



**Groundwater Sample Results,
Combined Level 2 and Level 4 Laboratory Report,
and the Sample Location Report, SDG 320-24184-1**

*Naval Air Station Dallas
Dallas, Texas*

July 2019

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NAS DALLAS, TX
SSIC 5000-33c

LABORATORY DATA PACKAGE 320-24184-1 NAS DALLAS TX

01/13/2017
TEST AMERICA, INC.

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-24184-1

Job Description: PFAS, NAS Dallas

For:

EnSafe, Inc.

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Irving, TX 75038

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: 320-24184-1

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.
B	Blank contamination: The analyte was detected above one-half the reporting limit in an associated blank.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
D	The reported value is from a dilution.
H	Sample was prepped or analyzed beyond the specified holding time

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: 320-24184-1

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 12/08/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 3.4 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 sample FSS3TMW-1216 (320-24184-3) associated with this CCV was greater than the calibration range. The sample was analyzed at a dilution and reported from a analytical batch 320-145022.

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 method blank for preparation batch 320-142967 and analytical batch 320-144253 contained Perfluorohexanoic acid (PFHxA) above half the reporting limit (1/2RL). Any samples that were either greater than 10X the value found in the method blank or not detected were reported with no further corrective action. Any sample with a detection less than 10x the level found in the method blank were re-extracted outside of holding time and both sets of data reported..

The Isotope Dilution Analyte (IDA) recoveries for several analytes in the following samples is below the method recommended limit: 308A51MW-LF-1216 (320-24184-1), SWMU1-01-1216 (320-24184-2), FSS3TMW-1216 (320-24184-3), and SWMU1-02-1216 (320-24184-4). 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 following samples were diluted to bring the concentration of target analytes within the calibration range: 308A51MW-LF-1216 (320-24184-1), FSS3TMW-1216 (320-24184-3), and SWMU1-02-1216 (320-24184-4). Elevated reporting limits (RLs) are provided.

The following samples (FSS3TMW-1216 (320-24184-3)) 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. FSS3TMW-1216 (320-24184-3) - 2000X dilution

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

Organic Prep

The following sample was a cloudy white color after adding the methanol and water for the final volume. 308A51MW-LF-1216 (320-24184-1)

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 320-144971.

The following sample was re-prepared outside of preparation holding time because the Method Blank was above 1/2 the reporting limit for PFHxA: SWMU1-01-1216 (320-24184-2) and SWMU1-02-1216 (320-24184-4).

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: 320-24184-1

Client Sample ID: 308A51MW-LF-1216

Lab Sample ID: 320-24184-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.9	E	0.0023	0.00042	ug/L	1		537 (Modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.6	E	0.0023	0.00091	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.4	E B	0.0023	0.00073	ug/L	1		537 (Modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.3	E	0.0023	0.00074	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.6	E M	0.0023	0.00069	ug/L	1		537 (Modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.13		0.0023	0.00060	ug/L	1		537 (Modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.0027		0.0023	0.00041	ug/L	1		537 (Modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.00047	J	0.0023	0.00037	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.6	E M	0.0023	0.00085	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.9	E	0.0023	0.00080	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA)	0.0021	J	0.0023	0.00059	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanoic acid (PFBA) - DL	5.3	D	0.12	0.021	ug/L	50		537 (Modified)	Total/NA
Perfluoropentanoic acid (PFPeA) - DL	9.1	D	0.12	0.046	ug/L	50		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	11	D B	0.12	0.036	ug/L	50		537 (Modified)	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	4.3	D	0.12	0.037	ug/L	50		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	2.6	D M	0.12	0.035	ug/L	50		537 (Modified)	Total/NA
Perfluorononanoic acid (PFNA) - DL	0.13	D	0.12	0.030	ug/L	50		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	4.3	D	0.12	0.042	ug/L	50		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	17	D	0.12	0.040	ug/L	50		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	11	D	0.18	0.059	ug/L	50		537 (Modified)	Total/NA

Client Sample ID: SWMU1-01-1216

Lab Sample ID: 320-24184-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.020	M	0.0025	0.00045	ug/L	1		537 (Modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.0039	M	0.0025	0.00098	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.0057	B	0.0025	0.00078	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.0028		0.0025	0.00074	ug/L	1		537 (Modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.0011	J	0.0025	0.00039	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.00092	J	0.0025	0.00091	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0034		0.0025	0.00086	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA) - RE	0.0057	H	0.0024	0.00074	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: FSS3TMW-1216

Lab Sample ID: 320-24184-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.6	E	0.0022	0.00041	ug/L	1		537 (Modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.4	E	0.0022	0.00088	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	3.4	E B	0.0022	0.00070	ug/L	1		537 (Modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.2	E	0.0022	0.00071	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA)	6.9	E	0.0022	0.00067	ug/L	1		537 (Modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.19		0.0022	0.00058	ug/L	1		537 (Modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.067		0.0022	0.00039	ug/L	1		537 (Modified)	Total/NA
Perfluoroundecanoic acid (PFUnA)	0.0021	J	0.0022	0.00067	ug/L	1		537 (Modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.00042	J	0.0022	0.00036	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	4.4	E M	0.0022	0.00082	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.6	E	0.0022	0.00077	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	21	E Q	0.0036	0.0011	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: 320-24184-1

Client Sample ID: FSS3TMW-1216 (Continued)

Lab Sample ID: 320-24184-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorodecanesulfonic acid (PFDS)	0.51	E	0.0036	0.0011	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA)	0.61	E	0.0022	0.00057	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanoic acid (PFBA) - DL	8.6	D	0.45	0.082	ug/L	200		537 (Modified)	Total/NA
Perfluoropentanoic acid (PFPeA) - DL	12	D	0.45	0.18	ug/L	200		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	38	D B	0.45	0.14	ug/L	200		537 (Modified)	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	4.0	D	0.45	0.14	ug/L	200		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	13	D M	0.45	0.13	ug/L	200		537 (Modified)	Total/NA
Perfluorononanoic acid (PFNA) - DL	0.16	J D	0.45	0.12	ug/L	200		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	19	D	0.45	0.16	ug/L	200		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	61	D	0.45	0.15	ug/L	200		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	260	E D	0.71	0.23	ug/L	200		537 (Modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA) - DL	0.63	D	0.45	0.11	ug/L	200		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL2	300		7.1	2.3	ug/L	1		537 (Modified)	Total/NA

Client Sample ID: SWMU1-02-1216

Lab Sample ID: 320-24184-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.016	M	0.0022	0.00041	ug/L	1		537 (Modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.0049	M	0.0022	0.00088	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.012	B	0.0022	0.00070	ug/L	1		537 (Modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.00081	J	0.0022	0.00072	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.0047	M	0.0022	0.00067	ug/L	1		537 (Modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.00072	J	0.0022	0.00039	ug/L	1		537 (Modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.00044	J	0.0022	0.00036	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.010		0.0022	0.00082	ug/L	1		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.033	M	0.0022	0.00078	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.99	E	0.0036	0.0011	ug/L	1		537 (Modified)	Total/NA
Perfluorodecanesulfonic acid (PFDS)	0.0064		0.0036	0.0011	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA)	0.018		0.0022	0.00057	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanoic acid (PFBA) - DL	0.016	J D M	0.022	0.0041	ug/L	10		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	0.011	J D B	0.022	0.0070	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.0095	J D	0.022	0.0082	ug/L	10		537 (Modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	0.030	D	0.022	0.0078	ug/L	10		537 (Modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	1.2	D	0.036	0.011	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA) - DL	0.017	J D	0.022	0.0057	ug/L	10		537 (Modified)	Total/NA
Perfluorohexanoic acid (PFHxA) - RE	0.0081	H M	0.0023	0.00072	ug/L	1		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: 320-24184-1

Client Sample ID: 308A51MW-LF-1216

Lab Sample ID: 320-24184-1

Date Collected: 12/07/16 13:40

Matrix: Water

Date Received: 12/08/16 10:00

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.9	E	0.0023	0.00042	ug/L		12/19/16 14:38	12/29/16 00:52	1
Perfluoropentanoic acid (PFPeA)	1.6	E	0.0023	0.00091	ug/L		12/19/16 14:38	12/29/16 00:52	1
Perfluorohexanoic acid (PFHxA)	1.4	E B	0.0023	0.00073	ug/L		12/19/16 14:38	12/29/16 00:52	1
Perfluoroheptanoic acid (PFHpA)	2.3	E	0.0023	0.00074	ug/L		12/19/16 14:38	12/29/16 00:52	1
Perfluorooctanoic acid (PFOA)	1.6	E M	0.0023	0.00069	ug/L		12/19/16 14:38	12/29/16 00:52	1
Perfluorononanoic acid (PFNA)	0.13		0.0023	0.00060	ug/L		12/19/16 14:38	12/29/16 00:52	1
Perfluorodecanoic acid (PFDA)	0.0027		0.0023	0.00041	ug/L		12/19/16 14:38	12/29/16 00:52	1
Perfluoroundecanoic acid (PFUnA)	0.0018	U	0.0023	0.00069	ug/L		12/19/16 14:38	12/29/16 00:52	1
Perfluorododecanoic acid (PFDoA)	0.0018	U	0.0023	0.00054	ug/L		12/19/16 14:38	12/29/16 00:52	1
Perfluorotridecanoic Acid (PFTriA)	0.0018	U	0.0023	0.00051	ug/L		12/19/16 14:38	12/29/16 00:52	1
Perfluorotetradecanoic acid (PFTeA)	0.00047	J	0.0023	0.00037	ug/L		12/19/16 14:38	12/29/16 00:52	1
Perfluorobutanesulfonic acid (PFBS)	1.6	E M	0.0023	0.00085	ug/L		12/19/16 14:38	12/29/16 00:52	1
Perfluorohexanesulfonic acid (PFHxS)	4.9	E	0.0023	0.00080	ug/L		12/19/16 14:38	12/29/16 00:52	1
Perfluorodecanesulfonic acid (PFDS)	0.0028	U	0.0037	0.0011	ug/L		12/19/16 14:38	12/29/16 00:52	1
Perfluorooctane Sulfonamide (FOSA)	0.0021	J	0.0023	0.00059	ug/L		12/19/16 14:38	12/29/16 00:52	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	10	Q	25 - 150	12/19/16 14:38	12/29/16 00:52	1
13C4 PFBA	15	Q	25 - 150	12/19/16 14:38	12/29/16 00:52	1
13C5-PFPeA	24	Q	25 - 150	12/19/16 14:38	12/29/16 00:52	1
13C2 PFHxA	31		25 - 150	12/19/16 14:38	12/29/16 00:52	1
13C4-PFHpA	23	Q	25 - 150	12/19/16 14:38	12/29/16 00:52	1
13C4 PFOA	49		25 - 150	12/19/16 14:38	12/29/16 00:52	1
13C5 PFNA	39		25 - 150	12/19/16 14:38	12/29/16 00:52	1
13C2 PFDA	117		25 - 150	12/19/16 14:38	12/29/16 00:52	1
13C2 PFUnA	121		25 - 150	12/19/16 14:38	12/29/16 00:52	1
13C2 PFDoA	110		25 - 150	12/19/16 14:38	12/29/16 00:52	1
18O2 PFHxS	20	Q	25 - 150	12/19/16 14:38	12/29/16 00:52	1
13C4 PFOS	38		25 - 150	12/19/16 14:38	12/29/16 00:52	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	5.3	D	0.12	0.021	ug/L		12/19/16 14:38	12/30/16 13:33	50
Perfluoropentanoic acid (PFPeA)	9.1	D	0.12	0.046	ug/L		12/19/16 14:38	12/30/16 13:33	50
Perfluorohexanoic acid (PFHxA)	11	D B	0.12	0.036	ug/L		12/19/16 14:38	12/30/16 13:33	50
Perfluoroheptanoic acid (PFHpA)	4.3	D	0.12	0.037	ug/L		12/19/16 14:38	12/30/16 13:33	50
Perfluorooctanoic acid (PFOA)	2.6	D M	0.12	0.035	ug/L		12/19/16 14:38	12/30/16 13:33	50
Perfluorononanoic acid (PFNA)	0.13	D	0.12	0.030	ug/L		12/19/16 14:38	12/30/16 13:33	50
Perfluorodecanoic acid (PFDA)	0.046	U	0.12	0.020	ug/L		12/19/16 14:38	12/30/16 13:33	50
Perfluoroundecanoic acid (PFUnA)	0.092	U	0.12	0.035	ug/L		12/19/16 14:38	12/30/16 13:33	50
Perfluorododecanoic acid (PFDoA)	0.092	U	0.12	0.027	ug/L		12/19/16 14:38	12/30/16 13:33	50
Perfluorotridecanoic Acid (PFTriA)	0.092	U	0.12	0.025	ug/L		12/19/16 14:38	12/30/16 13:33	50
Perfluorotetradecanoic acid (PFTeA)	0.046	U	0.12	0.018	ug/L		12/19/16 14:38	12/30/16 13:33	50
Perfluorobutanesulfonic acid (PFBS)	4.3	D	0.12	0.042	ug/L		12/19/16 14:38	12/30/16 13:33	50
Perfluorohexanesulfonic acid (PFHxS)	17	D	0.12	0.040	ug/L		12/19/16 14:38	12/30/16 13:33	50

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-24184-1

Client Sample ID: 308A51MW-LF-1216

Lab Sample ID: 320-24184-1

Date Collected: 12/07/16 13:40

Matrix: Water

Date Received: 12/08/16 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	11	D	0.18	0.059	ug/L		12/19/16 14:38	12/30/16 13:33	50
Perfluorodecanesulfonic acid (PFDS)	0.14	U	0.18	0.056	ug/L		12/19/16 14:38	12/30/16 13:33	50
Perfluorooctane Sulfonamide (FOSA)	0.092	U	0.12	0.029	ug/L		12/19/16 14:38	12/30/16 13:33	50
<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	11	Q	25 - 150				12/19/16 14:38	12/30/16 13:33	50
13C4 PFBA	117		25 - 150				12/19/16 14:38	12/30/16 13:33	50
13C5-PFPeA	130		25 - 150				12/19/16 14:38	12/30/16 13:33	50
13C2 PFHxA	118		25 - 150				12/19/16 14:38	12/30/16 13:33	50
13C4-PFHpA	98		25 - 150				12/19/16 14:38	12/30/16 13:33	50
13C4 PFOA	140		25 - 150				12/19/16 14:38	12/30/16 13:33	50
13C5 PFNA	120		25 - 150				12/19/16 14:38	12/30/16 13:33	50
13C2 PFDA	122		25 - 150				12/19/16 14:38	12/30/16 13:33	50
13C2 PFUnA	124		25 - 150				12/19/16 14:38	12/30/16 13:33	50
13C2 PFDoA	126		25 - 150				12/19/16 14:38	12/30/16 13:33	50
18O2 PFHxS	112		25 - 150				12/19/16 14:38	12/30/16 13:33	50
13C4 PFOS	125		25 - 150				12/19/16 14:38	12/30/16 13:33	50

Client Sample ID: SWMU1-01-1216

Lab Sample ID: 320-24184-2

Date Collected: 12/07/16 14:45

Matrix: Water

Date Received: 12/08/16 10:00

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.020	M	0.0025	0.00045	ug/L		12/19/16 14:38	12/30/16 13:41	1
Perfluoropentanoic acid (PFPeA)	0.0039	M	0.0025	0.00098	ug/L		12/19/16 14:38	12/30/16 13:41	1
Perfluorohexanoic acid (PFHxA)	0.0057	B	0.0025	0.00078	ug/L		12/19/16 14:38	12/30/16 13:41	1
Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.00079	ug/L		12/19/16 14:38	12/30/16 13:41	1
Perfluorooctanoic acid (PFOA)	0.0028		0.0025	0.00074	ug/L		12/19/16 14:38	12/30/16 13:41	1
Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.00064	ug/L		12/19/16 14:38	12/30/16 13:41	1
Perfluorodecanoic acid (PFDA)	0.00099	U	0.0025	0.00043	ug/L		12/19/16 14:38	12/30/16 13:41	1
Perfluoroundecanoic acid (PFUnA)	0.0020	U	0.0025	0.00074	ug/L		12/19/16 14:38	12/30/16 13:41	1
Perfluorododecanoic acid (PFDoA)	0.0020	U	0.0025	0.00058	ug/L		12/19/16 14:38	12/30/16 13:41	1
Perfluorotridecanoic Acid (PFTriA)	0.0020	U	0.0025	0.00054	ug/L		12/19/16 14:38	12/30/16 13:41	1
Perfluorotetradecanoic acid (PFTeA)	0.0011	J	0.0025	0.00039	ug/L		12/19/16 14:38	12/30/16 13:41	1
Perfluorobutanesulfonic acid (PFBS)	0.00092	J	0.0025	0.00091	ug/L		12/19/16 14:38	12/30/16 13:41	1
Perfluorohexanesulfonic acid (PFHxS)	0.0034		0.0025	0.00086	ug/L		12/19/16 14:38	12/30/16 13:41	1
Perfluorooctanesulfonic acid (PFOS)	0.0030	U	0.0039	0.0013	ug/L		12/19/16 14:38	12/30/16 13:41	1
Perfluorodecanesulfonic acid (PFDS)	0.0030	U	0.0039	0.0012	ug/L		12/19/16 14:38	12/30/16 13:41	1
Perfluorooctane Sulfonamide (FOSA)	0.0020	U	0.0025	0.00063	ug/L		12/19/16 14:38	12/30/16 13:41	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	7	Q	25 - 150				12/19/16 14:38	12/30/16 13:41	1
13C4 PFBA	37		25 - 150				12/19/16 14:38	12/30/16 13:41	1
13C5-PFPeA	93		25 - 150				12/19/16 14:38	12/30/16 13:41	1
13C2 PFHxA	113		25 - 150				12/19/16 14:38	12/30/16 13:41	1
13C4-PFHpA	106		25 - 150				12/19/16 14:38	12/30/16 13:41	1
13C4 PFOA	100		25 - 150				12/19/16 14:38	12/30/16 13:41	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-24184-1

Client Sample ID: SWMU1-01-1216

Lab Sample ID: 320-24184-2

Date Collected: 12/07/16 14:45

Matrix: Water

Date Received: 12/08/16 10:00

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	95		25 - 150	12/19/16 14:38	12/30/16 13:41	1
13C2 PFDA	96		25 - 150	12/19/16 14:38	12/30/16 13:41	1
13C2 PFUnA	103		25 - 150	12/19/16 14:38	12/30/16 13:41	1
13C2 PFDaA	104		25 - 150	12/19/16 14:38	12/30/16 13:41	1
18O2 PFHxS	118		25 - 150	12/19/16 14:38	12/30/16 13:41	1
13C4 PFOS	116		25 - 150	12/19/16 14:38	12/30/16 13:41	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - RE

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	0.0057	H	0.0024	0.00074	ug/L		01/04/17 16:57	01/05/17 15:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	116		25 - 150	01/04/17 16:57	01/05/17 15:38	1

Client Sample ID: FSS3TMW-1216

Lab Sample ID: 320-24184-3

Date Collected: 12/07/16 08:55

Matrix: Water

Date Received: 12/08/16 10:00

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.6	E	0.0022	0.00041	ug/L		12/19/16 14:38	12/29/16 01:07	1
Perfluoropentanoic acid (PFPeA)	1.4	E	0.0022	0.00088	ug/L		12/19/16 14:38	12/29/16 01:07	1
Perfluorohexanoic acid (PFHxA)	3.4	E B	0.0022	0.00070	ug/L		12/19/16 14:38	12/29/16 01:07	1
Perfluoroheptanoic acid (PFHpA)	3.2	E	0.0022	0.00071	ug/L		12/19/16 14:38	12/29/16 01:07	1
Perfluorooctanoic acid (PFOA)	6.9	E	0.0022	0.00067	ug/L		12/19/16 14:38	12/29/16 01:07	1
Perfluorononanoic acid (PFNA)	0.19		0.0022	0.00058	ug/L		12/19/16 14:38	12/29/16 01:07	1
Perfluorodecanoic acid (PFDA)	0.067		0.0022	0.00039	ug/L		12/19/16 14:38	12/29/16 01:07	1
Perfluoroundecanoic acid (PFUnA)	0.0021	J	0.0022	0.00067	ug/L		12/19/16 14:38	12/29/16 01:07	1
Perfluorododecanoic acid (PFDaA)	0.0018	U	0.0022	0.00052	ug/L		12/19/16 14:38	12/29/16 01:07	1
Perfluorotridecanoic Acid (PFTriA)	0.0018	U	0.0022	0.00049	ug/L		12/19/16 14:38	12/29/16 01:07	1
Perfluorotetradecanoic acid (PFTeA)	0.00042	J	0.0022	0.00036	ug/L		12/19/16 14:38	12/29/16 01:07	1
Perfluorobutanesulfonic acid (PFBS)	4.4	E M	0.0022	0.00082	ug/L		12/19/16 14:38	12/29/16 01:07	1
Perfluorohexanesulfonic acid (PFHxS)	9.6	E	0.0022	0.00077	ug/L		12/19/16 14:38	12/29/16 01:07	1
Perfluorooctanesulfonic acid (PFOS)	21	E Q	0.0036	0.0011	ug/L		12/19/16 14:38	12/29/16 01:07	1
Perfluorodecanesulfonic acid (PFDS)	0.51	E	0.0036	0.0011	ug/L		12/19/16 14:38	12/29/16 01:07	1
Perfluorooctane Sulfonamide (FOSA)	0.61	E	0.0022	0.00057	ug/L		12/19/16 14:38	12/29/16 01:07	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	32		25 - 150	12/19/16 14:38	12/29/16 01:07	1
13C4 PFBA	25		25 - 150	12/19/16 14:38	12/29/16 01:07	1
13C5-PFPeA	22	Q	25 - 150	12/19/16 14:38	12/29/16 01:07	1
13C2 PFHxA	17	Q	25 - 150	12/19/16 14:38	12/29/16 01:07	1
13C4-PFHpA	9	Q	25 - 150	12/19/16 14:38	12/29/16 01:07	1
13C4 PFOA	12	Q	25 - 150	12/19/16 14:38	12/29/16 01:07	1
13C5 PFNA	9	Q	25 - 150	12/19/16 14:38	12/29/16 01:07	1
13C2 PFDA	46		25 - 150	12/19/16 14:38	12/29/16 01:07	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-24184-1

Client Sample ID: FSS3TMW-1216

Lab Sample ID: 320-24184-3

Date Collected: 12/07/16 08:55

Matrix: Water

Date Received: 12/08/16 10:00

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFUnA	119		25 - 150	12/19/16 14:38	12/29/16 01:07	1
13C2 PFDoA	113		25 - 150	12/19/16 14:38	12/29/16 01:07	1
18O2 PFHxS	9	Q	25 - 150	12/19/16 14:38	12/29/16 01:07	1
13C4 PFOS	6	Q	25 - 150	12/19/16 14:38	12/29/16 01:07	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	8.6	D	0.45	0.082	ug/L		12/19/16 14:38	12/30/16 12:41	200
Perfluoropentanoic acid (PFPeA)	12	D	0.45	0.18	ug/L		12/19/16 14:38	12/30/16 12:41	200
Perfluorohexanoic acid (PFHxA)	38	D B	0.45	0.14	ug/L		12/19/16 14:38	12/30/16 12:41	200
Perfluoroheptanoic acid (PFHpA)	4.0	D	0.45	0.14	ug/L		12/19/16 14:38	12/30/16 12:41	200
Perfluorooctanoic acid (PFOA)	13	D M	0.45	0.13	ug/L		12/19/16 14:38	12/30/16 12:41	200
Perfluorononanoic acid (PFNA)	0.16	J D	0.45	0.12	ug/L		12/19/16 14:38	12/30/16 12:41	200
Perfluorodecanoic acid (PFDA)	0.18	U	0.45	0.078	ug/L		12/19/16 14:38	12/30/16 12:41	200
Perfluoroundecanoic acid (PFUnA)	0.36	U	0.45	0.13	ug/L		12/19/16 14:38	12/30/16 12:41	200
Perfluorododecanoic acid (PFDoA)	0.36	U	0.45	0.10	ug/L		12/19/16 14:38	12/30/16 12:41	200
Perfluorotridecanoic Acid (PFTriA)	0.36	U	0.45	0.098	ug/L		12/19/16 14:38	12/30/16 12:41	200
Perfluorotetradecanoic acid (PFTeA)	0.18	U	0.45	0.071	ug/L		12/19/16 14:38	12/30/16 12:41	200
Perfluorobutanesulfonic acid (PFBS)	19	D	0.45	0.16	ug/L		12/19/16 14:38	12/30/16 12:41	200
Perfluorohexanesulfonic acid (PFHxS)	61	D	0.45	0.15	ug/L		12/19/16 14:38	12/30/16 12:41	200
Perfluorooctanesulfonic acid (PFOS)	260	E D	0.71	0.23	ug/L		12/19/16 14:38	12/30/16 12:41	200
Perfluorodecanesulfonic acid (PFDS)	0.53	U	0.71	0.22	ug/L		12/19/16 14:38	12/30/16 12:41	200
Perfluorooctane Sulfonamide (FOSA)	0.63	D	0.45	0.11	ug/L		12/19/16 14:38	12/30/16 12:41	200

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	73		25 - 150	12/19/16 14:38	12/30/16 12:41	200
13C4 PFBA	105		25 - 150	12/19/16 14:38	12/30/16 12:41	200
13C5-PFPeA	103		25 - 150	12/19/16 14:38	12/30/16 12:41	200
13C2 PFHxA	108		25 - 150	12/19/16 14:38	12/30/16 12:41	200
13C4-PFHpA	73		25 - 150	12/19/16 14:38	12/30/16 12:41	200
13C4 PFOA	91		25 - 150	12/19/16 14:38	12/30/16 12:41	200
13C5 PFNA	66		25 - 150	12/19/16 14:38	12/30/16 12:41	200
13C2 PFDA	106		25 - 150	12/19/16 14:38	12/30/16 12:41	200
13C2 PFUnA	105		25 - 150	12/19/16 14:38	12/30/16 12:41	200
13C2 PFDoA	117		25 - 150	12/19/16 14:38	12/30/16 12:41	200
18O2 PFHxS	124		25 - 150	12/19/16 14:38	12/30/16 12:41	200
13C4 PFOS	71		25 - 150	12/19/16 14:38	12/30/16 12:41	200

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL2

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	300		7.1	2.3	ug/L		12/19/16 14:38	01/04/17 21:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	105		25 - 150	12/19/16 14:38	01/04/17 21:33	1

Client Sample Results

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

TestAmerica Job ID: 320-24184-1

Client Sample ID: SWMU1-02-1216

Lab Sample ID: 320-24184-4

Date Collected: 12/07/16 12:00

Matrix: Water

Date Received: 12/08/16 10:00

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.016	M	0.0022	0.00041	ug/L		12/19/16 14:38	12/30/16 14:11	1
Perfluoropentanoic acid (PFPeA)	0.0049	M	0.0022	0.00088	ug/L		12/19/16 14:38	12/30/16 14:11	1
Perfluorohexanoic acid (PFHxA)	0.012	B	0.0022	0.00070	ug/L		12/19/16 14:38	12/30/16 14:11	1
Perfluoroheptanoic acid (PFHpA)	0.00081	J	0.0022	0.00072	ug/L		12/19/16 14:38	12/30/16 14:11	1
Perfluorooctanoic acid (PFOA)	0.0047	M	0.0022	0.00067	ug/L		12/19/16 14:38	12/30/16 14:11	1
Perfluorononanoic acid (PFNA)	0.0018	U	0.0022	0.00058	ug/L		12/19/16 14:38	12/30/16 14:11	1
Perfluorodecanoic acid (PFDA)	0.00072	J	0.0022	0.00039	ug/L		12/19/16 14:38	12/30/16 14:11	1
Perfluoroundecanoic acid (PFUnA)	0.0018	U	0.0022	0.00067	ug/L		12/19/16 14:38	12/30/16 14:11	1
Perfluorododecanoic acid (PFDoA)	0.0018	U	0.0022	0.00052	ug/L		12/19/16 14:38	12/30/16 14:11	1
Perfluorotridecanoic Acid (PFTriA)	0.0018	U	0.0022	0.00049	ug/L		12/19/16 14:38	12/30/16 14:11	1
Perfluorotetradecanoic acid (PFTeA)	0.00044	J	0.0022	0.00036	ug/L		12/19/16 14:38	12/30/16 14:11	1
Perfluorobutanesulfonic acid (PFBS)	0.010		0.0022	0.00082	ug/L		12/19/16 14:38	12/30/16 14:11	1
Perfluorohexanesulfonic acid (PFHxS)	0.033	M	0.0022	0.00078	ug/L		12/19/16 14:38	12/30/16 14:11	1
Perfluorooctanesulfonic acid (PFOS)	0.99	E	0.0036	0.0011	ug/L		12/19/16 14:38	12/30/16 14:11	1
Perfluorodecanesulfonic acid (PFDS)	0.0064		0.0036	0.0011	ug/L		12/19/16 14:38	12/30/16 14:11	1
Perfluorooctane Sulfonamide (FOSA)	0.018		0.0022	0.00057	ug/L		12/19/16 14:38	12/30/16 14:11	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	12	Q	25 - 150	12/19/16 14:38	12/30/16 14:11	1
13C4 PFBA	31		25 - 150	12/19/16 14:38	12/30/16 14:11	1
13C5-PFPeA	91		25 - 150	12/19/16 14:38	12/30/16 14:11	1
13C2 PFHxA	115		25 - 150	12/19/16 14:38	12/30/16 14:11	1
13C4-PFHpA	116		25 - 150	12/19/16 14:38	12/30/16 14:11	1
13C4 PFOA	110		25 - 150	12/19/16 14:38	12/30/16 14:11	1
13C5 PFNA	62		25 - 150	12/19/16 14:38	12/30/16 14:11	1
13C2 PFDA	104		25 - 150	12/19/16 14:38	12/30/16 14:11	1
13C2 PFUnA	112		25 - 150	12/19/16 14:38	12/30/16 14:11	1
13C2 PFDoA	109		25 - 150	12/19/16 14:38	12/30/16 14:11	1
18O2 PFHxS	118		25 - 150	12/19/16 14:38	12/30/16 14:11	1
13C4 PFOS	80		25 - 150	12/19/16 14:38	12/30/16 14:11	1

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.016	J D M	0.022	0.0041	ug/L		12/19/16 14:38	12/30/16 14:03	10
Perfluoropentanoic acid (PFPeA)	0.018	U M	0.022	0.0088	ug/L		12/19/16 14:38	12/30/16 14:03	10
Perfluorohexanoic acid (PFHxA)	0.011	J D B	0.022	0.0070	ug/L		12/19/16 14:38	12/30/16 14:03	10
Perfluoroheptanoic acid (PFHpA)	0.018	U	0.022	0.0072	ug/L		12/19/16 14:38	12/30/16 14:03	10
Perfluorooctanoic acid (PFOA)	0.018	U	0.022	0.0067	ug/L		12/19/16 14:38	12/30/16 14:03	10
Perfluorononanoic acid (PFNA)	0.018	U	0.022	0.0058	ug/L		12/19/16 14:38	12/30/16 14:03	10
Perfluorodecanoic acid (PFDA)	0.0089	U	0.022	0.0039	ug/L		12/19/16 14:38	12/30/16 14:03	10
Perfluoroundecanoic acid (PFUnA)	0.018	U	0.022	0.0067	ug/L		12/19/16 14:38	12/30/16 14:03	10
Perfluorododecanoic acid (PFDoA)	0.018	U	0.022	0.0052	ug/L		12/19/16 14:38	12/30/16 14:03	10
Perfluorotridecanoic Acid (PFTriA)	0.018	U	0.022	0.0049	ug/L		12/19/16 14:38	12/30/16 14:03	10
Perfluorotetradecanoic acid (PFTeA)	0.0089	U	0.022	0.0036	ug/L		12/19/16 14:38	12/30/16 14:03	10
Perfluorobutanesulfonic acid (PFBS)	0.0095	J D	0.022	0.0082	ug/L		12/19/16 14:38	12/30/16 14:03	10

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-24184-1

Client Sample ID: SWMU1-02-1216

Lab Sample ID: 320-24184-4

Date Collected: 12/07/16 12:00

Matrix: Water

Date Received: 12/08/16 10:00

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	0.030	D	0.022	0.0078	ug/L		12/19/16 14:38	12/30/16 14:03	10
Perfluorooctanesulfonic acid (PFOS)	1.2	D	0.036	0.011	ug/L		12/19/16 14:38	12/30/16 14:03	10
Perfluorodecanesulfonic acid (PFDS)	0.027	U	0.036	0.011	ug/L		12/19/16 14:38	12/30/16 14:03	10
Perfluorooctane Sulfonamide (FOSA)	0.017	J D	0.022	0.0057	ug/L		12/19/16 14:38	12/30/16 14:03	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	12	Q	25 - 150	12/19/16 14:38	12/30/16 14:03	10
13C4 PFBA	93		25 - 150	12/19/16 14:38	12/30/16 14:03	10
13C5-PFPeA	148		25 - 150	12/19/16 14:38	12/30/16 14:03	10
13C2 PFHxA	125		25 - 150	12/19/16 14:38	12/30/16 14:03	10
13C4-PFHpA	123		25 - 150	12/19/16 14:38	12/30/16 14:03	10
13C4 PFOA	114		25 - 150	12/19/16 14:38	12/30/16 14:03	10
13C5 PFNA	96		25 - 150	12/19/16 14:38	12/30/16 14:03	10
13C2 PFDA	98		25 - 150	12/19/16 14:38	12/30/16 14:03	10
13C2 PFUnA	99		25 - 150	12/19/16 14:38	12/30/16 14:03	10
13C2 PFDoA	101		25 - 150	12/19/16 14:38	12/30/16 14:03	10
18O2 PFHxS	139		25 - 150	12/19/16 14:38	12/30/16 14:03	10
13C4 PFOS	123		25 - 150	12/19/16 14:38	12/30/16 14:03	10

Method: 537 (Modified) - Perfluorinated Hydrocarbons - RE

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	0.0081	H M	0.0023	0.00072	ug/L		01/04/17 16:57	01/05/17 15:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	108		25 - 150	01/04/17 16:57	01/05/17 15:45	1

Default Detection Limits

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

TestAmerica Job ID: 320-24184-1

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: 320-24184-1

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 PFBA/ (25-150)	3C5-PFPe (25-150)	3C2 PFHx (25-150)	3C4-PFHp (25-150)	3C4 PFO/ (25-150)	3C5 PFNA/ (25-150)	3C2 PFDA/ (25-150)
320-24184-1	308A51MW-LF-1216	10 Q	15 Q	24 Q	31	23 Q	49	39	117
320-24184-1 - DL	308A51MW-LF-1216	11 Q	117	130	118	98	140	120	122
320-24184-2	SWMU1-01-1216	7 Q	37	93	113	106	100	95	96
320-24184-2 - RE	SWMU1-01-1216				116				
320-24184-3	FSS3TMW-1216	32	25	22 Q	17 Q	9 Q	12 Q	9 Q	46
320-24184-3 - DL	FSS3TMW-1216	73	105	103	108	73	91	66	106
320-24184-3 - DL2	FSS3TMW-1216								
320-24184-4 - DL	SWMU1-02-1216	12 Q	93	148	125	123	114	96	98
320-24184-4	SWMU1-02-1216	12 Q	31	91	115	116	110	62	104
320-24184-4 - RE	SWMU1-02-1216				108				
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								
LCS 320-144971/2-A	Lab Control Sample				109				
LCSD 320-144971/3-A	Lab Control Sample Dup				117				
MB 320-142967/1-A	Method Blank	64	131	137	131	132	133	126	130
MB 320-142967/1-A - RA	Method Blank								
MB 320-144971/1-A	Method Blank				139				

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)			
		3C2 PFUn (25-150)	3C2 PFDo (25-150)	3O2 PFHx (25-150)	3C4 PFO: (25-150)
320-24184-1	308A51MW-LF-1216	121	110	20 Q	38
320-24184-1 - DL	308A51MW-LF-1216	124	126	112	125
320-24184-2	SWMU1-01-1216	103	104	118	116
320-24184-2 - RE	SWMU1-01-1216				
320-24184-3	FSS3TMW-1216	119	113	9 Q	6 Q
320-24184-3 - DL	FSS3TMW-1216	105	117	124	71
320-24184-3 - DL2	FSS3TMW-1216				105
320-24184-4 - DL	SWMU1-02-1216	99	101	139	123
320-24184-4	SWMU1-02-1216	112	109	118	80
320-24184-4 - RE	SWMU1-02-1216				
LCS 320-142967/2-A	Lab Control Sample	119	114	128	128
LCS 320-142967/2-A - RA	Lab Control Sample				126
LCS 320-144971/2-A	Lab Control Sample				
LCSD 320-144971/3-A	Lab Control Sample Dup				
MB 320-142967/1-A	Method Blank	127	112	130	126
MB 320-142967/1-A - RA	Method Blank				113
MB 320-144971/1-A	Method Blank				

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

Isotope Dilution Summary

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

TestAmerica Job ID: 320-24184-1

18O2 PFHxS = 18O2 PFHxS

13C4 PFOS = 13C4 PFOS

QC Sample Results

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

TestAmerica Job ID: 320-24184-1

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	MB	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
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	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C8 FOSA	64		25 - 150	12/19/16 14:38	12/29/16 00:06	1
13C4 PFBA	131		25 - 150	12/19/16 14:38	12/29/16 00:06	1
13C5-PFPeA	137		25 - 150	12/19/16 14:38	12/29/16 00:06	1
13C2 PFHxA	131		25 - 150	12/19/16 14:38	12/29/16 00:06	1
13C4-PFHpA	132		25 - 150	12/19/16 14:38	12/29/16 00:06	1
13C4 PFOA	133		25 - 150	12/19/16 14:38	12/29/16 00:06	1
13C5 PFNA	126		25 - 150	12/19/16 14:38	12/29/16 00:06	1
13C2 PFDA	130		25 - 150	12/19/16 14:38	12/29/16 00:06	1
13C2 PFUnA	127		25 - 150	12/19/16 14:38	12/29/16 00:06	1
13C2 PFDoA	112		25 - 150	12/19/16 14:38	12/29/16 00:06	1
18O2 PFHxS	130		25 - 150	12/19/16 14:38	12/29/16 00:06	1
13C4 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	LCS	Unit	D	%Rec	Limits
		Result	Qualifier				
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: 320-24184-1

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
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%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
¹³ C8 FOSA	62		25 - 150
¹³ C4 PFBA	131		25 - 150
¹³ C5-PFPeA	132		25 - 150
¹³ C2 PFHxA	126		25 - 150
¹³ C4-PFHpA	128		25 - 150
¹³ C4 PFOA	127		25 - 150
¹³ C5 PFNA	123		25 - 150
¹³ C2 PFDA	127		25 - 150
¹³ C2 PFUnA	119		25 - 150
¹³ C2 PFDoA	114		25 - 150
¹⁸ O2 PFHxS	128		25 - 150
¹³ C4 PFOS	128		25 - 150

Lab Sample ID: MB 320-144971/1-A
Matrix: Water
Analysis Batch: 145242

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 144971

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	0.0020	U	0.0025	0.00079	ug/L		01/04/17 16:57	01/05/17 15:15	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
¹³ C2 PFHxA	139		25 - 150	01/04/17 16:57	01/05/17 15:15	1

Lab Sample ID: LCS 320-144971/2-A
Matrix: Water
Analysis Batch: 145242

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 144971
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorohexanoic acid (PFHxA)	0.0400	0.0402		ug/L		101	60 - 140

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
¹³ C2 PFHxA	109		25 - 150

QC Sample Results

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

TestAmerica Job ID: 320-24184-1

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

Lab Sample ID: LCSD 320-144971/3-A
Matrix: Water
Analysis Batch: 145242

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 144971

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	0.0400	0.0424		ug/L		106	60 - 140	5	30
Isotope Dilution		%Recovery	Qualifier						
<i>13C2 PFHxA</i>		<i>117</i>							<i>25 - 150</i>

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 Result	MB 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
Isotope Dilution		%Recovery	Qualifier				Prepared	Analyzed	Dil Fac
<i>13C4 PFOS - RA</i>		<i>113</i>					<i>12/19/16 14:38</i>	<i>12/30/16 16:11</i>	<i>1</i>

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

QC Association Summary

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

TestAmerica Job ID: 320-24184-1

LCMS

Prep Batch: 142967

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24184-1 - DL	308A51MW-LF-1216	Total/NA	Water	3535	
320-24184-1	308A51MW-LF-1216	Total/NA	Water	3535	
320-24184-2	SWMU1-01-1216	Total/NA	Water	3535	
320-24184-3	FSS3TMW-1216	Total/NA	Water	3535	
320-24184-3 - DL2	FSS3TMW-1216	Total/NA	Water	3535	
320-24184-3 - DL	FSS3TMW-1216	Total/NA	Water	3535	
320-24184-4 - DL	SWMU1-02-1216	Total/NA	Water	3535	
320-24184-4	SWMU1-02-1216	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	Lab Control Sample	Total/NA	Water	3535	
LCS 320-142967/2-A - RA	Lab Control Sample	Total/NA	Water	3535	

Analysis Batch: 144253

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24184-1	308A51MW-LF-1216	Total/NA	Water	537 (Modified)	142967
320-24184-3	FSS3TMW-1216	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

Analysis Batch: 144510

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24184-1 - DL	308A51MW-LF-1216	Total/NA	Water	537 (Modified)	142967
320-24184-2	SWMU1-01-1216	Total/NA	Water	537 (Modified)	142967
320-24184-3 - DL	FSS3TMW-1216	Total/NA	Water	537 (Modified)	142967
320-24184-4 - DL	SWMU1-02-1216	Total/NA	Water	537 (Modified)	142967
320-24184-4	SWMU1-02-1216	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

Prep Batch: 144971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24184-2 - RE	SWMU1-01-1216	Total/NA	Water	3535	
320-24184-4 - RE	SWMU1-02-1216	Total/NA	Water	3535	
MB 320-144971/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-144971/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-144971/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 145022

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24184-3 - DL2	FSS3TMW-1216	Total/NA	Water	537 (Modified)	145739

Analysis Batch: 145242

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24184-2 - RE	SWMU1-01-1216	Total/NA	Water	537 (Modified)	144971
320-24184-4 - RE	SWMU1-02-1216	Total/NA	Water	537 (Modified)	144971
MB 320-144971/1-A	Method Blank	Total/NA	Water	537 (Modified)	144971
LCS 320-144971/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	144971
LCSD 320-144971/3-A	Lab Control Sample Dup	Total/NA	Water	537 (Modified)	144971

TestAmerica Sacramento

QC Association Summary

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

TestAmerica Job ID: 320-24184-1

LCMS (Continued)

Cleanup Batch: 145739

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-24184-3 - DL2	FSS3TMW-1216	Total/NA	Water	Dilution	142967

Lab Chronicle

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

TestAmerica Job ID: 320-24184-1

Client Sample ID: 308A51MW-LF-1216

Date Collected: 12/07/16 13:40

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24184-1

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 00:52	TTP	TAL SAC
Total/NA	Prep	3535	DL		142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	50	144510	12/30/16 13:33	CBW	TAL SAC

Client Sample ID: SWMU1-01-1216

Date Collected: 12/07/16 14:45

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24184-2

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	144510	12/30/16 13:41	CBW	TAL SAC
Total/NA	Prep	3535	RE		144971	01/04/17 16:57	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	RE	1	145242	01/05/17 15:38	SBC	TAL SAC

Client Sample ID: FSS3TMW-1216

Date Collected: 12/07/16 08:55

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24184-3

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 01:07	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 12:41	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 21:33	SBC	TAL SAC

Client Sample ID: SWMU1-02-1216

Date Collected: 12/07/16 12:00

Date Received: 12/08/16 10:00

Lab Sample ID: 320-24184-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535	DL		142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	144510	12/30/16 14:03	CBW	TAL SAC
Total/NA	Prep	3535			142967	12/19/16 14:38	VPM	TAL SAC
Total/NA	Analysis	537 (Modified)		1	144510	12/30/16 14:11	CBW	TAL SAC
Total/NA	Prep	3535	RE		144971	01/04/17 16:57	JER	TAL SAC
Total/NA	Analysis	537 (Modified)	RE	1	145242	01/05/17 15:45	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: 320-24184-1

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: 320-24184-1

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: 320-24184-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-24184-1	308A51MW-LF-1216	Water	12/07/16 13:40	12/08/16 10:00
320-24184-2	SWMU1-01-1216	Water	12/07/16 14:45	12/08/16 10:00
320-24184-3	FSS3TMW-1216	Water	12/07/16 08:55	12/08/16 10:00
320-24184-4	SWMU1-02-1216	Water	12/07/16 12:00	12/08/16 10:00

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 142379

Lab 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.: 320-24184-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 144213

Lab 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	phomsophat	12/29/16 08:10

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 144253

Lab Sample ID: 320-24184-1 Client Sample ID: 308A51MW-LF-1216

Date Analyzed: 12/29/16 00:52 Lab File ID: 28DEC2016C_009.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.88	Incomplete Integration	phomsopha t	01/06/17 09:10
Perfluorooctanoic acid (PFOA)	2.78	Incomplete Integration	phomsopha t	12/29/16 17:38

Lab Sample ID: 320-24184-3 Client Sample ID: FSS3TMW-1216

Date Analyzed: 12/29/16 01:07 Lab File ID: 28DEC2016C_011.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.89	Incomplete Integration	phomsopha t	01/06/17 09:11

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 144510

Lab 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: 320-24184-3 DL Client Sample ID: FSS3TMW-1216 DL

Date Analyzed: 12/30/16 12:41 Lab File ID: 30DEC2016B_004.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 13:48

Lab Sample ID: 320-24184-1 DL Client Sample ID: 308A51MW-LF-1216 DL

Date Analyzed: 12/30/16 13:33 Lab File ID: 30DEC2016B_011.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 13:53

Lab Sample ID: 320-24184-2 Client Sample ID: SWMU1-01-1216

Date Analyzed: 12/30/16 13:41 Lab File ID: 30DEC2016B_012.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.53	Incomplete Integration	phomsopha t	01/03/17 13:55
Perfluoropentanoic acid (PFPeA)	1.81	Incomplete Integration	phomsopha t	01/03/17 13:55

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 144510

Lab Sample ID: 320-24184-4 DL Client Sample ID: SWMU1-02-1216 DL

Date Analyzed: 12/30/16 14:03 Lab File ID: 30DEC2016B_015.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.53	Baseline	phomsopha t	01/03/17 13:59
Perfluoropentanoic acid (PFPeA)	1.81	Baseline	phomsopha t	01/03/17 13:59

Lab Sample ID: 320-24184-4 Client Sample ID: SWMU1-02-1216

Date Analyzed: 12/30/16 14:11 Lab File ID: 30DEC2016B_016.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.53	Incomplete Integration	phomsopha t	01/03/17 14:01
Perfluoropentanoic acid (PFPeA)	1.81	Incomplete Integration	phomsopha t	01/03/17 14:01
Perfluorohexanesulfonic acid (PFHxS)	2.45	Incomplete Integration	phomsopha t	01/03/17 14:01
Perfluorooctanoic acid (PFOA)	2.78	Incomplete Integration	phomsopha t	01/03/17 14:01

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 145022

Lab 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

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 145242

Lab Sample ID: 320-24184-4 RE Client Sample ID: SWMU1-02-1216 RE

Date Analyzed: 01/05/17 15:45 Lab File ID: 05JAN2017B_009.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanoic acid (PFHxA)	2.19	Baseline	chandrase nas	01/06/17 09:55

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24184-1

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
					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					
.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)	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
LCPFCL-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 PFUnA	50 ng/mL		
					LCPFCLSP_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.: 320-24184-1

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 (PFHxA)	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	
..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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24184-1

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.: 320-24184-1

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 (PFHpA)	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	LCPMFCSU_00047	250 uL	13C2-PFHxDA 13C2-PFTEda	50 ng/mL 50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24184-1

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 PFDaA	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 PFUnA	50 ng/mL
							LCPFCSU_00071	50 uL
							Perfluorobutanesulfonic acid (PFBS)	0.884 ng/mL
							Perfluorodecanoic acid (PFDA)	1 ng/mL
							Perfluorododecanoic acid (PFDaA)	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
					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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24184-1

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.: 320-24184-1

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.: 320-24184-1

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
...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-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.: 320-24184-1

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
					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_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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24184-1

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
..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
					LCPFTriDA_00004	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.5 ug/mL
					LCPFUdA_00005	100 uL	Perfluoroundecanoic acid (PFUnA)	0.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24184-1

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 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-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
		Perfluorobutanesulfonic acid (PFBS)	17.68 ng/mL					
		Perfluorodecanoic acid (PFDA)	20 ng/mL					

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24184-1

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 (PFHxA)	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	
					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	
..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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24184-1

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_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 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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24184-1

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
					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 (PFHpA)	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.: 320-24184-1

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-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	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 M4PFHFA0516		(Purchased Reagent)		13C4-PFHFA	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.: 320-24184-1

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 PFTTrDA0216			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24184-1

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
					LCPFCSP_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.: 320-24184-1

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	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
..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)		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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24184-1

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 (PFHpA)	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.: 320-24184-1

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-octanesulfonamide	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-octanesulfonamide	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-octanesulfonamide	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.: 320-24184-1

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
MeFOSA	1 ng/mL							
N-methyl 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.: 320-24184-1

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-octanesulfonamide	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-octanesulfonamide	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-octanesulfonamide	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-octanesulfonamide	5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24184-1

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-octanesulfoamide	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-octanesulfoamide	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.: 320-24184-1

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		
					LCPFC2SP_00017	200 uL	M2-8:2FTS	47.9 ng/mL		
							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		
.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
..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.: 320-24184-1

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 NETFOSA0516M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfoamide	50 ug/mL
..LCN-EtFOSAA_00002	01/20/21		WELLINGTON, Lot NETFOSAA0116		(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-NETFOSAA	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-octanesulfoamide	50 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	50 ng/mL
MeFOSA	50 ng/mL							
N-methyl perfluorooctane sulfonamidoacetic acid	50 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:FOSAA_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FOSAA_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:FOSAA_00001	07/15/17		WELLINGTON, Lot M262FOSAA0714		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FOSAA_00001	04/13/17		WELLINGTON, Lot M282FOSAA0414		(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.: 320-24184-1

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-octanesulfonamide	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-octanesulfonamide	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		
LCPF2-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		
					LCPF2SP_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-octanesulfonamide	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-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		

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24184-1

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
							Perfluorobutanoic acid (PFBA)	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24184-1

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
					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
..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)		1802 PFHxS	47.3 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-24184-1

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.: 320-24184-1

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.: 320-24184-1

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: 7hclis ev
s: 7hclis sw

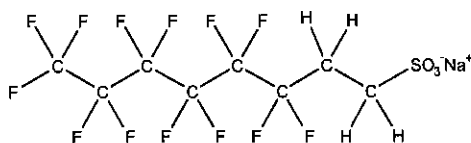


WELLINGTON LABORATORIES

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

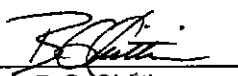
DOCUMENTATION/ DATA ATTACHED:

- 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.

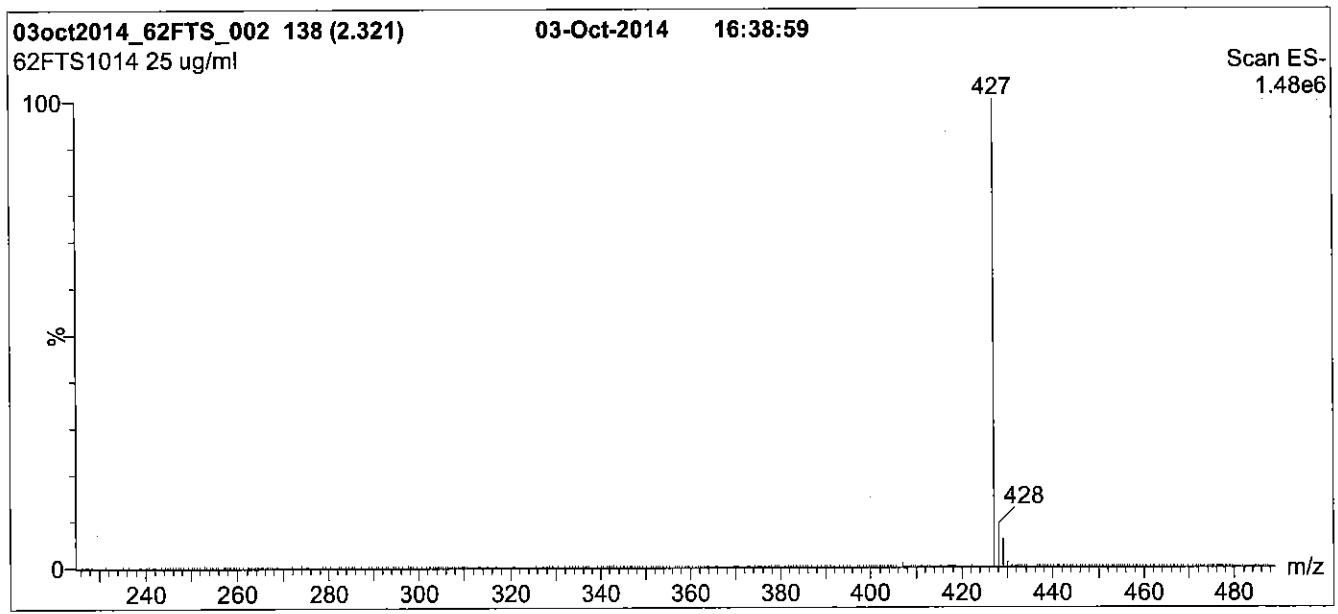
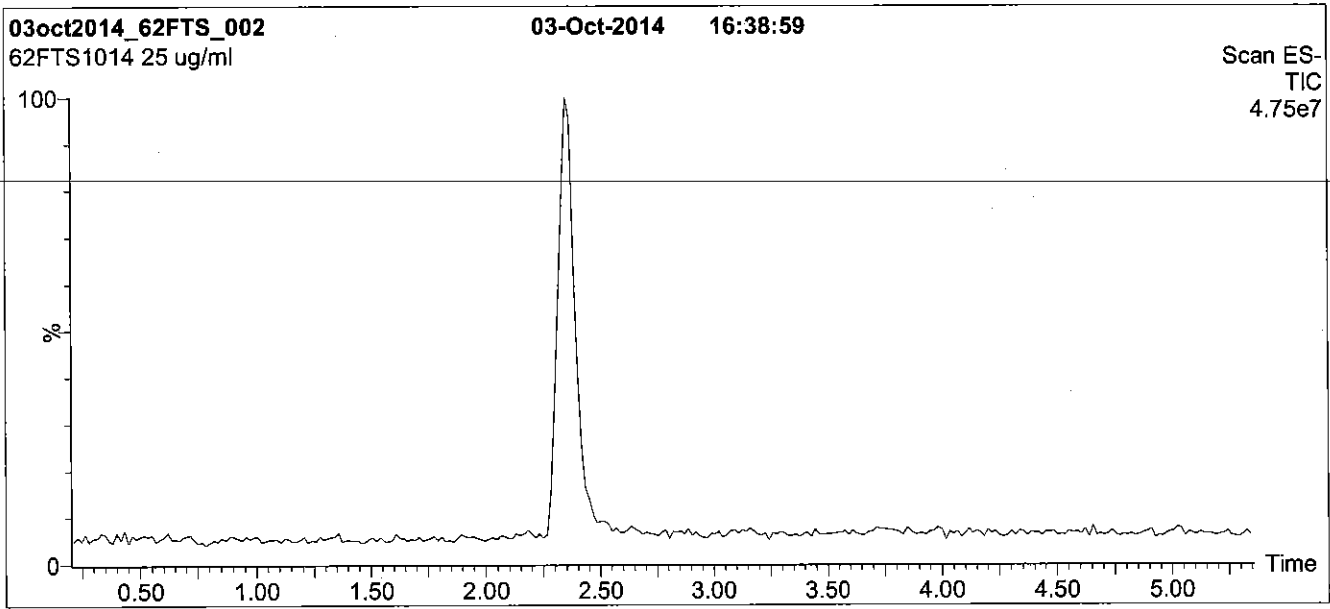
QUALITY MANAGEMENT:

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

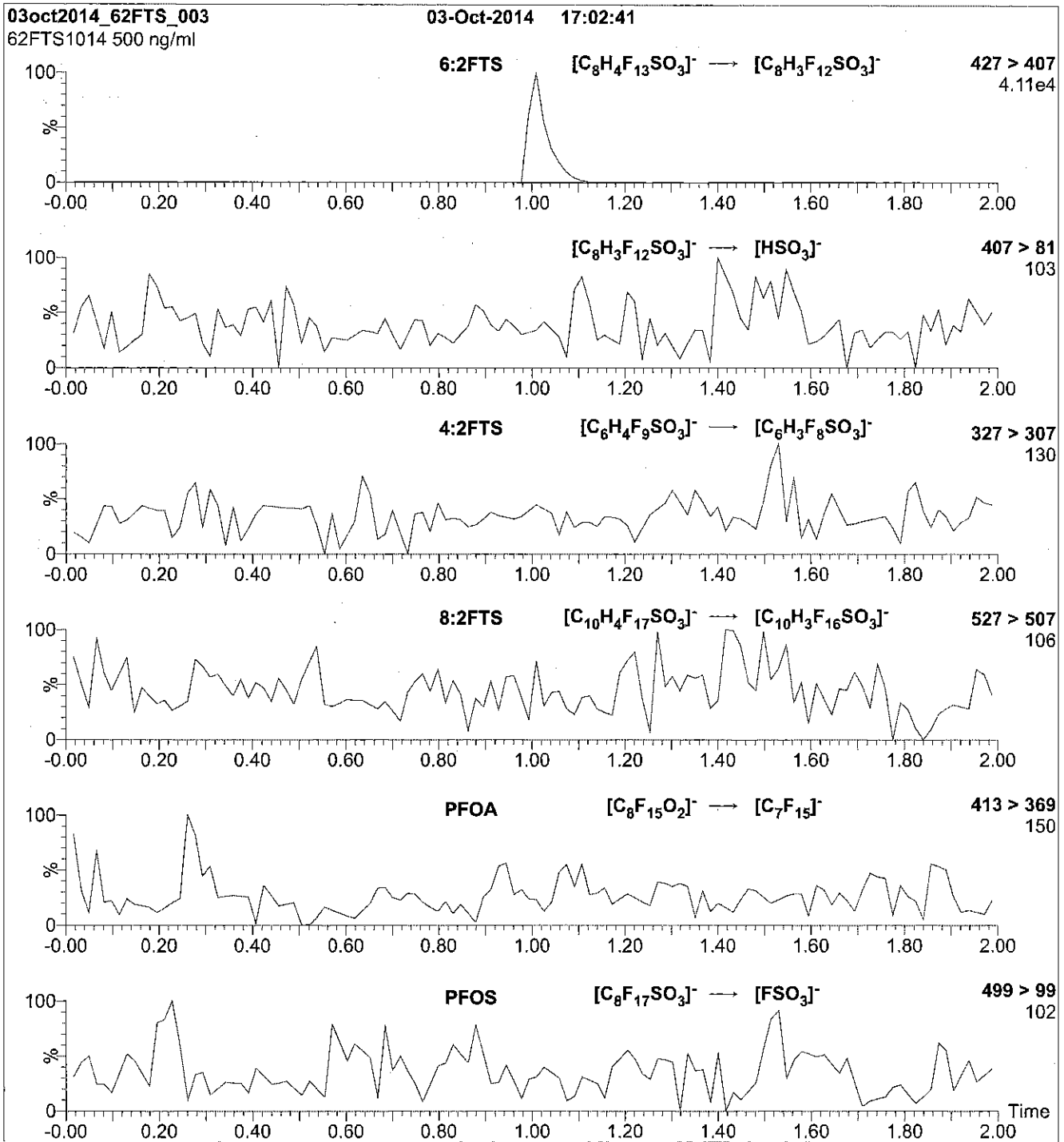
Flow: 300 μ l/min

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

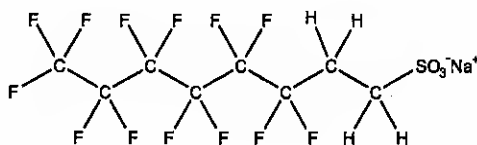


WELLINGTON LABORATORIES

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: C₈H₄F₁₃SO₃Na **MOLECULAR WEIGHT:** 450.15
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.4 ± 2.4 µg/ml (6:2FTS anion)
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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HAZARDS:

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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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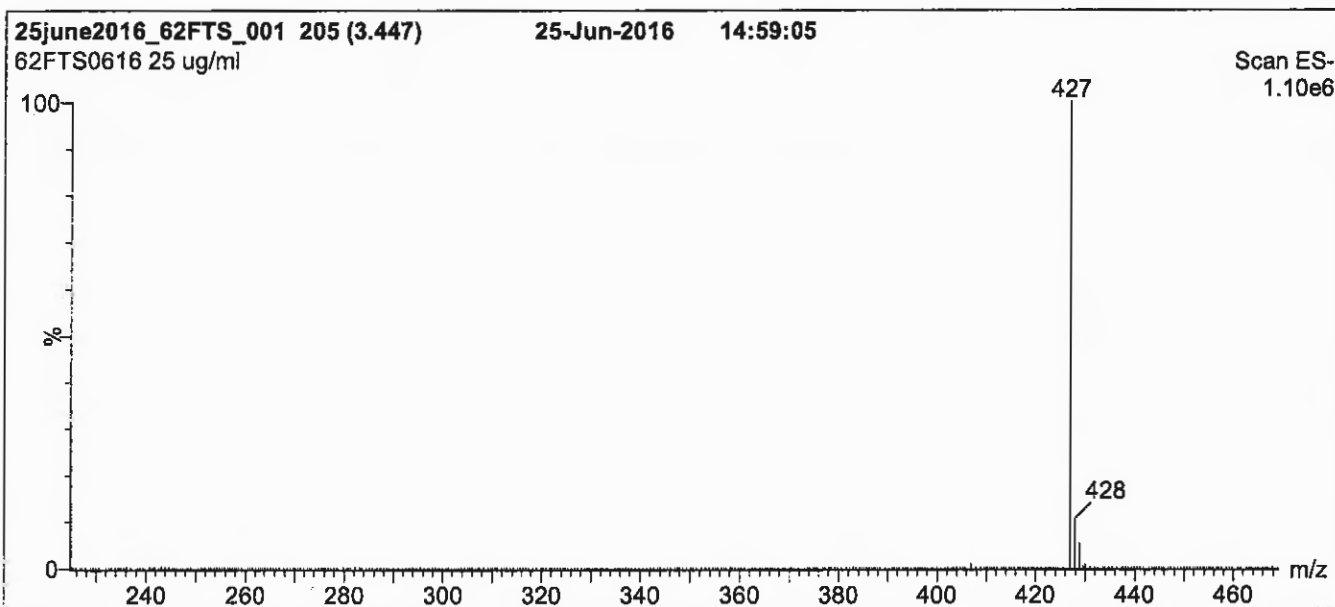
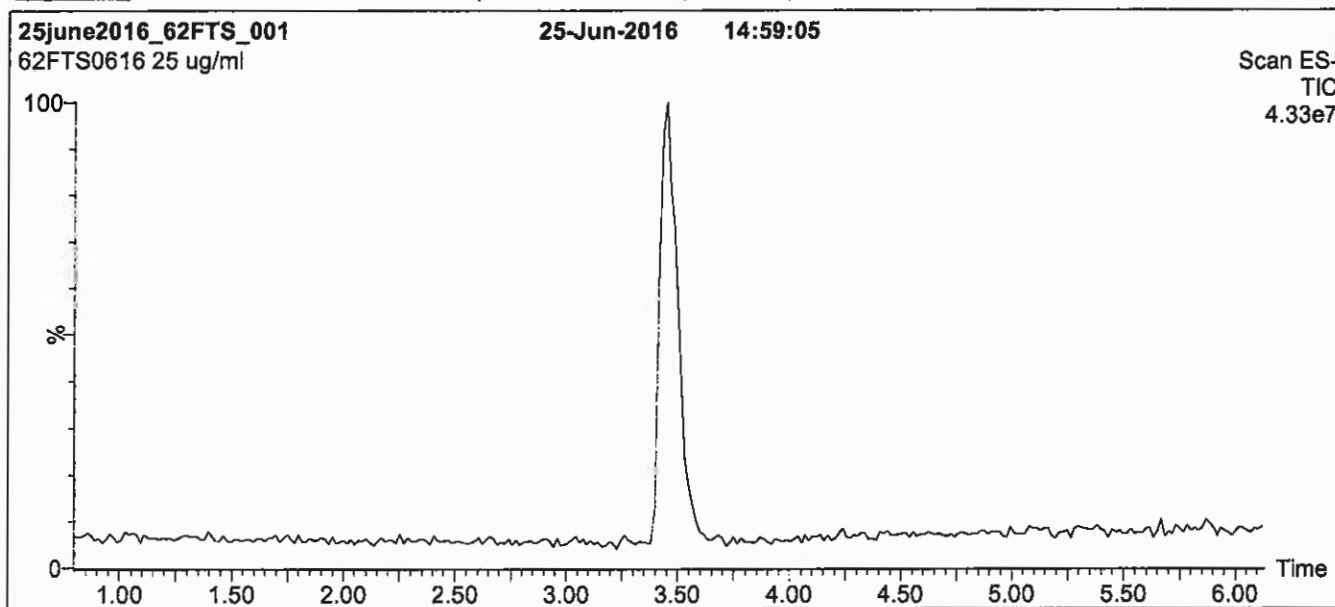
QUALITY MANAGEMENT:

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: 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

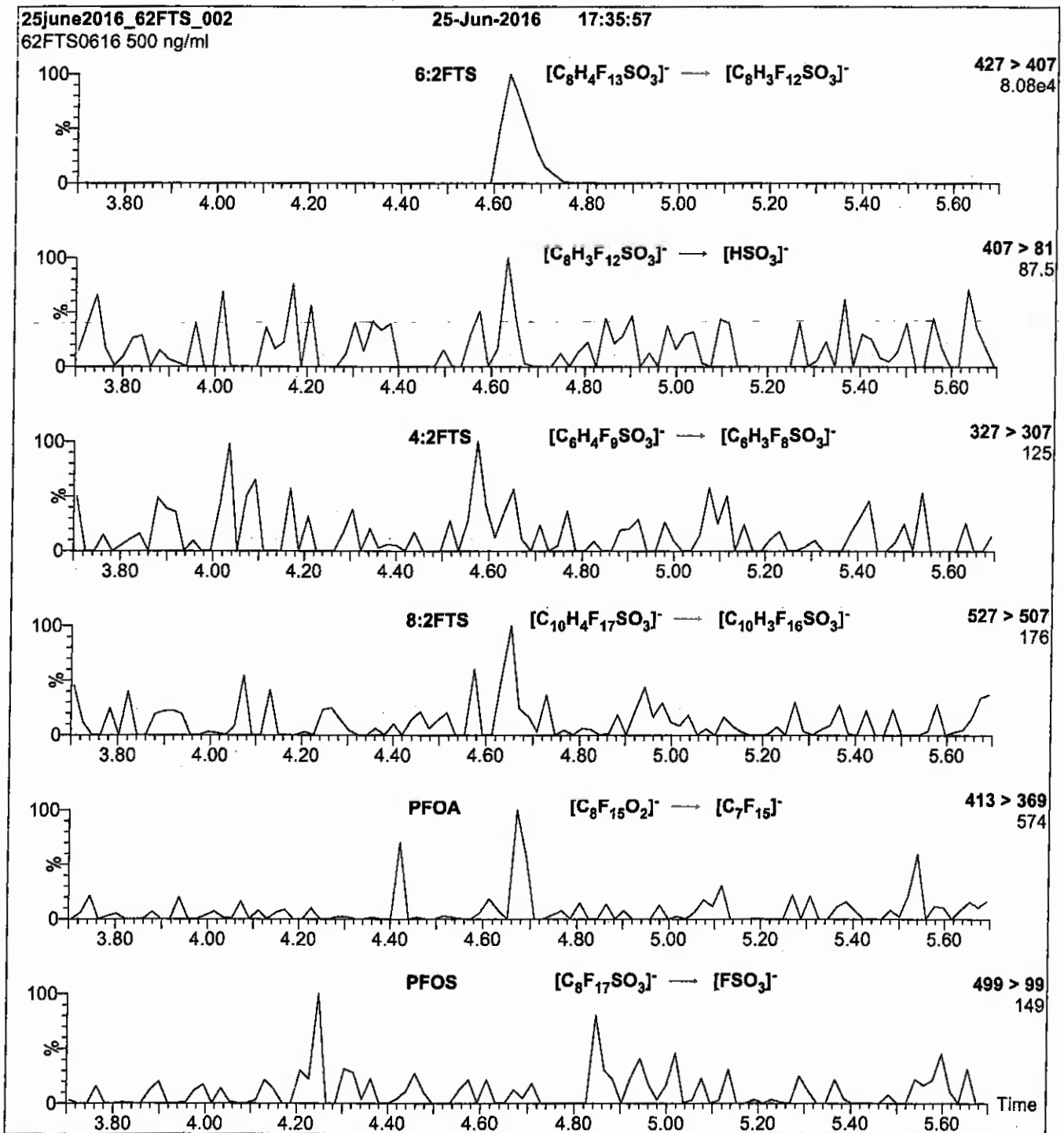
Flow: 300 μ l/min

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% H₂O
(both with 10 mM NH₄OAc 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 sv
s: 7/22/15 sv

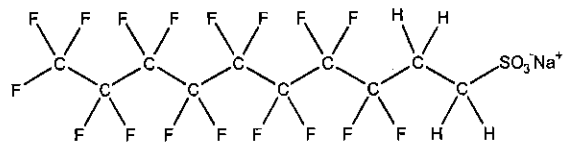


WELLINGTON LABORATORIES

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: C₁₀H₄F₁₇SO₃Na **MOLECULAR WEIGHT:** 550.16
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.9 ± 2.4 µg/ml (8:2FTS 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:

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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.

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:

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LIMITED WARRANTY:

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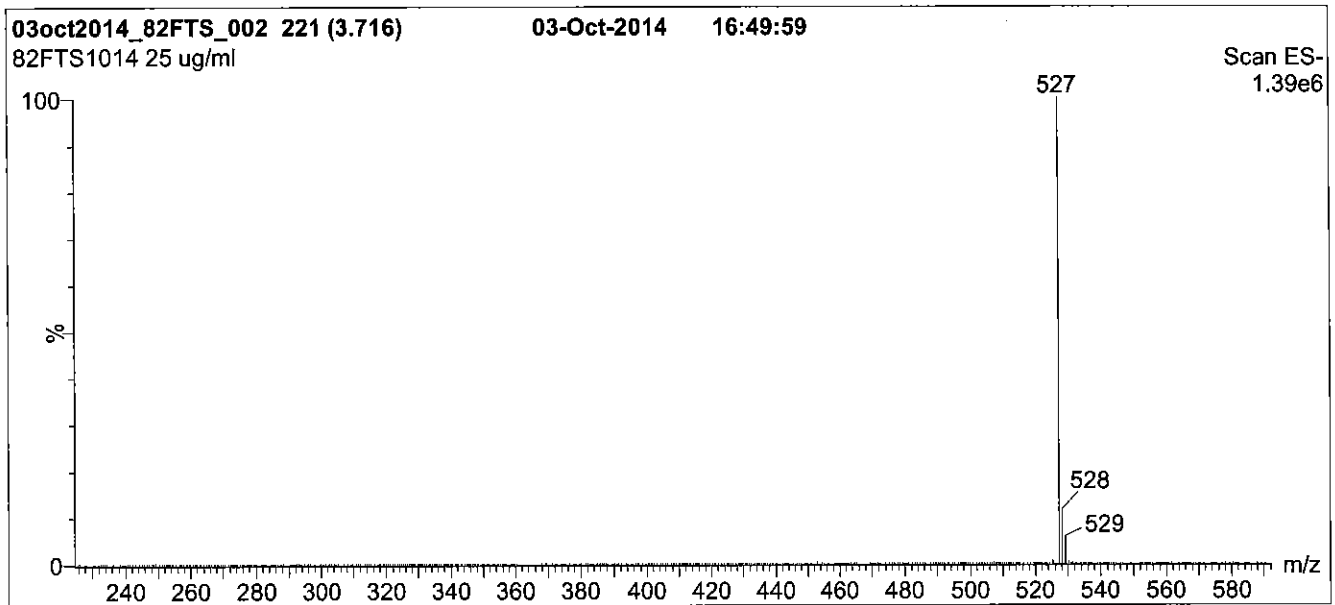
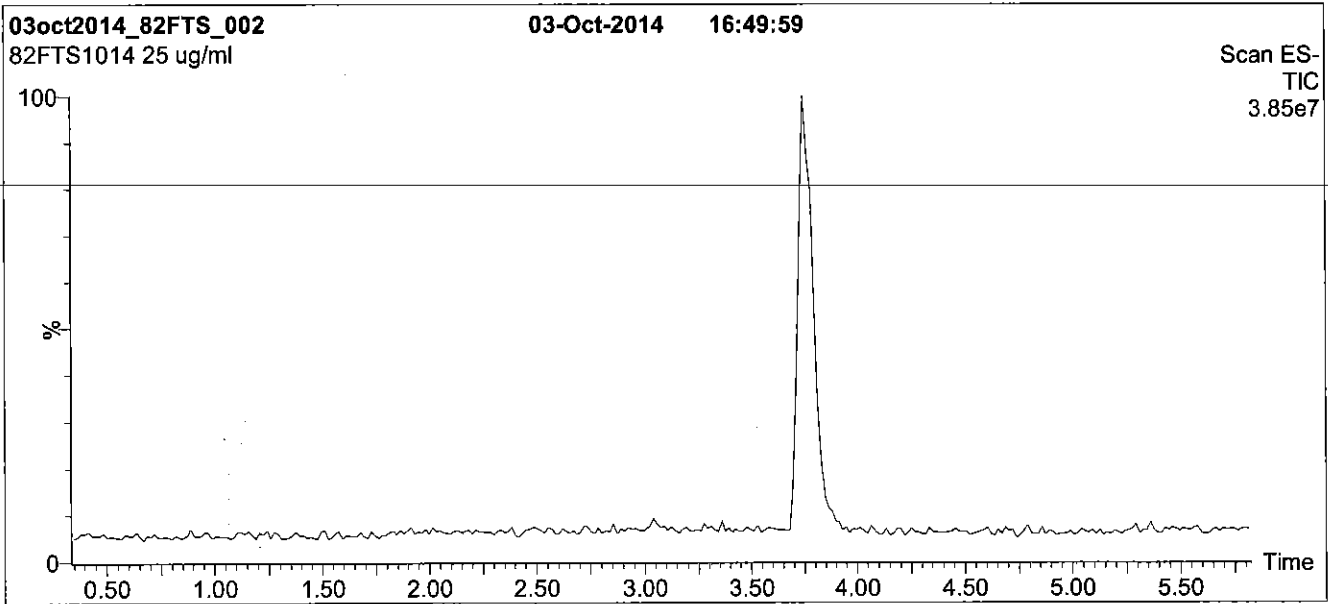
QUALITY MANAGEMENT:

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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: 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

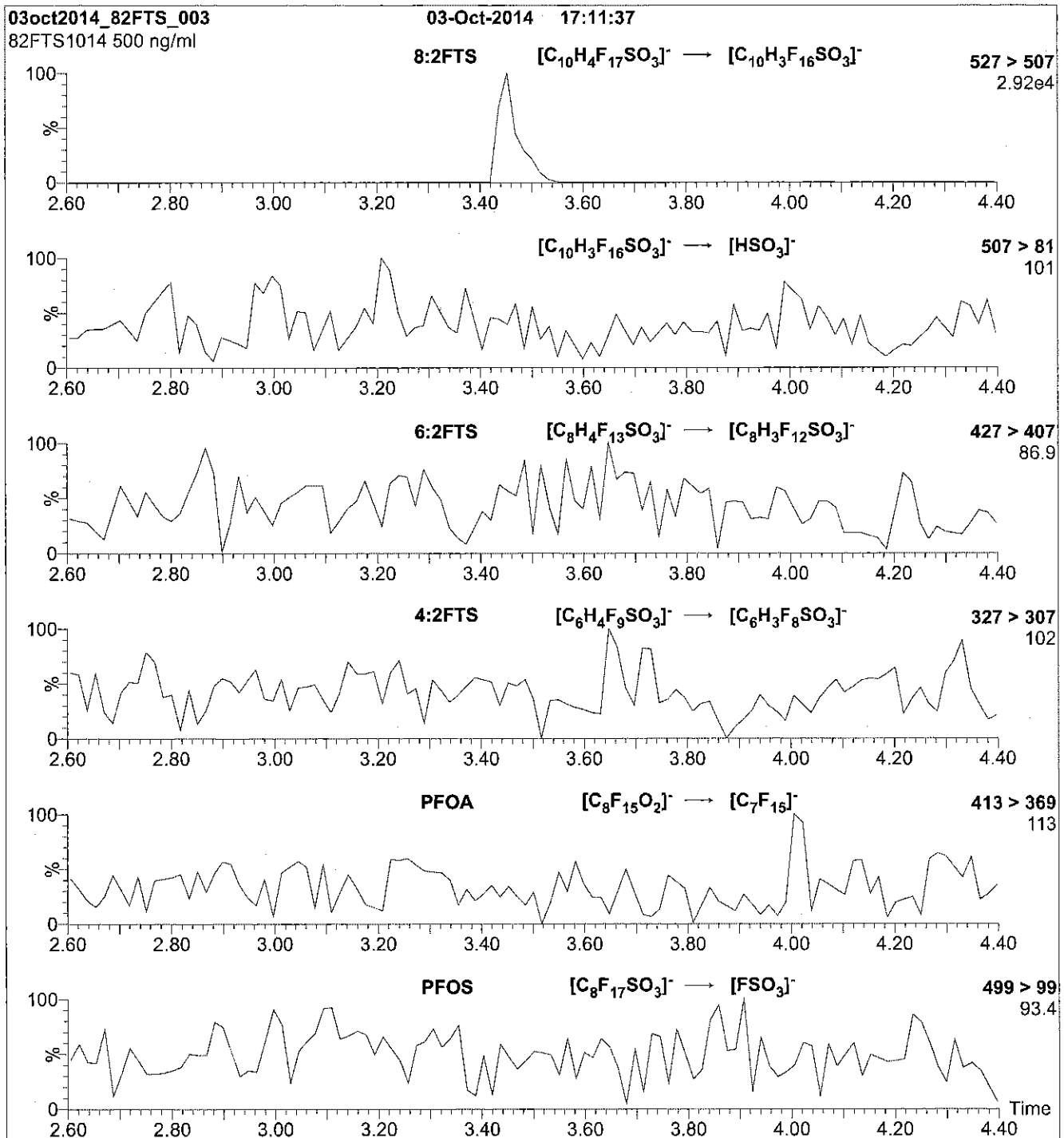
Flow: 300 μ l/min

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% 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

LC8 : 2FTS _ 00002

R: 8/23/16 SBC

715545
ID: LC8:2F7S_00002
Exp: 10/23/20 P: SBC
8:2F7S

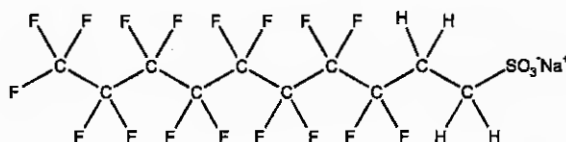


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 8:2F7S **LOT NUMBER:** 82F7S1015
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 ± 2.5 µg/ml (Na salt)	SOLVENT(S):	Methanol
	47.9 ± 2.4 µg/ml (8:2F7S anion)		
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	10/23/2015		
EXPIRY DATE: (mm/dd/yyyy)	10/23/2020		
RECOMMENDED STORAGE:	Refrigerate ampoule		

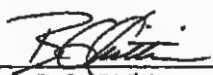
DOCUMENTATION/ DATA ATTACHED:

- 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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim

Date: 10/27/2015
(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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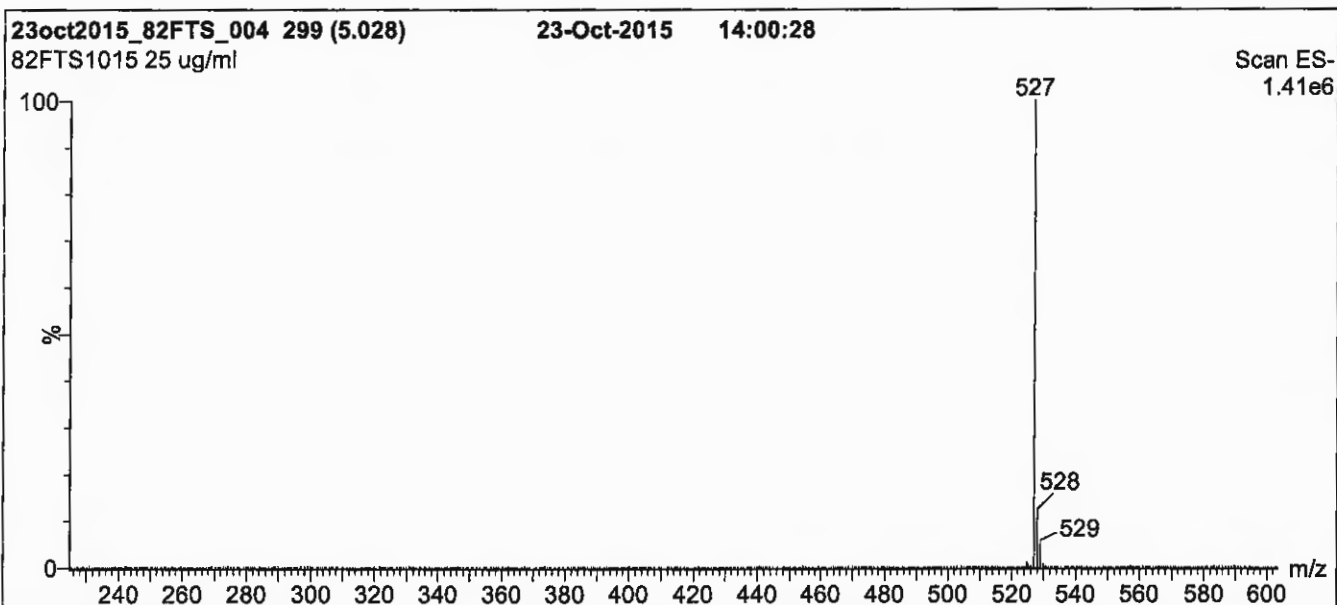
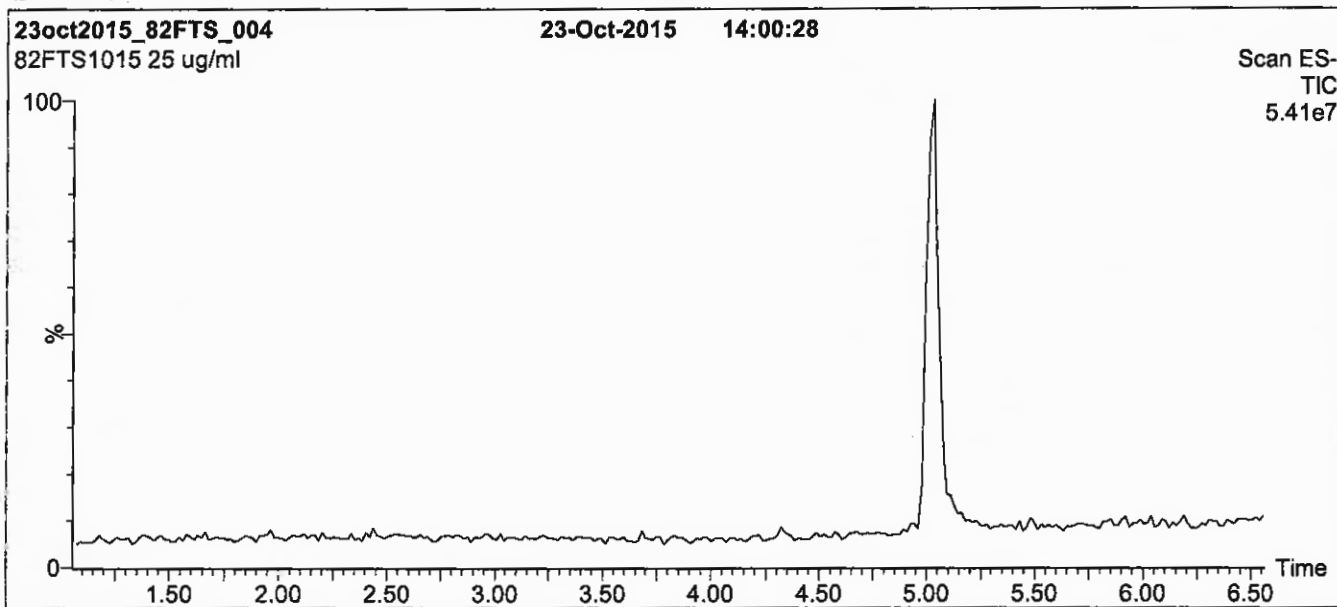
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Figure 1: 8:2FTS; LC/MS Data (TIC and Mass Spectrum)



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

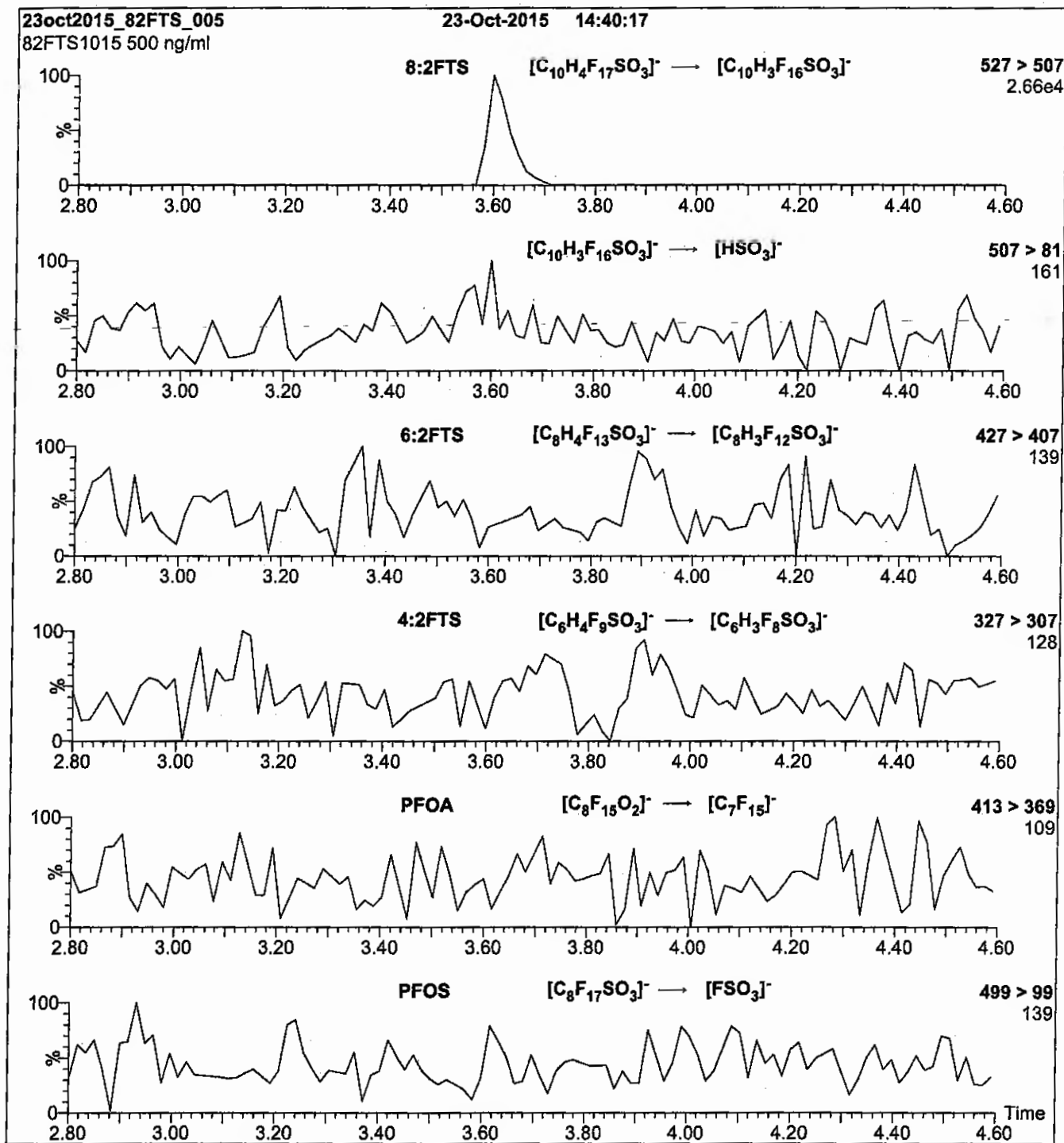
Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 2 min.
 Return to Initial conditions in 0.5 min.
 Time: 10 min

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% H₂O
(both with 10 mM NH₄OAc 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/



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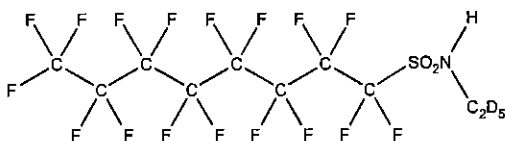
CERTIFICATE OF ANALYSIS DOCUMENTATION

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)

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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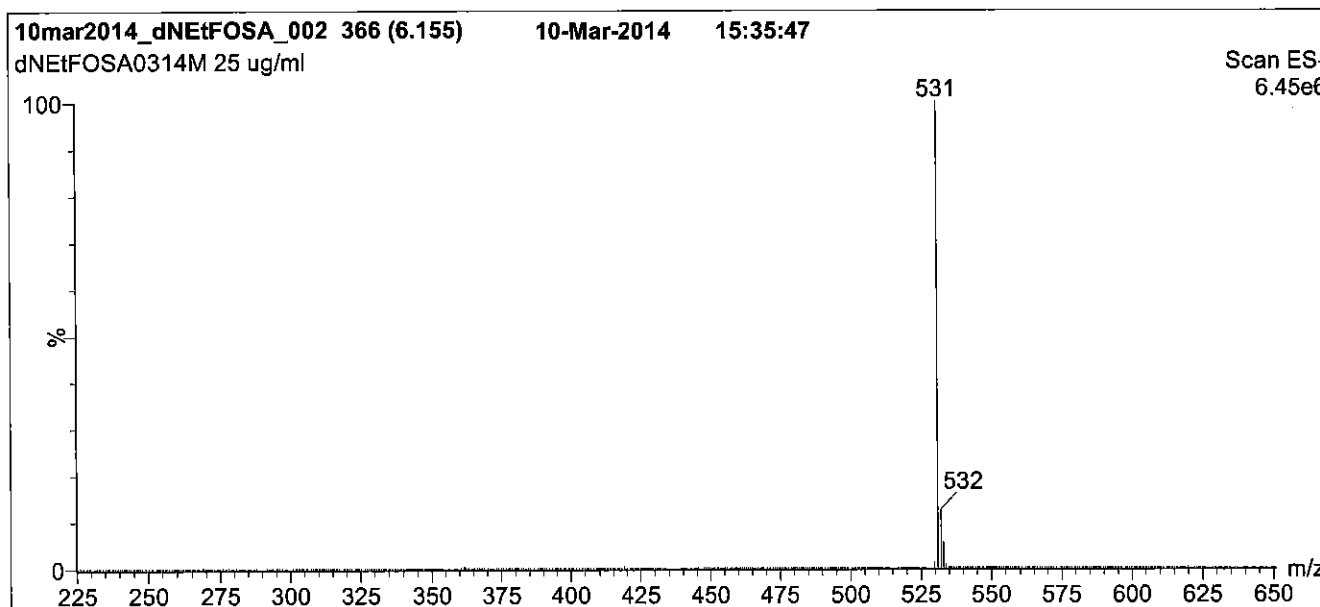
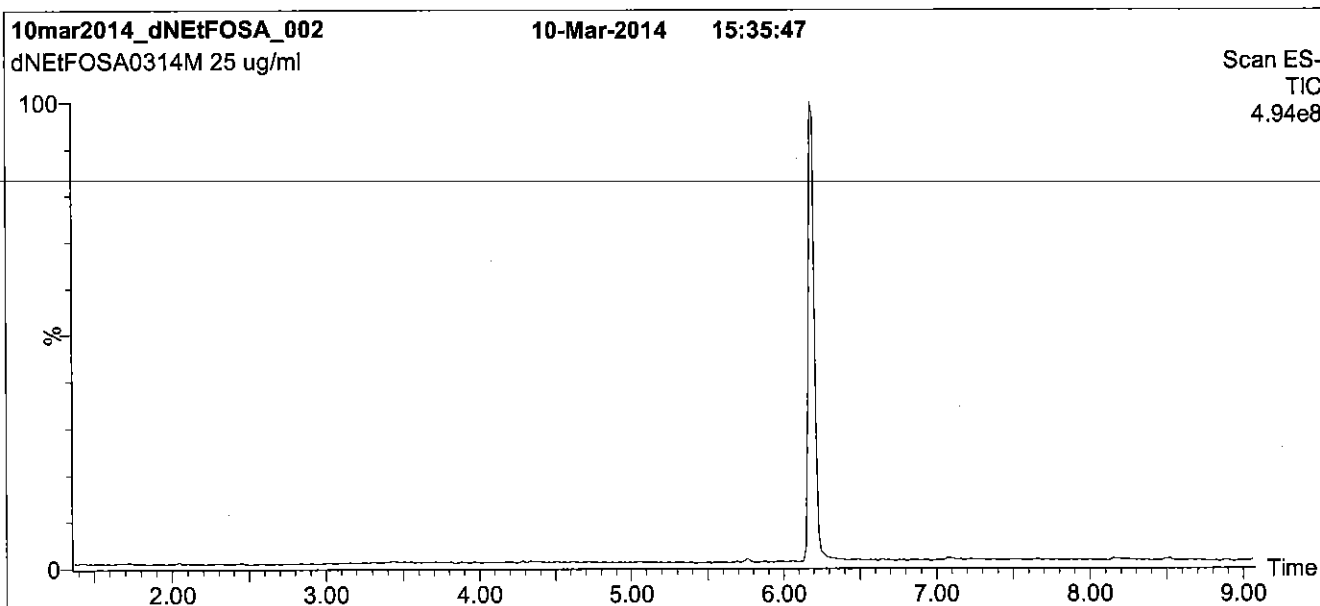
QUALITY MANAGEMENT:

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Figure 1: 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

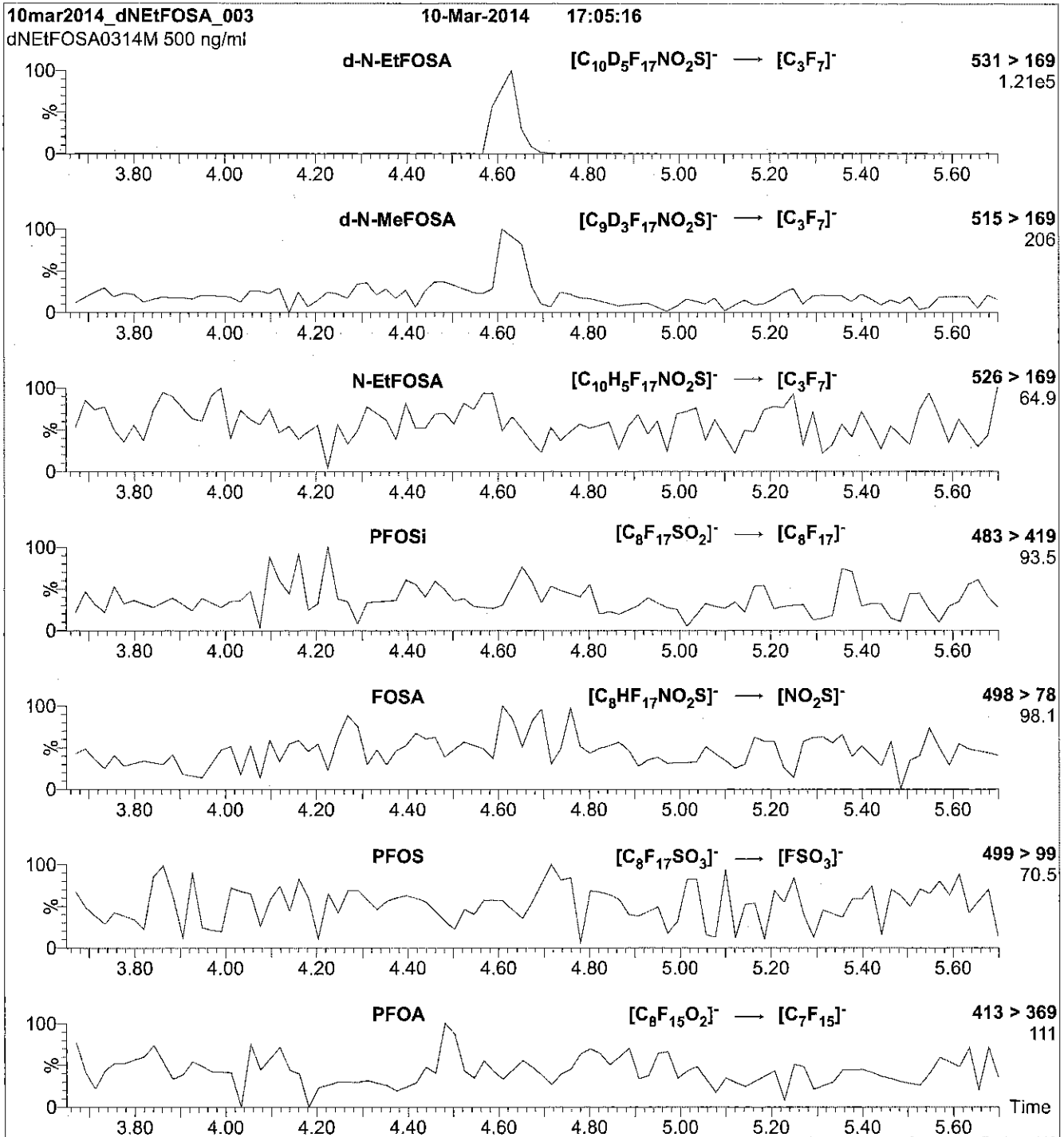
Flow: 300 μ l/min

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 µl (500 ng/ml d-N-EtFOSA-M)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCd-NEtFOSA-M_00002

R-7/6/16 CAW



671571
ID: LCd-NEtFOSA-M_00002
Exp: 03/10/19 Pipd: CBW
d-N-EtFOSA-M

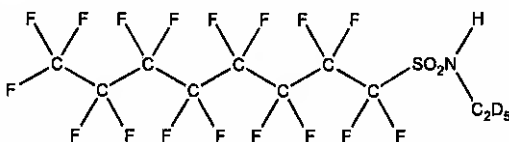


WELLINGTON LABORATORIES

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 **MOLECULAR WEIGHT:** 532.23
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥98% ²H₅
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

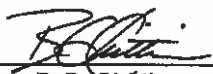
DOCUMENTATION/ DATA ATTACHED:

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

- See page 2 for further details.

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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

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HAZARDS:

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

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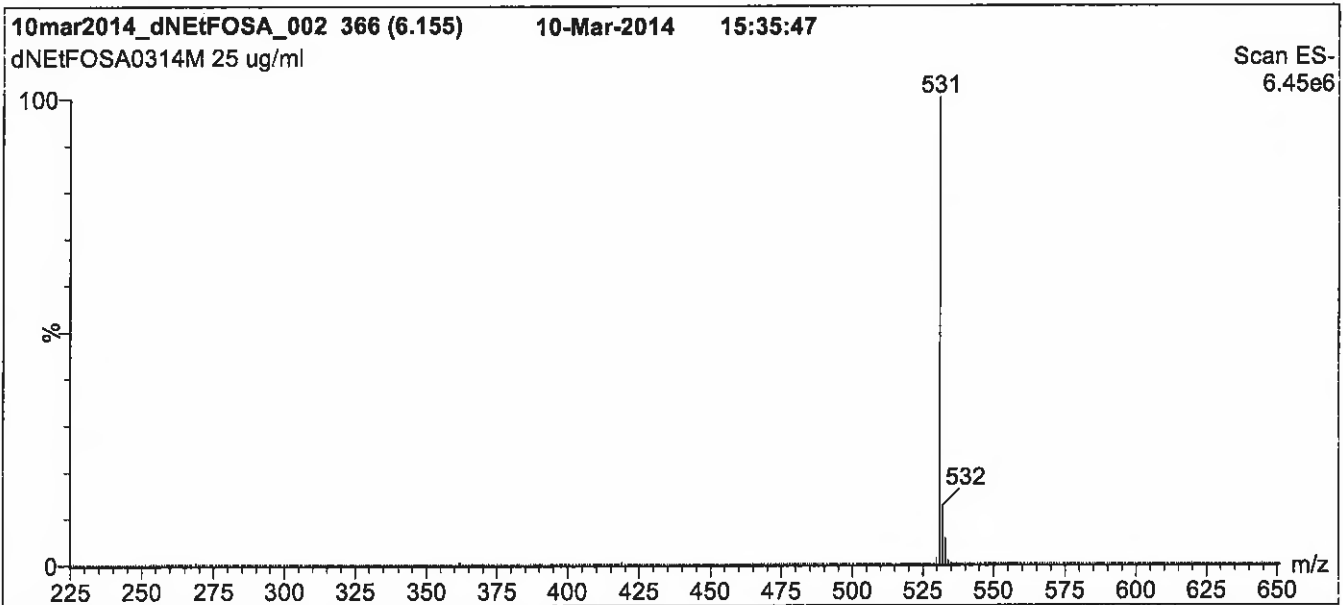
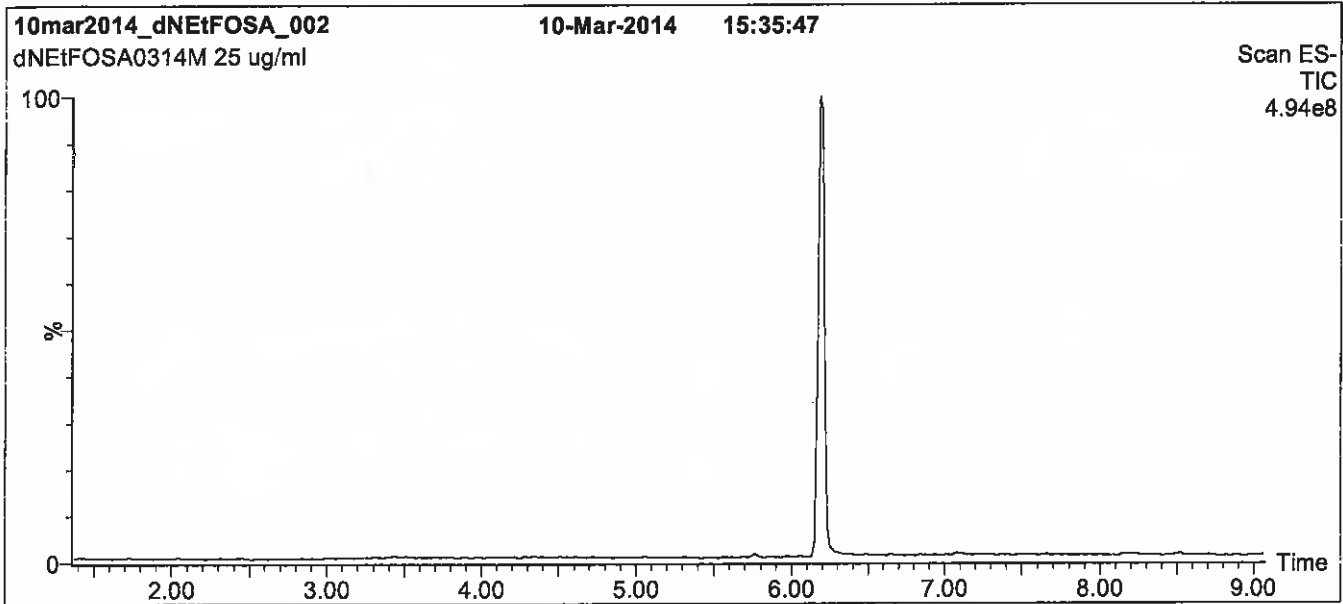
QUALITY MANAGEMENT:

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Figure 1: 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: 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

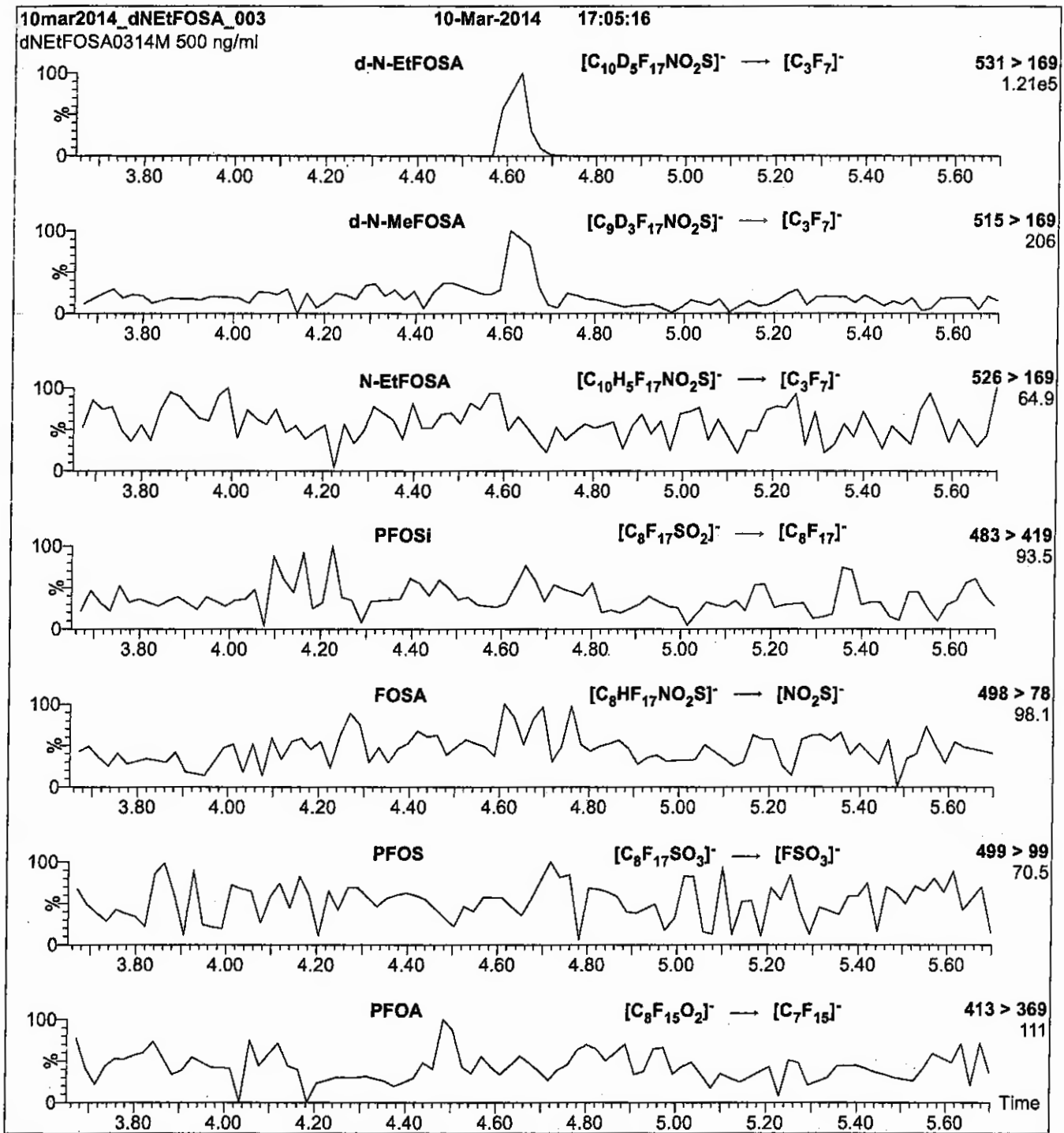
Flow: 300 μ l/min

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% H₂O
(both with 10 mM NH₄OAc 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



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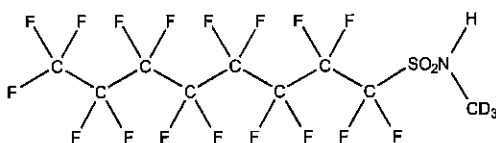
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: dNMeFOSA0114M

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: C₉D₃HF₁₇NO₂S
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

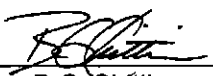
DOCUMENTATION/ DATA ATTACHED:

- 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.

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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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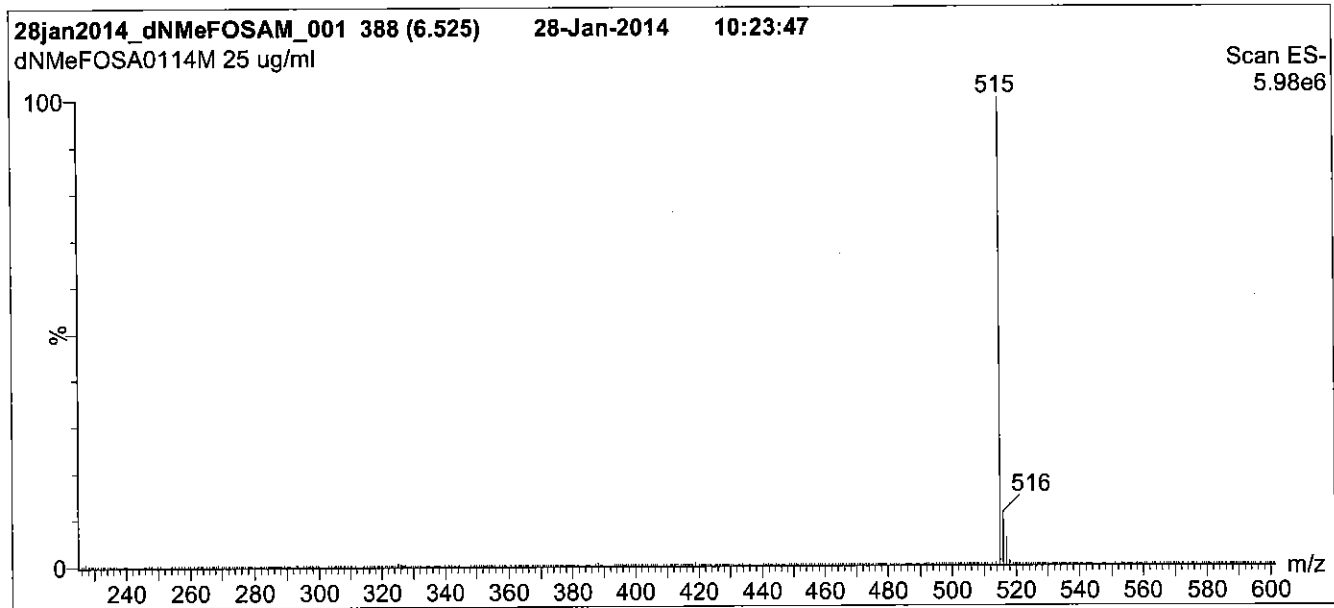
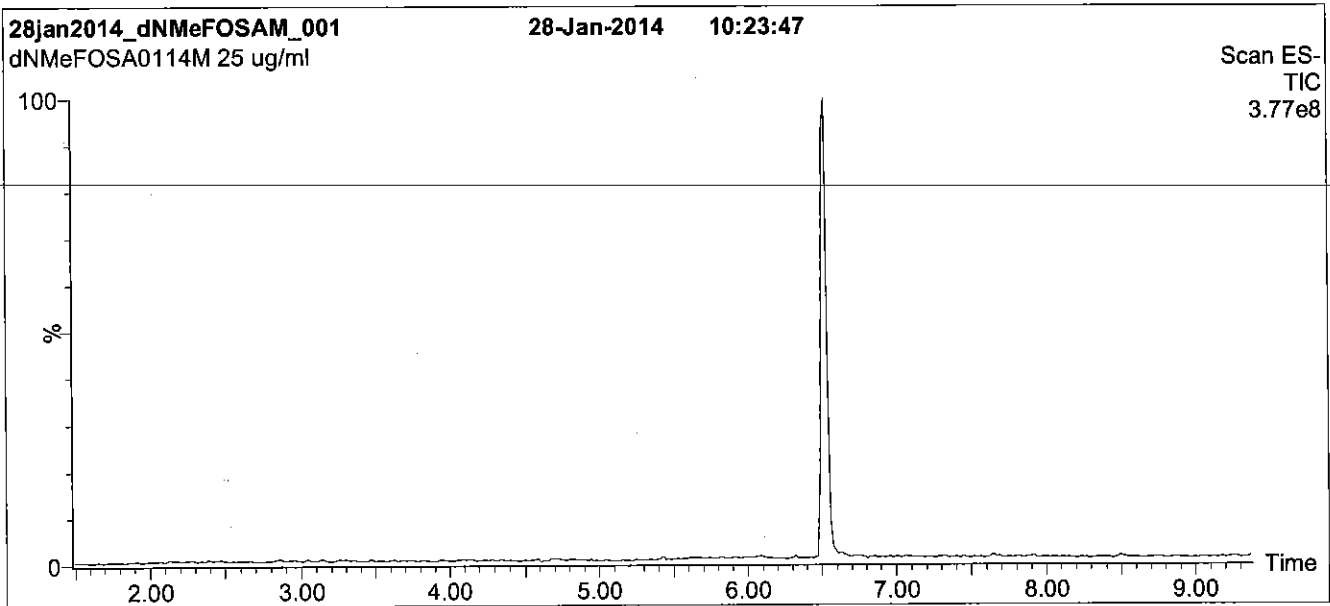
QUALITY MANAGEMENT:

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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: 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

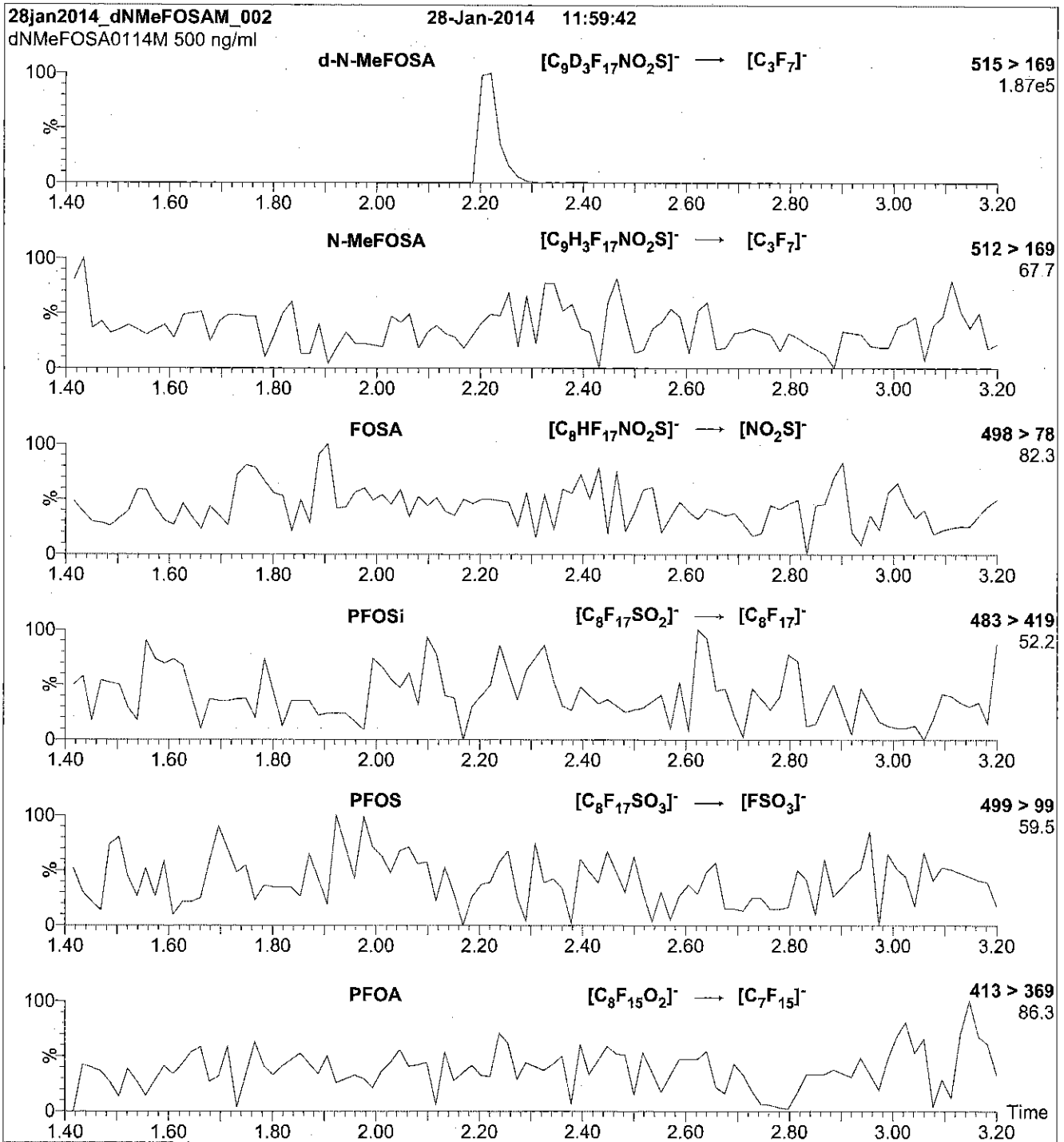
Flow: 300 μ l/min

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

R: 7/6/16 CBW



671625
ID: LCd-NMeFOSA-M_00002
Exp: 06/13/21 Prpd: CBW
d-N-MeFOSA-M

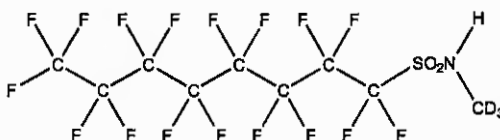


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d-N-MeFOSA-M **LOT NUMBER:** dNMeFOSA0616M
COMPOUND: N-methyl-d₃-perfluoro-1-octanesulfonamide

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₈D₃HF₁₇NO₂S **MOLECULAR WEIGHT:** 516.19
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥98% ²H₃
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


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:  **Date:** 06/16/2016
B.G. Chittim (mm/dd/yyyy)

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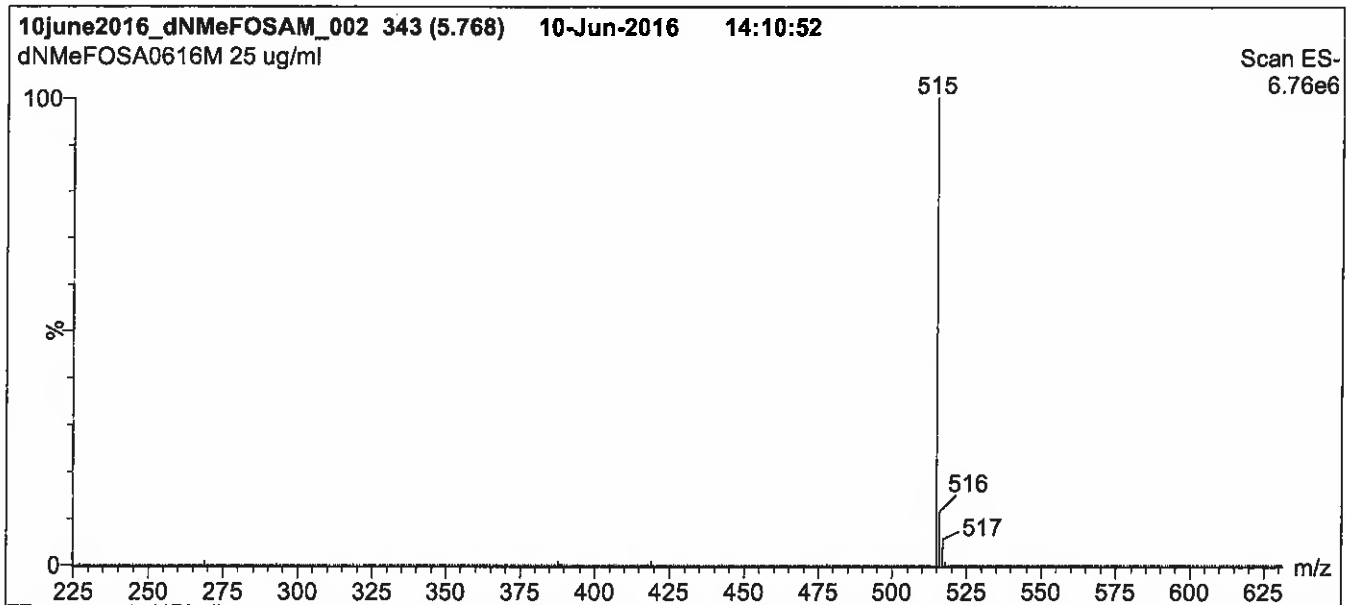
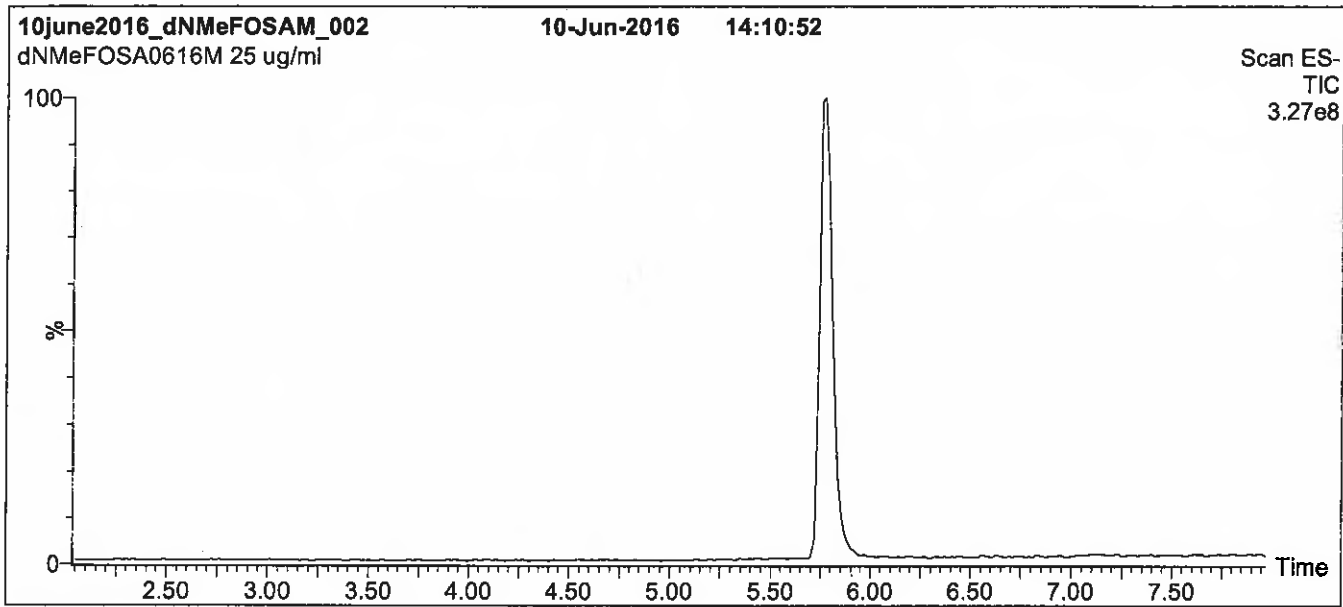
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Figure 1: d-N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)



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

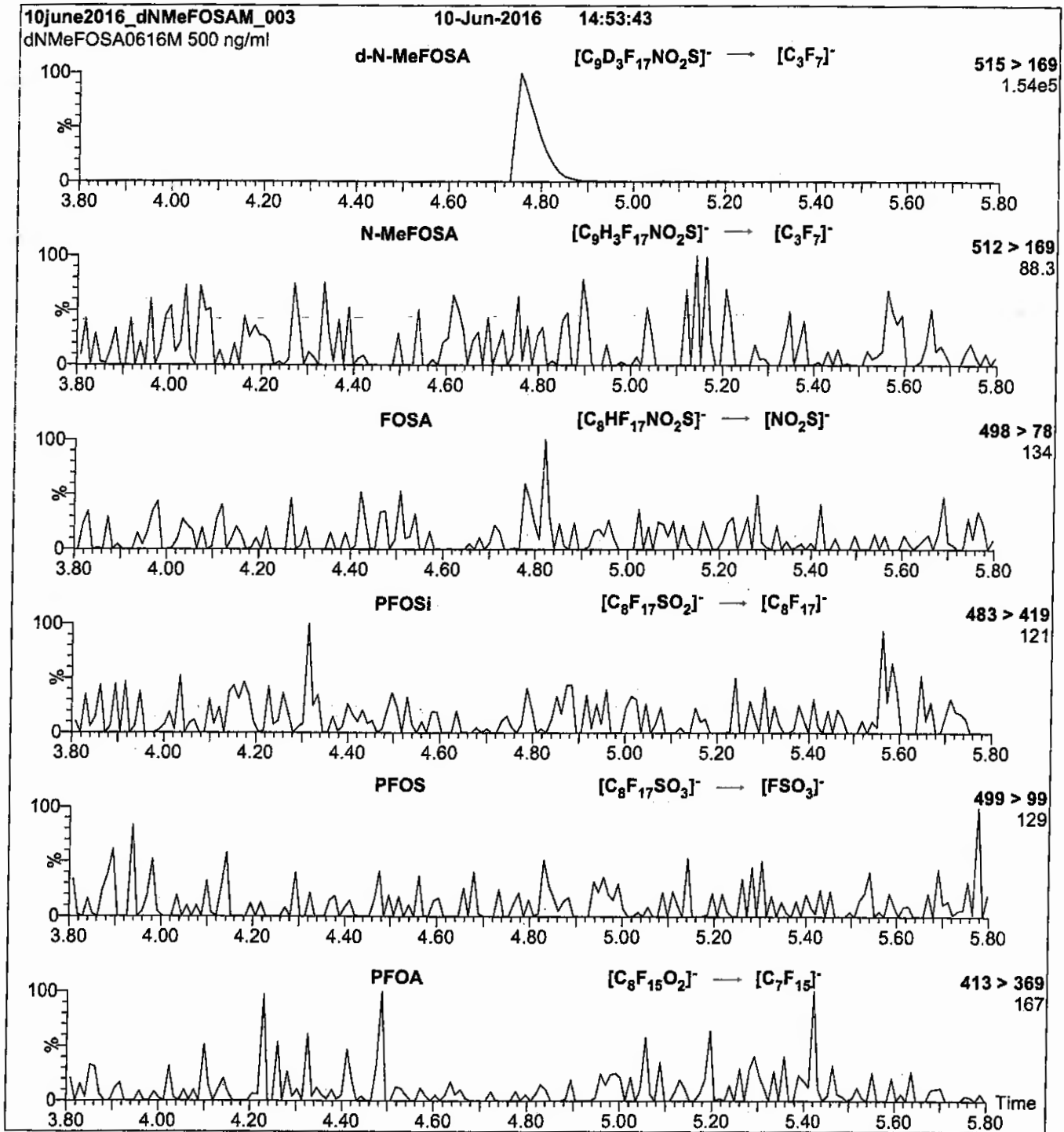
Flow: 300 μ l/min

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% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCd3-NMeFOSAA_00001

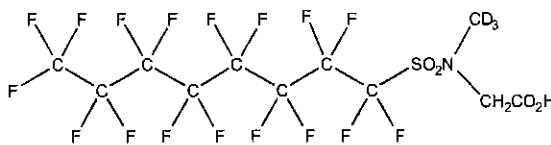


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d3-N-MeFOSAA **LOT NUMBER:** d3NMeFOSAA0113
COMPOUND: N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₁₁D₃H₃F₁₇NO₄S
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 574.23
SOLVENT(S): Methanol
 Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/31/2013
EXPIRY DATE: (mm/dd/yyyy) 01/31/2018
RECOMMENDED STORAGE: Refrigerate ampoule

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.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

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Certified By:


 B.G. Chittim

Date: 04/06/2015
 (mm/dd/yyyy)

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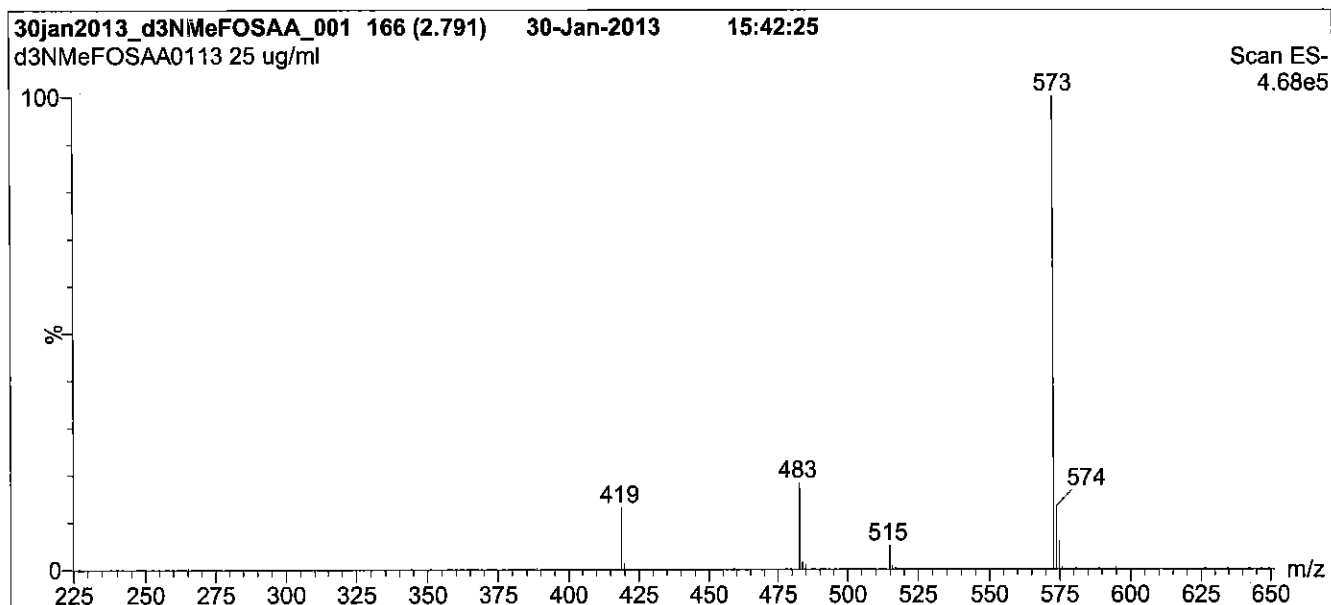
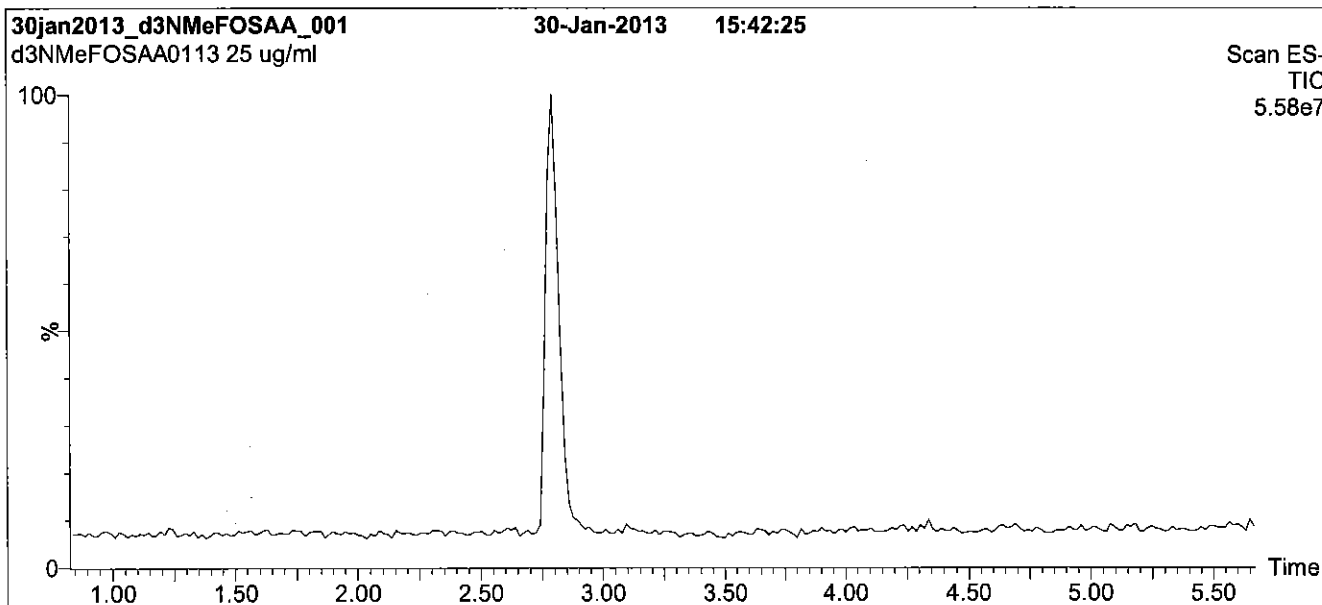
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1.7 μ m, 2.1 x 100 mm

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before returning to initial conditions in 0.5 min.
Time: 10 min

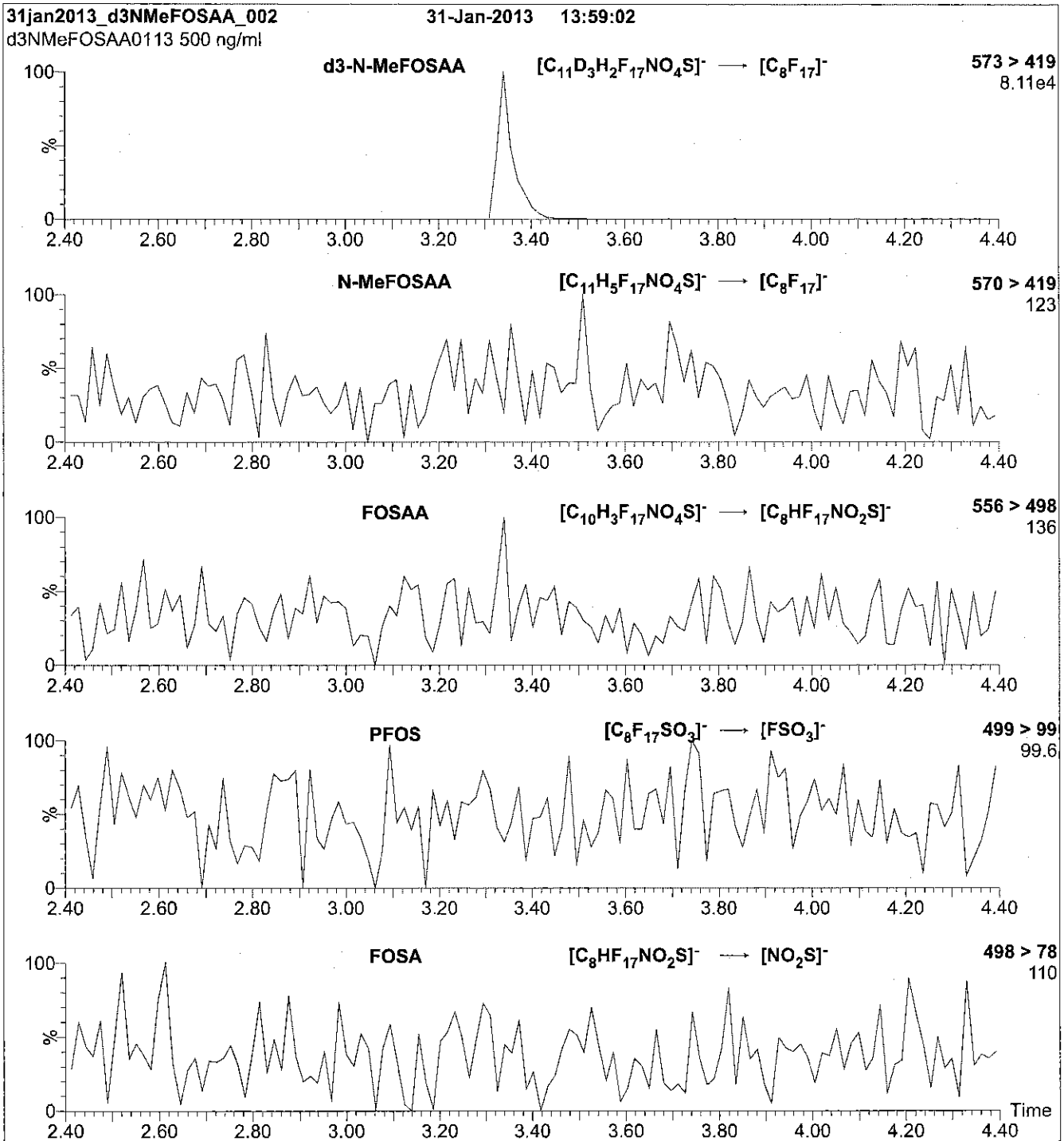
Flow: 300 μ l/min

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

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.

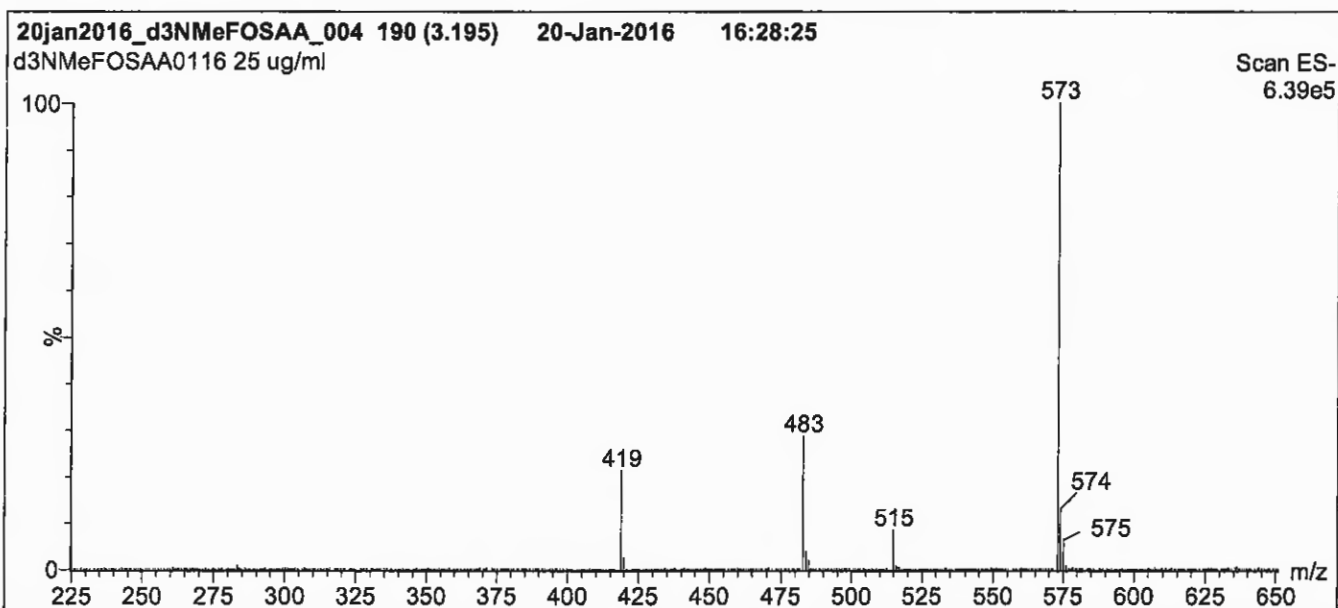
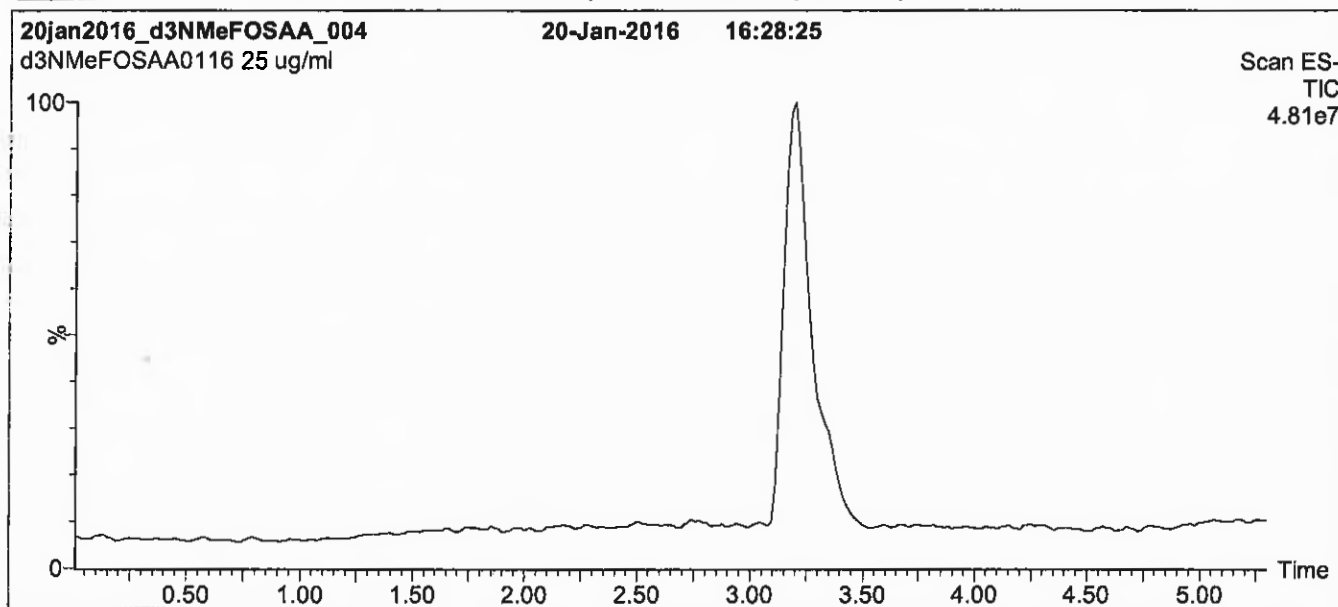
QUALITY MANAGEMENT:

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: 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

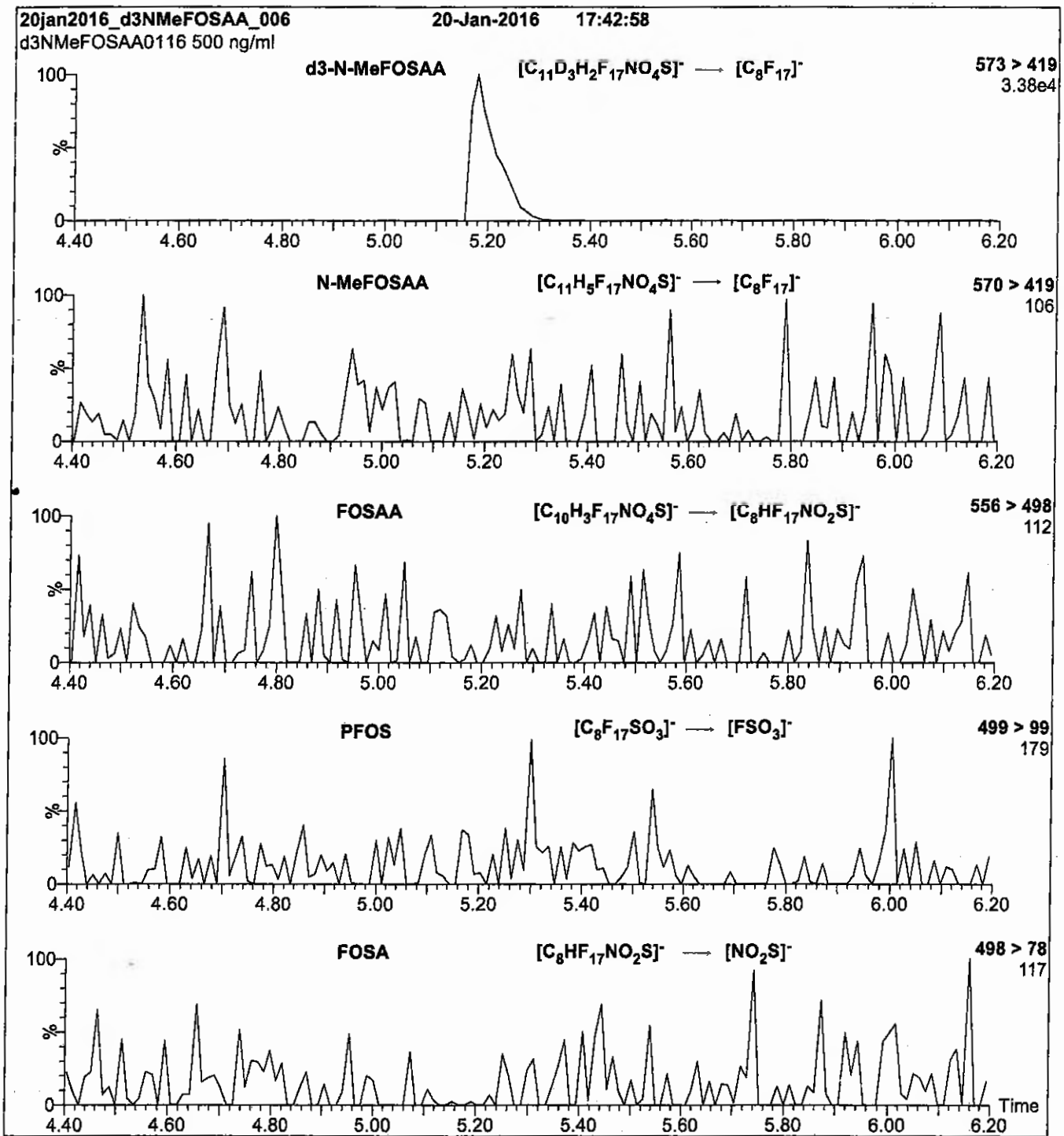
Flow: 300 μ l/min

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% 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

LCd5-NEtFOSAA_00001

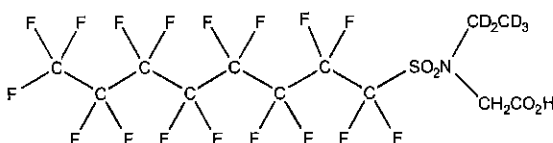


WELLINGTON LABORATORIES

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: C₁₂D₅H₃F₁₇NO₄S
CONCENTRATION: 50 ± 2.5 µg/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: ≥98% ²H₅

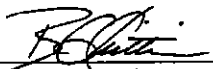
DOCUMENTATION/ DATA ATTACHED:

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.
- 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:

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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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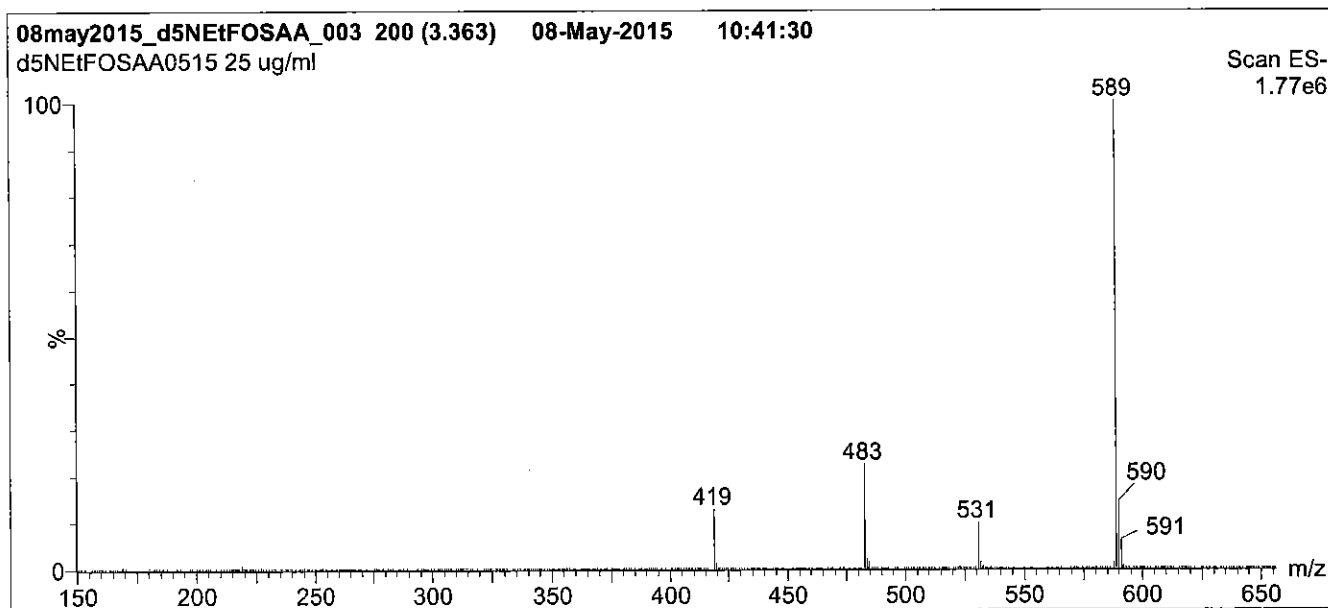
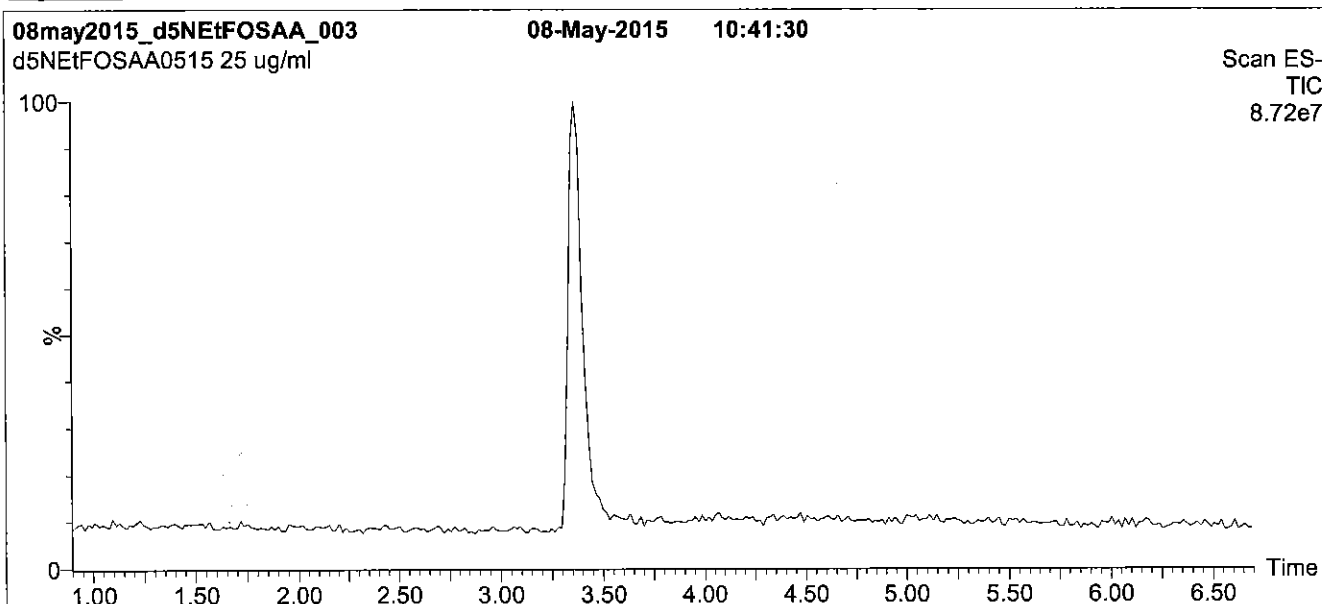
QUALITY MANAGEMENT:

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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

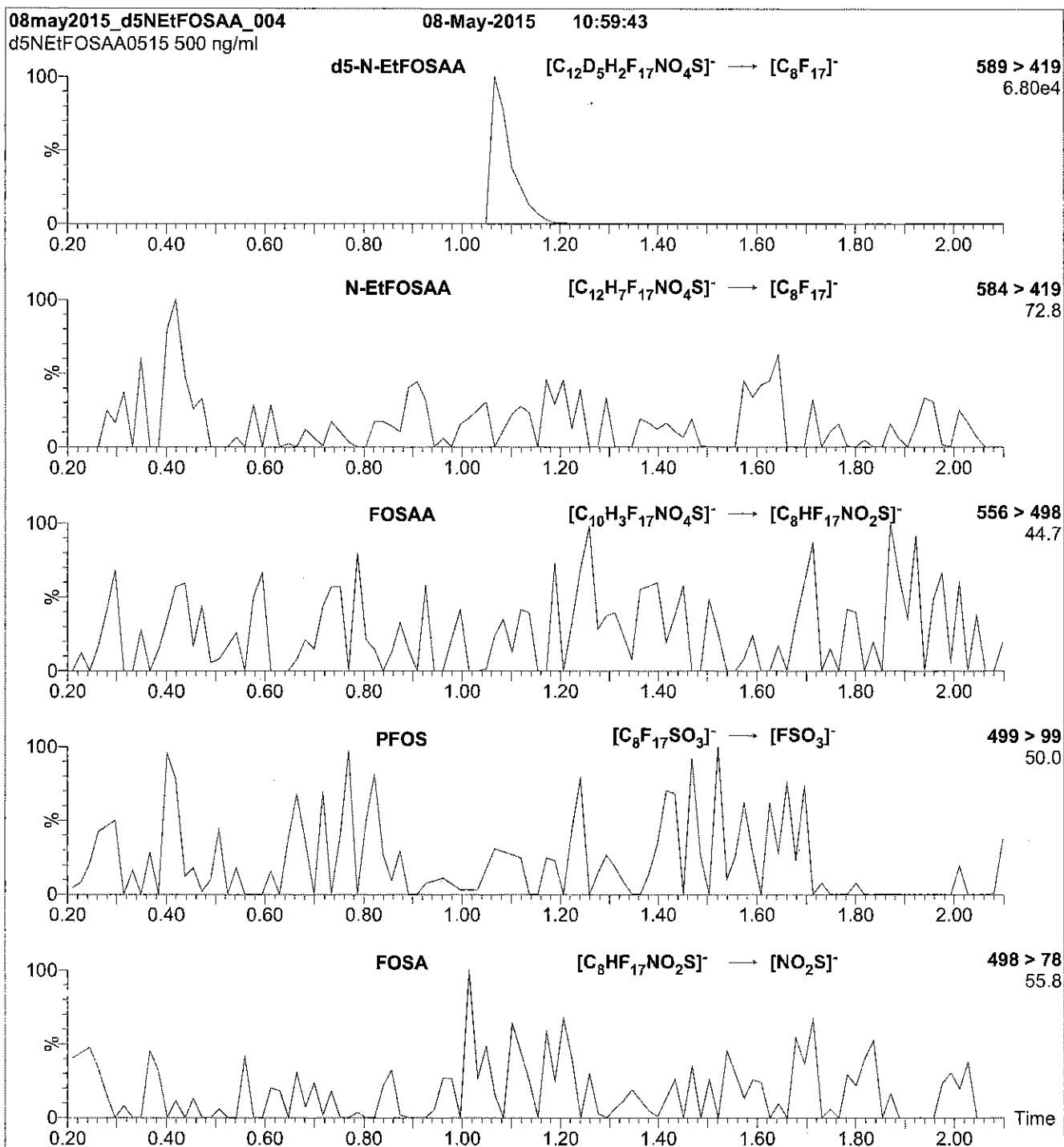
Flow: 300 μ l/min

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% H₂O
(both with 10 mM NH₄OAc 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 Prod: CBW
d5-N-EtFOSAA

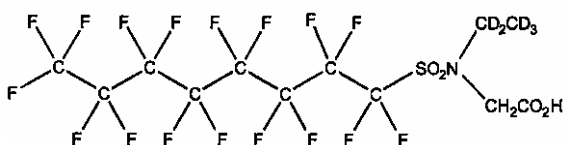


WELLINGTON LABORATORIES

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: C₁₂D₅H₃F₁₇NO₄S

CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 590.27

SOLVENT(S): Methanol

Water (<1%)

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: ≥98% ²H₆

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

INTENDED USE:

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

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EXPIRY DATE / PERIOD OF VALIDITY:

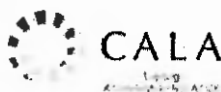
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LIMITED WARRANTY:

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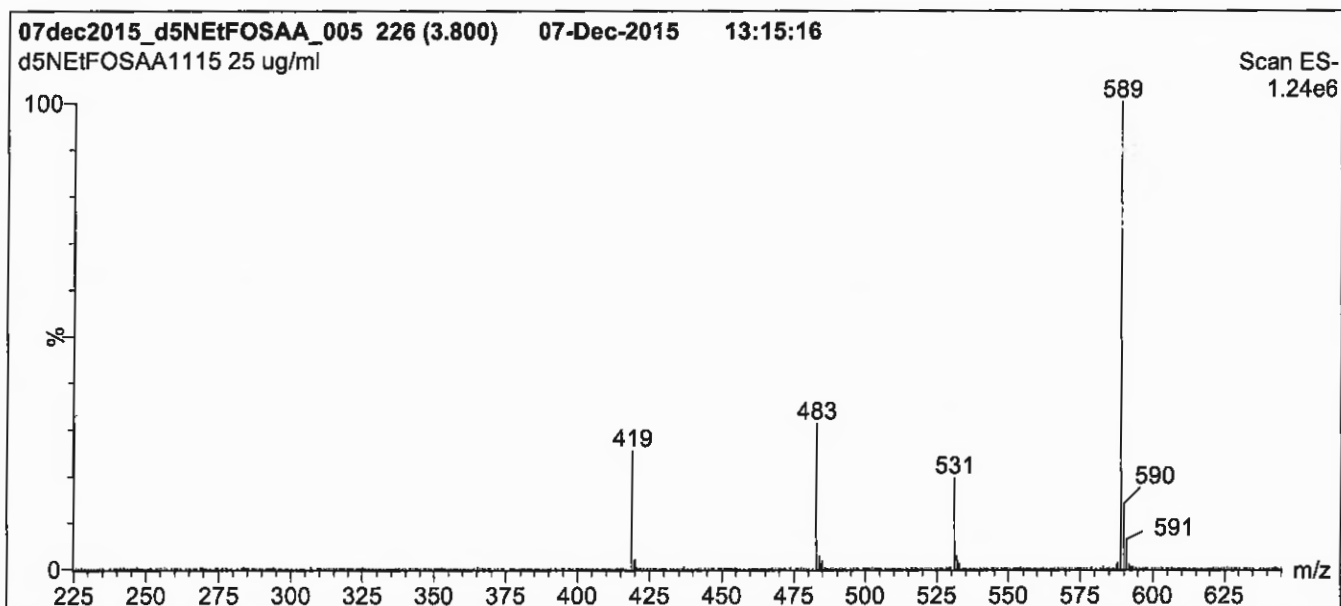
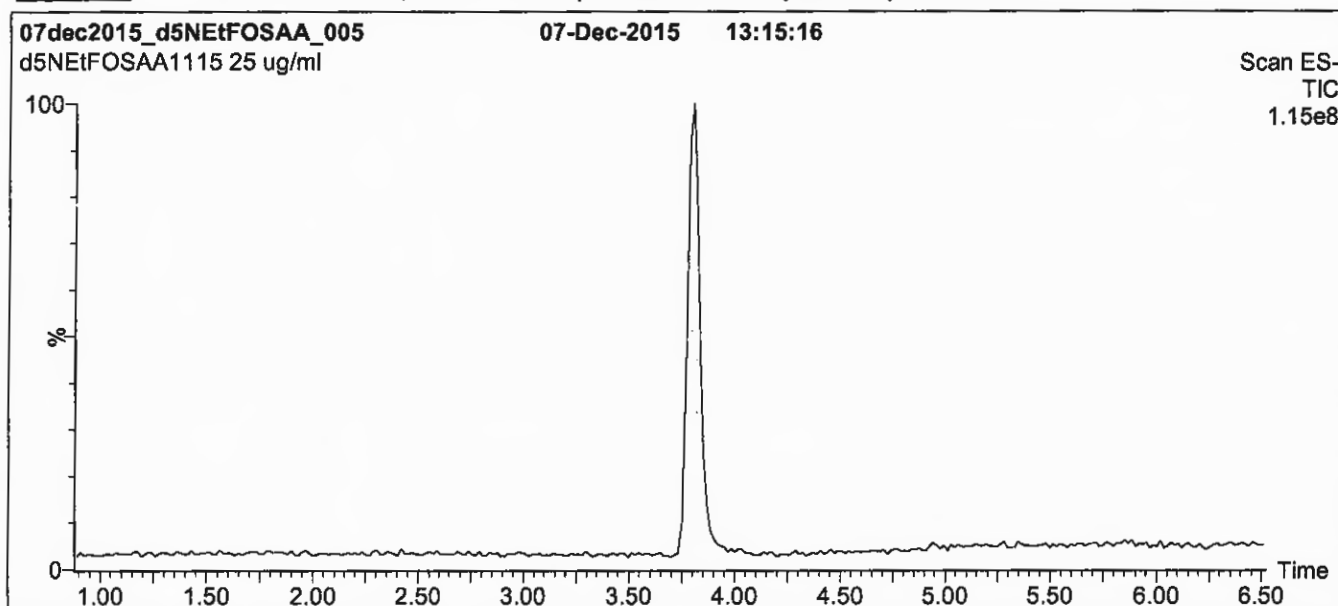
QUALITY MANAGEMENT:

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).



