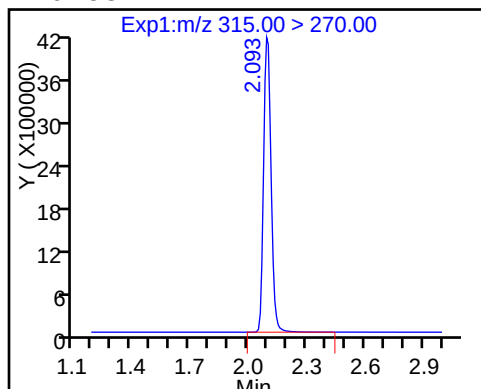
D 4 13C5-PFPeA



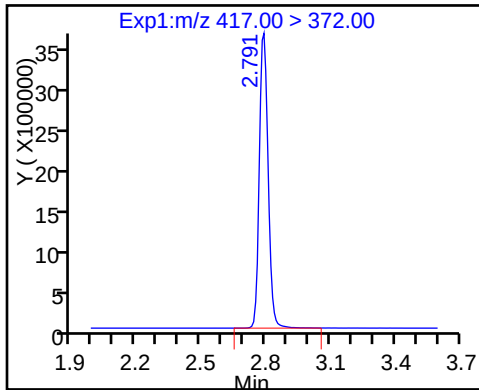
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7 Perfluorohexanoic acid

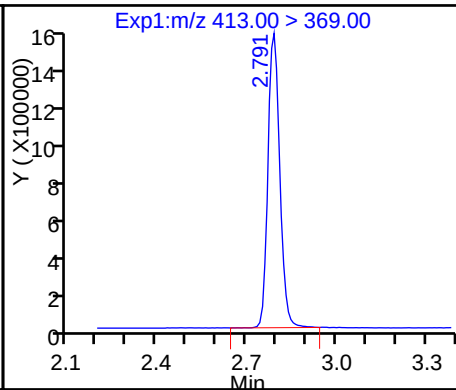
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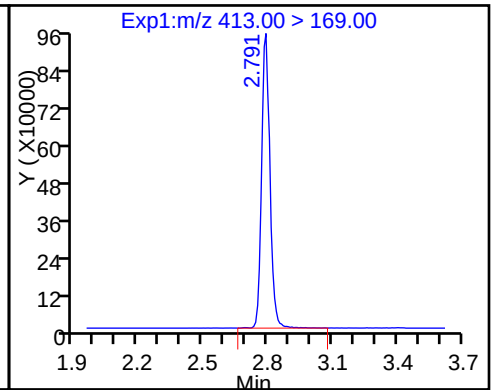
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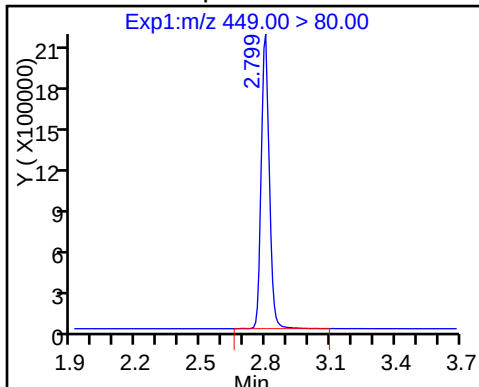
15 Perfluorooctanoic acid



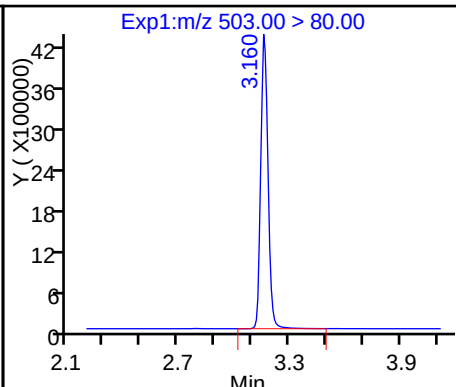
15 Perfluorooctanoic acid



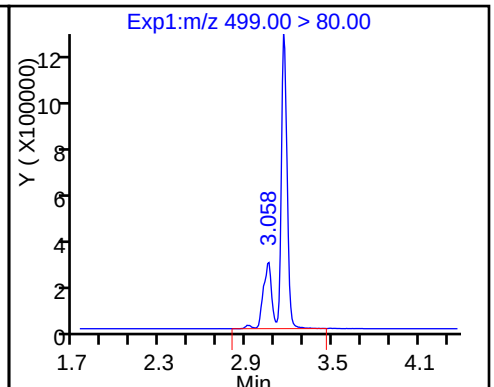
13 Perfluoroheptanesulfonic Acid



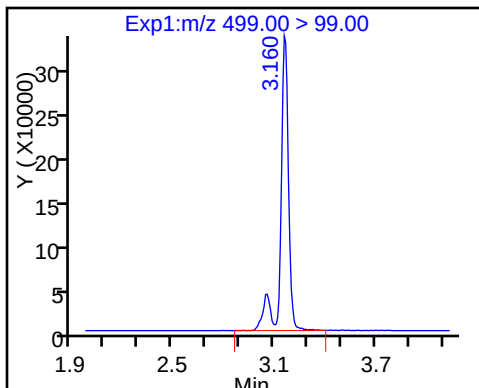
D 17 13C4 PFOS



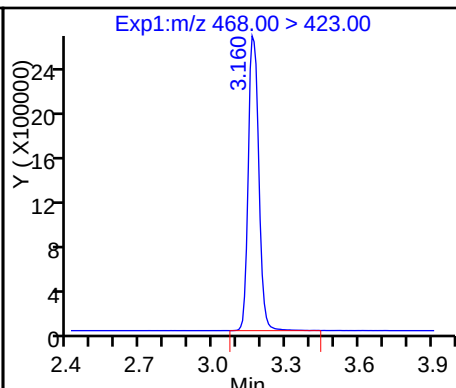
18 Perfluorooctane sulfonic acid



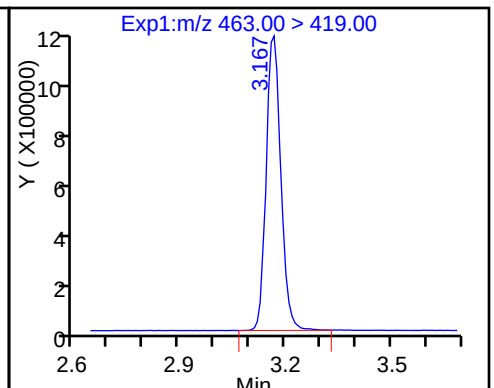
18 Perfluorooctane sulfonic acid



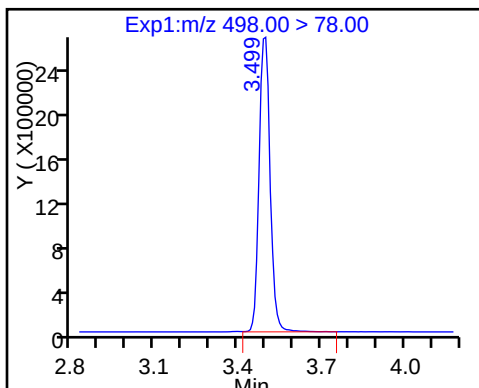
D 19 13C5 PFNA



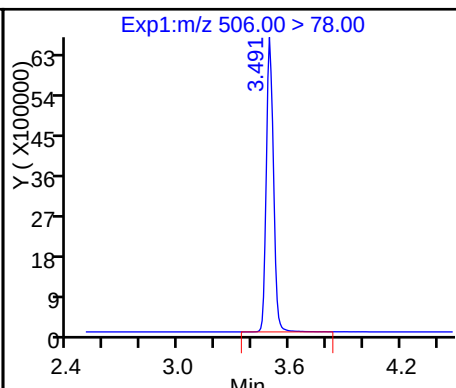
20 Perfluorononanoic acid



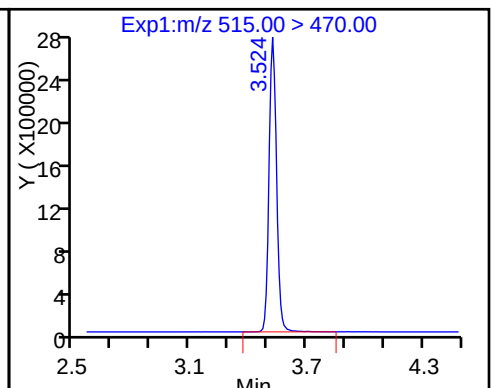
22 Perfluorooctane Sulfonamide



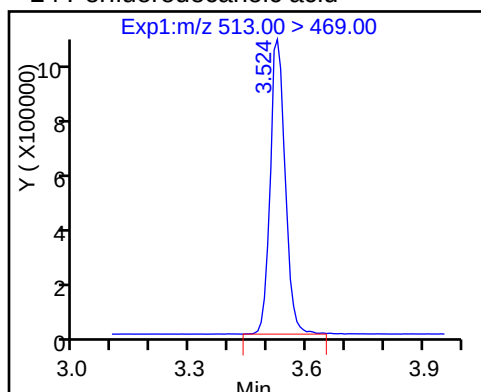
D 21 13C8 FOSA



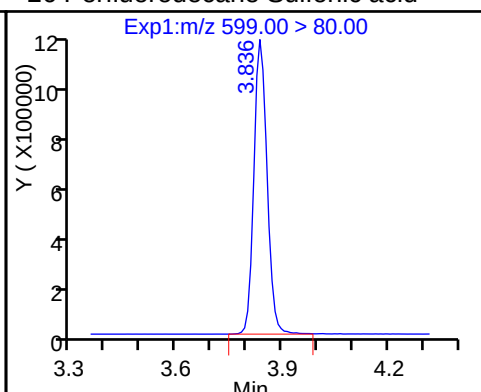
D 23 13C2 PFDA



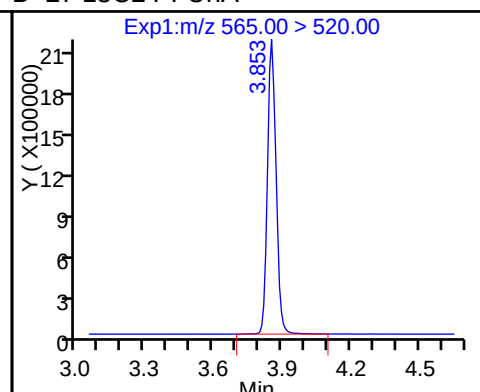
24 Perfluorodecanoic acid



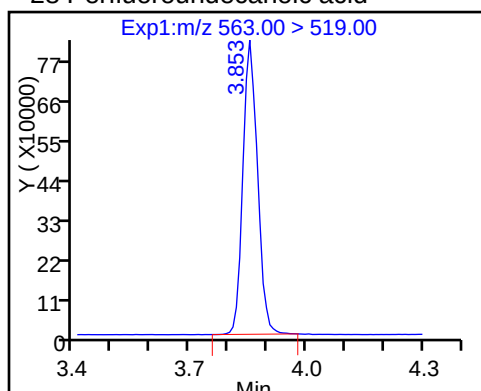
26 Perfluorodecane Sulfonic acid



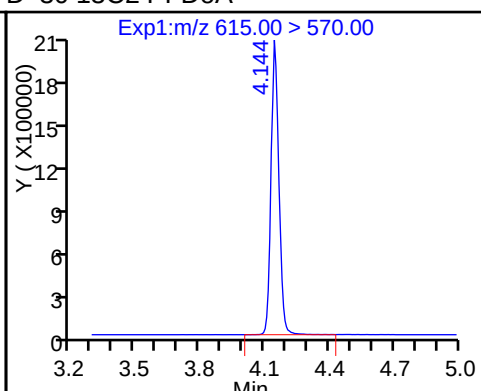
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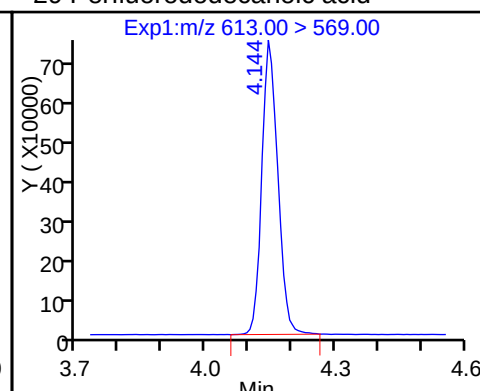
28 Perfluoroundecanoic acid



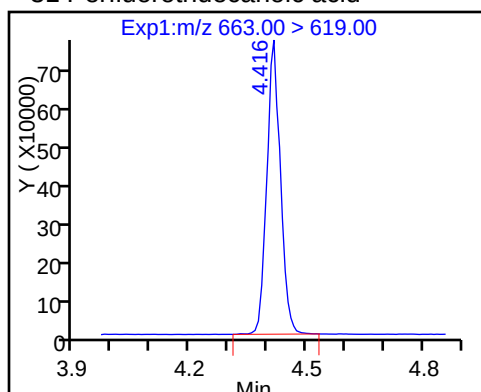
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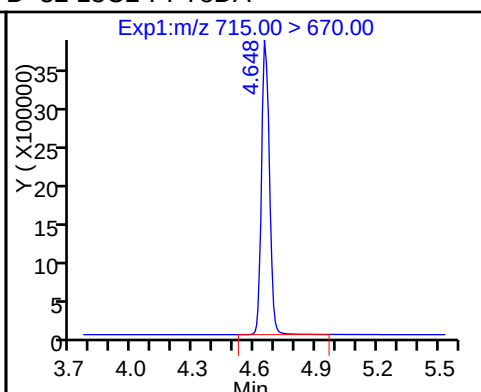
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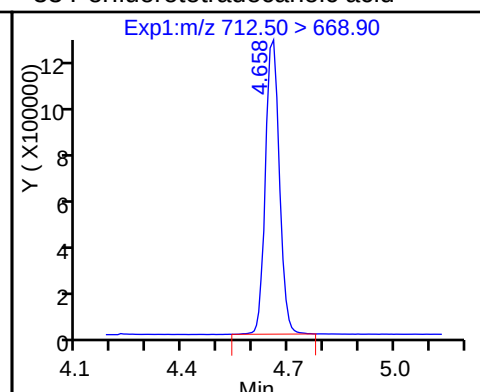
31 Perfluorotridecanoic acid



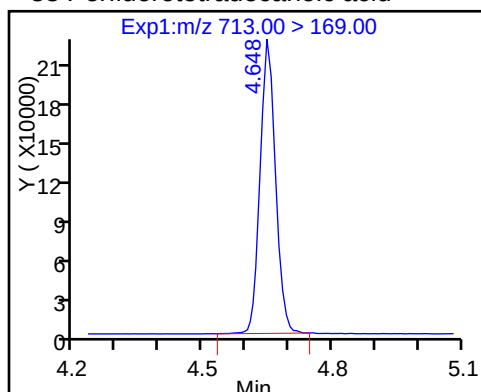
D 32 13C2-PFTeDA



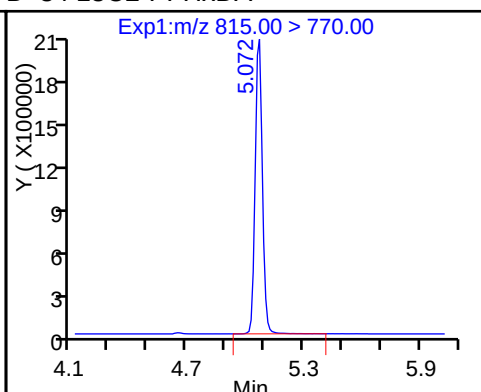
33 Perfluorotetradecanoic acid



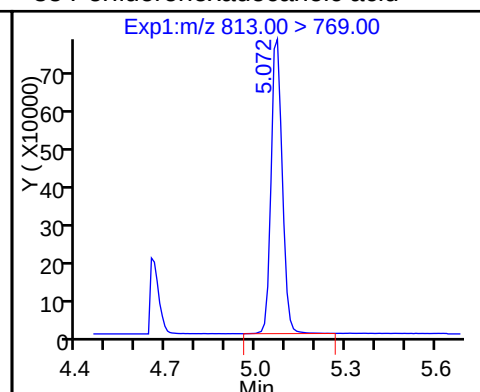
33 Perfluorotetradecanoic acid



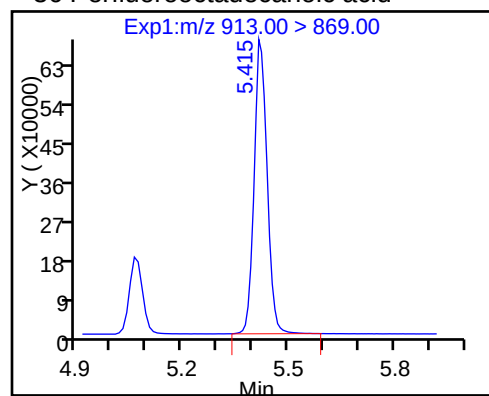
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Lab Sample ID: CCV 320-144510/49 Calibration Date: 12/30/2016 17:04

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 30DEC2016B_039.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9164		53.7	50.0	7.3	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.000		50.6	50.0	1.3	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.507		47.0	44.2	6.3	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9591		51.6	50.0	3.3	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.025		45.3	45.5	-0.5	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9808		50.1	50.0	0.2	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.022		51.0	50.0	1.9	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.164		50.3	47.6	5.7	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9945	1.032		48.1	46.4	3.8	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9463		49.7	50.0	-0.6	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9704		52.0	50.0	4.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9340		49.5	50.0	-1.0	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6207		51.2	48.2	6.3	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9673		50.6	50.0	1.2	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9182		50.0	50.0	0.0	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9263		51.1	50.0	2.1	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.715		54.1	50.0	8.2	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9745		50.4	50.0	0.9	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.8764		42.5	50.0	-14.9	25.0
13C4 PFBA	Ave	347743	320194		46.0	50.0	-7.9	50.0
13C5-PFPeA	Ave	266072	241278		45.3	50.0	-9.3	50.0
13C2 PFHxA	Ave	245110	210024		42.8	50.0	-14.3	50.0
13C4-PFHpA	Ave	226344	190561		42.1	50.0	-15.8	50.0
18O2 PFHxS	Ave	326976	290267		42.0	47.3	-11.2	50.0
13C4 PFOA	Ave	230362	189989		41.2	50.0	-17.5	50.0
13C4 PFOS	Ave	248847	229944		44.2	47.8	-7.6	50.0
13C5 PFNA	Ave	177687	149963		42.2	50.0	-15.6	50.0
13C8 FOSA	Ave	384141	346067		45.0	50.0	-9.9	50.0
13C2 PFDA	Ave	157302	137352		43.7	50.0	-12.7	50.0
13C2 PFUnA	Ave	117250	103045		43.9	50.0	-12.1	50.0
13C2 PFDoA	Ave	110957	95867		43.2	50.0	-13.6	50.0
13C2-PFTeDA	Ave	227387	196571		43.2	50.0	-13.6	50.0
13C2-PFHxDA	Ave	124568	103963		41.7	50.0	-16.5	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_039.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 30-Dec-2016 17:04:13 ALS Bottle#: 41 Worklist Smp#: 49
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub5
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 03-Jan-2017 14:28:59 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK026

First Level Reviewer: phomsophat

Date: 03-Jan-2017 14:26:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 2 13C4 PFBA

217.00 > 172.00 1.528 1.528 0.0 16009719 46.0 92.1 903423

1 Perfluorobutyric acid

212.90 > 169.00 1.528 1.528 0.0 1.000 14671667 53.7 107 75038

D 4 13C5-PFPeA

267.90 > 223.00 1.803 1.803 0.0 12063917 45.3 90.7 976521

3 Perfluoropentanoic acid

262.90 > 219.00 1.803 1.803 0.0 1.000 12059305 50.6 101 178809

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.842 1.842 0.0 1.000 19329899 47.0 106

298.90 > 99.00 1.842 1.842 0.0 1.000 8798573 2.20(0.00-0.00)

D 6 13C2 PFHxA

315.00 > 270.00 2.090 2.090 0.0 10501207 42.8 85.7 483955

7 Perfluorohexanoic acid

313.00 > 269.00 2.090 2.090 0.0 1.000 10071498 51.6 103 272120

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.415 2.415 0.0 1.000 13541179 45.3 99.5

D 11 13C4-PFHpA

367.00 > 322.00 2.420 2.420 0.0 9528041 42.1 84.2 892988

12 Perfluoroheptanoic acid

363.00 > 319.00 2.420 2.420 0.0 1.000 9344962 50.1 100 79338

D 10 18O2 PFHxS

403.00 > 84.00 2.440 2.440 0.0 13729613 42.0 88.8 621387

D 14 13C4 PFOA

417.00 > 372.00 2.784 2.784 0.0 9499469 41.2 82.5 575488

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.784	2.784	0.0	1.000	9711530	51.0		102	111933	
413.00 > 169.00	2.784	2.784	0.0	1.000	5918630		1.64(0.90-1.10)		231815	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.792	2.792	0.0	1.000	12742346	50.3		106		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.049	3.049	0.0	1.000	11010160	48.1		104	65083	
499.00 > 99.00	3.153	3.049	0.104	1.034	2437905		4.52(0.90-1.10)		123587	
D 17 13C4 PFOS										
503.00 > 80.00	3.161	3.161	0.0		10991329	44.2		92.4	260466	
D 19 13C5 PFNA										
468.00 > 423.00	3.161	3.161	0.0		7498138	42.2		84.4	530697	
20 Perfluorononanoic acid										
463.00 > 419.00	3.161	3.161	0.0	1.000	7095077	49.7		99.4	156672	
D 21 13C8 FOSA										
506.00 > 78.00	3.492	3.492	0.0		17303363	45.0		90.1	512626	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.492	3.492	0.0	1.000	16791762	52.0		104	514139	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.518	3.518	0.0	1.000	6414580	49.5		99.0	198376	
D 23 13C2 PFDA										
515.00 > 470.00	3.518	3.518	0.0		6867607	43.7		87.3	281914	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.837	3.837	0.0	1.000	6879630	51.2		106		
D 27 13C2 PFUnA										
565.00 > 520.00	3.854	3.854	0.0		5152261	43.9		87.9	276866	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.854	3.854	0.0	1.000	4983936	50.6		101	126359	
D 30 13C2 PFDaA										
615.00 > 570.00	4.144	4.144	0.0		4793333	43.2		86.4	132765	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.144	4.144	0.0	1.000	4401414	50.0		100	111491	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.415	4.415	0.0	1.000	4440147	51.1		102	94370	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.647	4.647	0.0		9828535	43.2		86.4	1202145	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.647	4.647	0.0	1.000	8222522	54.1		108	120682	
713.00 > 169.00	4.647	4.647	0.0	1.000	1286223		6.39(0.00-0.00)		127368	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.060	5.060	0.0		5198148	41.7		83.5	115546	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.060	5.060	0.0	1.000	4671297	50.4		101	6128	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.415	5.415	0.0	1.000	4200954	42.5		85.1	5503	

Reagents:

LCPFC-L5_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_039.d

Injection Date: 30-Dec-2016 17:04:13

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 41

Worklist Smp#: 49

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

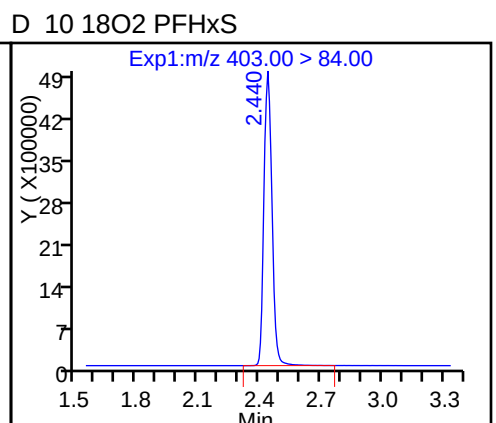
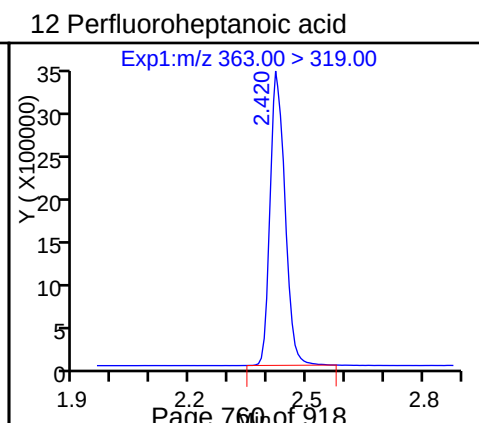
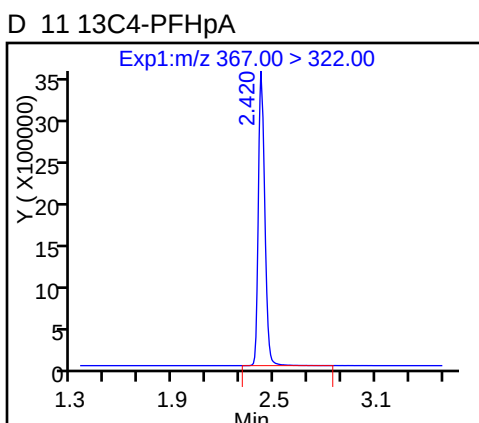
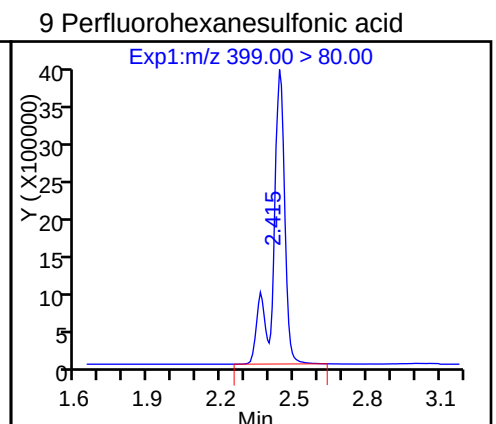
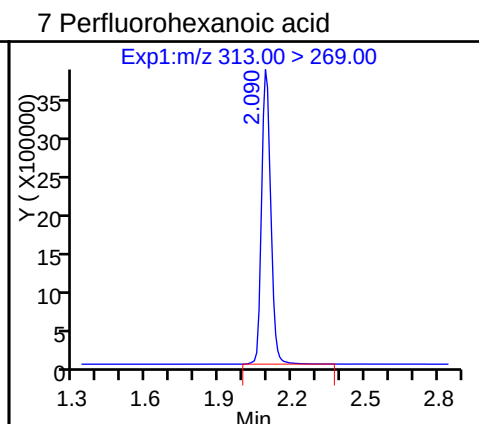
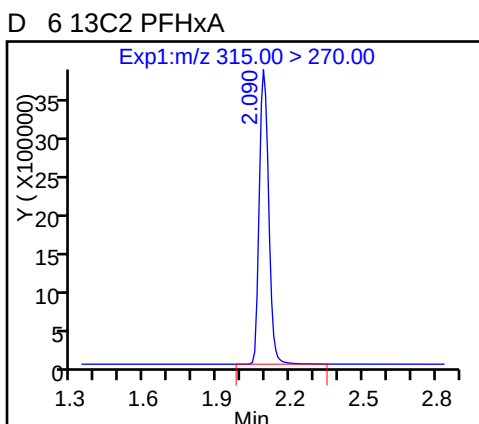
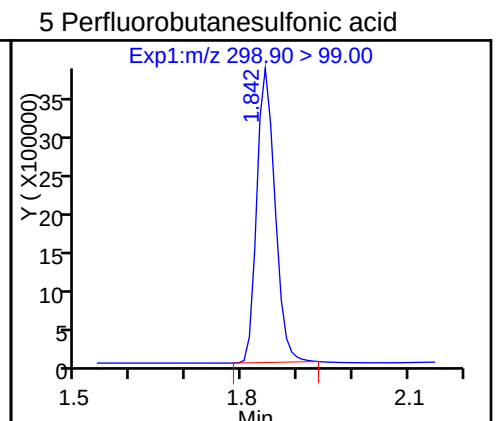
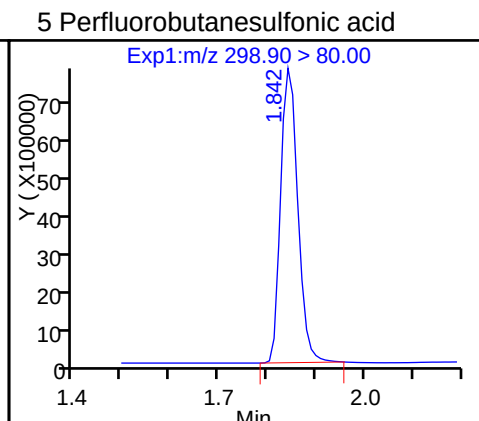
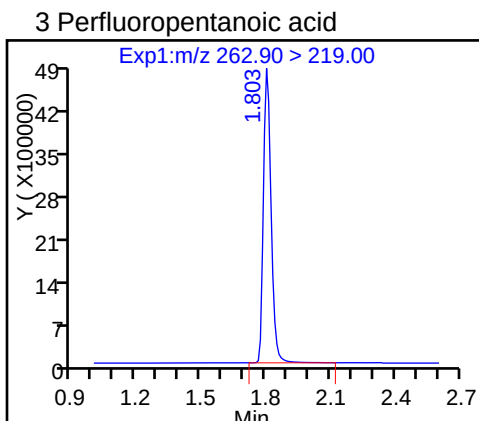
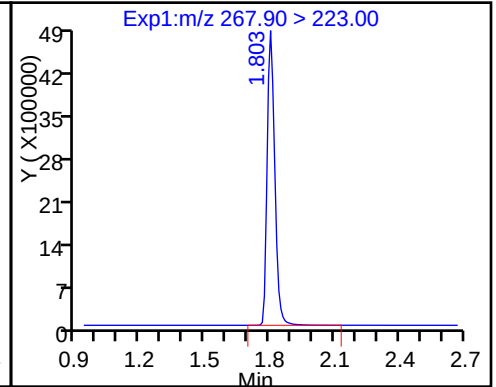
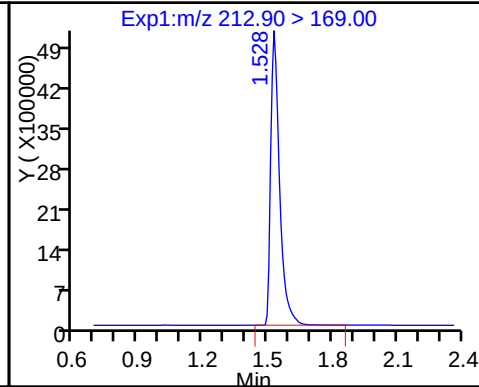
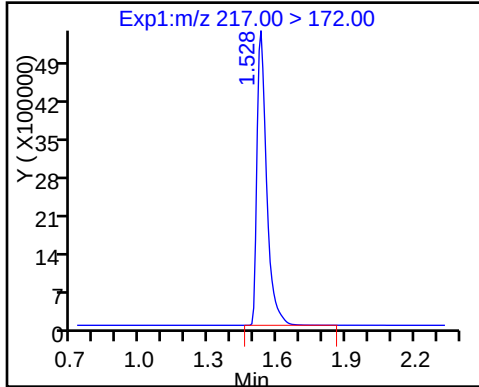
Method: A8_N

Limit Group: LC PFC_DOD ICAL

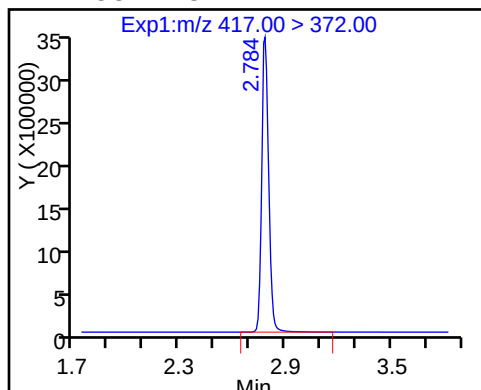
D 2 13C4 PFBA

1 Perfluorobutyric acid

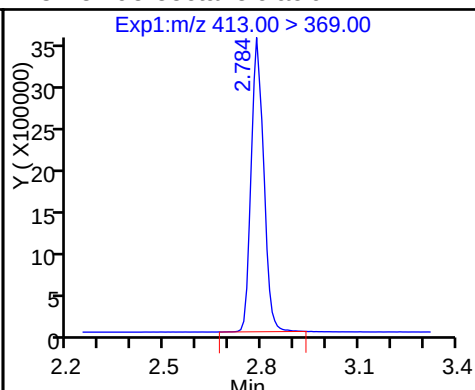
D 4 13C5-PFPeA



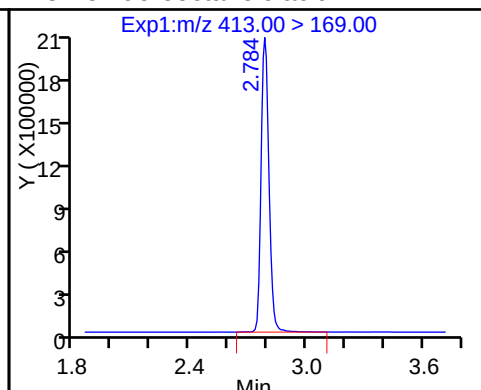
D 14 13C4 PFOA



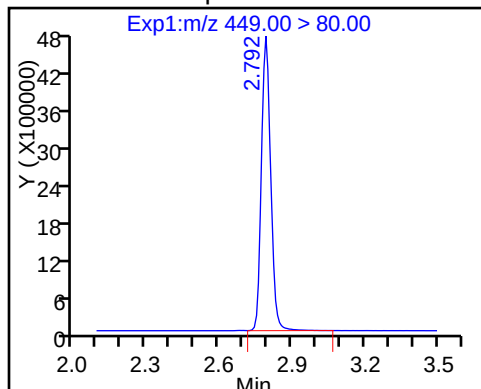
15 Perfluorooctanoic acid



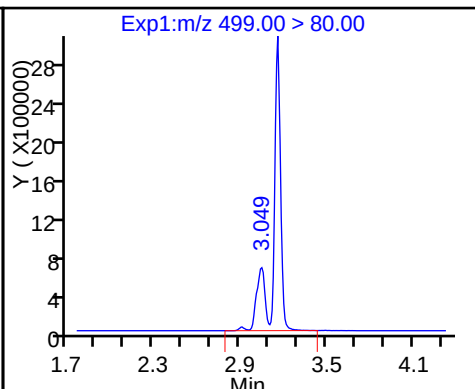
15 Perfluorooctanoic acid



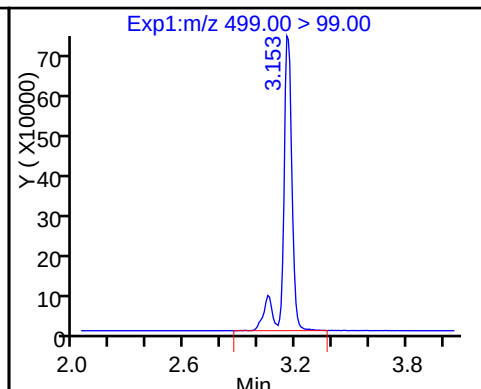
13 Perfluoroheptanesulfonic Acid



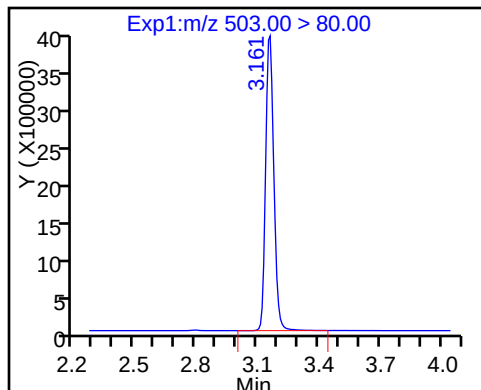
18 Perfluorooctane sulfonic acid



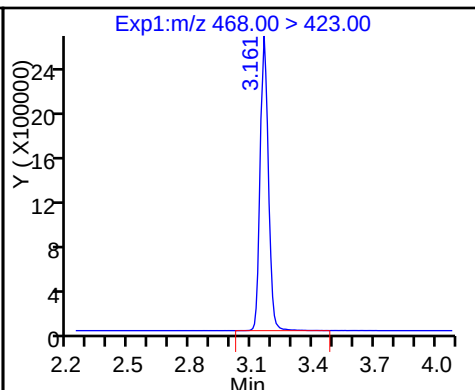
18 Perfluorooctane sulfonic acid



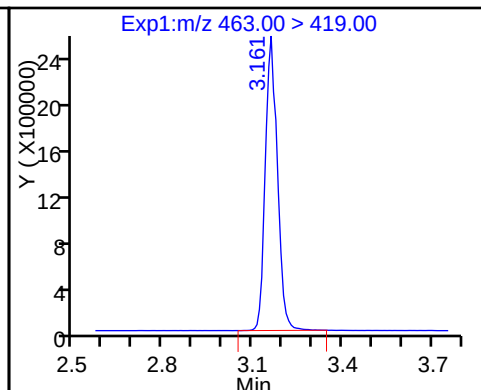
D 17 13C4 PFOS



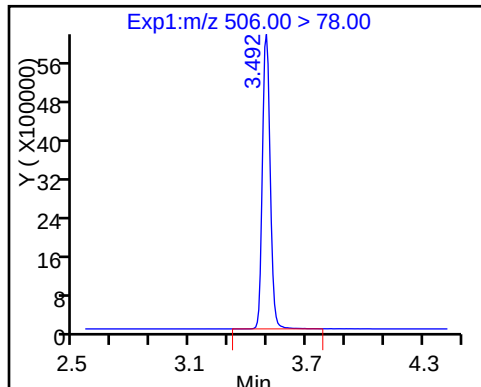
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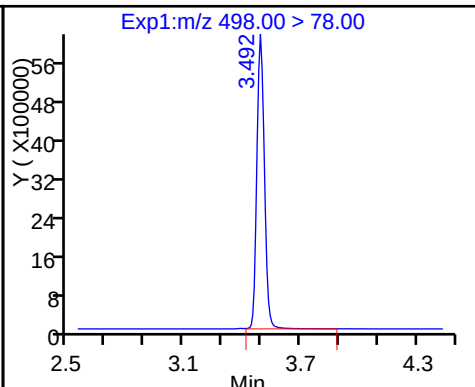
20 Perfluorononanoic acid



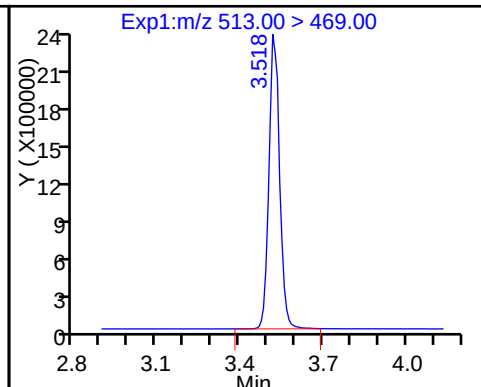
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide



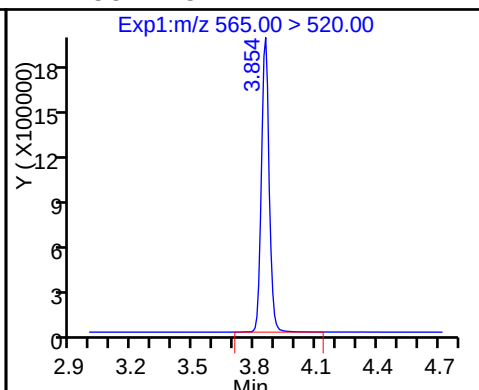
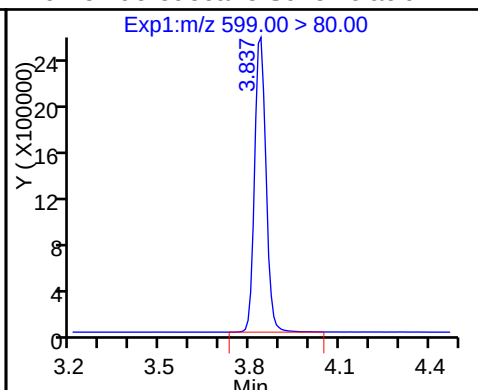
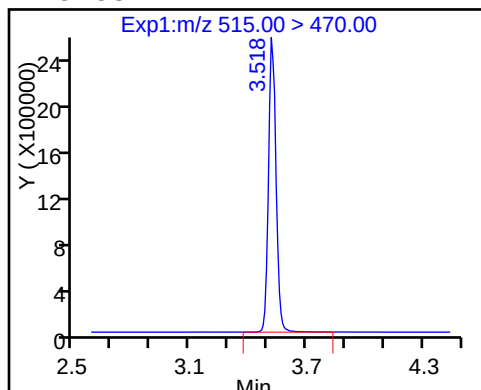
24 Perfluorodecanoic acid



D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

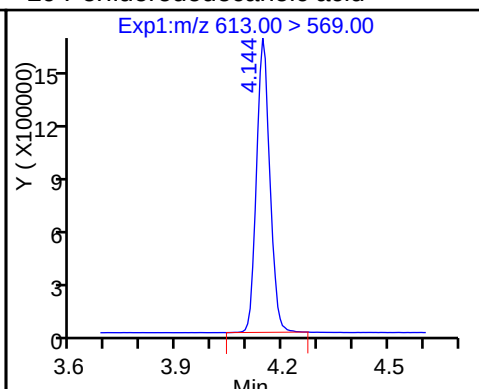
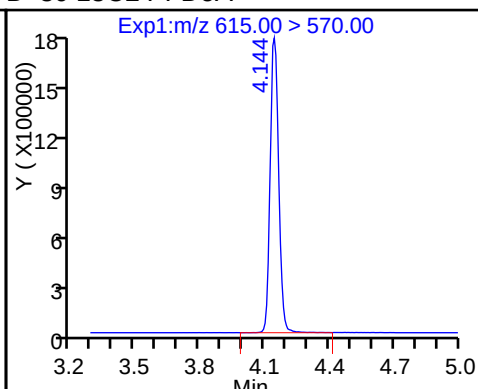
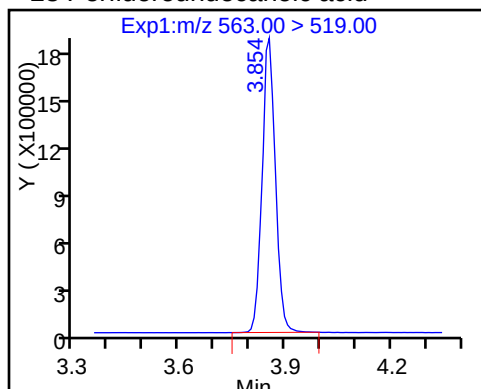
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

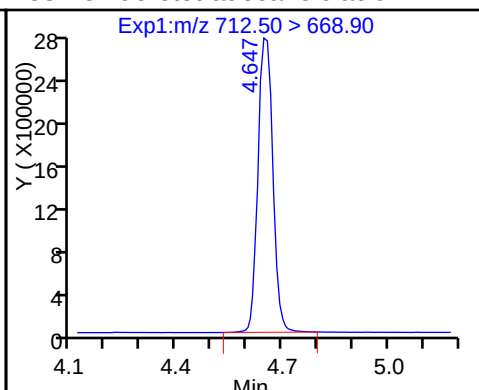
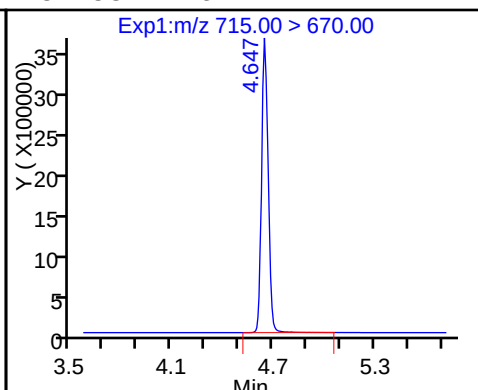
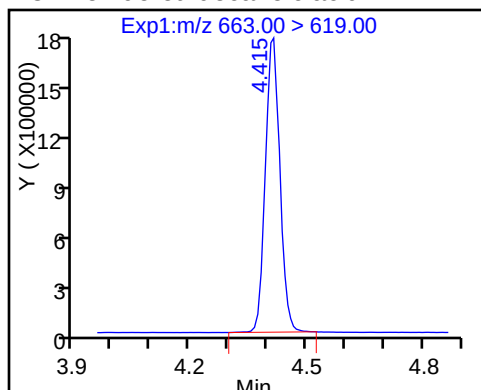
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

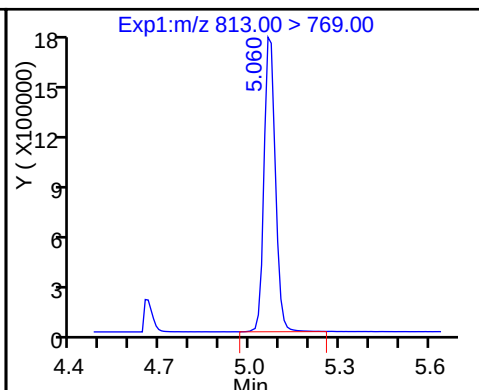
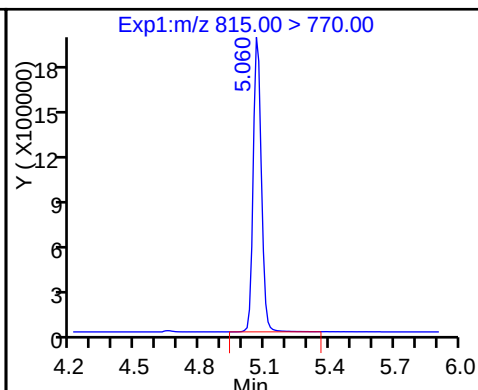
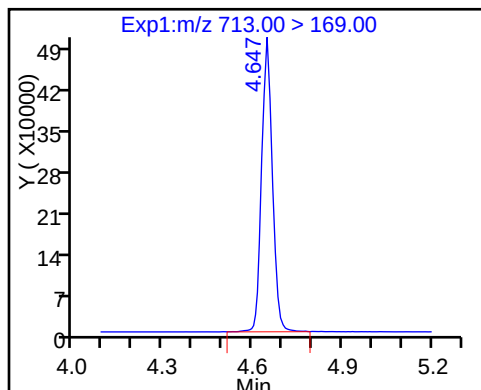
33 Perfluorotetradecanoic acid



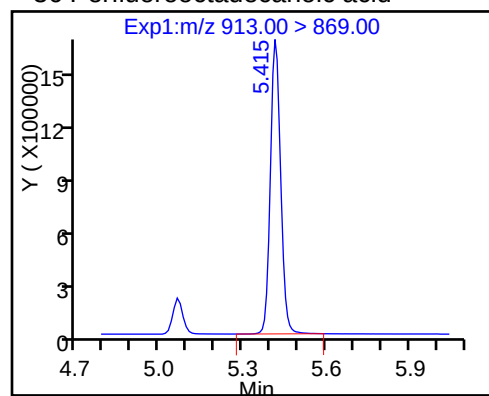
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Lab Sample ID: CCV 320-144867/14 Calibration Date: 01/03/2017 15:51

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 03JAN2017C_014.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9589		22.5	20.0	12.3	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.058		21.4	20.0	7.2	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.636		20.4	17.7	15.5	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9535		20.5	20.0	2.7	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.087		19.2	18.2	5.6	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	1.015		20.7	20.0	3.7	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.196		20.7	19.0	8.6	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.075		21.4	20.0	7.2	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9945	1.063		19.8	18.6	6.9	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9900		20.8	20.0	4.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	1.004		21.5	20.0	7.6	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9833		20.8	20.0	4.2	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6427		21.2	19.3	10.1	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9825		20.5	20.0	2.7	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9490		20.7	20.0	3.4	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9484		20.9	20.0	4.6	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.587		20.0	20.0	0.1	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9005		18.3	20.0	-8.7	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.7723		15.0	20.0	-25.0	25.0
13C4 PFBA	Ave	347743	372367		53.5	50.0	7.1	50.0
13C5-PFPeA	Ave	266072	279717		52.6	50.0	5.1	50.0
13C2 PFHxA	Ave	245110	245819		50.1	50.0	0.3	50.0
13C4-PFHpA	Ave	226344	219404		48.5	50.0	-3.1	50.0
18O2 PFHxS	Ave	326976	324069		46.9	47.3	-0.9	50.0
13C4 PFOA	Ave	230362	244045		53.0	50.0	5.9	50.0
13C4 PFOS	Ave	248847	270824		52.0	47.8	8.8	50.0
13C5 PFNA	Ave	177687	191885		54.0	50.0	8.0	50.0
13C8 FOSA	Ave	384141	417493		54.3	50.0	8.7	50.0
13C2 PFDA	Ave	157302	190365		60.5	50.0	21.0	50.0
13C2 PFUnA	Ave	117250	137558		58.7	50.0	17.3	50.0
13C2 PFDoA	Ave	110957	130832		59.0	50.0	17.9	50.0
13C2-PFTeDA	Ave	227387	254216		55.9	50.0	11.8	50.0
13C2-PFHxDA	Ave	124568	127483		51.2	50.0	2.3	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170104-38437.b\03JAN2017C_014.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 03-Jan-2017 15:51:06 ALS Bottle#: 40 Worklist Smp#: 14
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub5
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170104-38437.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2017 10:08:54 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK007

First Level Reviewer: chandrasenas

Date: 04-Jan-2017 10:08:18

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 2 13C4 PFBA

217.00 > 172.00 1.630 1.630 0.0 18618356 53.5 107 1339730

1 Perfluorobutyric acid

212.90 > 169.00 1.638 1.638 0.0 1.000 7141359 22.5 112 45430

3 Perfluoropentanoic acid

262.90 > 219.00 1.935 1.935 0.0 1.000 5918702 21.4 107 91158

D 4 13C5-PFPeA

267.90 > 223.00 1.935 1.935 0.0 13985829 52.6 105 1643195

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.974 1.974 0.0 1.000 9376189 20.4 115

298.90 > 99.00 1.974 1.974 0.0 1.000 3965972 2.36(0.00-0.00)

D 6 13C2 PFHxA

315.00 > 270.00 2.239 2.239 0.0 12290944 50.1 100 1066834

7 Perfluorohexanoic acid

313.00 > 269.00 2.239 2.239 0.0 1.000 4687946 20.5 103 177991

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.576 2.576 0.0 1.000 6412727 19.2 106

D 11 13C4-PFHpA

367.00 > 322.00 2.591 2.591 0.0 10970223 48.5 96.9 1225410

12 Perfluoroheptanoic acid

363.00 > 319.00 2.591 2.591 0.0 1.000 4456004 20.7 104 62120

D 10 18O2 PFHxS

403.00 > 84.00 2.606 2.606 0.0 15328454 46.9 99.1 1307837

D 14 13C4 PFOA

417.00 > 372.00 2.955 2.955 0.0 12202274 53.0 106 767245

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.963	2.963	0.0	1.000	5248234	21.4		107	64140	
413.00 > 169.00	2.955	2.963	-0.008	0.997	3184069		1.65(0.90-1.10)		214538	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.963	2.963	0.0	1.000	6169269	20.7		109		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.224	3.224	0.0	1.000	5343401	19.8		107	38933	
499.00 > 99.00	3.328	3.224	0.104	1.032	1167744		4.58(0.90-1.10)		173257	
D 17 13C4 PFOS										
503.00 > 80.00	3.328	3.328	0.0		12945386	52.0		109	431913	
20 Perfluorononanoic acid										
463.00 > 419.00	3.328	3.328	0.0	1.000	3799162	20.8		104	63117	
D 19 13C5 PFNA										
468.00 > 423.00	3.343	3.343	0.0		9594241	54.0		108	575496	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.659	3.659	0.0	1.000	8381809	21.5		108	289601	
D 21 13C8 FOSA										
506.00 > 78.00	3.659	3.659	0.0		20874673	54.3		109	1140408	
D 23 13C2 PFDA										
515.00 > 470.00	3.688	3.688	0.0		9518262	60.5		121	182636	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.688	3.688	0.0	1.000	3743816	20.8		104	107921	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.997	3.997	0.0	1.000	3356040	21.2		110		
D 27 13C2 PFUnA										
565.00 > 520.00	4.016	4.016	0.0		6877920	58.7		117	262011	
28 Perfluoroundecanoic acid										
563.00 > 519.00	4.016	4.016	0.0	1.000	2703001	20.5		103	101093	
D 30 13C2 PFDaA										
615.00 > 570.00	4.298	4.298	0.0		6541577	59.0		118	180986	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.307	4.307	0.0	1.000	2483246	20.7		103	4542	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.569	4.569	0.0	1.000	2481689	20.9		105	2410	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.797	4.797	0.0		12710777	55.9		112	736722	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.805	4.805	0.0	1.000	4151980	20.0		100	1507	
713.00 > 169.00	4.797	4.805	-0.008	0.998	688124		6.03(0.00-0.00)		42019	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.212	5.212	0.0		6374167	51.2		102	86954	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.212	5.212	0.0	1.000	2356229	18.3		91.3	1604	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.573	5.573	0.0	1.000	2020924	15.0		75.0	1504	

Reagents:

LCPFC-L4_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170104-38437.b\03JAN2017C_014.d

Injection Date: 03-Jan-2017 15:51:06

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 40

Worklist Smp#: 14

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

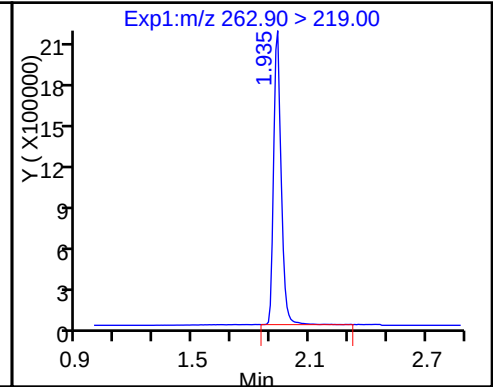
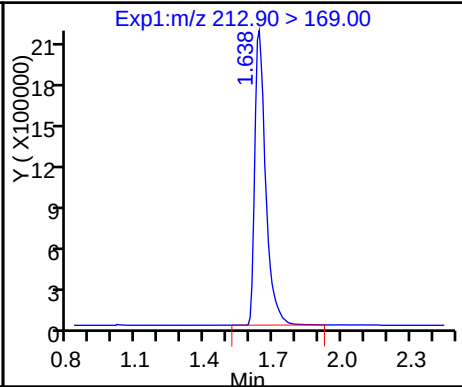
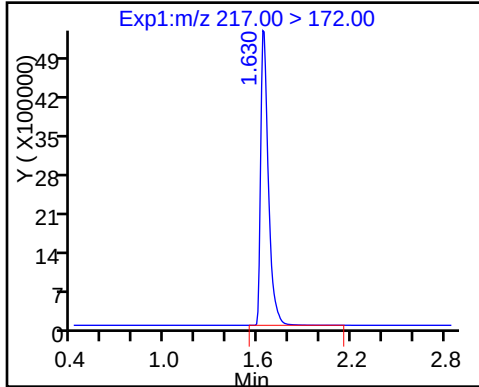
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

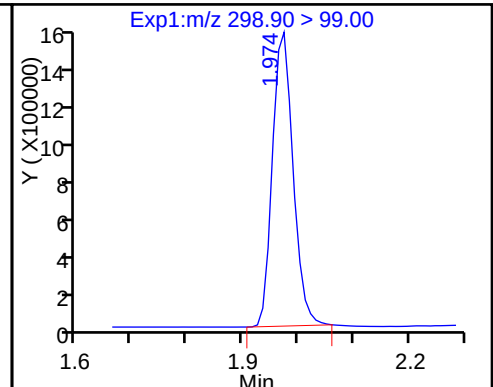
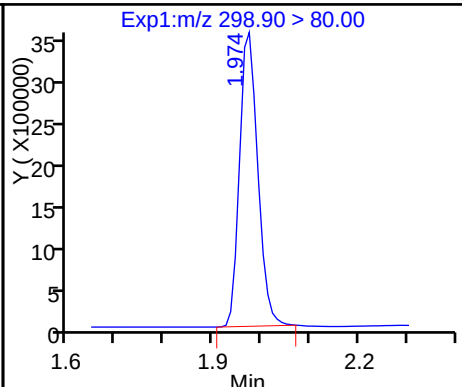
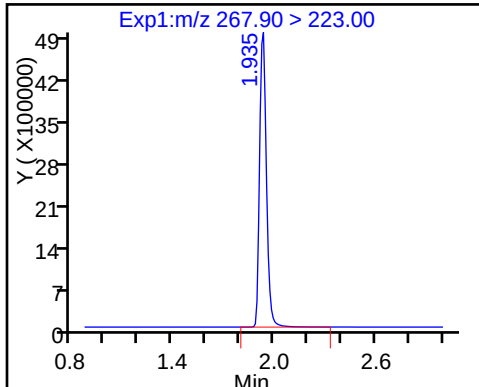
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

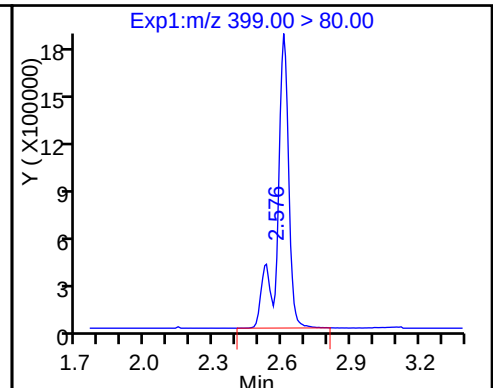
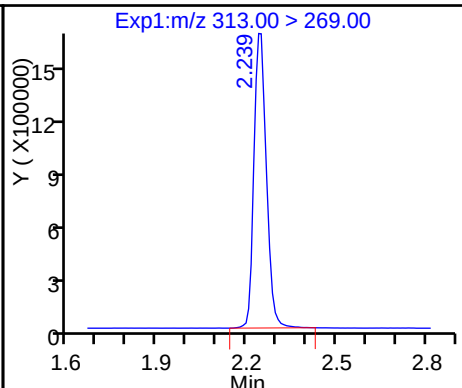
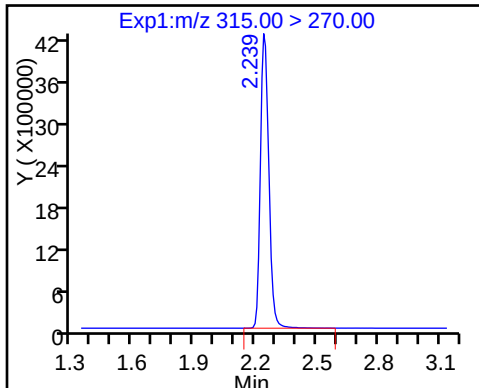
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

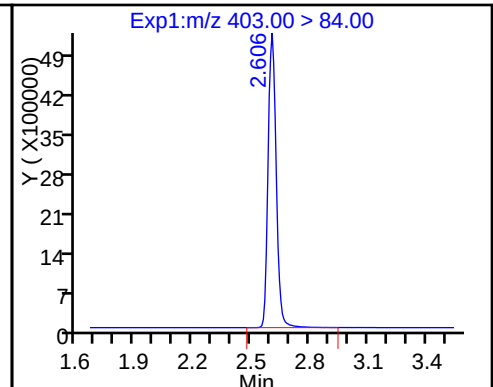
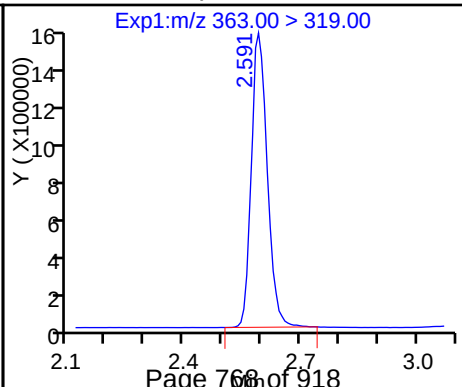
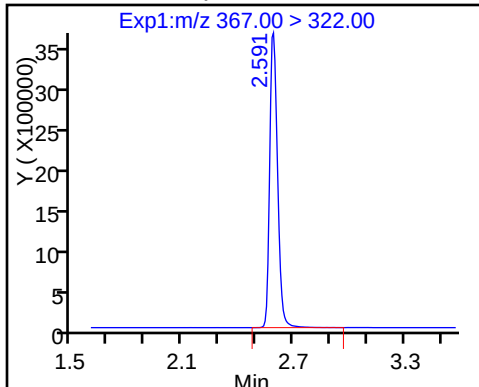
9 Perfluorohexanesulfonic acid



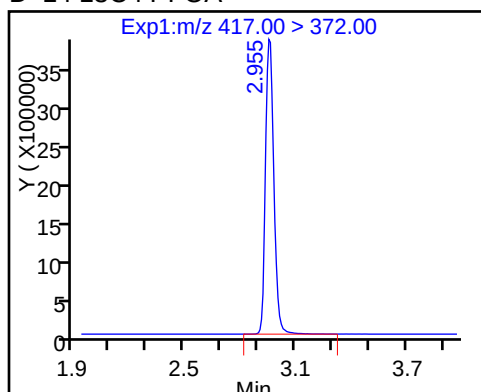
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid

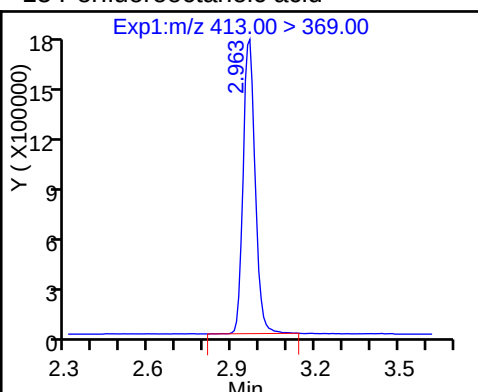
D 10 18O2 PFHxS



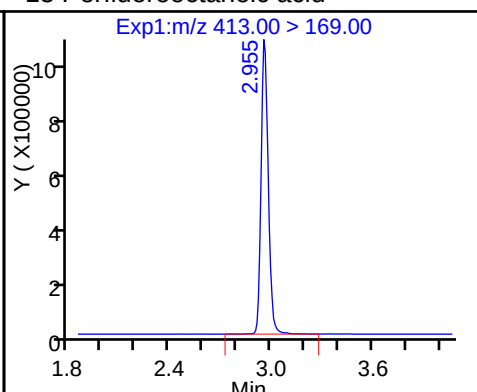
D 14 13C4 PFOA



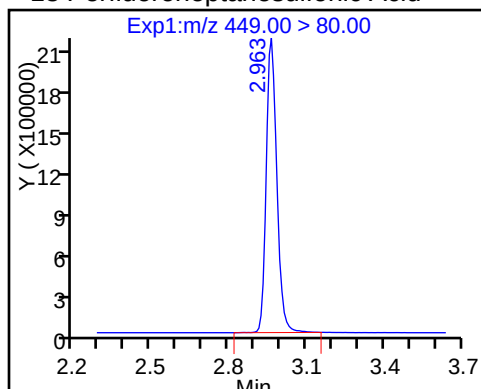
15 Perfluorooctanoic acid



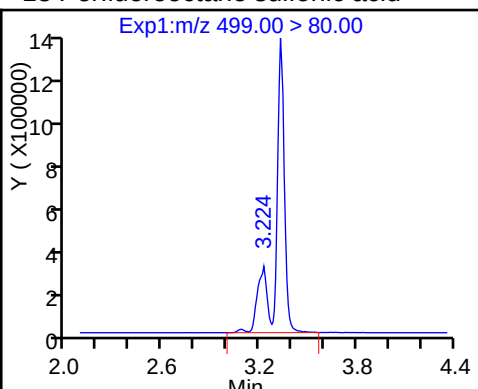
15 Perfluorooctanoic acid



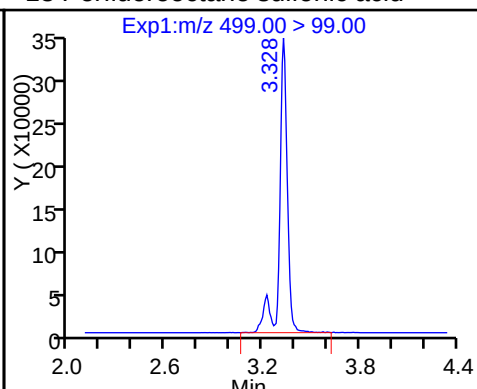
13 Perfluoroheptanesulfonic Acid



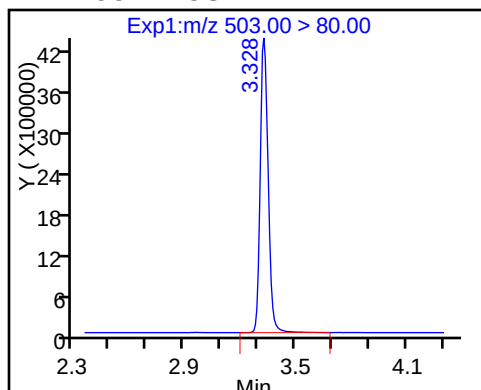
18 Perfluorooctane sulfonic acid



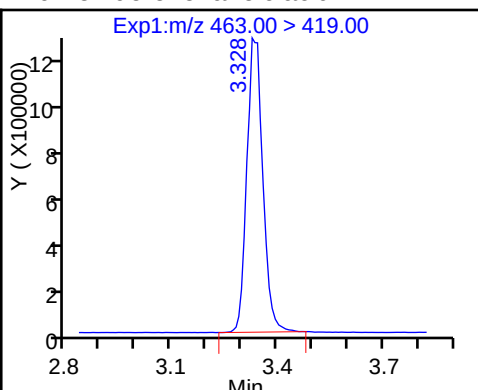
18 Perfluorooctane sulfonic acid



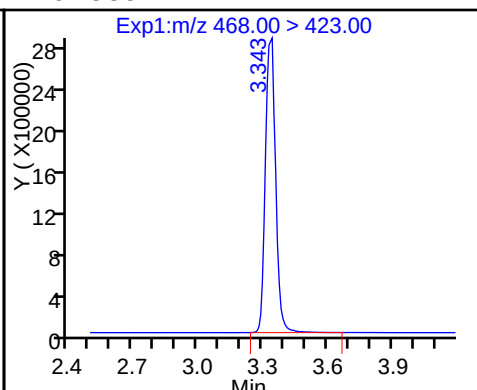
D 17 13C4 PFOS



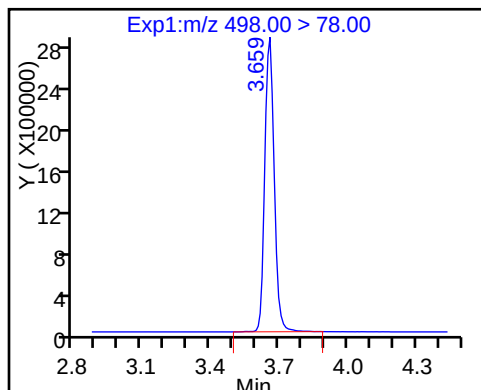
20 Perfluorononanoic acid



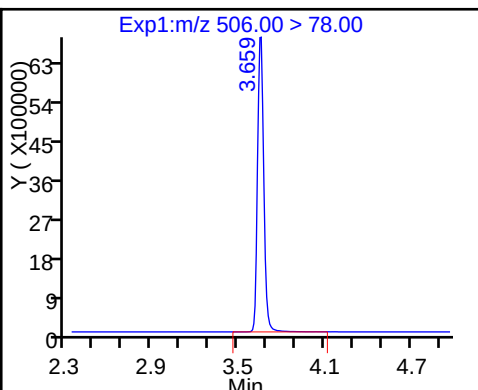
D 19 13C5 PFNA



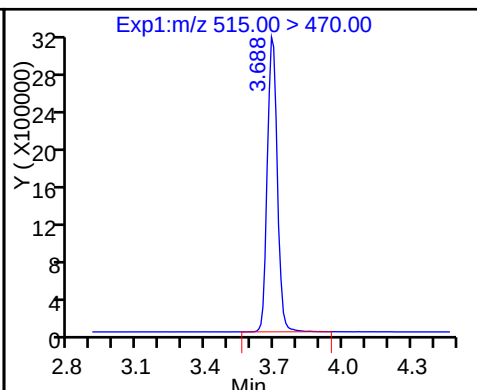
22 Perfluorooctane Sulfonamide

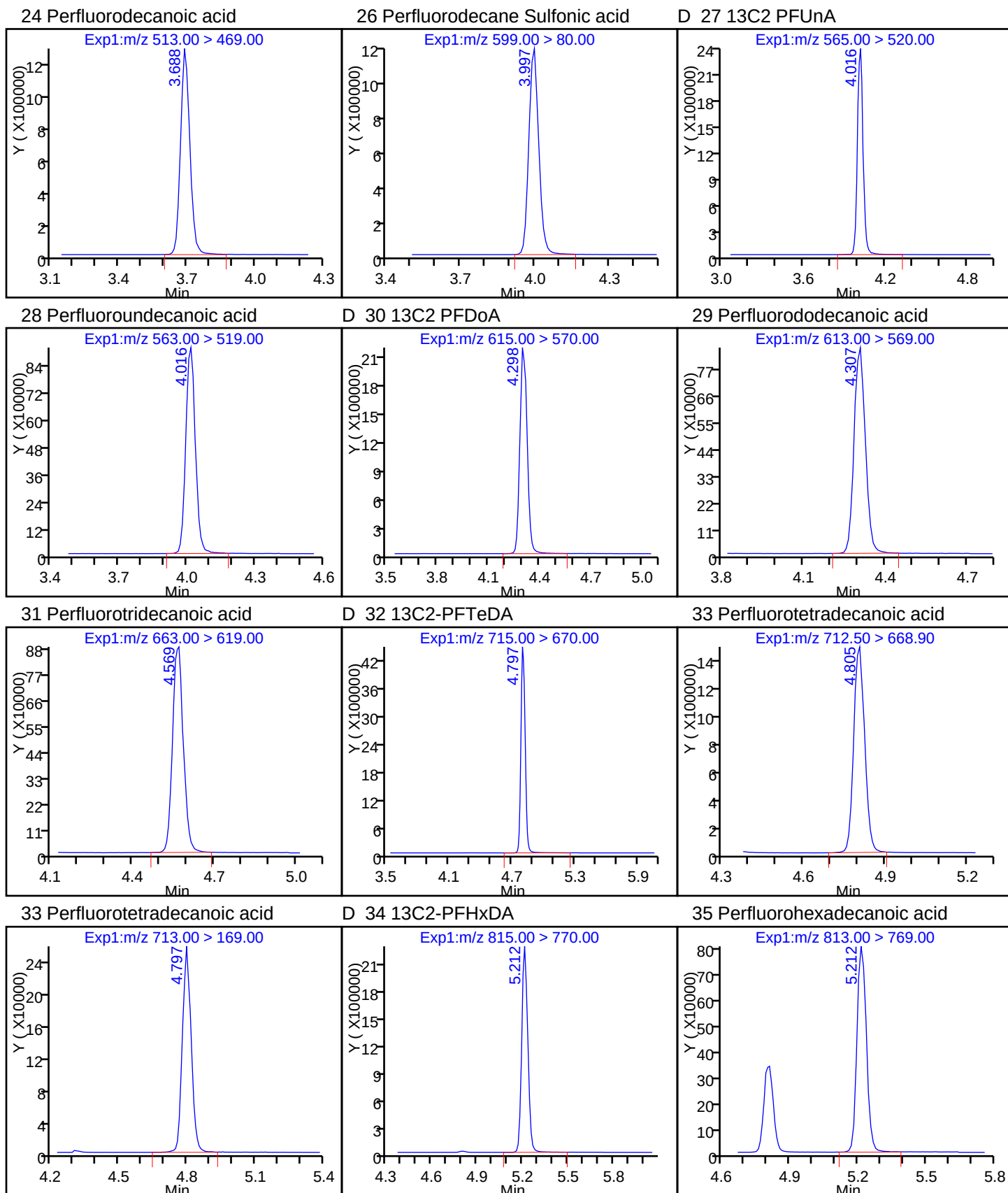


D 21 13C8 FOSA

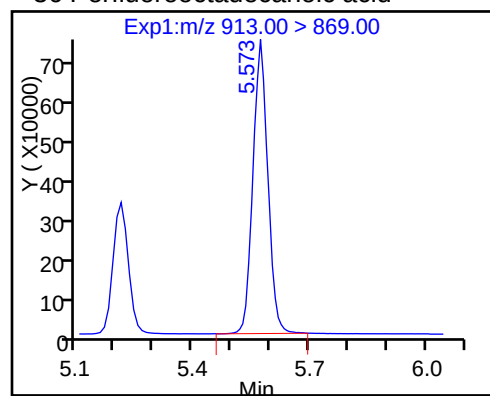


D 23 13C2 PFDA





36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Lab Sample ID: CCV 320-144867/26 Calibration Date: 01/03/2017 17:21