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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

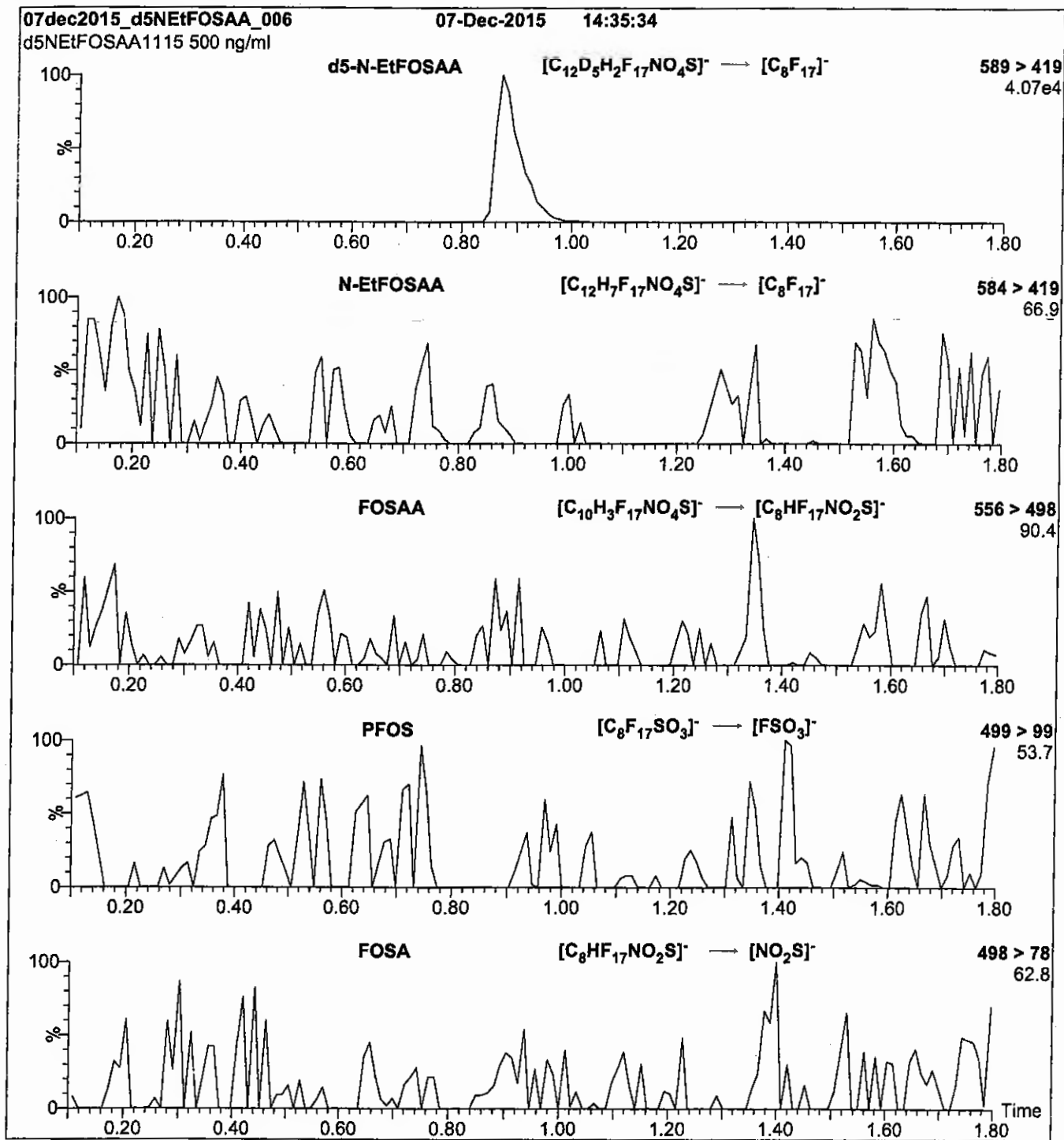
Flow: 300 μ l/min

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% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

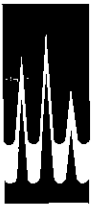
MS Parameters

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

Reagent

LCM2-6:FTS_00001

R: 7/16/15 SKV
S: 7/20/15 SKV

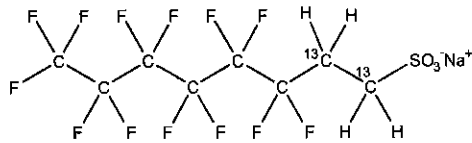


WELLINGTON LABORATORIES

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

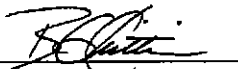
DOCUMENTATION/ DATA ATTACHED:

- 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
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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.

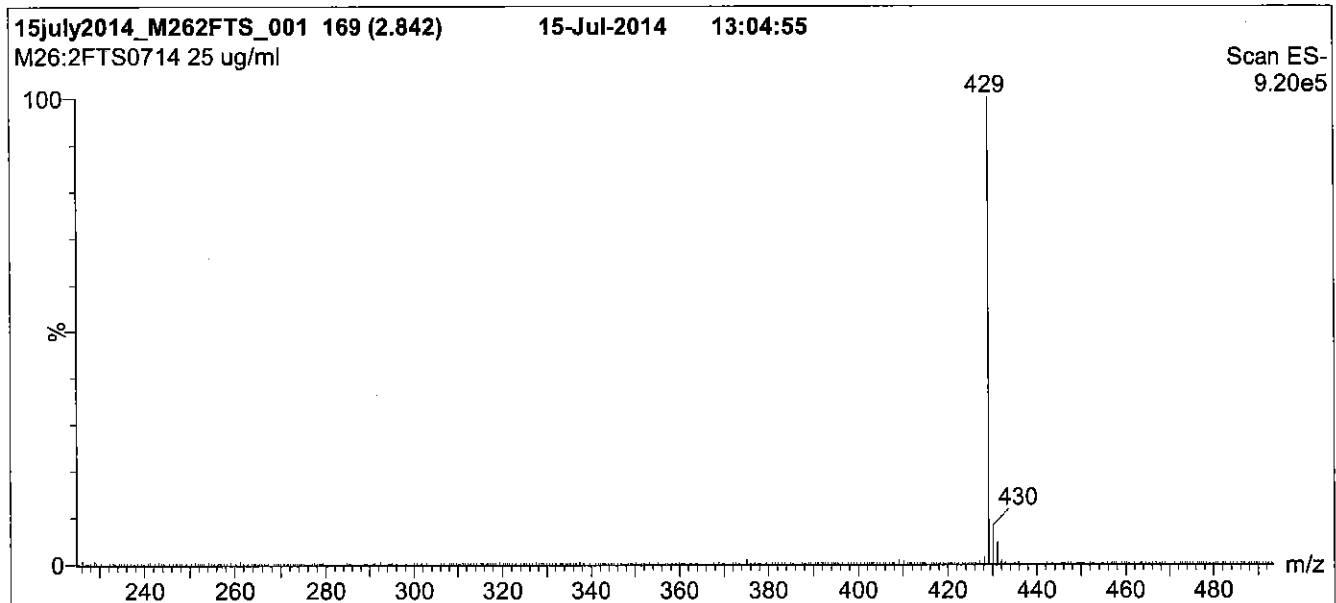
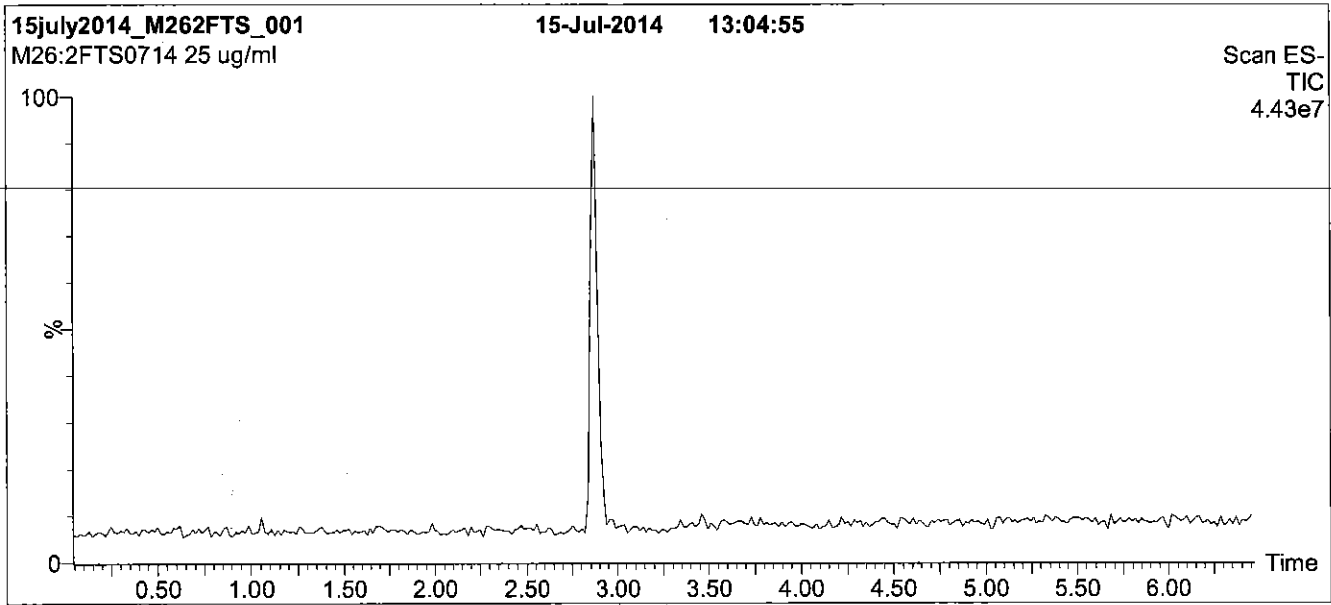
QUALITY MANAGEMENT:

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: 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

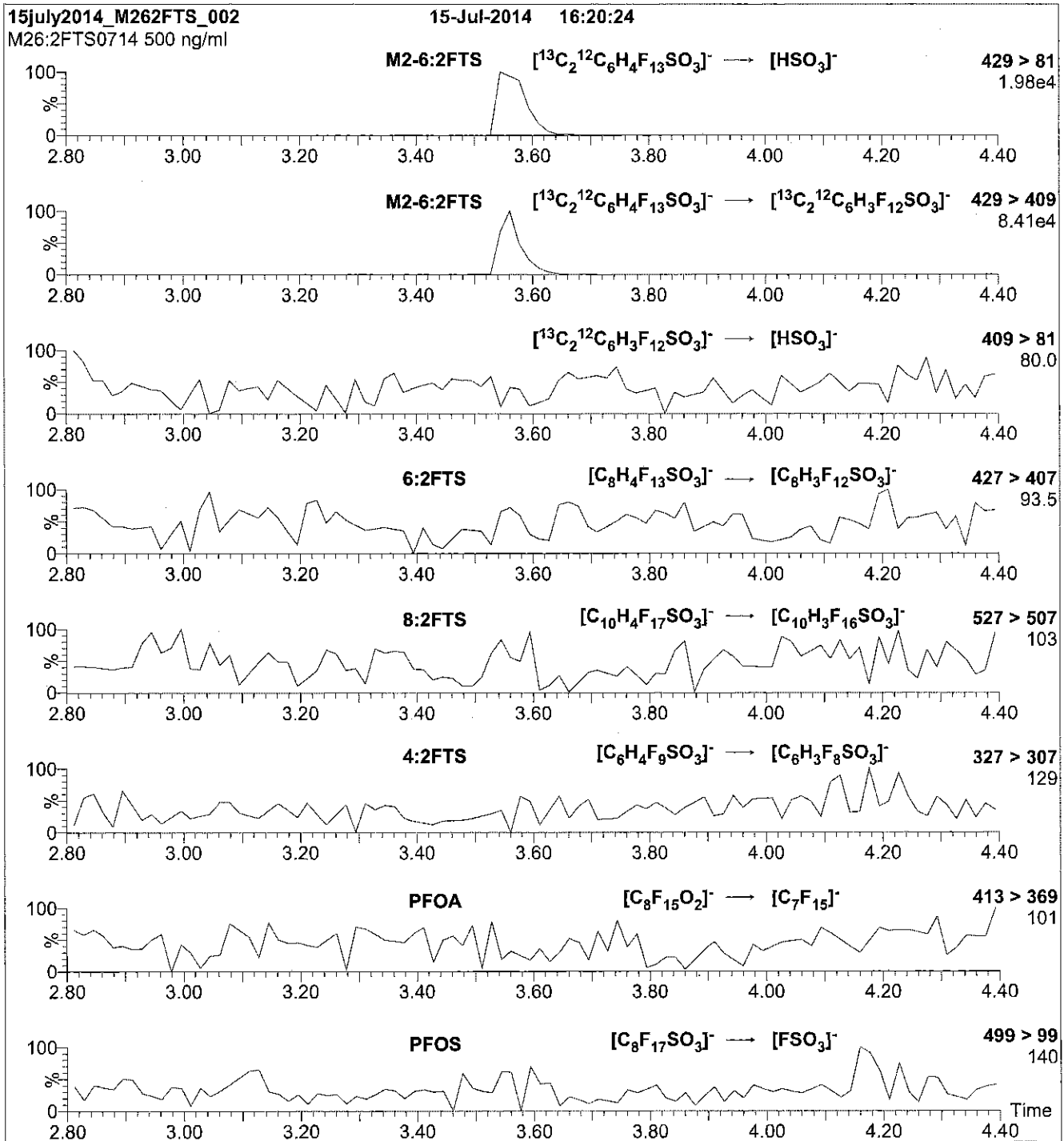
Flow: 300 μ l/min

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: 7/16/16 CSW

671575
ID: LCM2-6:F2S_00002
Exp: 01/08/21 Prod: CSW
M2-6:2F2S

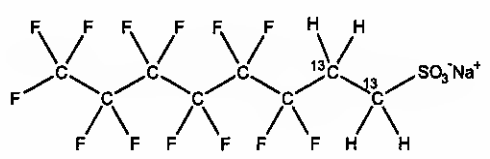


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-6:2F2S **LOT NUMBER:** M262F2S0116
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 (M2-6:2F2S 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 6:2F2S contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 6:2F2S and M2-6:2F2S 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 M2-6:2F2S 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.

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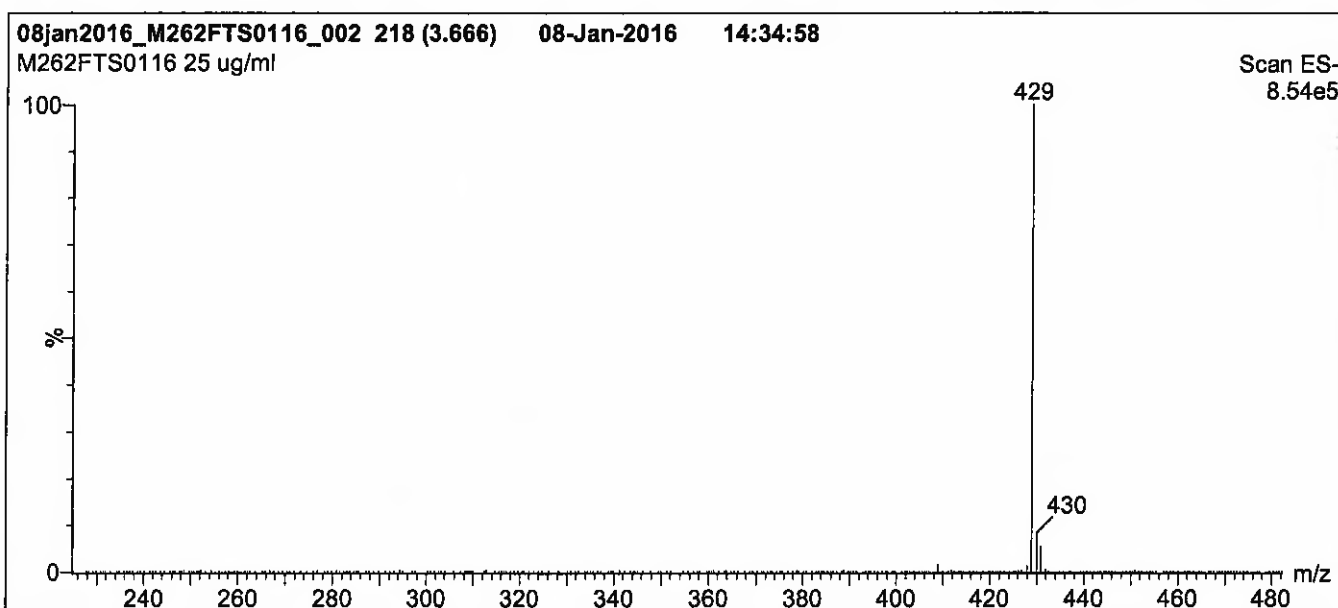
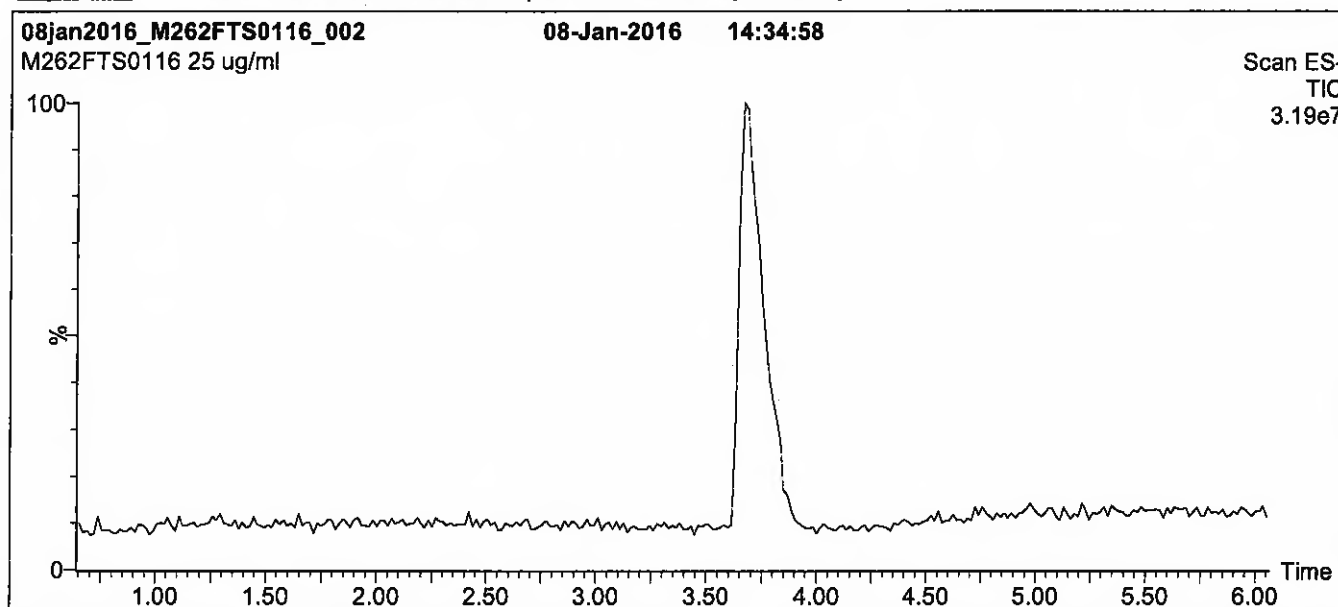
QUALITY MANAGEMENT:

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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: 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

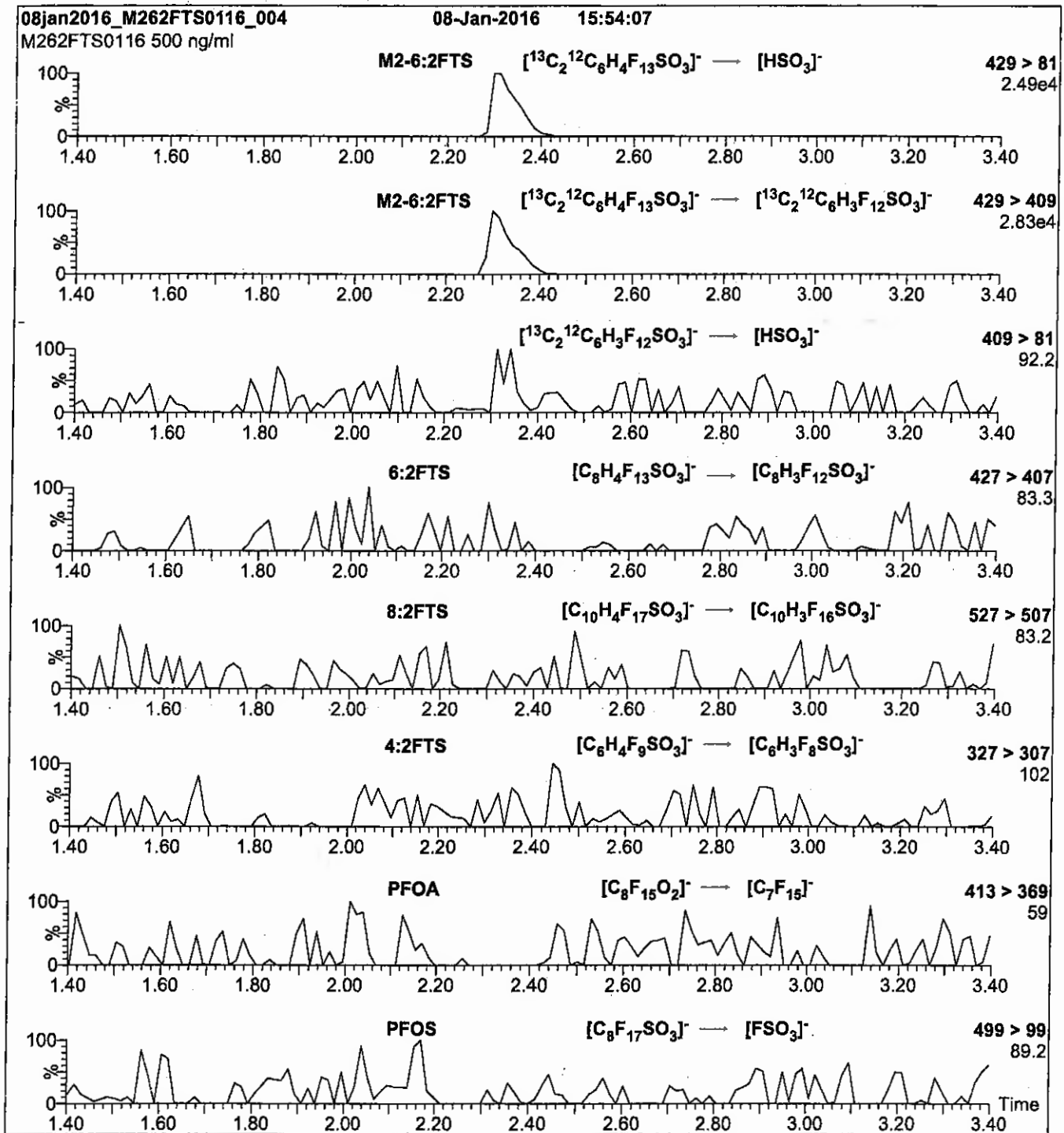
Flow: 300 μ l/min

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% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 µl/min

MS Parameters

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

Reagent

LCM2-8:2FTS_00001

r: 7/16/15 ✓
s: 7/22/15 STV

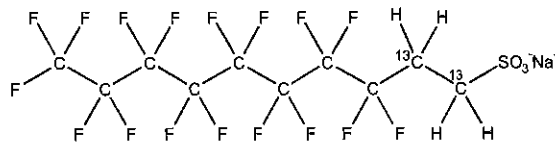


WELLINGTON LABORATORIES

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

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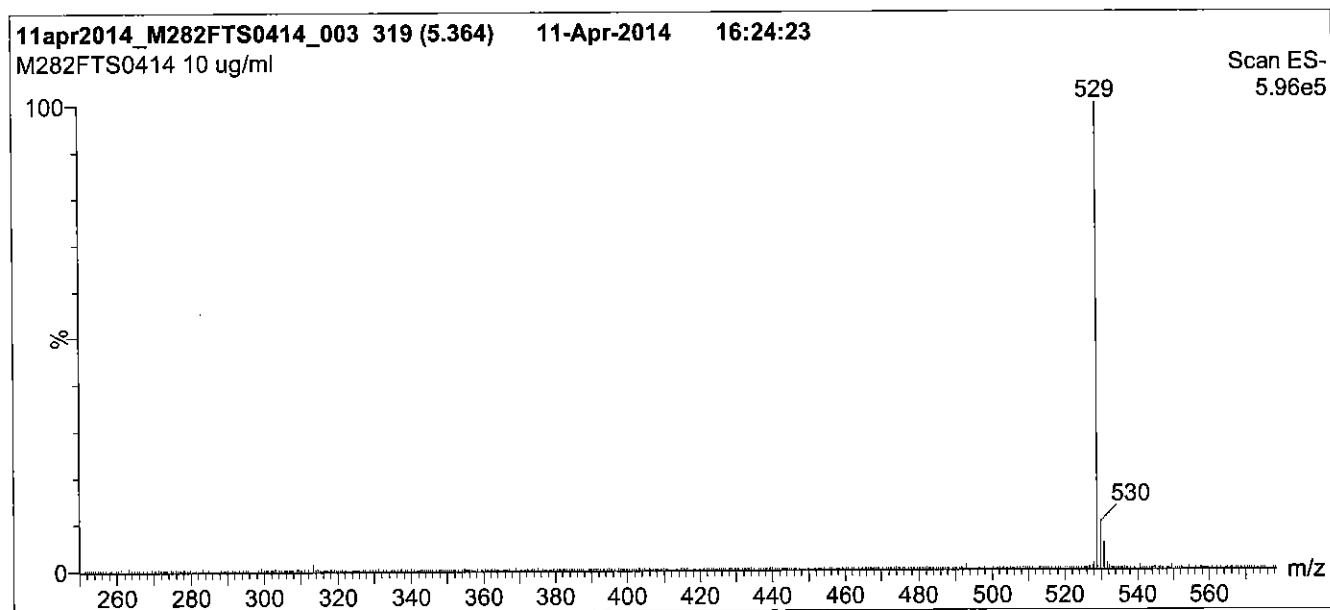
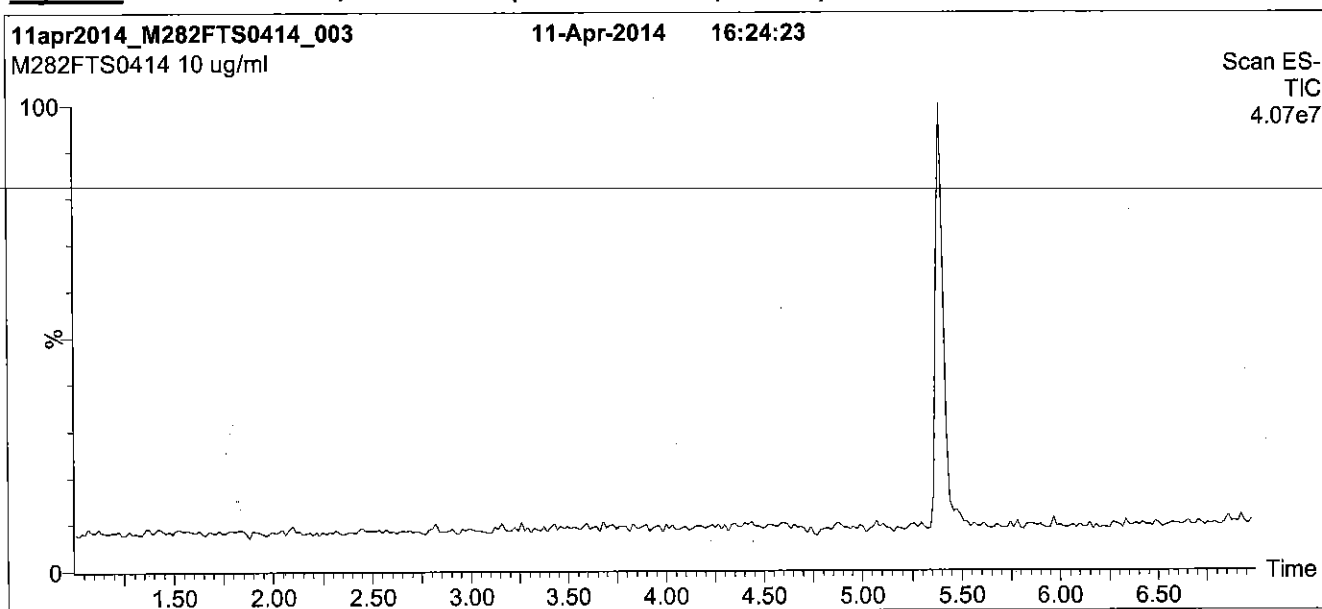
QUALITY MANAGEMENT:

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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

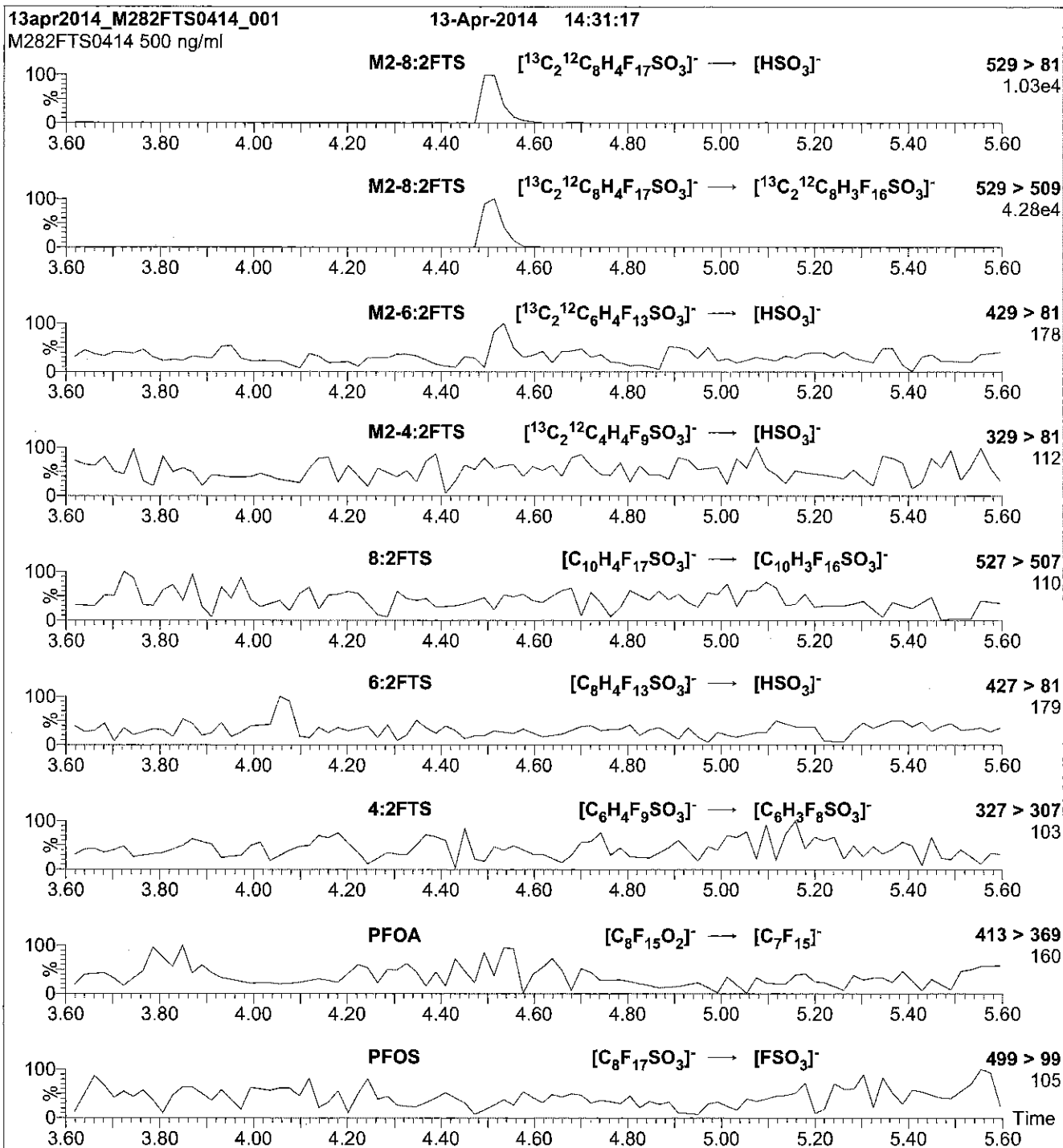
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (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 caw



671602

ID: LCM2-8:2FTS_00002

Exp: 01/08/21 Prod: CSW

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)

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EXPIRY DATE / PERIOD OF VALIDITY:

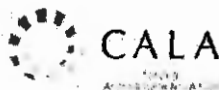
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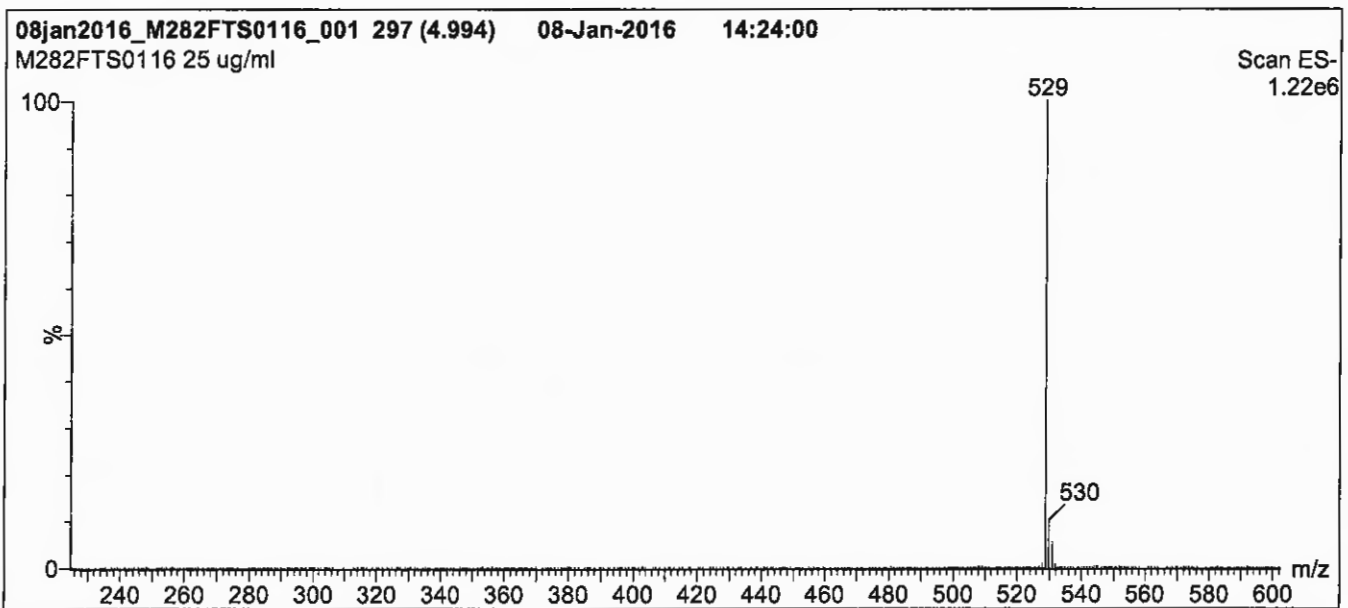
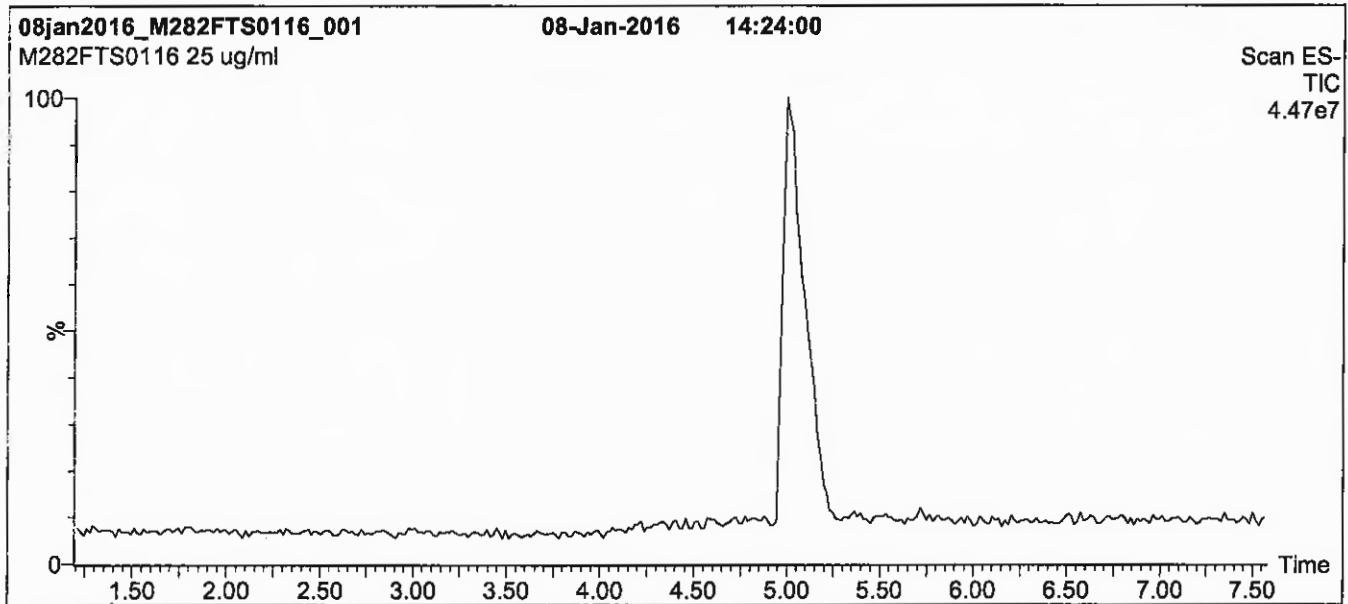
QUALITY MANAGEMENT:

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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

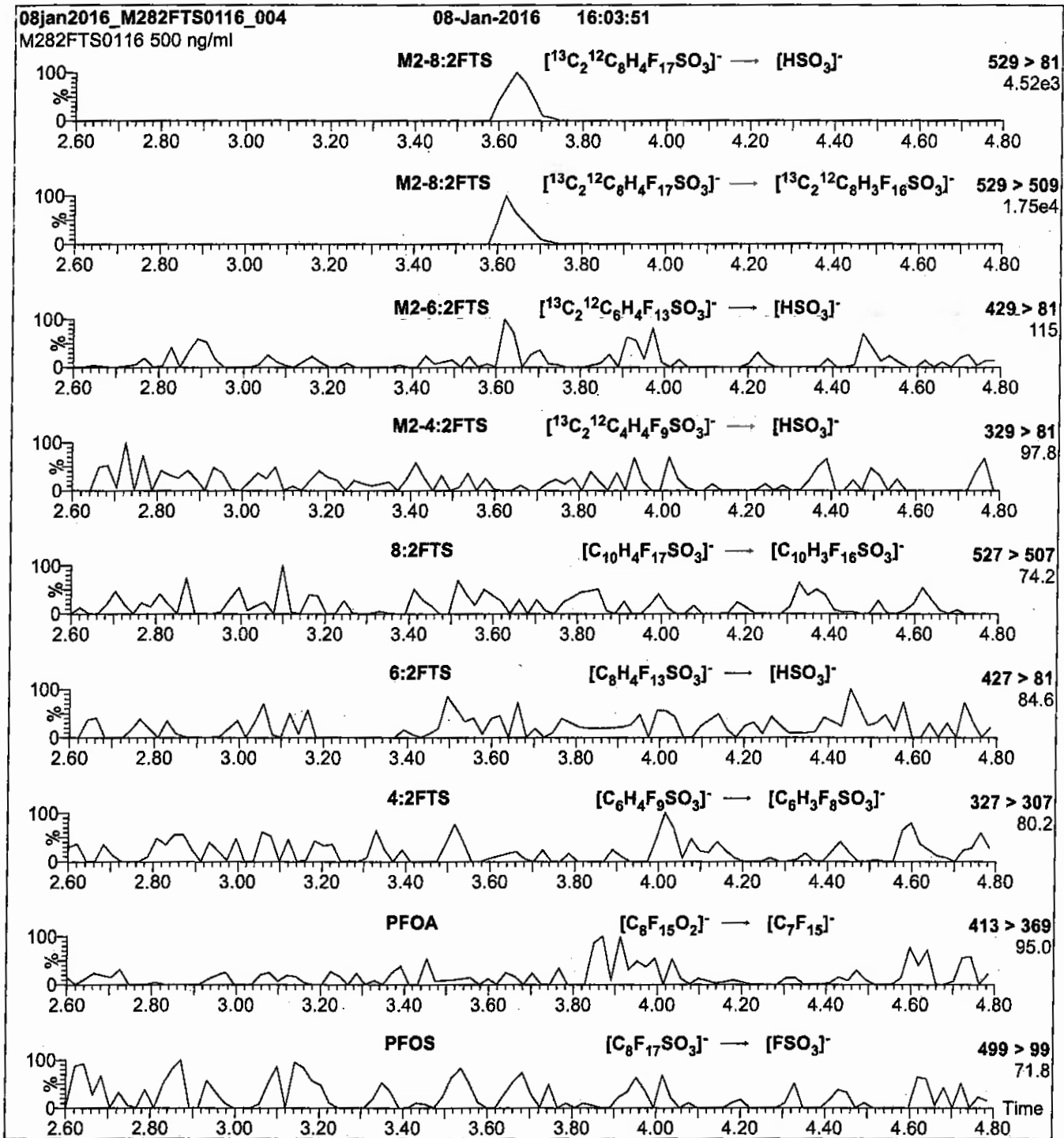
Flow: 300 μ l/min

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

Reagent

LCM2PFHxDA_00008

R: SBC 9/22/16

739512
ID: LCM2PFHxDA_00008
Exp: 01/07/21 Prod: SBC
13C2-PFHxDA at 50ug/mL

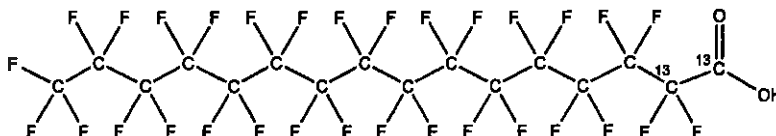


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFHxDA **LOT NUMBER:** M2PFHxDA1112
COMPOUND: Perfluoro-n-[1,2-¹³C₂]hexadecanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	¹³ C ₂ ¹² C ₁₄ HF ₃₁ O ₂	MOLECULAR WEIGHT:	816.11
CONCENTRATION:	50 ± 2.5 µg/ml	SOLVENT(S):	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	ISOTOPIC PURITY:	≥99% ¹³ C (1,2- ¹³ C ₂)
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		


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:  **Date:** 01/11/2016
B.G. Chittim (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:

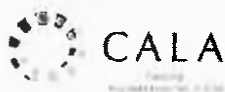
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

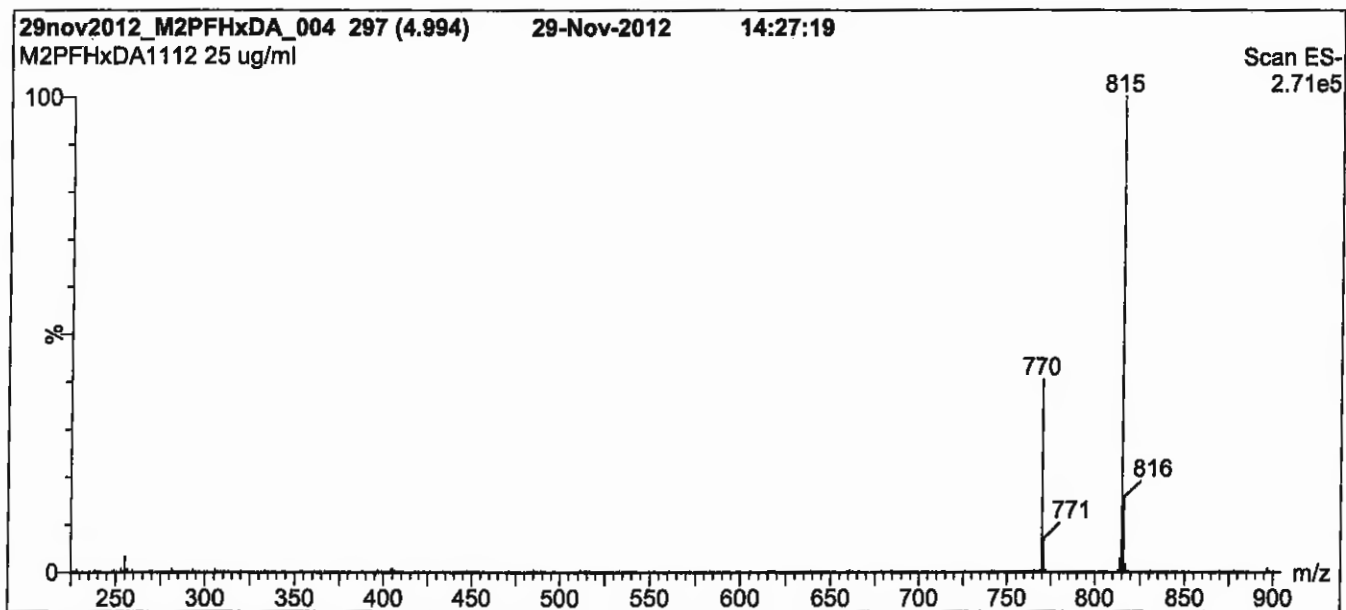
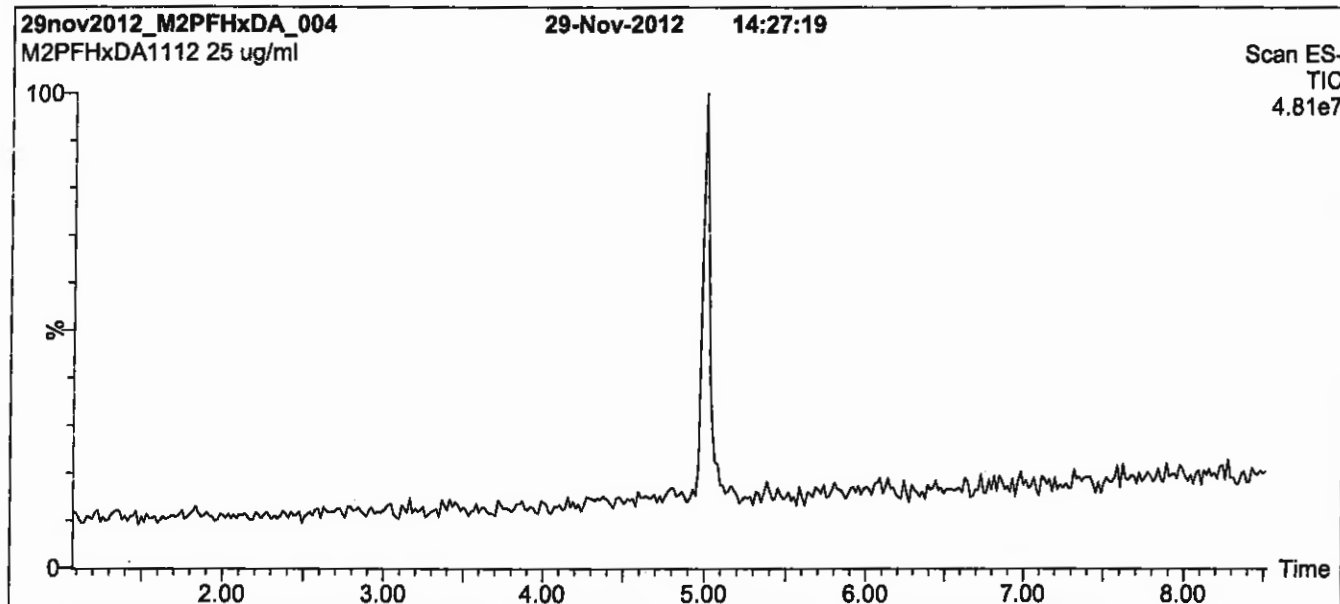
QUALITY MANAGEMENT:

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: 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

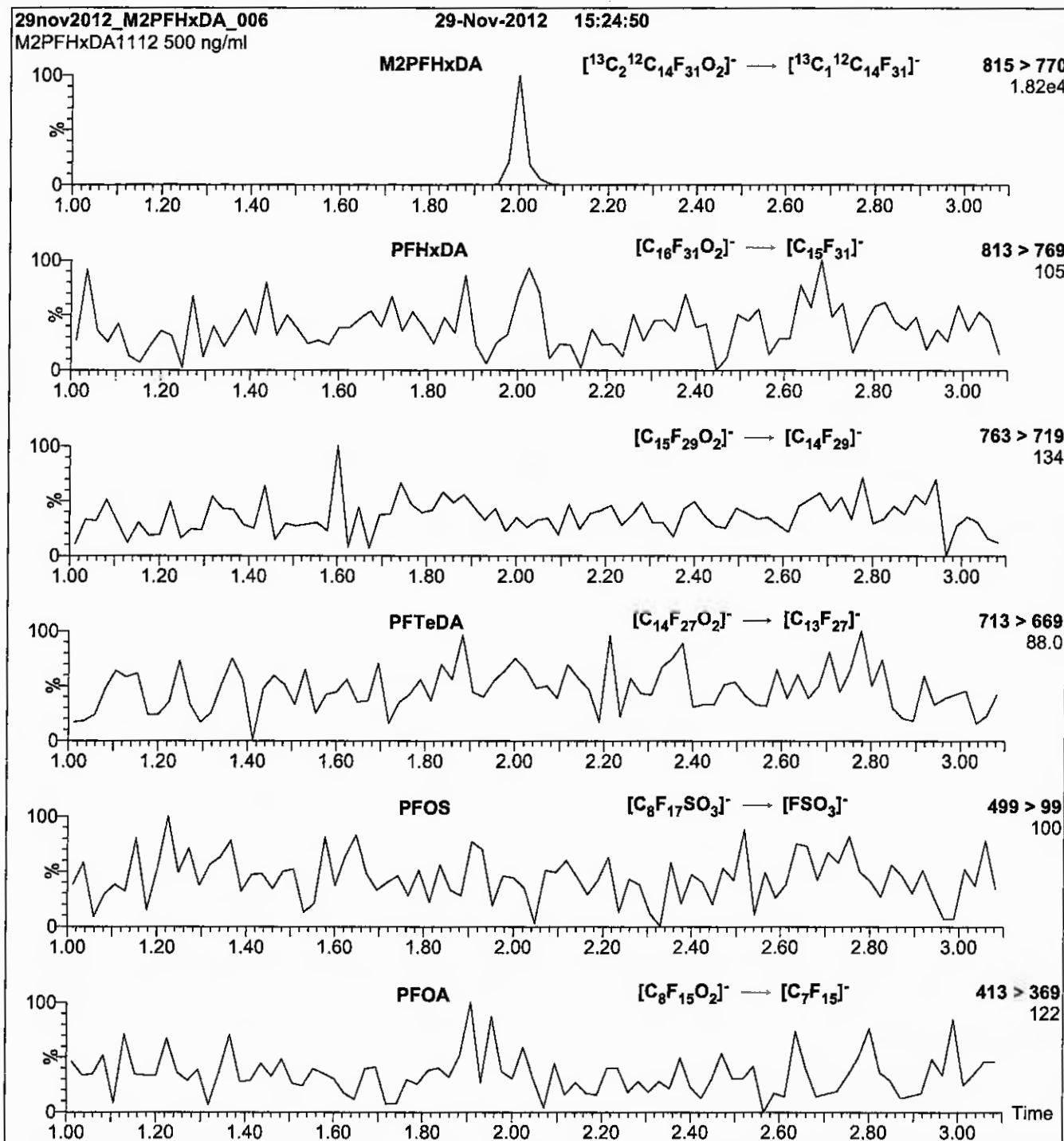
Flow: 300 μ l/min

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

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

739563
ID: LCM2PFTeDA_00007
Exp: 12/07/20 Prod: SBC
13C2-PFTeDA at 50ug/mL

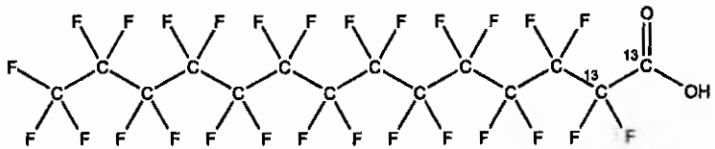


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFTeDA **LOT NUMBER:** M2PFTeDA1115
COMPOUND: Perfluoro-n-[1,2-¹³C₂]tetradecanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₂HF₂₇O₂ **MOLECULAR WEIGHT:** 716.10
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
(1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 12/07/2015
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: Date: 12/08/2015
B.G. Chittim (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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where x is expressed as a relative standard uncertainty of the individual parameter.

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EXPIRY DATE / PERIOD OF VALIDITY:

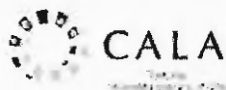
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

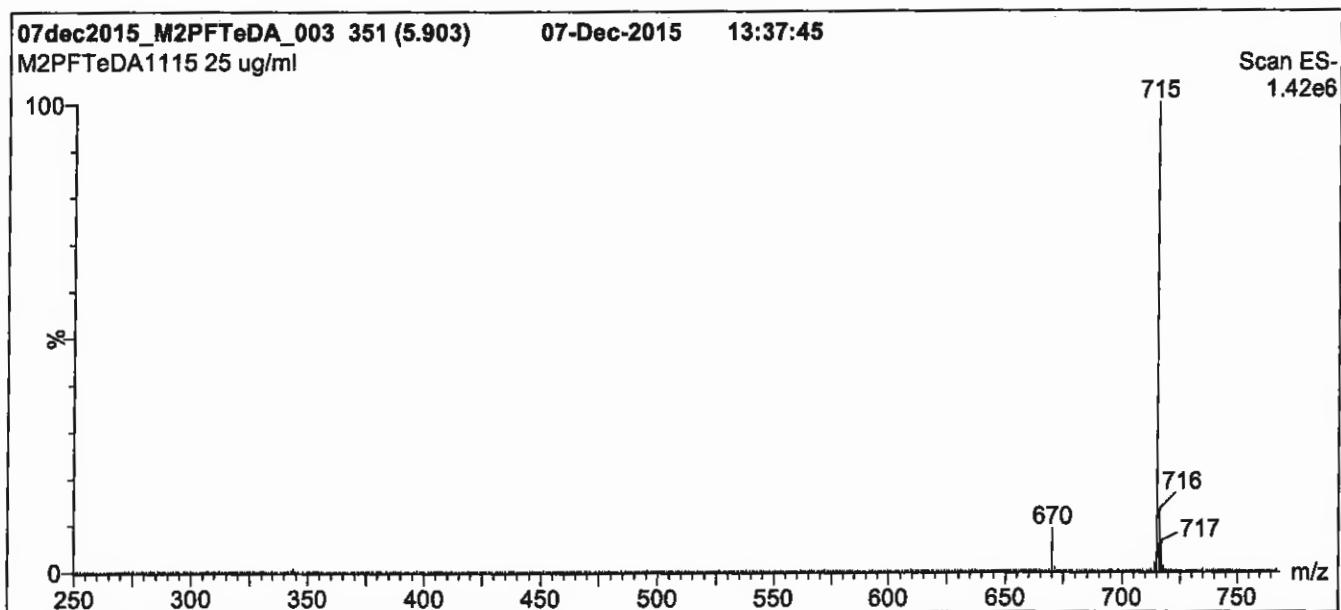
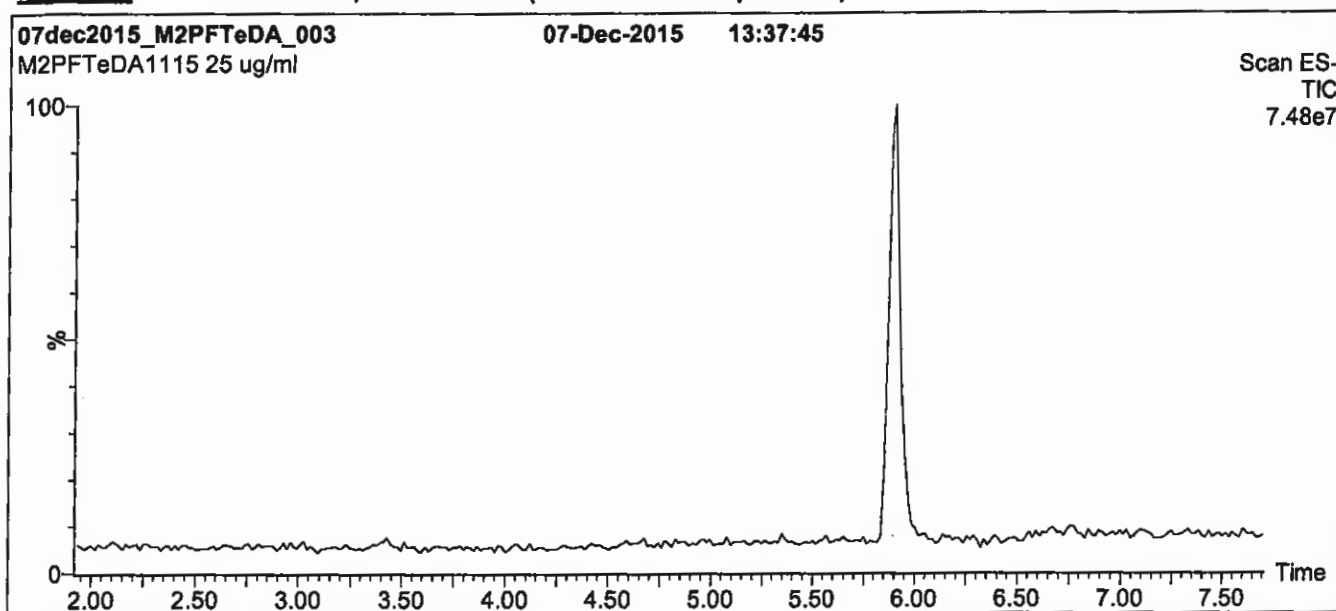
QUALITY MANAGEMENT:

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: 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

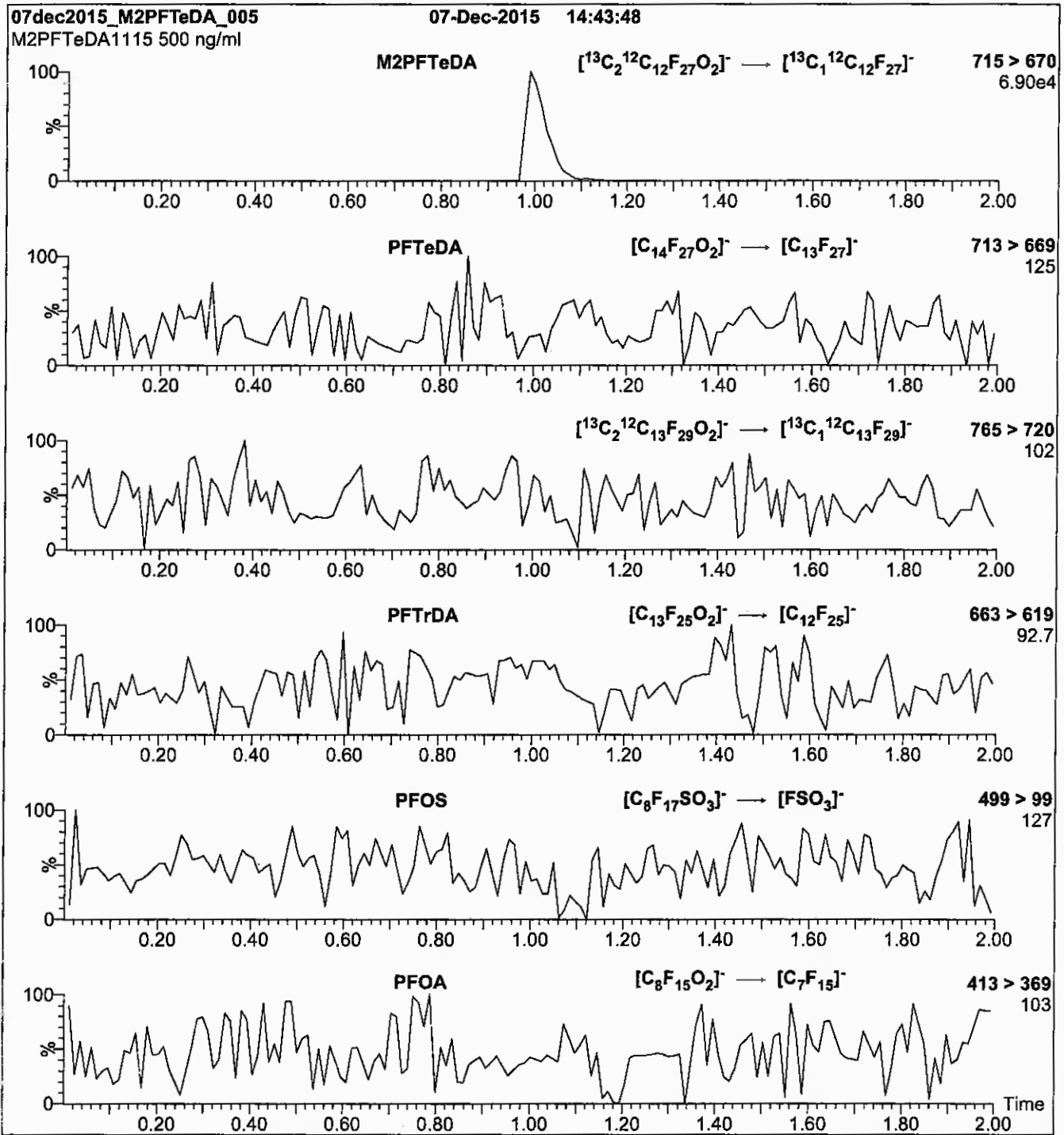
Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

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) = 3.28e-3
Collision Energy (eV) = 14

Reagent

LCM4PFHPA_00007

R: SBC 07/22/16

739567
ID: LCM4PFHPA_00007
Exp: 05/27/21 Prpd: SBC
13C4-Perfluoroheptanoic a



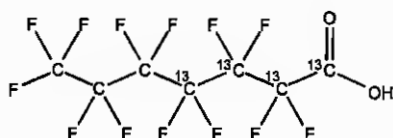
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

Scanned 10/14/16 SK

PRODUCT CODE: M4PFHpA **LOT NUMBER:** M4PFHpA0516
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]heptanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₄¹²C₃HF₁₃O₂ **MOLECULAR WEIGHT:** 368.03
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99%¹³C
(1,2,3,4-¹³C₄)
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

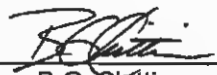
DOCUMENTATION/ DATA ATTACHED:

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.

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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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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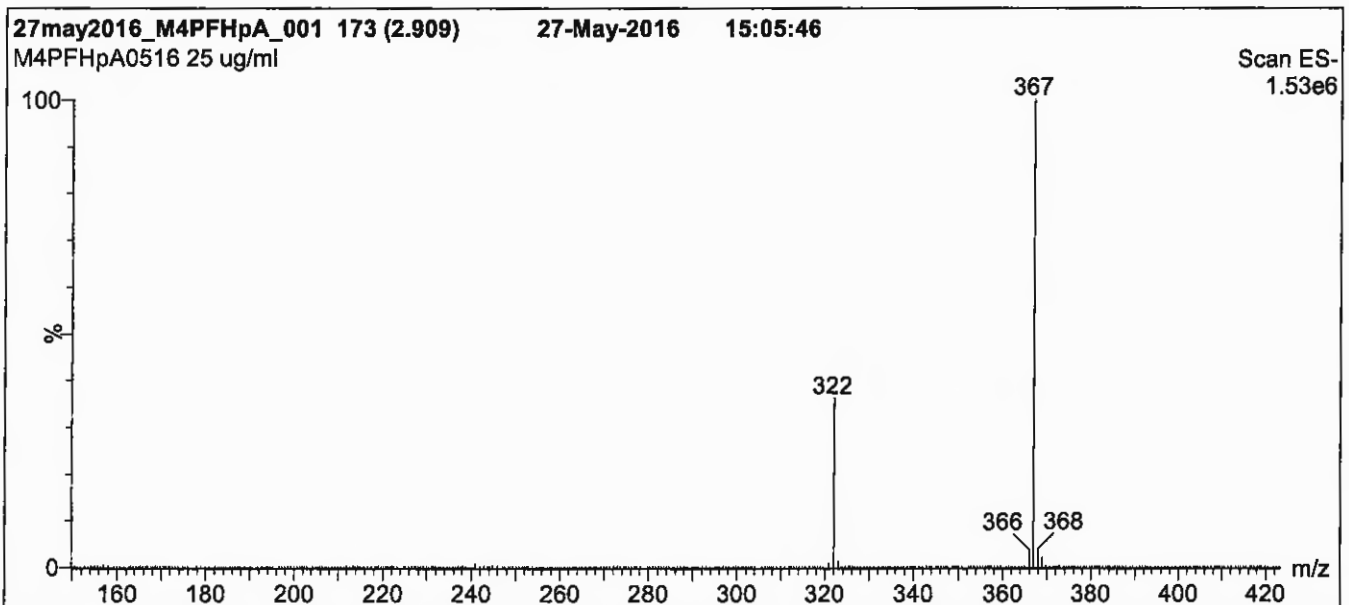
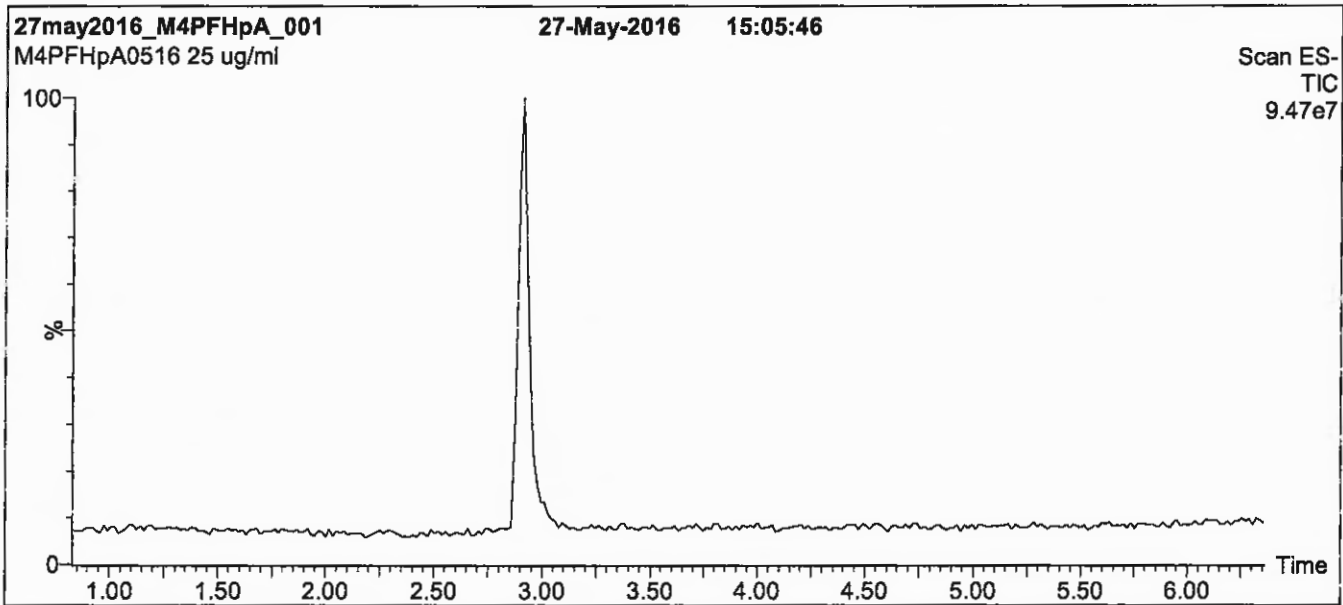
QUALITY MANAGEMENT:

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Figure 1: 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

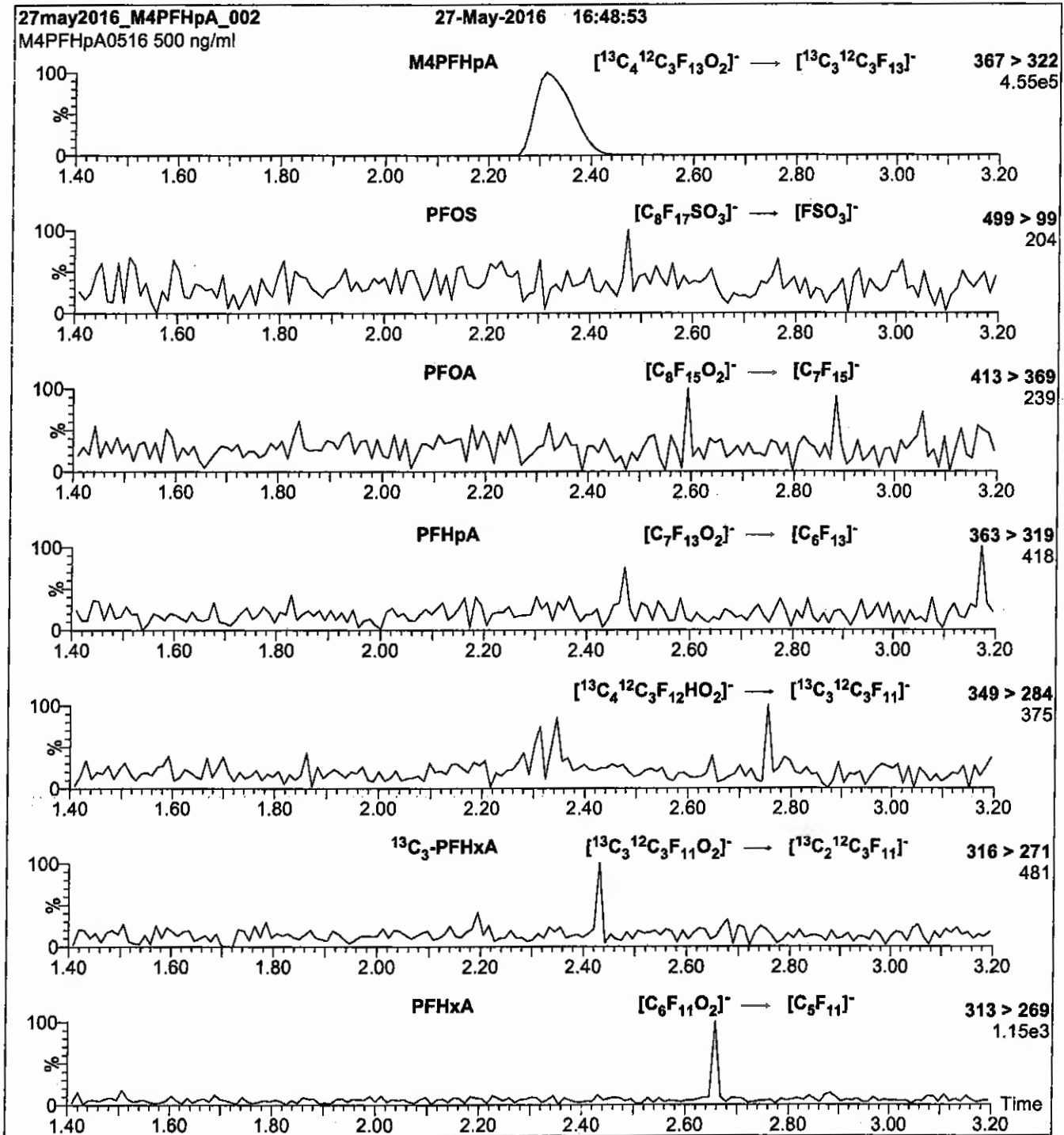
Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

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% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 µl/min

MS Parameters

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

Reagent

LCM5PFPEA_00008

R: SBC 9/22/16



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



WELLINGTON LABORATORIES

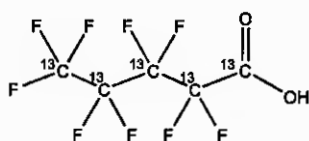
CERTIFICATE OF ANALYSIS DOCUMENTATION

Scanned 10/14/16 SR

PRODUCT CODE: M5PFPeA
COMPOUND: Perfluoro-n-¹³C₅pentanoic acid

LOT NUMBER: M5PFPeA0515

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%
LAST TESTED: (mm/dd/yyyy) 05/22/2015
EXPIRY DATE: (mm/dd/yyyy) 05/22/2020

ISOTOPIC PURITY: ≥99% ¹³C
(¹³C₅)

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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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:

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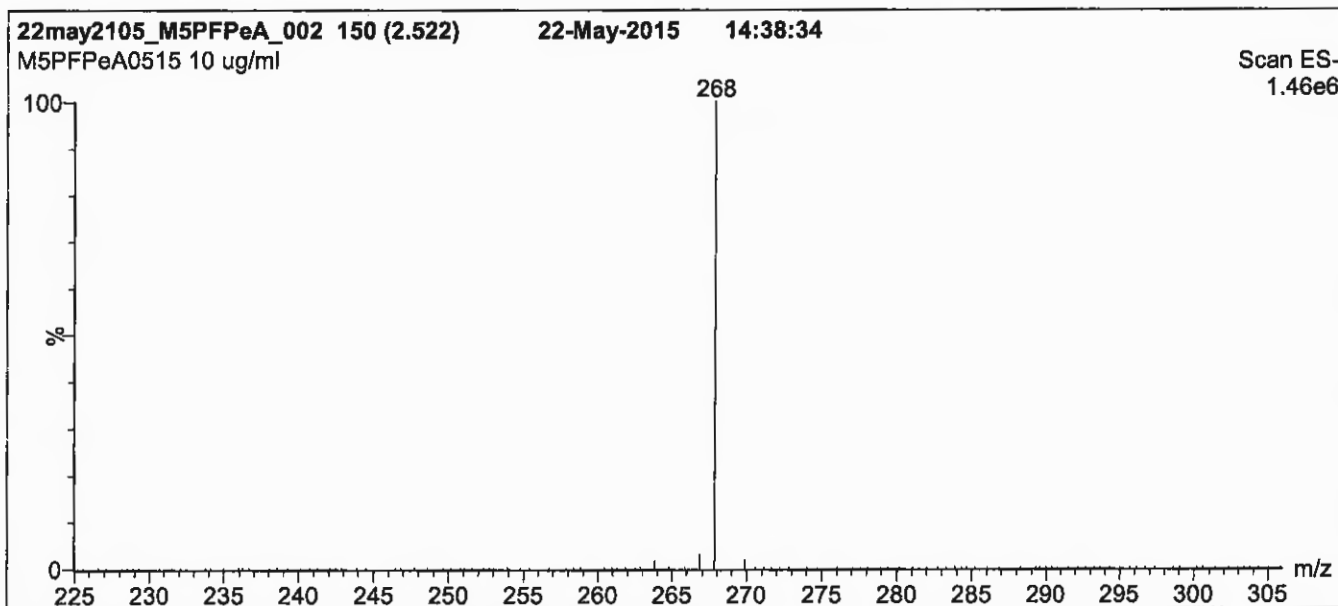
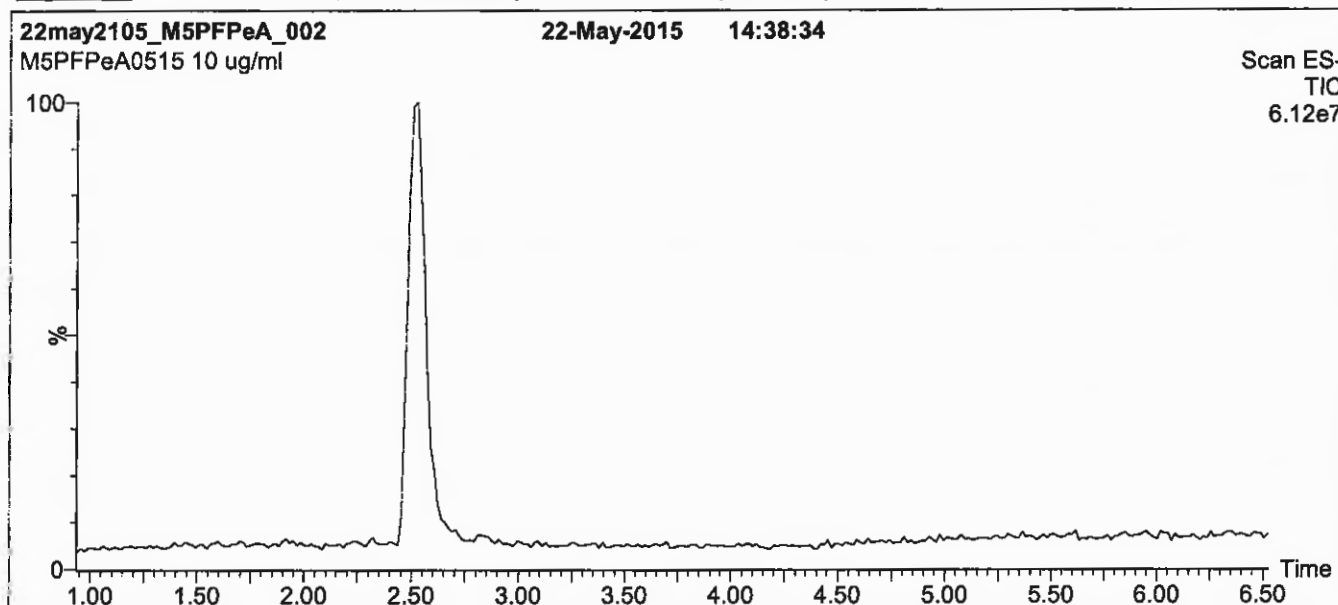
QUALITY MANAGEMENT:

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: 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

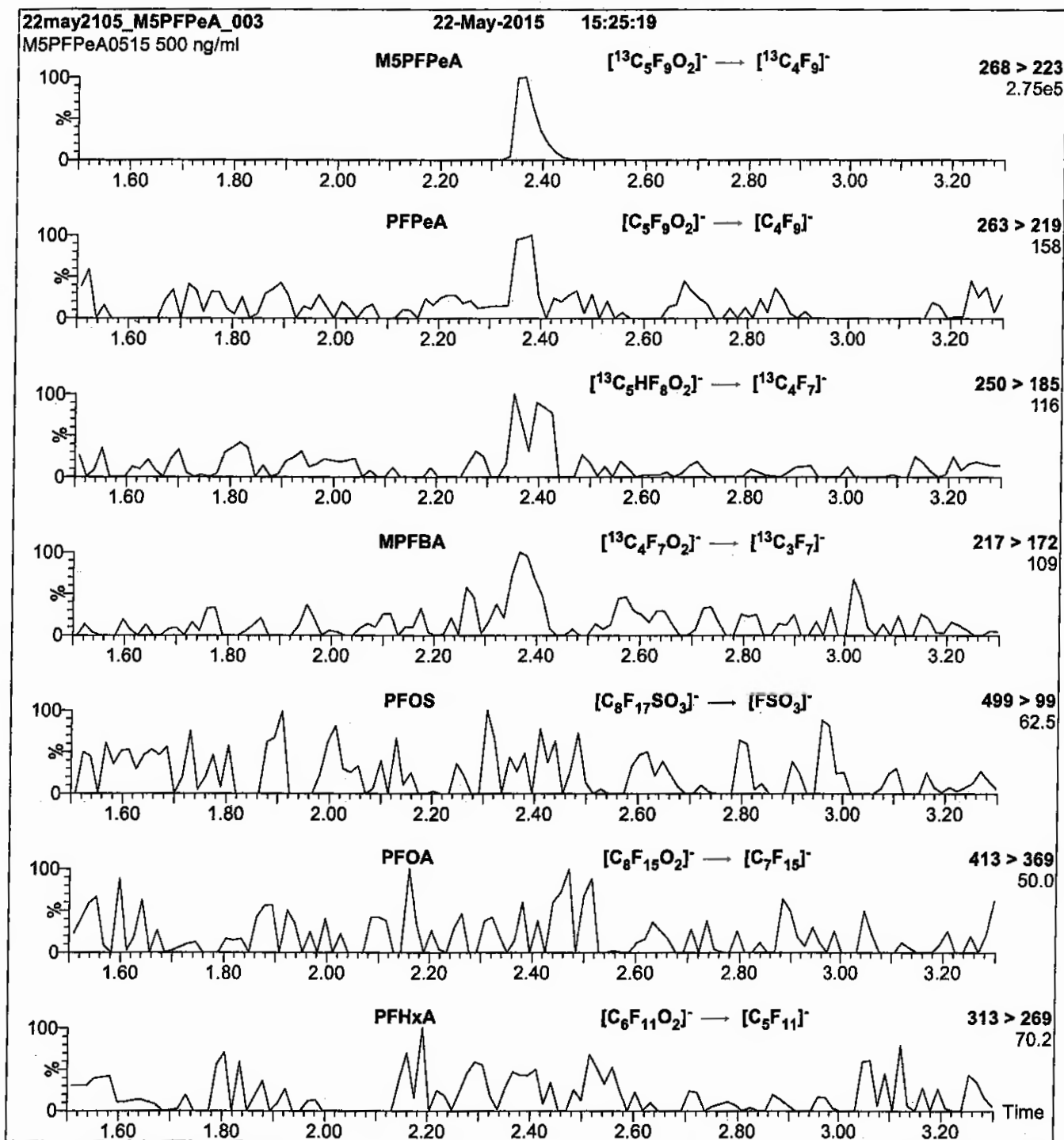
Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

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

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

739615
ID: LCM8FOSA_00011
Exp: 12/22/17 Prod: SBC
13C8-Perfluorooctanesulfo

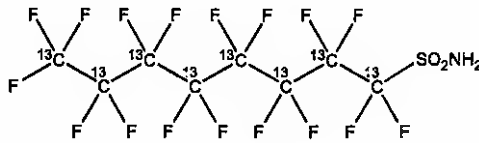


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M8FOSA-I **LOT NUMBER:** M8FOSA1215I
COMPOUND: Perfluoro-1-[¹³C]₈octanesulfonamide

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	¹³ C ₈ H ₂ F ₁₇ NO ₂ S	MOLECULAR WEIGHT:	507.09
CONCENTRATION:	50 ± 2.5 µg/ml	SOLVENT(S):	Isopropanol
CHEMICAL PURITY:	>98%	ISOTOPIC PURITY:	≥99% ¹³ C
LAST TESTED: (mm/dd/yyyy)	12/22/2015		(¹³ C ₈)
EXPIRY DATE: (mm/dd/yyyy)	12/22/2017		
RECOMMENDED STORAGE:	Refrigerate ampoule		

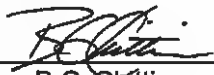
DOCUMENTATION/ DATA ATTACHED:

- 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: 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:

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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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LIMITED WARRANTY:

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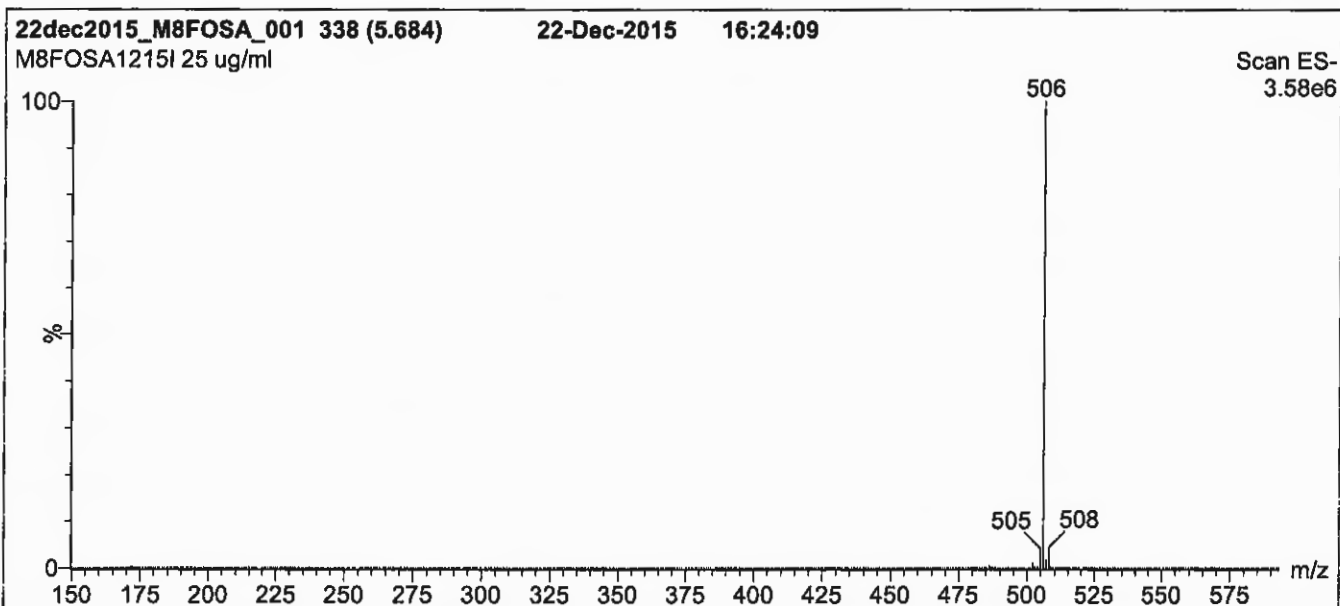
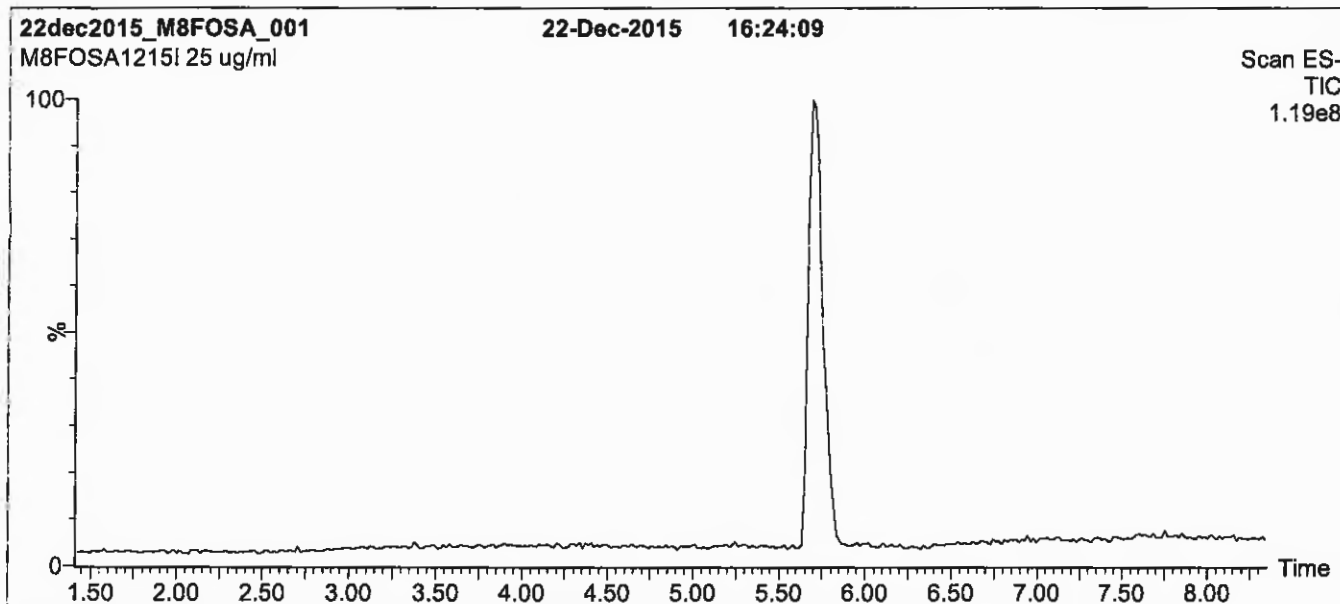
QUALITY MANAGEMENT:

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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

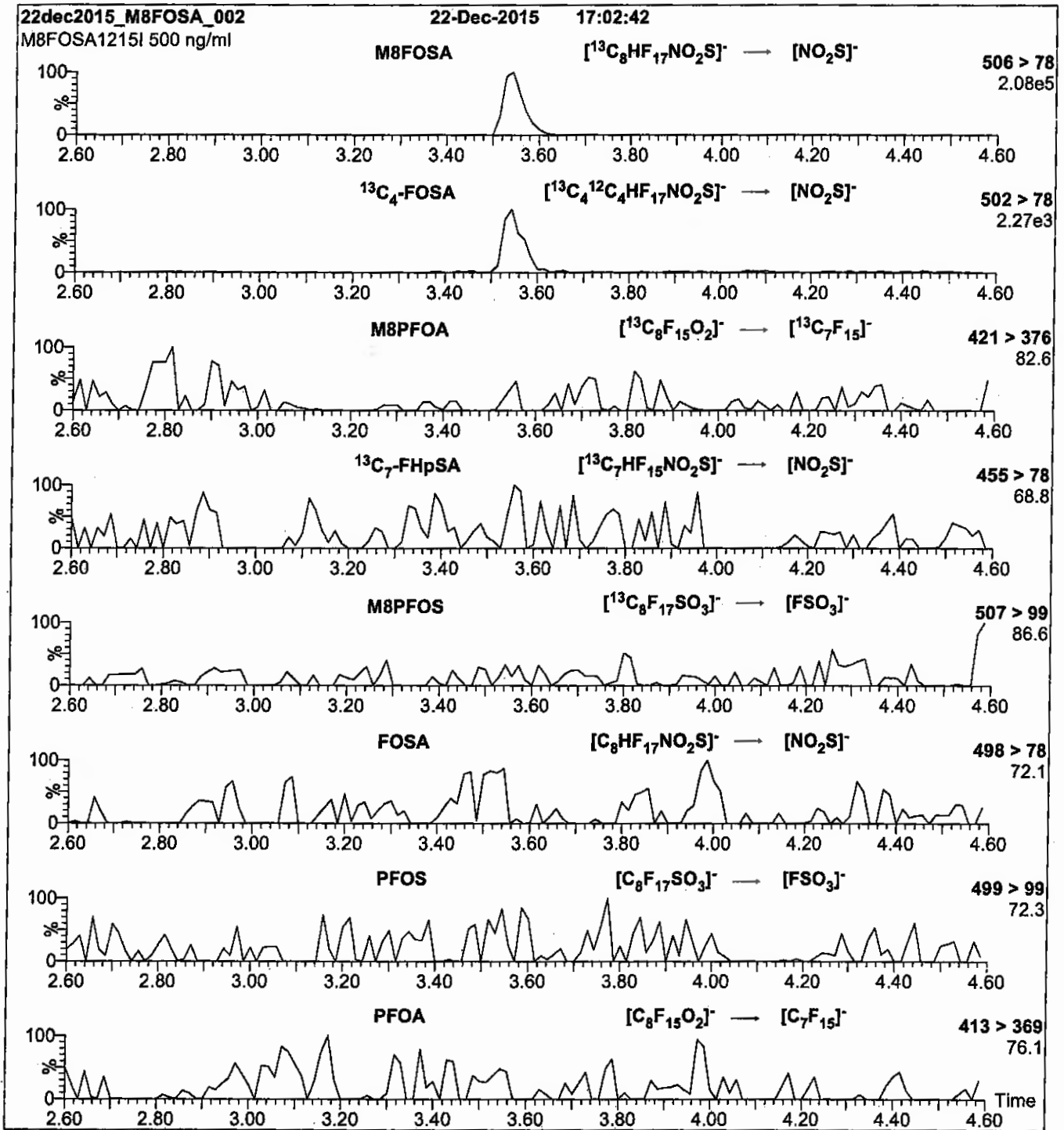
Flow: 300 μ l/min

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) = $3.39\text{e-}3$
Collision Energy (eV) = 30

Reagent

LCMPFBA_00008

R: 8BC 9/22/16



739593

ID: LCMFBA_00008

Exp: 05/24/21 Prep: SEC

¹³C4-Perfluorobutanoic ac



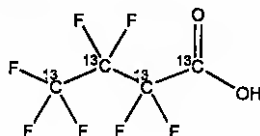
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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PRODUCT CODE: MPFBA **LOT NUMBER:** MPFBA0516
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]butanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₄HF₉O₂ **MOLECULAR WEIGHT:** 218.01
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
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

INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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LIMITED WARRANTY:

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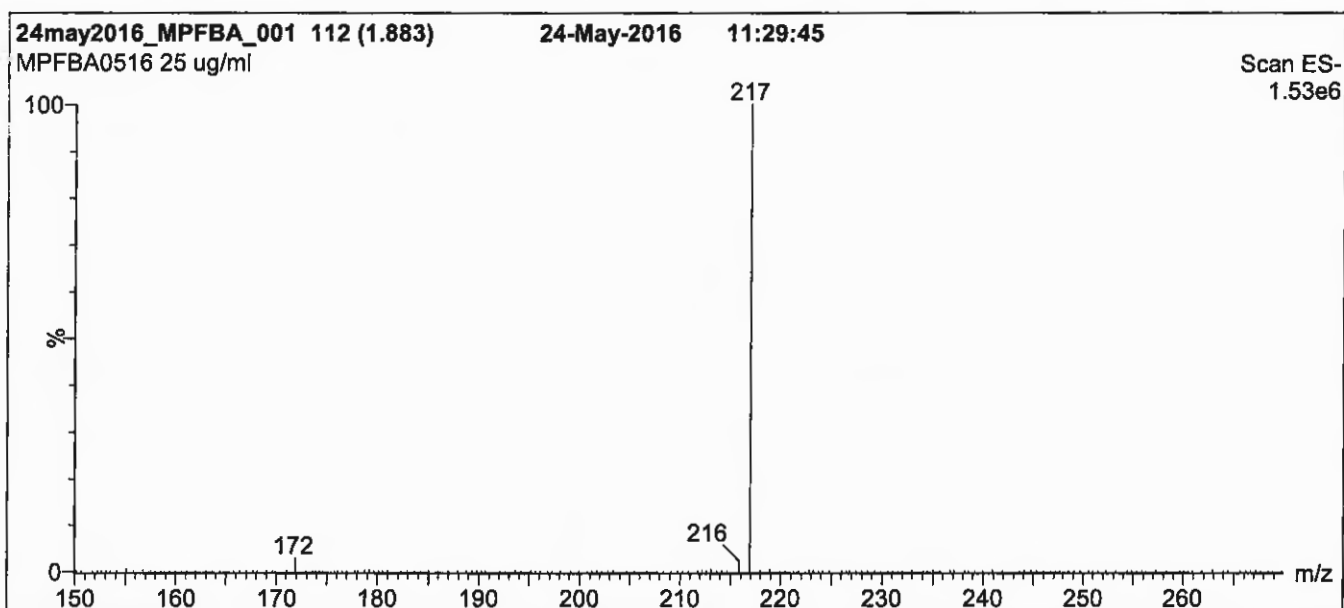
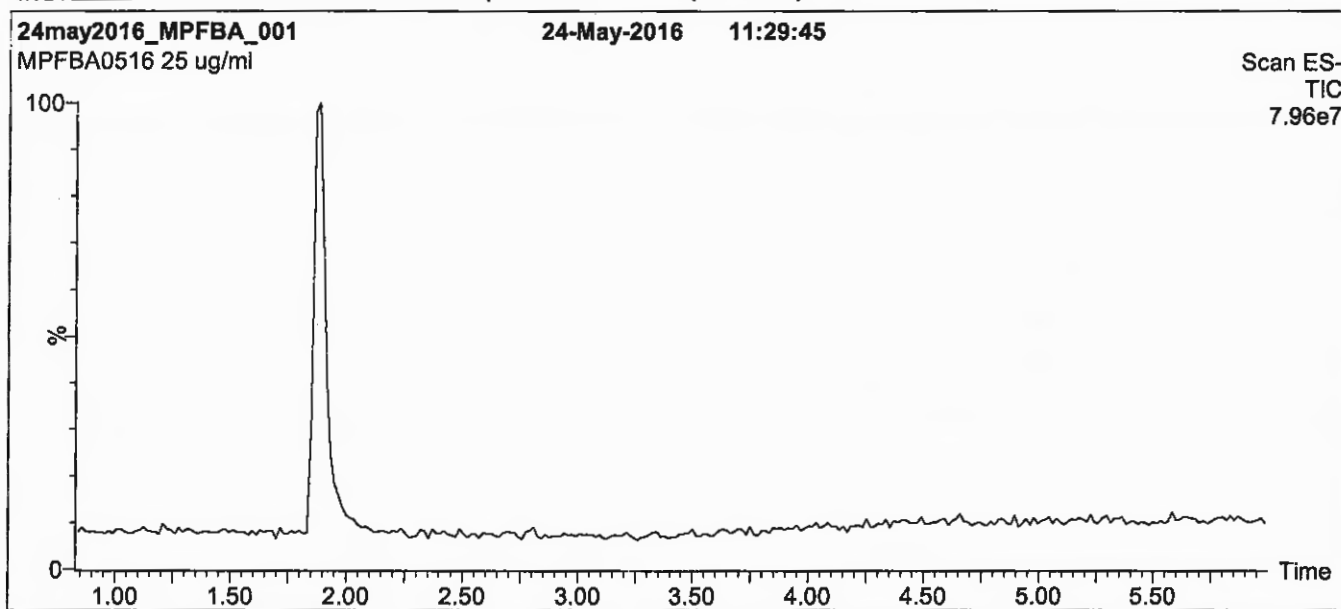
QUALITY MANAGEMENT:

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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

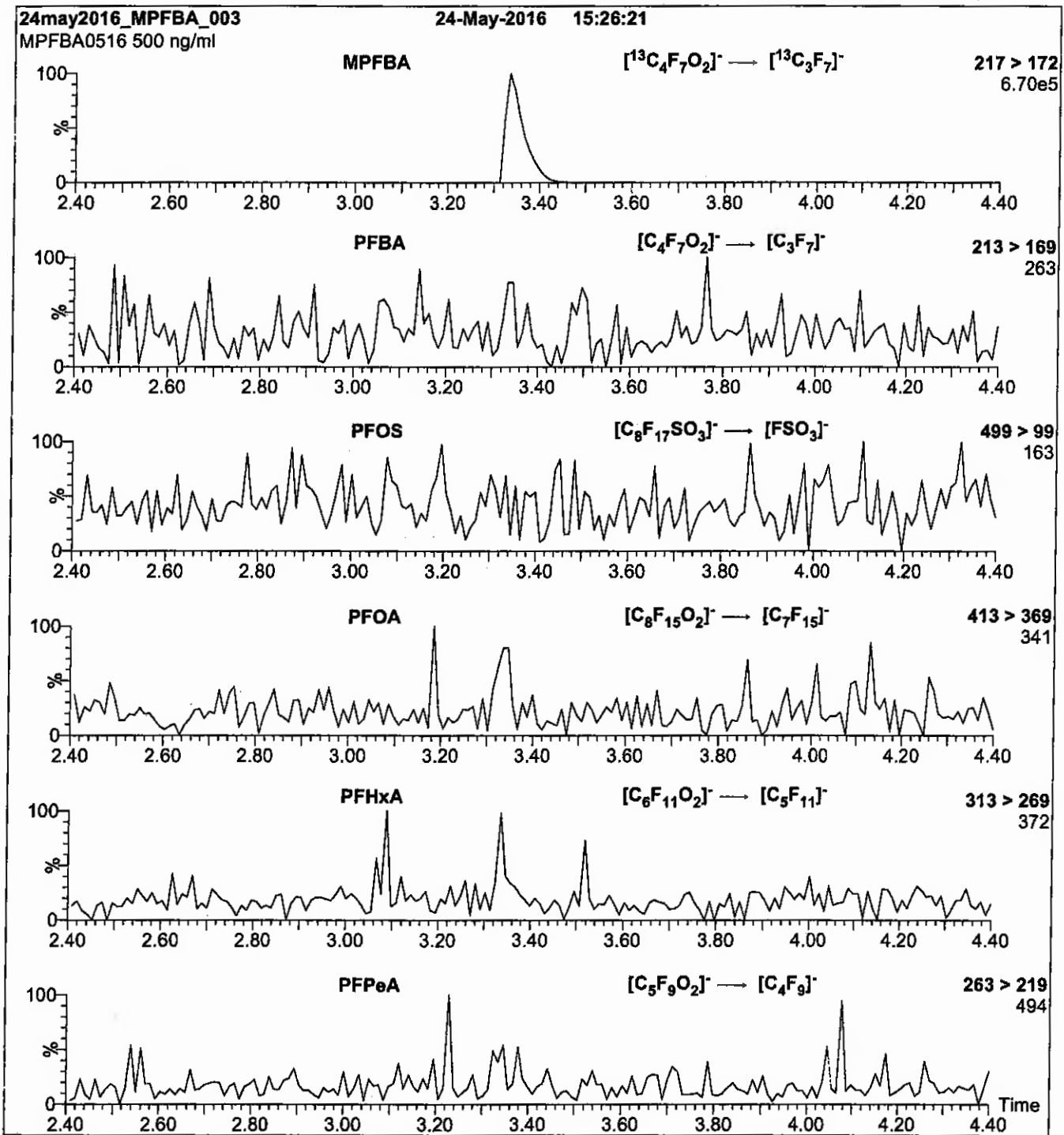
Flow: 300 μ l/min

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



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

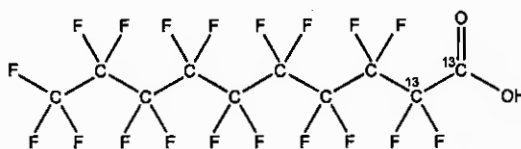


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDA **LOT NUMBER:** MPFDA0815
COMPOUND: Perfluoro-n-[1,2-¹³C₂]decanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈HF₁₉O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 516.07
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/19/2015
EXPIRY DATE: (mm/dd/yyyy) 08/19/2020

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

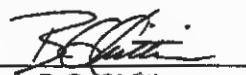
DOCUMENTATION/ DATA ATTACHED:

- 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

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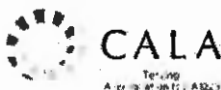
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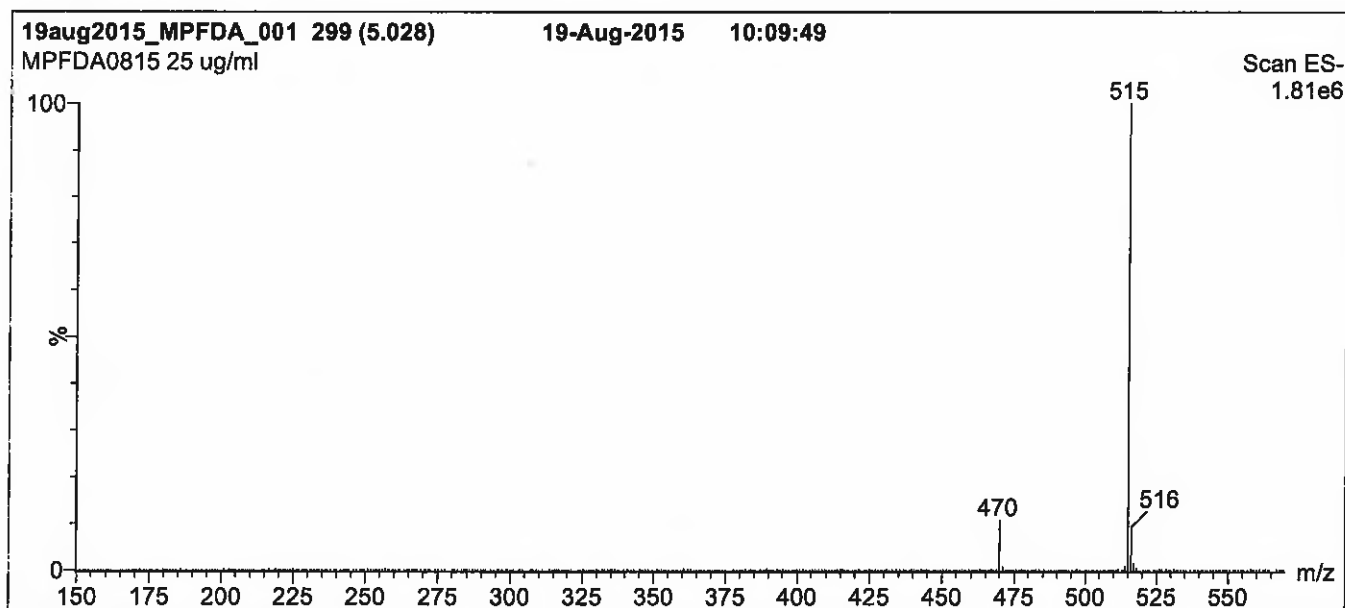
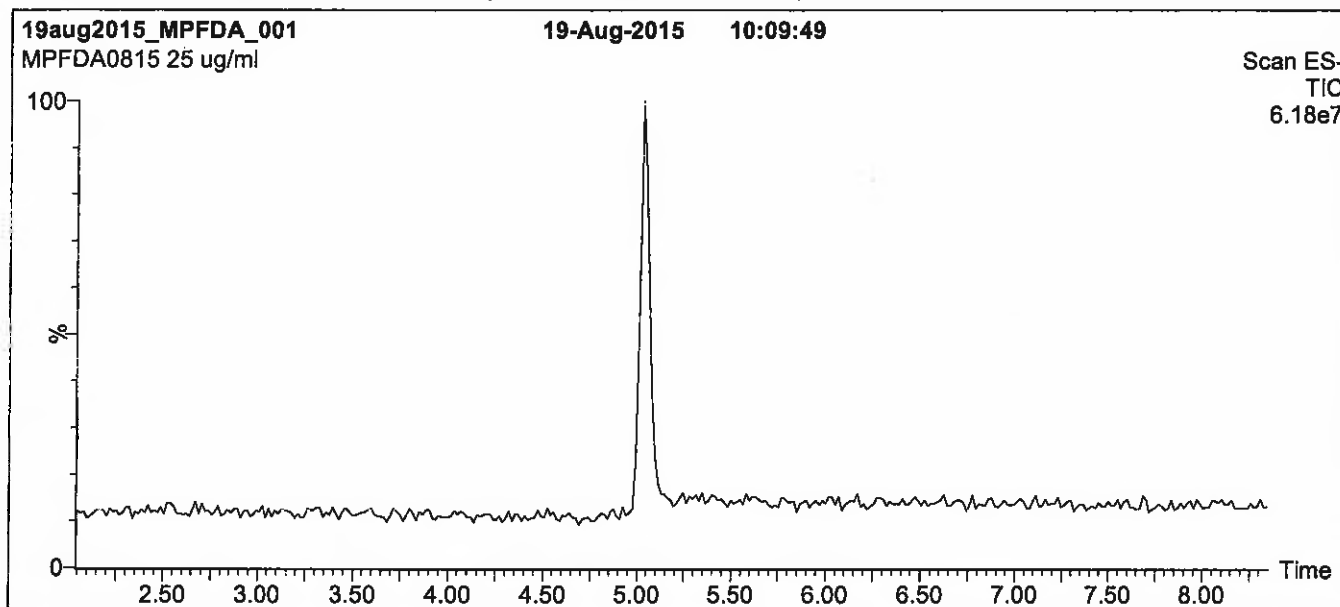
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LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

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

Mobile phase: 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

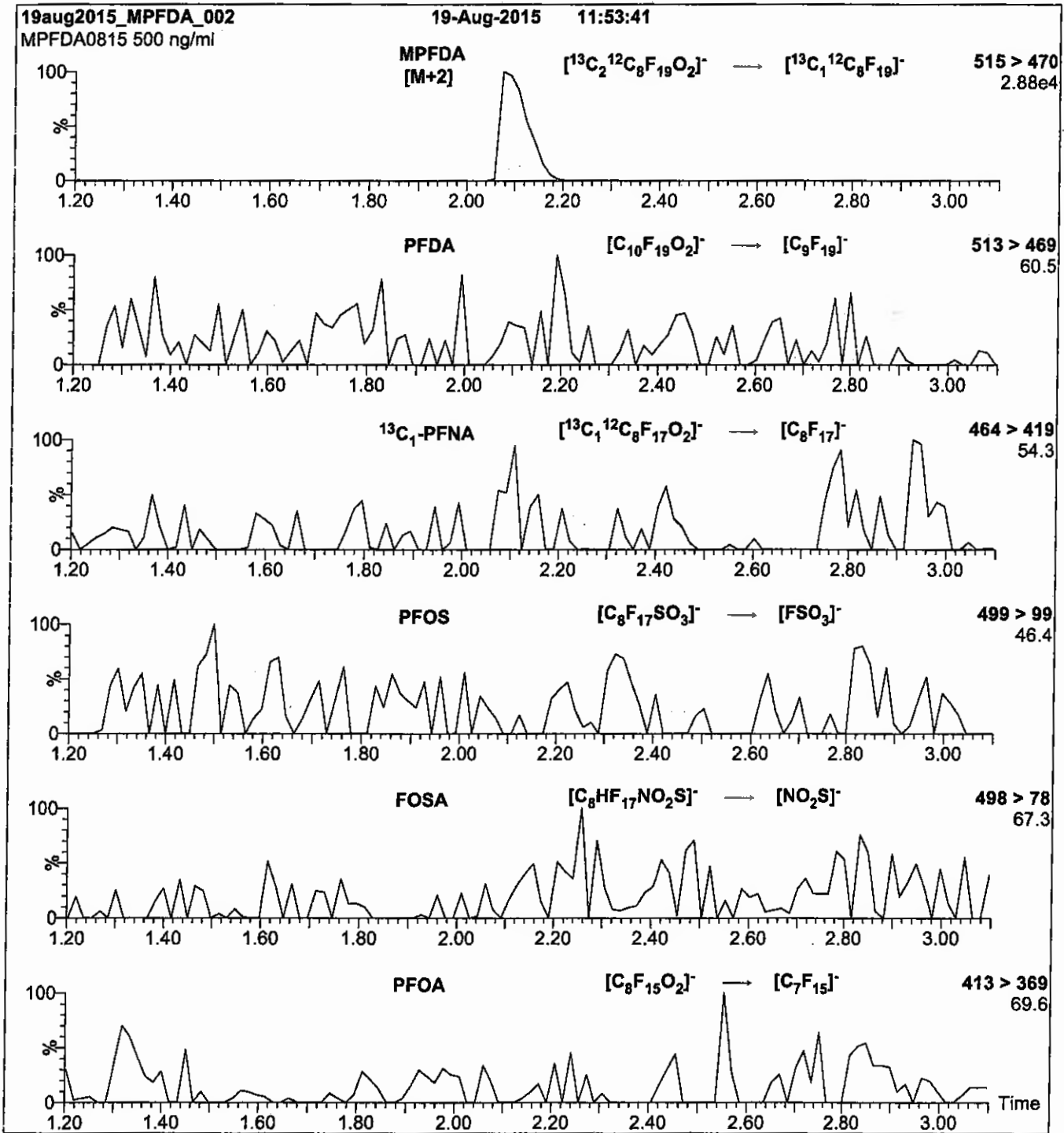
Flow: 300 μ l/min

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 μl (500 ng/ml MPFDA)

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) = 13

Reagent

LCMPFD_oA_00008

R: 802 9/22/16



739598

ID: LCMPFD0A_00008

Exp: 04/08/21 Prpd: SBC

13C2-Perfluorododecanoic



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

Scanned 10/14/16 SR

PRODUCT CODE: MPFD0A **LOT NUMBER:** MPFD0A0416
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%
LAST TESTED: (mm/dd/yyyy) 04/08/2016
EXPIRY DATE: (mm/dd/yyyy) 04/08/2021

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

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

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.

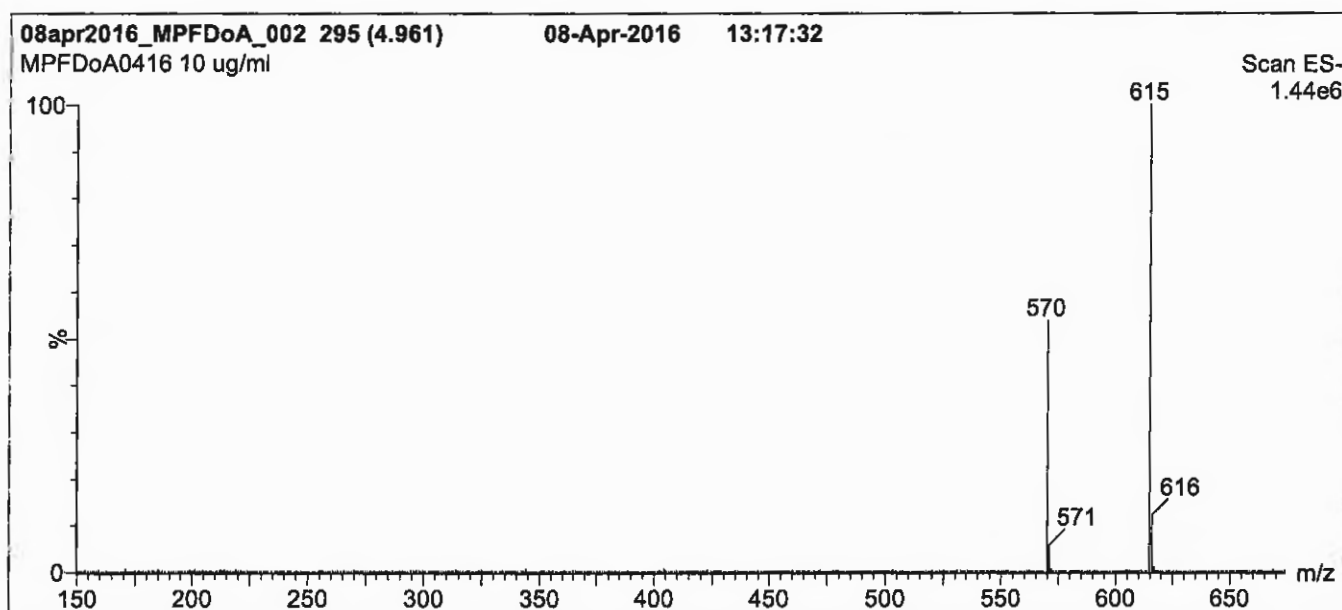
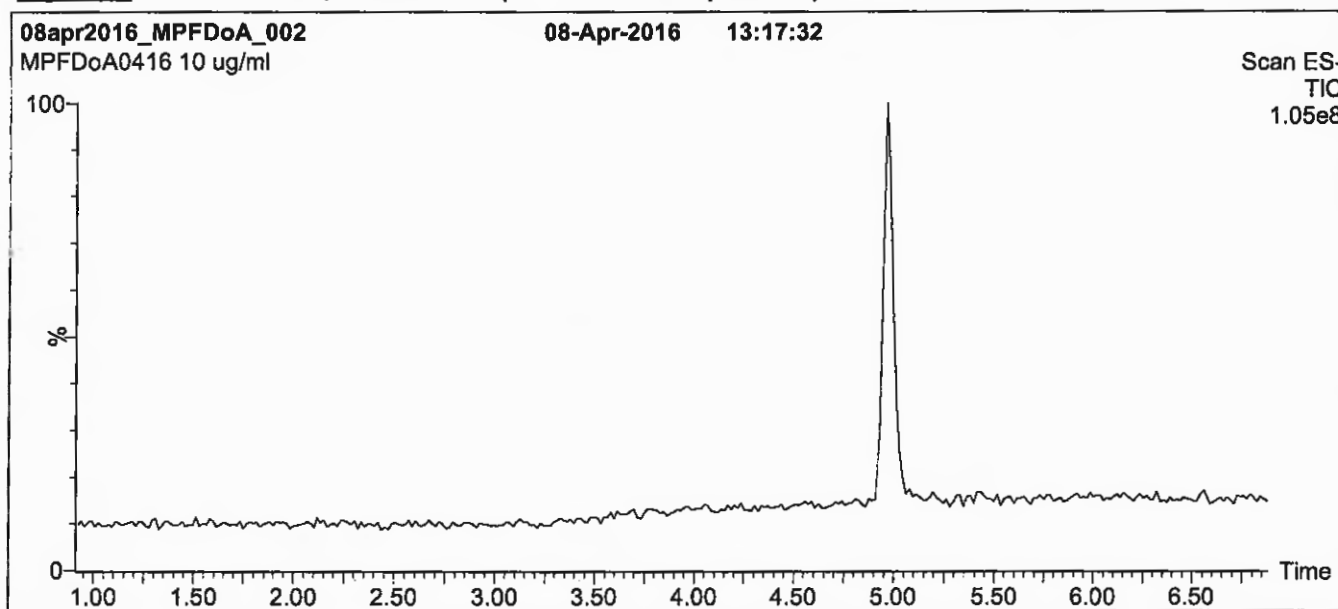
QUALITY MANAGEMENT:

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: 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

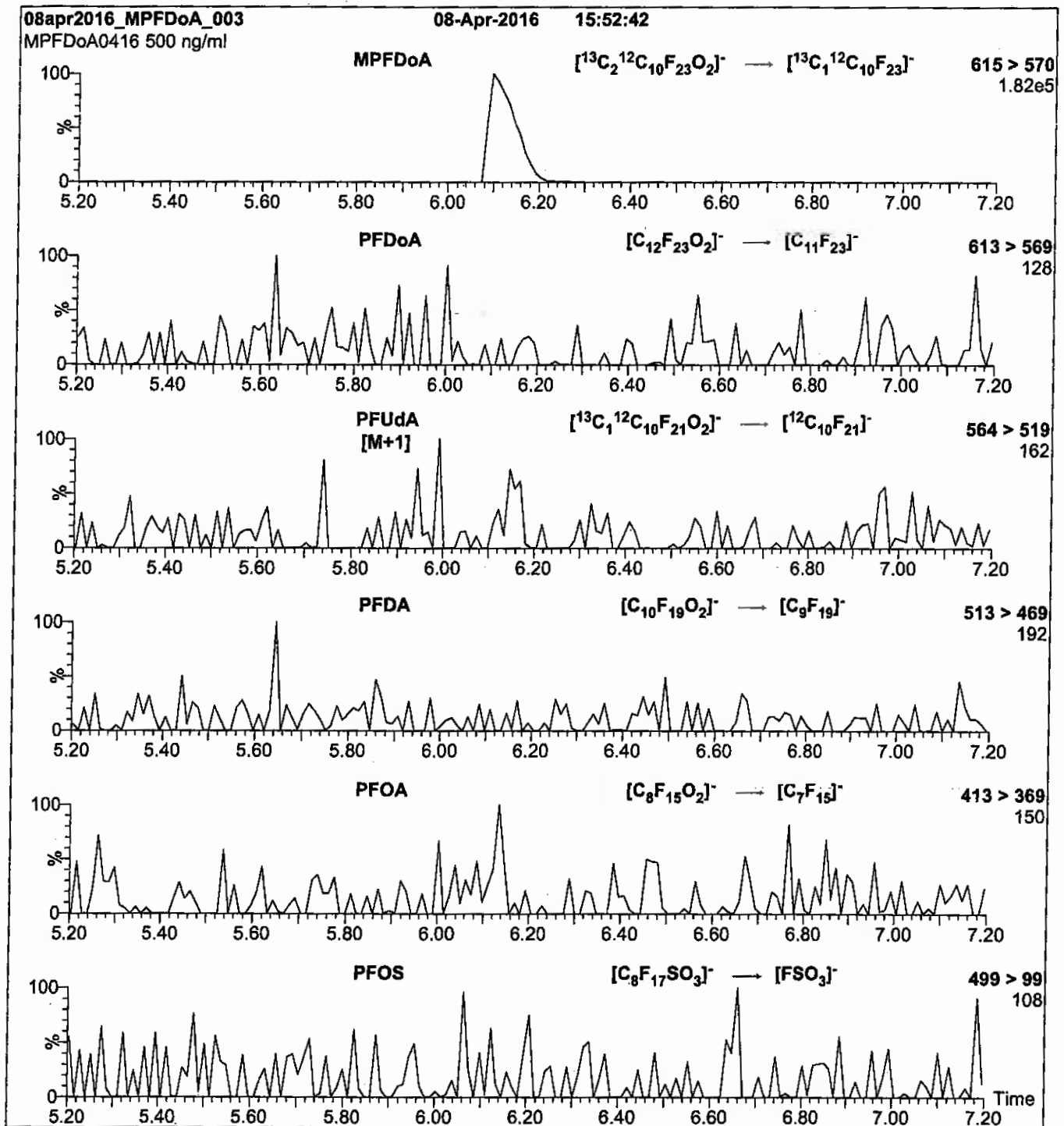
Flow: 300 μ l/min

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 10/11/16 R: SBC 9/22/16

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



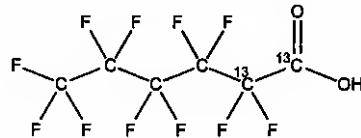
WELLINGTON LABORATORIES

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%)

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: ≥99%¹³C
(1,2-¹³C₂)

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

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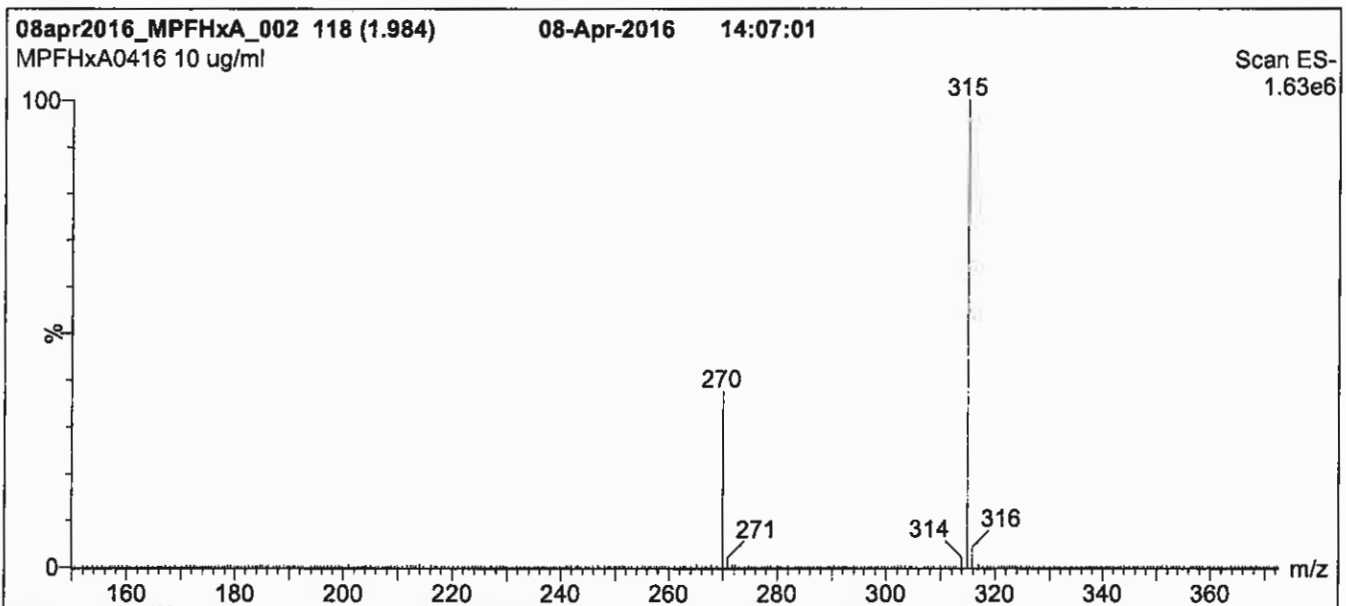
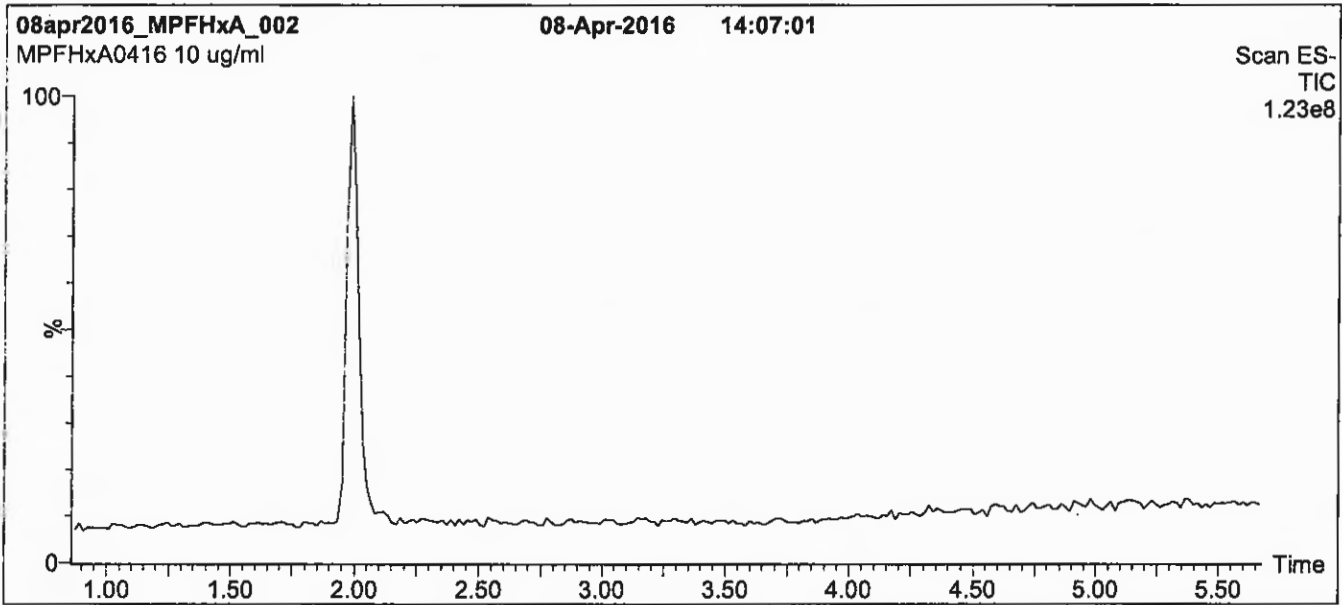
QUALITY MANAGEMENT:

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: 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

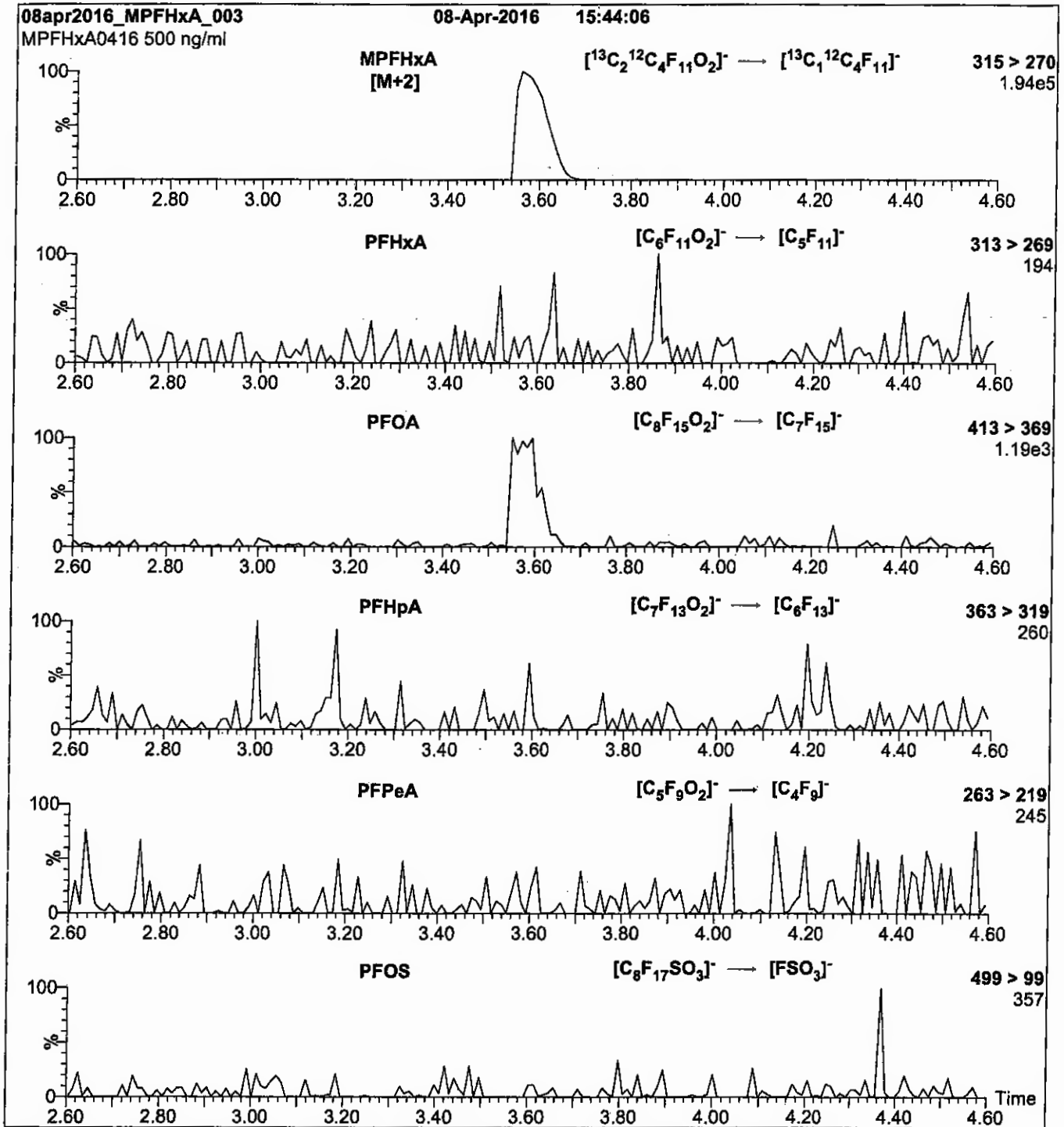
Flow: 300 μ l/min

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

R: 8BC 9/22/16



739601

ID: LCMPFHxS_00008

Exp: 10/23/20 Prod: SBC

18O2-Perfluorohexanesulfo



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

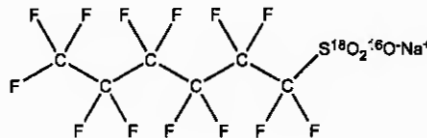
Scanned 10/14/16 SK

PRODUCT CODE: MPFHxS
COMPOUND: Sodium perfluoro-1-hexane[¹⁸O₂]sulfonate

LOT NUMBER: MPFHxS1015

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: C₆F₁₃S¹⁸O₂¹⁶ONa
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt)
47.3 ± 2.4 µg/ml (MPFHxS anion)
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

MOLECULAR WEIGHT: 426.10
SOLVENT(S): Methanol
ISOTOPIC PURITY: >94% (¹⁸O₂)


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 (C₆F₁₃S¹⁸O₃) 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

INTENDED USE:

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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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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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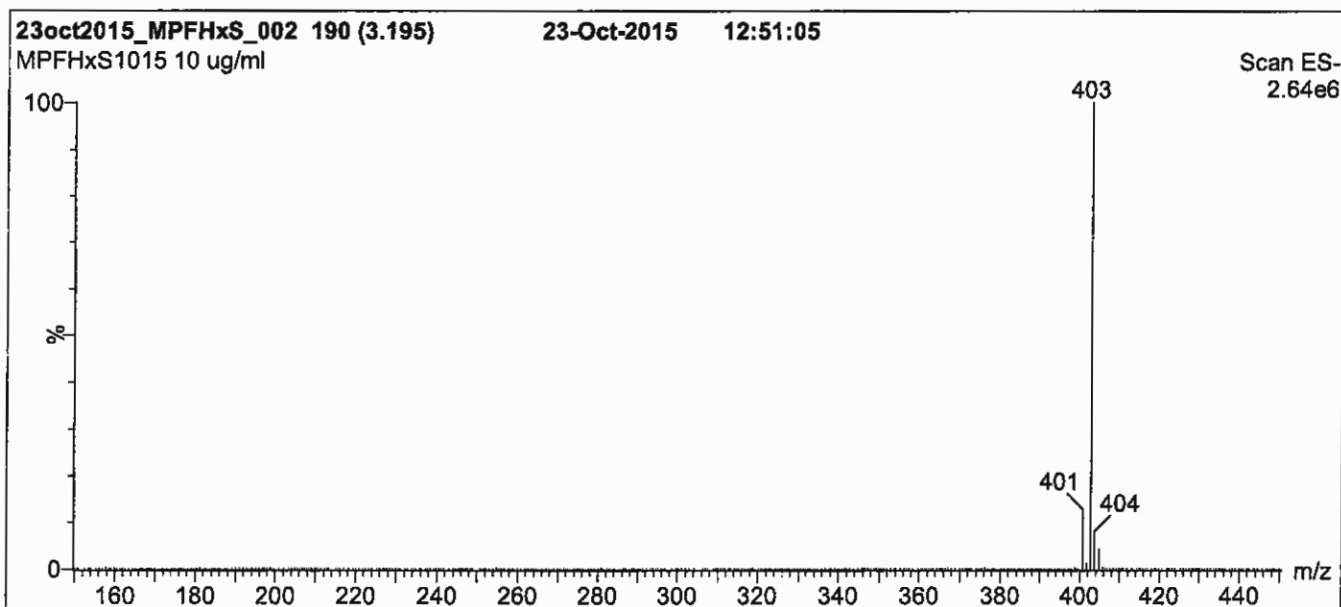
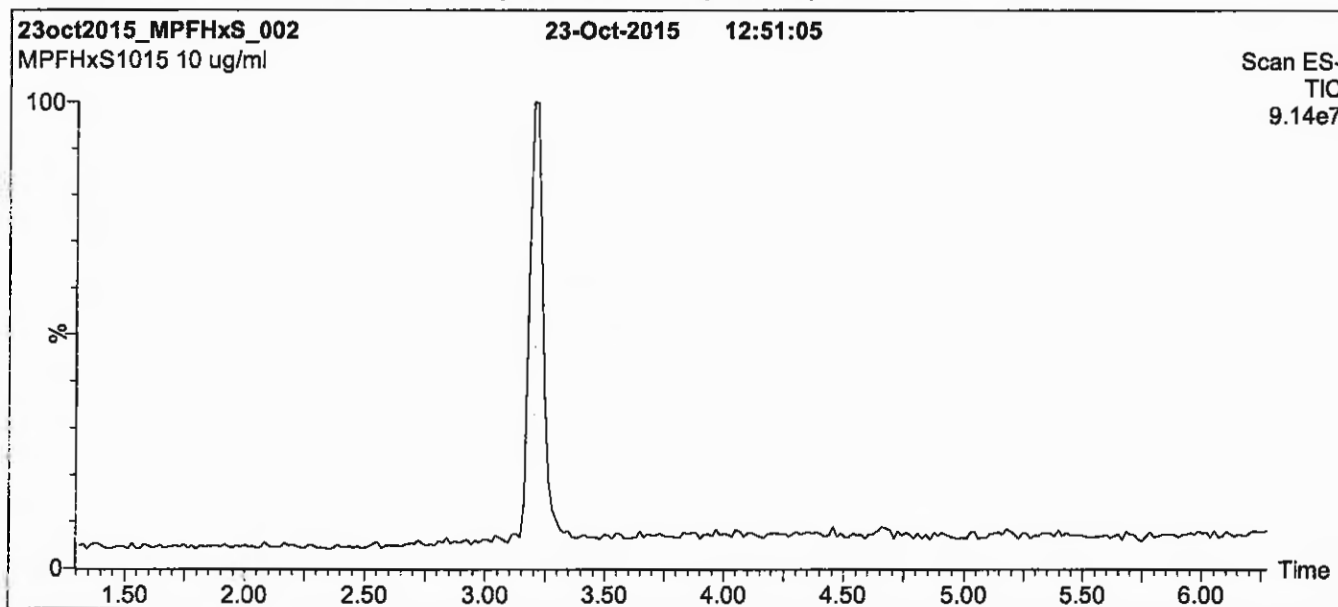
QUALITY MANAGEMENT:

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Figure 1: 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

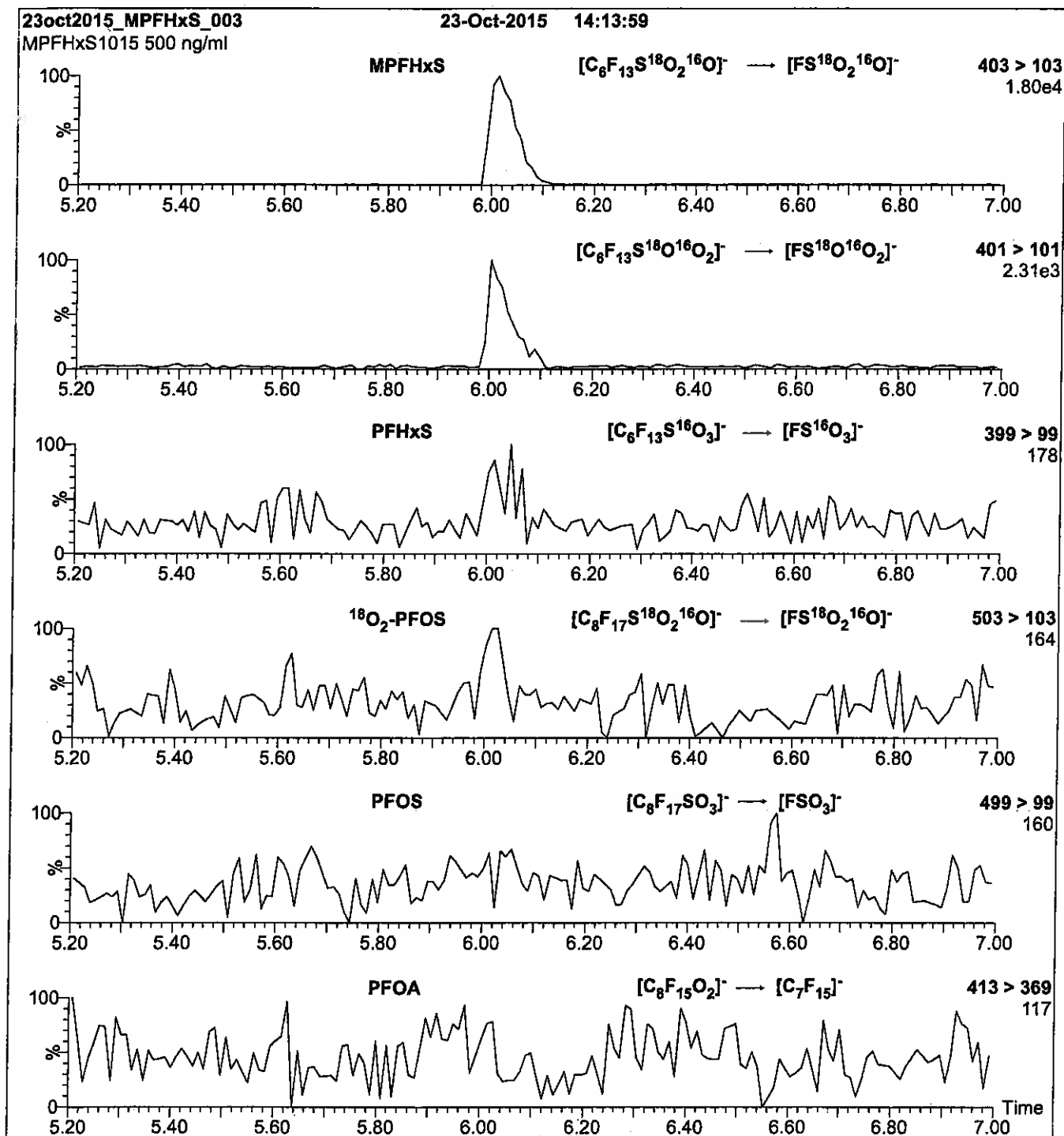
Flow: 300 μ l/min

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% H₂O
(both with 10 mM NH₄OAc 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

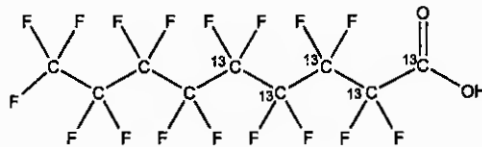
739637
ID: LCM:PFNA_00008
Exp: 04/13/19 Prep: SBC
13C5-Perfluorononanoic aci



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: ¹³C₅¹²C₄HF₁₇O₂ **MOLECULAR WEIGHT:** 469.04
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99%¹³C
(1,2,3,4,5-¹³C₅)
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
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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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:

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:

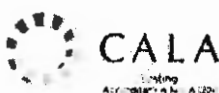
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

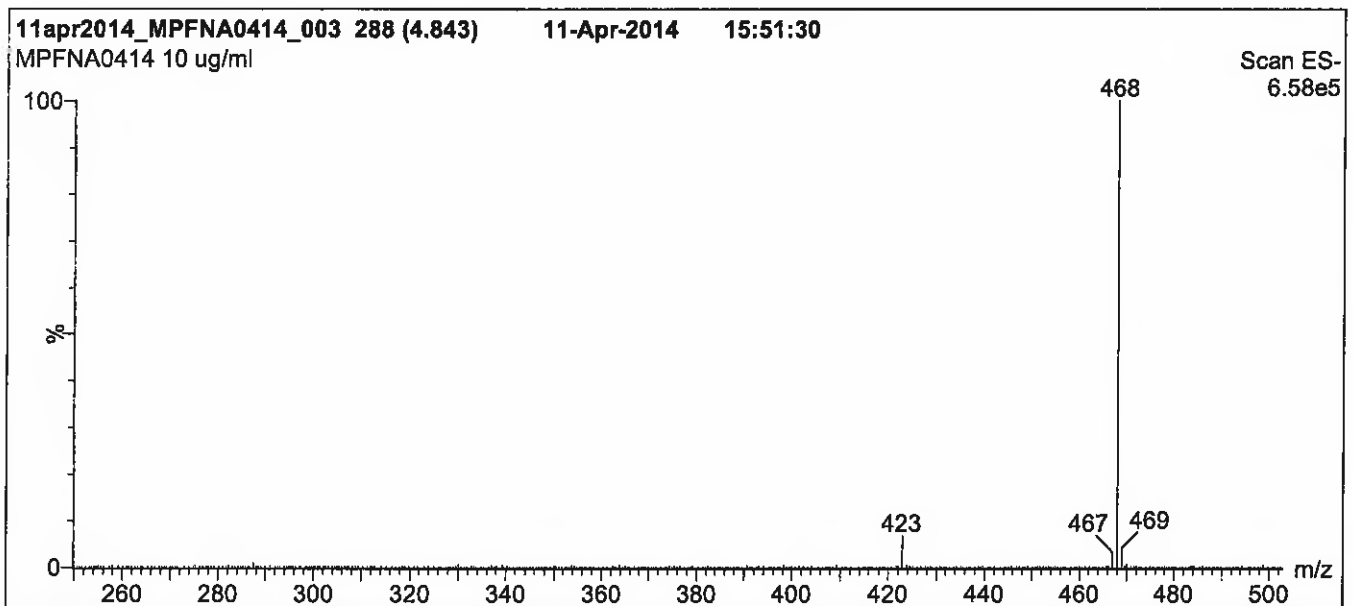
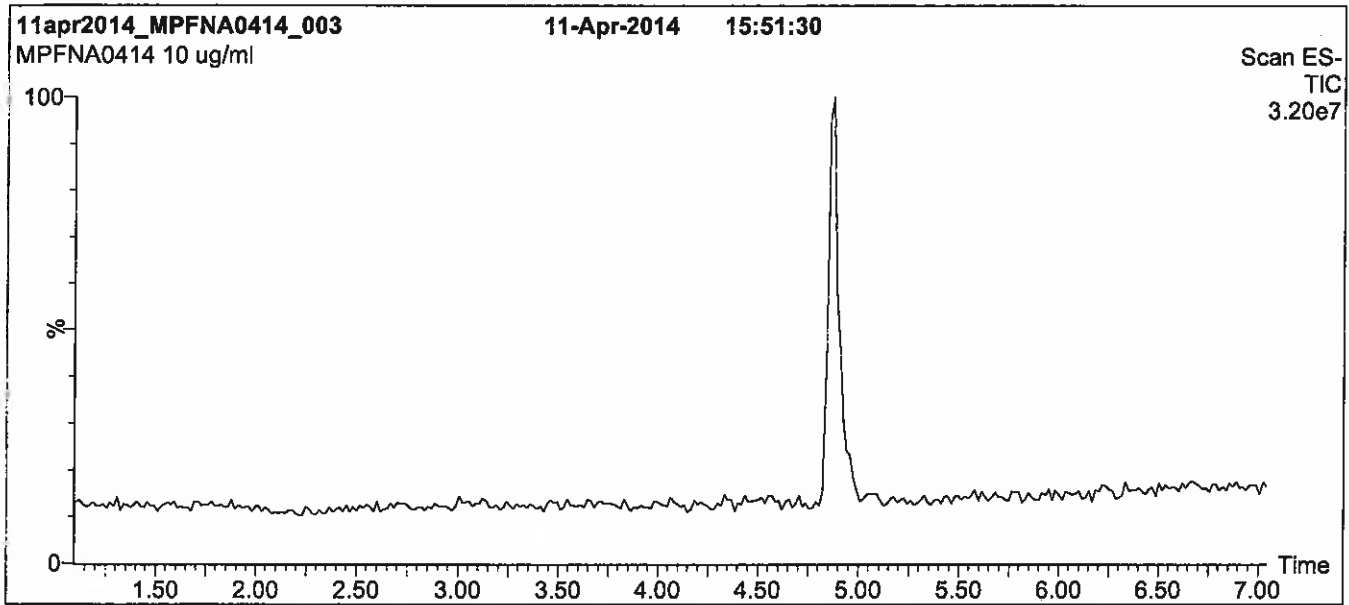
QUALITY MANAGEMENT:

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: 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

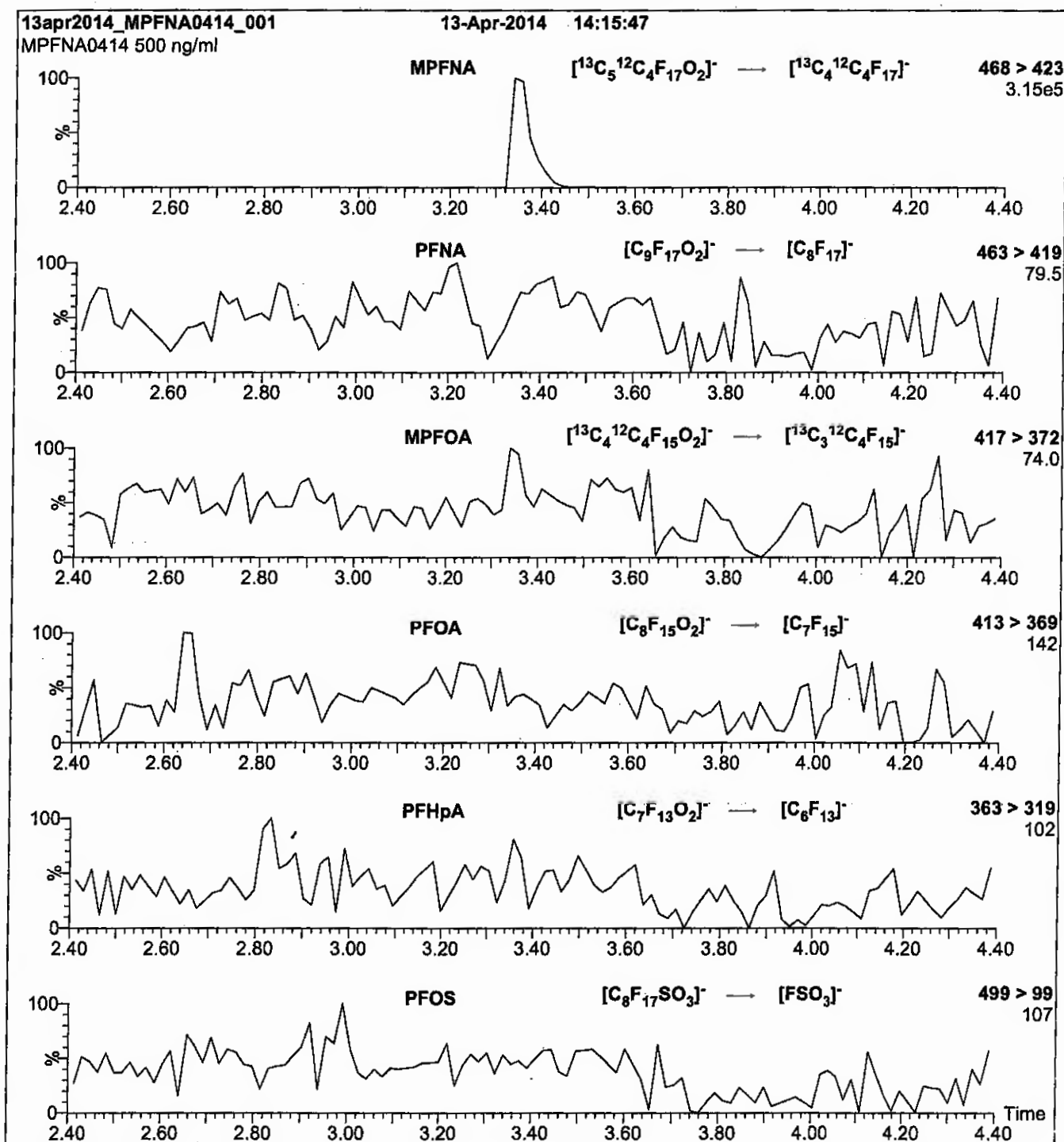
Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

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: SBC 9/22/16



738683
ID: LCMFPOA_00012
Exp: 01/22/21 Prod: SBC
13C4-Perfluorooctanoic ac

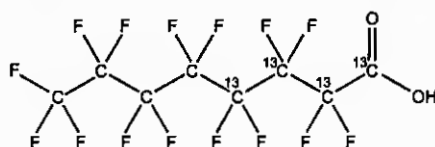


WELLINGTON LABORATORIES

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:	¹³ C ₄ ¹² C ₄ HF ₁₆ O ₂	MOLECULAR WEIGHT:	418.04
CONCENTRATION:	50 ± 2.5 µg/ml	SOLVENT(S):	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	ISOTOPIC PURITY:	≥99% ¹³ C (1,2,3,4- ¹³ C ₄)
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		

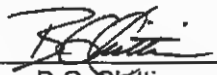
DOCUMENTATION/ DATA ATTACHED:

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.
- 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:

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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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LIMITED WARRANTY:

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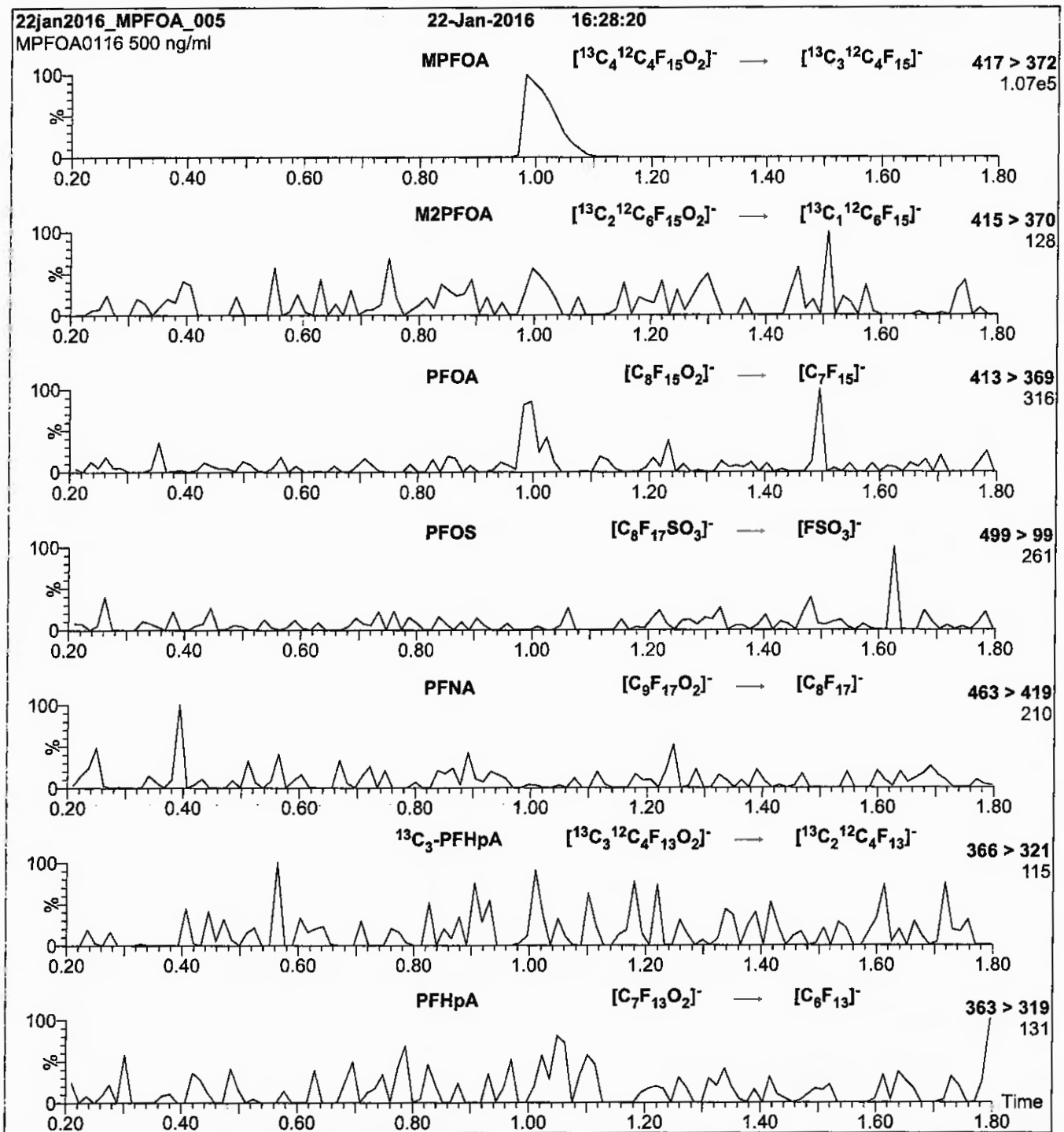
QUALITY MANAGEMENT:

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



Conditions for Figure 2:

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

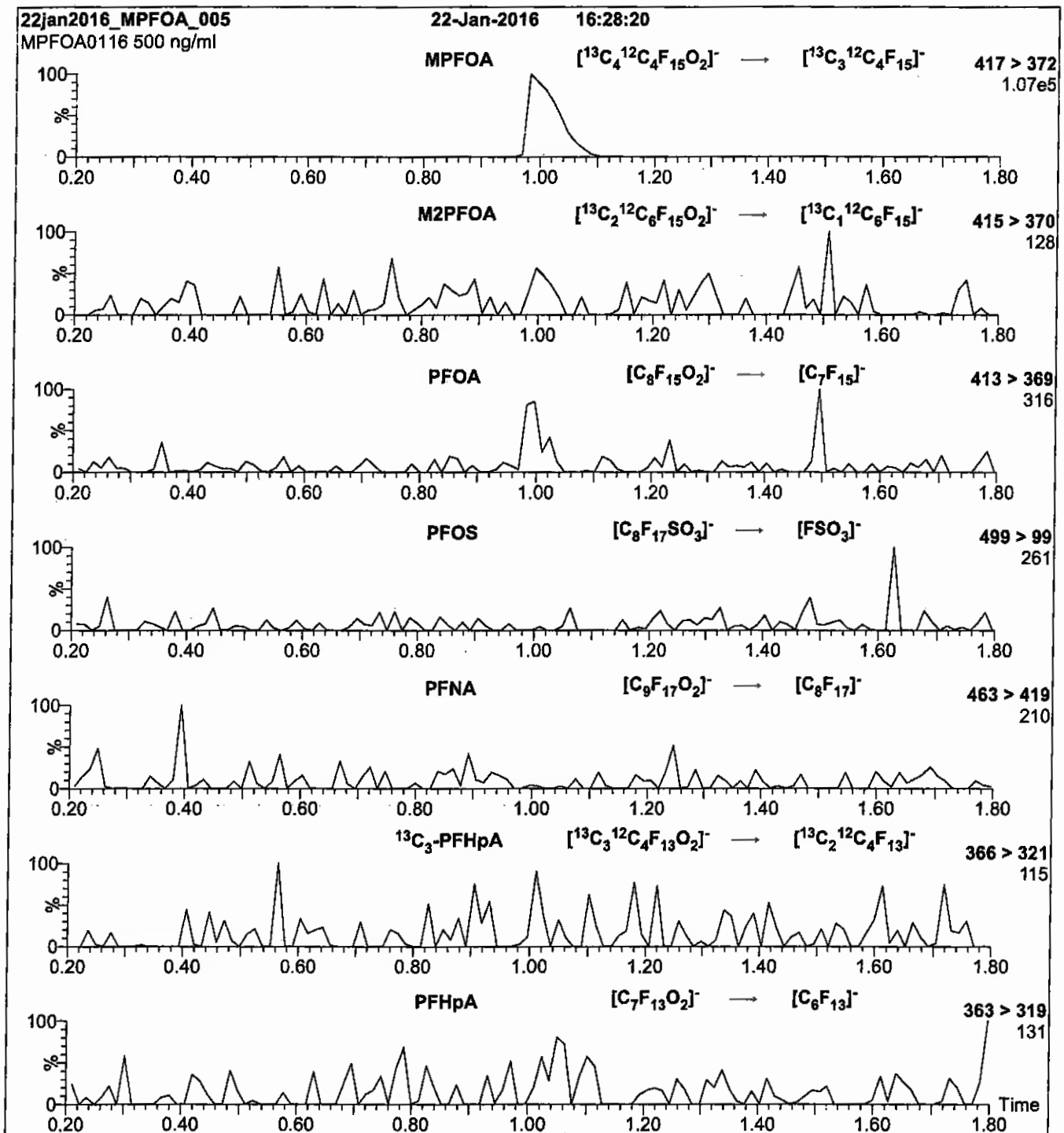
Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

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

MS Parameters

Collision Gas (mbar) = 3.58e-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) = 3.58e-3
Collision Energy (eV) = 10

Reagent

LCMPFOS_00017

R: 9/9/16 802

728309
ID: LCMPPFOS_00017
Exp: 08/03/21 Prpd: SBC
13C4-Perfluorooctanesulfo

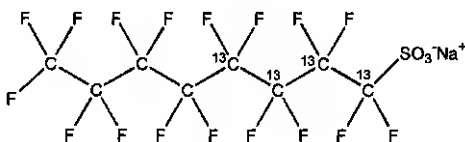


WELLINGTON LABORATORIES

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		

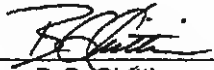
DOCUMENTATION/ DATA ATTACHED:

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.

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:

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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:

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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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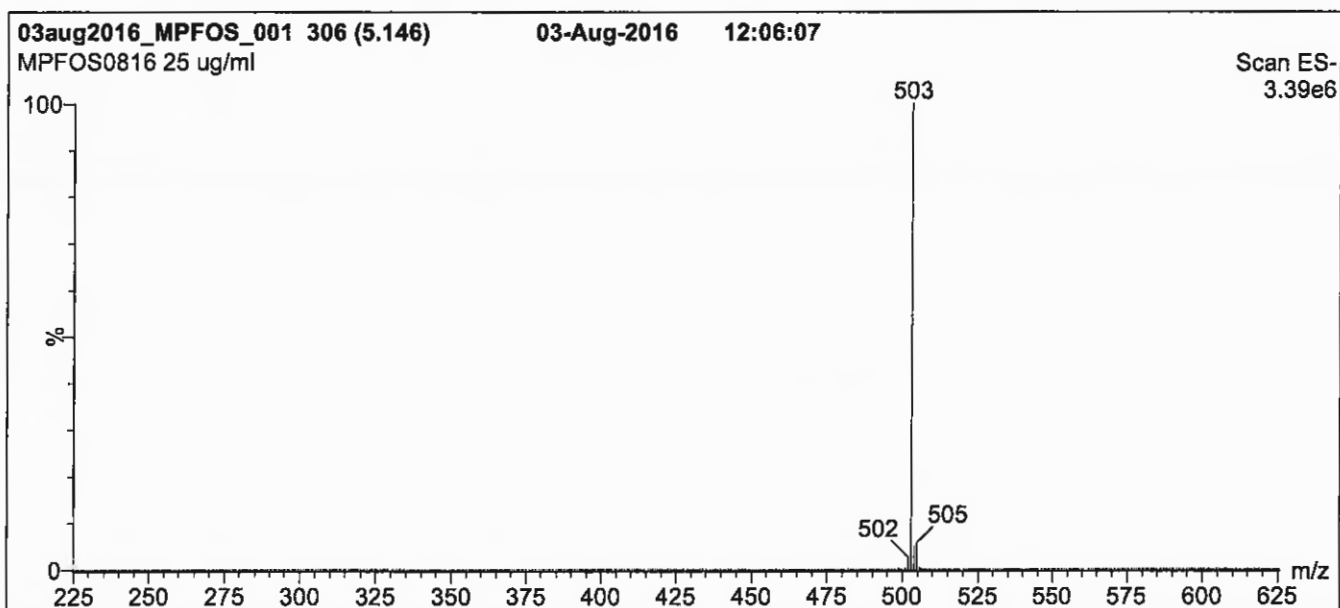
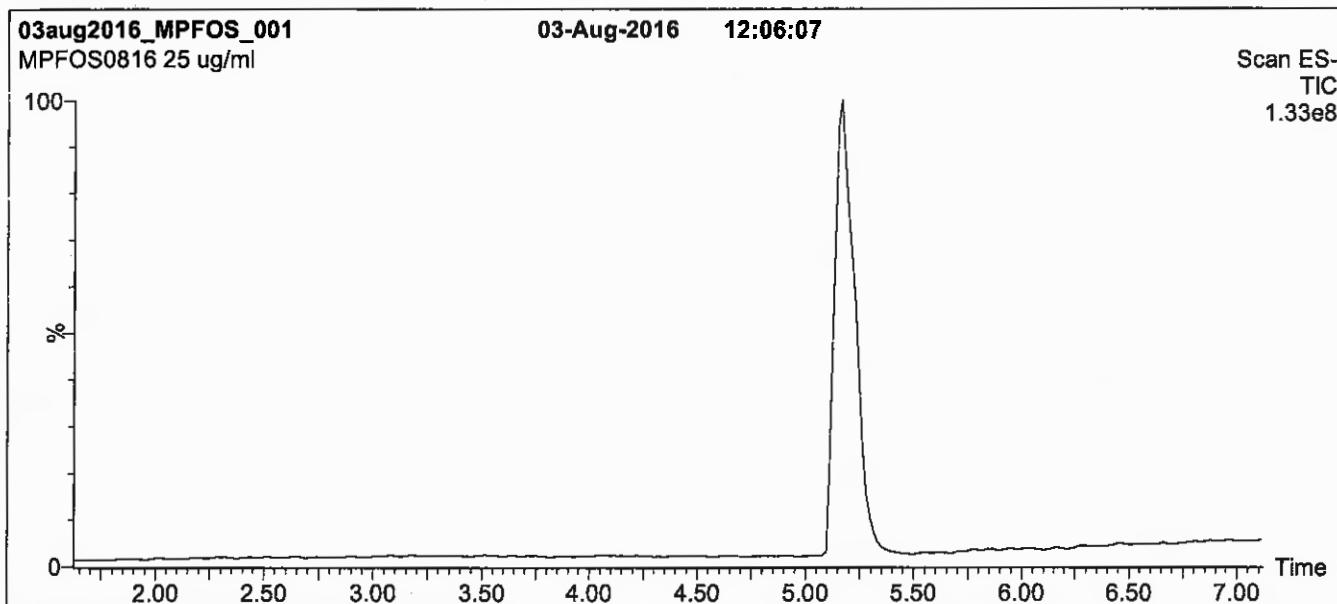
QUALITY MANAGEMENT:

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).



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

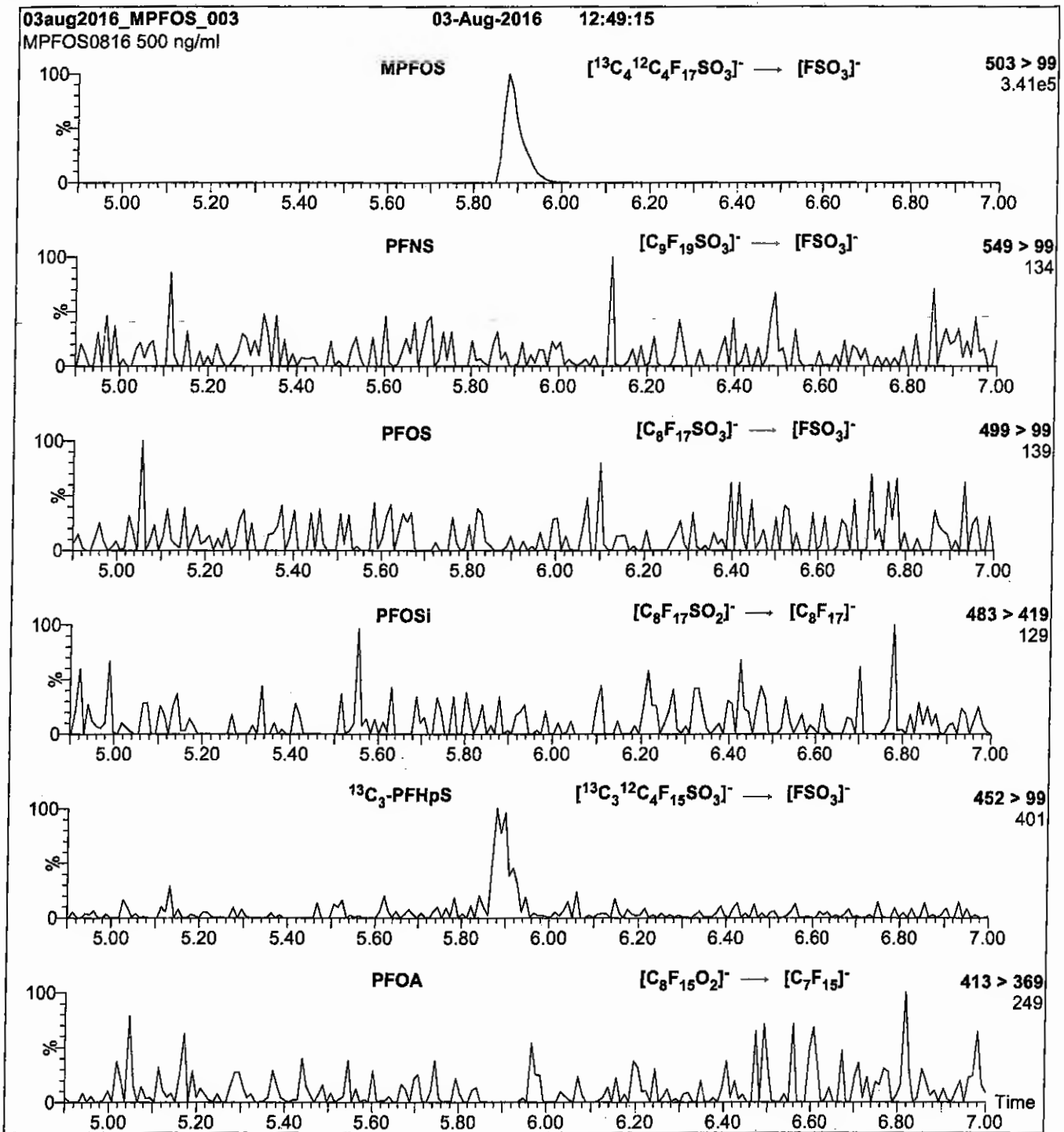
Flow: 300 μ l/min

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) = 3.46e-3
 Collision Energy (eV) = 40

Reagent

LCMPFUdA_00009

R: SBC 9/22/16

739604
ID: LCMPFUdA_00009
Exp: 02/12/21 Prod: SBC
13C2-Perfluoroundecanoic



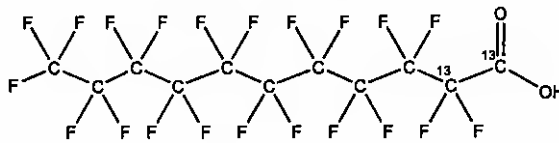
WELLINGTON LABORATORIES

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 **MOLECULAR WEIGHT:** 566.08
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
(1,2-¹³C₂)
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.
- 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:

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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.

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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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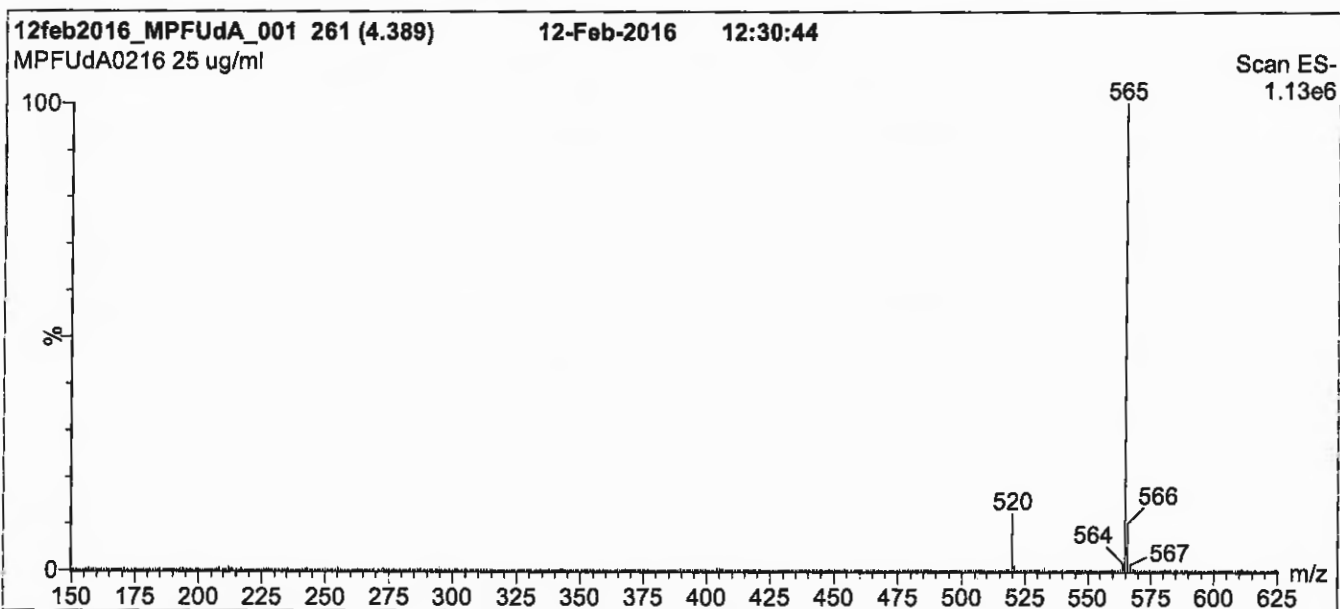
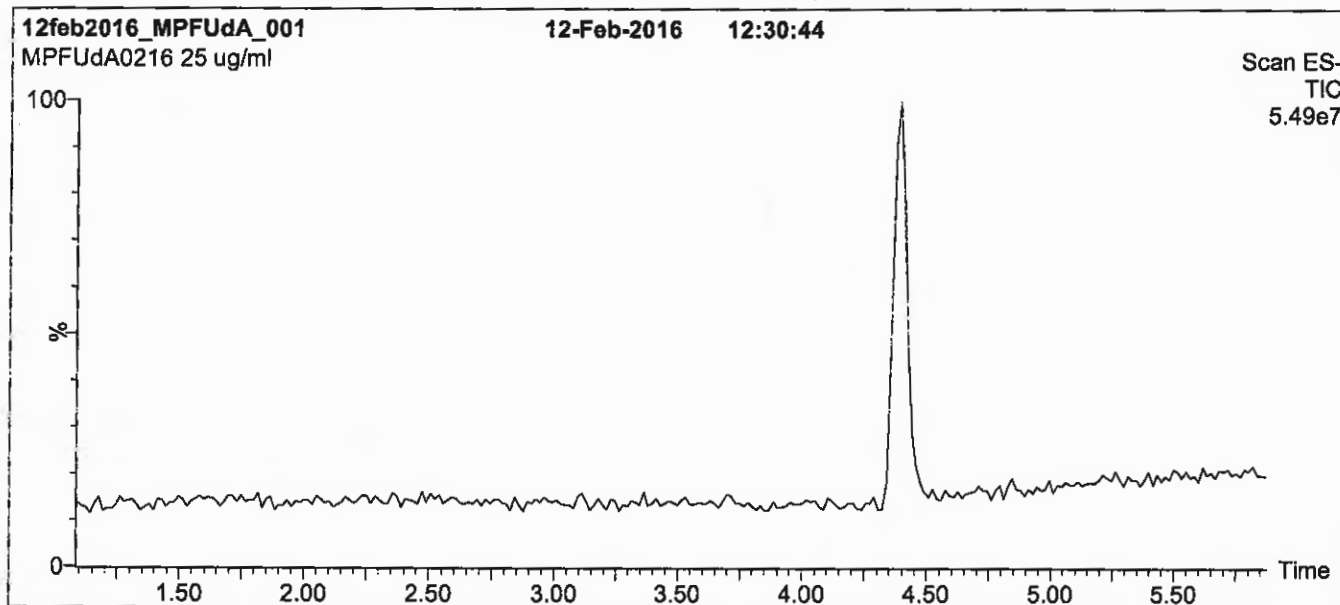
QUALITY MANAGEMENT:

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Figure 1: 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

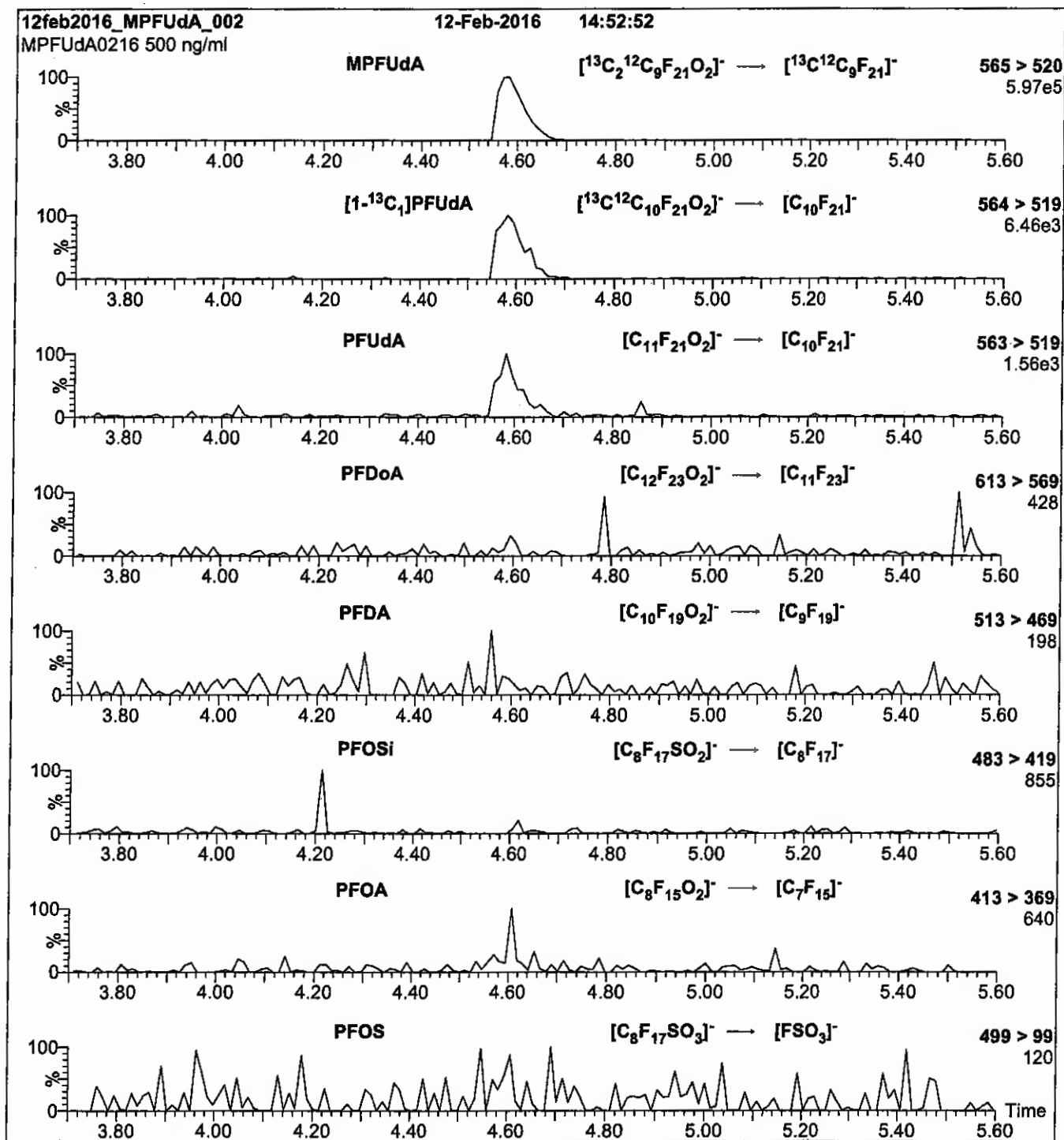
Flow: 300 μ l/min

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

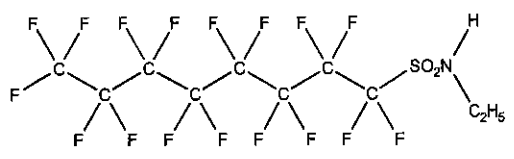
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSA-M
COMPOUND: N-ethylperfluoro-1-octanesulfonamide

LOT NUMBER: NEtFOSA0714M

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA: C₁₀H₆F₁₇NO₂S
CONCENTRATION: 50 ± 2.5 µg/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:

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.

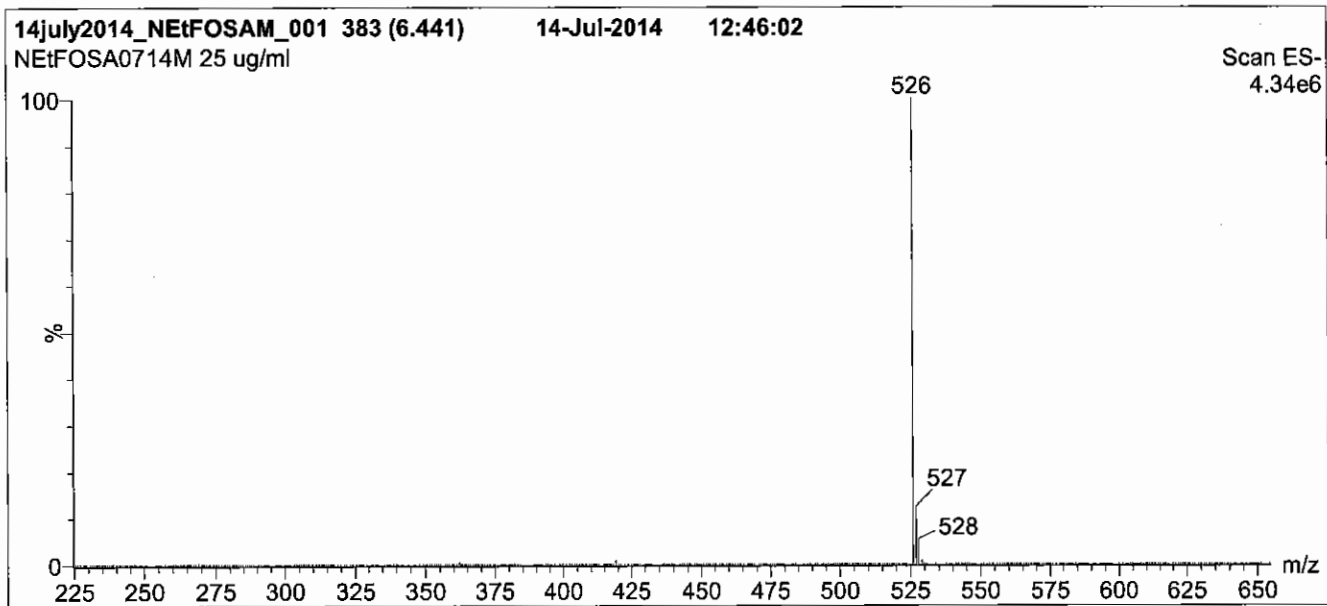
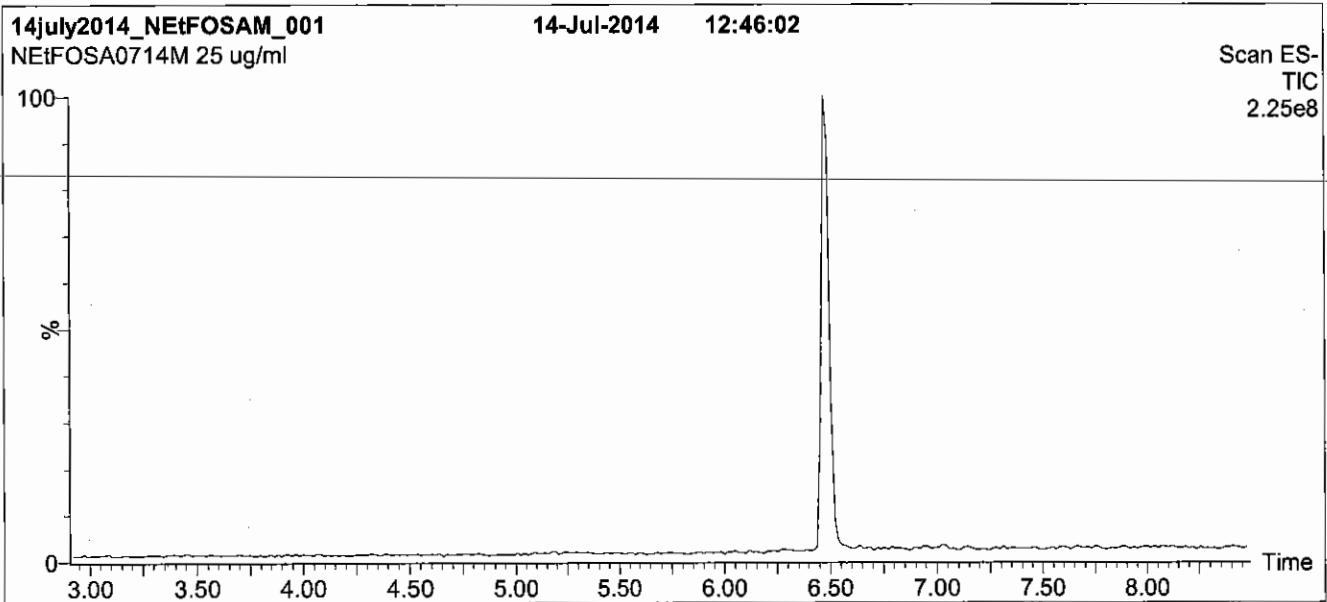
QUALITY MANAGEMENT:

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-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

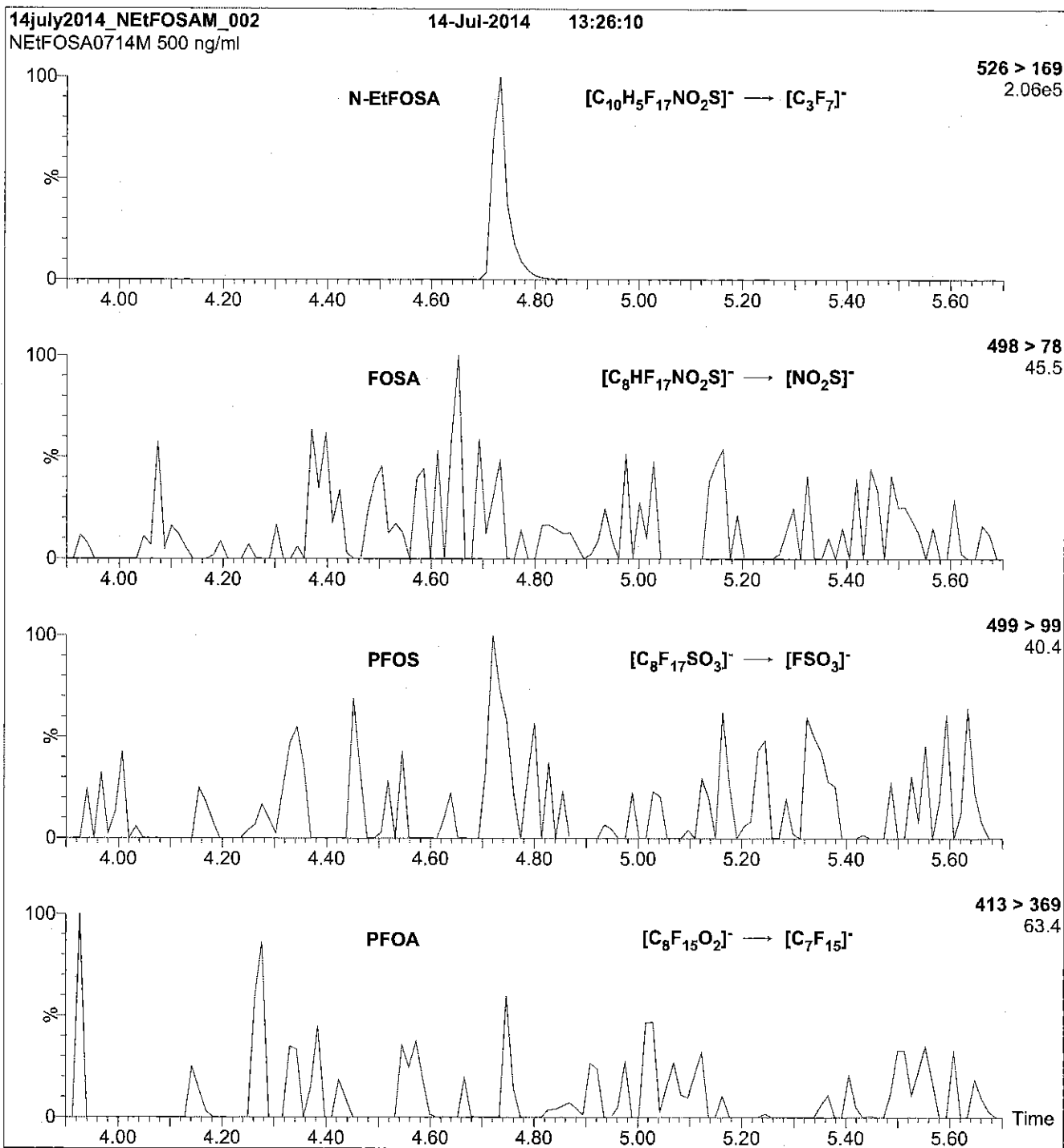
Flow: 300 μ l/min

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 Prpd: 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:  **Date:** 05/27/2016
B.G. Chittim (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:

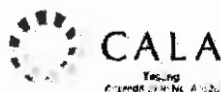
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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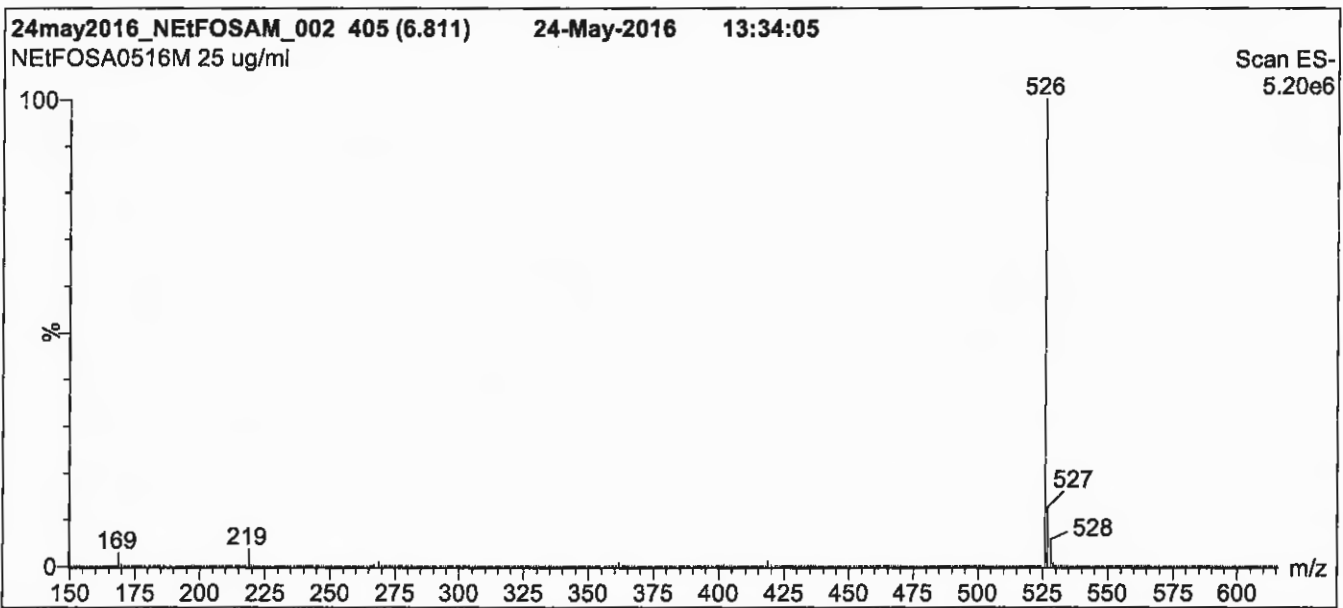
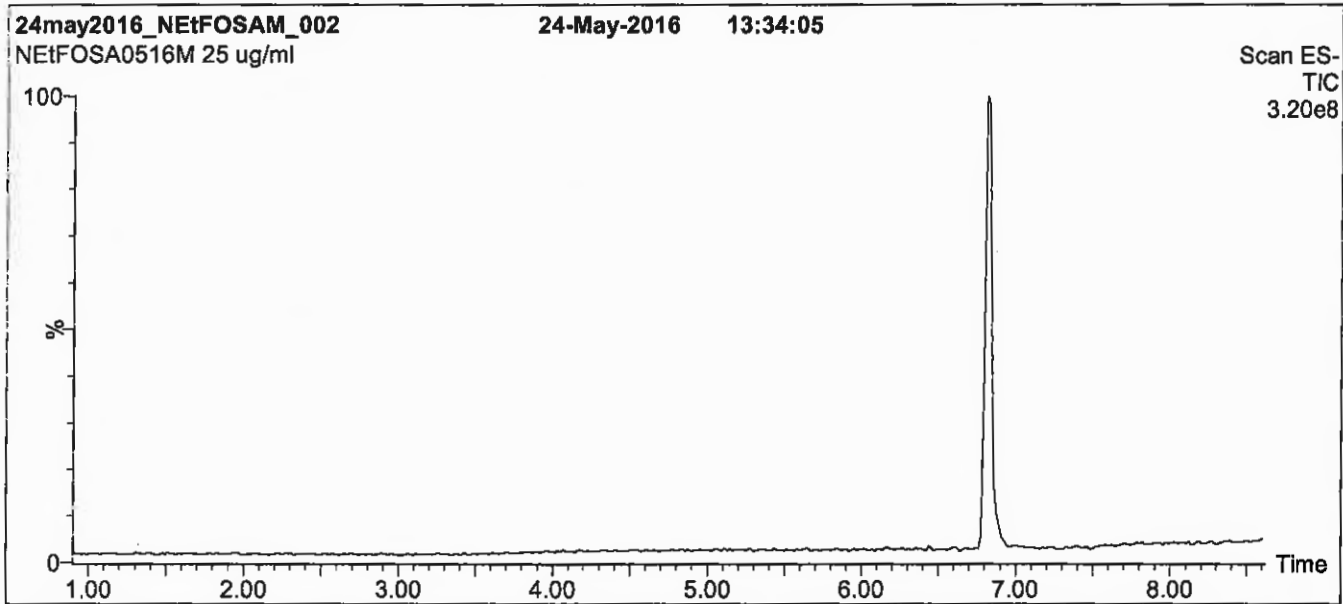
QUALITY MANAGEMENT:

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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

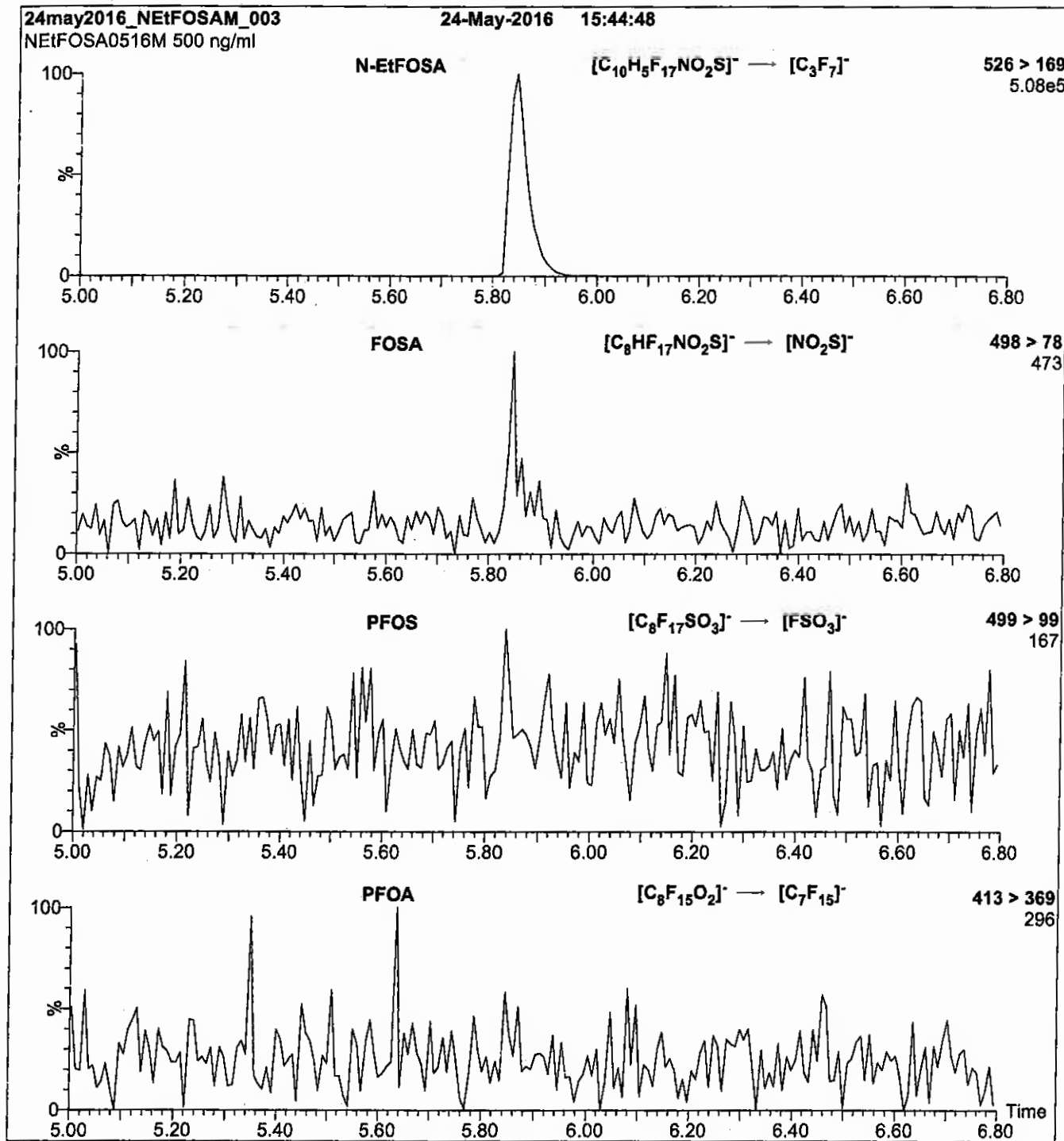
Flow: 300 μ l/min

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)

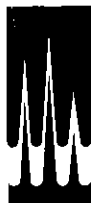
Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCN-ETFOSAA_00001

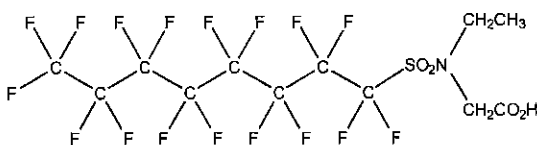


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSAA **LOT NUMBER:** NEtFOSAA0113
COMPOUND: N-ethylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2991-50-6



MOLECULAR FORMULA: C₁₂H₈F₁₇NO₄S **MOLECULAR WEIGHT:** 585.23
CONCENTRATION: 50 ± 2.5 µg/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:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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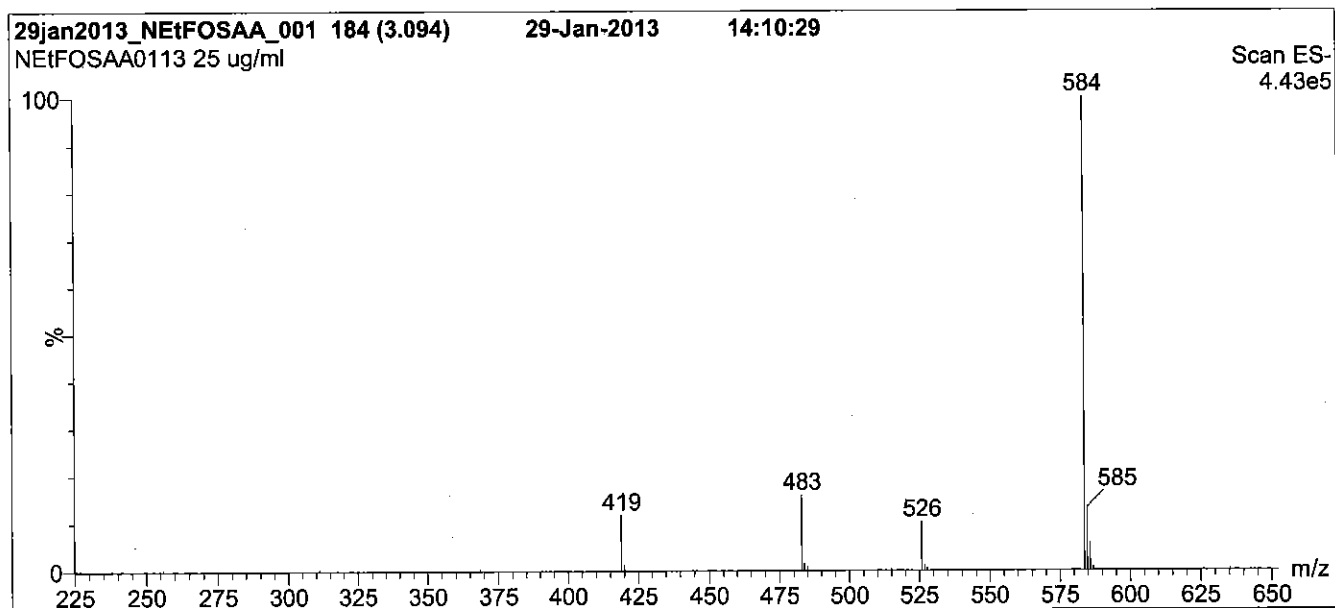
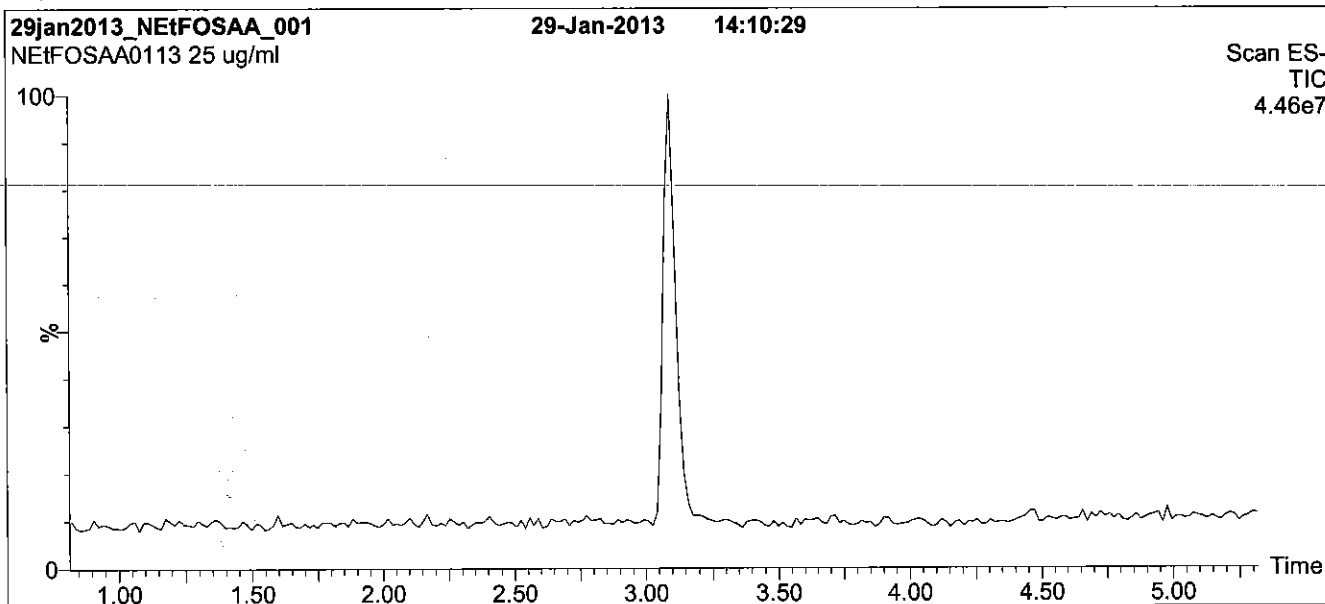
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Figure 1: N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)



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

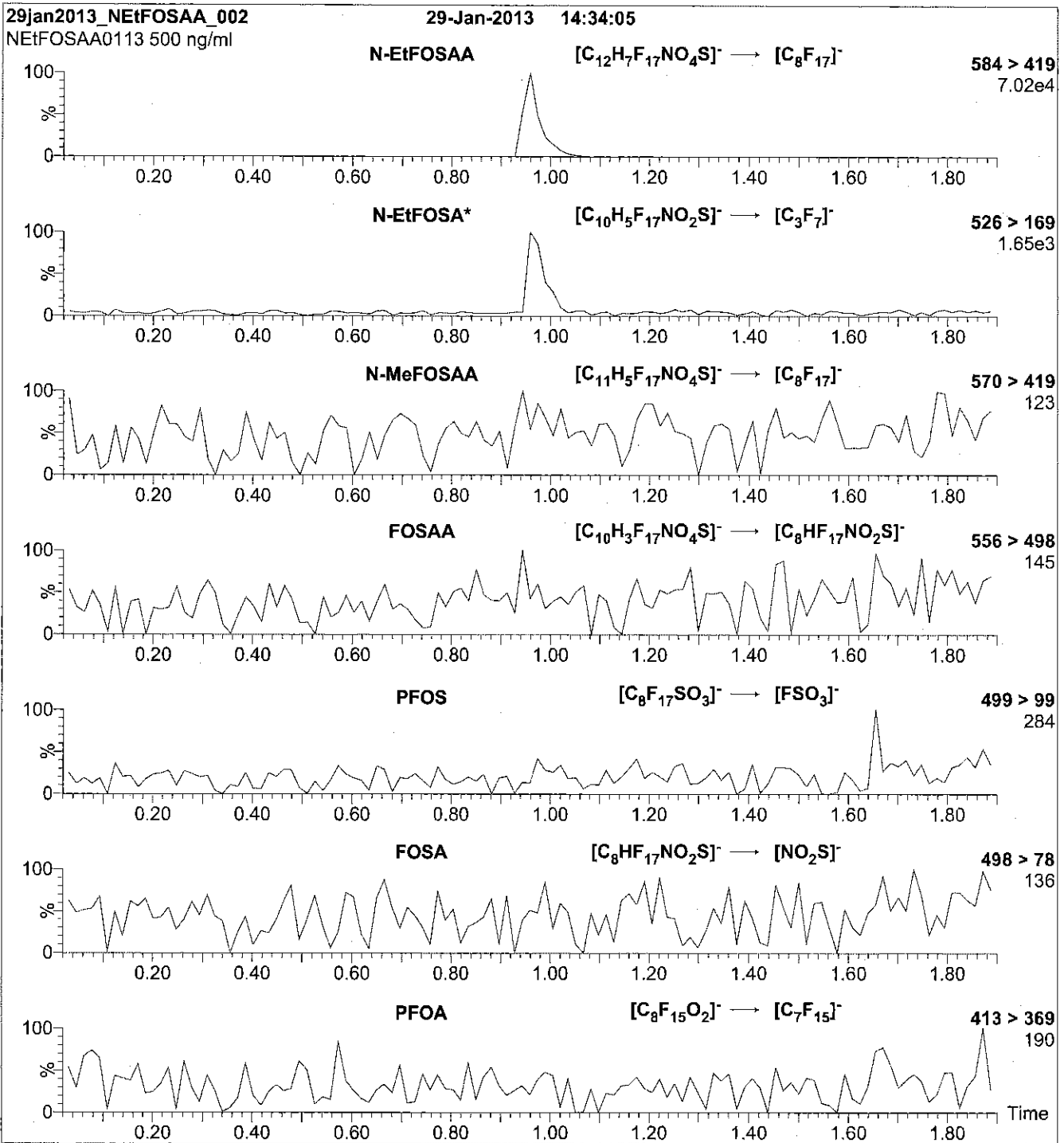
Flow: 300 μ l/min

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% H₂O
(both with 10 mM NH₄OAc 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-EiFOSAA_00002
Exp: 01/2021 Pp# 98C
N-EiFOSAA

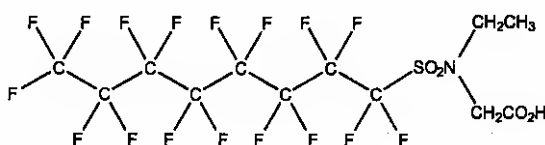


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSAA **LOT NUMBER:** NEiFOSAA0116
COMPOUND: N-ethylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2991-50-6



MOLECULAR FORMULA: C₁₂H₈F₁₇NO₄S **MOLECULAR WEIGHT:** 585.23
CONCENTRATION: 50 ± 2.5 µg/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
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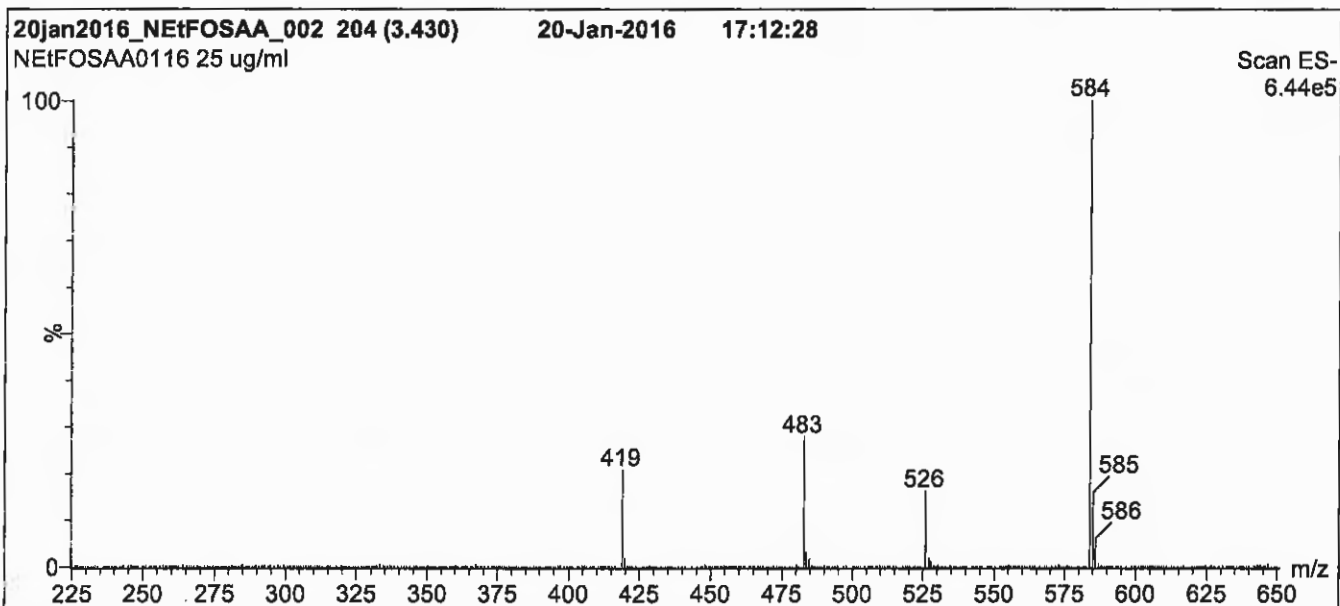
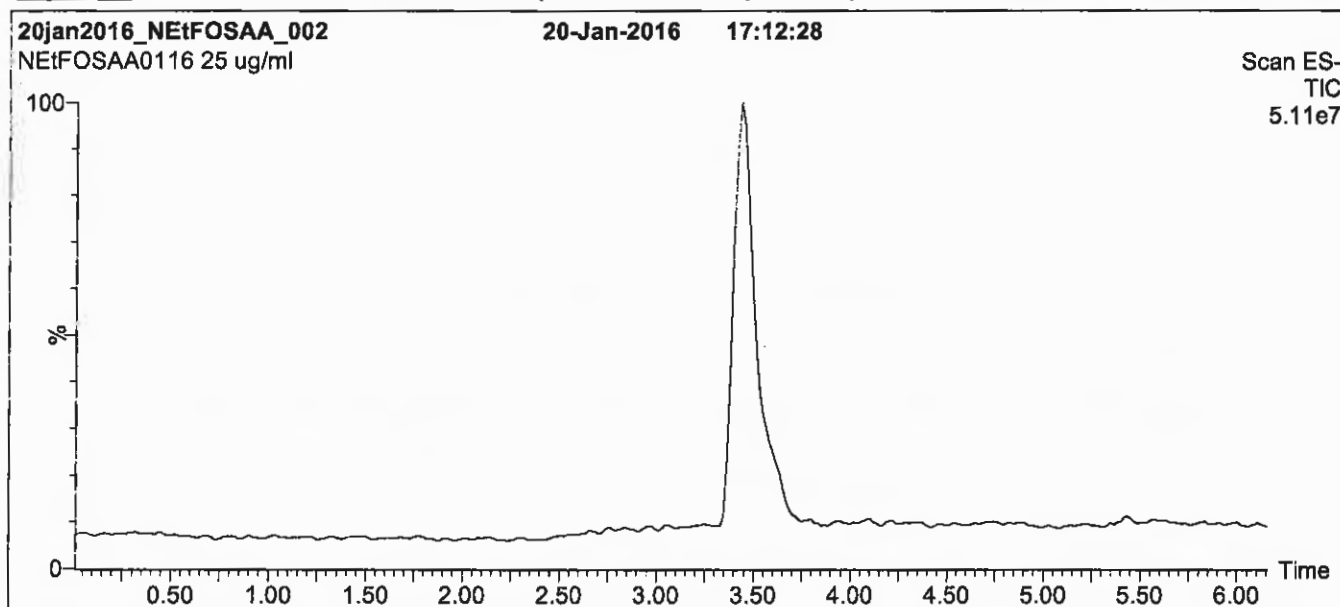
QUALITY MANAGEMENT:

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: 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

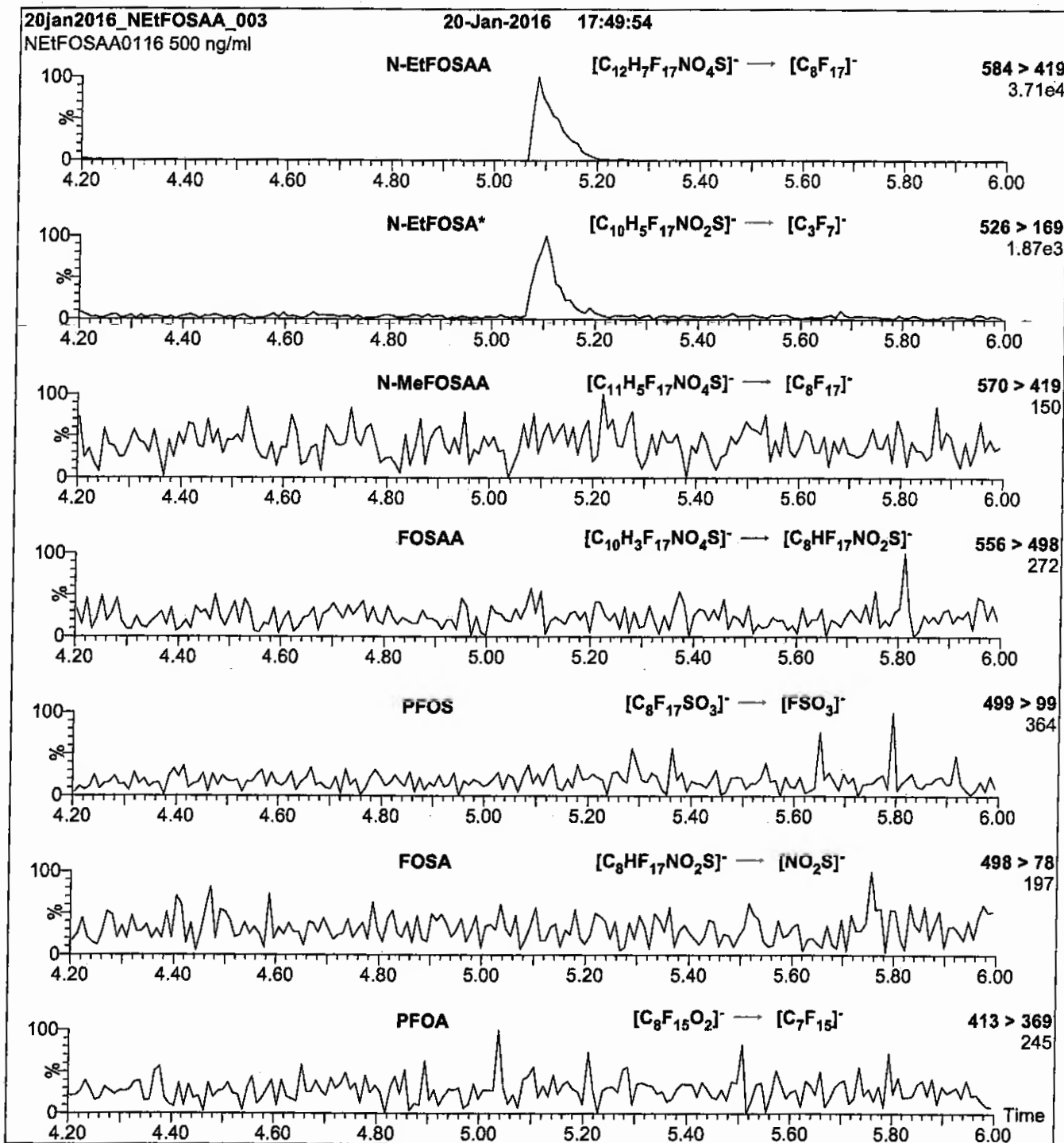
Flow: 300 μ l/min

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

V: 7/16/15 SPW



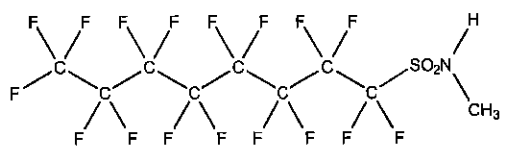
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSA-M
COMPOUND: N-methylperfluoro-1-octanesulfonamide

LOT NUMBER: NMeFOSA0714M

STRUCTURE:  **CAS #:** 31506-32-8



MOLECULAR FORMULA: C₉H₄F₁₇NO₂S
CONCENTRATION: 50 ± 2.5 µg/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

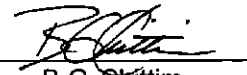
DOCUMENTATION/ DATA ATTACHED:

- 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:

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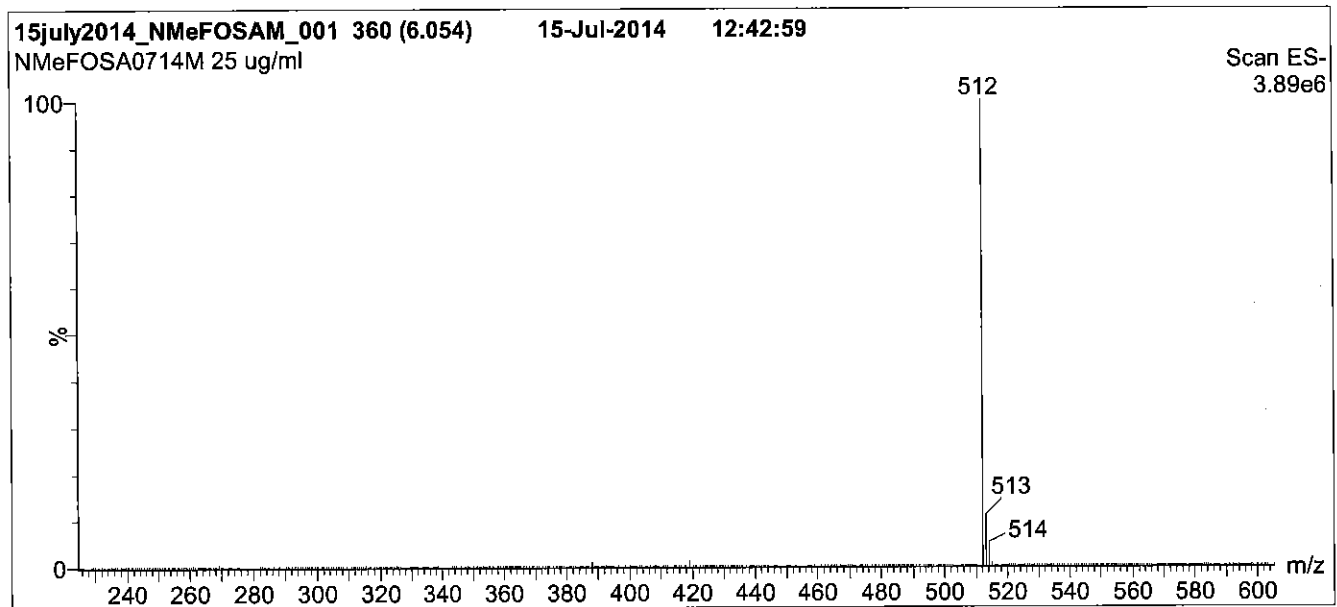
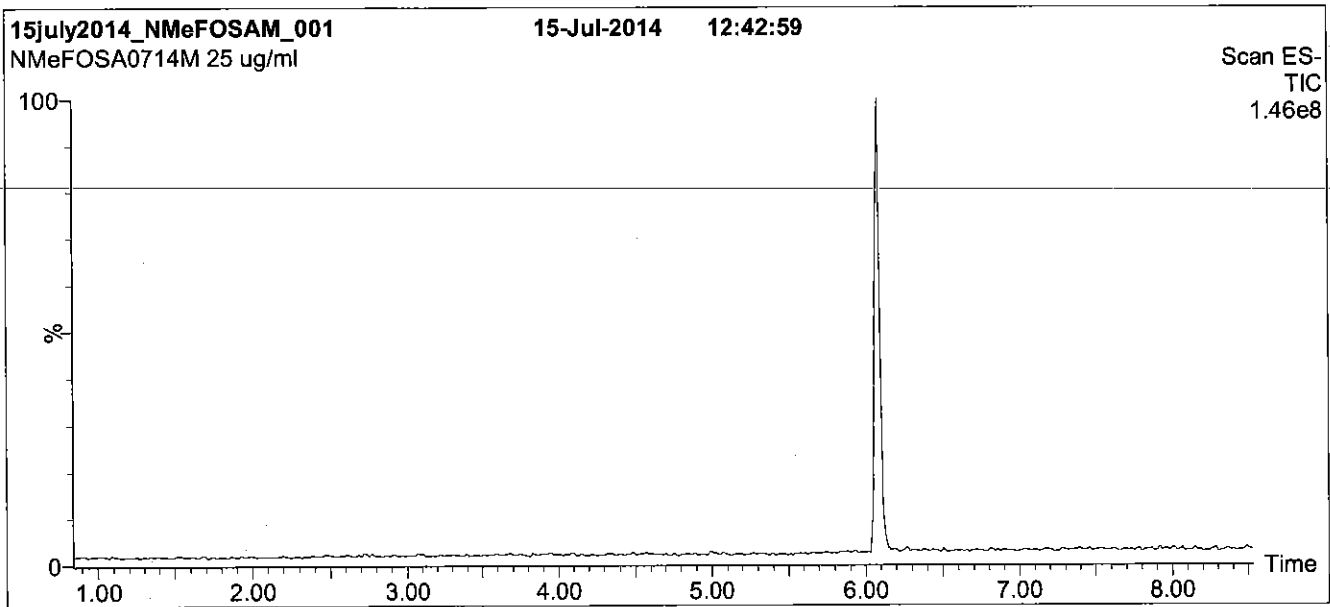
QUALITY MANAGEMENT:

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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 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

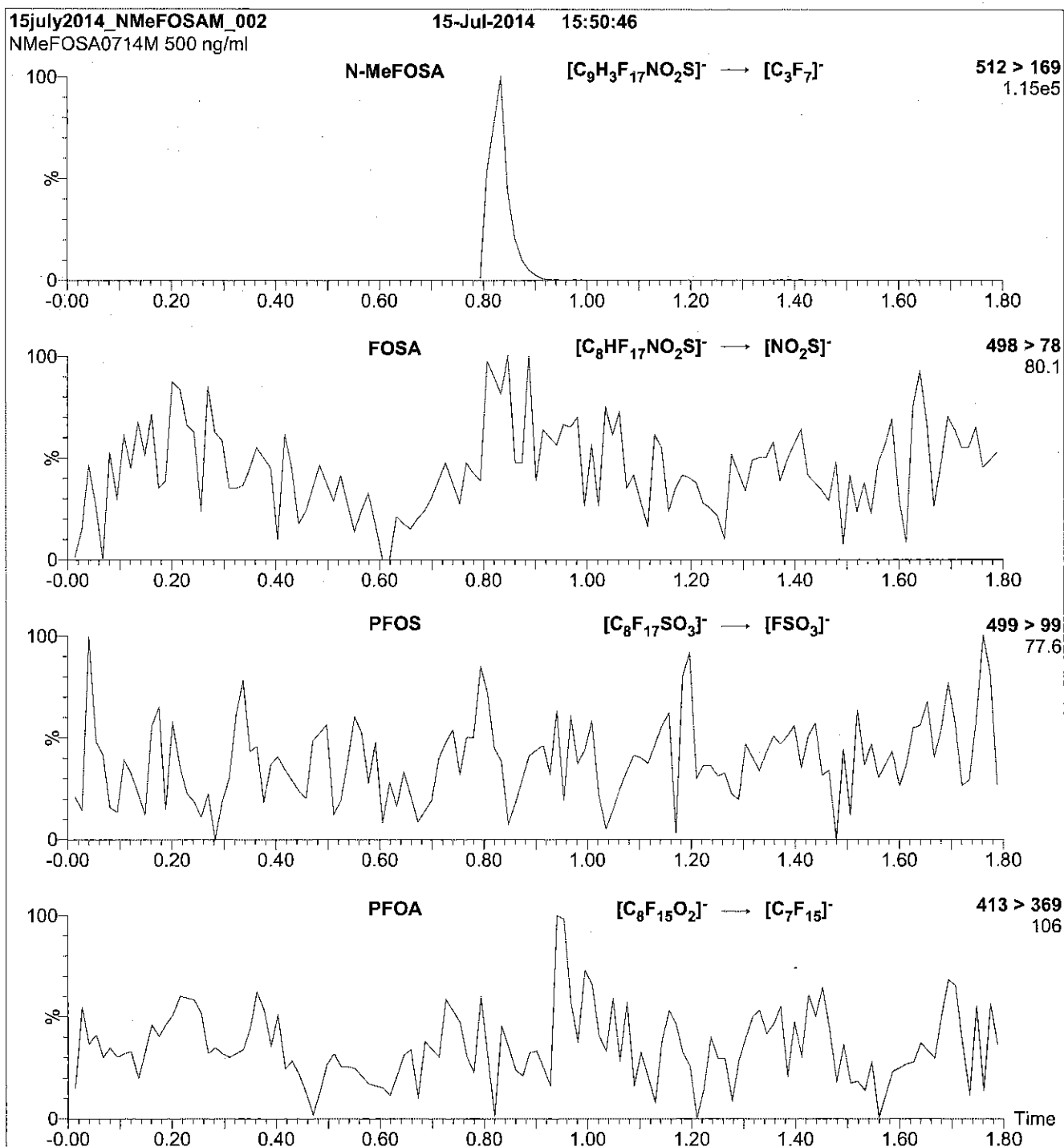
Flow: 300 μ l/min

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% 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-MeFOSA-M_00002

R: 8/23/16 SBC



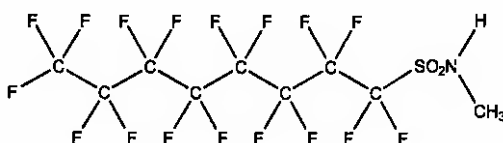
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ID: LCN-MeFOSA-M_00002
Exp: 05/24/21 Pppl: SBC
N-MeFOSA-M



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: C₉H₄F₁₇NO₂S **MOLECULAR WEIGHT:** 513.17
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: 05/26/2016
(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

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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SYNTHESIS / CHARACTERIZATION:

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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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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:

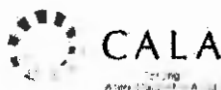
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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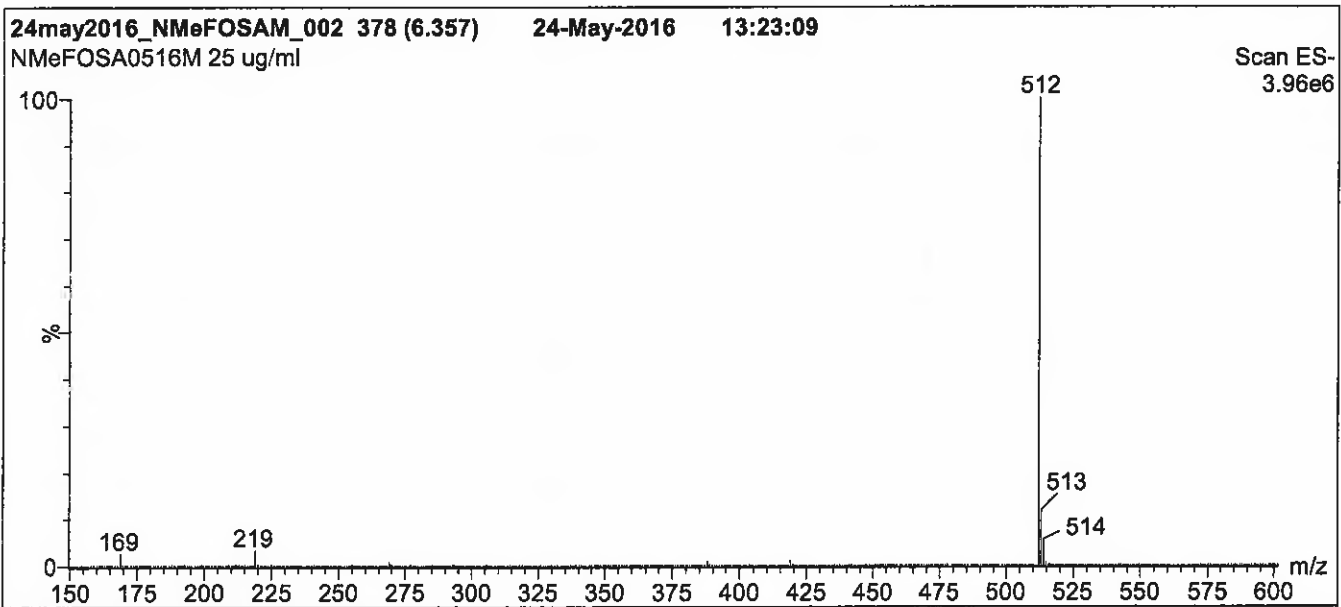
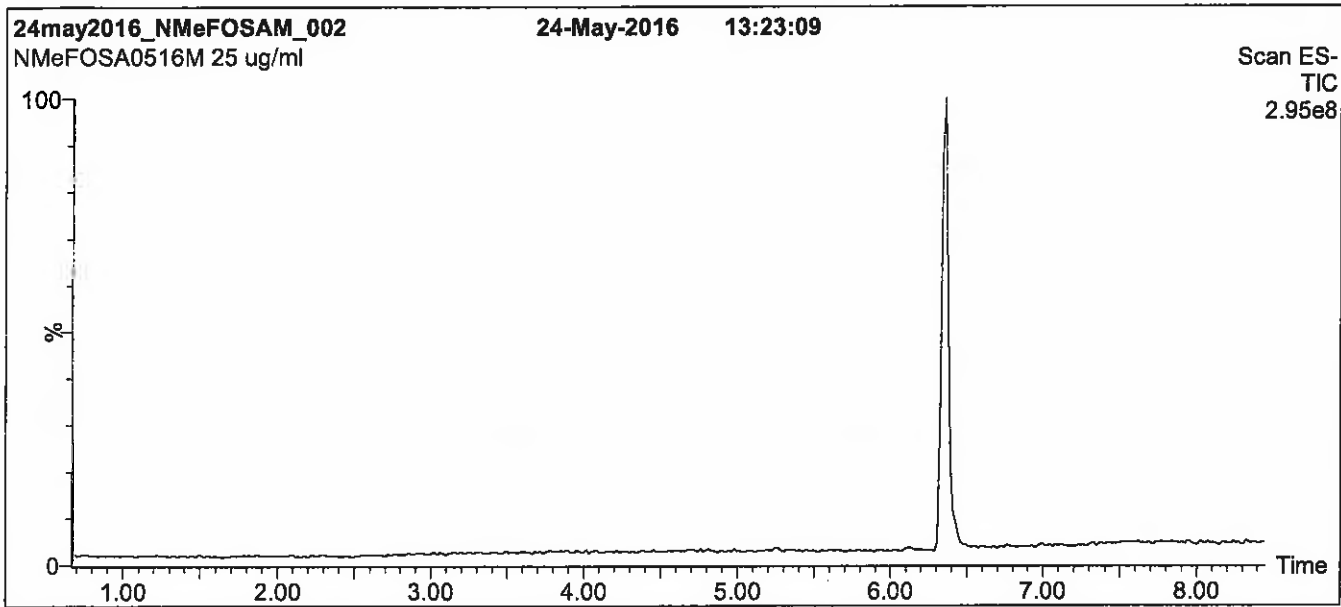
QUALITY MANAGEMENT:

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Figure 1: 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

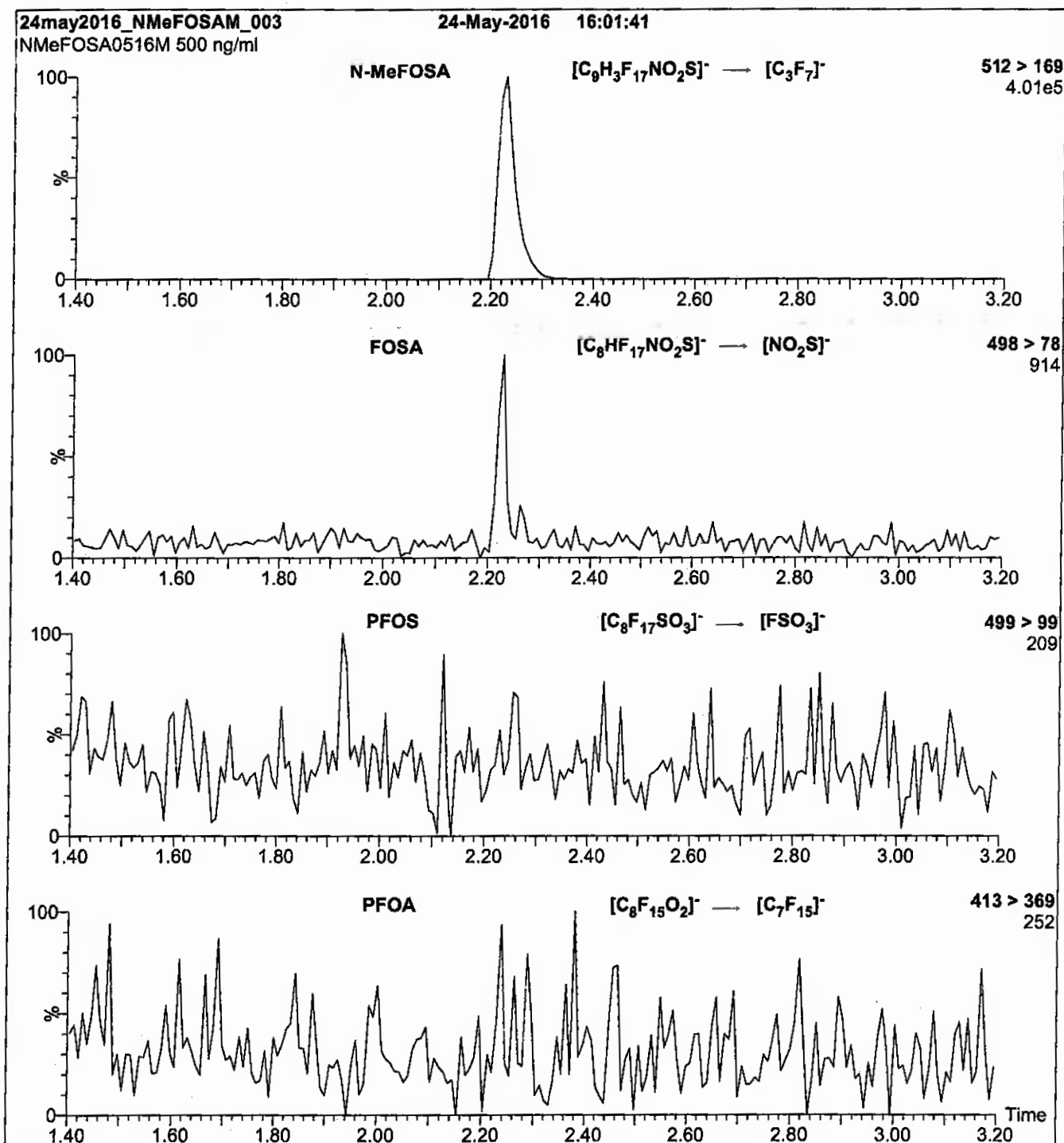
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.50
 Cone Voltage (V) = 40.00
 Core 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% 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-MeFOSAA_00001

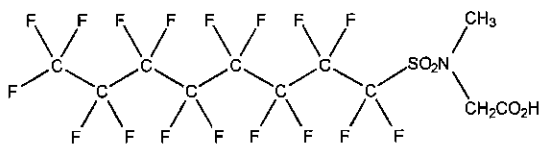


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSAA **LOT NUMBER:** NMeFOSAA1214
COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2355-31-9



MOLECULAR FORMULA: C₁₁H₆F₁₇NO₄S **MOLECULAR WEIGHT:** 571.21
CONCENTRATION: 50 ± 2.5 µg/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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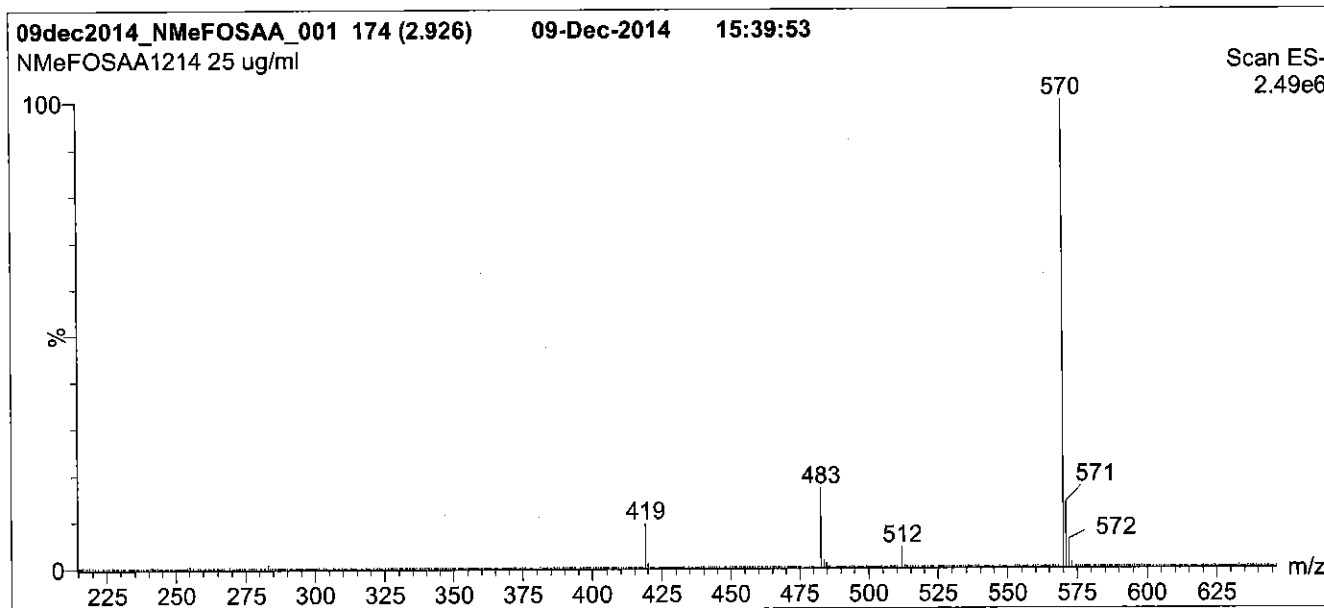
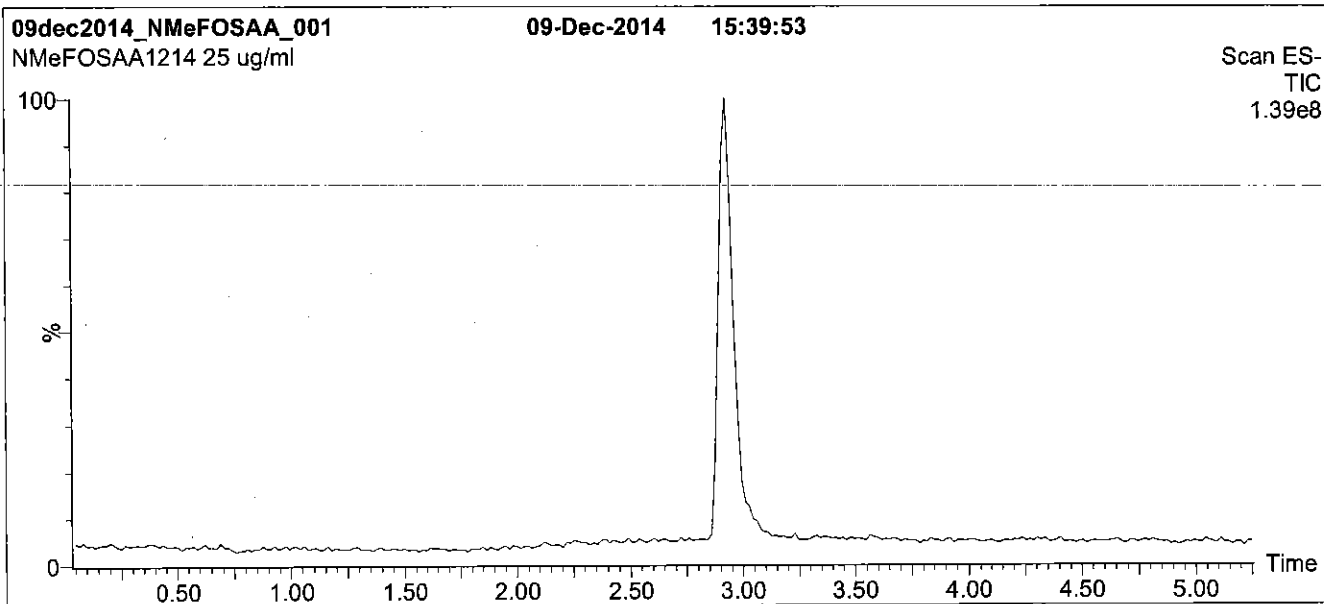
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Figure 1: N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)



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

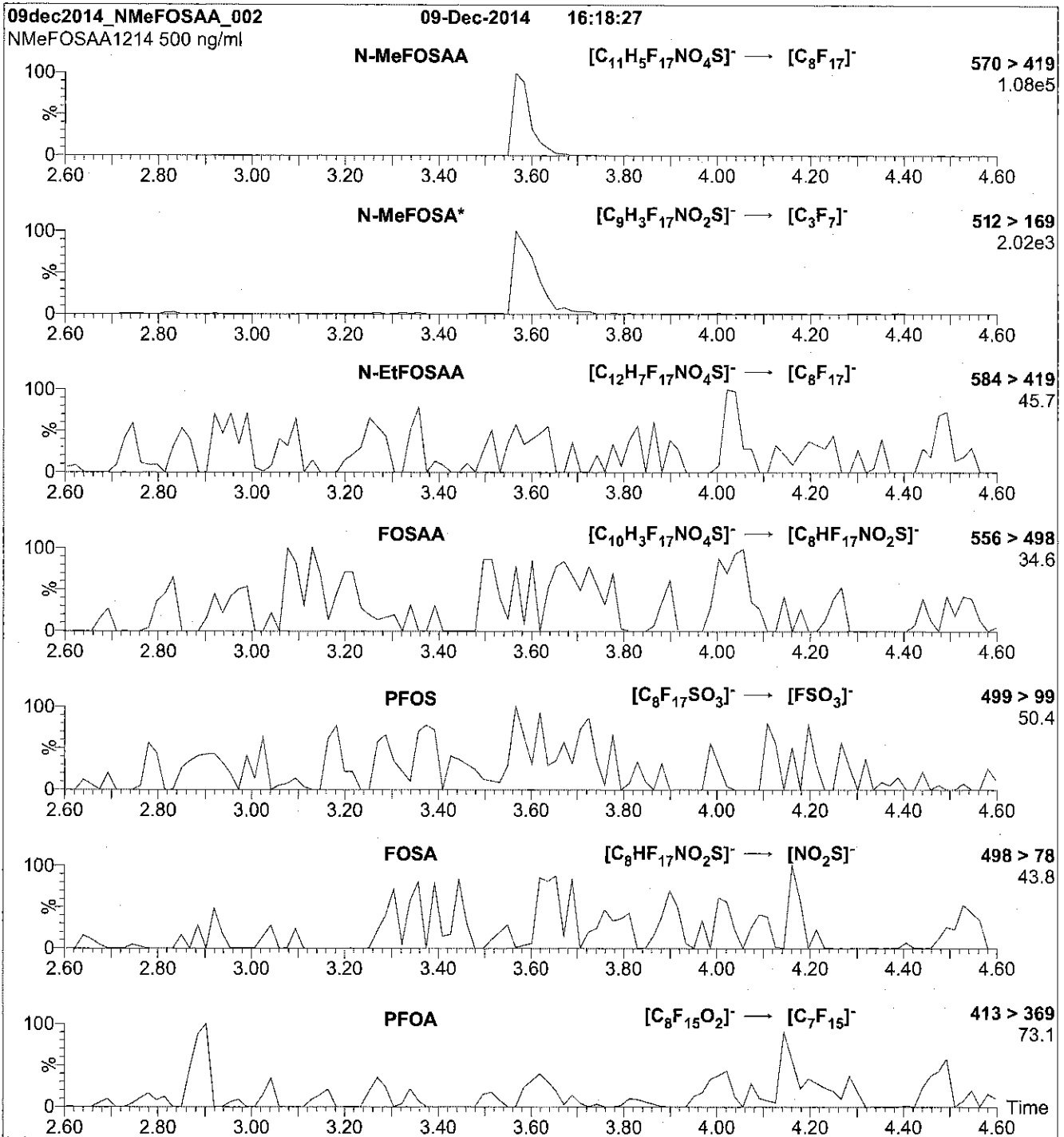
Flow: 300 μ l/min

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

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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:

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.

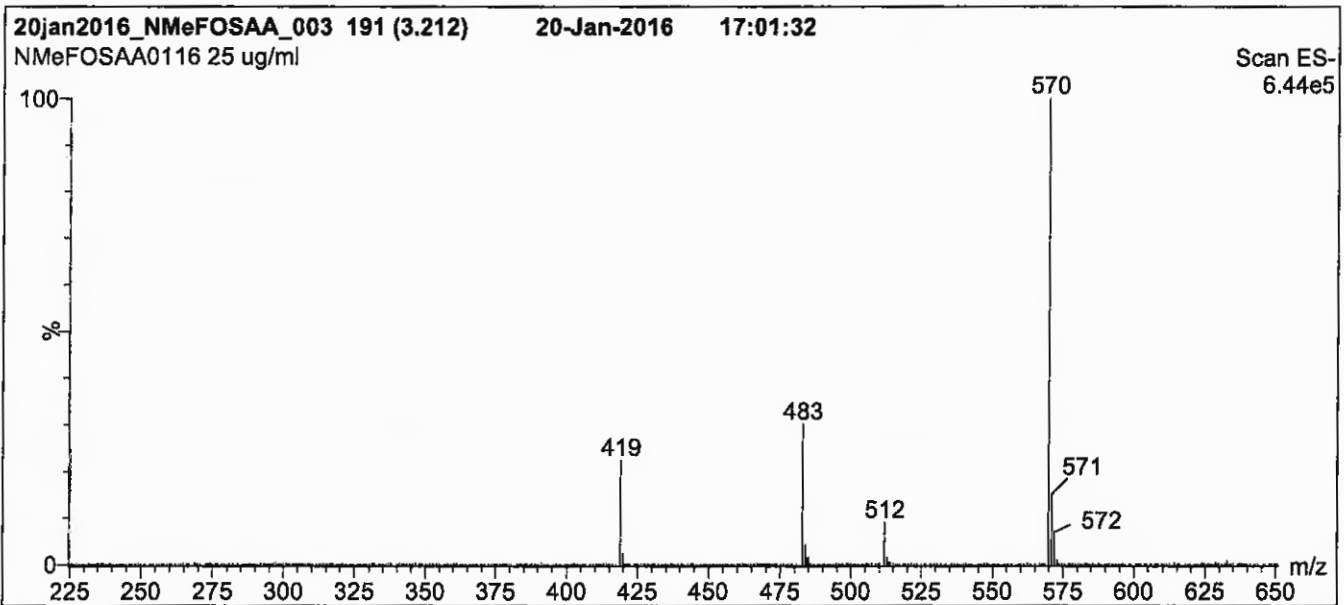
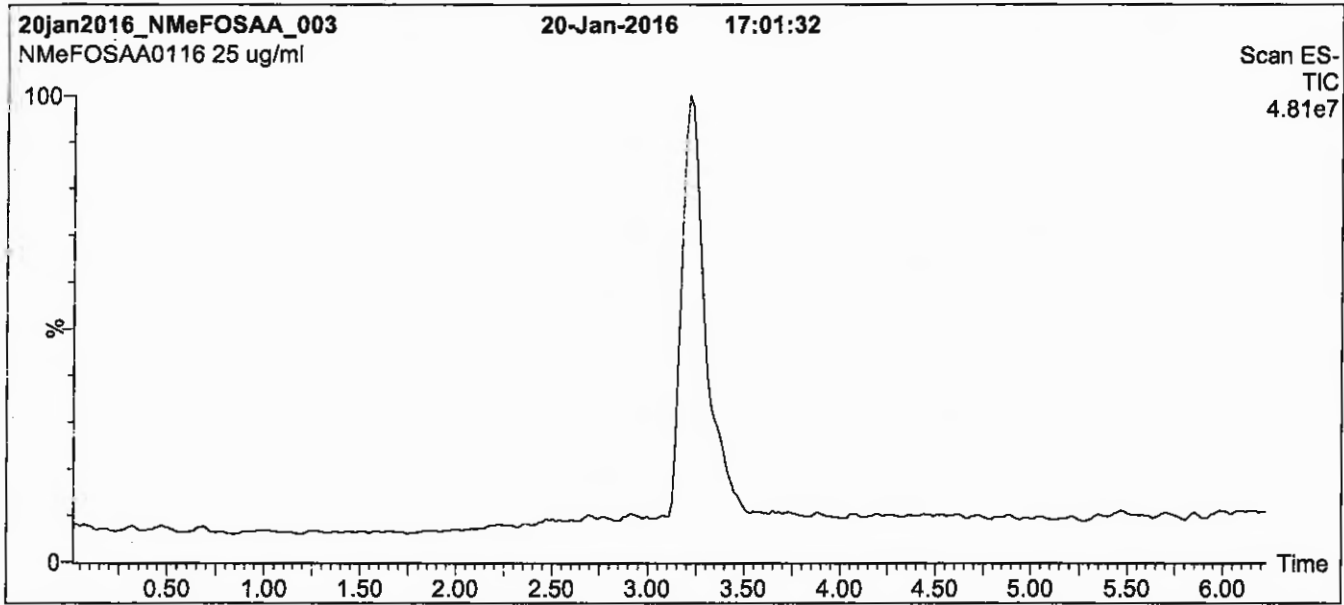
QUALITY MANAGEMENT:

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: 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

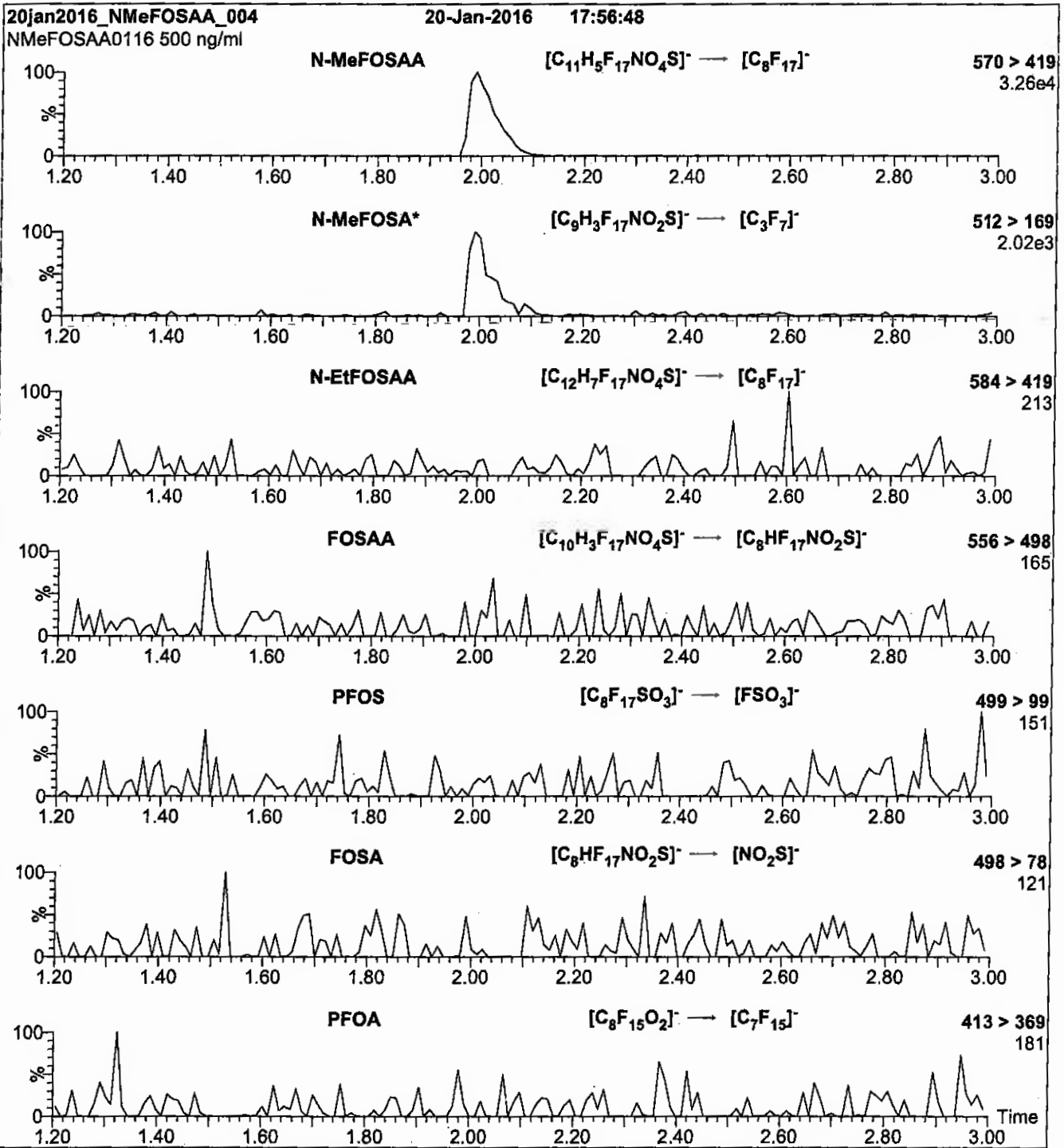
Flow: 300 μ l/min

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: 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% 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

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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**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 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:

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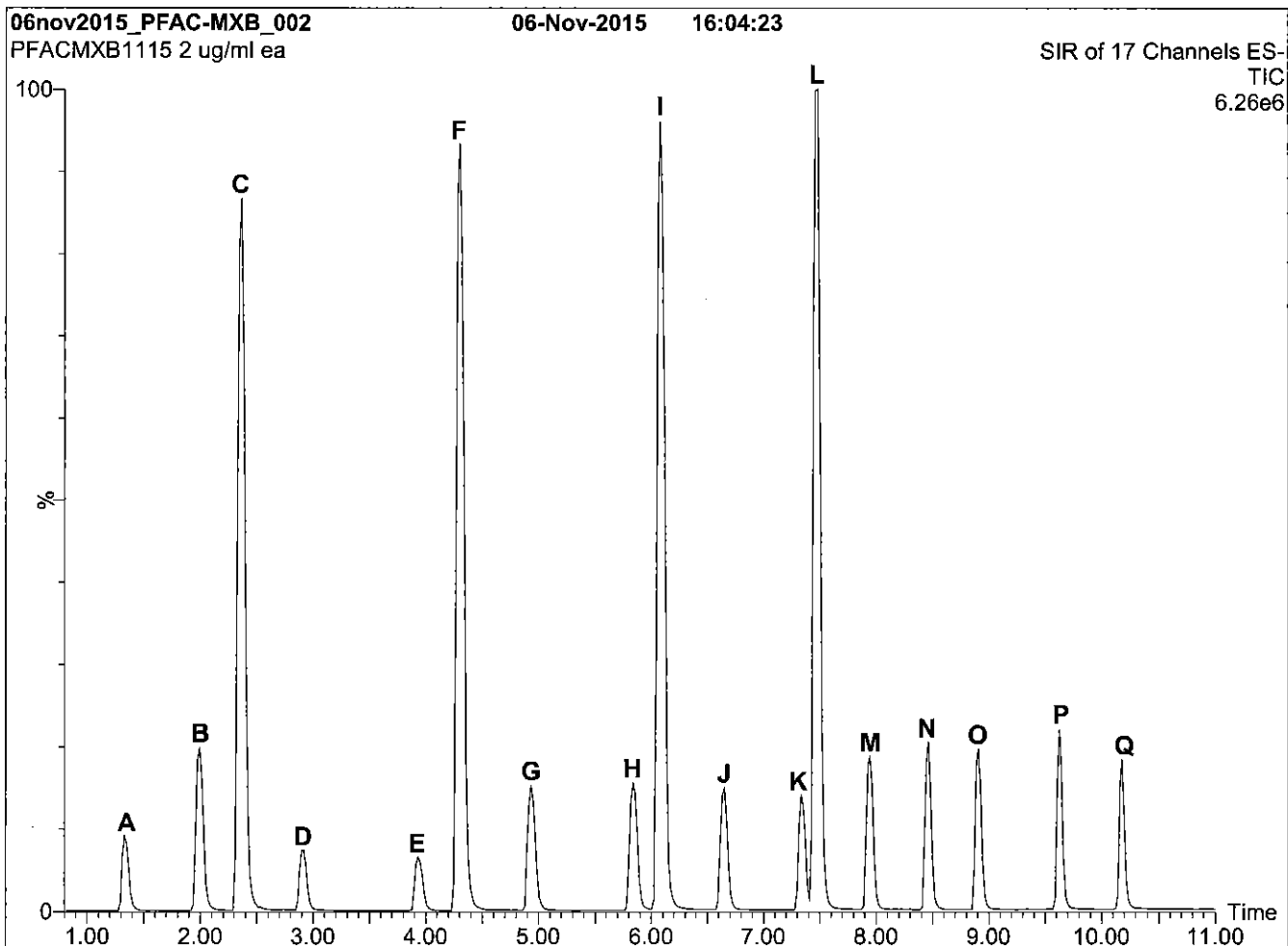
Table A: PFAC-MXB; Components and Concentrations (ng/ml, ± 5% in Methanol / Water (<1%))

Name	Abbreviation	Concentration (ng/ml)		Peak Assignment in Figure 1
		as the salt	as the anion	
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-butanesulfonate	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)

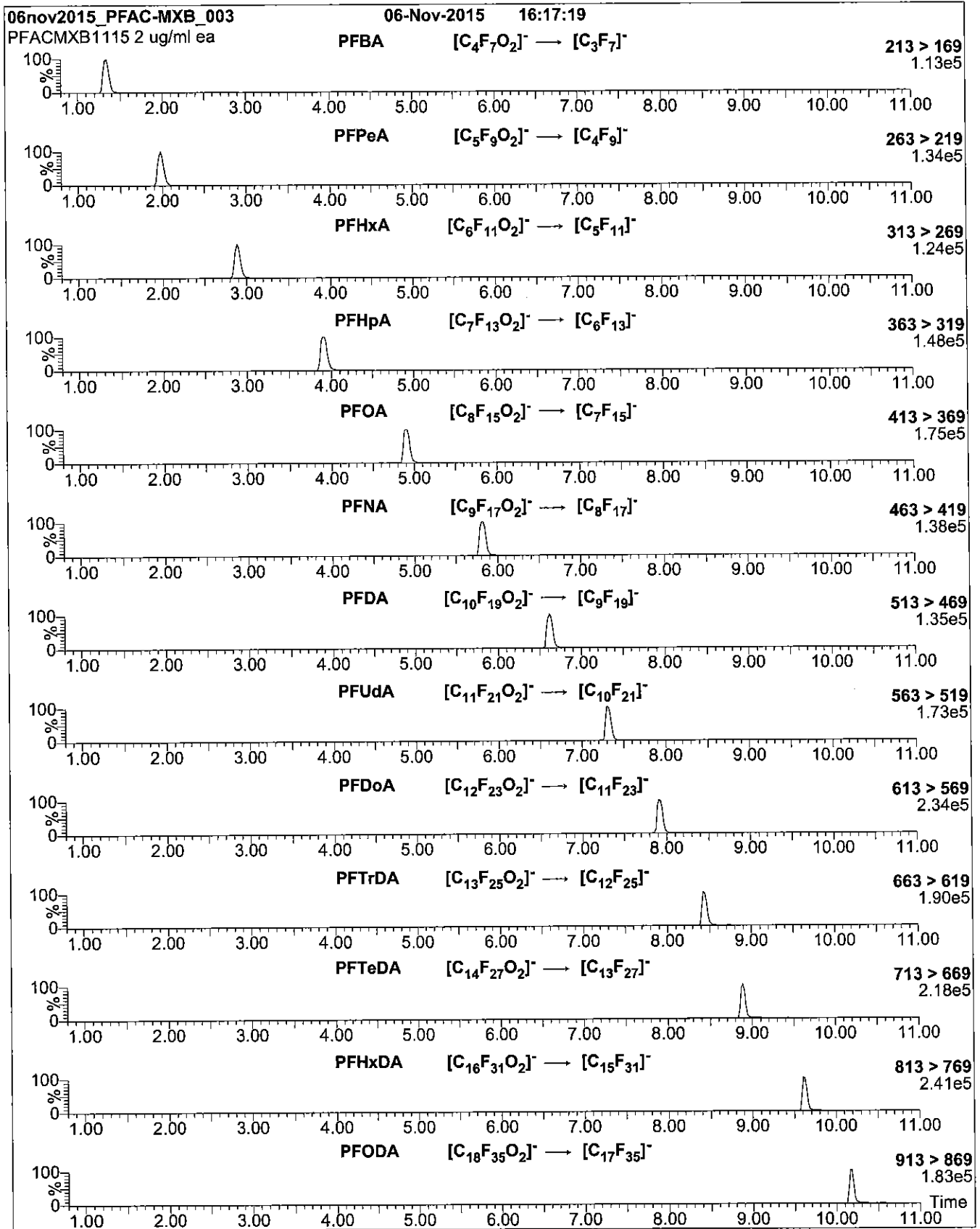
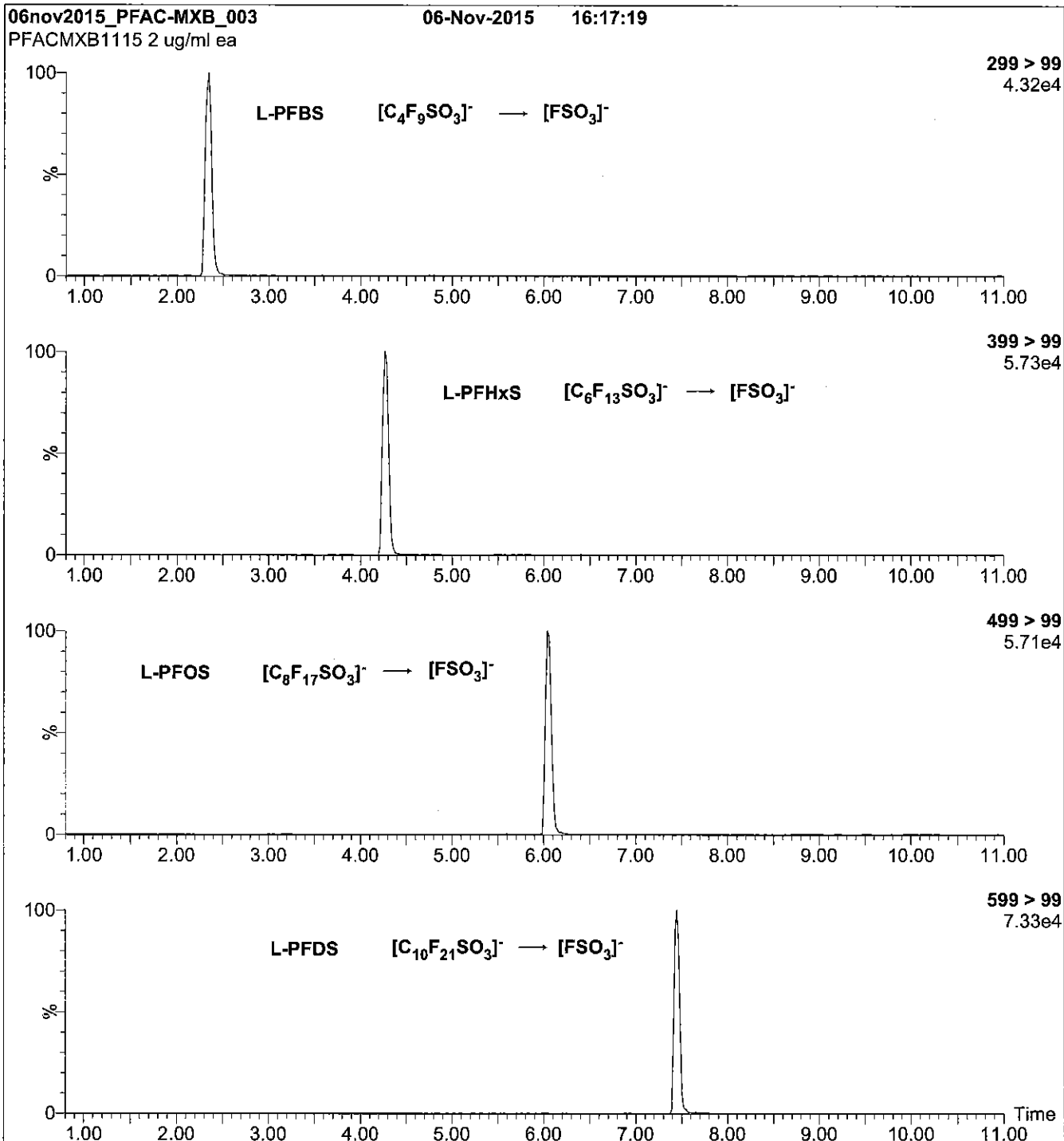


Figure 3: PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)



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: LCPFBA_00005
Exp: 05/27/21 Prpd: SBC
PF-n-butanolic acid



730532
ID: LCPFBA_00006
Exp: 05/27/21 Prpd: SBC
PF-n-butanolic acid



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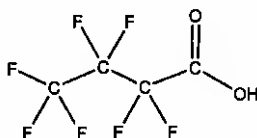
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFBA
COMPOUND: Perfluoro-n-butanolic acid

LOT NUMBER: PFBA0516

STRUCTURE:

CAS #: 375-22-4



MOLECULAR FORMULA: C₄HF₇O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 214.04
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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INTENDED USE:

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HAZARDS:

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HOMOGENEITY:

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UNCERTAINTY:

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LIMITED WARRANTY:

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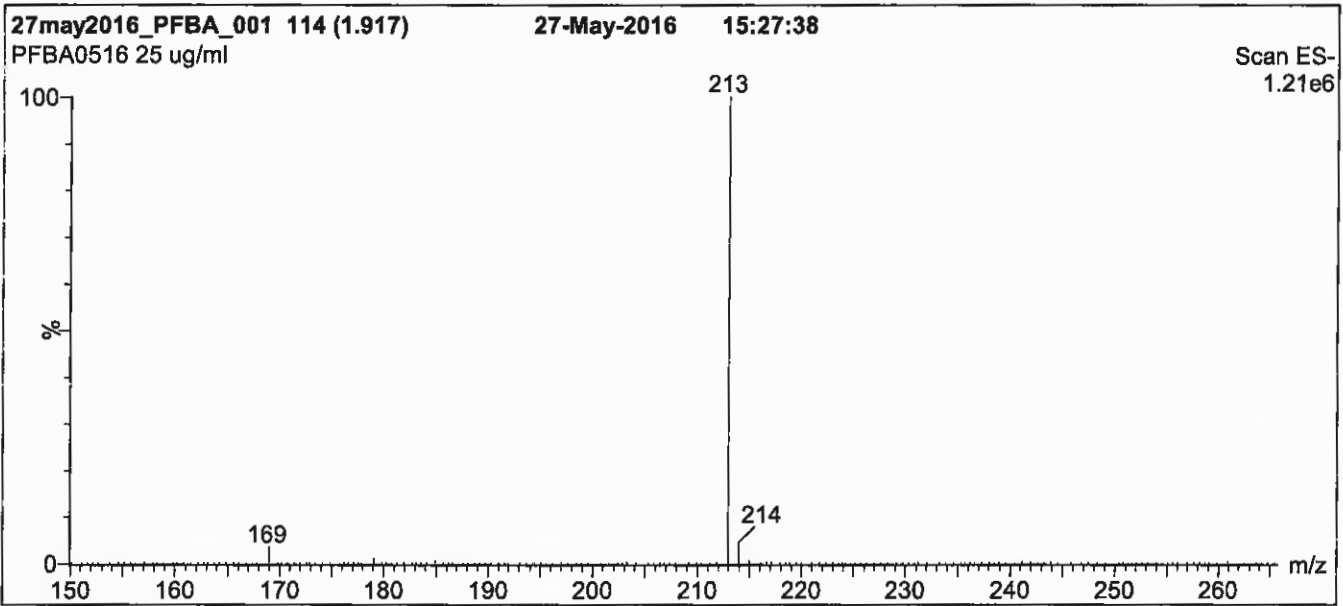
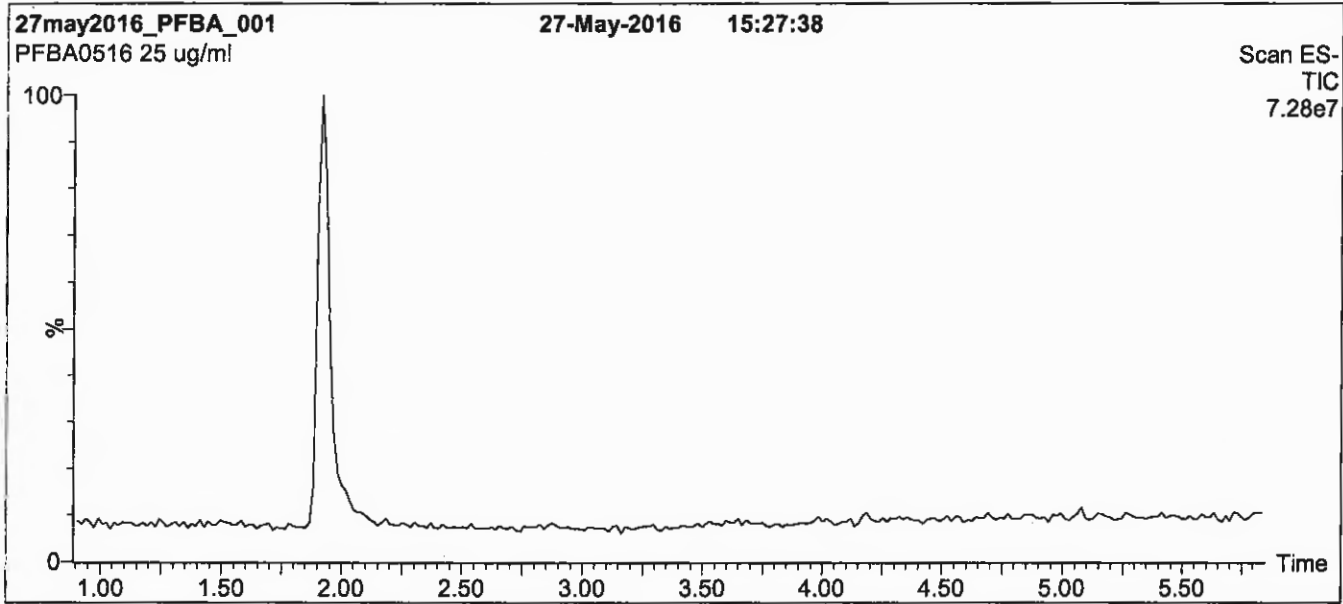
QUALITY MANAGEMENT:

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: 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

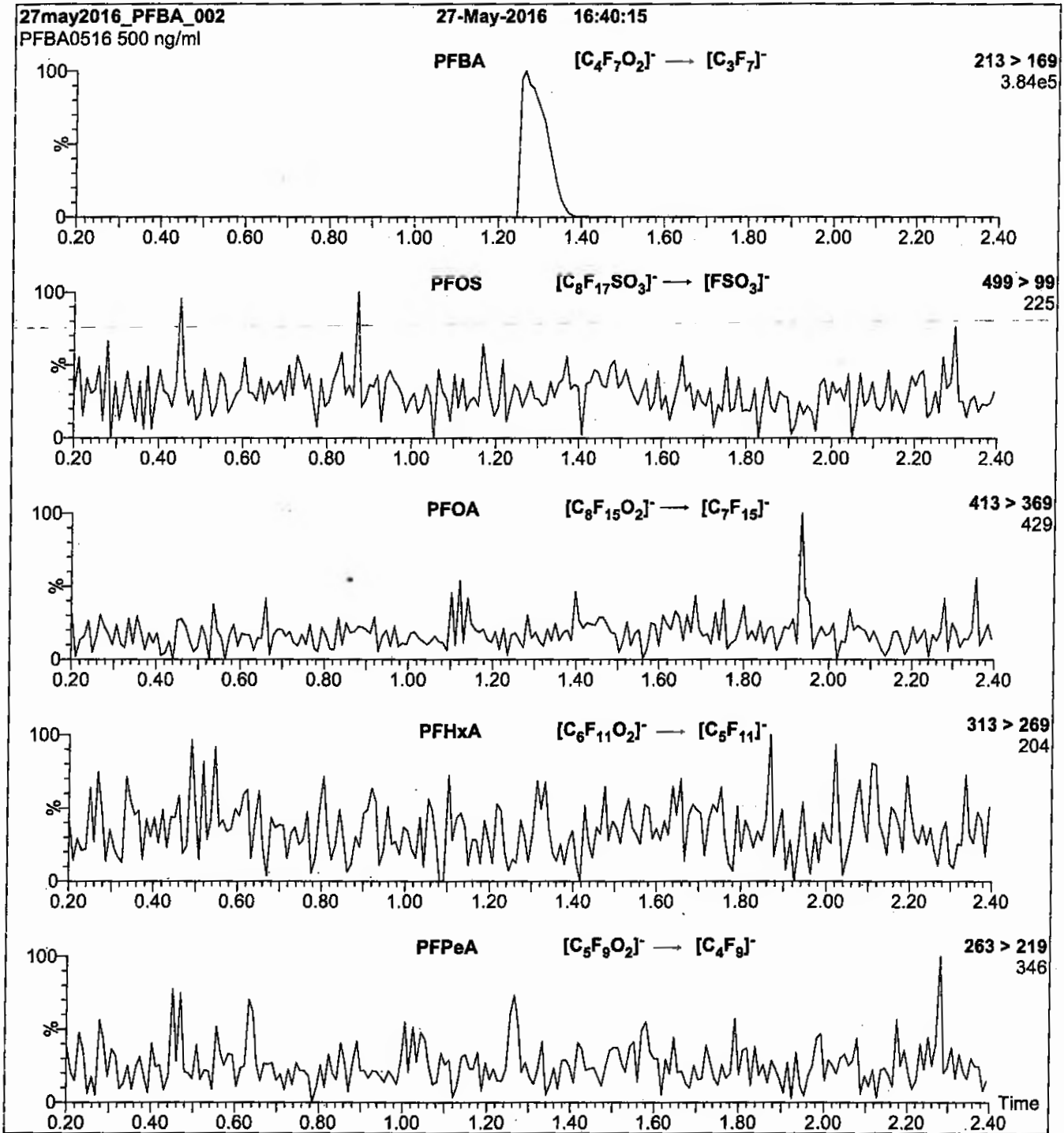
Flow: 300 μ l/min

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 gbe



728306
ID: LCM2-8:2FTS_00003
Exp: 01/08/21 Prpd: SBC
M2-8:2FTS

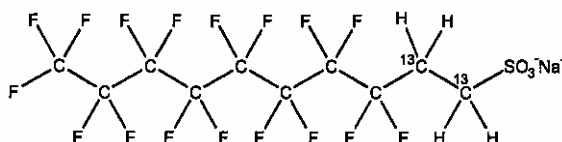


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CERTIFICATE OF ANALYSIS DOCUMENTATION

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:	¹³ C ₂ ¹² C ₈ H ₄ F ₁₇ SO ₃ Na	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)	ISOTOPIC PURITY:	≥99% ¹³ C
CHEMICAL PURITY:	>98%		(1,2- ¹³ C ₂)
LAST TESTED: (mm/dd/yyyy)	01/08/2016		
EXPIRY DATE: (mm/dd/yyyy)	01/08/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

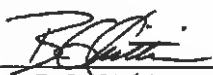
DOCUMENTATION/ DATA ATTACHED:

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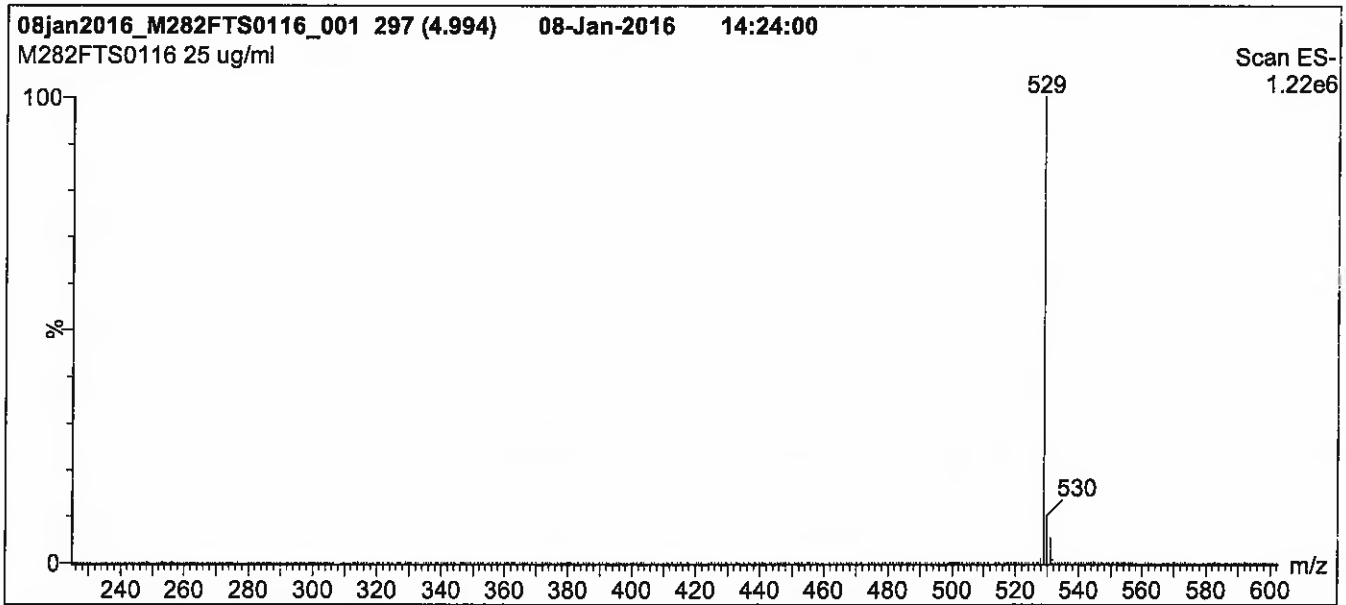
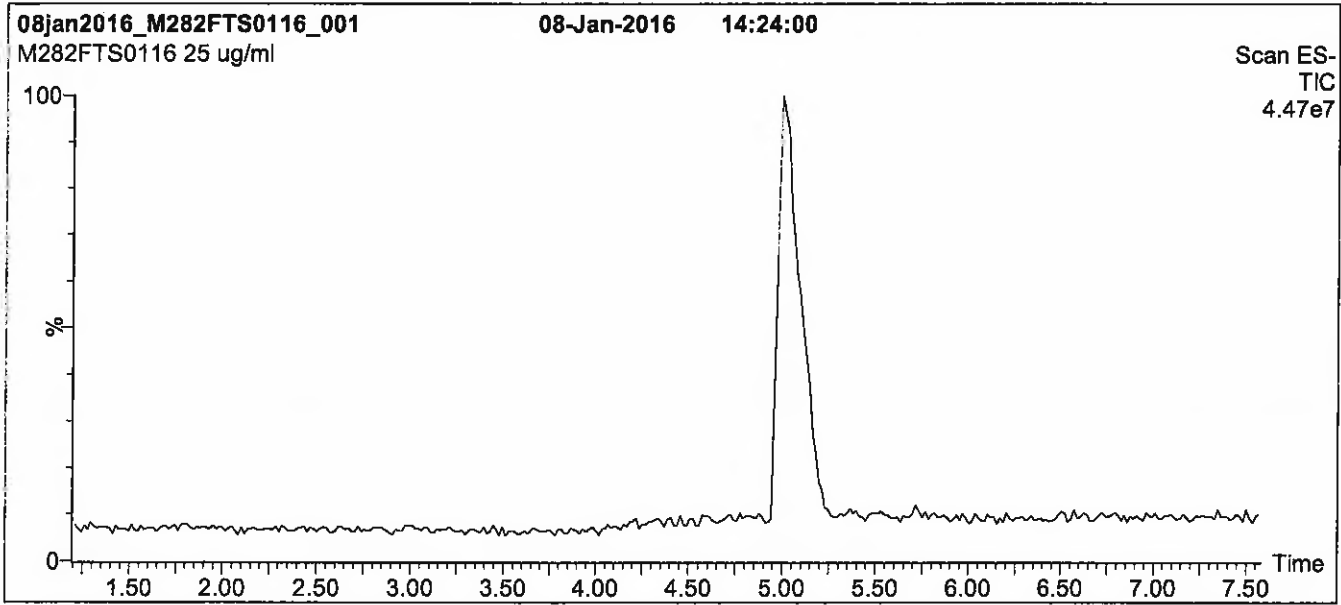
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Figure 1: M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)



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

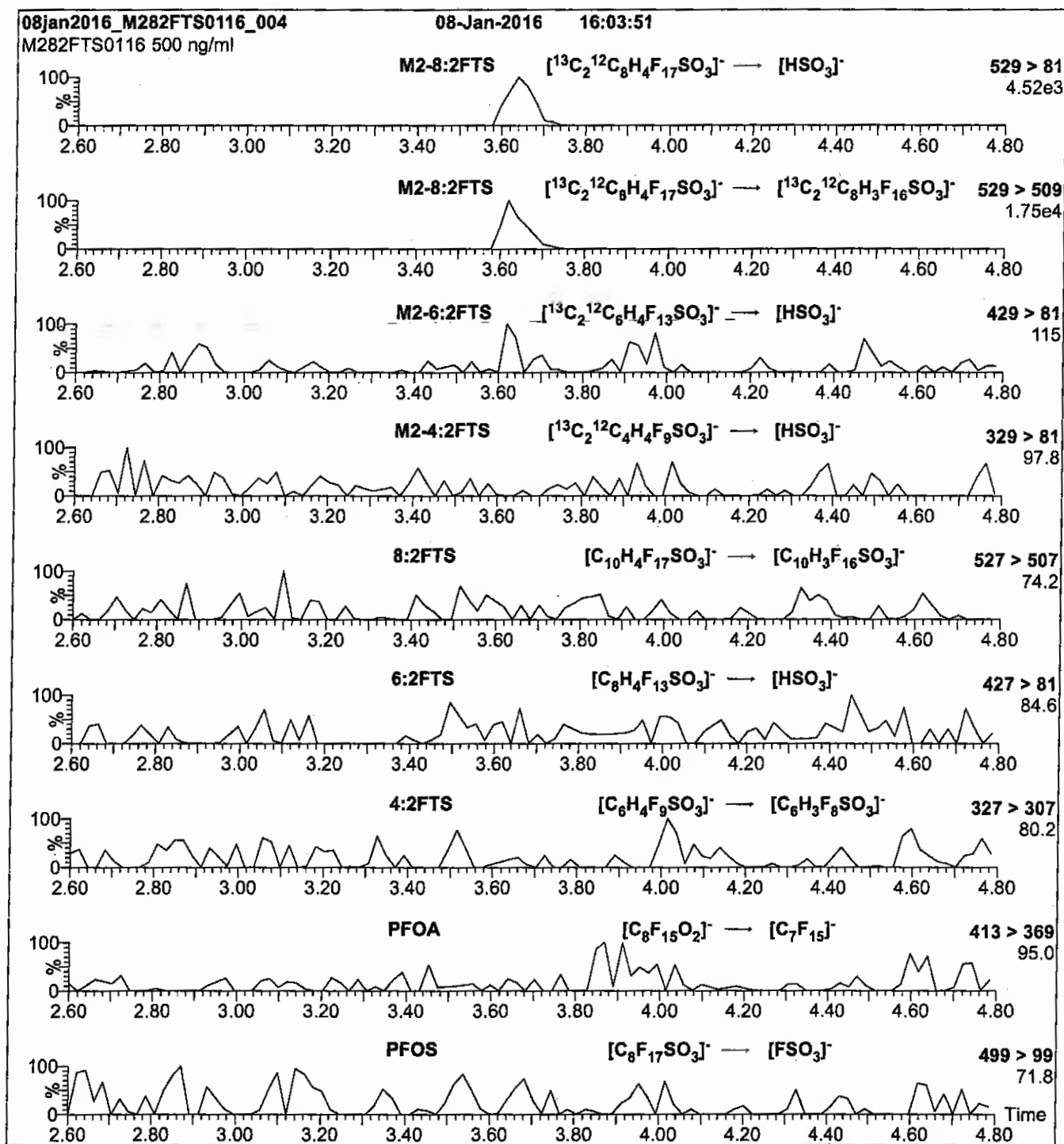
Flow: 300 μ l/min

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% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 µl/min

MS Parameters

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

R: SBC 9/13/16



730511
ID: LCPFBS_00005
Exp: 03/15/21 Prpd: SBC
PF-1-butanesulfonate K sa



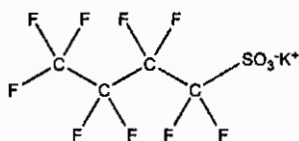
730512
ID: LCPFBS_00006
Exp: 03/15/21 Prpd: SBC
PF-1-butanesulfonate K sa



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFBS **LOT NUMBER:** LPFBS0316
COMPOUND: Potassium perfluoro-1-butanesulfonate
STRUCTURE: **CAS #:** 29420-49-3



MOLECULAR FORMULA: C₄F₉SO₃K **MOLECULAR WEIGHT:** 338.19
CONCENTRATION: 50.0 ± 2.5 µg/ml (K salt) **SOLVENT(S):** Methanol
44.2 ± 2.2 µg/ml (PFBS anion)
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. Chrifim

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:

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.

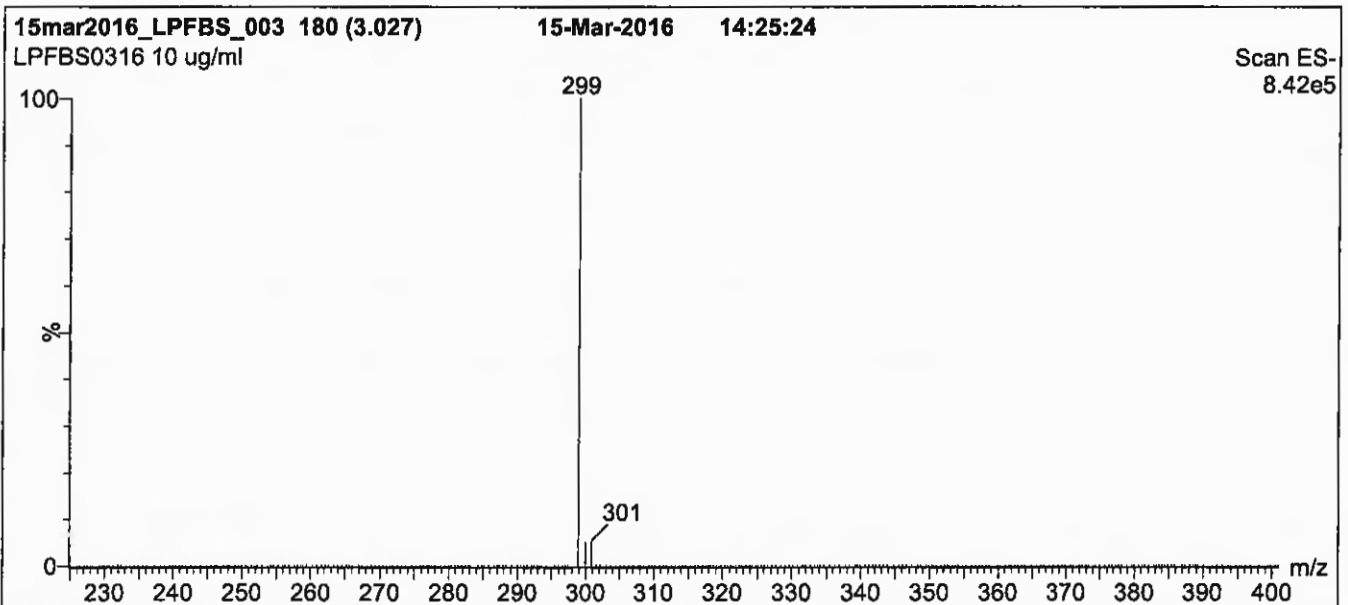
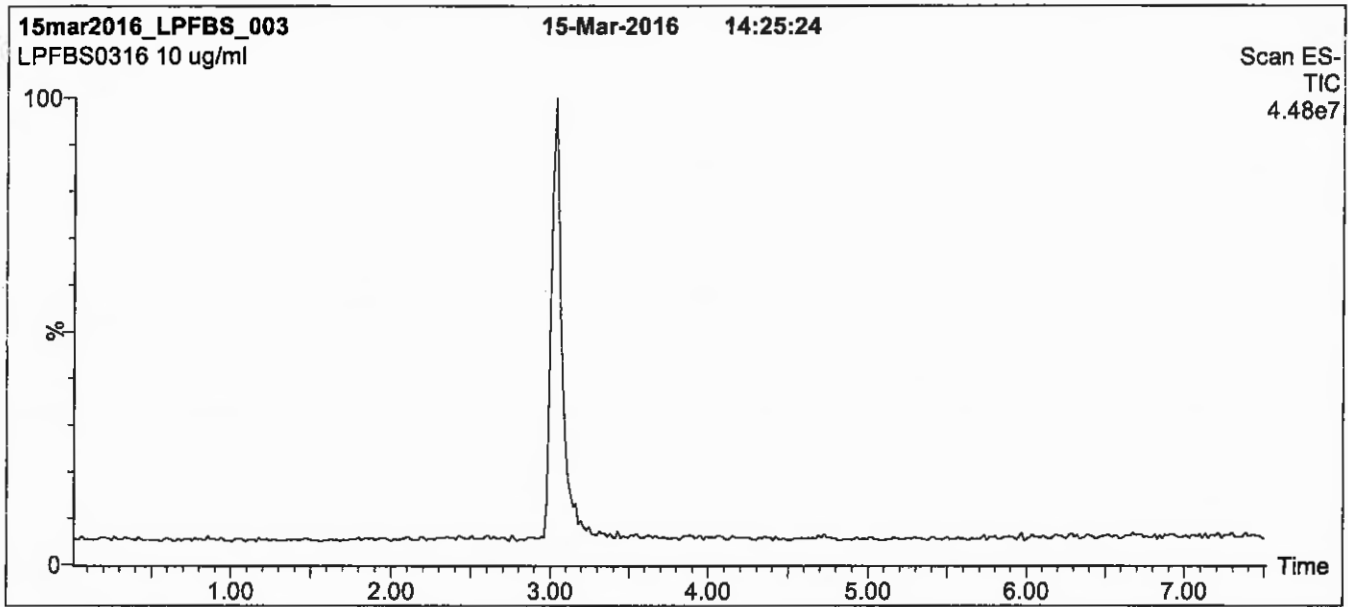
QUALITY MANAGEMENT:

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: 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

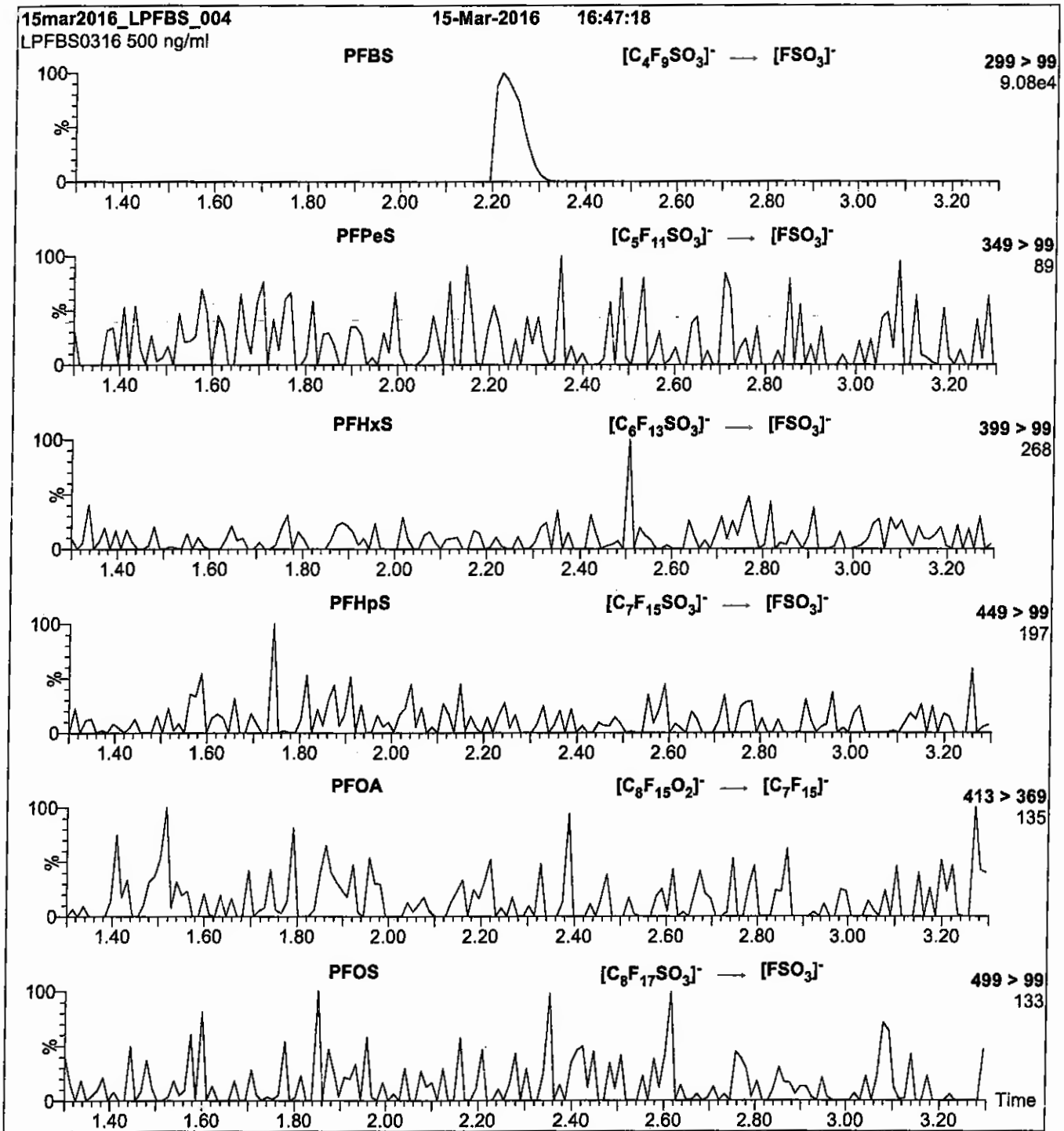
Flow: 300 μ l/min

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% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

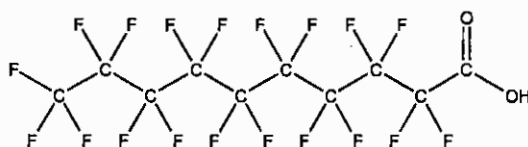
MS Parameters

Collision Gas (mbar) = 3.20e-3
 Collision Energy (eV) = 25

Reagent

LCPFDA_00005

R: 7/16/16 CBW

671576
ID: LCPFDA_00005
Exp: 07/02/20 Prep: 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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. ChittimDate: 07/24/2015
(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.