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 03JAN2017C_026.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9112		53.4	50.0	6.7	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.007		51.0	50.0	2.0	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.551		48.4	44.2	9.5	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9428		50.8	50.0	1.5	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9927		50.7	50.0	1.4	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.037		45.8	45.5	0.7	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.041		51.9	50.0	3.8	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.159		50.1	47.6	5.1	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9502		49.9	50.0	-0.2	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9945	1.027		47.9	46.4	3.3	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9471		50.8	50.0	1.5	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9412		49.9	50.0	-0.3	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6555		54.1	48.2	12.3	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	1.026		53.6	50.0	7.2	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9174		50.0	50.0	-0.0	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9140		50.4	50.0	0.8	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.522		48.0	50.0	-4.0	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.8508		44.0	50.0	-12.1	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.6752		32.8	50.0	-34.5*	25.0
13C4 PFBA	Ave	347743	338493		48.7	50.0	-2.7	50.0
13C5-PFPeA	Ave	266072	251144		47.2	50.0	-5.6	50.0
13C2 PFHxA	Ave	245110	221569		45.2	50.0	-9.6	50.0
13C4-PFHpA	Ave	226344	196343		43.4	50.0	-13.3	50.0
18O2 PFHxS	Ave	326976	293228		42.4	47.3	-10.3	50.0
13C4 PFOA	Ave	230362	208982		45.4	50.0	-9.3	50.0
13C4 PFOS	Ave	248847	241324		46.4	47.8	-3.0	50.0
13C5 PFNA	Ave	177687	173329		48.8	50.0	-2.5	50.0
13C8 FOSA	Ave	384141	380261		49.5	50.0	-1.0	50.0
13C2 PFDA	Ave	157302	168480		53.6	50.0	7.1	50.0
13C2 PFUnA	Ave	117250	116487		49.7	50.0	-0.7	50.0
13C2 PFDoA	Ave	110957	118367		53.3	50.0	6.7	50.0
13C2-PFTeDA	Ave	227387	217228		47.8	50.0	-4.5	50.0
13C2-PFHxDA	Ave	124568	110160		44.2	50.0	-11.6	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170104-38437.b\03JAN2017C_026.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 03-Jan-2017 17:21:03 ALS Bottle#: 41 Worklist Smp#: 26
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub5
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170104-38437.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 04-Jan-2017 10:14:55 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK007

First Level Reviewer: chandrasenas

Date: 04-Jan-2017 10:14:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 2 13C4 PFBA

217.00 > 172.00 1.631 1.631 0.0 16924625 48.7 97.3 1650395

1 Perfluorobutyric acid

212.90 > 169.00 1.631 1.631 0.0 1.000 15421655 53.4 107 136062

3 Perfluoropentanoic acid

262.90 > 219.00 1.916 1.916 0.0 1.000 12643373 51.0 102 166898

D 4 13C5-PFPeA

267.90 > 223.00 1.916 1.916 0.0 12557186 47.2 94.4 1476566

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.955 1.955 0.0 1.000 20104851 48.4 109

298.90 > 99.00 1.955 1.955 0.0 1.000 9073253 2.22(0.00-0.00)

D 6 13C2 PFHxA

315.00 > 270.00 2.222 2.222 0.0 11078429 45.2 90.4 962176

7 Perfluorohexanoic acid

313.00 > 269.00 2.222 2.222 0.0 1.000 10444488 50.8 102 466500

12 Perfluoroheptanoic acid

363.00 > 319.00 2.569 2.569 0.0 1.000 9745156 50.7 101 130552

D 11 13C4-PFHpA

367.00 > 322.00 2.569 2.569 0.0 9817130 43.4 86.7 1140642

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.585 2.585 0.0 1.000 13831905 45.8 101

D 10 18O2 PFHxS

403.00 > 84.00 2.585 2.585 0.0 13869701 42.4 89.7 4828911

D 14 13C4 PFOA

417.00 > 372.00 2.932 2.932 0.0 10449110 45.4 90.7 1185363

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.932	2.932	0.0	1.000	10877531	51.9		104	127239	
413.00 > 169.00	2.932	2.932	0.0	1.000	6669220		1.63(0.90-1.10)		429798	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.940	2.940	0.0	1.000	13309577	50.1		105		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.302	3.302	0.0	1.000	11503105	47.9		103	480503	
499.00 > 99.00	3.302	3.302	0.0	1.000	2524391		4.56(0.90-1.10)		187384	
D 17 13C4 PFOS										
503.00 > 80.00	3.302	3.302	0.0		11535288	46.4		97.0	217223	
20 Perfluorononanoic acid										
463.00 > 419.00	3.302	3.302	0.0	1.000	8234774	49.9		99.8	141550	M
D 19 13C5 PFNA										
468.00 > 423.00	3.310	3.310	0.0		8666464	48.8		97.5	555391	
D 21 13C8 FOSA										
506.00 > 78.00	3.634	3.634	0.0		19013064	49.5		99.0	771533	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.634	3.634	0.0	1.000	18006960	50.8		102	522072	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.660	3.660	0.0	1.000	7928453	49.9		99.7	206845	
D 23 13C2 PFDA										
515.00 > 470.00	3.660	3.660	0.0		8424006	53.6		107	185310	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.967	3.967	0.0	1.000	7625031	54.1		112		
D 27 13C2 PFUnA										
565.00 > 520.00	3.995	3.995	0.0		5824369	49.7		99.3	318325	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.995	3.995	0.0	1.000	5973516	53.6		107	151253	
D 30 13C2 PFDaA										
615.00 > 570.00	4.283	4.283	0.0		5918371	53.3		107	251924	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.283	4.283	0.0	1.000	5429327	50.0		99.9	34480	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.543	4.543	0.0	1.000	5409290	50.4		101	5912	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.777	4.777	0.0		10861412	47.8		95.5	535665	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.785	4.785	0.0	1.000	9005917	48.0		96.0	3218	
713.00 > 169.00	4.777	4.785	-0.008	0.998	1531134		5.88(0.00-0.00)		111266	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.184	5.184	0.0		5508006	44.2		88.4	72595	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.195	5.195	0.0	1.000	5035327	44.0		87.9	3463	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.549	5.549	0.0	1.000	3996062	32.8		65.5	2960	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L5_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170104-38437.b\03JAN2017C_026.d

Injection Date: 03-Jan-2017 17:21:03

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 41

Worklist Smp#: 26

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

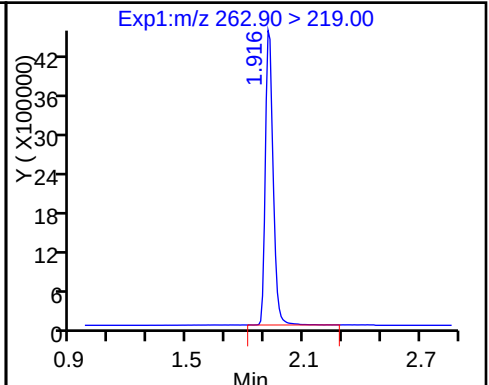
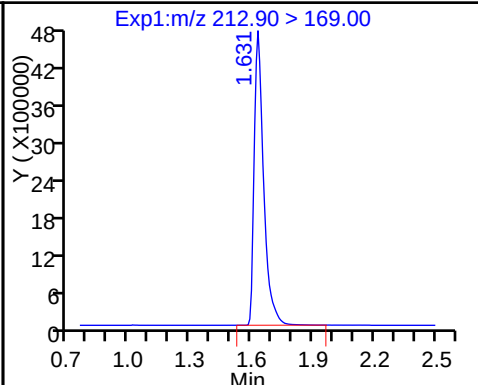
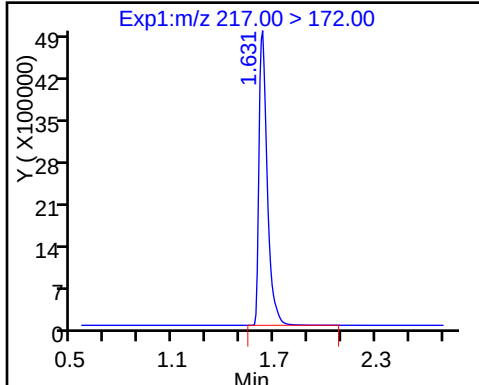
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

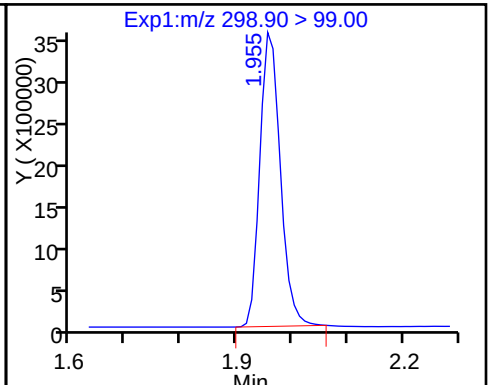
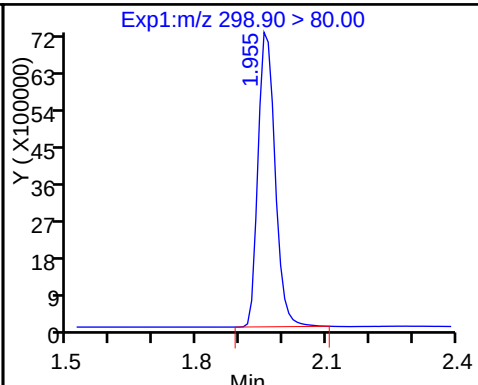
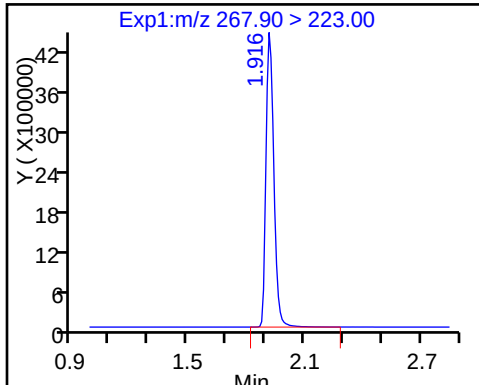
3 Perfluoropentanoic acid



D 4 13C5-PFPeA

5 Perfluorobutanesulfonic acid

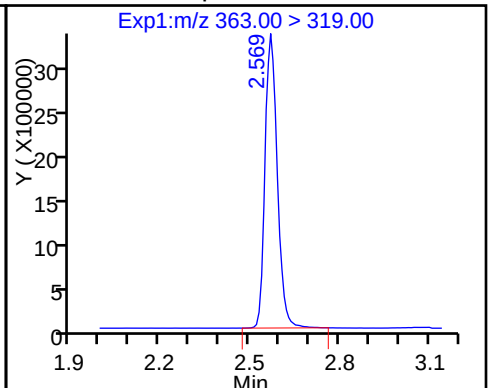
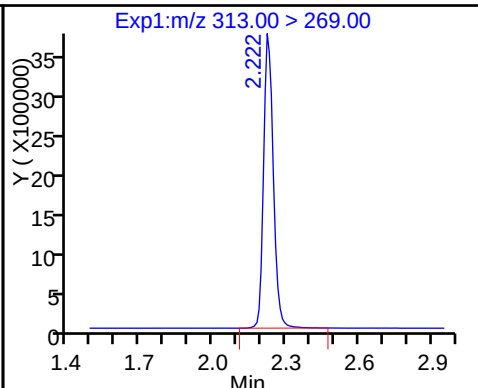
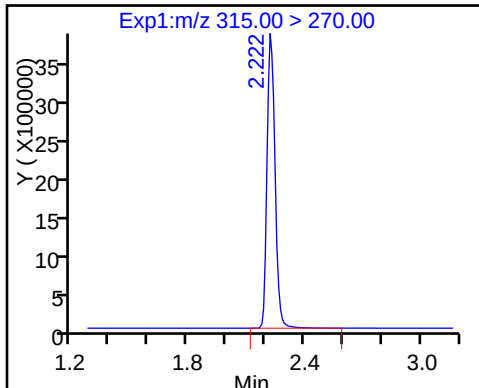
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

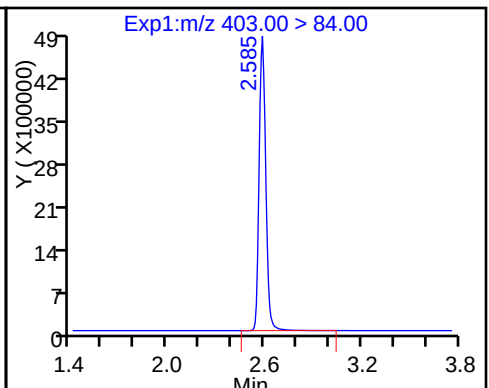
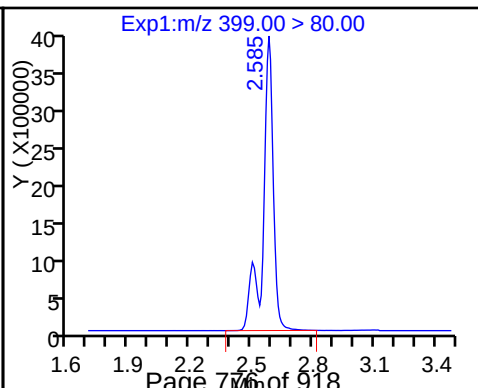
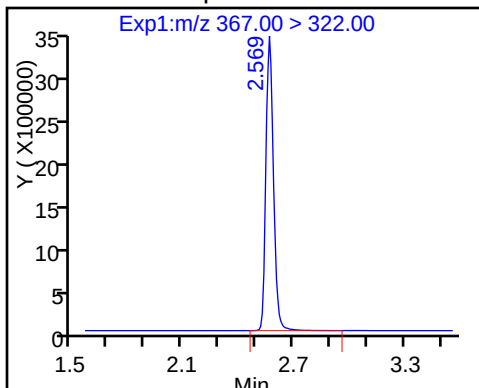
12 Perfluoroheptanoic acid



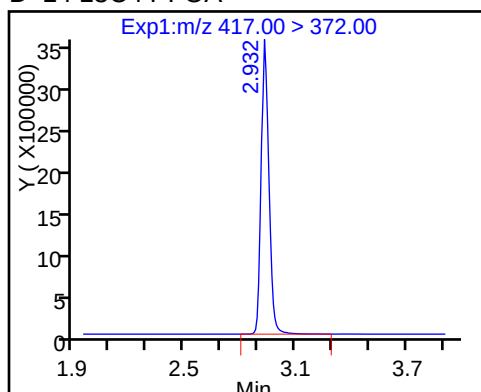
D 11 13C4-PFHpA

9 Perfluorohexanesulfonic acid

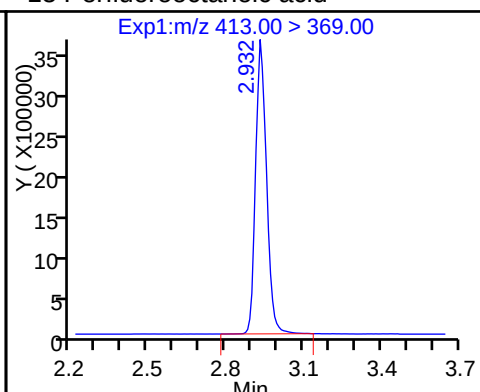
D 10 18O2 PFHxS



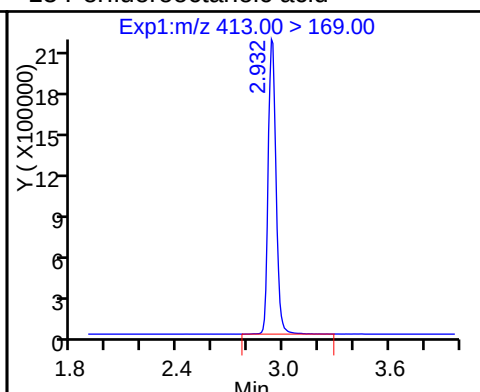
D 14 13C4 PFOA



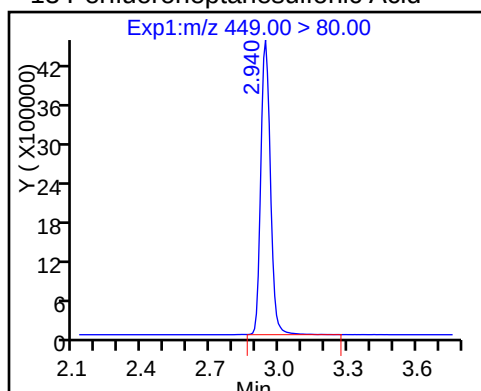
15 Perfluorooctanoic acid



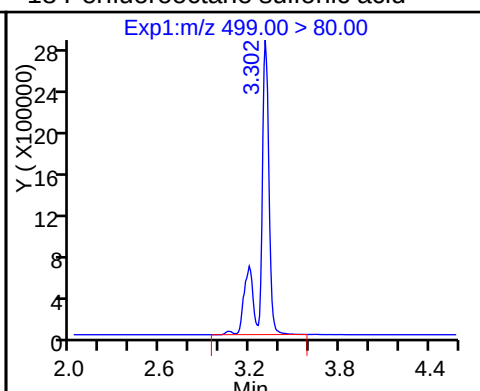
15 Perfluorooctanoic acid



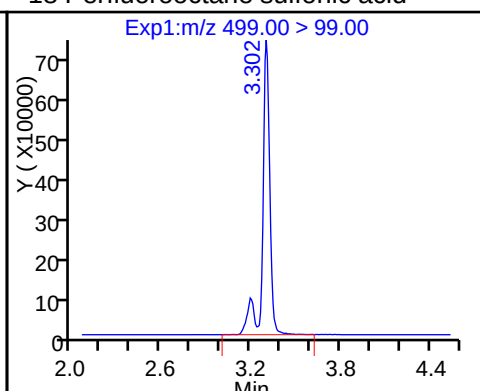
13 Perfluoroheptanesulfonic Acid



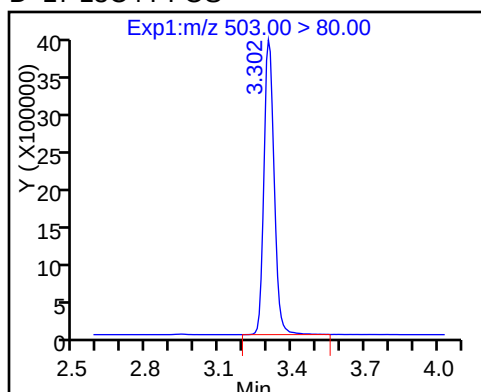
18 Perfluorooctane sulfonic acid



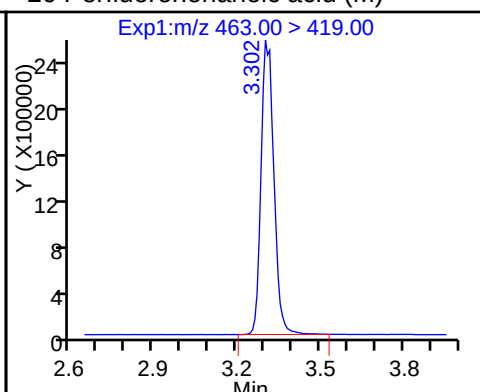
18 Perfluorooctane sulfonic acid



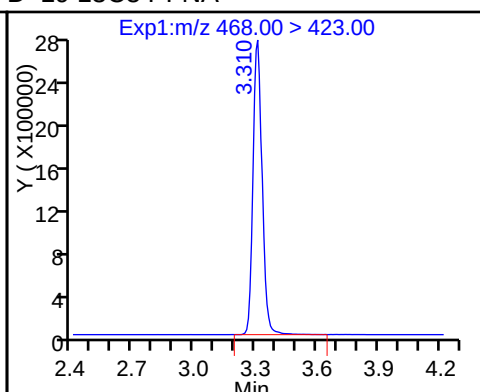
D 17 13C4 PFOS



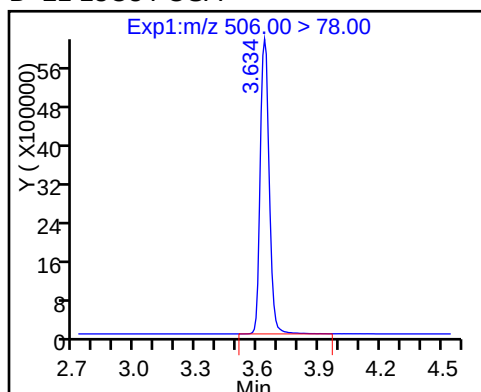
20 Perfluorononanoic acid (M)



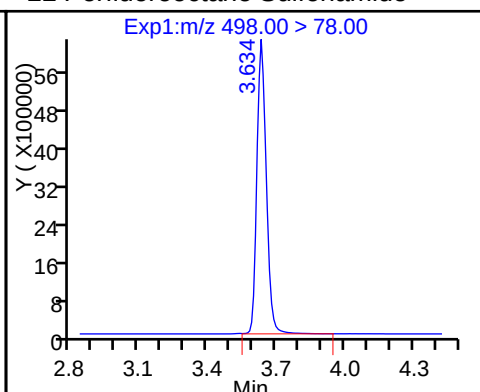
D 19 13C5 PFNA



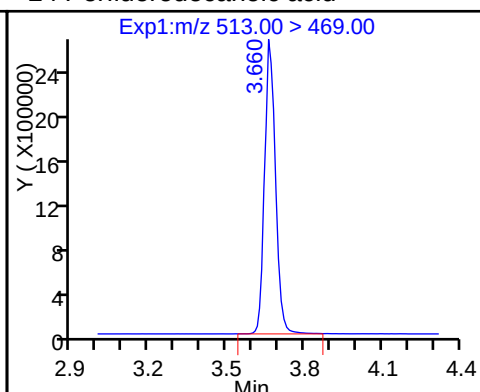
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide



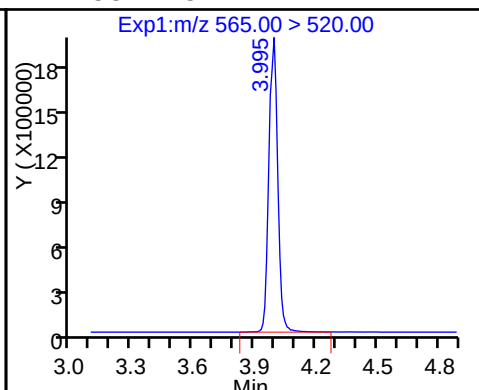
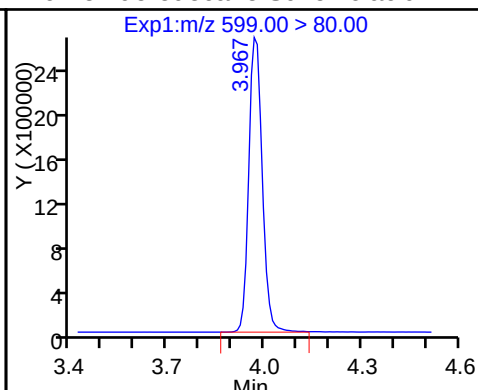
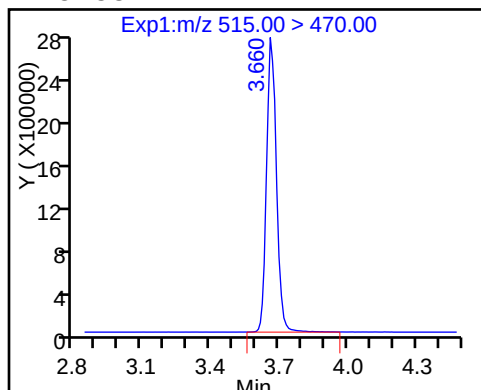
24 Perfluorodecanoic acid



D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

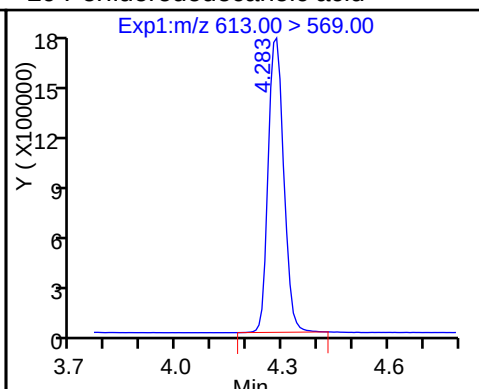
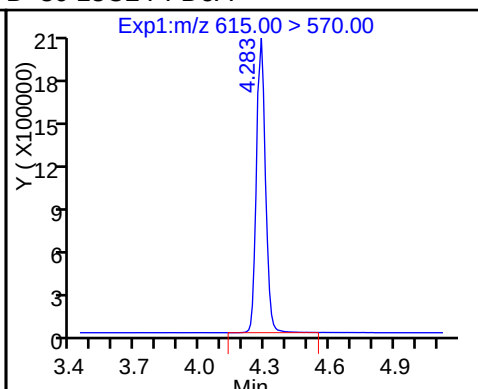
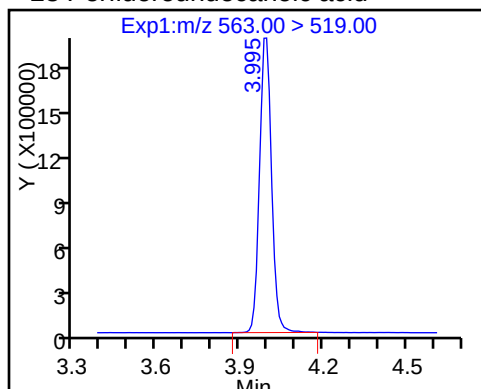
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

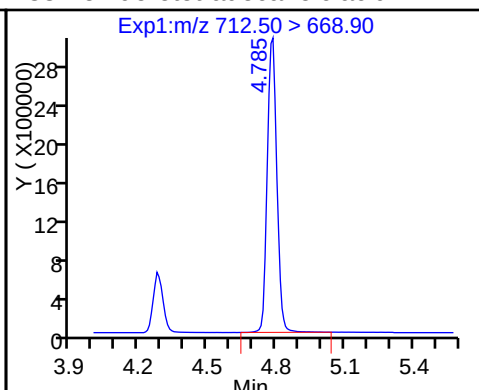
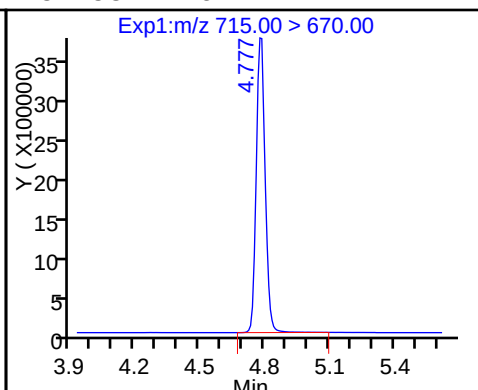
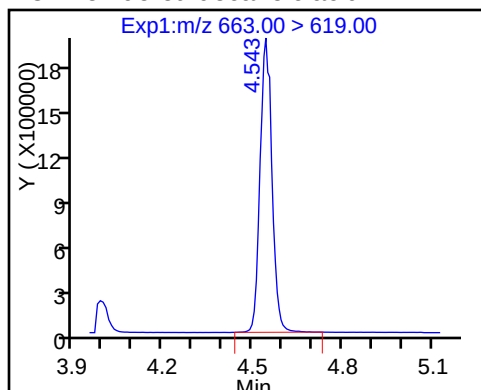
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

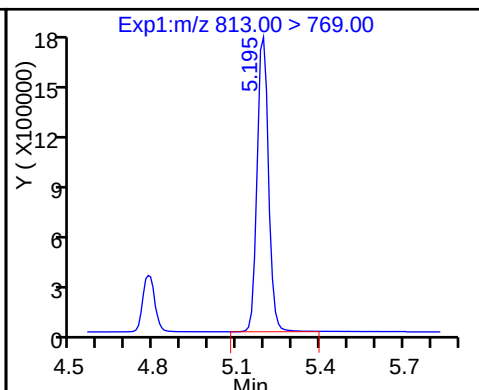
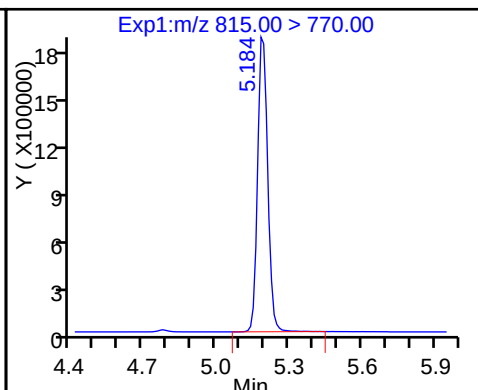
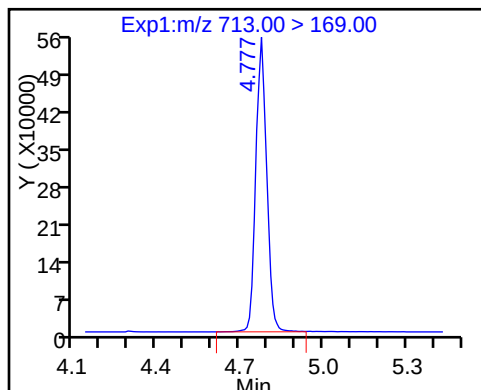
33 Perfluorotetradecanoic acid



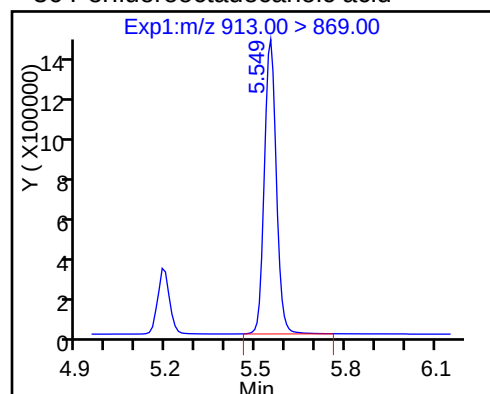
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

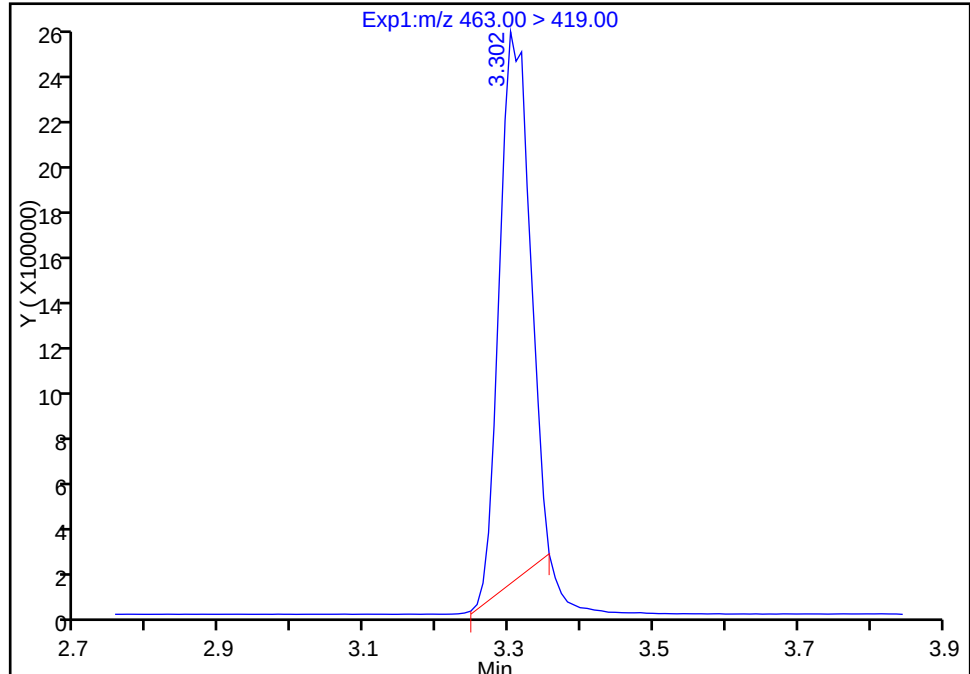
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170104-38437.b\03JAN2017C_026.d
Injection Date: 03-Jan-2017 17:21:03 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

20 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

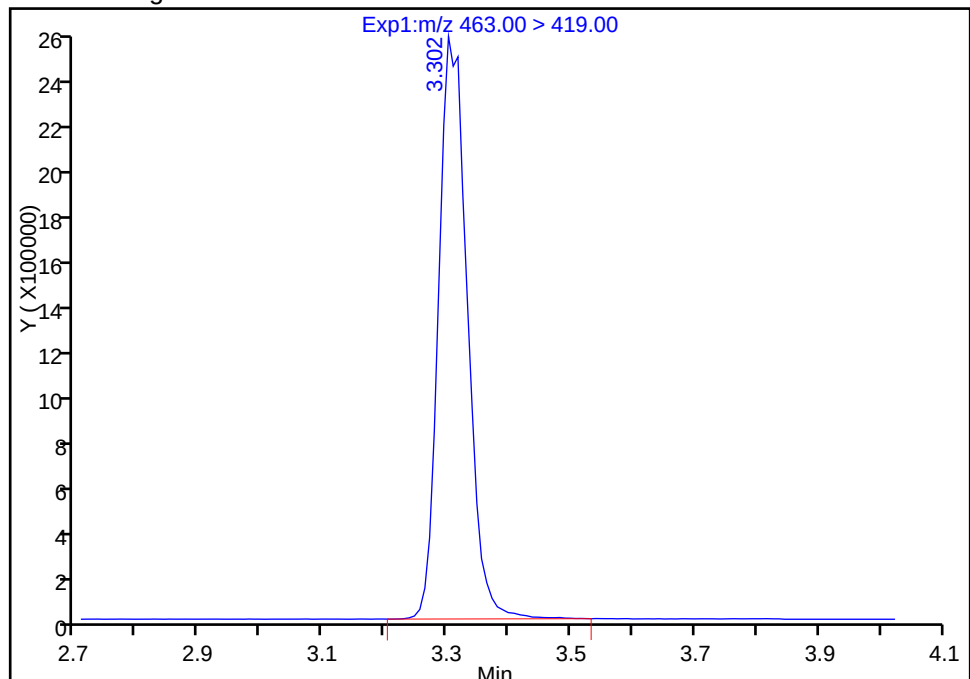
RT: 3.30
Area: 7056954
Amount: 42.775001
Amount Units: ng/ml

Processing Integration Results



RT: 3.30
Area: 8234774
Amount: 49.914236
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 04-Jan-2017 10:14:27

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Lab Sample ID: CCV 320-145022/5 Calibration Date: 01/04/2017 16:33

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 04JAN2017A_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.8636		1.01	1.00	1.2	50.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	0.9645		0.977	1.00	-2.3	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.509		0.941	0.884	6.5	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9092		0.979	1.00	-2.1	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9904		1.01	1.00	1.2	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.126		0.995	0.910	9.3	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.016		0.878	0.952	-7.8	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.064		1.06	1.00	6.1	50.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9221		0.969	1.00	-3.1	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9945	0.9802		0.915	0.928	-1.4	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9608		1.03	1.00	3.0	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9301		0.985	1.00	-1.5	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6368		1.05	0.964	9.0	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9470		0.990	1.00	-1.0	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.8506		0.927	1.00	-7.3	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9022		0.995	1.00	-0.5	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.622		1.02	1.00	2.4	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.452		0.921	1.00	-7.9	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.7664		0.744	1.00	-25.6	50.0
13C4 PFBA	Ave	347743	369981		53.2	50.0	6.4	50.0
13C5-PFPeA	Ave	266072	290939		54.7	50.0	9.3	50.0
13C2 PFHxA	Ave	245110	275813		56.3	50.0	12.5	50.0
13C4-PFHpA	Ave	226344	243310		53.7	50.0	7.5	50.0
18O2 PFHxS	Ave	326976	335997		48.6	47.3	2.8	50.0
13C4 PFOA	Ave	230362	259754		56.4	50.0	12.8	50.0
13C4 PFOS	Ave	248847	267176		51.3	47.8	7.4	50.0
13C5 PFNA	Ave	177687	198032		55.7	50.0	11.4	50.0
13C8 FOSA	Ave	384141	414261		53.9	50.0	7.8	50.0
13C2 PFDA	Ave	157302	193976		61.7	50.0	23.3	50.0
13C2 PFUnA	Ave	117250	149637		63.8	50.0	27.6	50.0
13C2 PFDoA	Ave	110957	139645		62.9	50.0	25.9	50.0
13C2-PFTeDA	Ave	227387	258482		56.8	50.0	13.7	50.0
13C2-PFHxDA	Ave	124568	138561		55.6	50.0	11.2	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170105-38480.b\04JAN2017A_005.d
 Lims ID: CCV L2
 Client ID:
 Sample Type: CCVL
 Inject. Date: 04-Jan-2017 16:33:05 ALS Bottle#: 38 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L2
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub5
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170105-38480.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 05-Jan-2017 09:08:05 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK034

First Level Reviewer: chandrasenas

Date: 05-Jan-2017 09:05:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.614	1.614	0.0		18499065	53.2		106	1134120	
1 Perfluorobutyric acid										
212.90 > 169.00	1.622	1.622	0.0	1.000	319502	1.01		101	2230	
D 4 13C5-PFPeA										
267.90 > 223.00	1.916	1.906	0.010		14546928	54.7		109	1030058	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.916	1.916	0.0	1.000	280611	0.9774		97.7	2894	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.954	1.945	0.009	1.000	448064	0.9411		106		
298.90 > 99.00	1.945	1.945	0.0	0.995	177691		2.52(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.221	2.215	0.006		13790655	56.3		113	1209461	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.221	2.224	-0.003	1.000	250780	0.9790		97.9	10022	
D 11 13C4-PFHpA										
367.00 > 322.00	2.571	2.560	0.011		12165517	53.7		107	1038114	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.571	2.568	0.003	1.000	240963	1.01		101	2810	
D 10 18O2 PFHxS										
403.00 > 84.00	2.586	2.575	0.011		15892642	48.6		103	1801270	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.578	2.583	-0.005	1.000	344252	0.99		109		
D 14 13C4 PFOA										
417.00 > 372.00	2.940	2.927	0.013		12987692	56.4		113	885490	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.940	2.936	0.004	1.000	276395	1.06		106	2689	
413.00 > 169.00	2.940	2.936	0.004	1.000	154508		1.79(0.90-1.10)		7608	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.940	2.936	0.004	1.000	258440	0.8778		92.2		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.314	3.282	0.032	1.000	243025	0.9147		98.6	16267	M
499.00 > 99.00	3.307	3.282	0.025	0.998	58677		4.14(0.90-1.10)		1932	M
D 17 13C4 PFOS										
503.00 > 80.00	3.307	3.305	0.002		12770994	51.3		107	606987	
D 19 13C5 PFNA										
468.00 > 423.00	3.314	3.312	0.002		9901596	55.7		111	812506	
20 Perfluorononanoic acid										
463.00 > 419.00	3.314	3.320	-0.006	1.000	182596	0.9687		96.9	4450	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.618	3.611	0.007	1.000	398020	1.03		103	28871	
D 21 13C8 FOSA										
506.00 > 78.00	3.618	3.611	0.007		20713068	53.9		108	497303	
D 23 13C2 PFDA										
515.00 > 470.00	3.672	3.673	-0.001		9698776	61.7		123	199231	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.681	3.682	-0.001	1.000	180416	0.9855		98.5	6095	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.990	3.981	0.009	1.000	164007	1.05		109		
28 Perfluoroundecanoic acid										
563.00 > 519.00	4.009	4.000	0.009	1.000	141709	0.99		99.0	3455	
D 27 13C2 PFUnA										
565.00 > 520.00	4.009	4.000	0.009		7481855	63.8		128	274074	
D 30 13C2 PFDaA										
615.00 > 570.00	4.302	4.297	0.005		6982236	62.9		126	124187	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.302	4.297	0.005	1.000	118786	0.9266		92.7	218	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.573	4.567	0.007	1.000	125993	0.99		99.5	100	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.810	4.810	0.0		12924102	56.8		114	581770	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.810	4.810	0.0	1.000	226569	1.02		102	79.5	
713.00 > 169.00	4.802	4.810	-0.008	0.998	35718		6.34(0.00-0.00)		2587	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.240	5.229	0.011		6928038	55.6		111	79131	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.230	5.229	0.001	1.000	202802	0.9215		92.1	139	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.611	5.604	0.007	1.000	107022	0.7438		74.4	90.0	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L2_00023

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170105-38480.b\04JAN2017A_005.d

Injection Date: 04-Jan-2017 16:33:05

Instrument ID: A8_N

Lims ID: CCV L2

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 38

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

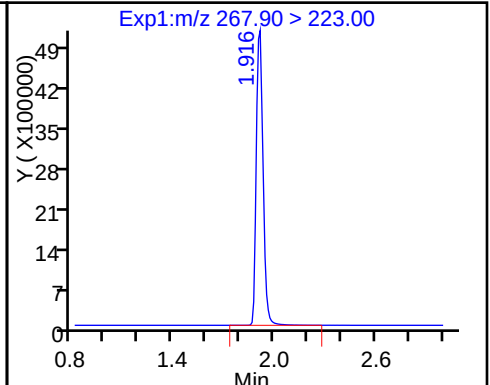
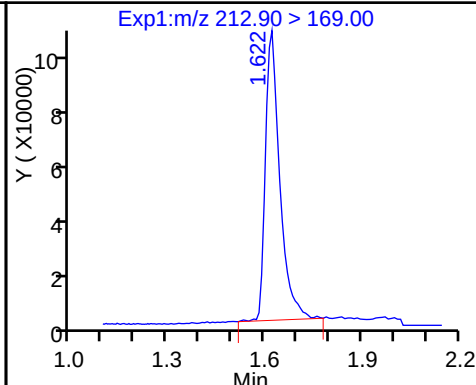
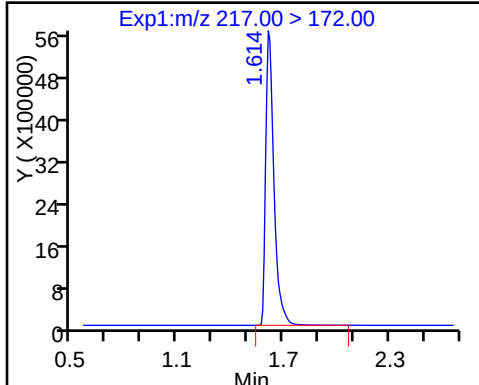
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

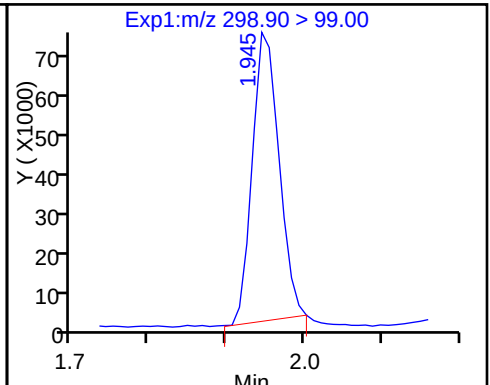
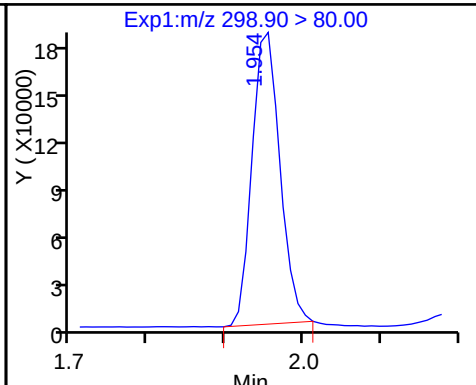
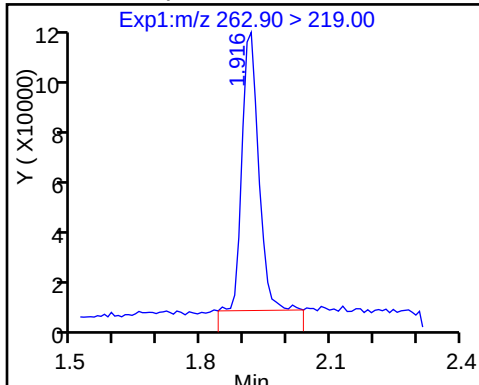
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

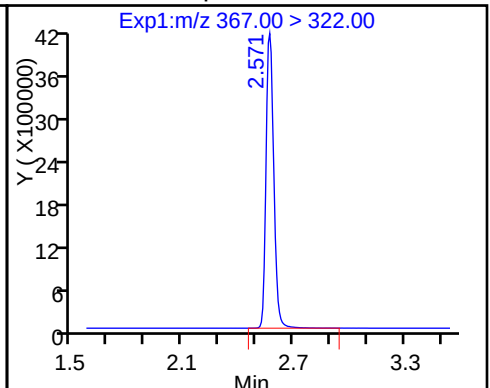
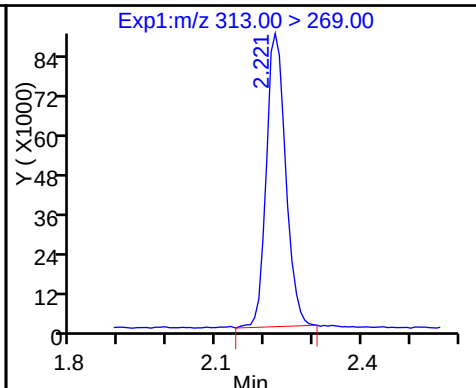
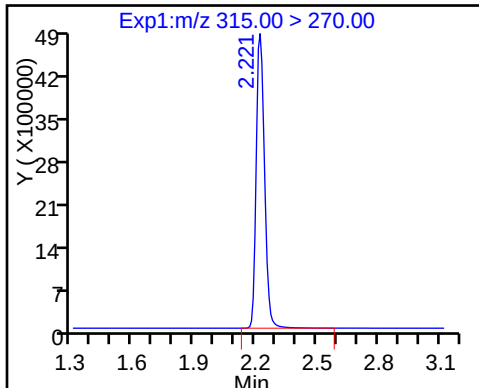
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

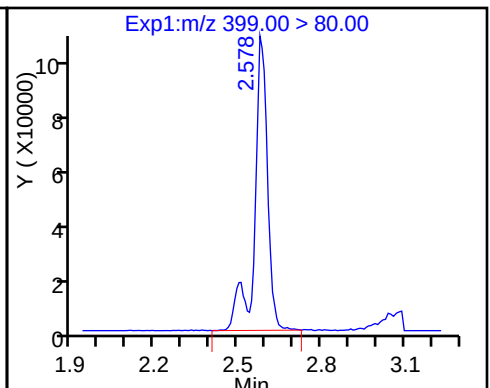
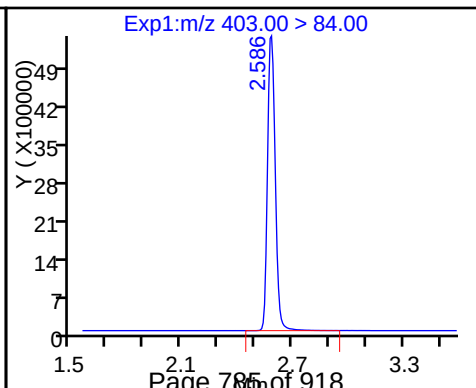
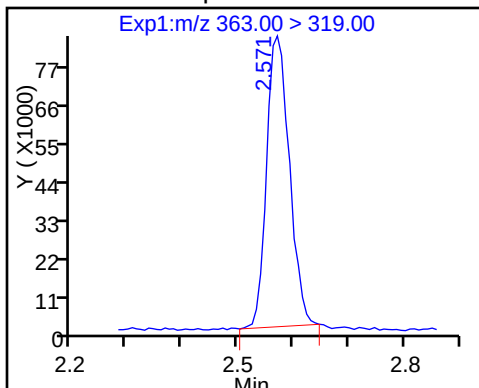
D 11 13C4-PFHpA



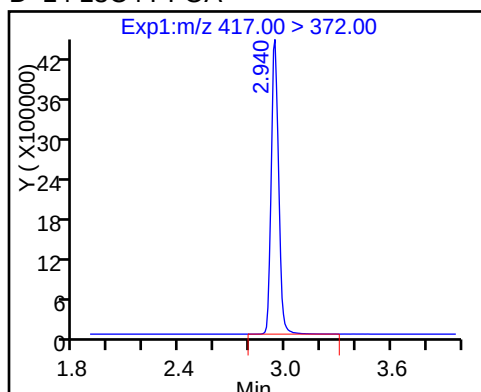
12 Perfluoroheptanoic acid

D 10 18O2 PFHxS

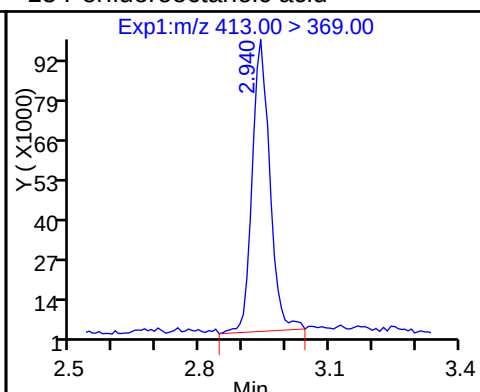
9 Perfluorohexanesulfonic acid



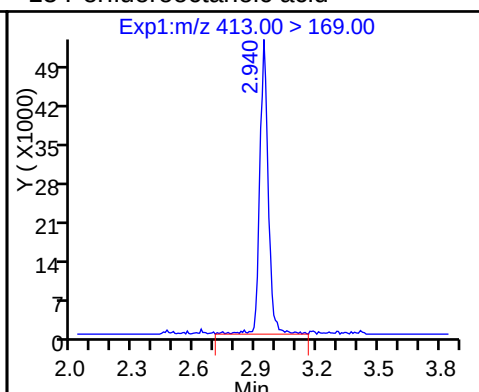
D 14 13C4 PFOA



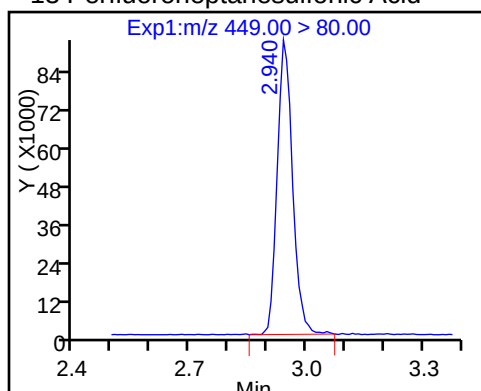
15 Perfluorooctanoic acid



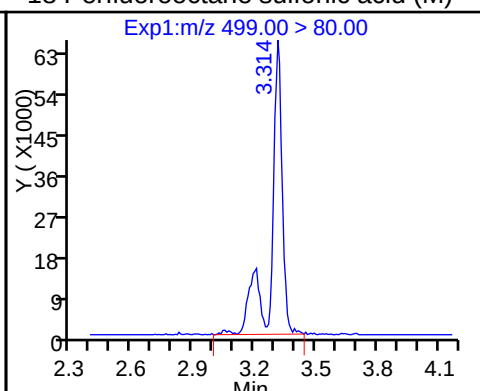
15 Perfluorooctanoic acid



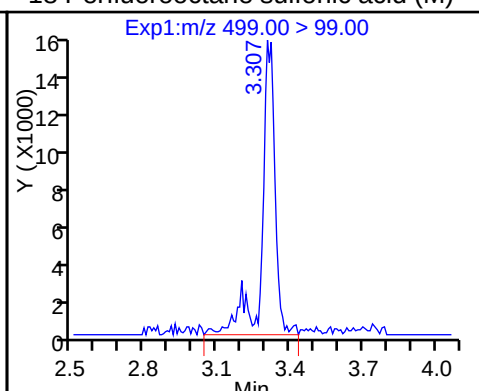
13 Perfluoroheptanesulfonic Acid



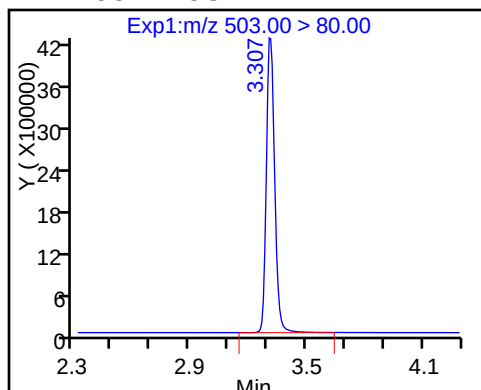
18 Perfluorooctane sulfonic acid (M)



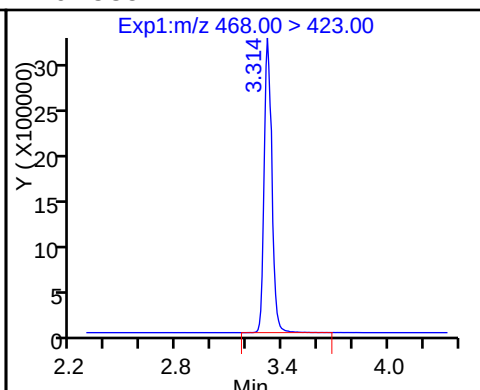
18 Perfluorooctane sulfonic acid (M)



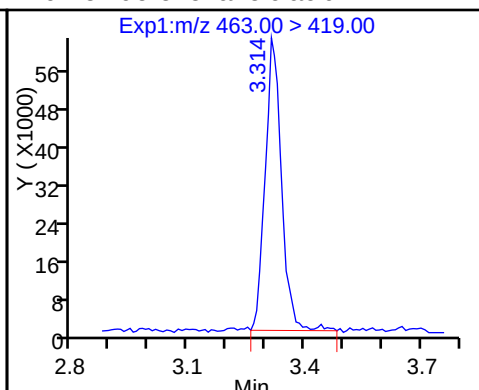
D 17 13C4 PFOS



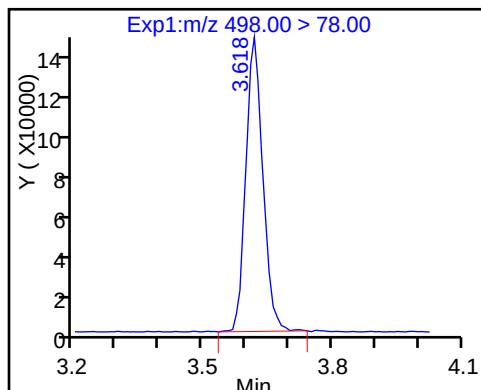
D 19 13C5 PFNA



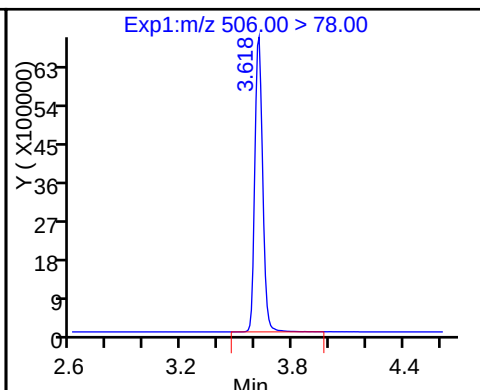
20 Perfluorononanoic acid



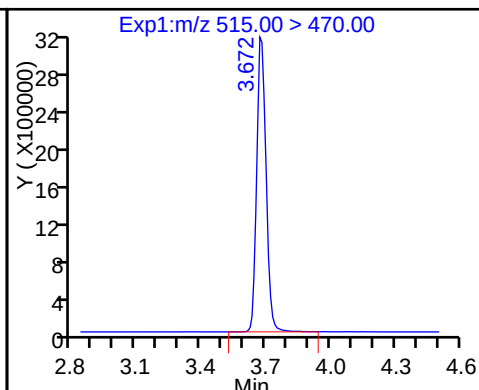
22 Perfluorooctane Sulfonamide



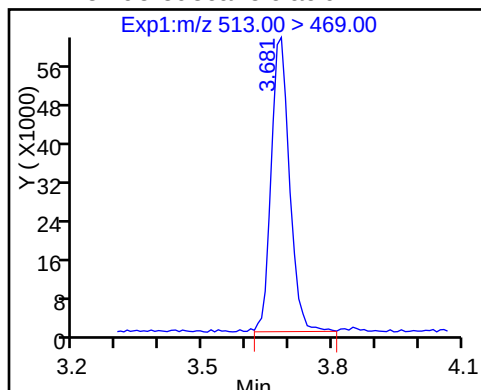
D 21 13C8 FOSA



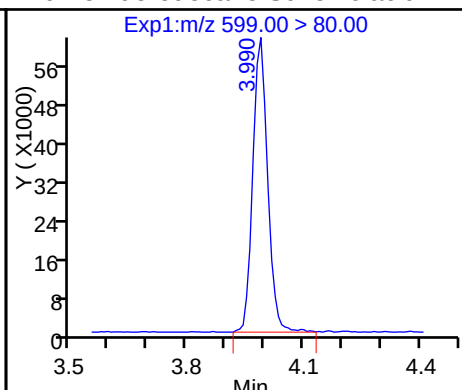
D 23 13C2 PFDA



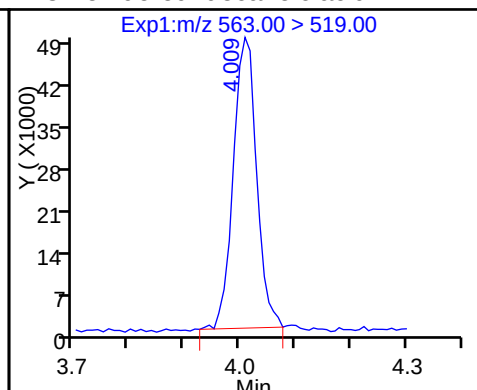
24 Perfluorodecanoic acid



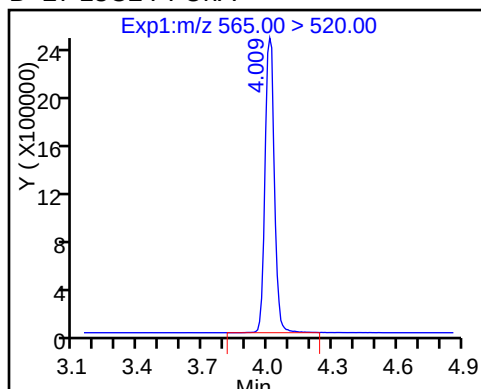
26 Perfluorodecane Sulfonic acid



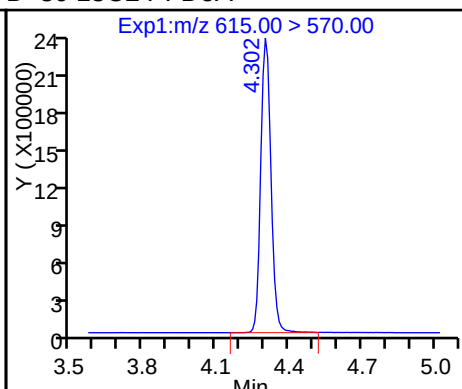
28 Perfluoroundecanoic acid



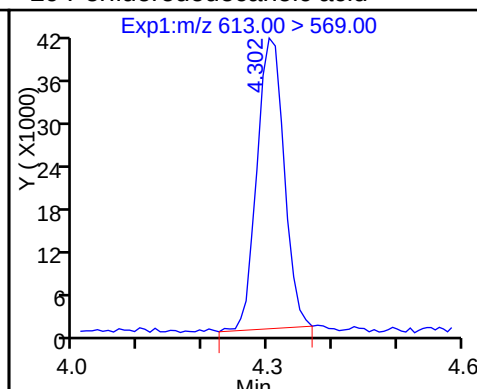
D 27 13C2 PFUnA



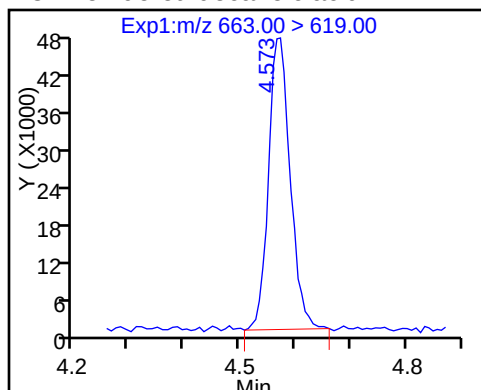
D 30 13C2 PFDaA



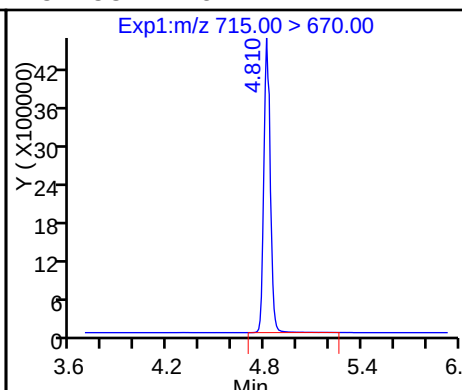
29 Perfluorododecanoic acid



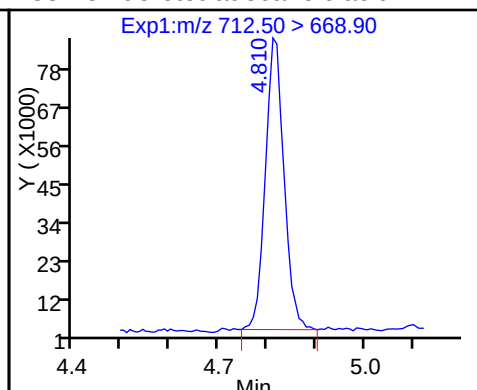
31 Perfluorotridecanoic acid



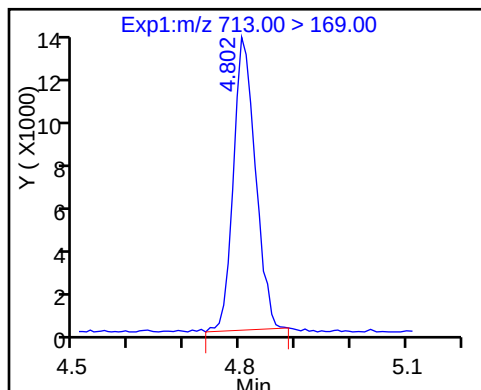
D 32 13C2-PFTeDA



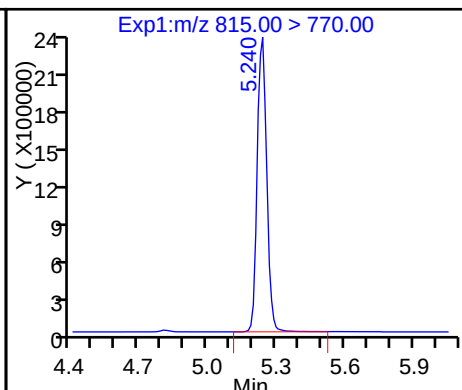
33 Perfluorotetradecanoic acid



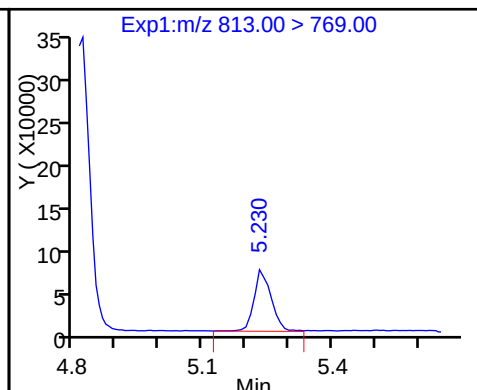
33 Perfluorotetradecanoic acid



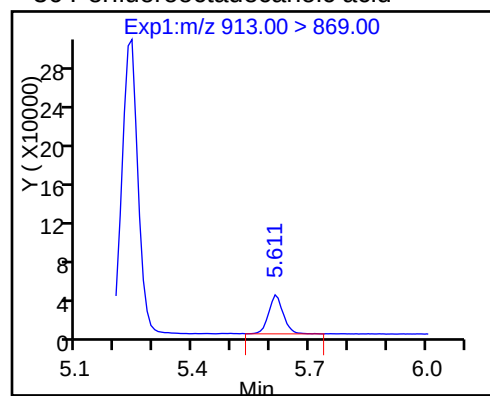
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

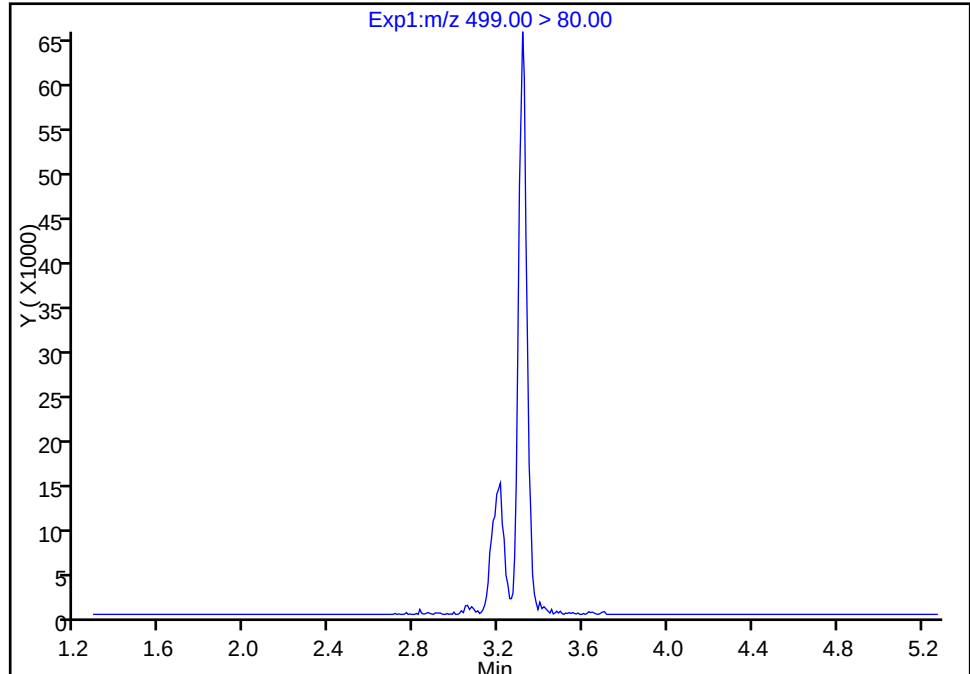
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170105-38480.b\04JAN2017A_005.d
Injection Date: 04-Jan-2017 16:33:05 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

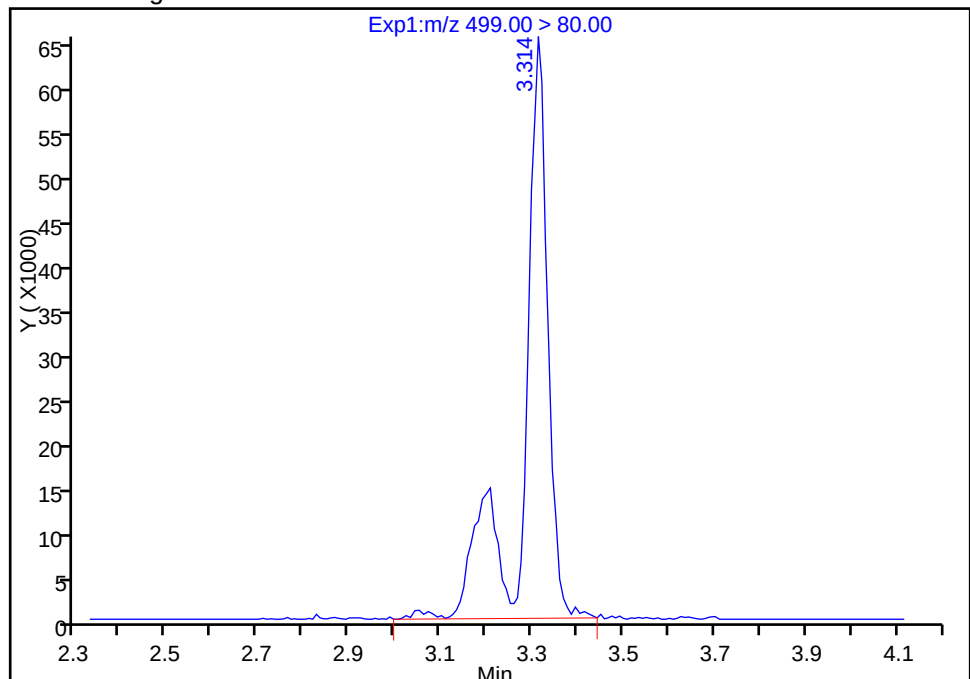
Not Detected
Expected RT: 3.28

Processing Integration Results



RT: 3.31
Area: 243025
Amount: 0.914682
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 05-Jan-2017 09:05:50

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

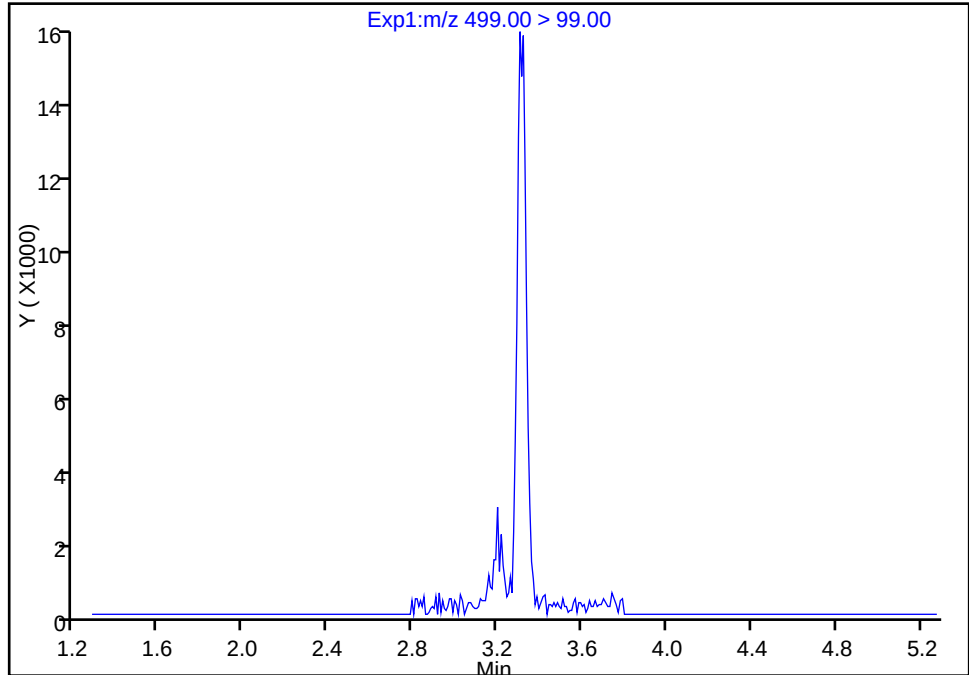
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170105-38480.b\04JAN2017A_005.d
Injection Date: 04-Jan-2017 16:33:05 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PCVA8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