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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.

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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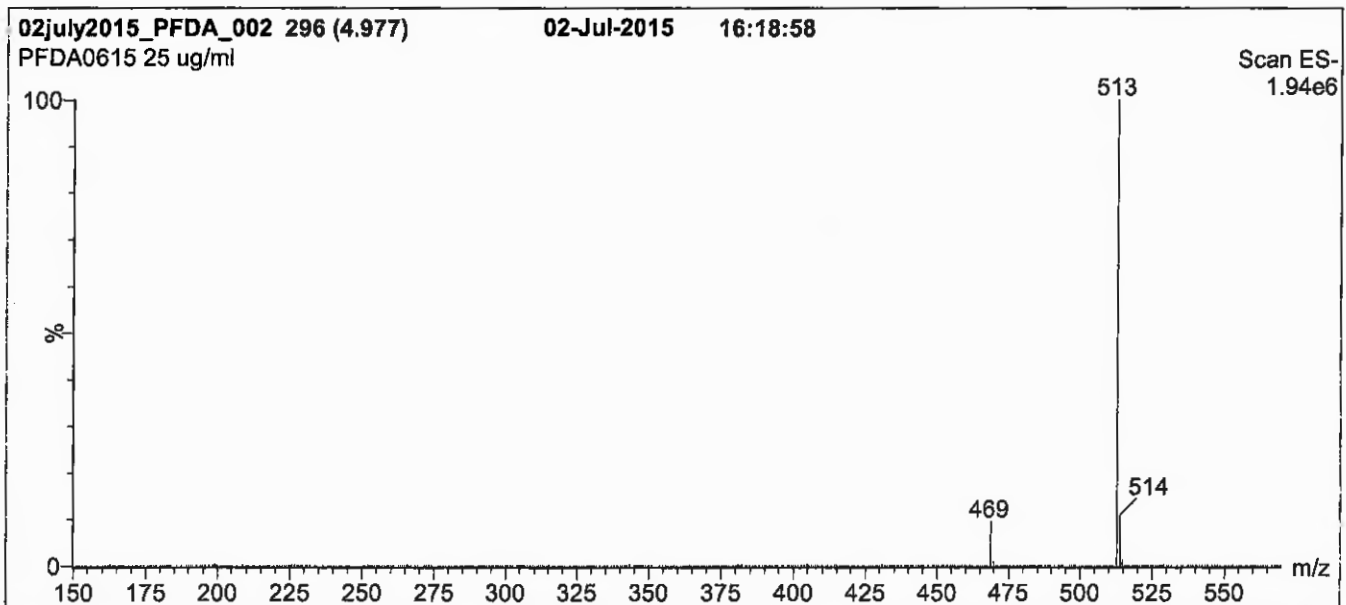
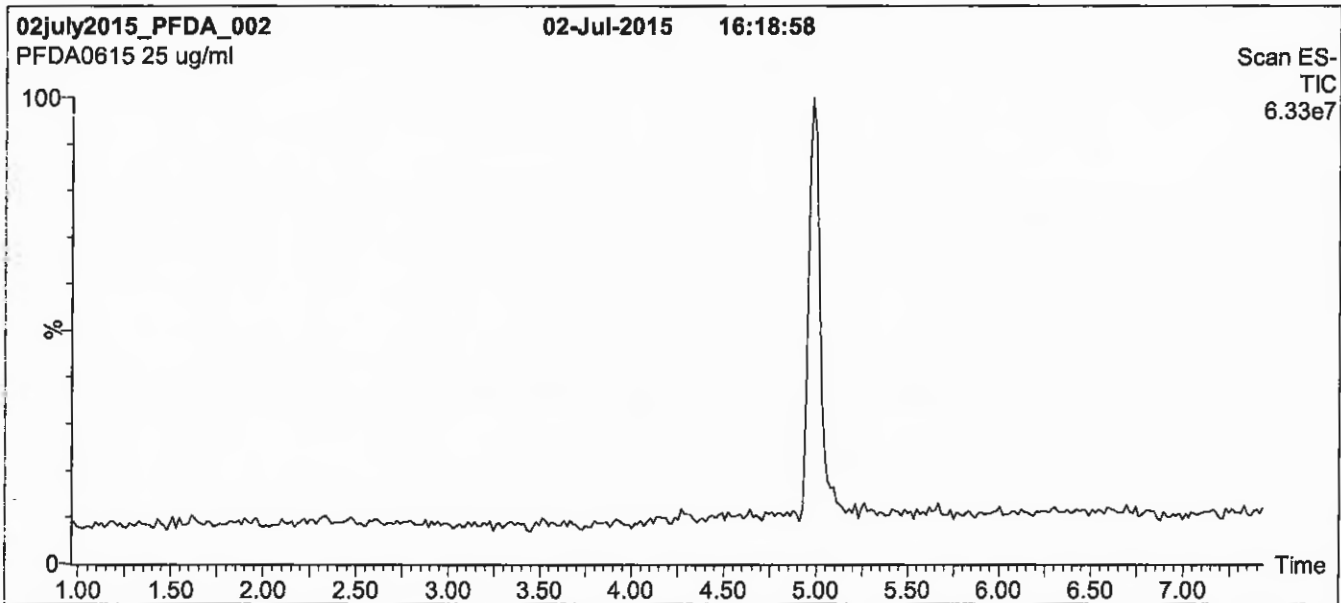
QUALITY MANAGEMENT:

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Figure 1: 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

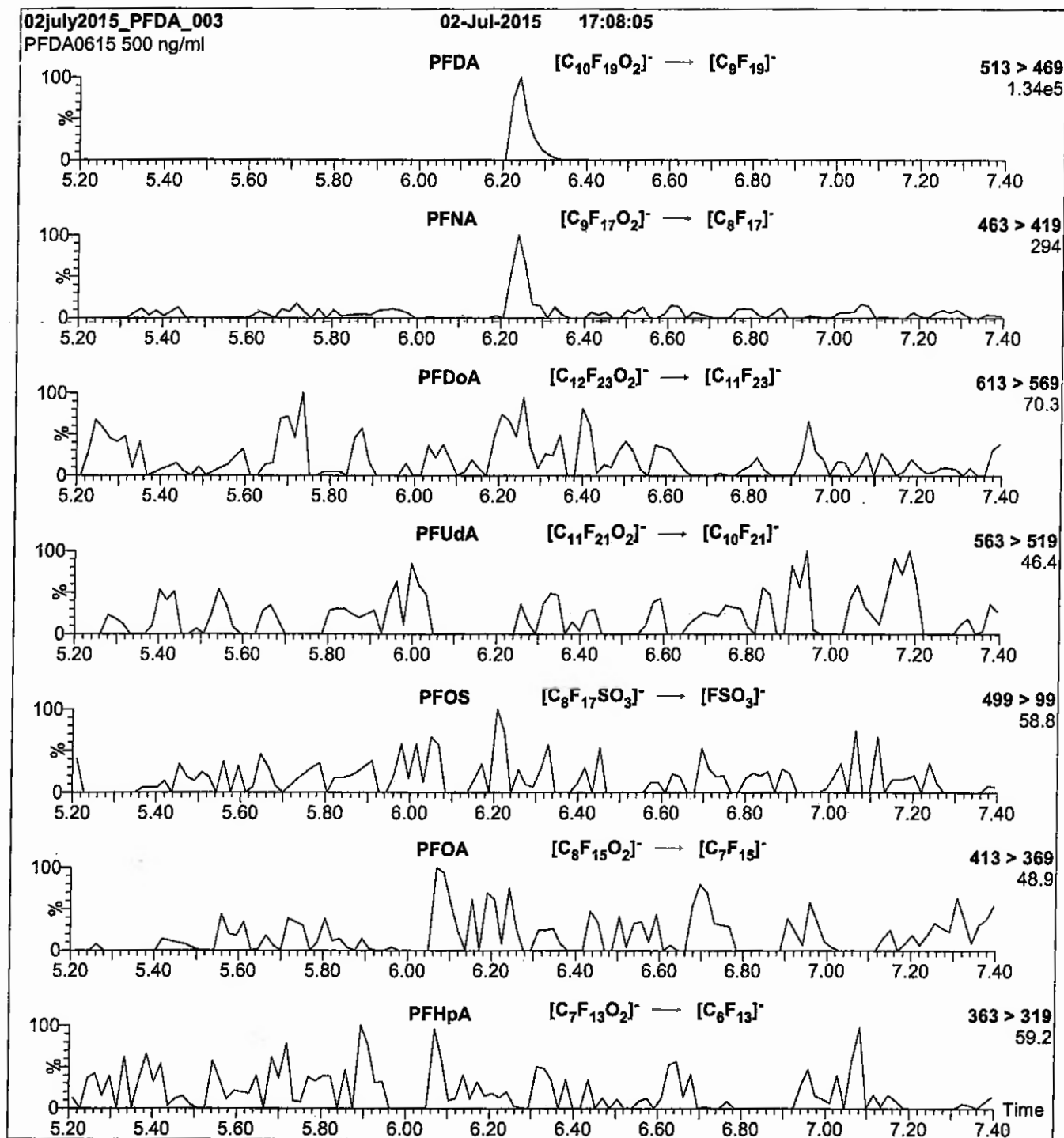
Flow: 300 μ l/min

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

INTENDED USE:

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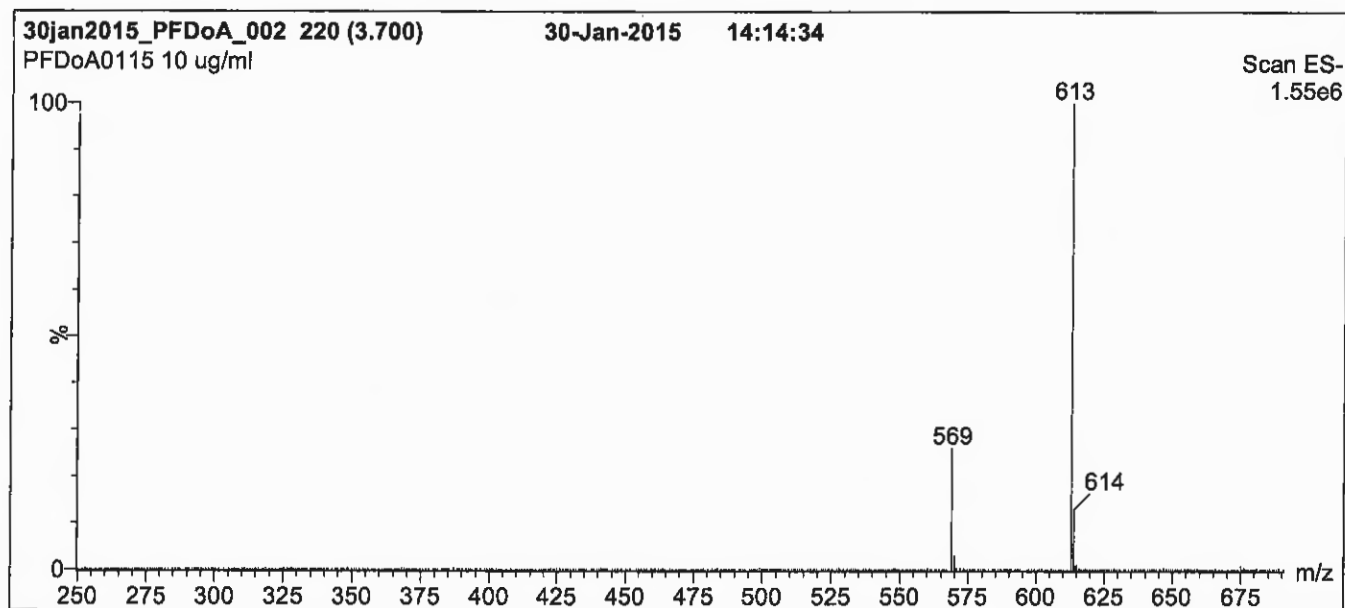
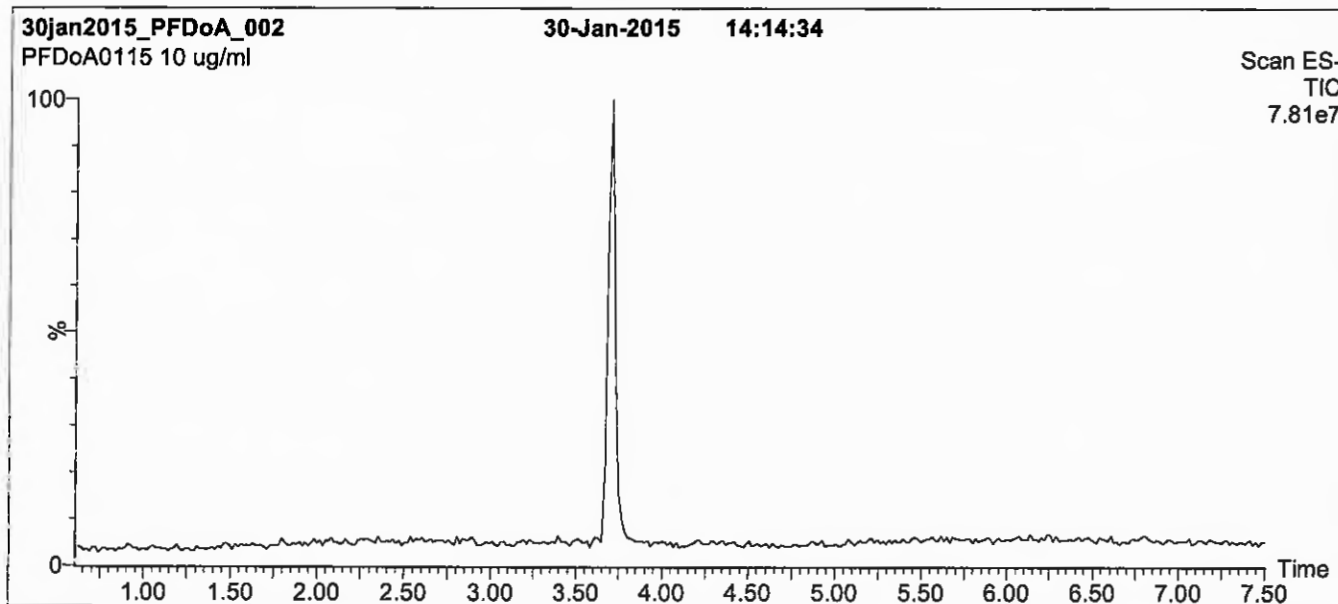
QUALITY MANAGEMENT:

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Figure 1: PFDoA; 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

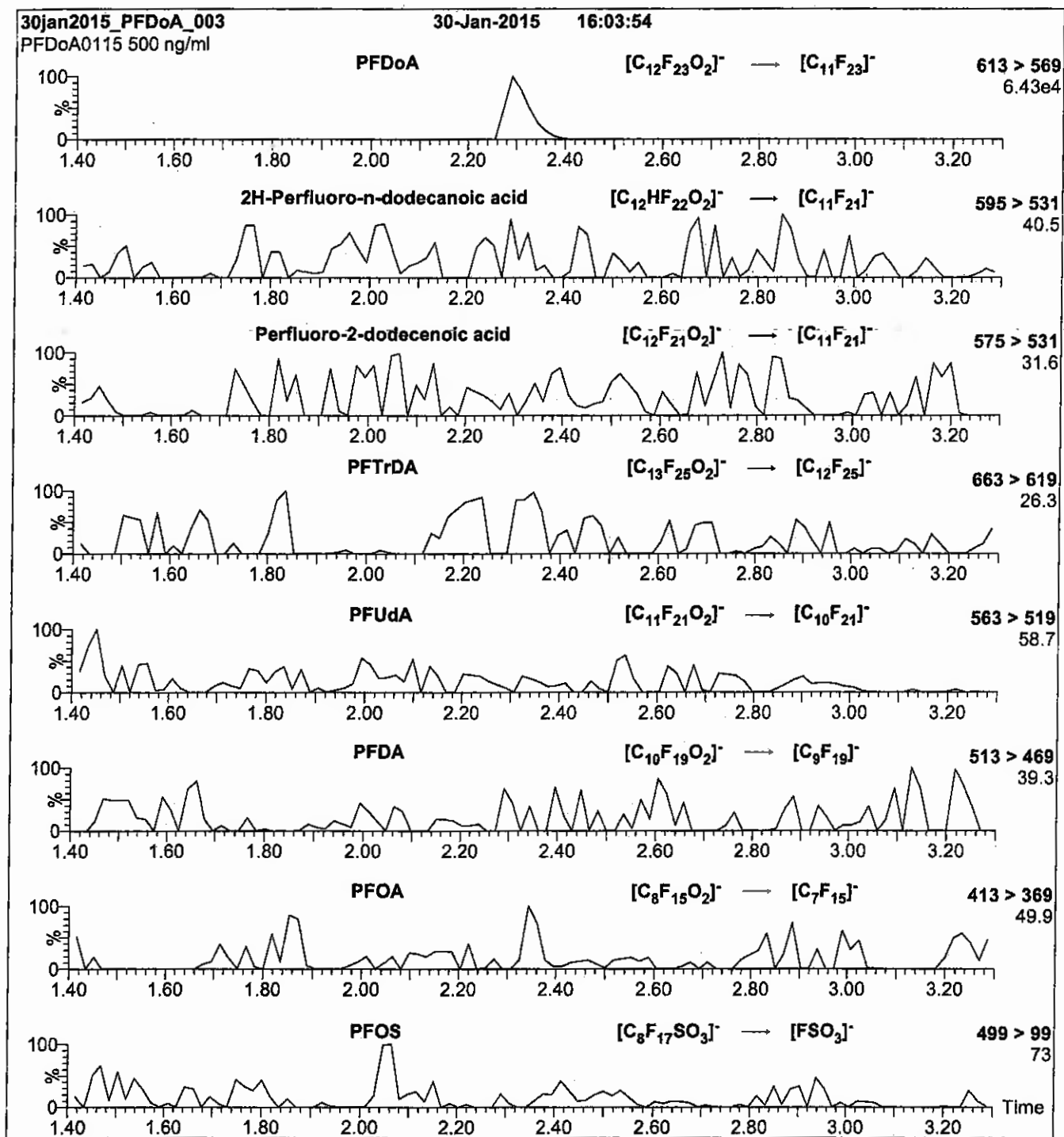
Flow: 300 μ l/min

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% H₂O
(both with 10 mM NH₄OAc buffer)

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 13

Flow: 300 μ l/min

Reagent

LCPFHpA_00005



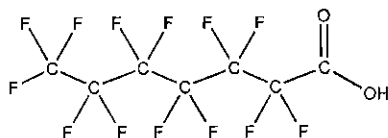
609639

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
COMPOUND: Perfluoro-n-heptanoic acid**LOT NUMBER:** PFHpA0116**STRUCTURE:****CAS #:** 375-85-9**MOLECULAR FORMULA:** C₇H₁₃O₂
CONCENTRATION: 50 ± 2.5 µg/ml**MOLECULAR WEIGHT:** 364.06
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

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EXPIRY DATE / PERIOD OF VALIDITY:

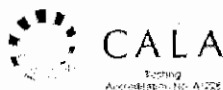
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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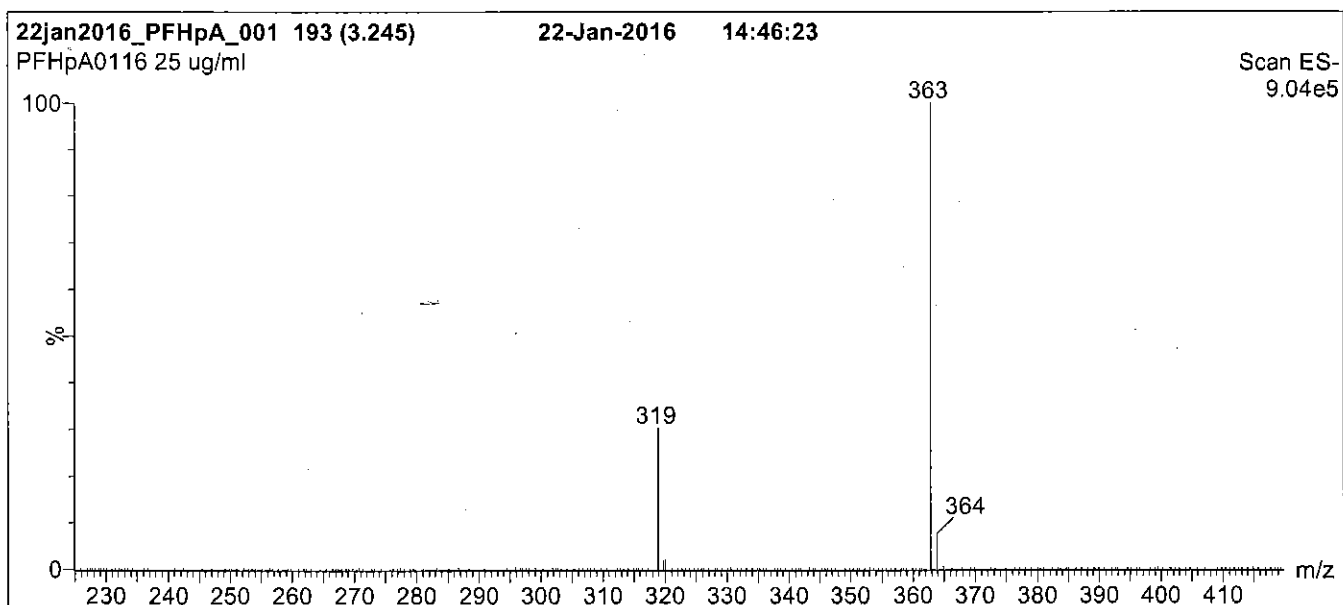
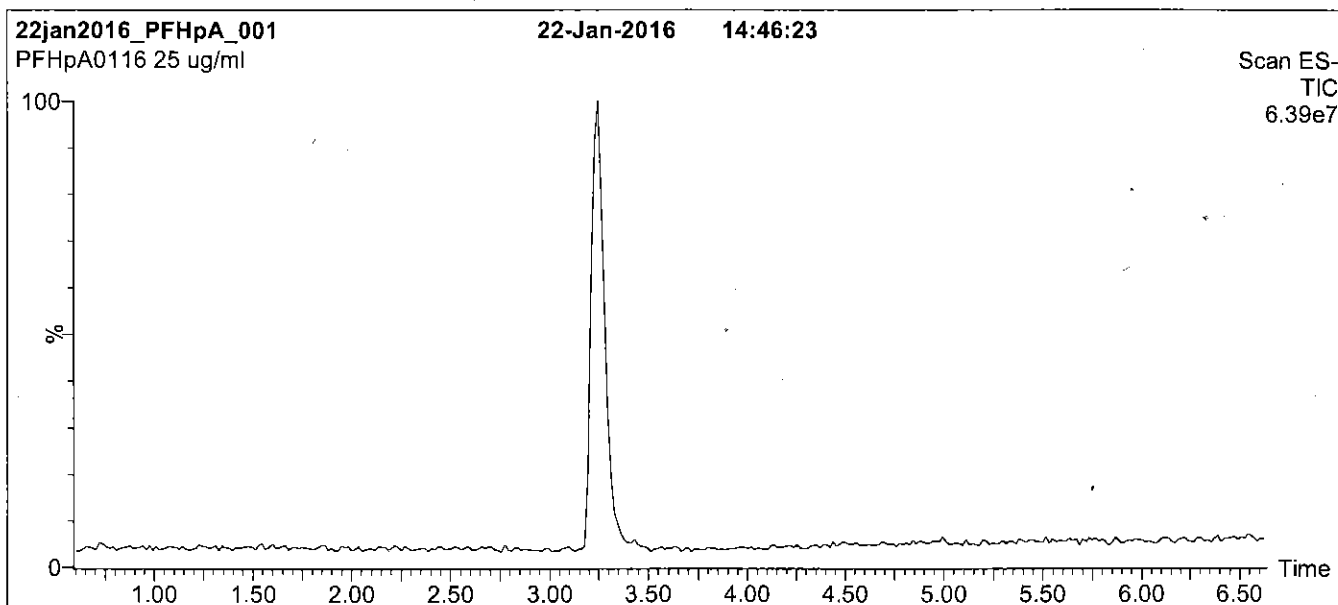
QUALITY MANAGEMENT:

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).



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: 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

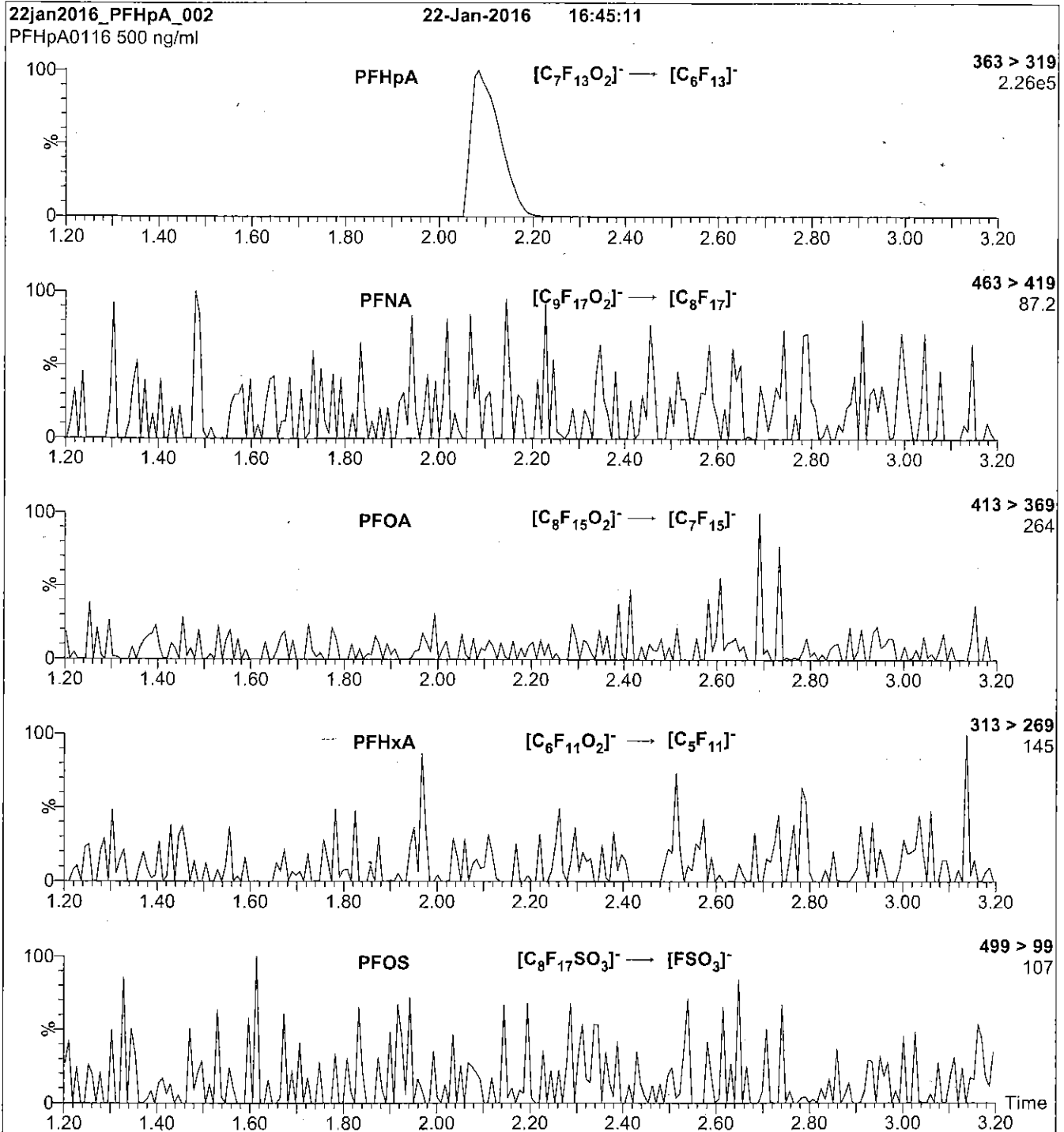
Flow: 300 μ l/min

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

LCPFHpA_00006

Scanned R: 8BC 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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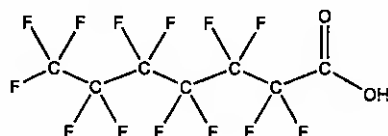
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHpA
COMPOUND: Perfluoro-n-heptanoic acid

LOT NUMBER: PFHpA0116

STRUCTURE:

CAS #: 375-85-9



MOLECULAR FORMULA: C₇HF₁₃O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 364.06
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.

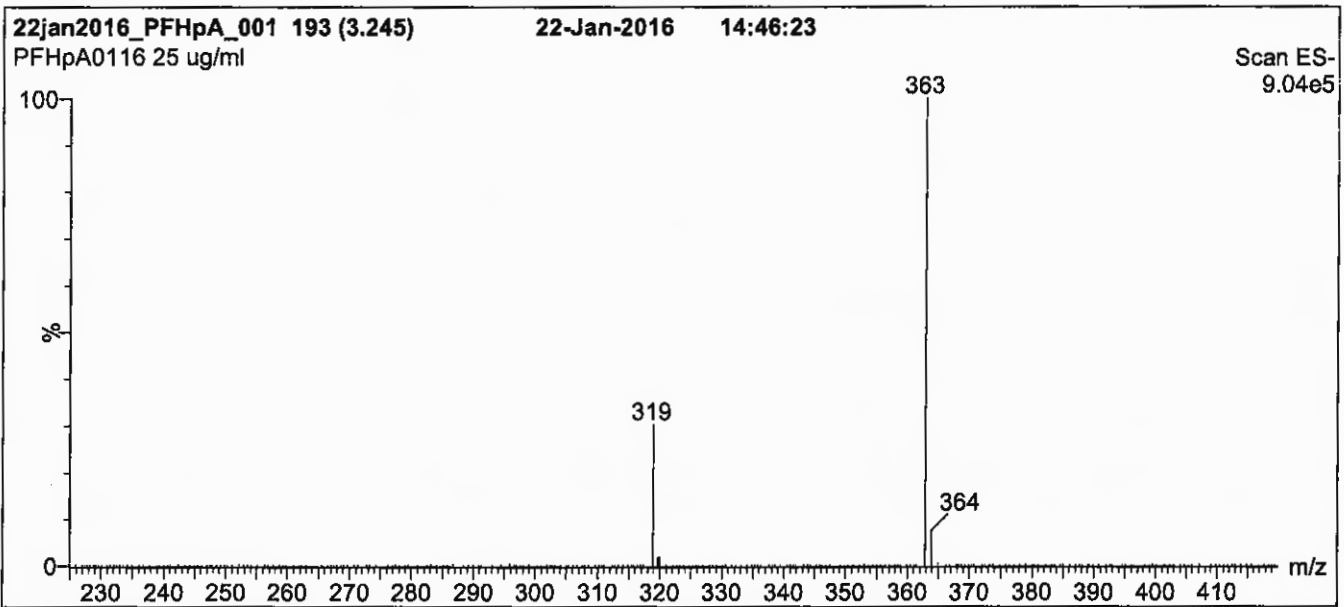
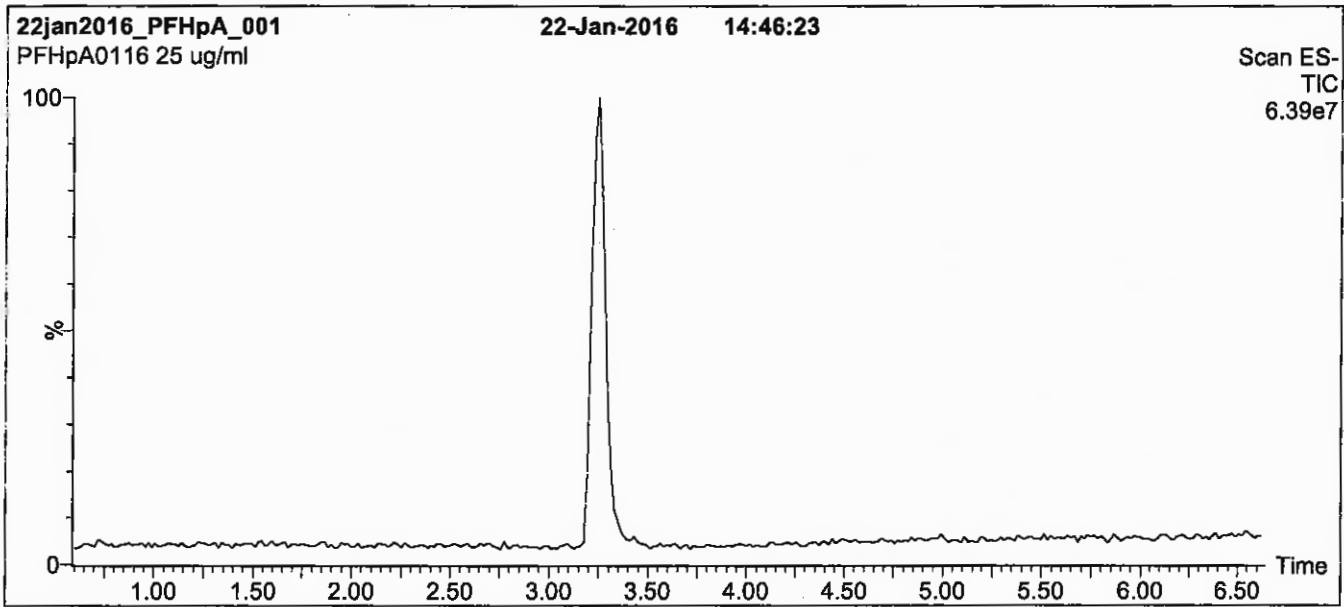
QUALITY MANAGEMENT:

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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

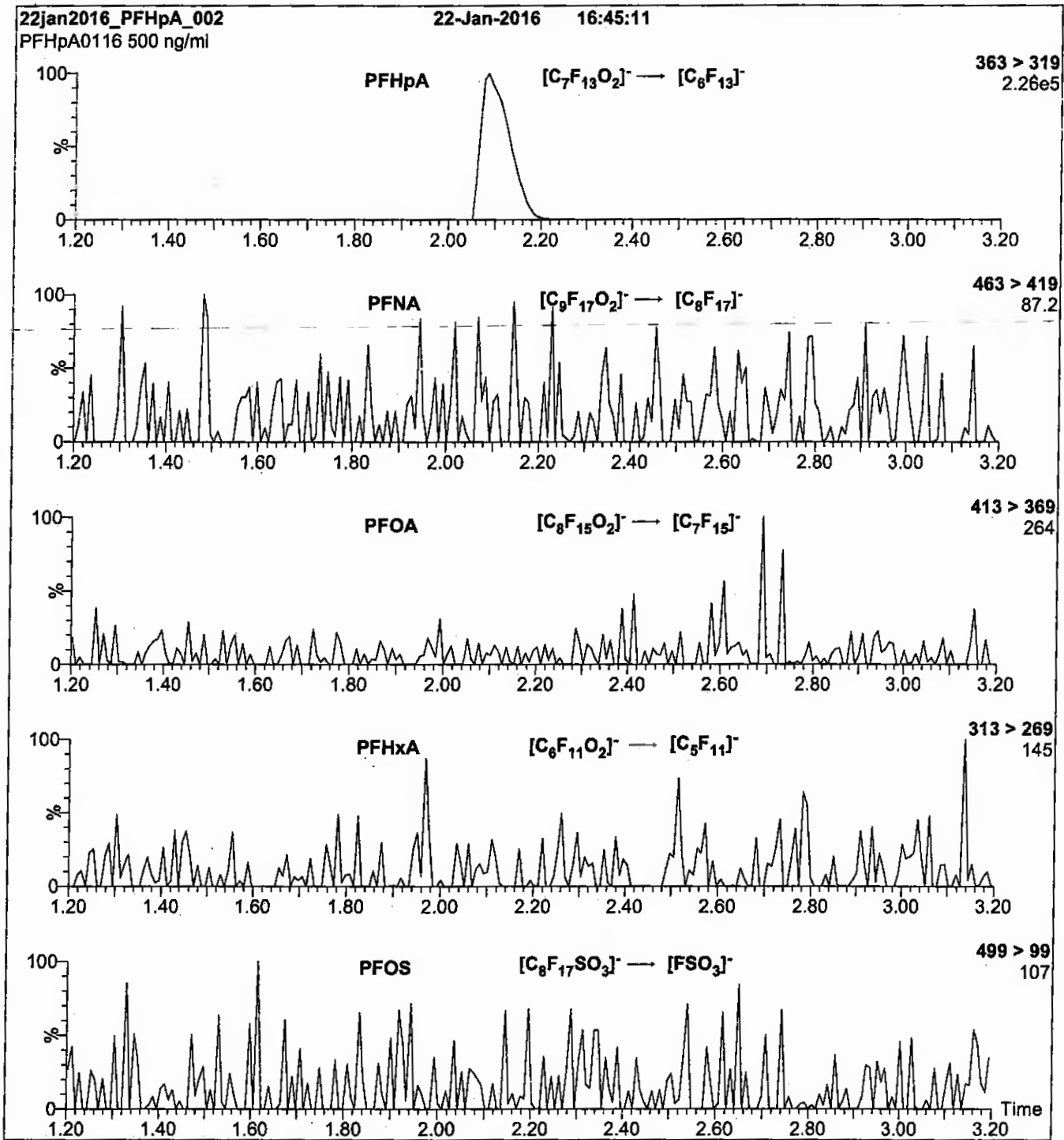
Flow: 300 μ l/min

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: 8BC 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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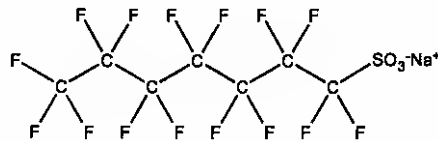
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFHpS
COMPOUND: Sodium perfluoro-1-heptanesulfonate

LOT NUMBER: LPFHpS1115

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: C₇F₁₅SO₃Na
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt)
47.6 ± 2.4 µg/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 (C₆F₁₃SO₃Na) and ~ 0.2% of L-PFOS (C₈F₁₇SO₃Na).

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:

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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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:

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.

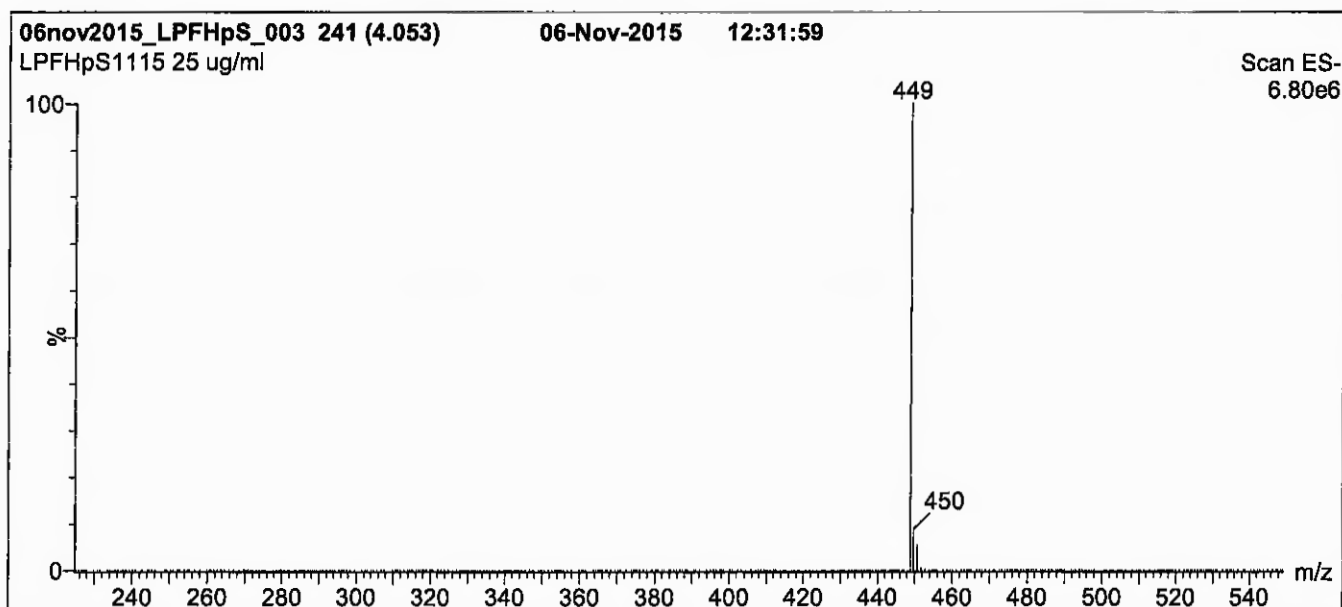
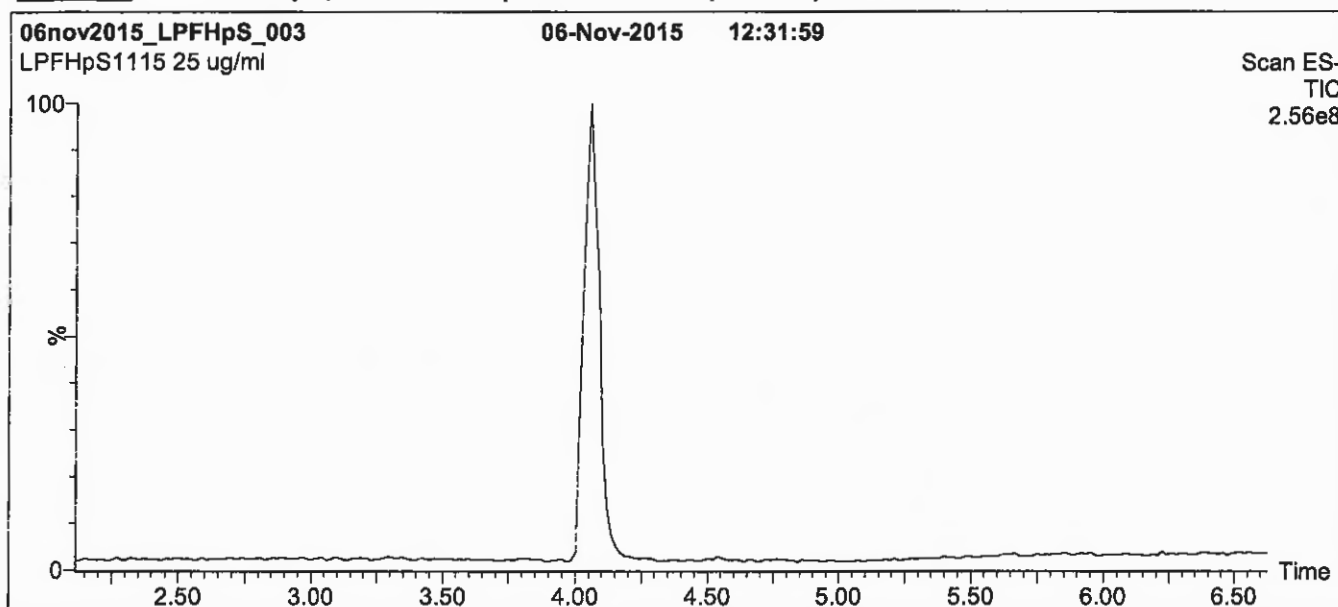
QUALITY MANAGEMENT:

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Figure 1: 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 RP_{1a}
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)

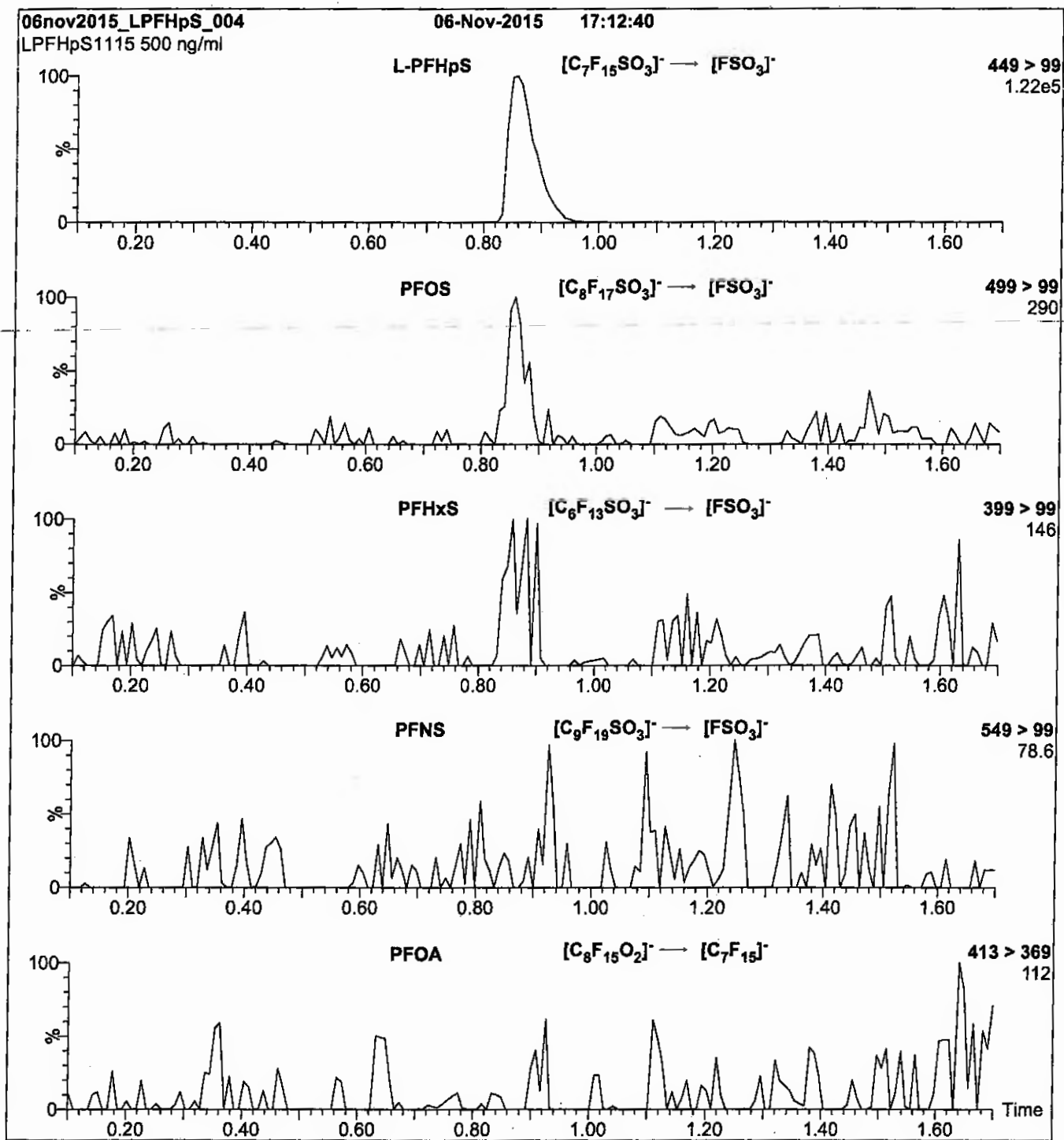
Capillary Voltage (kV) = 2.00

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% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
 Collision Energy (eV) = 35

Reagent

LCPFHxA_00004

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.

SYNTHESIS / CHARACTERIZATION:

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

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:

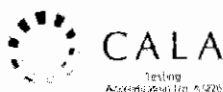
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

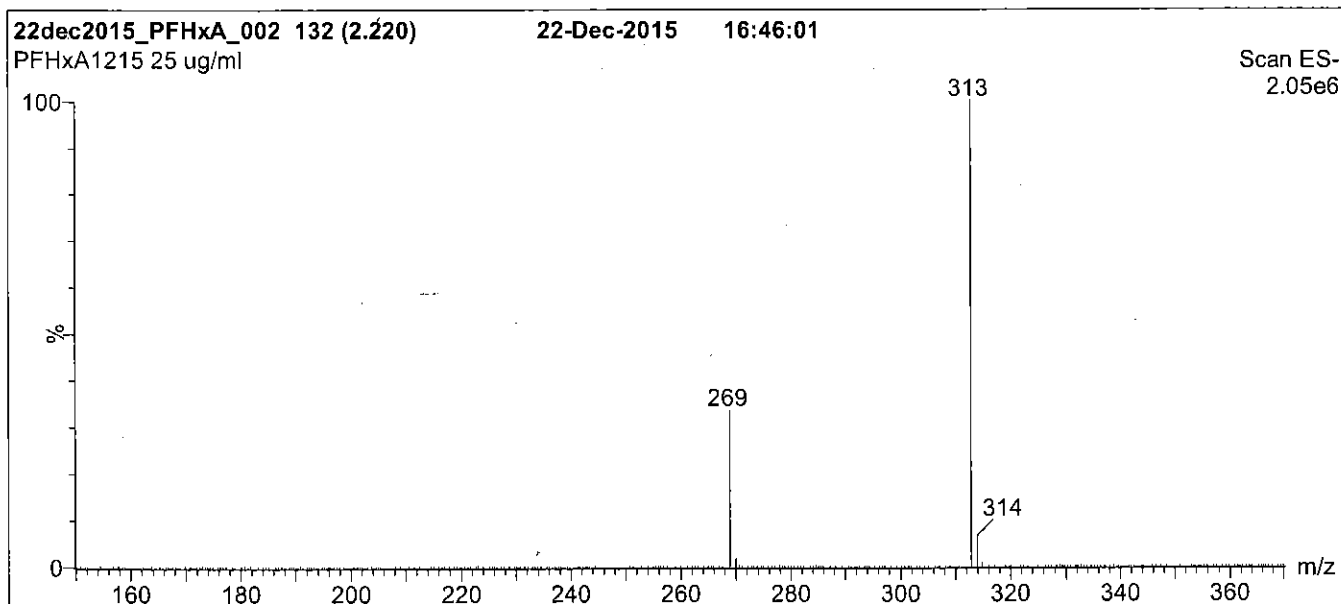
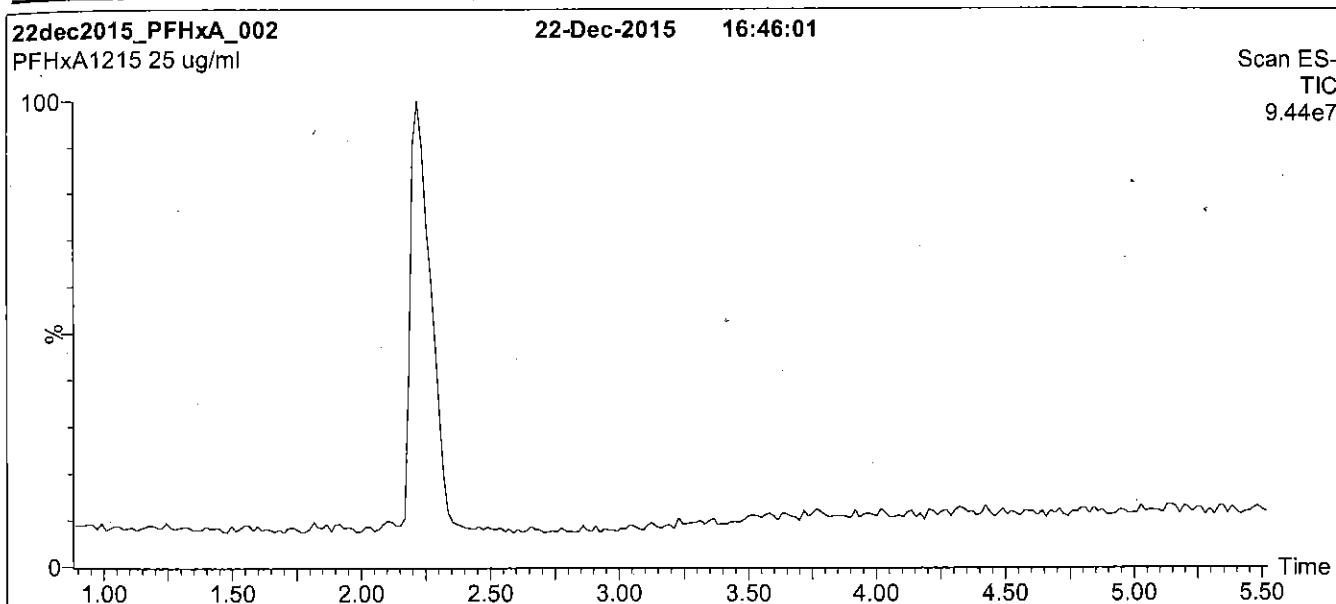
QUALITY MANAGEMENT:

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Figure 1: 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

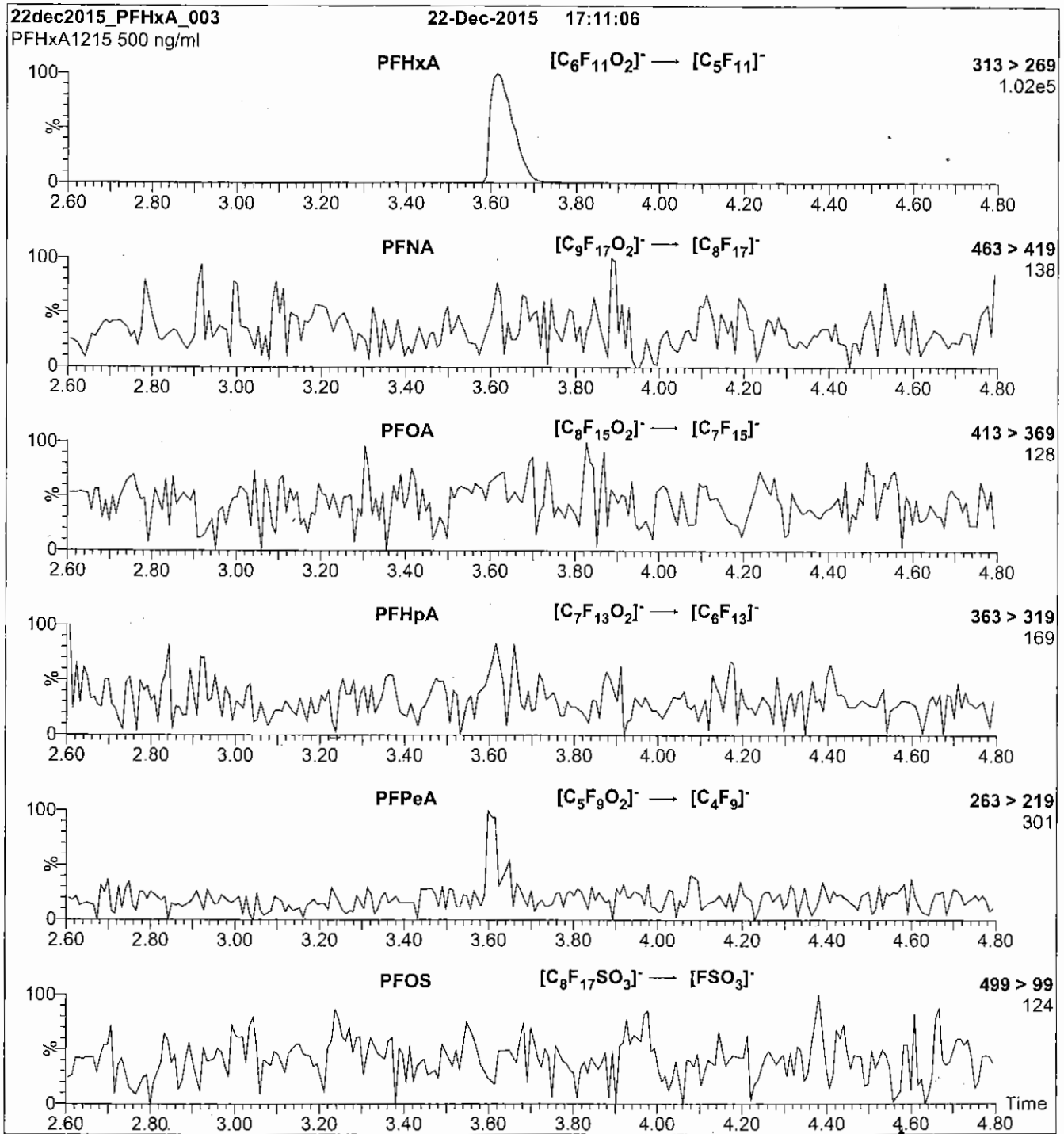
Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 2 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

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

LCPFHxA_00005

R: 832 9/13/16



730551
ID: LCPFHxA_00005
Exp: 12/22/20 Pprd: SBC
PF-n-hexanoic acid



730552
ID: LCPFHxA_00006
Exp: 12/22/20 Pprd: SBC
PF-n-hexanoic acid



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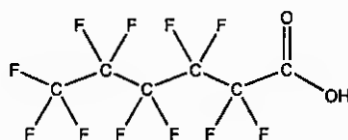
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHxA
COMPOUND: Perfluoro-n-hexanoic acid

LOT NUMBER: PFHxA1215

STRUCTURE:

CAS #: 307-24-4



MOLECULAR FORMULA: C₆H₁₁F₁₁O₂
CONCENTRATION: 50 ± 2.5 µg/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

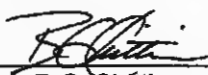
DOCUMENTATION/ DATA ATTACHED:

- 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:

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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.

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:

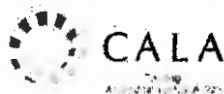
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

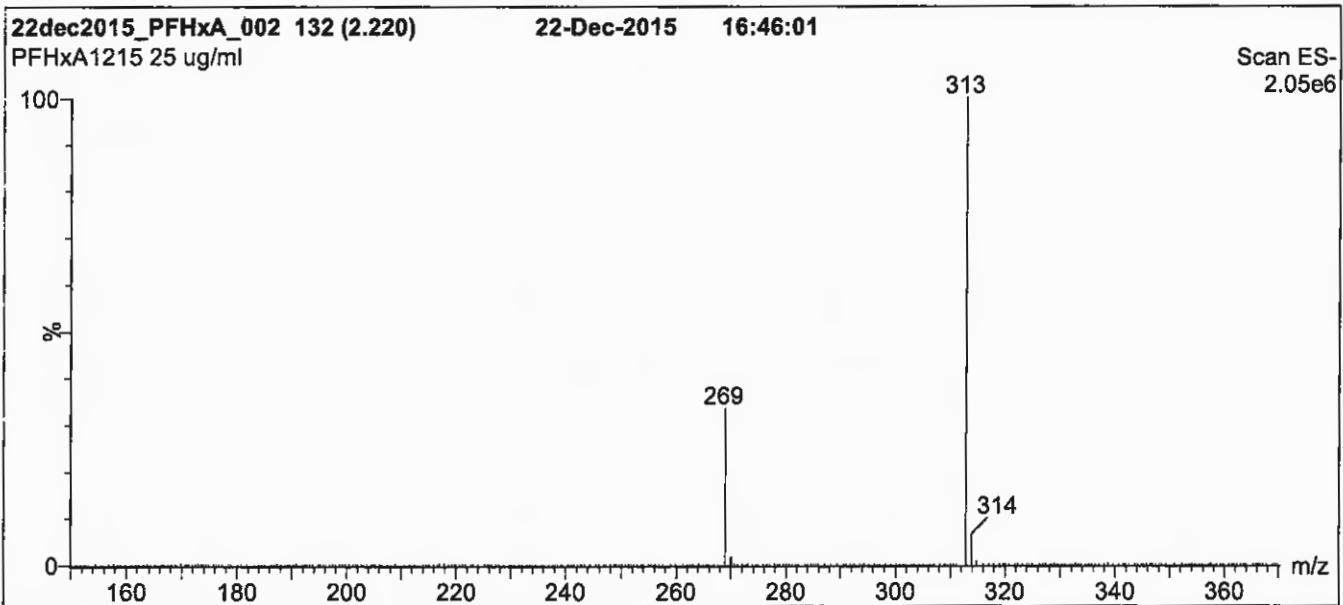
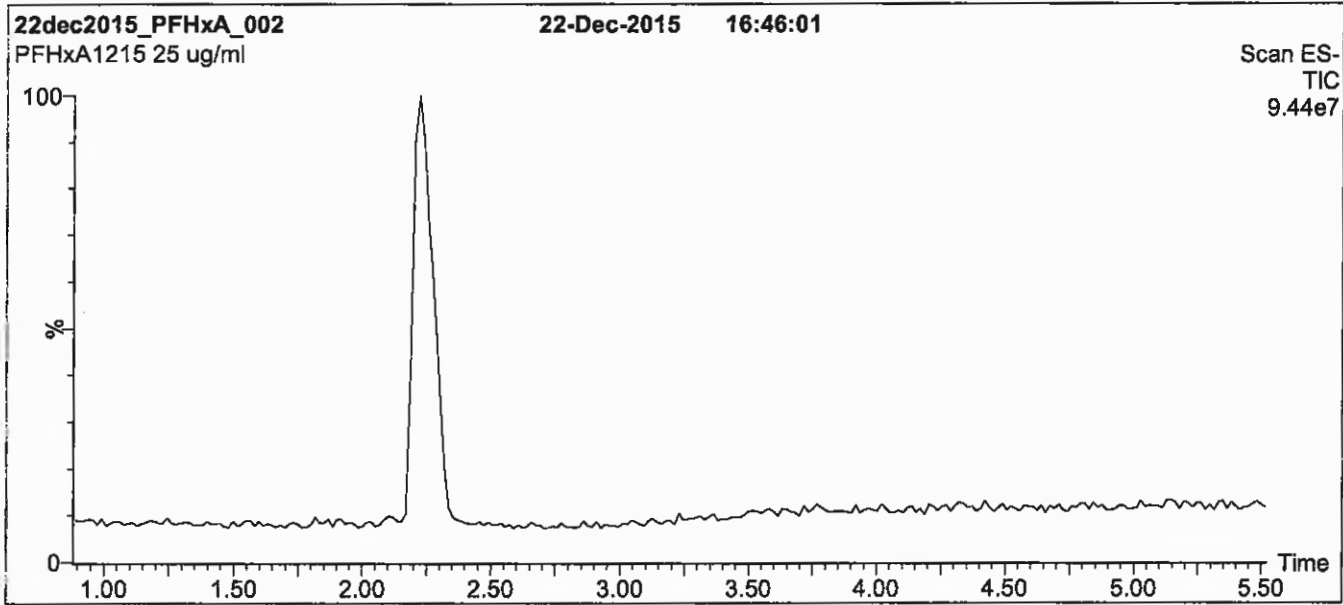
QUALITY MANAGEMENT:

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: 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

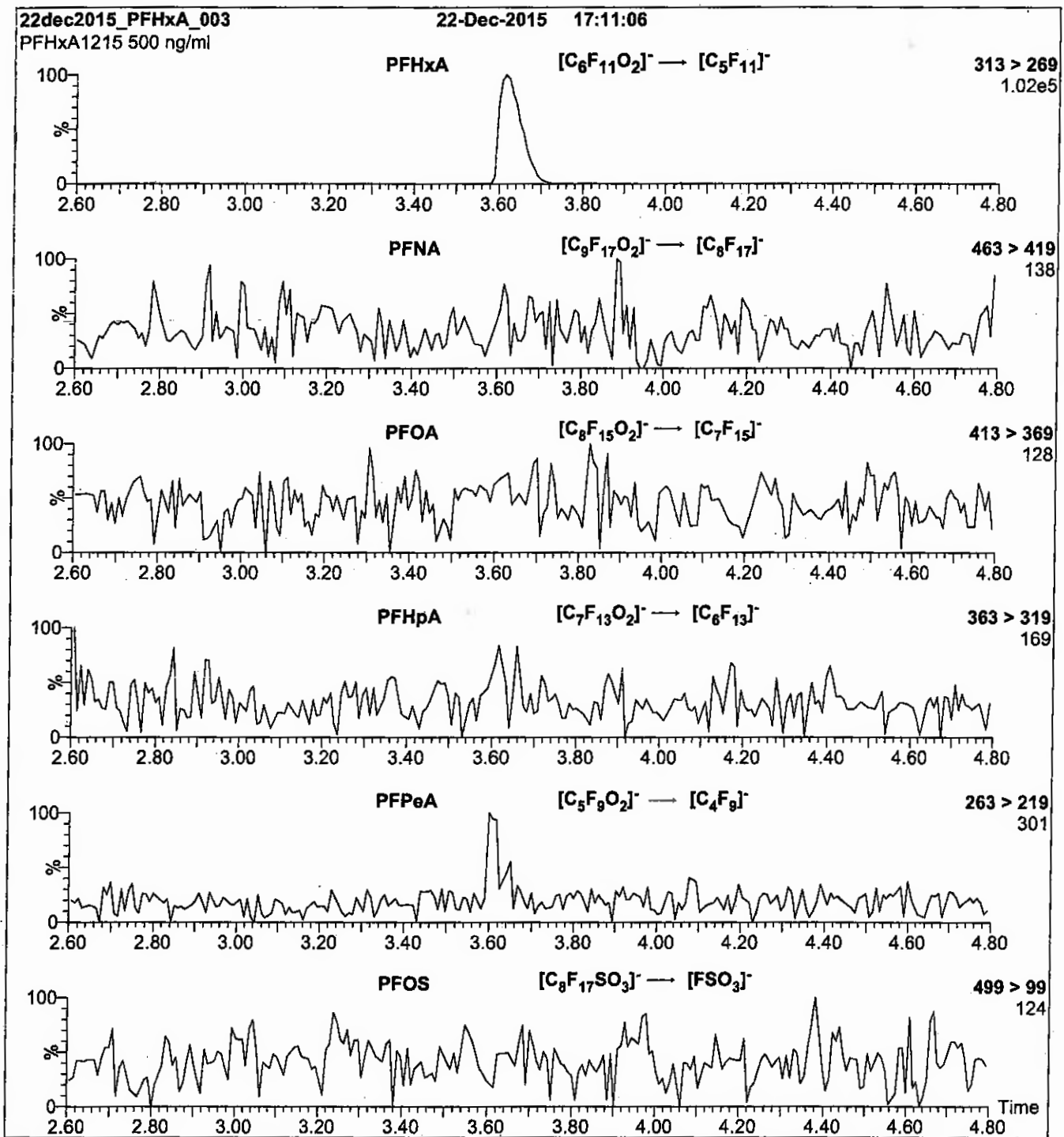
Flow: 300 μ l/min

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

R: SBC 9/13/16

Scanned 10/14/16



730630
ID: LCPFHxDA_00006
Exp: 05/25/21 Pppt: SBC
PFHxDA stock 50ug/mL



730631
ID: LCPFHxDA_00007
Exp: 05/25/21 Pppt: SBC
PFHxDA stock 50ug/mL

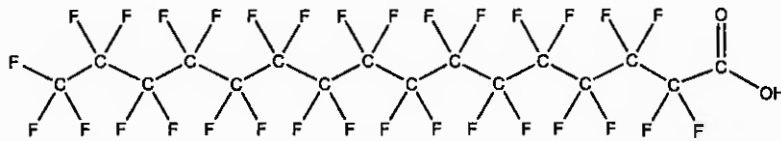


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHxDA **LOT NUMBER:** PFHxDA0516
COMPOUND: Perfluoro-n-hexadecanoic acid

STRUCTURE: **CAS #:** 67905-19-5



MOLECULAR FORMULA: C₁₆HF₃₁O₂ **MOLECULAR WEIGHT:** 814.13
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/25/2016
EXPIRY DATE: (mm/dd/yyyy) 05/25/2021
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 ~ 0.4% of PFODA.

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:

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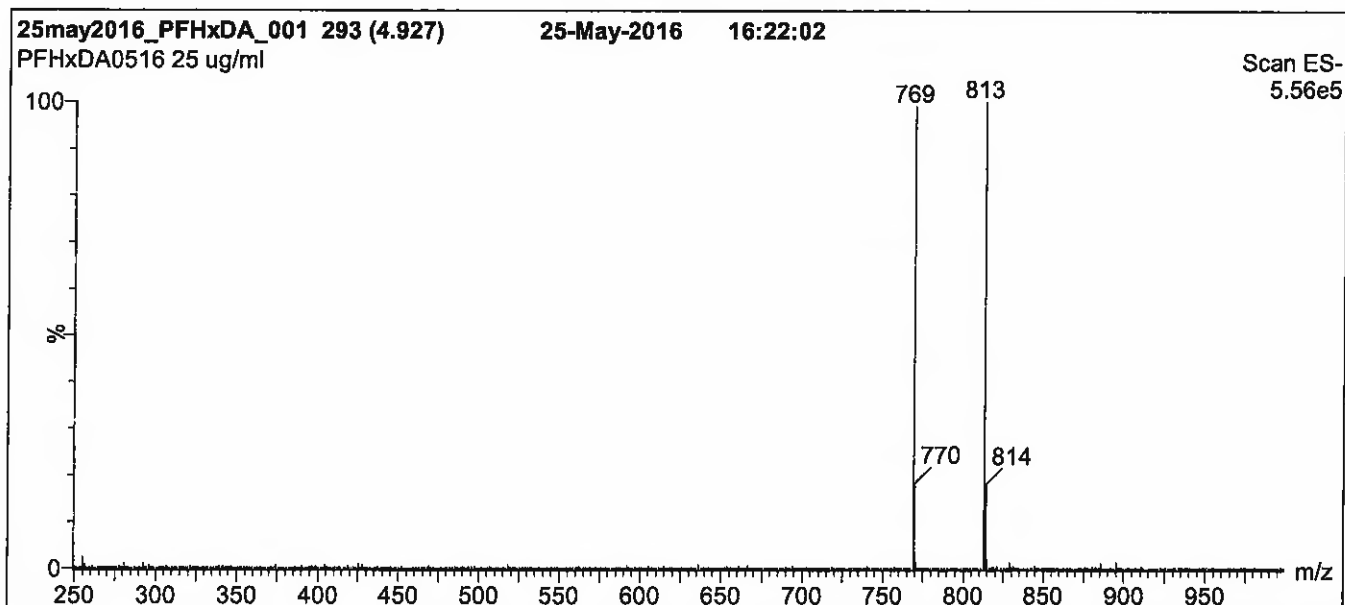
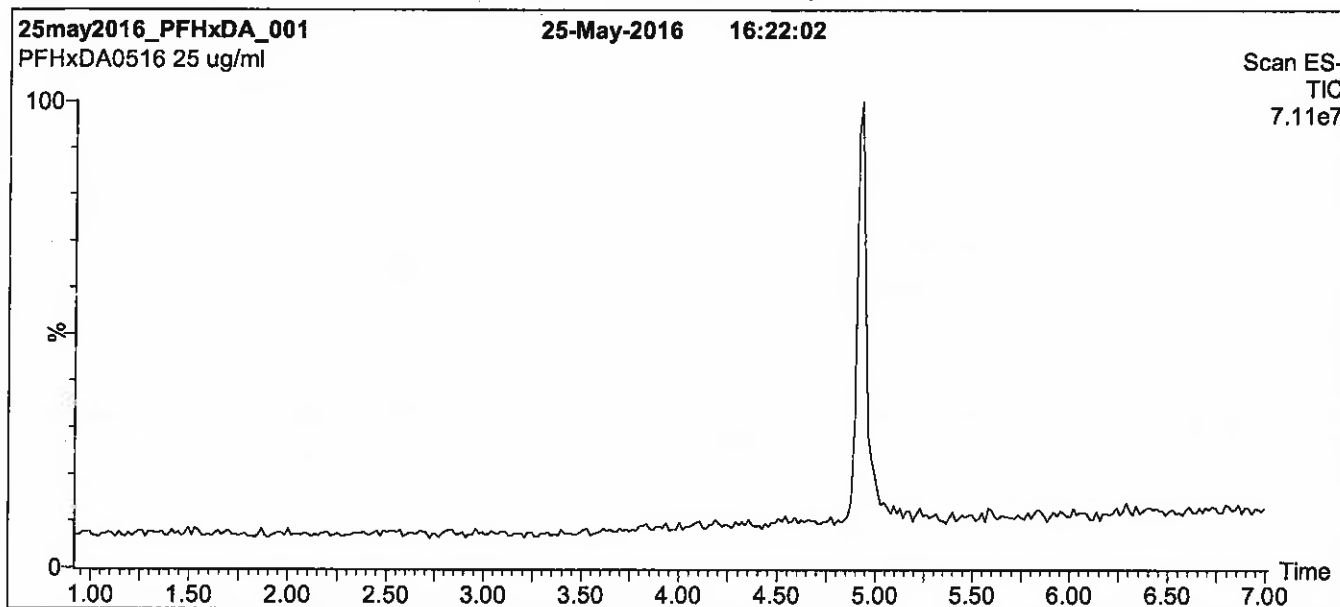
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Figure 1: PFHxDA; LC/MS Data (TIC and Mass Spectrum)



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

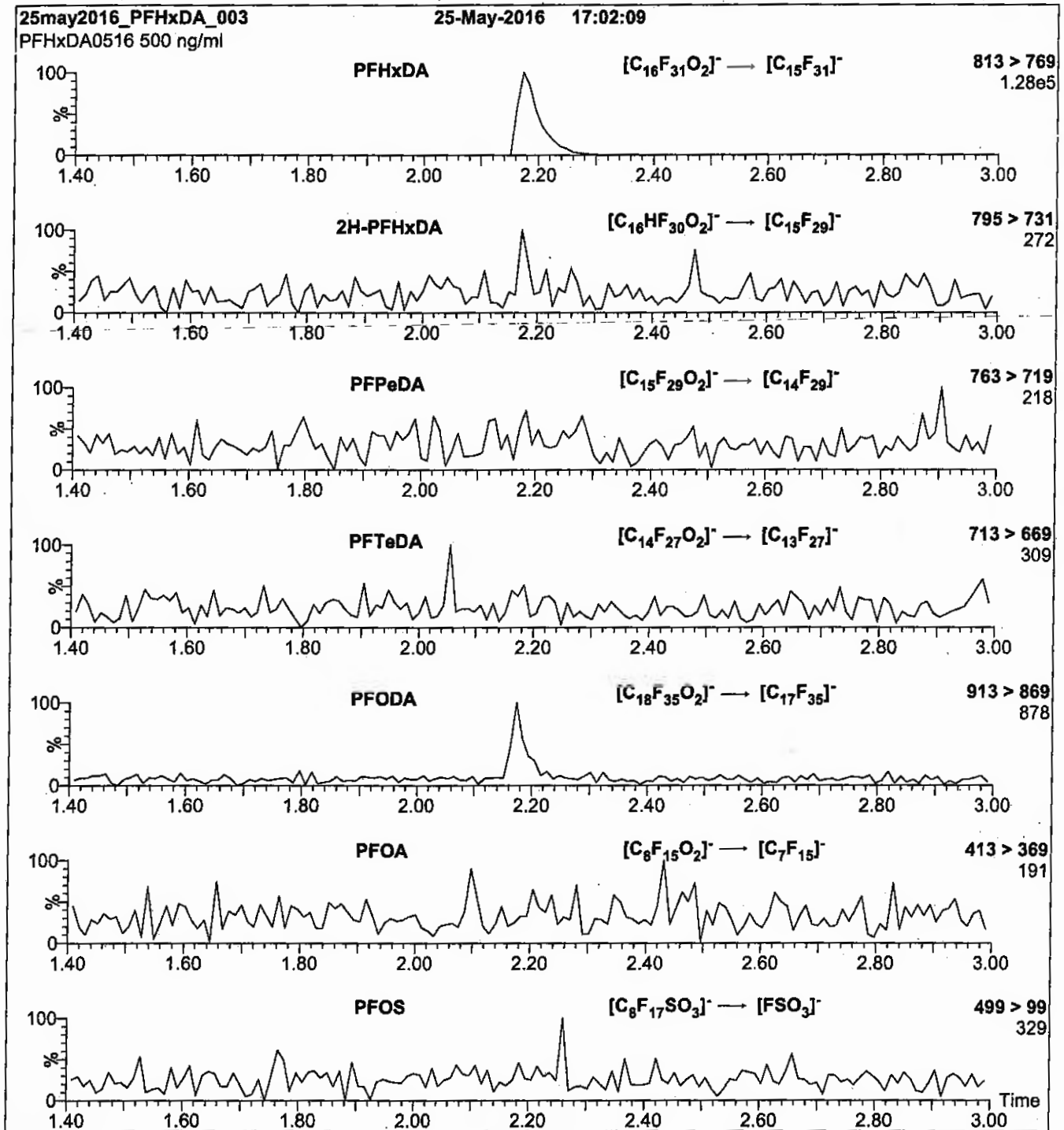
Flow: 300 μ l/min

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 Prpd: SBC
Potassium Perfluorohexane



730514
ID: LCPFHxS-br_00003
Exp: 07/03/20 Prpd: SBC
Potassium Perfluorohexane



WELLINGTON
LABORATORIES

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

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.

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Table A: br-PFHxSK; Isomeric Components and Percent Composition (by ¹⁹F-NMR)*

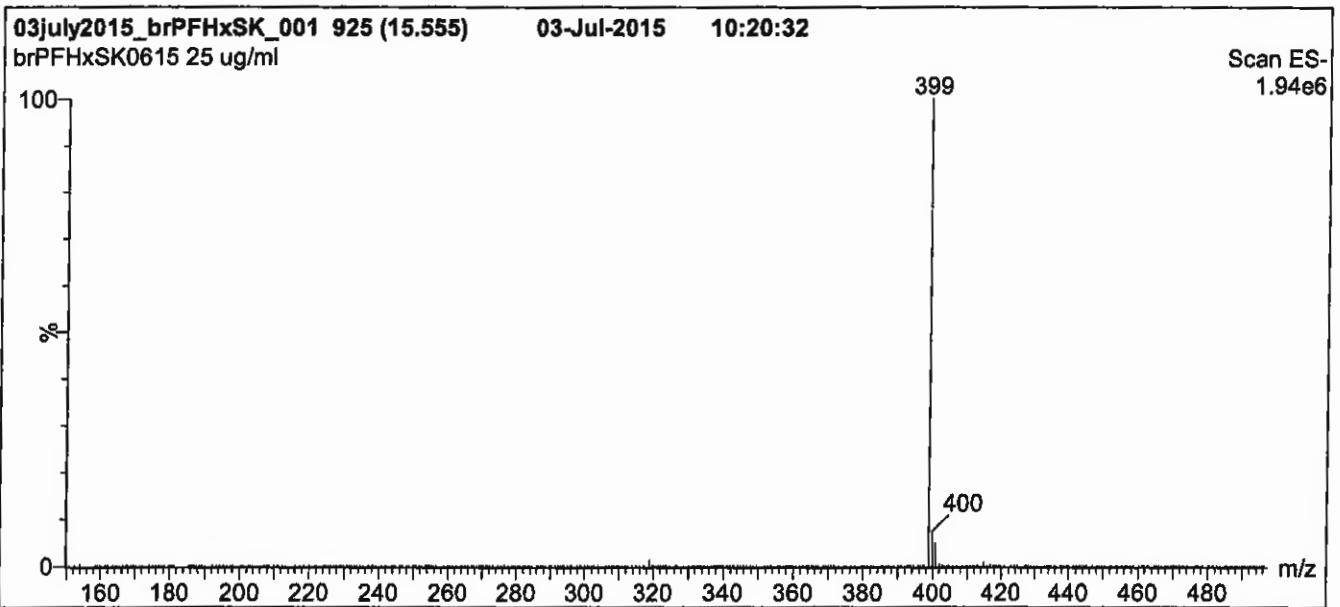
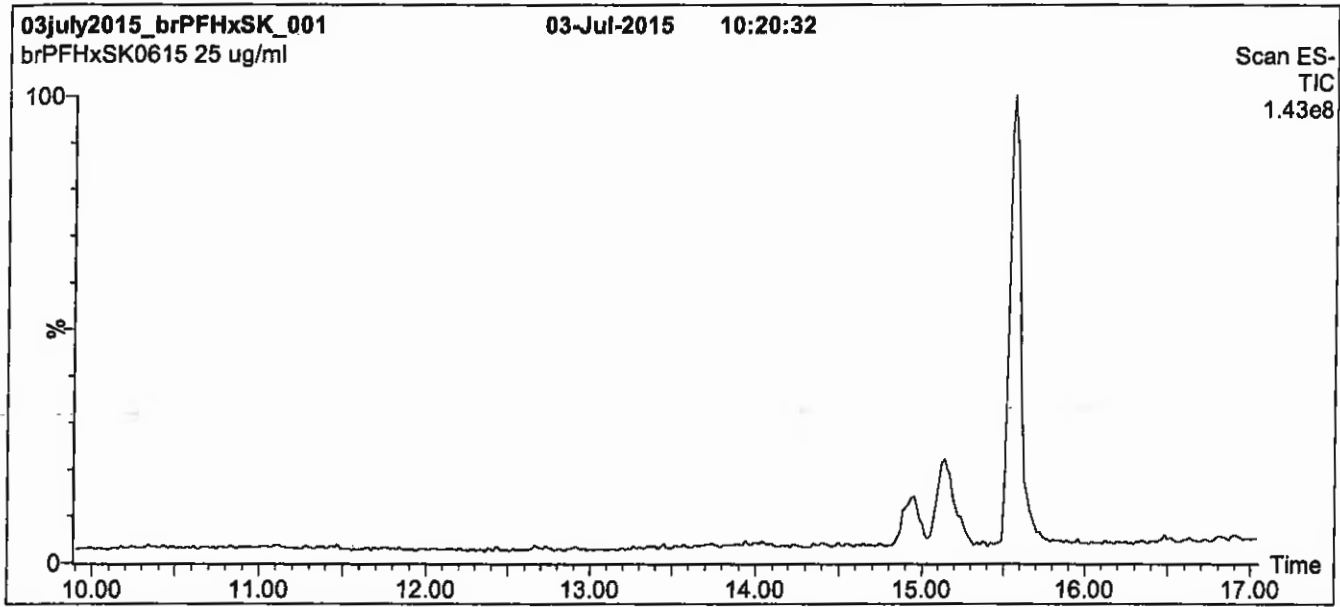
Isomer	Name	Structure	Percent Composition by ¹⁹ F-NMR
1	Potassium perfluoro-1-hexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$\begin{array}{c} \text{CF}_3 \\ \\ \text{CF}_3\text{CCF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	0.2
7	Other Unidentified Isomers		0.5

* Percent of total perfluorohexanesulfonate isomers only.
 ** Systematic Name: Potassium perfluorohexane-2-sulfonate.

Certified By: 
 B.G. Chittim

Date: 07/15/2015
 (mm/dd/yyyy)

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

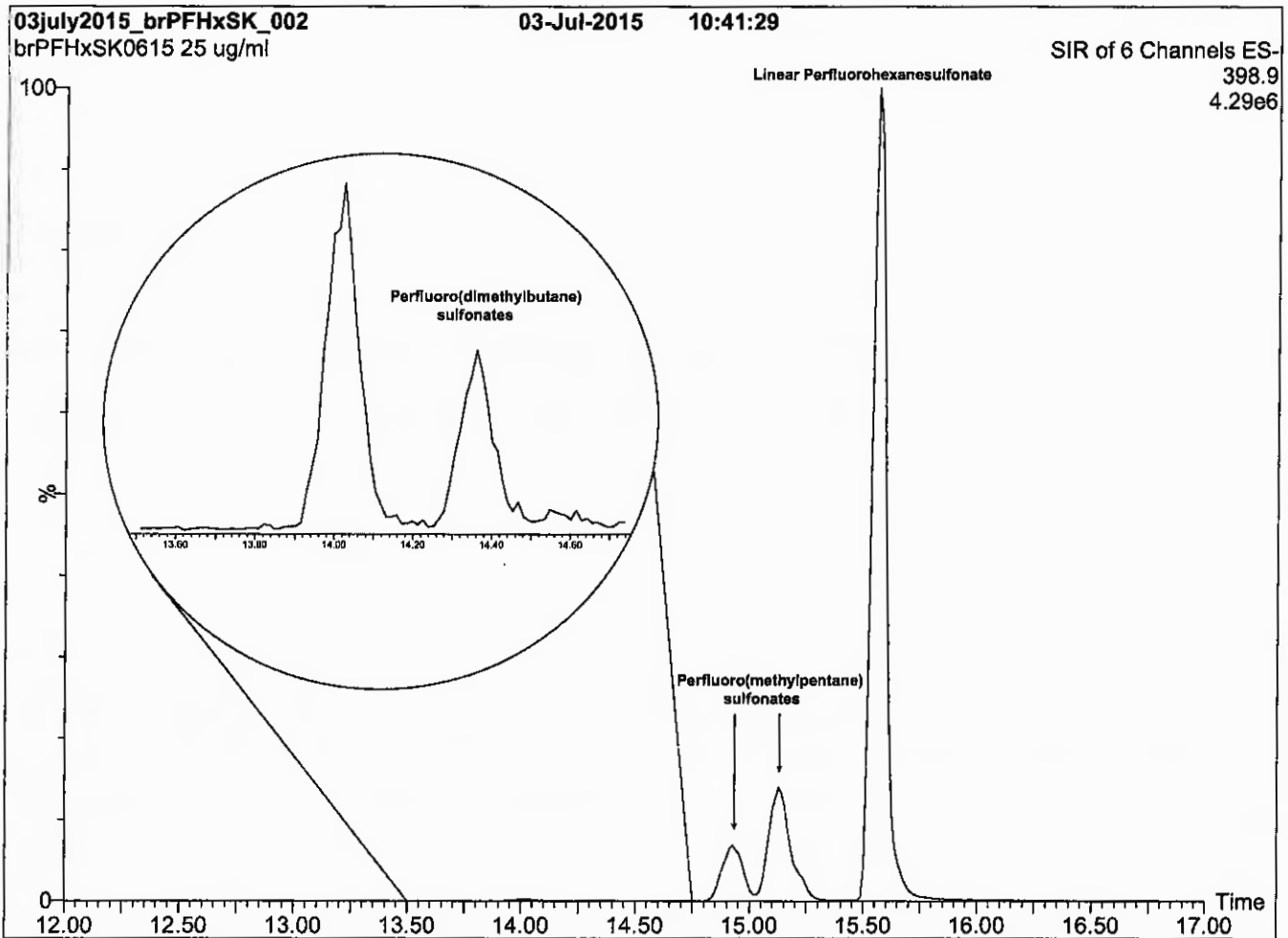
Flow: 300 μ l/min

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

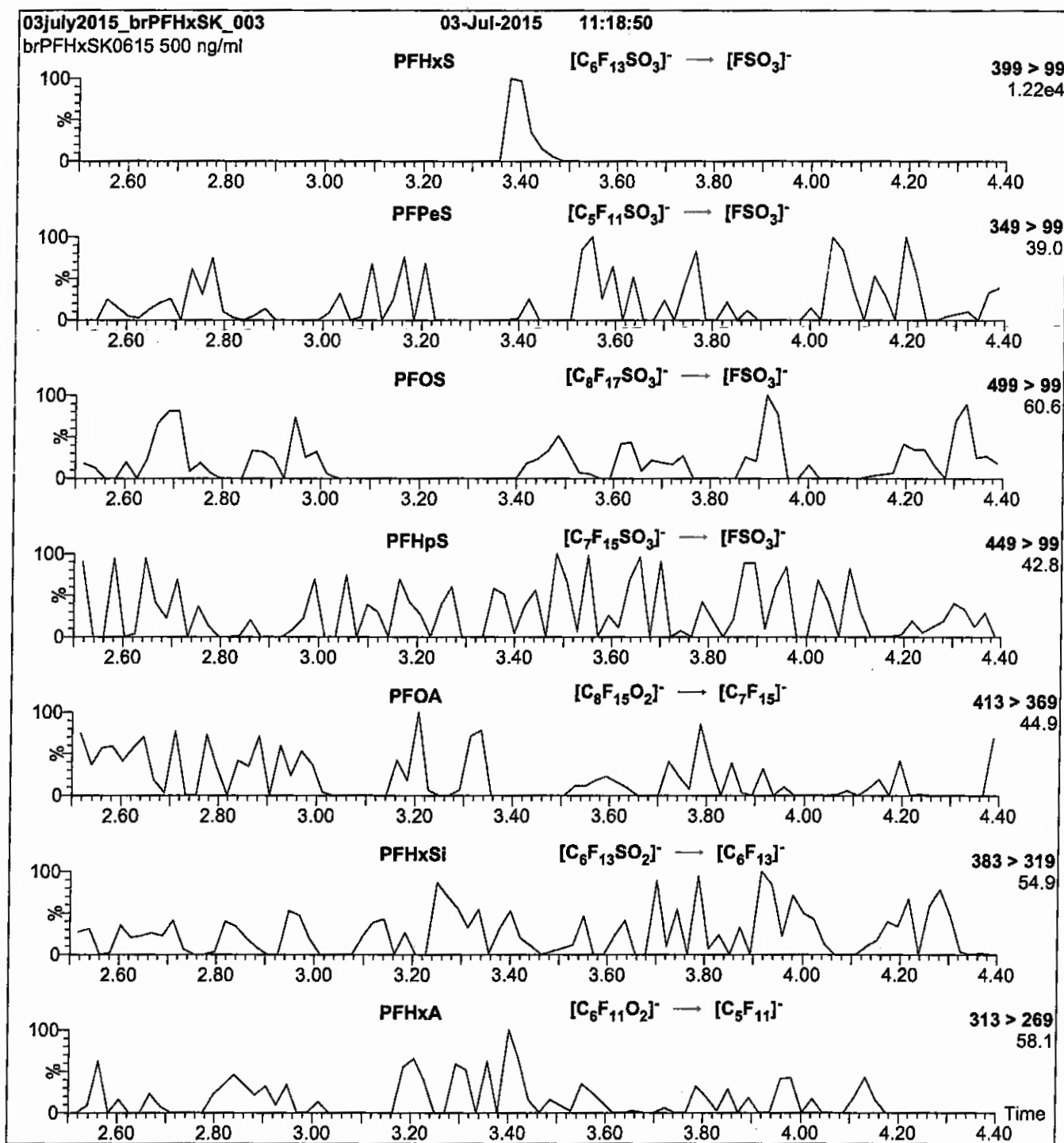
Flow: 300 μ l/min

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% 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

LCPFNA_00005



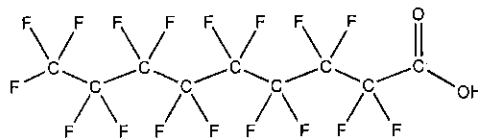
R: 4/7/16 CBW

609703

ID: LCPFNA_00005

Exp: 10/23/20 Prod: CBW

PF-n-nonanoic acid

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:** PFNA
COMPOUND: Perfluoro-n-nonanoic acid**LOT NUMBER:** PFNA1015**STRUCTURE:****CAS #:** 375-95-1**MOLECULAR FORMULA:** C₉H_{F₁₇}O₂
CONCENTRATION: 50 ± 2.5 µg/ml**MOLECULAR WEIGHT:** 464.08
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

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LIMITED WARRANTY:

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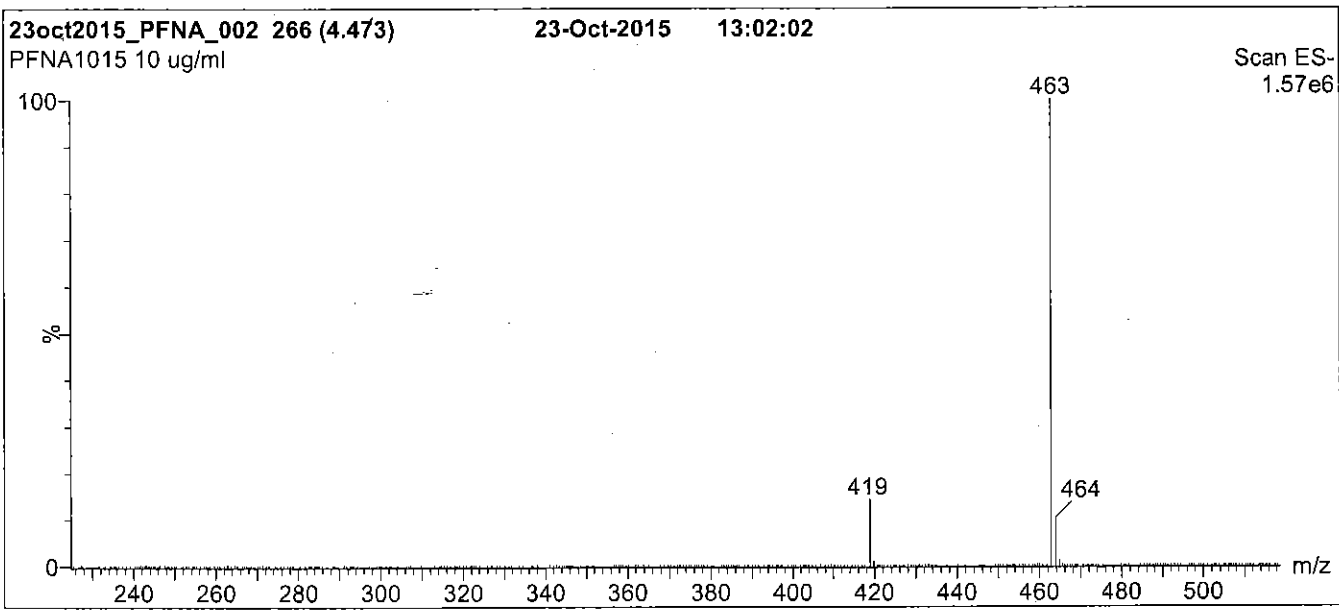
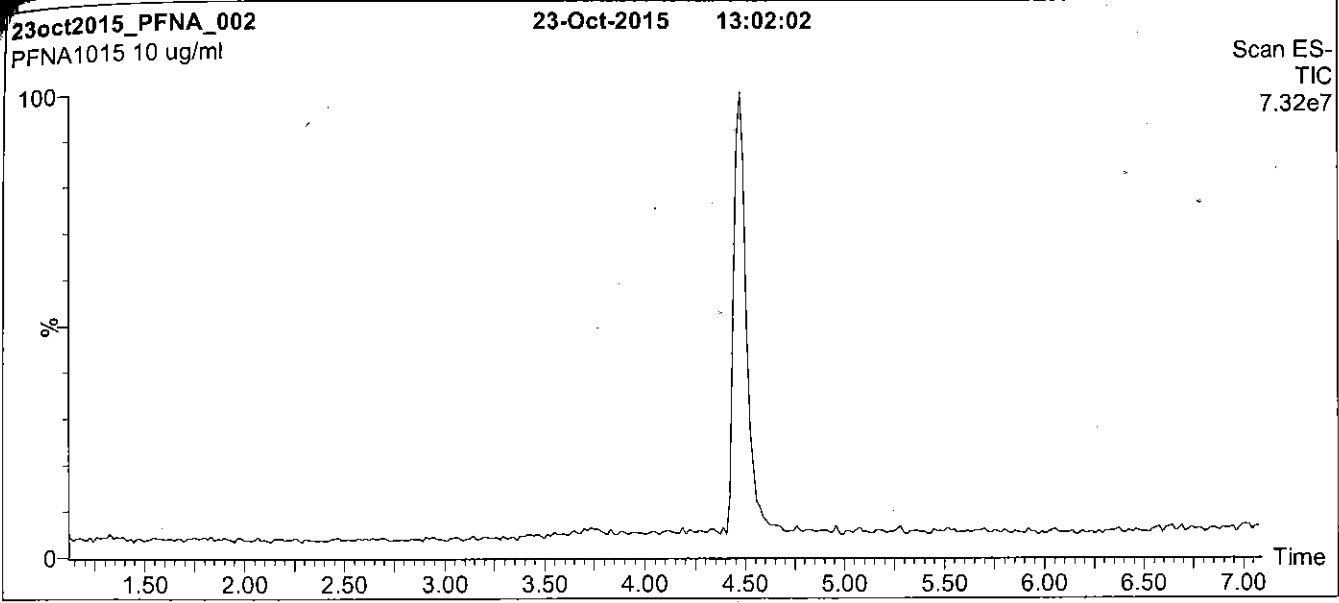
QUALITY MANAGEMENT:

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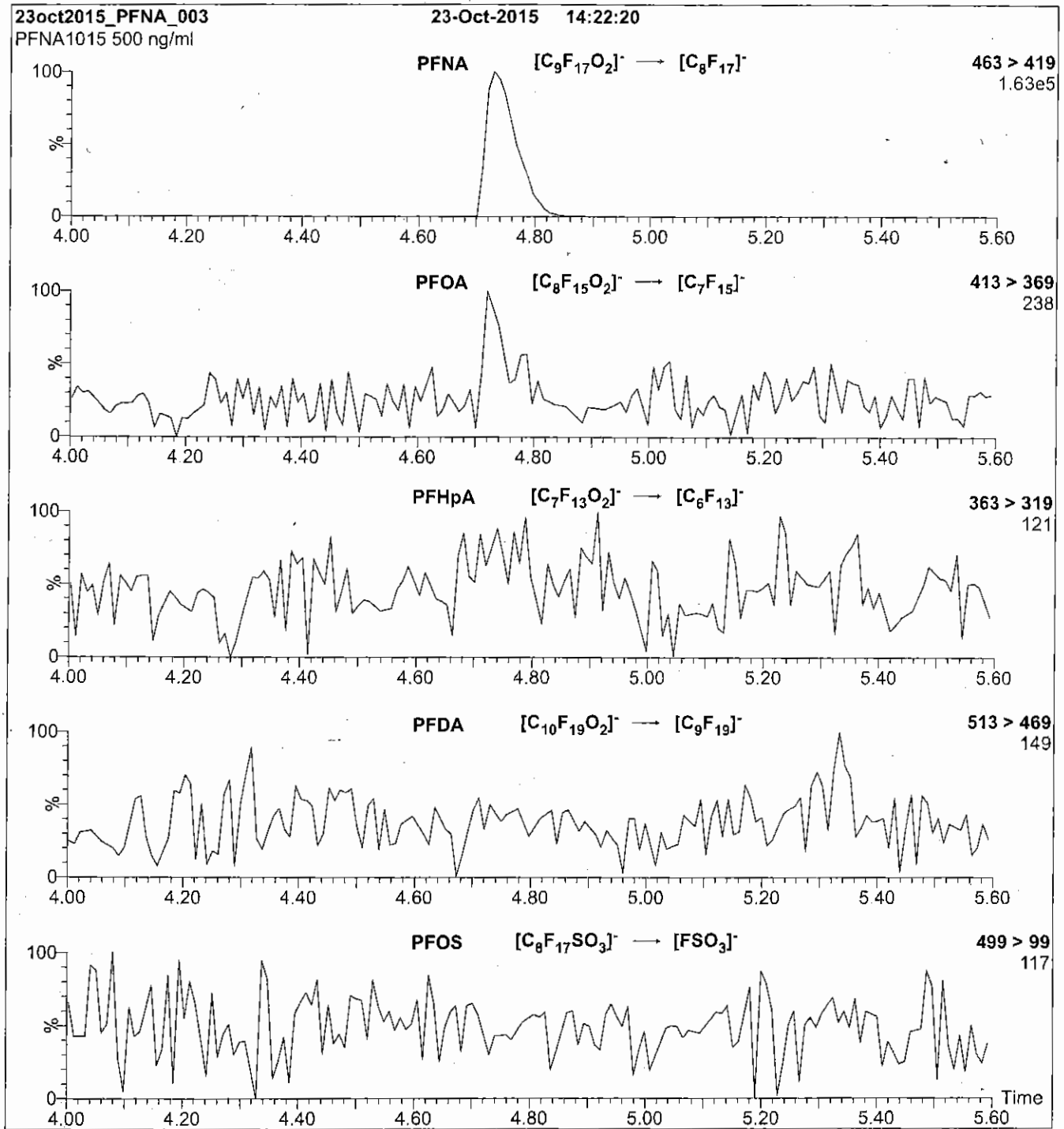
Figure 1: PFNA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC:	Waters Acquity Ultra Performance LC
MS:	Micromass Quattro <i>micro</i> API MS
Chromatographic Conditions	
Column:	Acquity UPLC BEH Shield RP ₁₈ 1.7 μ m, 2.1 x 100 mm
Mobile phase:	Gradient Start: 50% (80:20 MeOH:ACN) / 50% H ₂ O (both with 10 mM NH ₄ OAc 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

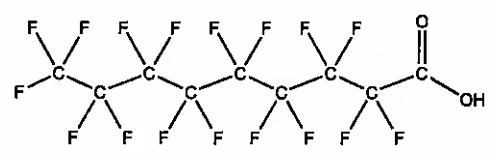
COMPOUND:

Perfluoro-n-nonanoic acid

STRUCTURE:

CAS #:

375-95-1



MOLECULAR FORMULA:

C₉H_F₁₇O₂

MOLECULAR WEIGHT:

464.08

CONCENTRATION:

50 ± 2.5 µg/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:

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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:

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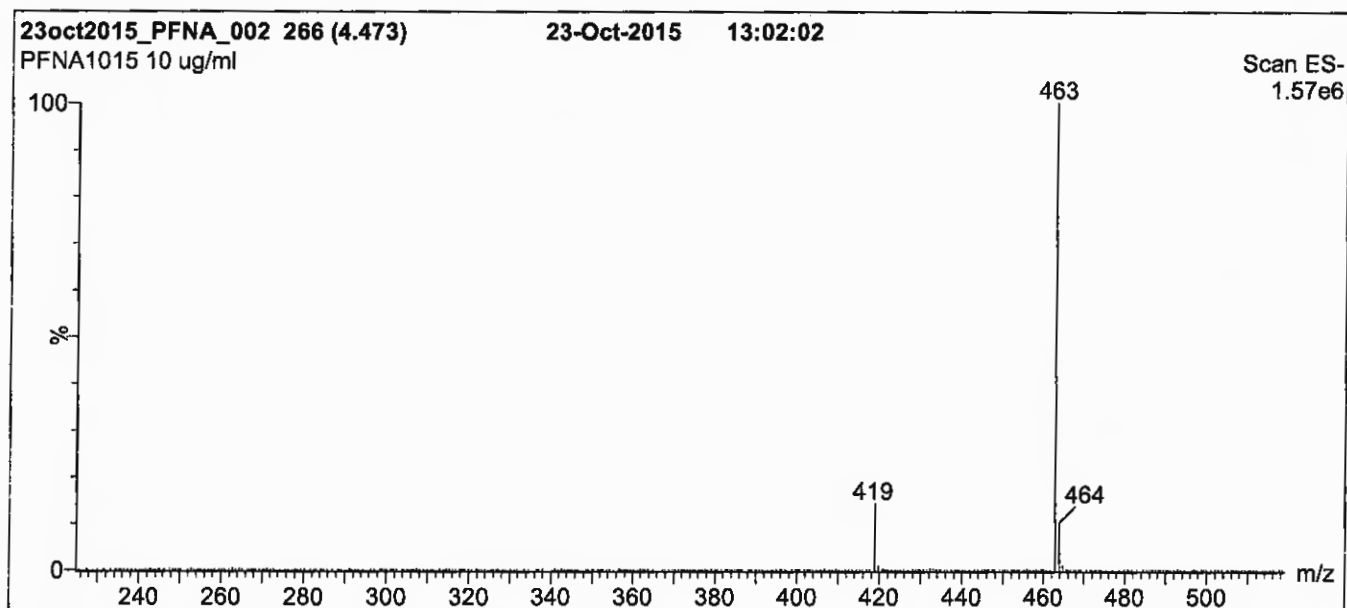
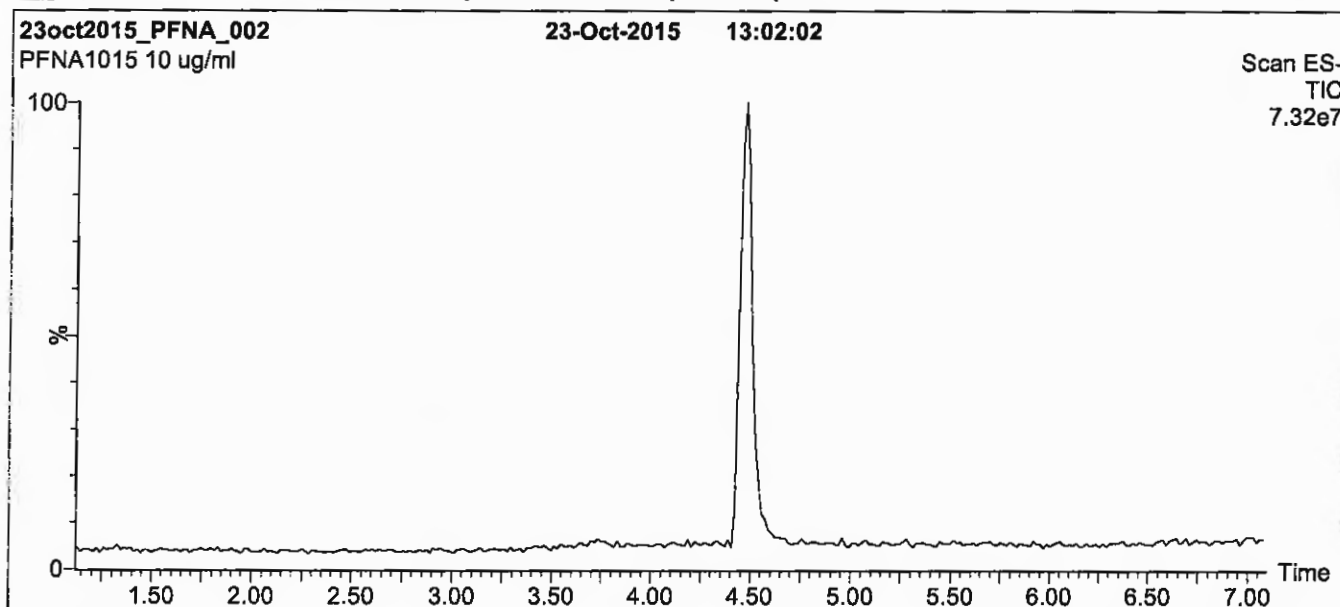
QUALITY MANAGEMENT:

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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

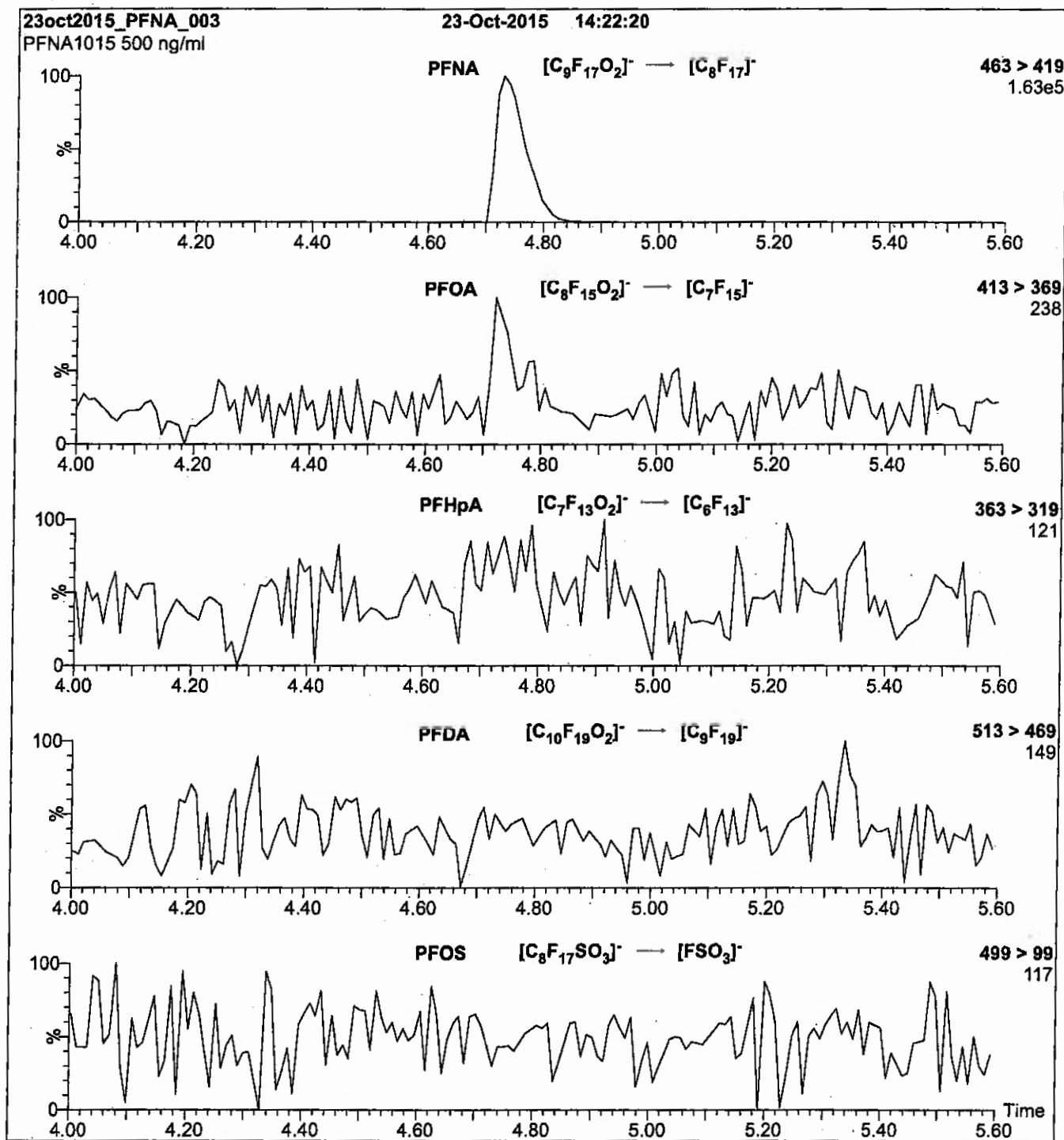
Flow: 300 μ l/min

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

LCPFOA_00006

INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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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.

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

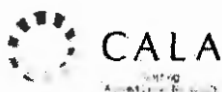
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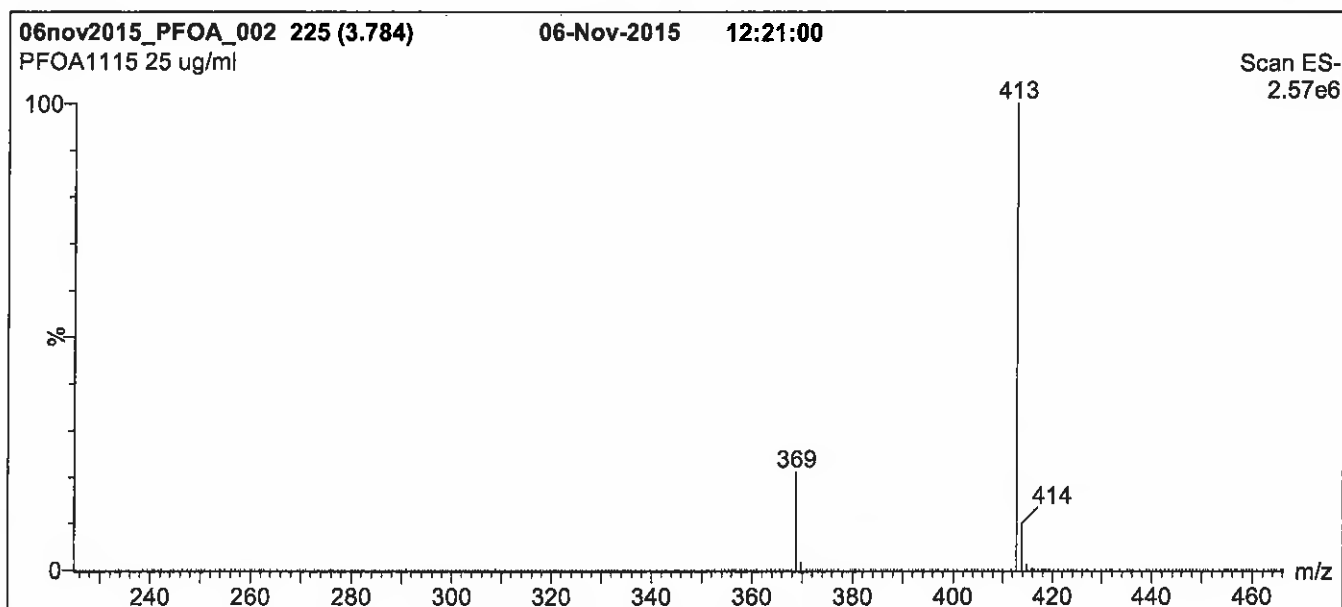
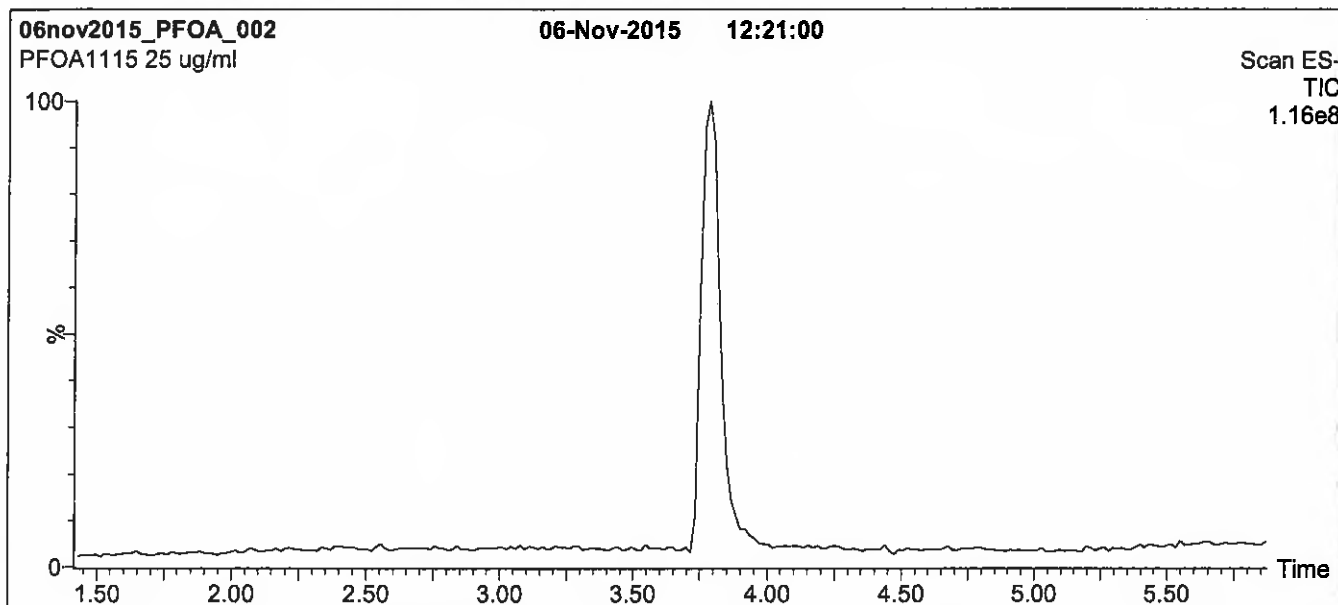
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Figure 1: PFOA; LC/MS Data (TIC and Mass Spectrum)



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

Reagent

LCPFODA_00005

INTENDED USE:

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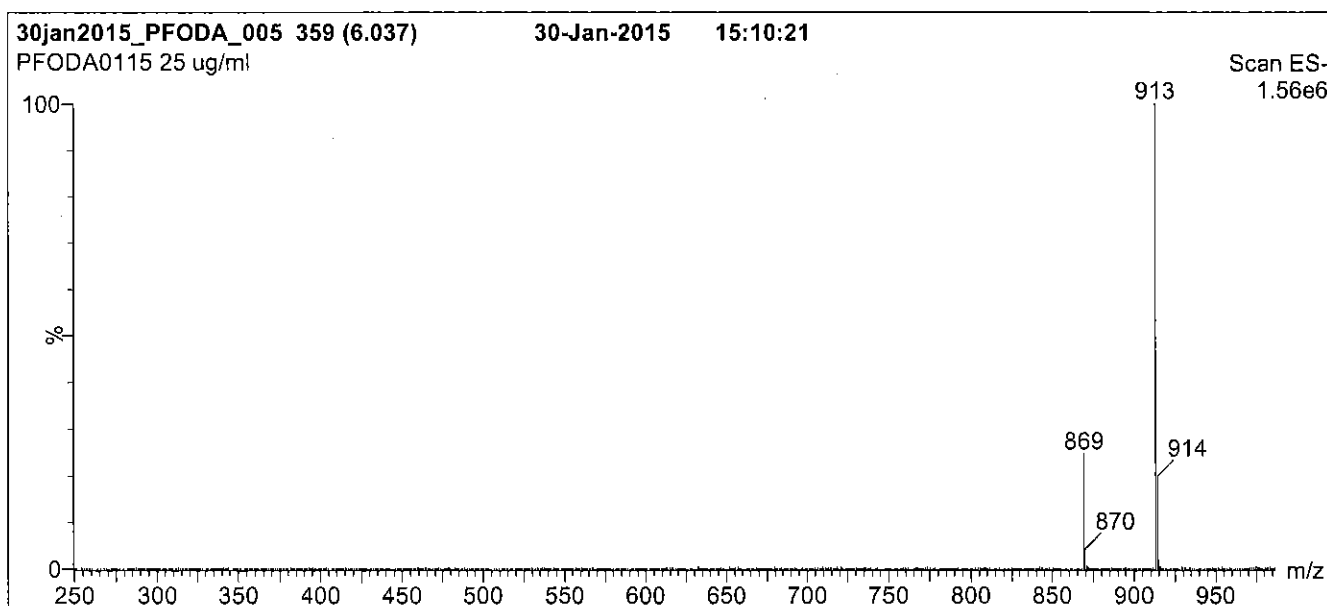
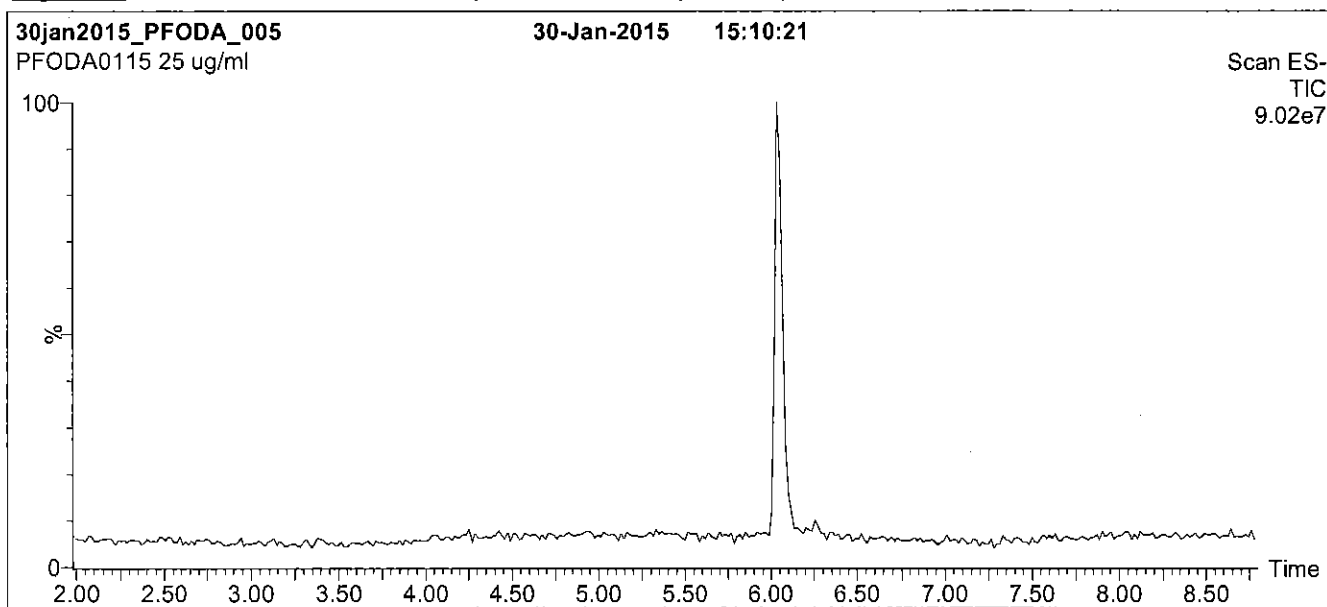
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Figure 1: PFODA; LC/MS Data (TIC and Mass Spectrum)



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MS: Micromass Quattro *micro* API MS

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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

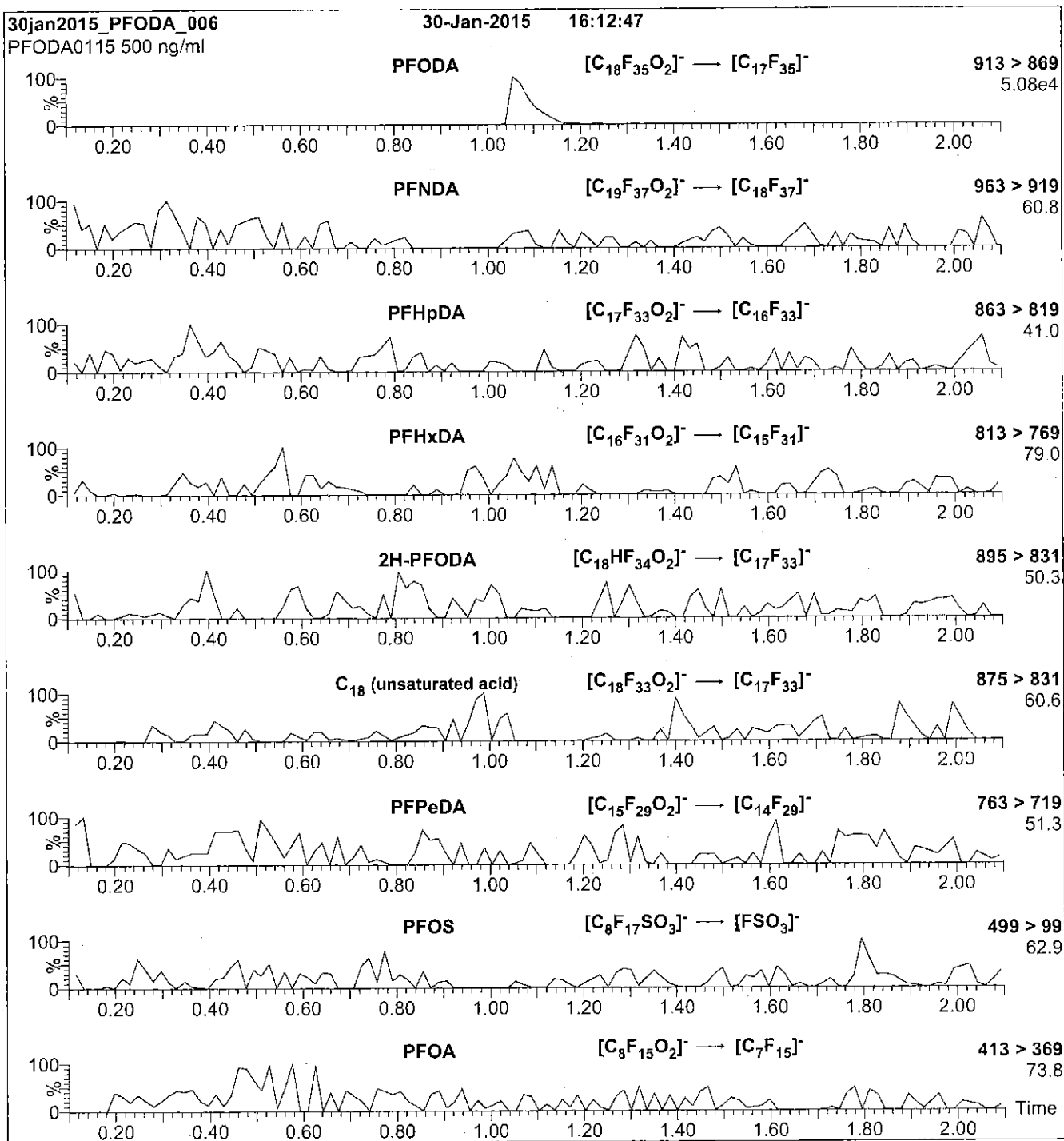
Flow: 300 μ l/min

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 µl (500 ng/ml PFODA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
 Collision Energy (eV) = 15

Reagent

LCPFODA_00006

INTENDED USE:

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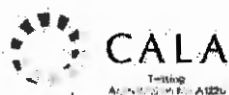
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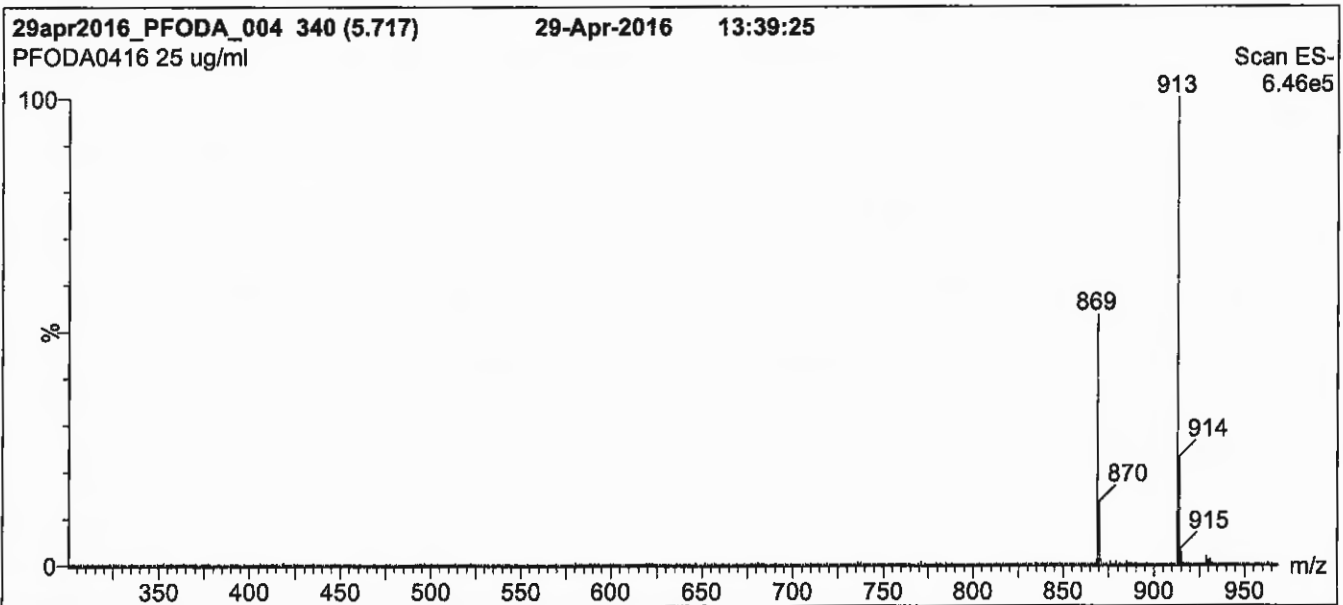
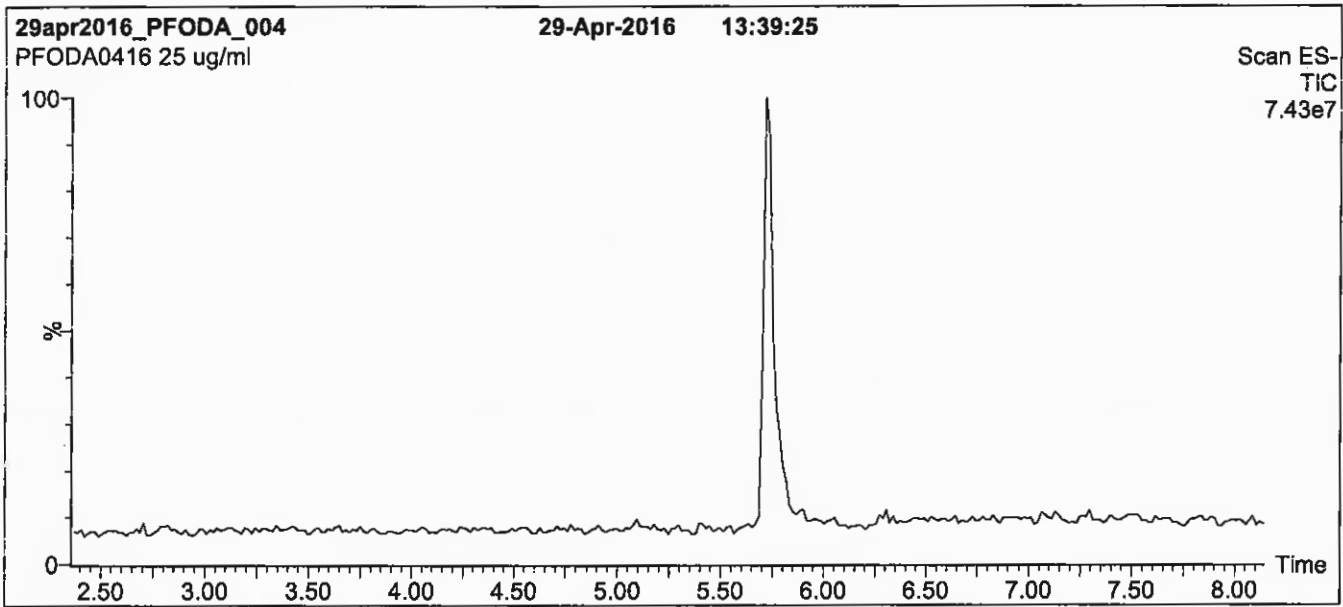
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Figure 1: PFODA; LC/MS Data (TIC and Mass Spectrum)



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: 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

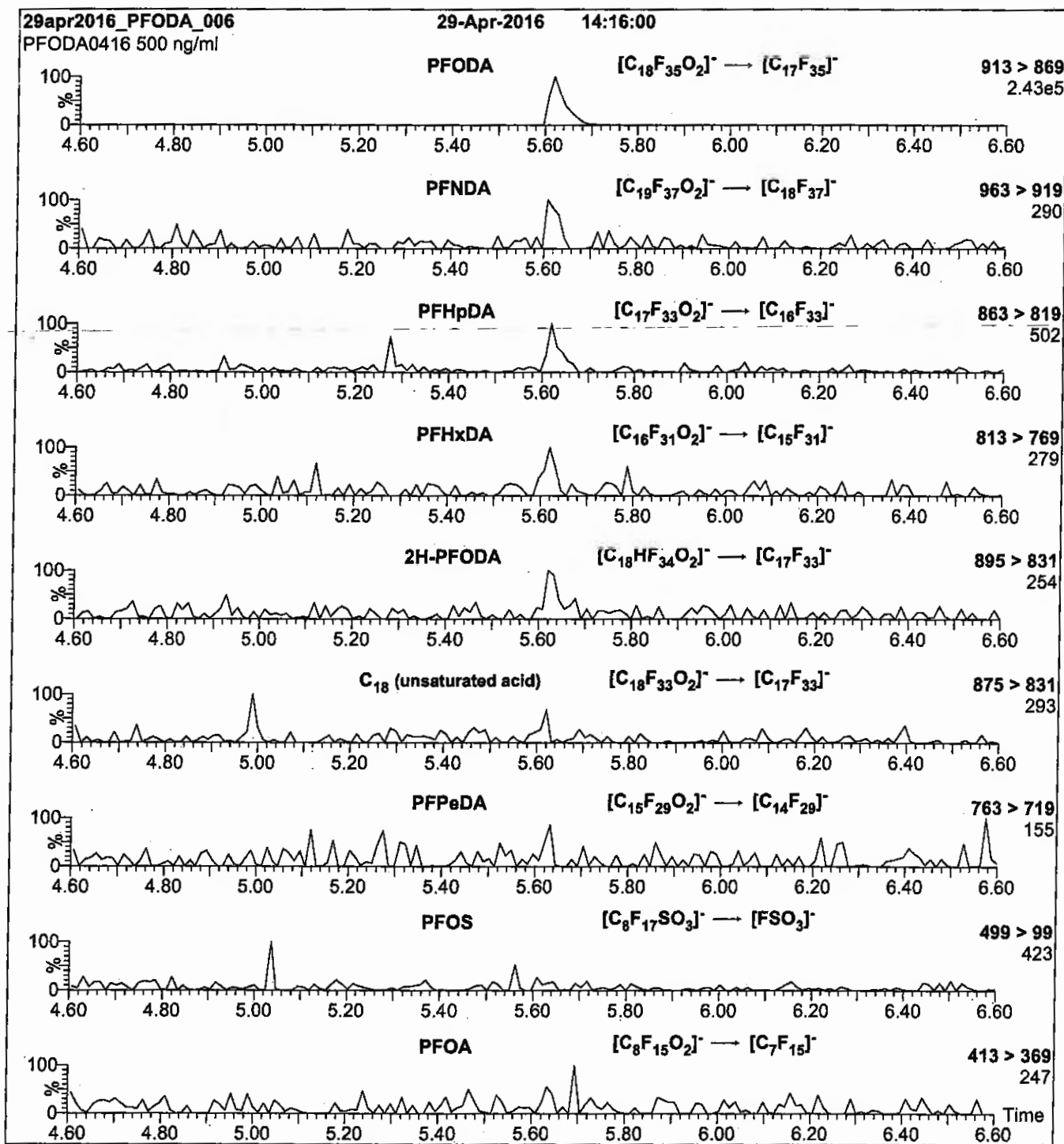
Flow: 300 μ l/min

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 Pipr: SBC
Potassium Perfluorooctane



730516
ID: LCPFOS-br_00003
Exp: 10/14/20 Pipr: SBC
Potassium Perfluorooctane



WELLINGTON LABORATORIES

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).

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

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.

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Table A: br-PFOSK; Isomeric Components and Percent Composition (by ¹⁹F-NMR)*

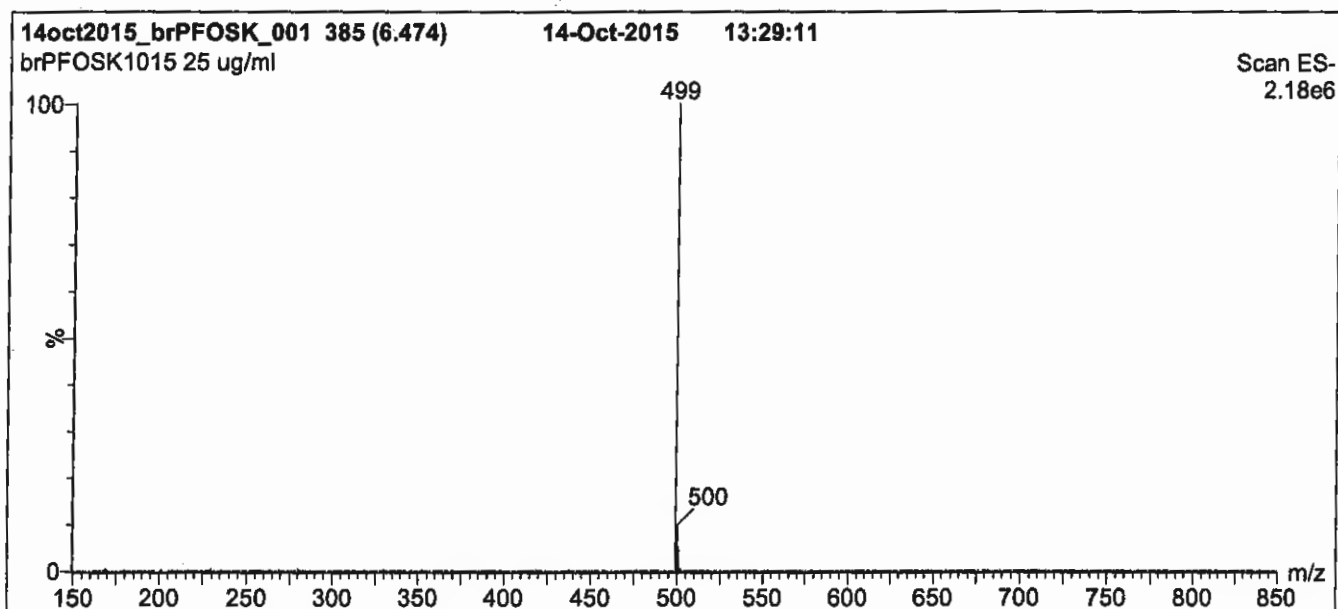
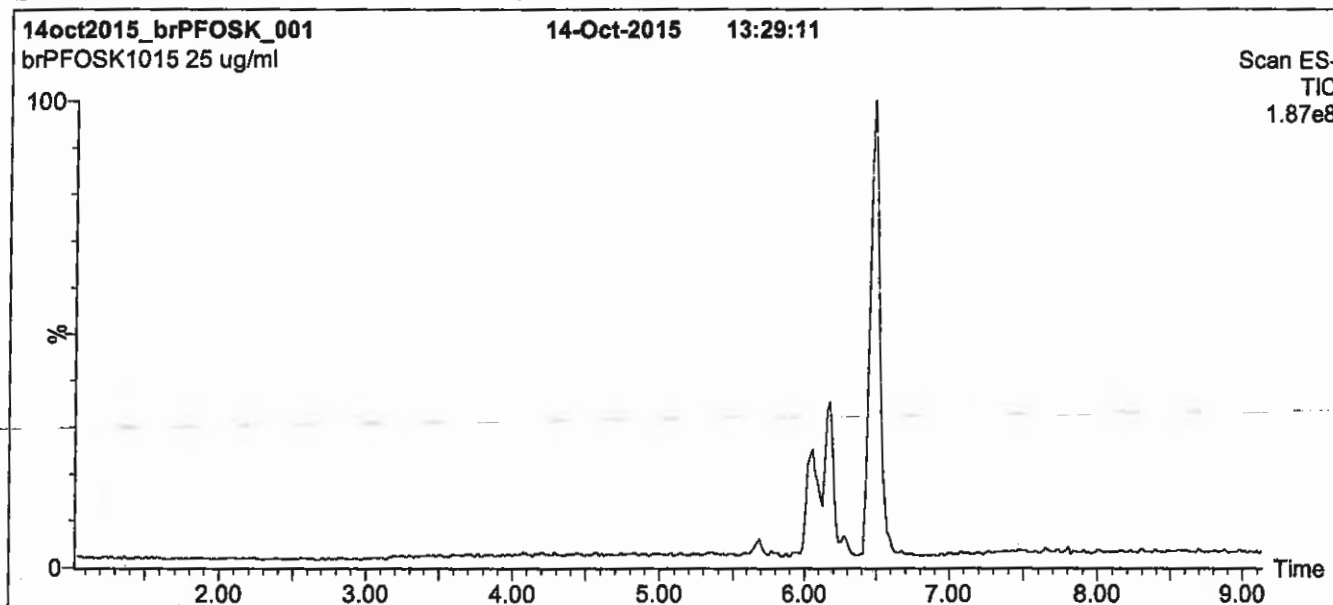
Isomer	Name	Structure	Percent Composition by ¹⁹ F-NMR
1	Potassium perfluoro-1-octanesulfonate	$\text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	$\begin{array}{c} \text{CF}_3 \\ \\ \text{CF}_3-\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	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	$\begin{array}{c} \text{CF}_3-\text{CF}-\text{CF}-\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\ \quad \\ \text{CF}_3 \quad \text{CF}_3 \end{array}$	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$\begin{array}{c} \text{CF}_3-\text{CF}-\text{CF}_2-\text{CF}-\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+ \\ \quad \quad \\ \text{CF}_3 \quad \quad \text{CF}_3 \end{array}$	0.07

* Percent of total perfluorooctanesulfonate isomers only. Isomers are labeled 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

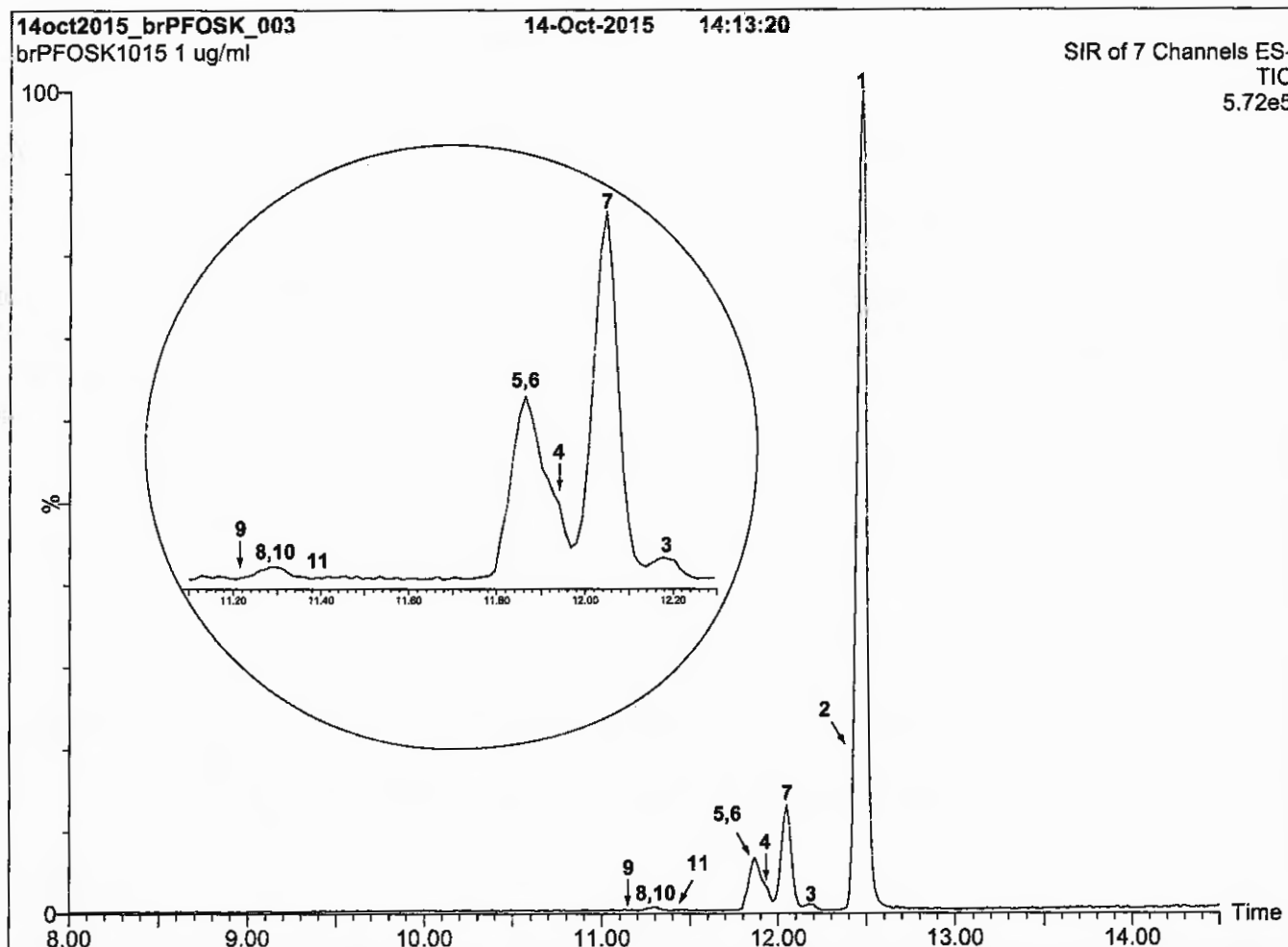
Flow: 300 μ l/min

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

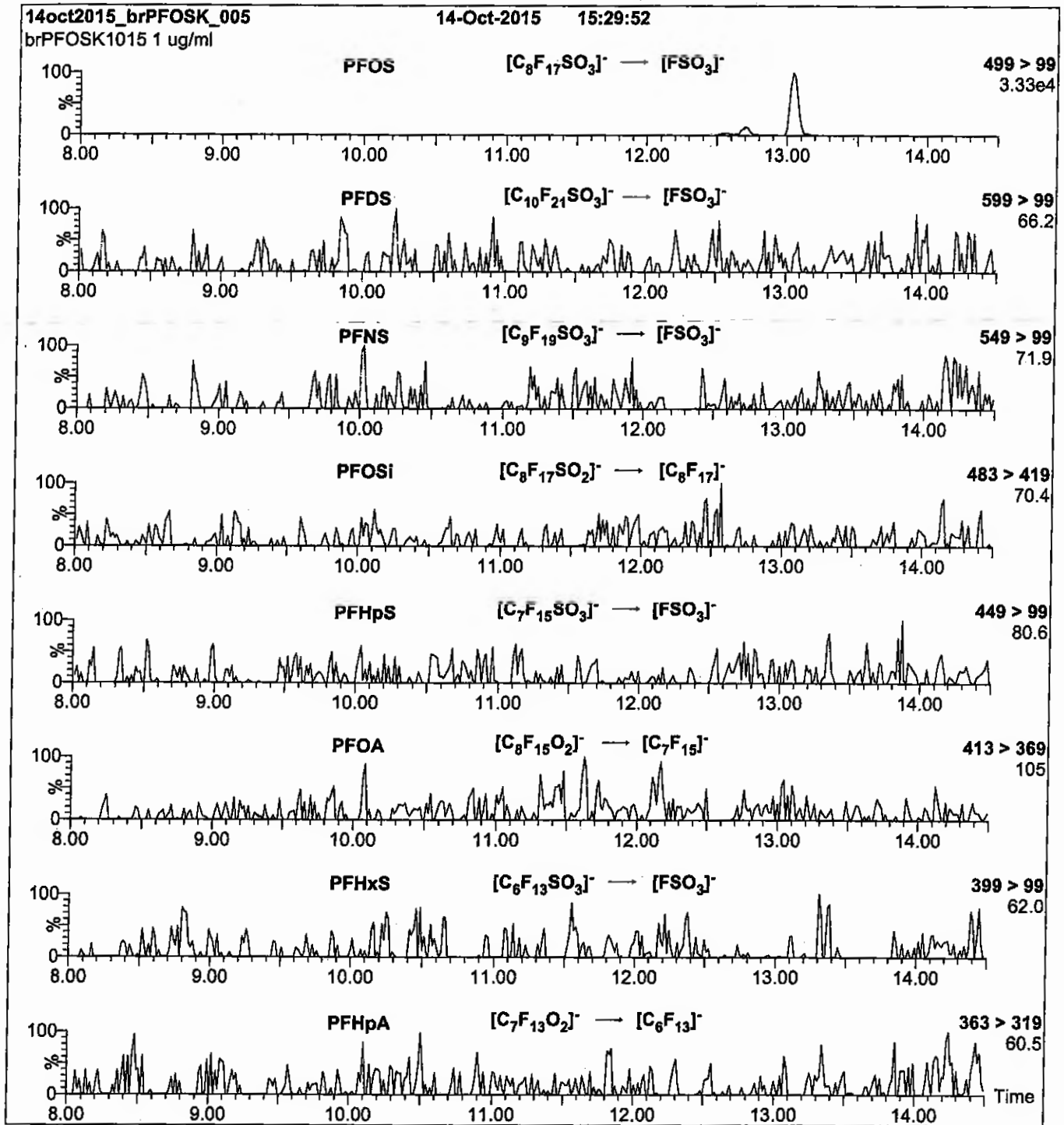
Chromatographic Conditions:

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 $^{\circ}$ C
Desolvation = 325 $^{\circ}$ 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

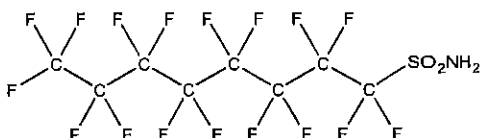


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: FOSA-I **LOT NUMBER:** FOSA0815I
COMPOUND: Perfluoro-1-octanesulfonamide

STRUCTURE: **CAS #:** 754-91-6



MOLECULAR FORMULA: $C_8H_2F_{17}NO_2S$ **MOLECULAR WEIGHT:** 499.14
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Isopropanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/02/2015
EXPIRY DATE: (mm/dd/yyyy) 09/02/2017
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: 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

INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

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

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TRACEABILITY:

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LIMITED WARRANTY:

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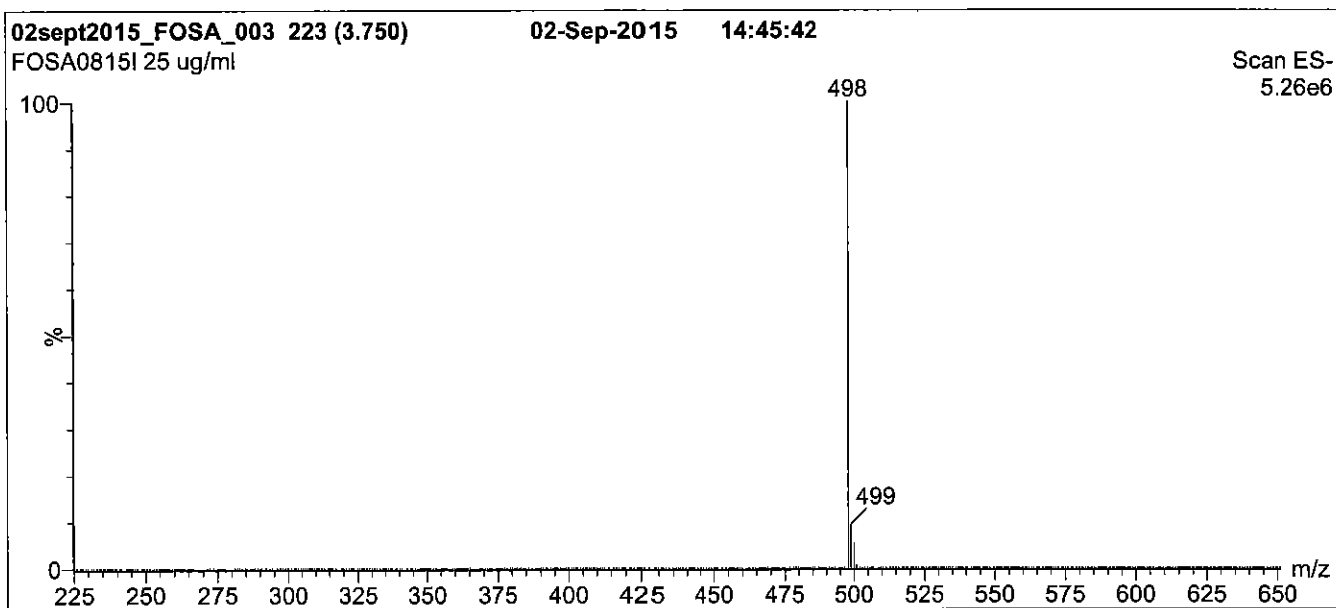
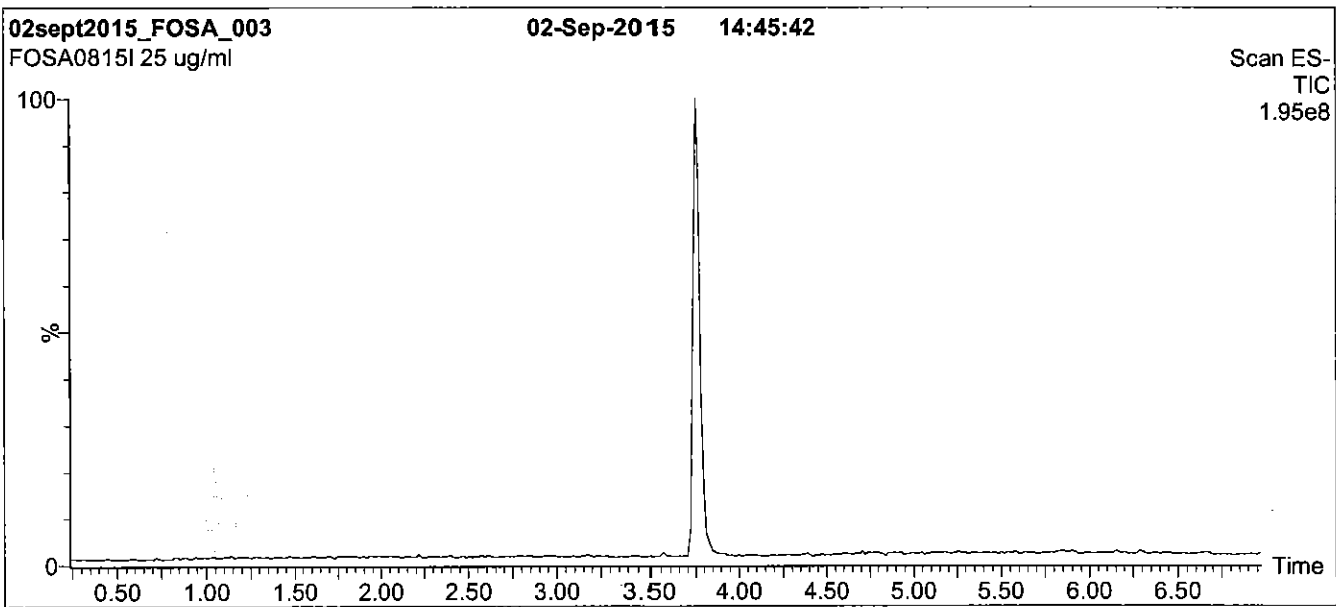
QUALITY MANAGEMENT:

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: 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 RP_{1a}
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

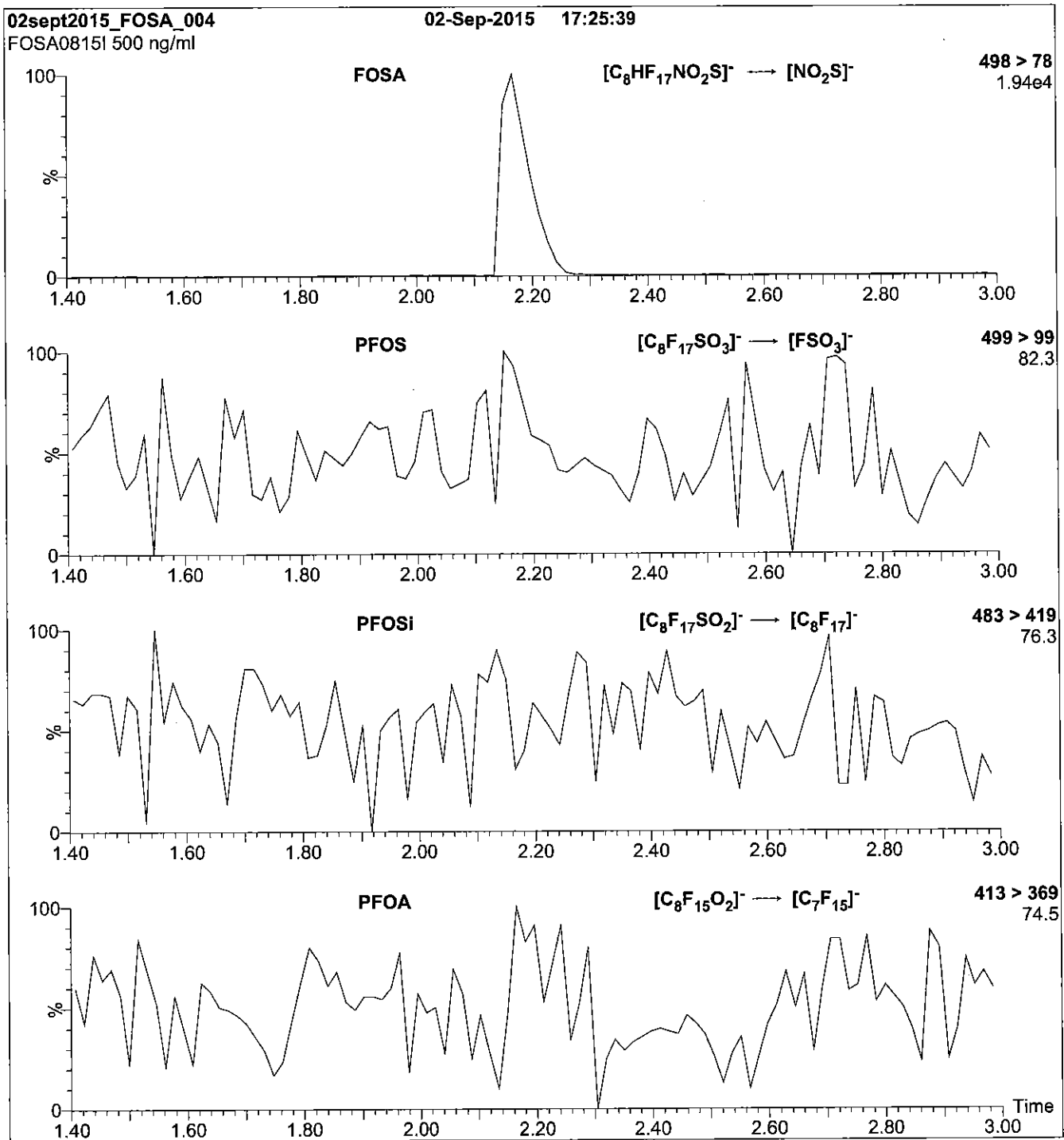
Flow: 300 μ l/min

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

LCPFOSA_00008

Scanned
10/14/16

R: SBC 9/13/16



730534
ID: LCPFOSA_00009
Exp: 09/02/17 Prpd: SBC
PF-1-octanesulfonamide



730533
ID: LCPFOSA_00008
Exp: 09/02/17 Prpd: SBC
PF-1-octanesulfonamide



WELLINGTON LABORATORIES

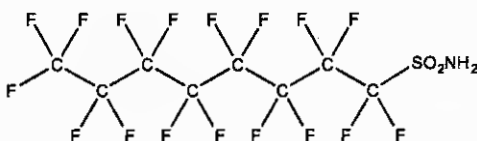
CERTIFICATE OF ANALYSIS DOCUMENTATION

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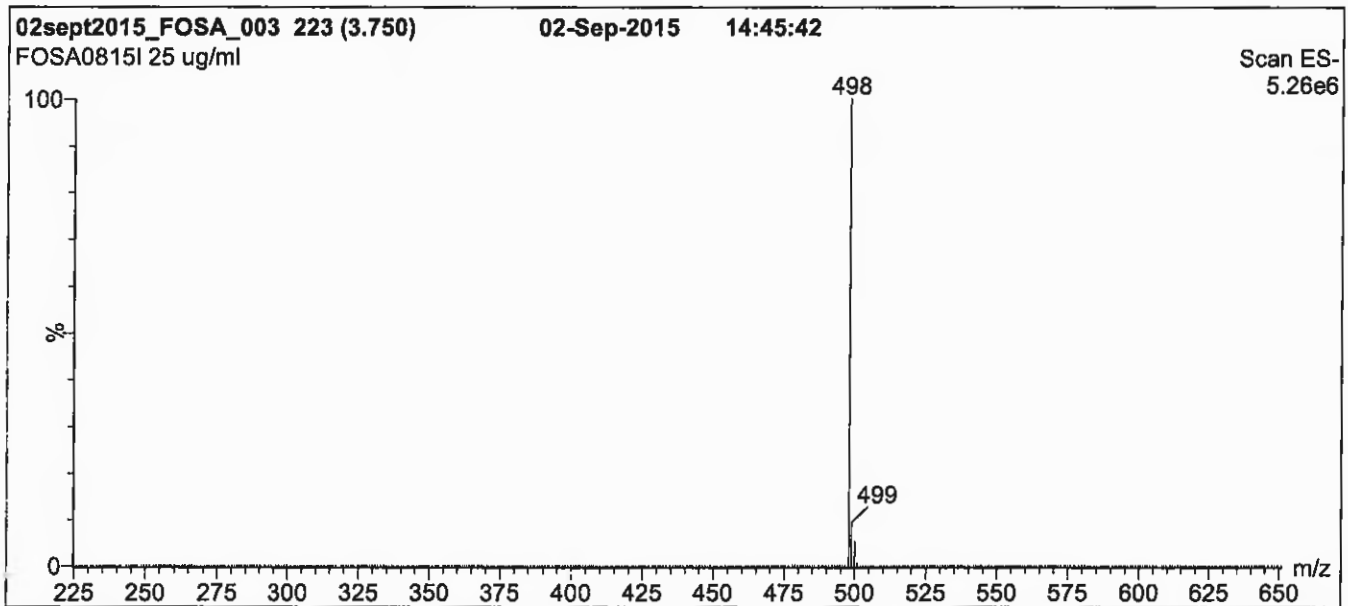
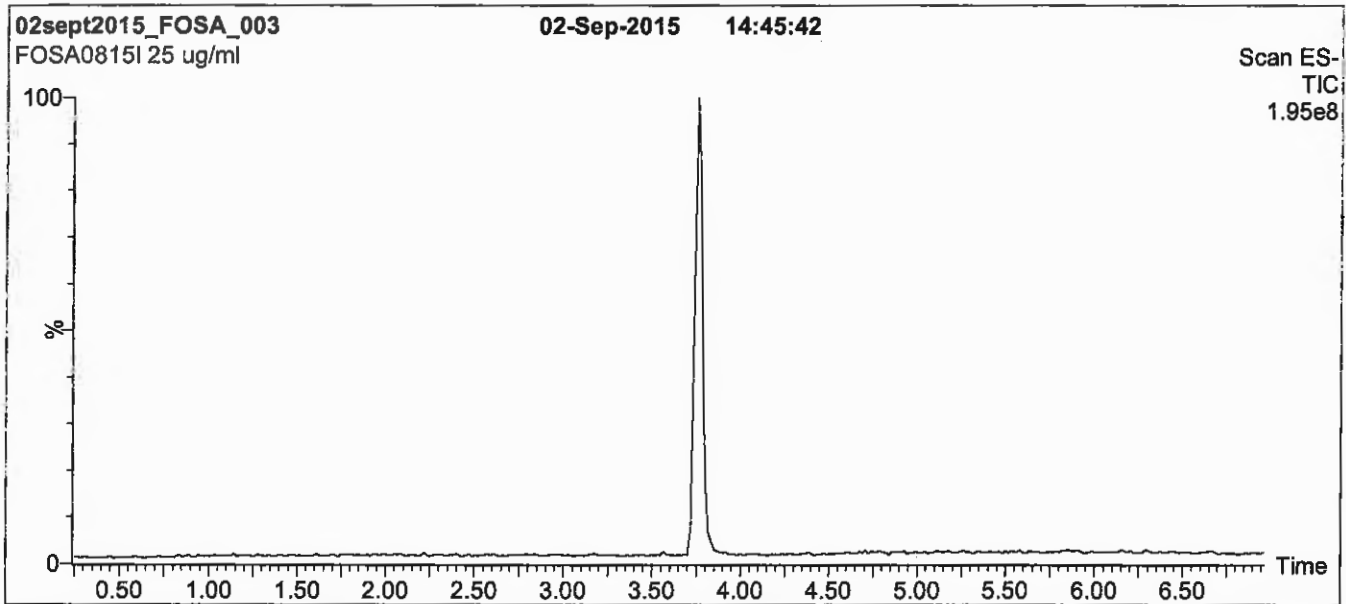
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Figure 1: FOSA-I; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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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

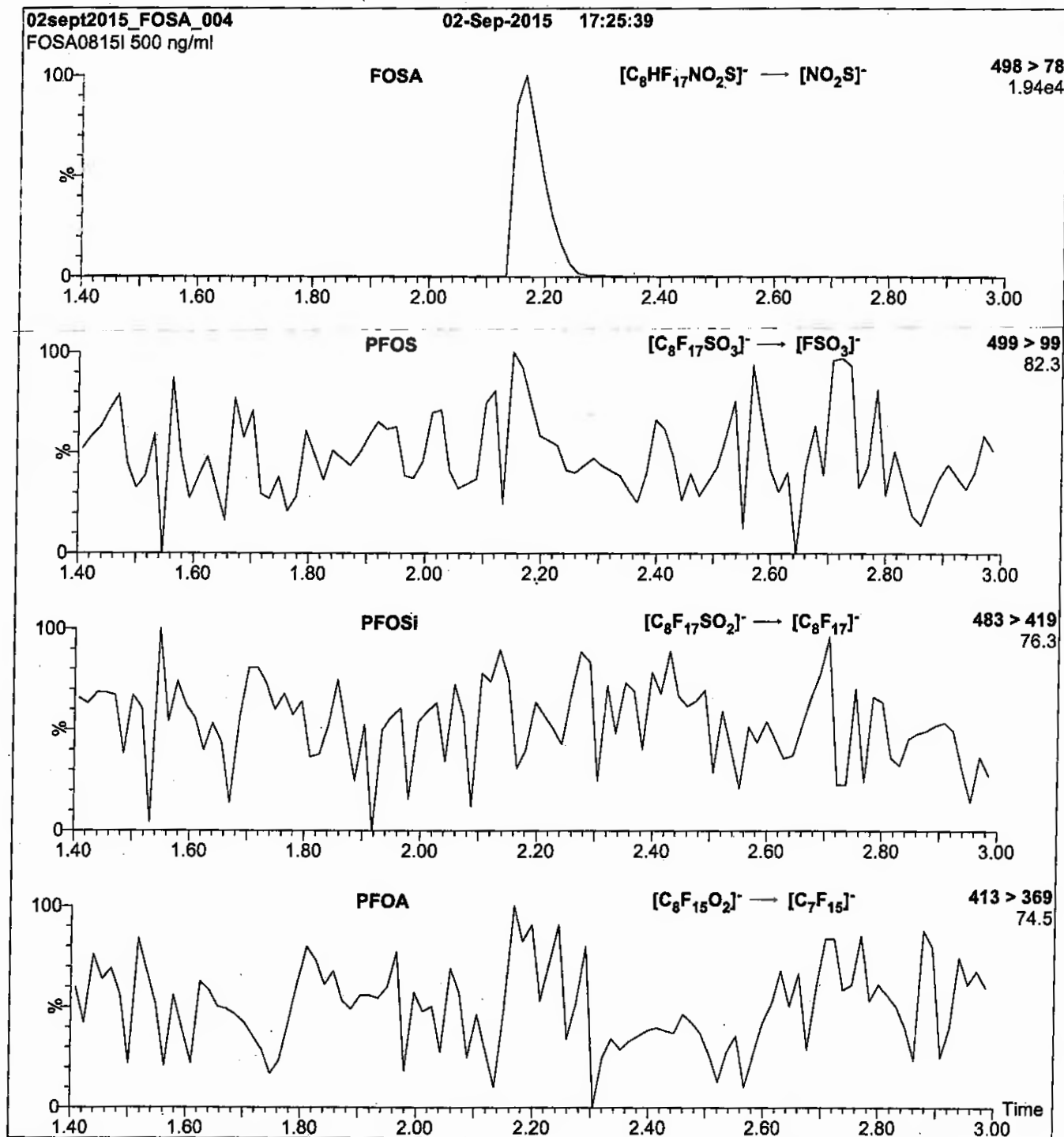
Flow: 300 μ l/min

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

LCFPeA_00005

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.

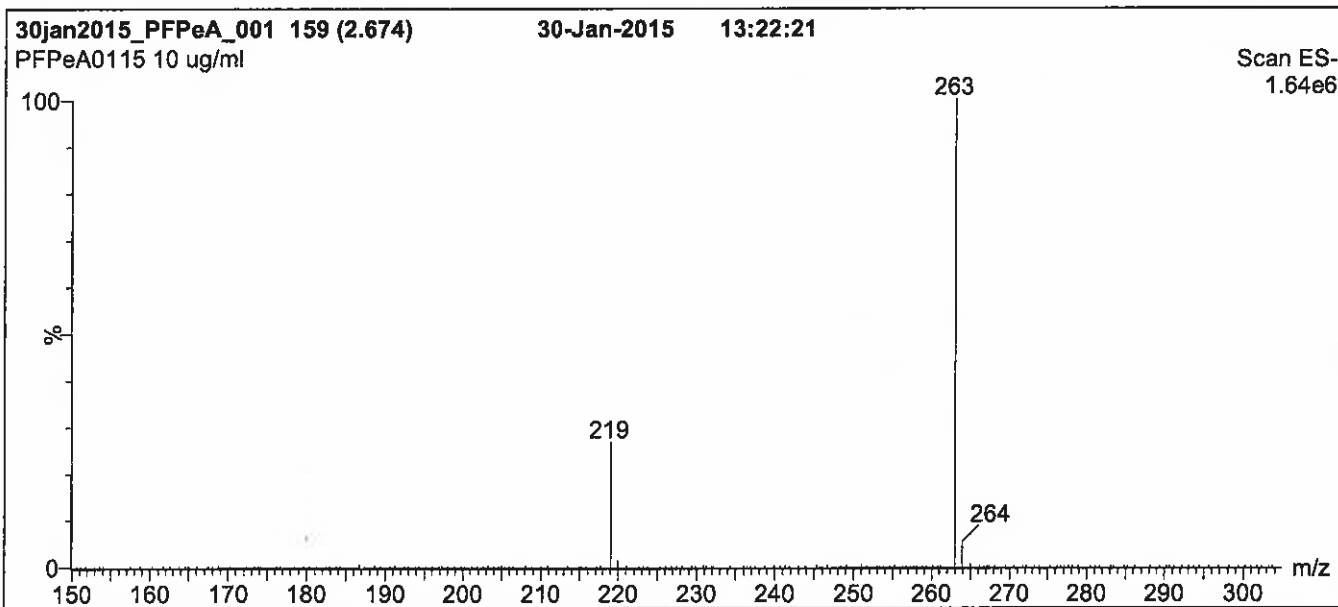
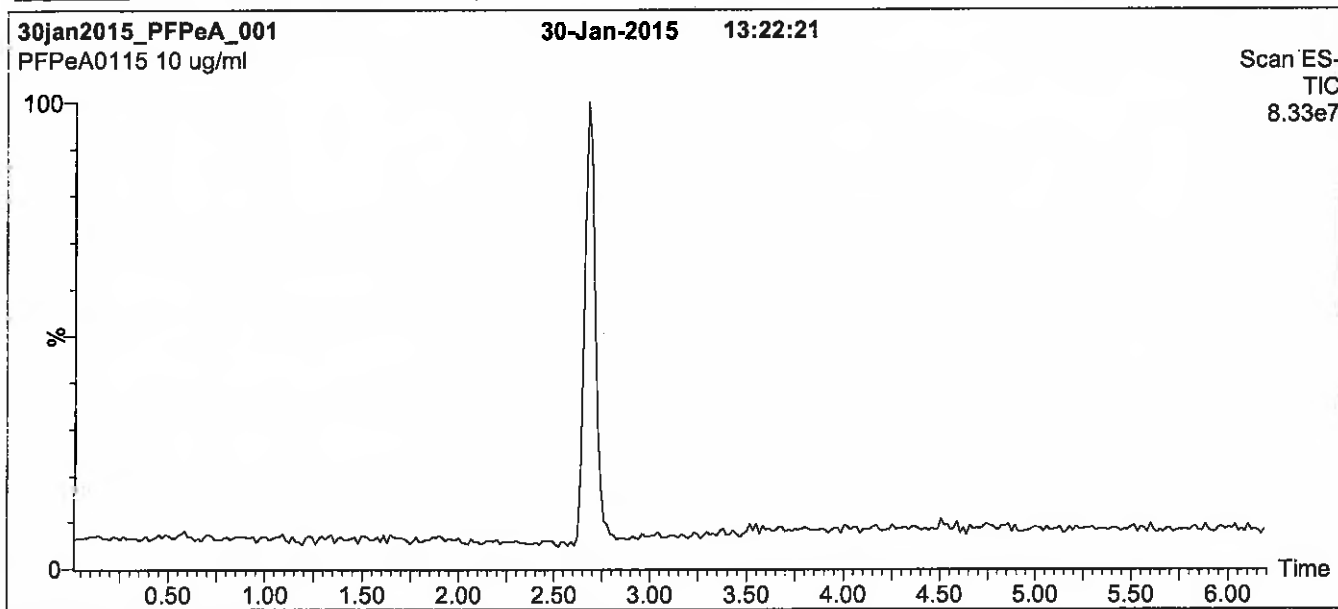
QUALITY MANAGEMENT:

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: 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

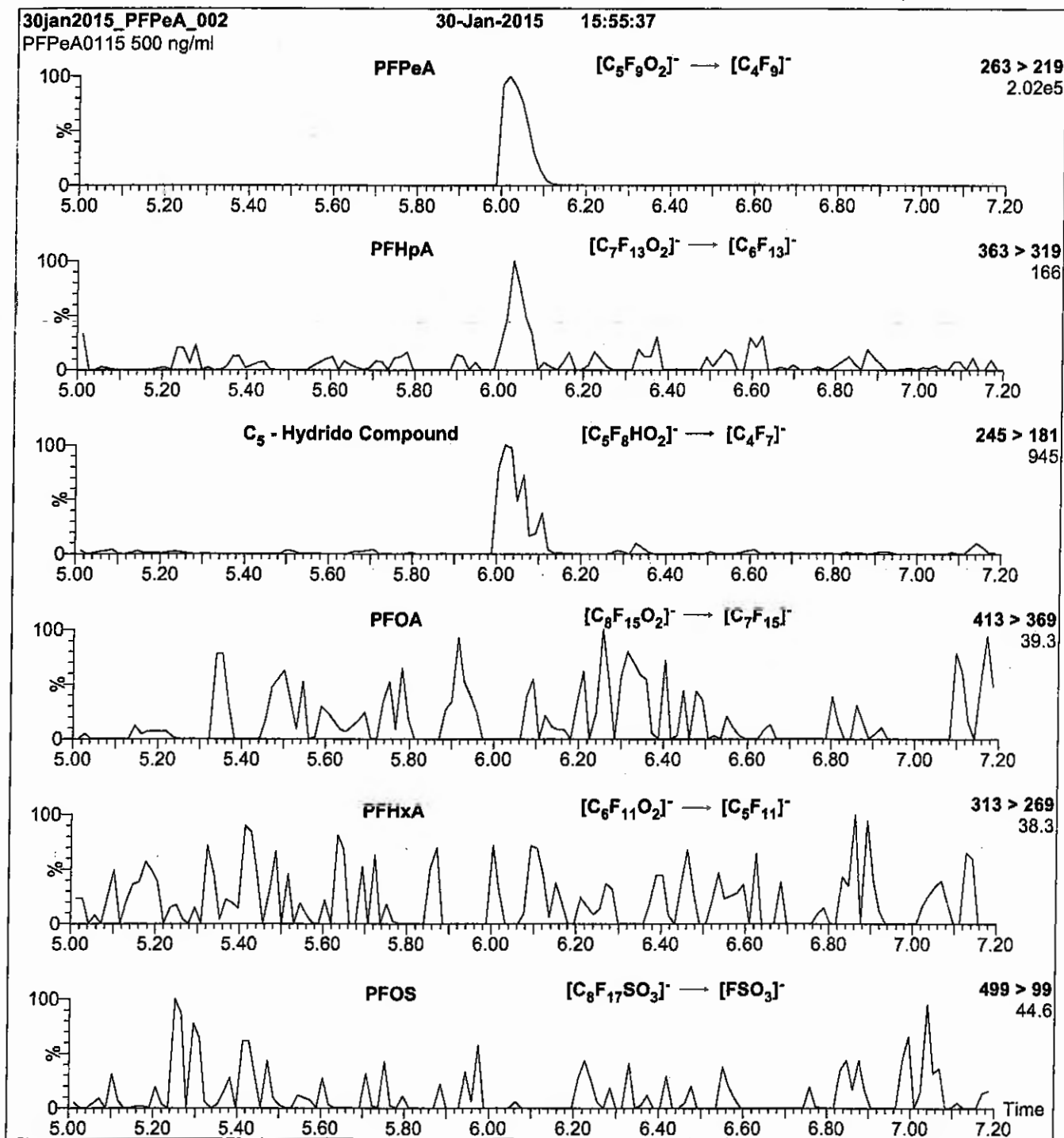
Flow: 300 μ l/min

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



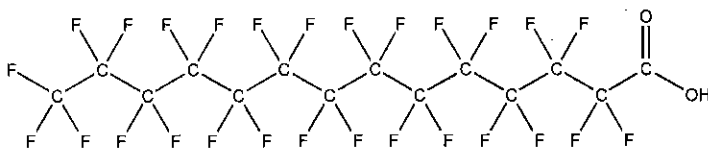
R: 4/7/16 CBW

609636

ID: LCPFTeDA_00004

Exp: 12/09/20 Pripd: CBW

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:	$C_{14}H_{27}O_2$	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 ($C_{12}H_{23}O_2$) 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

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EXPIRY DATE / PERIOD OF VALIDITY:

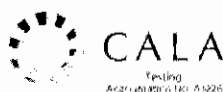
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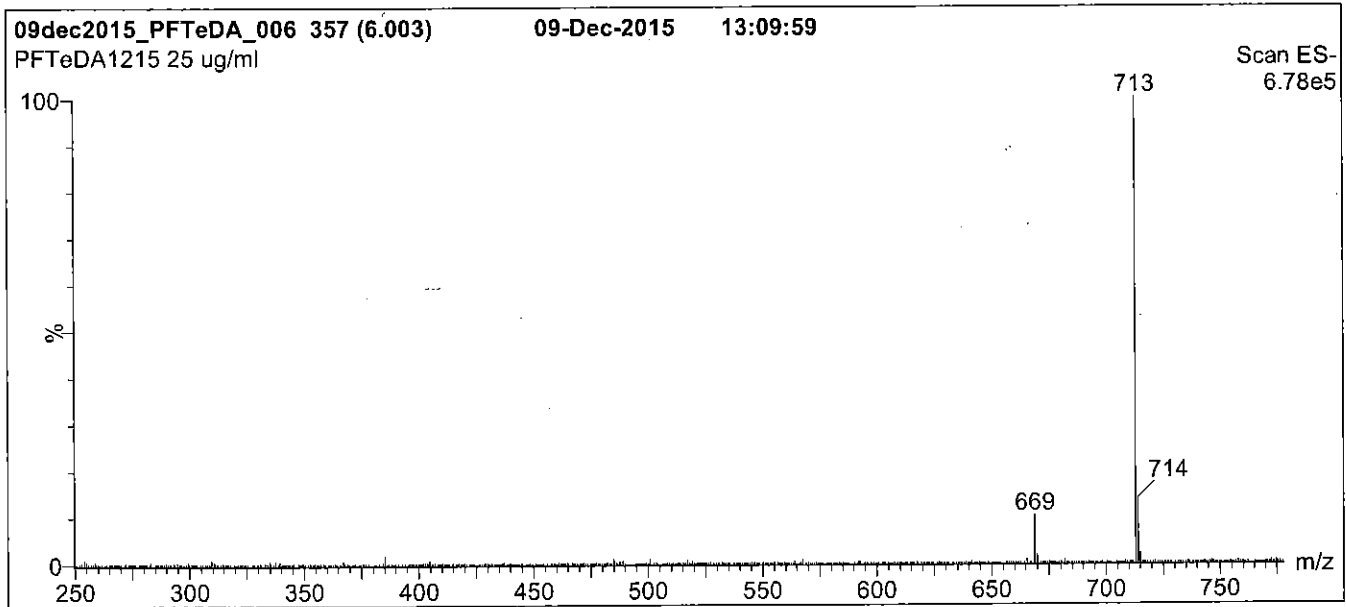
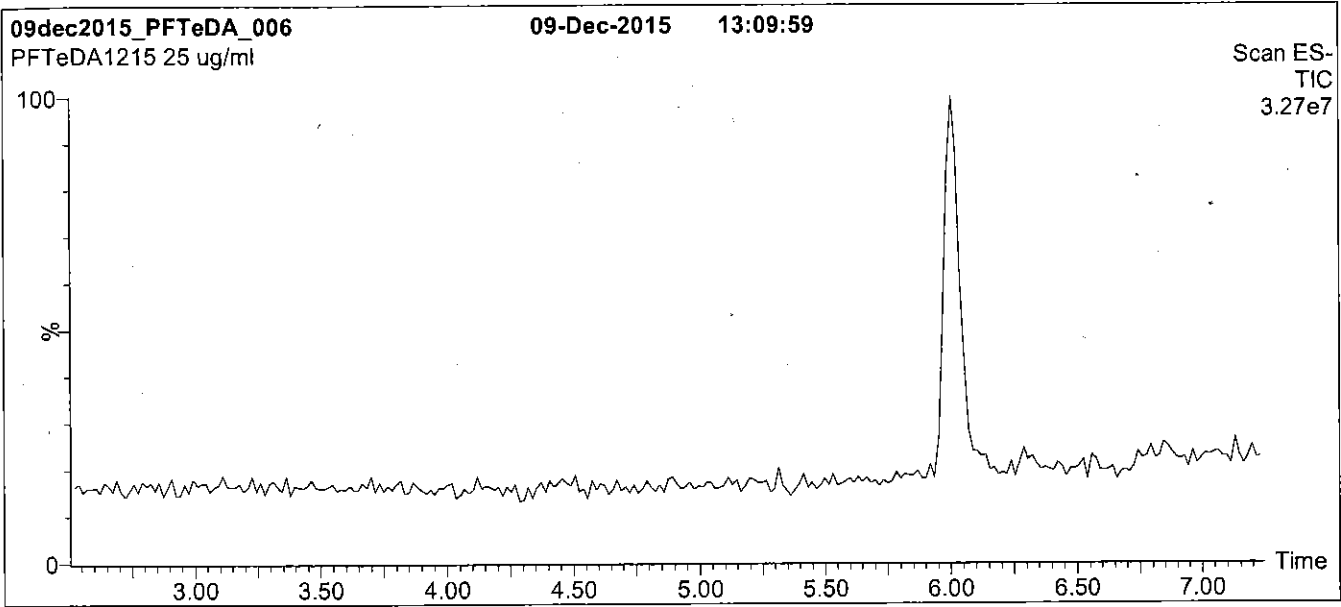
QUALITY MANAGEMENT:

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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 µm, 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

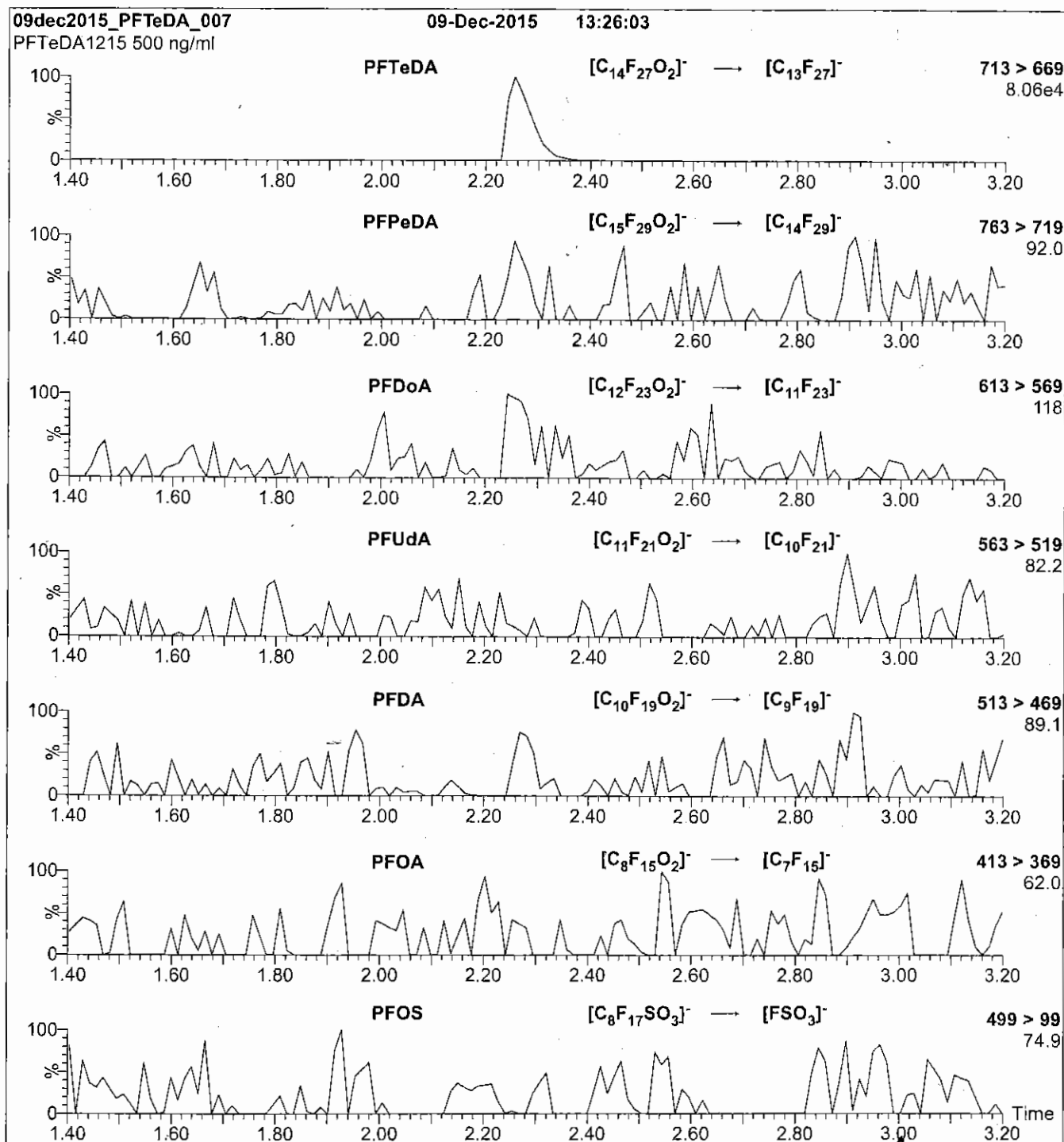
Flow: 300 µl/min

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% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 14

Reagent

LCPFTeDA_00005

R: SBA 9/13/16



730645
ID: LCPFTeDA_00005
Exp: 12/09/20 Pripd: SBC
PF-n-tetradecanoic acid



730659
ID: LCPFTeDA_00006
Exp: 12/09/20 Pripd: SBC
PF-n-tetradecanoic acid

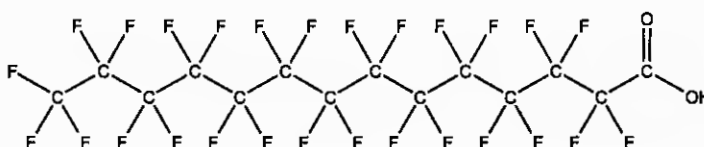


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTeDA **LOT NUMBER:** PFTeDA1215
COMPOUND: Perfluoro-n-tetradecanoic acid

STRUCTURE: **CAS #:** 376-06-7



MOLECULAR FORMULA: C₁₄H_{F₂₇}O₂ **MOLECULAR WEIGHT:** 714.11
CONCENTRATION: 50 ± 2.5 µg/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

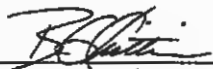
DOCUMENTATION/ DATA ATTACHED:

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 (C₁₂H_{F₂₃}O₂) and ~ 0.2% of PFPeDA (C₁₆H_{F₂₉}O₂).

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

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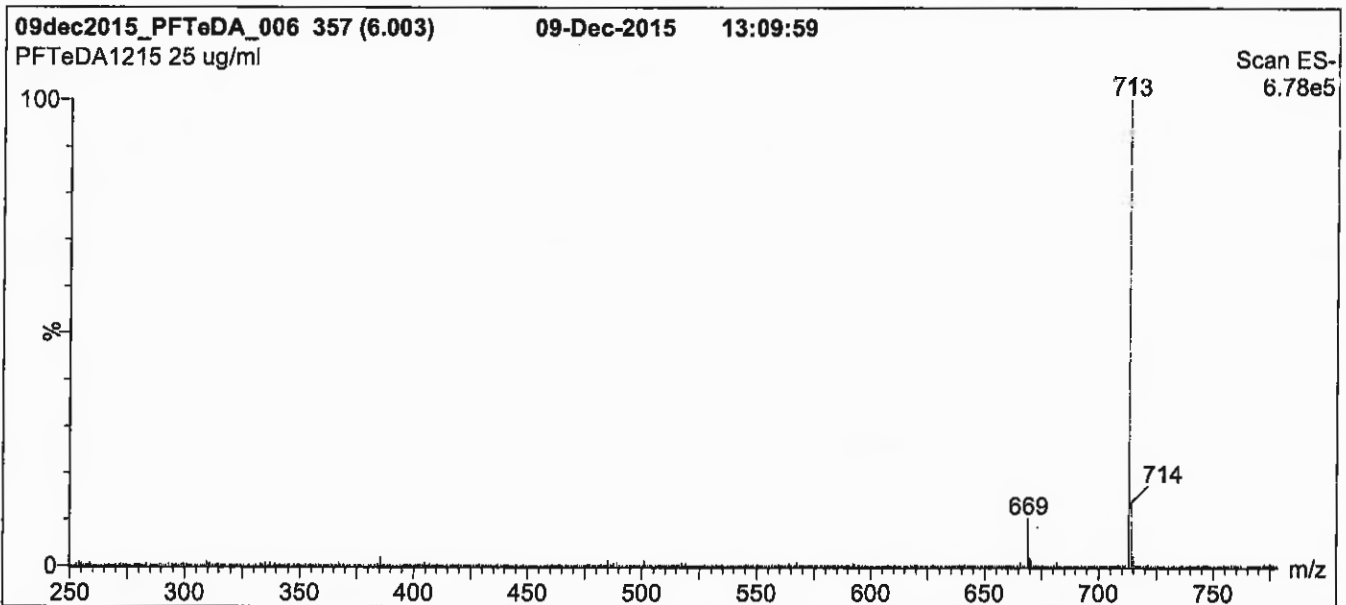
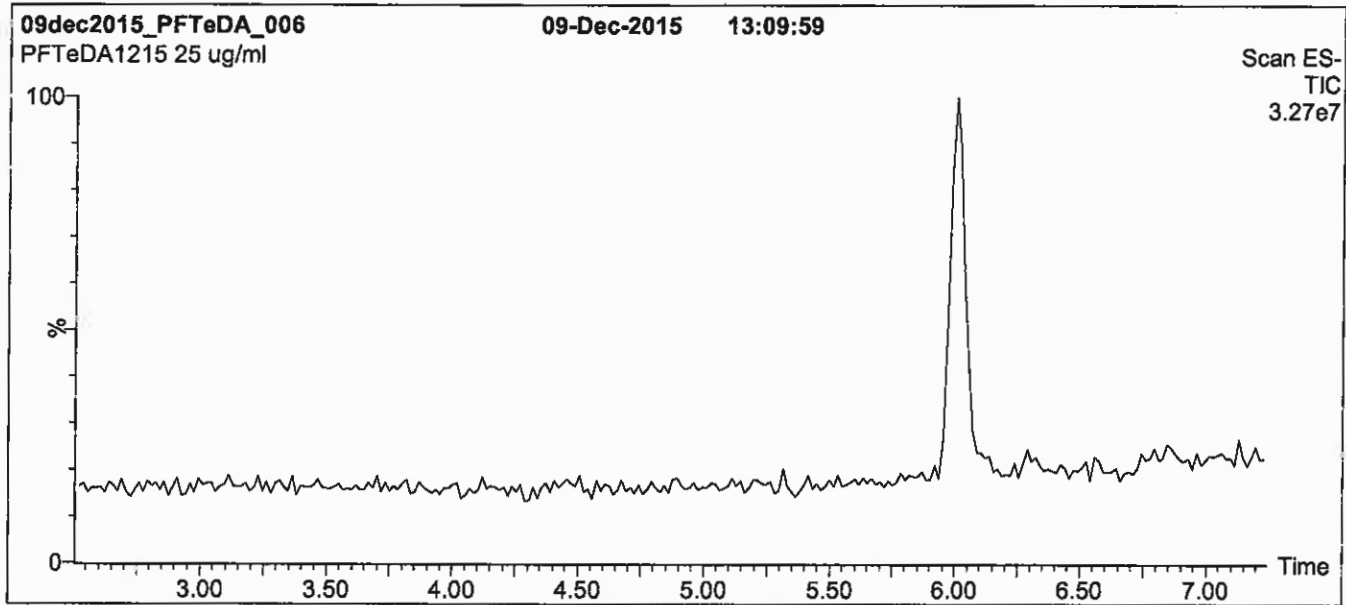
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Figure 1: PFTeDA; LC/MS Data (TIC and Mass Spectrum)



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

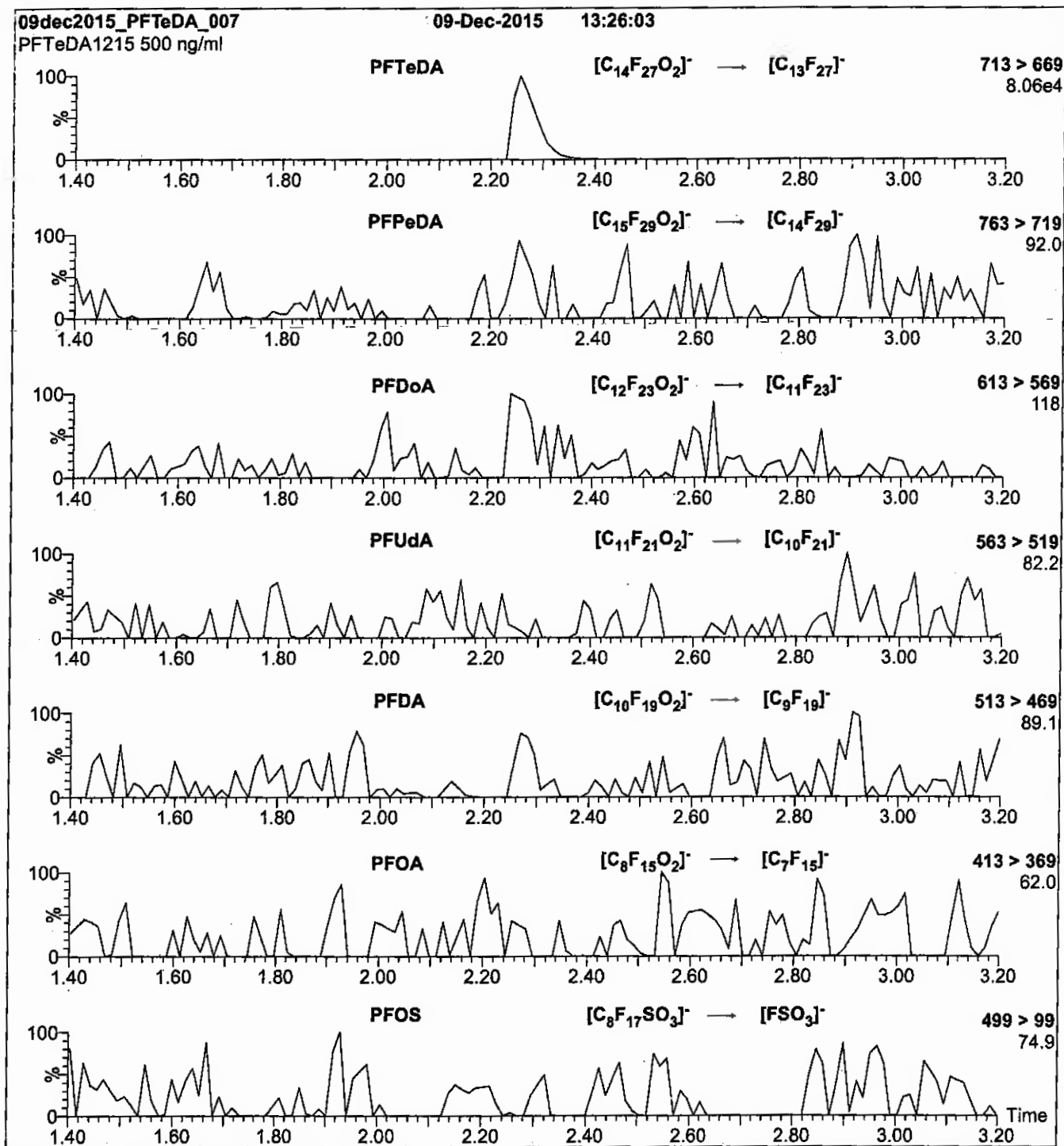
Flow: 300 μ l/min

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% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 14

Reagent

LCPFT_rDA_00004



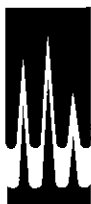
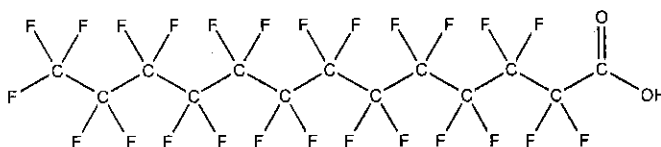
R: 4/7/16 CBW

609697

ID: LCPFTrDA_00004

Exp: 12/10/18 Prep: CBW

PF-n-tridecanoic acid

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:** PFTrDA **LOT NUMBER:** PFTrDA1213
COMPOUND: Perfluoro-n-tridecanoic acid**STRUCTURE:** **CAS #:** 72629-94-8

MOLECULAR FORMULA: $C_{13}H_2F_{25}O_2$ **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 ($C_{11}H_2F_{21}O_2$); ~ 0.4% of PFDaA ($C_{12}H_2F_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}H_2F_{27}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim
Date: 03/25/2015
(mm/dd/yyyy)

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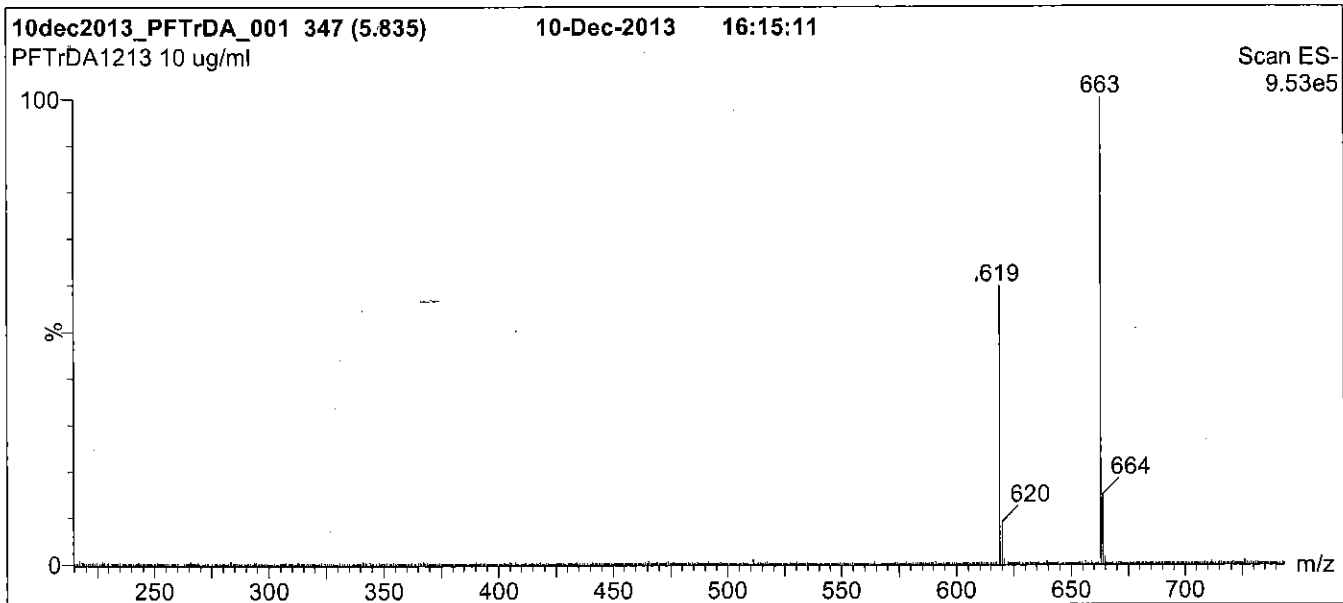
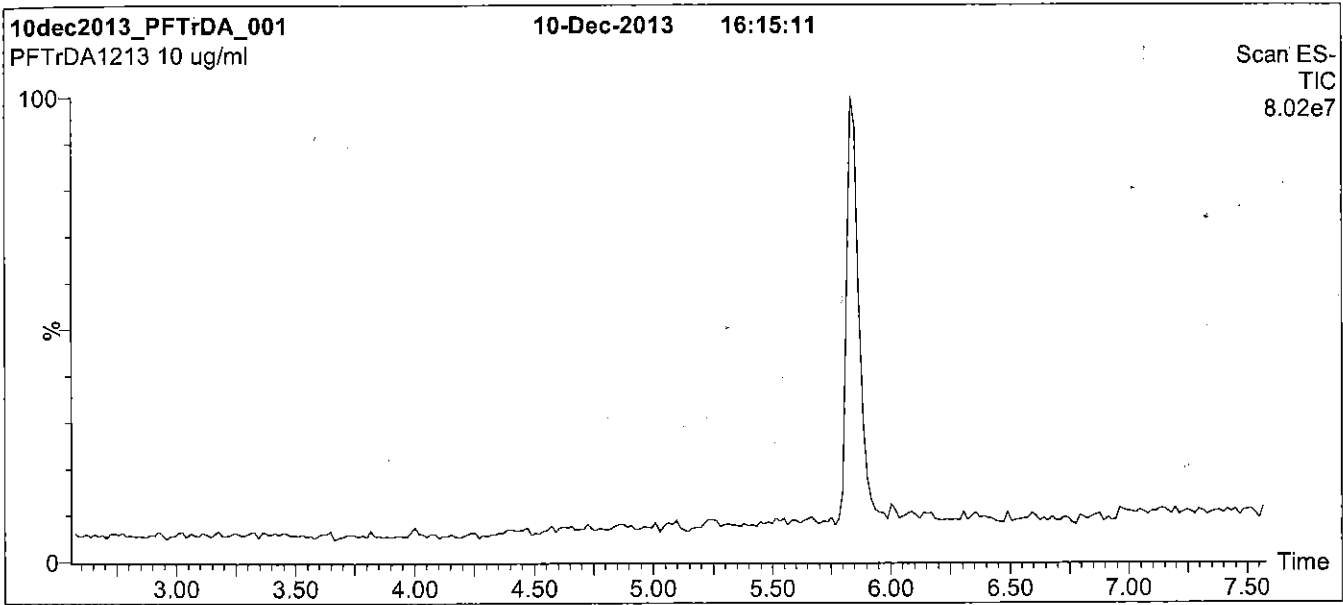
QUALITY MANAGEMENT:

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: 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

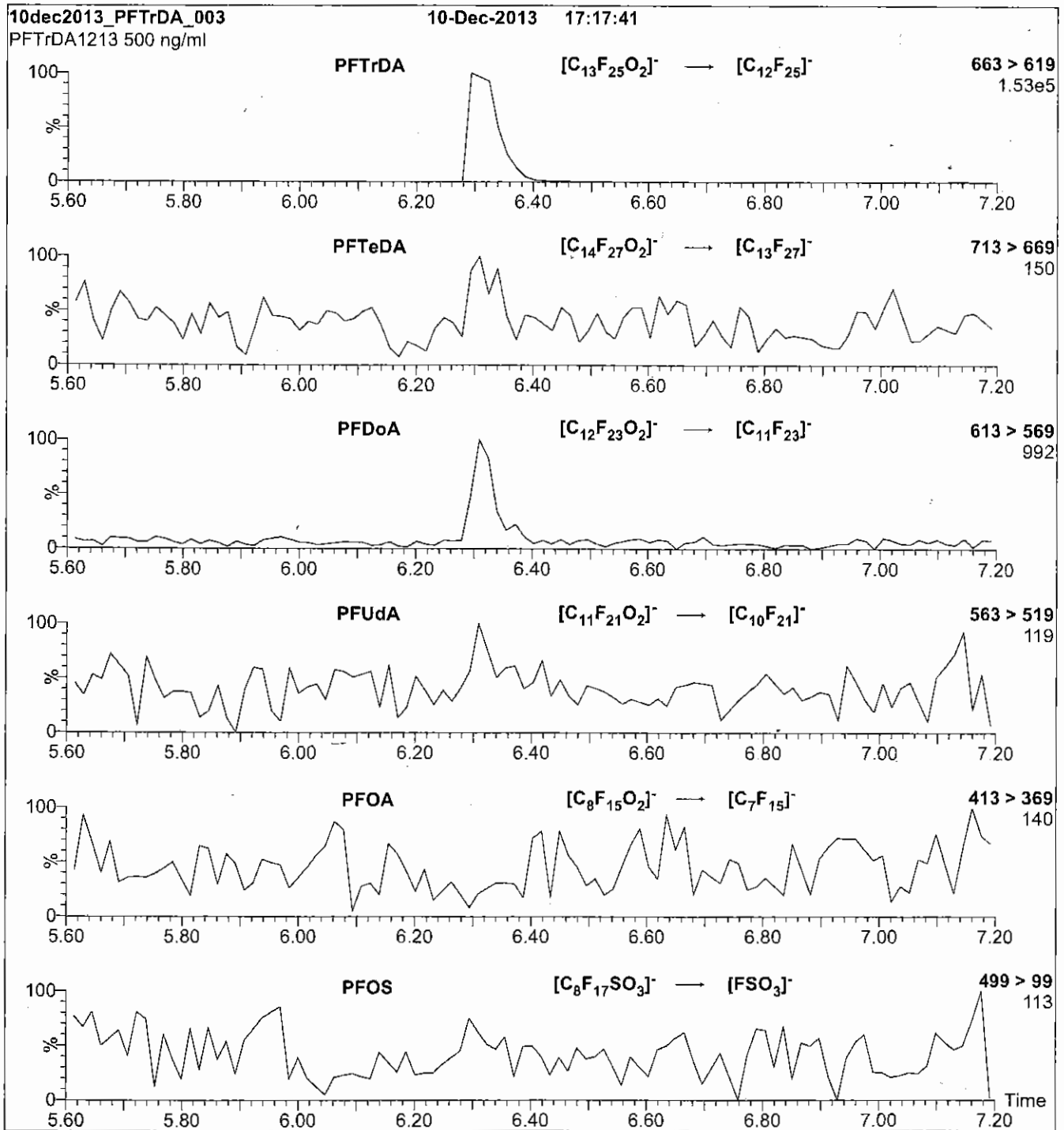
Mobile phase: Gradient
 Start: 60% (80:20 MeOH:ACN) / 40% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

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: SBC 9/13/16



730665
ID: LCPFTrDA_00005
Exp: 02/12/21 Prod: SBC
PF-n-tridecanoic acid



730666
ID: LCPFTrDA_00006
Exp: 02/12/21 Prod: SBC
PF-n-tridecanoic acid

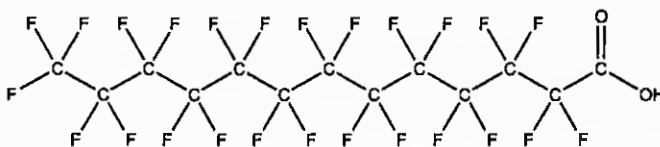


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTTrDA **LOT NUMBER:** PFTTrDA0216
COMPOUND: Perfluoro-n-tridecanoic acid

STRUCTURE: **CAS #:** 72629-94-8



MOLECULAR FORMULA: $C_{13}HF_{25}O_2$ **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

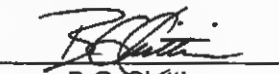
DOCUMENTATION/ DATA ATTACHED:

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 ($C_{11}HF_{21}O_2$), ~ 0.4% of PFDoA ($C_{12}HF_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}HF_{27}O_2$).

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

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:

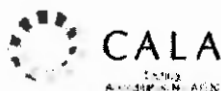
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

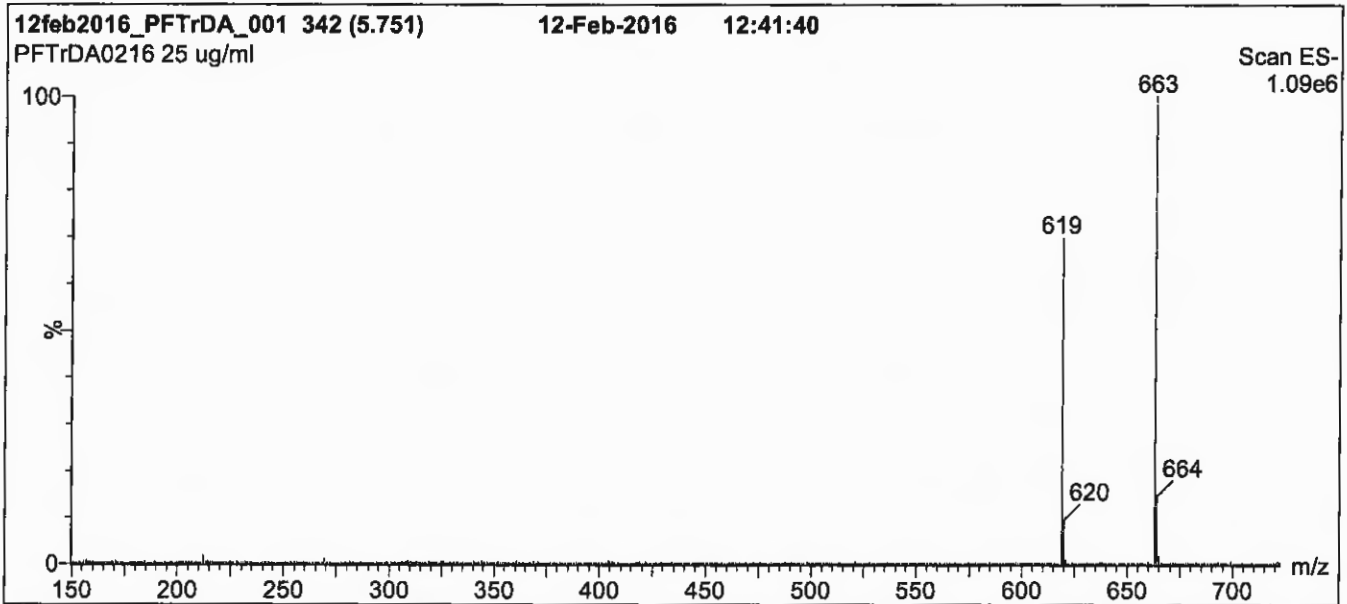
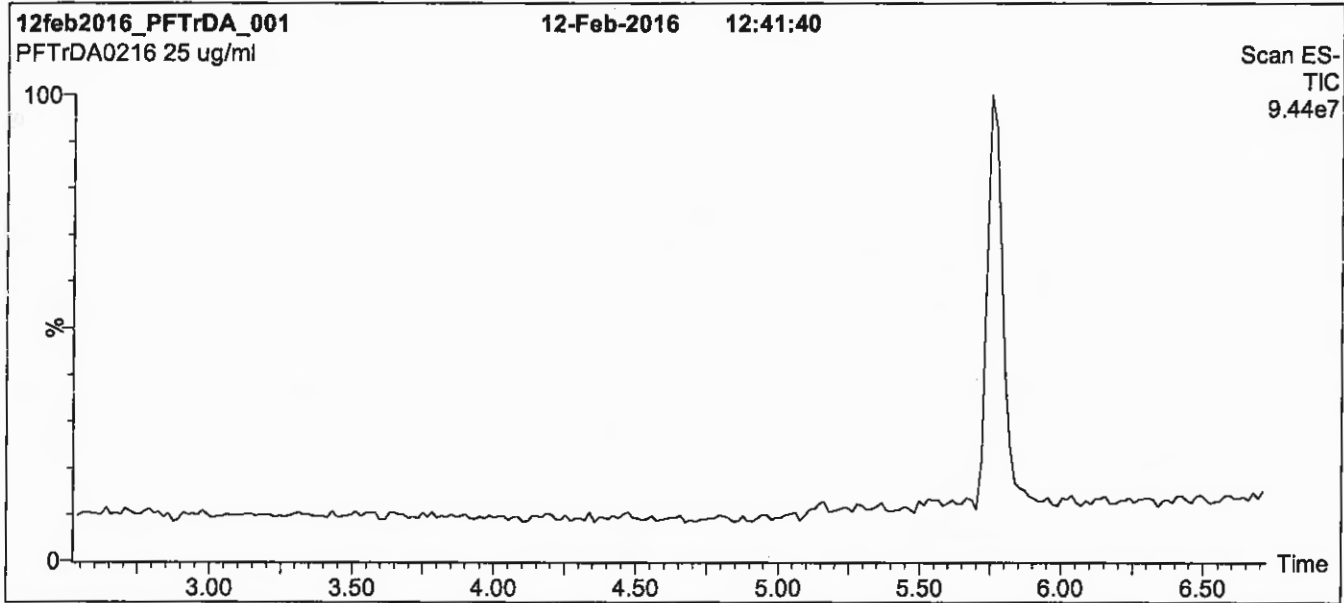
QUALITY MANAGEMENT:

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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

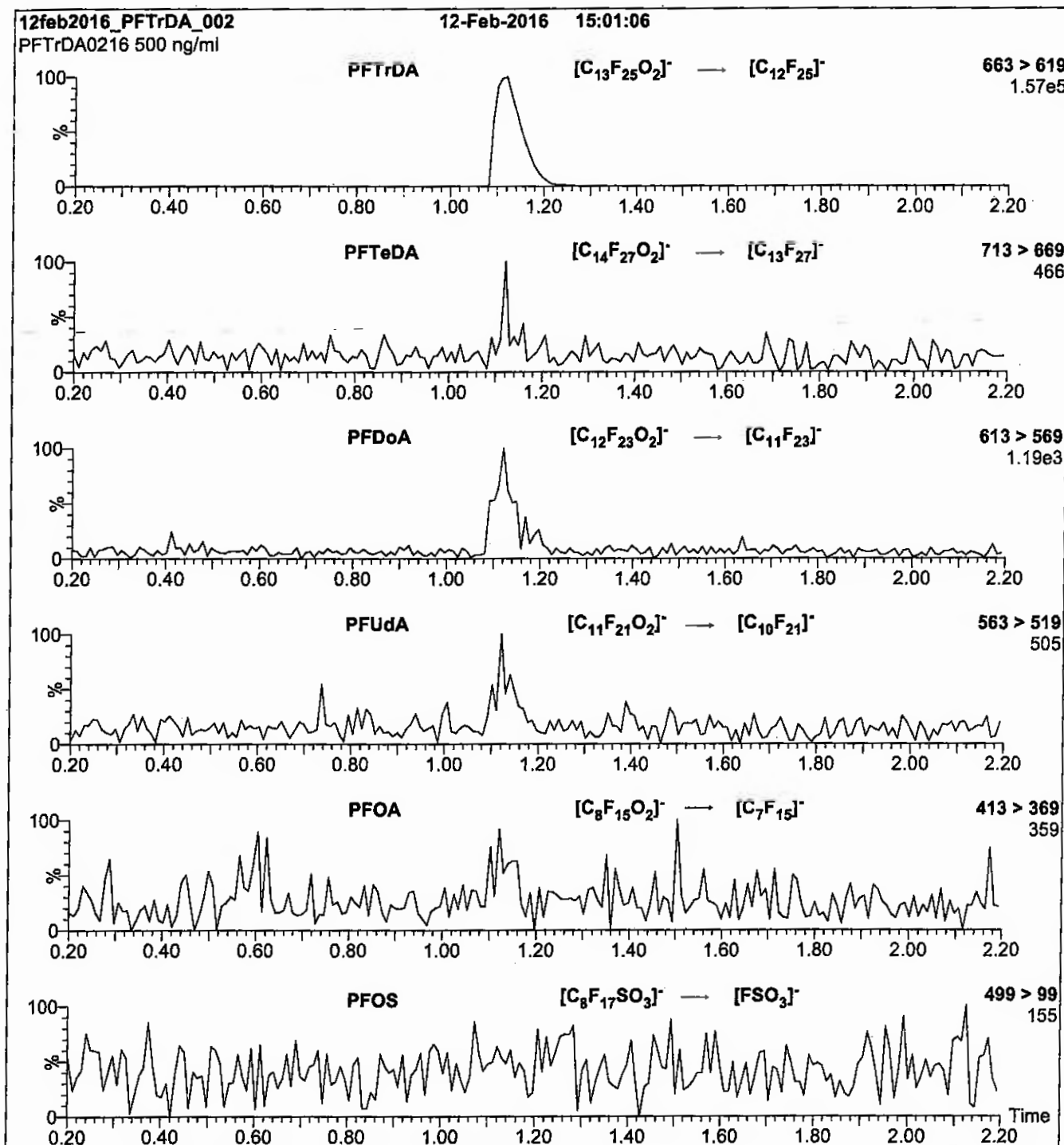
Flow: 300 μ l/min

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 PFTrDA)

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

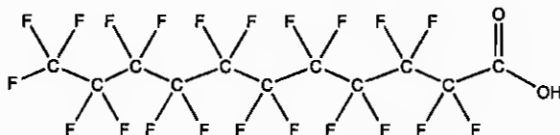


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFUdA **LOT NUMBER:** PFUdA0815
COMPOUND: Perfluoro-n-undecanoic acid

STRUCTURE: **CAS #:** 2058-94-8



MOLECULAR FORMULA: C₁₁HF₂₁O₂ **MOLECULAR WEIGHT:** 564.09
CONCENTRATION: 50 ± 2.5 µg/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)

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.

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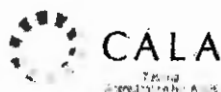
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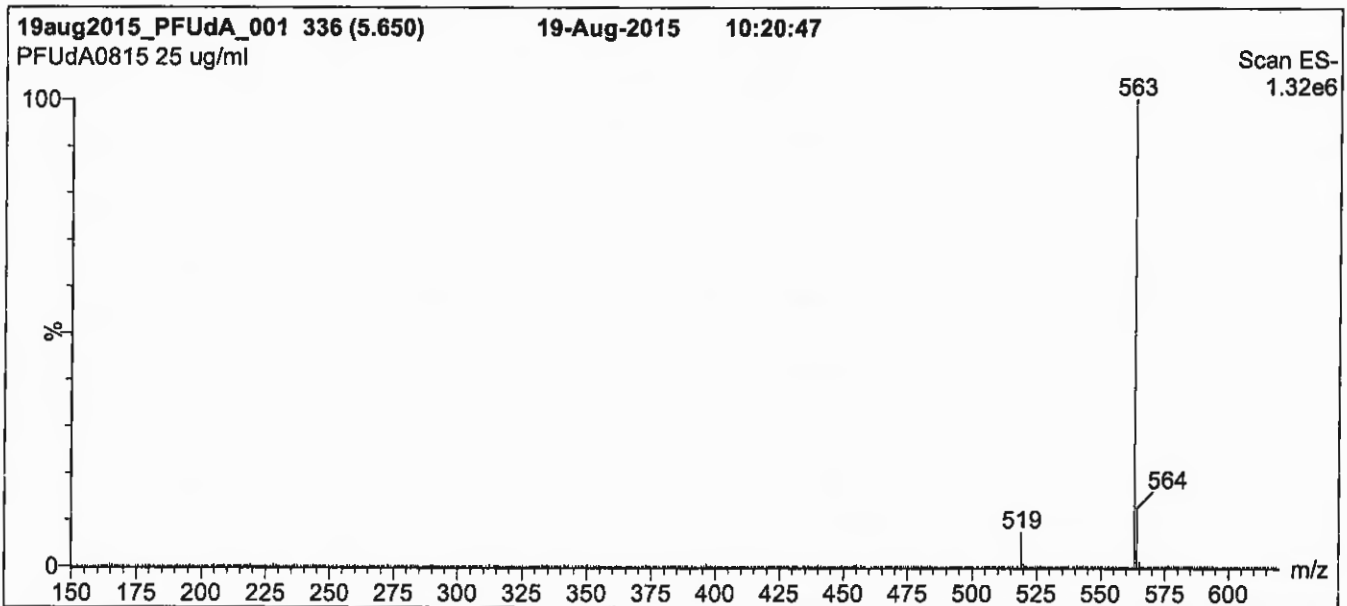
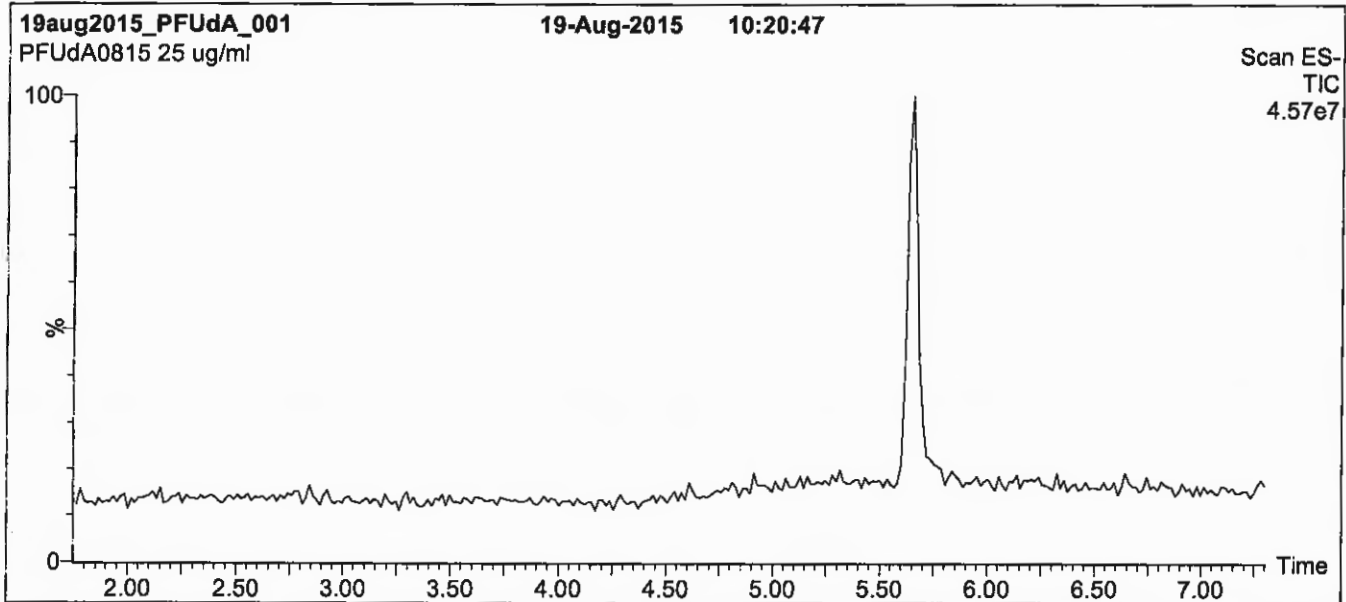
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Figure 1: PFUdA; LC/MS Data (TIC and Mass Spectrum)



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

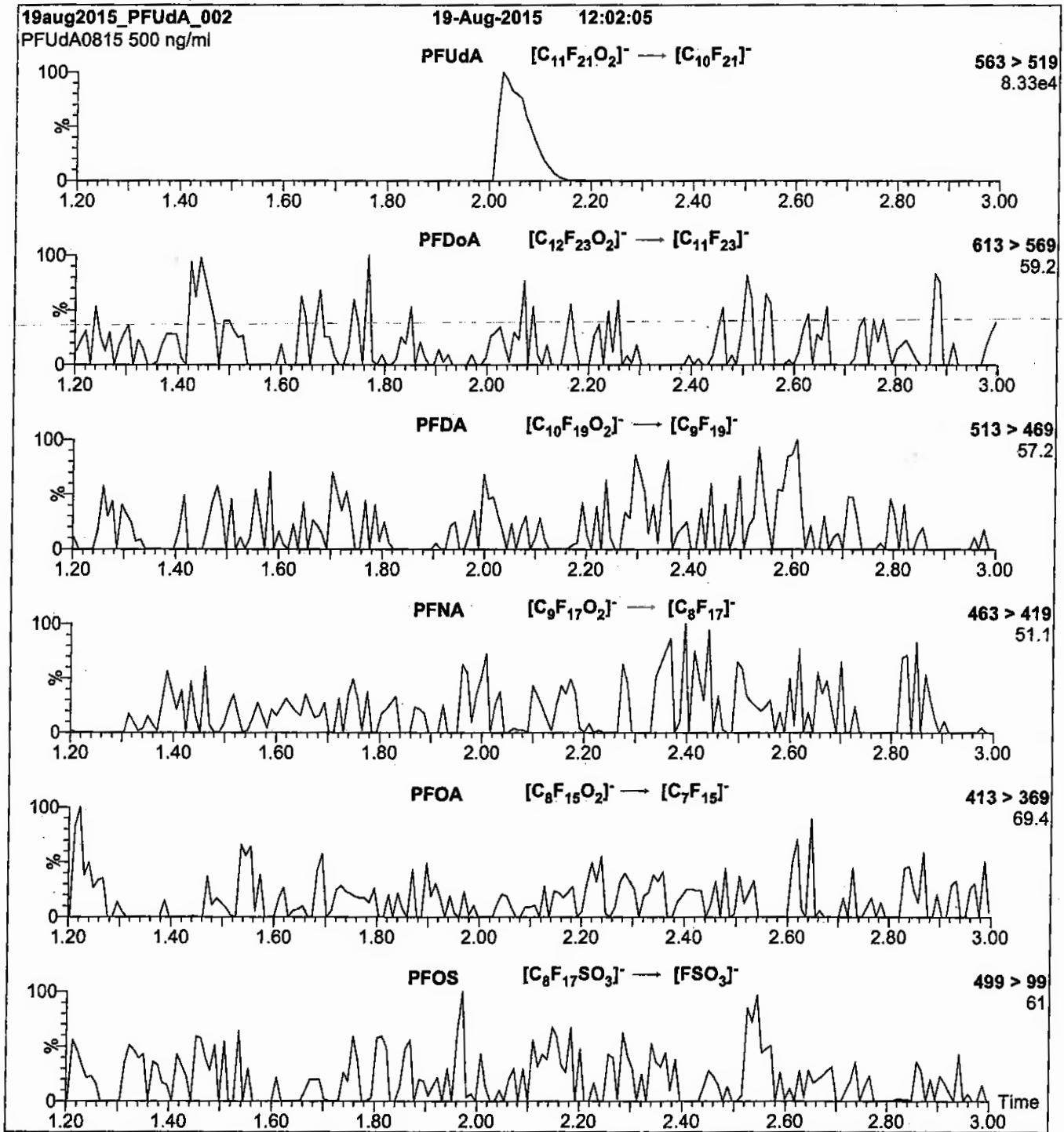
Flow: 300 μ l/min

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.: 320-24184-1

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 #
308A51MW-LF-1216	320-24184-1	15 Q	24 Q	31	23 Q	20 Q	49	39	38
308A51MW-LF-1216 DL	320-24184-1 DL	117	130	118	98	112	140	120	125
SWMU1-01-1216	320-24184-2	37	93	113	106	118	100	95	116
FSS3TMW-1216	320-24184-3	25	22 Q	17 Q	9 Q	9 Q	12 Q	9 Q	6 Q
SWMU1-02-1216	320-24184-4	31	91	115	116	118	110	62	80
SWMU1-02-1216 DL	320-24184-4 DL	93	148	125	123	139	114	96	123
	MB 320-142967/1-A	131	137	131	132	130	133	126	126
	LCS 320-142967/2-A	131	132	126	128	128	127	123	128

QC LIMITS

PFBA = 13C4 PFBA	25-150
13CPeA = 13C5-PFPeA	25-150
PFHxA = 13C2 PFHxA	25-150
13CHpA = 13C4-PFHpA	25-150
PFHxS = 1802 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 537 (Modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	13C8FOS #	PFDA #	PFUnA #	PFDoA #
308A51MW-LF-1216	320-24184-1	10 Q	117	121	110
308A51MW-LF-1216 DL	320-24184-1 DL	11 Q	122	124	126
SWMU1-01-1216	320-24184-2	7 Q	96	103	104
FSS3TMW-1216	320-24184-3	32	46	119	113
SWMU1-02-1216	320-24184-4	12 Q	104	112	109
SWMU1-02-1216 DL	320-24184-4 DL	12 Q	98	99	101
	MB 320-142967/1-A	64	130	127	112
	LCS 320-142967/2-A	62	127	119	114

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.: 320-24184-1

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 #
FSS3TMW-1216 DL	320-24184-3 DL	105	103	108	73	124	91	71	66

PFBA = 13C4 PFBA
 13CPeA = 13C5-PFPeA
 PFHxA = 13C2 PFHxA
 13CHpA = 13C4-PFHpA
 PFHxS = 1802 PFHxS
 PFOA = 13C4 PFOA
 PFOS = 13C4 PFOS
 PFNA = 13C5 PFNA

QC LIMITS

25-150
 25-150
 25-150
 25-150
 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.: 320-24184-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	13C8FOS #	PFDA #	PFUnA #	PFDoA #
FSS3TMW-1216 DL	320-24184-3 DL	73	106	105	117

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.: 320-24184-1

SDG No.: _____

Matrix: Water

Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	PFHxA #
SWMU1-01-1216 RE	320-24184-2 RE	116
SWMU1-02-1216 RE	320-24184-4 RE	108
	MB 320-144971/1-A	139
	LCS 320-144971/2-A	109
	LCSD 320-144971/3-A	117

PFHxA = 13C2 PFHxA

QC LIMITS
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.: 320-24184-1

SDG No.: _____

Matrix: Water

Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	PFOS #
FSS3TMW-1216 DL2	320-24184-3 DL2	105
	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.: 320-24184-1
 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
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 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 LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 05JAN2017B_006.d
 Lab ID: LCS 320-144971/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorohexanoic acid (PFHxA)	0.0400	0.0402	101	60-140	
13C2 PFHxA	0.100	0.109	109	25-150	

Column to be used to flag recovery and RPD values
 FORM III 537 (Modified)

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1

SDG No.: _____

Matrix: Water Level: Low Lab File ID: 05JAN2017B_007.d

Lab ID: LCSD 320-144971/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorohexanoic acid (PFHxA)	0.0400	0.0424	106	5	30	60-140	
13C2 PFHxA	0.100	0.117	117			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 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
308A51MW-LF-1216	320-24184-1	28DEC2016C_009.d	12/29/2016 00:52
FSS3TMW-1216	320-24184-3	28DEC2016C_011.d	12/29/2016 01:07

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 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
FSS3TMW-1216 DL	320-24184-3 DL	30DEC2016B_004.d	12/30/2016 12:41
308A51MW-LF-1216 DL	320-24184-1 DL	30DEC2016B_011.d	12/30/2016 13:33
SWMU1-01-1216	320-24184-2	30DEC2016B_012.d	12/30/2016 13:41
SWMU1-02-1216 DL	320-24184-4 DL	30DEC2016B_015.d	12/30/2016 14:03
SWMU1-02-1216	320-24184-4	30DEC2016B_016.d	12/30/2016 14:11
	LCS 320-142967/2-A RA	30DEC2016B_033.d	12/30/2016 16:19
FSS3TMW-1216 DL2	320-24184-3 DL2	04JAN2017A_045.d	01/04/2017 21:33

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Lab File ID: 05JAN2017B_005.d Lab Sample ID: MB 320-144971/1-A
 Matrix: Water Date Extracted: 01/04/2017 16:57
 Instrument ID: A8_N Date Analyzed: 01/05/2017 15:15
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-144971/2-A	05JAN2017B_006.d	01/05/2017 15:23
	LCSD 320-144971/3-A	05JAN2017B_007.d	01/05/2017 15:30
SWMU1-01-1216 RE	320-24184-2 RE	05JAN2017B_008.d	01/05/2017 15:38
SWMU1-02-1216 RE	320-24184-4 RE	05JAN2017B_009.d	01/05/2017 15:45

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: 308A51MW-LF-1216 Lab Sample ID: 320-24184-1
 Matrix: Water Lab File ID: 28DEC2016C_009.d
 Analysis Method: 537 (Modified) Date Collected: 12/07/2016 13:40
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 271 (mL) Date Analyzed: 12/29/2016 00:52
 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.: 144253 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	2.9	E	0.0023	0.00092	0.00042
2706-90-3	Perfluoropentanoic acid (PFPeA)	1.6	E	0.0023	0.0018	0.00091
307-24-4	Perfluorohexanoic acid (PFHxA)	1.4	E B	0.0023	0.0018	0.00073
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.3	E	0.0023	0.0018	0.00074
335-67-1	Perfluorooctanoic acid (PFOA)	1.6	E M	0.0023	0.0018	0.00069
375-95-1	Perfluorononanoic acid (PFNA)	0.13		0.0023	0.0018	0.00060
335-76-2	Perfluorodecanoic acid (PFDA)	0.0027		0.0023	0.00092	0.00041
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0018	U	0.0023	0.0018	0.00069
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0018	U	0.0023	0.0018	0.00054
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0018	U	0.0023	0.0018	0.00051
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00047	J	0.0023	0.00092	0.00037
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.6	E M	0.0023	0.0018	0.00085
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	4.9	E	0.0023	0.0018	0.00080
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0028	U	0.0037	0.0028	0.0011
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0021	J	0.0023	0.0018	0.00059

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: 308A51MW-LF-1216 Lab Sample ID: 320-24184-1
 Matrix: Water Lab File ID: 28DEC2016C_009.d
 Analysis Method: 537 (Modified) Date Collected: 12/07/2016 13:40
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 271 (mL) Date Analyzed: 12/29/2016 00:52
 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.: 144253 Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	10	Q	25-150
STL00992	13C4 PFBA	15	Q	25-150
STL01893	13C5-PFPeA	24	Q	25-150
STL00993	13C2 PFHxA	31		25-150
STL01892	13C4-PFHpA	23	Q	25-150
STL00990	13C4 PFOA	49		25-150
STL00995	13C5 PFNA	39		25-150
STL00996	13C2 PFDA	117		25-150
STL00997	13C2 PFUnA	121		25-150
STL00998	13C2 PFDoA	110		25-150
STL00994	18O2 PFHxS	20	Q	25-150
STL00991	13C4 PFOS	38		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_009.d
 Lims ID: 320-24184-A-1-A
 Client ID: 308A51MW-LF-1216
 Sample Type: Client
 Inject. Date: 29-Dec-2016 00:52:01 ALS Bottle#: 7 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24184-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 09:10:39 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 17:38:40

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	1.533	1.534	-0.001	2635456	7.58		15.2	141716	
1 Perfluorobutyric acid										E
212.90 > 169.00	1.533	1.534	-0.001	1.000	71875746	1597.3			95156	E
D 4 13C5-PFPeA	267.90 > 223.00	1.810	1.810	0.0	3131274	11.8		23.5	72327	
3 Perfluoropentanoic acid										E
262.90 > 219.00	1.829	1.810	0.019	1.000	53098406	859.2			4242	E
5 Perfluorobutanesulfonic acid										EM
298.90 > 80.00	1.877	1.849	0.028	1.000	77801104	844.1				EM
298.90 > 99.00	1.848	1.849	-0.001	0.985	70621103		1.10(0.00-0.00)			
D 6 13C2 PFHxA	315.00 > 270.00	2.087	2.097	-0.010	3760373	15.3		30.7	305961	
7 Perfluorohexanoic acid										E
313.00 > 269.00	2.118	2.097	0.021	1.000	51347497	735.1			1440	E
9 Perfluorohexanesulfonic acid										E
399.00 > 80.00	2.401	2.422	-0.021	1.000	176864369	2639.7				E
D 11 13C4-PFHpA	367.00 > 322.00	2.409	2.429	-0.020	2591290	11.4		22.9	223927	
12 Perfluoroheptanoic acid										E
363.00 > 319.00	2.409	2.429	-0.020	1.000	63180739	1245.5			12131	E
D 10 18O2 PFHxS	403.00 > 84.00	2.436	2.452	-0.016	3076914	9.41		19.9	26164	
D 14 13C4 PFOA	417.00 > 372.00	2.785	2.790	-0.005	5670316	24.6		49.2	215745	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.777	2.790	-0.013	1.000	100330883	881.9			179240	EM
413.00 > 169.00	2.760	2.790	-0.030	0.994	86802281		1.16(0.90-1.10)		313754	

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	2.986	3.134	-0.148	1.000	293011367	3124.9			0.0	E
499.00 > 99.00	3.132	3.134	-0.002	1.049	123012967		2.38(0.90-1.10)		285109	
D 17 13C4 PFOS										
503.00 > 80.00	3.149	3.158	-0.009		4507038	18.1		37.9	33691	
20 Perfluorononanoic acid										
463.00 > 419.00	3.149	3.158	-0.009	1.000	4523216	67.9			28055	
D 19 13C5 PFNA										
468.00 > 423.00	3.149	3.166	-0.017		3500273	19.7		39.4	130737	
D 21 13C8 FOSA										
506.00 > 78.00	3.484	3.481	0.003		1893842	4.93		9.9	80624	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.355	3.481	-0.126	1.000	39989	1.13			1243	
D 23 13C2 PFDA										
515.00 > 470.00	3.509	3.523	-0.014		9225214	58.6		117	672269	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.509	3.523	-0.014	1.000	250704	1.44			2574	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.821	3.834	-0.013	1.000	438	0.007955				
D 27 13C2 PFUnA										
565.00 > 520.00	3.838	3.851	-0.013		7084892	60.4		121	697440	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.847	3.851	-0.004	1.000	22884	0.1689			325	
D 30 13C2 PFDaA										
615.00 > 570.00	4.136	4.134	0.002		6124484	55.2		110	195991	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.655	4.652	0.003	1.000	49801	0.2565			736	
713.00 > 169.00	4.635	4.652	-0.017	0.996	6986		7.13(0.00-0.00)		2959	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

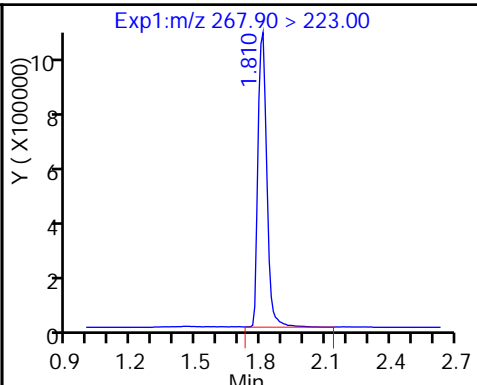
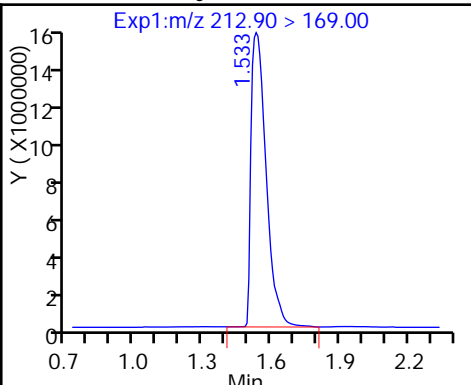
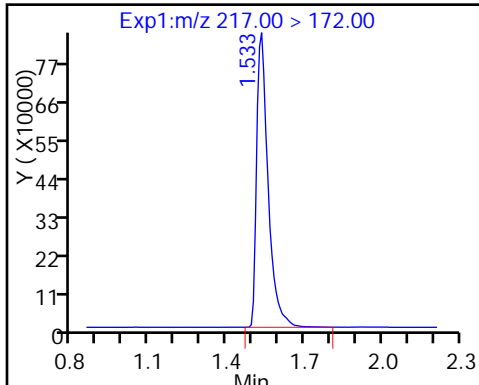
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_009.d
Injection Date: 29-Dec-2016 00:52:01 Instrument ID: A8_N
Lims ID: 320-24184-A-1-A Lab Sample ID: 320-24184-1
Client ID: 308A51MW-LF-1216
Operator ID: A8-PC\A8 ALS Bottle#: 7 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

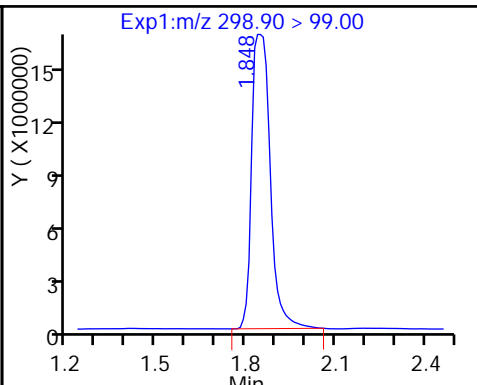
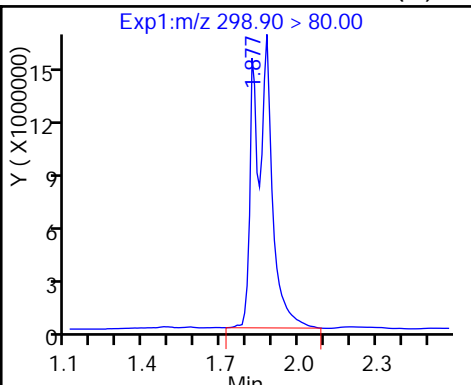
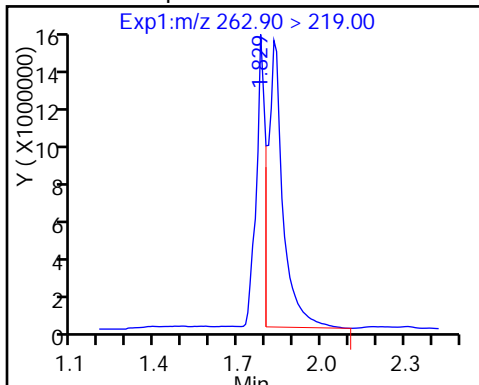
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid (M)

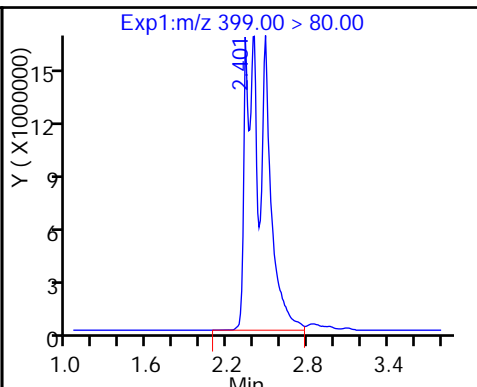
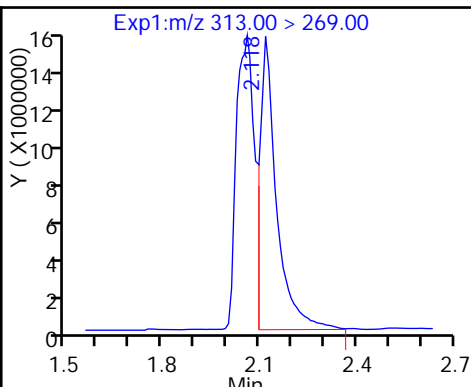
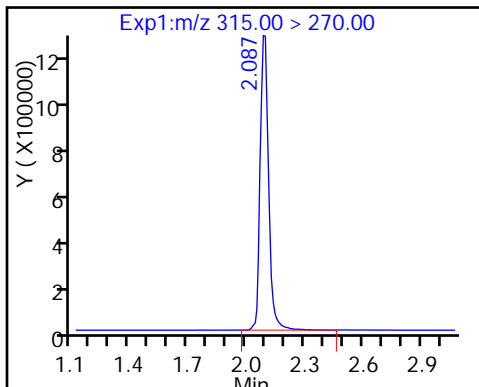
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

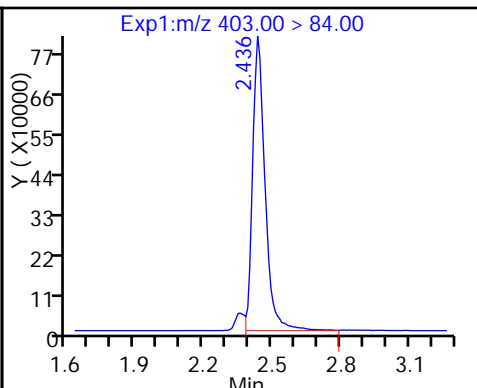
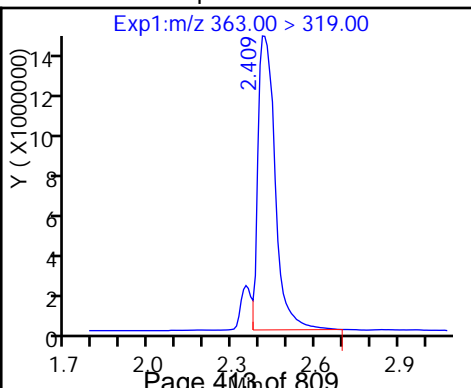
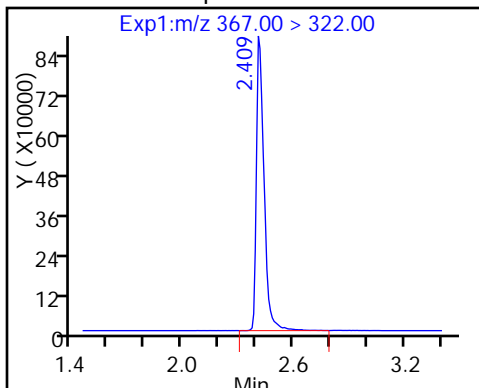
9 Perfluorohexanesulfonic acid



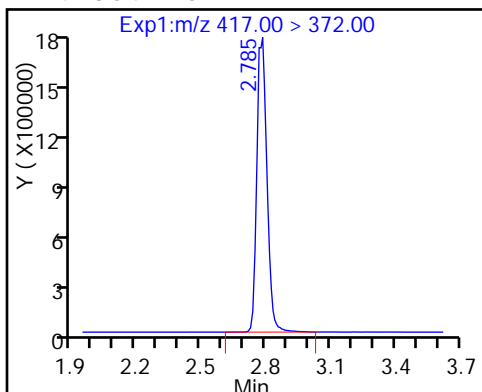
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid

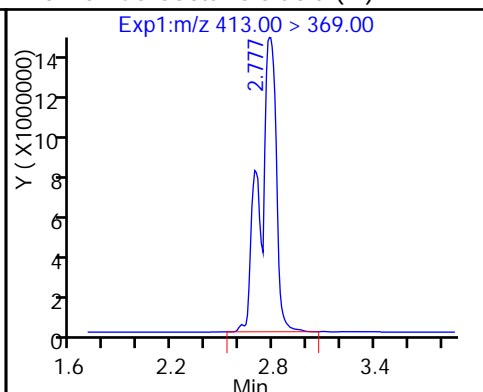
D 10 18O2 PFHxS



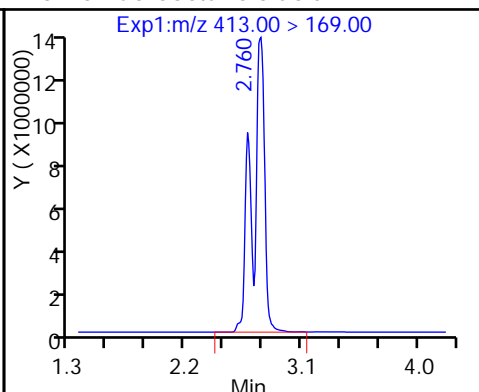
D 14 13C4 PFOA



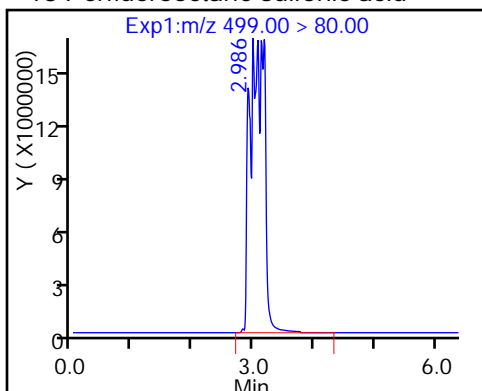
15 Perfluorooctanoic acid (M)



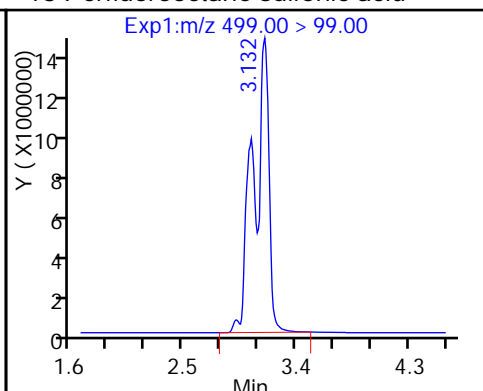
15 Perfluorooctanoic acid



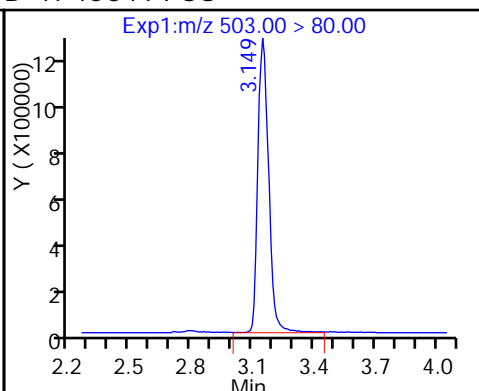
18 Perfluorooctane sulfonic acid



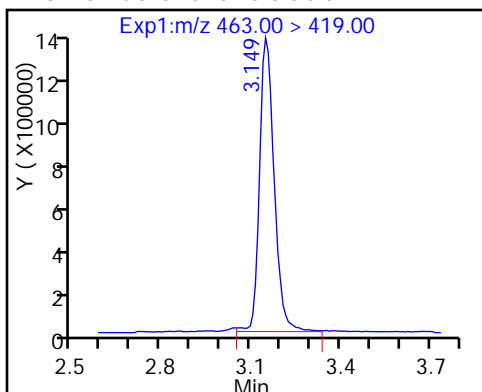
18 Perfluorooctane sulfonic acid



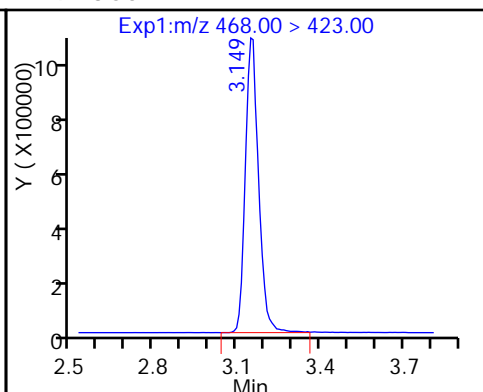
D 17 13C4 PFOS



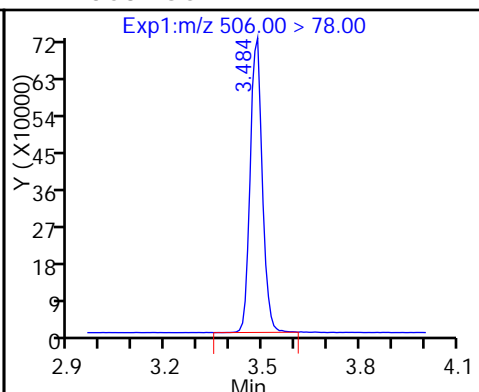
20 Perfluorononanoic acid



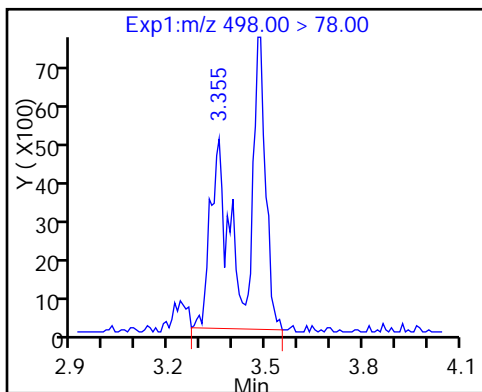
D 19 13C5 PFNA



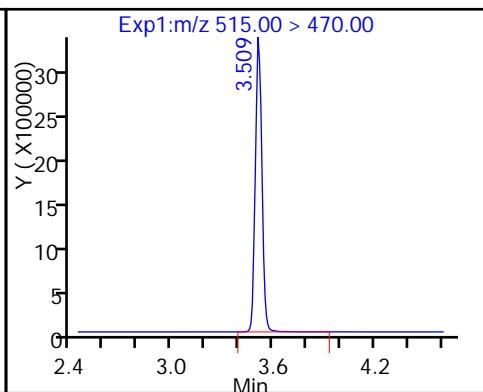
D 21 13C8 FOSA



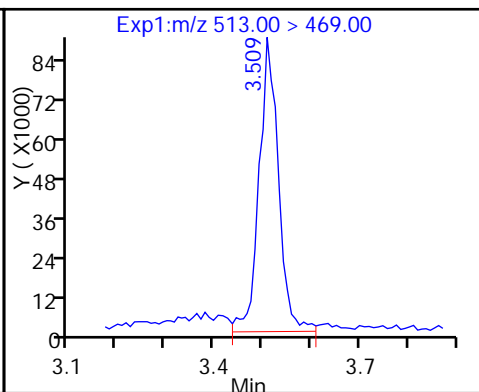
22 Perfluorooctane Sulfonamide



D 23 13C2 PFDA



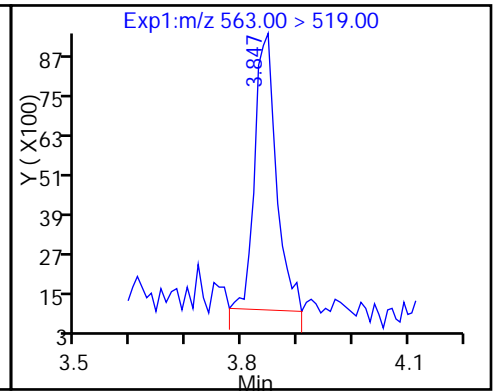
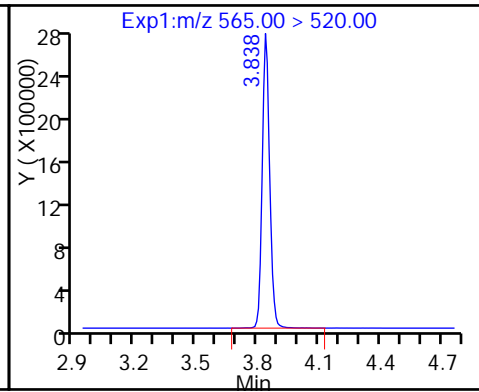
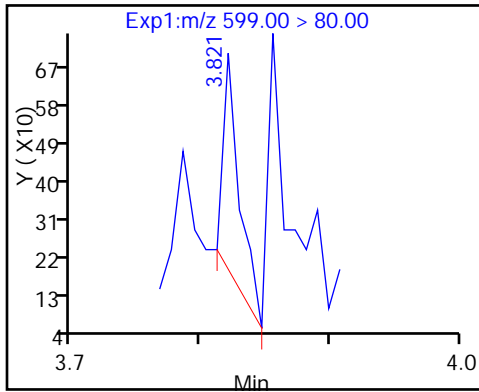
24 Perfluorodecanoic acid



26 Perfluorodecane Sulfonic acid

D 27 13C2 PFUnA

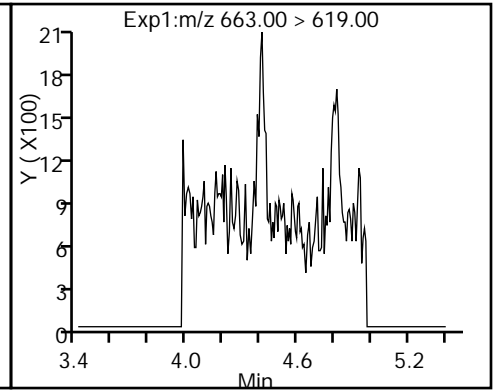
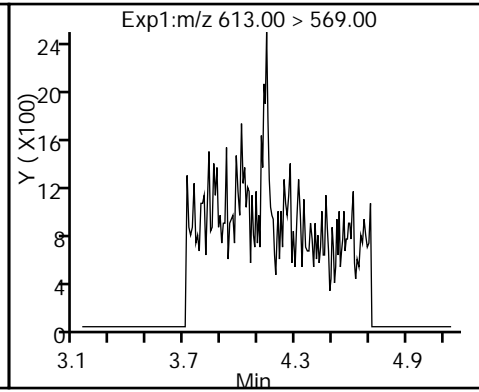
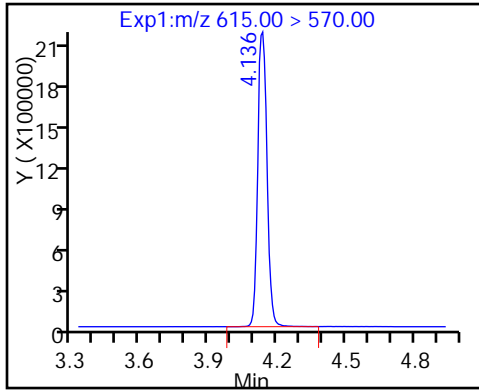
28 Perfluoroundecanoic acid



D 30 13C2 PFDaA

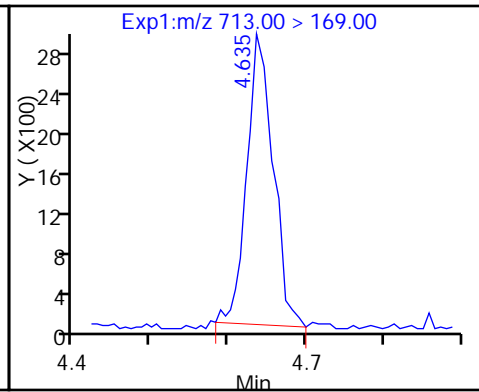
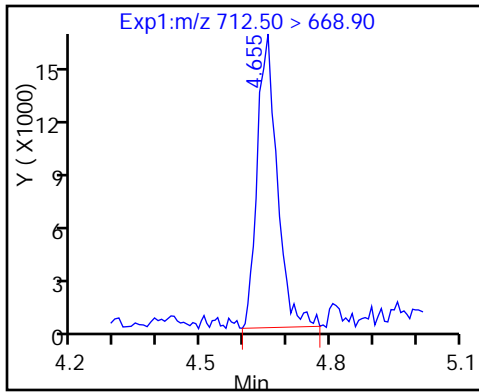
29 Perfluorododecanoic acid (ND)

31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



TestAmerica Sacramento

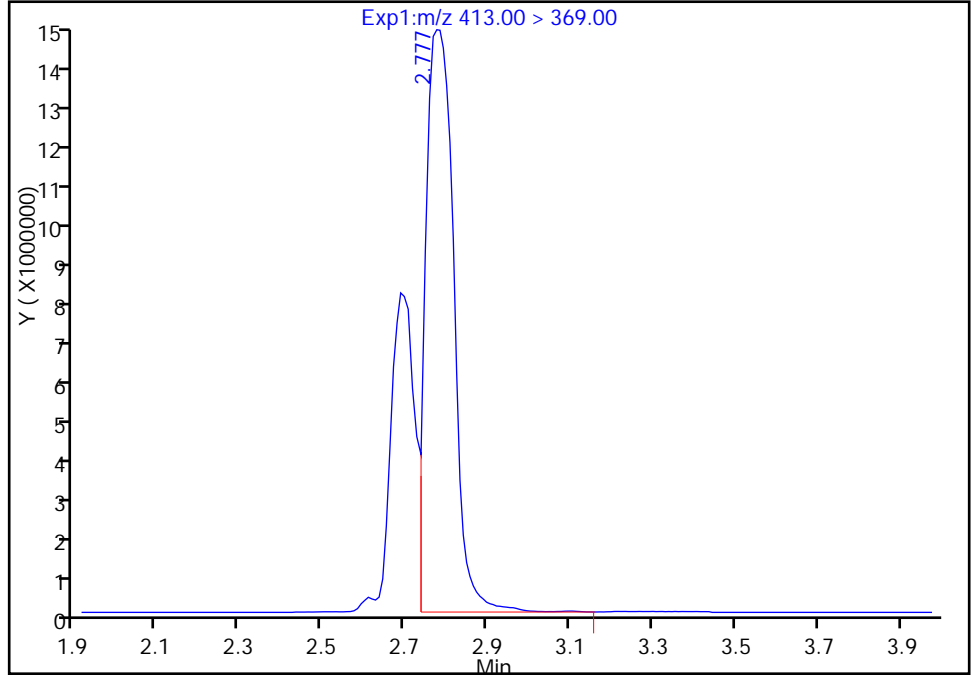
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Injection Date: 29-Dec-2016 00:52:01 Instrument ID: A8_N
Lims ID: 320-24184-A-1-A Lab Sample ID: 320-24184-1
Client ID: 308A51MW-LF-1216
Operator ID: A8-PC\A8 ALS Bottle#: 7 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

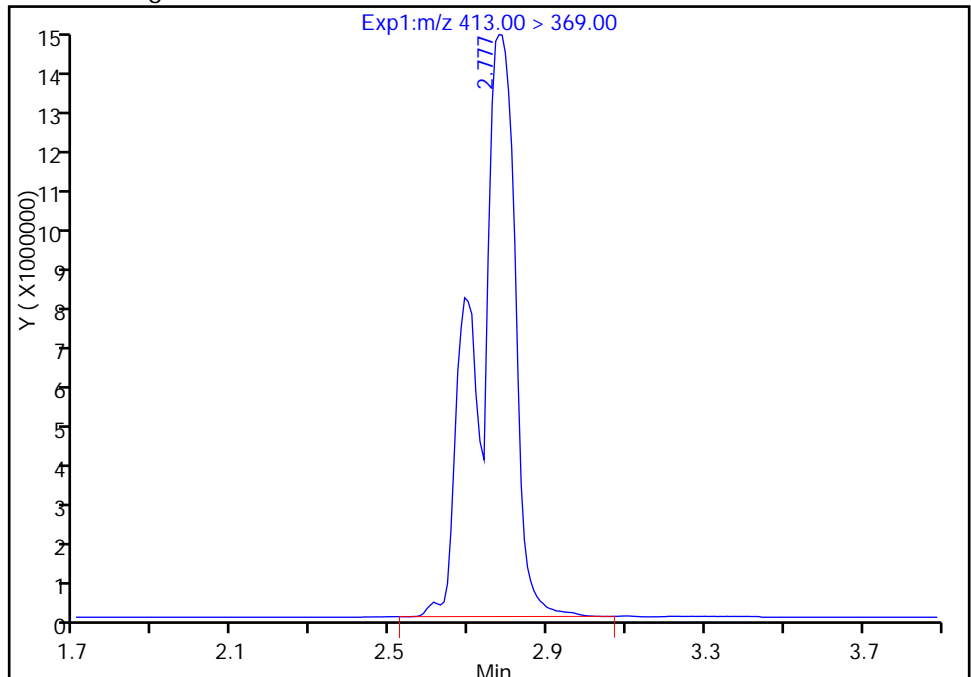
RT: 2.78
Area: 68212625
Amount: 599.6040
Amount Units: ng/ml

Processing Integration Results



RT: 2.78
Area: 100330883
Amount: 881.9305
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 29-Dec-2016 17:38:40

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento

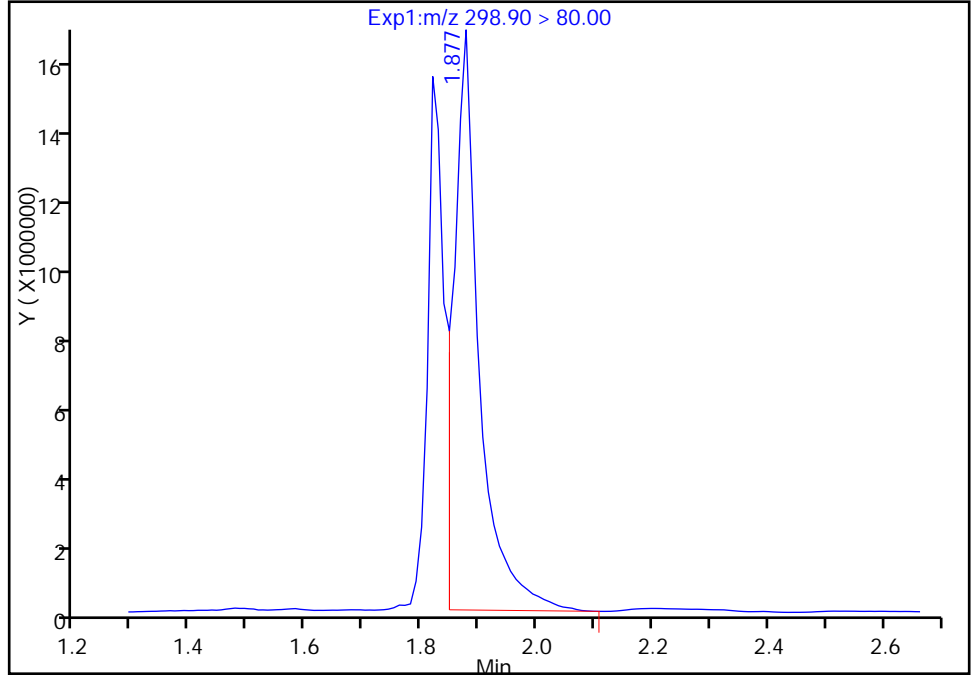
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_009.d
Injection Date: 29-Dec-2016 00:52:01 Instrument ID: A8_N
Lims ID: 320-24184-A-1-A Lab Sample ID: 320-24184-1
Client ID: 308A51MW-LF-1216
Operator ID: A8-PC\A8 ALS Bottle#: 7 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

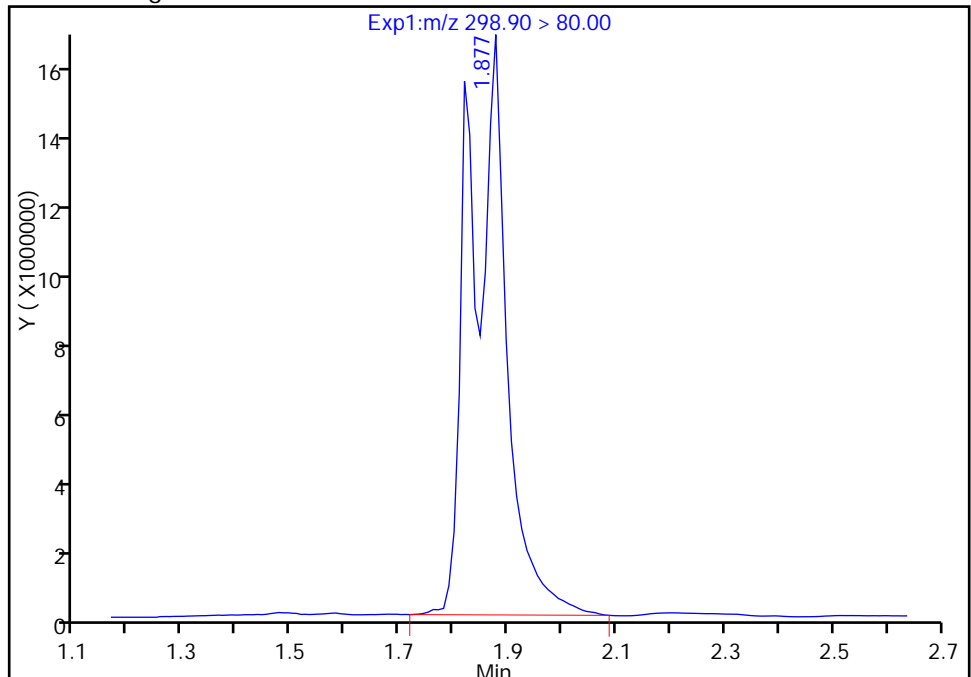
RT: 1.88
Area: 48045385
Amount: 521.2446
Amount Units: ng/ml

Processing Integration Results



RT: 1.88
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Amount: 844.0646
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 06-Jan-2017 09:10:39

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: 308A51MW-LF-1216 DL Lab Sample ID: 320-24184-1 DL
 Matrix: Water Lab File ID: 30DEC2016B_011.d
 Analysis Method: 537 (Modified) Date Collected: 12/07/2016 13:40
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 271 (mL) Date Analyzed: 12/30/2016 13:33
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 50
 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
375-22-4	Perfluorobutanoic acid (PFBA)	5.3	D	0.12	0.046	0.021
2706-90-3	Perfluoropentanoic acid (PFPeA)	9.1	D	0.12	0.092	0.046
307-24-4	Perfluorohexanoic acid (PFHxA)	11	D B	0.12	0.092	0.036
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.3	D	0.12	0.092	0.037
335-67-1	Perfluorooctanoic acid (PFOA)	2.6	D M	0.12	0.092	0.035
375-95-1	Perfluorononanoic acid (PFNA)	0.13	D	0.12	0.092	0.030
335-76-2	Perfluorodecanoic acid (PFDA)	0.046	U	0.12	0.046	0.020
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.092	U	0.12	0.092	0.035
307-55-1	Perfluorododecanoic acid (PFDoA)	0.092	U	0.12	0.092	0.027
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.092	U	0.12	0.092	0.025
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.046	U	0.12	0.046	0.018
375-73-5	Perfluorobutanesulfonic acid (PFBS)	4.3	D	0.12	0.092	0.042
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	17	D	0.12	0.092	0.040
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	11	D	0.18	0.14	0.059
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.14	U	0.18	0.14	0.056
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.092	U	0.12	0.092	0.029

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: 308A51MW-LF-1216 DL Lab Sample ID: 320-24184-1 DL
 Matrix: Water Lab File ID: 30DEC2016B_011.d
 Analysis Method: 537 (Modified) Date Collected: 12/07/2016 13:40
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 271 (mL) Date Analyzed: 12/30/2016 13:33
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 50
 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.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	11	Q	25-150
STL00992	13C4 PFBA	117		25-150
STL01893	13C5-PFPeA	130		25-150
STL00993	13C2 PFHxA	118		25-150
STL01892	13C4-PFHpA	98		25-150
STL00990	13C4 PFOA	140		25-150
STL00995	13C5 PFNA	120		25-150
STL00996	13C2 PFDA	122		25-150
STL00997	13C2 PFUnA	124		25-150
STL00998	13C2 PFDoA	126		25-150
STL00994	18O2 PFHxS	112		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_011.d
 Lims ID: 320-24184-A-1-A
 Client ID: 308A51MW-LF-1216
 Sample Type: Client
 Inject. Date: 30-Dec-2016 13:33:55 ALS Bottle#: 7 Worklist Smp#: 21
 Injection Vol: 2.0 ul Dil. Factor: 50.0000
 Sample Info: 320-24184-a-1-a 50X
 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 13:53:24

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	1.534	1.534	0.0	405325	1.17		2.3	35516	
1 Perfluorobutyric acid	212.90 > 169.00	1.534	1.534	0.0	1.000	20026093	57.9		98201	
D 4 13C5-PFPeA	267.90 > 223.00	1.811	1.810	0.001	346473	1.30		2.6	28591	
3 Perfluoropentanoic acid	262.90 > 219.00	1.811	1.810	0.001	1.000	33672303	98.5		202827	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.849	1.849	0.0	1.000	23946105	46.3			
	298.90 > 99.00	1.849	1.849	0.0	1.000	11474977	2.09(0.00-0.00)			
D 6 13C2 PFHxA	315.00 > 270.00	2.097	2.098	-0.001	288562	1.18		2.4	36793	
7 Perfluorohexanoic acid	313.00 > 269.00	2.097	2.098	-0.001	1.000	31613950	118.0		322845	
9 Perfluorohexanesulfonic acid	399.00 > 80.00	2.366	2.424	-0.058	1.000	67333605	179.1			
D 11 13C4-PFHpA	367.00 > 322.00	2.431	2.431	0.0	222530	0.9831		2.0	40929	
12 Perfluoroheptanoic acid	363.00 > 319.00	2.431	2.431	0.0	1.000	10051162	46.1		38673	
D 10 18O2 PFHxS	403.00 > 84.00	2.445	2.454	-0.009	345299	1.06		2.2	29917	
D 14 13C4 PFOA	417.00 > 372.00	2.790	2.791	-0.001	321384	1.40		2.8	25903	
15 Perfluorooctanoic acid	413.00 > 369.00	2.790	2.791	-0.001	1.000	9018319	28.0		123153	M
	413.00 > 169.00	2.790	2.791	-0.001	1.000	6050367	1.49(0.90-1.10)		216182	M

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	3.037	3.135	-0.098	1.000	36734800	119.1			342022	
499.00 > 99.00	3.047	3.135	-0.088	1.003	8331631		4.41(0.90-1.10)		110948	
D 17 13C4 PFOS										
503.00 > 80.00	3.158	3.159	-0.001		296454	1.19		2.5	17439	
20 Perfluorononanoic acid										
463.00 > 419.00	3.158	3.159	-0.001	1.000	286356	1.42			5758	
D 19 13C5 PFNA										
468.00 > 423.00	3.158	3.167	-0.009		212581	1.20		2.4	39683	
D 21 13C8 FOSA										
506.00 > 78.00	3.481	3.474	0.007		43868	0.1142		0.2	4027	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.515	3.524	-0.009	1.000	4906	0.0270			221	
D 23 13C2 PFDA										
515.00 > 470.00	3.515	3.524	-0.009		192414	1.22		2.4	6157	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.696	3.836	-0.140	1.000	310	0.001712				
D 27 13C2 PUnA										
565.00 > 520.00	3.851	3.853	-0.002		144823	1.24		2.5	19288	
D 30 13C2 PFDaA										
615.00 > 570.00	4.147	4.149	-0.002		139426	1.26		2.5	6818	

QC Flag Legend

Review Flags

M - Manually Integrated

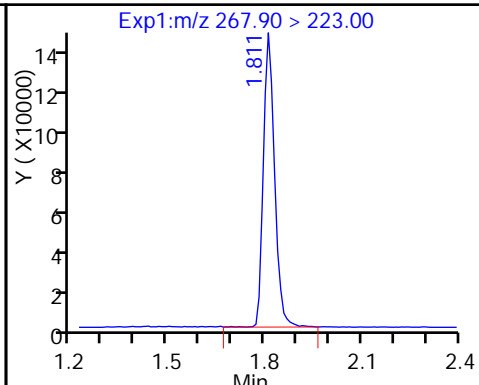
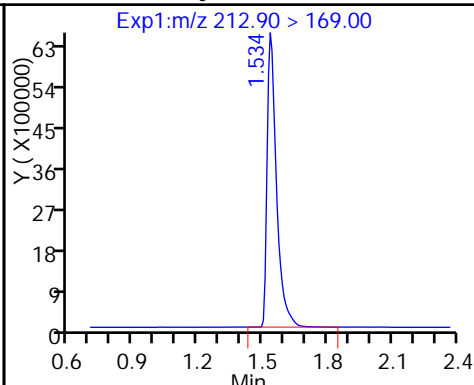
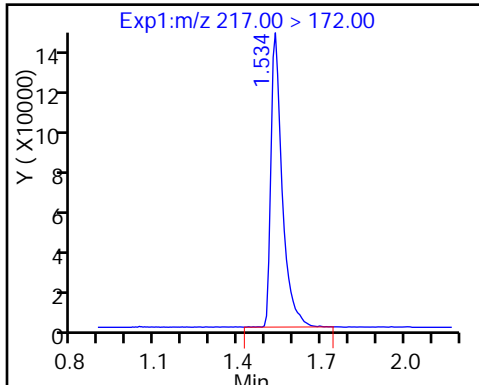
TestAmerica Sacramento

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Injection Date: 30-Dec-2016 13:33:55 Instrument ID: A8_N
Lims ID: 320-24184-A-1-A Lab Sample ID: 320-24184-1
Client ID: 308A51MW-LF-1216
Operator ID: A8-PC\A8 ALS Bottle#: 7 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 50.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

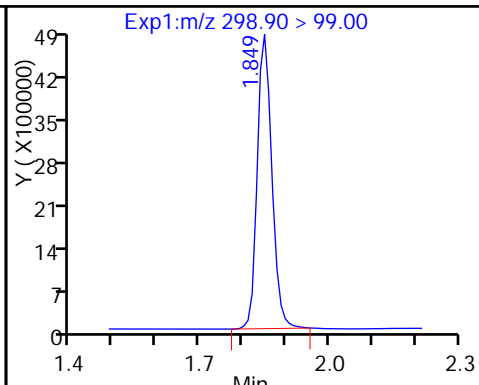
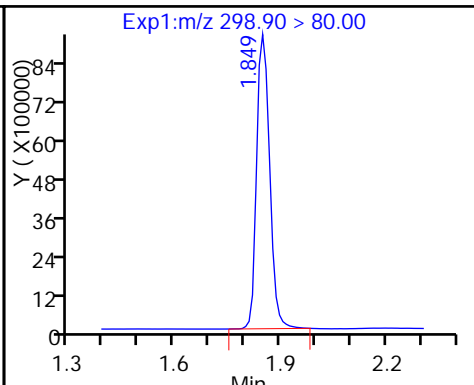
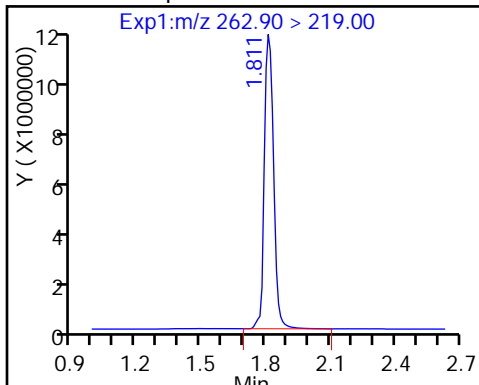
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

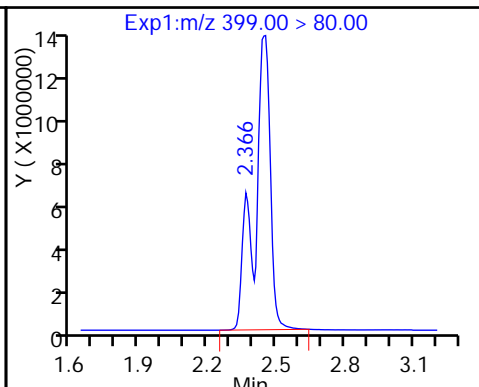
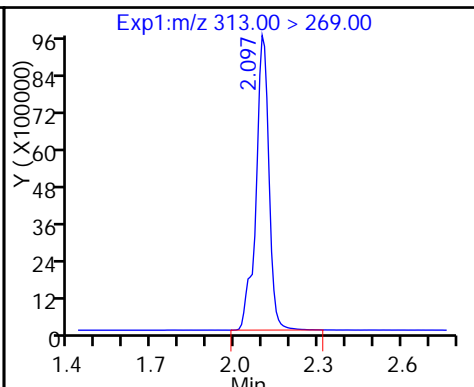
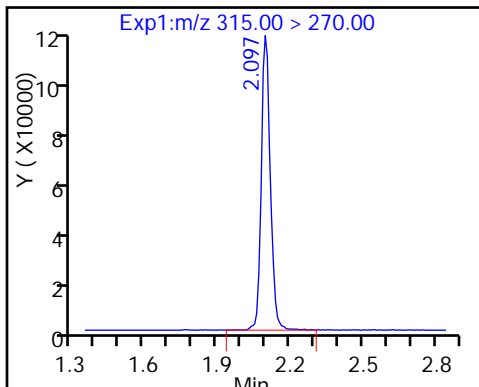
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

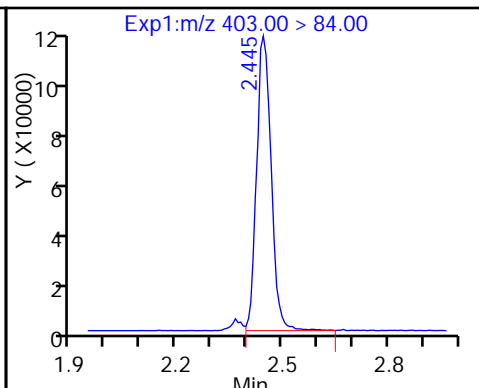
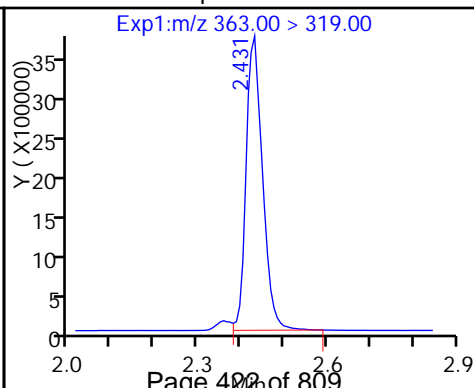
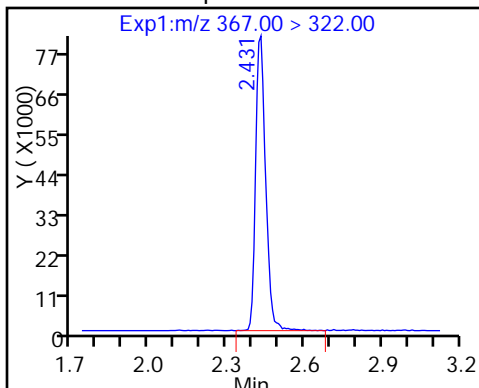
9 Perfluorohexanesulfonic acid



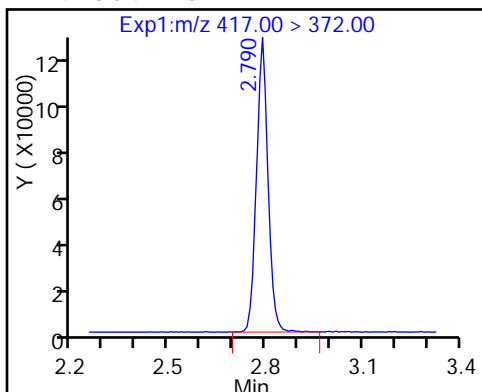
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid

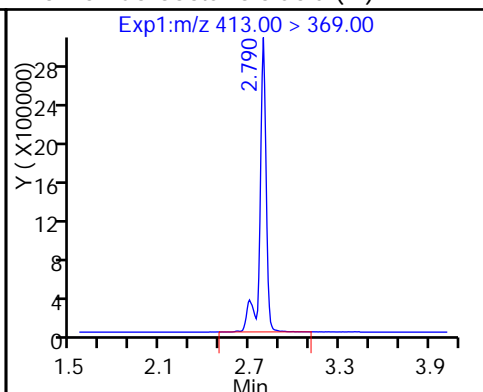
D 10 18O2 PFHxS



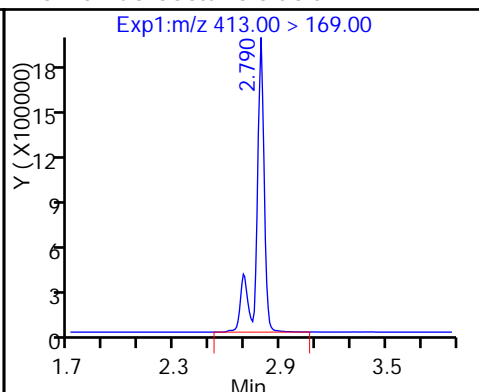
D 14 13C4 PFOA



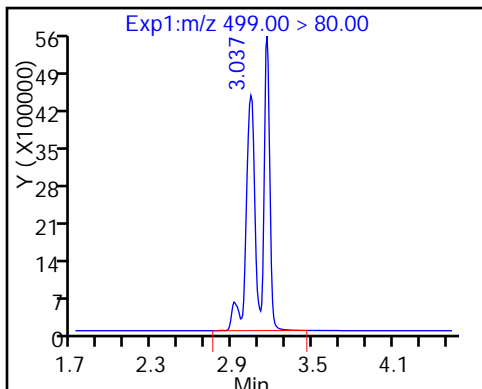
15 Perfluorooctanoic acid (M)



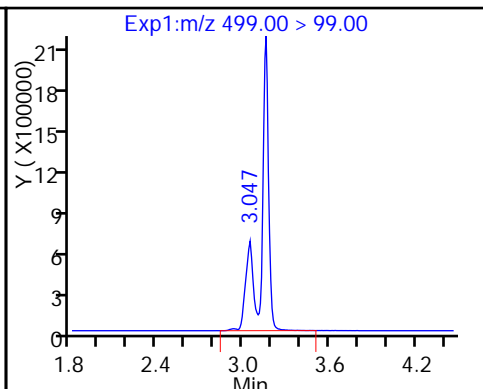
15 Perfluorooctanoic acid



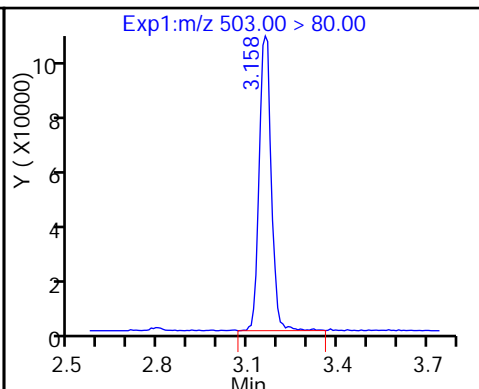
18 Perfluorooctane sulfonic acid



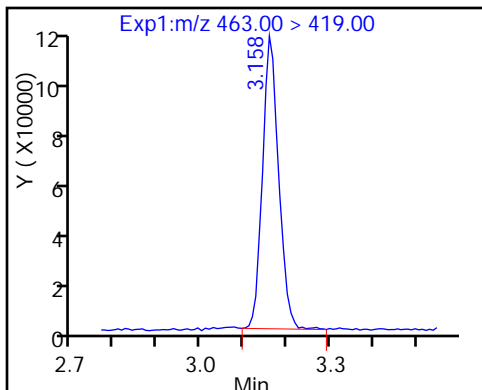
18 Perfluorooctane sulfonic acid



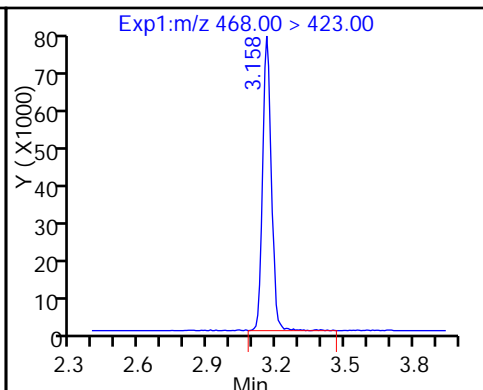
D 17 13C4 PFOS



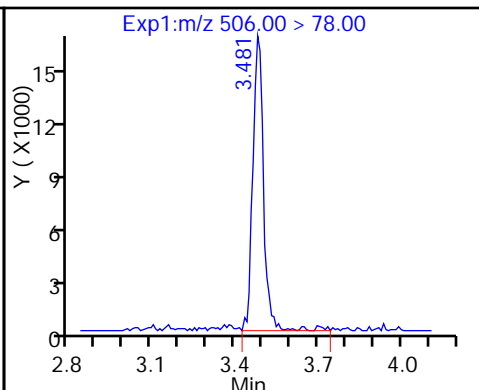
20 Perfluorononanoic acid



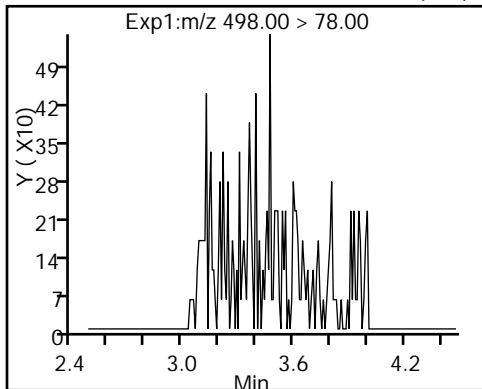
D 19 13C5 PFNA



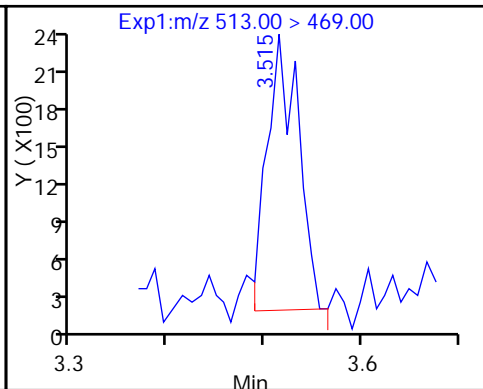
D 21 13C8 FOSA



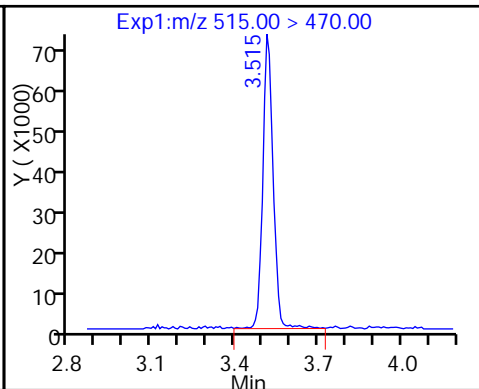
22 Perfluorooctane Sulfonamide (ND)



24 Perfluorodecanoic acid



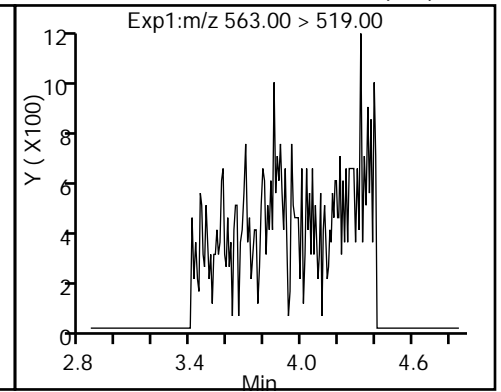
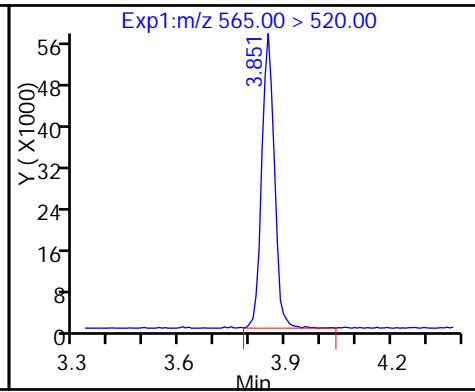
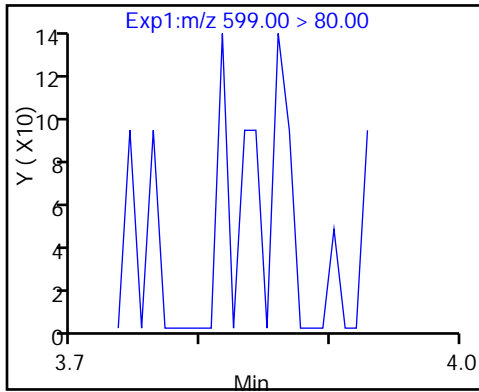
D 23 13C2 PFDA



26 Perfluorodecane Sulfonic acid

D 27 13C2 PFUnA

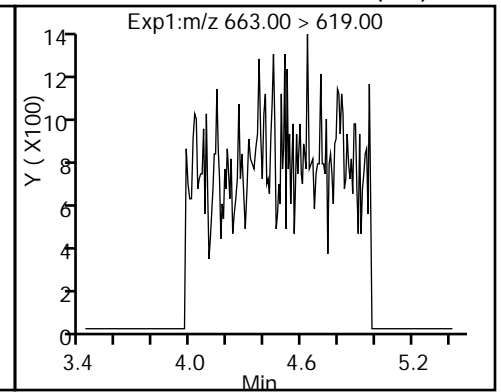
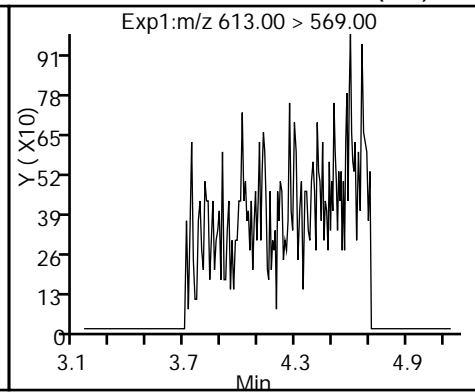
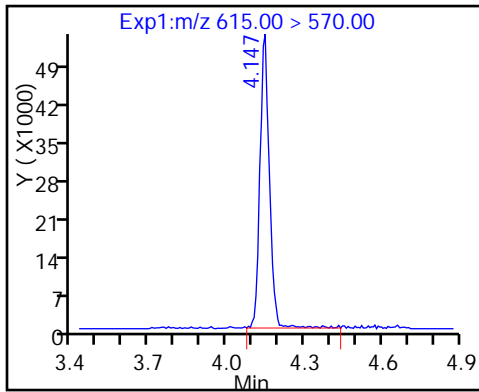
28 Perfluoroundecanoic acid (ND)



D 30 13C2 PFDaA

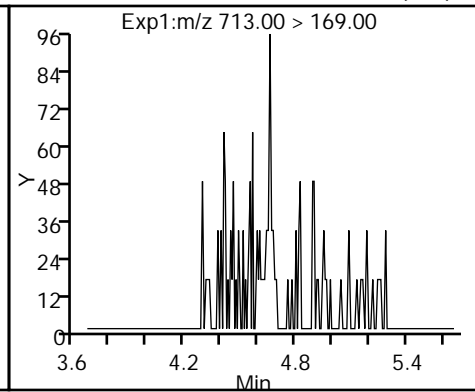
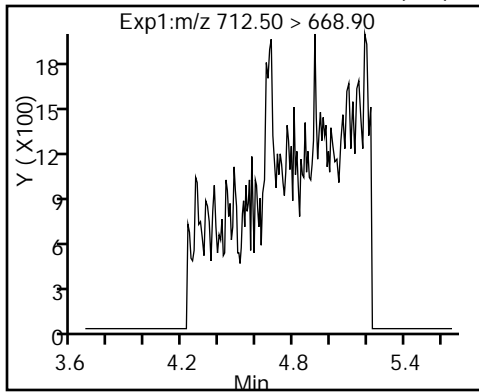
29 Perfluorododecanoic acid (ND)

31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND)

33 Perfluorotetradecanoic acid (ND)



TestAmerica Sacramento

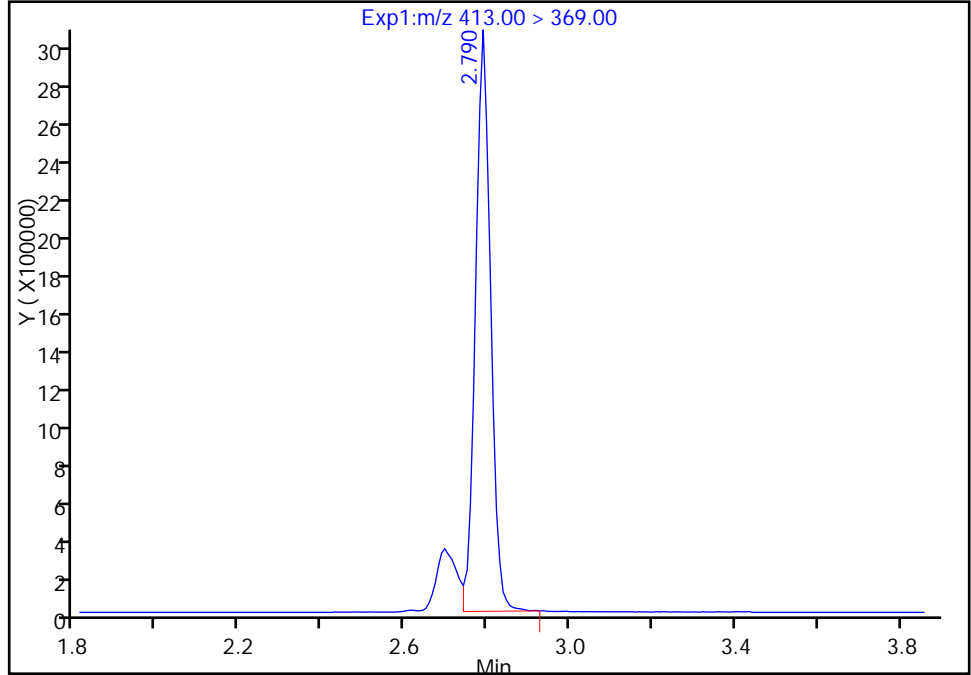
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Injection Date: 30-Dec-2016 13:33:55 Instrument ID: A8_N
Lims ID: 320-24184-A-1-A Lab Sample ID: 320-24184-1
Client ID: 308A51MW-LF-1216
Operator ID: A8-PC\A8 ALS Bottle#: 7 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 50.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

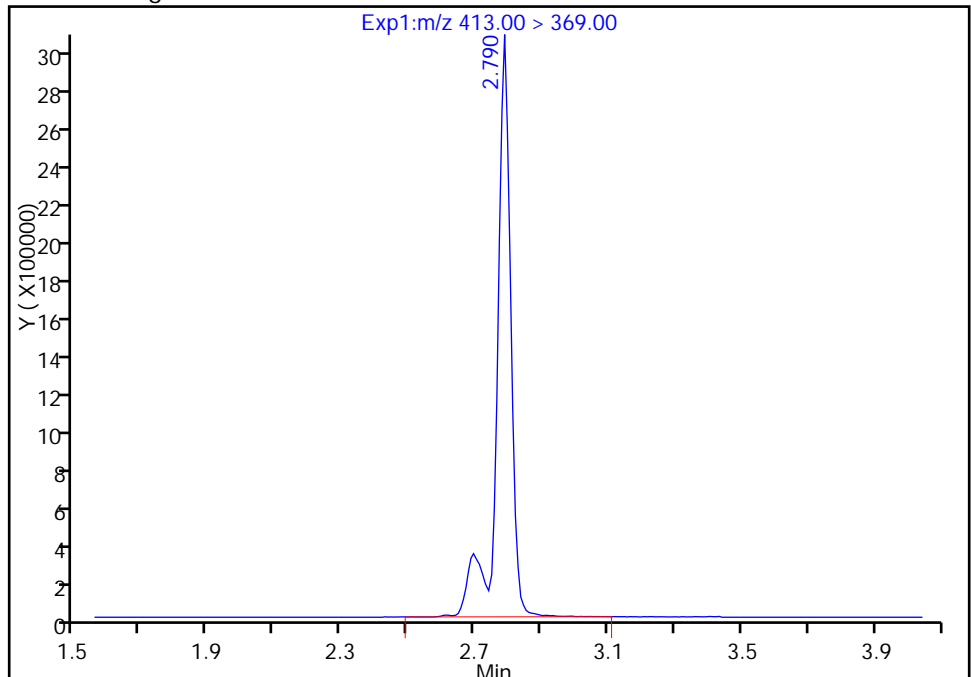
RT: 2.79
Area: 7803626
Amount: 24.205229
Amount Units: ng/ml