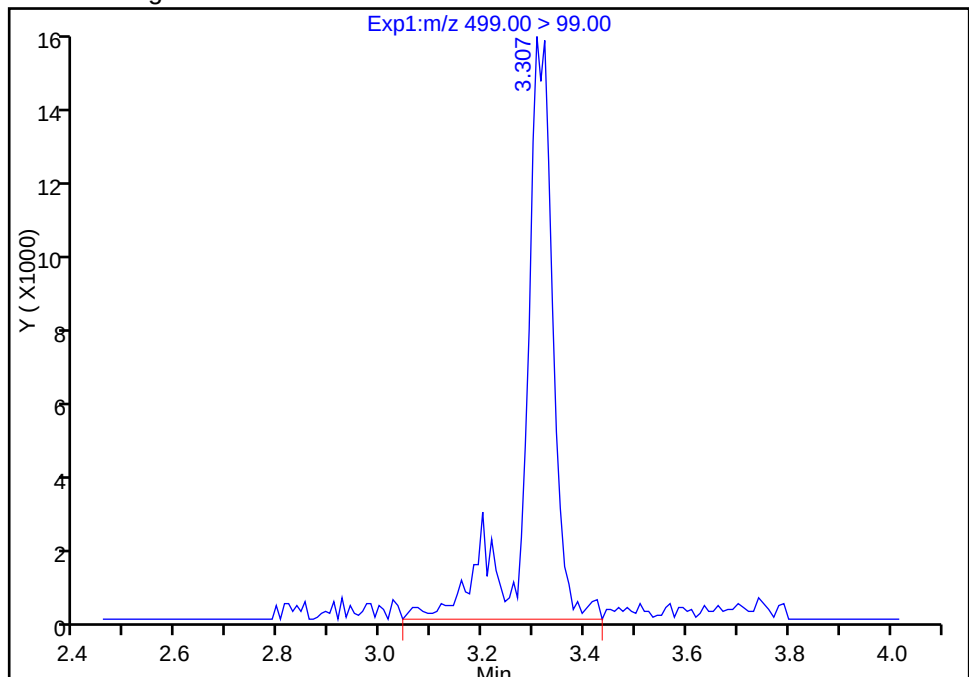
Signal: 2

Not Detected
Expected RT: 3.28

Processing Integration Results



Manual Integration Results



Reviewer: chandrasenas, 05-Jan-2017 09:05:50

Audit Action: Manually Integrated

Audit Reason: Assign Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Lab Sample ID: CCV 320-145022/41 Calibration Date: 01/04/2017 21:03

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 04JAN2017A_041.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9676		22.7	20.0	13.3	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.064		21.6	20.0	7.9	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.735		21.6	17.7	22.4	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9742		21.0	20.0	4.9	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	1.002		20.5	20.0	2.3	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.092		19.3	18.2	6.0	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.220		21.1	19.0	10.8	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.091		21.7	20.0	8.7	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9945	1.096		20.4	18.6	10.2	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9690		20.4	20.0	1.8	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	1.025		22.0	20.0	9.9	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9511		20.2	20.0	0.8	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6968		23.0	19.3	19.3	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.999		20.9	20.0	4.5	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9541		20.8	20.0	3.9	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9110		20.1	20.0	0.4	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.658		20.9	20.0	4.6	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.8552		17.3	20.0	-13.4	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.7199		14.0	20.0	-30.1*	25.0
13C4 PFBA	Ave	347743	388079		55.8	50.0	11.6	50.0
13C5-PFPeA	Ave	266072	298168		56.0	50.0	12.1	50.0
13C2 PFHxA	Ave	245110	269713		55.0	50.0	10.0	50.0
13C4-PFHpA	Ave	226344	234033		51.7	50.0	3.4	50.0
18O2 PFHxS	Ave	326976	355474		51.4	47.3	8.7	50.0
13C4 PFOA	Ave	230362	248295		53.9	50.0	7.8	50.0
13C4 PFOS	Ave	248847	286019		54.9	47.8	14.9	50.0
13C5 PFNA	Ave	177687	199182		56.0	50.0	12.1	50.0
13C8 FOSA	Ave	384141	426463		55.5	50.0	11.0	50.0
13C2 PFDA	Ave	157302	186581		59.3	50.0	18.6	50.0
13C2 PFUnA	Ave	117250	138581		59.1	50.0	18.2	50.0
13C2 PFDoA	Ave	110957	136382		61.5	50.0	22.9	50.0
13C2-PFTeDA	Ave	227387	248685		54.7	50.0	9.4	50.0
13C2-PFHxDA	Ave	124568	128222		51.5	50.0	2.9	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170105-38480.b\04JAN2017A_041.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 04-Jan-2017 21:03:10 ALS Bottle#: 40 Worklist Smp#: 41
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub5
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170105-38480.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 05-Jan-2017 09:51:27 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK034

First Level Reviewer: chandrasenas

Date: 05-Jan-2017 09:50:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 2 13C4 PFBA

217.00 > 172.00 1.617 1.617 0.0 19403972 55.8 112 996975

1 Perfluorobutyric acid

212.90 > 169.00 1.617 1.617 0.0 1.000 7509888 22.7 113 55122

D 4 13C5-PFPeA

267.90 > 223.00 1.909 1.909 0.0 14908418 56.0 112 917558

3 Perfluoropentanoic acid

262.90 > 219.00 1.909 1.909 0.0 1.000 6347957 21.6 108 89232

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.948 1.948 0.0 1.000 10903916 21.6 122

298.90 > 99.00 1.948 1.948 0.0 1.000 4606012 2.37(0.00-0.00)

7 Perfluorohexanoic acid

313.00 > 269.00 2.209 2.209 0.0 1.000 5255047 21.0 105 188504

D 6 13C2 PFHxA

315.00 > 270.00 2.217 2.217 0.0 13485657 55.0 110 962527

D 11 13C4-PFHpA

367.00 > 322.00 2.558 2.558 0.0 11701632 51.7 103 1014367

12 Perfluoroheptanoic acid

363.00 > 319.00 2.558 2.558 0.0 1.000 4688733 20.5 102 61667

D 10 18O2 PFHxS

403.00 > 84.00 2.573 2.573 0.0 16813943 51.4 109 5920829

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.573 2.573 0.0 1.000 7062347 19.3 106

D 14 13C4 PFOA

417.00 > 372.00 2.927 2.927 0.0 12414738 53.9 108 477130

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.927	2.927	0.0	1.000	5417348	21.7		109	59672	
413.00 > 169.00	2.927	2.927	0.0	1.000	3158677		1.72(0.90-1.10)		161373	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.927	2.927	0.0	1.000	6646280	21.1		111		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.271	3.271	0.0	1.000	5815921	20.4		110	34393	
499.00 > 99.00	3.294	3.271	0.023	1.007	1283797		4.53(0.90-1.10)		76362	
D 17 13C4 PFOS										
503.00 > 80.00	3.294	3.294	0.0		13671710	54.9		115	525402	
D 19 13C5 PFNA										
468.00 > 423.00	3.301	3.301	0.0		9959076	56.0		112	488010	
20 Perfluorononanoic acid										
463.00 > 419.00	3.301	3.301	0.0	1.000	3860216	20.4		102	73111	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.621	3.621	0.0	1.000	8739968	22.0		110	347736	
D 21 13C8 FOSA										
506.00 > 78.00	3.621	3.621	0.0		21323143	55.5		111	1071069	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.665	3.665	0.0	1.000	3549276	20.2		101	92525	
D 23 13C2 PFDA										
515.00 > 470.00	3.665	3.665	0.0		9329059	59.3		119	321795	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.971	3.971	0.0	1.000	3842625	23.0		119		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.990	3.990	0.0	1.000	2768992	20.9		104	90005	
D 27 13C2 PFUnA										
565.00 > 520.00	3.990	3.990	0.0		6929028	59.1		118	1247632	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.284	4.284	0.0	1.000	2602512	20.8		104	17502	
D 30 13C2 PFDaA										
615.00 > 570.00	4.284	4.284	0.0		6819112	61.5		123	221726	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.538	4.538	0.0	1.000	2484796	20.1		100	2280	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.783	4.783	0.0		12434260	54.7		109	752448	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.783	4.783	0.0	1.000	4523003	20.9		105	1575	
713.00 > 169.00	4.775	4.783	-0.008	0.998	717967		6.30(0.00-0.00)		53183	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.191	5.191	0.0		6411097	51.5		103	81203	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.202	5.202	0.0	1.000	2332640	17.3		86.6	1437	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.554	5.554	0.0	1.000	1963724	14.0		69.9	1512	

Reagents:

LCPFC-L4_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170105-38480.b\04JAN2017A_041.d

Injection Date: 04-Jan-2017 21:03:10

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 40

Worklist Smp#: 41

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

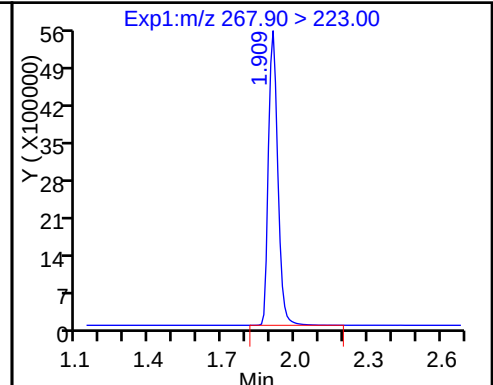
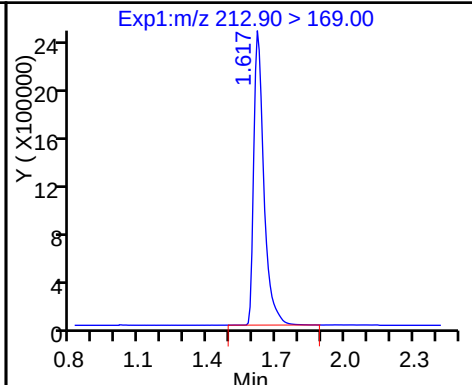
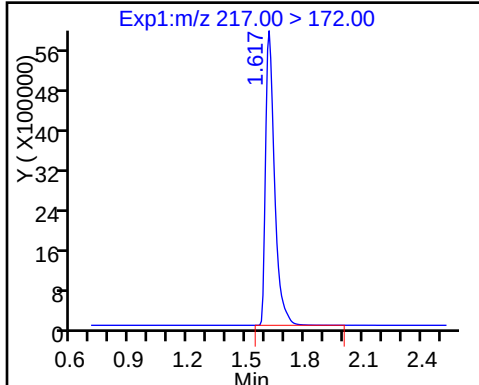
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

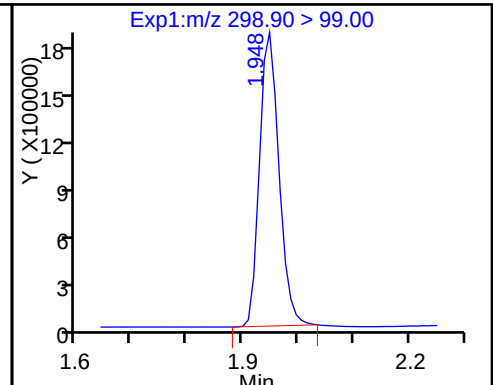
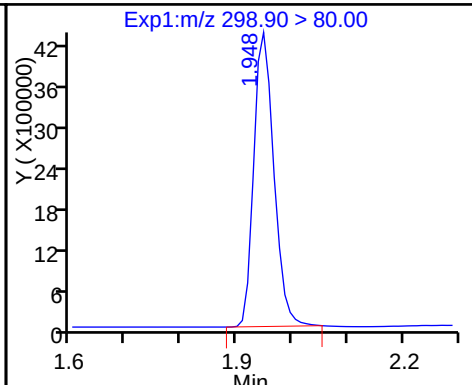
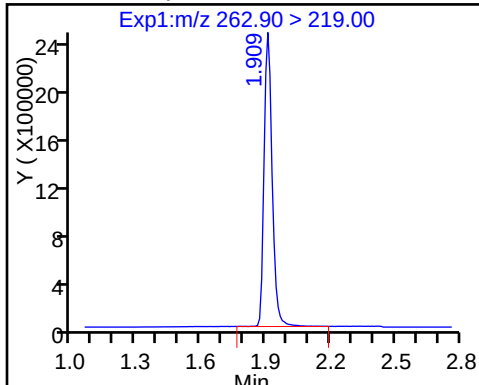
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

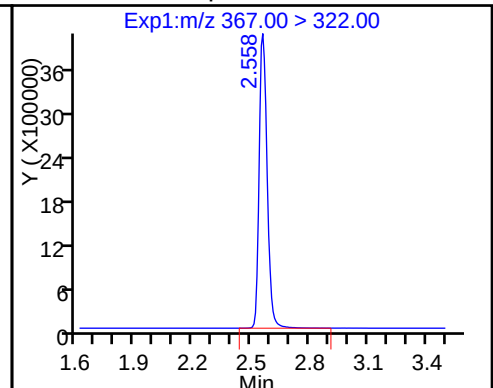
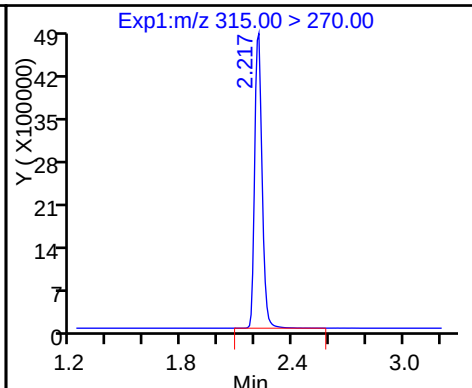
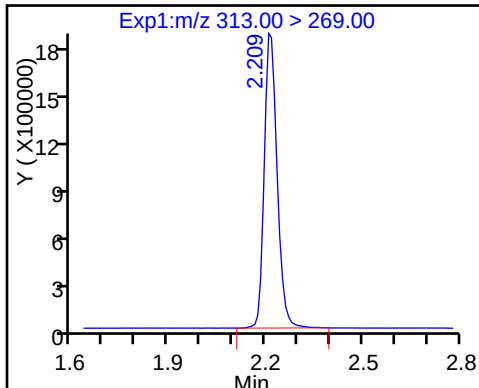
5 Perfluorobutanesulfonic acid



7 Perfluorohexanoic acid

D 6 13C2 PFHxA

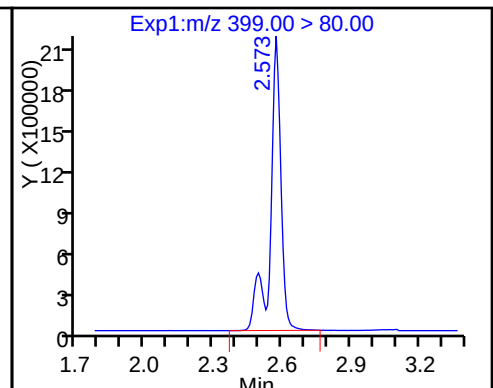
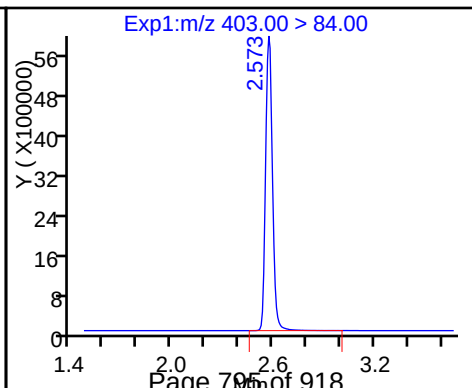
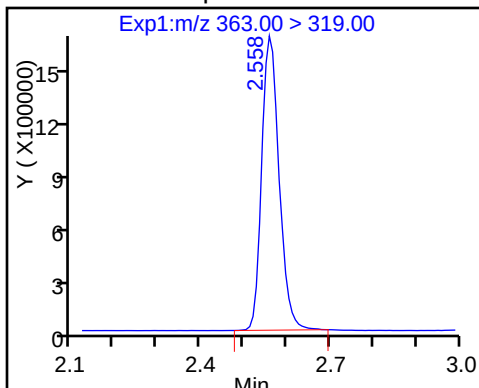
D 11 13C4-PFHpA



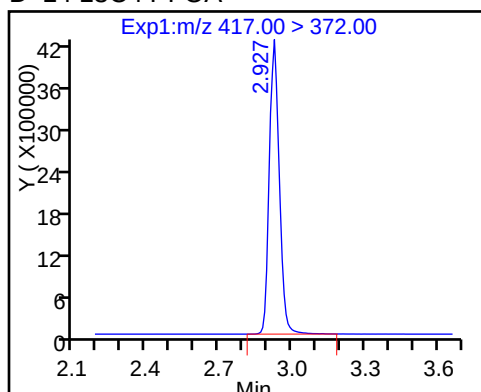
12 Perfluoroheptanoic acid

D 10 18O2 PFHxS

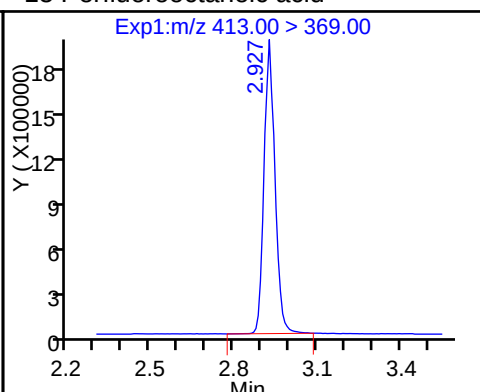
9 Perfluorohexanesulfonic acid



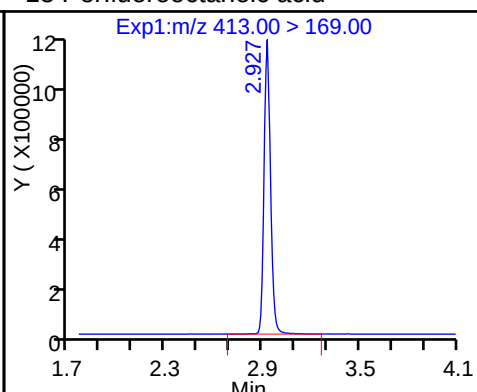
D 14 13C4 PFOA



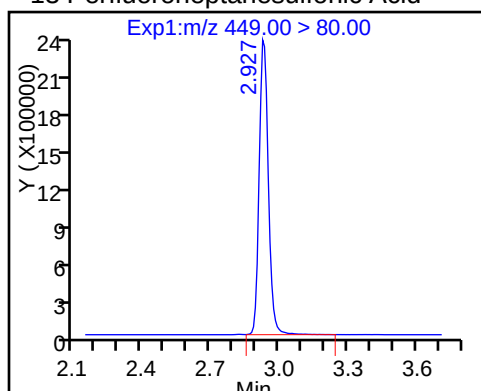
15 Perfluorooctanoic acid



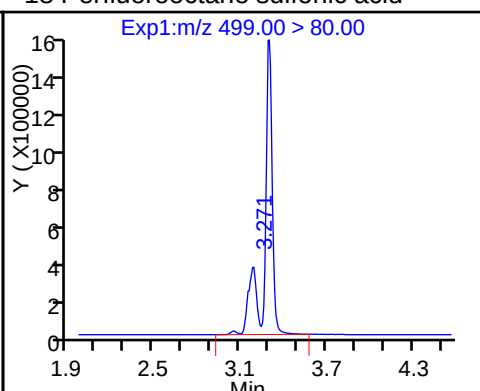
15 Perfluorooctanoic acid



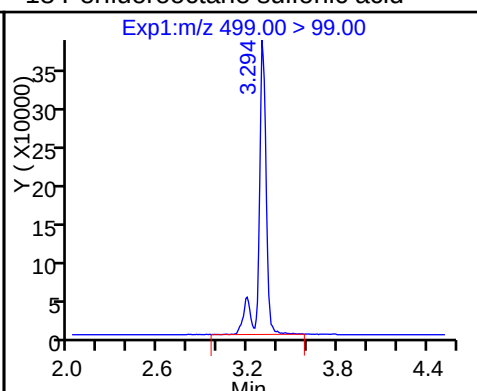
13 Perfluoroheptanesulfonic Acid



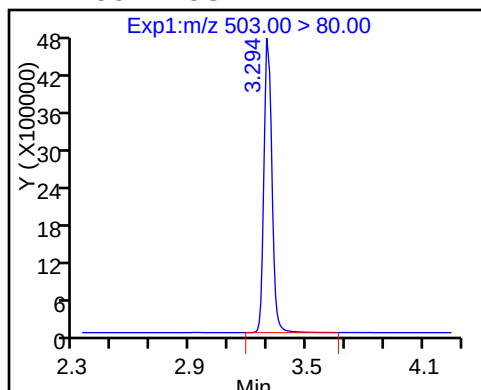
18 Perfluorooctane sulfonic acid



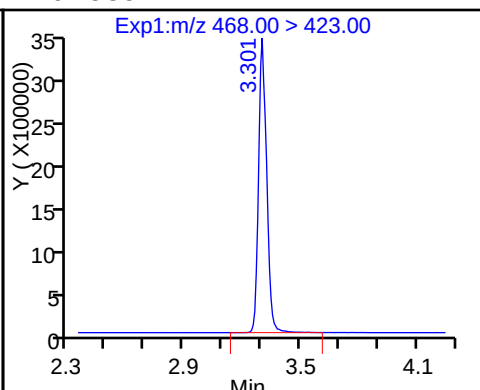
18 Perfluorooctane sulfonic acid



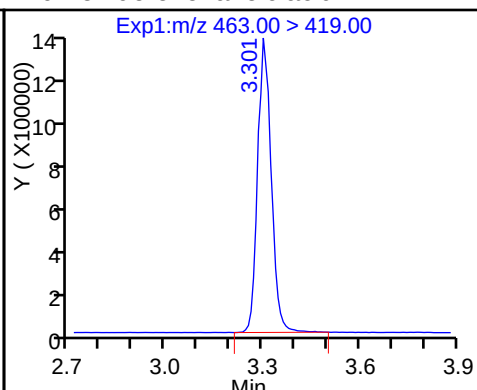
D 17 13C4 PFOS



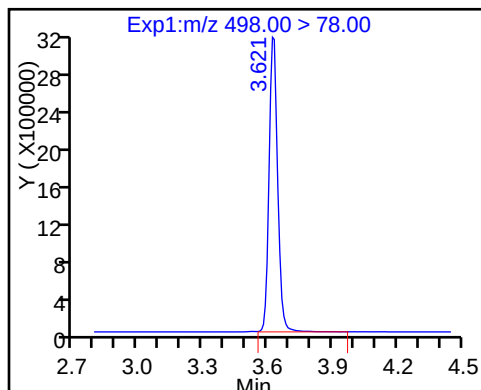
D 19 13C5 PFNA



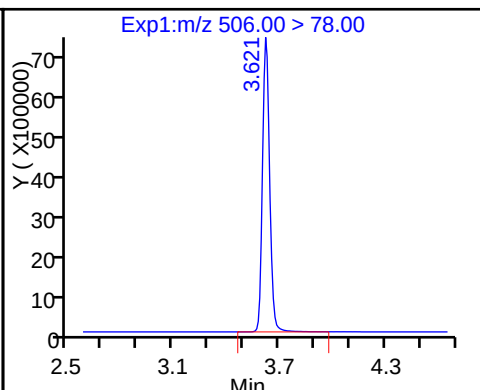
20 Perfluorononanoic acid



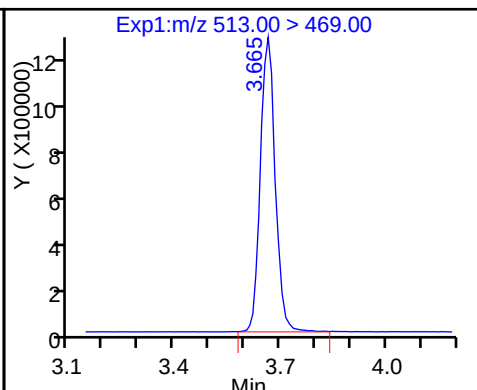
22 Perfluorooctane Sulfonamide



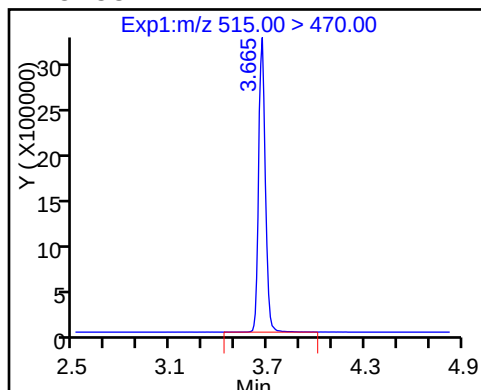
D 21 13C8 FOSA



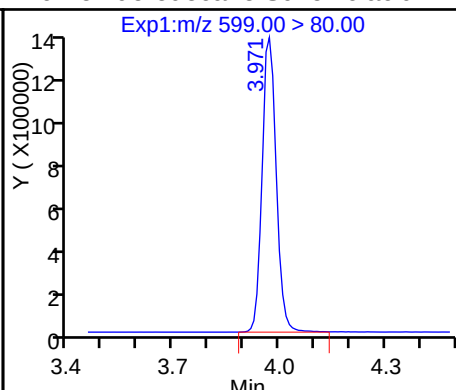
24 Perfluorodecanoic acid



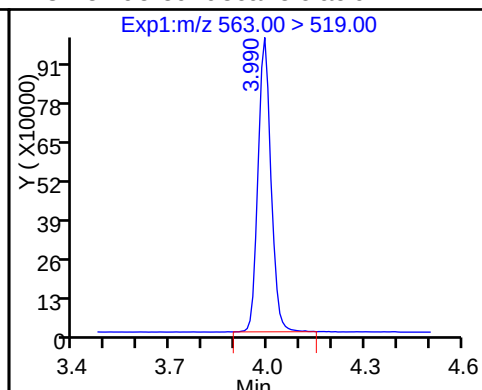
D 23 13C2 PFDA



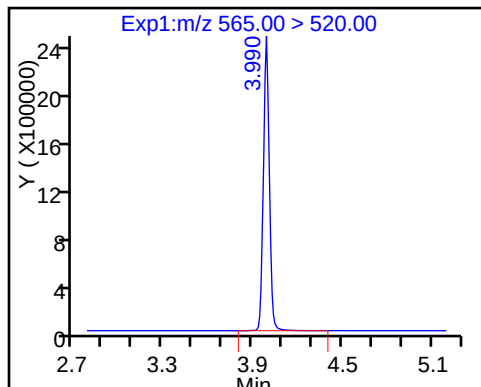
26 Perfluorodecane Sulfonic acid



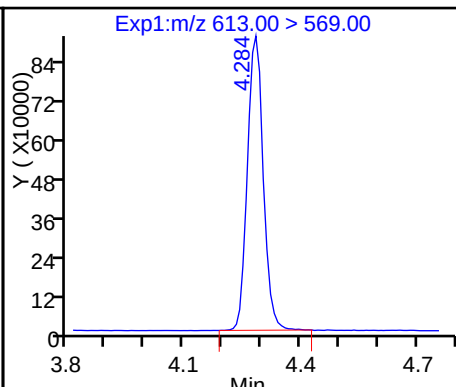
28 Perfluoroundecanoic acid



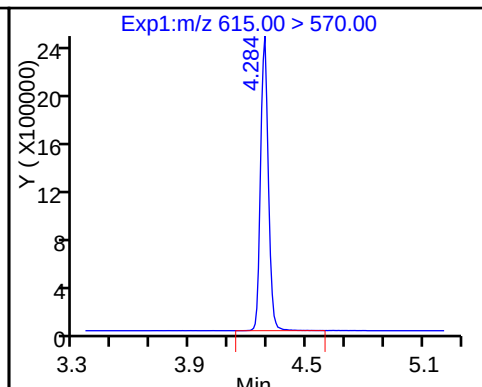
D 27 13C2 PFUnA



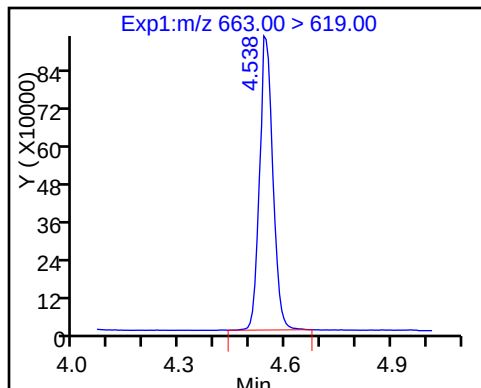
29 Perfluorododecanoic acid



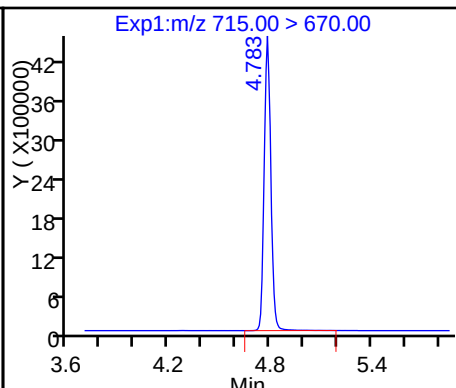
D 30 13C2 PFDaA



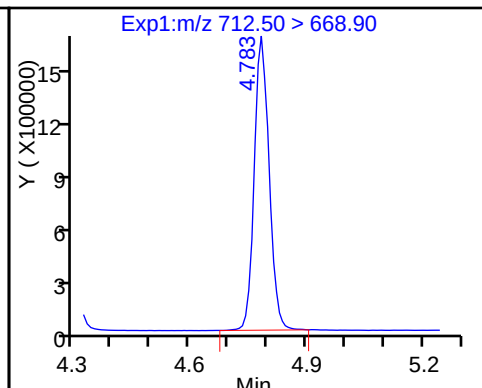
31 Perfluorotridecanoic acid



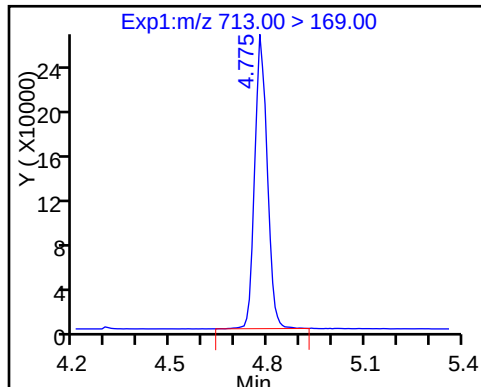
D 32 13C2-PFTeDA



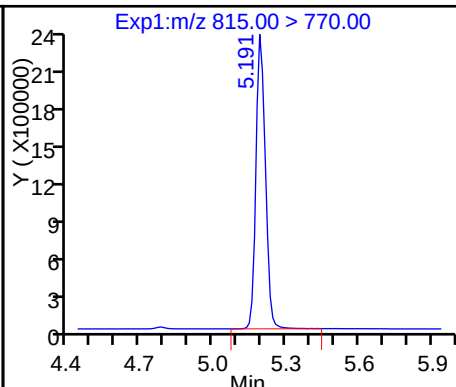
33 Perfluorotetradecanoic acid



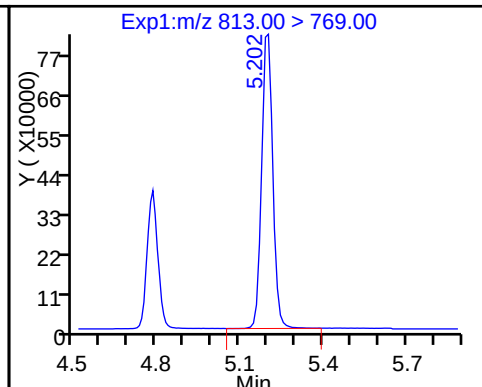
33 Perfluorotetradecanoic acid



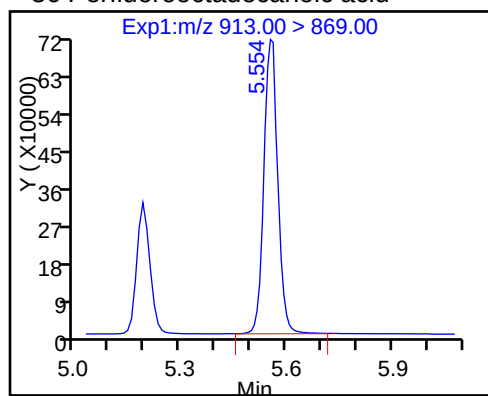
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Lab Sample ID: CCV 320-145022/47 Calibration Date: 01/04/2017 21:48

Instrument ID: A8_N Calib Start Date: 12/15/2016 12:29

GC Column: Acquity ID: 2.10 (mm) Calib End Date: 12/15/2016 14:18

Lab File ID: 04JAN2017A_047.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8537	0.9150		53.6	50.0	7.2	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	0.9931		50.3	50.0	0.6	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.644		51.3	44.2	16.0	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9193		49.5	50.0	-1.0	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9915		50.6	50.0	1.3	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.060		46.8	45.5	2.9	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.040		51.8	50.0	3.7	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.102	1.147		49.5	47.6	4.0	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9945	1.059		49.4	46.4	6.5	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9663		50.8	50.0	1.5	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9338		50.1	50.0	0.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9708		51.4	50.0	2.9	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6866		56.7	48.2	17.6	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9440		49.4	50.0	-1.3	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9619		52.4	50.0	4.8	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9353		51.6	50.0	3.1	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.574		49.7	50.0	-0.7	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.8476		43.8	50.0	-12.4	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.7016		34.0	50.0	-31.9*	25.0
13C4 PFBA	Ave	347743	352162		50.6	50.0	1.3	50.0
13C5-PFPeA	Ave	266072	268991		50.5	50.0	1.1	50.0
13C2 PFHxA	Ave	245110	248725		50.7	50.0	1.5	50.0
13C4-PFHpA	Ave	226344	208761		46.1	50.0	-7.8	50.0
18O2 PFHxS	Ave	326976	313413		45.3	47.3	-4.1	50.0
13C4 PFOA	Ave	230362	215277		46.7	50.0	-6.5	50.0
13C4 PFOS	Ave	248847	252933		48.6	47.8	1.6	50.0
13C5 PFNA	Ave	177687	170900		48.1	50.0	-3.8	50.0
13C8 FOSA	Ave	384141	399782		52.0	50.0	4.1	50.0
13C2 PFDA	Ave	157302	167759		53.3	50.0	6.6	50.0
13C2 PFUnA	Ave	117250	125429		53.5	50.0	7.0	50.0
13C2 PFDoA	Ave	110957	117767		53.1	50.0	6.1	50.0
13C2-PFTeDA	Ave	227387	224797		49.4	50.0	-1.1	50.0
13C2-PFHxDA	Ave	124568	114118		45.8	50.0	-8.4	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170105-38480.b\04JAN2017A_047.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 04-Jan-2017 21:48:07 ALS Bottle#: 41 Worklist Smp#: 47
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub5
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170105-38480.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2017 12:50:33 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d

Column 1 : Det: EXP1

Process Host: XAWRK021

First Level Reviewer: chandrasenas

Date: 06-Jan-2017 12:50:09

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 2 13C4 PFBA

217.00 > 172.00 1.609 1.609 0.0 17608110 50.6 101 756280

1 Perfluorobutyric acid

212.90 > 169.00 1.609 1.609 0.0 1.000 16111211 53.6 107 111070

D 4 13C5-PFPeA

267.90 > 223.00 1.899 1.899 0.0 13449541 50.5 101 1230139

3 Perfluoropentanoic acid

262.90 > 219.00 1.899 1.899 0.0 1.000 13356659 50.3 101 150572

5 Perfluorobutanesulfonic acid

298.90 > 80.00 1.938 1.938 0.0 1.000 22768020 51.3 116

298.90 > 99.00 1.938 1.938 0.0 1.000 10348324 2.20(0.00-0.00)

7 Perfluorohexanoic acid

313.00 > 269.00 2.200 2.200 0.0 1.000 11432599 49.5 99.0 310194

D 6 13C2 PFHxA

315.00 > 270.00 2.209 2.209 0.0 12436270 50.7 101 744569

D 11 13C4-PFHpA

367.00 > 322.00 2.553 2.553 0.0 10438028 46.1 92.2 706465

12 Perfluoroheptanoic acid

363.00 > 319.00 2.553 2.553 0.0 1.000 10348940 50.6 101 139328

D 10 18O2 PFHxS

403.00 > 84.00 2.560 2.560 0.0 14824443 45.3 95.9 1362100

9 Perfluorohexanesulfonic acid

399.00 > 80.00 2.560 2.560 0.0 1.000 15120173 46.8 103

D 14 13C4 PFOA

417.00 > 372.00 2.911 2.911 0.0 10763855 46.7 93.5 893940

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.911	2.911	0.0	1.000	11195879	51.8		104	94970	
413.00 > 169.00	2.911	2.911	0.0	1.000	6628457		1.69(0.90-1.10)		324610	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.919	2.919	0.0	1.000	13803677	49.5		104		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.269	3.269	0.0	1.000	12427636	49.4		106	214215	
499.00 > 99.00	3.285	3.269	0.016	1.005	2669926		4.65(0.90-1.10)		166755	
D 17 13C4 PFOS										
503.00 > 80.00	3.285	3.285	0.0		12090178	48.6		102	239816	
D 19 13C5 PFNA										
468.00 > 423.00	3.292	3.292	0.0		8545021	48.1		96.2	555561	
20 Perfluorononanoic acid										
463.00 > 419.00	3.292	3.292	0.0	1.000	8257342	50.8		102	127549	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.610	3.610	0.0	1.000	18665943	50.1		100	383545	
D 21 13C8 FOSA										
506.00 > 78.00	3.610	3.610	0.0		19989096	52.0		104	527554	
D 23 13C2 PFDA										
515.00 > 470.00	3.644	3.644	0.0		8387961	53.3		107	228946	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.644	3.644	0.0	1.000	8142956	51.4		103	170745	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.958	3.958	0.0	1.000	8370907	56.7		118		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.976	3.976	0.0	1.000	5920259	49.4		98.7	130948	
D 27 13C2 PFUnA										
565.00 > 520.00	3.976	3.976	0.0		6271451	53.5		107	310642	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.262	4.262	0.0	1.000	5663986	52.4		105	59693	
D 30 13C2 PFDaA										
615.00 > 570.00	4.270	4.270	0.0		5888362	53.1		106	187137	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.537	4.537	0.0	1.000	5507635	51.6		103	5541	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.768	4.768	0.0		11239869	49.4		98.9	389960	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.777	4.777	0.0	1.000	9270288	49.7		99.3	3274	
713.00 > 169.00	4.759	4.777	-0.018	0.996	1519691		6.10(0.00-0.00)		112603	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.182	5.182	0.0		5705894	45.8		91.6	79527	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.182	5.182	0.0	1.000	4991225	43.8		87.6	3408	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.539	5.539	0.0	1.000	4131486	34.0		68.1	3226	

Reagents:

LCPFC-L5_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170105-38480.b\04JAN2017A_047.d

Injection Date: 04-Jan-2017 21:48:07

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 41

Worklist Smp#: 47

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

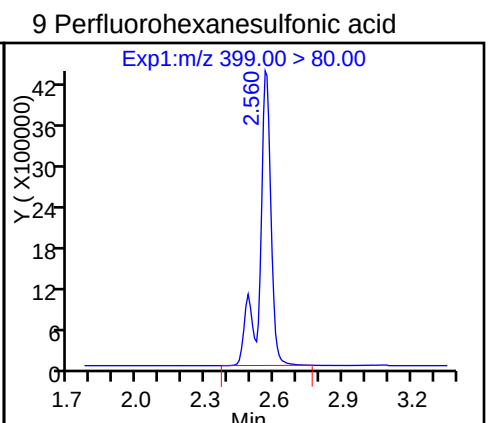
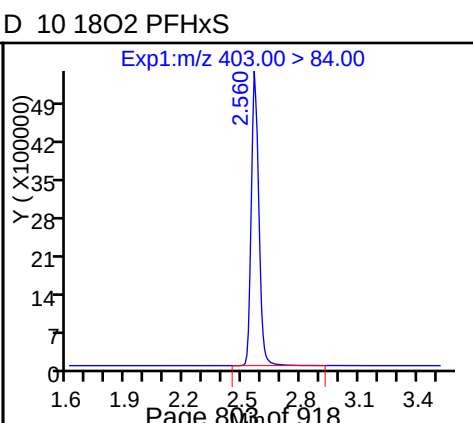
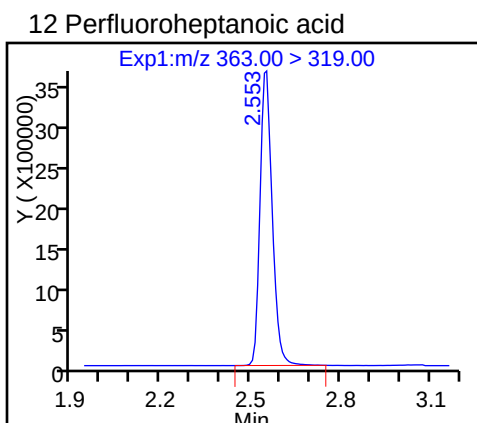
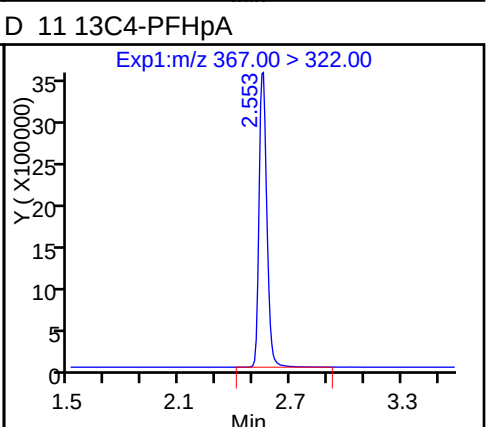
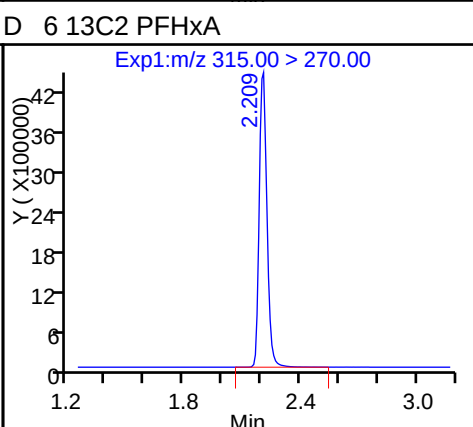
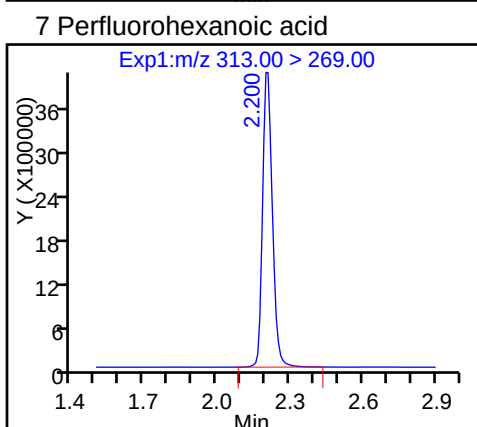
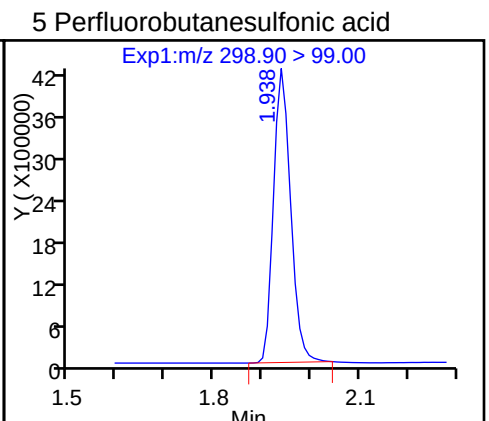
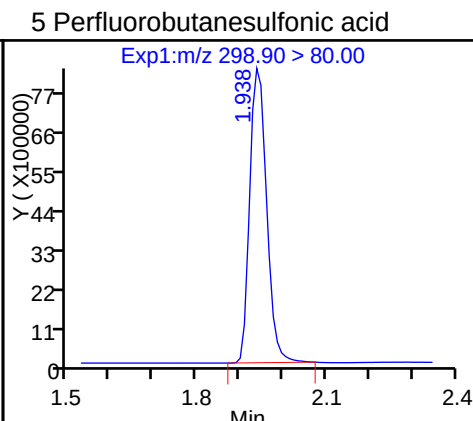
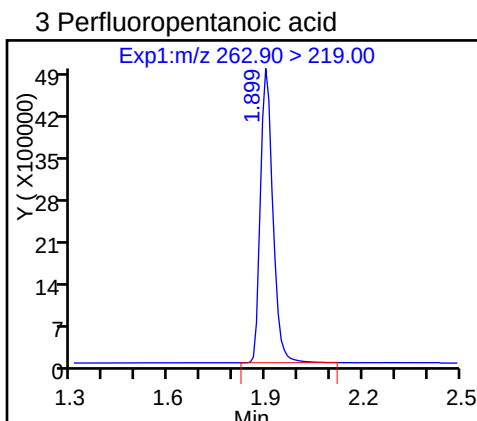
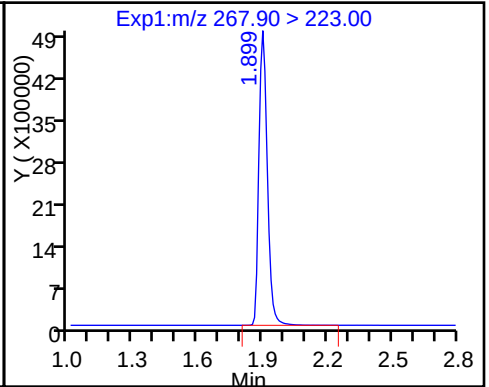
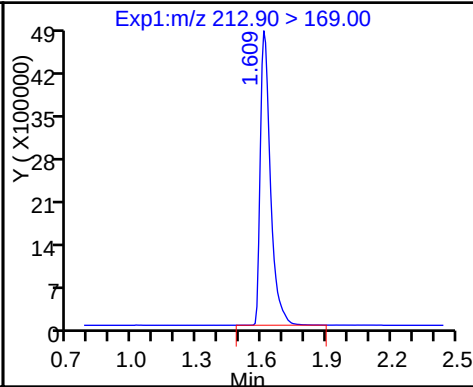
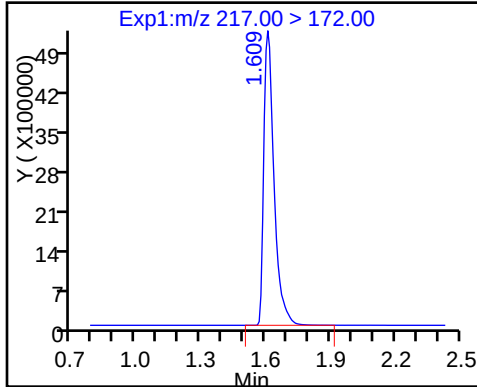
Method: A8_N

Limit Group: LC PFC_DOD ICAL

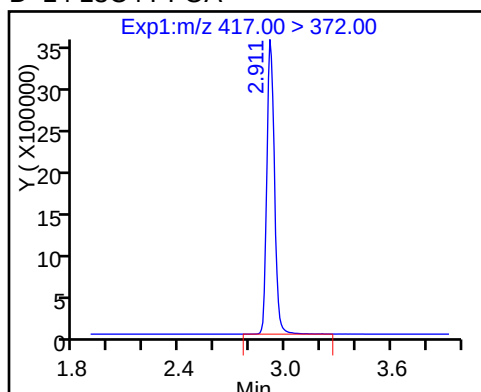
D 2 13C4 PFBA

1 Perfluorobutyric acid

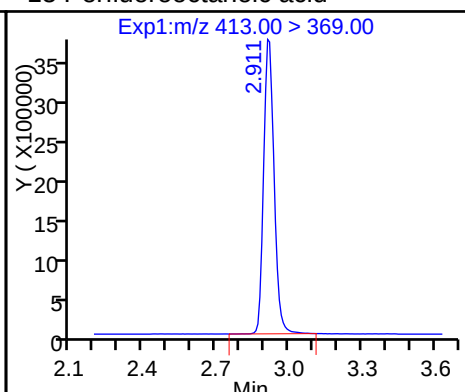
D 4 13C5-PFPeA



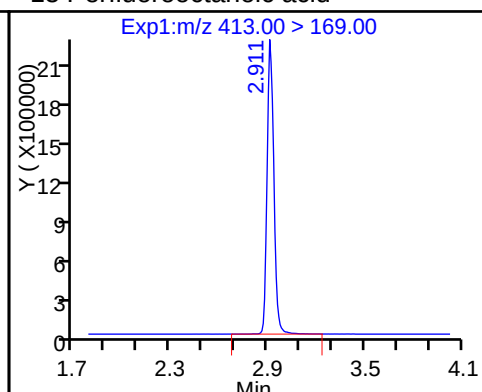
D 14 13C4 PFOA



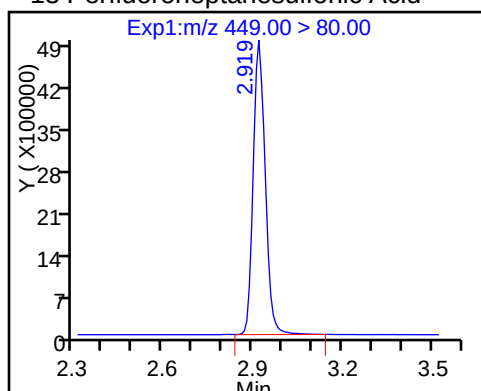
15 Perfluorooctanoic acid



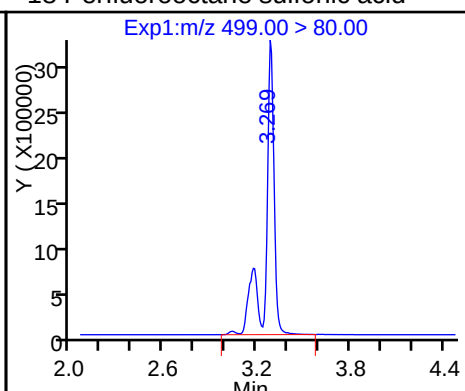
15 Perfluorooctanoic acid



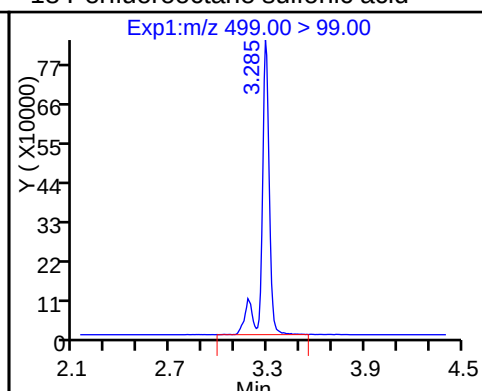
13 Perfluoroheptanesulfonic Acid



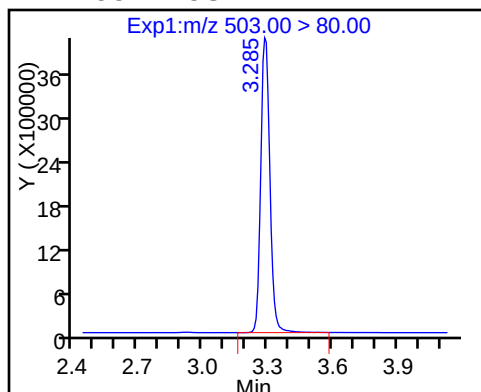
18 Perfluorooctane sulfonic acid



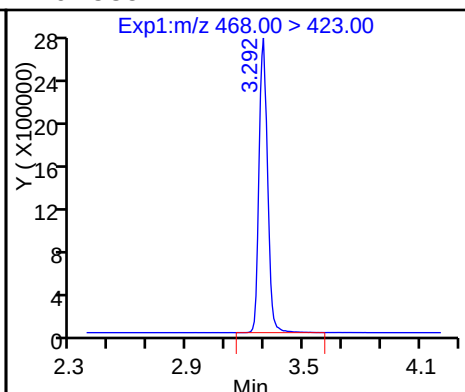
18 Perfluorooctane sulfonic acid



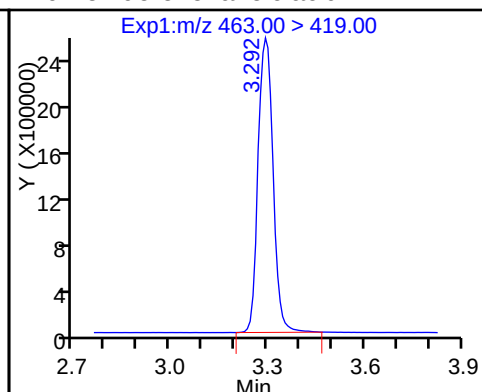
D 17 13C4 PFOS



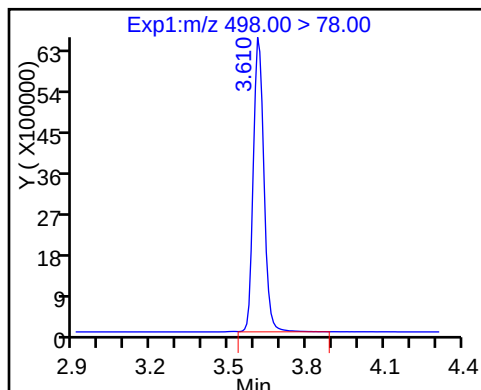
D 19 13C5 PFNA



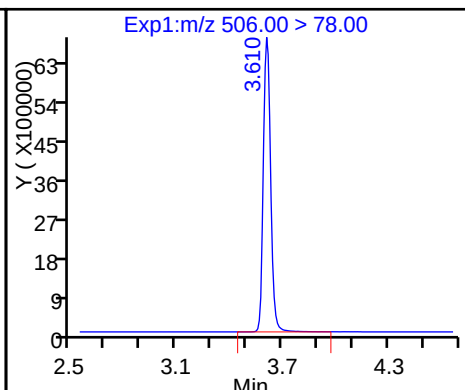
20 Perfluorononanoic acid



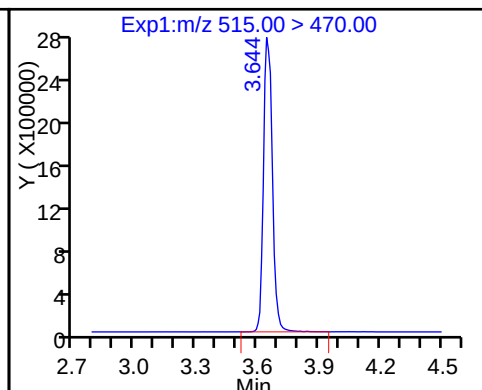
22 Perfluorooctane Sulfonamide

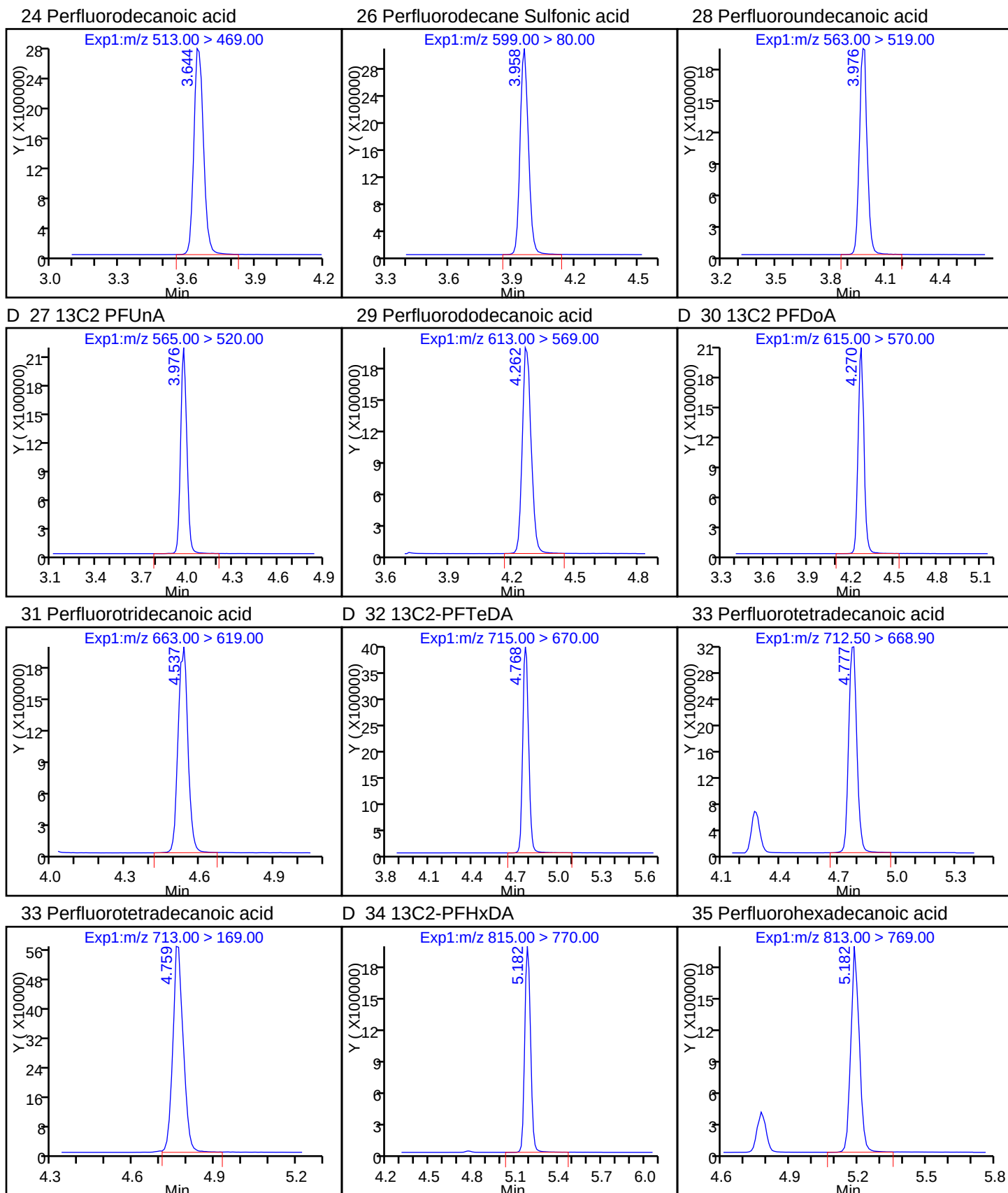


D 21 13C8 FOSA

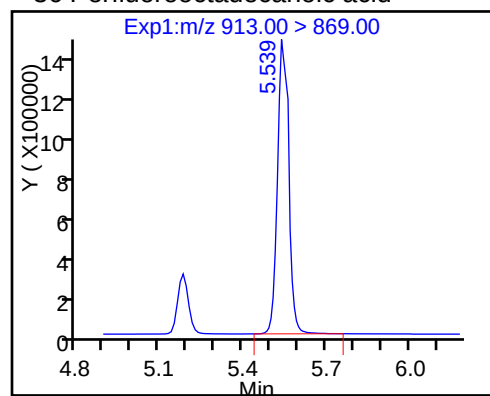


D 23 13C2 PFDA





36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>MB 320-142967/1-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_003.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>12/29/2016 00:06</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.0010	U	0.0025	0.0010	0.00046
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0020	U	0.0025	0.0020	0.00099
307-24-4	Perfluorohexanoic acid (PFHxA)	0.00147	J	0.0025	0.0020	0.00079
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.0020	0.00080
335-67-1	Perfluorooctanoic acid (PFOA)	0.00116	J	0.0025	0.0020	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.0020	0.00065
335-76-2	Perfluorodecanoic acid (PFDA)	0.0010	U	0.0025	0.0010	0.00044
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0020	U	0.0025	0.0020	0.00075
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0020	U	0.0025	0.0020	0.00058
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0020	U	0.0025	0.0020	0.00055
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.0010	U	0.0025	0.0010	0.00040
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.0020	0.00092
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.000944	J	0.0025	0.0020	0.00087
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0030	U	0.0040	0.0030	0.0012
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0020	U	0.0025	0.0020	0.00064

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>MB 320-142967/1-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_003.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>12/29/2016 00:06</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	64		25-150
STL00992	13C4 PFBA	131		25-150
STL01893	13C5-PFPeA	137		25-150
STL00993	13C2 PFHxA	131		25-150
STL01892	13C4-PFHpA	132		25-150
STL00990	13C4 PFOA	133		25-150
STL00995	13C5 PFNA	126		25-150
STL00996	13C2 PFDA	130		25-150
STL00997	13C2 PFUnA	127		25-150
STL00998	13C2 PFDoA	112		25-150
STL00994	18O2 PFHxS	130		25-150
STL00991	13C4 PFOS	126		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_003.d
 Lims ID: MB 320-142967/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 29-Dec-2016 00:06:57 ALS Bottle#: 1 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-142967/1-a
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Dec-2016 17:32:20 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK027

First Level Reviewer: phomsophat

Date: 29-Dec-2016 17:26:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.533	1.534	-0.001		22721769	65.3		131	925685	
1 Perfluorobutyric acid										
212.90 > 169.00	1.533	1.534	-0.001	1.000	68891	0.1776			395	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.810	0.0		18203986	68.4		137	1419246	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.810	0.0	1.000	129663	0.3609			1124	
D 6 13C2 PFHxA										
315.00 > 270.00	2.095	2.097	-0.002		16019429	65.4		131	855679	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.095	2.097	-0.002	1.000	218047	0.7328			5026	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.440	2.422	0.018	1.000	207215	0.4721				
D 11 13C4-PFHpA										
367.00 > 322.00	2.425	2.429	-0.004		14896126	65.8		132	901870	
D 10 18O2 PFHxS										
403.00 > 84.00	2.440	2.452	-0.012		20159010	61.7		130	1823256	
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.745	2.773	-0.028	1.000	4852	NR				
D 47 M2-6:2FTS										
429.00 > 409.00	2.754	2.781	-0.027		1527	0.0131		0.0		
D 14 13C4 PFOA										
417.00 > 372.00	2.785	2.790	-0.005		15351124	66.6		133	1373543	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.777	2.790	-0.013	1.000	178217	0.5786			1647	
413.00 > 169.00	2.777	2.790	-0.013	1.000	118363		1.51(0.90-1.10)		4542	
D 17 13C4 PFOS										
503.00 > 80.00	3.154	3.158	-0.004		15004280	60.3		126	1809672	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 19 13C5 PFNA										
468.00 > 423.00	3.146	3.166	-0.020		11219527	63.1		126	468115	
D 21 13C8 FOSA										
506.00 > 78.00	3.477	3.481	-0.004		12344298	32.1		64.3	469588	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.477	3.481	-0.004	1.000	18875	0.0820			1393	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.664	3.519	0.145	1.000	328	NR				
D 23 13C2 PFDA										
515.00 > 470.00	3.511	3.523	-0.012		10192833	64.8		130	457986	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.503	3.523	-0.020	1.000	4780	0.0248			192	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.664	3.683	-0.019		15222	0.2021		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.813	3.834	-0.021	1.000	231	0.001260				
D 27 13C2 PFUnA										
565.00 > 520.00	3.839	3.851	-0.012		7424245	63.3		127	379052	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.839	3.851	-0.012	1.000	16579	0.1168			479	
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.839	3.855	-0.016		19849	0.2533		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.723	3.864	-0.141	0.970	702	NR				
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.511	3.997	-0.486		851904	8.96		0.0		
D 30 13C2 PFDaA										
615.00 > 570.00	4.136	4.134	0.002		6231043	56.2		112	238714	
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.213	4.180	0.033		342	0.003987		0.0		
D 32 13C2-PFTeDA										
715.00 > 670.00	4.647	4.652	-0.005		14245009	62.6		125	1014829	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.647	4.652	-0.005	1.000	33805	0.1712			351	
713.00 > 169.00	4.637	4.652	-0.015	0.998	5978		5.65(0.00-0.00)		2064	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.060	5.069	-0.009		6519433	52.3		105	185875	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.060	5.069	-0.009	1.000	83401	0.1013			163	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.415	5.421	-0.006	1.000	4279	0.0333			3.5	

[QC Flag Legend](#)

Processing Flags

NR - Missing Quant Standard

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_003.d

Injection Date: 29-Dec-2016 00:06:57

Instrument ID: A8_N

Lims ID: MB 320-142967/1-A

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 1

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

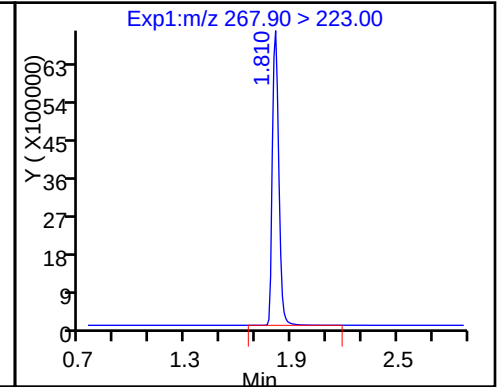
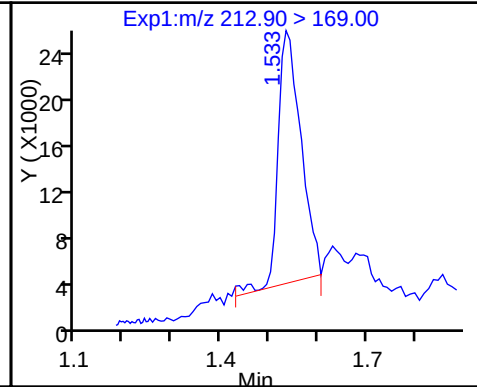
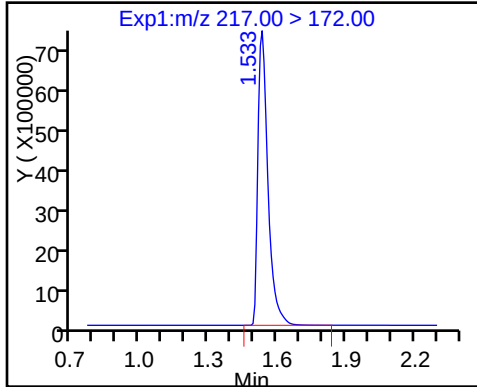
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

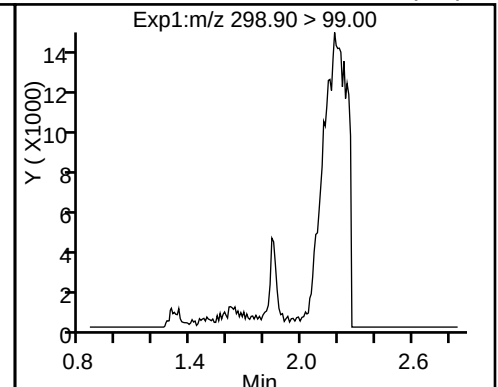
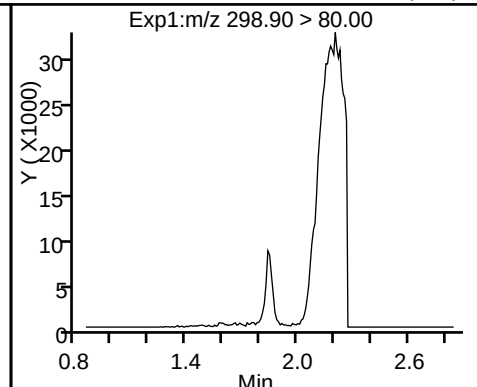
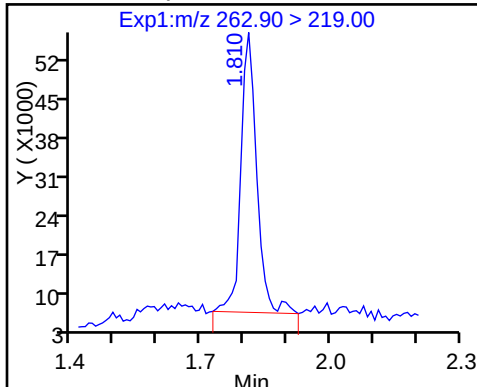
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid (ND)

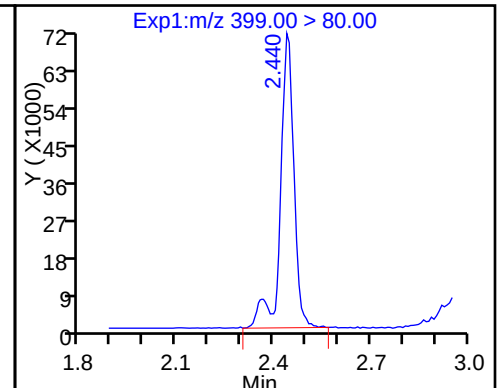
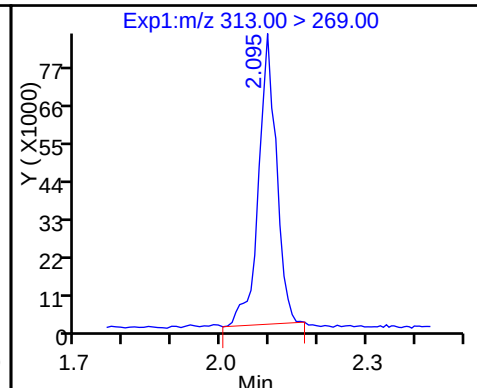
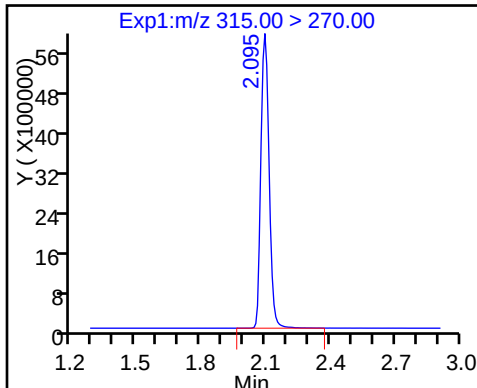
5 Perfluorobutanesulfonic acid (ND)



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

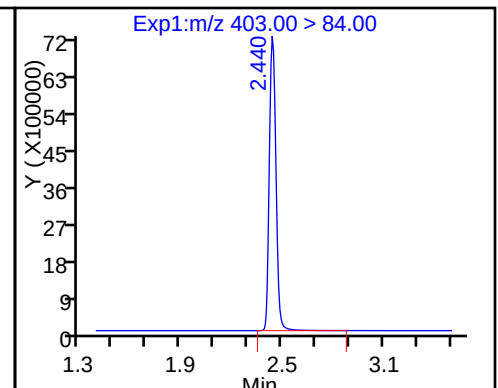
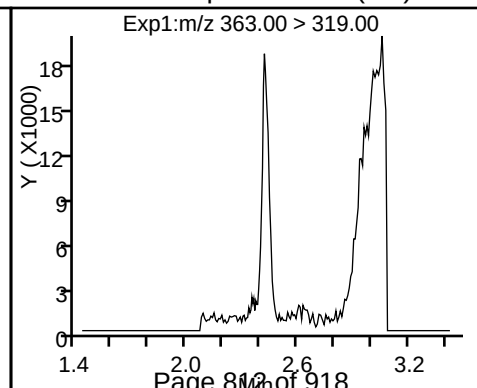
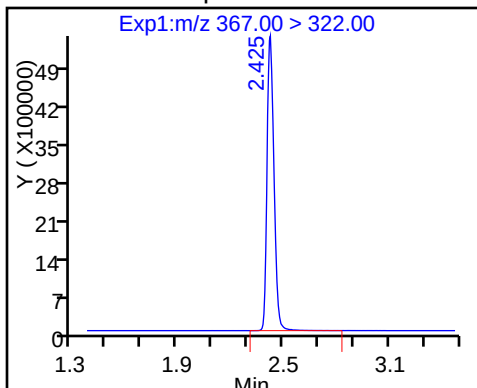
9 Perfluorohexanesulfonic acid