Processing Integration Results



RT: 2.79
Area: 9018319
Amount: 27.972954
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 03-Jan-2017 13:53:24

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: SWMU1-01-1216 Lab Sample ID: 320-24184-2
 Matrix: Water Lab File ID: 30DEC2016B_012.d
 Analysis Method: 537 (Modified) Date Collected: 12/07/2016 14:45
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 253.5 (mL) Date Analyzed: 12/30/2016 13:41
 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
375-22-4	Perfluorobutanoic acid (PFBA)	0.020	M	0.0025	0.00099	0.00045
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0039	M	0.0025	0.0020	0.00098
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0057	B	0.0025	0.0020	0.00078
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0020	U	0.0025	0.0020	0.00079
335-67-1	Perfluorooctanoic acid (PFOA)	0.0028		0.0025	0.0020	0.00074
375-95-1	Perfluorononanoic acid (PFNA)	0.0020	U	0.0025	0.0020	0.00064
335-76-2	Perfluorodecanoic acid (PFDA)	0.00099	U	0.0025	0.00099	0.00043
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0020	U	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)	0.0011	J	0.0025	0.00099	0.00039
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.00092	J	0.0025	0.0020	0.00091
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0034		0.0025	0.0020	0.00086
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0030	U	0.0039	0.0030	0.0013
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0030	U	0.0039	0.0030	0.0012
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0020	U	0.0025	0.0020	0.00063

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: SWMU1-01-1216 Lab Sample ID: 320-24184-2
 Matrix: Water Lab File ID: 30DEC2016B_012.d
 Analysis Method: 537 (Modified) Date Collected: 12/07/2016 14:45
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 253.5 (mL) Date Analyzed: 12/30/2016 13:41
 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.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	7	Q	25-150
STL00992	13C4 PFBA	37		25-150
STL01893	13C5-PFPeA	93		25-150
STL00993	13C2 PFHxA	113		25-150
STL01892	13C4-PFHpA	106		25-150
STL00990	13C4 PFOA	100		25-150
STL00995	13C5 PFNA	95		25-150
STL00996	13C2 PFDA	96		25-150
STL00997	13C2 PFUnA	103		25-150
STL00998	13C2 PFDoA	104		25-150
STL00994	18O2 PFHxS	118		25-150
STL00991	13C4 PFOS	116		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_012.d
 Lims ID: 320-24184-A-2-A
 Client ID: SWMU1-01-1216
 Sample Type: Client
 Inject. Date: 30-Dec-2016 13:41:27 ALS Bottle#: 8 Worklist Smp#: 22
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24184-a-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 14:28:00 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 13:31:36

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	1.534	1.534	0.0	6514109	18.7		37.5	455238	
1 Perfluorobutyric acid										M
212.90 > 169.00	1.534	1.534	0.0	1.000	1107392	9.96		764	M	
D 4 13C5-PFPeA	267.90 > 223.00	1.811	1.810	0.001	12314086	46.3		92.6	313682	
3 Perfluoropentanoic acid										M
262.90 > 219.00	1.811	1.810	0.001	1.000	477682	1.97		425	M	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.839	1.849	-0.010	1.000	254980	0.4671				
298.90 > 99.00	1.839	1.849	-0.010	1.000	110638		2.30(0.00-0.00)			
D 6 13C2 PFHxA	315.00 > 270.00	2.096	2.098	-0.002	13809910	56.3		113	644809	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.096	2.098	-0.002	1.000	741385	2.89		3615		
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.448	2.424	0.024	1.000	680311	1.71				
D 11 13C4-PFHpA	367.00 > 322.00	2.426	2.431	-0.005	12014815	53.1		106	618416	
D 10 18O2 PFHxS	403.00 > 84.00	2.448	2.454	-0.006	18220363	55.7		118	671305	
D 14 13C4 PFOA	417.00 > 372.00	2.785	2.791	-0.006	11499742	49.9		99.8	871605	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.793	2.791	0.002	1.000	324140	1.40		2096		
413.00 > 169.00	2.785	2.791	-0.006	0.997	241952		1.34(0.90-1.10)	7886		
D 17 13C4 PFOS	503.00 > 80.00	3.153	3.159	-0.006	13837125	55.6		116	436081	

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	3.153	3.167	-0.014	8447718	47.5	95.1	766445	
D 21 13C8 FOSA	506.00	> 78.00	3.476	3.474	0.002	1363915	3.55	7.1	107412	
24 Perfluorodecanoic acid	513.00	> 469.00	3.509	3.524	-0.015	1.000	4164	0.0291	97.3	
D 23 13C2 PFDA	515.00	> 470.00	3.509	3.524	-0.015	7582688	48.2	96.4	651891	
26 Perfluorodecane Sulfonic acid	599.00	> 80.00	3.811	3.836	-0.025	1.000	2904	0.0172		
D 27 13C2 PFUnA	565.00	> 520.00	3.837	3.853	-0.016	6018129	51.3	103	446220	
28 Perfluoroundecanoic acid	563.00	> 519.00	3.845	3.853	-0.008	1.000	19100	0.1659	442	
D 30 13C2 PFDaA	615.00	> 570.00	4.127	4.149	-0.022	5793870	52.2	104	457959	
33 Perfluorotetradecanoic acid	712.50	> 668.90	4.654	4.664	-0.010	1.000	103866	0.5656	1201	
	713.00	> 169.00	4.644	4.664	-0.020	0.998	8884	11.69(0.00-0.00)	1678	

QC Flag Legend

Review Flags

M - Manually Integrated

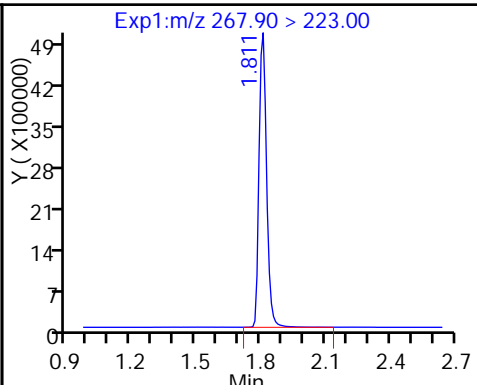
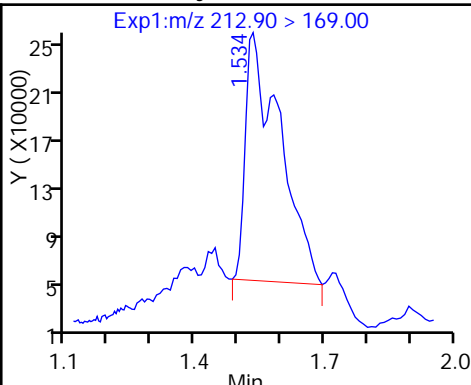
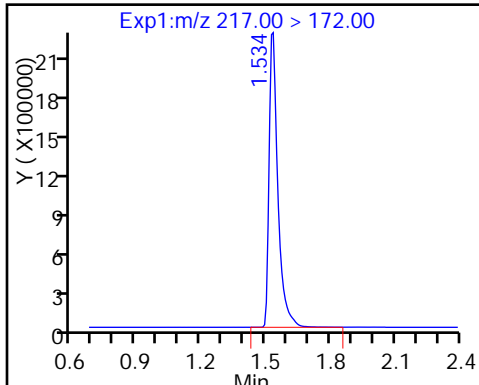
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_012.d
Injection Date: 30-Dec-2016 13:41:27 Instrument ID: A8_N
Lims ID: 320-24184-A-2-A Lab Sample ID: 320-24184-2
Client ID: SWMU1-01-1216
Operator ID: A8-PC\A8 ALS Bottle#: 8 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 (M)

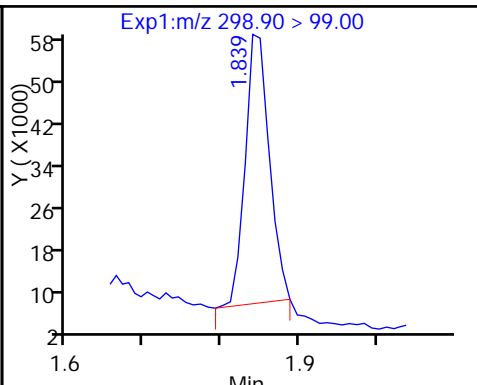
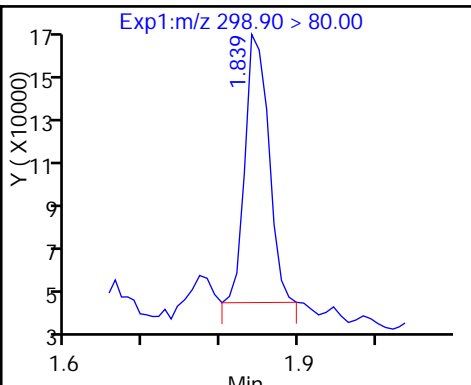
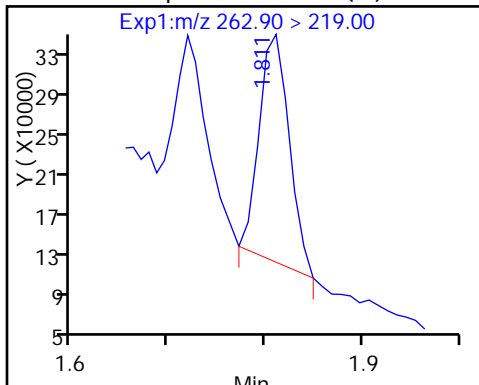
D 4 13C5-PFPeA



3 Perfluoropentanoic acid (M)

5 Perfluorobutanesulfonic acid

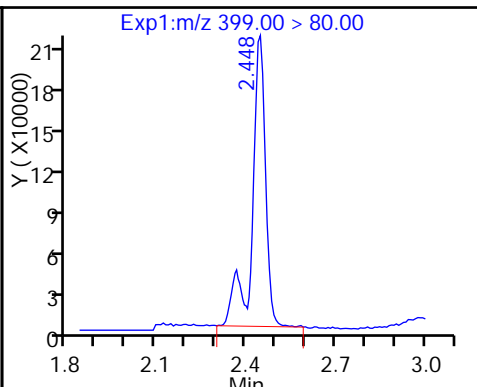
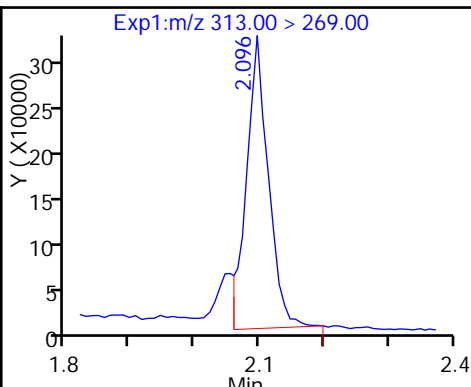
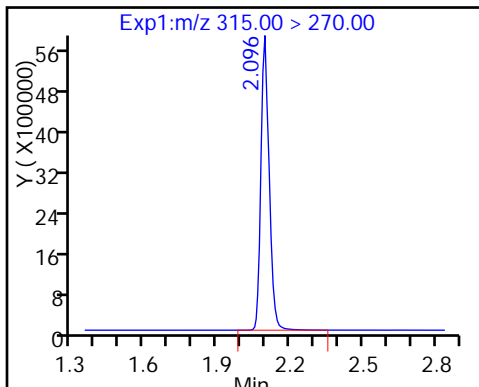
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

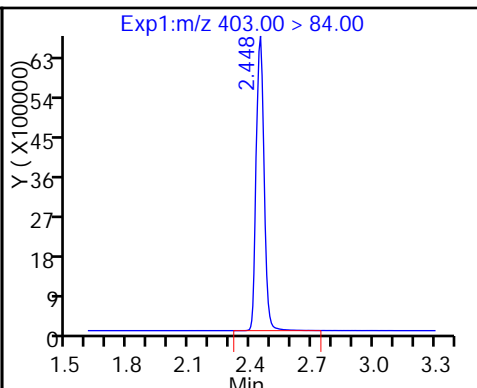
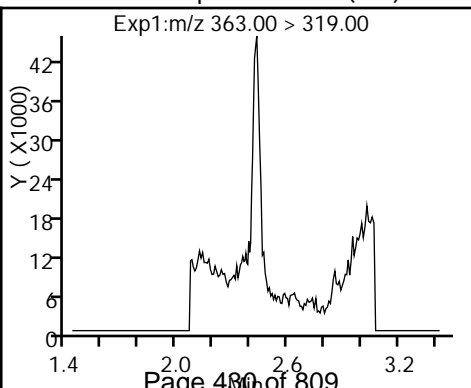
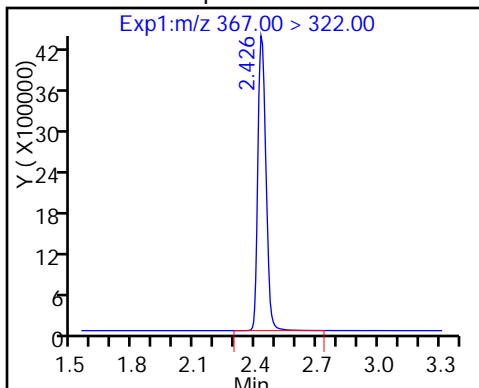
9 Perfluorohexanesulfonic acid



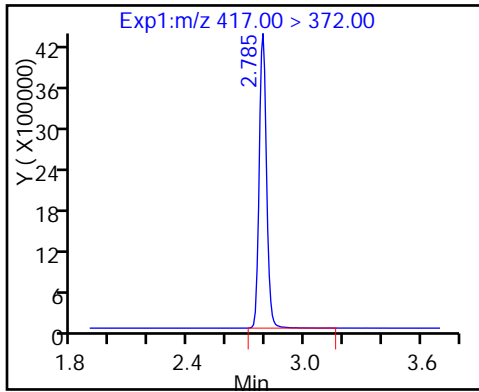
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid (ND)

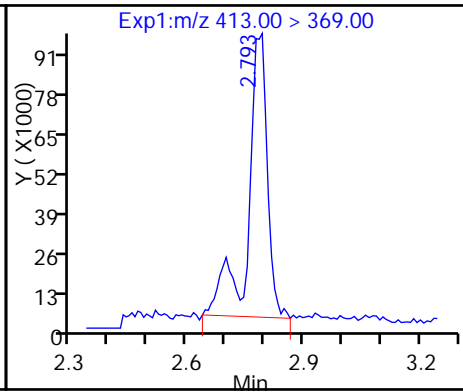
D 10 18O2 PFHxS



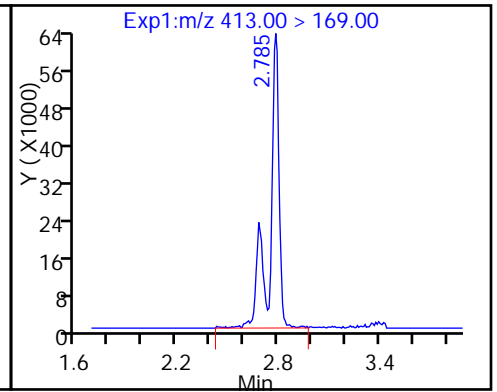
D 14 13C4 PFOA



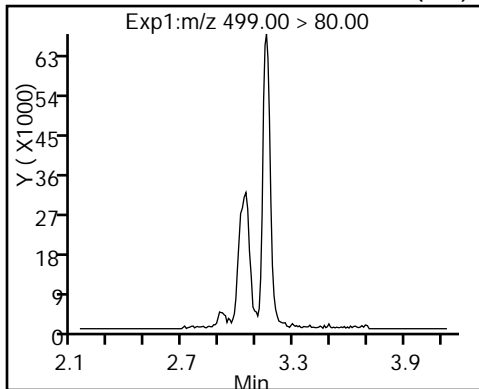
15 Perfluorooctanoic acid



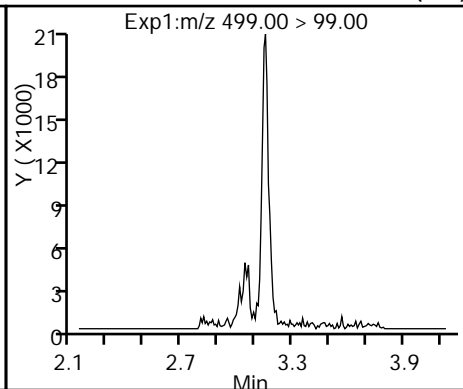
15 Perfluorooctanoic acid



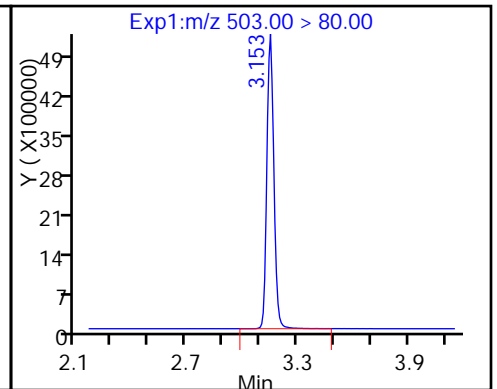
18 Perfluorooctane sulfonic acid (ND)



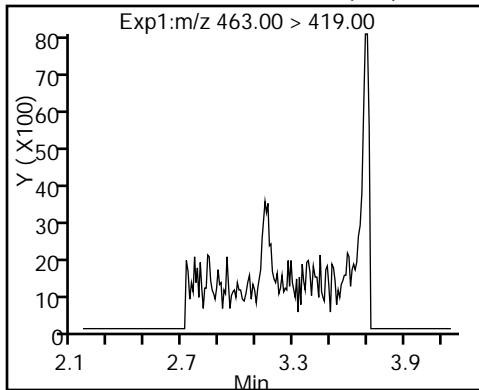
18 Perfluorooctane sulfonic acid (ND)



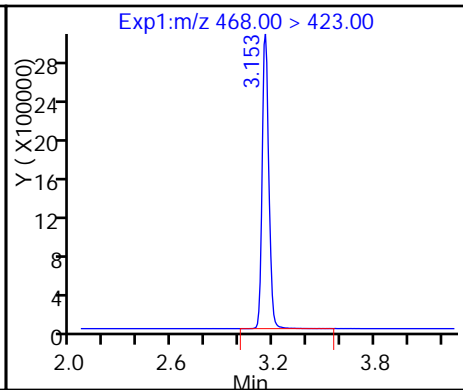
D 17 13C4 PFOS



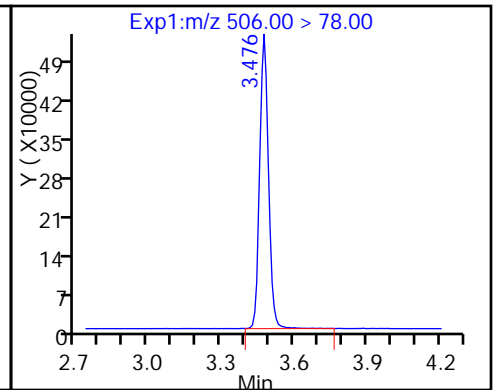
20 Perfluorononanoic acid (ND)



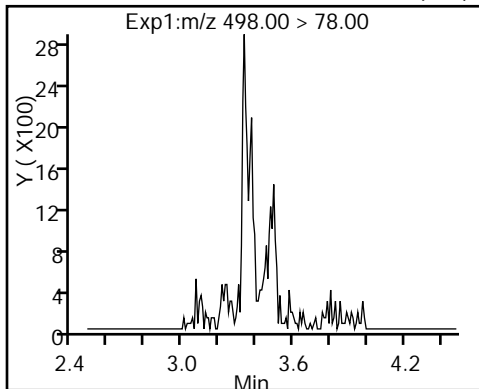
D 19 13C5 PFNA



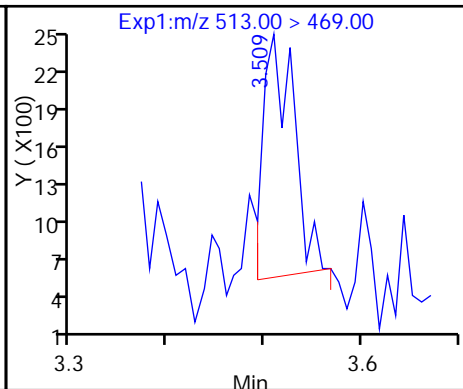
D 21 13C8 FOSA



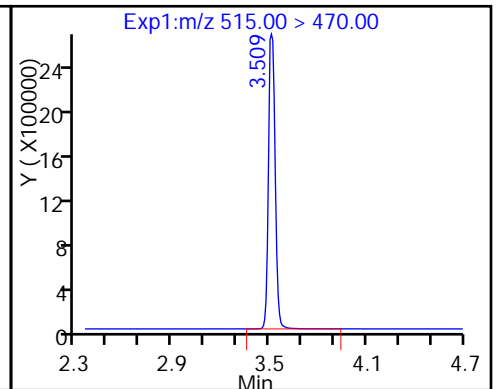
22 Perfluorooctane Sulfonamide (ND)



24 Perfluorodecanoic acid



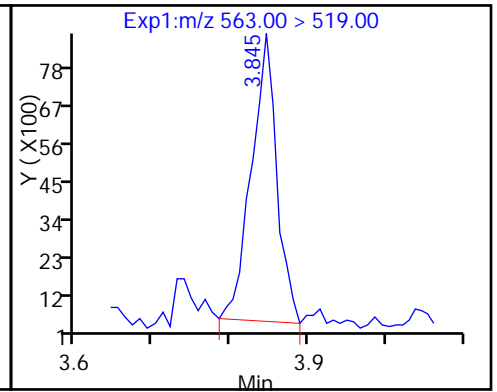
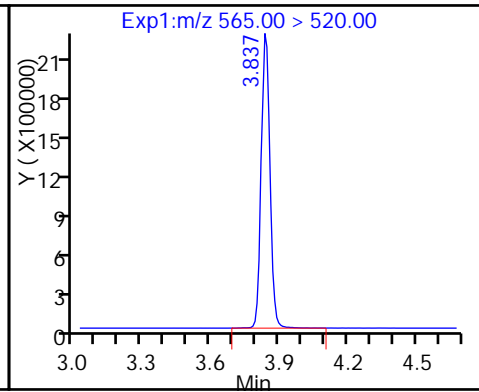
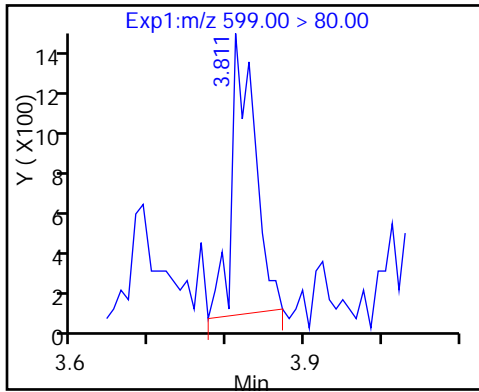
D 23 13C2 PFDA



26 Perfluorodecane Sulfonic acid

D 27 13C2 PFUnA

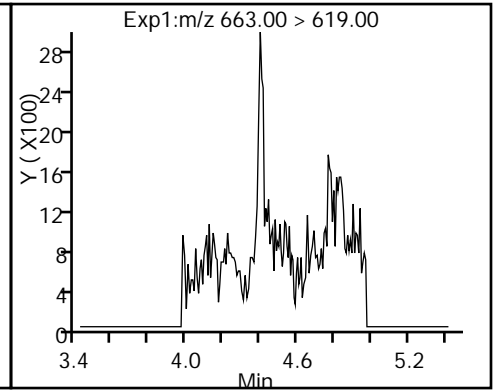
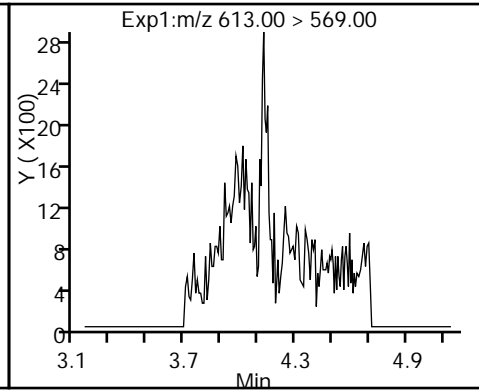
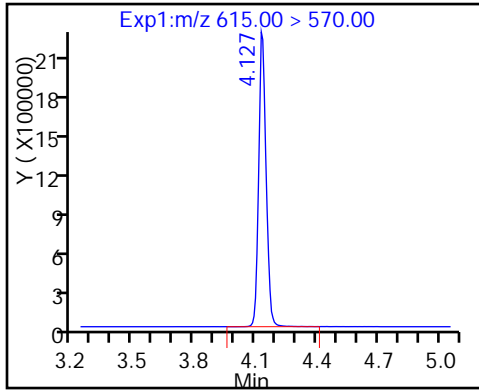
28 Perfluoroundecanoic acid



D 30 13C2 PFDaA

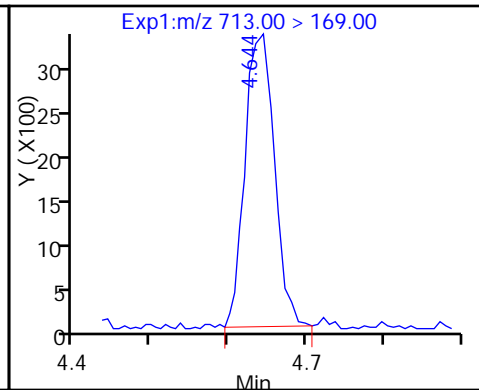
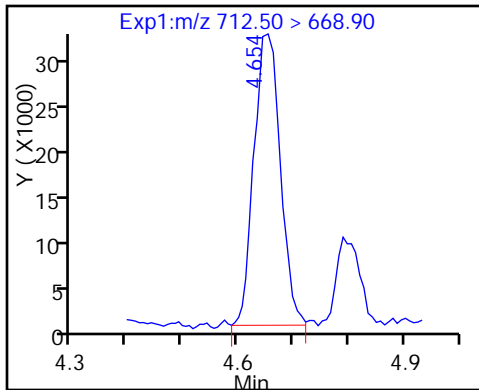
29 Perfluorododecanoic acid (ND)

31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



TestAmerica Sacramento

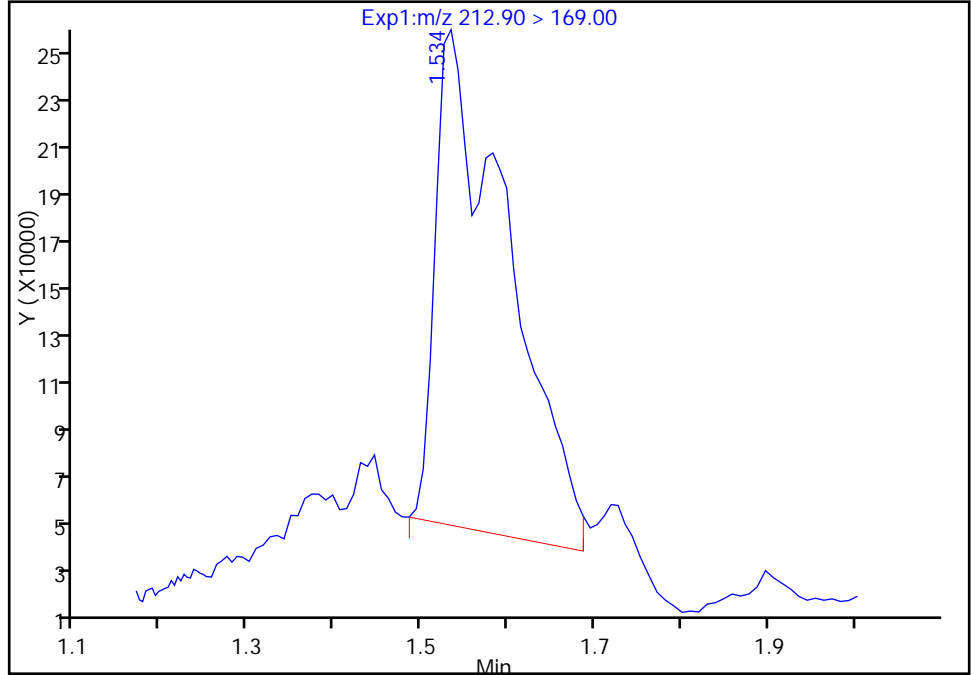
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_012.d
Injection Date: 30-Dec-2016 13:41:27 Instrument ID: A8_N
Lims ID: 320-24184-A-2-A Lab Sample ID: 320-24184-2
Client ID: SWMU1-01-1216
Operator ID: A8-PC\A8 ALS Bottle#: 8 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

1 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

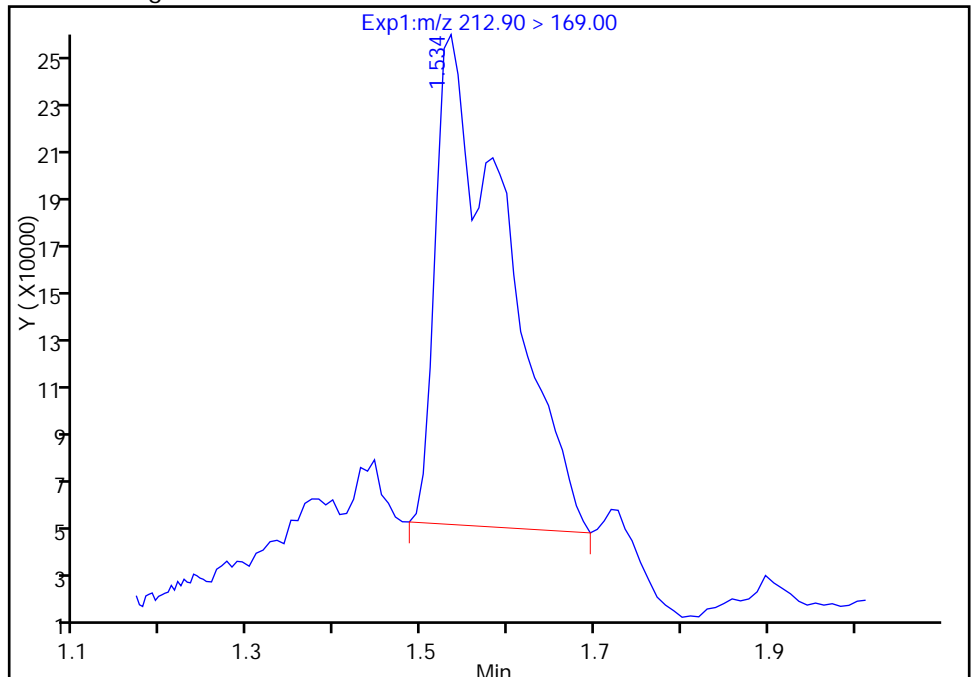
RT: 1.53
Area: 1163603
Amount: 10.461981
Amount Units: ng/ml

Processing Integration Results



RT: 1.53
Area: 1107392
Amount: 9.956586
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 03-Jan-2017 13:55:44
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento

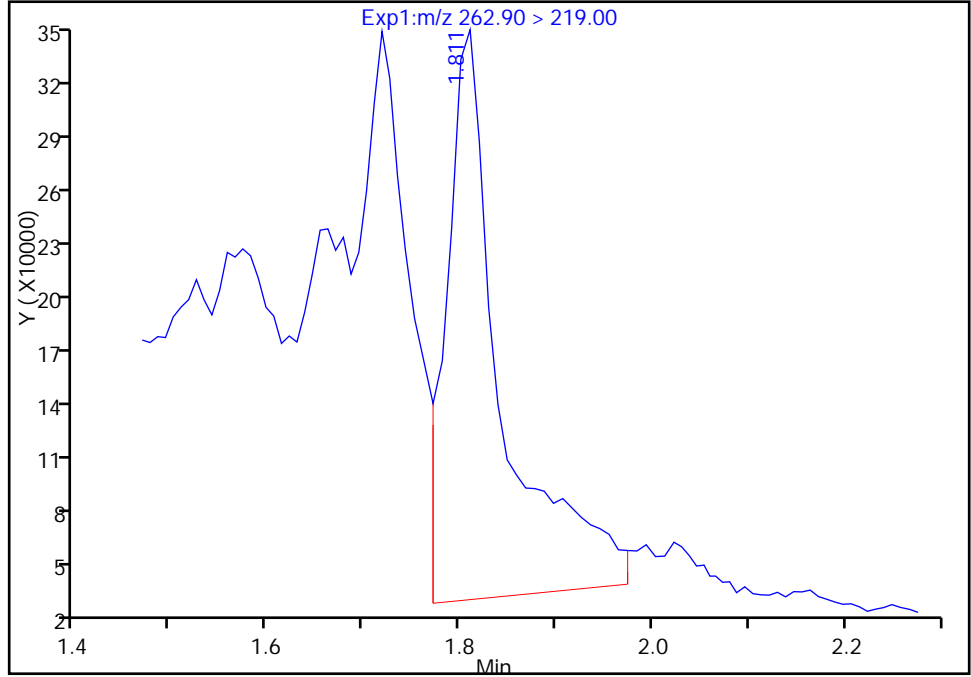
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Lims ID: 320-24184-A-2-A Lab Sample ID: 320-24184-2
Client ID: SWMU1-01-1216
Operator ID: A8-PC\A8 ALS Bottle#: 8 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

3 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

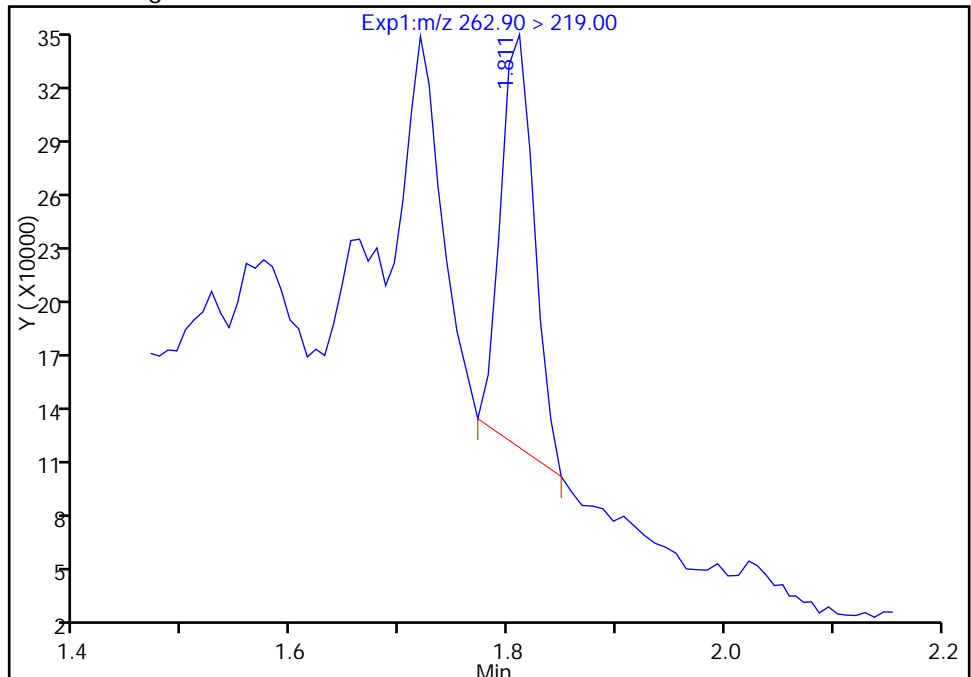
RT: 1.81
Area: 1248201
Amount: 5.136013
Amount Units: ng/ml

Processing Integration Results



RT: 1.81
Area: 477682
Amount: 1.965534
Amount Units: ng/ml

Manual Integration Results



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: SWMU1-01-1216 RE Lab Sample ID: 320-24184-2 RE
 Matrix: Water Lab File ID: 05JAN2017B_008.d
 Analysis Method: 537 (Modified) Date Collected: 12/07/2016 14:45
 Extraction Method: 3535 Date Extracted: 01/04/2017 16:57
 Sample wt/vol: 264.7 (mL) Date Analyzed: 01/05/2017 15:38
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 145242 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
307-24-4	<i>Perfluorohexanoic acid (PFHxA)</i>	0.0057	H	0.0024	0.0019	0.00074

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	116		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38534.b\05JAN2017B_008.d
 Lims ID: 320-24184-B-2-A
 Client ID: SWMU1-01-1216
 Sample Type: Client
 Inject. Date: 05-Jan-2017 15:38:14 ALS Bottle#: 19 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24184-b-2-a
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38534.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2017 09:59:23 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 09:54:43

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	1.598	1.598	0.0	6792321	19.5		39.1	371110	
1 Perfluorobutyric acid	212.90 > 169.00	1.606	1.606	0.0	1.000	959720	8.28		700	
D 4 13C5-PFPeA	267.90 > 223.00	1.887	1.887	0.0	13655884	51.3		103	349998	
3 Perfluoropentanoic acid	262.90 > 219.00	1.887	1.887	0.0	1.000	624914	2.32		446	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.926	1.935	-0.009	1.000	249807	0.4390			
	298.90 > 99.00	1.926	1.935	-0.009	1.000	107017	2.33(0.00-0.00)			
D 6 13C2 PFHxA	315.00 > 270.00	2.196	2.195	0.001	14263849	58.2		116	670396	
7 Perfluorohexanoic acid	313.00 > 269.00	2.196	2.195	0.001	1.000	798706	3.01		2566	
9 Perfluorohexanesulfonic acid	399.00 > 80.00	2.550	2.476	0.074	1.000	643976	1.56			
D 11 13C4-PFHpA	367.00 > 322.00	2.535	2.536	-0.001	14189116	62.7		125	1034556	
12 Perfluoroheptanoic acid	363.00 > 319.00	2.535	2.536	-0.001	1.000	94674	0.3408		377	
D 10 18O2 PFHxS	403.00 > 84.00	2.550	2.552	-0.002	18995191	58.1		123	1132799	
15 Perfluorooctanoic acid	413.00 > 369.00	2.902	2.902	0.0	1.000	588915	2.03		2994	
	413.00 > 169.00	2.878	2.902	-0.024	0.992	445669	1.32(0.90-1.10)		8085	
D 14 13C4 PFOA	417.00 > 372.00	2.902	2.902	0.0	14493963	62.9		126	1297401	

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	3.276	3.275	0.001	14866307	59.7		125	357937	
D 19 13C5 PFNA	468.00 > 423.00	3.276	3.283	-0.007	11152256	62.8		126	957455	
D 21 13C8 FOSA	506.00 > 78.00	3.599	3.600	-0.001	1024124	2.67		5.3	77744	
24 Perfluorodecanoic acid	513.00 > 469.00	3.633	3.642	-0.009	13800	0.0732			189	
D 23 13C2 PFDA	515.00 > 470.00	3.633	3.642	-0.009	9989708	63.5		127	306572	
26 Perfluorodecane Sulfonic acid	599.00 > 80.00	3.937	3.945	-0.008	2036	0.0112				
28 Perfluoroundecanoic acid	563.00 > 519.00	3.955	3.963	-0.008	20295	0.1512			368	
D 27 13C2 PFUnA	565.00 > 520.00	3.963	3.972	-0.009	7018615	59.9		120	431080	
D 30 13C2 PFDoA	615.00 > 570.00	4.256	4.265	-0.009	5938735	53.5		107	211557	
33 Perfluorotetradecanoic acid	712.50 > 668.90	4.763	4.772	-0.009	63292	0.3362			32.0	
	713.00 > 169.00	4.755	4.772	-0.017	8857		7.15(0.00-0.00)		1776	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38534.b\05JAN2017B_008.d

Injection Date: 05-Jan-2017 15:38:14

Instrument ID: A8_N

Lims ID: 320-24184-B-2-A

Lab Sample ID: 320-24184-2

Client ID: SWMU1-01-1216

Operator ID: A8-PC\A8

ALS Bottle#: 19

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

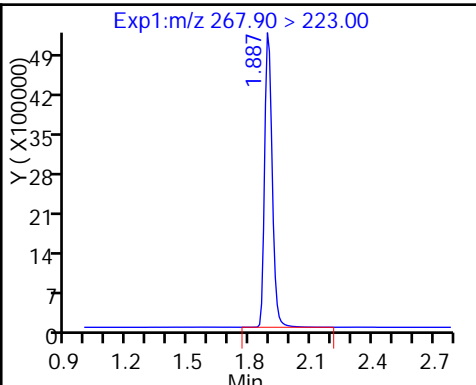
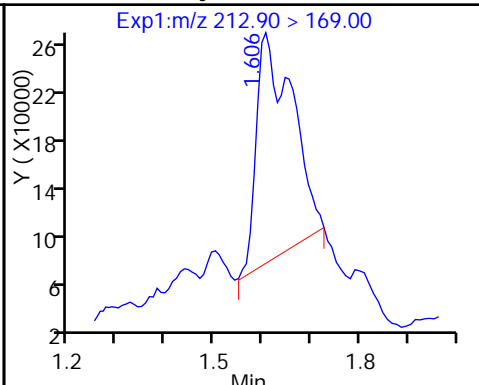
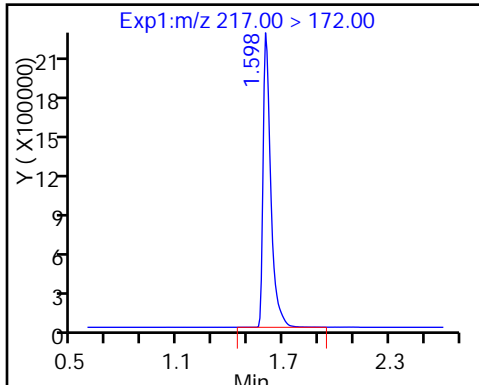
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

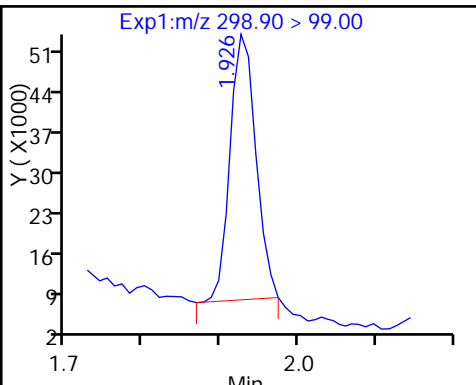
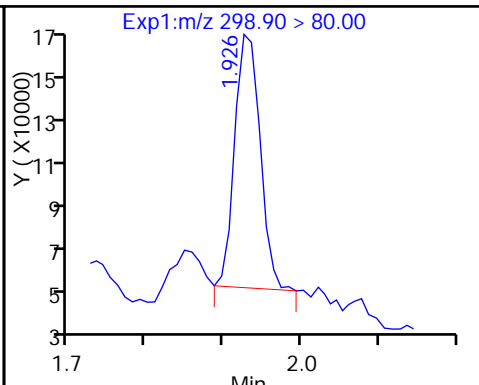
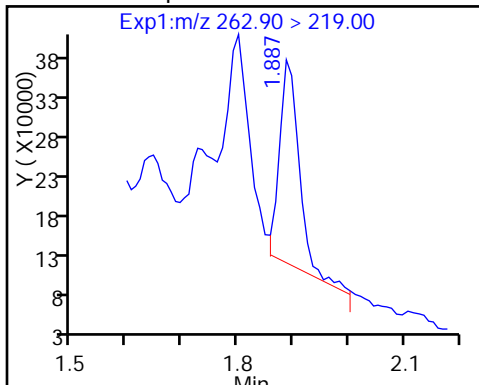
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

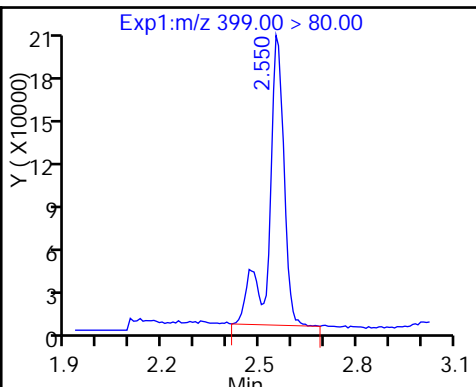
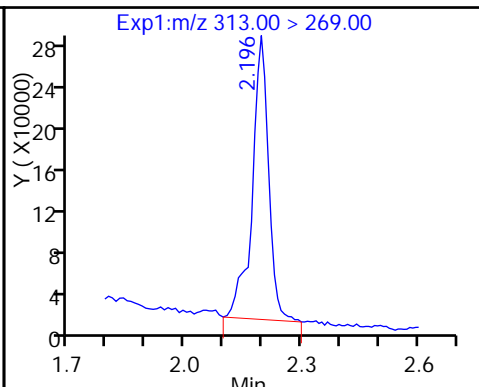
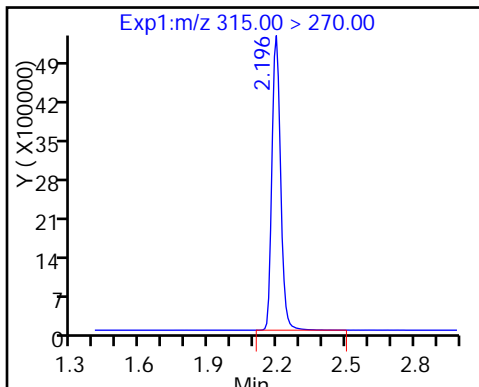
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

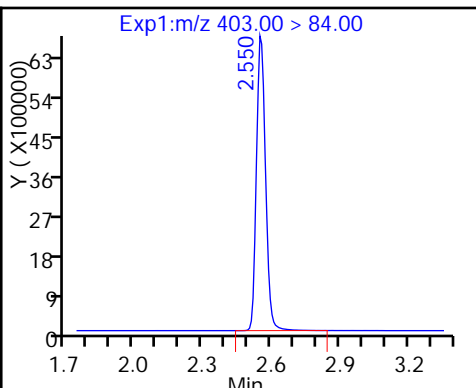
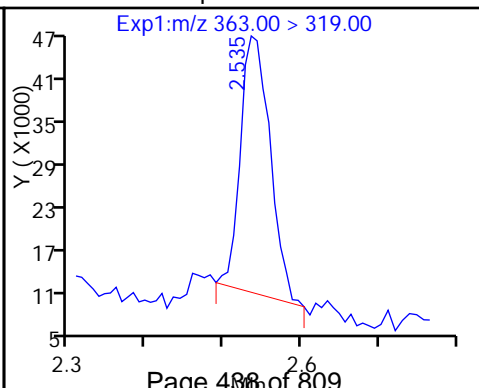
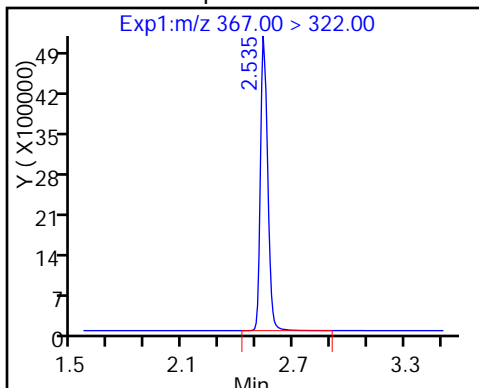
9 Perfluorohexanesulfonic acid

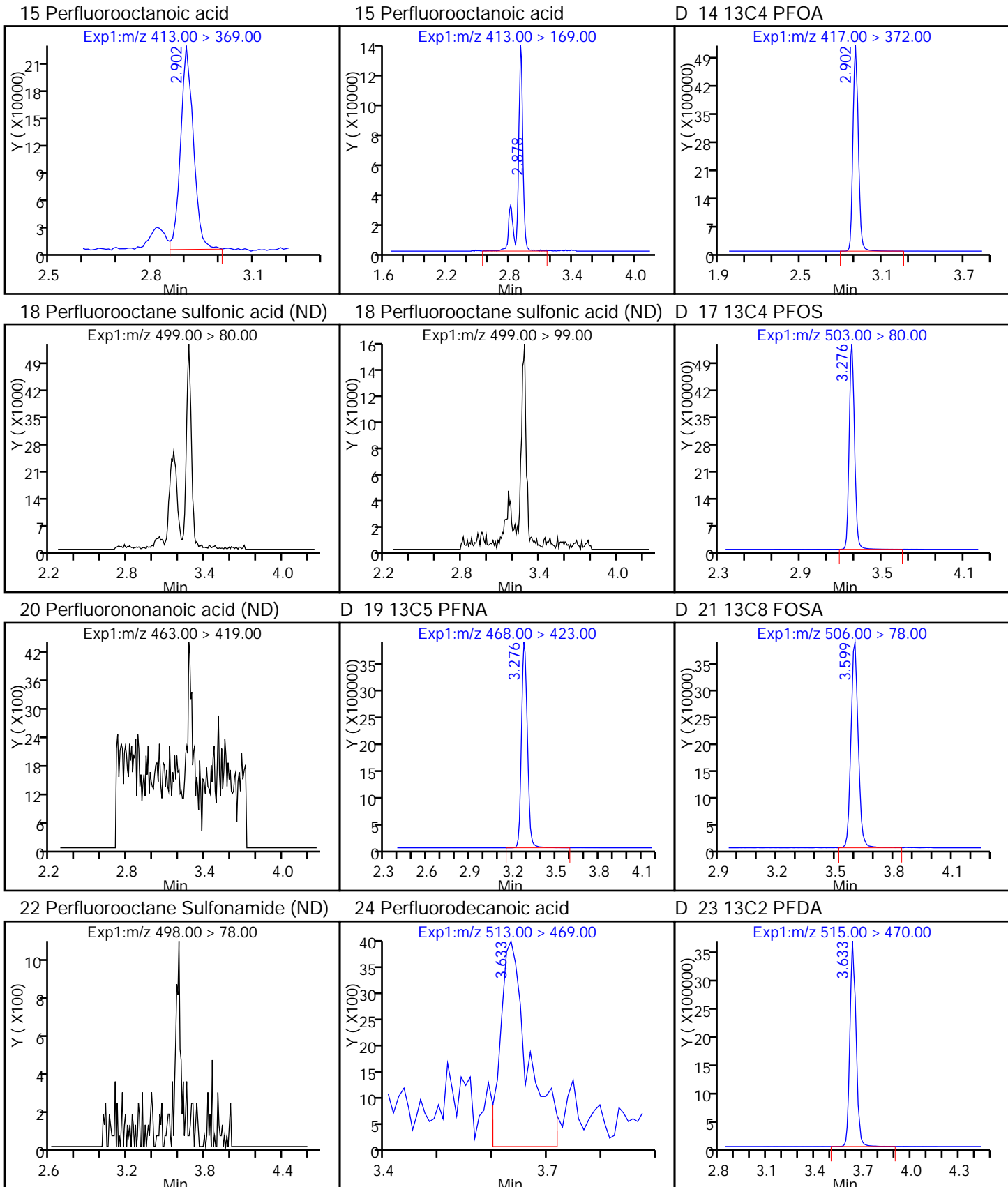


D 11 13C4-PFHpA

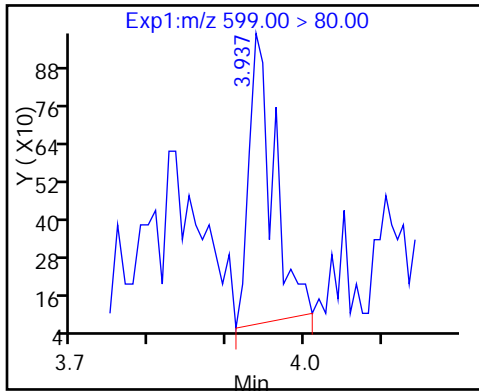
12 Perfluoroheptanoic acid

D 10 18O2 PFHxS

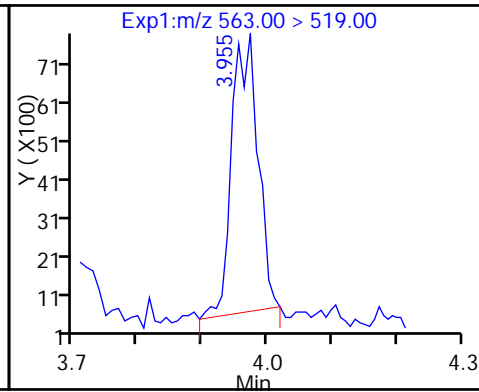




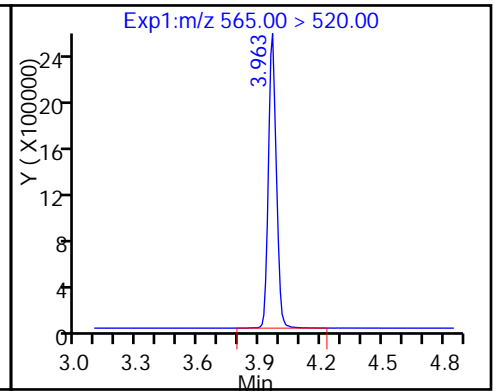
26 Perfluorodecane Sulfonic acid



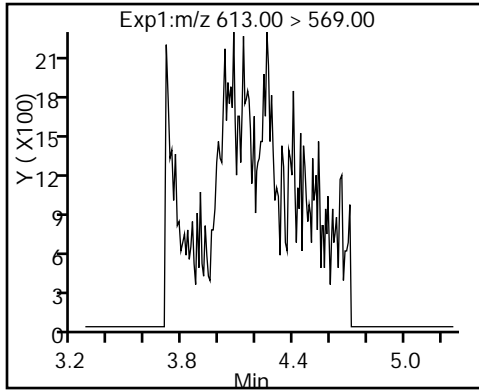
28 Perfluoroundecanoic acid



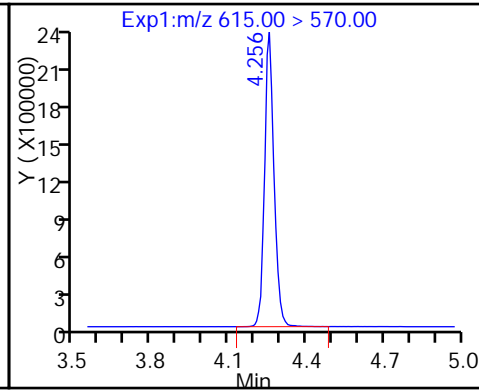
D 27 13C2 PFUnA



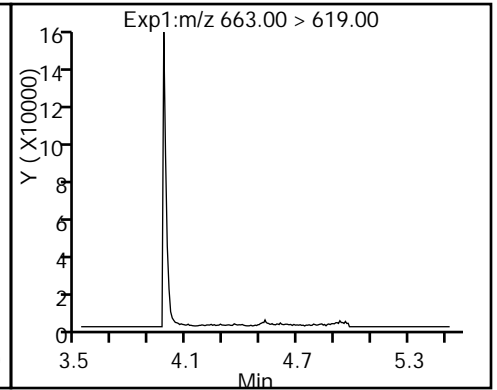
29 Perfluorododecanoic acid (ND)



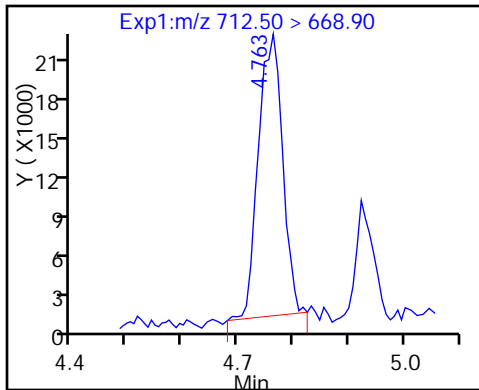
D 30 13C2 PFDaA



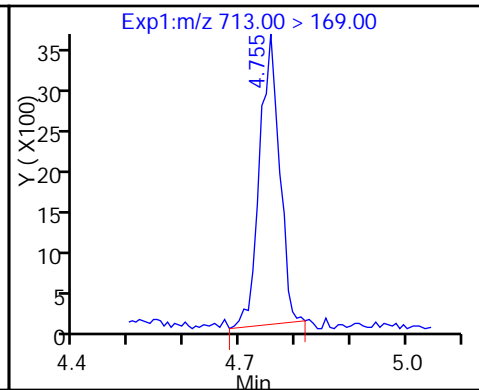
31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: FSS3TMW-1216 Lab Sample ID: 320-24184-3
 Matrix: Water Lab File ID: 28DEC2016C_011.d
 Analysis Method: 537 (Modified) Date Collected: 12/07/2016 08:55
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 280.7(mL) Date Analyzed: 12/29/2016 01:07
 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.: 144253 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	1.6	E	0.0022	0.00089	0.00041
2706-90-3	Perfluoropentanoic acid (PFPeA)	1.4	E	0.0022	0.0018	0.00088
307-24-4	Perfluorohexanoic acid (PFHxA)	3.4	E B	0.0022	0.0018	0.00070
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.2	E	0.0022	0.0018	0.00071
335-67-1	Perfluorooctanoic acid (PFOA)	6.9	E	0.0022	0.0018	0.00067
375-95-1	Perfluorononanoic acid (PFNA)	0.19		0.0022	0.0018	0.00058
335-76-2	Perfluorodecanoic acid (PFDA)	0.067		0.0022	0.00089	0.00039
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0021	J	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)	0.00042	J	0.0022	0.00089	0.00036
375-73-5	Perfluorobutanesulfonic acid (PFBS)	4.4	E M	0.0022	0.0018	0.00082
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	9.6	E	0.0022	0.0018	0.00077
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	21	E Q	0.0036	0.0027	0.0011
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.51	E	0.0036	0.0027	0.0011
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.61	E	0.0022	0.0018	0.00057

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: FSS3TMW-1216 Lab Sample ID: 320-24184-3
 Matrix: Water Lab File ID: 28DEC2016C_011.d
 Analysis Method: 537 (Modified) Date Collected: 12/07/2016 08:55
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 280.7(mL) Date Analyzed: 12/29/2016 01:07
 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.: 144253 Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	32		25-150
STL00992	13C4 PFBA	25		25-150
STL01893	13C5-PFPeA	22	Q	25-150
STL00993	13C2 PFHxA	17	Q	25-150
STL01892	13C4-PFHpA	9	Q	25-150
STL00990	13C4 PFOA	12	Q	25-150
STL00995	13C5 PFNA	9	Q	25-150
STL00996	13C2 PFDA	46		25-150
STL00997	13C2 PFUnA	119		25-150
STL00998	13C2 PFDoA	113		25-150
STL00994	18O2 PFHxS	9	Q	25-150
STL00991	13C4 PFOS	6	Q	25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_011.d
 Lims ID: 320-24184-A-3-A
 Client ID: FFTA3TMW-1216
 Sample Type: Client
 Inject. Date: 29-Dec-2016 01:07:00 ALS Bottle#: 9 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24184-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: 06-Jan-2017 09:11:03 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: XAWRK020

First Level Reviewer: phomsophat Date: 29-Dec-2016 17:44:23

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	1.534	-0.008	4322321	12.4		24.9	242531	
1 Perfluorobutyric acid										E
212.90 > 169.00	1.566	1.534	0.032	1.000	64885359	879.2			32379	E
D 4 13C5-PFPeA	267.90 > 223.00	1.800	1.810	-0.010	2862784	10.8		21.5	127013	
3 Perfluoropentanoic acid										E
262.90 > 219.00	1.820	1.810	0.010	1.000	42890132	759.1			1390	E
5 Perfluorobutanesulfonic acid										EM
298.90 > 80.00	1.887	1.849	0.038	1.000	105310686	2468.5				EM
298.90 > 99.00	1.858	1.849	0.009	0.985	106579625		0.99(0.00-0.00)			M
D 6 13C2 PFHxA	315.00 > 270.00	2.084	2.097	-0.013	2025794	8.26		16.5	216511	
7 Perfluorohexanoic acid										E
313.00 > 269.00	2.115	2.097	0.018	1.000	71316876	1895.2			1287	E
9 Perfluorohexanesulfonic acid										E
399.00 > 80.00	2.308	2.422	-0.114	1.000	166337778	5364.0				E
D 11 13C4-PFHpA	367.00 > 322.00	2.393	2.429	-0.036	993136	4.39		8.8	138279	
12 Perfluoroheptanoic acid										E
363.00 > 319.00	2.393	2.429	-0.036	1.000	34756826	1787.7			7480	E
D 10 18O2 PFHxS	403.00 > 84.00	2.402	2.452	-0.050	1424100	4.36		9.2	8654	
D 14 13C4 PFOA	417.00 > 372.00	2.760	2.790	-0.030	1393746	6.05		12.1	157325	
15 Perfluorooctanoic acid										E
413.00 > 369.00	2.737	2.790	-0.053	1.000	107585864	3847.5			66780	E
413.00 > 169.00	2.760	2.790	-0.030	1.008	99895432		1.08(0.90-1.10)		0.0	

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	3.196	3.134	0.062	1.000	182562270	11564			647	E
499.00 > 99.00	3.145	3.134	0.011	0.984	263633259		0.69(0.90-1.10)		22672	
D 17 13C4 PFOS										
503.00 > 80.00	3.111	3.158	-0.047		758828	3.05		6.4	5271	
20 Perfluorononanoic acid										
463.00 > 419.00	3.101	3.158	-0.057	1.000	1576083	107.0			10635	
D 19 13C5 PFNA										
468.00 > 423.00	3.101	3.166	-0.065		774040	4.36		8.7	33848	
D 21 13C8 FOSA										
506.00 > 78.00	3.462	3.481	-0.019		6064549	15.8		31.6	60022	
22 Perfluorooctane Sulfonamide										E
498.00 > 78.00	3.462	3.481	-0.019	1.000	39005144	344.8			2061	E
D 23 13C2 PFDA										
515.00 > 470.00	3.511	3.523	-0.012		3612203	23.0		45.9	116229	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.511	3.523	-0.012	1.000	2573438	37.7			9441	
26 Perfluorodecane Sulfonic acid										E
599.00 > 80.00	3.819	3.834	-0.016	1.000	2654928	286.4				E
D 27 13C2 PFUnA										
565.00 > 520.00	3.838	3.851	-0.013		6963526	59.4		119	373469	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.838	3.851	-0.013	1.000	157312	1.18			1306	
D 30 13C2 PFDaA										
615.00 > 570.00	4.127	4.134	-0.007		6266359	56.5		113	235668	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.119	4.141	-0.022	1.000	17161	0.1492			203	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.652	4.652	0.0	1.000	46921	0.2362			735	
713.00 > 169.00	4.633	4.652	-0.019	0.996	8018		5.85(0.00-0.00)		1613	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

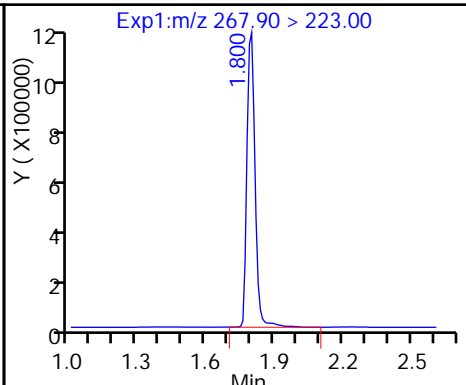
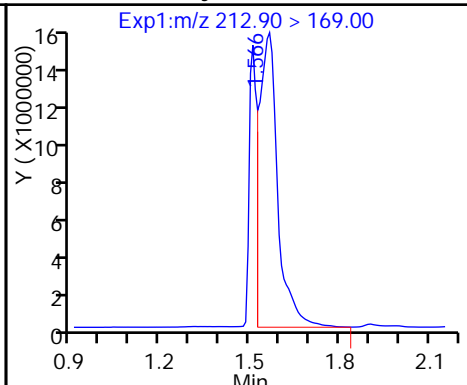
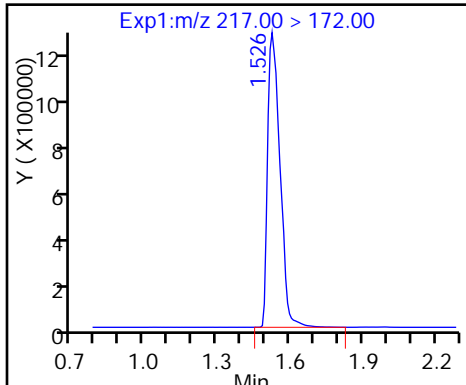
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_011.d
Injection Date: 29-Dec-2016 01:07:00 Instrument ID: A8_N
Lims ID: 320-24184-A-3-A Lab Sample ID: 320-24184-3
Client ID: FFTA3TMW-1216
Operator ID: A8-PC\A8 ALS Bottle#: 9 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

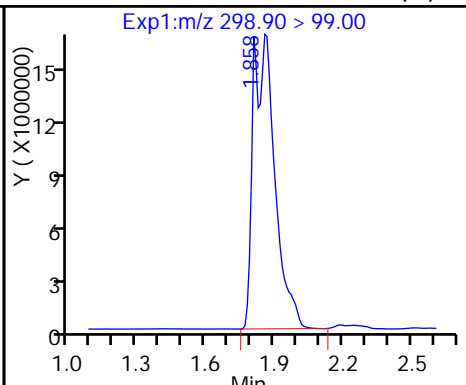
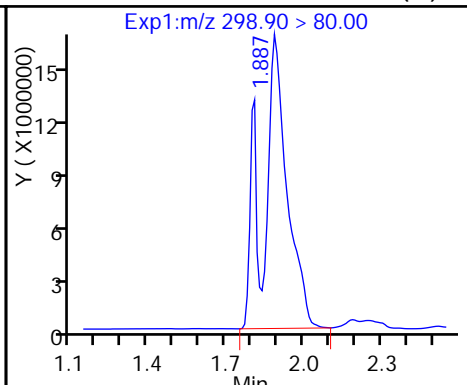
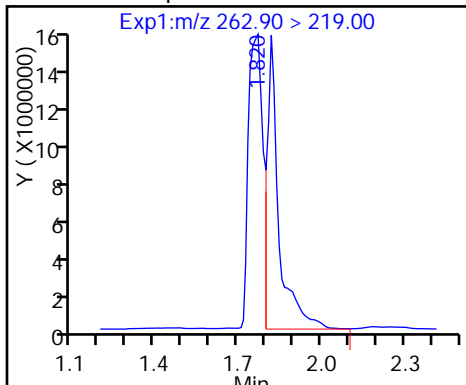
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid (M)

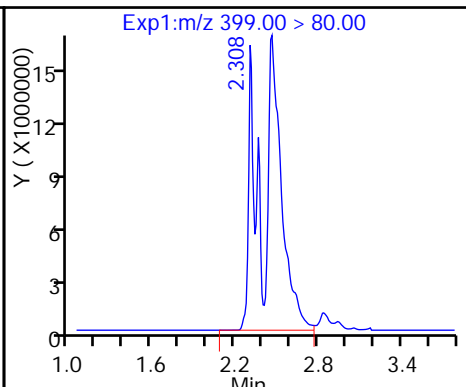
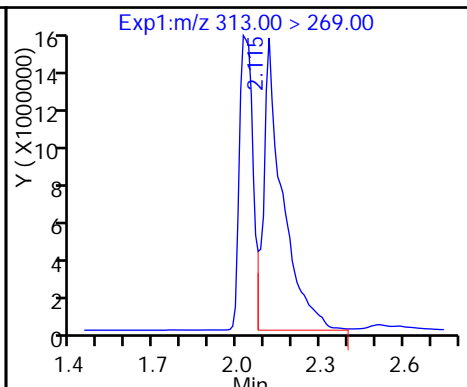
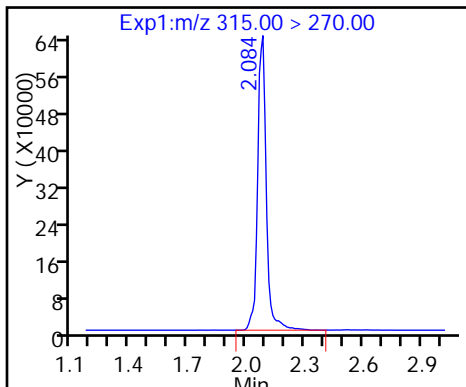
5 Perfluorobutanesulfonic acid (M)



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

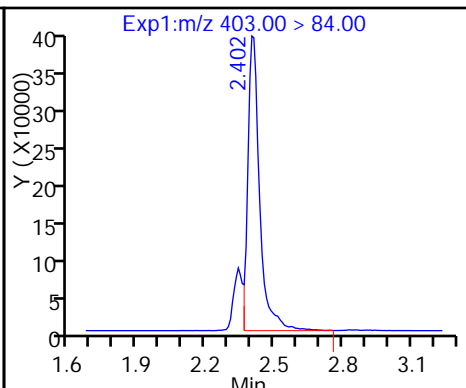
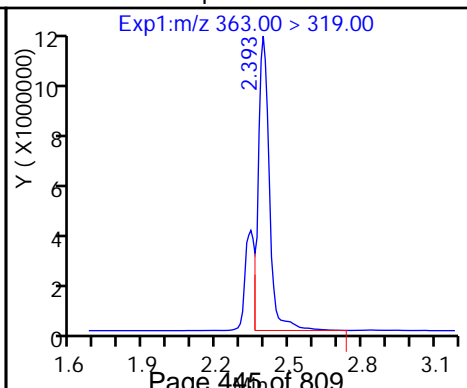
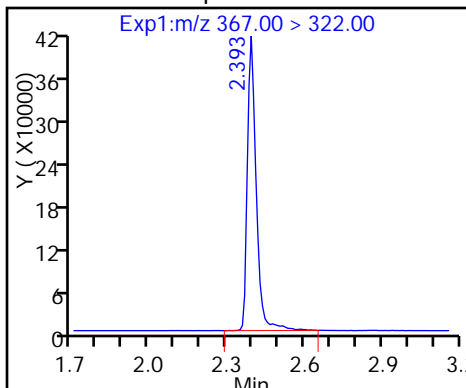
9 Perfluorohexanesulfonic acid



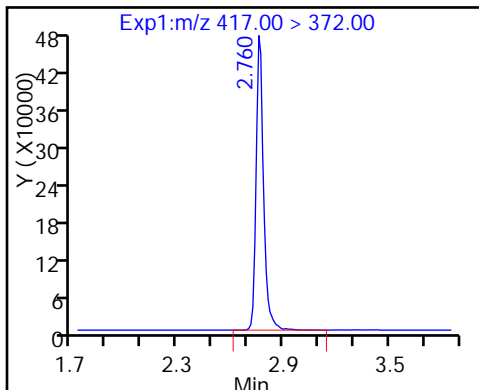
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid

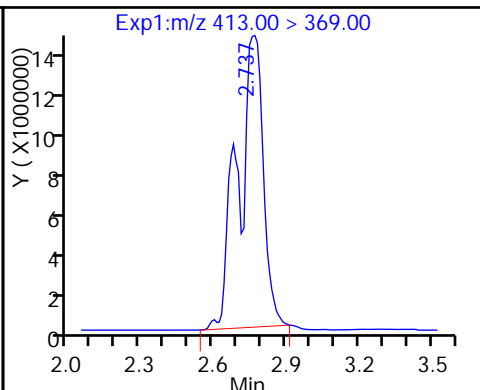
D 10 18O2 PFHxS



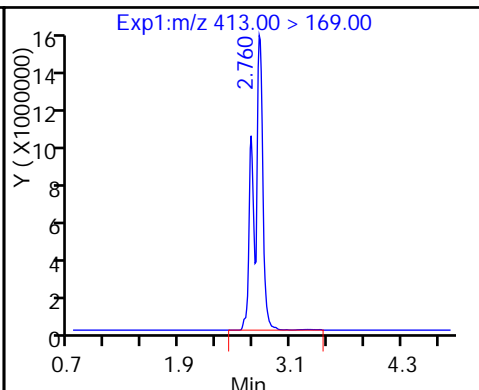
D 14 13C4 PFOA



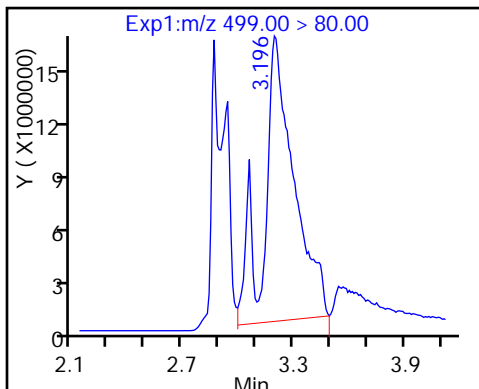
15 Perfluorooctanoic acid



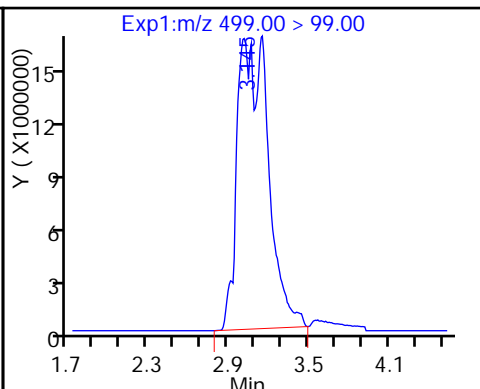
15 Perfluorooctanoic acid



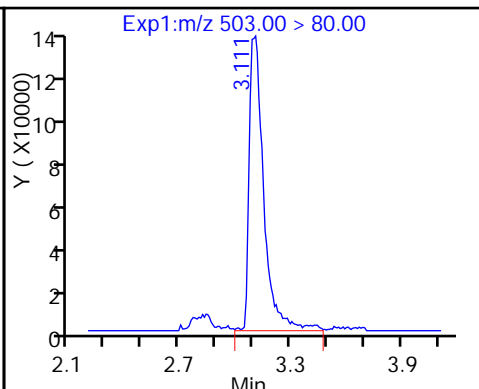
18 Perfluorooctane sulfonic acid



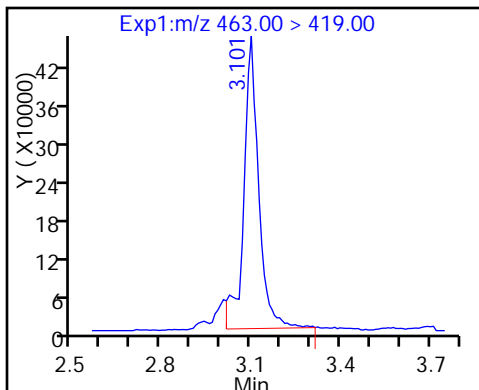
18 Perfluorooctane sulfonic acid



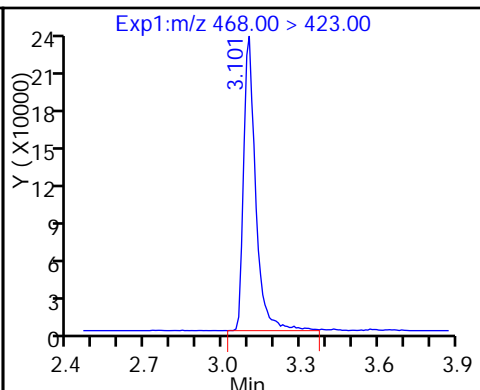
D 17 13C4 PFOS



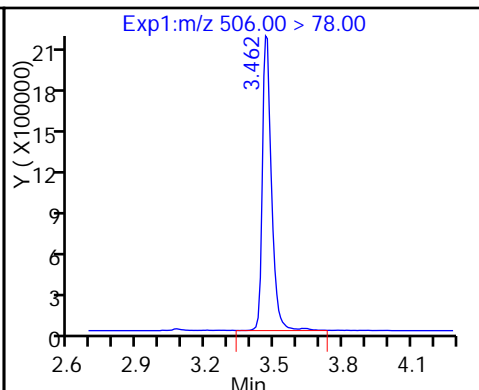
20 Perfluorononanoic acid



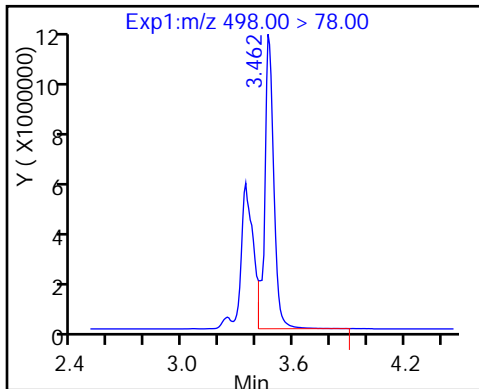
D 19 13C5 PFNA



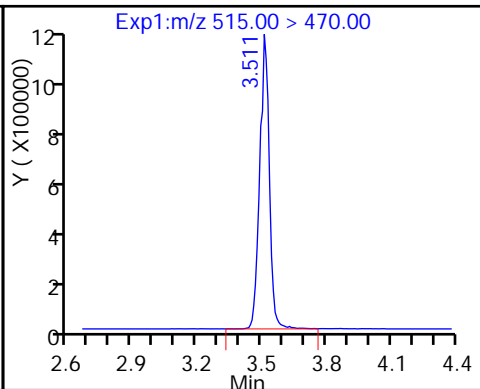
D 21 13C8 FOSA



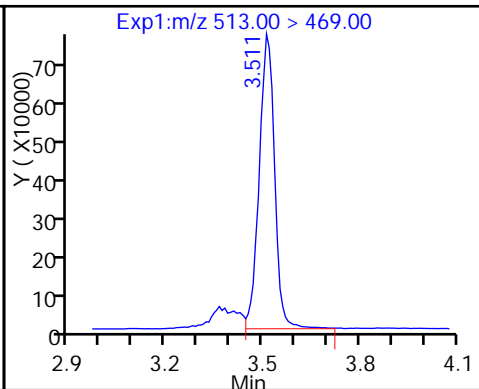
22 Perfluorooctane Sulfonamide



D 23 13C2 PFDA



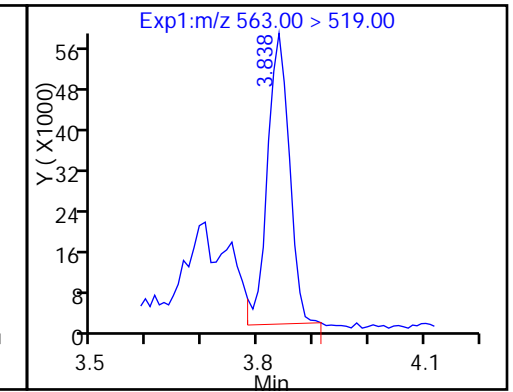
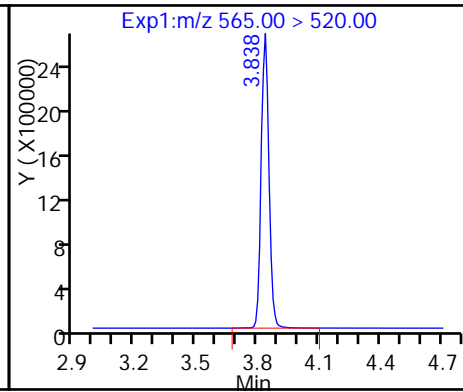
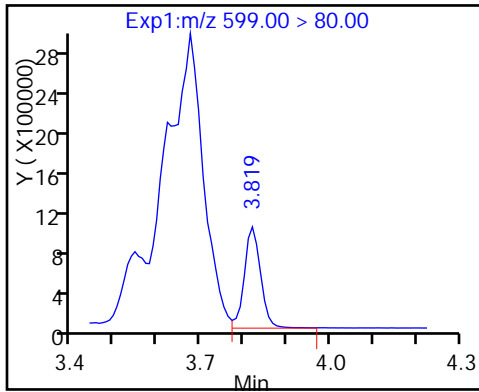
24 Perfluorodecanoic acid



26 Perfluorodecane Sulfonic acid

D 27 13C2 PFUnA

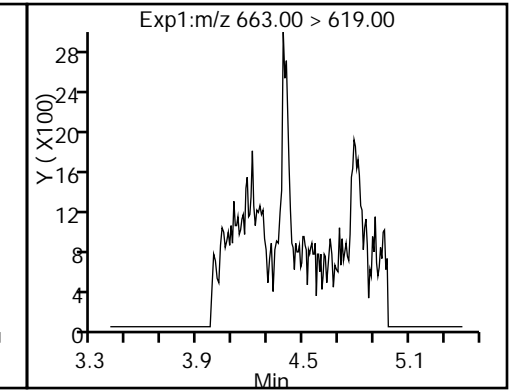
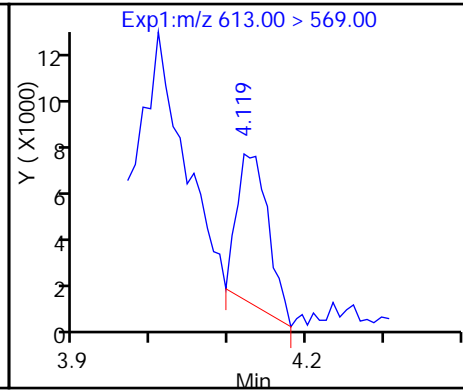
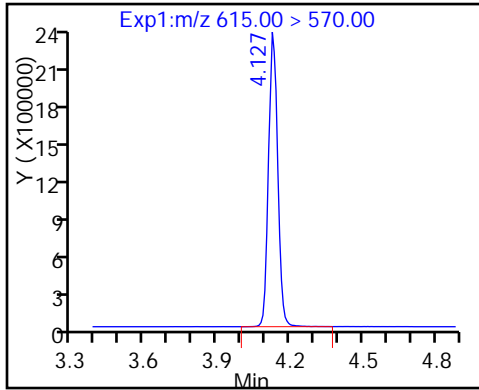
28 Perfluoroundecanoic acid



D 30 13C2 PFDaA

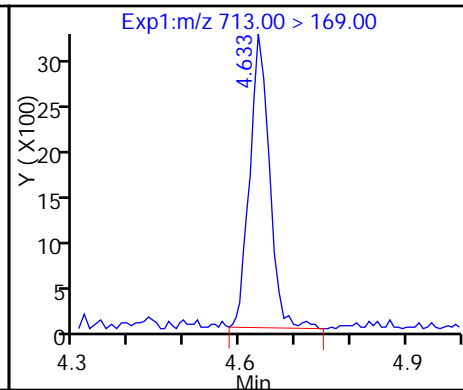
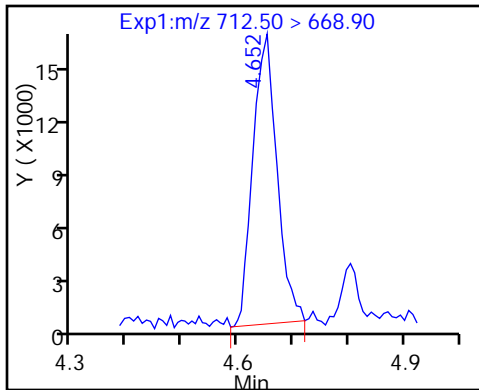
29 Perfluorododecanoic acid

31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



TestAmerica Sacramento

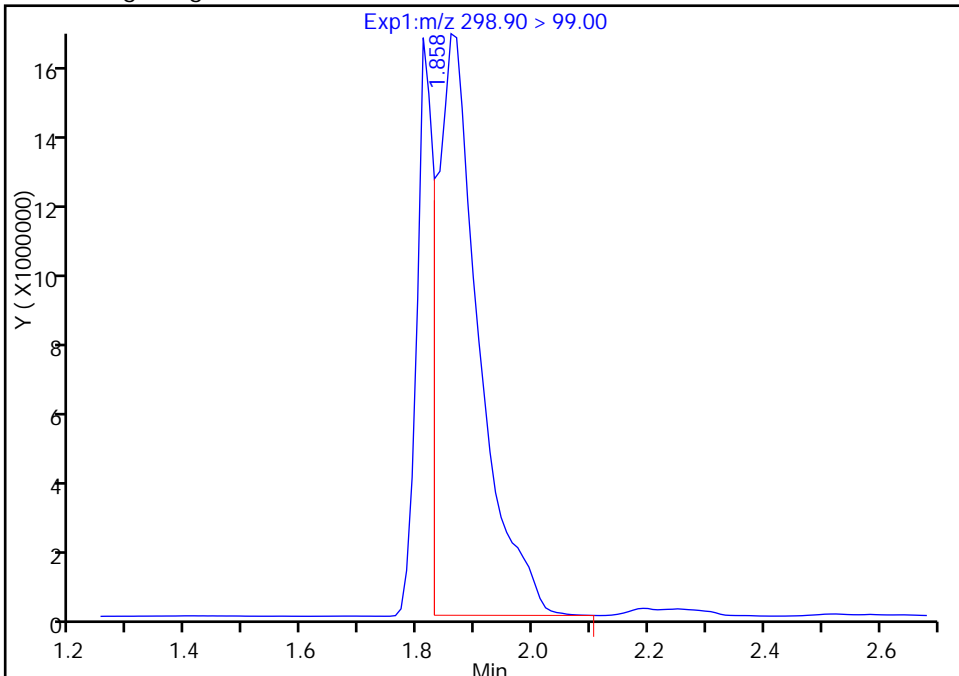
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Injection Date: 29-Dec-2016 01:07:00 Instrument ID: A8_N
Lims ID: 320-24184-A-3-A Lab Sample ID: 320-24184-3
Client ID: FFTA3TMW-1216
Operator ID: A8-PC\A8 ALS Bottle#: 9 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

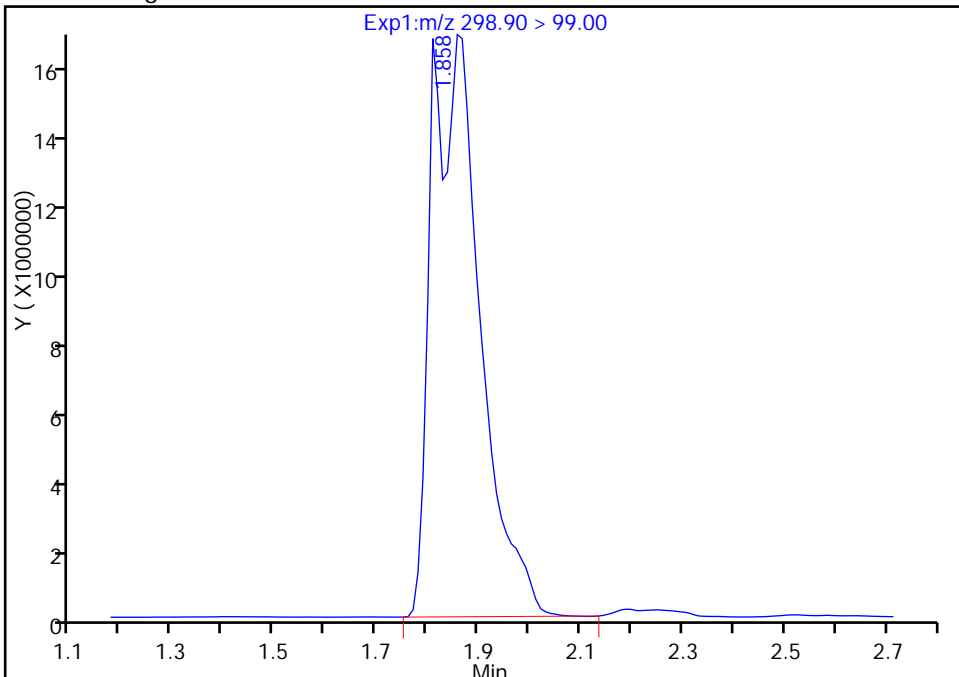
RT: 1.86
Area: 77390697
Amount: 1925.8841
Amount Units: ng/ml

Processing Integration Results



RT: 1.86
Area: 106579625
Amount: 2468.5232
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 06-Jan-2017 09:08:17
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento

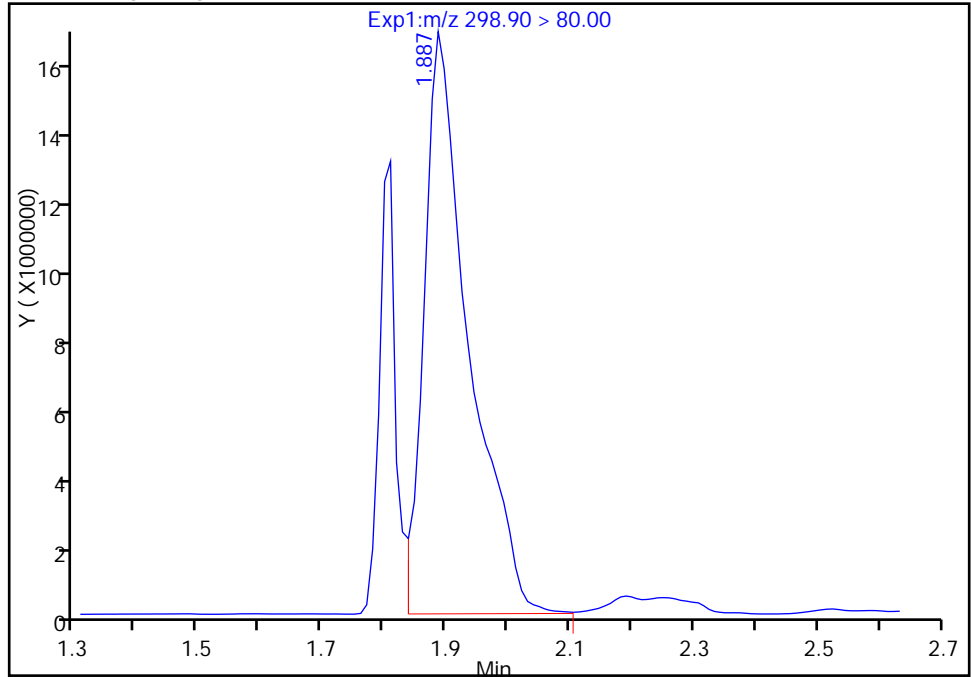
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b\28DEC2016C_011.d
Injection Date: 29-Dec-2016 01:07:00 Instrument ID: A8_N
Lims ID: 320-24184-A-3-A Lab Sample ID: 320-24184-3
Client ID: FFTA3TMW-1216
Operator ID: A8-PC\A8 ALS Bottle#: 9 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

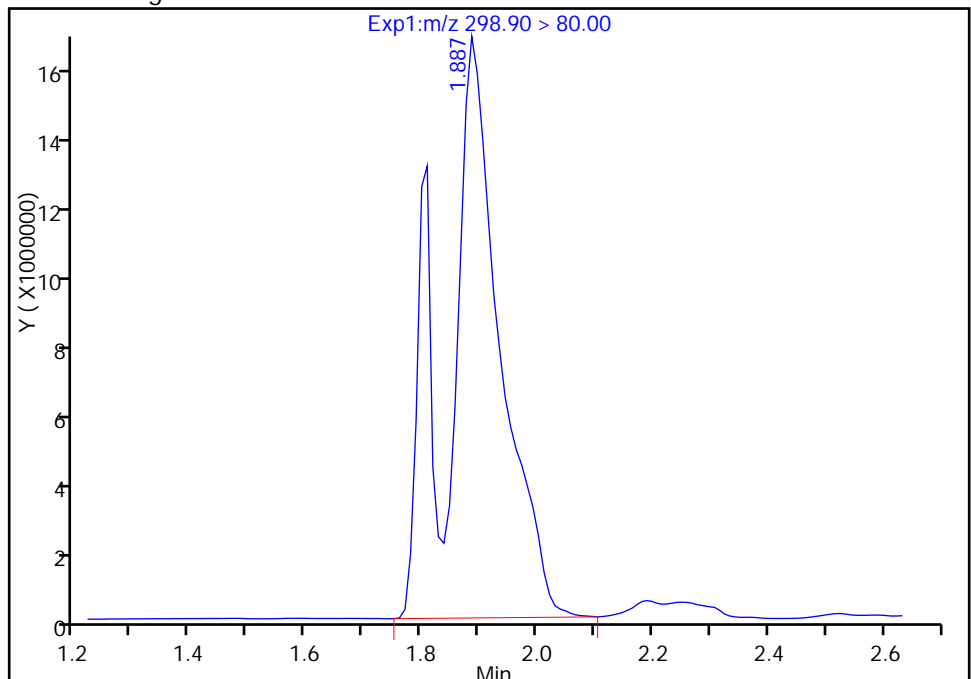
RT: 1.89
Area: 82160934
Amount: 1925.8841
Amount Units: ng/ml

Processing Integration Results



RT: 1.89
Area: 105310686
Amount: 2468.5232
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 06-Jan-2017 09:11:03

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: FSS3TMW-1216 DL2 Lab Sample ID: 320-24184-3 DL2
 Matrix: Water Lab File ID: 04JAN2017A_045.d
 Analysis Method: 537 (Modified) Date Collected: 12/07/2016 08:55
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 280.7(mL) Date Analyzed: 01/04/2017 21:33
 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
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	300		7.1	5.3	2.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	105		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170105-38480.b\04JAN2017A_045.d
 Lims ID: 320-24184-A-3-G
 Client ID: FSS3TMW-1216
 Sample Type: Client
 Inject. Date: 04-Jan-2017 21:33:08 ALS Bottle#: 24 Worklist Smp#: 46
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24184-a-3-a 2000X 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 11:01:13 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 11:00:19

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	1.614	1.617	-0.003	19015635	54.7		109	814026	
1 Perfluorobutyric acid	212.90 > 169.00	1.614	1.617	-0.003	1.000	685918	2.11		4446	
D 4 13C5-PFPeA	267.90 > 223.00	1.906	1.909	-0.003	14590726	54.8		110	1085837	
3 Perfluoropentanoic acid	262.90 > 219.00	1.906	1.909	-0.003	1.000	913276	3.17		8847	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.945	1.948	-0.003	1.000	3823928	8.12			
	298.90 > 99.00	1.945	1.948	-0.003	1.000	1594266	2.40(0.00-0.00)			
7 Perfluorohexanoic acid	313.00 > 269.00	2.212	2.209	0.003	1.000	3173313	12.9		118743	
D 6 13C2 PFHxA	315.00 > 270.00	2.212	2.217	-0.005	13227488	54.0		108	809825	
D 11 13C4-PFHpA	367.00 > 322.00	2.552	2.558	-0.006	11576518	51.1		102	1387302	
12 Perfluoroheptanoic acid	363.00 > 319.00	2.560	2.558	0.002	1.000	187933	0.8297		2154	
D 10 18O2 PFHxS	403.00 > 84.00	2.575	2.573	0.002	15718477	48.1		102	1790263	
9 Perfluorohexanesulfonic acid	399.00 > 80.00	2.492	2.573	-0.081	1.000	11693385	34.2			
D 14 13C4 PFOA	417.00 > 372.00	2.927	2.927	0.0	12612862	54.8		109	728359	
15 Perfluorooctanoic acid	413.00 > 369.00	2.927	2.927	0.0	1.000	771229	3.05		7710	M
	413.00 > 169.00	2.822	2.927	-0.105	0.964	495776	1.56(0.90-1.10)		4128	

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	3.177	3.271	-0.094	1.000	21532020	82.9			207288	
499.00 > 99.00	3.294	3.271	0.023	1.037	4594007		4.69(0.90-1.10)		135486	
D 17 13C4 PFOS										
503.00 > 80.00	3.294	3.294	0.0		12489359	50.2		105	550558	
D 19 13C5 PFNA										
468.00 > 423.00	3.302	3.301	0.001		9213951	51.9		104	792243	
20 Perfluorononanoic acid										
463.00 > 419.00	3.286	3.301	-0.015	1.000	6258	0.0357			116	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.620	3.621	-0.001	1.000	47192	0.1145			2046	
D 21 13C8 FOSA										
506.00 > 78.00	3.620	3.621	-0.001		22102484	57.5		115	769025	
D 23 13C2 PFDA										
515.00 > 470.00	3.654	3.665	-0.011		9407102	59.8		120	283048	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.654	3.665	-0.011	1.000	9926	0.0559			210	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.948	3.971	-0.023	1.000	2192	0.0144				
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.985	3.990	-0.005	1.000	21309	0.1493			606	
D 27 13C2 PFUnA										
565.00 > 520.00	3.985	3.990	-0.005		7466253	63.7		127	446665	
D 30 13C2 PFDaA										
615.00 > 570.00	4.267	4.284	-0.017		6858186	61.8		124	217114	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.777	4.783	-0.006	1.000	12557	0.0578			3.9	
713.00 > 169.00	4.760	4.783	-0.023	0.997	5489		2.29(0.00-0.00)		512	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170105-38480.b\04JAN2017A_045.d

Injection Date: 04-Jan-2017 21:33:08

Instrument ID: A8_N

Lims ID: 320-24184-A-3-G

Lab Sample ID: 320-24184-3

Client ID: FSS3TMW-1216

Operator ID: A8-PC\A8

ALS Bottle#: 24

Worklist Smp#: 46

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

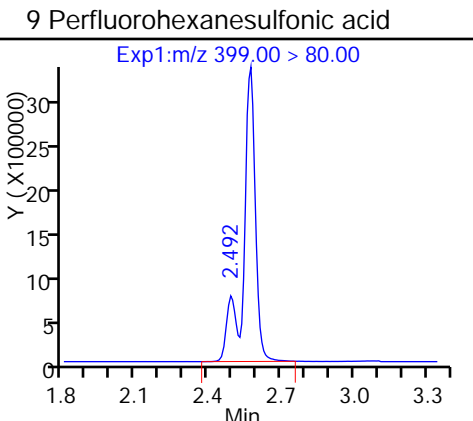
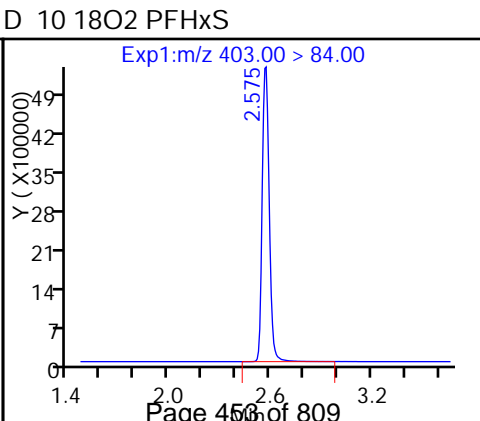
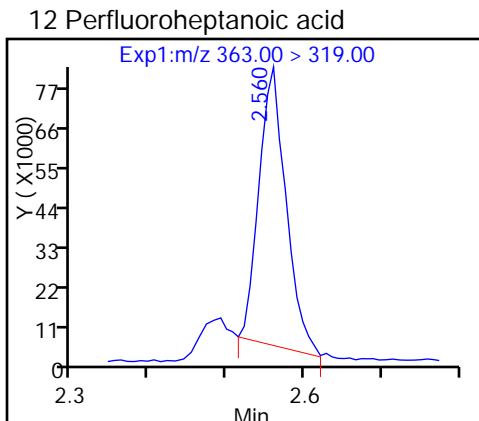
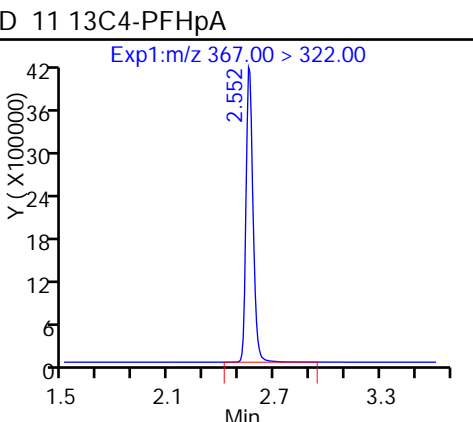
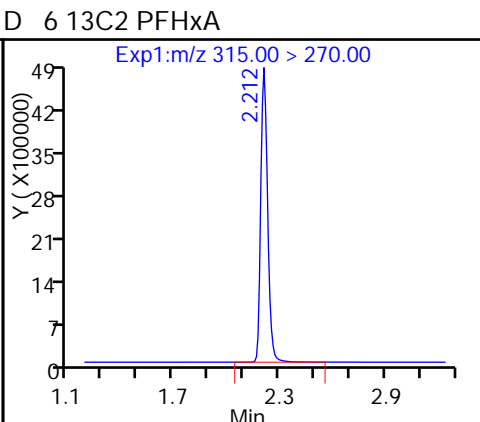
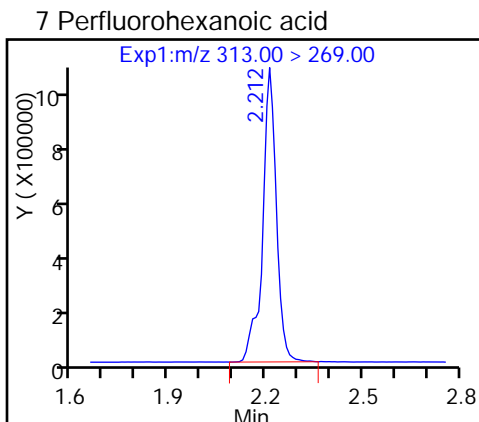
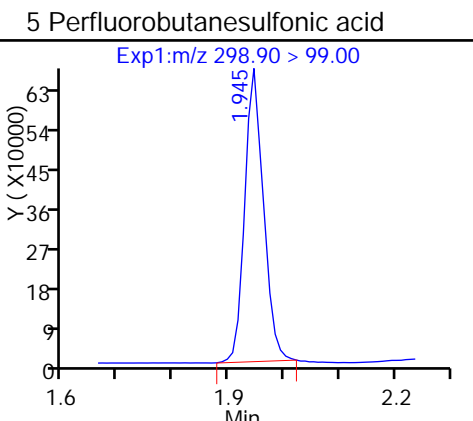
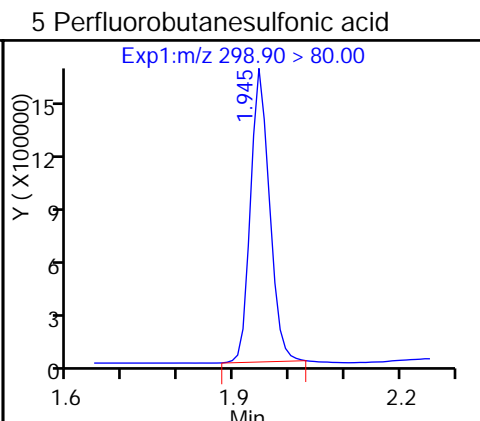
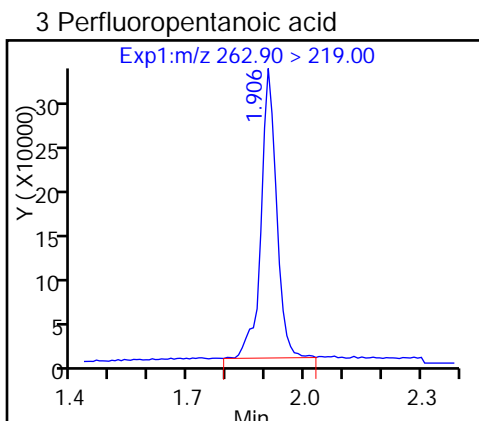
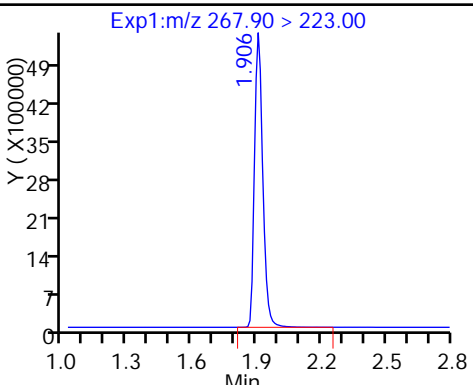
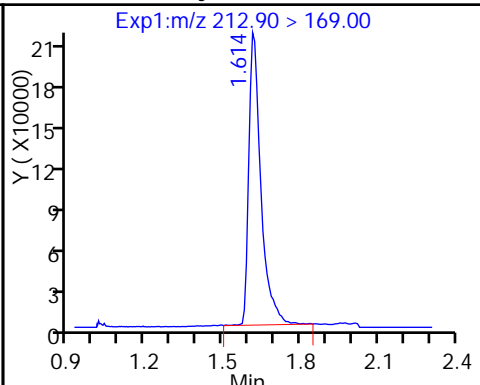
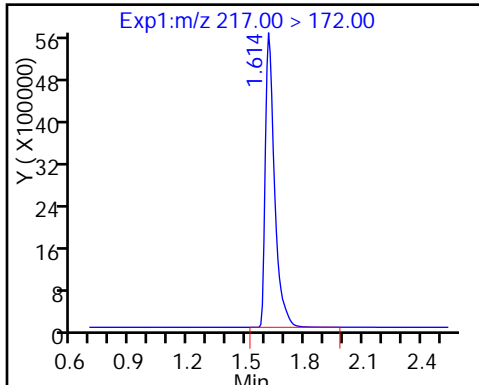
Method: A8_N

Limit Group: LC PFC_DOD ICAL

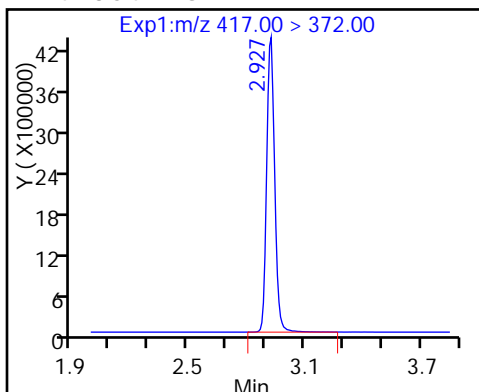
D 2 13C4 PFBA

1 Perfluorobutyric acid

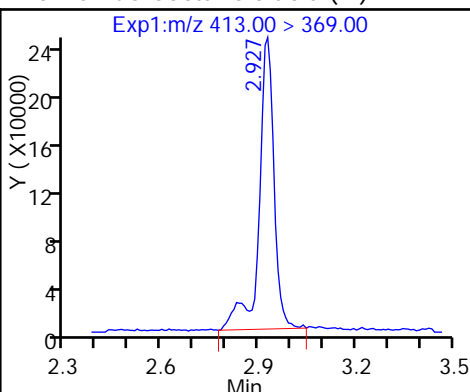
D 4 13C5-PFPeA



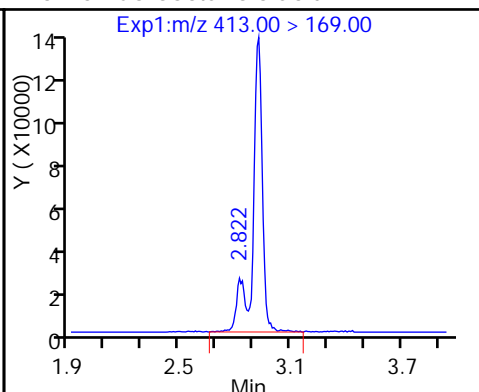
D 14 13C4 PFOA



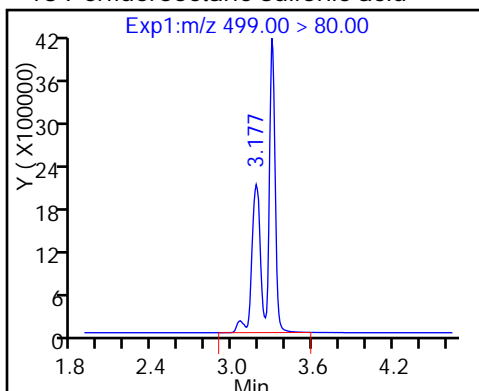
15 Perfluorooctanoic acid (M)



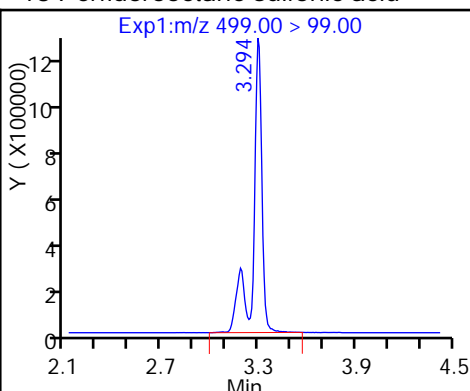
15 Perfluorooctanoic acid



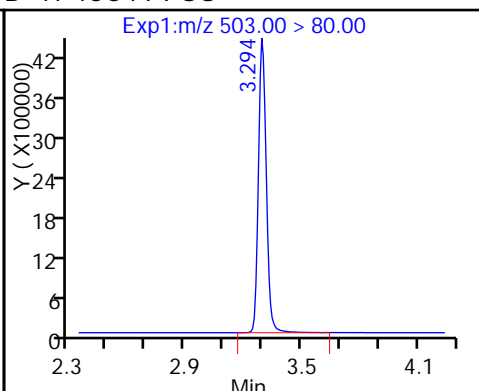
18 Perfluorooctane sulfonic acid



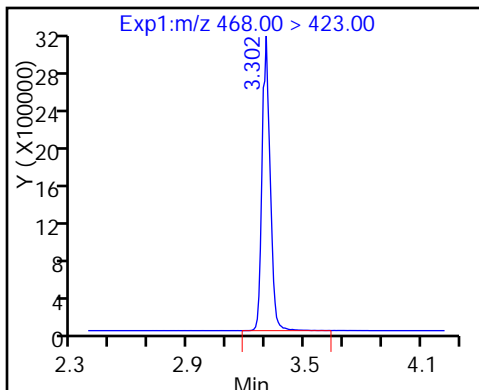
18 Perfluorooctane sulfonic acid



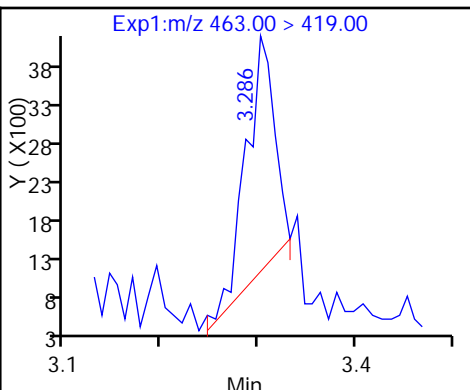
D 17 13C4 PFOS



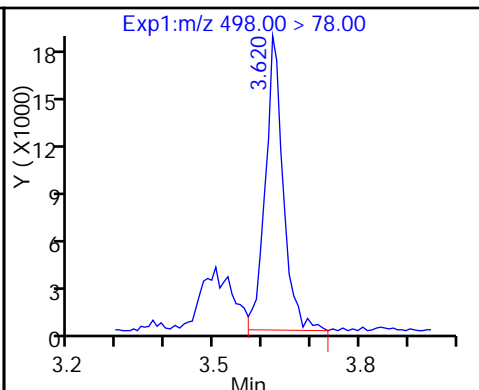
D 19 13C5 PFNA



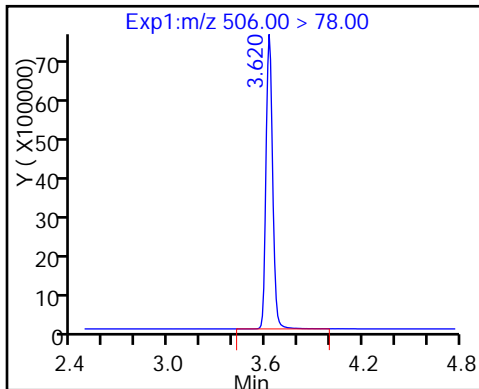
20 Perfluorononanoic acid



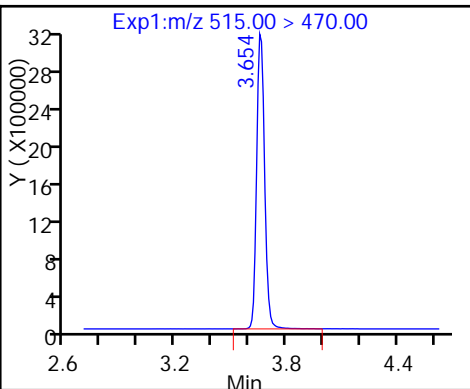
22 Perfluorooctane Sulfonamide



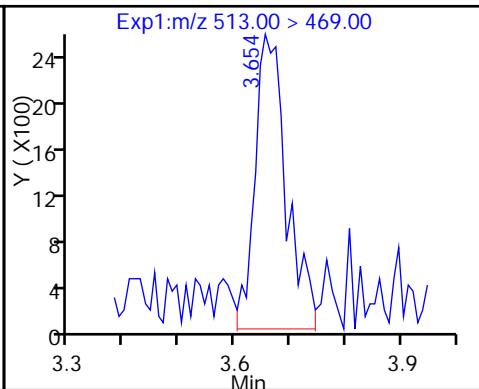
D 21 13C8 FOSA



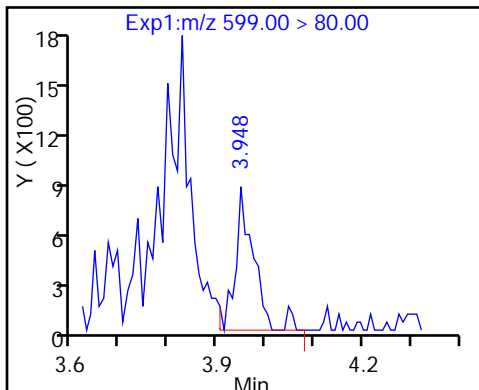
D 23 13C2 PFDA



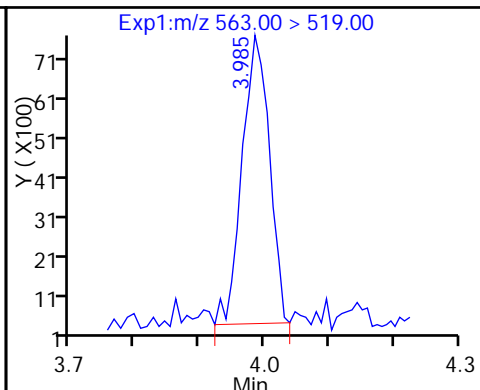
24 Perfluorodecanoic acid



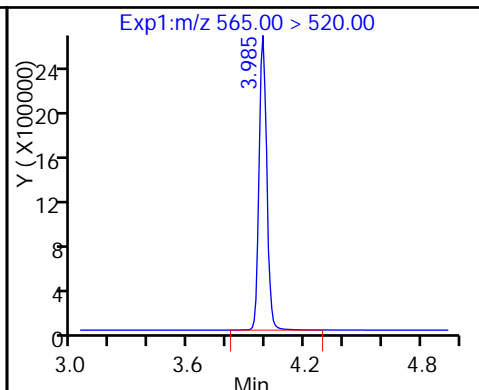
26 Perfluorodecane Sulfonic acid



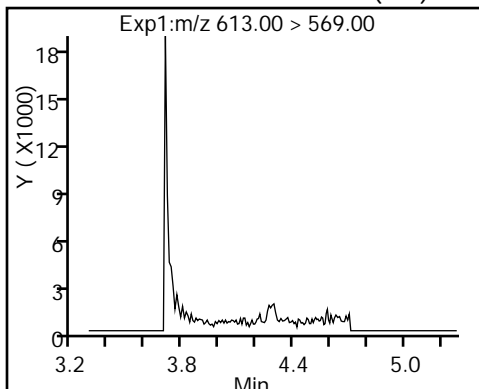
28 Perfluoroundecanoic acid



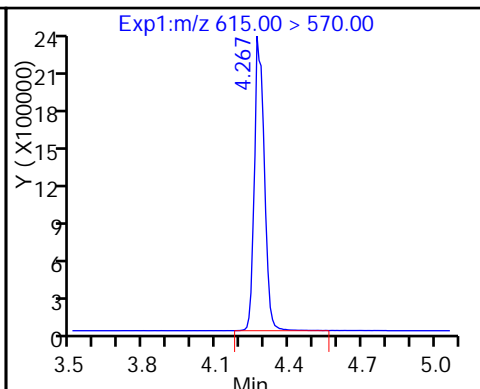
D 27 13C2 PFUnA



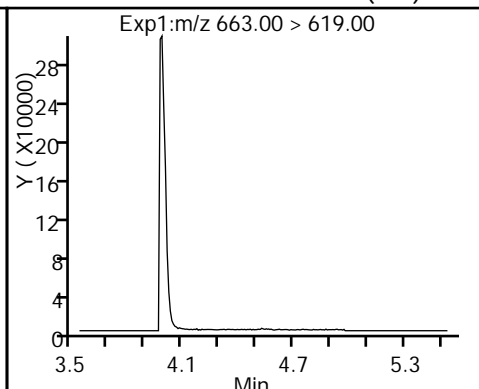
29 Perfluorododecanoic acid (ND)



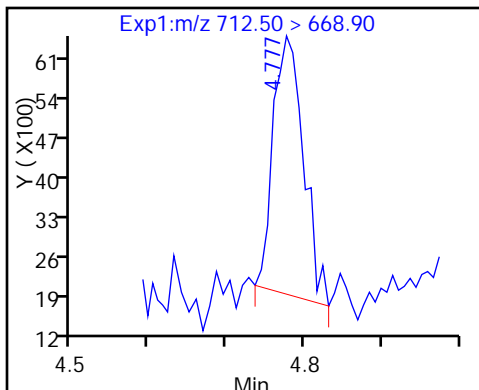
D 30 13C2 PFDaA



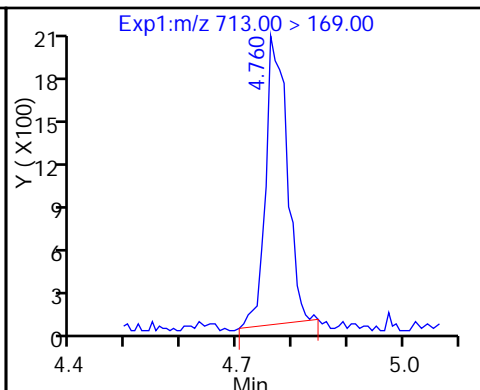
31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: FSS3TMW-1216 DL Lab Sample ID: 320-24184-3 DL
 Matrix: Water Lab File ID: 30DEC2016B_004.d
 Analysis Method: 537 (Modified) Date Collected: 12/07/2016 08:55
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 280.7(mL) Date Analyzed: 12/30/2016 12:41
 Con. Extract Vol.: 0.5(mL) Dilution Factor: 200
 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
375-22-4	Perfluorobutanoic acid (PFBA)	8.6	D	0.45	0.18	0.082
2706-90-3	Perfluoropentanoic acid (PFPeA)	12	D	0.45	0.36	0.18
307-24-4	Perfluorohexanoic acid (PFHxA)	38	D B	0.45	0.36	0.14
375-85-9	Perfluoroheptanoic acid (PFHpA)	4.0	D	0.45	0.36	0.14
335-67-1	Perfluorooctanoic acid (PFOA)	13	D M	0.45	0.36	0.13
375-95-1	Perfluorononanoic acid (PFNA)	0.16	J D	0.45	0.36	0.12
335-76-2	Perfluorodecanoic acid (PFDA)	0.18	U	0.45	0.18	0.078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.36	U	0.45	0.36	0.13
307-55-1	Perfluorododecanoic acid (PFDoA)	0.36	U	0.45	0.36	0.10
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.36	U	0.45	0.36	0.098
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.18	U	0.45	0.18	0.071
375-73-5	Perfluorobutanesulfonic acid (PFBS)	19	D	0.45	0.36	0.16
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	61	D	0.45	0.36	0.15
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	260	E D	0.71	0.53	0.23
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.53	U	0.71	0.53	0.22
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.63	D	0.45	0.36	0.11

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: FSS3TMW-1216 DL Lab Sample ID: 320-24184-3 DL
 Matrix: Water Lab File ID: 30DEC2016B_004.d
 Analysis Method: 537 (Modified) Date Collected: 12/07/2016 08:55
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 280.7(mL) Date Analyzed: 12/30/2016 12:41
 Con. Extract Vol.: 0.5(mL) Dilution Factor: 200
 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.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	73		25-150
STL00992	13C4 PFBA	105		25-150
STL01893	13C5-PFPeA	103		25-150
STL00993	13C2 PFHxA	108		25-150
STL01892	13C4-PFHpA	73		25-150
STL00990	13C4 PFOA	91		25-150
STL00995	13C5 PFNA	66		25-150
STL00996	13C2 PFDA	106		25-150
STL00997	13C2 PFUnA	105		25-150
STL00998	13C2 PFDoA	117		25-150
STL00994	18O2 PFHxS	124		25-150
STL00991	13C4 PFOS	71		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_004.d
 Lims ID: 320-24184-A-3-A
 Client ID: FFTA3TMW-1216
 Sample Type: Client
 Inject. Date: 30-Dec-2016 12:41:23 ALS Bottle#: 2 Worklist Smp#: 14
 Injection Vol: 2.0 ul Dil. Factor: 200.0000
 Sample Info: 320-24184-a-3-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 13:48:02

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	1.536	1.534	0.002	91207	0.2623		0.5	7853	
1 Perfluorobutyric acid	212.90 > 169.00	1.536	1.534	0.002	1.000	7477614	24.0		39874	
D 4 13C5-PFPeA	267.90 > 223.00	1.812	1.810	0.002	68538	0.2576		0.5	9458	
3 Perfluoropentanoic acid	262.90 > 219.00	1.812	1.810	0.002	1.000	9362280	34.6		93200	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.851	1.849	0.002	1.000	30427836	53.0			
	298.90 > 99.00	1.851	1.849	0.002	1.000	15518274	1.96(0.00-0.00)			
D 6 13C2 PFHxA	315.00 > 270.00	2.104	2.098	0.006	66193	0.2701		0.5	13214	
7 Perfluorohexanoic acid	313.00 > 269.00	2.104	2.098	0.006	1.000	26077179	106.0		568978	
9 Perfluorohexanesulfonic acid	399.00 > 80.00	2.378	2.424	-0.046	1.000	71808489	171.9			
D 11 13C4-PFHpA	367.00 > 322.00	2.438	2.431	0.007	41095	0.1816		0.4	7785	
12 Perfluoroheptanoic acid	363.00 > 319.00	2.438	2.431	0.007	1.000	1795160	11.2		6967	
D 10 18O2 PFHxS	403.00 > 84.00	2.453	2.454	-0.001	95911	0.2933		0.6	8472	
D 14 13C4 PFOA	417.00 > 372.00	2.789	2.791	-0.002	52213	0.2267		0.5	10053	
15 Perfluorooctanoic acid	413.00 > 369.00	2.789	2.791	-0.002	1.000	7397543	35.3		141464	M
	413.00 > 169.00	2.798	2.791	0.007	1.003	4727748	1.56(0.90-1.10)		186825	

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	3.046	3.135	-0.089	1.000	128012948	730.9			383935	E
499.00 > 99.00	3.055	3.135	-0.080	1.003	34430327		3.72(0.90-1.10)		132254	
D 17 13C4 PFOS										
503.00 > 80.00	3.165	3.159	0.006		42093	0.1692		0.4	1553	
20 Perfluorononanoic acid										
463.00 > 419.00	3.173	3.159	0.014	1.000	50943	0.4582			971	
D 19 13C5 PFNA										
468.00 > 423.00	3.173	3.167	0.006		29200	0.1643		0.3	2983	
D 21 13C8 FOSA										
506.00 > 78.00	3.483	3.474	0.009		70403	0.1833		0.4	3075	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.491	3.482	0.009	1.000	467864	1.78			4832	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.517	3.524	-0.007	1.000	29534	0.1874			908	
D 23 13C2 PFDA										
515.00 > 470.00	3.525	3.524	0.001		41740	0.2653		0.5	1266	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.837	3.836	0.001	1.000	11130	0.1082				
D 27 13C2 PFUnA										
565.00 > 520.00	3.854	3.853	0.001		30720	0.2620		0.5	6832	
D 30 13C2 PFDoA										
615.00 > 570.00	4.149	4.149	0.0		32544	0.2933		0.6	1426	

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_004.d

Injection Date: 30-Dec-2016 12:41:23

Instrument ID: A8_N

Lims ID: 320-24184-A-3-A

Lab Sample ID: 320-24184-3

Client ID: FFTA3TMW-1216

Operator ID: A8-PC\A8

ALS Bottle#: 2

Worklist Smp#: 14

Injection Vol: 2.0 ul

Dil. Factor: 200.0000

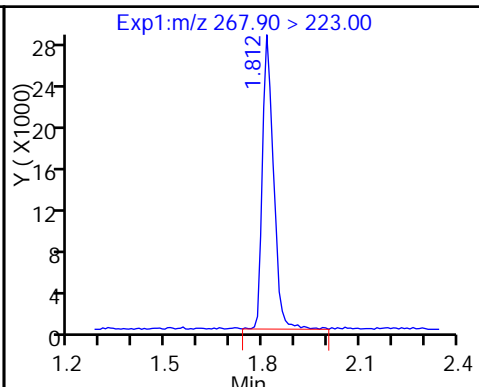
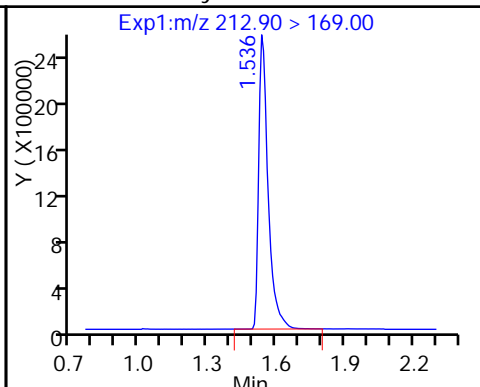
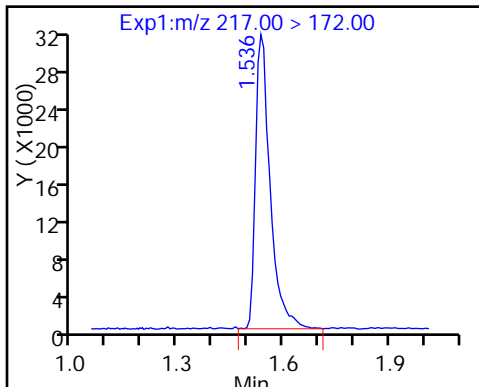
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

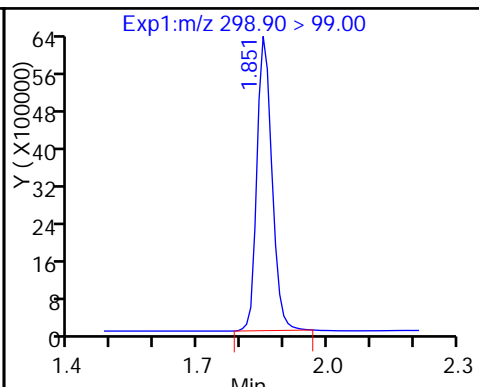
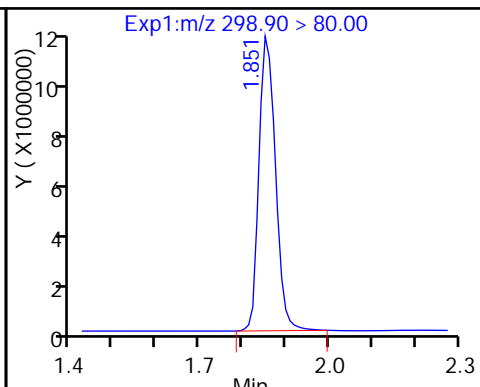
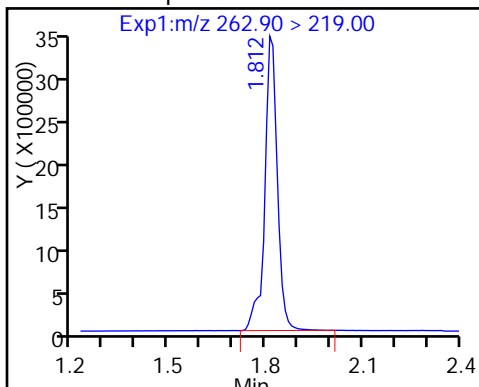
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

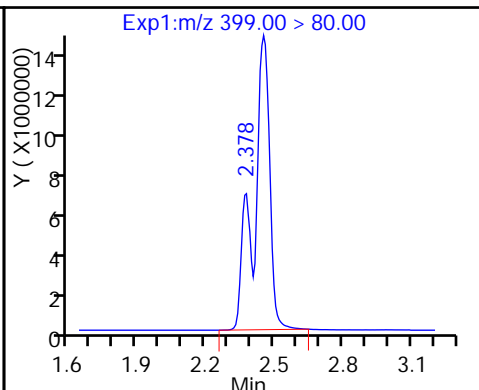
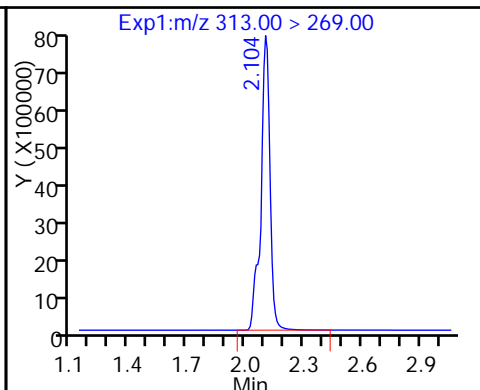
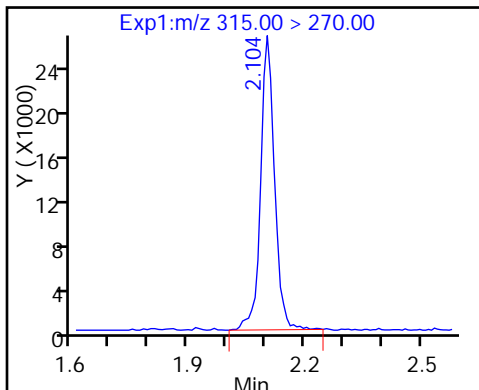
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

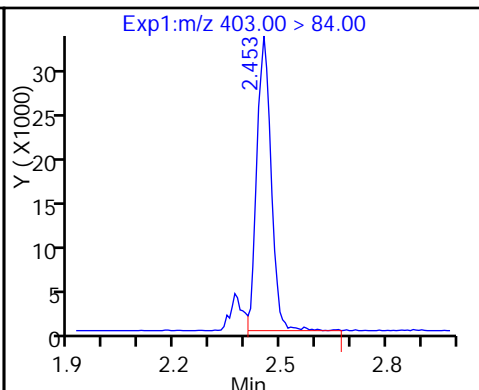
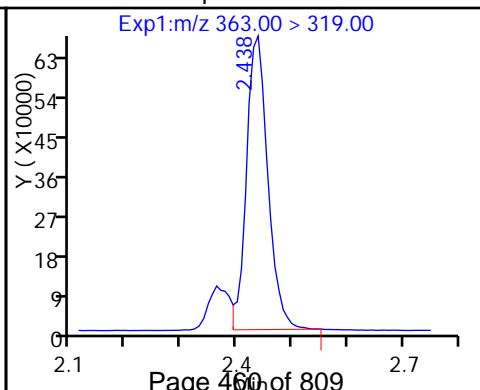
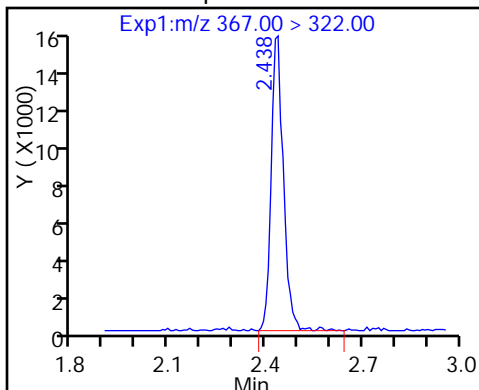
9 Perfluorohexanesulfonic acid



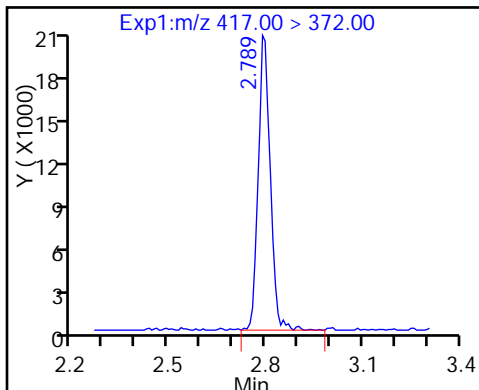
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid

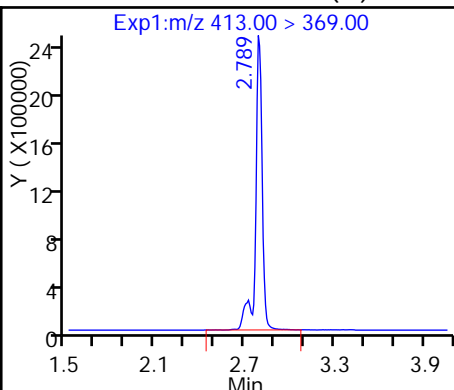
D 10 18O2 PFHxS



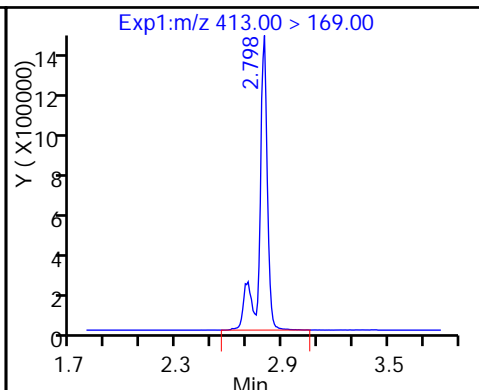
D 14 13C4 PFOA



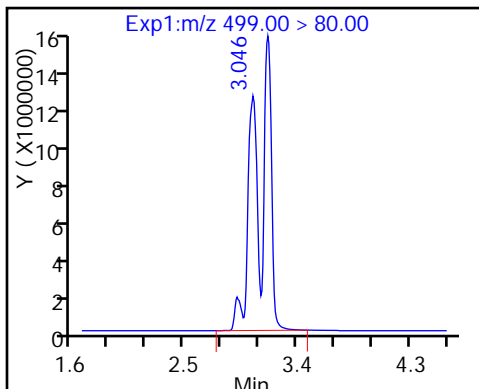
15 Perfluorooctanoic acid (M)



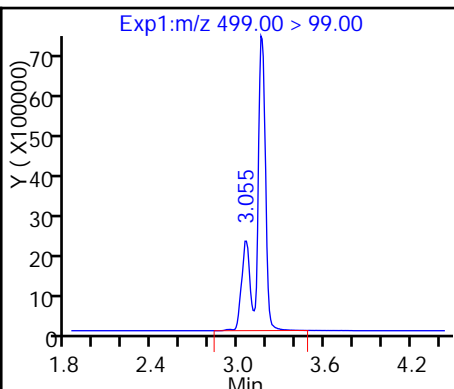
15 Perfluorooctanoic acid



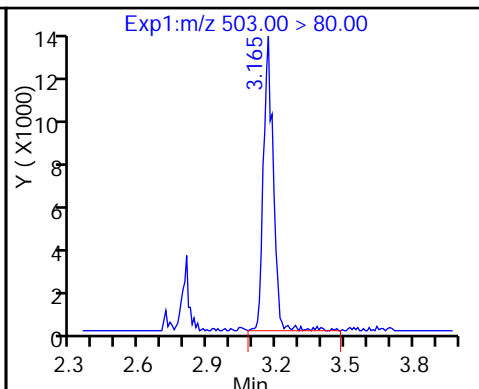
18 Perfluorooctane sulfonic acid



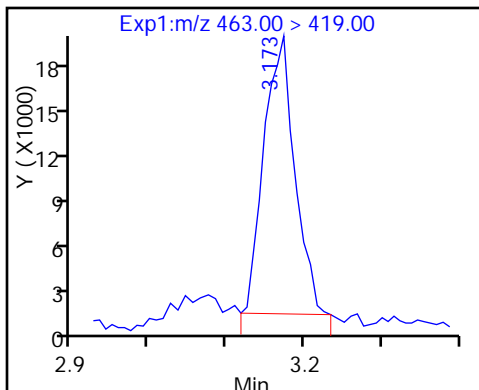
18 Perfluorooctane sulfonic acid



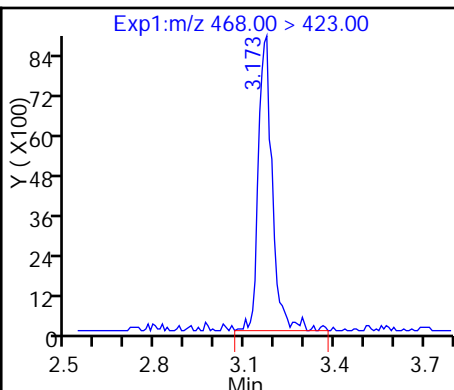
D 17 13C4 PFOS



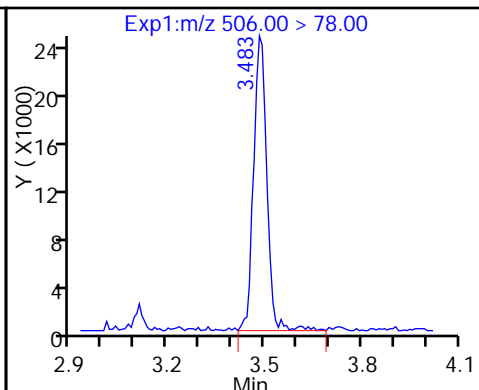
20 Perfluorononanoic acid



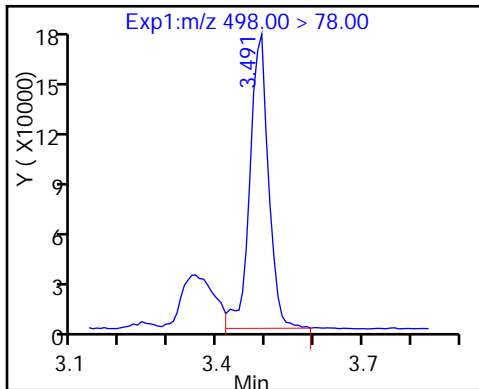
D 19 13C5 PFNA



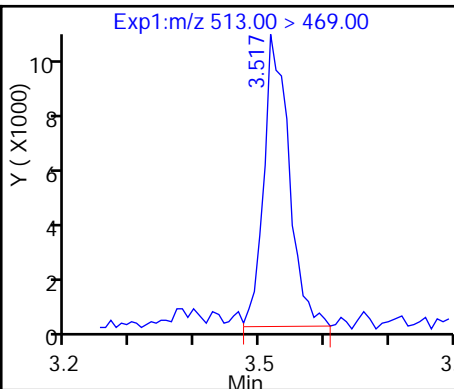
D 21 13C8 FOSA



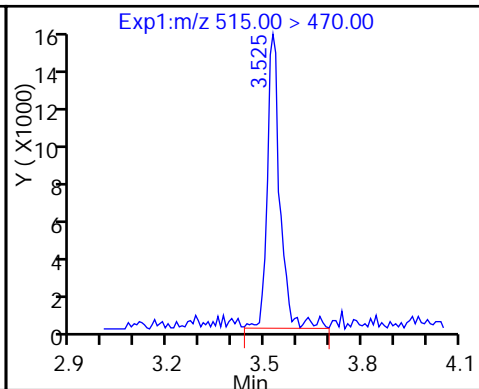
22 Perfluorooctane Sulfonamide



24 Perfluorodecanoic acid



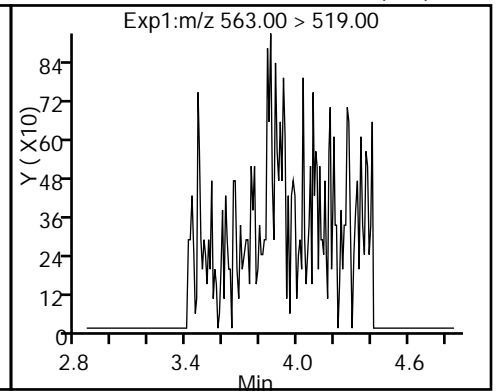
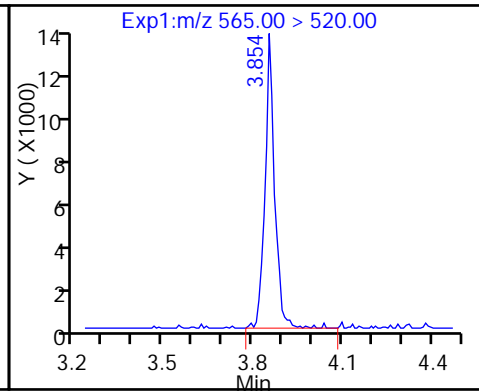
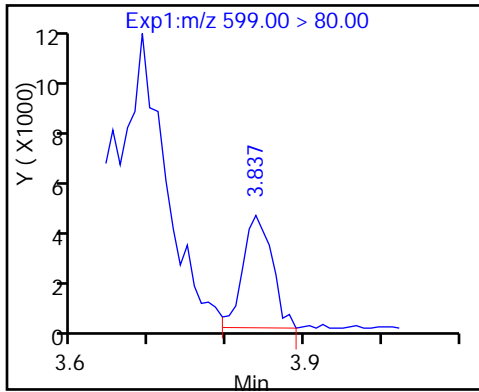
D 23 13C2 PFDA



26 Perfluorodecane Sulfonic acid

D 27 13C2 PFUnA

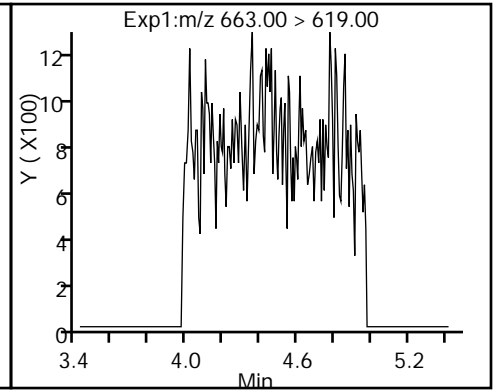
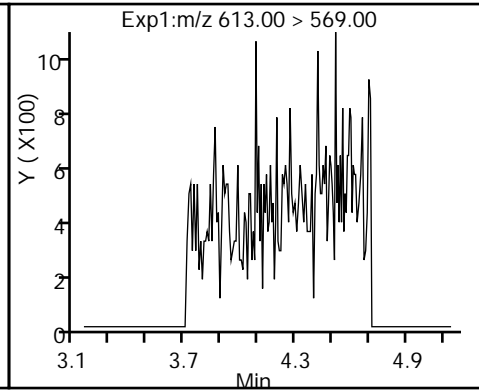
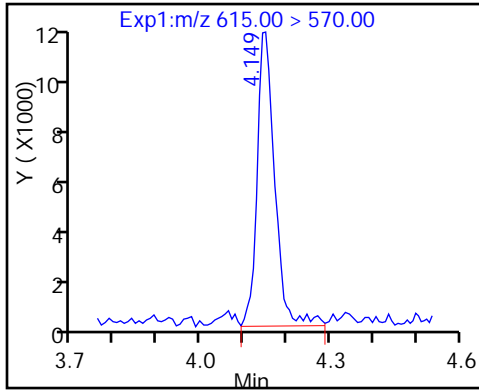
28 Perfluoroundecanoic acid (ND)



D 30 13C2 PFDoA

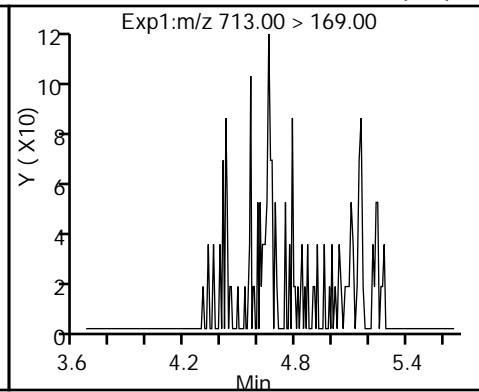
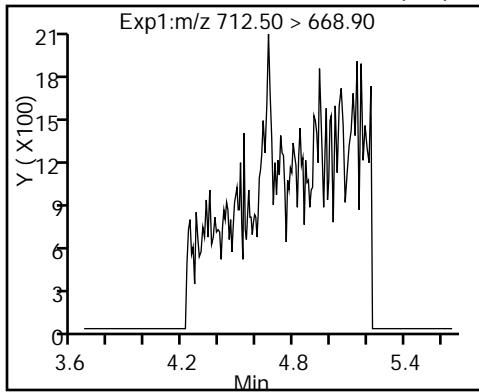
29 Perfluorododecanoic acid (ND)

31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND)

33 Perfluorotetradecanoic acid (ND)



TestAmerica Sacramento

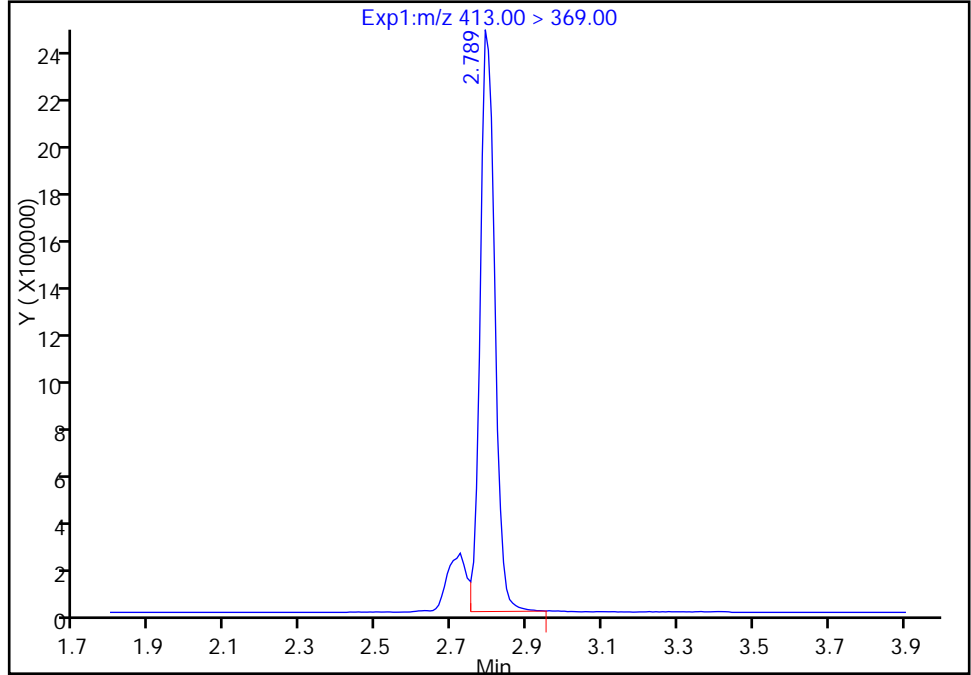
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Injection Date: 30-Dec-2016 12:41:23 Instrument ID: A8_N
Lims ID: 320-24184-A-3-A Lab Sample ID: 320-24184-3
Client ID: FFTA3TMW-1216
Operator ID: A8-PC\A8 ALS Bottle#: 2 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 200.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

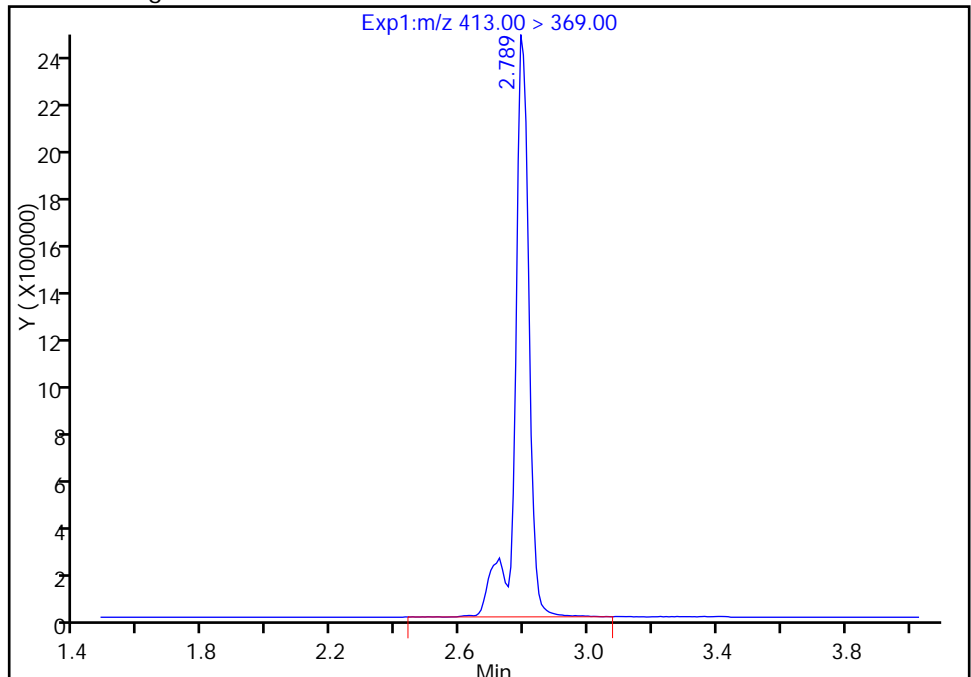
RT: 2.79
Area: 6484400
Amount: 30.950535
Amount Units: ng/ml

Processing Integration Results



RT: 2.79
Area: 7397543
Amount: 35.309036
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 03-Jan-2017 13:48:02

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: SWMU1-02-1216 Lab Sample ID: 320-24184-4
 Matrix: Water Lab File ID: 30DEC2016B_016.d
 Analysis Method: 537 (Modified) Date Collected: 12/07/2016 12:00
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 279.8 (mL) Date Analyzed: 12/30/2016 14:11
 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
375-22-4	Perfluorobutanoic acid (PFBA)	0.016	M	0.0022	0.00089	0.00041
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0049	M	0.0022	0.0018	0.00088
307-24-4	Perfluorohexanoic acid (PFHxA)	0.012	B	0.0022	0.0018	0.00070
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.00081	J	0.0022	0.0018	0.00072
335-67-1	Perfluorooctanoic acid (PFOA)	0.0047	M	0.0022	0.0018	0.00067
375-95-1	Perfluorononanoic acid (PFNA)	0.0018	U	0.0022	0.0018	0.00058
335-76-2	Perfluorodecanoic acid (PFDA)	0.00072	J	0.0022	0.00089	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)	0.00044	J	0.0022	0.00089	0.00036
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.010		0.0022	0.0018	0.00082
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.033	M	0.0022	0.0018	0.00078
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.99	E	0.0036	0.0027	0.0011
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0064		0.0036	0.0027	0.0011
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.018		0.0022	0.0018	0.00057

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: SWMU1-02-1216 Lab Sample ID: 320-24184-4
 Matrix: Water Lab File ID: 30DEC2016B_016.d
 Analysis Method: 537 (Modified) Date Collected: 12/07/2016 12:00
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 279.8 (mL) Date Analyzed: 12/30/2016 14:11
 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.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	12	Q	25-150
STL00992	13C4 PFBA	31		25-150
STL01893	13C5-PFPeA	91		25-150
STL00993	13C2 PFHxA	115		25-150
STL01892	13C4-PFHpA	116		25-150
STL00990	13C4 PFOA	110		25-150
STL00995	13C5 PFNA	62		25-150
STL00996	13C2 PFDA	104		25-150
STL00997	13C2 PFUnA	112		25-150
STL00998	13C2 PFDoA	109		25-150
STL00994	18O2 PFHxS	118		25-150
STL00991	13C4 PFOS	80		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_016.d
 Lims ID: 320-24184-A-4-A
 Client ID: SWMU1-02-1216
 Sample Type: Client
 Inject. Date: 30-Dec-2016 14:11:26 ALS Bottle#: 10 Worklist Smp#: 26
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24184-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 13:32:29