D 11 13C4-PFHpA

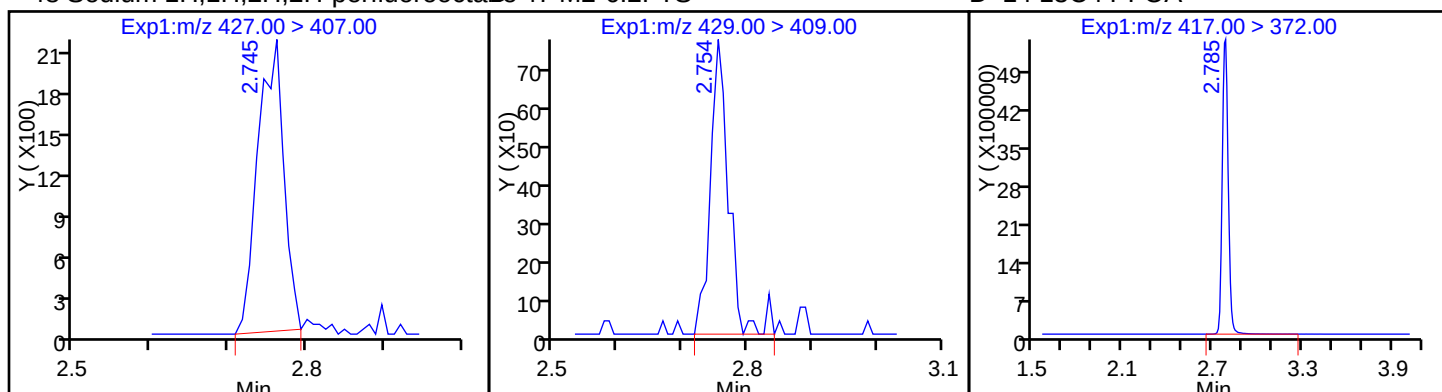
12 Perfluoroheptanoic acid (ND)

D 10 18O2 PFHxS



48 Sodium 1H,1H,2H,2H-perfluorooctadec-4

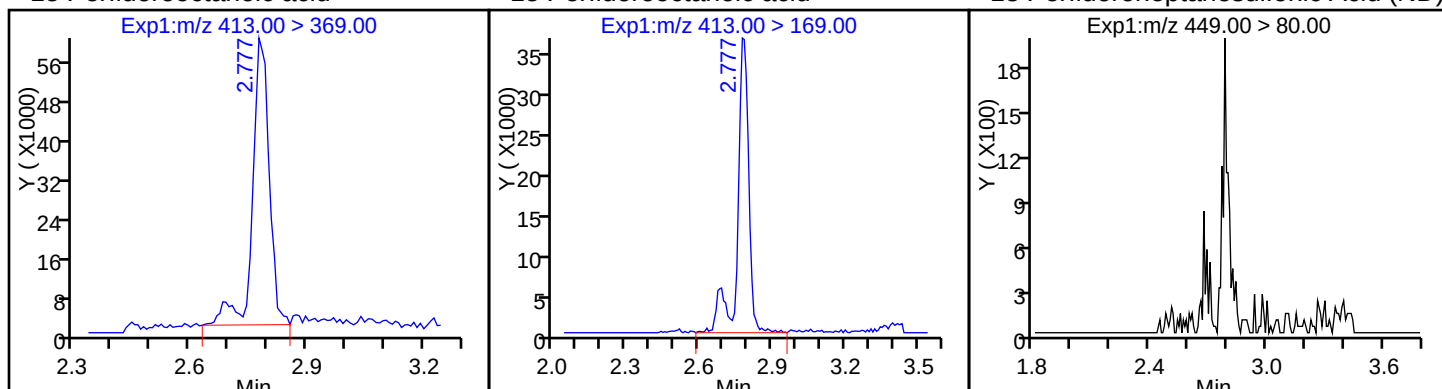
D 14 13C4 PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

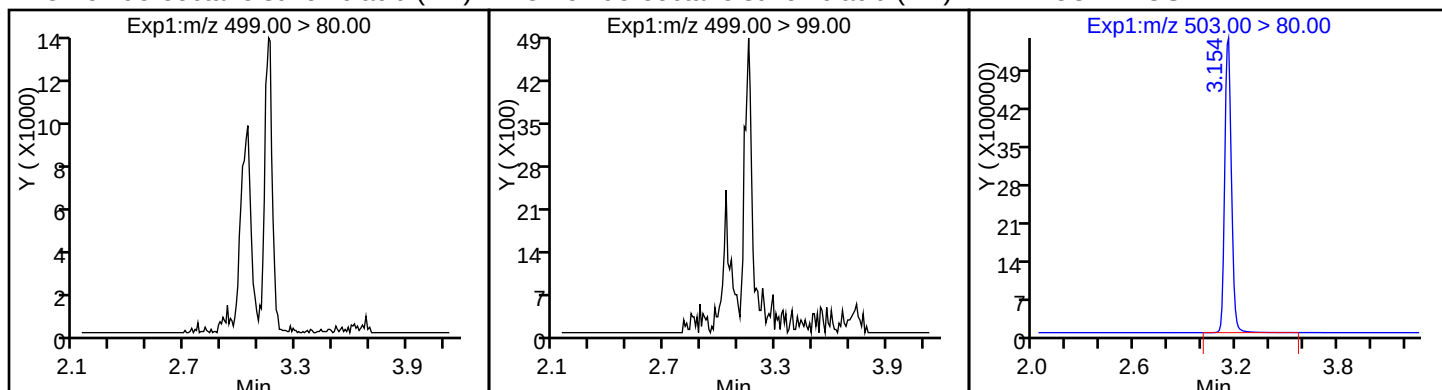
13 Perfluoroheptanesulfonic Acid (ND)



18 Perfluorooctane sulfonic acid (ND)

18 Perfluorooctane sulfonic acid (ND)

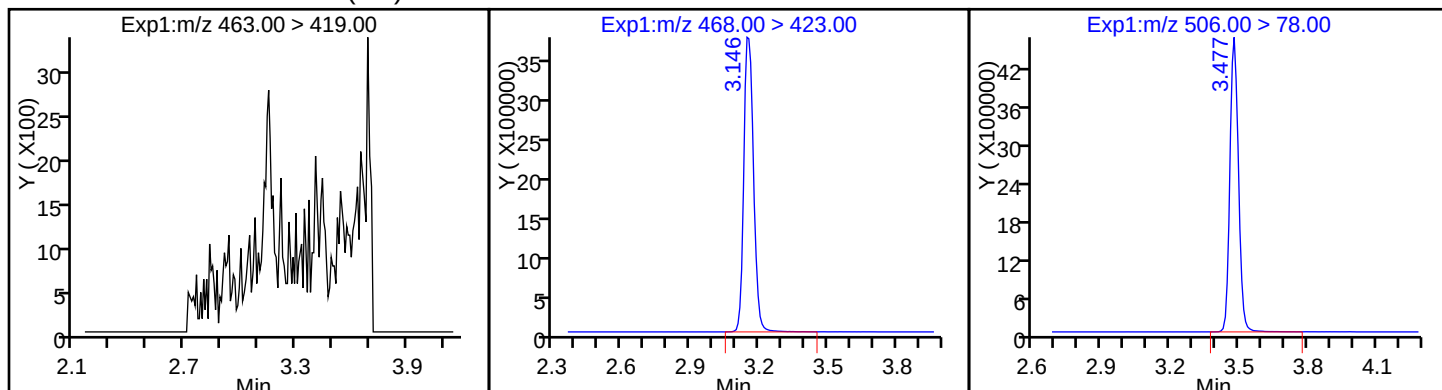
D 17 13C4 PFOS



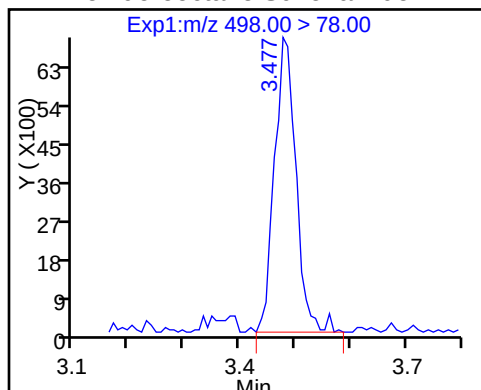
20 Perfluorononanoic acid (ND)

D 19 13C5 PFNA

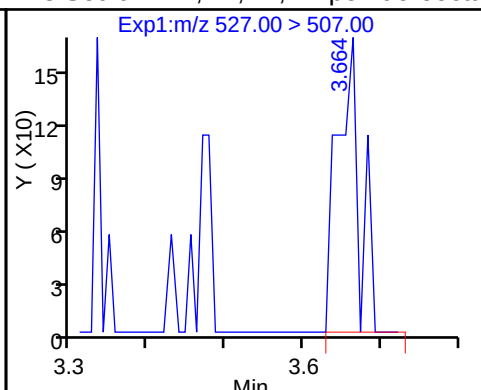
D 21 13C8 FOSA



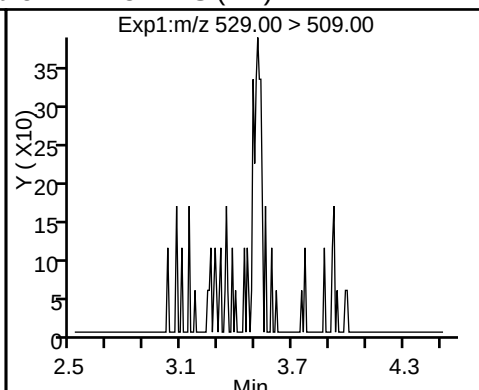
22 Perfluorooctane Sulfonamide



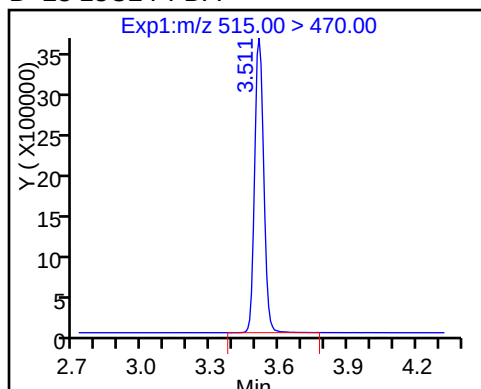
43 Sodium 1H,1H,2H,2H-perfluorooctane-1-sulfonate



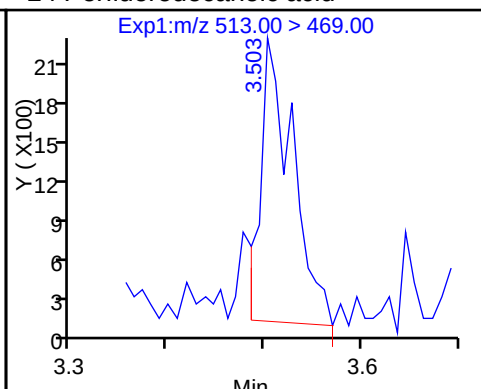
42 M2-8:2FTS (ND)



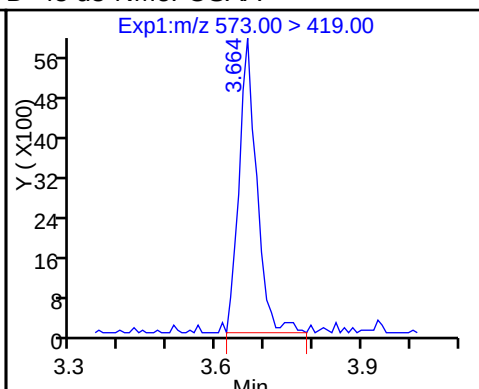
D 23 13C2 PFDA



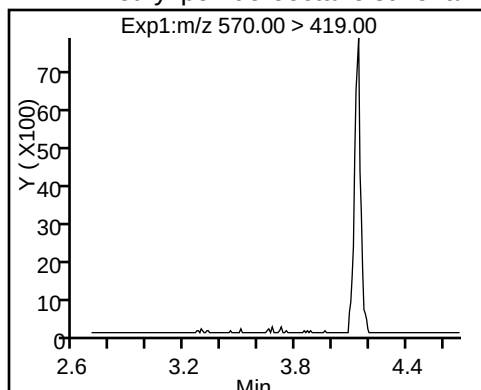
24 Perfluorodecanoic acid



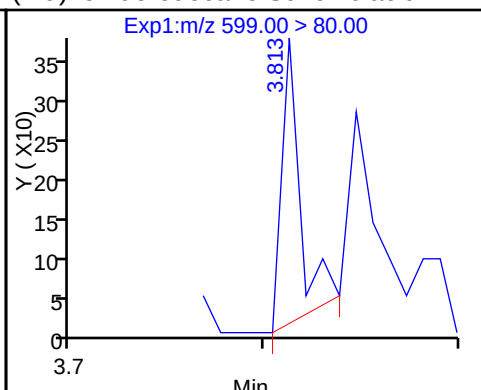
D 45 d3-NMeFOSAA



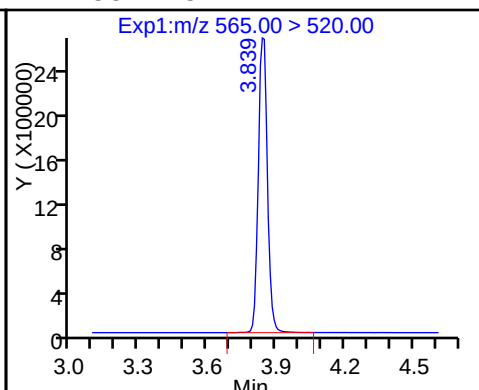
44 N-methyl perfluorooctane sulfonamide



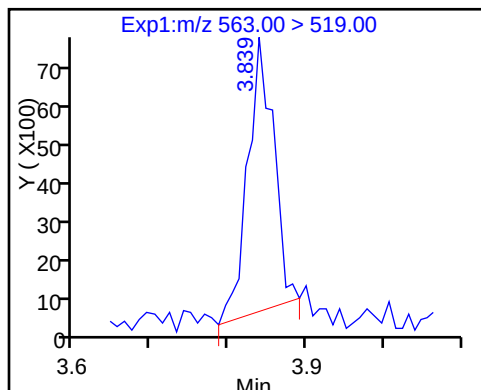
D 27 13C2 PFUnA



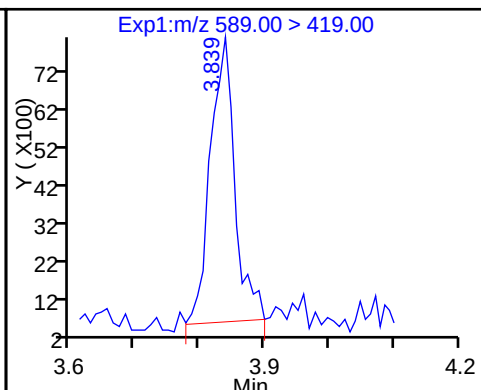
D 27 13C2 PFUnA



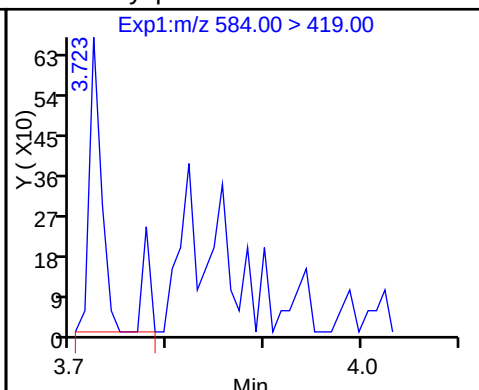
28 Perfluoroundecanoic acid



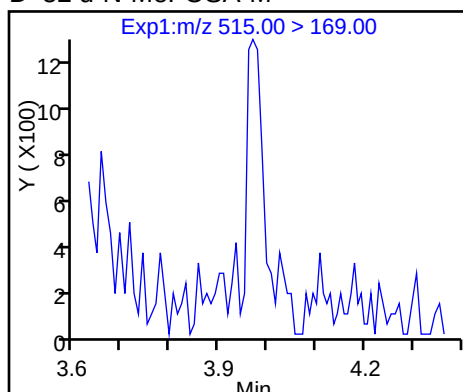
D 46 d5-NEtFOSAA



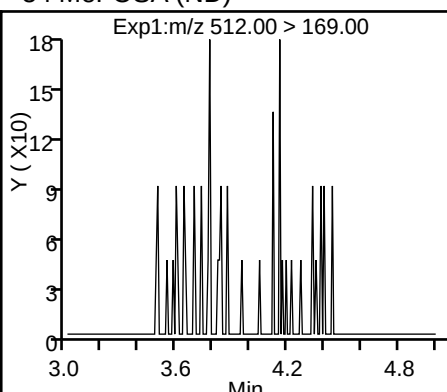
49 N-ethyl perfluorooctane sulfonamide



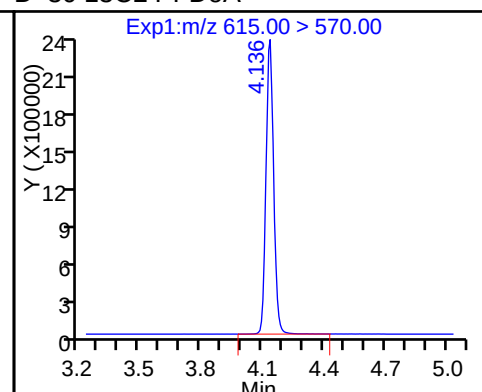
D 52 d-N-MeFOSA-M



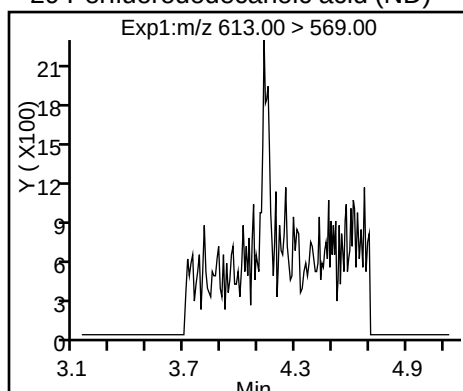
54 MeFOSA (ND)



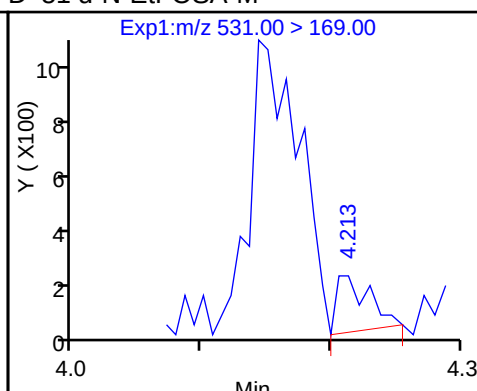
D 30 13C2 PFDaA



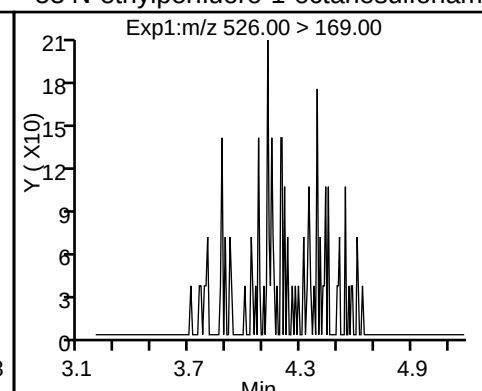
29 Perfluorododecanoic acid (ND)



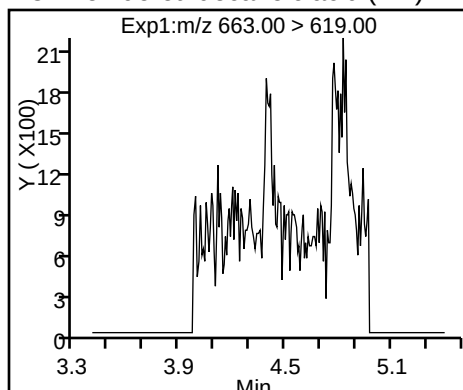
D 51 d-N-EtFOSA-M



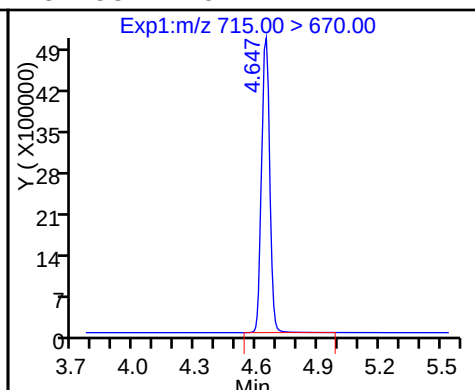
53 N-ethylperfluoro-1-octanesulfonami (ND)



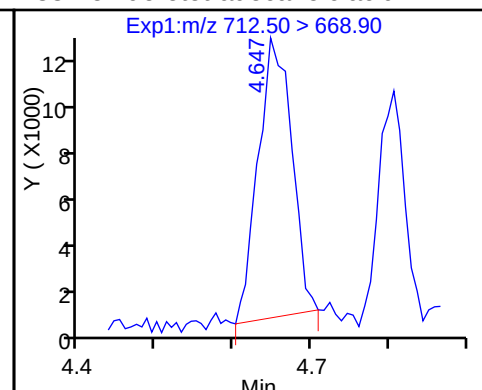
31 Perfluorotridecanoic acid (ND)



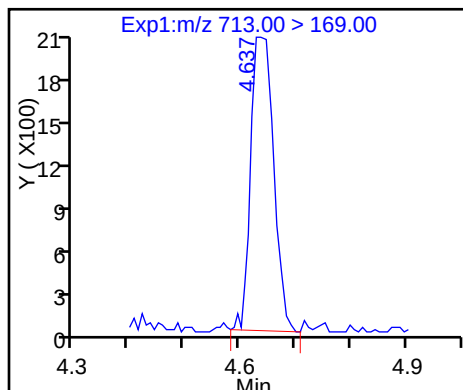
D 32 13C2-PFTeDA



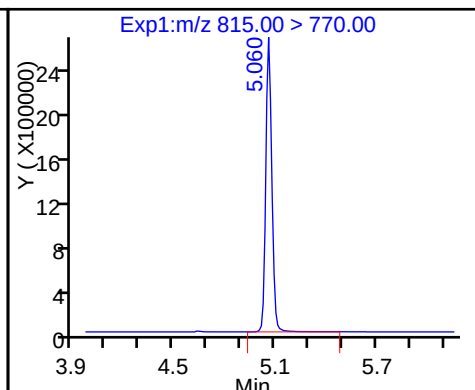
33 Perfluorotetradecanoic acid



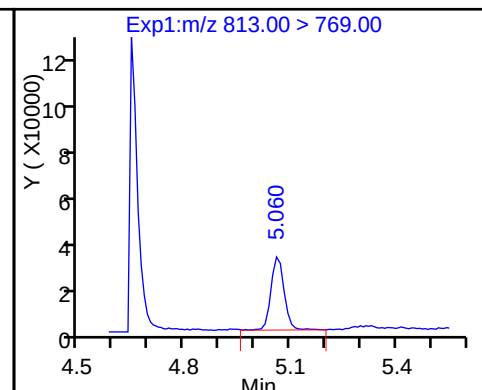
33 Perfluorotetradecanoic acid



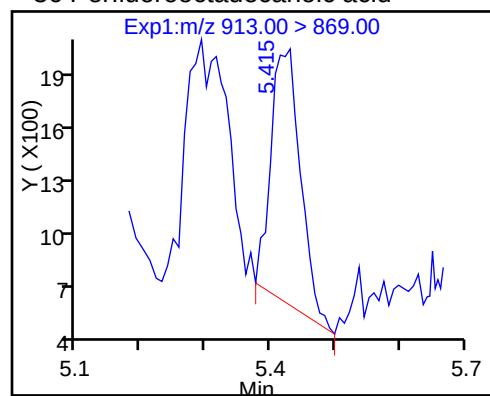
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-142967/1-A RA
 Matrix: Water Lab File ID: 30DEC2016B_032.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 250 (mL) Date Analyzed: 12/30/2016 16:11
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 144510 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0030	U	0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	113		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_032.d
 Lims ID: MB 320-142967/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 30-Dec-2016 16:11:36 ALS Bottle#: 22 Worklist Smp#: 42
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-142967/1-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 03-Jan-2017 14:28:47 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: phomsophat

Date: 03-Jan-2017 13:27:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.534	1.534	0.0		19948771	57.4		115	1129876	
1 Perfluorobutyric acid										
212.90 > 169.00	1.534	1.534	0.0	1.000	76986	0.2260			273	
D 4 13C5-PFPeA										
267.90 > 223.00	1.811	1.810	0.001		15664834	58.9		118	1265682	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.820	1.810	0.010	1.000	100082	0.3237			959	
D 6 13C2 PFHxA										
315.00 > 270.00	2.106	2.093	0.013		12684975	51.8		104	704879	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.106	2.093	0.013	1.000	165186	0.7010			3485	
D 11 13C4-PFHpA										
367.00 > 322.00	2.437	2.424	0.013		12441009	55.0		110	488472	
D 10 18O2 PFHxS										
403.00 > 84.00	2.452	2.447	0.005		17145709	52.4		111	679373	
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.759	2.773	-0.014	1.000	2686	NR				
D 47 M2-6:2FTS										
429.00 > 409.00	2.750	2.781	-0.031		962	0.008223		0.0		
D 14 13C4 PFOA										
417.00 > 372.00	2.798	2.791	0.007		12703011	55.1		110	517684	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.806	2.791	0.015	1.000	150010	0.5886			1732	
413.00 > 169.00	2.798	2.791	0.007	0.997	104355		1.44(0.90-1.10)		4136	
D 17 13C4 PFOS										
503.00 > 80.00	3.167	3.160	0.007		13397237	53.8		113	976866	
D 19 13C5 PFNA										
468.00 > 423.00	3.167	3.160	0.007		9628175	54.2		108	1635815	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.499	3.491	0.008		10446875	27.2		54.4	446128	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.515	3.499	0.016	1.000	16139	0.0828			1012	
D 42 M2-8:2FTS										
529.00 > 509.00	3.524	3.519	0.005		1098	0.0102		0.0		
24 Perfluorodecanoic acid										
513.00 > 469.00	3.532	3.524	0.008	1.000	4824	0.0298			248	
D 23 13C2 PFDA										
515.00 > 470.00	3.532	3.524	0.008		8589040	54.6		109	270154	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.688	3.683	0.005		15585	0.2069		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.688	3.692	-0.004	1.000	290	NR				
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.843	3.836	0.007	1.000	682	0.004167				
D 27 13C2 PFUnA										
565.00 > 520.00	3.860	3.853	0.007		6561505	56.0		112	314957	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.852	3.853	-0.001	1.000	17755	0.1415			406	
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.852	3.855	-0.003		25005	0.3191		0.0		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.002	3.997	0.005		2820	0.0297		0.0		
D 30 13C2 PFDaA										
615.00 > 570.00	4.148	4.144	0.004		5549360	50.0		100	210714	
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.155	4.180	-0.025		1749	0.0204		0.0		
D 32 13C2-PFTeDA										
715.00 > 670.00	4.663	4.648	0.015		12674070	55.7		111	683445	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.663	4.658	0.005	1.000	28048	0.1595			336	
713.00 > 169.00	4.654	4.658	-0.004	0.998	5491		5.11(0.00-0.00)		2423	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.069	5.072	-0.003		5940740	47.7		95.4	178094	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.080	5.072	0.008	1.000	73762	0.0964			135	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.429	5.415	0.014	1.000	2881	0.0252			3.5	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_032.d

Injection Date: 30-Dec-2016 16:11:36

Instrument ID: A8_N

Lims ID: MB 320-142967/1-A

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 22

Worklist Smp#: 42

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

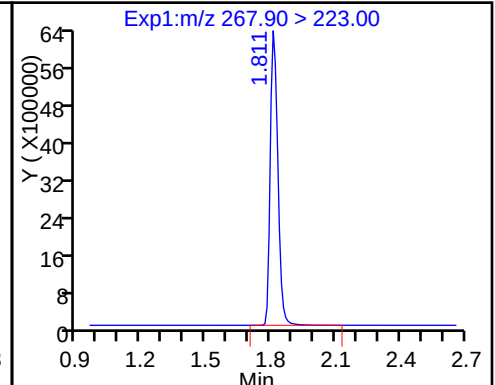
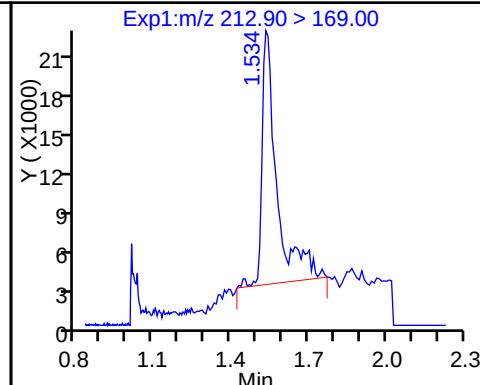
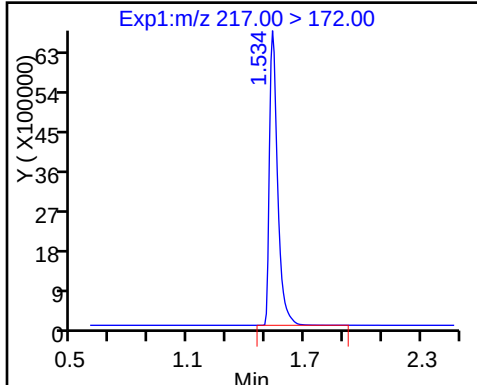
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

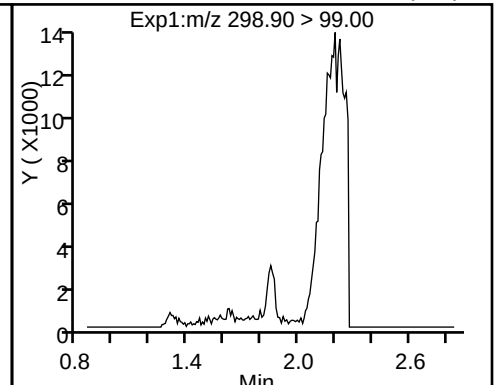
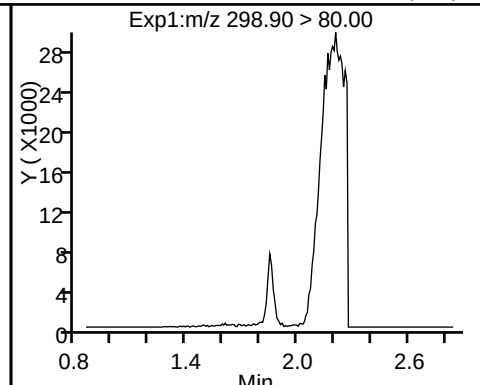
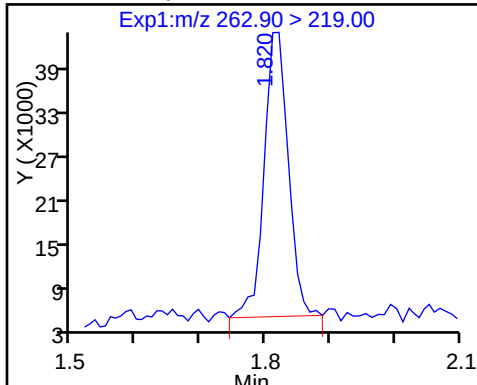
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid (ND)

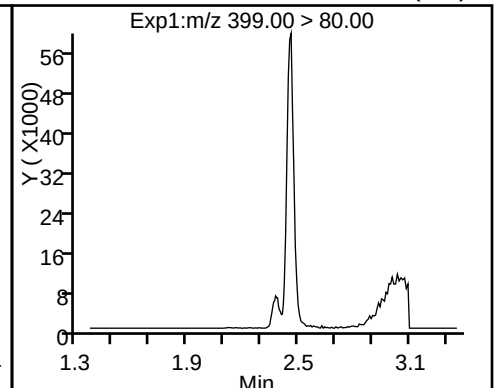
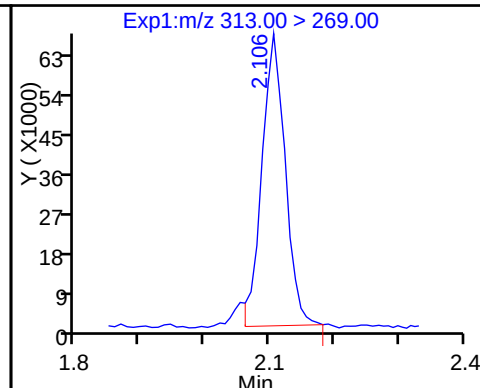
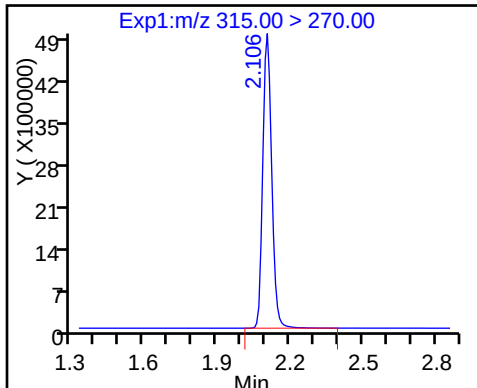
5 Perfluorobutanesulfonic acid (ND)



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

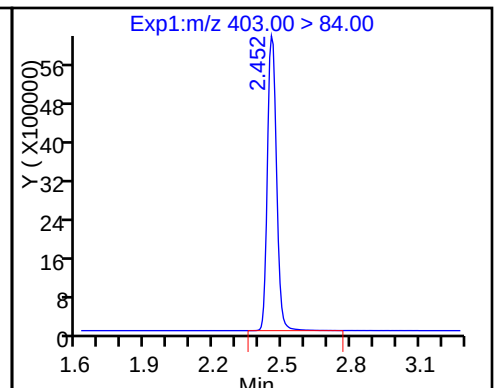
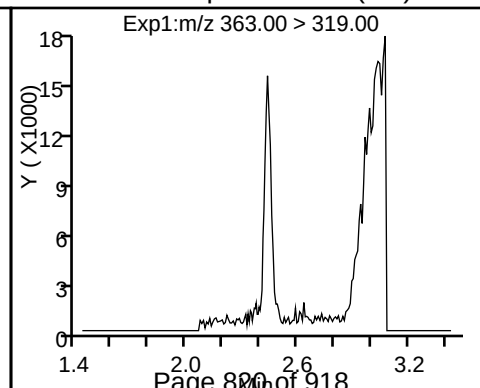
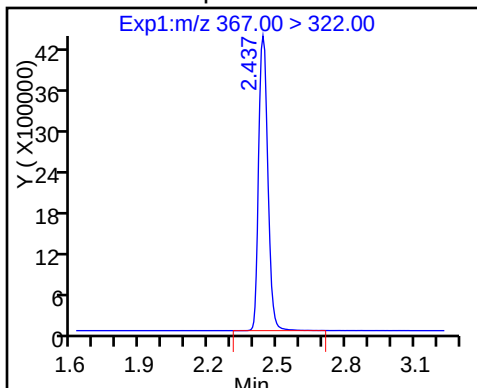
9 Perfluorohexanesulfonic acid (ND)



D 11 13C4-PFHpA

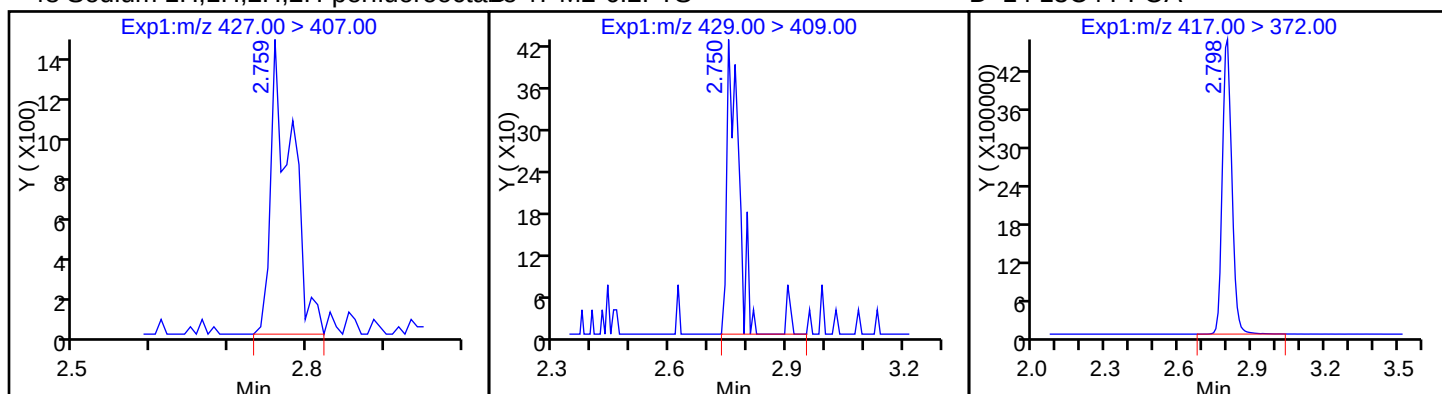
12 Perfluoroheptanoic acid (ND)

D 10 18O2 PFHxS



48 Sodium 1H,1H,2H,2H-perfluorooctadec-47 M2-6:2FTS

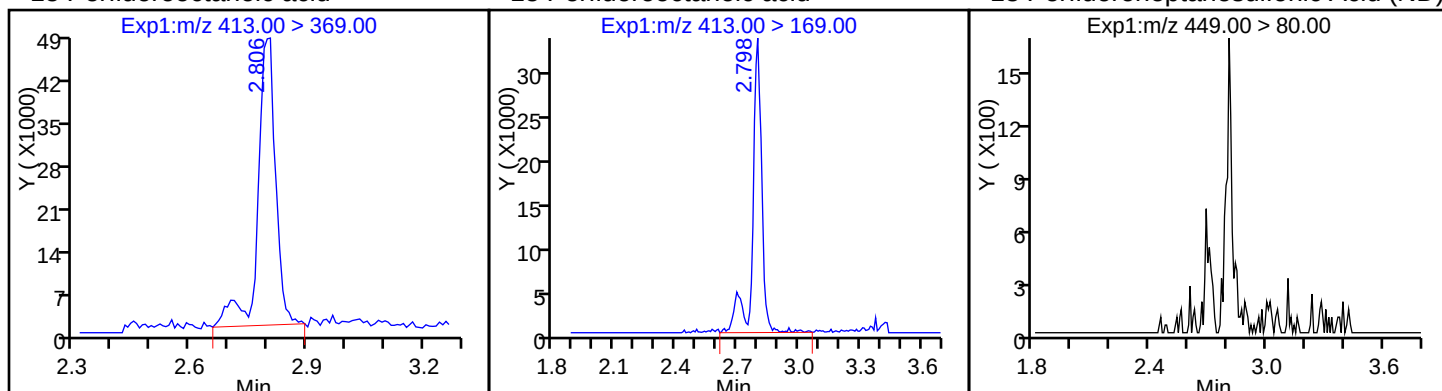
D 14 13C4 PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

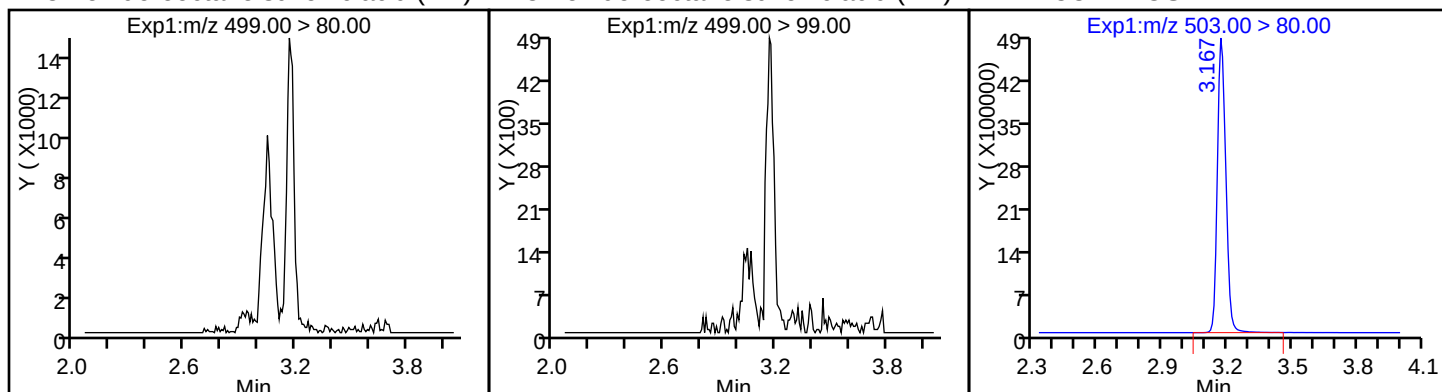
13 Perfluoroheptanesulfonic Acid (ND)



18 Perfluorooctane sulfonic acid (ND)

18 Perfluorooctane sulfonic acid (ND)

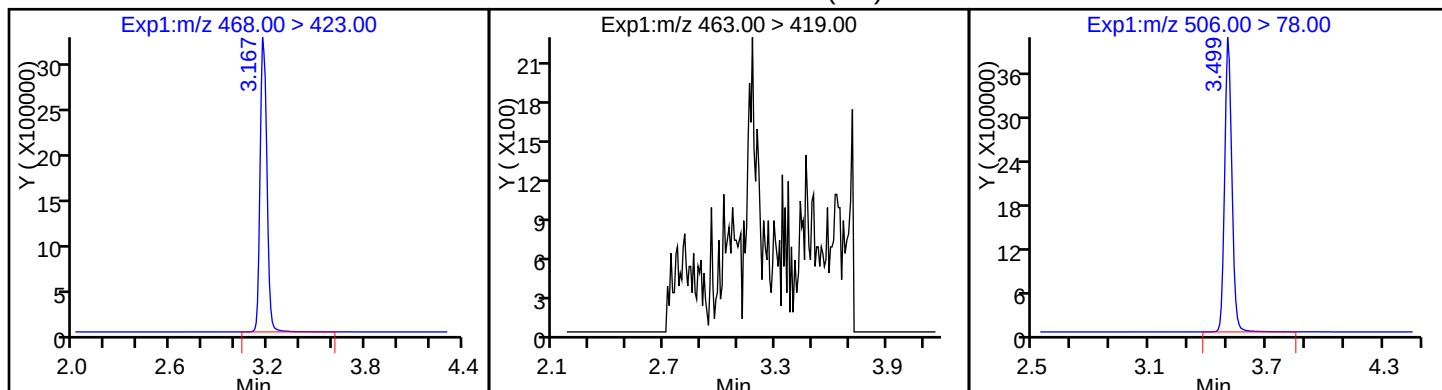
D 17 13C4 PFOS



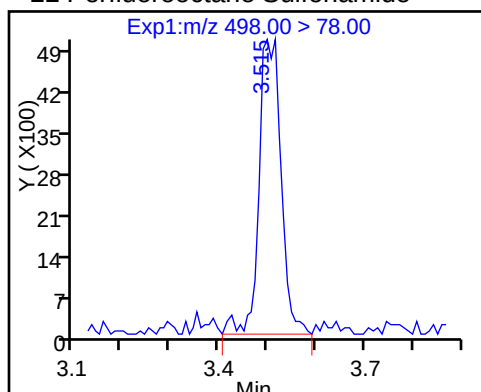
D 19 13C5 PFNA

20 Perfluorononanoic acid (ND)

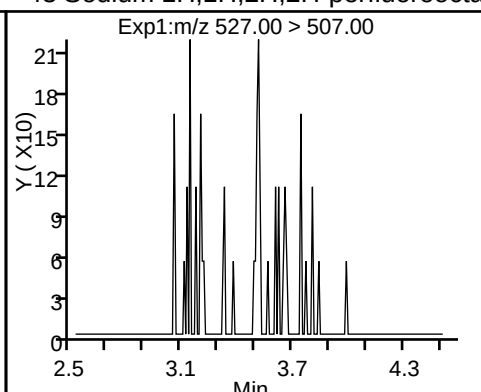
D 21 13C8 FOSA



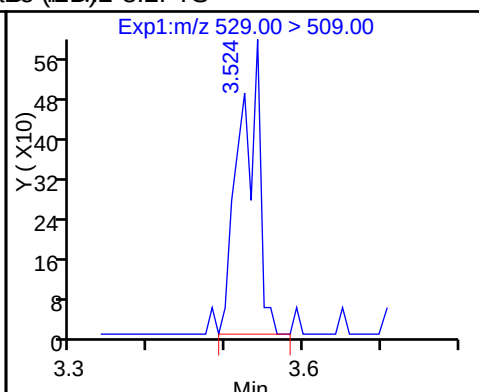
22 Perfluorooctane Sulfonamide



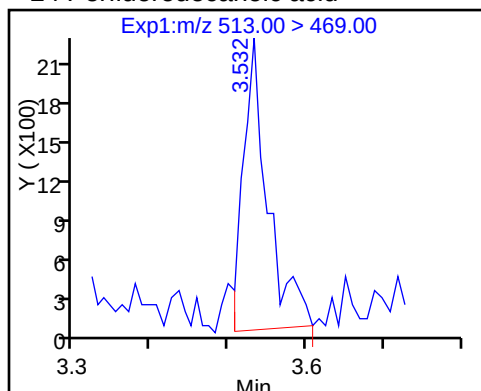
43 Sodium 1H,1H,2H,2H-perfluorooctane-1Sulfonate (PFOS)



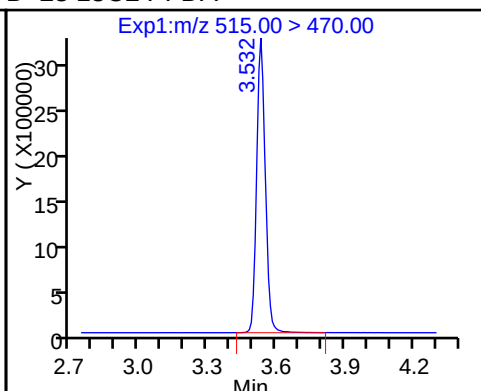
48 D2-8:2FTS



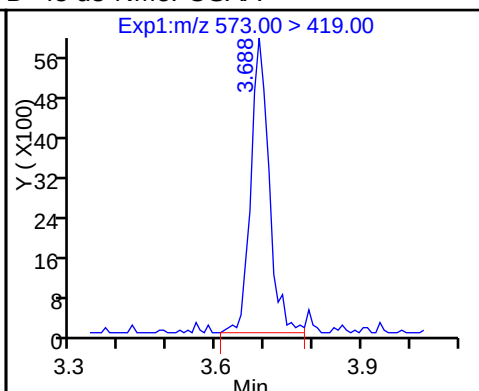
24 Perfluorodecanoic acid



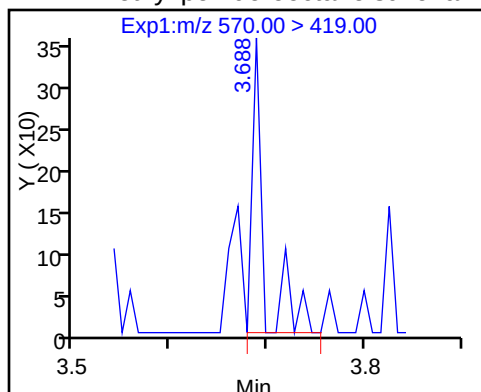
D 23 13C2 PFDA



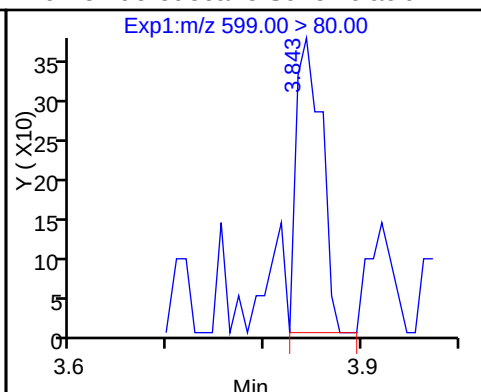
D 45 d3-NMeFOSAA



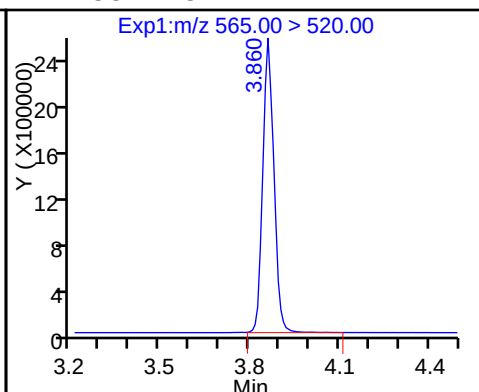
44 N-methyl perfluorooctane sulfonamid



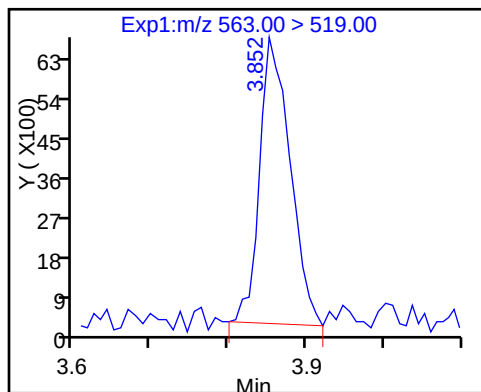
26 Perfluorodecane Sulfonic acid



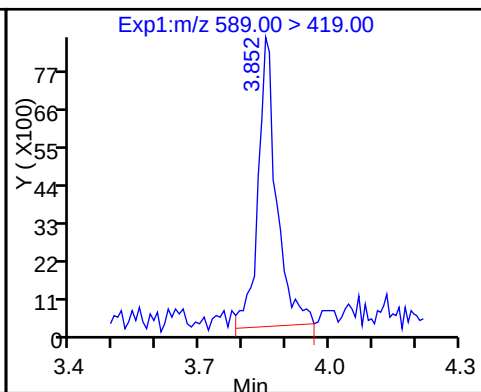
D 27 13C2 PFUnA



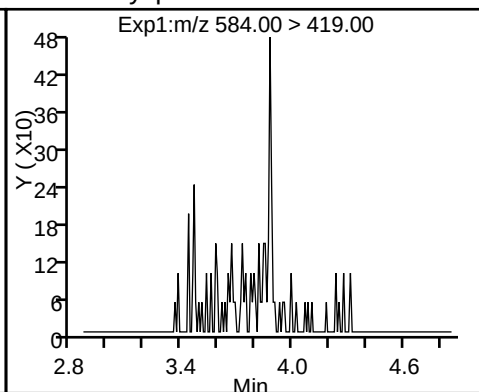
28 Perfluoroundecanoic acid



D 46 d5-NEtFOSAA



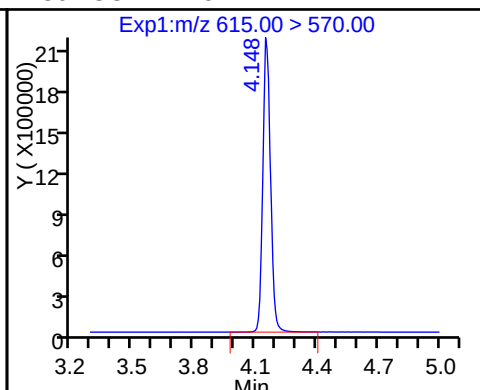
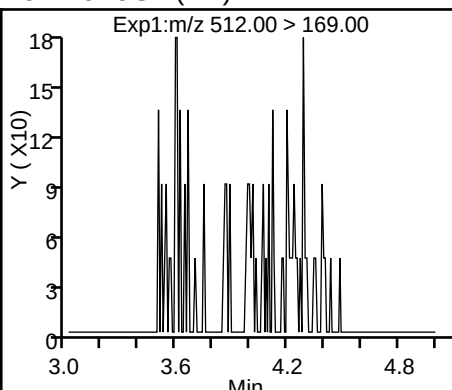
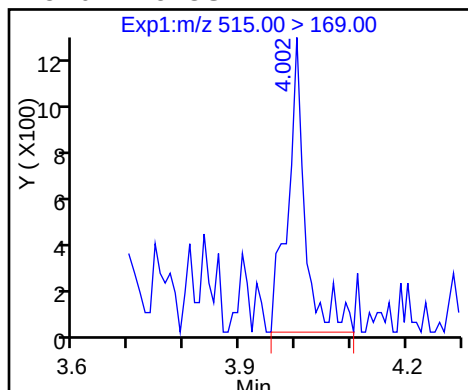
49 N-ethyl perfluorooctane sulfonamid (ND)



D 52 d-N-MeFOSA-M

54 MeFOSA (ND)

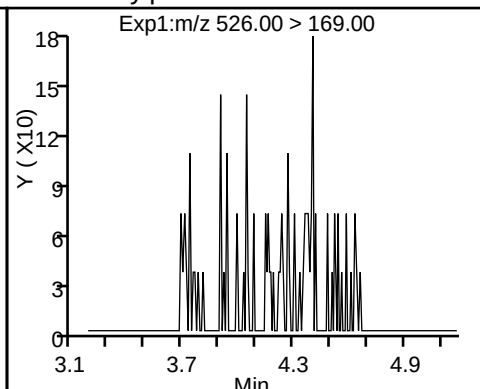
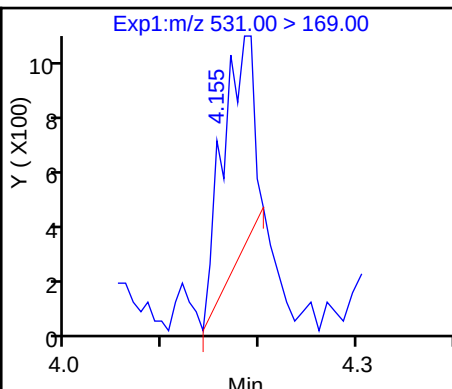
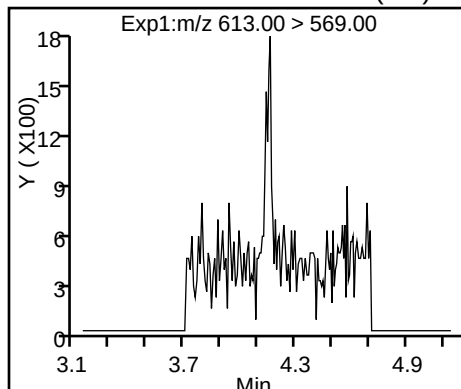
D 30 13C2 PFDaA



29 Perfluorododecanoic acid (ND)

D 51 d-N-EtFOSA-M

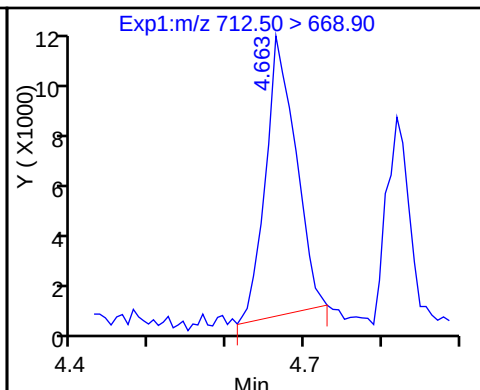
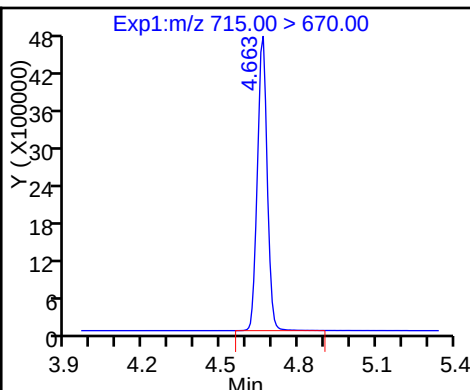
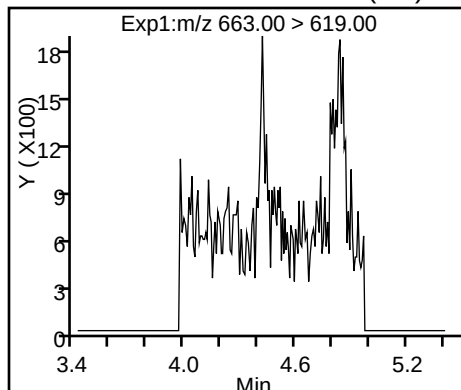
53 N-ethylperfluoro-1-octanesulfonami (ND)



31 Perfluorotridecanoic acid (ND)

D 32 13C2-PFTeDA

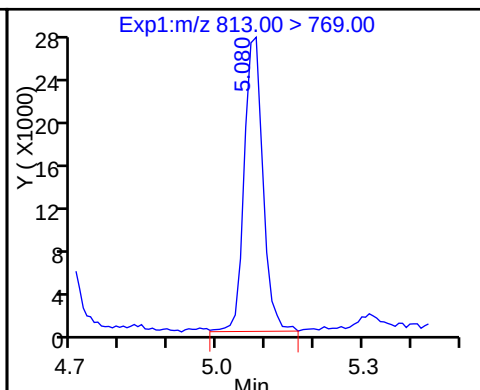
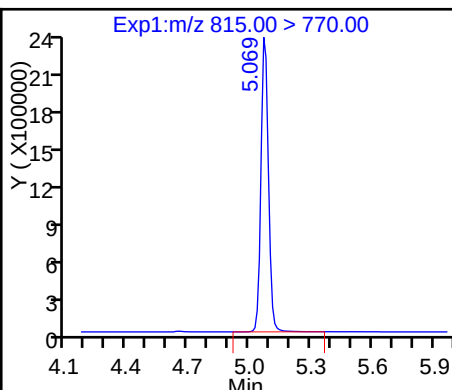
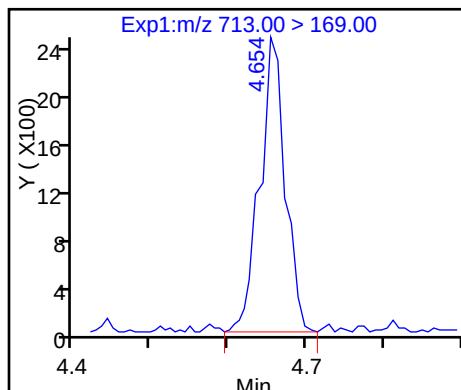
33 Perfluorotetradecanoic acid



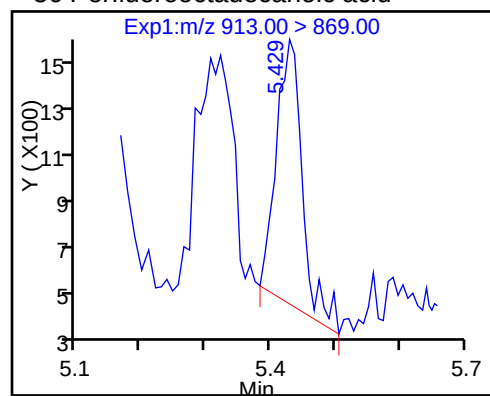
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>LCS 320-142967/2-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_004.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>12/29/2016 00:14</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.0441		0.0025	0.0010	0.00046
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0422		0.0025	0.0020	0.00099
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0413		0.0025	0.0020	0.00079
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0418		0.0025	0.0020	0.00080
335-67-1	Perfluorooctanoic acid (PFOA)	0.0406		0.0025	0.0020	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	0.0384		0.0025	0.0020	0.00065
335-76-2	Perfluorodecanoic acid (PFDA)	0.0399		0.0025	0.0010	0.00044
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0382		0.0025	0.0020	0.00075
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0386		0.0025	0.0020	0.00058
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0384		0.0025	0.0020	0.00055
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.0478		0.0025	0.0010	0.00040
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0432		0.0025	0.0020	0.00092
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0397		0.0025	0.0020	0.00087
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0385		0.0040	0.0030	0.0012
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0384		0.0025	0.0020	0.00064

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>LCS 320-142967/2-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_004.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>12/29/2016 00:14</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	62		25-150
STL00992	13C4 PFBA	131		25-150
STL01893	13C5-PFPeA	132		25-150
STL00993	13C2 PFHxA	126		25-150
STL01892	13C4-PFHpA	128		25-150
STL00990	13C4 PFOA	127		25-150
STL00995	13C5 PFNA	123		25-150
STL00996	13C2 PFDA	127		25-150
STL00997	13C2 PFUnA	119		25-150
STL00998	13C2 PFDoA	114		25-150
STL00994	18O2 PFHxS	128		25-150
STL00991	13C4 PFOS	128		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_004.d
 Lims ID: LCS 320-142967/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 29-Dec-2016 00:14:27 ALS Bottle#: 2 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-142967/2-a
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Dec-2016 17:32:20 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK027

First Level Reviewer: phomsophat

Date: 29-Dec-2016 17:32:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.533	1.534	-0.001		22745171	65.4		131	907829	
1 Perfluorobutyric acid										
212.90 > 169.00	1.533	1.534	-0.001	1.000	8555666	22.0		110	60595	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.810	0.0		17512342	65.8		132	963502	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.810	1.810	0.0	1.000	7290750	21.1		105	80268	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.849	-0.001	1.000	12771474	21.6		122		
298.90 > 99.00	1.848	1.849	-0.001	1.000	5467672		2.34(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.098	2.097	0.001		15456996	63.1		126	807976	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.098	2.097	0.001	1.000	5929814	20.7		103	124616	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.422	2.422	0.0	1.000	8545949	19.9		109		
D 11 13C4-PFHpA										
367.00 > 322.00	2.429	2.429	0.0		14459227	63.9		128	885210	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.429	2.429	0.0	1.000	5914551	20.9		104	54434	
D 10 18O2 PFHxS										
403.00 > 84.00	2.451	2.452	-0.001		19756760	60.4		128	1190700	
D 14 13C4 PFOA										
417.00 > 372.00	2.789	2.790	-0.001		14658582	63.6		127	636565	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.789	2.790	-0.001	1.000	5964939	20.3		101	77218	
413.00 > 169.00	2.789	2.790	-0.001	1.000	3669201		1.63(0.90-1.10)		186769	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.789	2.798	-0.009	1.000	7509937	21.3		112		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.134	3.134	0.0	1.000	8156406	25.7		138	88097	
499.00 > 99.00	3.126	3.134	-0.008	0.997	1805462		4.52(0.90-1.10)		35073	
D 17 13C4 PFOS										
503.00 > 80.00	3.158	3.158	0.0		15283766	61.4		128	411196	
20 Perfluorononanoic acid										
463.00 > 419.00	3.158	3.158	0.0	1.000	4000873	19.2		96.1	61812	
D 19 13C5 PFNA										
468.00 > 423.00	3.158	3.166	-0.008		10934977	61.5		123	912296	
D 21 13C8 FOSA										
506.00 > 78.00	3.481	3.481	0.0		11918495	31.0		62.1	557879	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.481	3.481	0.0	1.000	4273200	19.2		96.1	225795	
D 23 13C2 PFDA										
515.00 > 470.00	3.515	3.523	-0.008		9953645	63.3		127	347732	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.515	3.523	-0.008	1.000	3746468	19.9		99.7	112186	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.825	3.834	-0.009	1.000	3595209	19.3		99.9		
D 27 13C2 PFUnA										
565.00 > 520.00	3.842	3.851	-0.009		6963884	59.4		119	347347	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.851	3.851	0.0	1.000	2541473	19.1		95.4	61115	
D 30 13C2 PFDaA										
615.00 > 570.00	4.133	4.134	-0.001		6345418	57.2		114	229094	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.133	4.141	-0.008	1.000	2247085	19.3		96.4	62721	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.404	4.404	0.0	1.000	2212049	19.2		96.1	48978	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.642	4.652	-0.010		14637408	64.4		129	847727	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.652	4.652	0.0	1.000	4810498	23.9		120	62833	
713.00 > 169.00	4.642	4.652	-0.010	0.998	728141		6.61(0.00-0.00)		95577	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.058	5.069	-0.011		6676700	53.6		107	161695	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.058	5.069	-0.011	1.000	2269575	18.1		90.7	3449	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.421	5.421	0.0	1.000	2160389	16.5		82.6	2214	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_004.d

Injection Date: 29-Dec-2016 00:14:27

Instrument ID: A8_N

Lims ID: LCS 320-142967/2-A

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 2

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

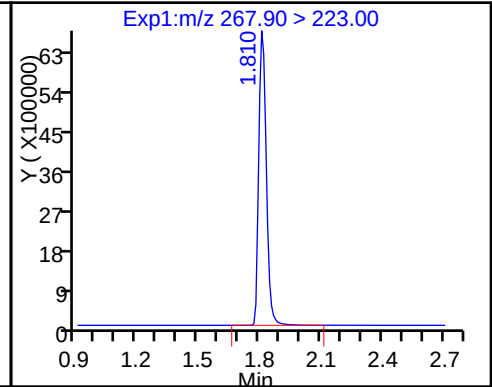
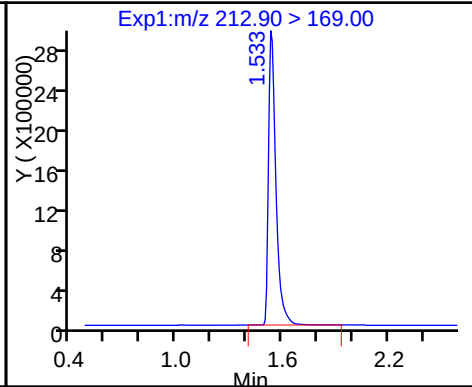
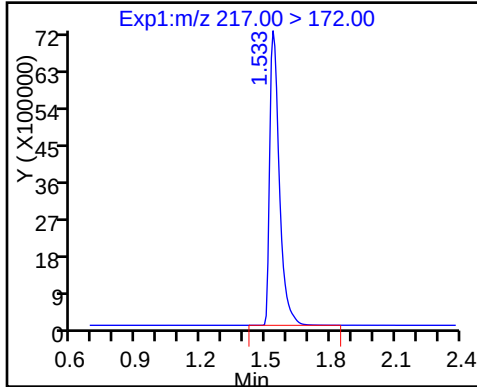
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

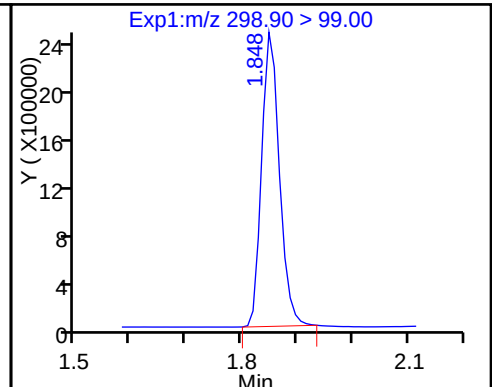
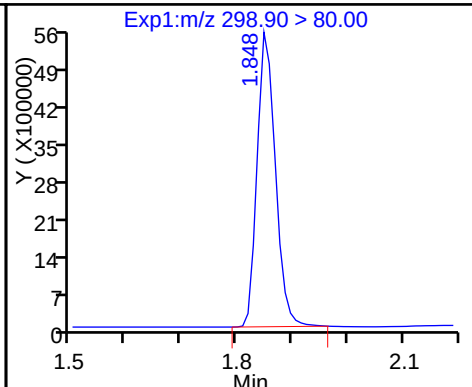
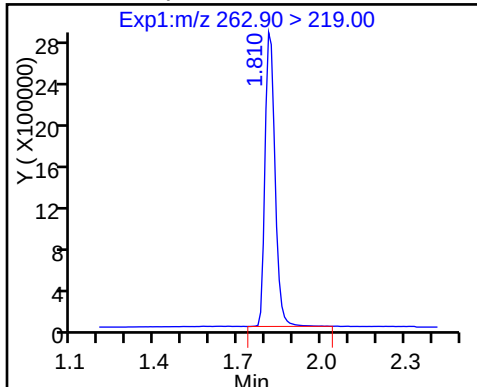
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

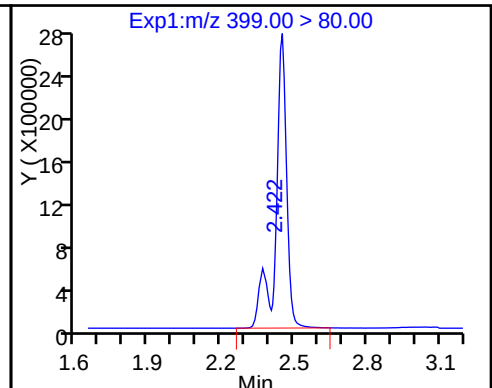
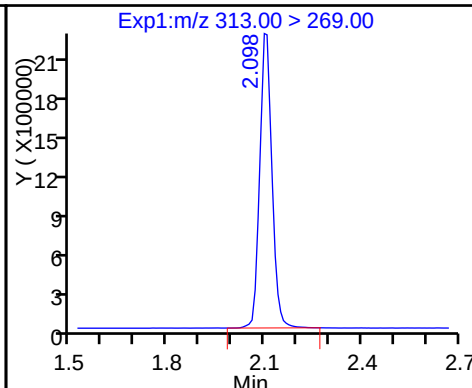
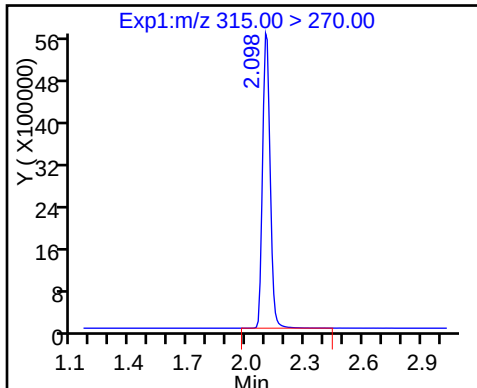
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

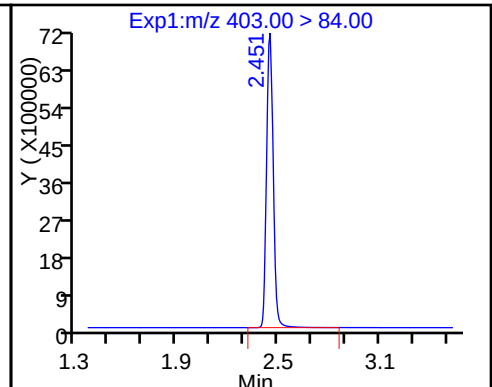
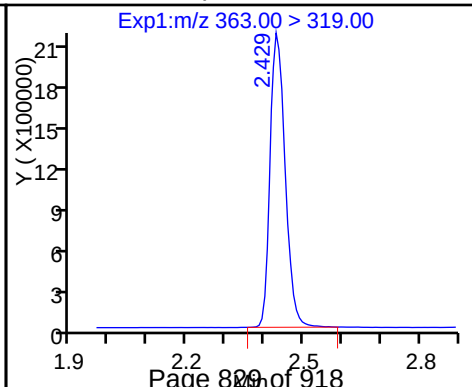
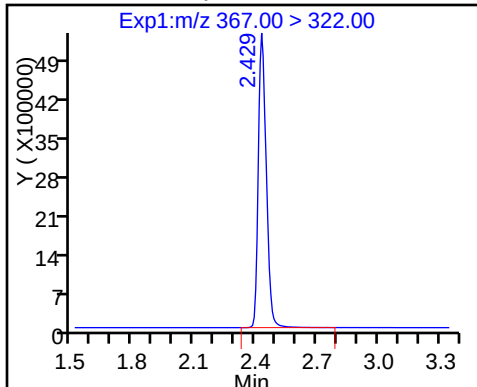
9 Perfluorohexanesulfonic acid



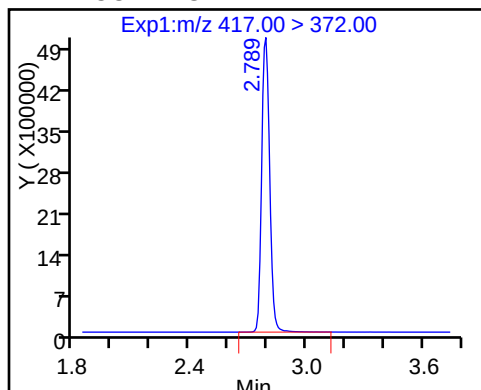
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid

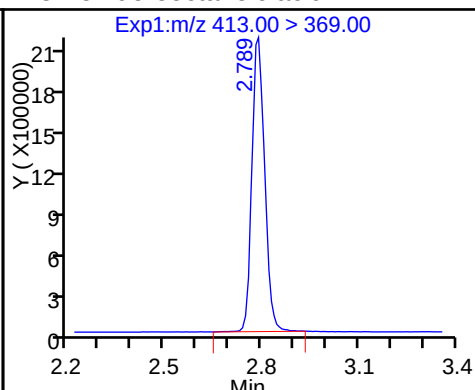
D 10 18O2 PFHxS



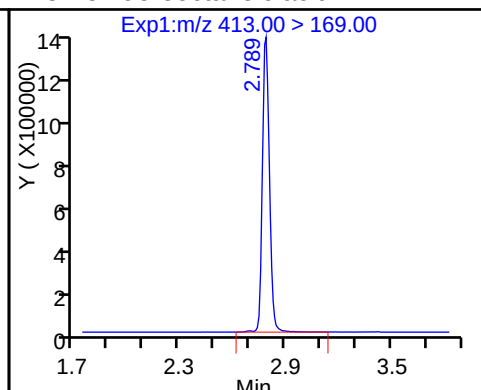
D 14 13C4 PFOA



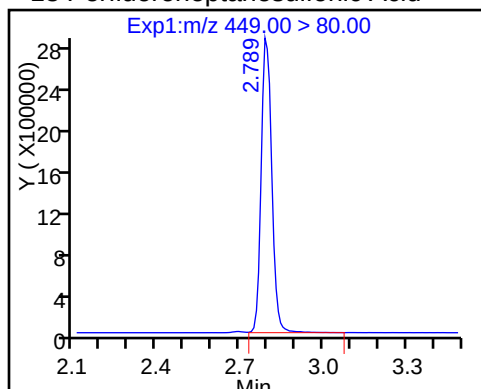
15 Perfluorooctanoic acid



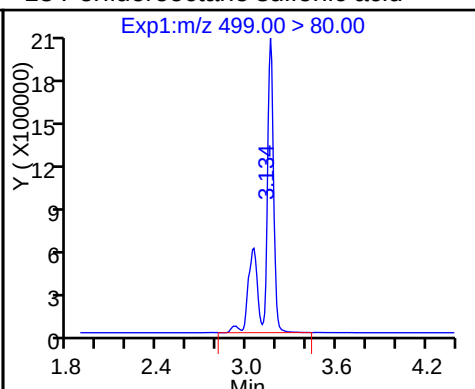
15 Perfluorooctanoic acid



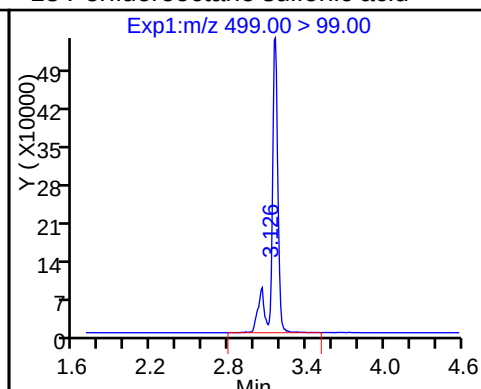
13 Perfluoroheptanesulfonic Acid



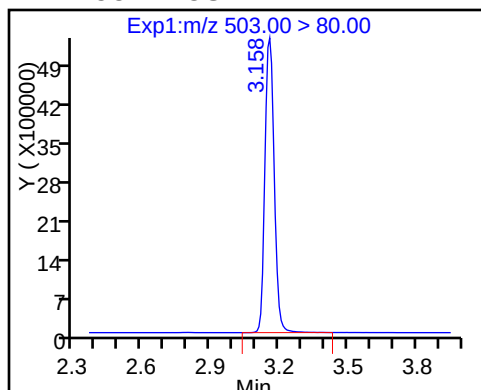
18 Perfluorooctane sulfonic acid



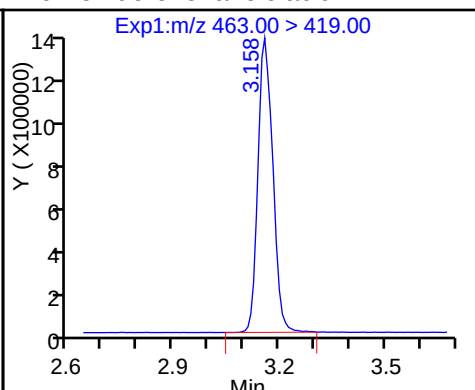
18 Perfluorooctane sulfonic acid



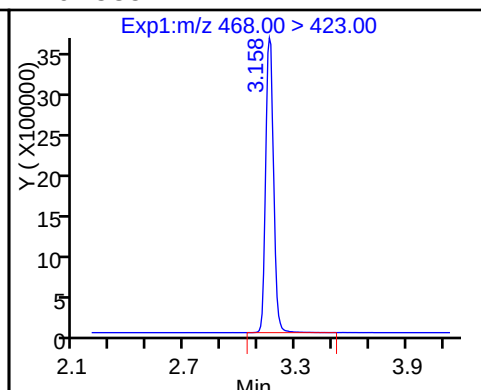
D 17 13C4 PFOS



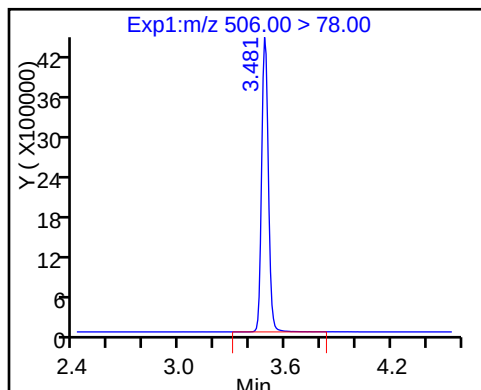
20 Perfluorononanoic acid



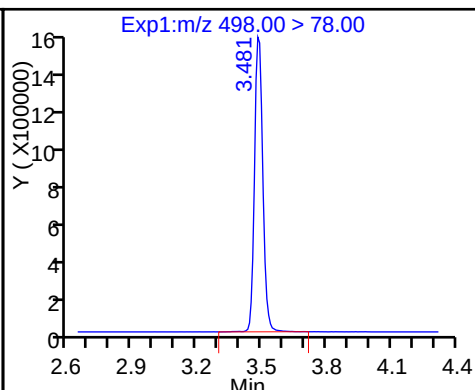
D 19 13C5 PFNA



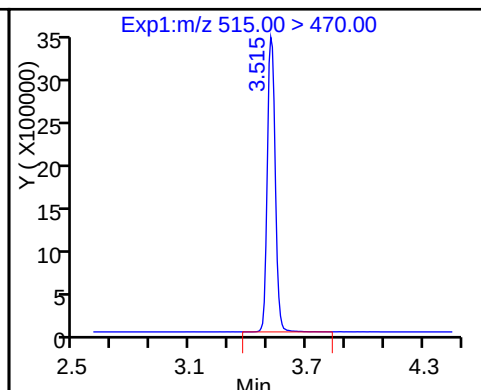
D 21 13C8 FOSA

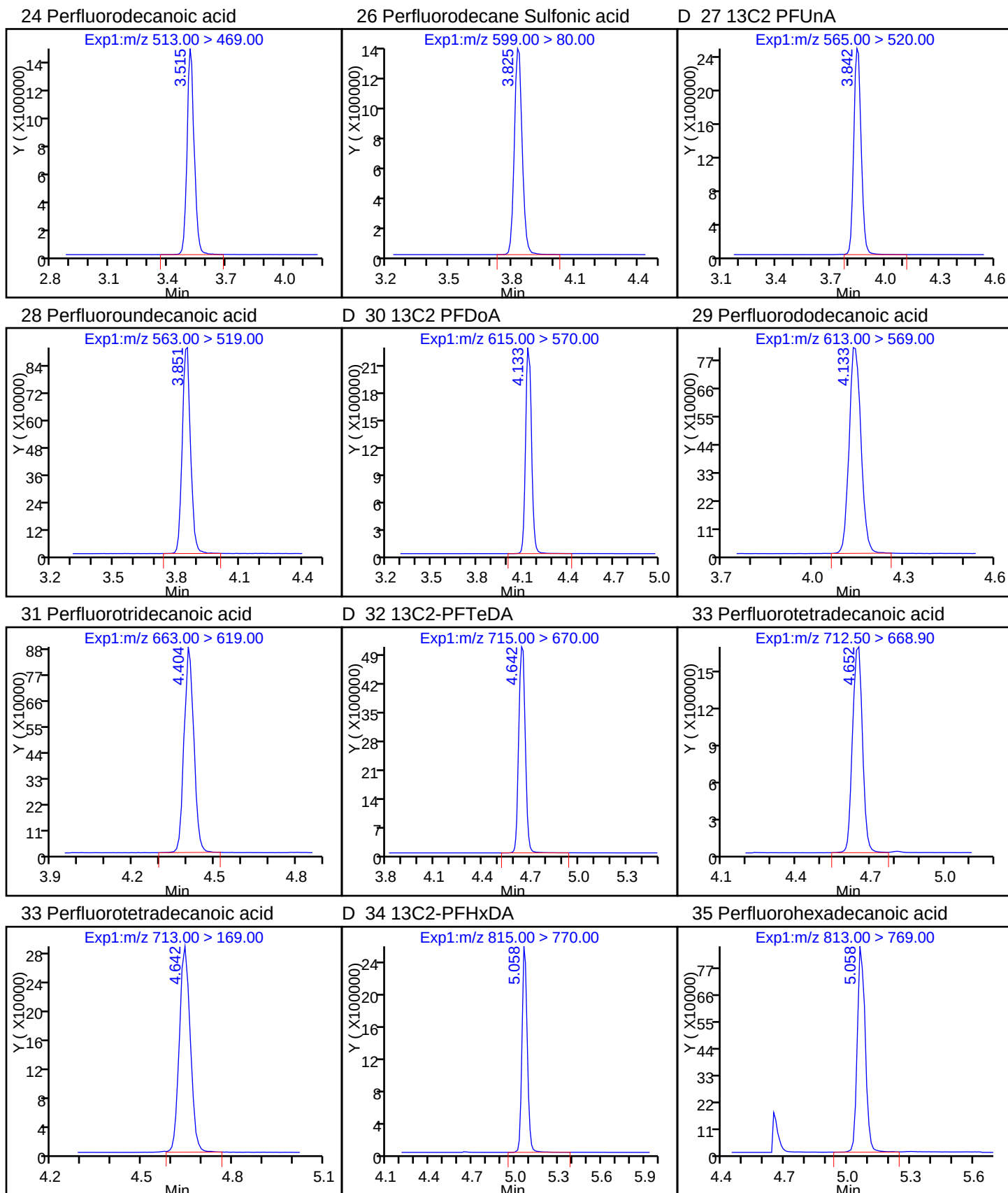


22 Perfluorooctane Sulfonamide

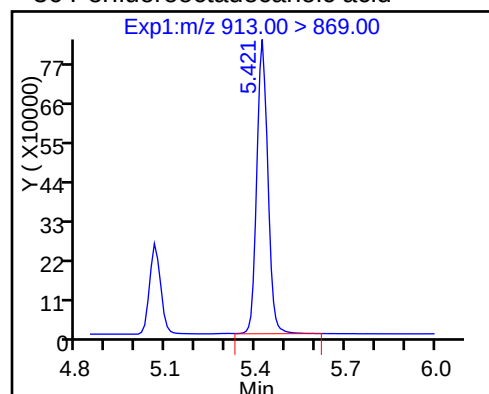


D 23 13C2 PFDA





36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-142967/2-A RA
 Matrix: Water Lab File ID: 30DEC2016B_033.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 250 (mL) Date Analyzed: 12/30/2016 16:19
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 144510 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0511		0.0040	0.0030	0.0013

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	126		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_033.d
 Lims ID: LCS 320-142967/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 30-Dec-2016 16:19:09 ALS Bottle#: 23 Worklist Smp#: 43
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-142967/2-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 03-Jan-2017 14:28:47 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: phomsophat

Date: 03-Jan-2017 14:19:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.528	1.534	-0.006		21990959	63.2		126	973508	
1 Perfluorobutyric acid										
212.90 > 169.00	1.536	1.534	0.002	1.000	8240189	21.9		110	40088	
D 4 13C5-PFPeA										
267.90 > 223.00	1.813	1.810	0.003		17147382	64.4		129	1080293	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.813	1.810	0.003	1.000	7164736	21.2		106	92618	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.851	1.849	0.002	1.000	11666172	20.5		116		
298.90 > 99.00	1.841	1.849	-0.008	0.995	5081397		2.30(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.100	2.093	0.007		14303512	58.4		117	491614	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.100	2.093	0.007	1.000	5364684	20.2		101	110148	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.416	2.362	0.054	1.000	8338277	20.2		111		
D 11 13C4-PFHpA										
367.00 > 322.00	2.429	2.424	0.005		13796559	61.0		122	704065	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.429	2.432	-0.003	1.000	5529405	20.5		102	42528	
D 10 18O2 PFHxS										
403.00 > 84.00	2.443	2.447	-0.004		18956697	58.0		123	1628744	
D 14 13C4 PFOA										
417.00 > 372.00	2.781	2.791	-0.010		13574629	58.9		118	585037	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.789	2.791	-0.002	1.000	5557698	20.4		102	80738	
413.00 > 169.00	2.789	2.791	-0.002	1.000	3473579		1.60(0.90-1.10)		112124	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.797	2.799	-0.002	1.000	7097453	20.5		108		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.055	3.058	-0.003	1.000	7981662	25.5		138	70927	
499.00 > 99.00	3.165	3.058	0.107	1.036	1763327		4.53(0.90-1.10)		86795	
D 17 13C4 PFOS										
503.00 > 80.00	3.165	3.160	0.005		15022345	60.4		126	435048	
D 19 13C5 PFNA										
468.00 > 423.00	3.165	3.160	0.005		10289260	57.9		116	593967	
20 Perfluorononanoic acid										
463.00 > 419.00	3.165	3.167	-0.002	1.000	3860899	19.7		98.6	68965	
D 21 13C8 FOSA										
506.00 > 78.00	3.489	3.491	-0.002		11186702	29.1		58.2	532677	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.497	3.499	-0.002	1.000	4060018	19.5		97.3	221852	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.522	3.524	-0.002	1.000	3610274	20.1		100	122598	
D 23 13C2 PFDA										
515.00 > 470.00	3.522	3.524	-0.002		9525414	60.6		121	494928	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.833	3.836	-0.003	1.000	3499950	19.1		98.9		
D 27 13C2 PFUnA										
565.00 > 520.00	3.850	3.853	-0.003		7162965	61.1		122	386832	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.850	3.853	-0.003	1.000	2694267	19.7		98.3	82597	
D 30 13C2 PFDaA										
615.00 > 570.00	4.148	4.144	0.004		6318440	56.9		114	337271	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.148	4.144	0.004	1.000	2254931	19.4		97.2	69019	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.411	4.416	-0.005	1.000	2184499	19.1		95.3	49483	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.652	4.648	0.004		14493754	63.7		127	1339620	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.652	4.658	-0.006	1.000	4574658	22.8		114	65058	
713.00 > 169.00	4.652	4.658	-0.006	1.000	717193		6.38(0.00-0.00)		143757	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.068	5.072	-0.004		6351590	51.0		102	198415	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.068	5.072	-0.004	1.000	2249702	18.0		90.2	3843	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.421	5.415	0.006	1.000	1858495	14.3		71.4	2216	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_033.d

Injection Date: 30-Dec-2016 16:19:09

Instrument ID: A8_N

Lims ID: LCS 320-142967/2-A

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 23

Worklist Smp#: 43

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

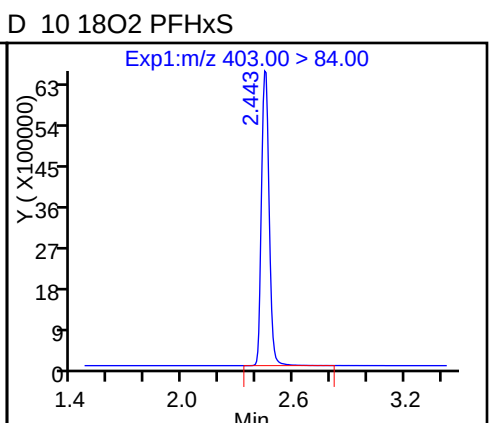
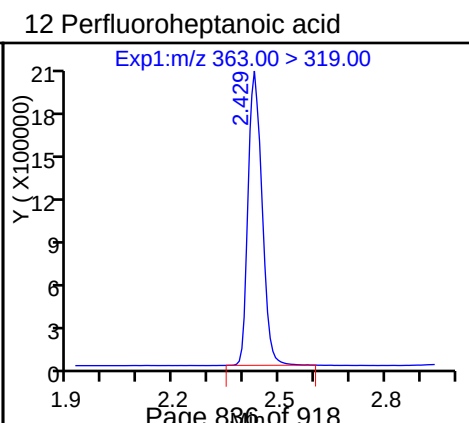
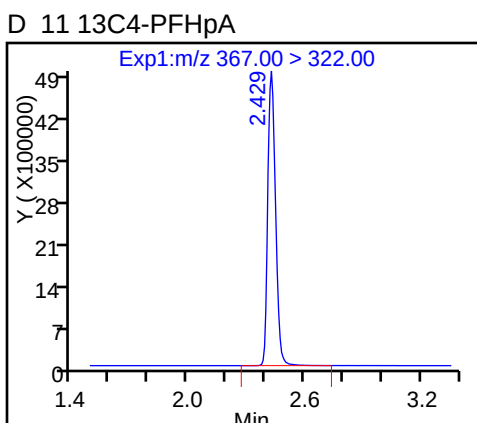
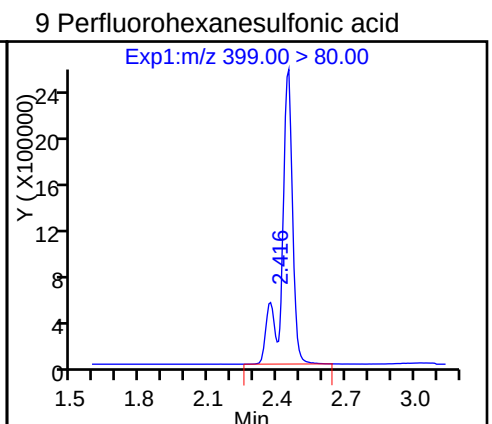
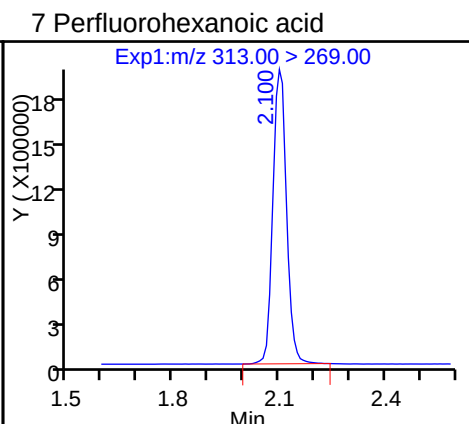
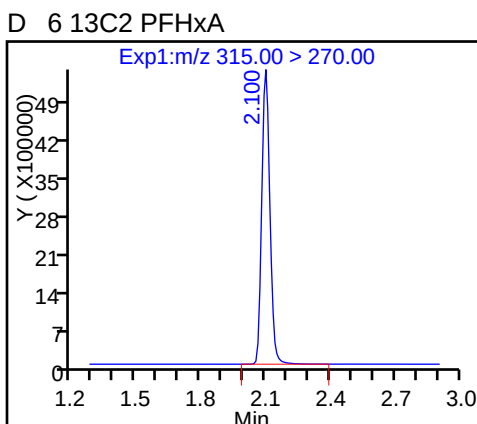
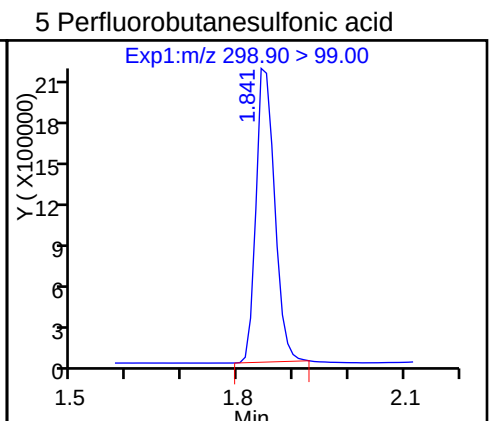
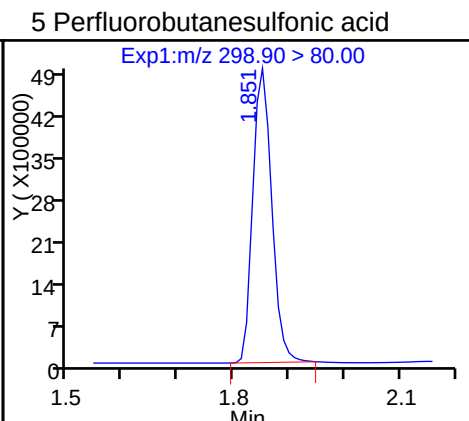
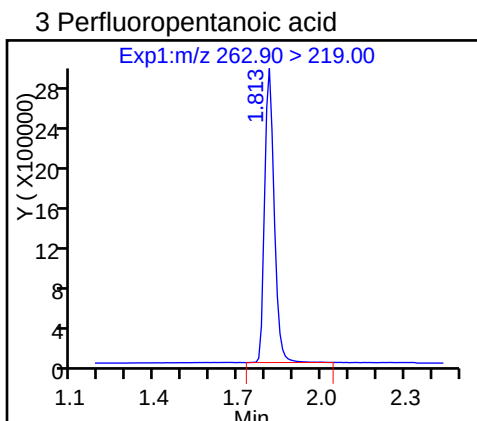
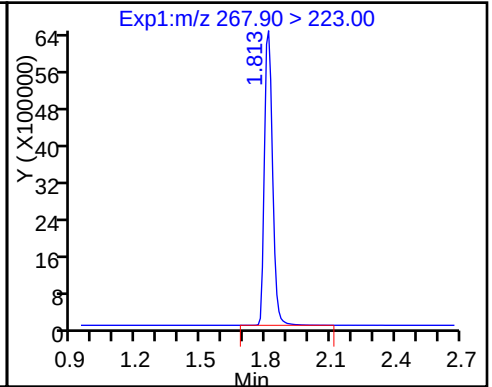
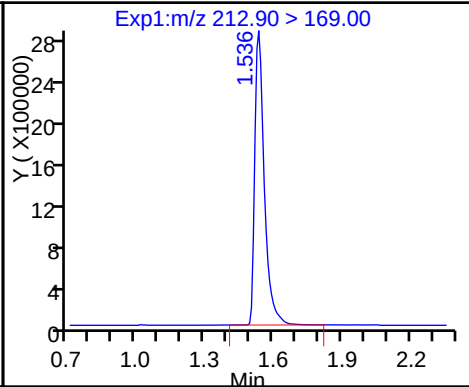
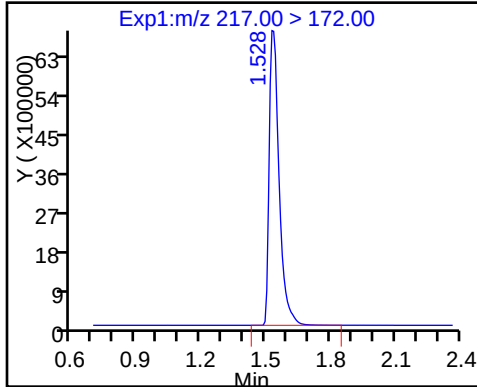
Method: A8_N

Limit Group: LC PFC_DOD ICAL

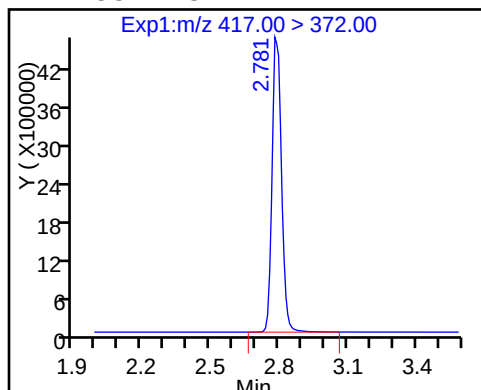
D 2 13C4 PFBA

1 Perfluorobutyric acid

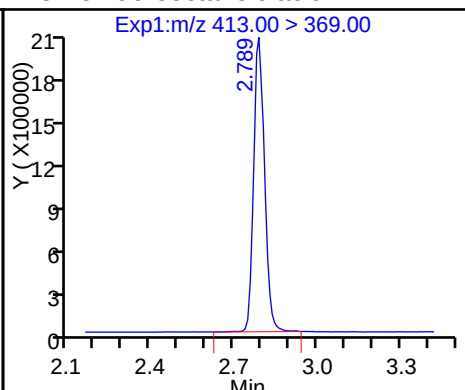
D 4 13C5-PFPeA



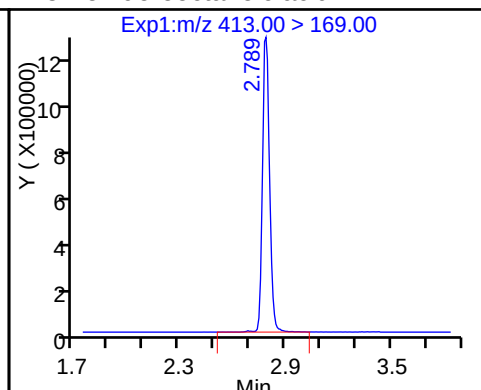
D 14 13C4 PFOA



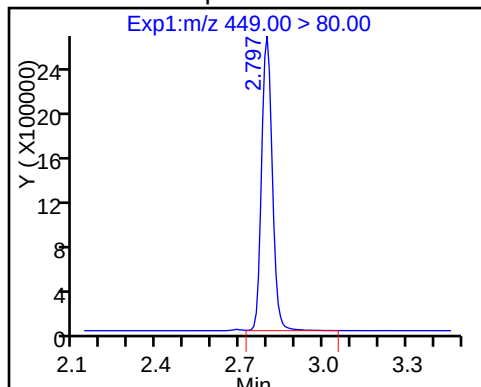
15 Perfluorooctanoic acid



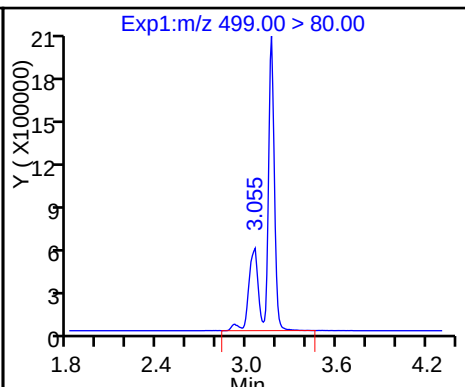
15 Perfluorooctanoic acid



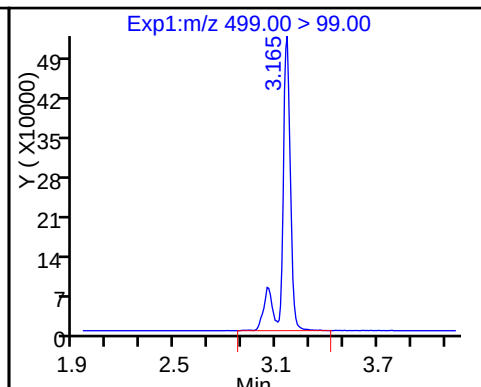
13 Perfluoroheptanesulfonic Acid



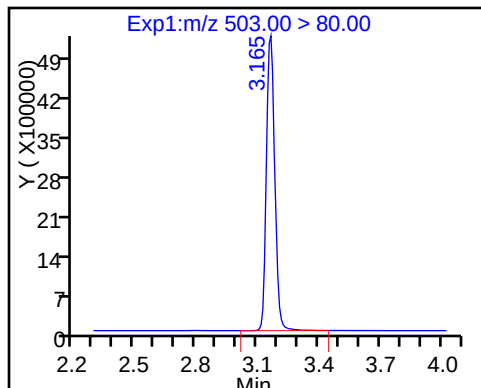
18 Perfluorooctane sulfonic acid



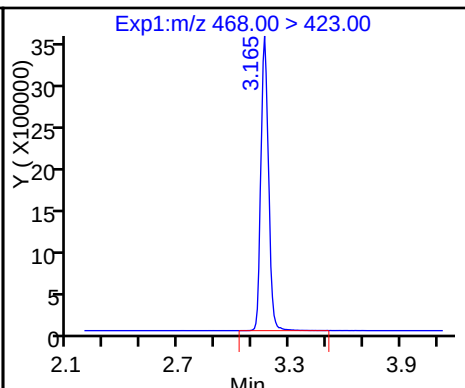
18 Perfluorooctane sulfonic acid



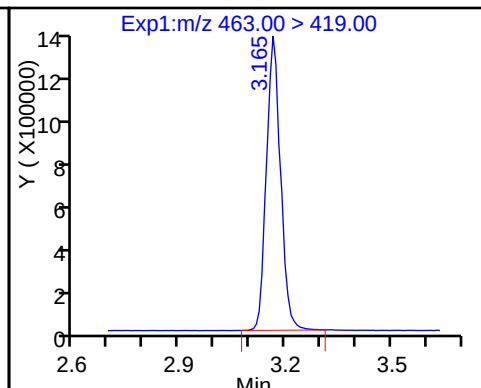
D 17 13C4 PFOS



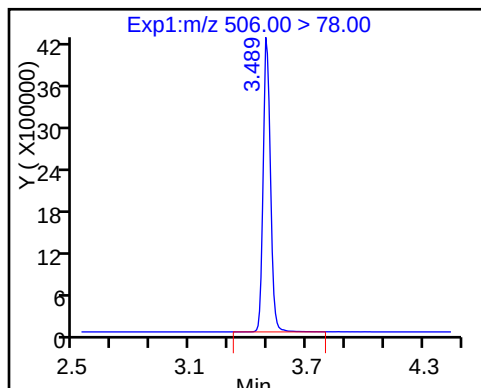
D 19 13C5 PFNA



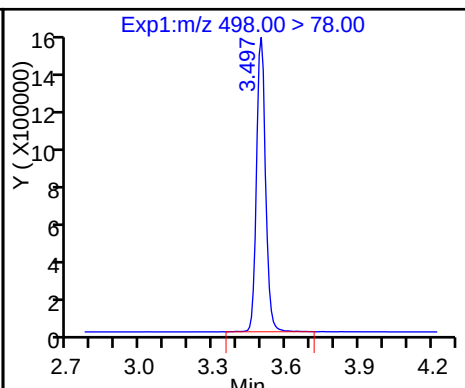
20 Perfluorononanoic acid



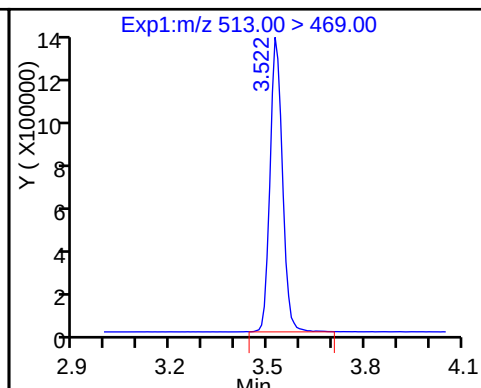
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide



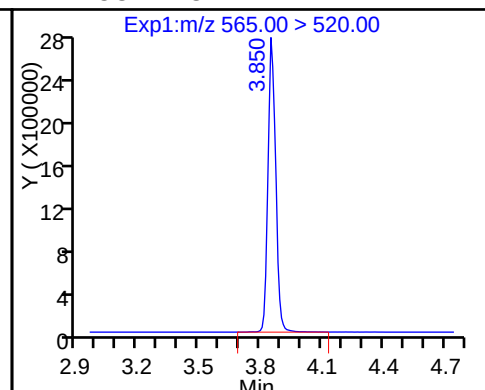
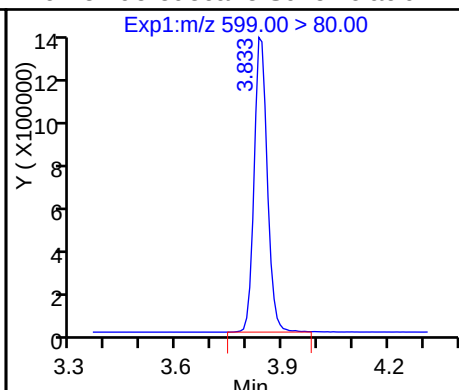
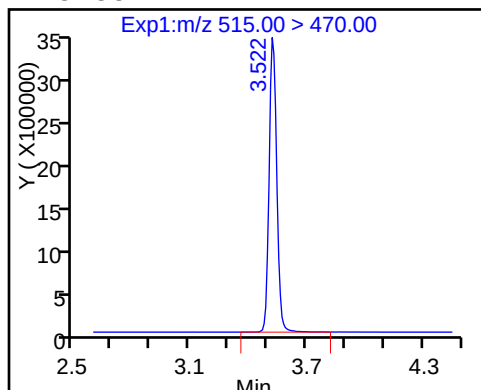
24 Perfluorodecanoic acid



D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

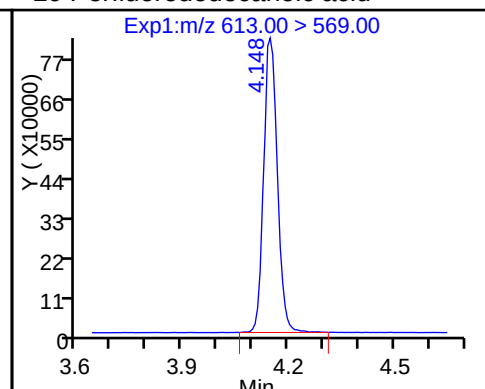
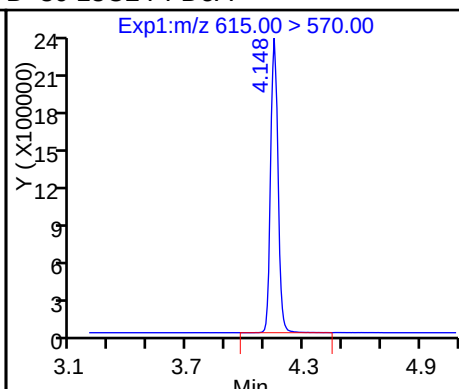
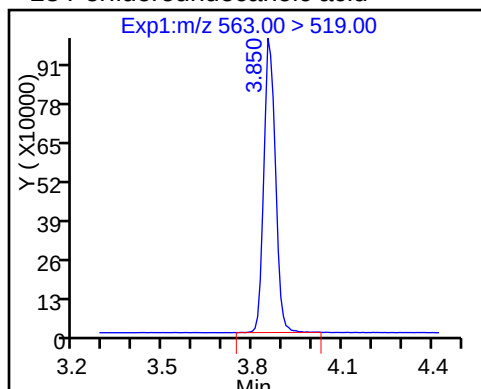
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

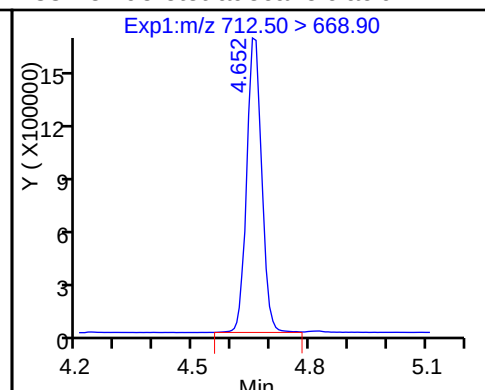
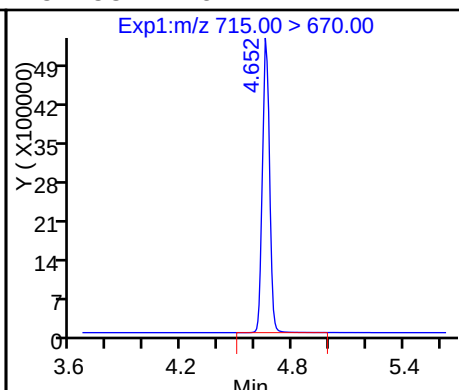
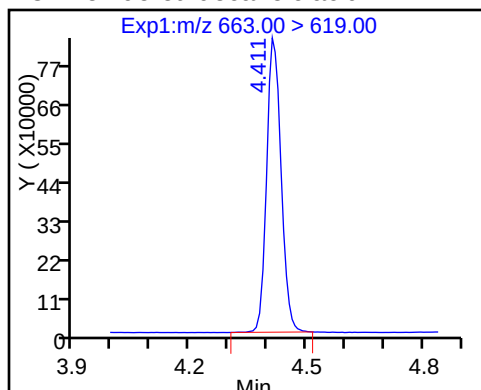
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

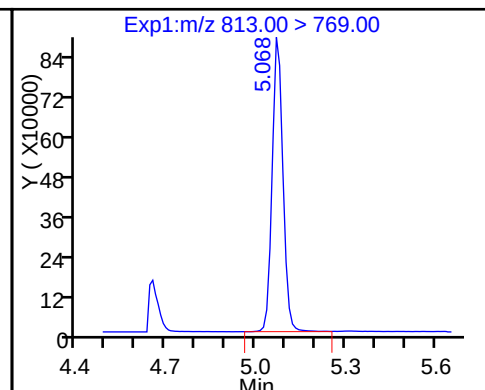
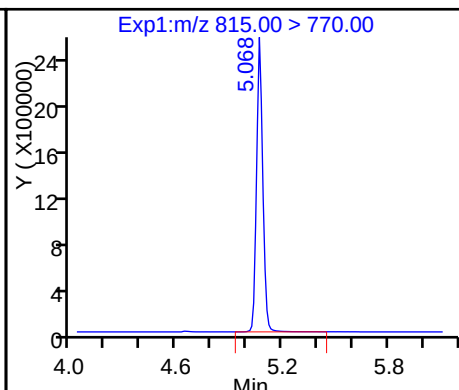
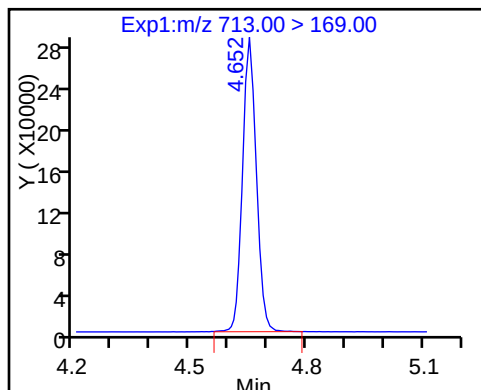
33 Perfluorotetradecanoic acid



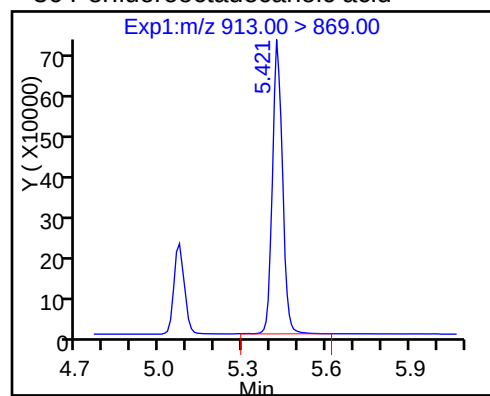
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FFTA2TMW-1216 MS</u>	Lab Sample ID: <u>320-24236-3 MS</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_018.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 12:40</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>233.7 (mL)</u>	Date Analyzed: <u>12/29/2016 01:59</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.334	4	0.0027	0.0011	0.00049
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.582	E 4	0.0027	0.0021	0.0011
307-24-4	Perfluorohexanoic acid (PFHxA)	0.852	E 4	0.0027	0.0021	0.00084
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.667	E 4	0.0027	0.0021	0.00086
335-67-1	Perfluorooctanoic acid (PFOA)	3.73	E 4 M	0.0027	0.0021	0.00080
375-95-1	Perfluorononanoic acid (PFNA)	0.0667		0.0027	0.0021	0.00070
335-76-2	Perfluorodecanoic acid (PFDA)	0.0503		0.0027	0.0011	0.00047
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0453		0.0027	0.0021	0.00080
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0427		0.0027	0.0021	0.00062
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0436		0.0027	0.0021	0.00059
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.0633		0.0027	0.0011	0.00043
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.299	4	0.0027	0.0021	0.00098
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.34	E 4	0.0027	0.0021	0.00093
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.701	E 4	0.0043	0.0032	0.0014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0513		0.0043	0.0032	0.0013
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0780	J	0.0027	0.0021	0.00068

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FFTA2TMW-1216 MS</u>	Lab Sample ID: <u>320-24236-3 MS</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_018.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 12:40</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>233.7 (mL)</u>	Date Analyzed: <u>12/29/2016 01:59</u>
Con. Extract Vol.: <u>0.5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	3	Q	25-150
STL00992	13C4 PFBA	34		25-150
STL01893	13C5-PFPeA	66		25-150
STL00993	13C2 PFHxA	70		25-150
STL01892	13C4-PFHpA	43		25-150
STL00990	13C4 PFOA	33		25-150
STL00995	13C5 PFNA	83		25-150
STL00996	13C2 PFDA	112		25-150
STL00997	13C2 PFUnA	111		25-150
STL00998	13C2 PFDoA	106		25-150
STL00994	18O2 PFHxS	41		25-150
STL00991	13C4 PFOS	99		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_018.d
 Lims ID: 320-24236-A-3-B MS
 Client ID: FFTA2TMW-1216
 Sample Type: MS
 Inject. Date: 29-Dec-2016 01:59:34 ALS Bottle#: 14 Worklist Smp#: 18
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24236-a-3-b ms
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Dec-2016 17:57:59 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK027

First Level Reviewer: phomsophat

Date: 29-Dec-2016 17:57:59

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.525	1.525	0.0		5839047	16.8		33.6	398854	
1 Perfluorobutyric acid										
212.90 > 169.00	1.533	1.525	0.008	1.000	15548956	156.0		780	37222	
D 4 13C5-PFPeA										
267.90 > 223.00	1.810	1.800	0.010		8781000	33.0		66.0	308700	
3 Perfluoropentanoic acid										E
262.90 > 219.00	1.810	1.800	0.010	1.000	47130185	272.0		1360	42881	E
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.839	0.009	1.000	26654329	139.9		791		
298.90 > 99.00	1.848	1.839	0.009	1.000	12667177		2.10(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.091	2.091	0.0		8532689	34.8		69.6	539268	
7 Perfluorohexanoic acid										E
313.00 > 269.00	2.091	2.091	0.0	1.000	63111028	398.2		1991	132554	E
9 Perfluorohexanesulfonic acid										E
399.00 > 80.00	2.414	2.409	0.005	1.000	151249137	1092.3		6002		E
D 11 13C4-PFHpA										
367.00 > 322.00	2.414	2.420	-0.006		4905617	21.7		43.3	358995	
12 Perfluoroheptanoic acid										E
363.00 > 319.00	2.414	2.420	-0.006	1.000	29941889	311.8		1559	65629	E
D 10 18O2 PFHxS										
403.00 > 84.00	2.441	2.440	0.001		6359079	19.4		41.1	220119	
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.737	2.773	-0.036	1.000	44152591	NR		0.0		
D 14 13C4 PFOA										
417.00 > 372.00	2.778	2.776	0.002		3753123	16.3		32.6	182692	
D 47 M2-6:2FTS										
429.00 > 409.00	2.746	2.781	-0.035		9457444	80.8		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.802	2.783	0.019	1.000	131273577	1743.4		8717	513821	EM
413.00 > 169.00	2.684	2.783	-0.099	0.958	121151463		1.08(0.90-1.10)		154980	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.794	2.783	0.011	1.000	5013307	18.4		96.7		
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.032	3.040	-0.008	1.000	80546107	327.7		1765	300598	E
499.00 > 99.00	3.042	3.040	0.002	1.003	16186051		4.98(0.90-1.10)		111709	
D 17 13C4 PFOS										
503.00 > 80.00	3.146	3.145	0.001		11816157	47.5		99.3	305383	
20 Perfluorononanoic acid										
463.00 > 419.00	3.153	3.153	0.0	1.000	4370653	31.2		156	7843	
D 19 13C5 PFNA										
468.00 > 423.00	3.153	3.153	0.0		7359402	41.4		82.8	299162	
D 21 13C8 FOSA										
506.00 > 78.00	3.484	3.475	0.009		548621	1.43		2.9	20105	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.484	3.475	0.009	1.000	373228	36.5		182	1709	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.509	3.509	0.0	1.000	3899112	23.5		118	22173	
D 23 13C2 PFDA										
515.00 > 470.00	3.509	3.509	0.0		8789793	55.9		112	455299	
D 42 M2-8:2FTS										
529.00 > 509.00	3.501	3.519	-0.018		5927	0.0552		0.0		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.492	3.519	-0.027	0.998	93871	NR		0.0		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.662	3.683	-0.021		2526	0.0335		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.653	3.692	-0.039	0.997	5621	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.828	3.825	0.003	1.000	3459905	24.0		124		
D 27 13C2 PFUnA										
565.00 > 520.00	3.845	3.834	0.011		6491754	55.4		111	391561	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.845	3.834	0.011	1.000	2626562	21.2		106	31494	
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.828	3.855	-0.027		4810	0.0614		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.837	3.864	-0.027	1.002	2343	NR		0.0		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.014	3.997	0.017		1374	0.0145		0.0		
54 MeFOSA										
512.00 > 169.00	4.014	4.006	0.008	1.000	387	NR		0.0		
D 30 13C2 PFDoA										
615.00 > 570.00	4.134	4.126	0.008		5868869	52.9		106	254124	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.134	4.133	0.001	1.000	2148449	19.9		99.7	44804	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.278	4.180	0.098		227	0.002646		0.0		
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.406	4.404	0.002	1.000	2168474	20.4		102	51626	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.644	4.644	0.0		15584396	68.5		137	1078643	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.644	4.644	0.0	1.000	5501925	29.6		148	80062	
713.00 > 169.00	4.644	4.644	0.0	1.000	790015		6.96(0.00-0.00)		100977	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.059	5.058	0.001		6548368	52.6		105	192096	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.059	5.058	0.001	1.000	2385939	20.7		103	3950	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.413	5.414	-0.001	1.000	2309371	19.1		95.5	2582	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_018.d

Injection Date: 29-Dec-2016 01:59:34

Instrument ID: A8_N

Lims ID: 320-24236-A-3-B MS

Client ID: FFTA2TMW-1216

Operator ID: A8-PC\A8

ALS Bottle#: 14

Worklist Smp#: 18

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

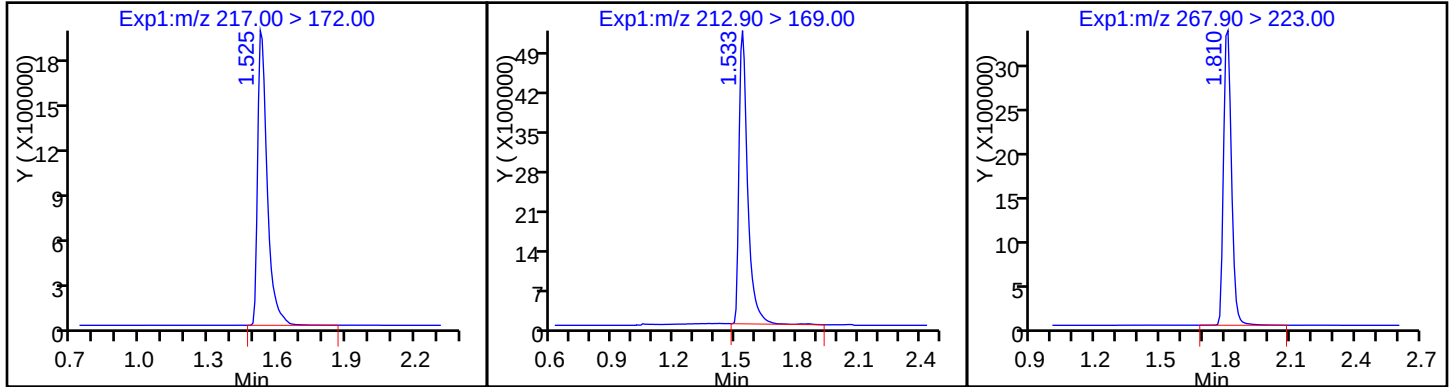
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

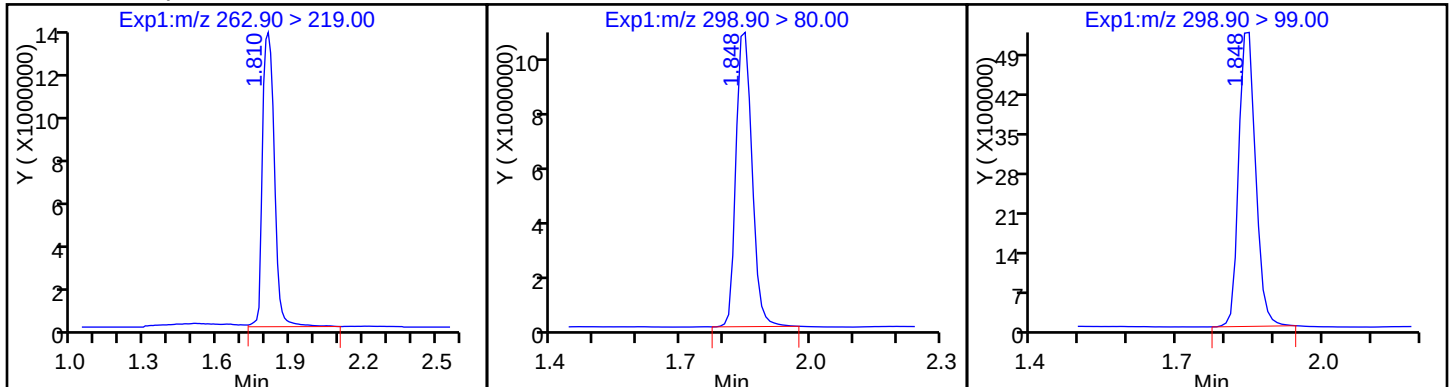
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

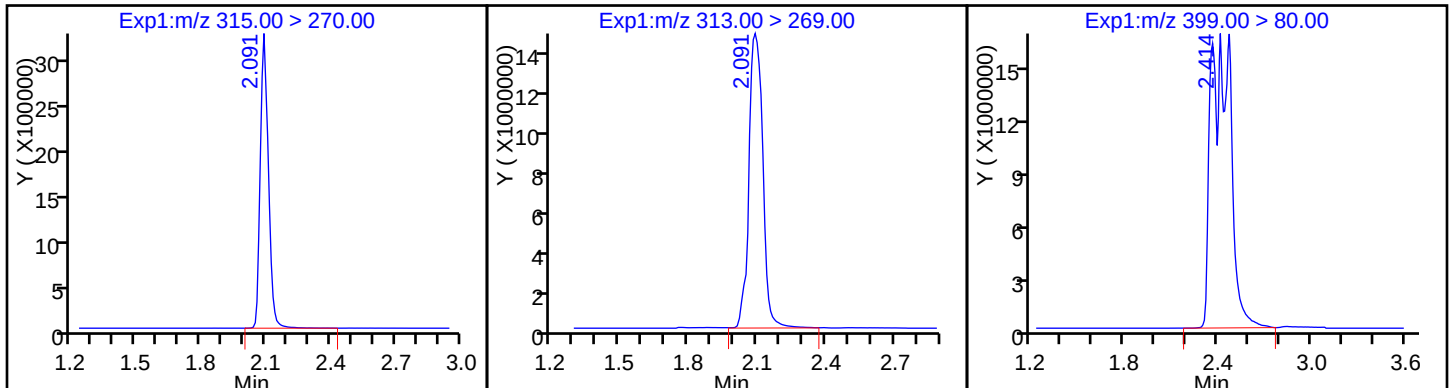
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

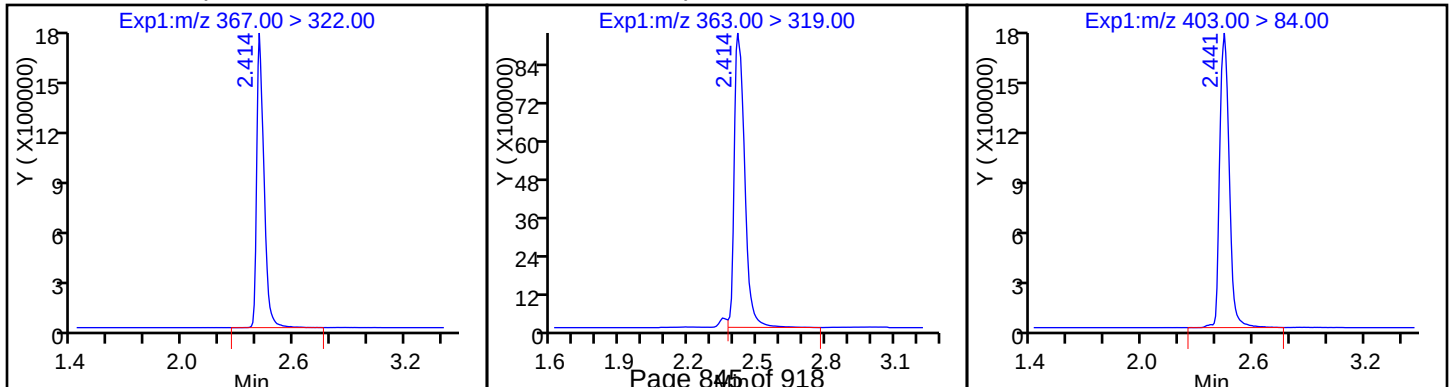
9 Perfluorohexanesulfonic acid



D 11 13C4-PFHpA

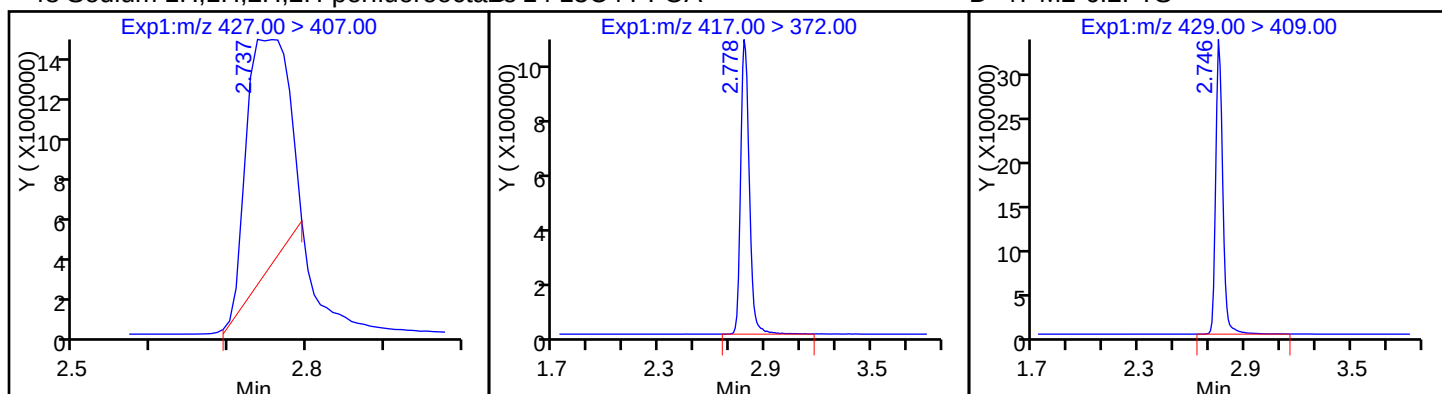
12 Perfluoroheptanoic acid

D 10 18O2 PFHxS



48 Sodium 1H,1H,2H,2H-perfluorooctadec-14 13C4 PFOA

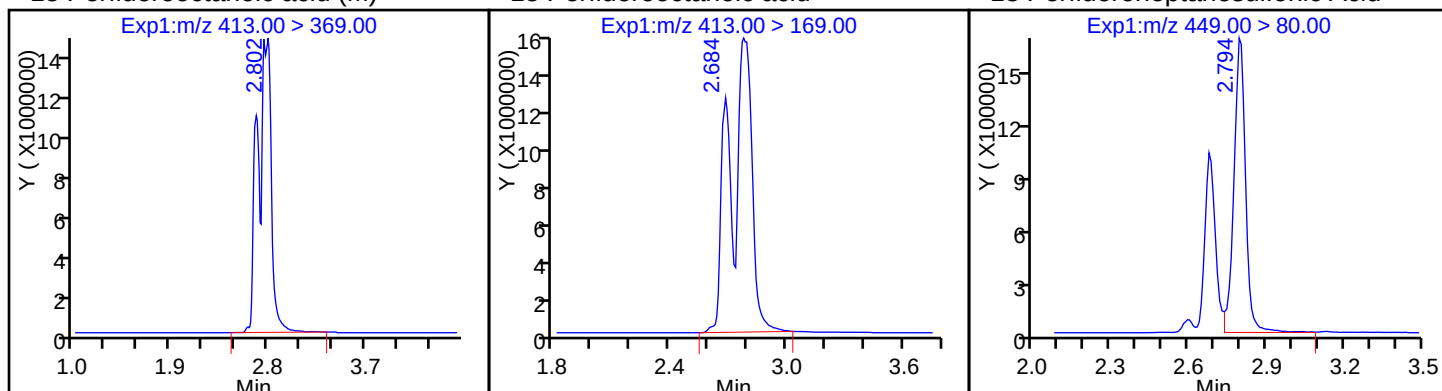
D 47 M2-6:2FTS



15 Perfluorooctanoic acid (M)

15 Perfluorooctanoic acid

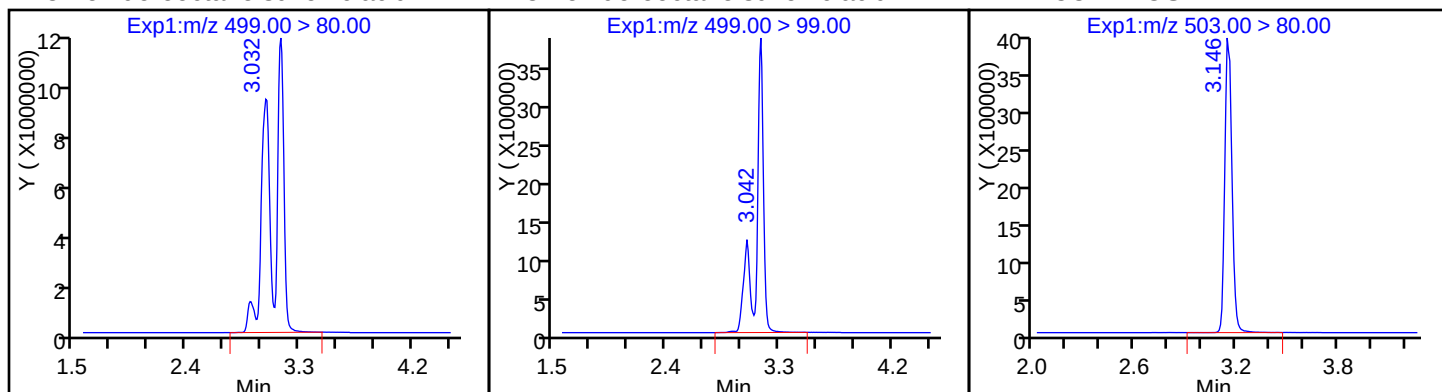
13 Perfluoroheptanesulfonic Acid



18 Perfluorooctane sulfonic acid

18 Perfluorooctane sulfonic acid

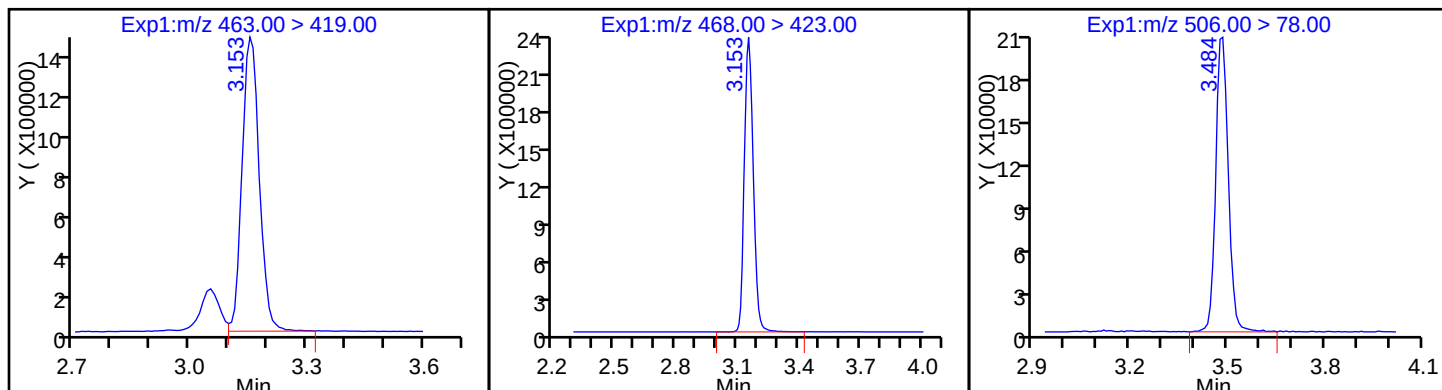
D 17 13C4 PFOS



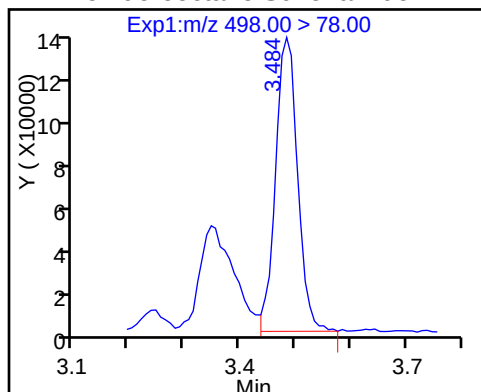
20 Perfluorononanoic acid

D 19 13C5 PFNA

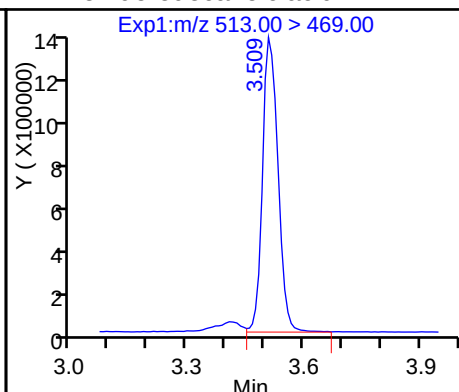
D 21 13C8 FOSA



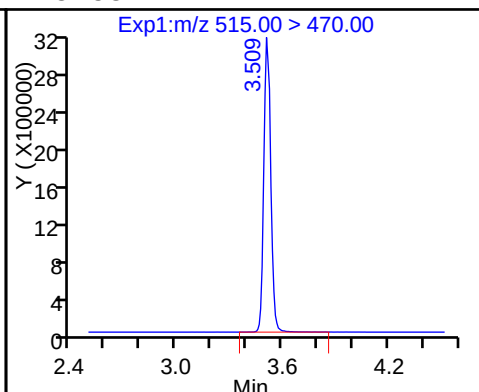
22 Perfluorooctane Sulfonamide



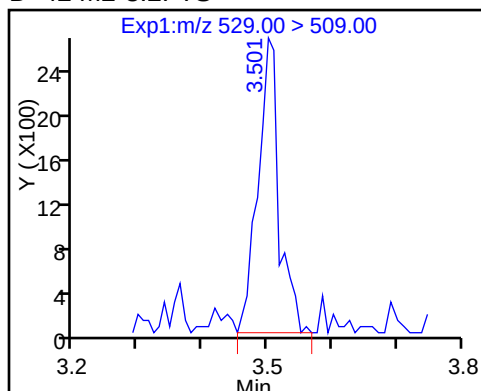
24 Perfluorodecanoic acid



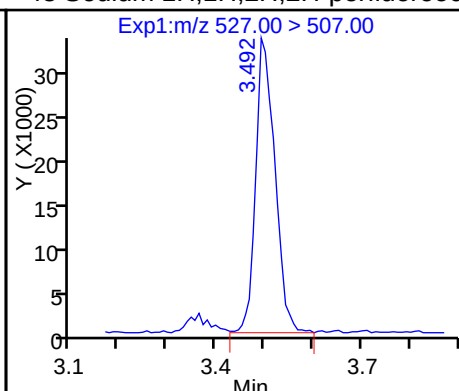
D 23 13C2 PFDA



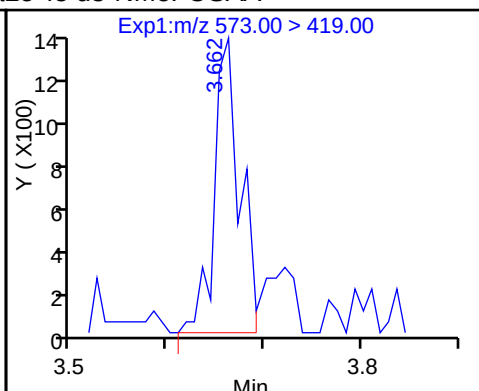
D 42 M2-8:2FTS



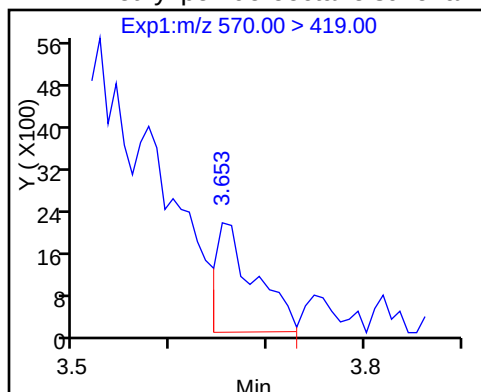
43 Sodium 1H,1H,2H,2H-perfluorooctane



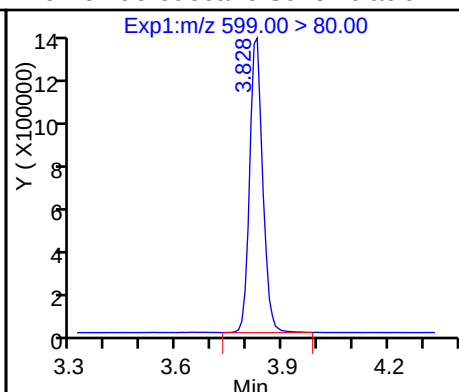
D 45 d3-NMeFOSAA



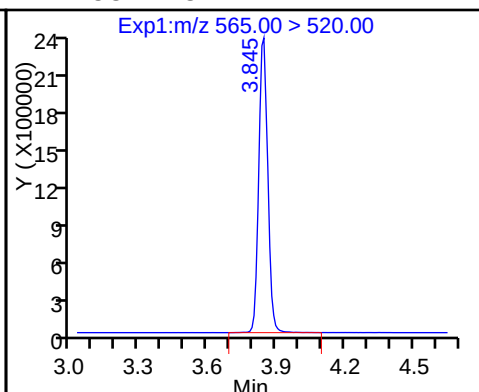
44 N-methyl perfluorooctane sulfonami



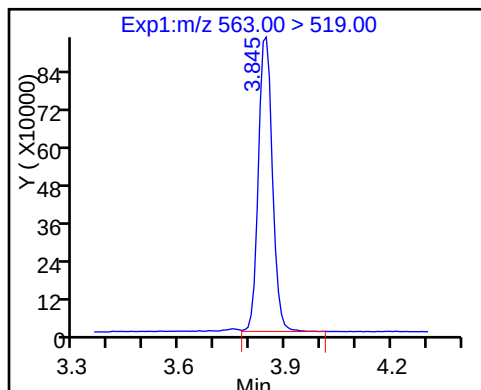
26 Perfluorodecane Sulfonic acid



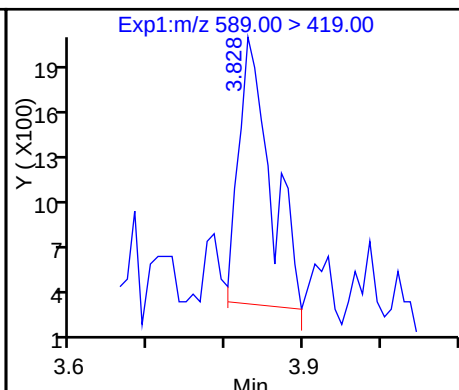
D 27 13C2 PFUnA



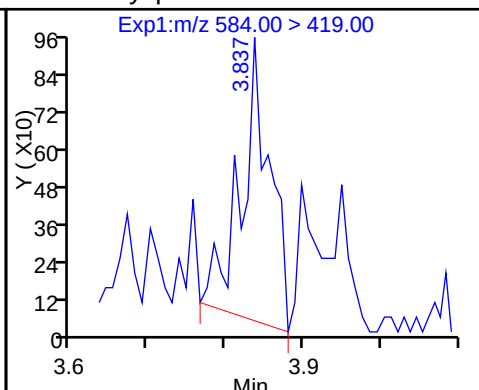
28 Perfluoroundecanoic acid



D 46 d5-NEtFOSAA



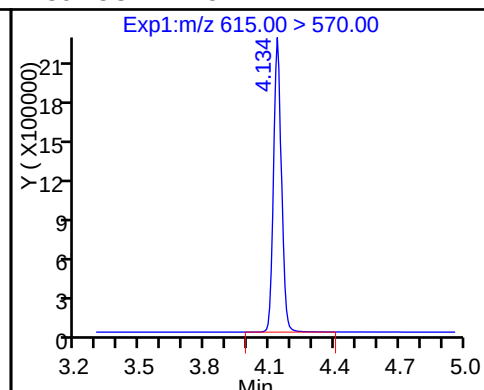
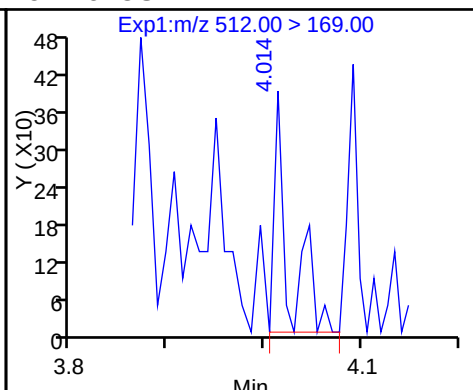
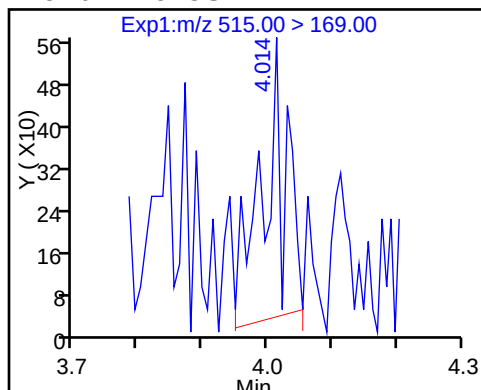
49 N-ethyl perfluorooctane sulfonamid