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	1.526	0.007	5409058	15.6		31.1	324245	
1 Perfluorobutyric acid										M
212.90 > 169.00	1.533	1.534	-0.001	1.000	841311	9.11			929	M
D 4 13C5-PFPeA	267.90 > 223.00	1.810	1.801	0.009	12148186	45.7		91.3	245805	
3 Perfluoropentanoic acid										M
262.90 > 219.00	1.810	1.811	-0.001	1.000	662034	2.76			692	M
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.848	1.840	0.008	1.000	3127372	5.71				
298.90 > 99.00	1.848	1.840	0.008	1.000	1258187		2.49(0.00-0.00)			
D 6 13C2 PFHxA	315.00 > 270.00	2.095	2.092	0.003	14117216	57.6		115	637697	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.095	2.092	0.003	1.000	1726543	6.58			6211	
9 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.445	2.410	0.035	1.000	7261186	18.2				M
D 11 13C4-PFHpA	367.00 > 322.00	2.423	2.421	0.002	13124560	58.0		116	998245	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.423	2.421	0.002	1.000	116436	0.4532			480	
D 10 18O2 PFHxS	403.00 > 84.00	2.445	2.443	0.002	18297750	56.0		118	741248	
D 14 13C4 PFOA	417.00 > 372.00	2.781	2.773	0.008	12645440	54.9		110	649104	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.781	2.780	0.001	1.000	664339	2.62			3981	M
413.00 > 169.00	2.758	2.780	-0.022	0.992	454526		1.46(0.90-1.10)		4169	

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	3.036	3.044	-0.008	1.000	108750083	552.5			249818	E
499.00 > 99.00	3.149	3.044	0.105	1.037	31513038		3.45(0.90-1.10)		765061	
D 17 13C4 PFOS										
503.00 > 80.00	3.149	3.148	0.001		9461850	38.0		79.5	240197	
D 19 13C5 PFNA										
468.00 > 423.00	3.149	3.148	0.001		5544704	31.2		62.4	254481	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.480	3.470	0.010	1.000	411088	9.95			5183	
D 21 13C8 FOSA										
506.00 > 78.00	3.472	3.478	-0.006		2214578	5.77		11.5	139348	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.514	3.504	0.010	1.000	62421	0.4029			990	
D 23 13C2 PFDA										
515.00 > 470.00	3.505	3.512	-0.007		8206994	52.2		104	434399	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.816	3.822	-0.006	1.000	411523	3.56				
D 27 13C2 PFUnA										
565.00 > 520.00	3.842	3.839	0.003		6541283	55.8		112	586517	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.833	3.839	-0.006	1.000	22546	0.1802			461	
D 30 13C2 PFDaA										
615.00 > 570.00	4.133	4.138	-0.005		6042160	54.5		109	248300	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.395	4.403	-0.007	1.000	2608	0.0238			104	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.652	4.651	0.001	1.000	47619	0.2486			933	
713.00 > 169.00	4.642	4.651	-0.009	0.998	8837		5.39(0.00-0.00)		2017	

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_016.d

Injection Date: 30-Dec-2016 14:11:26

Instrument ID: A8_N

Lims ID: 320-24184-A-4-A

Lab Sample ID:

Client ID: SWMU1-02-1216

Operator ID: A8-PC\A8

ALS Bottle#: 10

Worklist Smp#: 26

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

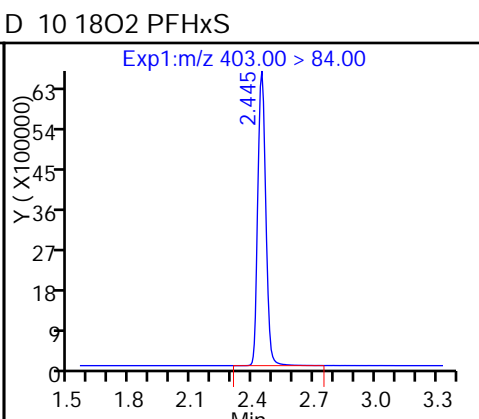
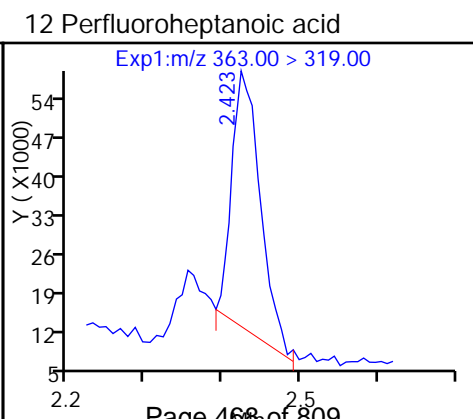
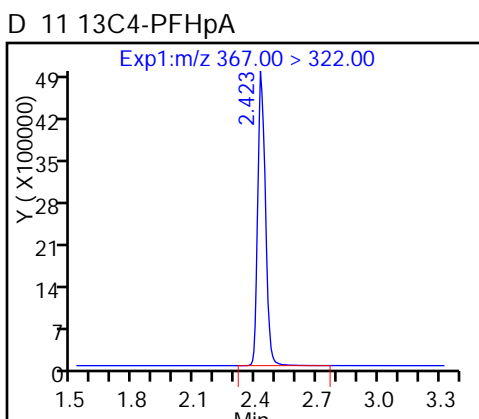
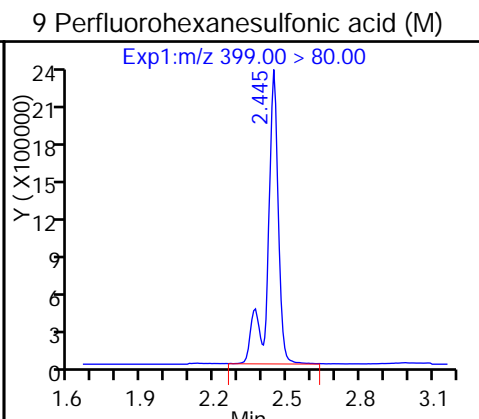
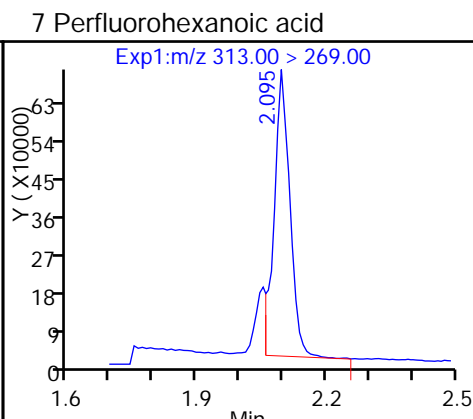
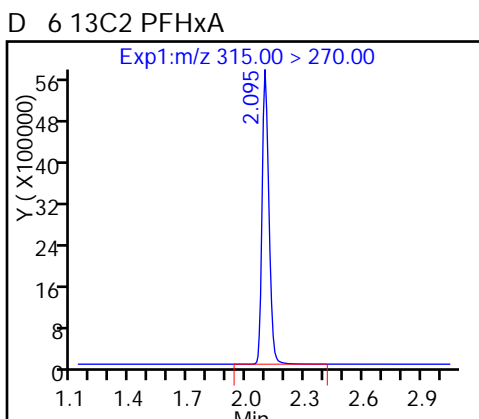
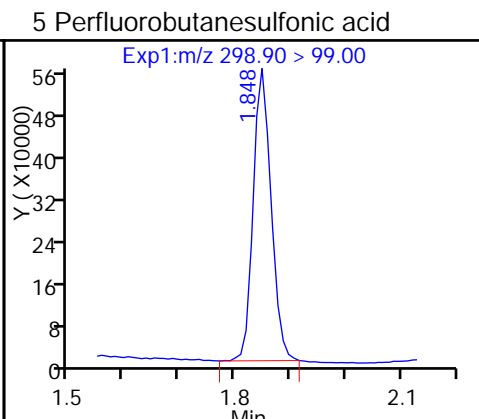
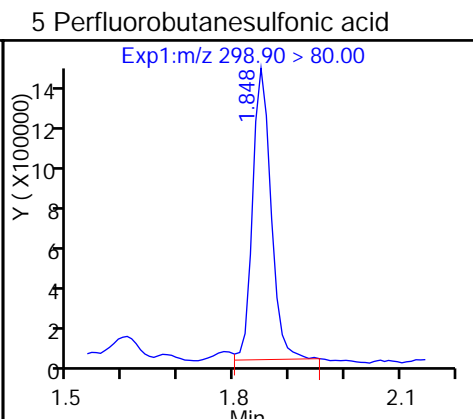
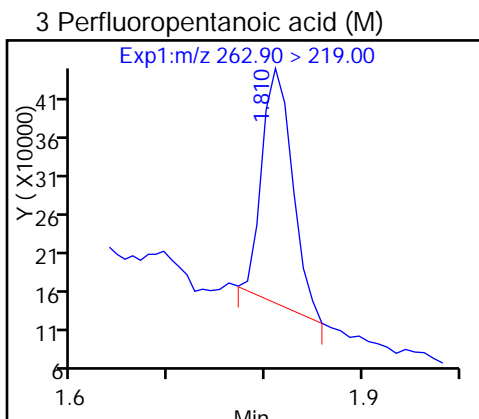
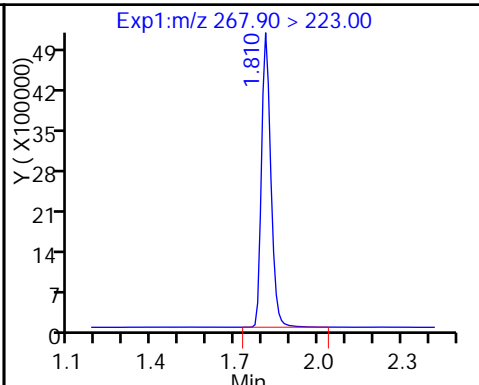
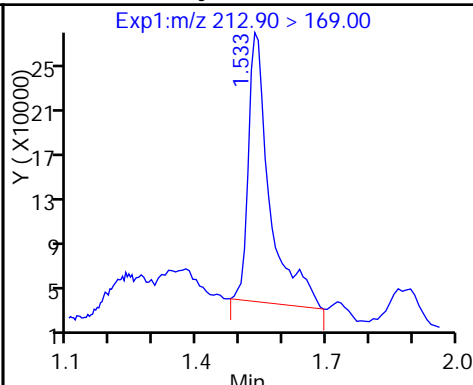
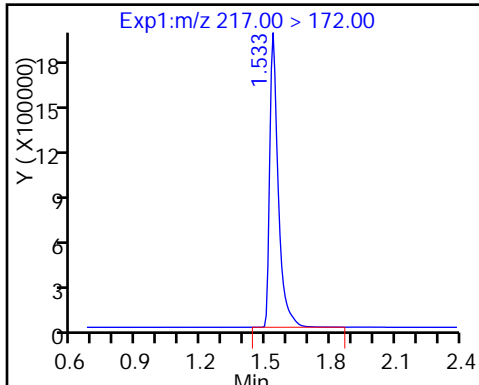
Method: A8_N

Limit Group: LC PFC_DOD ICAL

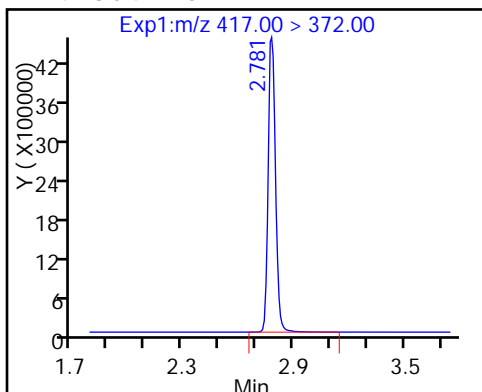
D 2 13C4 PFBA

1 Perfluorobutyric acid (M)

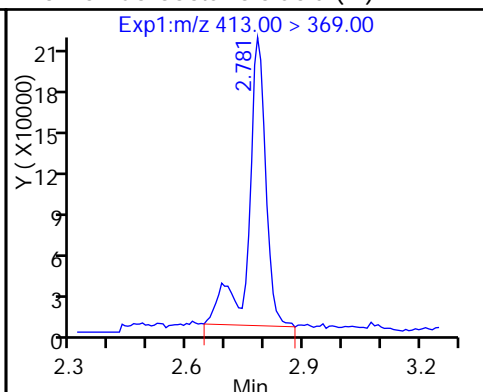
D 4 13C5-PFPeA



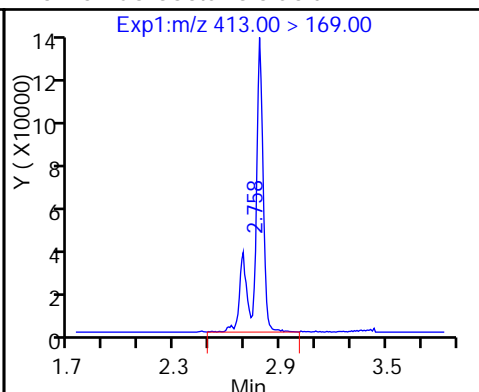
D 14 13C4 PFOA



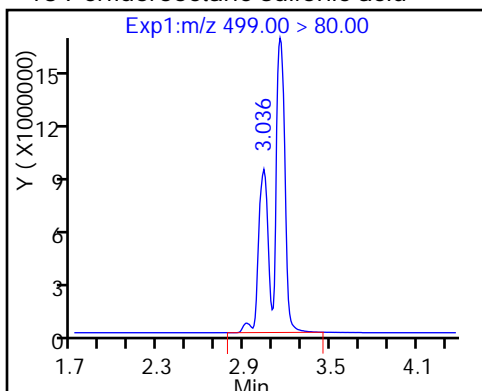
15 Perfluorooctanoic acid (M)



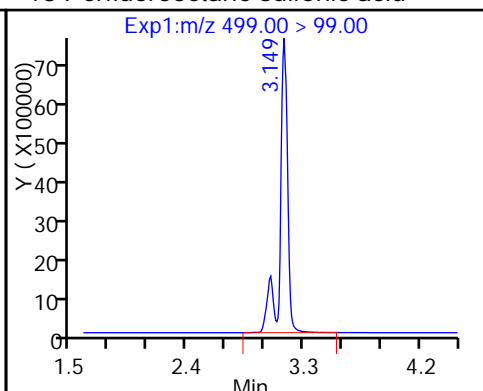
15 Perfluorooctanoic acid



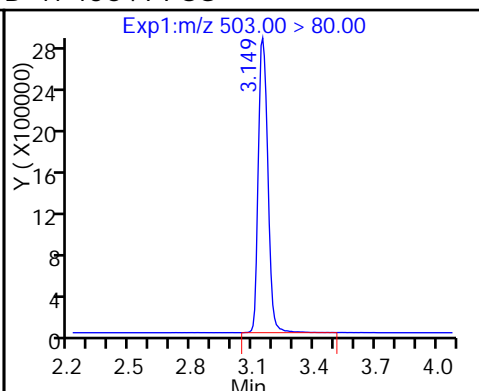
18 Perfluorooctane sulfonic acid



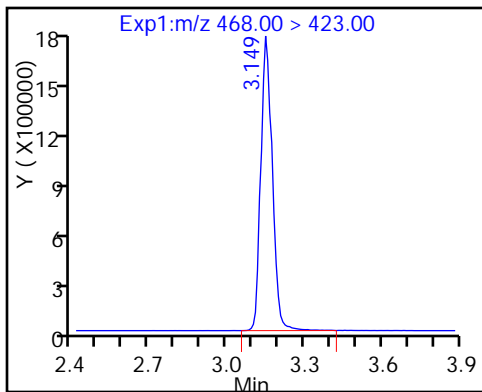
18 Perfluorooctane sulfonic acid



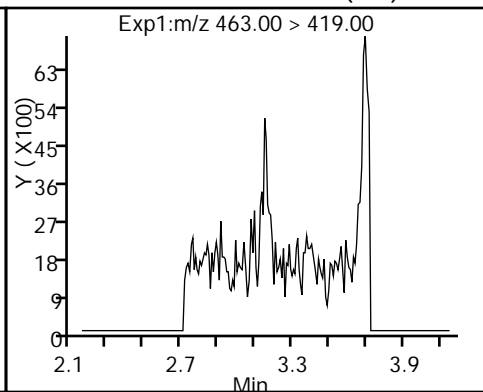
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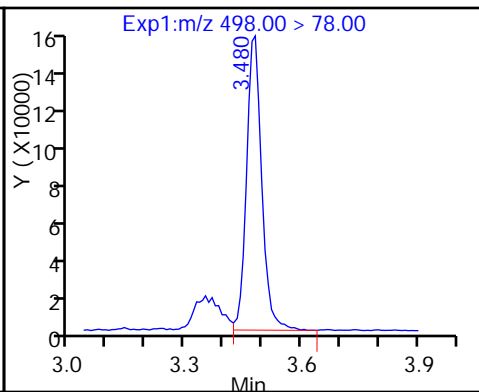
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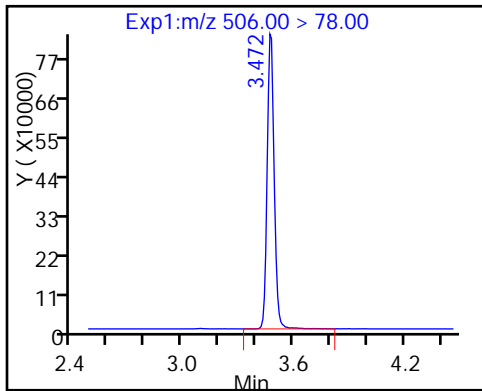
20 Perfluorononanoic acid (ND)



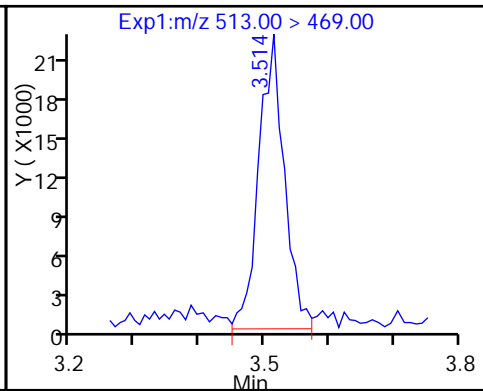
22 Perfluorooctane Sulfonamide



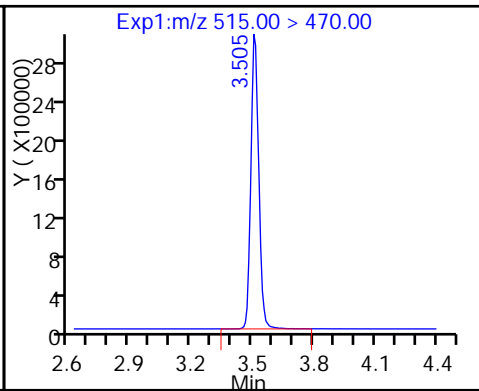
D 21 13C8 FOSA



24 Perfluorodecanoic acid



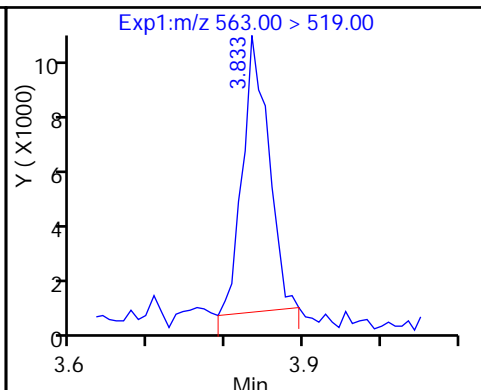
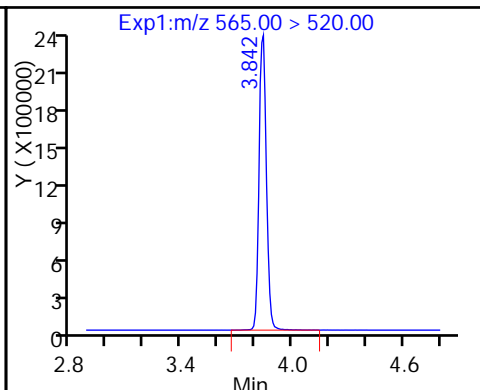
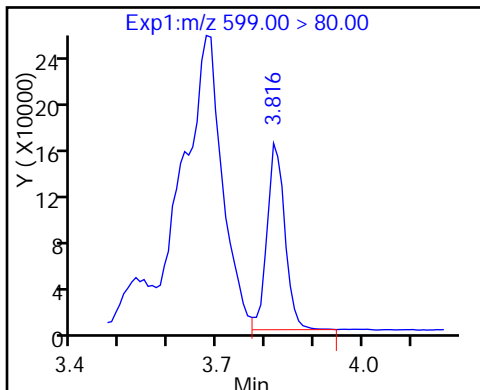
D 23 13C2 PFDA



26 Perfluorodecane Sulfonic acid

D 27 13C2 PFUnA

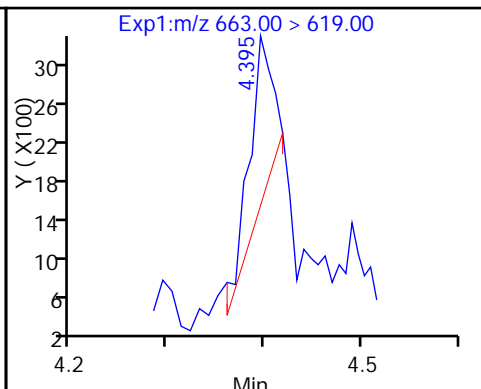
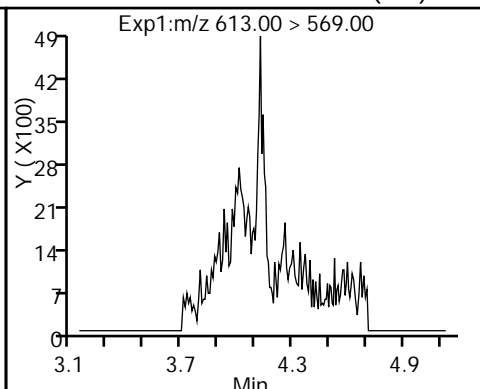
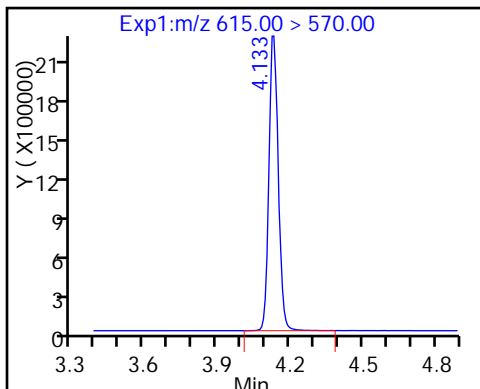
28 Perfluoroundecanoic acid



D 30 13C2 PFDaA

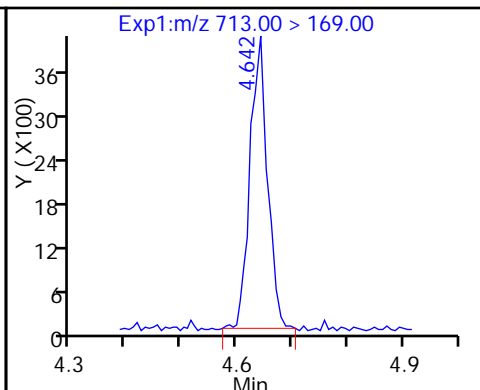
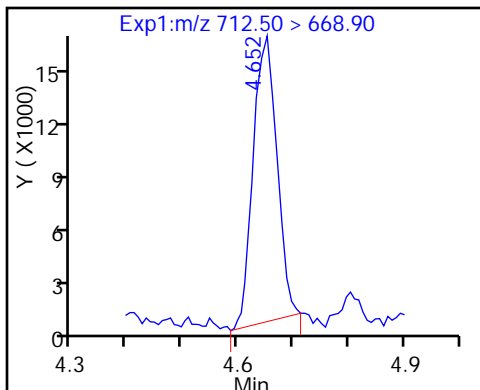
29 Perfluorododecanoic acid (ND)

31 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



TestAmerica Sacramento

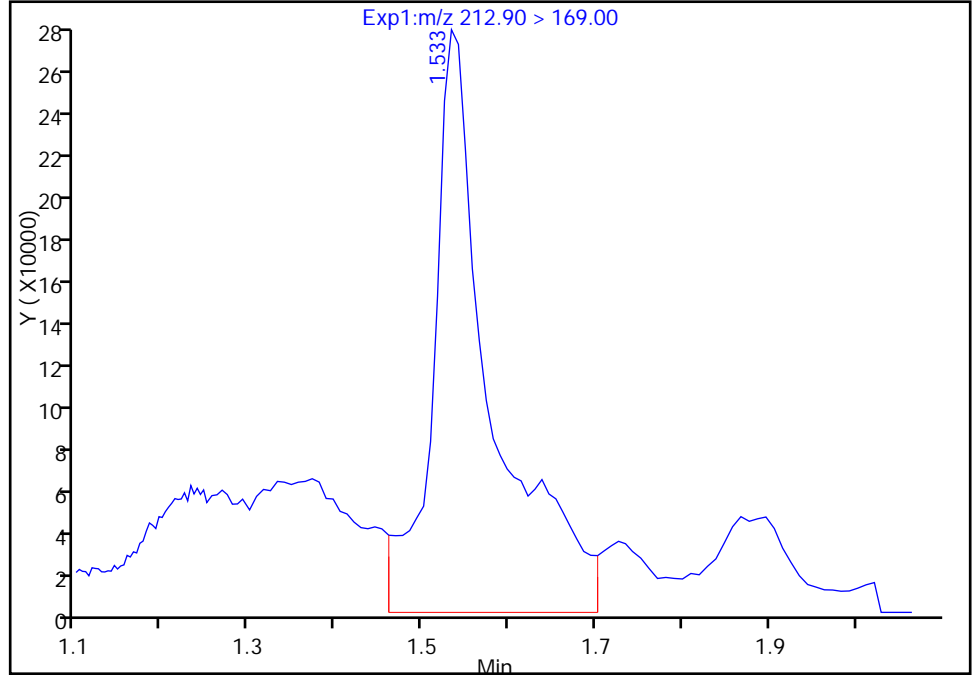
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Injection Date: 30-Dec-2016 14:11:26 Instrument ID: A8_N
Lims ID: 320-24184-A-4-A Lab Sample ID:
Client ID: SWMU1-02-1216
Operator ID: A8-PC\A8 ALS Bottle#: 10 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

1 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

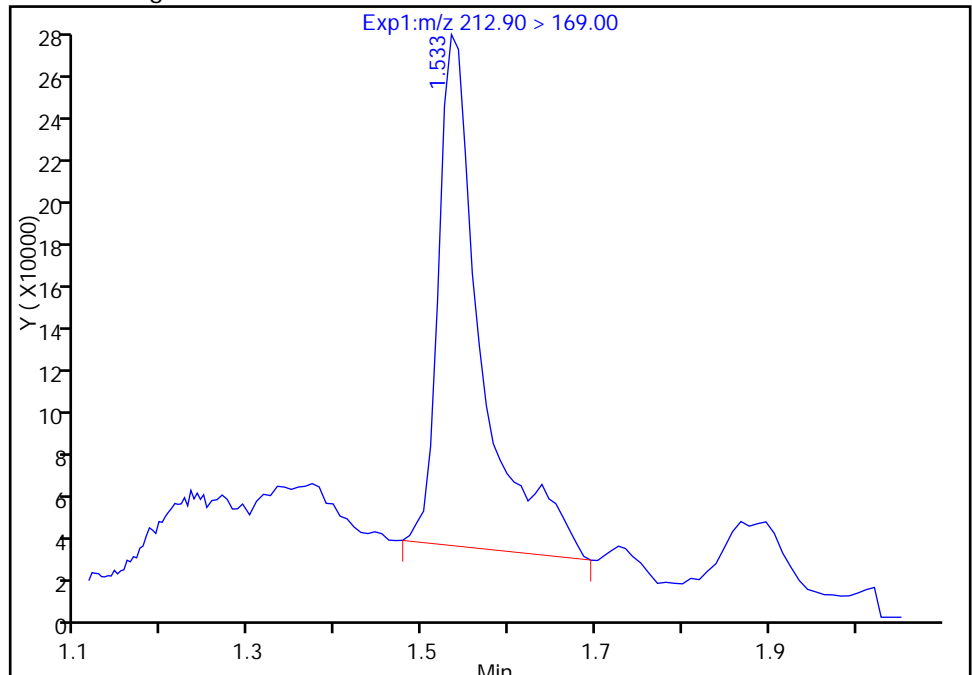
RT: 1.53
Area: 1307251
Amount: 14.154726
Amount Units: ng/ml

Processing Integration Results



RT: 1.53
Area: 841311
Amount: 9.109594
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 03-Jan-2017 14:01:14
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento

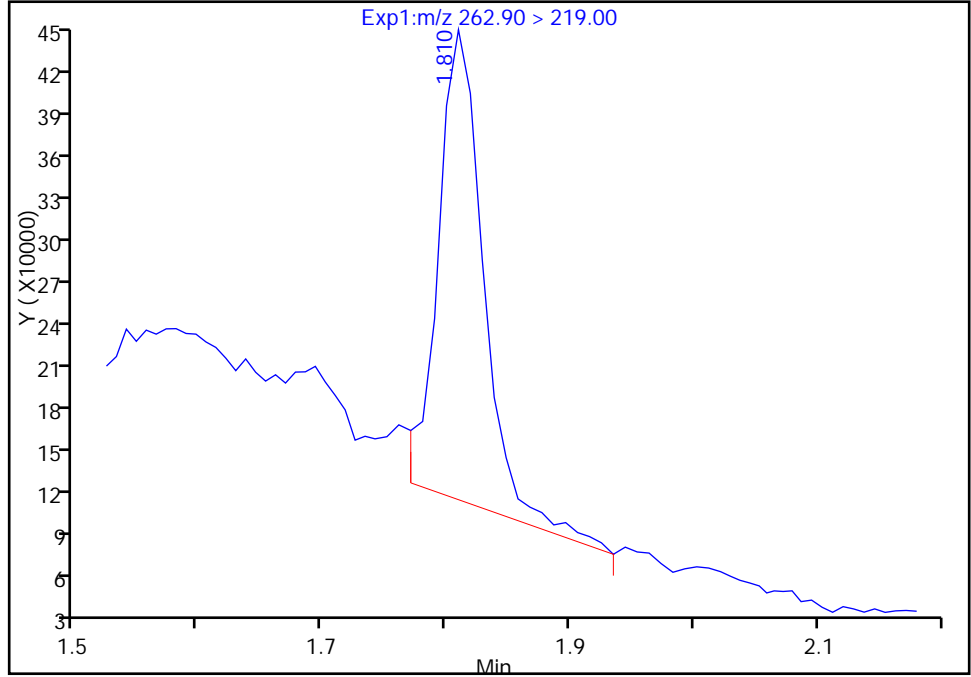
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Injection Date: 30-Dec-2016 14:11:26 Instrument ID: A8_N
Lims ID: 320-24184-A-4-A Lab Sample ID:
Client ID: SWMU1-02-1216
Operator ID: A8-PC\A8 ALS Bottle#: 10 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

3 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

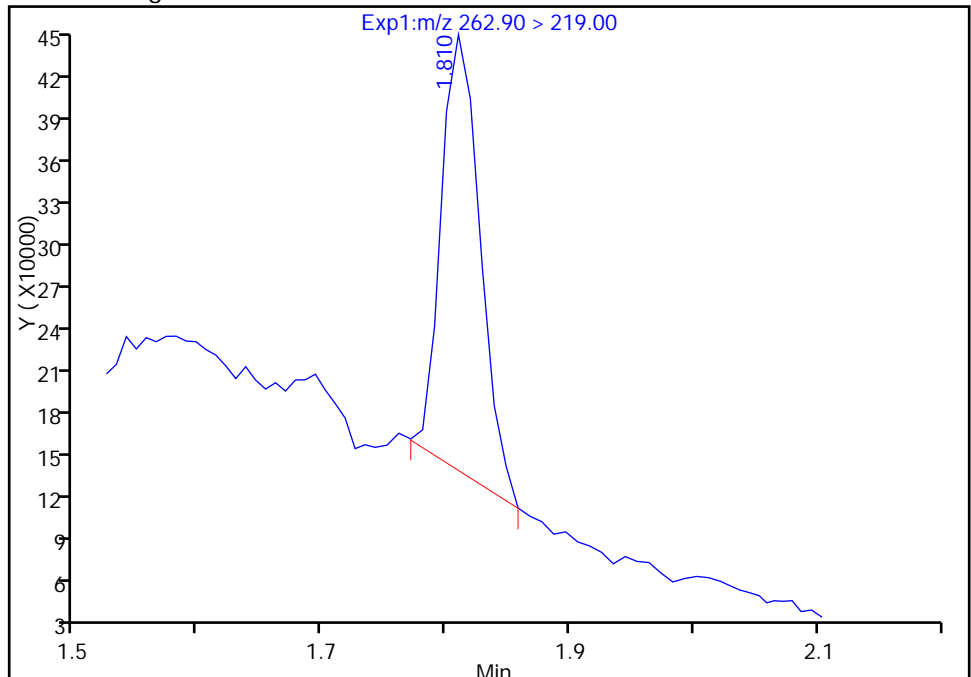
RT: 1.81
Area: 831696
Amount: 3.468941
Amount Units: ng/ml

Processing Integration Results



RT: 1.81
Area: 662034
Amount: 2.761294
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 03-Jan-2017 14:01:14

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento

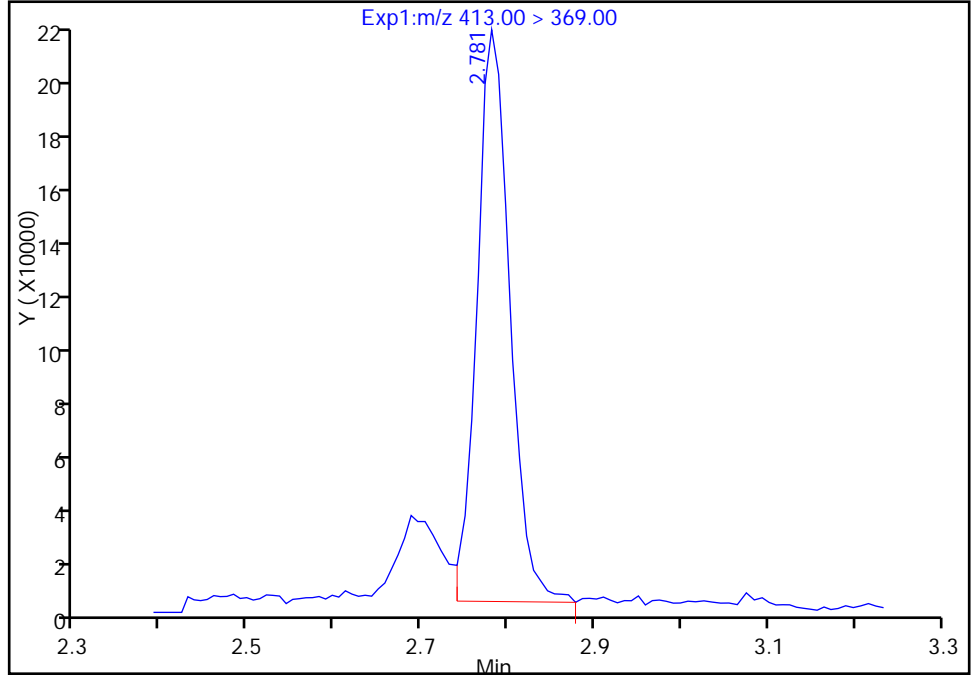
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Injection Date: 30-Dec-2016 14:11:26 Instrument ID: A8_N
Lims ID: 320-24184-A-4-A Lab Sample ID:
Client ID: SWMU1-02-1216
Operator ID: A8-PC\A8 ALS Bottle#: 10 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

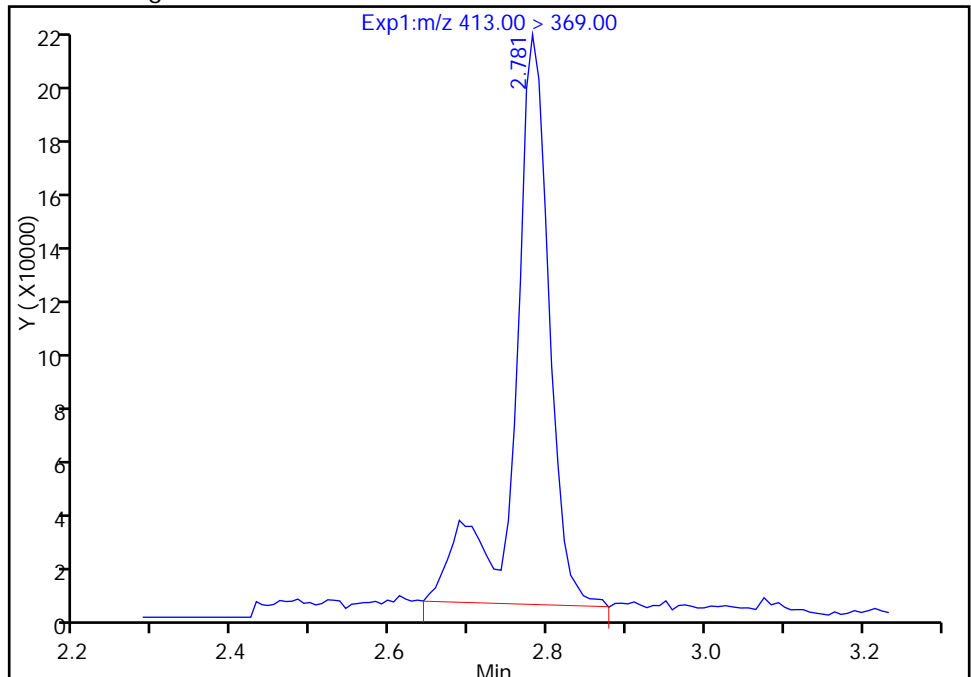
RT: 2.78
Area: 566285
Amount: 2.232072
Amount Units: ng/ml

Processing Integration Results



RT: 2.78
Area: 664339
Amount: 2.618562
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 03-Jan-2017 14:01:14
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento

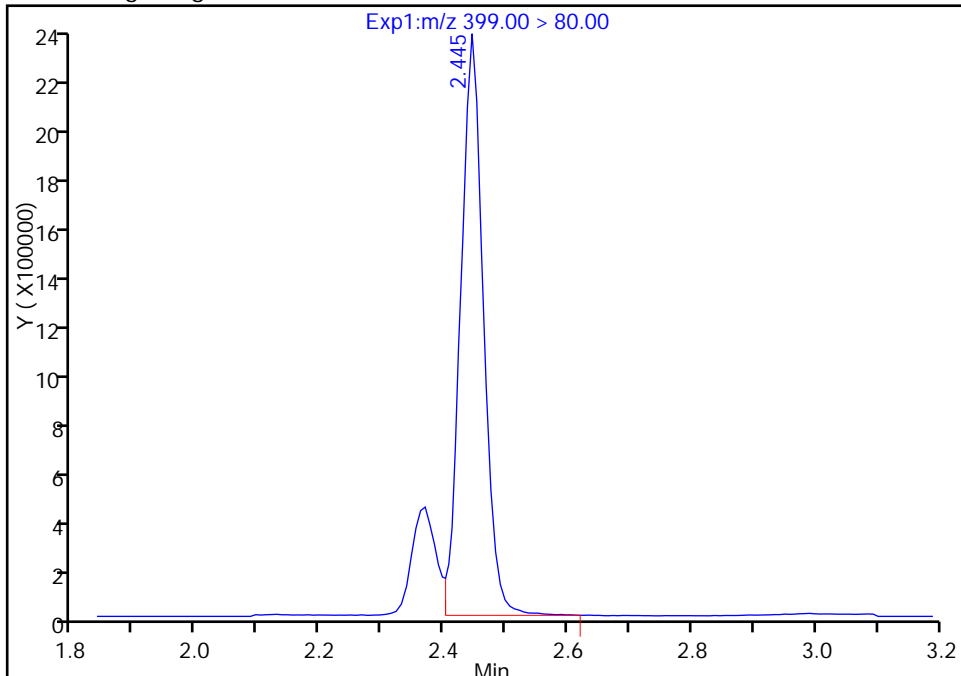
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Injection Date: 30-Dec-2016 14:11:26 Instrument ID: A8_N
Lims ID: 320-24184-A-4-A Lab Sample ID:
Client ID: SWMU1-02-1216
Operator ID: A8-PC\A8 ALS Bottle#: 10 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

9 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

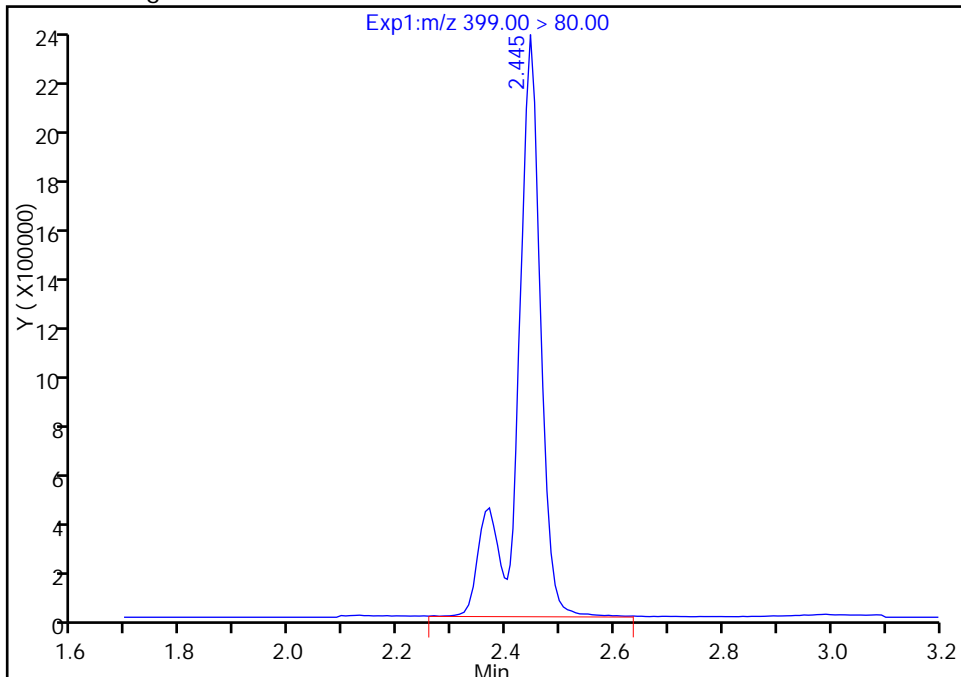
RT: 2.44
Area: 6017505
Amount: 15.102748
Amount Units: ng/ml

Processing Integration Results



RT: 2.44
Area: 7261186
Amount: 18.224142
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 03-Jan-2017 14:01:14
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: SWMU1-02-1216 RE Lab Sample ID: 320-24184-4 RE
 Matrix: Water Lab File ID: 05JAN2017B_009.d
 Analysis Method: 537 (Modified) Date Collected: 12/07/2016 12:00
 Extraction Method: 3535 Date Extracted: 01/04/2017 16:57
 Sample wt/vol: 272.4 (mL) Date Analyzed: 01/05/2017 15:45
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 145242 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0081	H M	0.0023	0.0018	0.00072

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	108		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38534.b\05JAN2017B_009.d
 Lims ID: 320-24184-B-4-A
 Client ID: SWMU1-02-1216
 Sample Type: Client
 Inject. Date: 05-Jan-2017 15:45:44 ALS Bottle#: 20 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-24184-b-4-a
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38534.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2017 09:59:23 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 09:55:15

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
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D 2 13C4 PFBA	217.00 > 172.00	1.593	1.598	-0.005	5729494	16.5		33.0	311446	
1 Perfluorobutyric acid	212.90 > 169.00	1.593	1.606	-0.013	1245840	12.7			1049	
D 4 13C5-PFPeA	267.90 > 223.00	1.881	1.887	-0.006	12393311	46.6		93.2	237576	
3 Perfluoropentanoic acid	262.90 > 219.00	1.890	1.887	0.003	1172333	4.79			737	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.919	1.935	-0.016	1719778	3.14				
	298.90 > 99.00	1.919	1.935	-0.016	641071		2.68(0.00-0.00)			
D 6 13C2 PFHxA	315.00 > 270.00	2.183	2.195	-0.012	13215226	53.9		108	695957	
7 Perfluorohexanoic acid	313.00 > 269.00	2.192	2.195	-0.003	1081372	4.41			3041	M
9 Perfluorohexanesulfonic acid	399.00 > 80.00	2.472	2.476	-0.004	5121769	12.9				
D 11 13C4-PFHpA	367.00 > 322.00	2.533	2.536	-0.003	13437025	59.4		119	1248739	
12 Perfluoroheptanoic acid	363.00 > 319.00	2.533	2.536	-0.003	79879	0.3037			375	
D 10 18O2 PFHxS	403.00 > 84.00	2.548	2.552	-0.004	18263040	55.9		118	736678	
15 Perfluorooctanoic acid	413.00 > 369.00	2.907	2.902	0.005	439777	1.63			2223	
	413.00 > 169.00	2.794	2.902	-0.108	366698		1.20(0.90-1.10)		4633	
D 14 13C4 PFOA	417.00 > 372.00	2.899	2.902	-0.003	13432178	58.3		117	567090	

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	3.272	3.259	0.013	1.000	59452550	222.0			1104229	E
499.00 > 99.00	3.264	3.259	0.005	0.998	14513692		4.10(0.90-1.10)		428928	
D 17 13C4 PFOS										
503.00 > 80.00	3.272	3.275	-0.003		12873171	51.7		108	264112	
20 Perfluorononanoic acid										
463.00 > 419.00	3.264	3.275	-0.011	1.000	7109	0.0441			84.7	
D 19 13C5 PFNA										
468.00 > 423.00	3.272	3.283	-0.011		8465524	47.6		95.3	1381762	
D 21 13C8 FOSA										
506.00 > 78.00	3.595	3.600	-0.005		3032390	7.89		15.8	124509	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.595	3.600	-0.005	1.000	273870	4.84			6130	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.628	3.642	-0.014	1.000	29052	0.1512			557	
D 23 13C2 PFDA										
515.00 > 470.00	3.637	3.642	-0.005		10181594	64.7		129	406150	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.946	3.945	0.001	1.000	414560	2.64				
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.964	3.963	0.001	1.000	33824	0.2066			592	
D 27 13C2 PFUnA										
565.00 > 520.00	3.964	3.972	-0.008		8559775	73.0		146	729289	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.243	4.265	-0.022	1.000	6984	0.0498			99.7	
D 30 13C2 PFDoA										
615.00 > 570.00	4.251	4.265	-0.014		7644692	68.9		138	256121	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.759	4.772	-0.013	1.000	55674	0.2298			22.6	
713.00 > 169.00	4.751	4.772	-0.021	0.998	10406		5.35(0.00-0.00)		2022	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38534.b\05JAN2017B_009.d

Injection Date: 05-Jan-2017 15:45:44

Instrument ID: A8_N

Lims ID: 320-24184-B-4-A

Lab Sample ID: 320-24184-4

Client ID: SWMU1-02-1216

Operator ID: A8-PC\A8

ALS Bottle#: 20

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

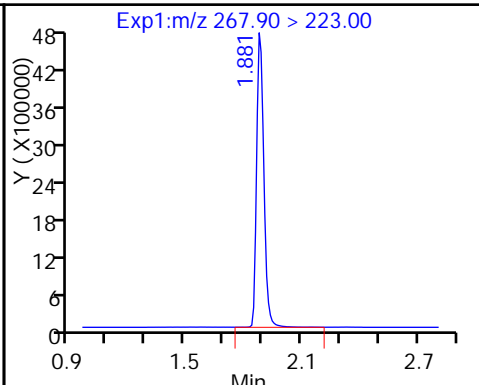
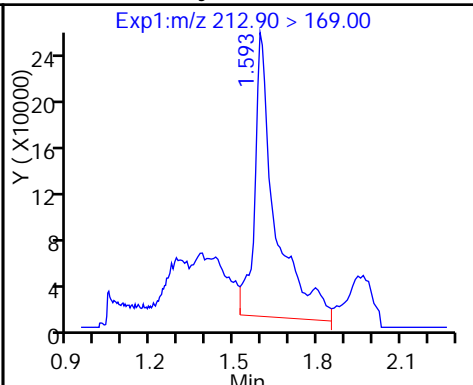
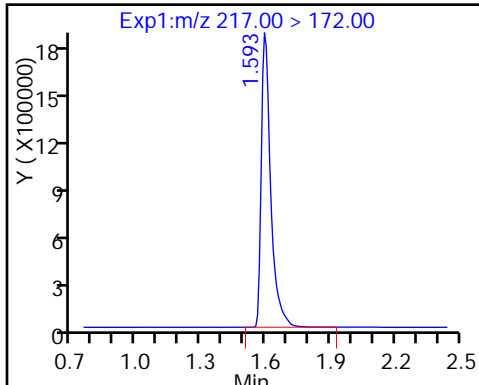
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

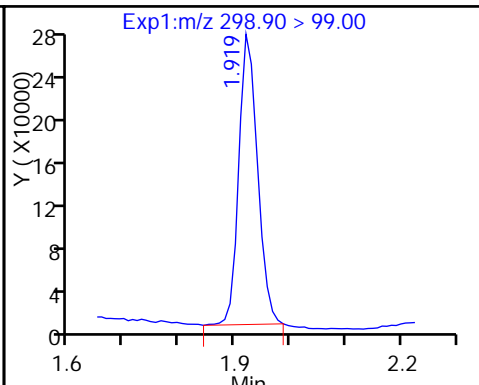
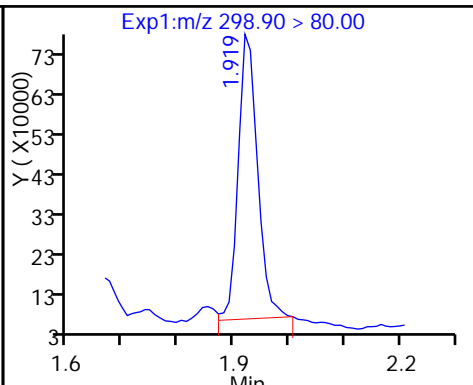
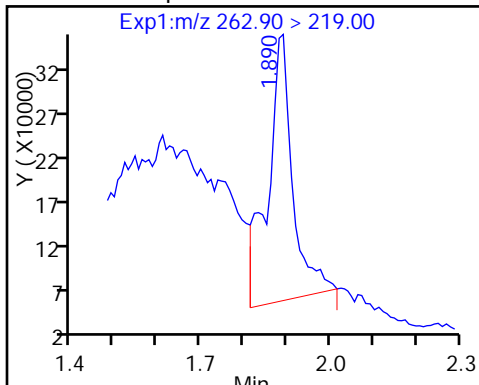
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

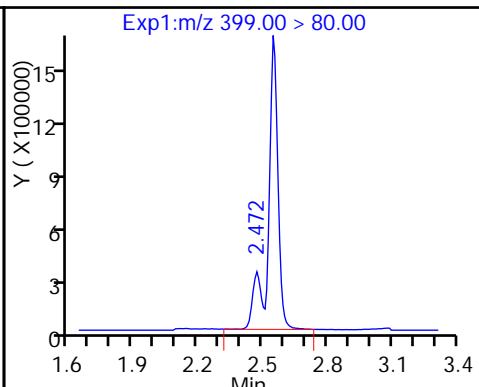
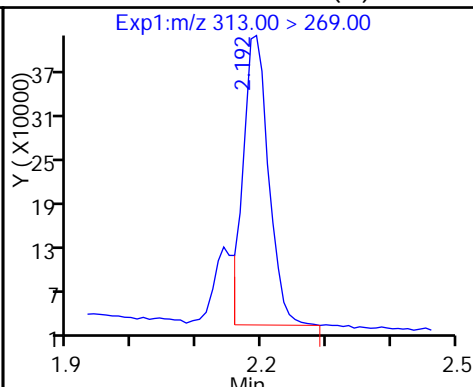
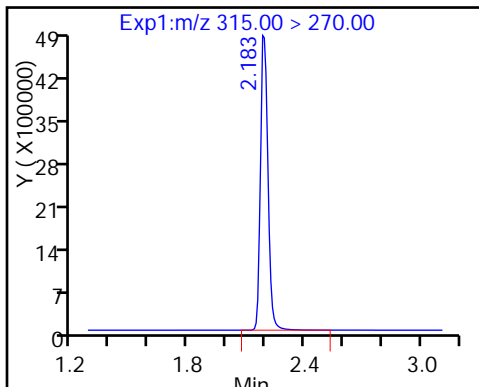
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid (M)

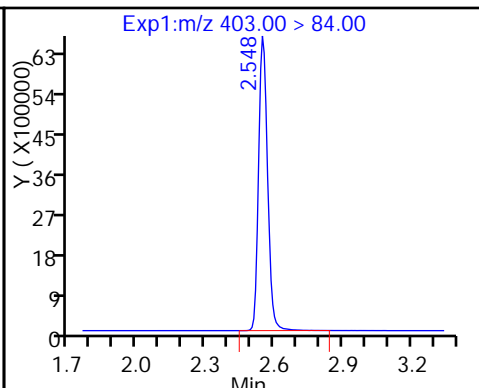
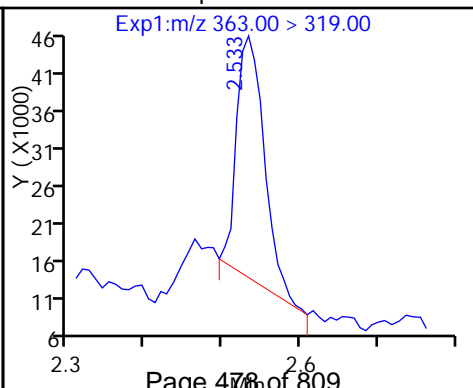
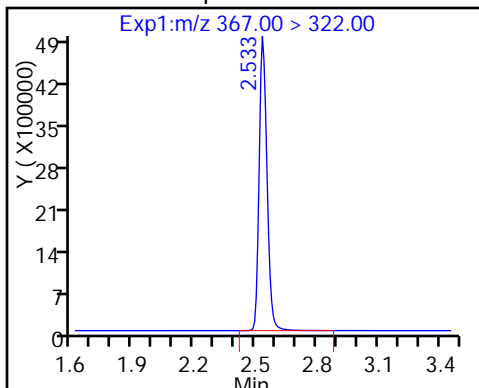
9 Perfluorohexanesulfonic acid

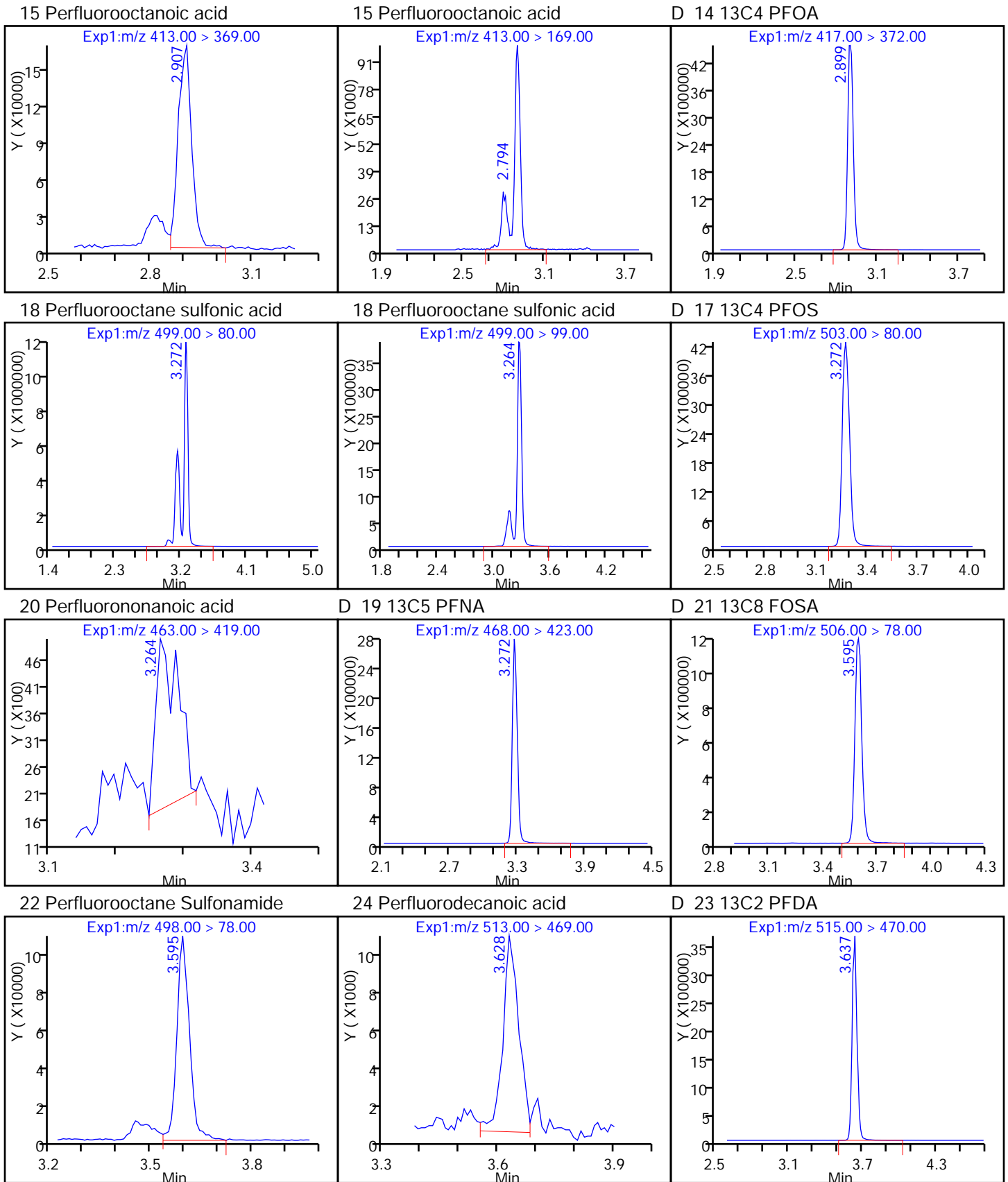


D 11 13C4-PFHpA

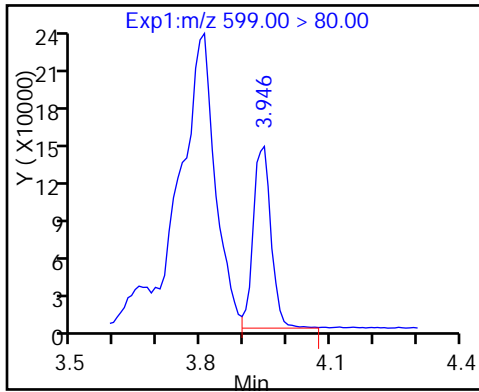
12 Perfluoroheptanoic acid

D 10 18O2 PFHxS

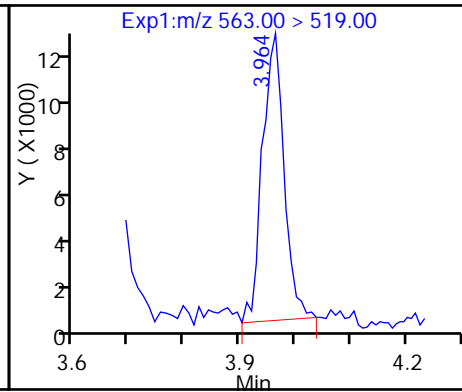




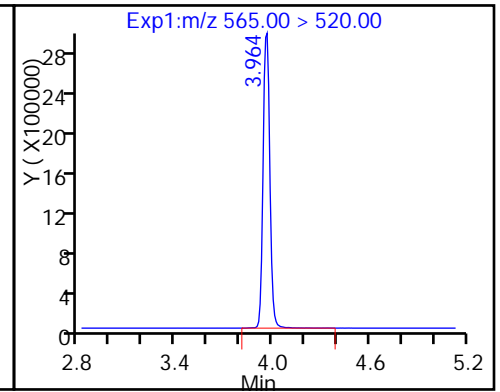
26 Perfluorodecane Sulfonic acid



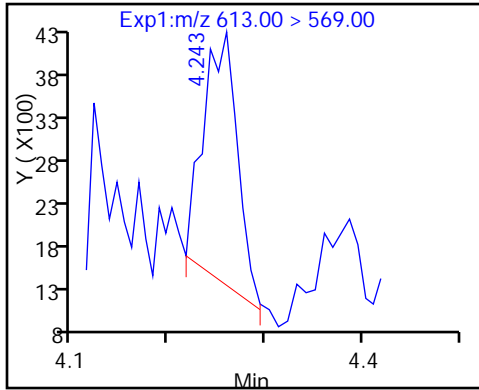
28 Perfluoroundecanoic acid



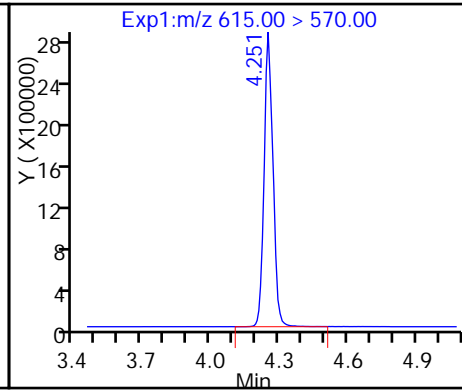
D 27 13C2 PFUnA



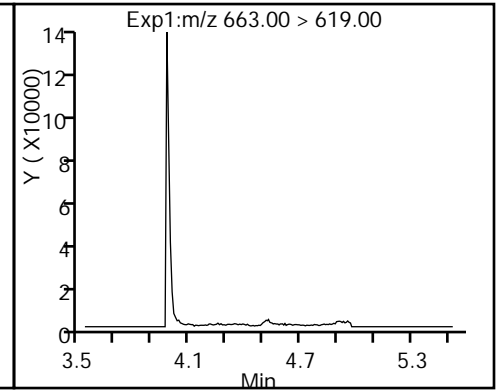
29 Perfluorododecanoic acid



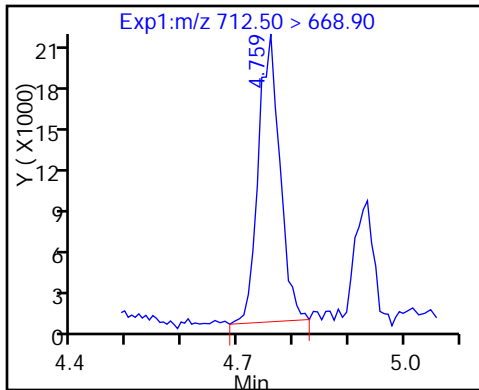
D 30 13C2 PFDaA



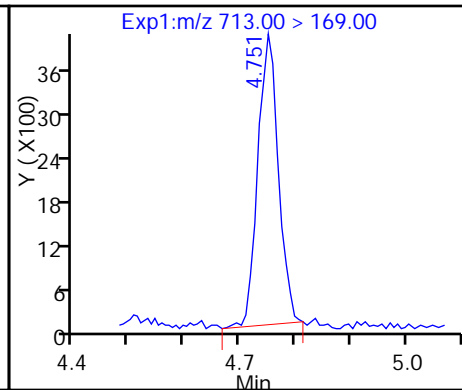
31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



TestAmerica Sacramento

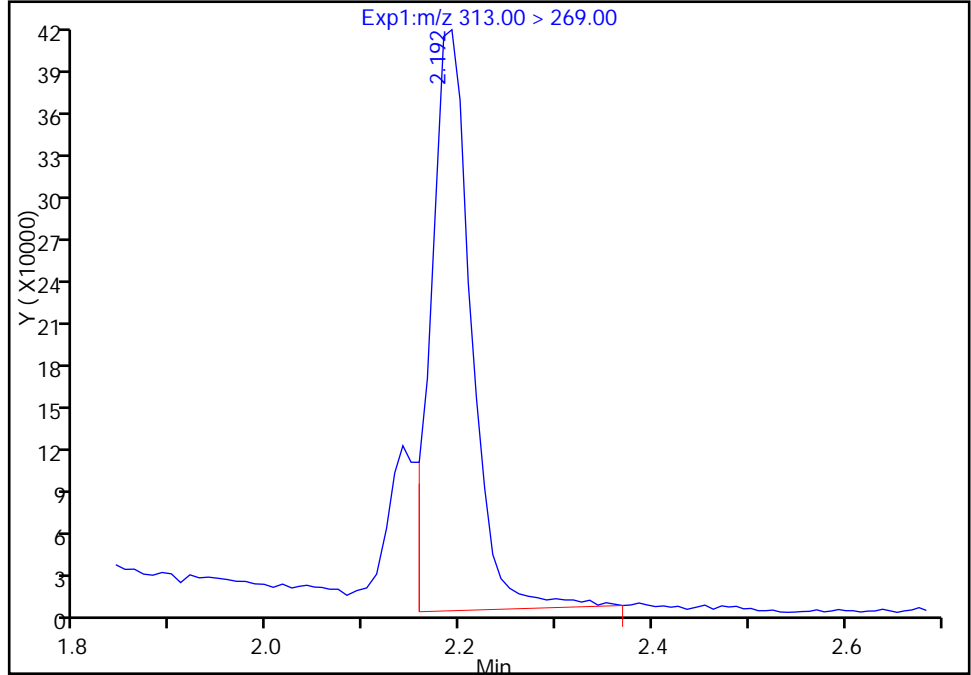
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Injection Date: 05-Jan-2017 15:45:44 Instrument ID: A8_N
Lims ID: 320-24184-B-4-A Lab Sample ID: 320-24184-4
Client ID: SWMU1-02-1216
Operator ID: A8-PC\A8 ALS Bottle#: 20 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

7 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

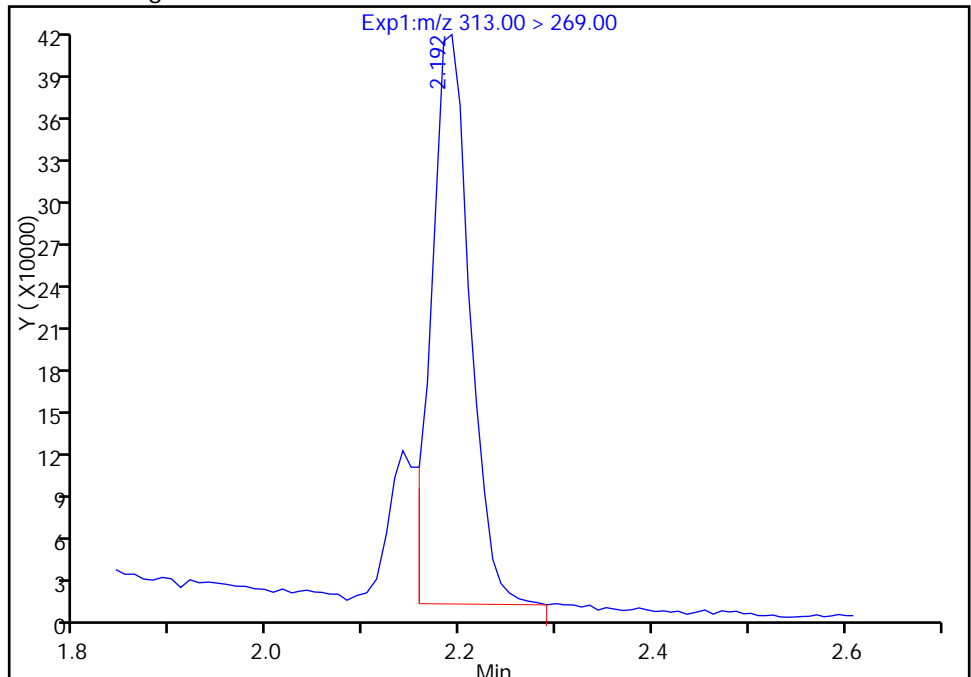
RT: 2.19
Area: 1155996
Amount: 4.709084
Amount Units: ng/ml

Processing Integration Results



RT: 2.19
Area: 1081372
Amount: 4.405095
Amount Units: ng/ml

Manual Integration Results



Reviewer: chandrasenas, 06-Jan-2017 09:55:15
Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: SWMU1-02-1216 DL Lab Sample ID: 320-24184-4 DL
 Matrix: Water Lab File ID: 30DEC2016B_015.d
 Analysis Method: 537 (Modified) Date Collected: 12/07/2016 12:00
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 279.8 (mL) Date Analyzed: 12/30/2016 14:03
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 10
 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
375-22-4	Perfluorobutanoic acid (PFBA)	0.016	J D M	0.022	0.0089	0.0041
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.018	U M	0.022	0.018	0.0088
307-24-4	Perfluorohexanoic acid (PFHxA)	0.011	J D B	0.022	0.018	0.0070
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.018	U	0.022	0.018	0.0072
335-67-1	Perfluorooctanoic acid (PFOA)	0.018	U	0.022	0.018	0.0067
375-95-1	Perfluorononanoic acid (PFNA)	0.018	U	0.022	0.018	0.0058
335-76-2	Perfluorodecanoic acid (PFDA)	0.0089	U	0.022	0.0089	0.0039
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.018	U	0.022	0.018	0.0067
307-55-1	Perfluorododecanoic acid (PFDoA)	0.018	U	0.022	0.018	0.0052
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.018	U	0.022	0.018	0.0049
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.0089	U	0.022	0.0089	0.0036
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0095	J D	0.022	0.018	0.0082
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.030	D	0.022	0.018	0.0078
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.2	D	0.036	0.027	0.011
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.027	U	0.036	0.027	0.011
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.017	J D	0.022	0.018	0.0057

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: SWMU1-02-1216 DL Lab Sample ID: 320-24184-4 DL
 Matrix: Water Lab File ID: 30DEC2016B_015.d
 Analysis Method: 537 (Modified) Date Collected: 12/07/2016 12:00
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 279.8 (mL) Date Analyzed: 12/30/2016 14:03
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 10
 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.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	12	Q	25-150
STL00992	13C4 PFBA	93		25-150
STL01893	13C5-PFPeA	148		25-150
STL00993	13C2 PFHxA	125		25-150
STL01892	13C4-PFHpA	123		25-150
STL00990	13C4 PFOA	114		25-150
STL00995	13C5 PFNA	96		25-150
STL00996	13C2 PFDA	98		25-150
STL00997	13C2 PFUnA	99		25-150
STL00998	13C2 PFDoA	101		25-150
STL00994	18O2 PFHxS	139		25-150
STL00991	13C4 PFOS	123		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_015.d
 Lims ID: 320-24184-A-4-A
 Client ID: SWMU1-02-1216
 Sample Type: Client
 Inject. Date: 30-Dec-2016 14:03:57 ALS Bottle#: 9 Worklist Smp#: 25
 Injection Vol: 2.0 ul Dil. Factor: 10.0000
 Sample Info: 320-24184-a-4-a 10X
 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 13:31:55

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	1.534	1.526	0.008	1624959	4.67		9.3	137676	
1 Perfluorobutyric acid										M
212.90 > 169.00	1.534	1.534	0.0	1.000	241532	0.8706			703	M
D 4 13C5-PFPeA	267.90 > 223.00	1.810	1.801	0.009	1962871	7.38		14.8	103703	
3 Perfluoropentanoic acid										M
262.90 > 219.00	1.810	1.811	-0.001	1.000	107333	0.2771			312	M
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.849	1.840	0.009	1.000	339773	0.5294				
298.90 > 99.00	1.849	1.840	0.009	1.000	133969		2.54(0.00-0.00)			
D 6 13C2 PFHxA	315.00 > 270.00	2.103	2.092	0.011	1530052	6.24		12.5	157636	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.103	2.092	0.011	1.000	180239	0.6342			2082	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.444	2.410	0.034	1.000	777714	1.67				
D 11 13C4-PFHpA	367.00 > 322.00	2.429	2.421	0.008	1389359	6.14		12.3	174426	
D 10 18O2 PFHxS	403.00 > 84.00	2.444	2.443	0.001	2142261	6.55		13.9	283629	
D 14 13C4 PFOA	417.00 > 372.00	2.782	2.773	0.009	1316049	5.71		11.4	71540	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.047	3.044	0.003	1.000	20598654	67.7			99353	
499.00 > 99.00	3.047	3.044	0.003	1.000	4939720		4.17(0.90-1.10)		36916	
D 17 13C4 PFOS	503.00 > 80.00	3.158	3.148	0.010	1462097	5.88		12.3	89166	

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	3.150	3.148	0.002		850912	4.79		9.6	59476	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.481	3.470	0.011	1.000	40418	0.9508			1899	
D 21 13C8 FOSA										
506.00 > 78.00	3.481	3.478	0.003		227905	0.5933		1.2	12074	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.515	3.504	0.011	1.000	7804	0.0537			185	
D 23 13C2 PFDA										
515.00 > 470.00	3.515	3.512	0.003		769457	4.89		9.8	35785	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.834	3.822	0.012	1.000	39996	0.2239				
D 27 13C2 PFUnA										
565.00 > 520.00	3.843	3.839	0.004		581926	4.96		9.9	60153	
D 30 13C2 PFDoA										
615.00 > 570.00	4.133	4.138	-0.005		559119	5.04		10.1	27393	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.662	4.651	0.011	1.000	8190	0.0462			231	
713.00 > 169.00	4.624	4.651	-0.027	0.992	930		8.81(0.00-0.00)		287	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_015.d

Injection Date: 30-Dec-2016 14:03:57

Instrument ID: A8_N

Lims ID: 320-24184-A-4-A

Lab Sample ID: 320-24184-4

Client ID: SWMU1-02-1216

Operator ID: A8-PC\A8

ALS Bottle#: 9

Worklist Smp#: 25

Injection Vol: 2.0 ul

Dil. Factor: 10.0000

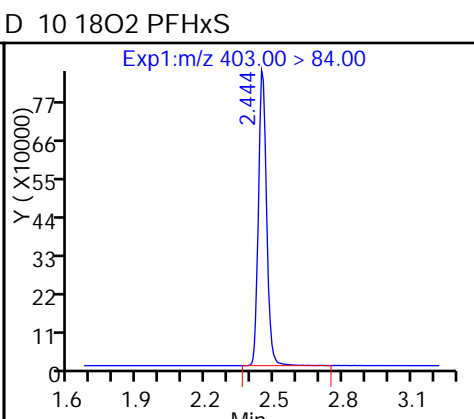
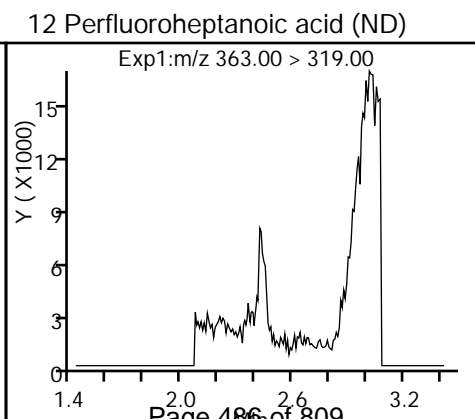
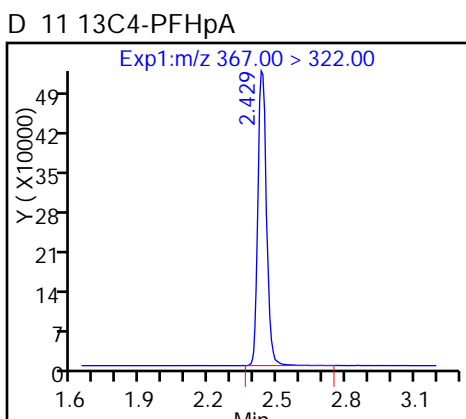
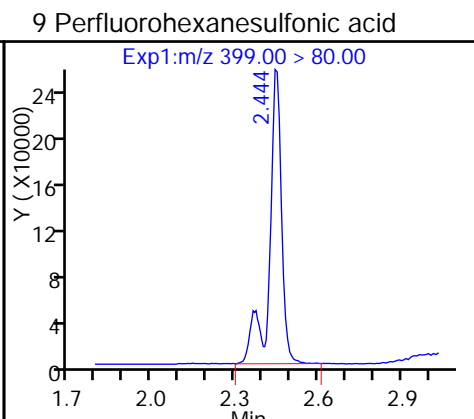
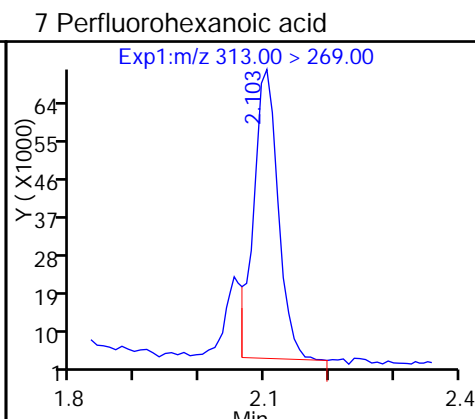
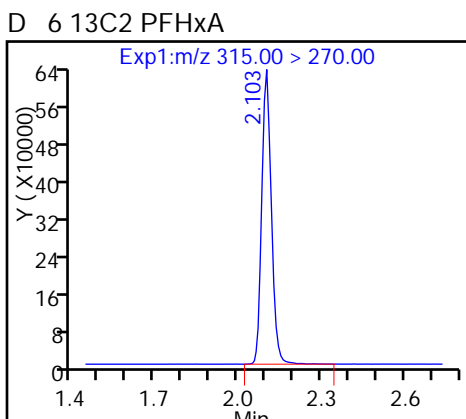
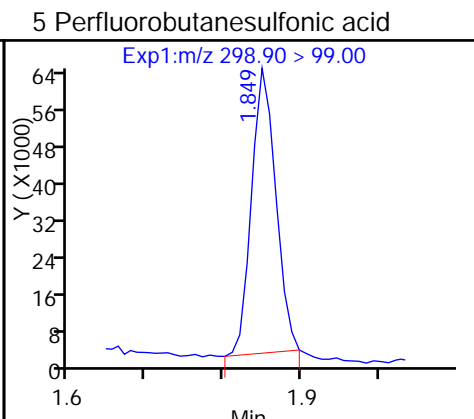
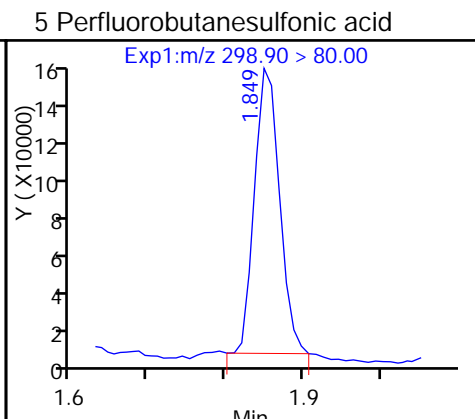
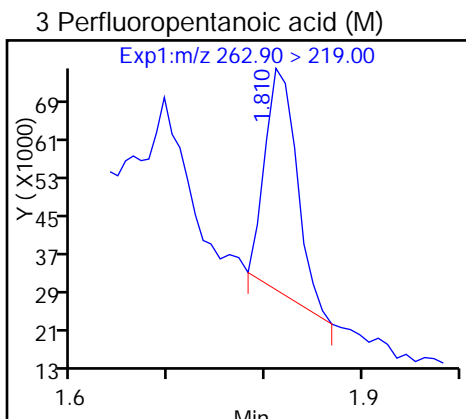
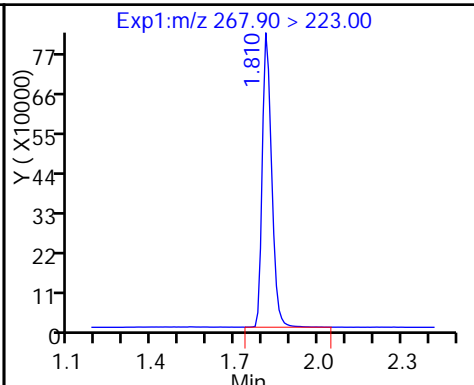
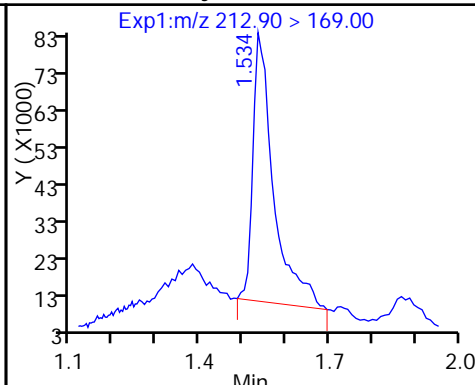
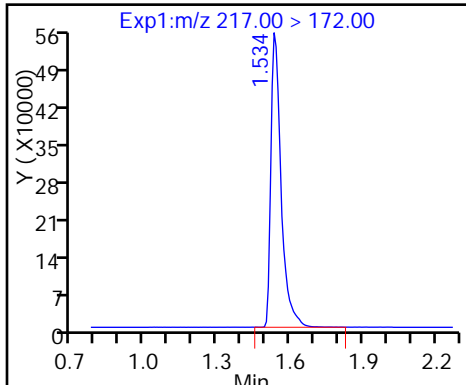
Method: A8_N

Limit Group: LC PFC_DOD ICAL

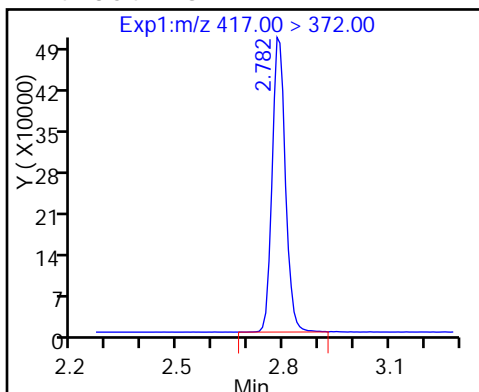
D 2 13C4 PFBA

1 Perfluorobutyric acid (M)

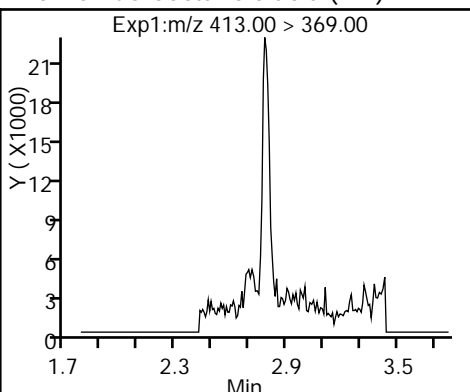
D 4 13C5-PFPeA



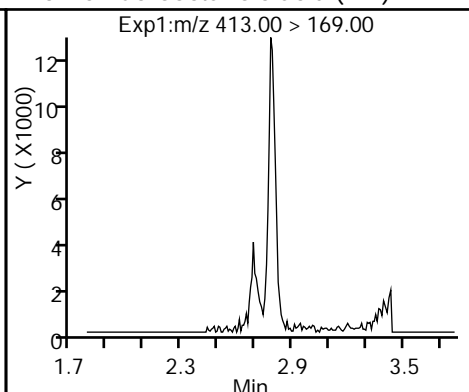
D 14 13C4 PFOA



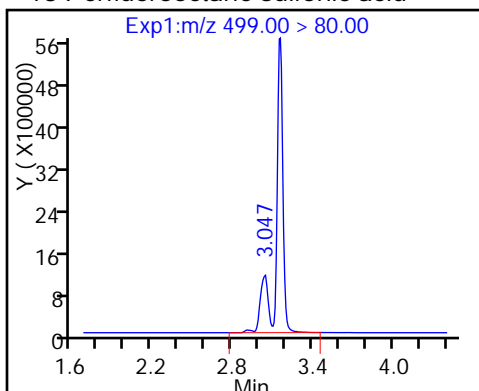
15 Perfluorooctanoic acid (ND)



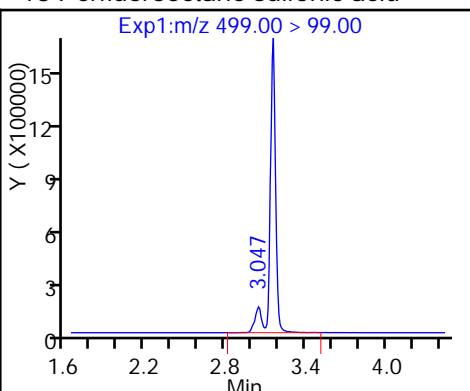
15 Perfluorooctanoic acid (ND)



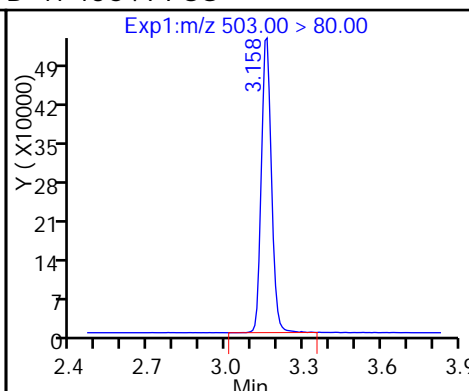
18 Perfluorooctane sulfonic acid



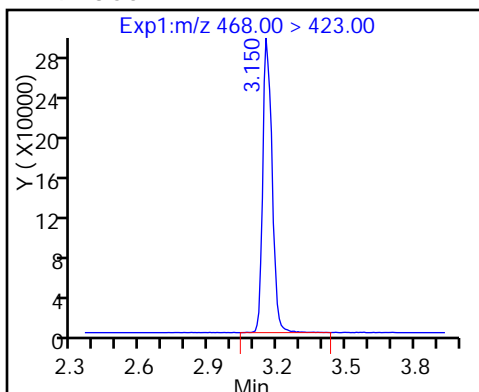
18 Perfluorooctane sulfonic acid



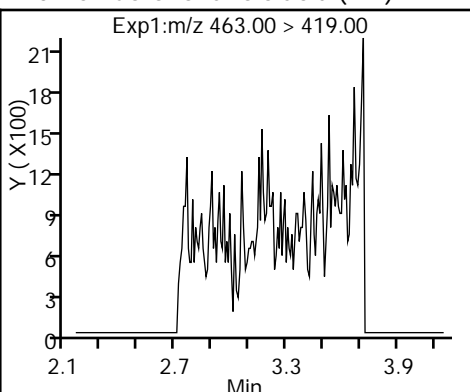
D 17 13C4 PFOS



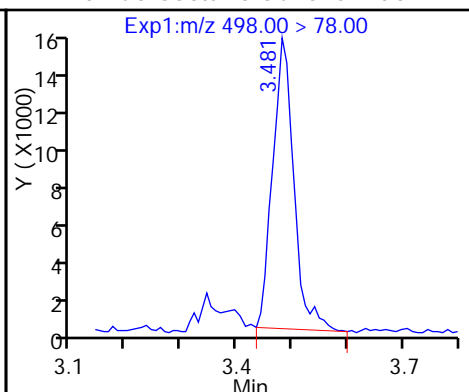
D 19 13C5 PFNA



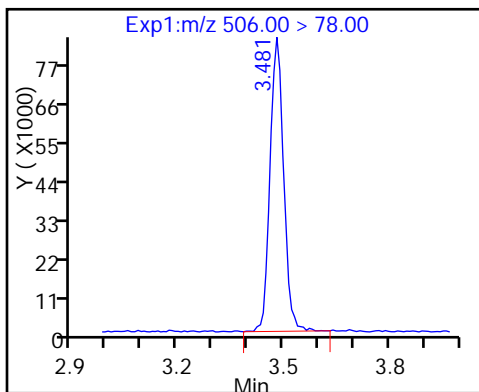
20 Perfluorononanoic acid (ND)



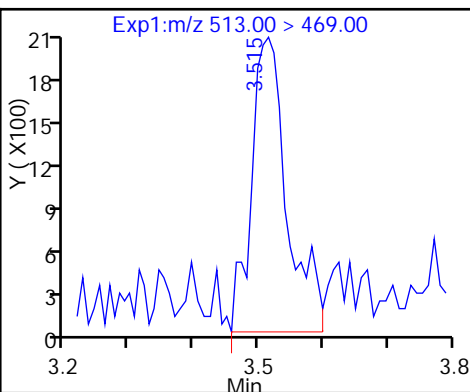
22 Perfluorooctane Sulfonamide



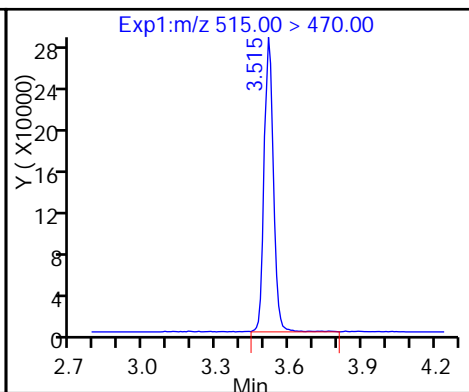
D 21 13C8 FOSA



24 Perfluorodecanoic acid



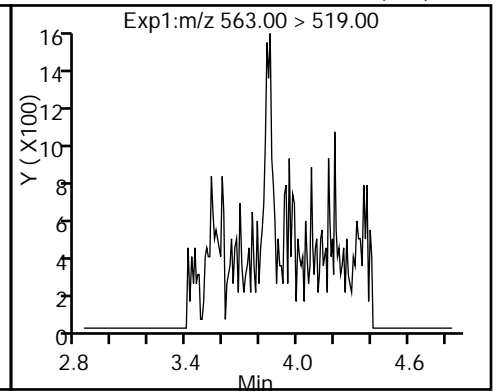
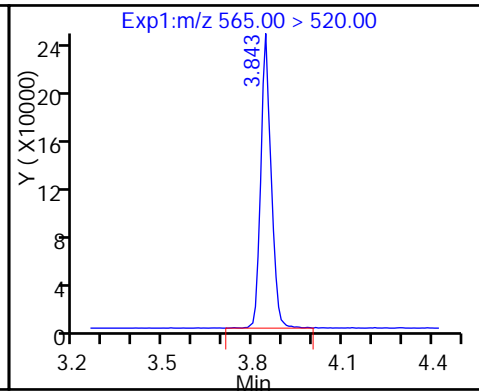
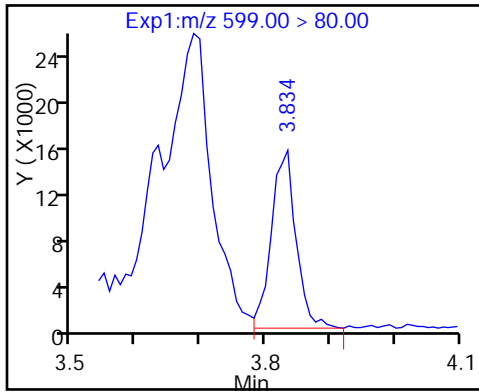
D 23 13C2 PFDA



26 Perfluorodecane Sulfonic acid

D 27 13C2 PFUnA

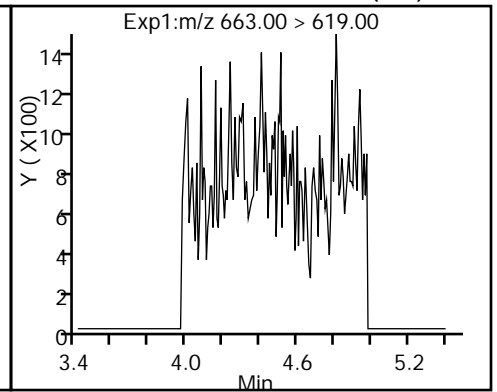
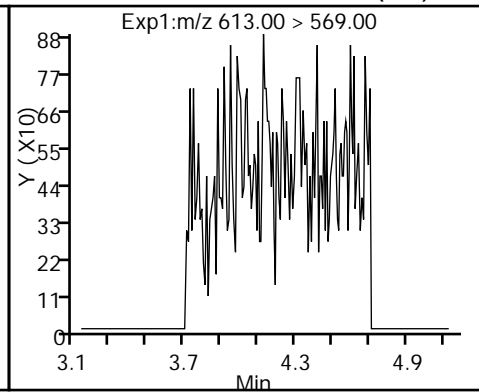
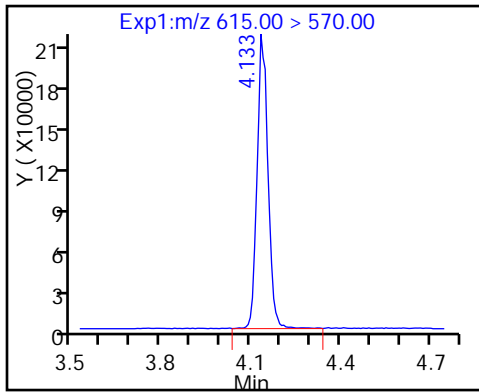
28 Perfluoroundecanoic acid (ND)



D 30 13C2 PFDaA

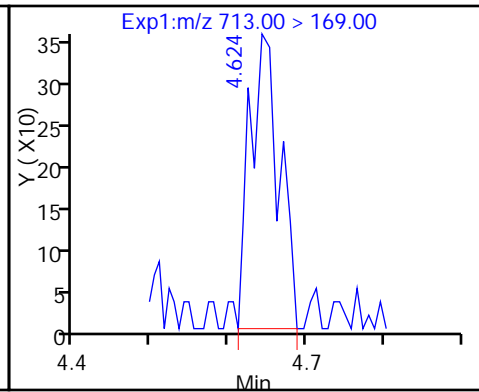
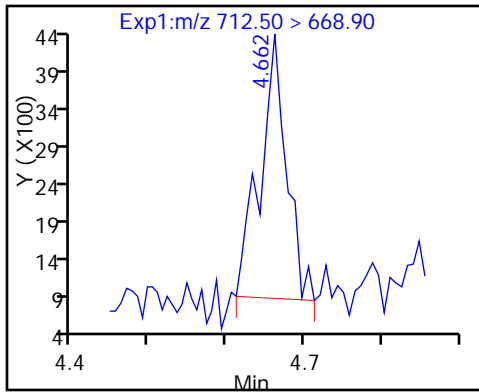
29 Perfluorododecanoic acid (ND)

31 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



TestAmerica Sacramento

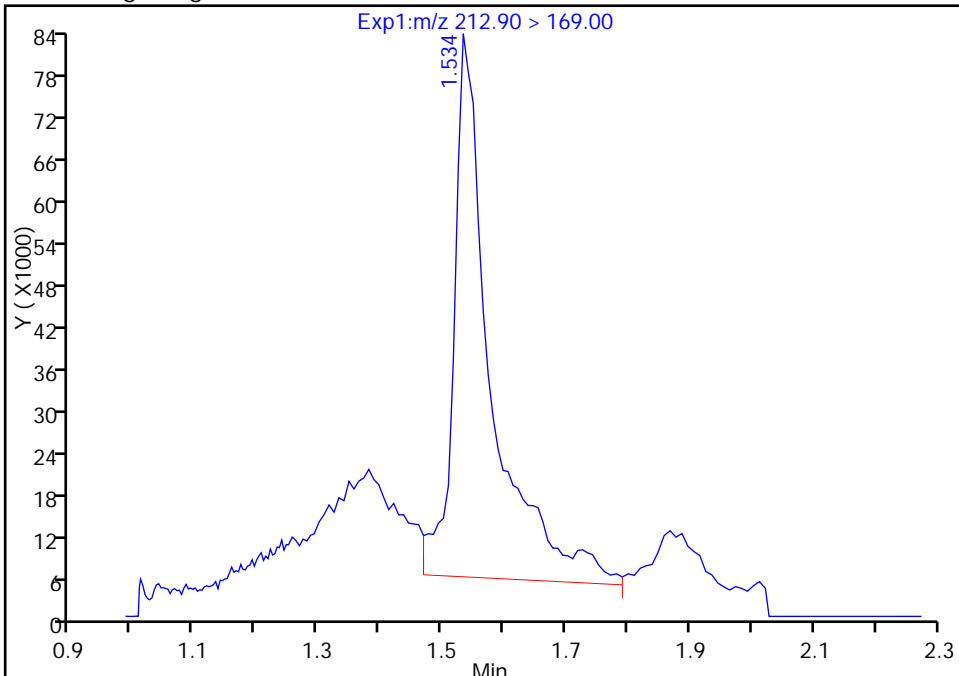
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_015.d
Injection Date: 30-Dec-2016 14:03:57 Instrument ID: A8_N
Lims ID: 320-24184-A-4-A Lab Sample ID: 320-24184-4
Client ID: SWMU1-02-1216
Operator ID: A8-PC\A8 ALS Bottle#: 9 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

1 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

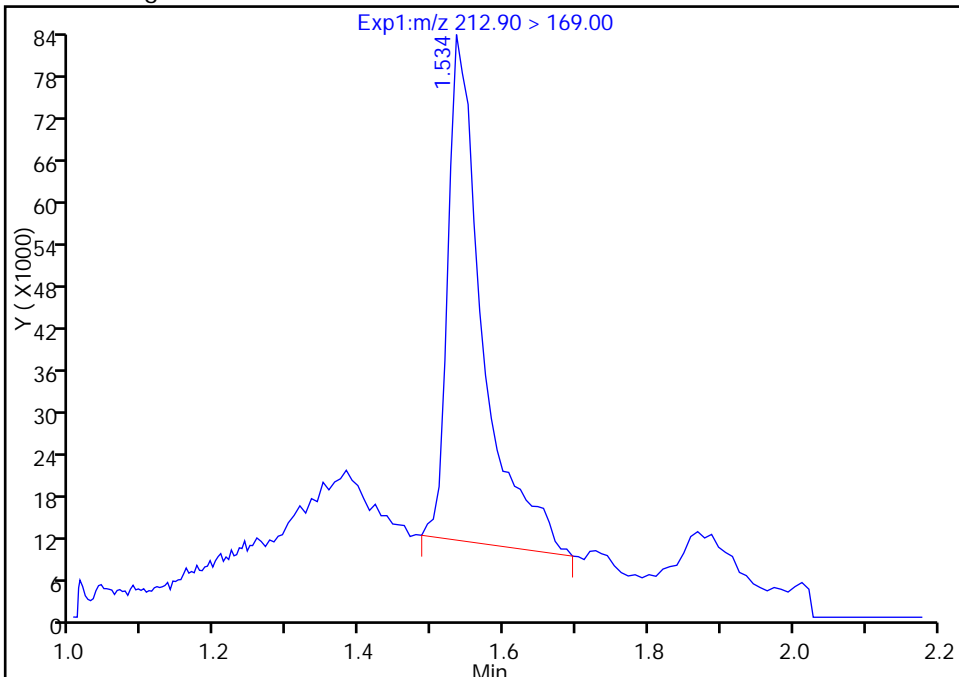
RT: 1.53
Area: 325380
Amount: 1.172769
Amount Units: ng/ml

Processing Integration Results



RT: 1.53
Area: 241532
Amount: 0.870555
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento

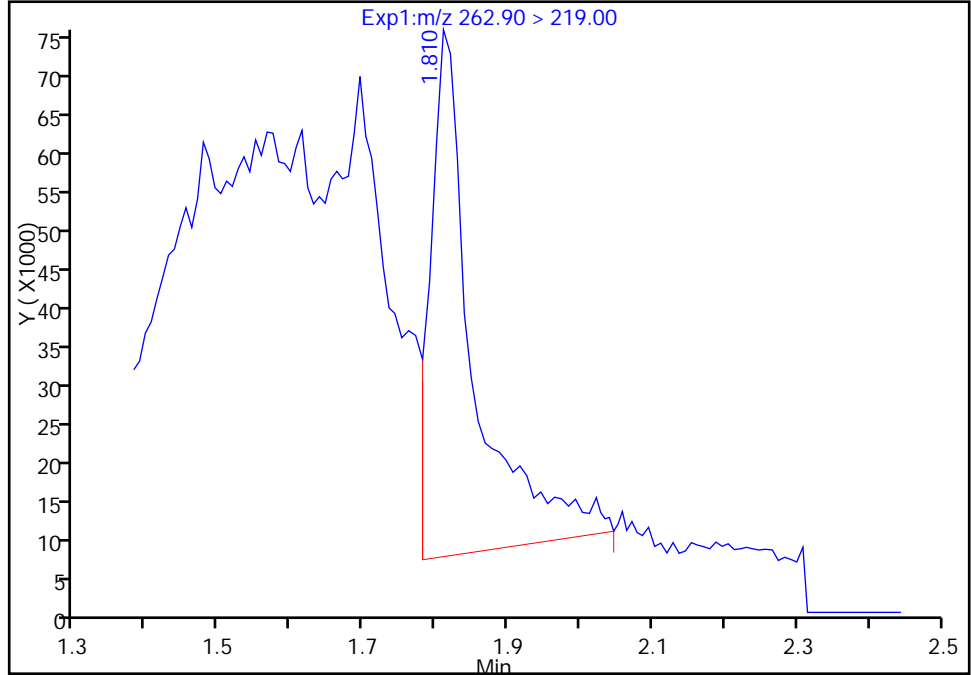
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b\30DEC2016B_015.d
Injection Date: 30-Dec-2016 14:03:57 Instrument ID: A8_N
Lims ID: 320-24184-A-4-A Lab Sample ID: 320-24184-4
Client ID: SWMU1-02-1216
Operator ID: A8-PC\A8 ALS Bottle#: 9 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

3 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

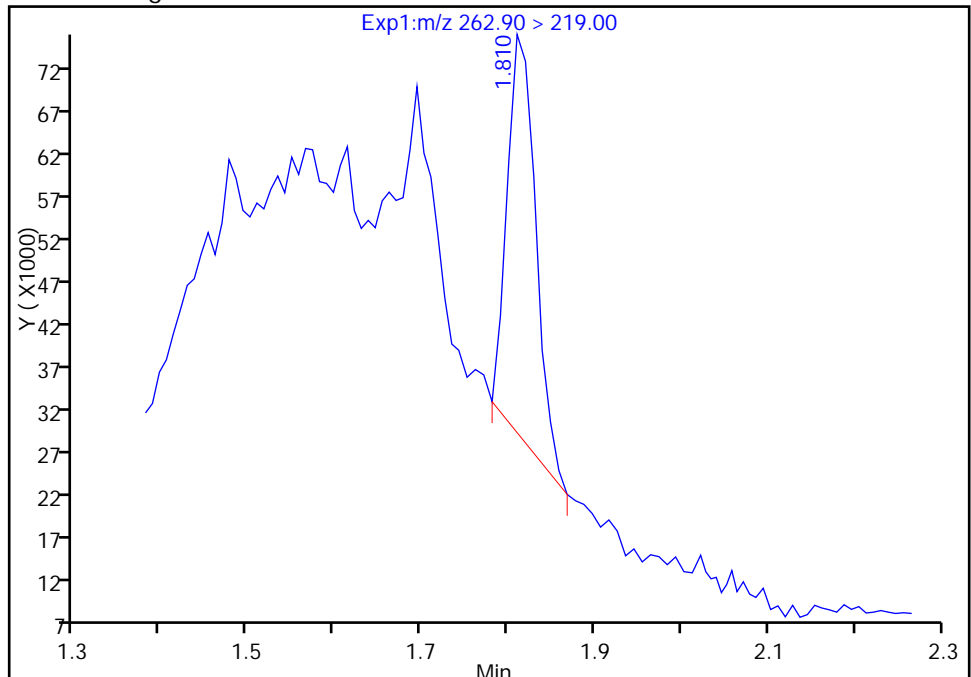
RT: 1.81
Area: 282281
Amount: 0.728675
Amount Units: ng/ml

Processing Integration Results



RT: 1.81
Area: 107333
Amount: 0.277067
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 03-Jan-2017 13:59:25

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1 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	15DEC2016BE_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 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	RT WINDOW	AVG RT
	LVL 11	LVL 12										
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.: 320-24184-1 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 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	RT WINDOW	AVG RT
	LVL 11	LVL 12										
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.: 320-24184-1 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 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	RT WINDOW	AVG RT
	LVL 11	LVL 12										
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.: 320-24184-1 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	15DEC2016BE_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 6	LVL 7	LVL 8												
	LVL 9	LVL 10	LVL 11	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.: 320-24184-1 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 2	LVL 3	LVL 4		B	M1	M2								
	LVL 5	LVL 6	LVL 7	LVL 8												
LVL 9	LVL 10	LVL 11	LVL 12													
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-NEtFOSAA		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.

CURVE EVALUATION

Lab Name: TestAmerica SacramentoJob No.: 320-24184-1Analy Batch No.: 142379

SDG No.: _____

Instrument ID: A8_NGC Column: Acquity ID: 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 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	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.: 320-24184-1Analy Batch No.: 142379

SDG No.: _____

Instrument ID: A8_NGC Column: Acquity ID: 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 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10												
Perfluorodecanoic acid (PFDA)	164274	158337	155537	146490	154381	AveID	0.9438				3.1	35.0					
	113084																
8:2FTS	83185	83106	116095	79051	100536	AveID	0.8473				12.1	35.0					
		84092															
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	57133	59646	85412	57389	74839	AveID	0.8846				15.4	35.0					
		64621															
Perfluorodecanesulfonic acid (PFDS)	143714	159960	145051	150246	147895	AveID	0.5840				4.8	50.0					
	124235																
Perfluoroundecanoic acid (PFUnA)	130000	121036	119189	108755	109942	AveID	0.9563				4.9	35.0					
	84265																
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	53544	59930	75946	53623	68286	AveID	0.7929				15.1	35.0					
		59690															
MeFOSA	68699	72138	97349	70049	88147	AveID	0.8376				13.3	35.0					
		80570															
Perfluorododecanoic acid (PFDoA)	105614	111590	103481	101460	101274	AveID	0.9180				3.5	35.0					
	87129																
N-EtFOSA-M	65375	61986	90659	62962	85286	AveID	0.8640				13.9	35.0					
		78901															
Perfluorotridecanoic Acid (PFTriA)	106640	104393	109461	99013	105018	AveID	0.9069				2.9	50.0					
	80194																
Perfluorotetradecanoic acid (PFTeA)	197042	183949	187123	172910	180115	AveID	1.5848				4.6	50.0					
	136554																
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++	113395	173261	106364	119906	LlID	0.5185	0.9555						1.0000		0.9900	
	88775																
Perfluoro-n-octadecanoic acid (PFODA)	123098	122262	114997	117393	116752	AveID	1.0304				3.9	50.0					
	91965																

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.: 320-24184-1 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	15DEC2016BE_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 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
		LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10
13C4 PFBA	Ave	18263829	17585378	18201393	17274187	18037108	50.0	50.0	50.0	50.0	50.0
		14961055					50.0				
13C5-PFPeA	Ave	14121285	13617158	14067714	13053659	14063070	50.0	50.0	50.0	50.0	50.0
		10898820					50.0				
13C2 PFHxA	Ave	12655304	12608210	12814780	12399280	12709919	50.0	50.0	50.0	50.0	50.0
		10345480					50.0				
13C4-PFHpA	Ave	12240718	11788221	12248222	10801604	12260528	50.0	50.0	50.0	50.0	50.0
		8564025					50.0				
1802 PFHxS	Ave	16163510	16062766	16093048	15278828	16222736	47.3	47.3	47.3	47.3	47.3
		12974829					47.3				
M2-6:2FTS	Ave	5570739	5352965	6471813	5108306	5259120	47.5	47.5	47.5	47.5	47.5
			5576967					47.5			
13C4 PFOA	Ave	12504504	11818203	12627691	11142777	12635065	50.0	50.0	50.0	50.0	50.0
		8380251					50.0				
13C4 PFOS	Ave	12276070	12183062	12459383	11946650	12484772	47.8	47.8	47.8	47.8	47.8
		10019454					47.8				

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1 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 SacramentoJob No.: 320-24184-1Analy 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

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-142379/4	15DEC2016B_004.d
Level 2	IC 320-142379/13	15DEC2016BE_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 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
			LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10
Perfluorobutanoic acid (PFBA)		AveID	155481	6690917	310647	15411527	1550440	0.500	20.0	1.00	50.0	5.00
			42763611					200				
Perfluoropentanoic acid (PFPeA)		AveID	152321	5770240	287573	13161065	1358239	0.500	20.0	1.00	50.0	5.00
			34291076					200				
Perfluorobutanesulfonic acid (PFBS)		AveID	216598	9860707	424227	21559838	2211602	0.442	17.7	0.884	44.2	4.42
			50724469					177				
Perfluorohexanoic acid (PFHxA)		AveID	126429	4929766	239458	11507044	1183286	0.500	20.0	1.00	50.0	5.00
			33223923					200				
Perfluorohexanesulfonic acid (PFHxS)		AveID	+++++	6624638	348475	15253691	1543002	+++++	18.2	0.910	45.5	4.55
			46223186					182				
Perfluoroheptanoic acid (PFHpA)		AveID	129104	4747711	237734	10799449	1175112	0.500	20.0	1.00	50.0	5.00
			30234194					200				
6:2FTS		AveID	405060	+++++	2416384	106947	5166665	4.74	+++++	19.0	0.948	47.4
			16907459	190								
Perfluorooctanoic acid (PFOA)		AveID	+++++	5109766	254861	11435583	1239541	+++++	20.0	1.00	50.0	5.00
			30784387					200				

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica SacramentoJob No.: 320-24184-1Analy Batch No.: 142379

SDG No.: _____

Instrument ID: A8_NGC Column: Acquity ID: 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	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
			LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	LVL 6	LVL 7	LVL 8	LVL 9	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	39808 16111959	2224381	75731	4815680	4.79 192	0.479	19.2	0.958	47.9
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	285665	29823 12924122	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	29965 11938061	1518918	53623	3414301	5.00 200	0.500	20.0	1.00	50.0
MeFOSA		AveID	343493	36069 16114020	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	30993 15780196	1813178	62962	4264314	5.00 200	0.500	20.0	1.00	50.0

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica SacramentoJob No.: 320-24184-1Analy 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	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
			LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10
Perfluorotridecanoic Acid (PFTriA)		AveID	53320	2087859	109461	4950651	525090	0.500	20.0	1.00	50.0	5.00
			16038809					200				
Perfluorotetradecanoic acid (PFTeA)		AveID	98521	3678976	187123	8645519	900575	0.500	20.0	1.00	50.0	5.00
			27310864					200				
Perfluoro-n-hexadecanoic acid (PFHxDA)		L1ID	+++++	2267892	173261	5318207	599529	+++++	20.0	1.00	50.0	5.00
			17754908					200				
Perfluoro-n-octadecanoic acid (PFODA)		AveID	61549	2445236	114997	5869666	583761	0.500	20.0	1.00	50.0	5.00
			18392980					200				

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	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	152321	0.5465		109	1332	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.849	1.848	0.001	216598	0.4473		101		
	298.90 > 99.00	1.849	1.848	0.001	87630		2.47(0.00-0.00)	101		
7 Perfluorohexanoic acid	313.00 > 269.00	2.097	2.096	0.001	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	129104	0.5388		108	1246	M
9 Perfluorohexanesulfonic acid	399.00 > 80.00	2.444	2.431	0.013	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 PFDoA										
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

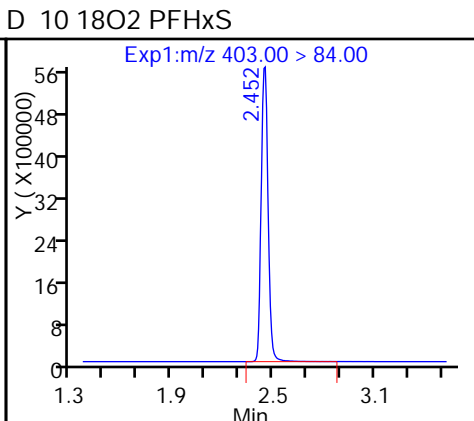
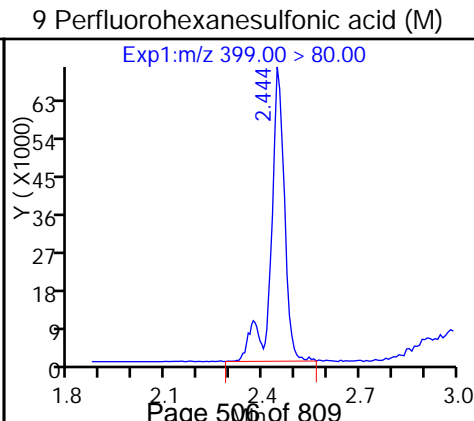
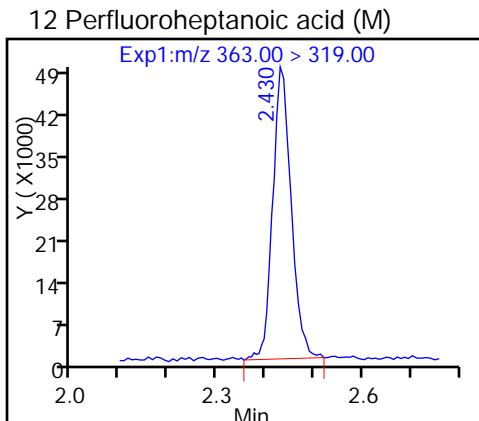
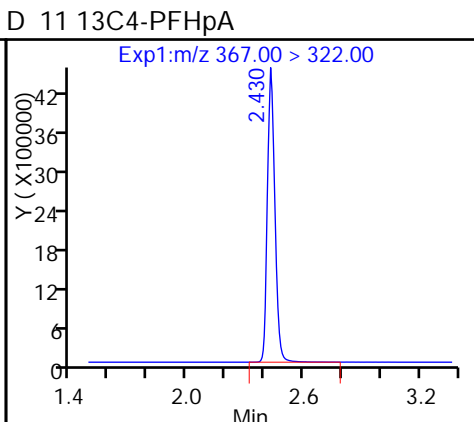
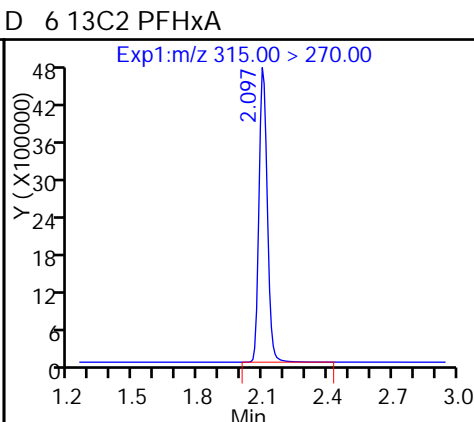
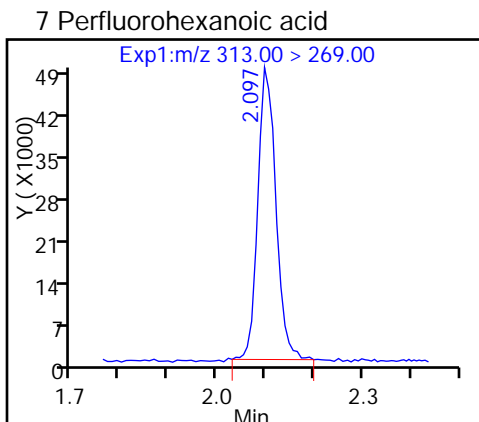
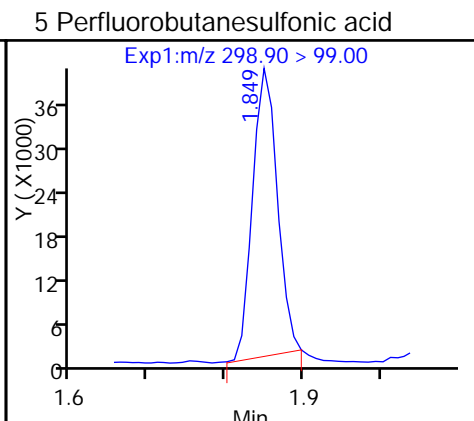
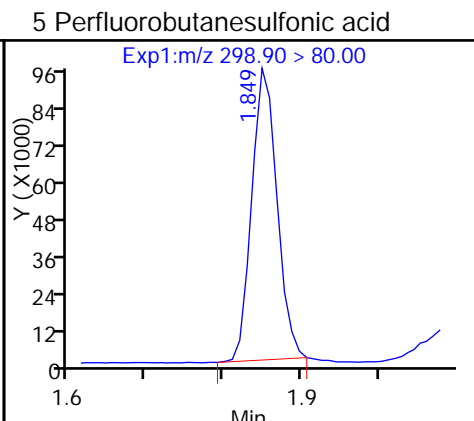
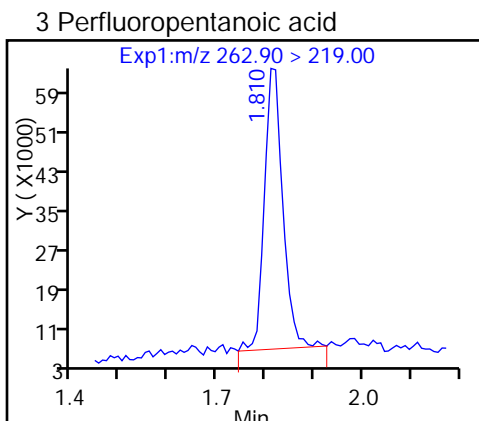
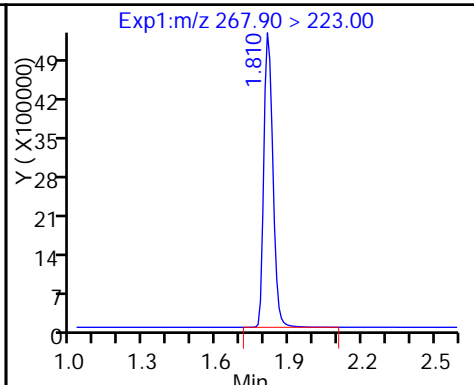
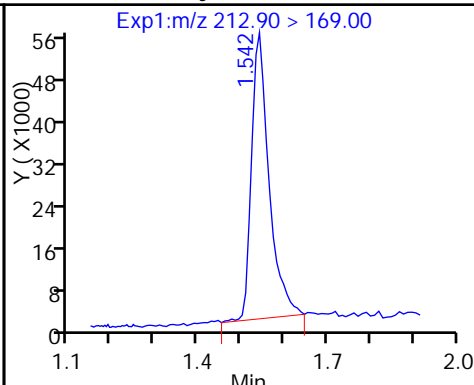
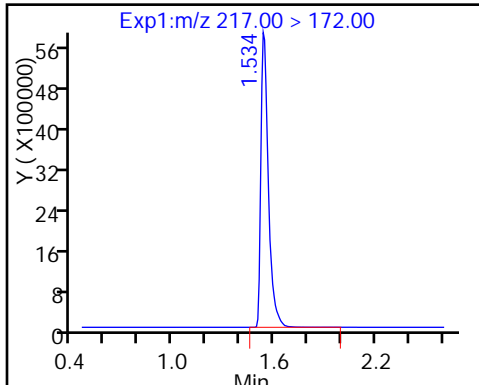
Method: A8_N

Limit Group: LC PFC_DOD ICAL

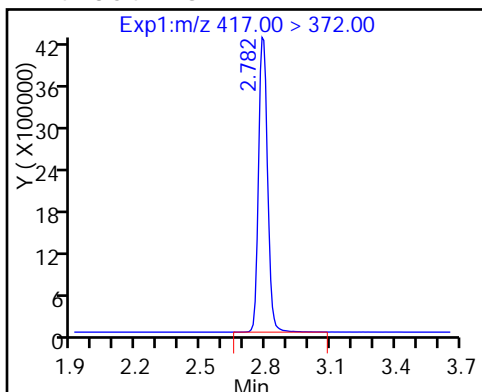
D 2 13C4 PFBA

1 Perfluorobutyric acid

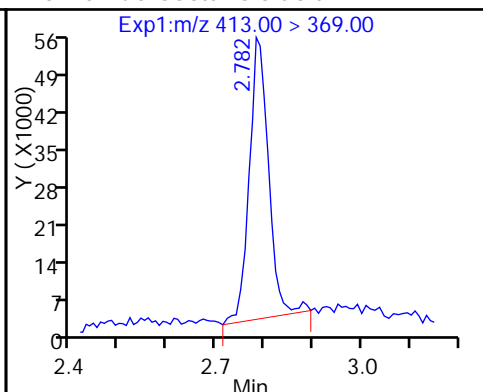
D 4 13C5-PFPeA



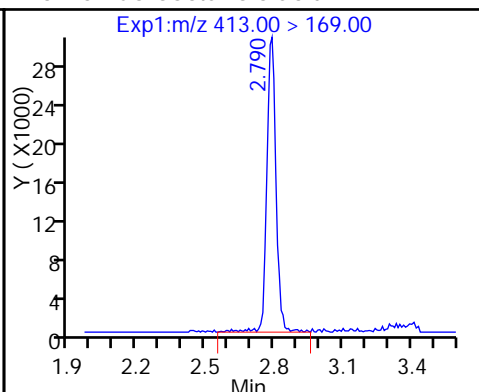
D 14 13C4 PFOA



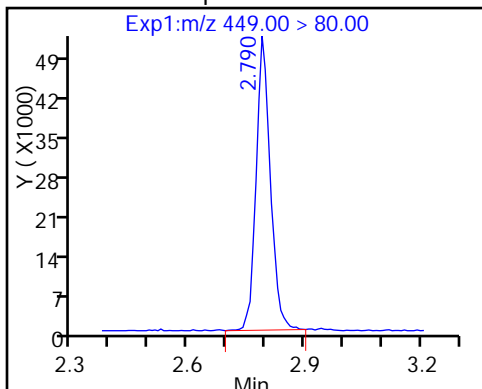
15 Perfluorooctanoic acid



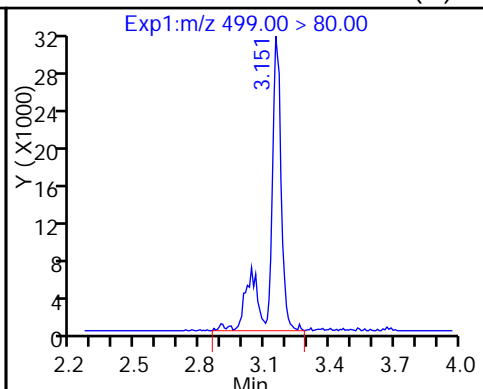
15 Perfluorooctanoic acid



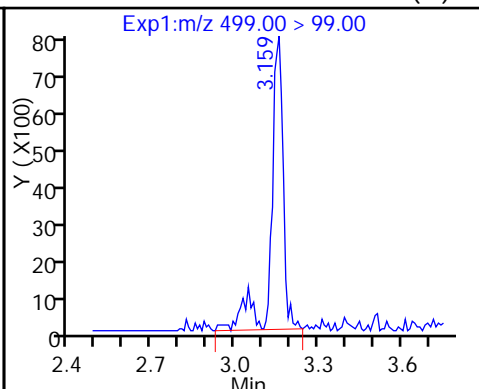
13 Perfluoroheptanesulfonic Acid



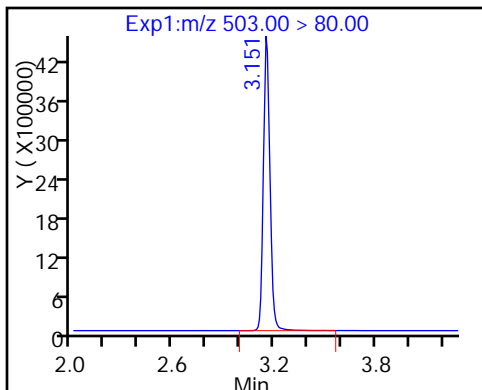
18 Perfluorooctane sulfonic acid (M)



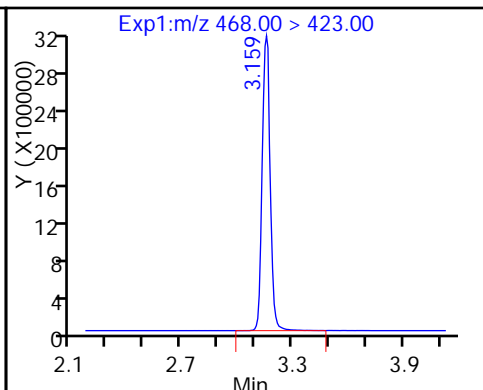
18 Perfluorooctane sulfonic acid (M)



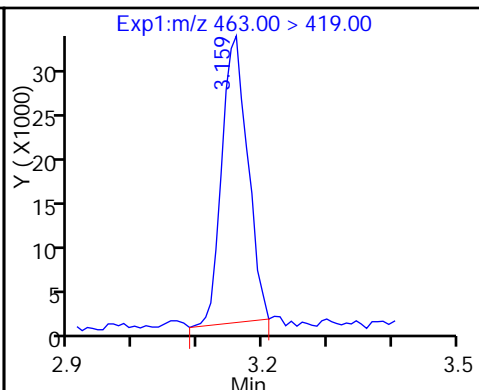
D 17 13C4 PFOS



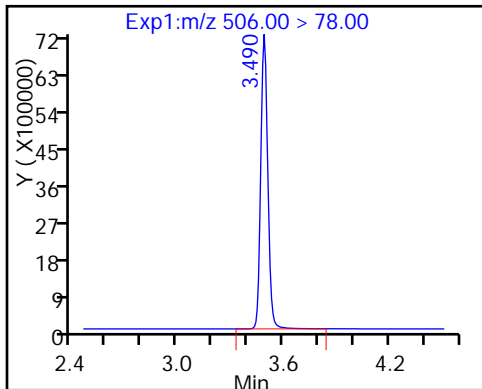
D 19 13C5 PFNA



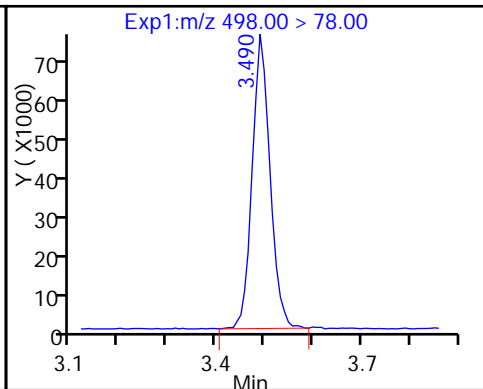
20 Perfluorononanoic acid



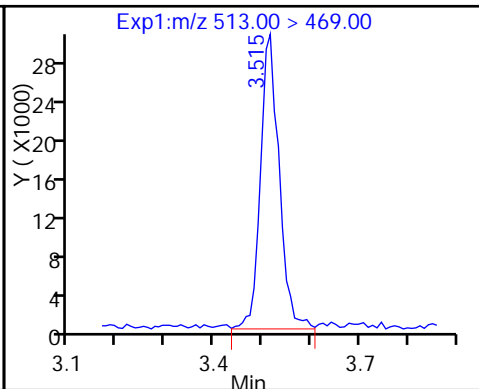
D 21 13C8 FOSA



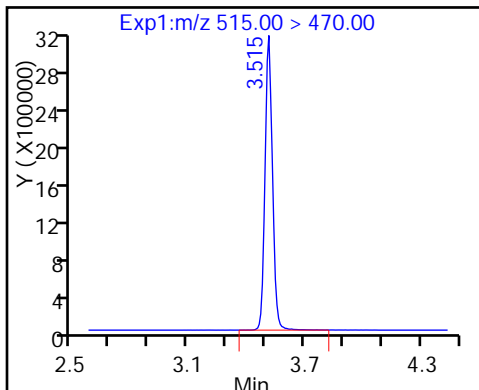
22 Perfluorooctane Sulfonamide



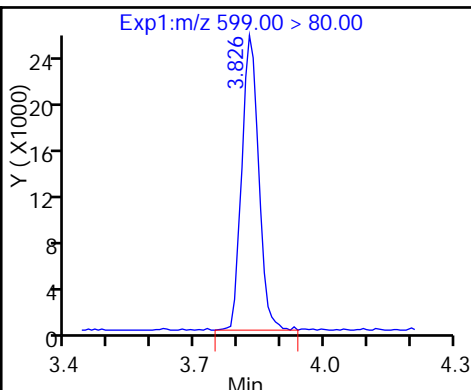
24 Perfluorodecanoic acid



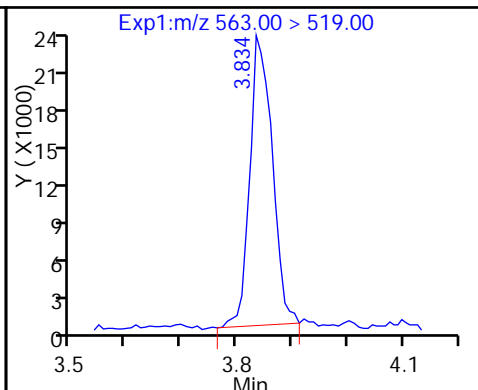
D 23 13C2 PFDA



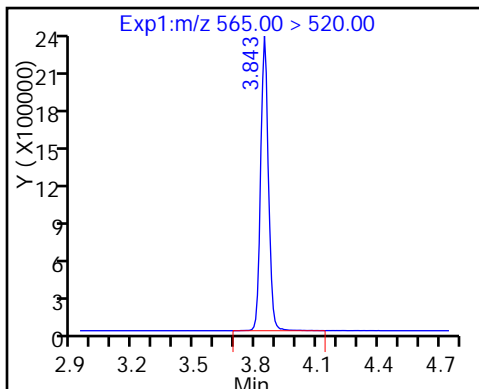
26 Perfluorodecane Sulfonic acid



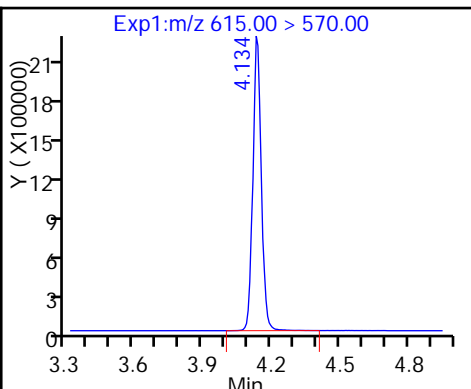
28 Perfluoroundecanoic acid



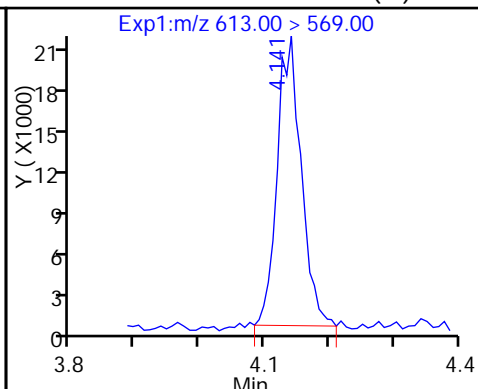
D 27 13C2 PFUa



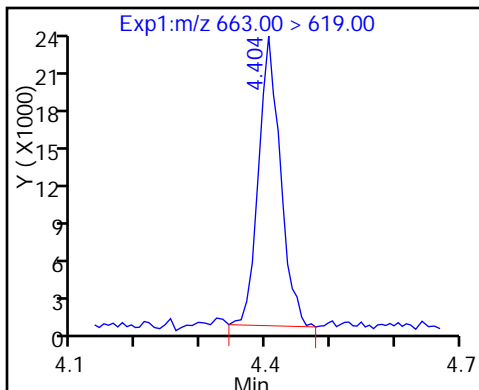
D 30 13C2 PFDa



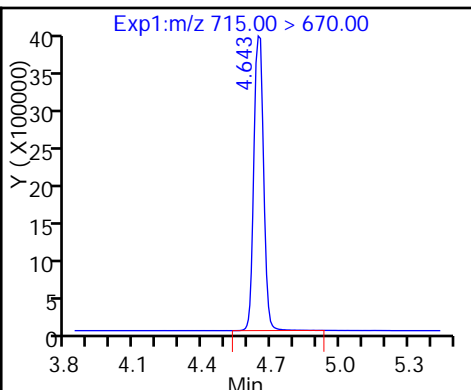
29 Perfluorododecanoic acid (M)



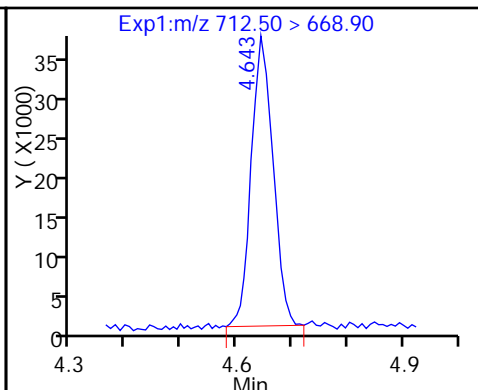
31 Perfluorotridecanoic acid



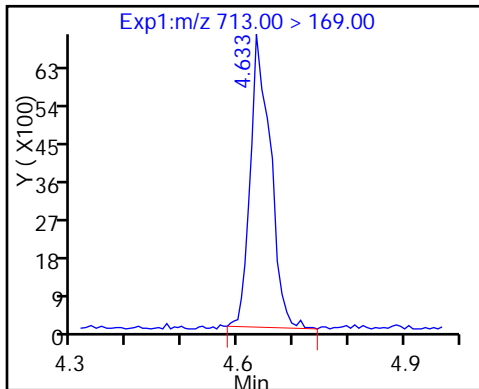
D 32 13C2-PFTeDA



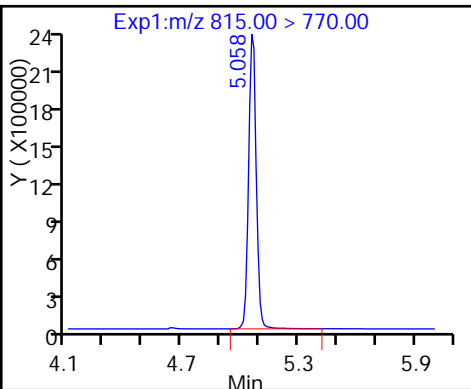
33 Perfluorotetradecanoic acid



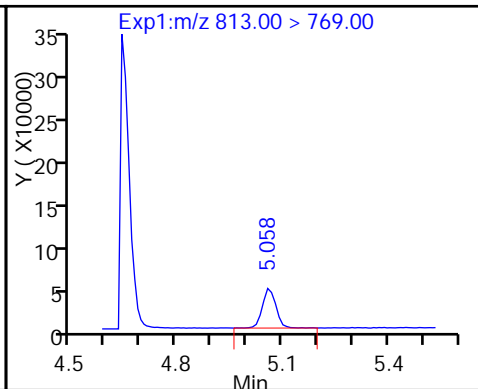
33 Perfluorotetradecanoic acid



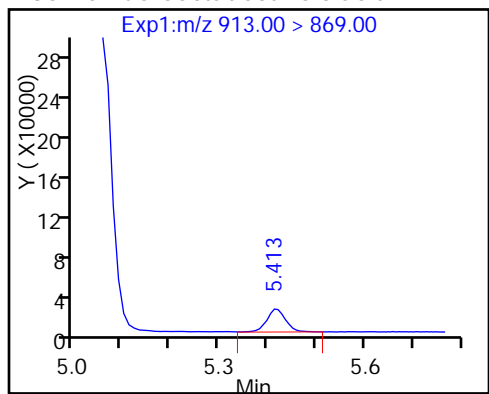
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



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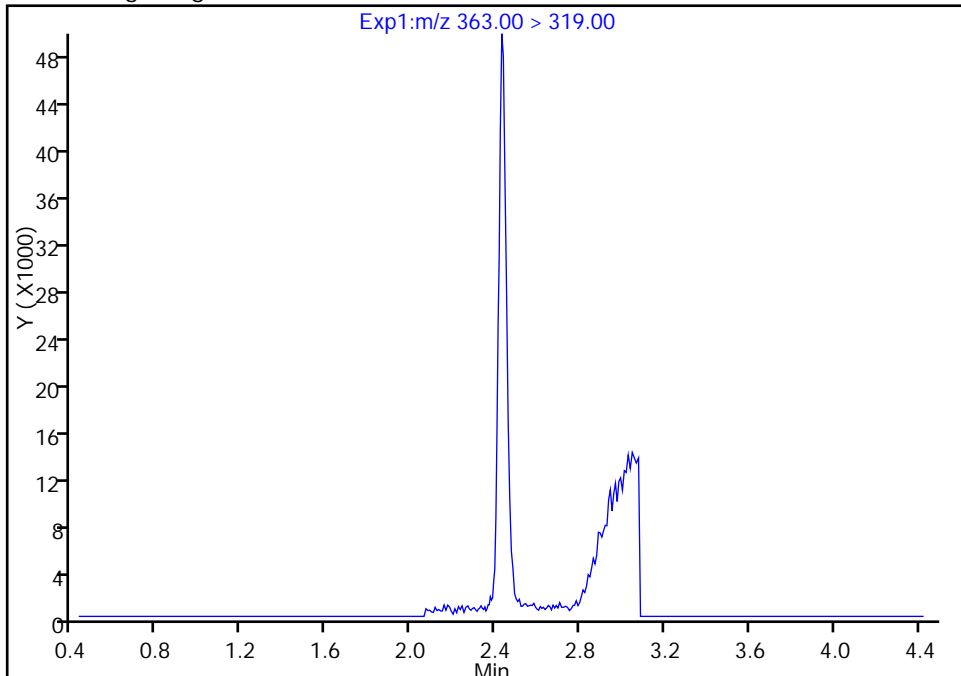
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d
Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

12 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

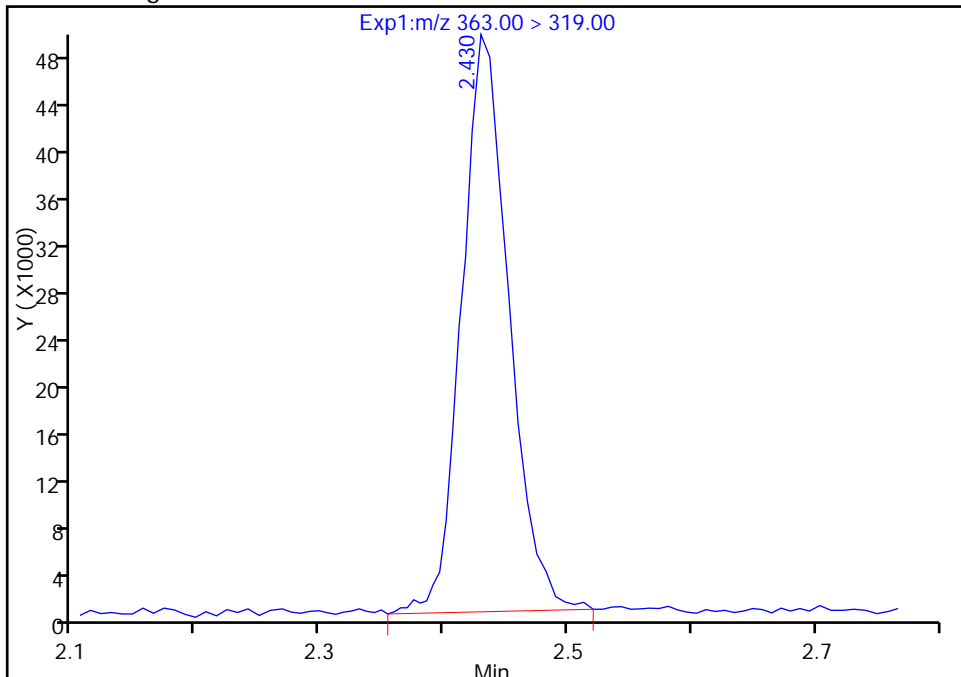
Not Detected
Expected RT: 2.43

Processing Integration Results



Manual Integration Results

RT: 2.43
Area: 129104
Amount: 0.538766
Amount Units: ng/ml



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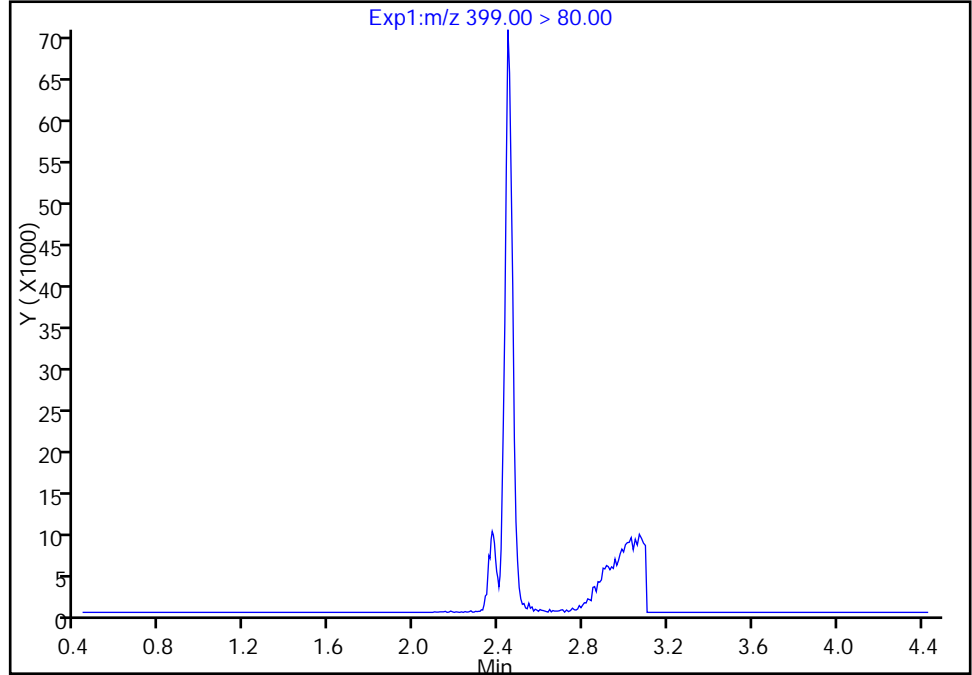
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d
Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

9 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

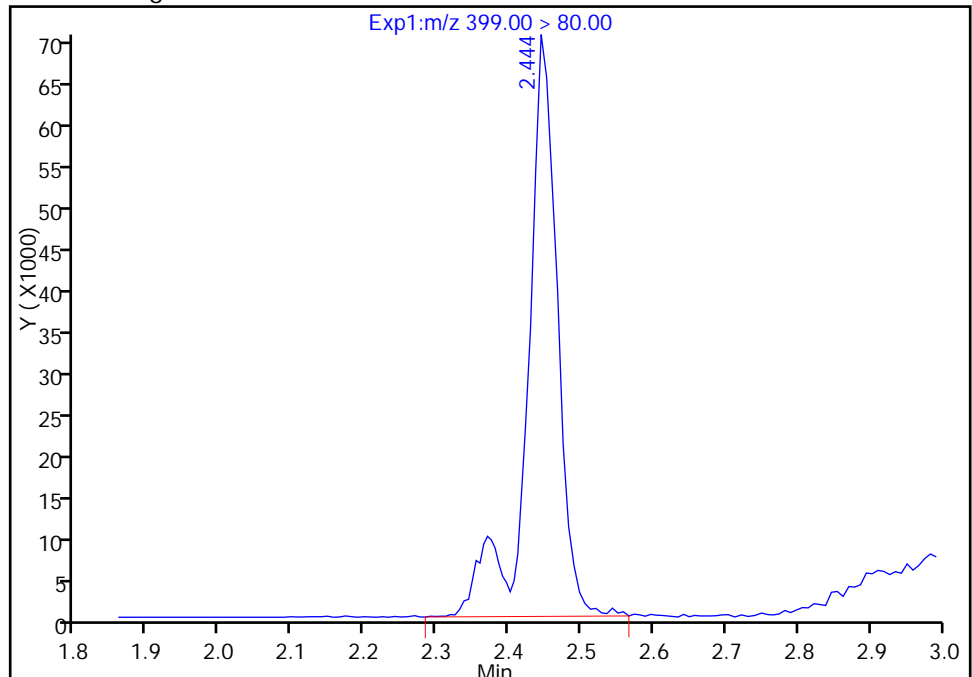
Not Detected
Expected RT: 2.43

Processing Integration Results



Manual Integration Results

RT: 2.44
Area: 204063
Amount: 0.579783
Amount Units: ng/ml



Reviewer: chandrasenas, 15-Dec-2016 13:48:59

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

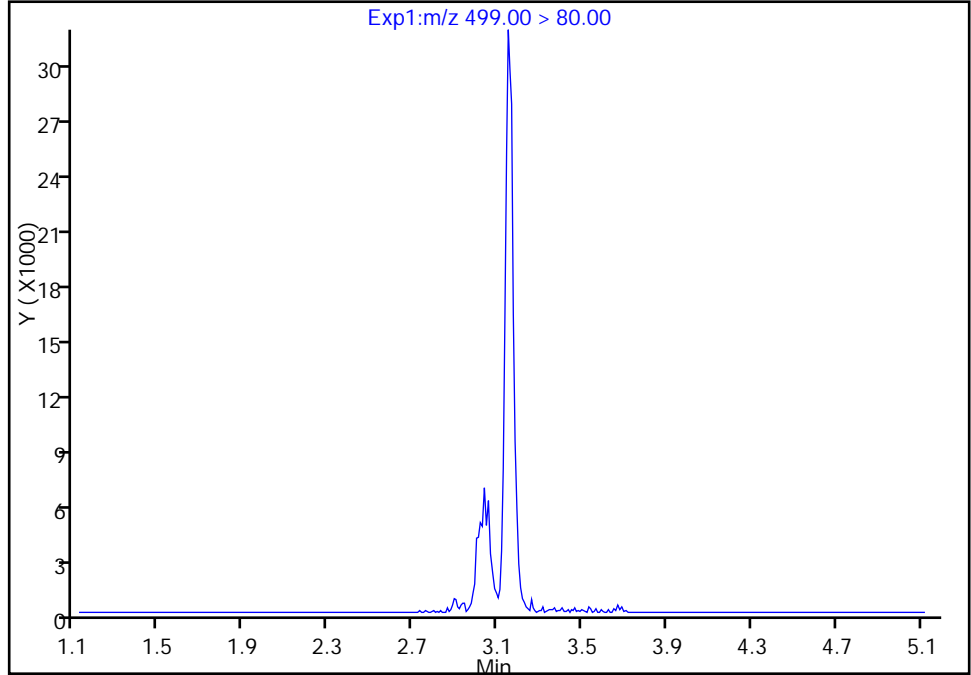
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Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

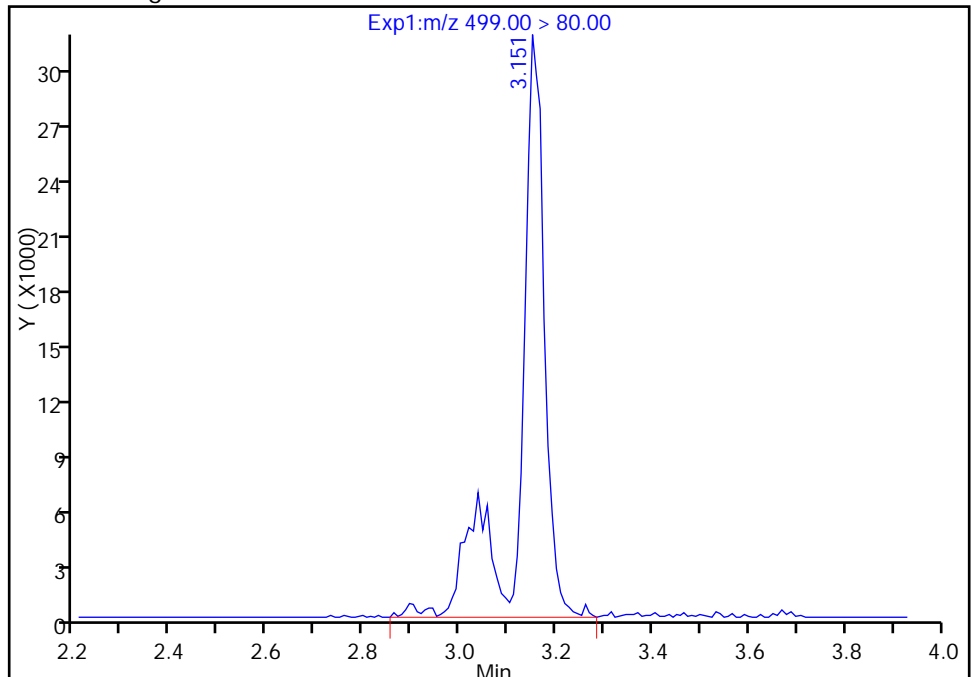
Not Detected
Expected RT: 3.12

Processing Integration Results



Manual Integration Results

RT: 3.15
Area: 116569
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

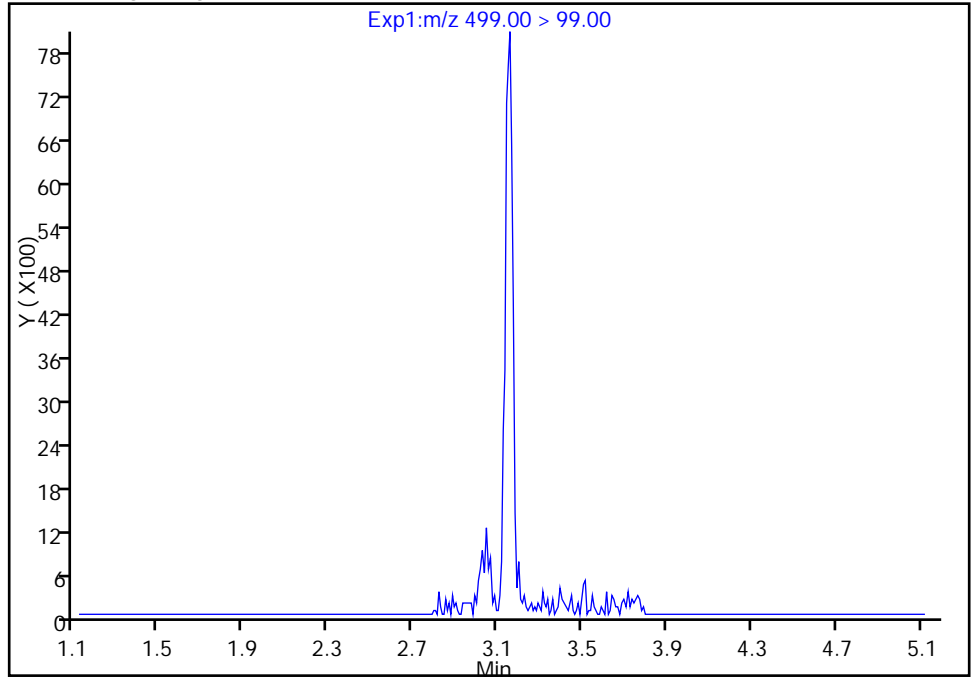
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161215-37881.b\15DEC2016B_004.d
Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