D 52 d-N-MeFOSA-M

54 MeFOSA

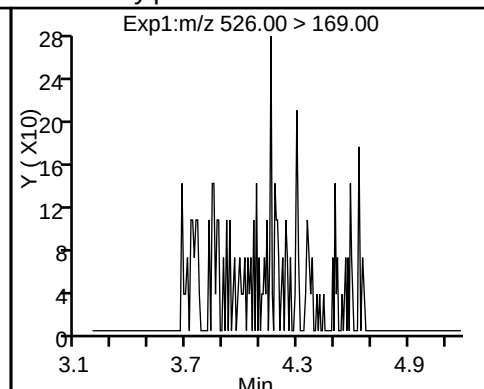
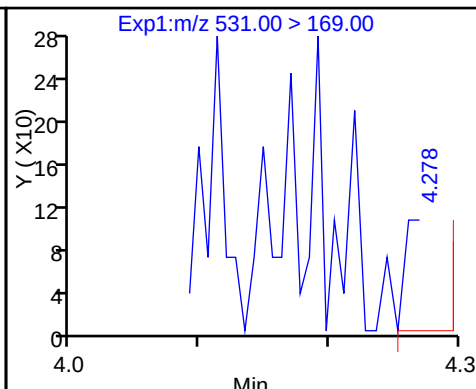
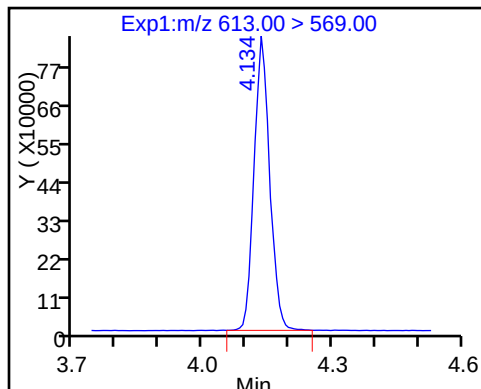
D 30 13C2 PFDaA



29 Perfluorododecanoic acid

D 51 d-N-EtFOSA-M

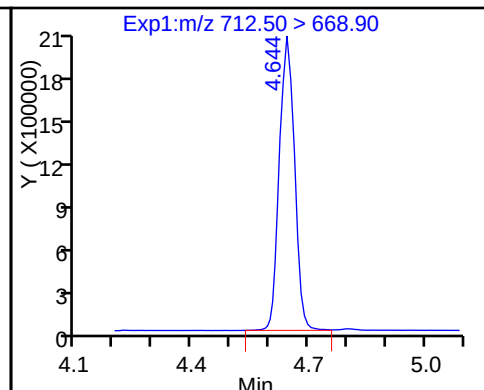
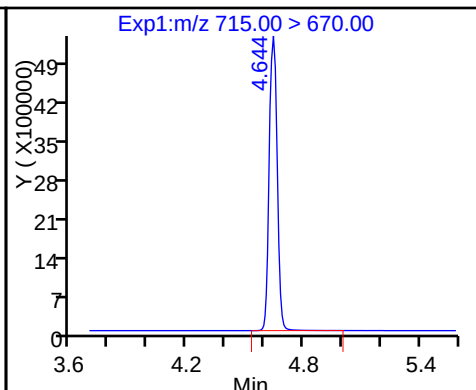
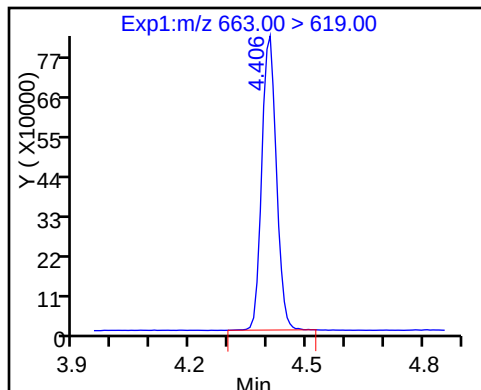
53 N-ethylperfluoro-1-octanesulfonami (ND)



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

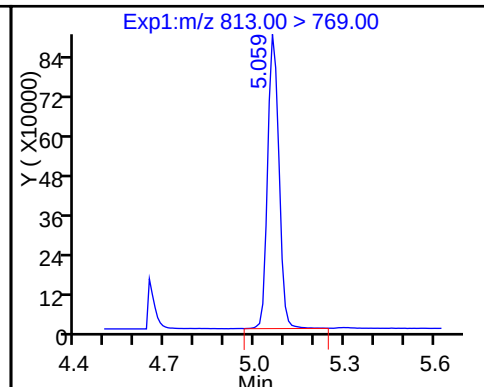
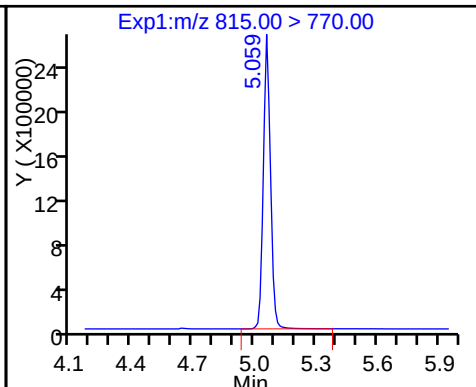
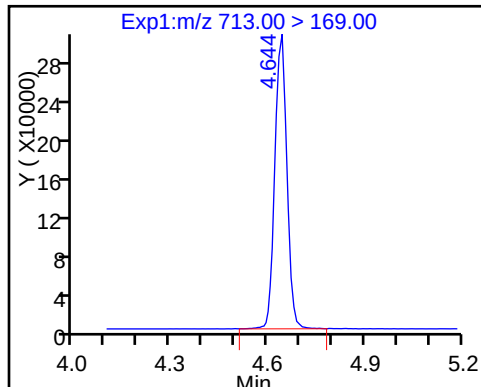
33 Perfluorotetradecanoic acid



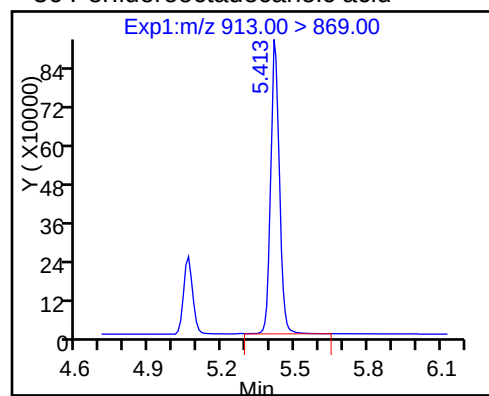
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

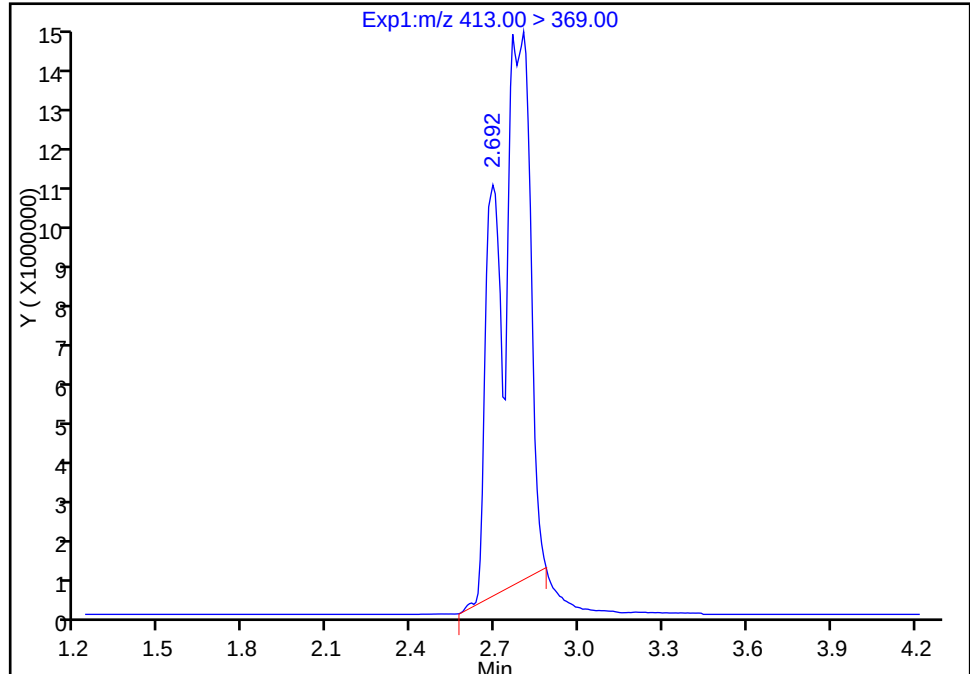
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_018.d
Injection Date: 29-Dec-2016 01:59:34 Instrument ID: A8_N
Lims ID: 320-24236-A-3-B MS
Client ID: FFTA2TMW-1216
Operator ID: A8-PC\A8 ALS Bottle#: 14 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

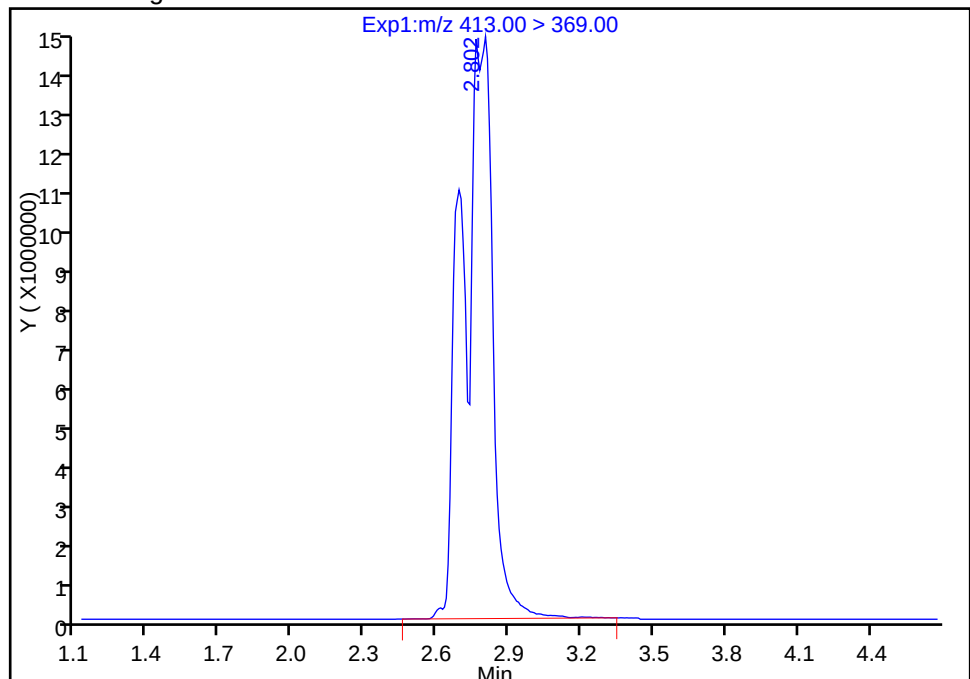
RT: 2.69
Area: 116241002
Amount: 1543.7378
Amount Units: ng/ml

Processing Integration Results



RT: 2.80
Area: 131273577
Amount: 1743.3778
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 29-Dec-2016 17:57:59

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FFTA2TMW-1216 MS DL</u>	Lab Sample ID: <u>320-24236-3 MS DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>30DEC2016B_019.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 12:40</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>233.7(mL)</u>	Date Analyzed: <u>12/30/2016 14:34</u>
Con. Extract Vol.: <u>0.5(mL)</u>	Dilution Factor: <u>20</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144510</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.346	D 4	0.053	0.021	0.0098
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.992	D 4	0.053	0.043	0.021
307-24-4	Perfluorohexanoic acid (PFHxA)	1.66	D 4	0.053	0.043	0.017
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.753	D 4	0.053	0.043	0.017
335-67-1	Perfluorooctanoic acid (PFOA)	6.84	D M 4	0.053	0.043	0.016
375-95-1	Perfluorononanoic acid (PFNA)	0.0660	D	0.053	0.043	0.014
335-76-2	Perfluorodecanoic acid (PFDA)	0.0472	J D	0.053	0.021	0.0094
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0450	J D	0.053	0.043	0.016
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0437	J D	0.053	0.043	0.012
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0411	J D	0.053	0.043	0.012
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.0544	D	0.053	0.021	0.0086
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.177	D	0.053	0.043	0.020
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	4.73	D M 4	0.053	0.043	0.019
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.695	D 4	0.086	0.064	0.027
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0399	J D	0.086	0.064	0.026
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0716	D J	0.053	0.043	0.014

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FFTA2TMW-1216 MS DL</u>	Lab Sample ID: <u>320-24236-3 MS DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>30DEC2016B_019.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 12:40</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>233.7(mL)</u>	Date Analyzed: <u>12/30/2016 14:34</u>
Con. Extract Vol.: <u>0.5(mL)</u>	Dilution Factor: <u>20</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144510</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	3	Q	25-150
STL00992	13C4 PFBA	117		25-150
STL01893	13C5-PFPeA	141		25-150
STL00993	13C2 PFHxA	119		25-150
STL01892	13C4-PFHpA	102		25-150
STL00990	13C4 PFOA	96		25-150
STL00995	13C5 PFNA	129		25-150
STL00996	13C2 PFDA	124		25-150
STL00997	13C2 PFUnA	123		25-150
STL00998	13C2 PFDoA	119		25-150
STL00994	18O2 PFHxS	119		25-150
STL00991	13C4 PFOS	122		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_019.d
 Lims ID: 320-24236-A-3-B MS
 Client ID: FFTA2TMW-1216
 Sample Type: MS
 Inject. Date: 30-Dec-2016 14:34:01 ALS Bottle#: 13 Worklist Smp#: 29
 Injection Vol: 2.0 ul Dil. Factor: 20.0000
 Sample Info: 320-24236-a-3-b ms 20X
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 03-Jan-2017 14:28:20 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: phomsophat

Date: 03-Jan-2017 14:05:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.529	1.526	0.003		1013226	2.91		5.8	91071	
1 Perfluorobutyric acid										
212.90 > 169.00	1.529	1.534	-0.005	1.000	2798786	8.09		809	15165	
D 4 13C5-PFPeA										
267.90 > 223.00	1.803	1.801	0.002		941176	3.54		7.1	61652	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.803	1.811	-0.008	1.000	8610123	23.2		2318	42980	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.842	1.840	0.002	1.000	2285036	4.14		468		
298.90 > 99.00	1.842	1.840	0.002	1.000	955599		2.39(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.090	2.092	-0.002		728551	2.97		5.9	92532	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.098	2.092	0.006	1.000	10519943	38.9		3887	167970	
9 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.444	2.410	0.034	1.000	44350903	110.5		12142		M
D 11 13C4-PFHpA										
367.00 > 322.00	2.422	2.421	0.001		576140	2.55		5.1	71234	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.422	2.421	0.001	1.000	3971499	17.6		1761	31791	
D 10 18O2 PFHxS										
403.00 > 84.00	2.444	2.443	0.001		921683	2.82		6.0	114335	
D 14 13C4 PFOA										
417.00 > 372.00	2.781	2.773	0.008		551488	2.39		4.8	48104	
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.749	2.773	-0.024	1.000	14550358	NR		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.781	2.780	0.001	1.000	35364381	159.8		15981	388683	M
413.00 > 169.00	2.687	2.780	-0.093	0.966	25471487		1.39(0.90-1.10)		112232	
D 47 M2-6:2FTS										
429.00 > 409.00	2.749	2.781	-0.032		829060	7.09		0.0		
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.789	2.788	0.001	1.000	612948	1.83		192		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.037	3.044	-0.007	1.000	4920850	16.2		1750	104391	
499.00 > 99.00	3.150	3.044	0.106	1.037	900125		5.47(0.90-1.10)		48992	
D 17 13C4 PFOS										
503.00 > 80.00	3.150	3.148	0.002		728197	2.93		6.1	46230	
D 19 13C5 PFNA										
468.00 > 423.00	3.150	3.148	0.002		573240	3.23		6.5	72339	
20 Perfluorononanoic acid										
463.00 > 419.00	3.150	3.156	-0.006	1.000	336437	1.54		154	4220	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.483	3.470	0.013	1.000	19695	1.67		167	938	
D 21 13C8 FOSA										
506.00 > 78.00	3.467	3.478	-0.011		31531	0.0821		0.2	5660	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.508	3.504	0.004	1.000	203881	1.10		110	6835	
D 23 13C2 PFDA										
515.00 > 470.00	3.508	3.512	-0.004		489512	3.11		6.2	21504	
D 42 M2-8:2FTS										
529.00 > 509.00	3.407	3.519	-0.112		212	0.001973		0.0		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.500	3.519	-0.019	1.027	3000	NR		0.0		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.671	3.683	-0.012		647	0.008589		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.671	3.692	-0.021	1.000	467	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.818	3.822	-0.004	1.000	166058	0.9333		96.8		
D 27 13C2 PFUnA										
565.00 > 520.00	3.835	3.839	-0.004		360653	3.08		6.2	42542	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.835	3.839	-0.004	1.000	145034	1.05		105	4724	
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.844	3.855	-0.011		929	0.0119		0.0		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.756	3.997	-0.241		350	0.003682		0.0		
D 30 13C2 PFDaA										
615.00 > 570.00	4.134	4.138	-0.004		329891	2.97		5.9	15403	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.127	4.138	-0.011	1.000	123621	1.02		102	3889	
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.235	4.180	0.055		208	0.002425		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
31 Perfluorotridecanoic acid	663.00 > 619.00	4.396	4.403	-0.006	1.000	115031	0.9612	96.1	2638	
D 32 13C2-PFTeDA	715.00 > 670.00	4.642	4.641	0.001		779829	3.43	6.9	144508	
33 Perfluorotetradecanoic acid	712.50 > 668.90	4.642	4.651	-0.009	1.000	265804	1.27	127	6367	
713.00 > 169.00	4.633	4.651	-0.018	0.998	38484		6.91(0.00-0.00)		15771	
D 34 13C2-PFHxDA	815.00 > 770.00	5.058	5.057	0.002		402717	3.23	6.5	31729	
35 Perfluorohexadecanoic acid	813.00 > 769.00	5.058	5.067	-0.009	1.000	143739	0.5413	54.1	1873	
36 Perfluorooctadecanoic acid	913.00 > 869.00	5.413	5.421	-0.008	1.000	128009	0.9415	94.2	1676	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_019.d

Injection Date: 30-Dec-2016 14:34:01

Instrument ID: A8_N

Lims ID: 320-24236-A-3-B MS

Client ID: FFTA2TMW-1216

Operator ID: A8-PC\A8

ALS Bottle#: 13

Worklist Smp#: 29

Injection Vol: 2.0 ul

Dil. Factor: 20.0000

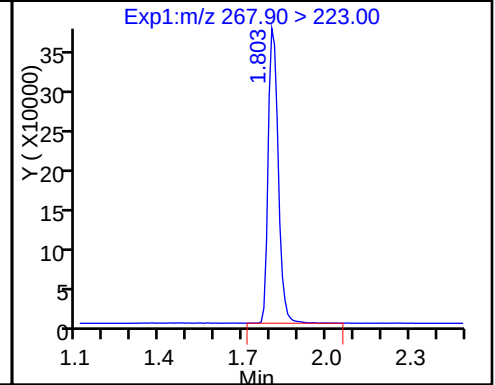
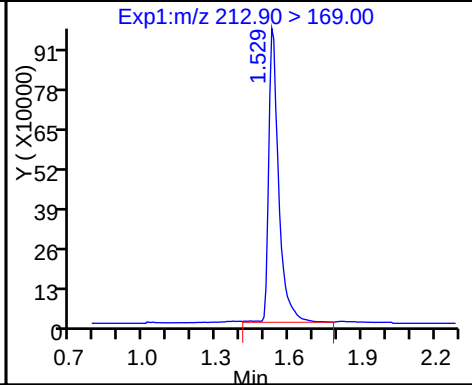
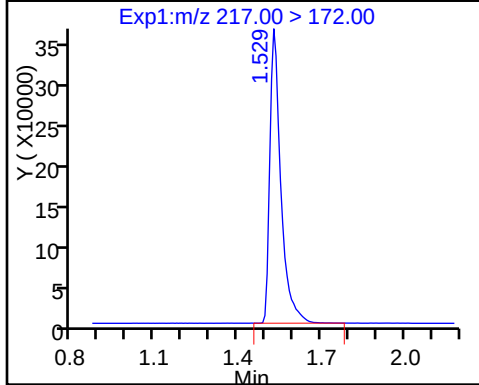
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

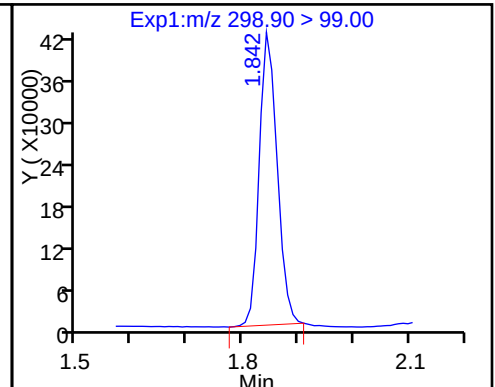
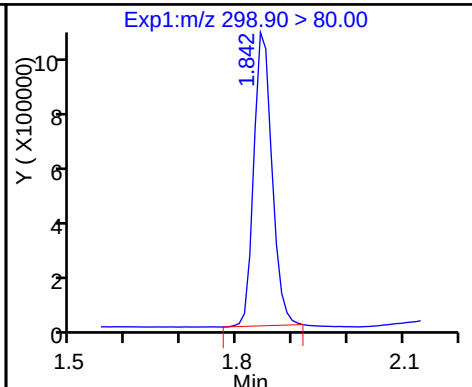
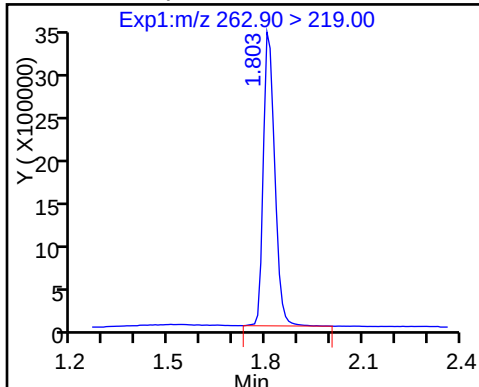
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

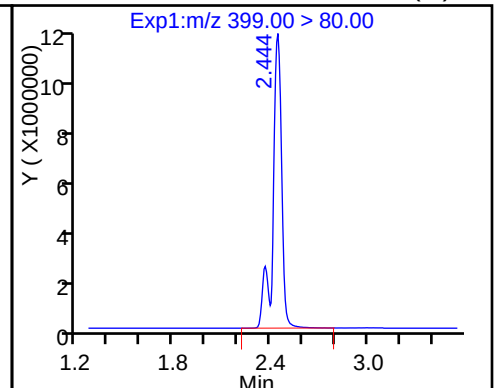
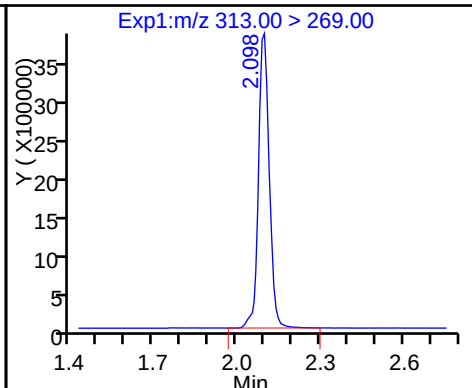
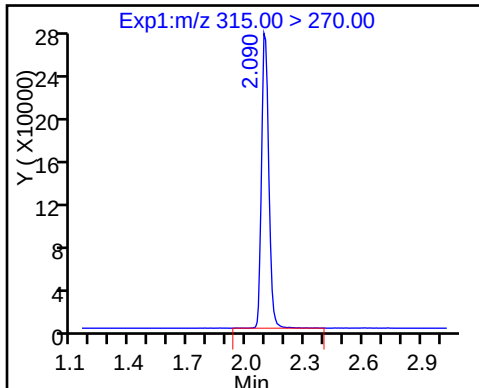
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

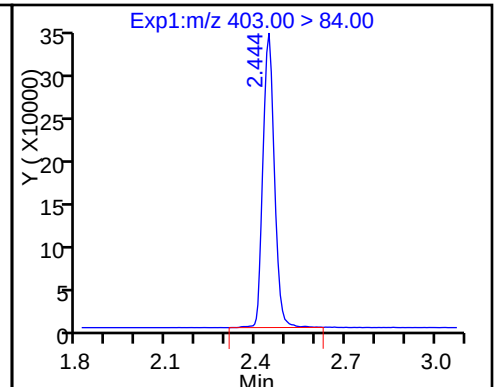
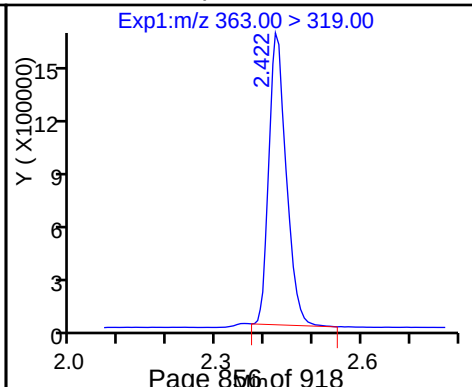
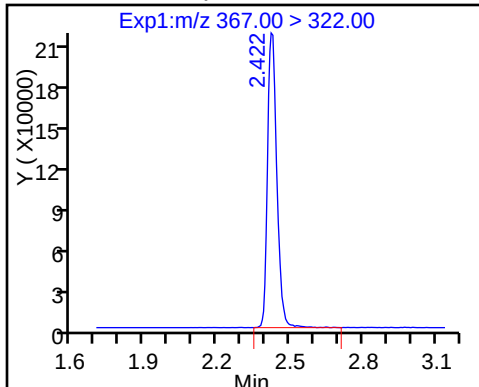
9 Perfluorohexanesulfonic acid (M)



D 11 13C4-PFHpA

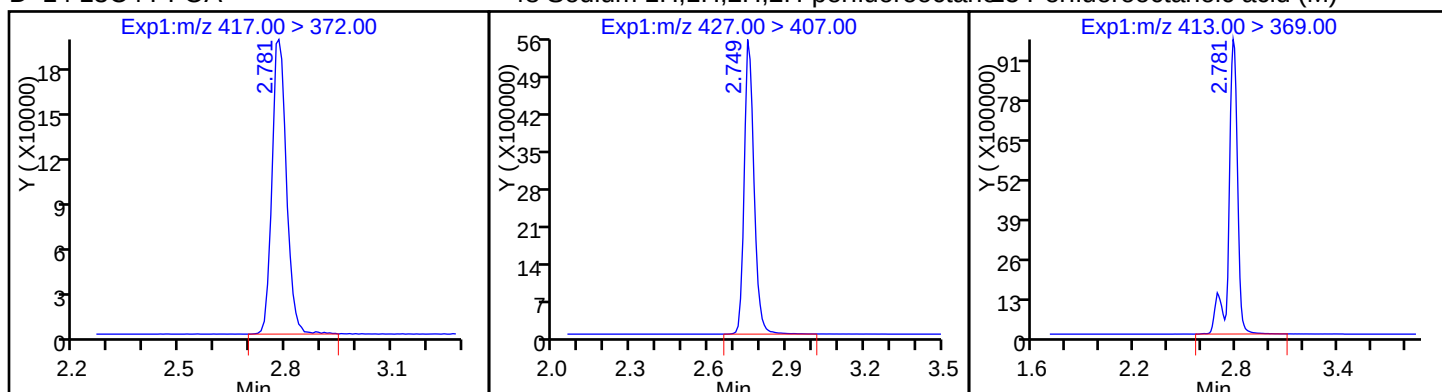
12 Perfluoroheptanoic acid

D 10 18O2 PFHxS



D 14 13C4 PFOA

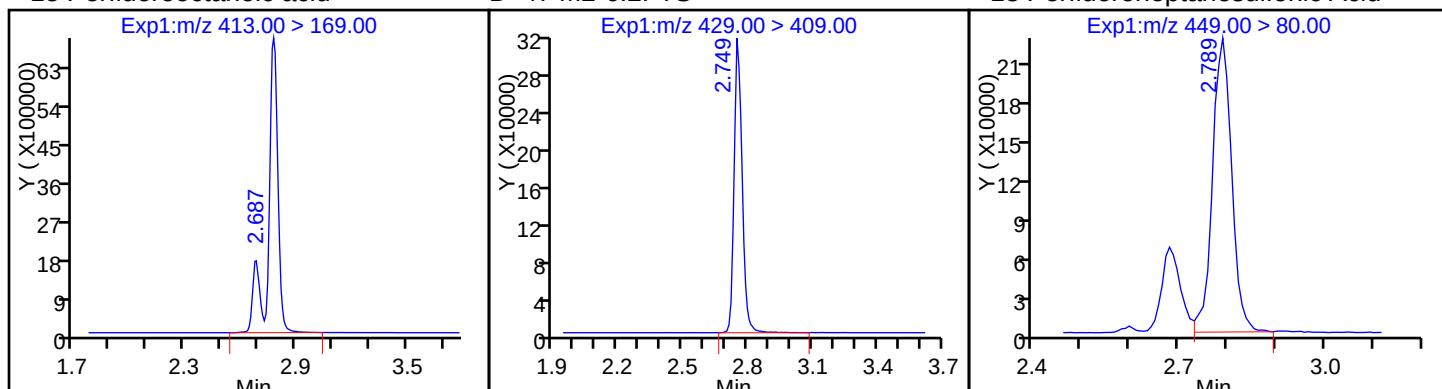
48 Sodium 1H,1H,2H,2H-perfluorooctan-1-yl 15 Perfluorooctanoic acid (M)



15 Perfluorooctanoic acid

D 47 M2-6:2FTS

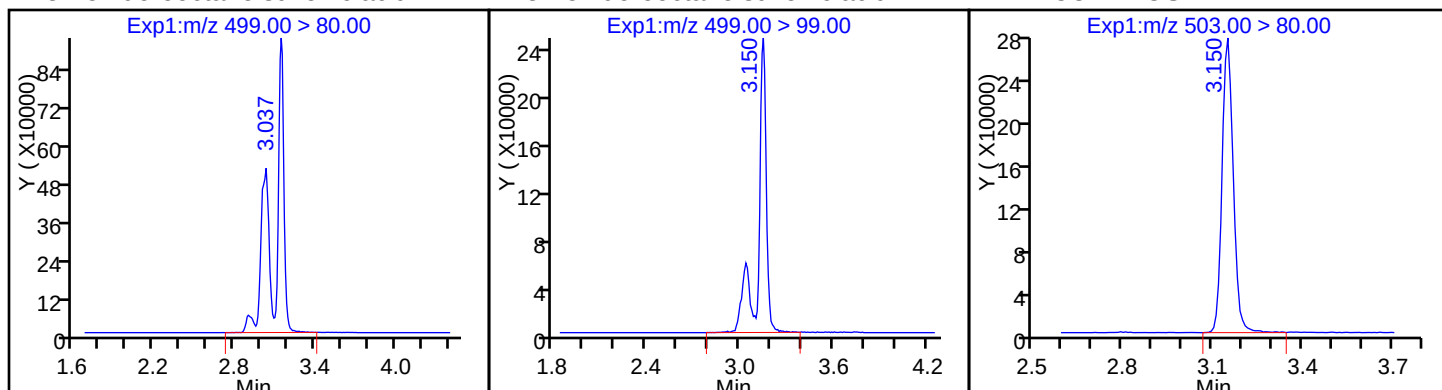
13 Perfluoroheptanesulfonic Acid



18 Perfluorooctane sulfonic acid

18 Perfluorooctane sulfonic acid

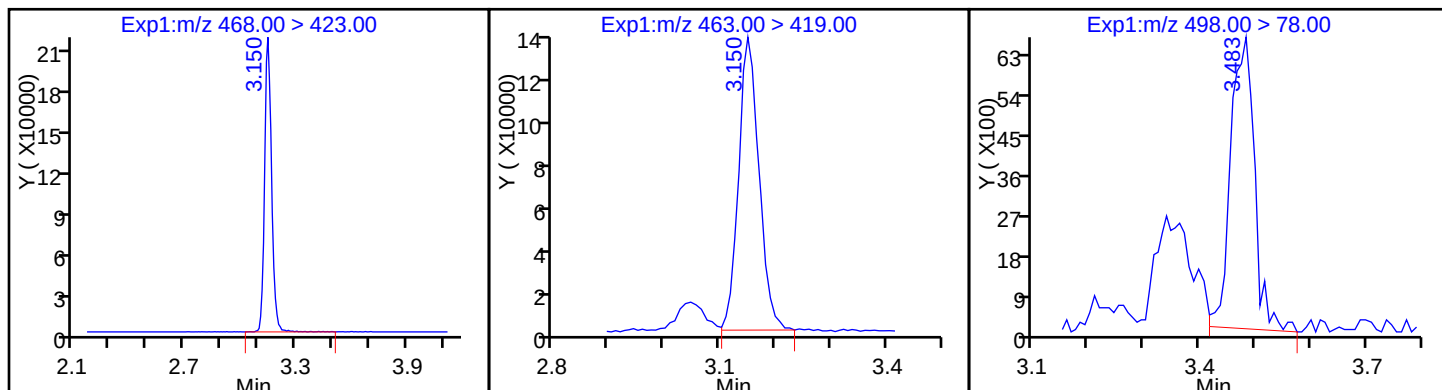
D 17 13C4 PFOS



D 19 13C5 PFNA

20 Perfluorononanoic acid

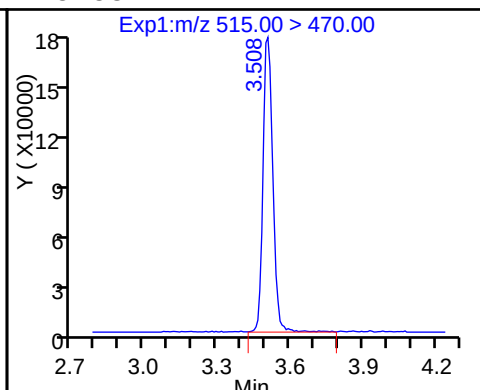
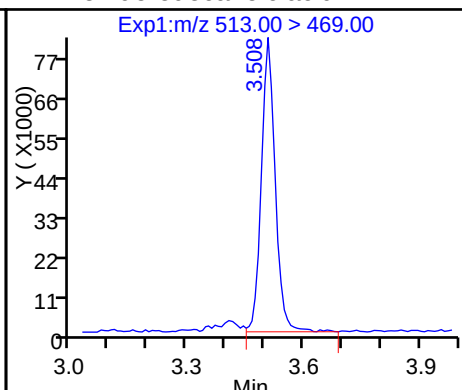
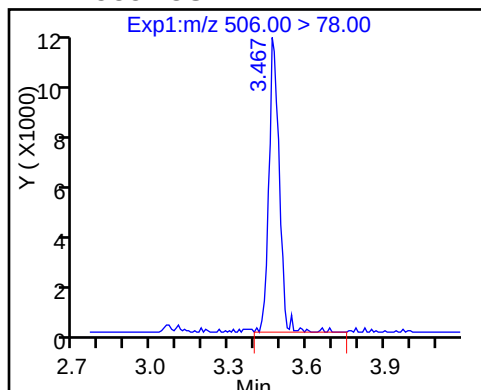
22 Perfluorooctane Sulfonamide



D 21 13C8 FOSA

24 Perfluorodecanoic acid

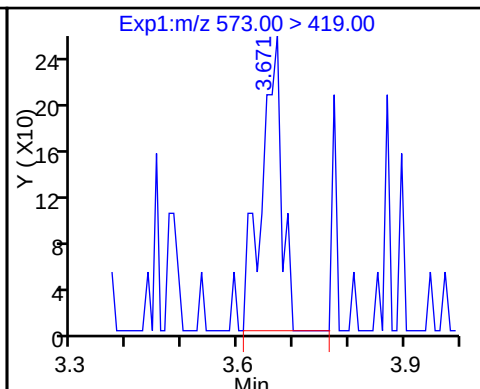
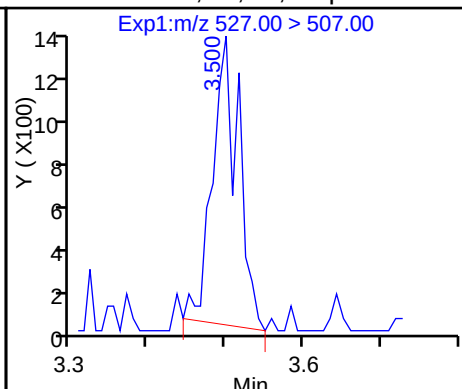
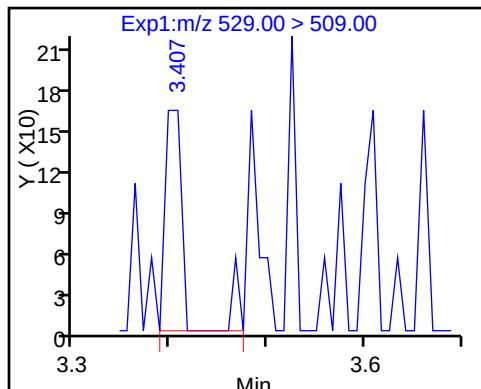
D 23 13C2 PFDA



D 42 M2-8:2FTS

43 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

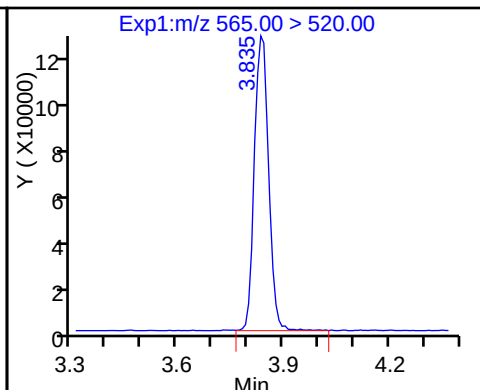
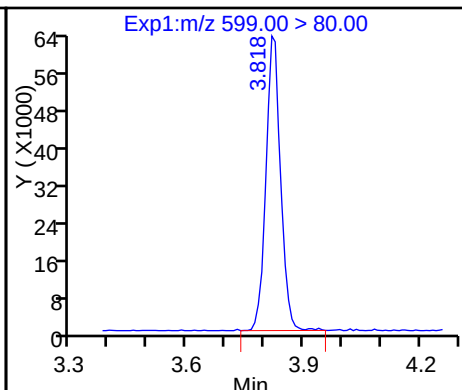
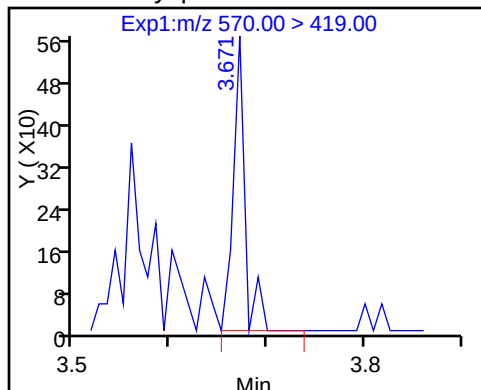
D 45 d3-NMeFOSAA



44 N-methyl perfluorooctane sulfonamide

26 Perfluorodecane Sulfonic acid

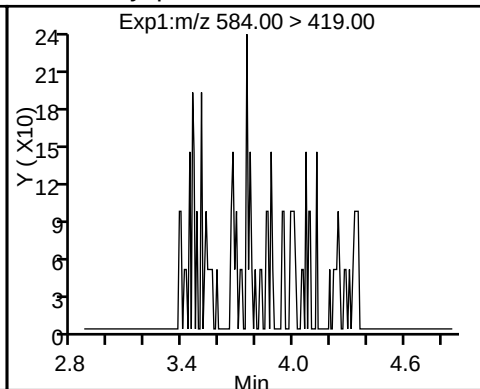
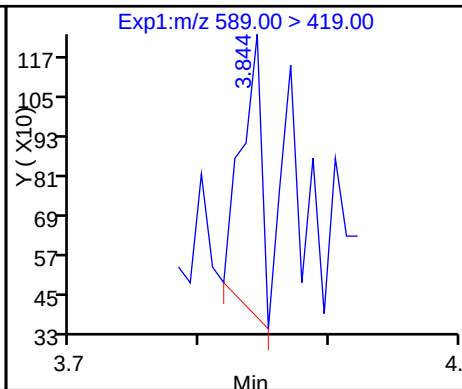
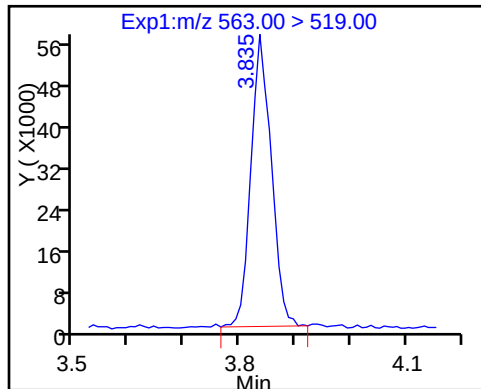
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 46 d5-NEtFOSAA

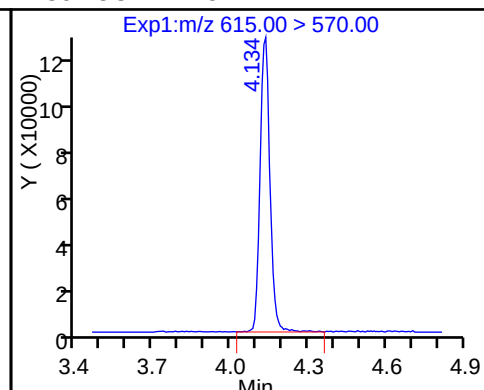
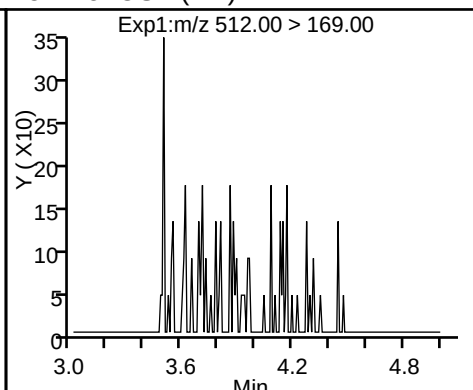
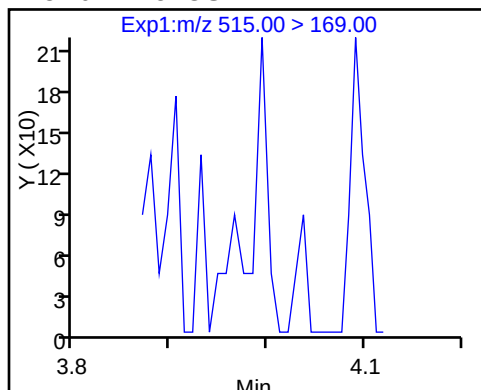
49 N-ethyl perfluorooctane sulfonamid (ND)



D 52 d-N-MeFOSA-M

54 MeFOSA (ND)

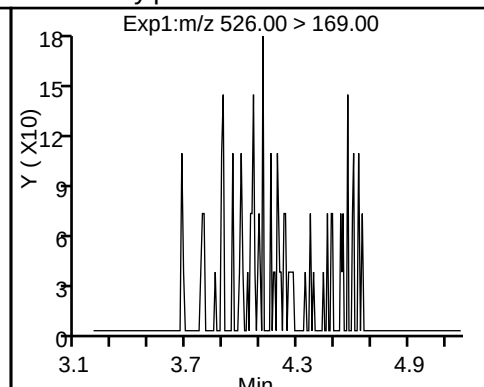
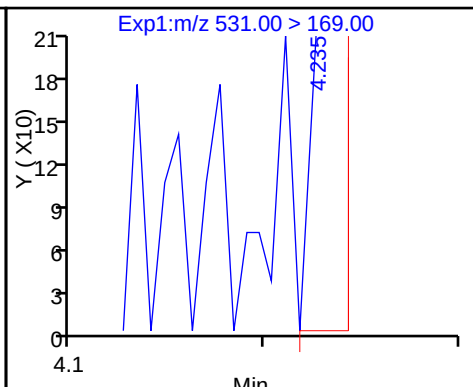
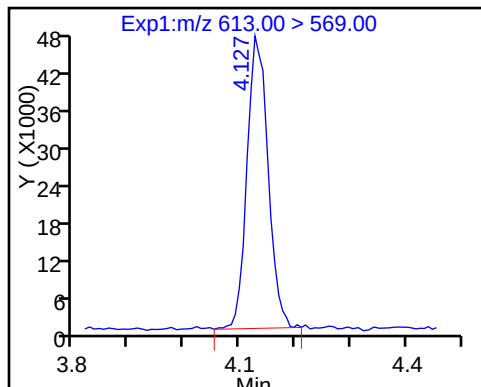
D 30 13C2 PFDaA



29 Perfluorododecanoic acid

D 51 d-N-EtFOSA-M

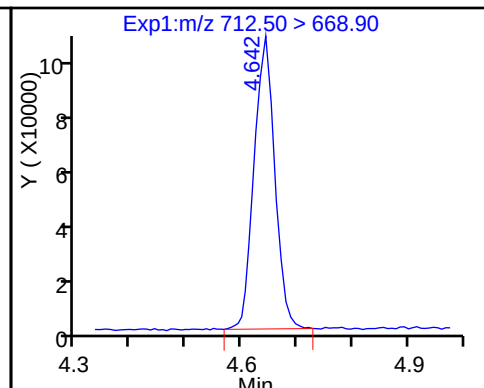
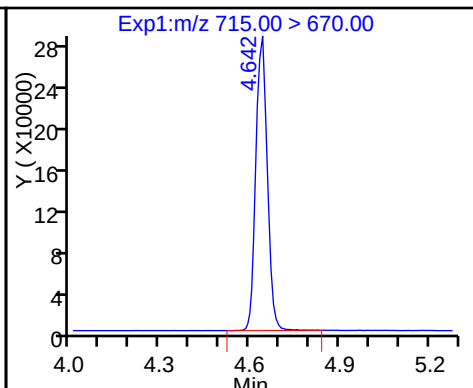
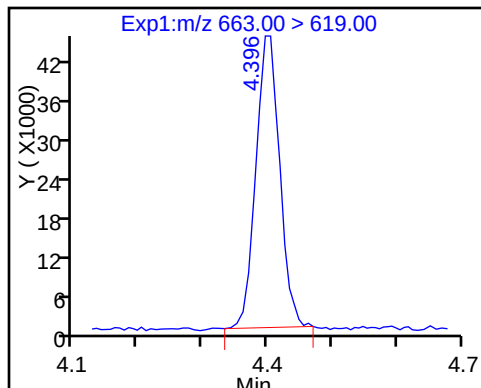
53 N-ethylperfluoro-1-octanesulfonami (ND)



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

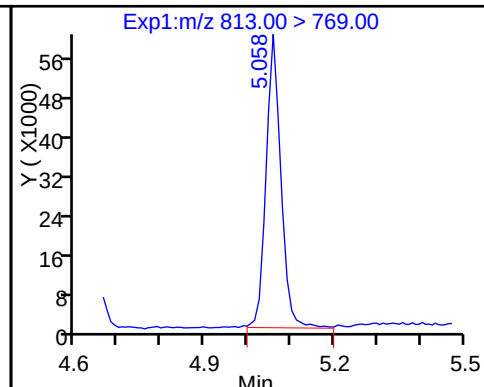
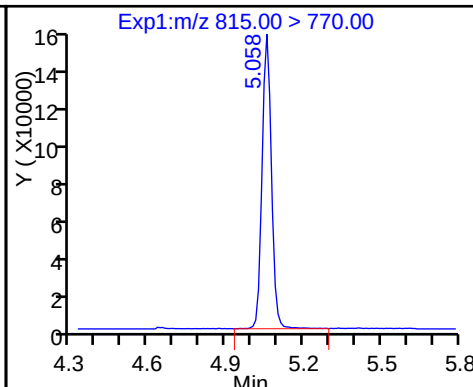
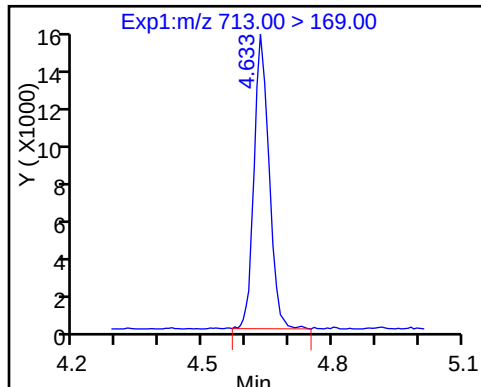
33 Perfluorotetradecanoic acid



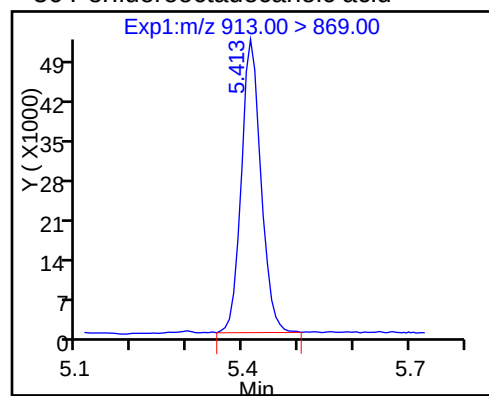
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

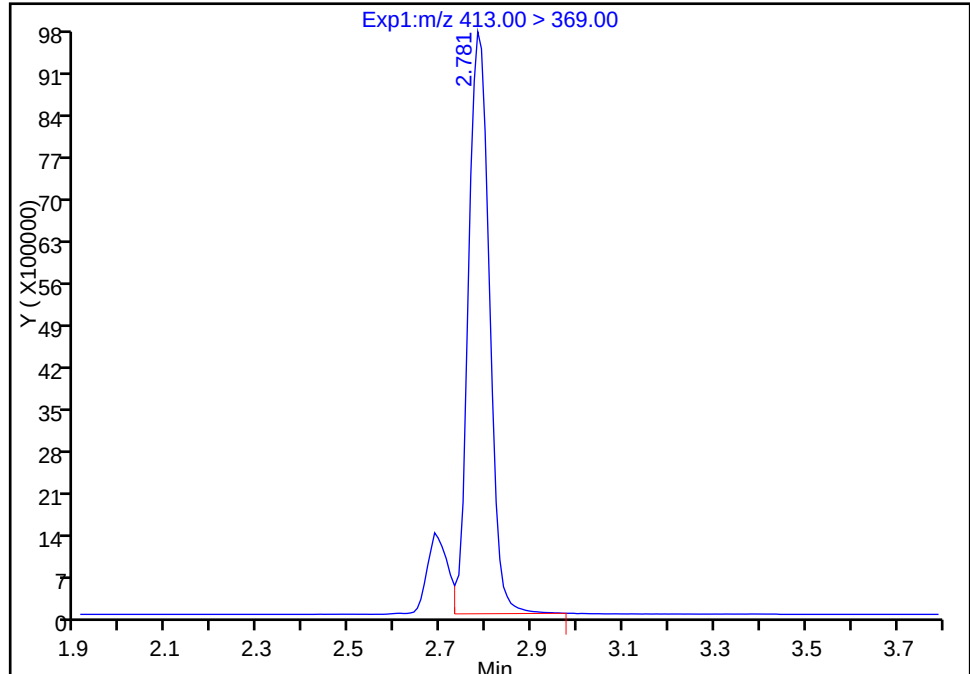
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_019.d
Injection Date: 30-Dec-2016 14:34:01 Instrument ID: A8_N
Lims ID: 320-24236-A-3-B MS
Client ID: FFTA2TMW-1216
Operator ID: A8-PC\A8 ALS Bottle#: 13 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 20.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

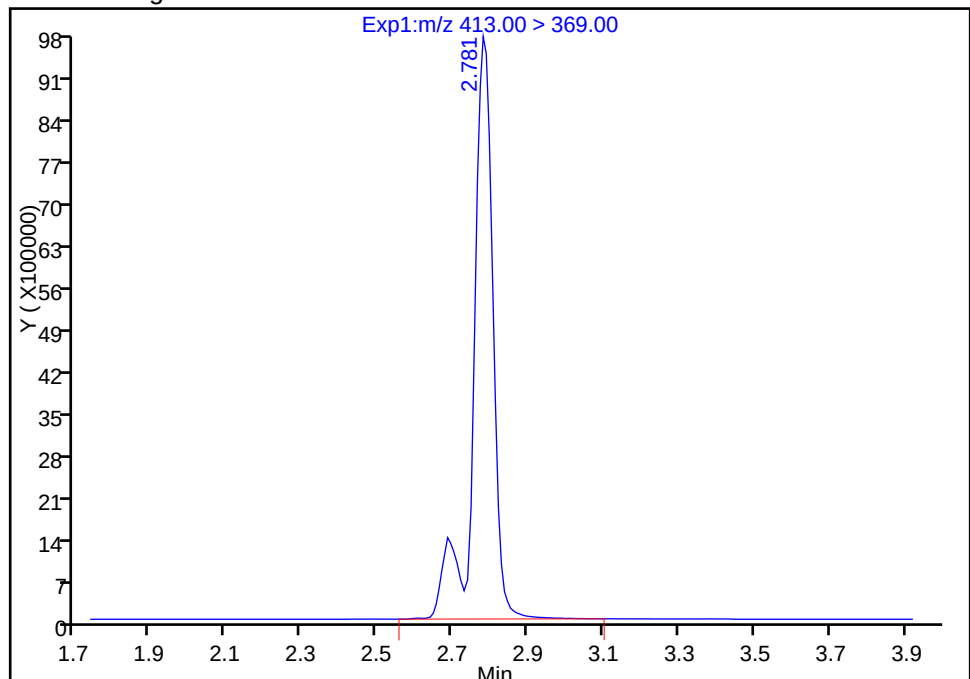
RT: 2.78
Area: 31046861
Amount: 140.3003
Amount Units: ng/ml

Processing Integration Results



RT: 2.78
Area: 35364381
Amount: 159.8111
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 03-Jan-2017 14:05:20

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento

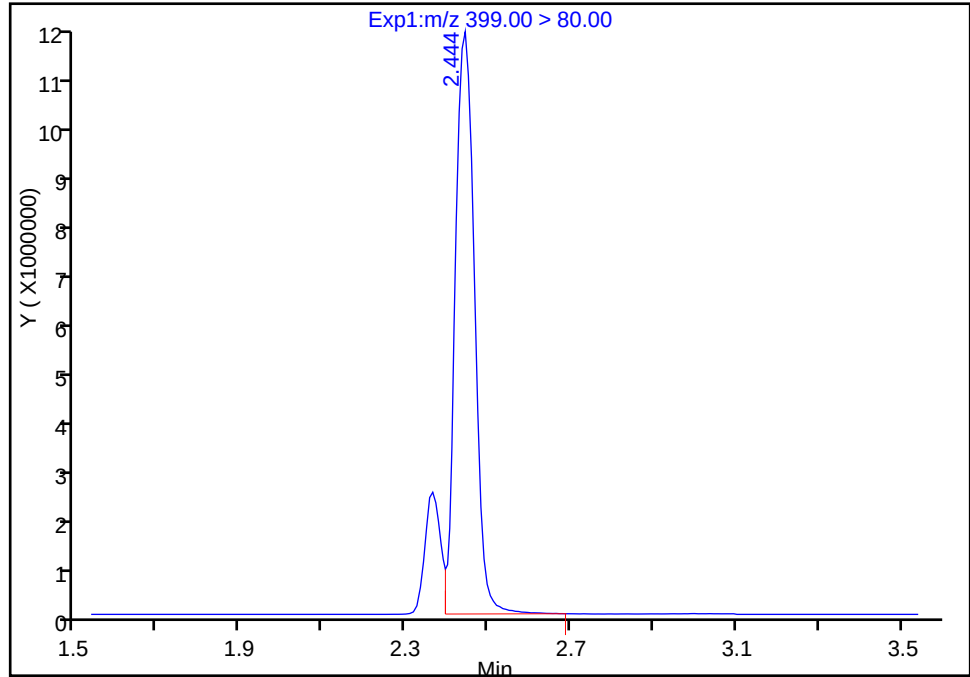
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Injection Date: 30-Dec-2016 14:34:01 Instrument ID: A8_N
Lims ID: 320-24236-A-3-B MS
Client ID: FFTA2TMW-1216
Operator ID: A8-PC\A8 ALS Bottle#: 13 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 20.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

9 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

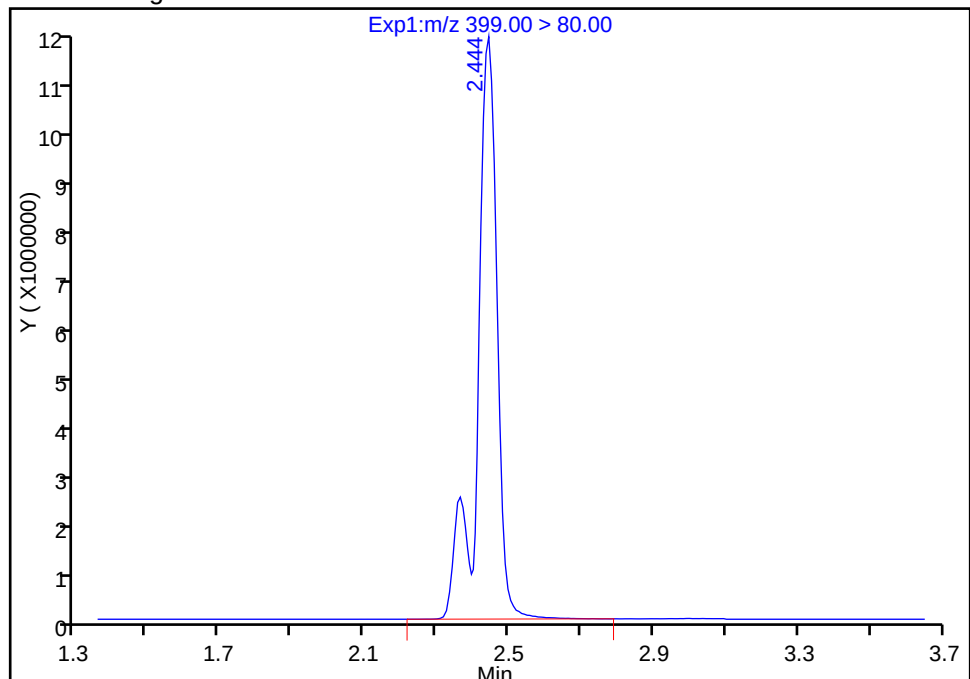
RT: 2.44
Area: 37854105
Amount: 94.305849
Amount Units: ng/ml

Processing Integration Results



RT: 2.44
Area: 44350903
Amount: 110.4913
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 03-Jan-2017 14:05:20

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FFTA2TMW-1216 MSD</u>	Lab Sample ID: <u>320-24236-3 MSD</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_019.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 12:40</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>236(mL)</u>	Date Analyzed: <u>12/29/2016 02:07</u>
Con. Extract Vol.: <u>0.5(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.341	4	0.0026	0.0011	0.00049
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.569	E 4	0.0026	0.0021	0.0010
307-24-4	Perfluorohexanoic acid (PFHxA)	0.835	E 4	0.0026	0.0021	0.00083
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.649	E 4	0.0026	0.0021	0.00085
335-67-1	Perfluorooctanoic acid (PFOA)	3.62	E 4 M	0.0026	0.0021	0.00079
375-95-1	Perfluorononanoic acid (PFNA)	0.0649		0.0026	0.0021	0.00069
335-76-2	Perfluorodecanoic acid (PFDA)	0.0508		0.0026	0.0011	0.00047
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0451		0.0026	0.0021	0.00079
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0461		0.0026	0.0021	0.00062
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0484		0.0026	0.0021	0.00058
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.0697	J	0.0026	0.0011	0.00042
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.298	4	0.0026	0.0021	0.00097
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.24	E 4	0.0026	0.0021	0.00092
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.577	E 4	0.0042	0.0032	0.0014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0503		0.0042	0.0032	0.0013
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0723	J	0.0026	0.0021	0.00068

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FFTA2TMW-1216 MSD</u>	Lab Sample ID: <u>320-24236-3 MSD</u>
Matrix: <u>Water</u>	Lab File ID: <u>28DEC2016C_019.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 12:40</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>236(mL)</u>	Date Analyzed: <u>12/29/2016 02:07</u>
Con. Extract Vol.: <u>0.5(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144253</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	3	Q	25-150
STL00992	13C4 PFBA	34		25-150
STL01893	13C5-PFPeA	67		25-150
STL00993	13C2 PFHxA	72		25-150
STL01892	13C4-PFHpA	45		25-150
STL00990	13C4 PFOA	33		25-150
STL00995	13C5 PFNA	88		25-150
STL00996	13C2 PFDA	107		25-150
STL00997	13C2 PFUnA	111		25-150
STL00998	13C2 PFDoA	102		25-150
STL00994	18O2 PFHxS	43		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_019.d
 Lims ID: 320-24236-A-3-C MSD
 Client ID: FFTA2TMW-1216
 Sample Type: MSD
 Inject. Date: 29-Dec-2016 02:07:05 ALS Bottle#: 15 Worklist Smp#: 19
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24236-a-3-c msd
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 29-Dec-2016 18:14:32 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK027

First Level Reviewer: phomsophat

Date: 29-Dec-2016 18:14:32

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.525	1.525	0.0		5968258	17.2		34.3	341587	
1 Perfluorobutyric acid										
212.90 > 169.00	1.525	1.525	0.0	1.000	16381621	160.8		804	40957	
D 4 13C5-PFPeA										
267.90 > 223.00	1.800	1.800	0.0		8881812	33.4		66.8	289979	
3 Perfluoropentanoic acid										E
262.90 > 219.00	1.800	1.800	0.0	1.000	47052622	268.4		1342	52630	E
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.839	1.839	0.0	1.000	27936086	140.5		795		
298.90 > 99.00	1.839	1.839	0.0	1.000	13357541		2.09(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.091	2.091	0.0		8865299	36.2		72.3	450550	
7 Perfluorohexanoic acid										E
313.00 > 269.00	2.091	2.091	0.0	1.000	64892160	394.1		1970	155893	E
9 Perfluorohexanesulfonic acid										E
399.00 > 80.00	2.405	2.409	-0.004	1.000	153025296	1059.1		5819		E
D 11 13C4-PFHpA										
367.00 > 322.00	2.405	2.420	-0.015		5070448	22.4		44.8	250625	
12 Perfluoroheptanoic acid										E
363.00 > 319.00	2.405	2.420	-0.015	1.000	30414240	306.4		1532	66179	E
D 10 18O2 PFHxS										
403.00 > 84.00	2.430	2.440	-0.010		6635290	20.3		42.9	227406	
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.758	2.773	-0.015	1.000	42859807	NR		0.0		
D 14 13C4 PFOA										
417.00 > 372.00	2.781	2.776	0.005		3857833	16.7		33.5	185904	
D 47 M2-6:2FTS										
429.00 > 409.00	2.741	2.781	-0.040		9938667	85.0		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.758	2.783	-0.025	1.000	132429282	1711.0		8555	208501	EM
413.00 > 169.00	2.681	2.783	-0.102	0.972	124592224		1.06(0.90-1.10)		267354	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.789	2.783	0.006	1.000	5101908	17.3		91.1		
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.027	3.040	-0.013	1.000	72285495	272.2		1466	271991	E
499.00 > 99.00	3.118	3.040	0.078	1.030	13844382		5.22(0.90-1.10)		82055	
D 17 13C4 PFOS										
503.00 > 80.00	3.150	3.145	0.005		12765446	51.3		107	332101	
20 Perfluorononanoic acid										
463.00 > 419.00	3.150	3.153	-0.003	1.000	4551706	30.7		153	8309	
D 19 13C5 PFNA										
468.00 > 423.00	3.142	3.153	-0.011		7800765	43.9		87.8	380881	
D 21 13C8 FOSA										
506.00 > 78.00	3.470	3.475	-0.005		519060	1.35		2.7	24360	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.478	3.475	0.003	1.000	330375	34.1		171	2215	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.503	3.509	-0.006	1.000	3819517	24.0		120	27606	
D 23 13C2 PFDA										
515.00 > 470.00	3.503	3.509	-0.006		8437316	53.6		107	241167	
D 42 M2-8:2FTS										
529.00 > 509.00	3.486	3.519	-0.033		4346	0.0404		0.0		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.486	3.519	-0.033	1.000	76238	NR		0.0		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.612	3.683	-0.071		800	0.0106		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.741	3.692	0.049	1.036	1324	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.813	3.825	-0.012	1.000	3704814	23.8		123		
D 27 13C2 PFUnA										
565.00 > 520.00	3.830	3.834	-0.004		6528568	55.7		111	592497	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.830	3.834	-0.004	1.000	2656895	21.3		106	37987	
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.804	3.855	-0.051		2283	0.0291		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.960	3.864	0.096	1.041	1146	NR		0.0		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.988	3.997	-0.009		879	0.009246		0.0		
54 MeFOSA										
512.00 > 169.00	3.839	4.006	-0.167	1.000	379	NR		0.0		
D 30 13C2 PFDoA										
615.00 > 570.00	4.129	4.126	0.003		5662557	51.0		102	293808	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.122	4.133	-0.011	1.000	2259903	21.7		109	47192	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.144	4.180	-0.036		461	0.005374		0.0		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	3.969	4.187	-0.218	1.000	223	NR		0.0		
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.399	4.404	-0.005	1.000	2345716	22.8		114	57528	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.637	4.644	-0.007		15934572	70.1		140	1088387	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.637	4.644	-0.007	1.000	5906330	32.9		165	85636	
713.00 > 169.00	4.637	4.644	-0.007	1.000	839290		7.04(0.00-0.00)		103918	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.050	5.058	-0.008		6470188	51.9		104	182322	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.050	5.058	-0.008	1.000	2400671	21.6		108	6361	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.407	5.414	-0.007	1.000	2451547	21.0		105	2423	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_019.d

Injection Date: 29-Dec-2016 02:07:05 Instrument ID: A8_N

Lims ID: 320-24236-A-3-C MSD

Client ID: FFTA2TMW-1216

Operator ID: A8-PC\A8

ALS Bottle#: 15 Worklist Smp#: 19

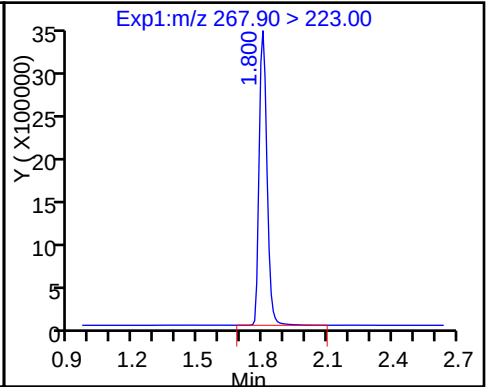
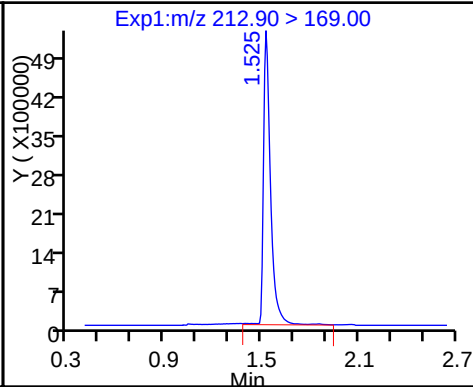
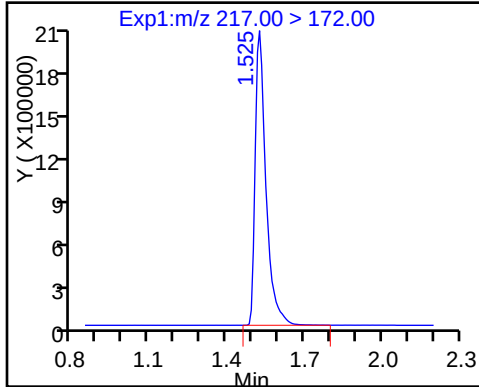
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

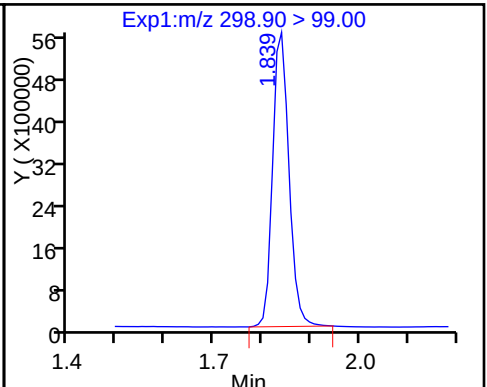
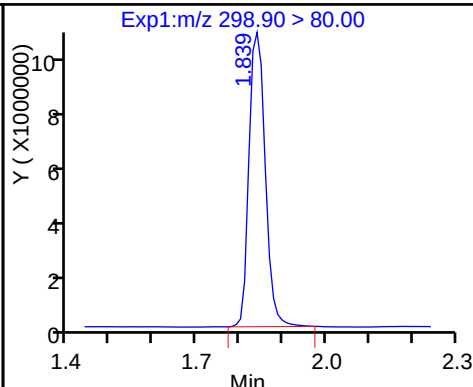
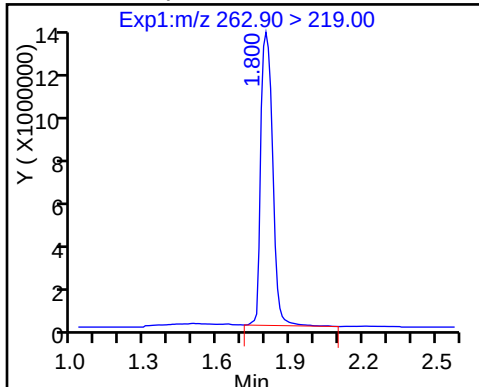
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

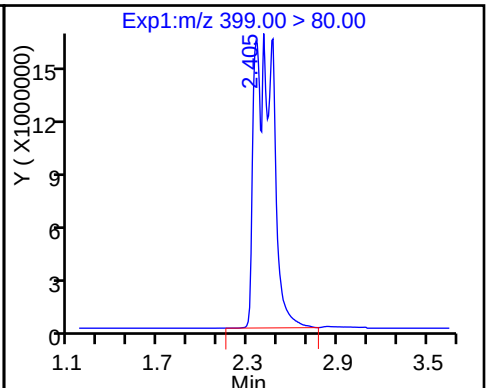
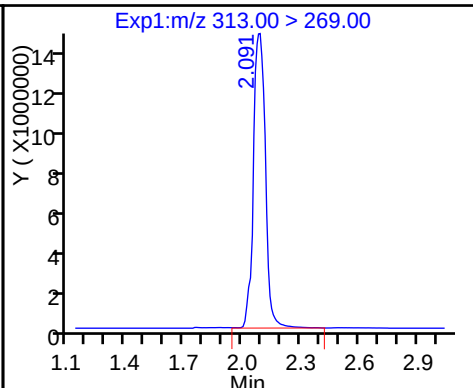
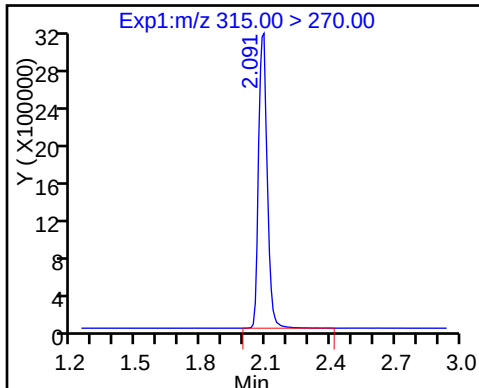
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

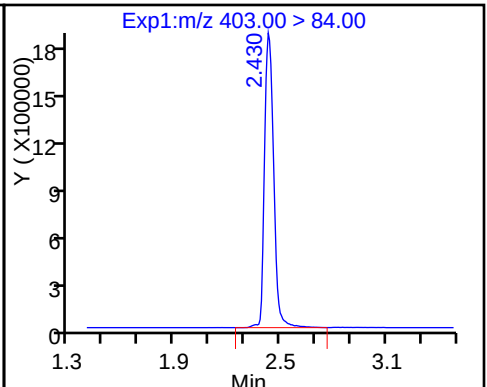
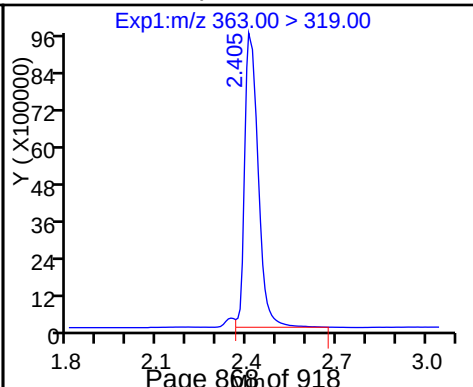
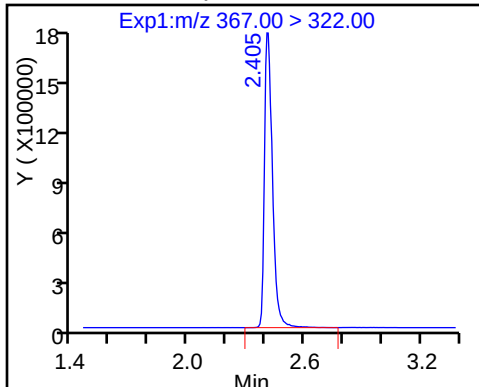
9 Perfluorohexanesulfonic acid



D 11 13C4-PFHpA

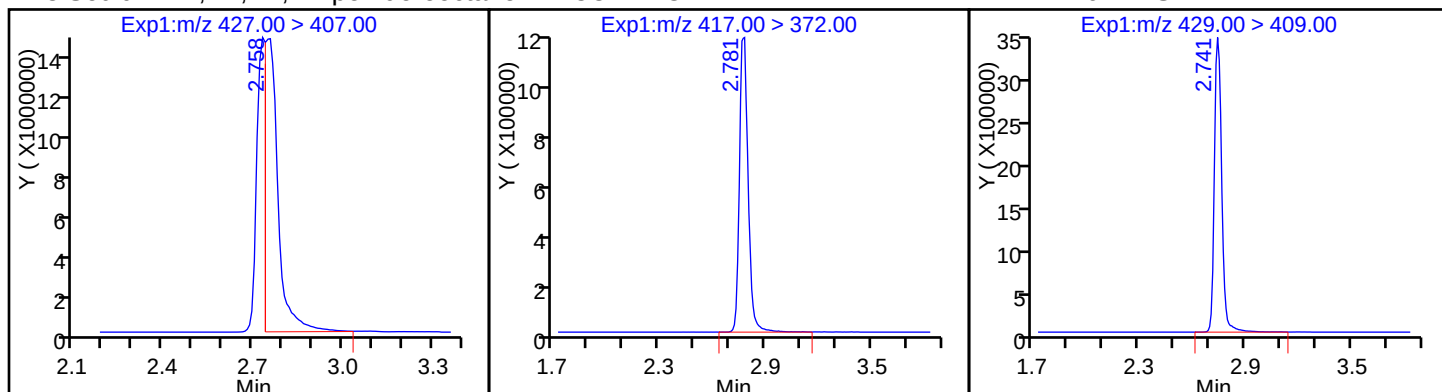
12 Perfluoroheptanoic acid

D 10 18O2 PFHxS



48 Sodium 1H,1H,2H,2H-perfluorooctadec-14 13C4 PFOA

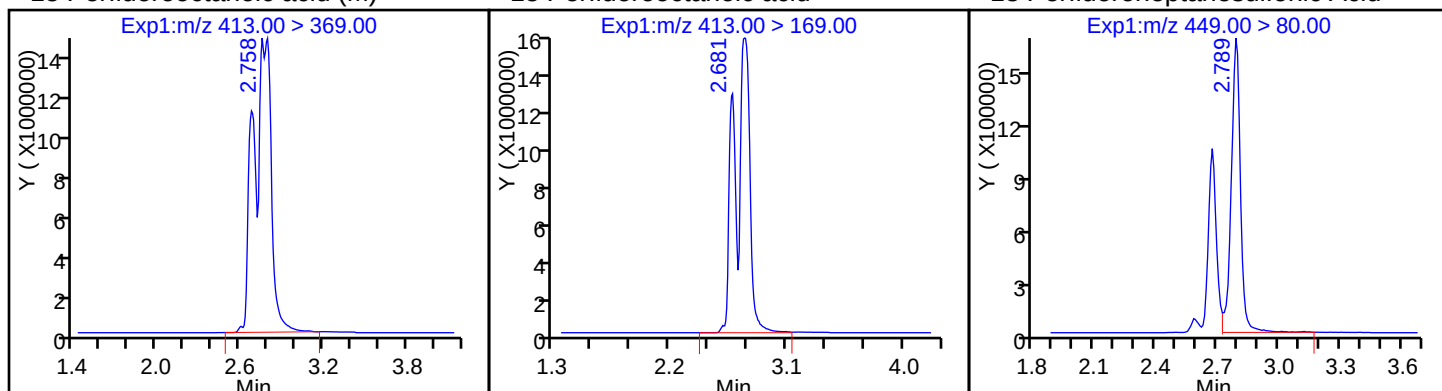
D 47 M2-6:2FTS



15 Perfluorooctanoic acid (M)

15 Perfluorooctanoic acid

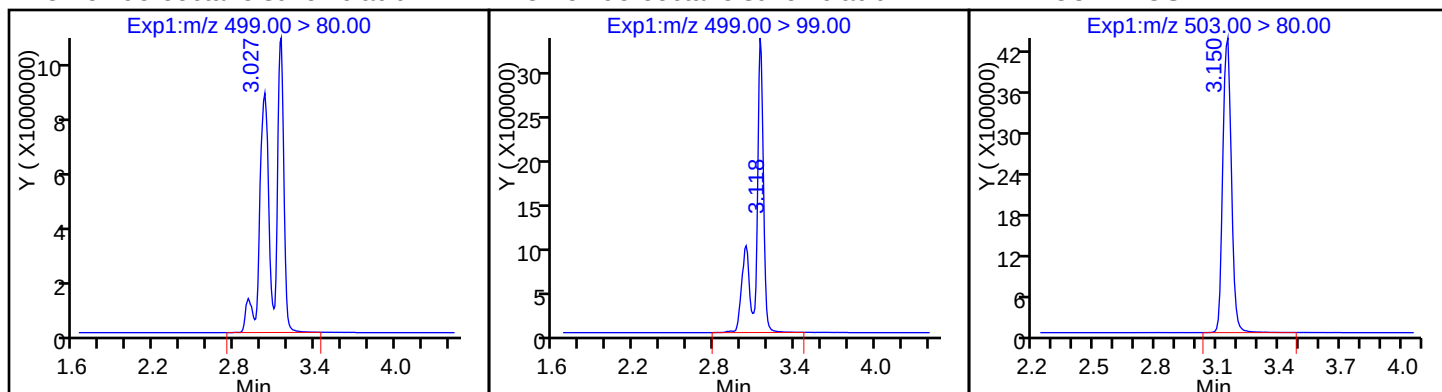
13 Perfluoroheptanesulfonic Acid



18 Perfluorooctane sulfonic acid

18 Perfluorooctane sulfonic acid

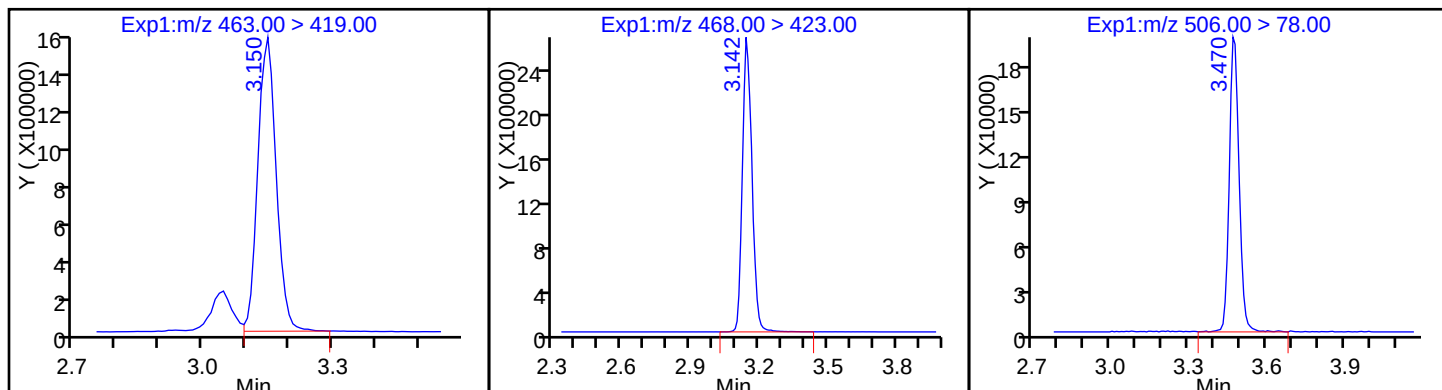
D 17 13C4 PFOS



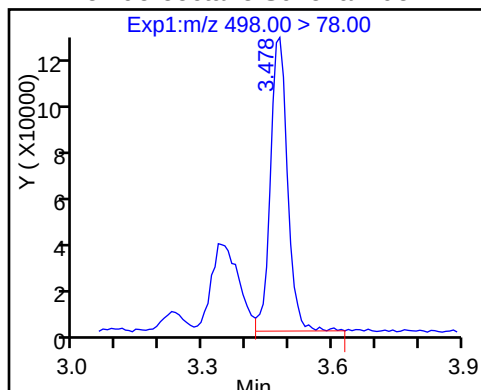
20 Perfluorononanoic acid

D 19 13C5 PFNA

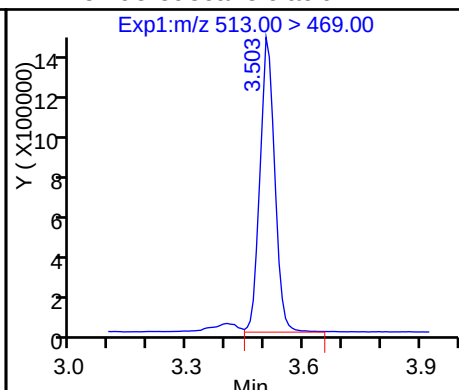
D 21 13C8 FOSA



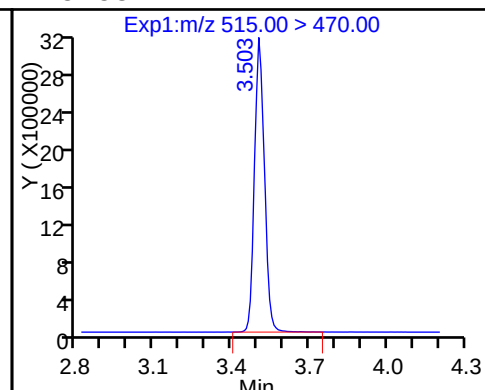
22 Perfluorooctane Sulfonamide



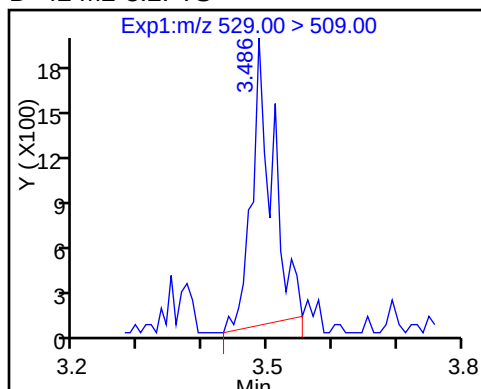
24 Perfluorodecanoic acid



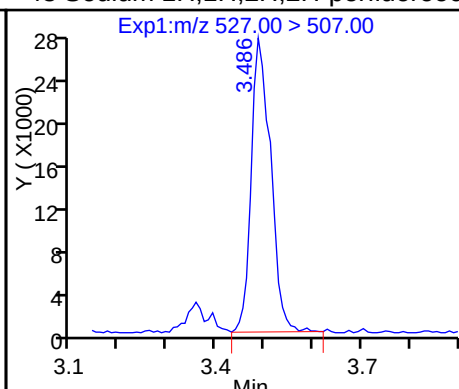
D 23 13C2 PFDA



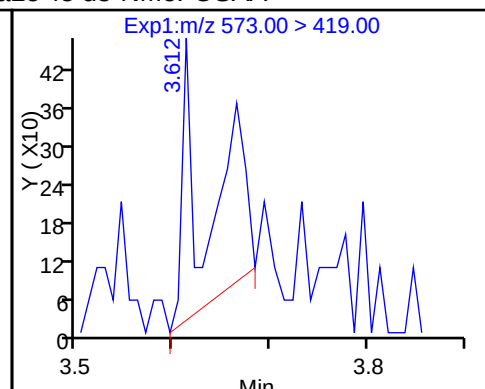
D 42 M2-8:2FTS



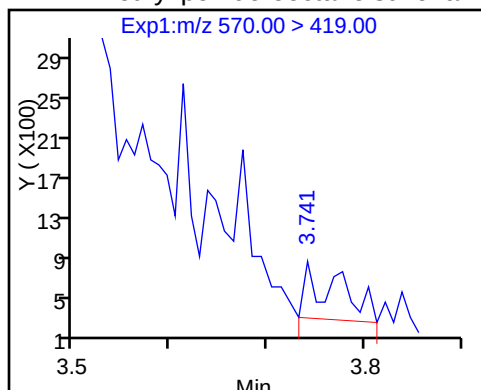
43 Sodium 1H,1H,2H,2H-perfluorooctane



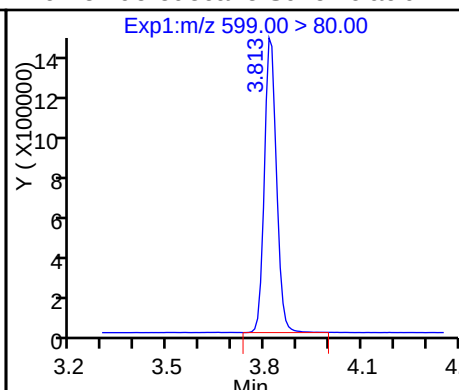
D 45 d3-NMeFOSAA



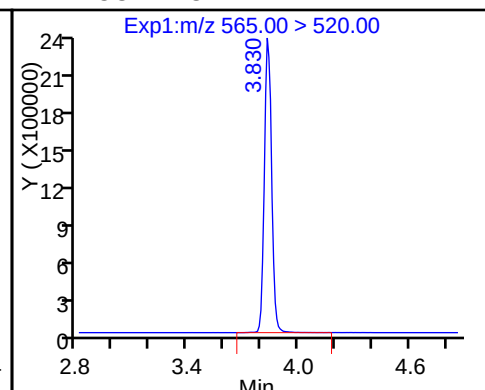
44 N-methyl perfluorooctane sulfonami



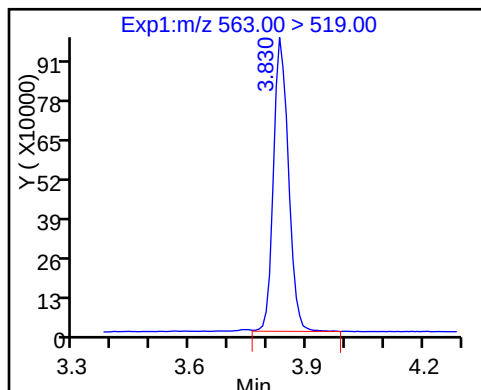
26 Perfluorodecane Sulfonic acid



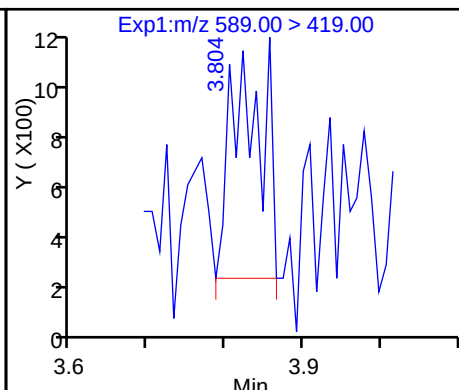
D 27 13C2 PFUnA



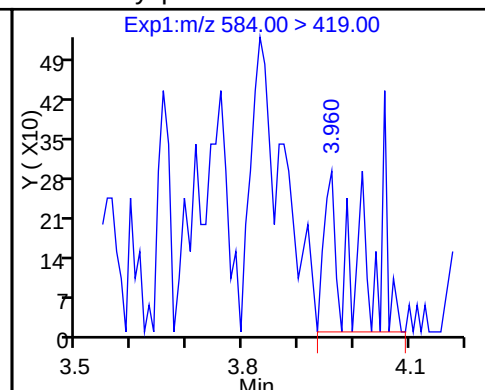
28 Perfluoroundecanoic acid



D 46 d5-NEtFOSAA



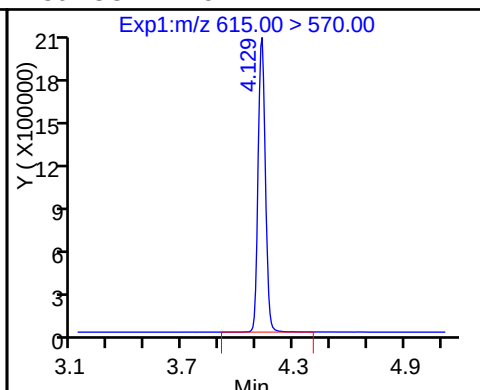
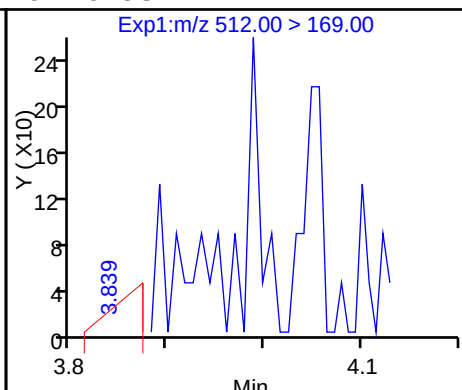
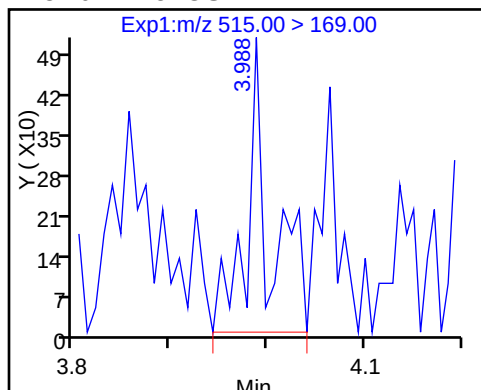
49 N-ethyl perfluorooctane sulfonamid



D 52 d-N-MeFOSA-M

54 MeFOSA

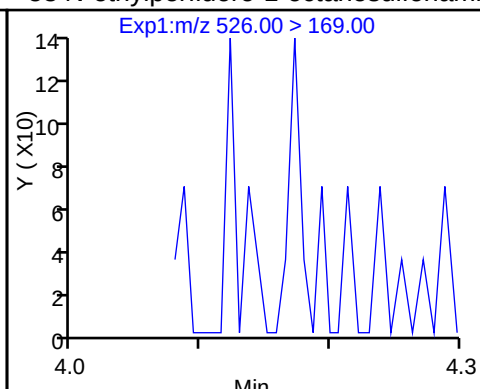
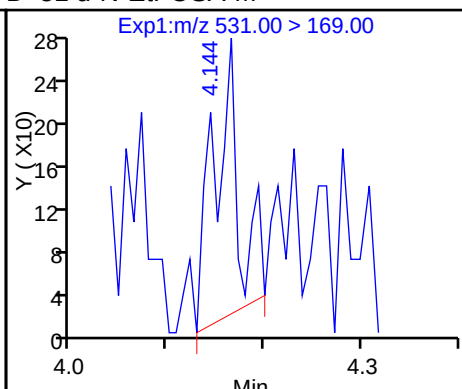
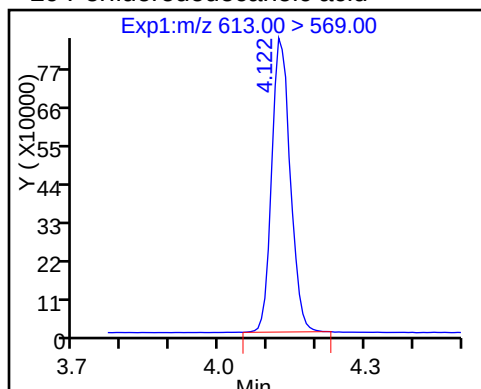
D 30 13C2 PFDaA



29 Perfluorododecanoic acid

D 51 d-N-EtFOSA-M

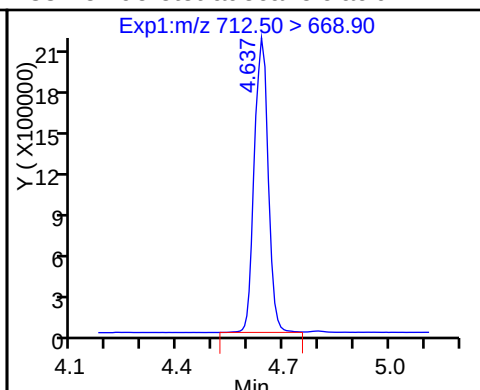
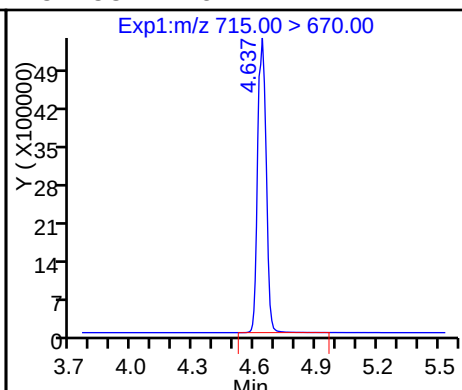
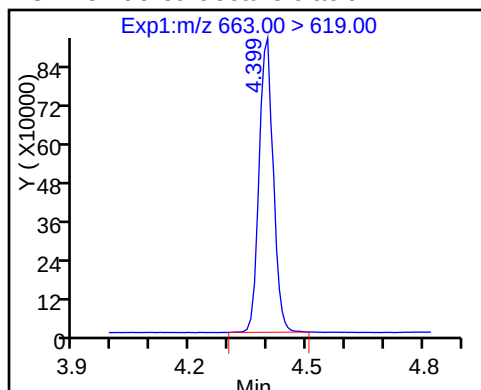
53 N-ethylperfluoro-1-octanesulfonami



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

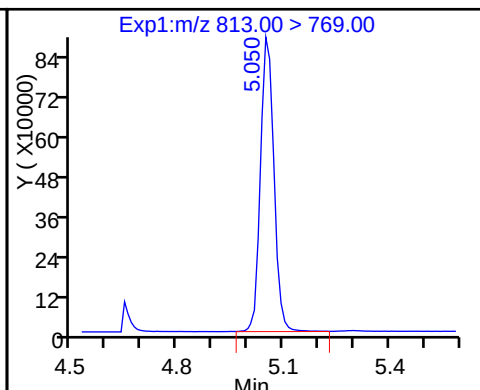
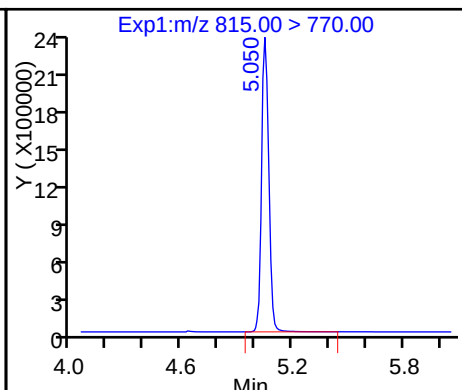
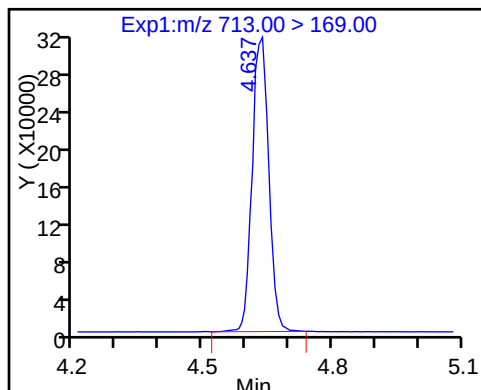
33 Perfluorotetradecanoic acid



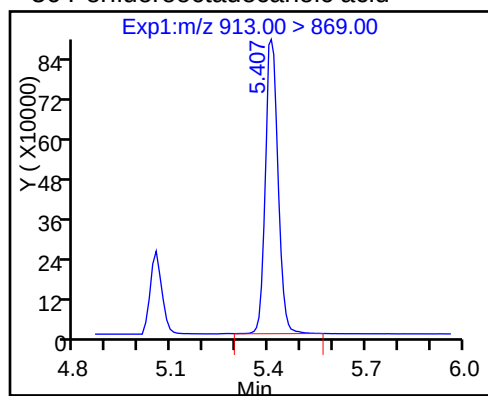
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

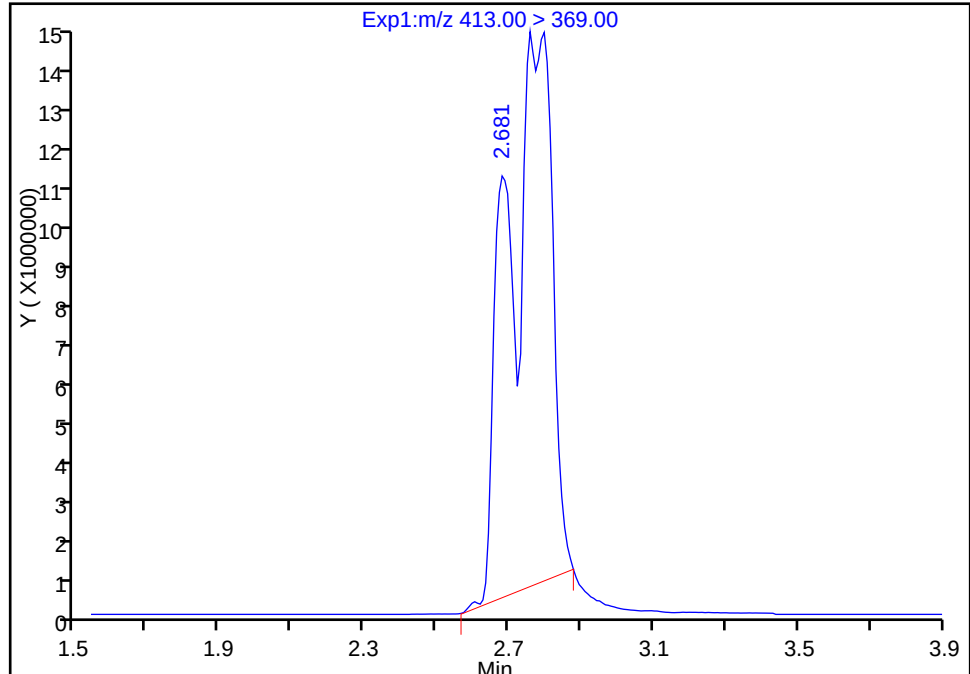
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_019.d
Injection Date: 29-Dec-2016 02:07:05 Instrument ID: A8_N
Lims ID: 320-24236-A-3-C MSD
Client ID: FFTA2TMW-1216
Operator ID: A8-PC\A8 ALS Bottle#: 15 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

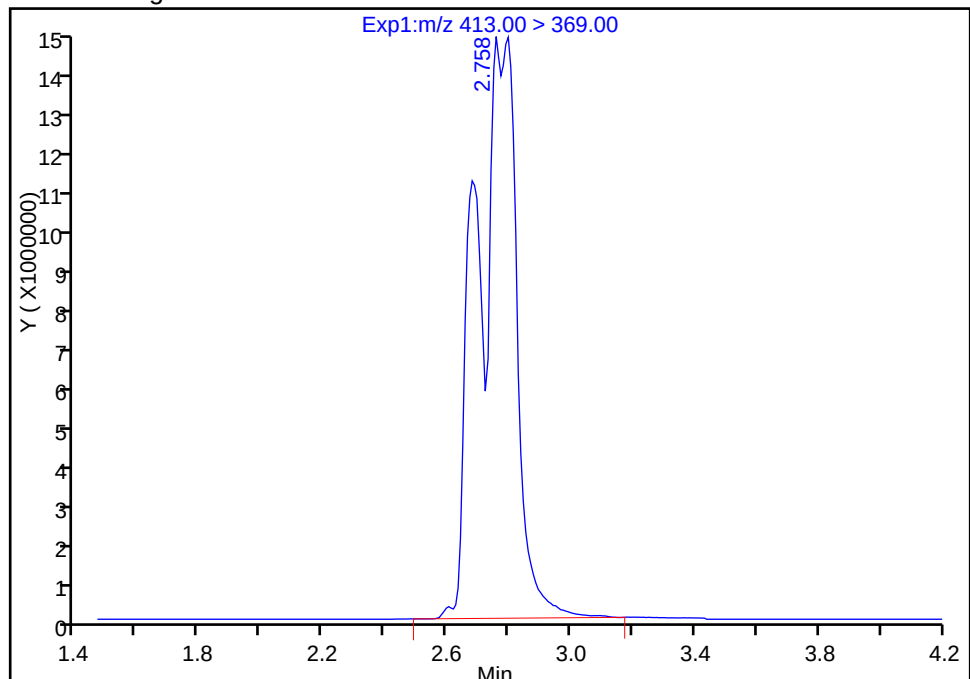
RT: 2.68
Area: 118544479
Amount: 1531.5984
Amount Units: ng/ml

Processing Integration Results



RT: 2.76
Area: 132429282
Amount: 1710.9905
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 29-Dec-2016 18:14:32

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FFTA2TMW-1216 MSD DL</u>	Lab Sample ID: <u>320-24236-3 MSD DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>30DEC2016B_020.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 12:40</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>236(mL)</u>	Date Analyzed: <u>12/30/2016 14:41</u>
Con. Extract Vol.: <u>0.5(mL)</u>	Dilution Factor: <u>20</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144510</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.347	D 4	0.053	0.021	0.0097
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.982	D 4	0.053	0.042	0.021
307-24-4	Perfluorohexanoic acid (PFHxA)	1.65	D 4	0.053	0.042	0.017
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.743	D 4	0.053	0.042	0.017
335-67-1	Perfluorooctanoic acid (PFOA)	6.88	D M 4	0.053	0.042	0.016
375-95-1	Perfluorononanoic acid (PFNA)	0.0658	D	0.053	0.042	0.014
335-76-2	Perfluorodecanoic acid (PFDA)	0.0499	J D	0.053	0.021	0.0093
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0449	J D	0.053	0.042	0.016
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0448	J D	0.053	0.042	0.012
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0406	J D	0.053	0.042	0.012
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.0581	D	0.053	0.021	0.0085
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.182	D	0.053	0.042	0.019
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	4.67	D M 4	0.053	0.042	0.018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.577	D 4	0.085	0.064	0.027
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0420	J D	0.085	0.064	0.026
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0749	D J	0.053	0.042	0.014

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-24236-1</u>
SDG No.: _____	
Client Sample ID: <u>FFTA2TMW-1216 MSD DL</u>	Lab Sample ID: <u>320-24236-3 MSD DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>30DEC2016B_020.d</u>
Analysis Method: <u>537 (Modified)</u>	Date Collected: <u>12/08/2016 12:40</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>12/19/2016 14:38</u>
Sample wt/vol: <u>236(mL)</u>	Date Analyzed: <u>12/30/2016 14:41</u>
Con. Extract Vol.: <u>0.5(mL)</u>	Dilution Factor: <u>20</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>Acquity</u> ID: <u>2.1(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>144510</u>	Units: <u>ug/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	3	Q	25-150
STL00992	13C4 PFBA	126		25-150
STL01893	13C5-PFPeA	149		25-150
STL00993	13C2 PFHxA	129		25-150
STL01892	13C4-PFHpA	108		25-150
STL00990	13C4 PFOA	100		25-150
STL00995	13C5 PFNA	138		25-150
STL00996	13C2 PFDA	131		25-150
STL00997	13C2 PFUnA	131		25-150
STL00998	13C2 PFDoA	125		25-150
STL00994	18O2 PFHxS	125		25-150
STL00991	13C4 PFOS	127		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_020.d
 Lims ID: 320-24236-A-3-C MSD
 Client ID: FFTA2TMW-1216
 Sample Type: MSD
 Inject. Date: 30-Dec-2016 14:41:31 ALS Bottle#: 14 Worklist Smp#: 30
 Injection Vol: 2.0 ul Dil. Factor: 20.0000
 Sample Info: 320-24236-a-3-c msd 20X
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 03-Jan-2017 14:28:20 Calib Date: 15-Dec-2016 14:18:33
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_018.d
 Column 1 : Det: EXP1
 Process Host: XAWRK026

First Level Reviewer: phomsophat

Date: 03-Jan-2017 14:06:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.529	1.526	0.003		1096851	3.15		6.3	131090	
1 Perfluorobutyric acid										
212.90 > 169.00	1.529	1.534	-0.005	1.000	3066082	8.19		819	15692	
D 4 13C5-PFPeA										
267.90 > 223.00	1.803	1.801	0.002		989860	3.72		7.4	69948	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.803	1.811	-0.008	1.000	9050465	23.2		2316	46165	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.842	1.840	0.002	1.000	2478903	4.30		486		
298.90 > 99.00	1.842	1.840	0.002	1.000	1008789		2.46(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.093	2.092	0.001		793296	3.24		6.5	161981	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.093	2.092	0.001	1.000	11460718	38.9		3889	229114	
9 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.441	2.410	0.031	1.000	46224535	110.2		12112		M
D 11 13C4-PFHpA										
367.00 > 322.00	2.415	2.421	-0.006		613431	2.71		5.4	77680	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.421	2.421	0.0	1.000	4209738	17.5		1753	32661	
D 10 18O2 PFHxS										
403.00 > 84.00	2.441	2.443	-0.002		963026	2.95		6.2	111954	
D 14 13C4 PFOA										
417.00 > 372.00	2.777	2.773	0.004		576713	2.50		5.0	71908	
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.745	2.773	-0.028	1.000	15305882	NR		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.777	2.780	-0.003	1.000	37597550	162.5		16247	236654	M
413.00 > 169.00	2.676	2.780	-0.104	0.964	26560890		1.42(0.90-1.10)		122309	
D 47 M2-6:2FTS										
429.00 > 409.00	2.745	2.781	-0.036		881328	7.53		0.0		
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.785	2.788	-0.003	1.000	645146	1.85		194		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.032	3.044	-0.012	1.000	4285394	13.6		1467	67294	
499.00 > 99.00	3.145	3.044	0.101	1.037	758259		5.65(0.90-1.10)		40152	
D 17 13C4 PFOS										
503.00 > 80.00	3.145	3.148	-0.003		756678	3.04		6.4	48149	
D 19 13C5 PFNA										
468.00 > 423.00	3.145	3.148	-0.003		614525	3.46		6.9	115536	
20 Perfluorononanoic acid										
463.00 > 419.00	3.145	3.156	-0.011	1.000	363249	1.55		155	3894	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.469	3.470	-0.001	1.000	19420	1.77		177	889	
D 21 13C8 FOSA										
506.00 > 78.00	3.469	3.478	-0.009		29469	0.0767		0.2	3374	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.503	3.504	-0.001	1.000	229164	1.18		118	6470	
D 23 13C2 PFDA										
515.00 > 470.00	3.503	3.512	-0.009		515490	3.28		6.6	18727	
D 42 M2-8:2FTS										
529.00 > 509.00	3.477	3.519	-0.042		566	0.005268		0.0		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.486	3.519	-0.033	1.002	3625	NR		0.0		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.664	3.683	-0.019		557	0.007395		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.578	3.692	-0.114	0.977	321	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.821	3.822	-0.001	1.000	183224	0.99		103		
D 27 13C2 PFUnA										
565.00 > 520.00	3.838	3.839	-0.001		383636	3.27		6.5	48522	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.838	3.839	-0.001	1.000	155472	1.06		106	4446	
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.847	3.855	-0.008		3236	0.0413		0.0		
D 30 13C2 PFDoA										
615.00 > 570.00	4.136	4.138	-0.002		345846	3.12		6.2	17146	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.136	4.138	-0.002	1.000	134319	1.06		106	4449	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.399	4.403	-0.003	1.000	120253	0.9585		95.9	2956	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.635	4.641	-0.006		798677	3.51		7.0	102746	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.635	4.651	-0.016	1.000	300854	1.37		137	7759	
713.00 > 169.00	4.635	4.651	-0.016	1.000	40311		7.46(0.00-0.00)		15274	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.049	5.057	-0.007		410693	3.30		6.6	31396	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.059	5.067	-0.008	1.000	150489	0.5398		54.0	1896	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.414	5.421	-0.007	1.000	145907	1.02		102	1730	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_020.d

Injection Date: 30-Dec-2016 14:41:31

Instrument ID: A8_N

Lims ID: 320-24236-A-3-C MSD

Client ID: FFTA2TMW-1216

Operator ID: A8-PC\A8

ALS Bottle#: 14

Worklist Smp#: 30

Injection Vol: 2.0 ul

Dil. Factor: 20.0000

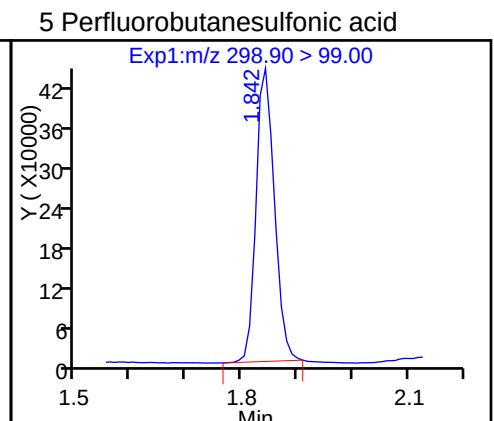
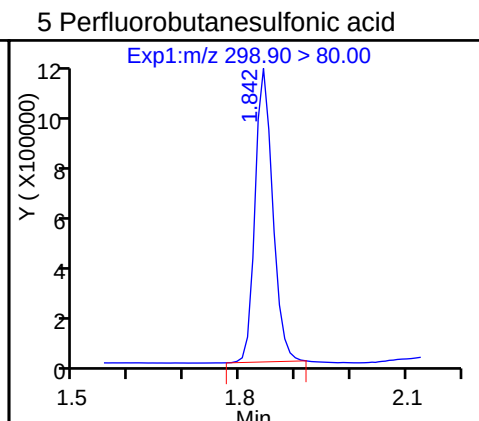
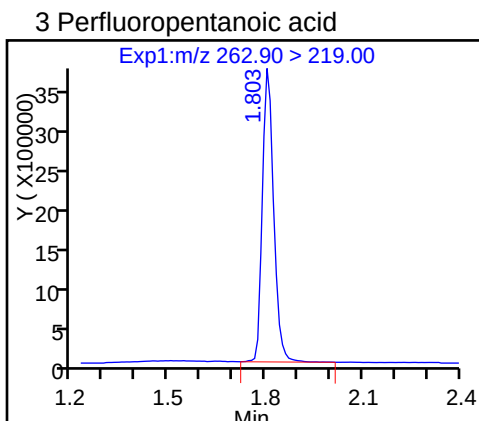
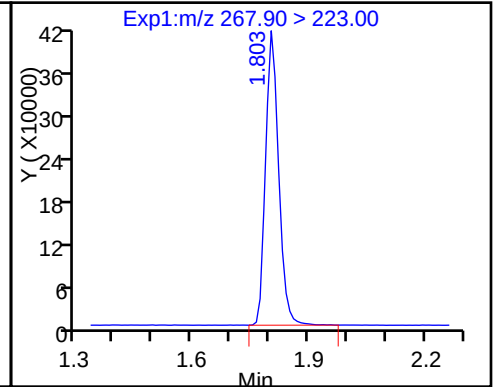
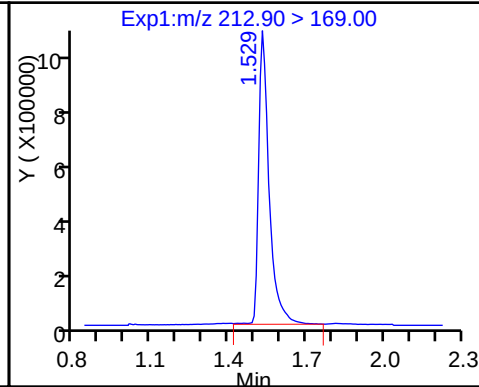
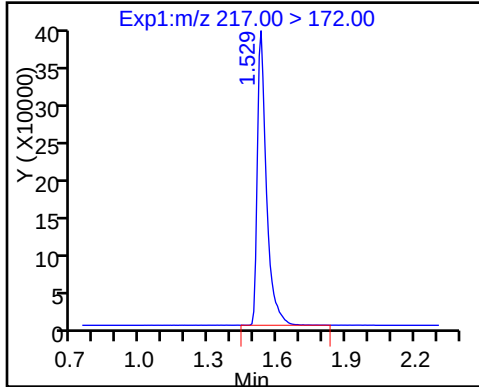
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

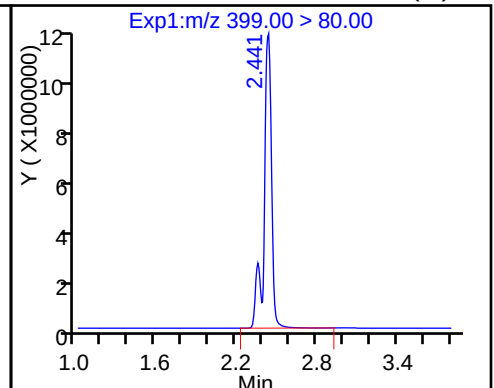
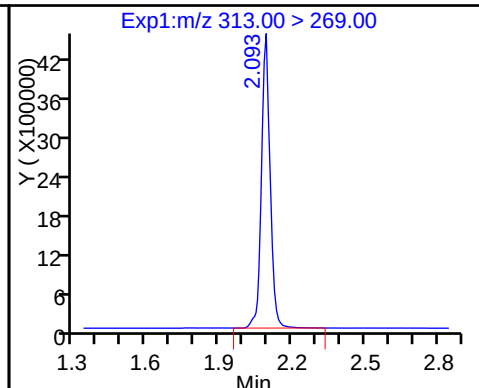
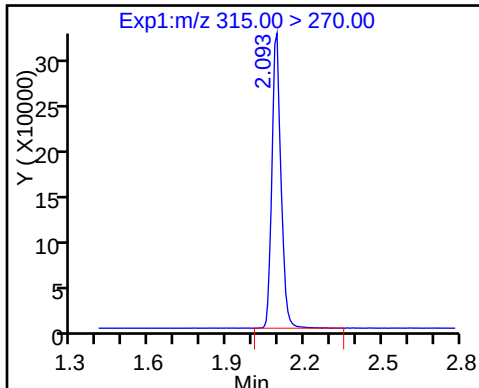
D 4 13C5-PFPeA



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

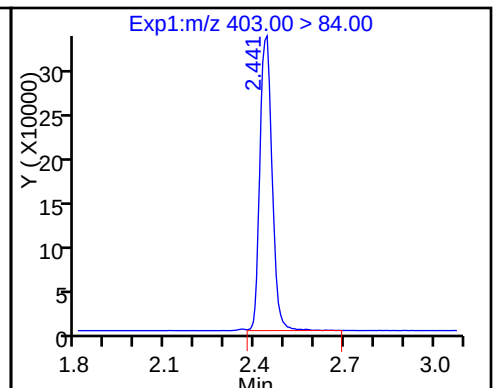
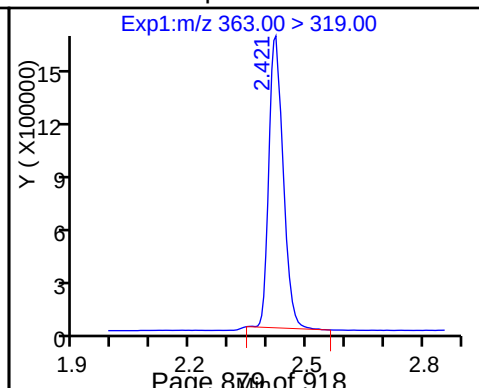
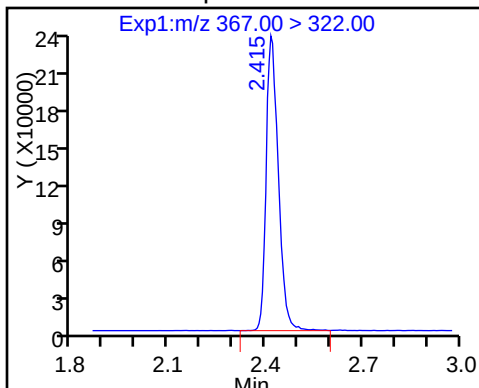
9 Perfluorohexanesulfonic acid (M)



D 11 13C4-PFHpA

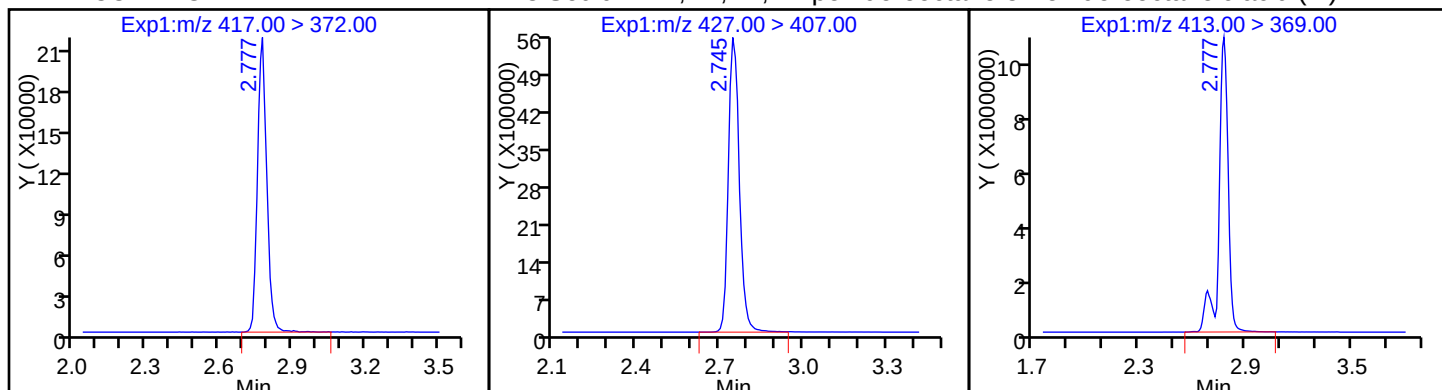
12 Perfluoroheptanoic acid

D 10 18O2 PFHxS



D 14 13C4 PFOA

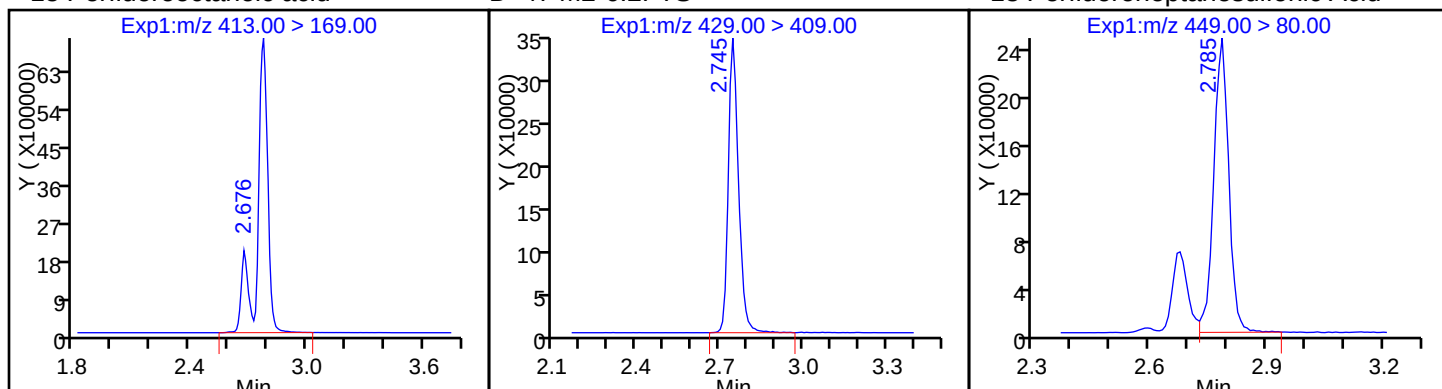
48 Sodium 1H,1H,2H,2H-perfluorooctan-1-yl 15 Perfluorooctanoic acid (M)



15 Perfluorooctanoic acid

D 47 M2-6:2FTS

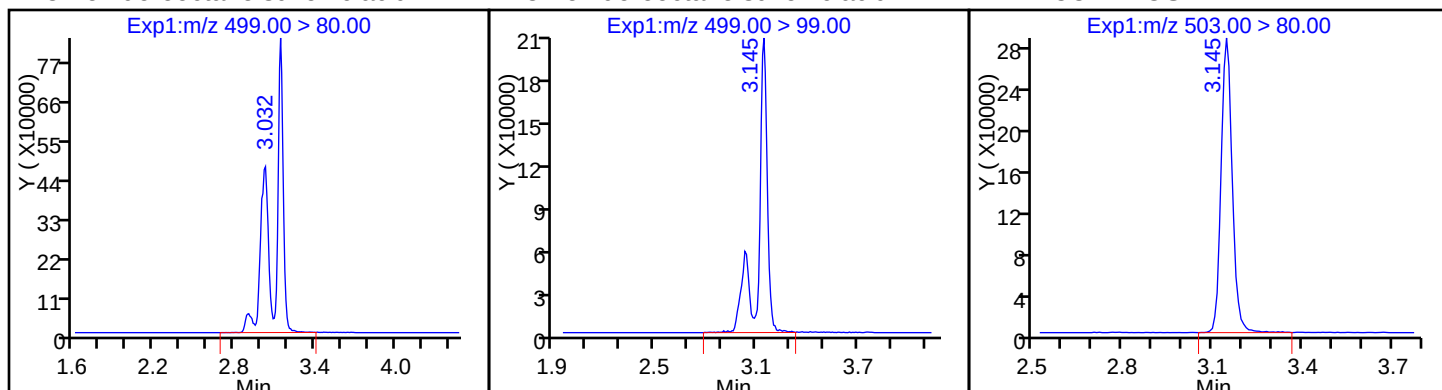
13 Perfluoroheptanesulfonic Acid



18 Perfluorooctane sulfonic acid

18 Perfluorooctane sulfonic acid

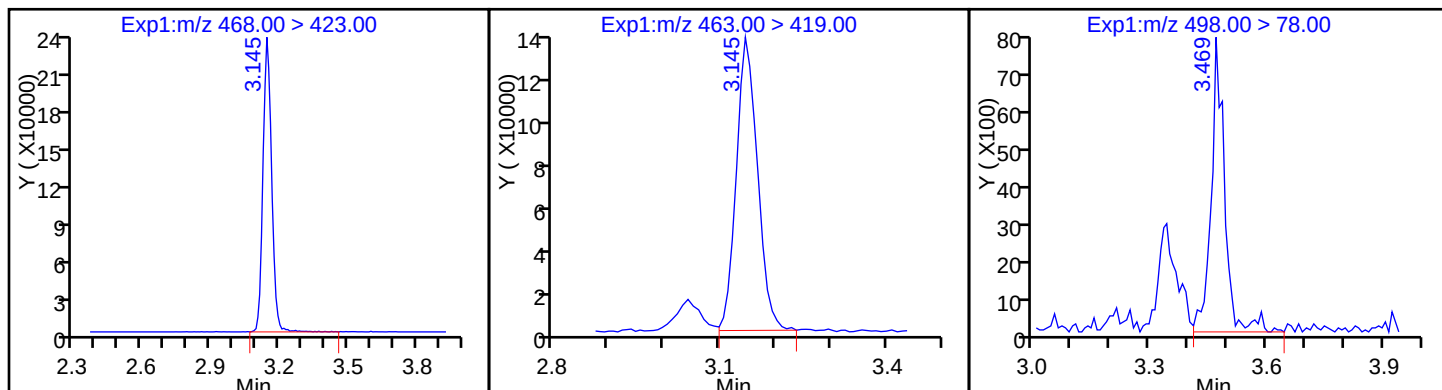
D 17 13C4 PFOS



D 19 13C5 PFNA

20 Perfluorononanoic acid

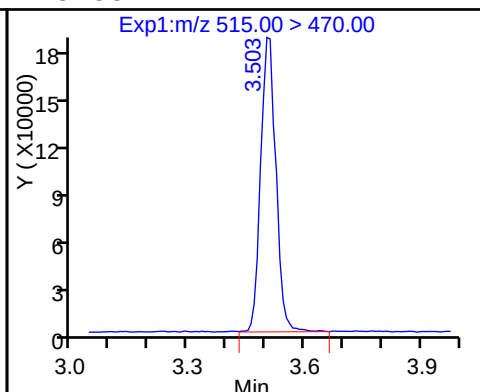
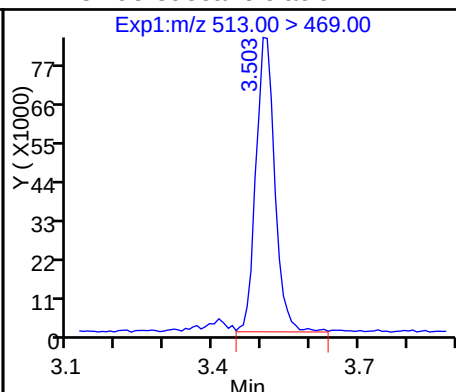
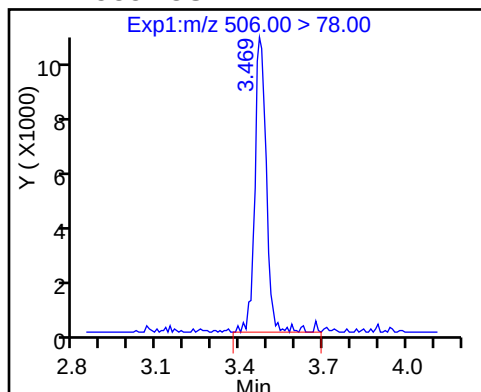
22 Perfluorooctane Sulfonamide



D 21 13C8 FOSA

24 Perfluorodecanoic acid

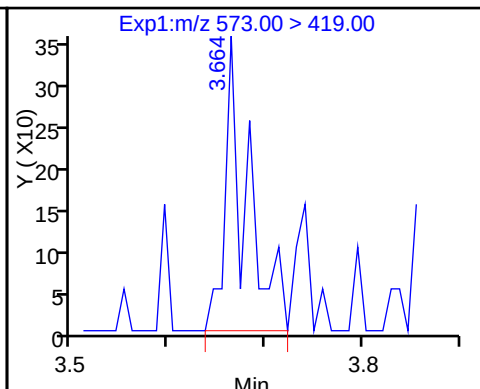
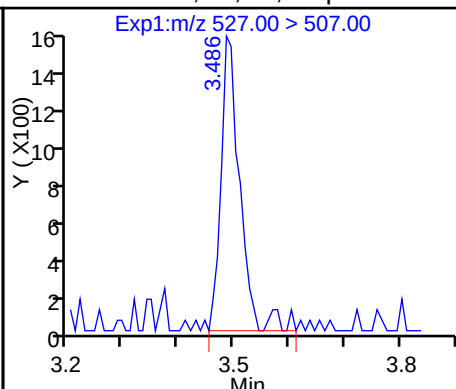
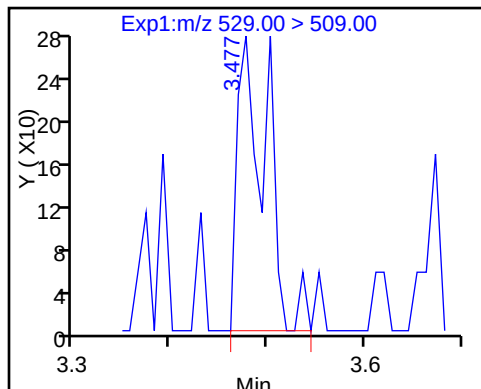
D 23 13C2 PFDA



D 42 M2-8:2FTS

43 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

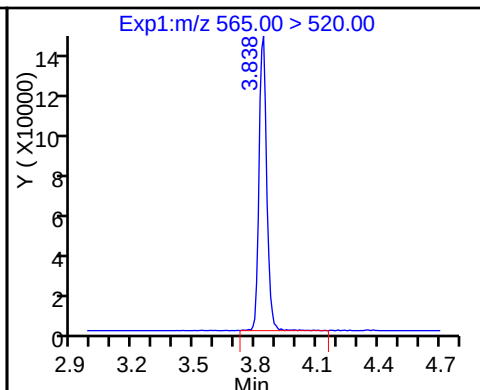
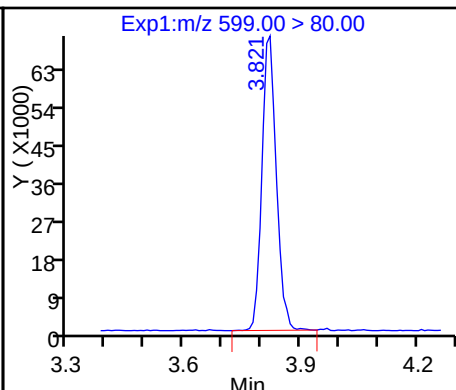
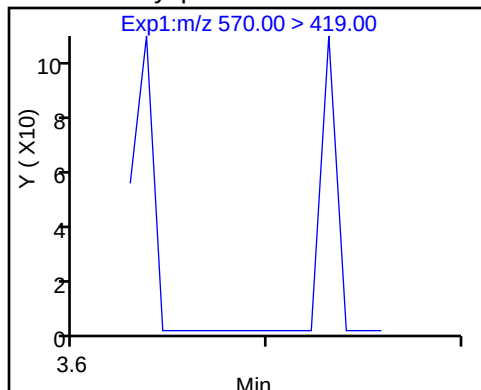
D 45 d3-NMeFOSAA



44 N-methyl perfluorooctane sulfonamide

26 Perfluorodecane Sulfonic acid

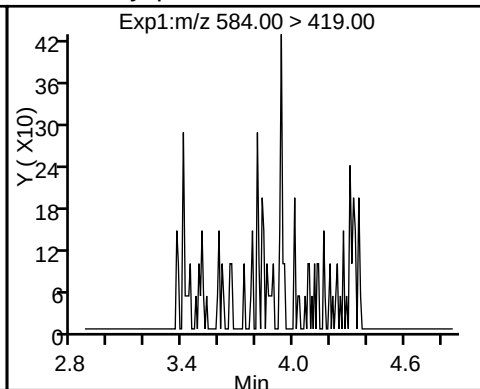
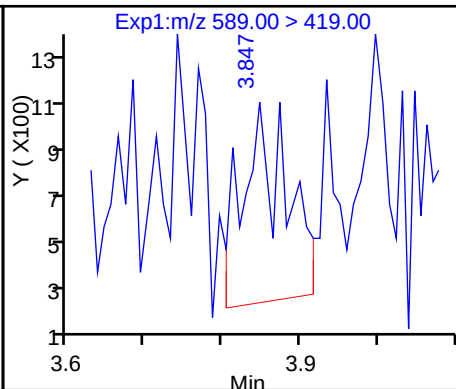
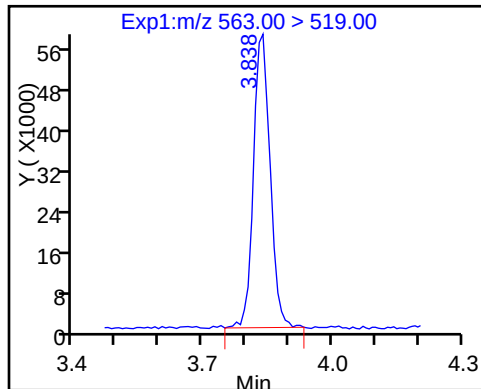
D 27 13C2 PFUnA



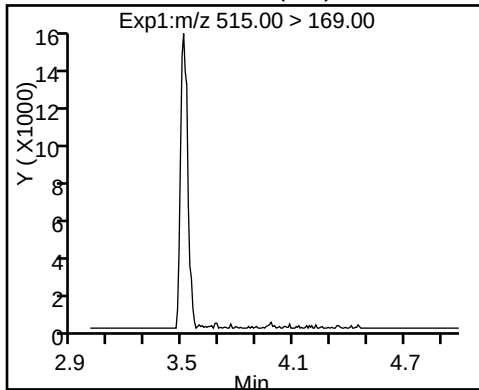
28 Perfluoroundecanoic acid

D 46 d5-NEtFOSAA

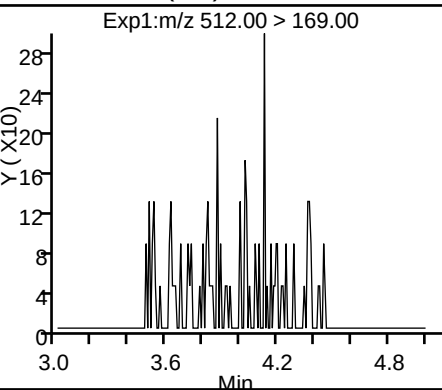
49 N-ethyl perfluorooctane sulfonamid (ND)



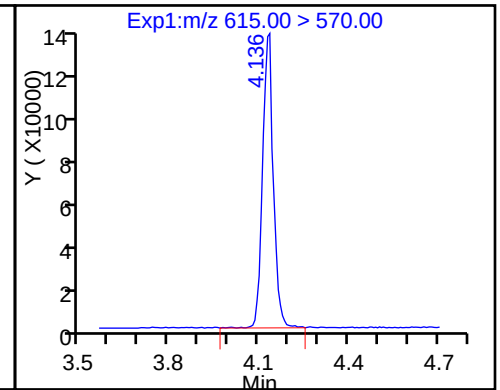
D 52 d-N-MeFOSA-M (ND)



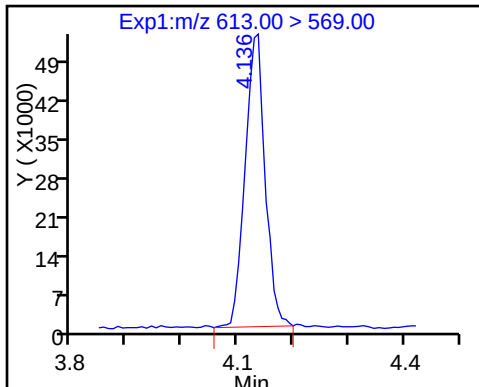
54 MeFOSA (ND)



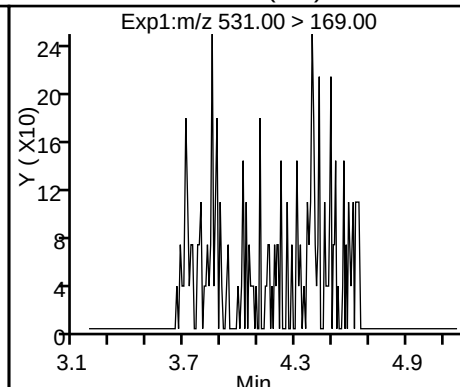
D 30 13C2 PFDaA



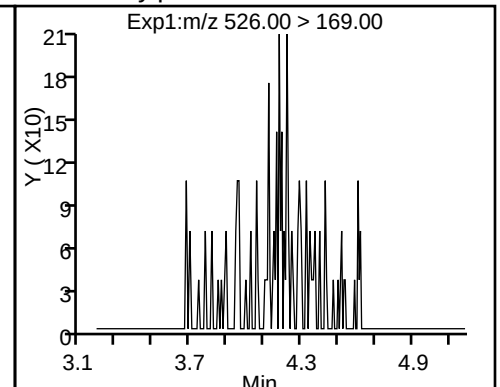
29 Perfluorododecanoic acid



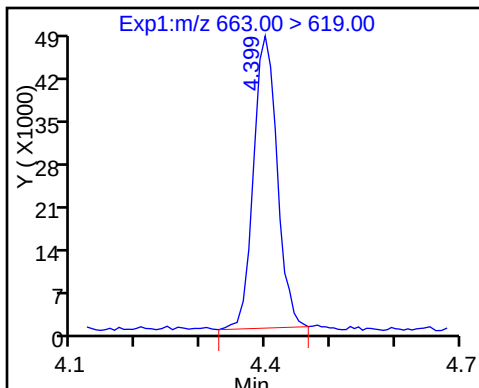
D 51 d-N-EtFOSA-M (ND)



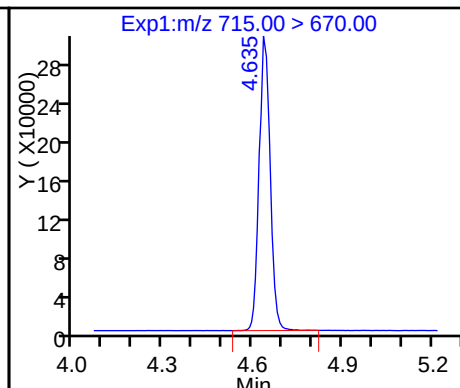
53 N-ethylperfluoro-1-octanesulfonami (ND)



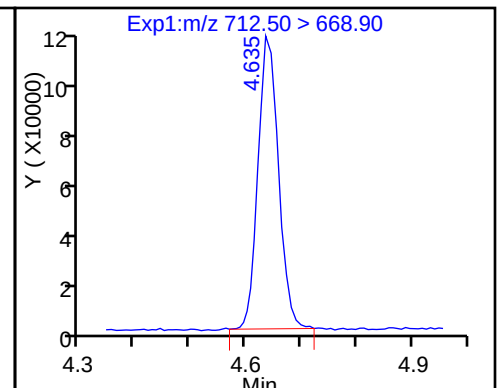
31 Perfluorotridecanoic acid



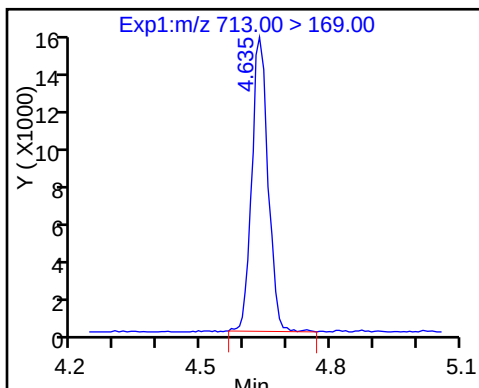
D 32 13C2-PFTeDA



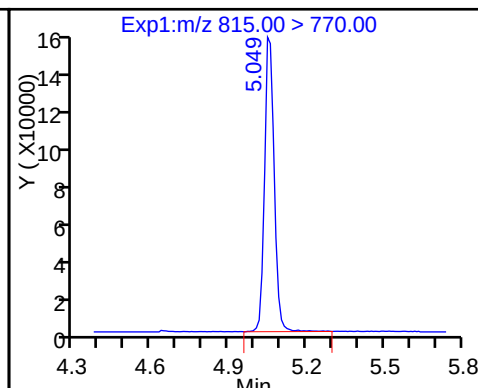
33 Perfluorotetradecanoic acid



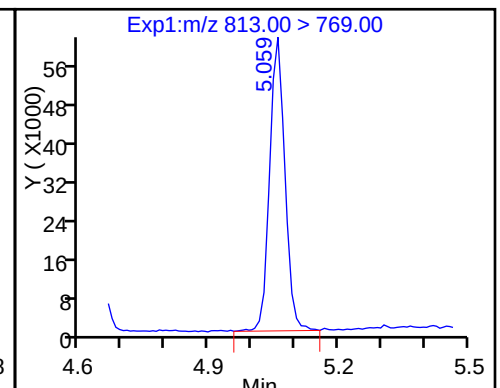
33 Perfluorotetradecanoic acid



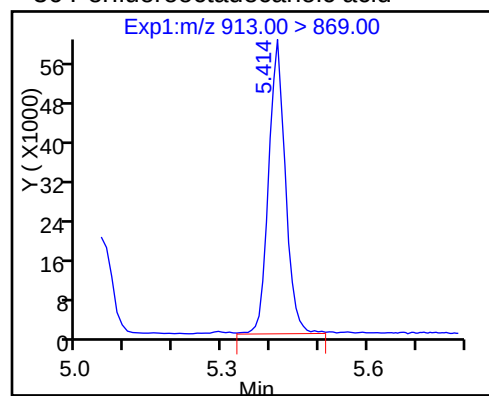
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

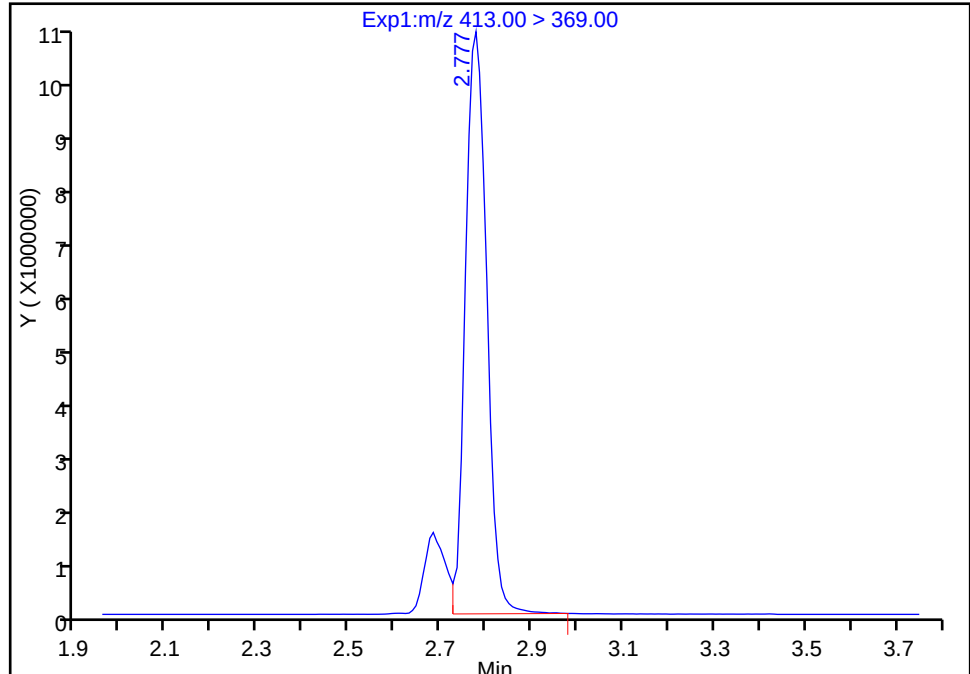
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Injection Date: 30-Dec-2016 14:41:31 Instrument ID: A8_N
Lims ID: 320-24236-A-3-C MSD
Client ID: FFTA2TMW-1216
Operator ID: A8-PC\A8 ALS Bottle#: 14 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 20.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

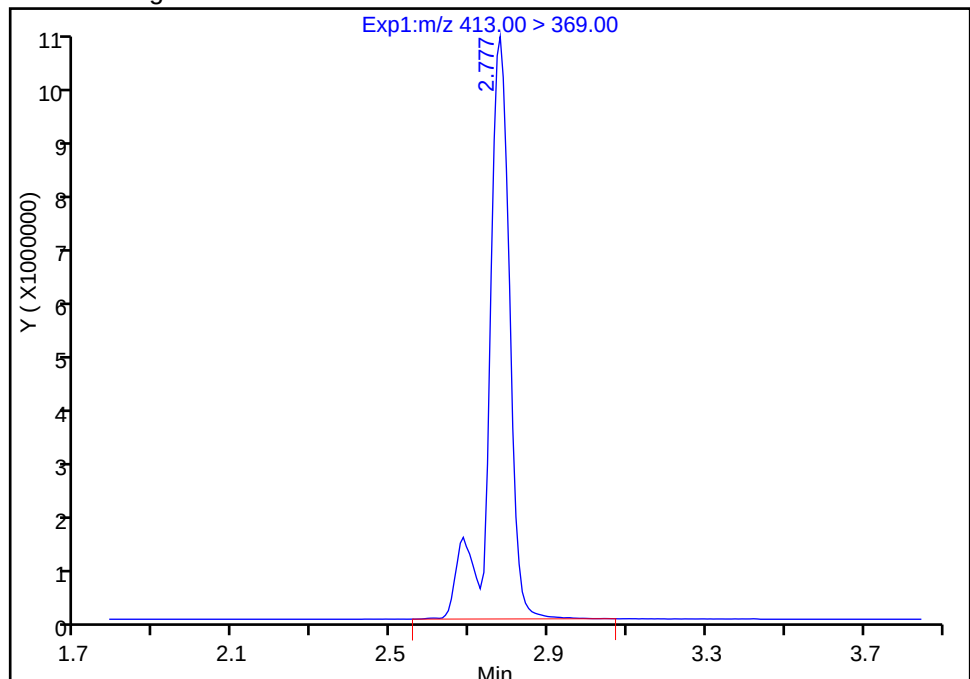
RT: 2.78
Area: 32947425
Amount: 142.3766
Amount Units: ng/ml

Processing Integration Results



RT: 2.78
Area: 37597550
Amount: 162.4714
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 03-Jan-2017 14:06:22

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento

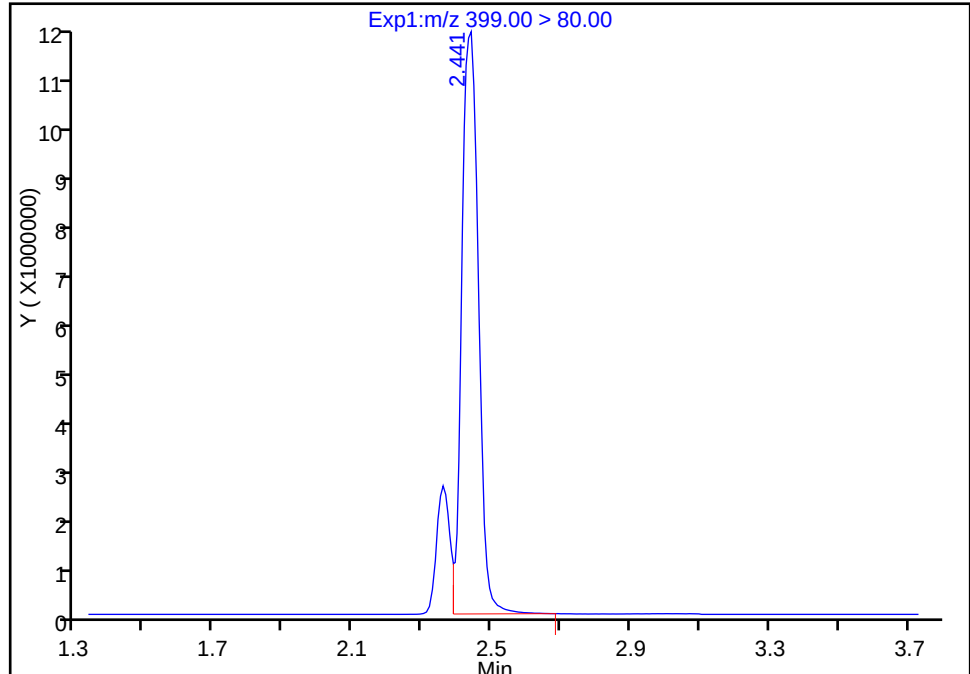
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Injection Date: 30-Dec-2016 14:41:31 Instrument ID: A8_N
Lims ID: 320-24236-A-3-C MSD
Client ID: FFTA2TMW-1216
Operator ID: A8-PC\A8 ALS Bottle#: 14 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 20.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

9 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

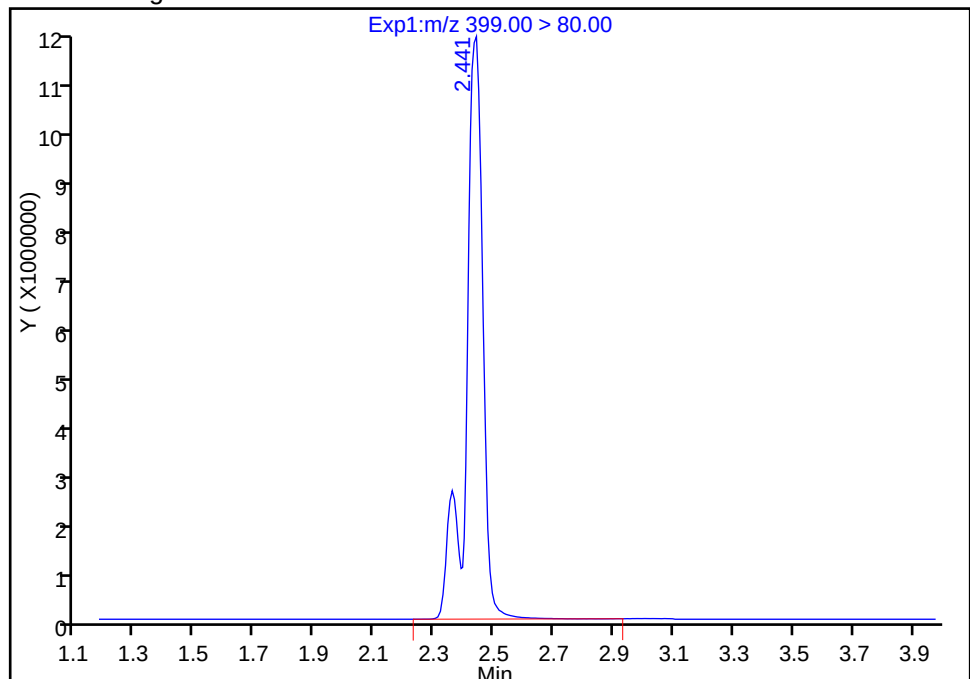
RT: 2.44
Area: 39313449
Amount: 93.736851
Amount Units: ng/ml

Processing Integration Results



RT: 2.44
Area: 46224535
Amount: 110.2153
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 03-Jan-2017 14:06:22

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-24236-1

SDG No.: _____

Instrument ID: A8_NStart Date: 12/15/2016 12:06Analysis Batch Number: 142379End Date: 12/15/2016 19:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-142379/1 CCB		12/15/2016 12:06	1		Acquity 2.1 (mm)
RB 320-142379/2 CCB		12/15/2016 12:14	1		Acquity 2.1 (mm)
RB 320-142379/3 CCB		12/15/2016 12:21	1		Acquity 2.1 (mm)
IC 320-142379/4		12/15/2016 12:29	1	15DEC2016B_004.d	Acquity 2.1 (mm)
IC 320-142379/5		12/15/2016 12:36	1	15DEC2016B_005.d	Acquity 2.1 (mm)
IC 320-142379/6		12/15/2016 12:44	1	15DEC2016B_006.d	Acquity 2.1 (mm)
IC 320-142379/7		12/15/2016 12:51	1	15DEC2016B_007.d	Acquity 2.1 (mm)
IC 320-142379/8		12/15/2016 12:59	1	15DEC2016B_008.d	Acquity 2.1 (mm)
IC 320-142379/9		12/15/2016 13:06	1	15DEC2016B_009.d	Acquity 2.1 (mm)
ICB 320-142379/10		12/15/2016 13:14	1		Acquity 2.1 (mm)
ICV 320-142379/11		12/15/2016 13:21	1	15DEC2016B_011.d	Acquity 2.1 (mm)
IC 320-142379/13		12/15/2016 13:41	1	15DEC2016BB_013.d	Acquity 2.1 (mm)
IC 320-142379/14		12/15/2016 13:48	1	15DEC2016B_014.d	Acquity 2.1 (mm)
IC 320-142379/15		12/15/2016 13:56	1	15DEC2016B_015.d	Acquity 2.1 (mm)
IC 320-142379/16		12/15/2016 14:03	1	15DEC2016B_016.d	Acquity 2.1 (mm)
IC 320-142379/17		12/15/2016 14:11	1	15DEC2016B_017.d	Acquity 2.1 (mm)
IC 320-142379/18		12/15/2016 14:18	1	15DEC2016B_018.d	Acquity 2.1 (mm)
ICB 320-142379/19		12/15/2016 14:26	1		Acquity 2.1 (mm)
ICV 320-142379/20		12/15/2016 14:33	1		Acquity 2.1 (mm)
RB 320-142379/21 CCB		12/15/2016 14:41	1		Acquity 2.1 (mm)
CCV 320-142379/24		12/15/2016 15:46	1		Acquity 2.1 (mm)
RB 320-142379/25 CCB		12/15/2016 15:54	1		Acquity 2.1 (mm)
ZZZZZ		12/15/2016 16:01	1		Acquity 2.1 (mm)
CCV 320-142379/27		12/15/2016 16:09	1		Acquity 2.1 (mm)
RB 320-142379/28 CCB		12/15/2016 16:16	1		Acquity 2.1 (mm)
ZZZZZ		12/15/2016 16:24	1		Acquity 2.1 (mm)
ZZZZZ		12/15/2016 16:31	1		Acquity 2.1 (mm)
ZZZZZ		12/15/2016 16:39	1		Acquity 2.1 (mm)
ZZZZZ		12/15/2016 16:46	1		Acquity 2.1 (mm)
ZZZZZ		12/15/2016 16:54	1		Acquity 2.1 (mm)
ZZZZZ		12/15/2016 17:01	1		Acquity 2.1 (mm)
ZZZZZ		12/15/2016 17:09	1		Acquity 2.1 (mm)
ZZZZZ		12/15/2016 17:16	1		Acquity 2.1 (mm)
ZZZZZ		12/15/2016 17:24	1		Acquity 2.1 (mm)
RB 320-142379/44 CCB		12/15/2016 19:47	1		Acquity 2.1 (mm)
CCV 320-142379/42		12/15/2016 19:54	1		Acquity 2.1 (mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Instrument ID: A8_N Start Date: 12/28/2016 16:21Analysis Batch Number: 144213 End Date: 12/28/2016 18:29

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-144213/1 CCB		12/28/2016 16:21	1		Acquity 2.1 (mm)
RB 320-144213/2 CCB		12/28/2016 16:29	1		Acquity 2.1 (mm)
RB 320-144213/3 CCB		12/28/2016 16:36	1		Acquity 2.1 (mm)
RB 320-144213/4 CCB		12/28/2016 16:44	1		Acquity 2.1 (mm)
CCV 320-144213/5 CCVL		12/28/2016 16:51	1	28DEC2016A_005. d	Acquity 2.1 (mm)
CCV 320-144213/6 CCVL		12/28/2016 16:59	1		Acquity 2.1 (mm)
CCV 320-144213/7		12/28/2016 17:06	1		Acquity 2.1 (mm)
RB 320-144213/8 CCB		12/28/2016 17:14	1		Acquity 2.1 (mm)
CCV 320-144213/17		12/28/2016 18:21	1		Acquity 2.1 (mm)
RB 320-144213/18 CCB		12/28/2016 18:29	1		Acquity 2.1 (mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-24236-1

SDG No.: _____

Instrument ID: A8_NStart Date: 12/28/2016 23:51Analysis Batch Number: 144253End Date: 12/29/2016 03:44

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-144253/1		12/28/2016 23:51	1	28DEC2016C_001.d	Acquity 2.1 (mm)
ZZZZZ		12/28/2016 23:59	1		Acquity 2.1 (mm)
MB 320-142967/1-A		12/29/2016 00:06	1	28DEC2016C_003.d	Acquity 2.1 (mm)
LCS 320-142967/2-A		12/29/2016 00:14	1	28DEC2016C_004.d	Acquity 2.1 (mm)
ZZZZZ		12/29/2016 00:21	1		Acquity 2.1 (mm)
ZZZZZ		12/29/2016 00:29	1		Acquity 2.1 (mm)
ZZZZZ		12/29/2016 00:36	1		Acquity 2.1 (mm)
ZZZZZ		12/29/2016 00:44	1		Acquity 2.1 (mm)
ZZZZZ		12/29/2016 00:52	1		Acquity 2.1 (mm)
ZZZZZ		12/29/2016 00:59	1		Acquity 2.1 (mm)
ZZZZZ		12/29/2016 01:07	1		Acquity 2.1 (mm)
ZZZZZ		12/29/2016 01:14	1		Acquity 2.1 (mm)
CCV 320-144253/13		12/29/2016 01:22	1	28DEC2016C_013.d	Acquity 2.1 (mm)
ZZZZZ		12/29/2016 01:29	1		Acquity 2.1 (mm)
320-24236-1		12/29/2016 01:37	1	28DEC2016C_015.d	Acquity 2.1 (mm)
320-24236-2		12/29/2016 01:44	1	28DEC2016C_016.d	Acquity 2.1 (mm)
320-24236-3		12/29/2016 01:52	1	28DEC2016C_017.d	Acquity 2.1 (mm)
320-24236-3 MS		12/29/2016 01:59	1	28DEC2016C_018.d	Acquity 2.1 (mm)
320-24236-3 MSD		12/29/2016 02:07	1	28DEC2016C_019.d	Acquity 2.1 (mm)
320-24236-4		12/29/2016 02:14	1	28DEC2016C_020.d	Acquity 2.1 (mm)
320-24236-5		12/29/2016 02:22	1	28DEC2016C_021.d	Acquity 2.1 (mm)
320-24236-6		12/29/2016 02:29	1	28DEC2016C_022.d	Acquity 2.1 (mm)
320-24236-7		12/29/2016 02:37	1	28DEC2016C_023.d	Acquity 2.1 (mm)
CCV 320-144253/24		12/29/2016 02:44	1	28DEC2016C_024.d	Acquity 2.1 (mm)
ZZZZZ		12/29/2016 02:52	1		Acquity 2.1 (mm)
320-24236-8		12/29/2016 02:59	1	28DEC2016C_026.d	Acquity 2.1 (mm)
320-24236-9		12/29/2016 03:07	1	28DEC2016C_027.d	Acquity 2.1 (mm)
320-24236-10		12/29/2016 03:14	1	28DEC2016C_028.d	Acquity 2.1 (mm)
CCV 320-144253/29		12/29/2016 03:22	1	28DEC2016C_029.d	Acquity 2.1 (mm)
ZZZZZ		12/29/2016 03:29	1		Acquity 2.1 (mm)
ZZZZZ		12/29/2016 03:37	1		Acquity 2.1 (mm)
ZZZZZ		12/29/2016 03:44	1		Acquity 2.1 (mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-24236-1

SDG No.: _____

Instrument ID: A8_NStart Date: 12/30/2016 10:56Analysis Batch Number: 144510End Date: 12/30/2016 17:11

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
ZZZZZ		12/30/2016 10:56	1		Acquity 2.1(mm)
ZZZZZ		12/30/2016 11:03	1		Acquity 2.1(mm)
ZZZZZ		12/30/2016 11:11	1		Acquity 2.1(mm)
ZZZZZ		12/30/2016 11:18	1		Acquity 2.1(mm)
CCV 320-144510/5 CCVL		12/30/2016 11:26	1	30DEC2016A_005. d	Acquity 2.1(mm)
CCV 320-144510/6 CCVL		12/30/2016 11:33	1		Acquity 2.1(mm)
CCV 320-144510/7		12/30/2016 11:41	1		Acquity 2.1(mm)
RB 320-144510/8 CCB		12/30/2016 11:48	1		Acquity 2.1(mm)
CCV 320-144510/9		12/30/2016 12:03	1		Acquity 2.1(mm)
RB 320-144510/10 CCB		12/30/2016 12:11	1		Acquity 2.1(mm)
CCV 320-144510/11		12/30/2016 12:18	1	30DEC2016B_001. d	Acquity 2.1(mm)
ZZZZZ		12/30/2016 12:26	1		Acquity 2.1(mm)
ZZZZZ		12/30/2016 12:33	200		Acquity 2.1(mm)
ZZZZZ		12/30/2016 12:41	200		Acquity 2.1(mm)
320-24236-2 DL		12/30/2016 12:48	200	30DEC2016B_005. d	Acquity 2.1(mm)
ZZZZZ		12/30/2016 12:56	1		Acquity 2.1(mm)
ZZZZZ		12/30/2016 13:03	10		Acquity 2.1(mm)
ZZZZZ		12/30/2016 13:11	1		Acquity 2.1(mm)
ZZZZZ		12/30/2016 13:18	1		Acquity 2.1(mm)
ZZZZZ		12/30/2016 13:26	1		Acquity 2.1(mm)
ZZZZZ		12/30/2016 13:33	50		Acquity 2.1(mm)
ZZZZZ		12/30/2016 13:41	1		Acquity 2.1(mm)
CCV 320-144510/23		12/30/2016 13:48	1	30DEC2016B_013. d	Acquity 2.1(mm)
ZZZZZ		12/30/2016 13:56	1		Acquity 2.1(mm)
ZZZZZ		12/30/2016 14:03	10		Acquity 2.1(mm)
ZZZZZ		12/30/2016 14:11	1		Acquity 2.1(mm)
ZZZZZ		12/30/2016 14:18	50		Acquity 2.1(mm)
320-24236-3 DL		12/30/2016 14:26	20	30DEC2016B_018. d	Acquity 2.1(mm)
320-24236-3 MS DL		12/30/2016 14:34	20	30DEC2016B_019. d	Acquity 2.1(mm)
320-24236-3 MSD DL		12/30/2016 14:41	20	30DEC2016B_020. d	Acquity 2.1(mm)
320-24236-4 RA		12/30/2016 14:49	1	30DEC2016B_021. d	Acquity 2.1(mm)
ZZZZZ		12/30/2016 14:56	50		Acquity 2.1(mm)
ZZZZZ		12/30/2016 15:04	50		Acquity 2.1(mm)
CCV 320-144510/34		12/30/2016 15:11	1	30DEC2016B_024. d	Acquity 2.1(mm)
ZZZZZ		12/30/2016 15:19	1		Acquity 2.1(mm)
CCV 320-144510/40		12/30/2016 15:56	1	30DEC2016B_030. d	Acquity 2.1(mm)
ZZZZZ		12/30/2016 16:04	1		Acquity 2.1(mm)
MB 320-142967/1-A RA		12/30/2016 16:11	1	30DEC2016B_032. d	Acquity 2.1(mm)
LCS 320-142967/2-A RA		12/30/2016 16:19	1	30DEC2016B_033. d	Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Instrument ID: A8_N Start Date: 12/30/2016 10:56Analysis Batch Number: 144510 End Date: 12/30/2016 17:11

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
ZZZZZ		12/30/2016 16:26	1		Acquity 2.1 (mm)
320-24236-5 RA		12/30/2016 16:34	1	30DEC2016B_035. d	Acquity 2.1 (mm)
320-24236-6 RA		12/30/2016 16:41	1	30DEC2016B_036. d	Acquity 2.1 (mm)
320-24236-7 RA		12/30/2016 16:49	1	30DEC2016B_037. d	Acquity 2.1 (mm)
ZZZZZ		12/30/2016 16:56	1		Acquity 2.1 (mm)
CCV 320-144510/49		12/30/2016 17:04	1	30DEC2016B_039. d	Acquity 2.1 (mm)
ZZZZZ		12/30/2016 17:11	1		Acquity 2.1 (mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Instrument ID: A8_N Start Date: 01/03/2017 14:13Analysis Batch Number: 144867 End Date: 01/03/2017 17:36

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-144867/1 CCB		01/03/2017 14:13	1		Acquity 2.1 (mm)
CCV 320-144867/2		01/03/2017 14:21	1		Acquity 2.1 (mm)
CCV 320-144867/3		01/03/2017 14:28	1		Acquity 2.1 (mm)
RB 320-144867/4 CCB		01/03/2017 14:36	1		Acquity 2.1 (mm)
RB 320-144867/6 CCB		01/03/2017 14:51	1		Acquity 2.1 (mm)
RB 320-144867/13 CCB		01/03/2017 15:43	1		Acquity 2.1 (mm)
CCV 320-144867/14		01/03/2017 15:51	1	03JAN2017C_014. d	Acquity 2.1 (mm)
CCV 320-144867/15		01/03/2017 15:58	1		Acquity 2.1 (mm)
ZZZZZ		01/03/2017 16:06	1		Acquity 2.1 (mm)
320-24236-1 DL		01/03/2017 16:58	100	03JAN2017C_023. d	Acquity 2.1 (mm)
320-24236-9 DL		01/03/2017 17:06	100	03JAN2017C_024. d	Acquity 2.1 (mm)
320-24236-10 DL		01/03/2017 17:13	100	03JAN2017C_025. d	Acquity 2.1 (mm)
CCV 320-144867/26		01/03/2017 17:21	1	03JAN2017C_026. d	Acquity 2.1 (mm)
CCV 320-144867/27		01/03/2017 17:28	1		Acquity 2.1 (mm)
ZZZZZ		01/03/2017 17:36	1		Acquity 2.1 (mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-24236-1

SDG No.: _____

Instrument ID: A8_NStart Date: 01/04/2017 16:33Analysis Batch Number: 145022End Date: 01/04/2017 22:03

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-145022/5 CCVL		01/04/2017 16:33	1	04JAN2017A_005. d	Acquity 2.1(mm)
CCV 320-145022/6 CCVL		01/04/2017 16:40	1		Acquity 2.1(mm)
CCV 320-145022/7		01/04/2017 16:48	1		Acquity 2.1(mm)
CCV 320-145022/8		01/04/2017 16:55	1		Acquity 2.1(mm)
ZZZZZ		01/04/2017 17:03	1		Acquity 2.1(mm)
ZZZZZ		01/04/2017 17:18	1		Acquity 2.1(mm)
ZZZZZ		01/04/2017 17:25	1		Acquity 2.1(mm)
ZZZZZ		01/04/2017 17:33	1		Acquity 2.1(mm)
CCV 320-145022/18		01/04/2017 18:10	1		Acquity 2.1(mm)
CCV 320-145022/19		01/04/2017 18:18	1		Acquity 2.1(mm)
ZZZZZ		01/04/2017 18:25	1		Acquity 2.1(mm)
CCV 320-145022/31		01/04/2017 19:48	1		Acquity 2.1(mm)
CCV 320-145022/32		01/04/2017 19:55	1		Acquity 2.1(mm)
ZZZZZ		01/04/2017 20:03	1		Acquity 2.1(mm)
CCV 320-145022/41		01/04/2017 21:03	1	04JAN2017A_041. d	Acquity 2.1(mm)
CCV 320-145022/42		01/04/2017 21:10	1		Acquity 2.1(mm)
ZZZZZ		01/04/2017 21:18	1		Acquity 2.1(mm)
ZZZZZ		01/04/2017 21:25	1		Acquity 2.1(mm)
ZZZZZ		01/04/2017 21:33	1		Acquity 2.1(mm)
320-24236-2 DL2		01/04/2017 21:40	1	04JAN2017A_046. d	Acquity 2.1(mm)
CCV 320-145022/47		01/04/2017 21:48	1	04JAN2017A_047. d	Acquity 2.1(mm)
CCV 320-145022/48		01/04/2017 21:55	1		Acquity 2.1(mm)
ZZZZZ		01/04/2017 22:03	1		Acquity 2.1(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Batch Number: 142967 Batch Start Date: 12/19/16 14:38 Batch Analyst: Marchenko, Veronika PBatch Method: 3535 Batch End Date: 12/20/16 18:14

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00046	LCPFCSP 00073
MB 320-142967/1		3535, 537 (Modified)				250 mL	0.5 mL	25 uL	
LCS 320-142967/2		3535, 537 (Modified)				250 mL	0.5 mL	25 uL	20 uL
320-24236-A-1	FSS6TMW-1216	3535, 537 (Modified)	T	271.48 g	26.16 g	245.3 mL	0.5 mL	25 uL	
320-24236-A-2	FSS2TMW-1216	3535, 537 (Modified)	T	280.04 g	27.00 g	253 mL	0.5 mL	25 uL	
320-24236-A-3	FFTA2TMW-1216	3535, 537 (Modified)	T	268.47 g	26.98 g	241.5 mL	0.5 mL	25 uL	
320-24236-A-3 MS	FFTA2TMW-1216	3535, 537 (Modified)	T	264.35 g	30.69 g	233.7 mL	0.5 mL	25 uL	20 uL
320-24236-A-3 MSD	FFTA2TMW-1216	3535, 537 (Modified)	T	263.98 g	28.01 g	236 mL	0.5 mL	25 uL	20 uL
320-24236-A-4	FB120816	3535, 537 (Modified)	T	306.35 g	27.17 g	279.2 mL	0.5 mL	25 uL	
320-24236-A-5	EBWC120816-a	3535, 537 (Modified)	T	286.26 g	27.08 g	259.2 mL	0.5 mL	25 uL	
320-24236-A-6	EBWC120816-b	3535, 537 (Modified)	T	269.41 g	27.94 g	241.5 mL	0.5 mL	25 uL	
320-24236-A-7	EBDPT120816-a	3535, 537 (Modified)	T	292.74 g	26.64 g	266.1 mL	0.5 mL	25 uL	
320-24236-A-8	EBDPT120816-b	3535, 537 (Modified)	T	299.51 g	26.49 g	273 mL	0.5 mL	25 uL	
320-24236-A-9	FFTA4TMW-1216	3535, 537 (Modified)	T	288.85 g	27.77 g	261.1 mL	0.5 mL	25 uL	
320-24236-A-10	FFTA4TMW-1216-D	3535, 537 (Modified)	T	289.02 g	28.33 g	260.7 mL	0.5 mL	25 uL	

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

537 (Modified)

Page 1 of 3

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Batch Number: 142967 Batch Start Date: 12/19/16 14:38 Batch Analyst: Marchenko, Veronika PBatch Method: 3535 Batch End Date: 12/20/16 18:14

Batch Notes	
Balance ID	QA-070
Batch Comment	0.1N NaOH/H2O: 794893
H2O ID	12/15/16
Hexane ID	0000135581
Manifold ID	5,6
Methanol ID	798085
Pipette ID	MD05306
Analyst ID - Reagent Drop	VPM
Analyst ID - SU Reagent Drop	VPM
Analyst ID - SU Reagent Drop Witness	OM
Solvent Lot #	800649
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 150mg
Solid Phase Extraction Disk ID	002836112A

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Batch Number: 142967 Batch Start Date: 12/19/16 14:38 Batch Analyst: Marchenko, Veronika PBatch Method: 3535 Batch End Date: 12/20/16 18:14

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00046	
320-24236-A-2	FSS2TMW-1216	3535, Dilution, 537 (Modified)	T	280.04 g	27.00 g	253 mL	0.5 mL	25 uL	

Batch Notes	
Balance ID	QA-070
Batch Comment	0.1N NaOH/H2O: 794893
H2O ID	12/15/16
Hexane ID	0000135581
Manifold ID	5,6
Methanol ID	798085
Pipette ID	MD05306
Analyst ID - Reagent Drop	VPM
Analyst ID - SU Reagent Drop	VPM
Analyst ID - SU Reagent Drop Witness	OM
Solvent Lot #	800649
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 150mg
Solid Phase Extraction Disk ID	002836112A

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

537 (Modified)

Page 3 of 3

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24236-1

SDG No.: _____

Batch Number: 145739 Batch Start Date: 12/19/16 14:38 Batch Analyst: Phomsopha, ThepBatch Method: Dilution Batch End Date: 12/20/16 18:14

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialVolume1	FinalVolume1	InitialVolume2	FinalVolume2	InitialVolume3	FinalVolume3
320-24236-A-2-A	FSS2TMW-1216	Dilution, 537 (Modified)	T	30 uL	300 uL	15 uL	300 uL	15 uL	300 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	DilutionFactor	CalcMsg	LCMPFCSU 00046			
320-24236-A-2-A	FSS2TMW-1216	Dilution, 537 (Modified)	T	4000 No Unit	OK	15 uL			

Batch Notes	
Batch Comment	0.1N NaOH/H2O: 794893

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

537 (Modified)

Page 1 of 1

HPLC/LCMS Data Review Checklist

Job Number(s): 24149; 24184; 24236

Work List ID(s): 38288; 38358; 38437

Extraction Batch: 142967

Analysis Batch(es): 144253; 144510; 144867

Delivery Rank: 4

Due Date: 12/23/16

A. Calibration/Instrument Run QC	1 st Level	2 nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# <u>142379</u>	✓	✓	
2. ICAL, CCV Frequency & Criteria met.	✓	✓	
• RF _{average} criteria appropriate for the method.	✓	✓	
• Linear Regression criteria appropriate if required ($r \geq 0.995$).	✓	✓	
• Quadratic fit criteria appropriate if required ($r^2 \geq 0.990$).			✓
• For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005?	✓	✓	
• All curve points show calculated concentrations.	✓	✓	
3. Peaks correctly ID'd by data system.	✓	✓	
5. Tune check frequency & criteria met and Tune check report attached.	✓	✓	
B. QA/QC			
1. Are all QC samples properly linked in TALS?	✓	✓	
2. Method blank, LCS/LCSD and MS/SD frequencies met.	✓	✓	
3. LCS/LCSD and MB data are within control limits. If not, NCM is present.	✓	✓	
4. Are MS/MSD recoveries and RPD within control limits?	✓	✓	
5. Holding Times were met for prep and analytical.	✓	✓	
6. IS/Surrogate recoveries meet criteria or properly noted.	✓	✓	
C. Sample Analysis			
1. Was correct analysis performed and were project instructions followed?	✓	✓	
2. If required, are compounds within RT windows?	✓	✓	
3. If required, are positive hits confirmed and >40% RPD flagged?			✓
4. Manual Integrations reviewed and appropriate.	✓	✓	
5. All analytes correctly reported. (Primary, secondary, acceptable status)	✓	✓	
6. Correct reporting limits used. (based on client request, prep factors, and dilutions)	✓	✓	
D. Documentation			
1. Are all non-conformances documented/attached? NCM#	✓	✓	
2. Do results make sense (e.g. dilutions, etc.)?	✓	✓	
3. Have all flags been reviewed for appropriateness?	✓	✓	
4. For level 3 and 4 reports, have forms and raw data been reviewed?	✓	✓	
5. Was QC Checker run for this job?	✓	✓	

*Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.

1st Level (Analyst): [Signature]

Date: 1/5/17

2nd Level Reviewer: [Signature]

Date: 1/6/2017

NCMS: 74501; 74503; 74504; 74505; 74506; 73213; 74508; 74533; 74534; 74535

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 28DEC2016C_PFC

Worklist Number: 38288

TAL BATCH: 144253

Instrument Name: A8_N

Chrom Method: A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b

QC Batching: Disabled

Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 144253	LC PFC ICAL Raw Batch: 144254	LC PFAS ICAL Raw Batch: 144255
# 1 CCV L5	# 1 CCV L5	# 1 CCV L5	# 1 CCV L5
# 2 RB	# 2 RB	# 2 RB	# 2 RB
✓ # 3 MB 320-142967/1-A	# 3 MB 320-142967/1-A	MB contamination NCM 74501 MS/MSD high targets NCM 74503 MS/MSD LCS good NCM 74504 IDA low NCM 74505 Eflag NCM 74506	# 13 CCV L4 # 14 RB
✓ # 4 LCS 320-142967/2-A	# 4 LCS 320-142967/2-A		
✓ # 5 320-24149-A-1-A	# 5 320-24149-A-1-A		
# 6 320-24149-A-2-A	# 6 320-24149-A-2-A		
# 7 320-24149-A-3-A	# 7 320-24149-A-3-A		
# 8 320-24149-A-4-A	# 8 320-24149-A-4-A		
✓ # 9 320-24184-A-1-A	# 9 320-24184-A-1-A		
# 10 320-24184-A-2-A - Reprog	# 10 320-24184-A-2-A		
✓ # 11 320-24184-A-3-A	# 11 320-24184-A-3-A		
# 12 320-24184-A-4-A - Reprog	# 12 320-24184-A-4-A		
✓ # 13 CCV L4 - PFOS Fails	# 13 CCV L4	# 13 CCV L4	# 13 CCV L4
# 14 RB	# 14 RB	# 14 RB	# 14 RB
✓ # 15 320-24236-A-1-A	# 15 320-24236-A-1-A	# 24 CCV L5 # 25 RB	# 24 CCV L5 # 25 RB
✓ # 16 320-24236-A-2-A	# 16 320-24236-A-2-A		
# 17 320-24236-A-3-A	# 17 320-24236-A-3-A		
# 18 320-24236-A-3-B MS	# 18 320-24236-A-3-B MS		
# 19 320-24236-A-3-C MSD	# 19 320-24236-A-3-C MSD		
# 20 320-24236-A-4-A	# 20 320-24236-A-4-A		
# 21 320-24236-A-5-A	# 21 320-24236-A-5-A		
# 22 320-24236-A-6-A	# 22 320-24236-A-6-A		
# 23 320-24236-A-7-A	# 23 320-24236-A-7-A		
# 24 CCV L5	# 24 CCV L5		
# 25 RB	# 25 RB		
✓ # 26 320-24236-A-8-A	# 26 320-24236-A-8-A	# 29 CCV L4 # 30 RB # 31 RB # 32 RB	# 29 CCV L4 # 30 RB # 31 RB # 32 RB
# 27 320-24236-A-9-A	# 27 320-24236-A-9-A		
# 28 320-24236-A-10-A	# 28 320-24236-A-10-A		
# 29 CCV L4	# 29 CCV L4		
# 30 RB	# 30 RB		
# 31 RB	# 31 RB		
# 32 RB	# 32 RB		

CCV L2 144213

ICV 142379

Tune NCM
73213

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 30DEC2016A_PFC

Worklist Number: 38358

Instrument Name: A8_N

Chrom Method: A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b

QC Batching: Disabled

Limit Group Batching: Enabled

TAL PFC-IC - 144511
TAL DOD - 144510

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 144510	LC PFC ICAL Raw Batch: 144511	LC PFAS ICAL Raw Batch: 144512
# 1 RB	# 1 RB	# 1 RB	# 1 RB
# 2 RB	# 2 RB	# 2 RB	# 2 RB
# 3 RB	# 3 RB	# 3 RB	# 3 RB
# 4 RB	# 4 RB	# 4 RB	# 4 RB
# 5 CCV L2	# 5 CCV L2	# 5 CCV L2	# 5 CCV L2
# 6 CCV L2 ADD ON	# 6 CCV L2 ADD ON	# 6 CCV L2 ADD ON	# 6 CCV L2 ADD ON
# 7 CCV L5	# 7 CCV L5	# 7 CCV L5	# 7 CCV L5
# 8 RB	# 8 RB	# 8 RB	# 8 RB
# 9 CCV L4	# 9 CCV L4	# 9 CCV L4	# 9 CCV L4
#10 RB	#10 RB	#10 RB	#10 RB
#11 CCV L5	#11 CCV L5	#11 CCV L5	#11 CCV L5
#12 RB	#12 RB	#12 RB	#12 RB
✓ #13 320-24149-A-1-A	#13 320-24149-A-1-A	} needs complex DL	
✓ #14 320-24184-A-3-A	#14 320-24184-A-3-A		
✓ #15 320-24236-A-2-A	#15 320-24236-A-2-A		
#16 RB	#16 RB	#16 RB	#16 RB
✓ #17 320-24149-A-2-A	#17 320-24149-A-2-A	#19 RB NEM 74501	#19 RB
✓ #18 320-24149-A-2-A	#18 320-24149-A-2-A		
#19 RB	#19 RB		
#20 320-24149-A-3-A	#20 320-24149-A-3-A	#23 CCV L4 #24 RB	#23 CCV L4 #24 RB
✓ #21 320-24184-A-1-A	#21 320-24184-A-1-A		
✓ #22 320-24184-A-2-A	#22 320-24184-A-2-A		
#23 CCV L4	#23 CCV L4	RL Dil NEM 74508	
#24 RB	#24 RB		
✓ #25 320-24184-A-4-A	#25 320-24184-A-4-A		
✓ #26 320-24184-A-4-A	#26 320-24184-A-4-A		
#27 320-24236-A-1-A	#27 320-24236-A-1-A		
✓ #28 320-24236-A-3-A	#28 320-24236-A-3-A		
✓ #29 320-24236-A-3-B MS	#29 320-24236-A-3-B MS		
✓ #30 320-24236-A-3-C MSD	#30 320-24236-A-3-C MSD		
#31 320-24236-A-4-A	#31 320-24236-A-4-A		
✓ #32 320-24236-A-9-A	#32 320-24236-A-9-A	#34 CCV L5 #35 RB	#34 CCV L5 #35 RB
✓ #33 320-24236-A-10-A	#33 320-24236-A-10-A		
#34 CCV L5	#34 CCV L5		
#35 RB	#35 RB	#36 320-24282-A-1-A #37 320-24282-A-2-A #38 320-24282-A-2-B MS #39 320-24282-A-2-C MSD	#36 320-24282-A-1-A #37 320-24282-A-2-A #38 320-24282-A-2-B MS #39 320-24282-A-2-C MSD
#36 320-24282-A-1-A			
#37 320-24282-A-2-A			
#38 320-24282-A-2-B MS		#40 CCV L4 #41 RB	#40 CCV L4 #41 RB
#39 320-24282-A-2-C MSD			
#40 CCV L4	#40 CCV L4		
#41 RB	#41 RB	#42 MB 320-142967/1-A #43 LCS 320-142967/2-A	#42 MB 320-142967/1-A #43 LCS 320-142967/2-A
#42 MB 320-142967/1-A	#42 MB 320-142967/1-A		
#43 LCS 320-142967/2-A	#43 LCS 320-142967/2-A		
#44 320-24149-A-4-A	#44 320-24149-A-4-A		
#45 320-24236-A-5-A	#45 320-24236-A-5-A		
#46 320-24236-A-6-A	#46 320-24236-A-6-A		
✓ #47 320-24236-A-7-A	#47 320-24236-A-7-A	#49 CCV L5 #50 RB	#49 CCV L5 #50 RB
#48 320-24236-A-8-A	#48 320-24236-A-8-A		
#49 CCV L5	#49 CCV L5		
#50 RB	#50 RB		

ICV 142379

TestAmerica Laboratories

Worklist QC Batch Report

Worklist Name: 03JAN2017C_PFC

Worklist Number: 38437

Instrument Name: A8_N

Chrom Method: A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170104-38437.b

QC Batching: Disabled

Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 144867	LC PFC ICAL Raw Batch: 144868	LC PFAS ICAL Raw Batch: 144869
# 1 RB	# 1 RB	# 1 RB	# 1 RB
# 2 CCV L5	# 2 CCV L5	# 2 CCV L5	# 2 CCV L5
# 3 CCV L5 ADD ON	# 3 CCV L5 ADD ON	# 3 CCV L5 ADD ON	# 3 CCV L5 ADD ON
# 4 RB	# 4 RB	# 4 RB	# 4 RB
# 5 320-24209-A-4-B	# 5 320-24209-A-4-B	# 5 320-24209-A-4-B	# 5 320-24209-A-4-B
# 6 RB	# 6 RB	# 6 RB	# 6 RB
# 7 MB 320-143624/1-A	# 7 MB 320-143624/1-A	# 7 MB 320-143624/1-A	# 7 MB 320-143624/1-A
# 8 320-23317-A-88-A MDLV	# 8 320-23317-A-88-A MDLV	# 8 320-23317-A-88-A MDLV	# 8 320-23317-A-88-A MDLV
# 9 320-23317-A-89-A MDLV	# 9 320-23317-A-89-A MDLV	# 9 320-23317-A-89-A MDLV	# 9 320-23317-A-89-A MDLV
#10 320-23317-A-90-A MDLV	#10 320-23317-A-90-A MDLV	#10 320-23317-A-90-A MDLV	#10 320-23317-A-90-A MDLV
#11 320-23317-A-91-A LOQV	#11 320-23317-A-91-A LOQV	#11 320-23317-A-91-A LOQV	#11 320-23317-A-91-A LOQV
#12 320-23317-A-92-A LOQV	#12 320-23317-A-92-A LOQV	#12 320-23317-A-92-A LOQV	#12 320-23317-A-92-A LOQV
#13 RB	#13 RB	#13 RB	#13 RB
#14 CCV L4	#14 CCV L4	#14 CCV L4	#14 CCV L4
#15 CCV L4 ADD ON	#15 CCV L4 ADD ON	#15 CCV L4 ADD ON	#15 CCV L4 ADD ON
#16 RB	#16 RB	#16 RB	#16 RB
#17 MB 320-143618/1-A	#17 MB 320-143618/1-A	#17 MB 320-143618/1-A	#17 MB 320-143618/1-A
#18 320-23317-A-82-A MDLV	#18 320-23317-A-82-A MDLV	#18 320-23317-A-82-A MDLV	#18 320-23317-A-82-A MDLV
#19 320-23317-A-83-A MDLV	#19 320-23317-A-83-A MDLV	#19 320-23317-A-83-A MDLV	#19 320-23317-A-83-A MDLV
#20 320-23317-A-84-A LOQV	#20 320-23317-A-84-A LOQV	#20 320-23317-A-84-A LOQV	#20 320-23317-A-84-A LOQV
#21 QC MB 01683632913	#21 QC MB 01683632913	#21 QC MB 01683632913	#21 QC MB 01683632913
#22 QC LCS 01683632913	#22 QC LCS 01683632913	#22 QC LCS 01683632913	#22 QC LCS 01683632913
#23 320-24236-A-1-A	#23 320-24236-A-1-A		
#24 320-24236-A-9-A	#24 320-24236-A-9-A		
#25 320-24236-A-10-A	#25 320-24236-A-10-A		
#26 CCV L5	#26 CCV L5	#26 CCV L5	#26 CCV L5
#27 CCV L5 ADD ON	#27 CCV L5 ADD ON	#27 CCV L5 ADD ON	#27 CCV L5 ADD ON
#28 RB	#28 RB	#28 RB	#28 RB

ICV 142380 SBC
142379 1/4/17

ICV 142380

CCV L2 144784

IDA FOSA low NCM 74533

IDA high NCM 74534

Dilution NCM 74535

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142967

Analyst: Marchenko, Veronika P

Batch Open: 12/19/2016 2:38:00PM

Method Code: 320-3535_PFC-320

Batch End: 12/20/16 18:14

Solid-Phase Extraction (SPE)

D.L. 1

Due 12/29

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 MB-320-142967/1 N/A	N/A		250 mL				N/A	N/A	N/A	RI	MB-320-142967/1-A
			0.5 mL								
2 LCS-320-142967/2 N/A	N/A		250 mL				N/A	N/A	N/A	RI	LCS-320-142967/2-A
			0.5 mL								
3 320-24149-A-1 (PFC_IDA_DOD5)	N/A (320-24149-1)	308.46 g	281.4 mL				12/23/16	12_Days	4	200X 100X	320-24149-A-1-A
		27.04 g	0.5 mL								
4 320-24149-A-2 (PFC_IDA_DOD5)	N/A (320-24149-1)	313.10 g	286 mL				12/23/16	12_Days	4	10X 1X	320-24149-A-2-A
		27.07 g	0.5 mL								
5 320-24149-A-3 (PFC_IDA_DOD5)	N/A (320-24149-1)	301.18 g	274.2 mL				12/23/16	12_Days	4	1X	320-24149-A-3-A
		27.02 g	0.5 mL								
6 320-24149-A-4 (PFC_IDA_DOD5)	N/A (320-24149-1)	291.97 g	264.8 mL				12/23/16	12_Days	4	50X 2012/29/16	320-24149-A-4-A
		27.13 g	0.5 mL								
7 320-24184-A-1 (PFC_IDA_DOD5)	N/A (320-24184-1)	298.32 g	271 mL				12/27/16	12_Days	4	50X	320-24184-A-1-A
		27.31 g	0.5 mL								
8 320-24184-A-2 (PFC_IDA_DOD5)	N/A (320-24184-1)	280.69 g	253.5 mL				12/27/16	12_Days	4	1X	320-24184-A-2-A
		27.19 g	0.5 mL								
9 320-24184-A-3 (PFC_IDA_DOD5)	N/A (320-24184-1)	307.26 g	280.7 mL				12/27/16	12_Days	4	200X 100X	320-24184-A-3-A
		26.57 g	0.5 mL								
10 320-24184-A-4 (PFC_IDA_DOD5)	N/A (320-24184-1)	306.47 g	279.8 mL				12/27/16	12_Days	4	10X 1X	320-24184-A-4-A
		26.67 g	0.5 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142967

Analyst: Marchenko, Veronika P

Batch Open: 12/19/2016 2:38:00PM

Method Code: 320-3535_PFC-320

Batch End:

11	320-24236-A-1 (PFC_IDA_DOD5)	N/A (320-24236-1)	271.48 g 26.16 g	245.3 mL 0.5 mL				12/28/16	12_Days	4	50X 100X	
12	320-24236-A-2 (PFC_IDA_DOD5)	N/A (320-24236-1)	280.04 g 27.00 g	253 mL 0.5 mL				12/28/16	12_Days	4	300X 200X 100X	
13	320-24236-A-3 (PFC_IDA_DOD5)	N/A (320-24236-1)	268.47 g 26.98 g	241.5 mL 0.5 mL				12/28/16	12_Days	4	20X	
14	320-24236-A-3-MS (PFC_IDA_DOD5)	N/A (320-24236-1)	264.35 g 30.69 g	233.7 mL 0.5 mL				12/28/16	12_Days	4	20X	
15	320-24236-A-3-MSD (PFC_IDA_DOD5)	N/A (320-24236-1)	263.98 g 28.01 g	236 mL 0.5 mL				12/28/16	12_Days	4	20X	
16	320-24236-A-4 (PFC_IDA_DOD5)	N/A (320-24236-1)	306.35 g 27.17 g	279.2 mL 0.5 mL				12/28/16	12_Days	4	1X	
17	320-24236-A-5 (PFC_IDA_DOD5)	N/A (320-24236-1)	286.26 g 27.08 g	259.2 mL 0.5 mL				12/28/16	12_Days	4	RI	
18	320-24236-A-6 (PFC_IDA_DOD5)	N/A (320-24236-1)	269.41 g 27.94 g	241.5 mL 0.5 mL				12/28/16	12_Days	4	RI	
19	320-24236-A-7 (PFC_IDA_DOD5)	N/A (320-24236-1)	292.74 g 26.64 g	266.1 mL 0.5 mL				12/28/16	12_Days	4	RI	
20	320-24236-A-8 (PFC_IDA_DOD5)	N/A (320-24236-1)	299.51 g 26.49 g	273 mL 0.5 mL				12/28/16	12_Days	4	RI	
21	320-24236-A-9 (PFC_IDA_DOD5)	N/A (320-24236-1)	288.85 g 27.77 g	261.1 mL 0.5 mL				12/28/16	12_Days	4	50X 100X	
22	320-24236-A-10 (PFC_IDA_DOD5)	N/A (320-24236-1)	289.02 g 28.33 g	260.7 mL 0.5 mL				12/28/16	12_Days	4	50X 100X	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142967

Analyst: Marchenko, Veronika P

Batch Open: 12/19/2016 2:38:00PM

Method Code: 320-3535_PFC-320

Batch End:

Batch Notes

Manifold ID 5,6
Methanol ID 798085
Hexane ID 0000135581
Sodium Hydroxide ID NA
First Start time NA
First End time NA
SPE Cartridge Type WAX 150mg
Solid Phase Extraction Disk ID 002836112A
Balance ID QA-070
H2O ID 12/15/16
Pipette ID MD05306
Solvent Name 0.3% NH4OH/MeOH
Solvent Lot # 800649
Analyst ID - Reagent Drop VPM
Analyst ID - SU Reagent Drop VPM
Analyst ID - SU Reagent Drop *dm*
Witness
Acid Name NA
Acid ID NA
Reagent ID NA
Reagent Lot Number NA
SOP Number WS-LC-0025

Page 903 of 918

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142967

Analyst: Marchenko, Veronika P

Batch Open: 12/19/2016 2:38:00PM

Method Code: 320-3535_PFC-320

Batch End:

Batch Comment 0.1N NaOH/H2O: 794893

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142967

Analyst: Marchenko, Veronika P

Batch Open: 12/19/2016 2:38:00PM

Method Code: 320-3535_PFC-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-142967/1	LCMPFCSU_00046	25 uL	~~250 mL~~ 25 mL	VPM 12/19/16	DM 12/19/16
LCS 320-142967/2	LCMPFCSU_00046	25 uL	~~250 mL~~		
LCS 320-142967/2	LCPFCSP_00073	20 uL	~~250 mL~~		
320-24149-A-1	LCMPFCSU_00046	25 uL			
320-24149-A-2	LCMPFCSU_00046	25 uL			
320-24149-A-3	LCMPFCSU_00046	25 uL			
320-24149-A-4	LCMPFCSU_00046	25 uL			
320-24184-A-1	LCMPFCSU_00046	25 uL			
320-24184-A-2	LCMPFCSU_00046	25 uL			
320-24184-A-3	LCMPFCSU_00046	25 uL			
320-24184-A-4	LCMPFCSU_00046	25 uL			
320-24236-A-1	LCMPFCSU_00046	25 uL			
320-24236-A-2	LCMPFCSU_00046	25 uL			
320-24236-A-3	LCMPFCSU_00046	25 uL			
320-24236-A-3 MS	LCMPFCSU_00046	25 uL			
320-24236-A-3 MS	LCPFCSP_00073	20 uL			
320-24236-A-3 MSD	LCMPFCSU_00046	25 uL			
320-24236-A-3 MSD	LCPFCSP_00073	20 uL			

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142967

Analyst: Marchenko, Veronika P

Batch Open: 12/19/2016 2:38:00PM

Method Code: 320-3535_PFC-320

Batch End:

320-24236-A-4	LCMPFCSU_00046	25 uL	0.5mL	VAN 12/19/16	OM 12/19/16
320-24236-A-5	LCMPFCSU_00046	25 uL			
320-24236-A-6	LCMPFCSU_00046	25 uL			
320-24236-A-7	LCMPFCSU_00046	25 uL			
320-24236-A-8	LCMPFCSU_00046	25 uL			
320-24236-A-9	LCMPFCSU_00046	25 uL			
320-24236-A-10	LCMPFCSU_00046	25 uL	✓	✓	✓

Other Reagents:

Reagent

Amount/Units

Lot#:

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142967

Analyst: Marchenko, Veronika P

Batch Open: 12/19/2016 2:38:00PM

Method Code: 320-3535_PFC-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-142967/1	LCMPFCSU_00046	25 uL	0.5 mL		
LCS 320-142967/2	LCMPFCSU_00046	25 uL	0.5 mL		
LCS 320-142967/2	LCPFCSP_00073	20 uL	0.5 mL		
320-24149-A-1	LCMPFCSU_00046	25 uL	0.5 mL		
320-24149-A-2	LCMPFCSU_00046	25 uL	0.5 mL		
320-24149-A-3	LCMPFCSU_00046	25 uL	0.5 mL		
320-24149-A-4	LCMPFCSU_00046	25 uL	0.5 mL		
320-24184-A-1	LCMPFCSU_00046	25 uL	0.5 mL		
320-24184-A-2	LCMPFCSU_00046	25 uL	0.5 mL		
320-24184-A-3	LCMPFCSU_00046	25 uL	0.5 mL		
320-24184-A-4	LCMPFCSU_00046	25 uL	0.5 mL		
320-24236-A-1	LCMPFCSU_00046	25 uL	0.5 mL		
320-24236-A-2	LCMPFCSU_00046	25 uL	0.5 mL		
320-24236-A-3	LCMPFCSU_00046	25 uL	0.5 mL		
320-24236-A-3 MS	LCMPFCSU_00046	25 uL	0.5 mL		
320-24236-A-3 MS	LCPFCSP_00073	20 uL	0.5 mL		
320-24236-A-3 MSD	LCMPFCSU_00046	25 uL	0.5 mL		
320-24236-A-3 MSD	LCPFCSP_00073	20 uL	0.5 mL		

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142967

Analyst: Marchenko, Veronika P

Batch Open: 12/19/2016 2:38:00PM

Method Code: 320-3535_PFC-320

Batch End:

320-24236-A-4	LCMPFCSU_00046	25 uL	0.5 mL		
320-24236-A-5	LCMPFCSU_00046	25 uL	0.5 mL		
320-24236-A-6	LCMPFCSU_00046	25 uL	0.5 mL		
320-24236-A-7	LCMPFCSU_00046	25 uL	0.5 mL		
320-24236-A-8	LCMPFCSU_00046	25 uL	0.5 mL		
320-24236-A-9	LCMPFCSU_00046	25 uL	0.5 mL		
320-24236-A-10	LCMPFCSU_00046	25 uL	0.5 mL		

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Other Reagents:		
Reagent	Amount/Units	Lot#:

Preparation Batch Number(s): 1429107 Test: PFC-10A-0005(L)
Earliest Holding Time: 12/20/16

Sample List Tab	1 st Level Reviewer	2 nd Level Reviewer
Samples identified to the correct method	/	/
All necessary NCMs filed (including holding time)	/	/
Method/sample/login/QAS checked and correct	/	/
Worksheet Tab	1 st Level Reviewer	2 nd Level Reviewer
All samples properly preserved	NA	NA
Weights in anticipated range and not targeted	/	/
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check)	/	/
The pH is transcribed correctly in TALS	NA	NA
All additional information transcribed into TALS is correct and raw data is attached	/	/
Comments are transcribed correctly in TALS	/	/
Reagents Tab	1 st Level Reviewer	2 nd Level Reviewer
All necessary reagents not expired and entered into TALS	/	/
All spike amounts correct and added to necessary samples and QC	/	/
Batch Information	1 st Level Reviewer	2 nd Level Reviewer
Date and time accurate and entered into TALS correctly	/	/
All necessary 'batch information' complete and entered into TALS correctly	/	/

1st Level Reviewer: VPM

Date: 12/20/16

2nd Level Reviewer: NSH

Date: 12-20-16

Comments: _____

Sample Dilution Record

Method ID PFC-1DA

Job # 320-24149, 320-24184, 320-24236 TD 12/30/16

Analyst (Print Name) Ther Phomsopha

Analyst Initials TP

Date 12/30/16

Sample#	Original F.V. (uL)	Aliquot (uL)	Dilution F.V. (uL)	Dilution Factor
320-24149-1	500	30	300	10X
320-24149-1(10X)	300	15	300	200X
320-24149-2	500	30	300	10X
320-24184-1	500	30	1500	50X
320-24184-3	500	30	300	10X
320-24184-3(10X)	300	15	300	200X
320-24184-4	500	30	300	10X
320-24236-1	500	30	1500	50X
320-24236-2	500	30	300	10X
320-24236-2(10X)	300	15	300	200X
320-24236-3	500	15	300	20X
320-24236-3MS	500	15	300	20X
320-24236-3MSD	500	15	300	20X
320-24236-9	500	30	1500	50X
320-24236-10	500	30	1500	50X
TP 12/30/16				

Comments:

Sample Dilution Record

Method ID PFC-1DA

Job # 320-24236

Analyst (Print Name) Ther Phansophe Analyst Initials TP

Date 11/3/17

[illegible]

TP 1/4/17

Comments:

HPLC/LCMS Data Review Checklist

Job Number(s): 24149; 24184; 24236

Work List ID(s): 38480

Extraction Batch: 445299 145739

Analysis Batch(es): 145022

Delivery Rank: 4 11/10/17

Due Date: 12/23/16; 12/27/16; 12/28/16

	1 st Level	2 nd Level	N/A
A. Calibration/Instrument Run QC			
1. ICAL locked in Chrom and TALS? ICAL Batch# <u>142379</u>	✓	✓	
2. ICAL, CCV Frequency & Criteria met.	✓	✓	
• RF _{average} criteria appropriate for the method.	✓	✓	
• Linear Regression criteria appropriate if required ($r \geq 0.995$).	✓	✓	
• Quadratic fit criteria appropriate if required ($r^2 \geq 0.990$).			✓
• For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005?	✓	✓	
• All curve points show calculated concentrations.	✓	✓	
3. Peaks correctly ID'd by data system.	✓	✓	
5. Tune check frequency & criteria met and Tune check report attached.	✓	✓	
B. QA/QC			
1. Are all QC samples properly linked in TALS?	✓	✓	
2. Method blank, LCS/LCSD and MS/SD frequencies met.	✓	✓	
3. LCS/LCSD and MB data are within control limits. If not, NCM is present.	✓	✓	
4. Are MS/MSD recoveries and RPD within control limits?	✓	✓	
5. Holding Times were met for prep and analytical.	✓	✓	
6. IS/Surrogate recoveries meet criteria or properly noted.	✓	✓	
C. Sample Analysis			
1. Was correct analysis performed and were project instructions followed?	✓	✓	
2. If required, are compounds within RT windows?	✓	✓	
3. If required, are positive hits confirmed and >40% RPD flagged?			✓
4. Manual Integrations reviewed and appropriate.	✓	✓	
5. All analytes correctly reported. (Primary, secondary, acceptable status)	✓	✓	
6. Correct reporting limits used. (based on client request, prep factors, and dilutions)	✓	✓	
D. Documentation			
1. Are all non-conformances documented/attached? NCM# <u>74664</u>	✓	✓	
2. Do results make sense (e.g. dilutions, etc.)?	✓	✓	
3. Have all flags been reviewed for appropriateness?	✓	✓	
4. For level 3 and 4 reports, have forms and raw data been reviewed?		✓	
5. Was QC Checker run for this job?	✓	✓	

*Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.

1st Level (Analyst): SE/TP

Date: 1/6/17

2nd Level Reviewer: Muway

Date: 1/11/2017

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 04JAN2017_PFC

Worklist Number: 38480

Instrument Name: A8_N

Chrom Method: A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170105-38480.b

QC Batching: Disabled

Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 145022	LC PFC ICAL Raw Batch: 145023	LC PFAS ICAL Raw Batch: 145024
# 1 RB	# 1 RB	# 1 RB	# 1 RB
# 2 RB	# 2 RB	# 2 RB	# 2 RB
# 3 RB	# 3 RB	# 3 RB	# 3 RB
# 4 RB	# 4 RB	# 4 RB	# 4 RB
# 5 CCV L2	# 5 CCV L2	# 5 CCV L2	# 5 CCV L2
# 6 CCV L2 ADD ON	# 6 CCV L2 ADD ON	# 6 CCV L2 ADD ON	# 6 CCV L2 ADD ON
# 7 CCV L5	# 7 CCV L5	# 7 CCV L5	# 7 CCV L5
# 8 CCV L5 ADD ON	# 8 CCV L5 ADD ON	# 8 CCV L5 ADD ON	# 8 CCV L5 ADD ON
# 9 RB	# 9 RB	# 9 RB	# 9 RB
#10 320-23763-A-20-A		#10 320-23763-A-20-A	#10 320-23763-A-20-A
#11 RB	#11 RB	#11 RB	#11 RB
#12 RB	#12 RB	#12 RB	#12 RB
#13 RB	#13 RB	#13 RB	#13 RB
#14 MB 320-144781/1-A		#14 MB 320-144781/1-A	#14 MB 320-144781/1-A
#15 LCS 320-144781/2-A		#15 LCS 320-144781/2-A	#15 LCS 320-144781/2-A
#16 LCSD 320-144781/3-A		#16 LCSD 320-144781/3-A	#16 LCSD 320-144781/3-A
#17 320-24608-B-6-A		#17 320-24608-B-6-A	#17 320-24608-B-6-A
#18 CCV L4	#18 CCV L4	#18 CCV L4	#18 CCV L4
#19 CCV L4 ADD ON	#19 CCV L4 ADD ON	#19 CCV L4 ADD ON	#19 CCV L4 ADD ON
#20 RB	#20 RB	#20 RB	#20 RB
#21 MB 320-144783/1-A		#21 MB 320-144783/1-A	#21 MB 320-144783/1-A
#22 LCS 320-144783/2-A		#22 LCS 320-144783/2-A	#22 LCS 320-144783/2-A
#23 320-24645-A-1-A		#23 320-24645-A-1-A	#23 320-24645-A-1-A
#24 320-24645-A-2-A		#24 320-24645-A-2-A	#24 320-24645-A-2-A
#25 320-24645-A-3-A		#25 320-24645-A-3-A	#25 320-24645-A-3-A
#26 320-24645-A-4-A		#26 320-24645-A-4-A	#26 320-24645-A-4-A
#27 320-24645-A-5-A		#27 320-24645-A-5-A	#27 320-24645-A-5-A
#28 320-24645-A-6-A		#28 320-24645-A-6-A	#28 320-24645-A-6-A
#29 320-24645-A-6-B MS		#29 320-24645-A-6-B MS	#29 320-24645-A-6-B MS
#30 320-24645-A-6-C MSD		#30 320-24645-A-6-C MSD	#30 320-24645-A-6-C MSD
#31 CCV L5	#31 CCV L5	#31 CCV L5	#31 CCV L5
#32 CCV L5 ADD ON	#32 CCV L5 ADD ON	#32 CCV L5 ADD ON	#32 CCV L5 ADD ON
#33 RB	#33 RB	#33 RB	#33 RB
#34 320-24645-A-7-A		#34 320-24645-A-7-A	#34 320-24645-A-7-A
#35 320-24645-A-8-A		#35 320-24645-A-8-A	#35 320-24645-A-8-A
#36 320-24645-A-9-A		#36 320-24645-A-9-A	#36 320-24645-A-9-A
#37 320-24645-A-10-A		#37 320-24645-A-10-A	#37 320-24645-A-10-A
#38 320-24645-A-11-A		#38 320-24645-A-11-A	#38 320-24645-A-11-A
#39 320-24645-A-12-A		#39 320-24645-A-12-A	#39 320-24645-A-12-A
#40 320-24645-A-13-A		#40 320-24645-A-13-A	#40 320-24645-A-13-A
#41 CCV L4	#41 CCV L4	#41 CCV L4	#41 CCV L4
#42 CCV L4 ADD ON	#42 CCV L4 ADD ON	#42 CCV L4 ADD ON	#42 CCV L4 ADD ON
#43 RB	#43 RB	#43 RB	#43 RB
#44 320-24149-A-1-F			
#46 320-24184-A-3-F			
#45 320-24236-A-2-F			
#47 CCV L5	#47 CCV L5	#47 CCV L5	#47 CCV L5
#48 CCV L5 ADD ON	#48 CCV L5 ADD ON	#48 CCV L5 ADD ON	#48 CCV L5 ADD ON
#49 RB	#49 RB	#49 RB	#49 RB

Complex DL
NCM 74664

ICV 142379

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-145739

Analyst: Phomsopha, Thep

Batch Open: 12/19/2016 2:38:00PM

Method Code: 320-PFC_Dil-320

Batch End: 12/20/2016 6:14:00PM

Dilution and Re-formation of Standards

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Adj1 Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 320-24149-A-1-A (PFC_IDA_DOD5)	N/A (320-24149-1)		300 uL		12/23/16	12_Days	4		
2 320-24184-A-3-A (PFC_IDA_DOD5)	N/A (320-24184-1)		300 uL		12/27/16	12_Days	4		
3 320-24236-A-2-A (PFC_IDA_DOD5)	N/A (320-24236-1)		300 uL		12/28/16	12_Days	4		

Batch Notes

Batch Comment 0.1N NaOH/H2O: 794893

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-145739

Analyst: Phomsopha, Thep

Batch Open: 12/19/2016 2:38:00PM

Method Code: 320-PFC_Dil-320

Batch End: 12/20/2016 6:14:00PM

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
320-24149-A-1-A	LCMPFCSU_00046	15 uL	300 uL		
320-24184-A-3-A	LCMPFCSU_00046	15 uL	300 uL		
320-24236-A-2-A	LCMPFCSU_00046	15 uL	300 uL		

Other Reagents:

Reagent	Amount/Units	Lot#:

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Shipping and Receiving Documents



CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

COC No. 25320414

Page 1 of 1

Project Name: PHA Groundwater Investigation

PQ No. 21529

Project No. 00012746 Phase FI FS

Site Location: NAS Dallas

Sample Analysis Requested (Enter number of containers for each test)

CTO No. JM 78

RC Project Manager: Tom Wilberg

Sampler/Site	Phone#
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Lab Name: Test America Surveys

Turnaround Time(specify): 21-Day

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (mm/dd/yy)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	Field Filtered (Y/N)	Total No. of Containers	USEPA Method	Extra Volume for	HOLD
	FSS 6 TMW - 1216	FSS 6 TMW	12/8/16	0930	WG	N	N	2	X		
	FSS 2 TMW - 1216	FSS 2 TMW	12/8/16	1135	WG	N	N	2	X		
	FFTA 2 TMW - 1216	FFTA 2 TMW	12/8/16	1240	WG	N	N	6	X		
	FB 120816	—	12/8/16	1320	WQ	FB	N	2	X		
	EBWC 120816-a	—	12/8/16	0750	WQ	EB	N	2	X		
	EBWC 120816-b	—	12/8/16	0920	WQ	EB	N	2	X		
	EDPT 120816-a	—	12/8/16	0810	WQ	EB	N	2	X		
	EDPT 120816-b	—	12/8/16	0930	WQ	EB	N	2	X		
	FFTA 4 TMW - 1216	FFTA 4 TMW	12/8/16	1410	WG	N	N	2	X		
	FFTA 4 TMW - 1216-D	—	12/8/16	—	WQ	FD	N	2	X		


 320-24236 Chain of Custody

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Page 917 of 918

Field Comments:

Lab Comments:

Sample Shipment and Delivery Details

Relinquished by (signature)

Date _____

Time

Received by (signature)

Date _____

Time

Number of coolers in shipment: 1

Samples Iced?(check) Yes ☒ No ☐

Method of Shipment: Feed Ex

Airbill No:

Date Shipped:	12	8	14

1 TRRP Reporting

- no preservative

12 | 0 | 20 | 4

1530

1	12/9/11 09:50

DAAC

(1) **AA**=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) **Sample Type:** AB=Ambient Blk, EB=Equipment Blk, FB=Field Blk, FD=Field Duplicate Sample, IDW=Investigative-Derived Waste, MIS=Incremental Sampling Methodology, N=Normal Environmental Sample, TB=Trip Blk

(3) **Preservative added:** HA=Hydrochloric Acid, NI=Nitric Acid, SH=Sodium Hydroxide, SA=Sulfuric Acid, ME=Methanol, SB=sodium bisulfate, ST=Sodium Thiosulfate. If **NO preservative** added leave blank

Rev 5/12

Login Sample Receipt Checklist

Client: EnSafe, Inc.

Job Number: 320-24236-1

Login Number: 24236

List Source: TestAmerica Sacramento

List Number: 1

Creator: Edman, Connor M

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

DODCMD_ID	INSTALLATION_ID	SDG	SITE_NAME	NORM_SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	CONTRACT_ID	DO_CTO_NUMBER	CONTR_NAME	SAMPLE_NAME	SAMPLE_MATRIX_DESC	SAMPLE_TYPE_DESC	COLLECT_DATE	ANALYTICAL_METHOD	ANALYTICAL_METHOD_GRP_DESC	RES_META_ID
SOUTHEAST	DALLAS_NAS	320-24236-1	SWMU 00004	SWMU 00004	FSS6TMW	Temporary well point	2441906.692	6957187.872	N6247011D8013	JM37	RESOLUTION CONSULTANTS	FSS6TMW-1216	Ground water	Normal (Regular)	8-Dec-16	537_MOD	Perfluoroalkyl Compounds	20170918061901.00
SOUTHEAST	DALLAS_NAS	320-24236-1	SWMU 00004	SWMU 00004	FSS2TMW	Temporary well point	2440497.094	6956702.44	N6247011D8013	JM37	RESOLUTION CONSULTANTS	FSS2TMW-1216	Ground water	Normal (Regular)	8-Dec-16	537_MOD	Perfluoroalkyl Compounds	20170918061901.00
SOUTHEAST	DALLAS_NAS	320-24236-1	SWMU 00007	SWMU 00007	FFTA4TMW	Temporary well point	2437007.668	6952948.133	N6247011D8013	JM37	RESOLUTION CONSULTANTS	FFTA4TMW-1216-D	Ground water	Field duplicate	8-Dec-16	537_MOD	Perfluoroalkyl Compounds	20170918061901.00
SOUTHEAST	DALLAS_NAS	320-24236-1	SWMU 00007	SWMU 00007	FFTA4TMW	Temporary well point	2437007.668	6952948.133	N6247011D8013	JM37	RESOLUTION CONSULTANTS	FFTA4TMW-1216	Ground water	Normal (Regular)	8-Dec-16	537_MOD	Perfluoroalkyl Compounds	20170918061901.00
SOUTHEAST	DALLAS_NAS	320-24236-1	SWMU 00008	SWMU 00008	FFTA2TMW	Temporary well point	2436745.29	6953310.595	N6247011D8013	JM37	RESOLUTION CONSULTANTS	FFTA2TMW-1216	Ground water	Normal (Regular)	8-Dec-16	537_MOD	Perfluoroalkyl Compounds	20170918061901.00
SOUTHEAST	DALLAS_NAS	320-24236-1							N6247011D8013	JM37	RESOLUTION CONSULTANTS	EBDPT120816-B	Water for QC samples	QC Sample	8-Dec-16	537_MOD	Perfluoroalkyl Compounds	20170918061901.00
SOUTHEAST	DALLAS_NAS	320-24236-1							N6247011D8013	JM37	RESOLUTION CONSULTANTS	EBDPT120816-A	Water for QC samples	QC Sample	8-Dec-16	537_MOD	Perfluoroalkyl Compounds	20170918061901.00
SOUTHEAST	DALLAS_NAS	320-24236-1							N6247011D8013	JM37	RESOLUTION CONSULTANTS	FB120816	Water for QC samples	QC Sample	8-Dec-16	537_MOD	Perfluoroalkyl Compounds	20170918061901.00
SOUTHEAST	DALLAS_NAS	320-24236-1							N6247011D8013	JM37	RESOLUTION CONSULTANTS	EBWC120816-A	Water for QC samples	QC Sample	8-Dec-16	537_MOD	Perfluoroalkyl Compounds	20170918061901.00
SOUTHEAST	DALLAS_NAS	320-24236-1							N6247011D8013	JM37	RESOLUTION CONSULTANTS	EBWC120816-B	Water for QC samples	QC Sample	8-Dec-16	537_MOD	Perfluoroalkyl Compounds	20170918061901.00