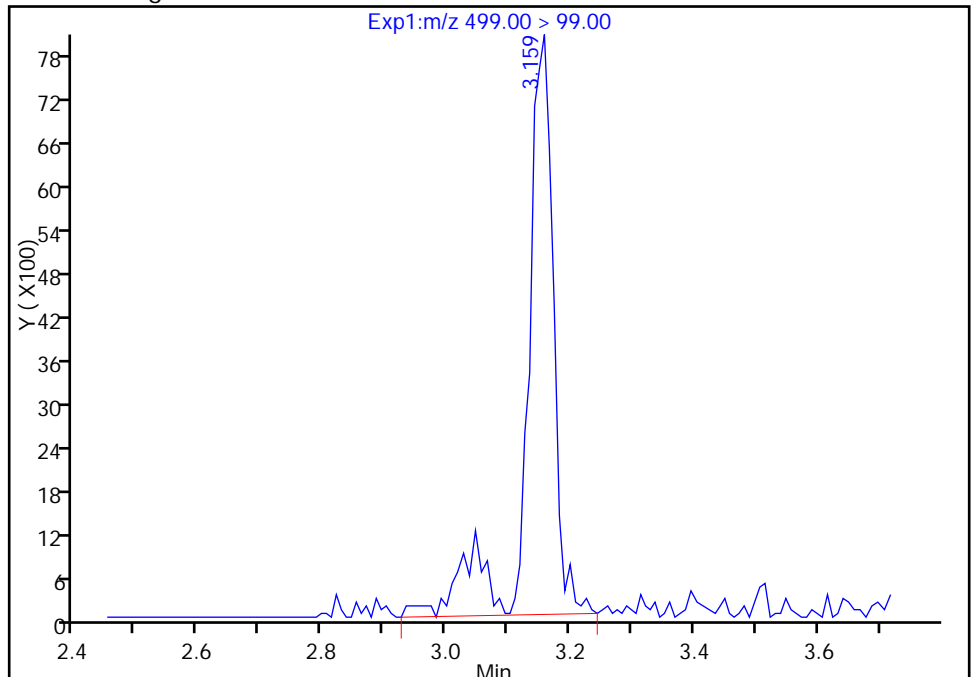
Not Detected
Expected RT: 3.12

Processing Integration Results



RT: 3.16
Area: 24244
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

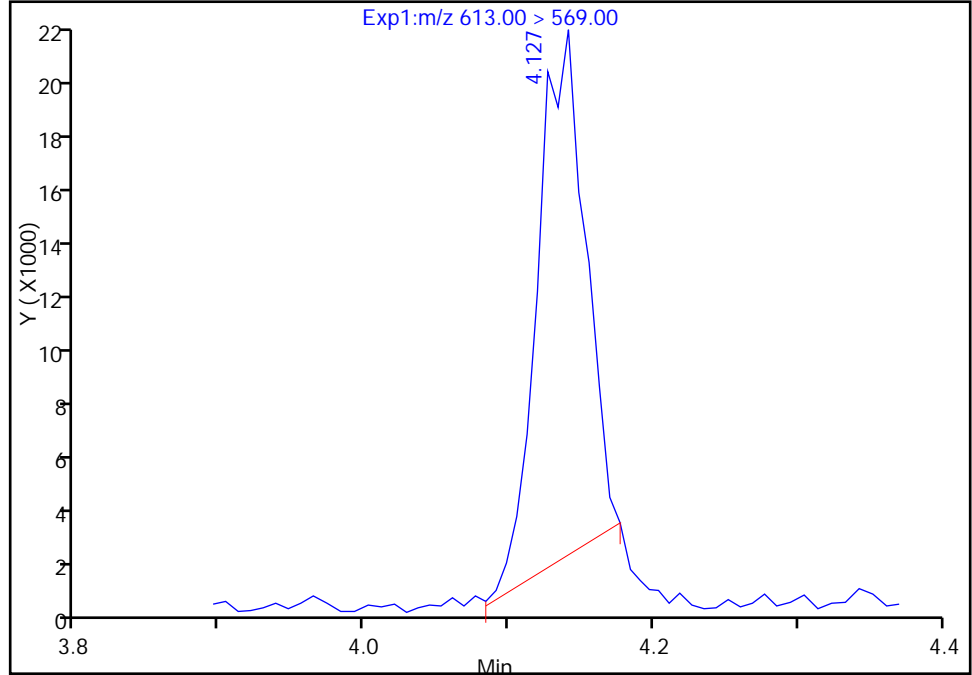
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Injection Date: 15-Dec-2016 12:29:18 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

29 Perfluorododecanoic acid, CAS: 307-55-1

Signal: 1

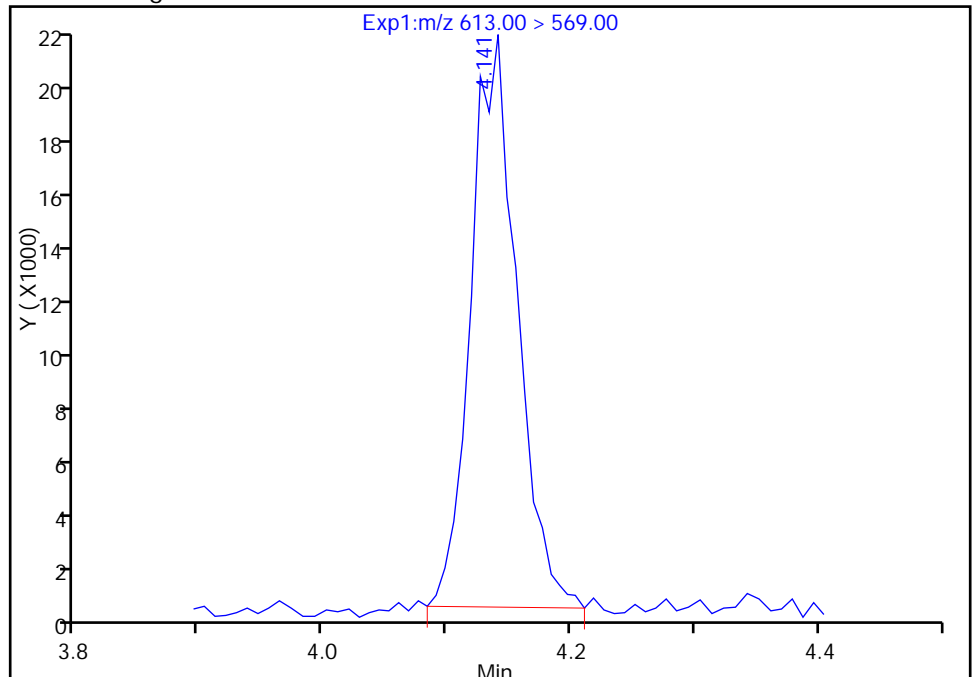
RT: 4.13
Area: 43489
Amount: 0.419548
Amount Units: ng/ml

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	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	287573	1.04		104	2935	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.844	1.848	-0.004	424227	0.8800		99.5		
	298.90 > 99.00	1.844	1.848	-0.004	171864		2.47(0.00-0.00)	99.5		
7 Perfluorohexanoic acid	313.00 > 269.00	2.092	2.096	-0.004	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	237734	0.99		99.1	1884	
9 Perfluorohexanesulfonic acid	399.00 > 80.00	2.445	2.431	0.014	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 PFDoA										
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

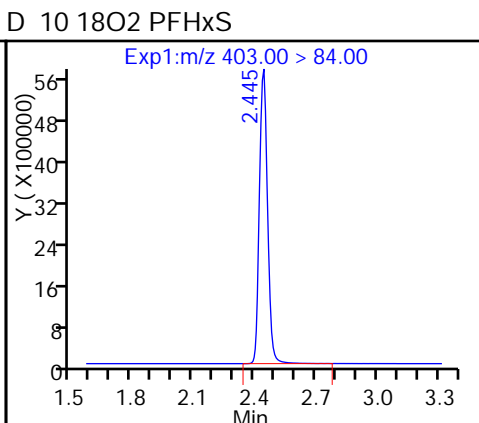
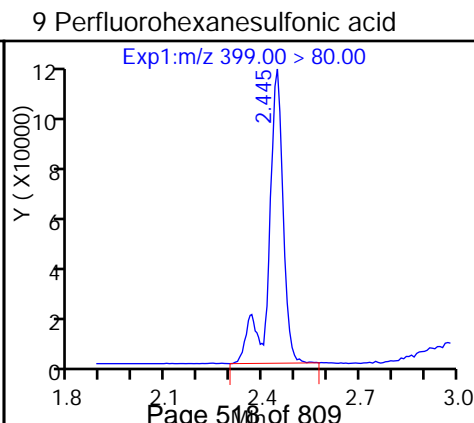
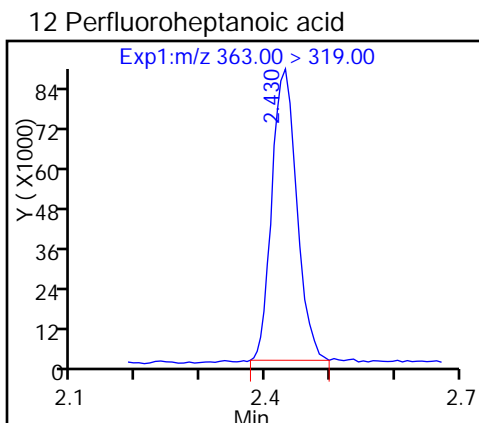
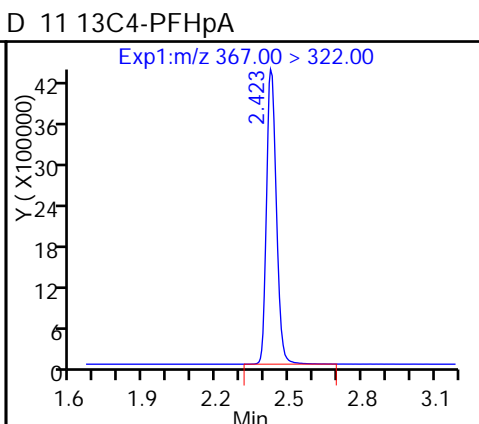
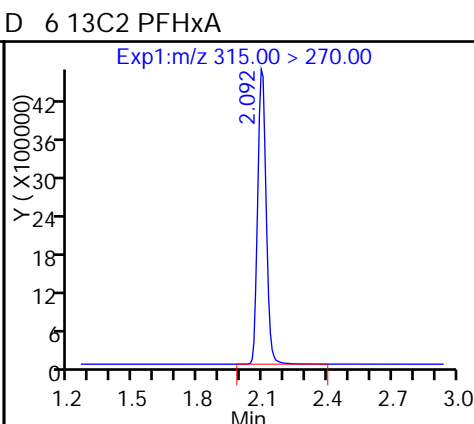
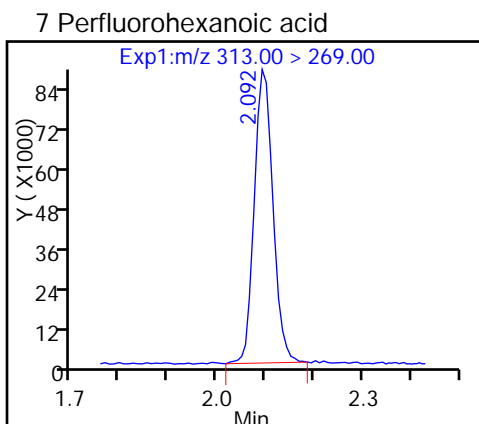
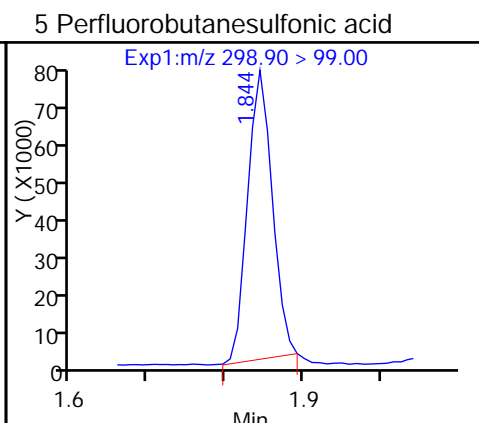
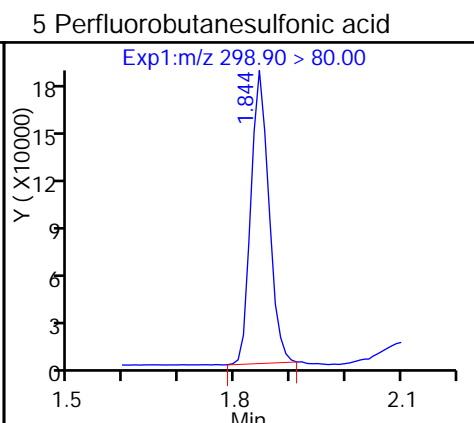
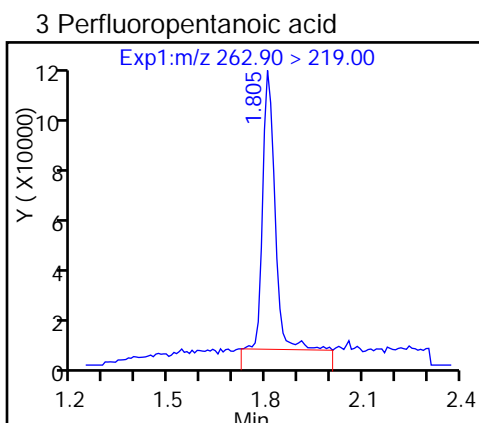
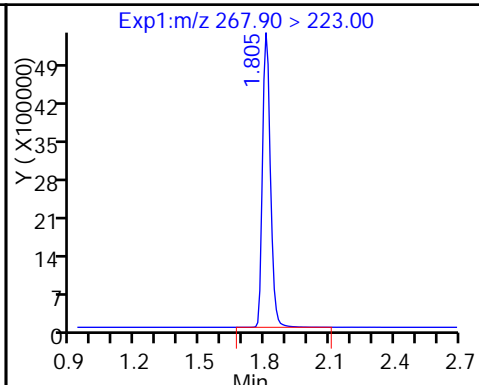
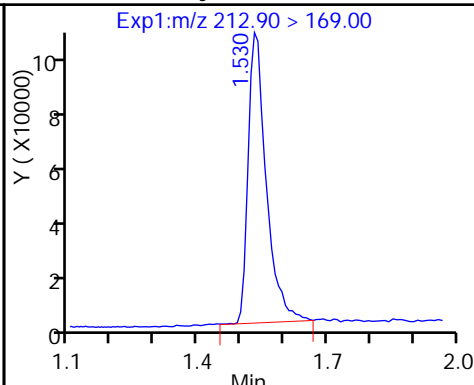
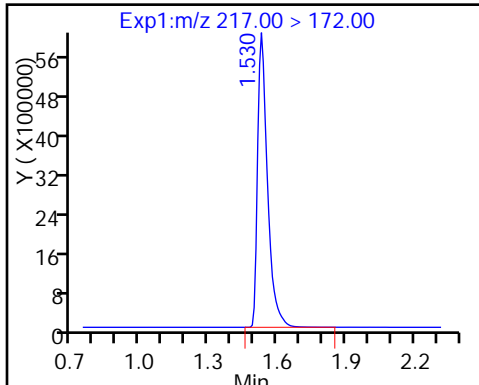
Method: A8_N

Limit Group: LC PFC_DOD ICAL

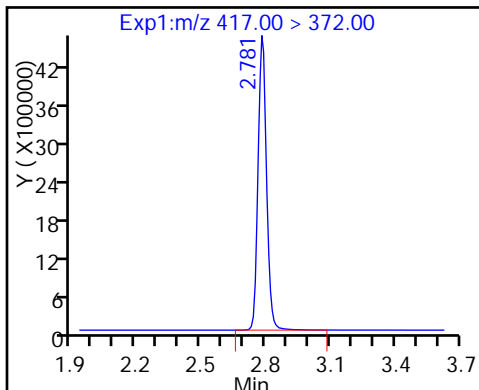
D 2 13C4 PFBA

1 Perfluorobutyric acid

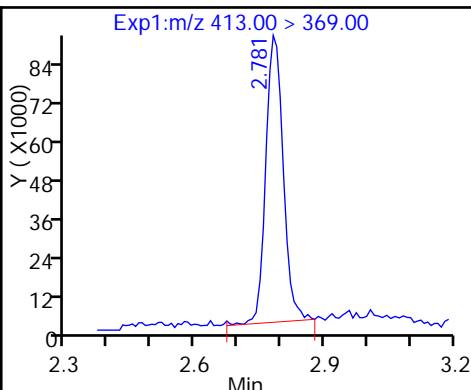
D 4 13C5-PFPeA



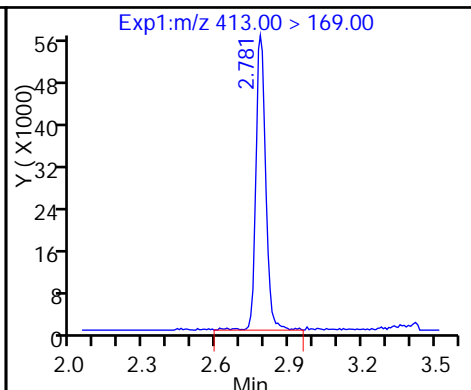
D 14 13C4 PFOA



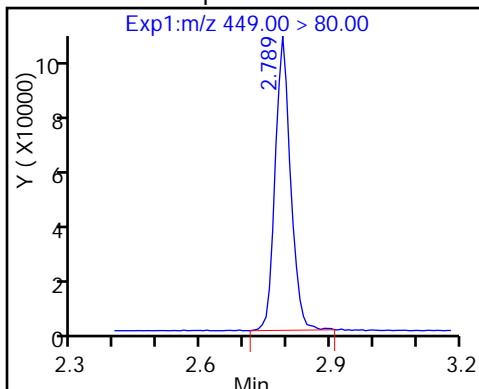
15 Perfluorooctanoic acid



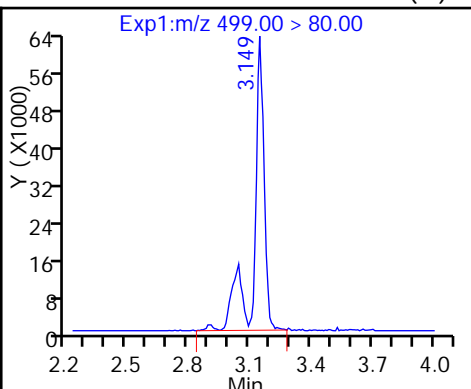
15 Perfluorooctanoic acid



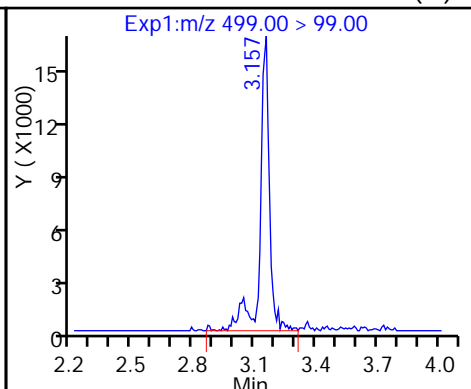
13 Perfluoroheptanesulfonic Acid



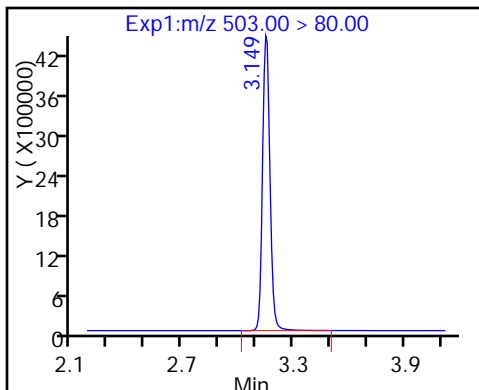
18 Perfluorooctane sulfonic acid (M)



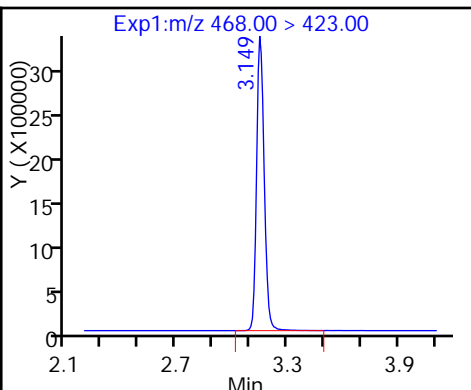
18 Perfluorooctane sulfonic acid (M)



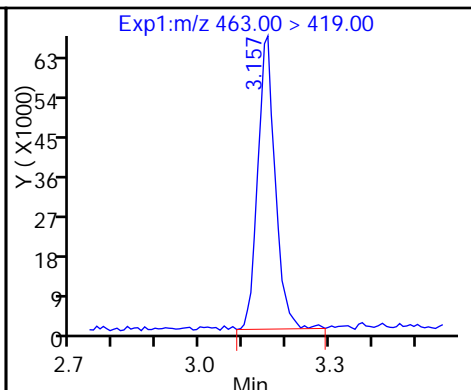
D 17 13C4 PFOS



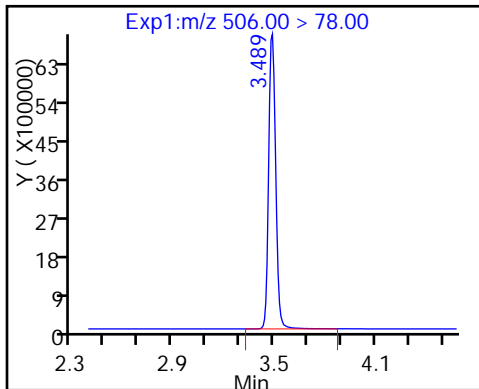
D 19 13C5 PFNA



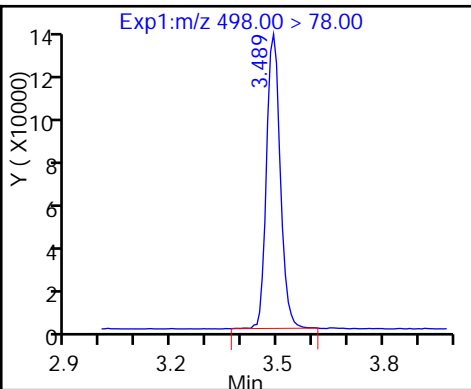
20 Perfluorononanoic acid



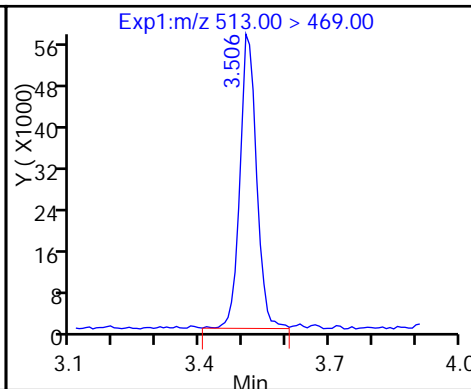
D 21 13C8 FOSA



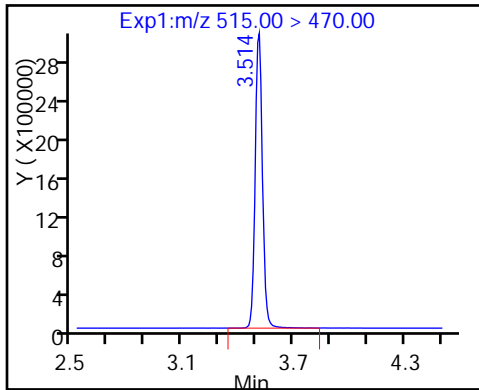
22 Perfluorooctane Sulfonamide



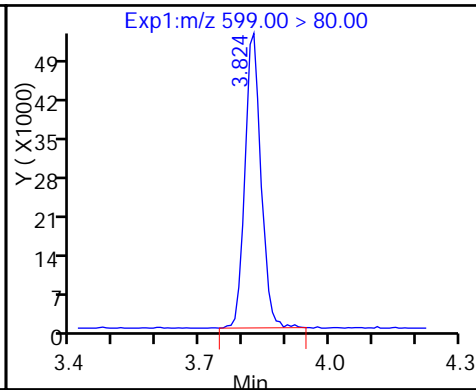
24 Perfluorodecanoic acid



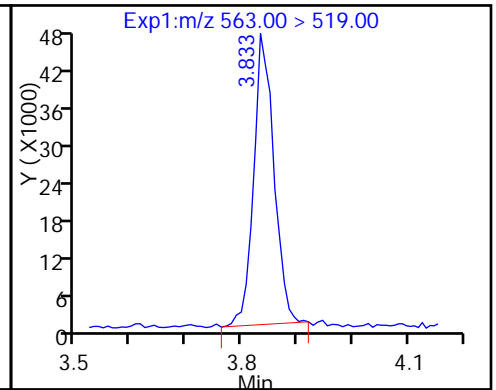
D 23 13C2 PFDA



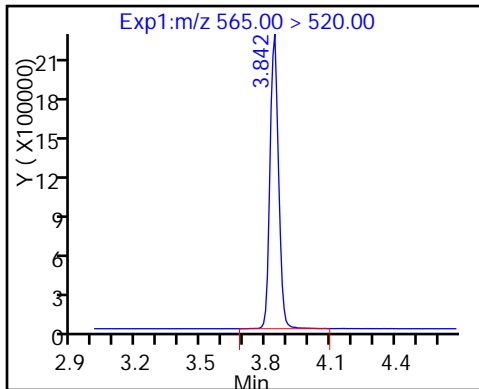
26 Perfluorodecane Sulfonic acid



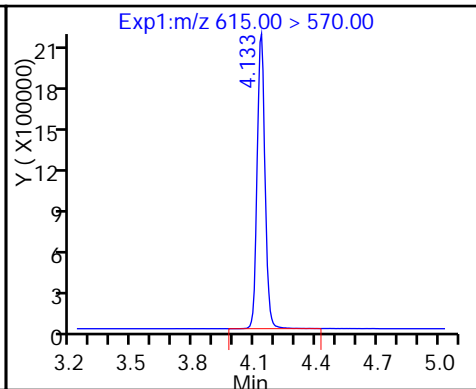
28 Perfluoroundecanoic acid



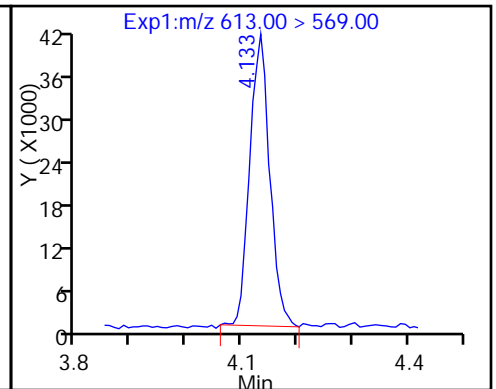
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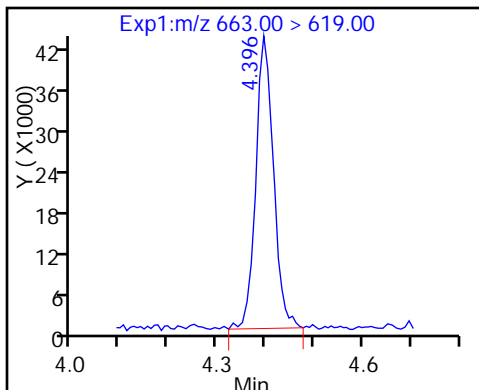
D 30 13C2 PFDa



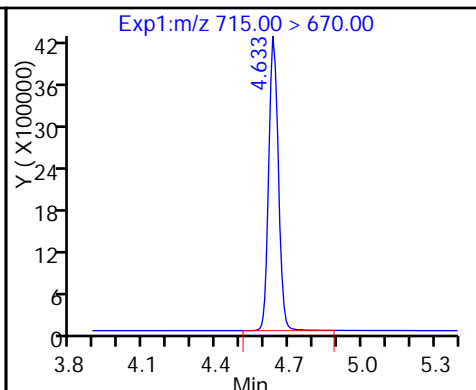
29 Perfluorododecanoic acid



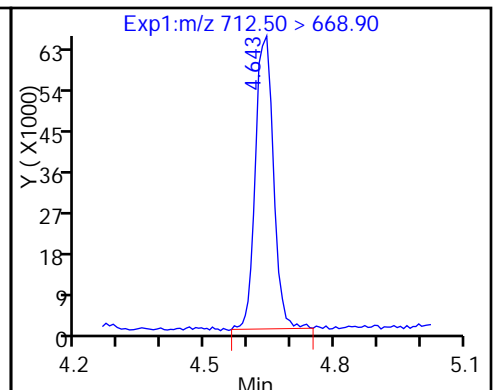
31 Perfluorotridecanoic acid



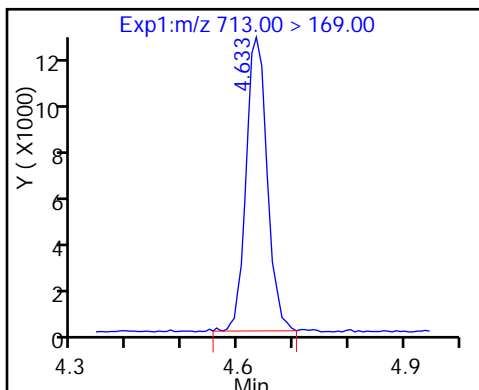
D 32 13C2-PFTeDA



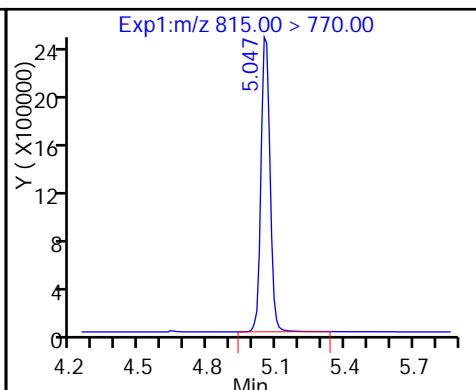
33 Perfluorotetradecanoic acid



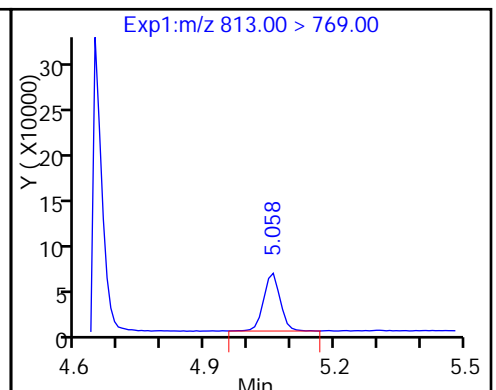
33 Perfluorotetradecanoic acid



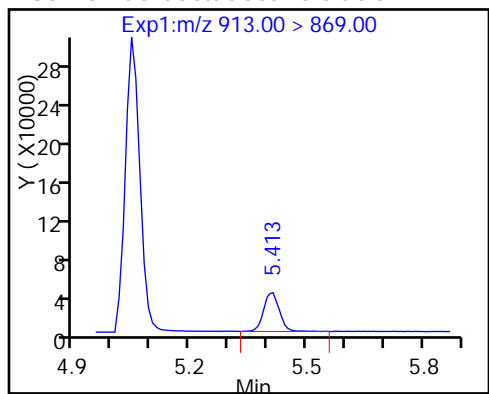
D 34 13C2-PFHxDa



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

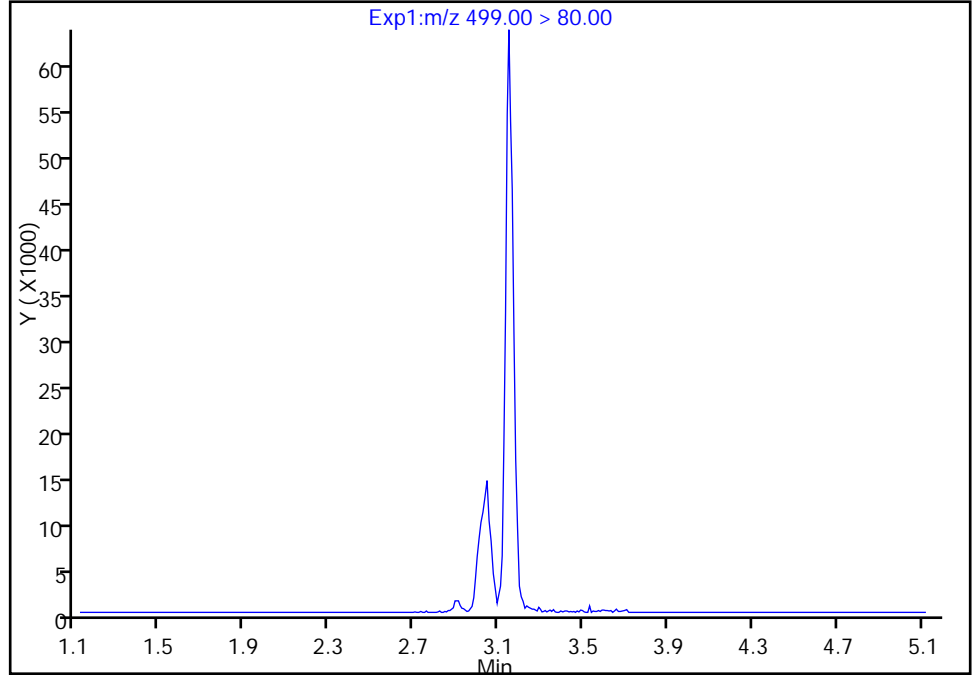
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Injection Date: 15-Dec-2016 12:36:48 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

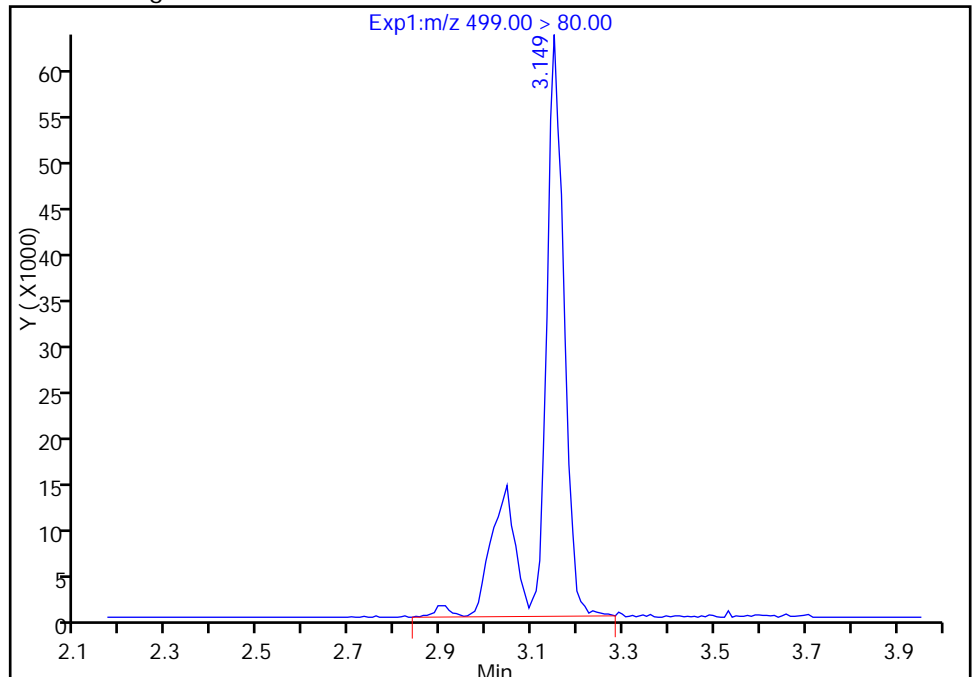
Not Detected
Expected RT: 3.12

Processing Integration Results



Manual Integration Results

RT: 3.15
Area: 220370
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

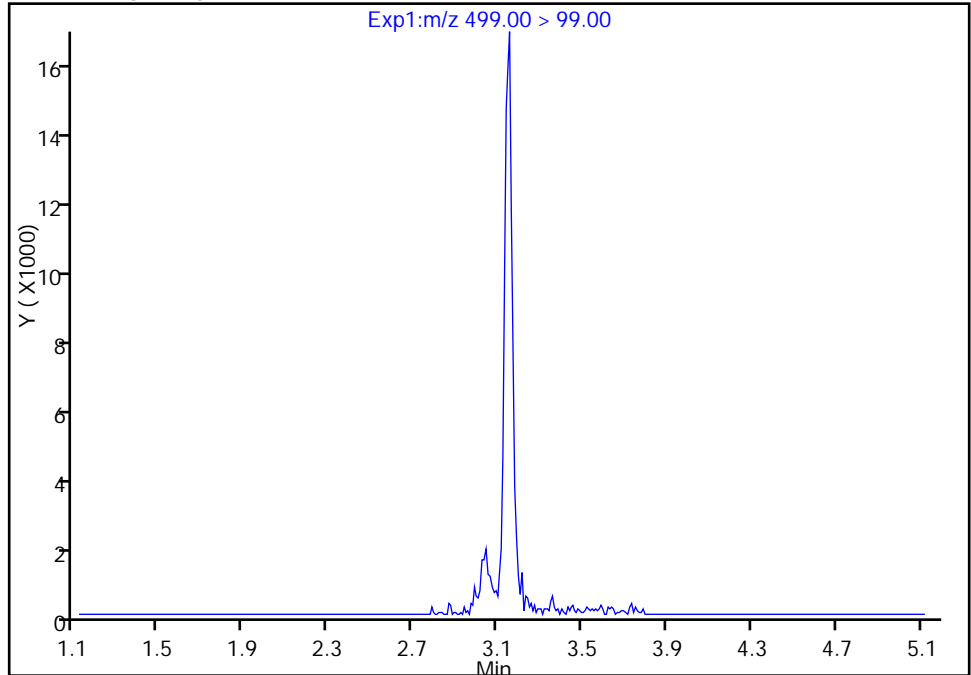
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Injection Date: 15-Dec-2016 12:36:48 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

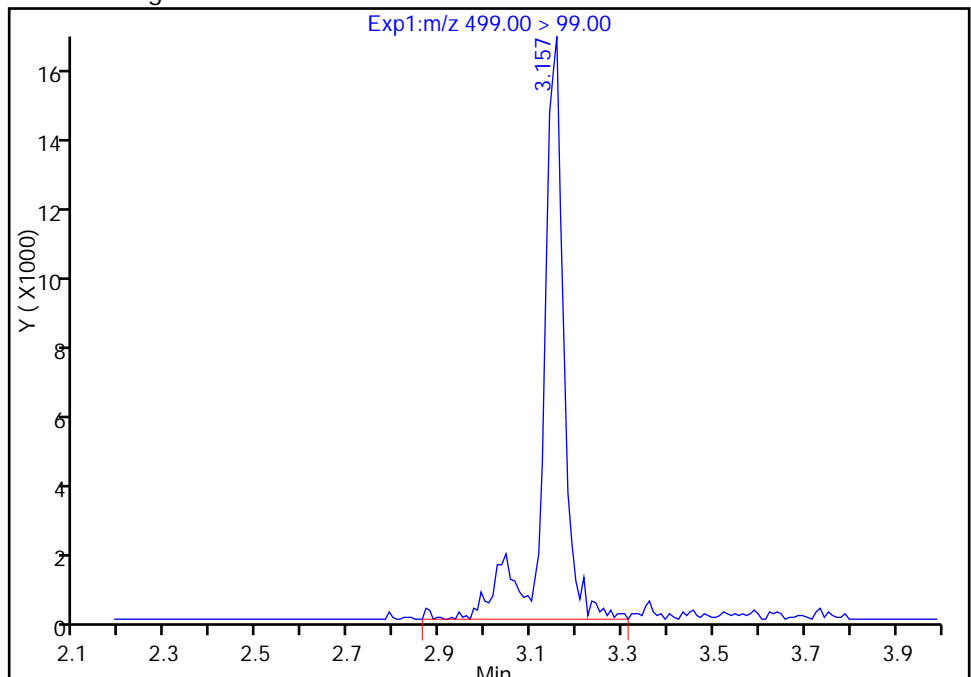
Not Detected
Expected RT: 3.12

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	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	1358239	4.89		97.9	15178	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.849	1.848	0.001	2211602	4.55		103		
	298.90 > 99.00	1.849	1.848	0.001	918055		2.41(0.00-0.00)	103		
7 Perfluorohexanoic acid	313.00 > 269.00	2.097	2.096	0.001	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	1175112	4.90		97.9	8914	
9 Perfluorohexanesulfonic acid	399.00 > 80.00	2.364	2.431	-0.067	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 PFDoA										
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

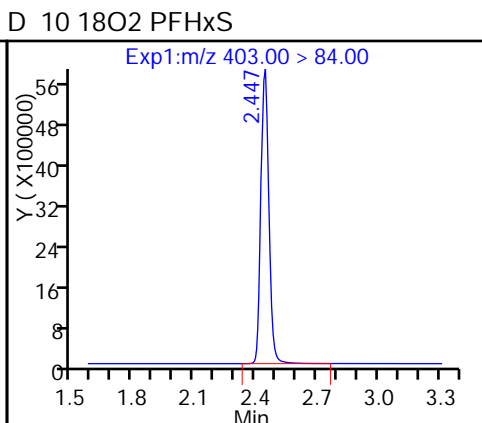
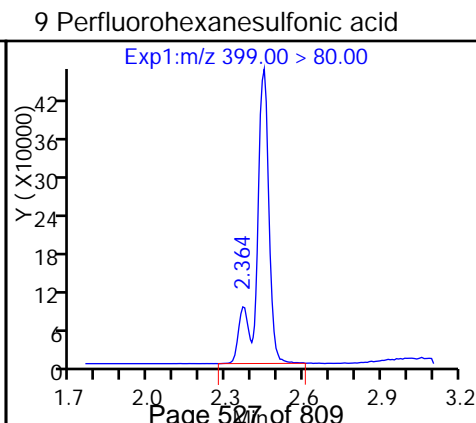
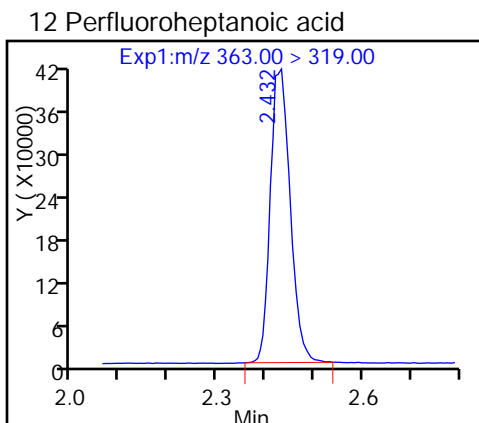
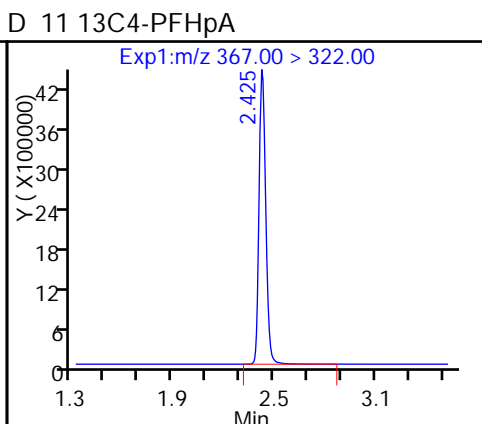
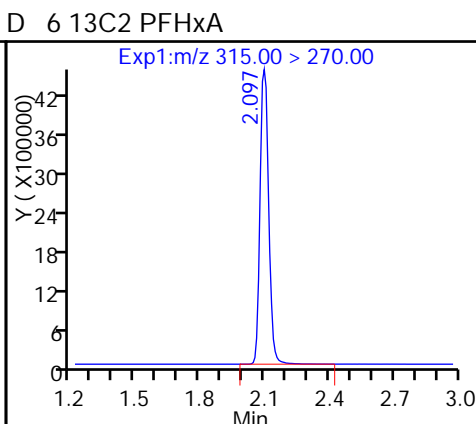
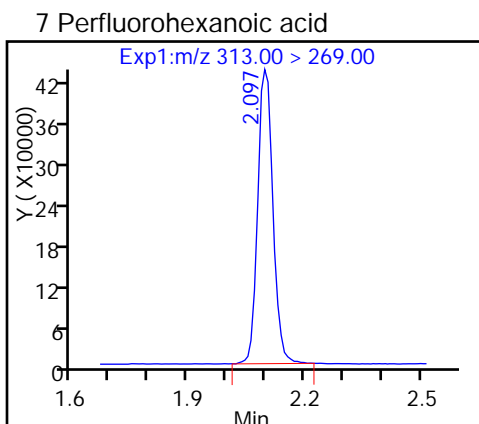
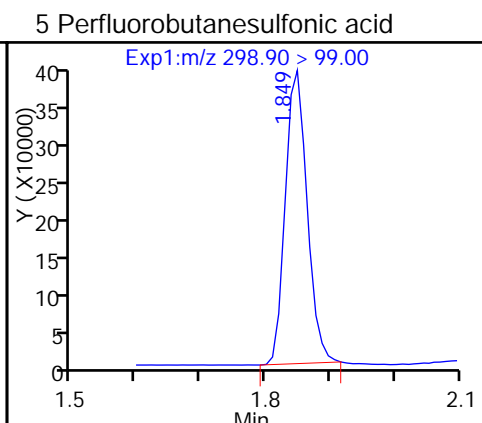
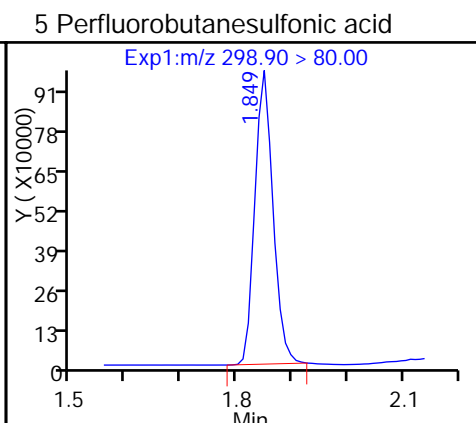
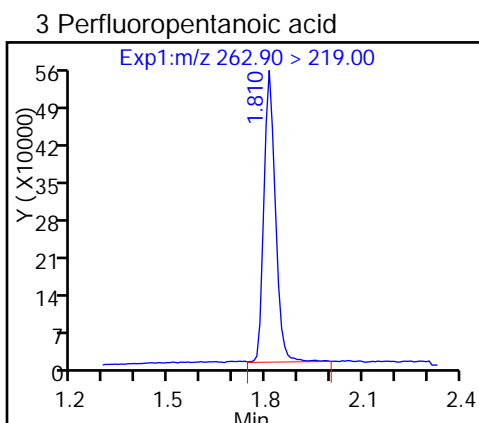
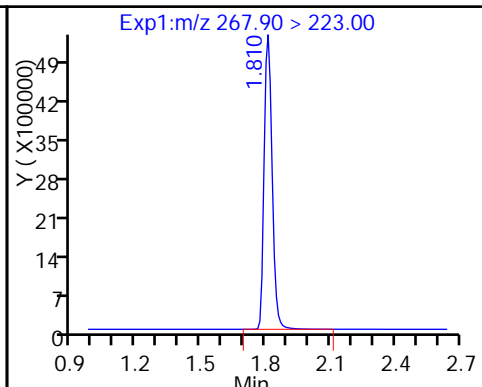
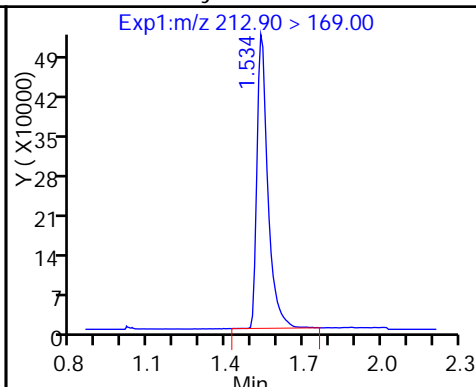
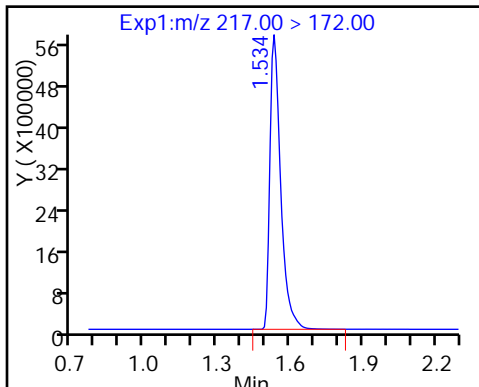
Method: A8_N

Limit Group: LC PFC_DOD ICAL

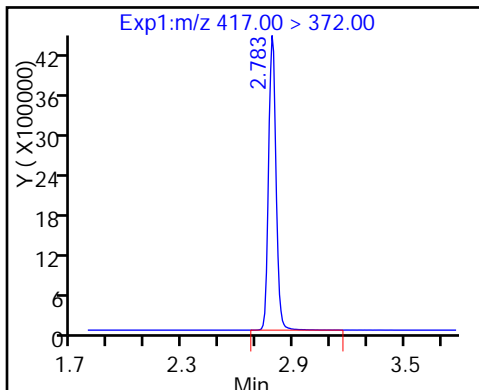
D 2 13C4 PFBA

1 Perfluorobutyric acid

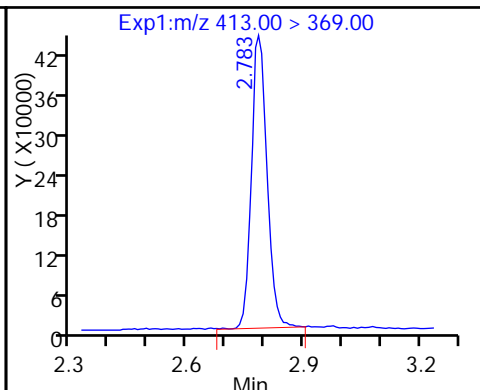
D 4 13C5-PFPeA



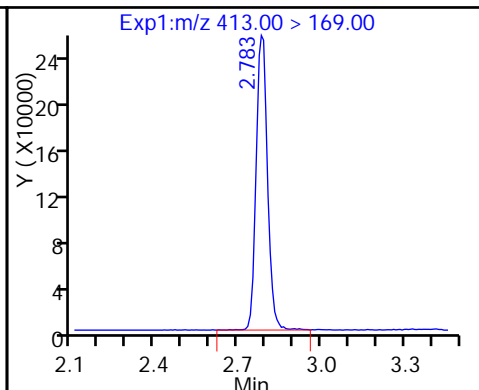
D 14 13C4 PFOA



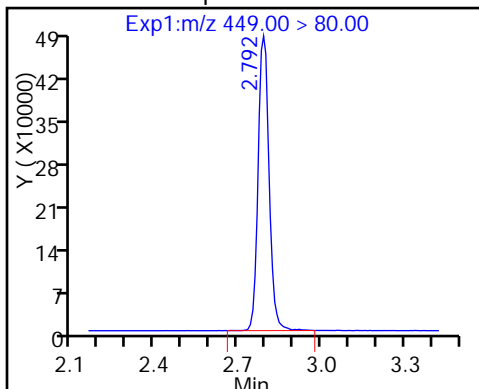
15 Perfluorooctanoic acid



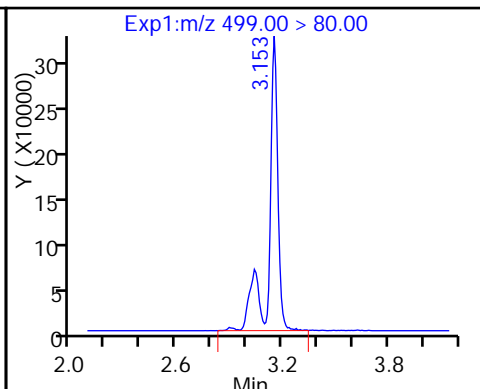
15 Perfluorooctanoic acid



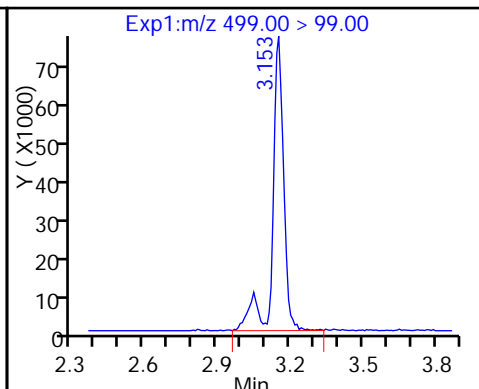
13 Perfluoroheptanesulfonic Acid



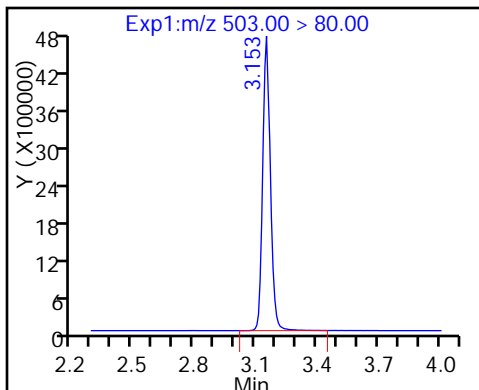
18 Perfluorooctane sulfonic acid



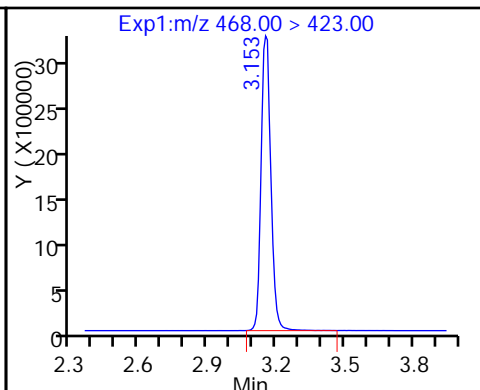
18 Perfluorooctane sulfonic acid



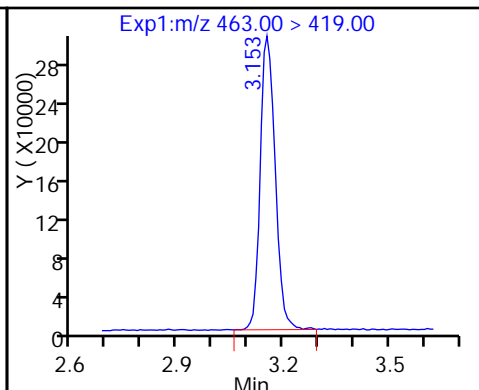
D 17 13C4 PFOS



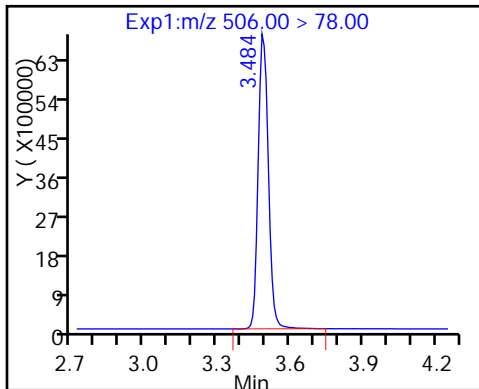
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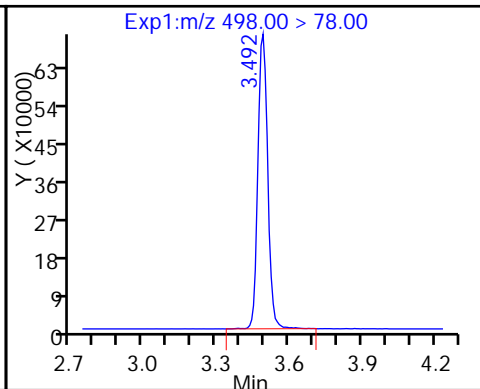
20 Perfluorononanoic acid



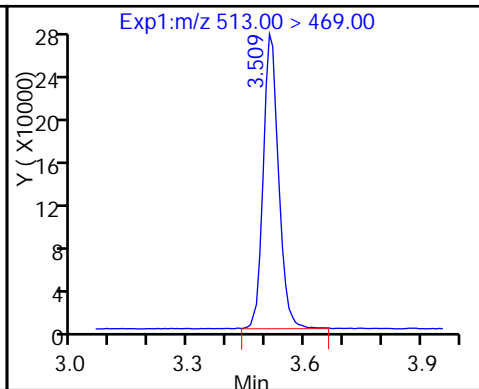
D 21 13C8 FOSA



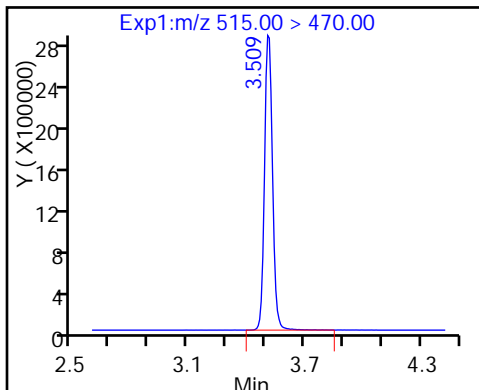
22 Perfluorooctane Sulfonamide



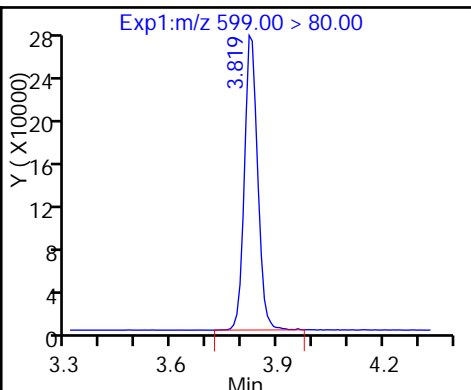
24 Perfluorodecanoic acid



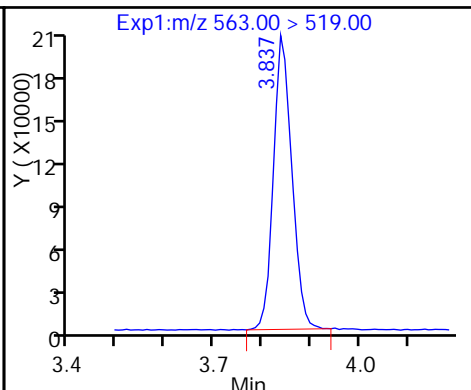
D 23 13C2 PFDA



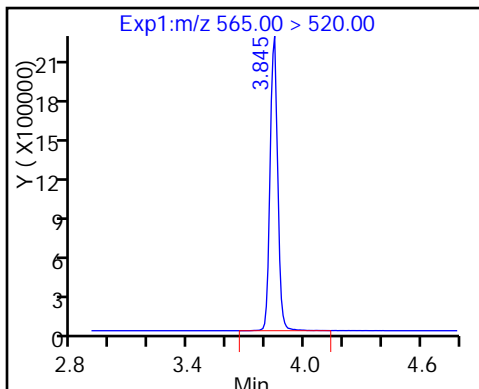
26 Perfluorodecane Sulfonic acid



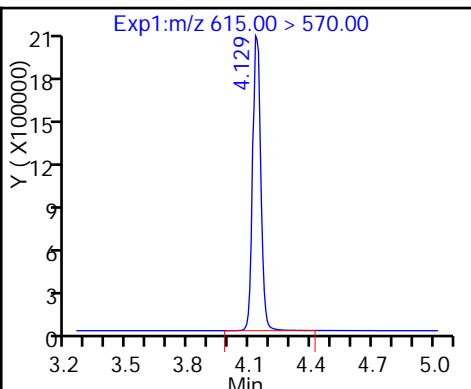
28 Perfluoroundecanoic acid



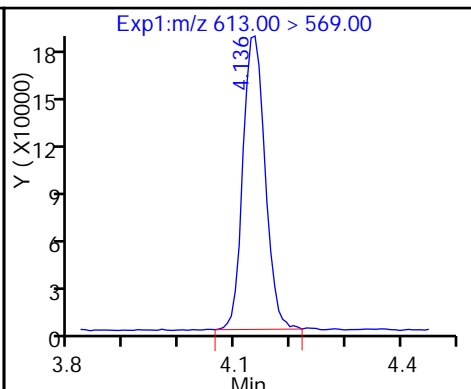
D 27 13C2 PFUnA



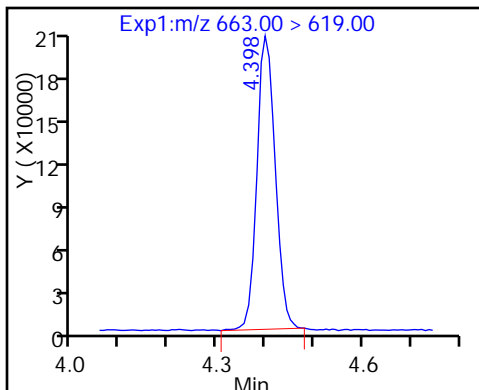
D 30 13C2 PFDaA



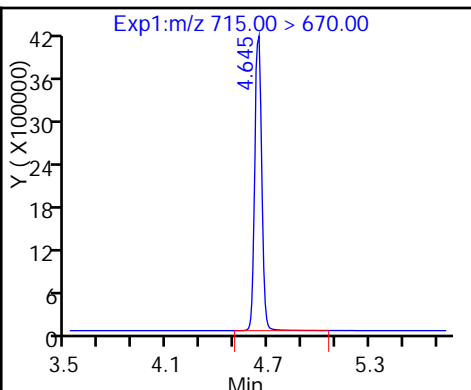
29 Perfluorododecanoic acid



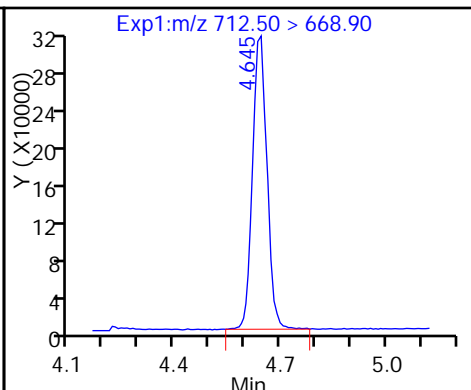
31 Perfluorotridecanoic acid



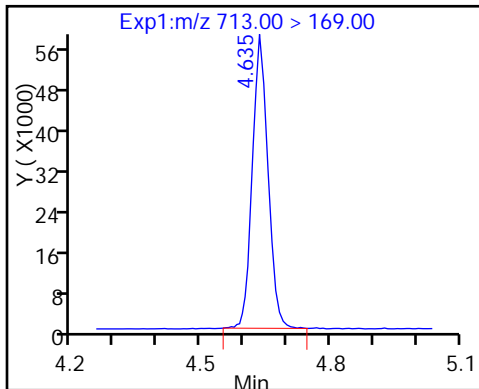
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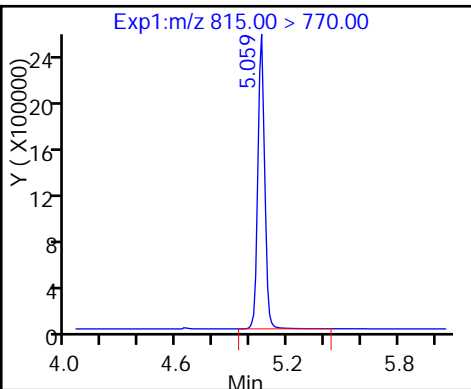
33 Perfluorotetradecanoic acid



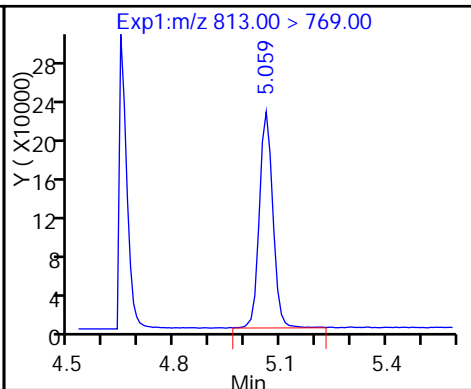
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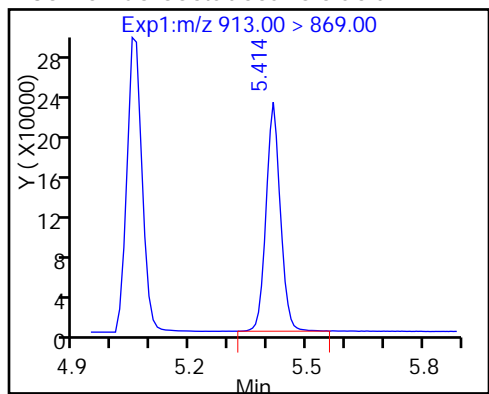
D 34 13C2-PFHxDA



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 PFDoA										
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

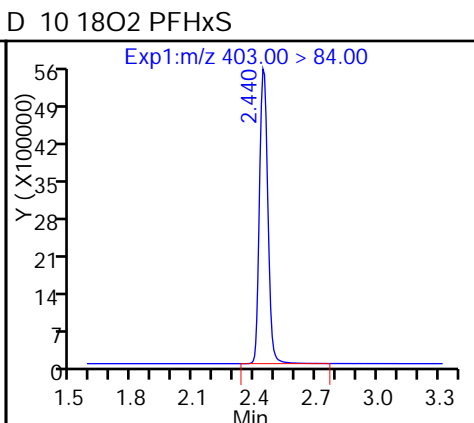
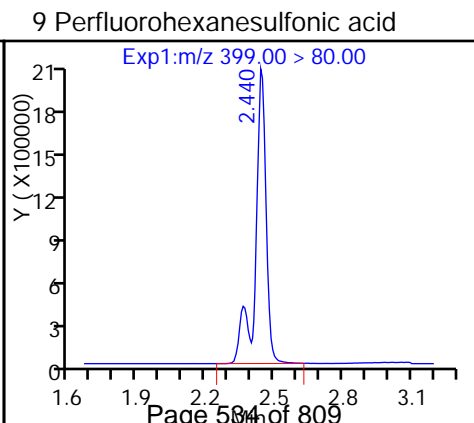
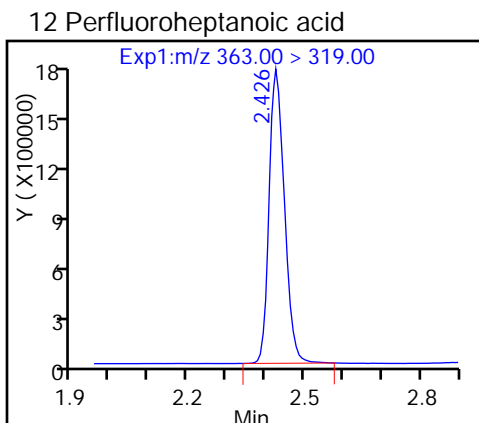
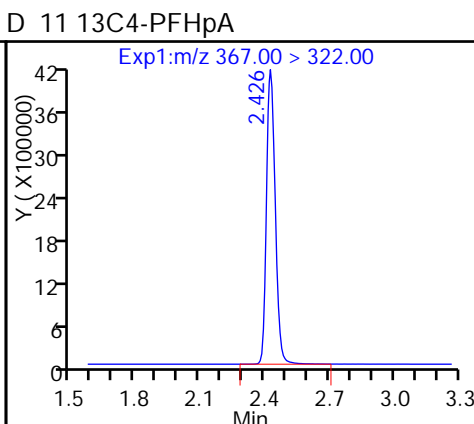
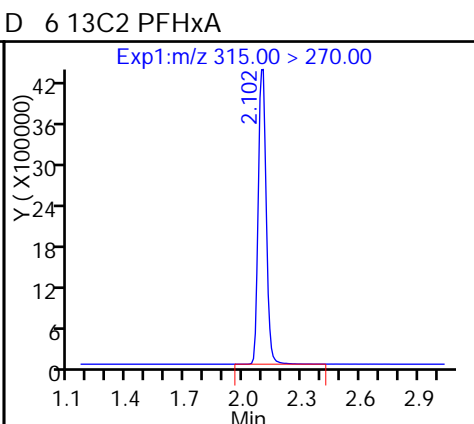
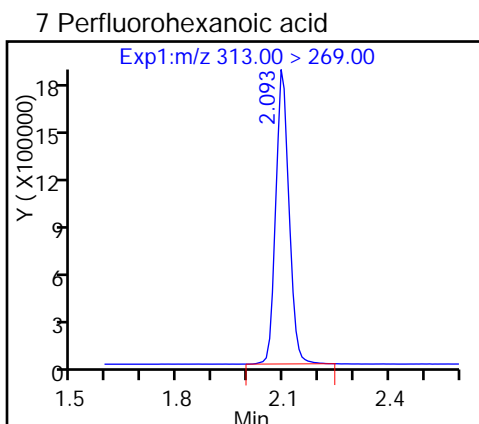
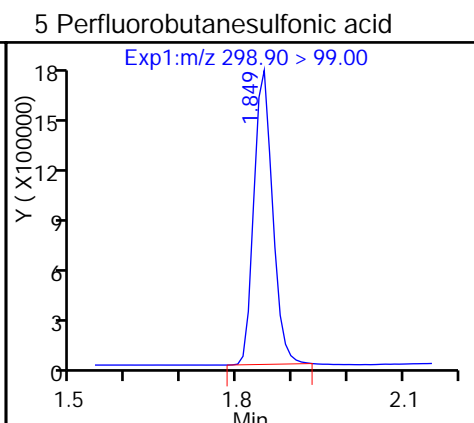
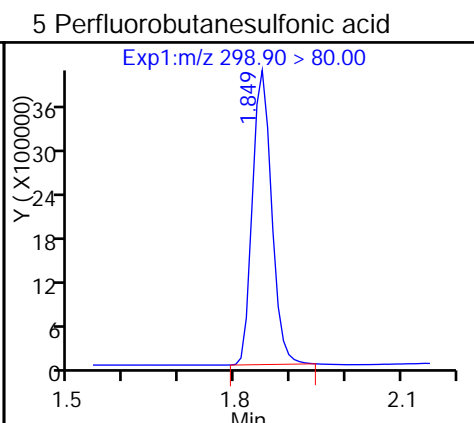
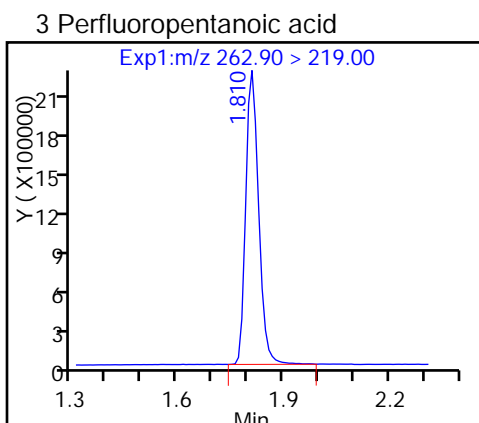
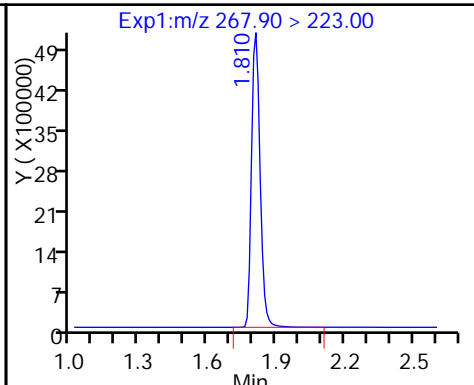
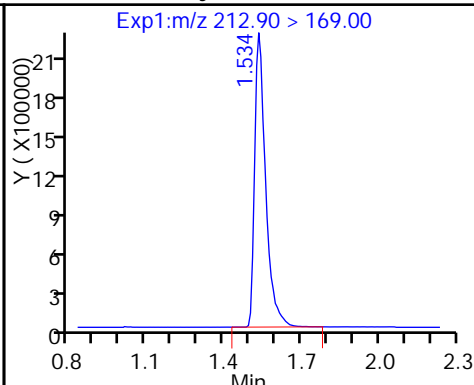
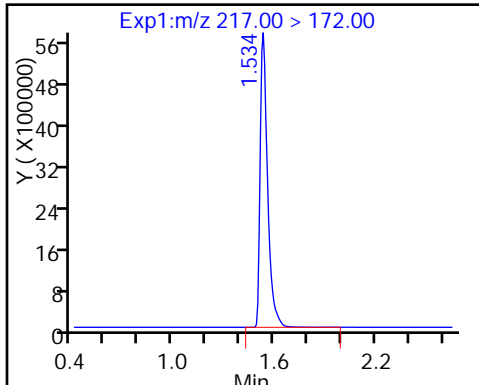
Method: A8_N

Limit Group: LC PFC_DOD ICAL

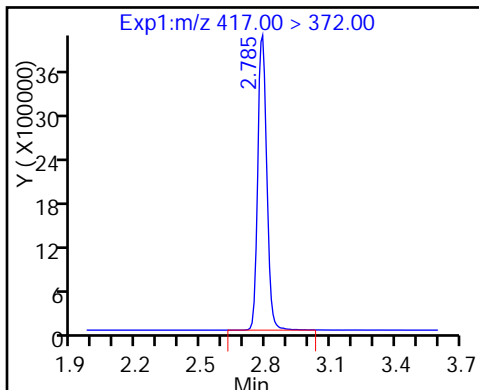
D 2 13C4 PFBA

1 Perfluorobutyric acid

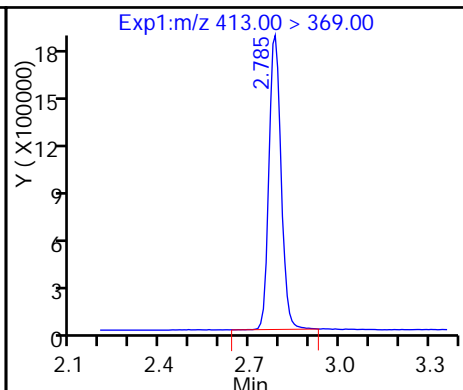
D 4 13C5-PFPeA



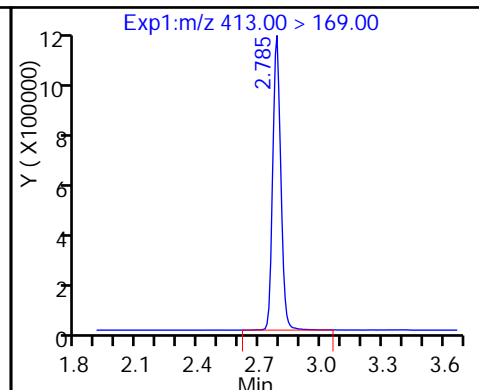
D 14 13C4 PFOA



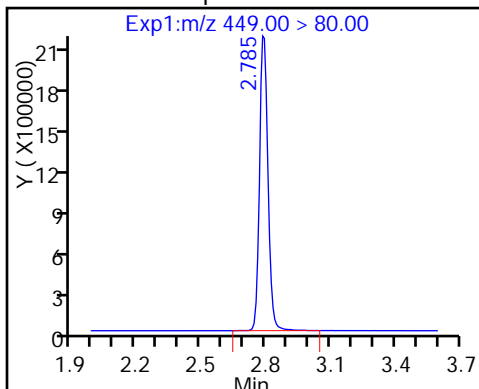
15 Perfluorooctanoic acid



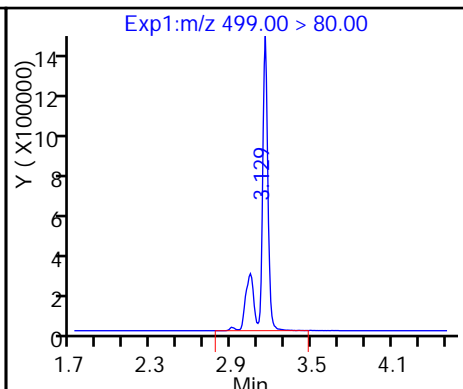
15 Perfluorooctanoic acid



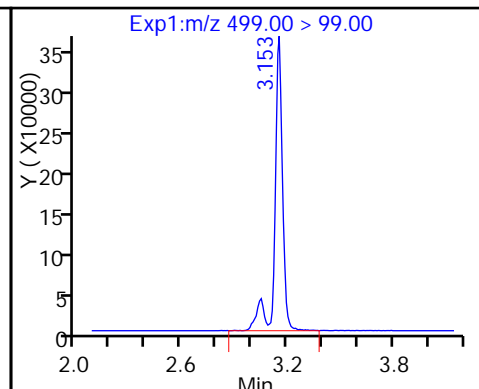
13 Perfluoroheptanesulfonic Acid



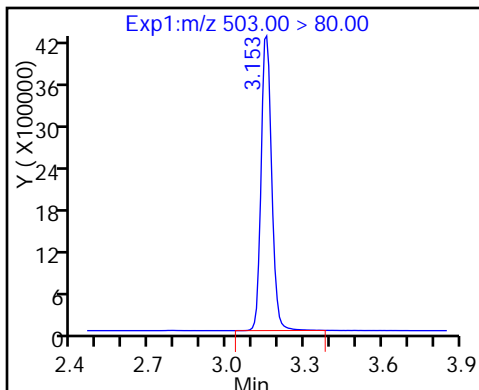
18 Perfluorooctane sulfonic acid



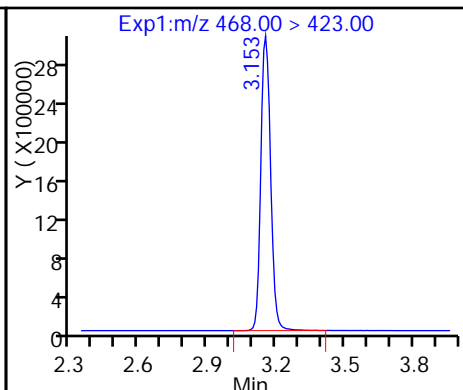
18 Perfluorooctane sulfonic acid



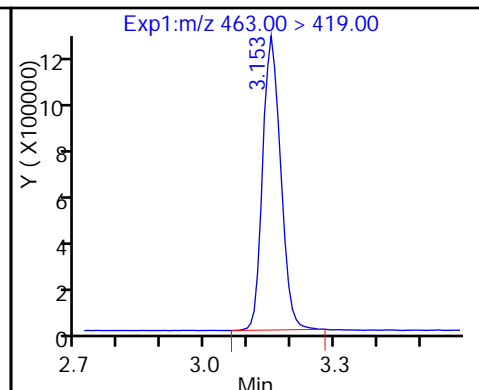
D 17 13C4 PFOS



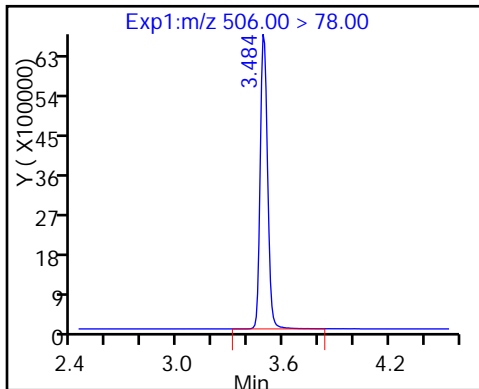
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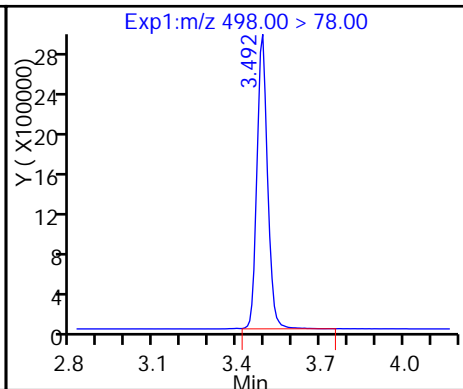
20 Perfluorononanoic acid



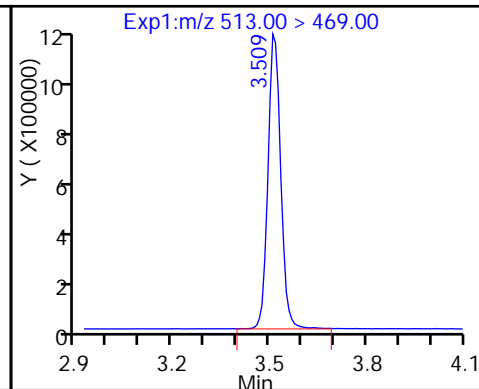
D 21 13C8 FOSA



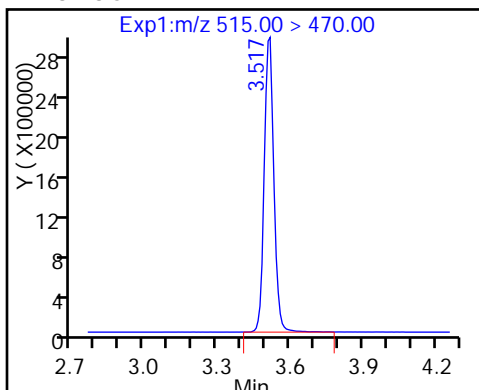
22 Perfluorooctane Sulfonamide



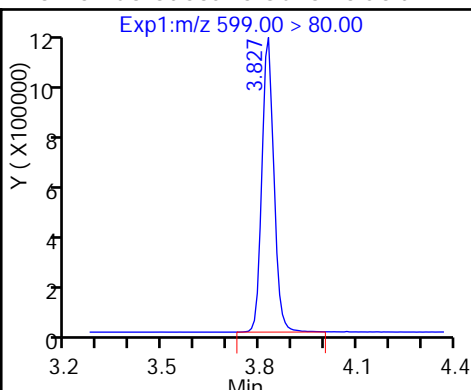
24 Perfluorodecanoic acid



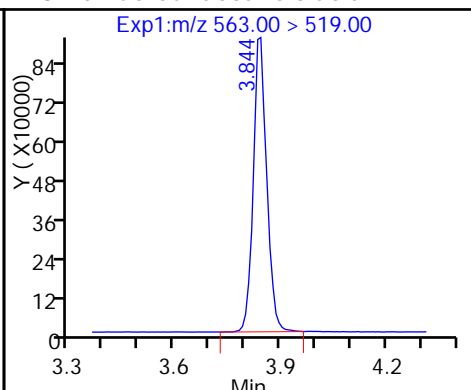
D 23 13C2 PFDA



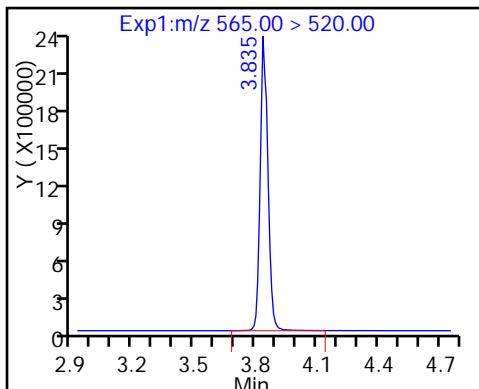
26 Perfluorodecane Sulfonic acid



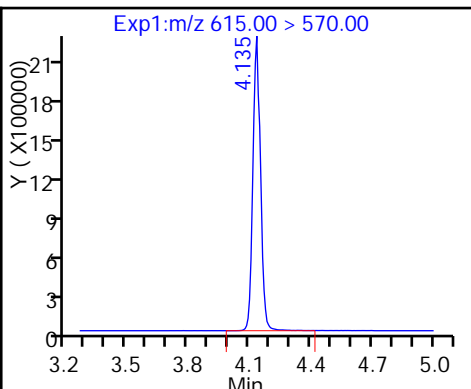
28 Perfluoroundecanoic acid



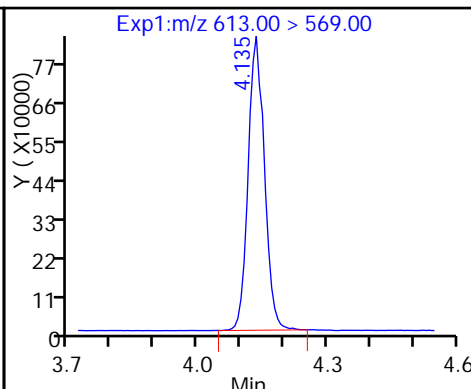
D 27 13C2 PFUa



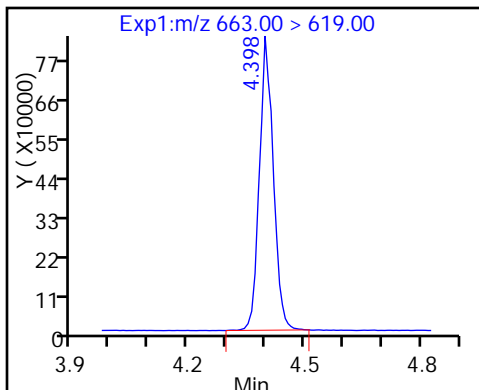
D 30 13C2 PFDa



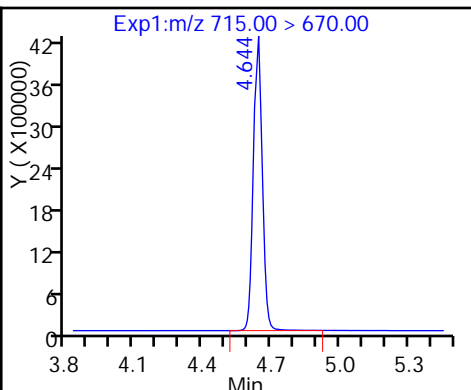
29 Perfluorododecanoic acid



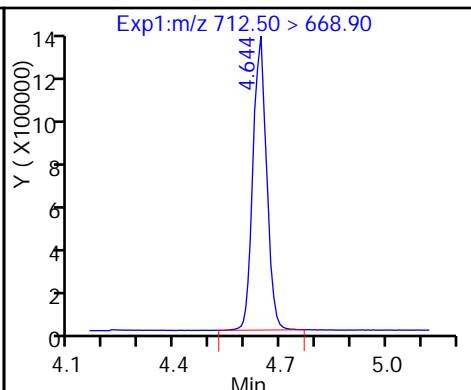
31 Perfluorotridecanoic acid



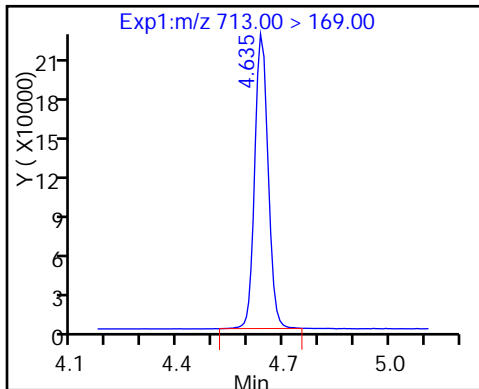
D 32 13C2-PFTeDA



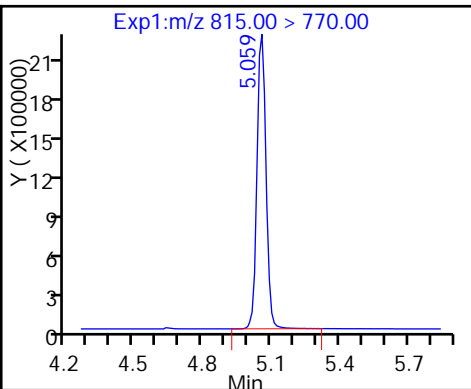
33 Perfluorotetradecanoic acid



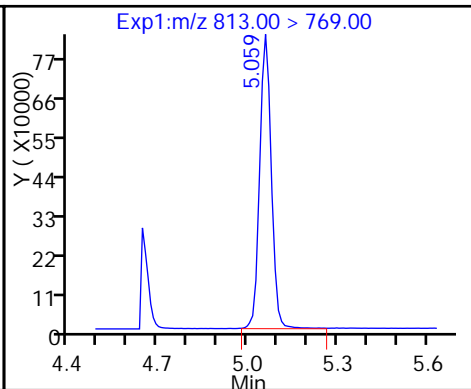
33 Perfluorotetradecanoic acid



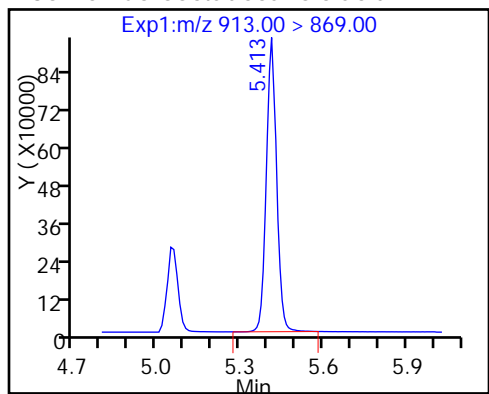
D 34 13C2-PFHxDA



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	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	13161065	51.1		102	158308	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.848	1.848	0.0	21559838	47.1		107		
	298.90 > 99.00	1.848	1.848	0.0	10128422		2.13(0.00-0.00)	107		
7 Perfluorohexanoic acid	313.00 > 269.00	2.098	2.096	0.002	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	10799449	51.1		102	85838	
9 Perfluorohexanesulfonic acid	399.00 > 80.00	2.446	2.431	0.015	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 PFDoA										
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

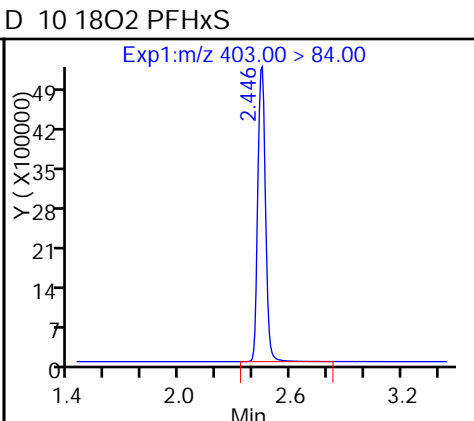
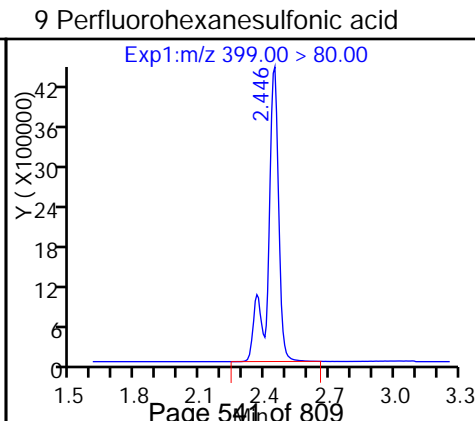
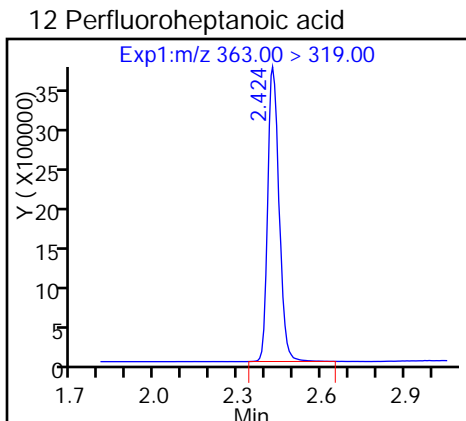
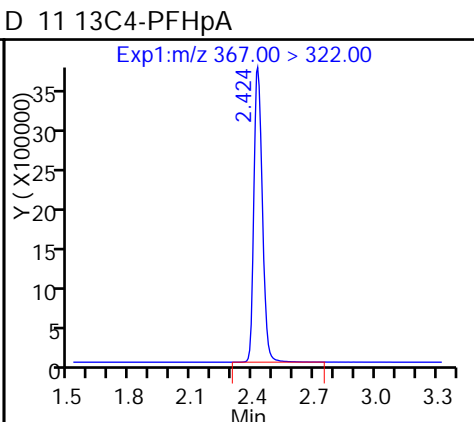
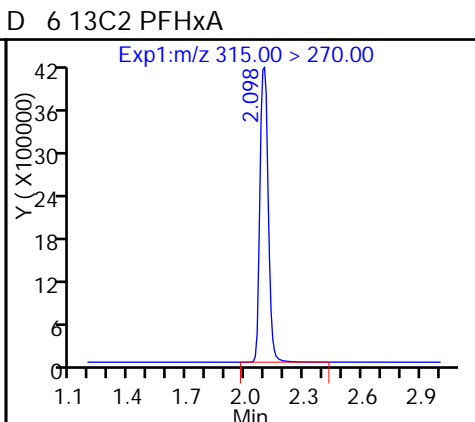
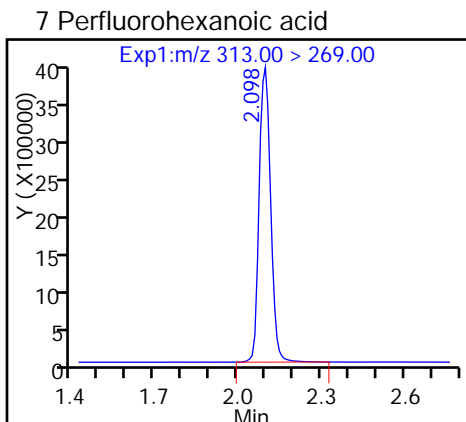
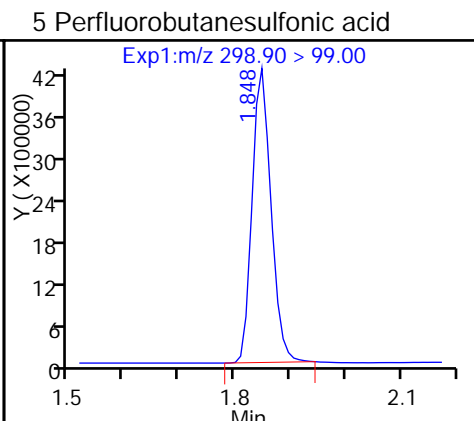
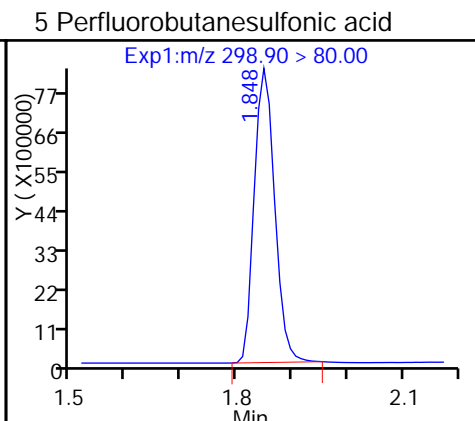
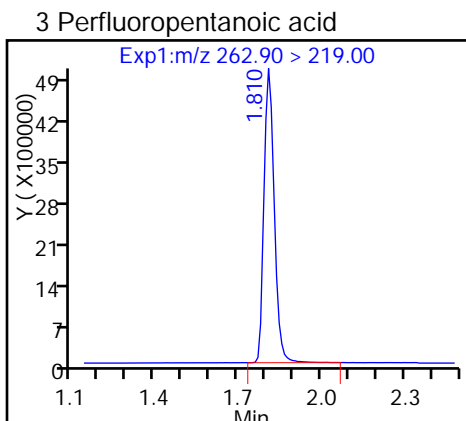
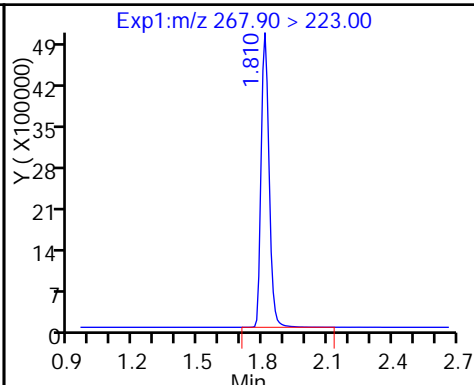
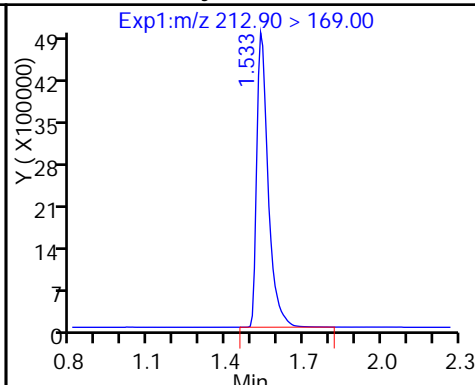
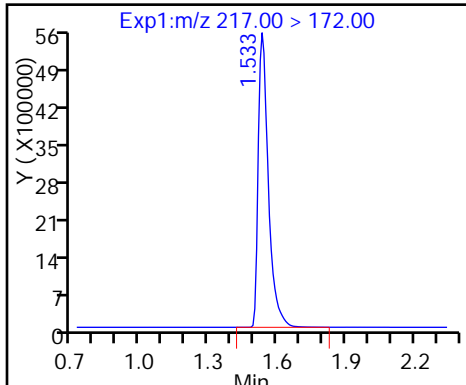
Method: A8_N

Limit Group: LC PFC_DOD ICAL

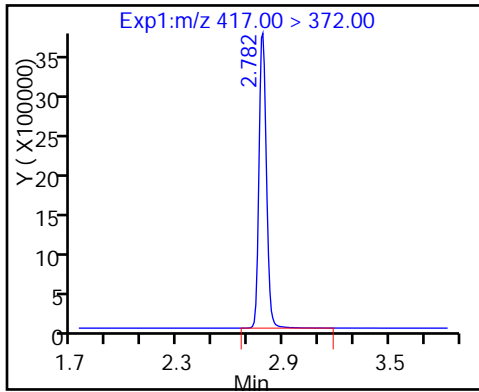
D 2 13C4 PFBA

1 Perfluorobutyric acid

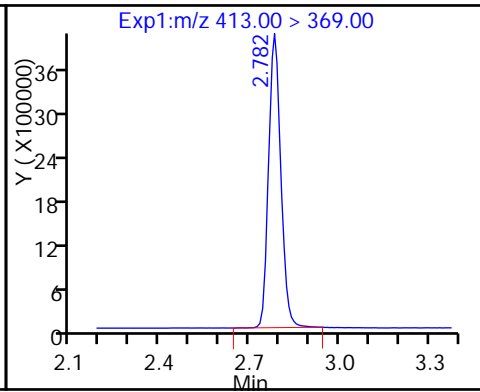
D 4 13C5-PFPeA



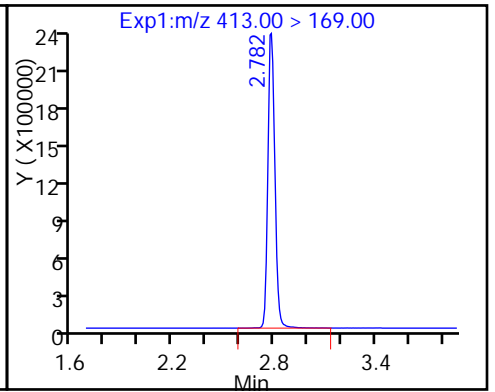
D 14 13C4 PFOA



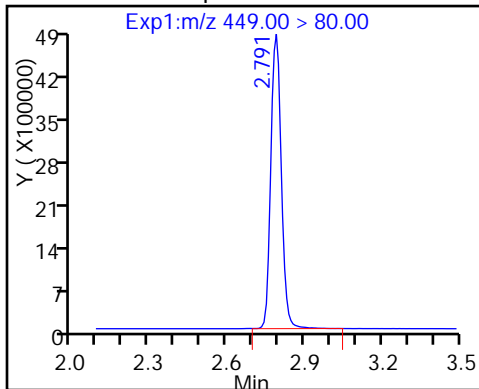
15 Perfluorooctanoic acid



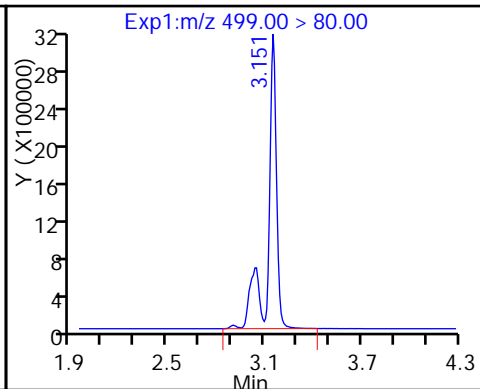
15 Perfluorooctanoic acid



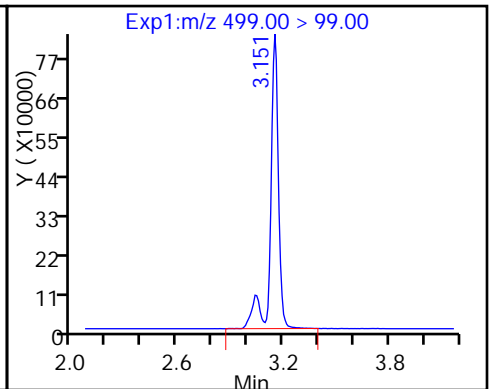
13 Perfluoroheptanesulfonic Acid



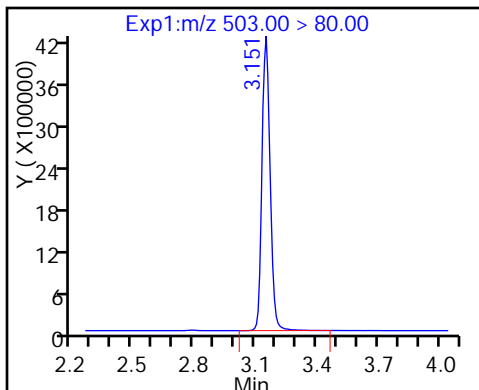
18 Perfluorooctane sulfonic acid



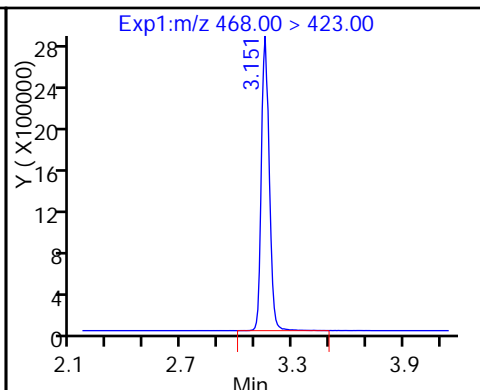
18 Perfluorooctane sulfonic acid



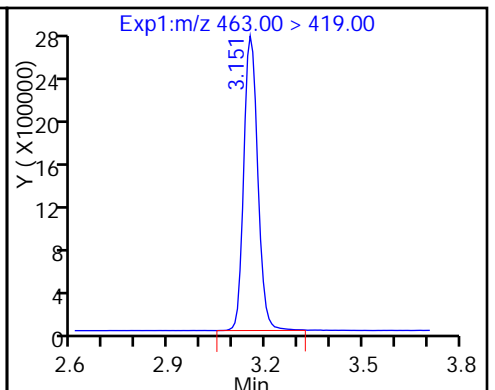
D 17 13C4 PFOS



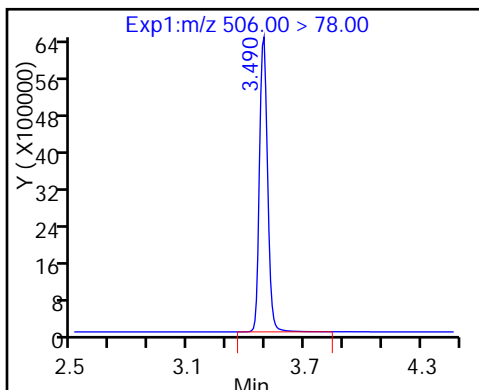
D 19 13C5 PFNA



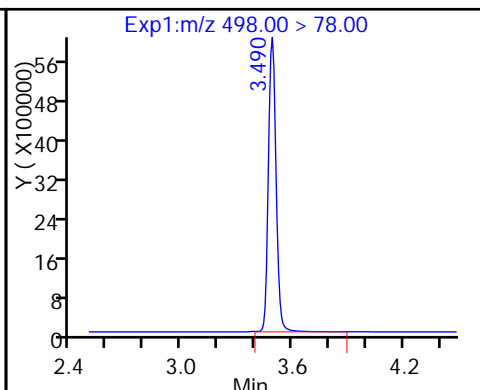
20 Perfluorononanoic acid



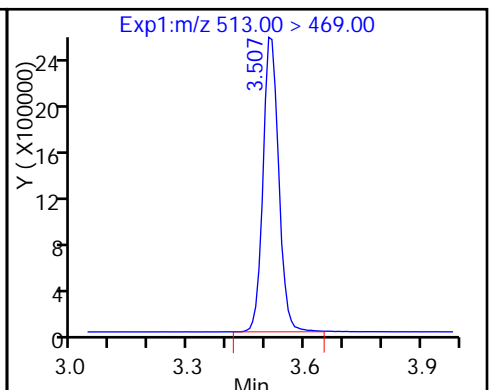
D 21 13C8 FOSA



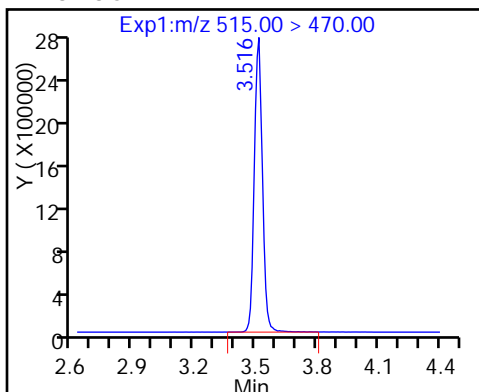
22 Perfluorooctane Sulfonamide



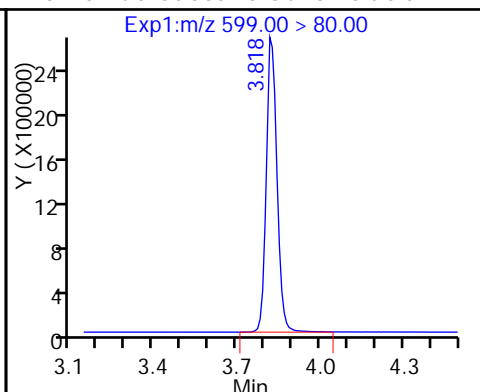
24 Perfluorodecanoic acid



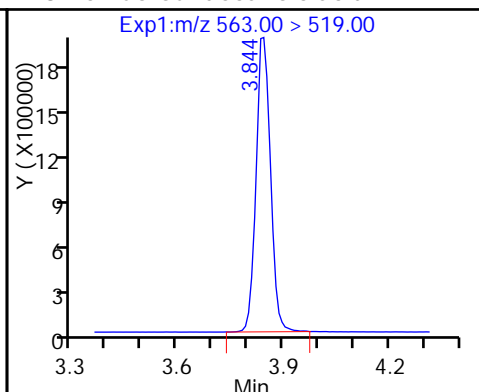
D 23 13C2 PFDA



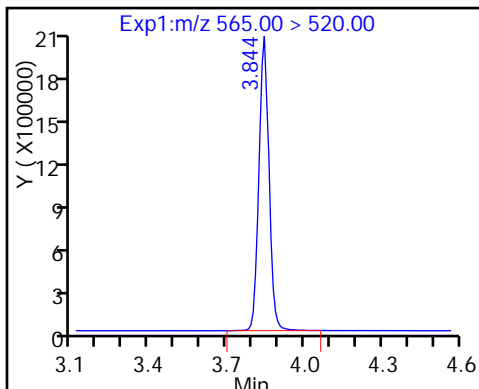
26 Perfluorodecane Sulfonic acid



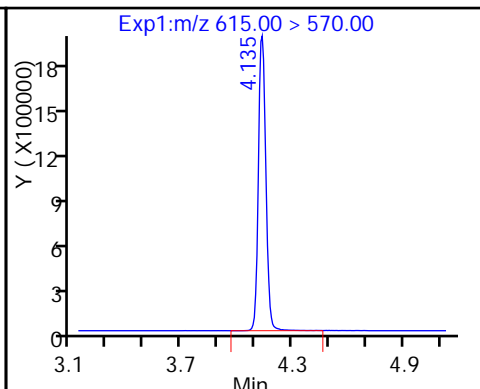
28 Perfluoroundecanoic acid



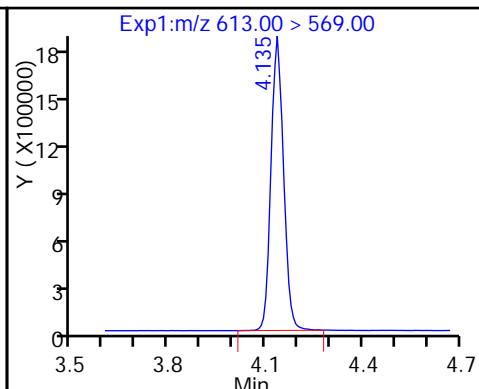
D 27 13C2 PFUa



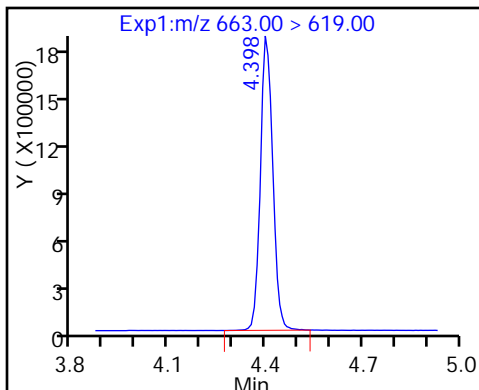
D 30 13C2 PFDa



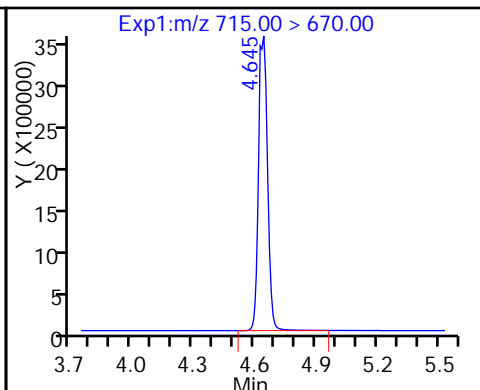
29 Perfluorododecanoic acid



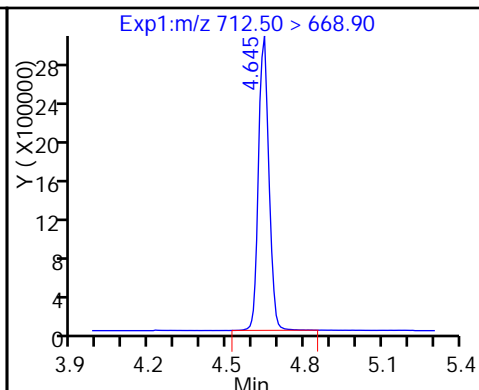
31 Perfluorotridecanoic acid



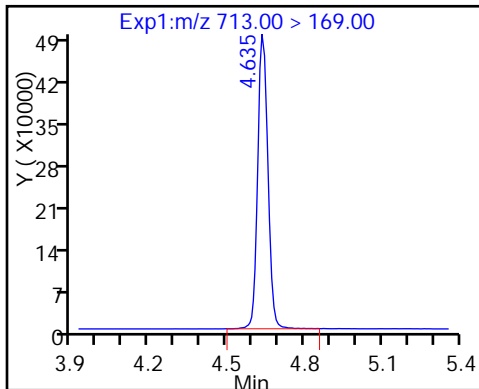
D 32 13C2-PFTeDA



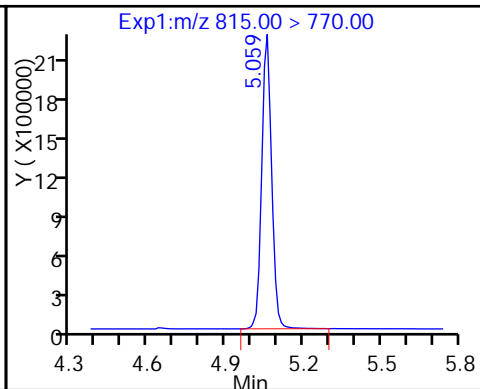
33 Perfluorotetradecanoic acid



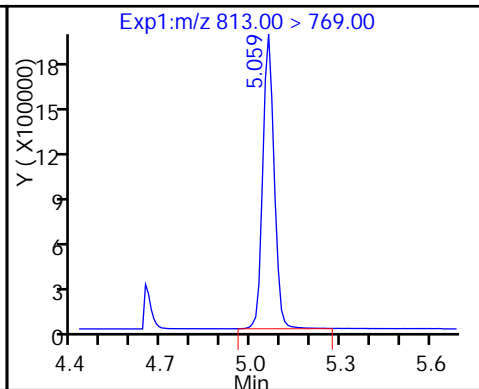
33 Perfluorotetradecanoic acid



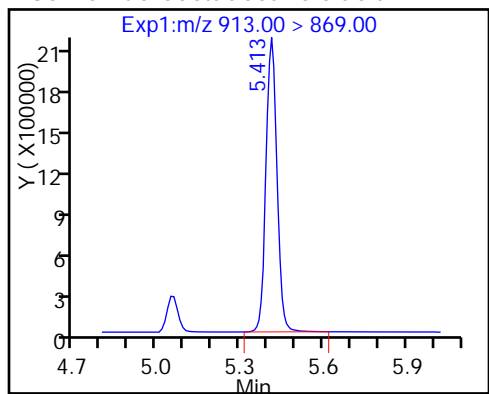
D 34 13C2-PFHxDA



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 PFDoA										
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

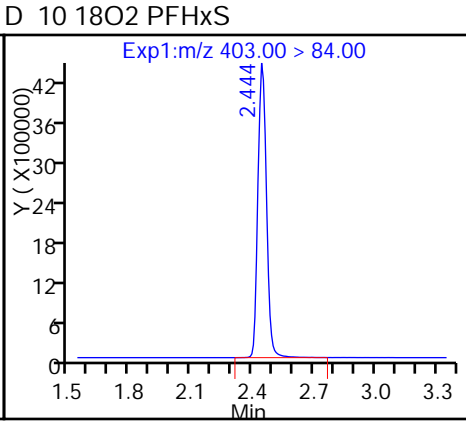
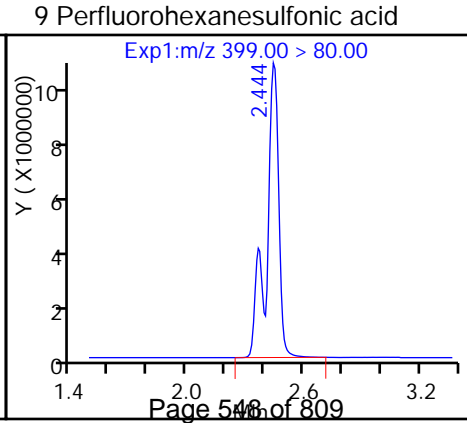
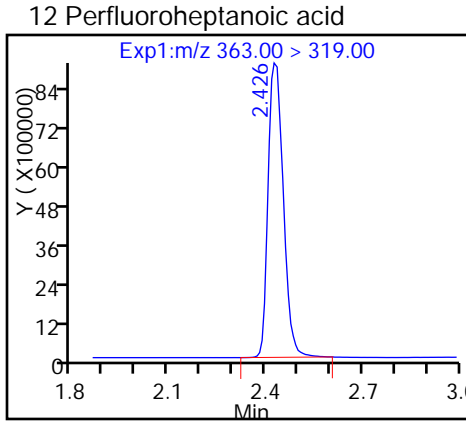
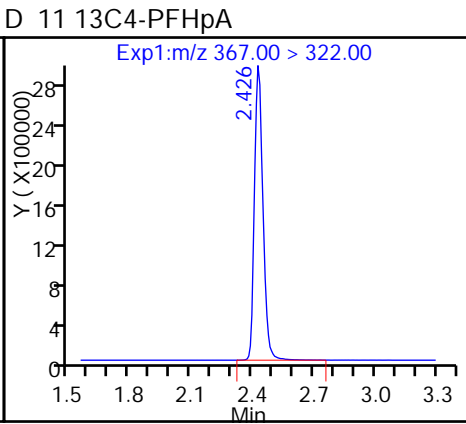
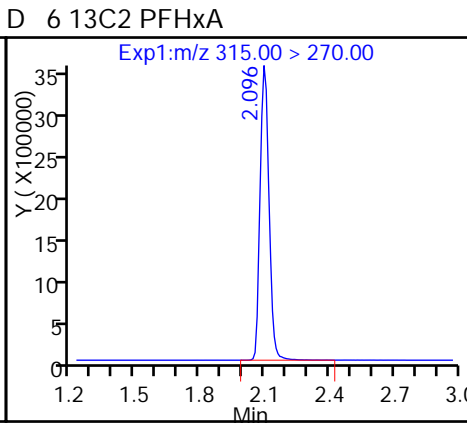
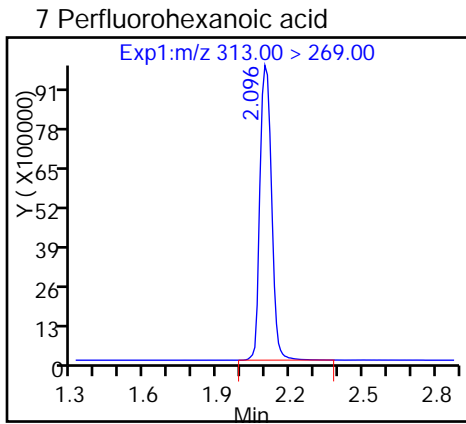
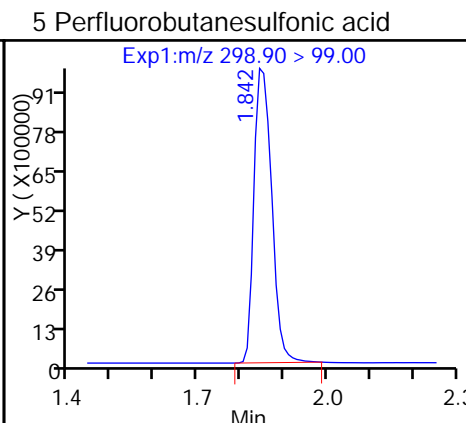
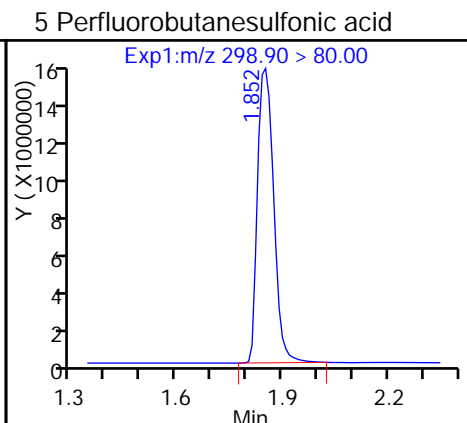
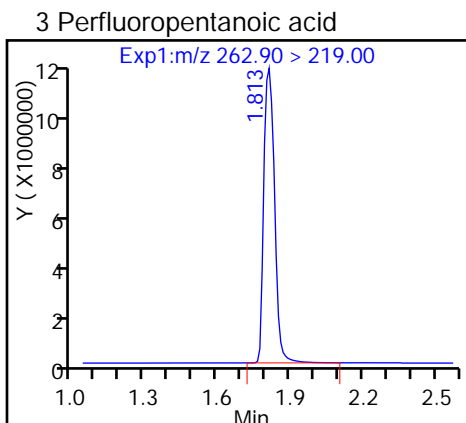
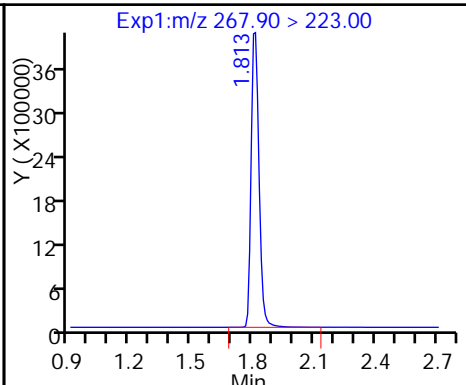
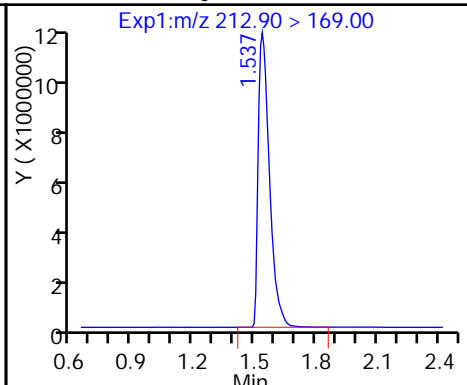
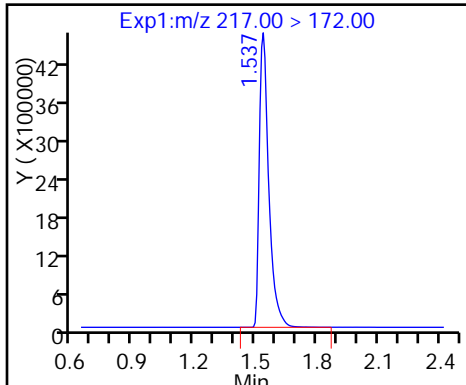
Method: A8_N

Limit Group: LC PFC_DOD ICAL

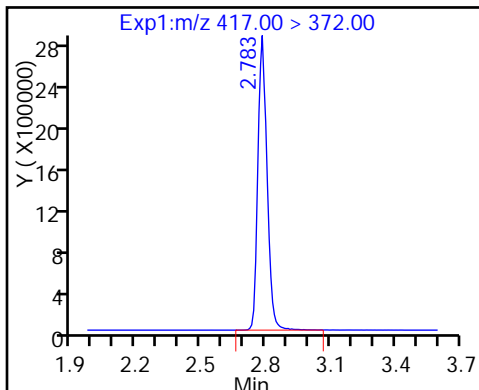
D 2 13C4 PFBA

1 Perfluorobutyric acid

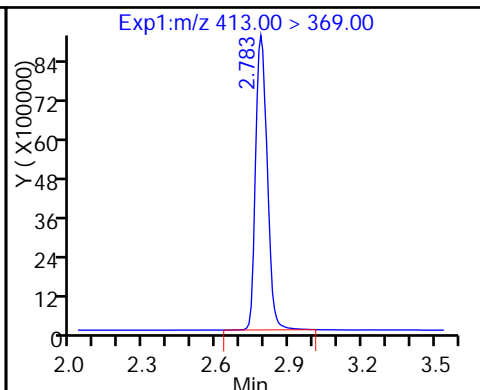
D 4 13C5-PFPeA



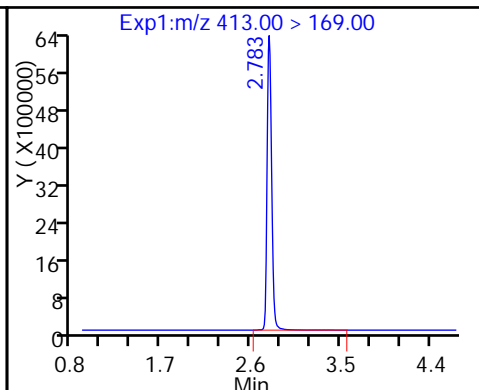
D 14 13C4 PFOA



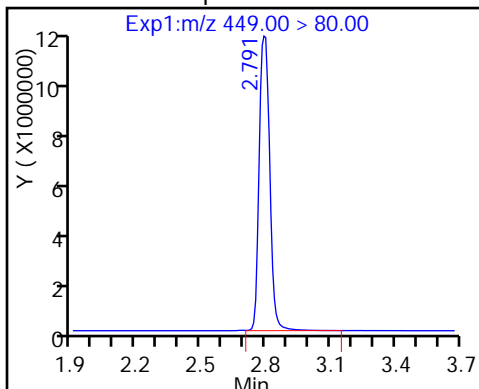
15 Perfluorooctanoic acid



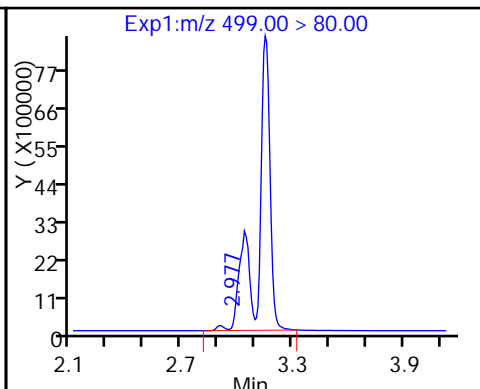
15 Perfluorooctanoic acid



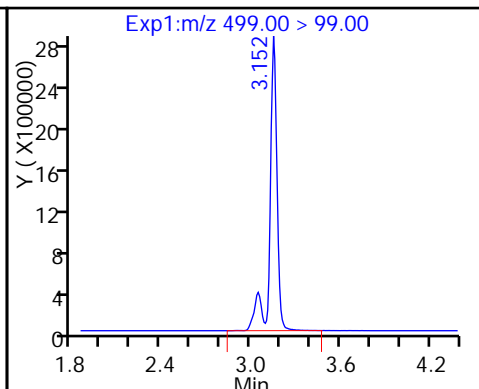
13 Perfluoroheptanesulfonic Acid



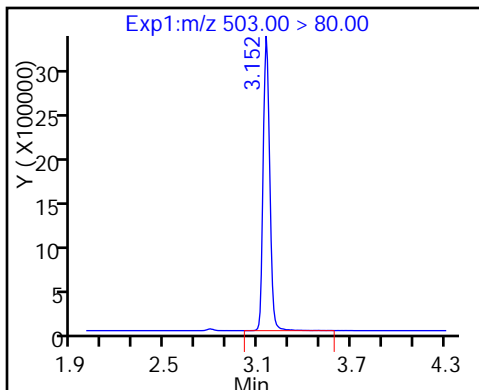
18 Perfluorooctane sulfonic acid



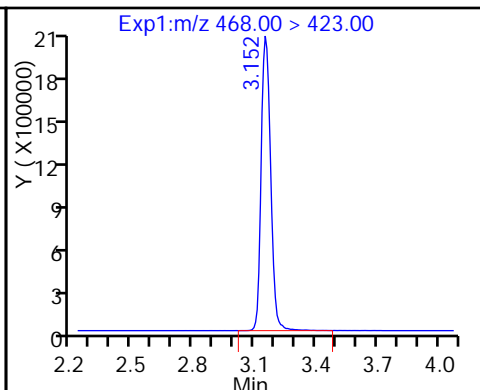
18 Perfluorooctane sulfonic acid



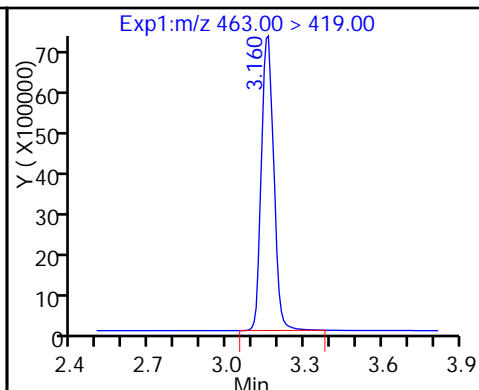
D 17 13C4 PFOS



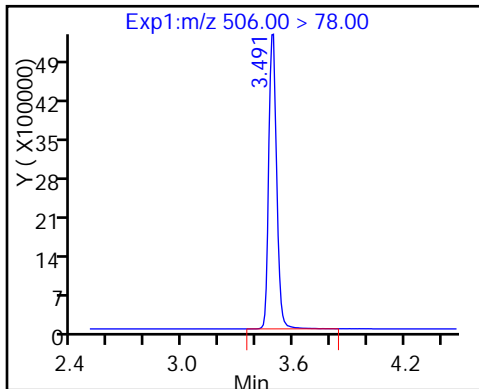
D 19 13C5 PFNA



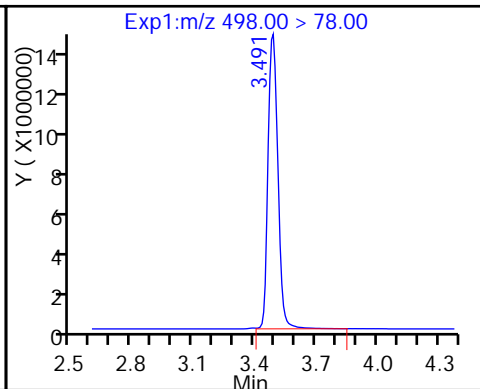
20 Perfluorononanoic acid



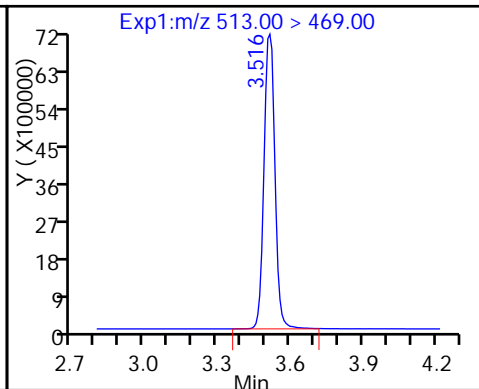
D 21 13C8 FOSA



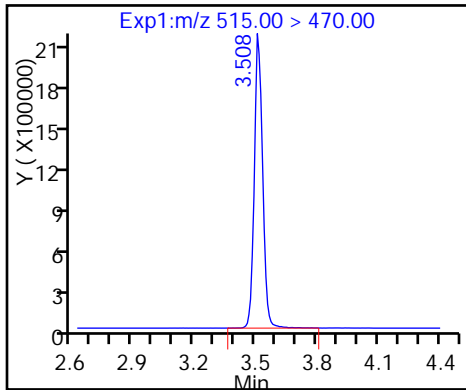
22 Perfluorooctane Sulfonamide



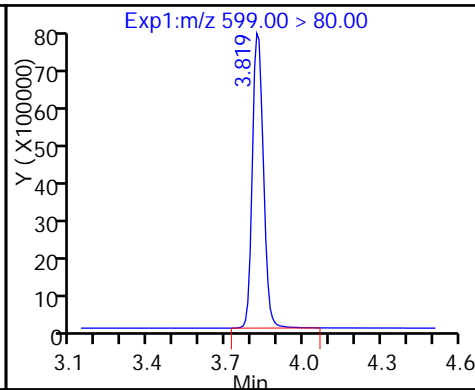
24 Perfluorodecanoic acid



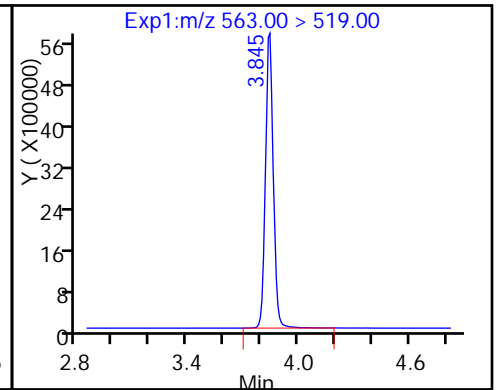
D 23 13C2 PFDA



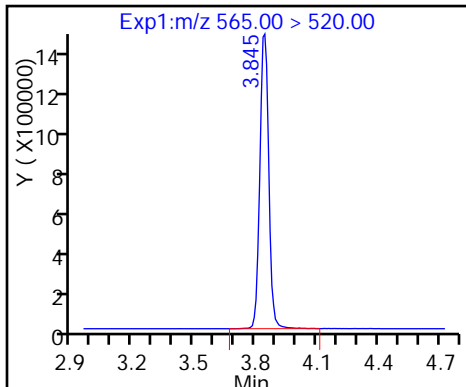
26 Perfluorodecane Sulfonic acid



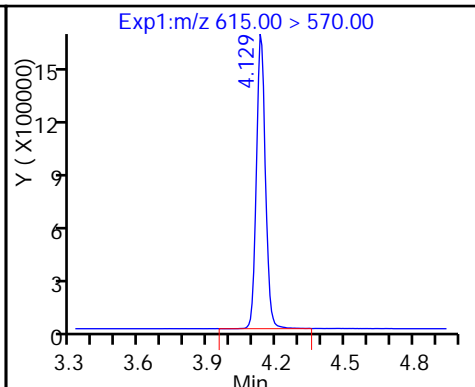
28 Perfluoroundecanoic acid



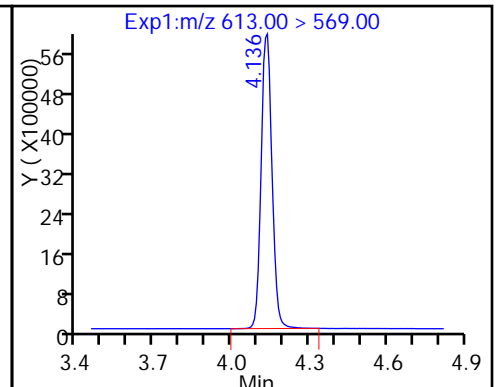
D 27 13C2 PFUa



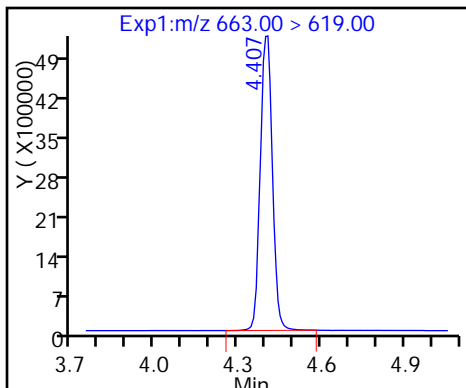
D 30 13C2 PFDa



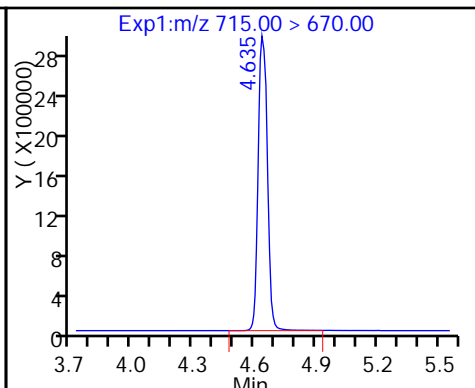
29 Perfluorododecanoic acid



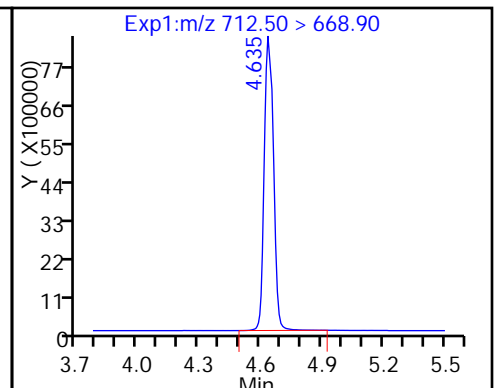
31 Perfluorotridecanoic acid



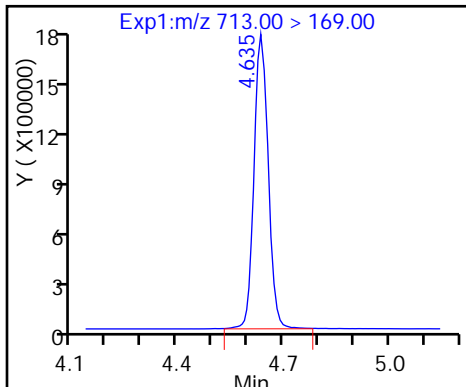
D 32 13C2-PFTeDA



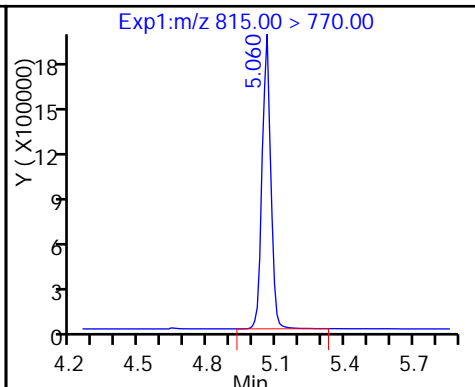
33 Perfluorotetradecanoic acid



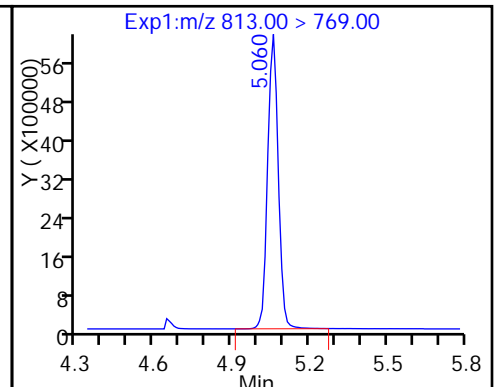
33 Perfluorotetradecanoic acid



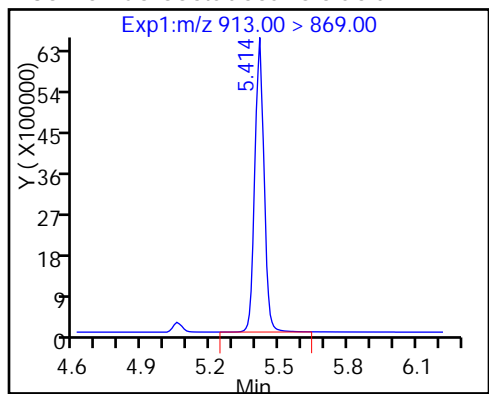
D 34 13C2-PFHxDA



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	48011	0.4779	1.000	101		
43 Sodium 1H,1H,2H,2H-perfluorooctane	527.00 > 507.00	3.511	3.511	0.0	39808	0.4671	1.000	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	29823	0.4637	1.000	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	29965	0.4858	1.005	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	36069	0.4978	1.000	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	30993	0.4729	1.000	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

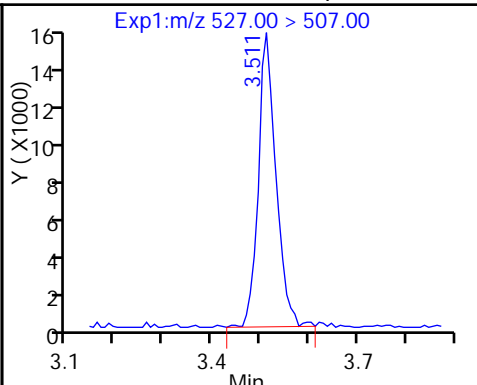
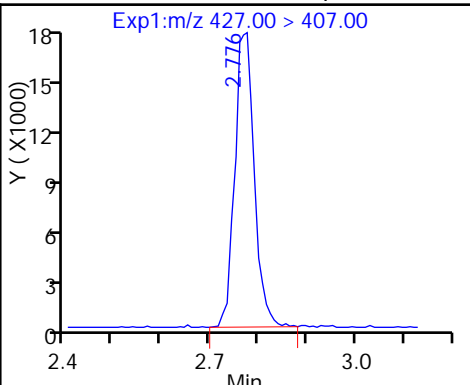
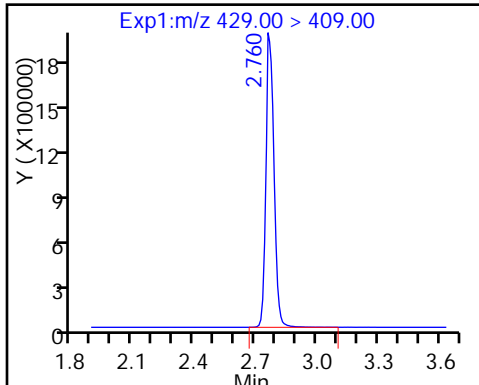
Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 47 M2-6:2FTS

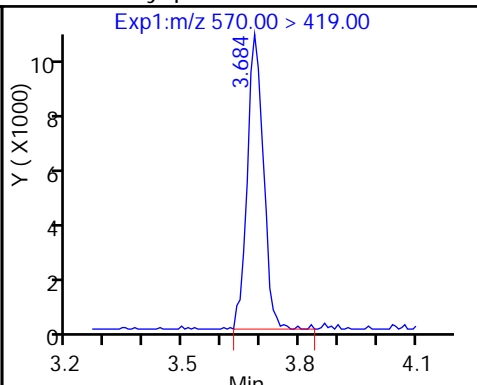
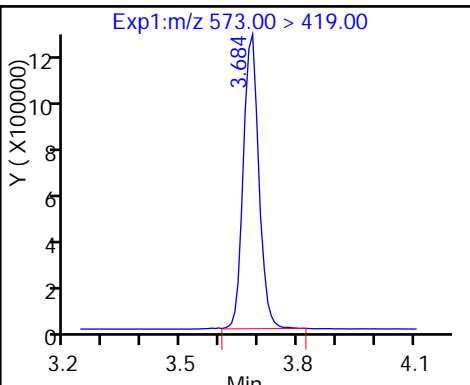
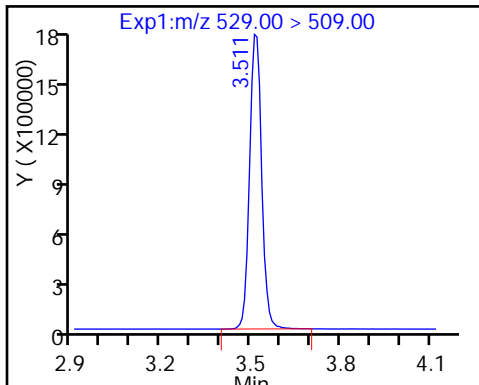
48 Sodium 1H,1H,2H,2H-perfluorooctane sulfonamide



D 42 M2-8:2FTS

D 45 d3-NMeFOSAA

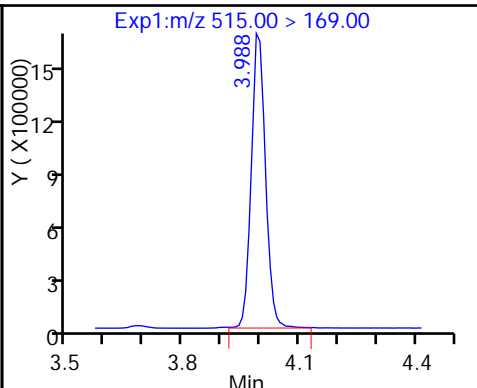
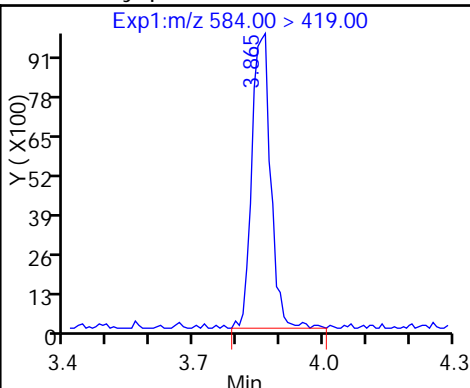
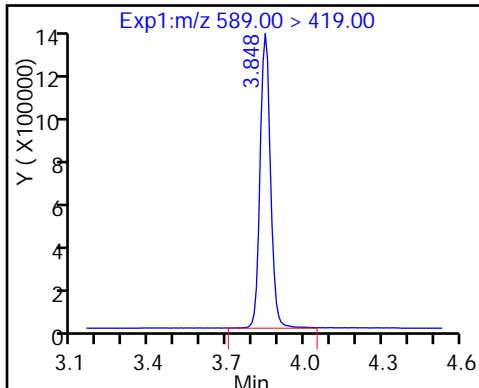
44 N-methyl perfluorooctane sulfonamide



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamide

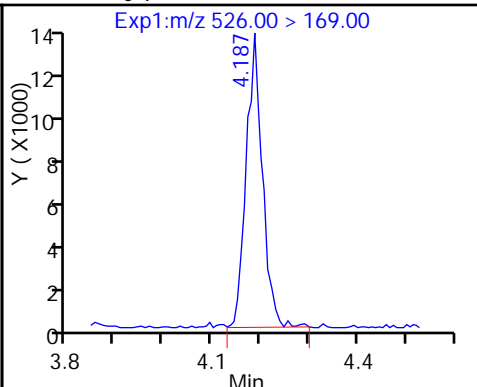
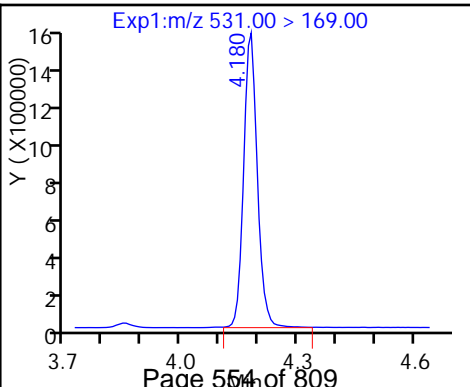
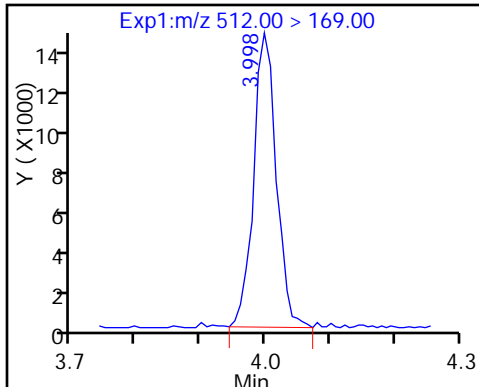
D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonamide



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	106947	1.12	1.000	118		
43 Sodium 1H,1H,2H,2H-perfluorooctane	527.00 > 507.00	3.502	3.511	-0.009	75731	0.9308	0.998	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	57389	0.9114	1.000	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	53623	0.9000	1.005	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	70049	0.9013	1.000	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	62962	0.8865	1.000	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

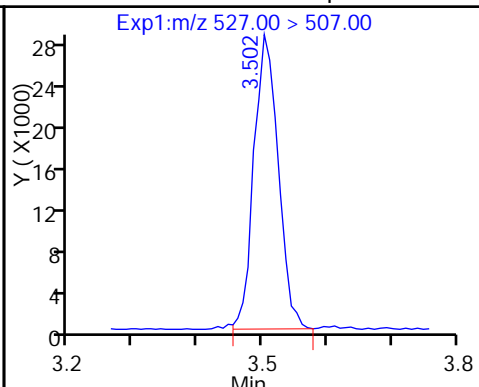
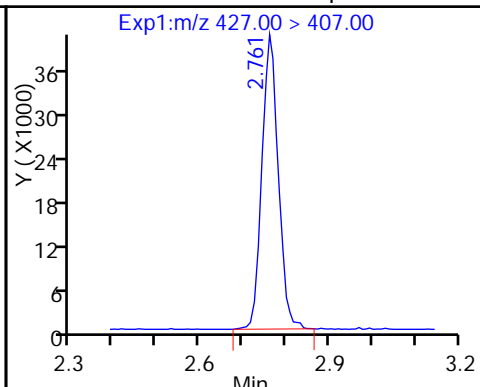
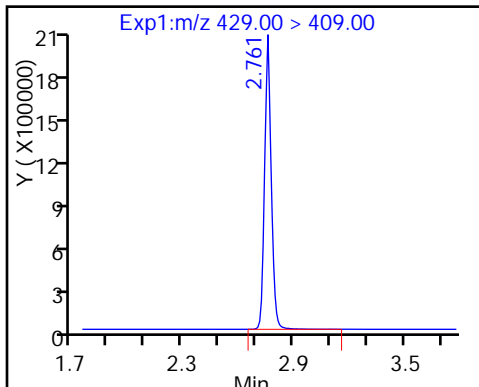
Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 47 M2-6:2FTS

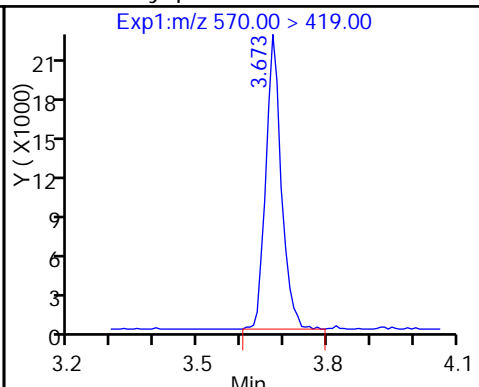
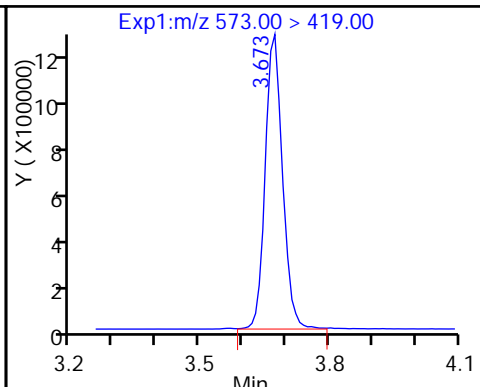
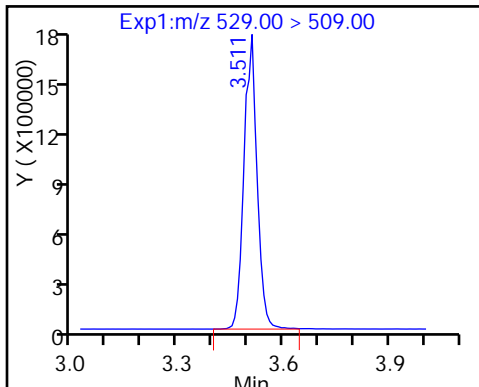
48 Sodium 1H,1H,2H,2H-perfluorooctane-43 Sodium 1H,1H,2H,2H-perfluorooctane



D 42 M2-8:2FTS

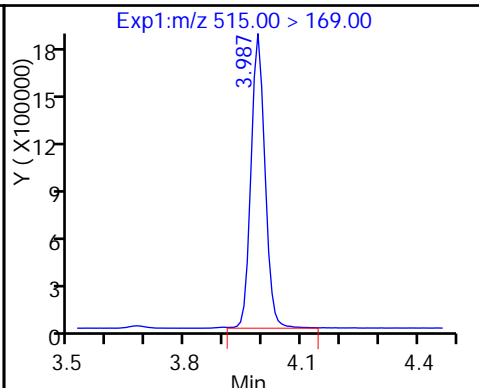
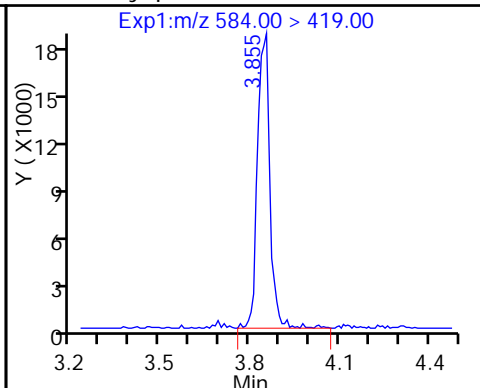
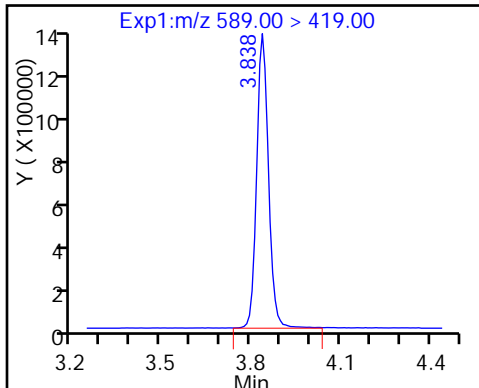
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

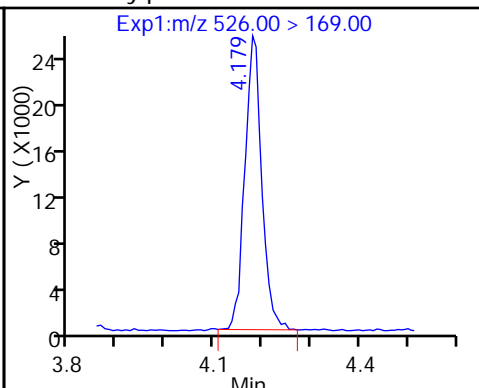
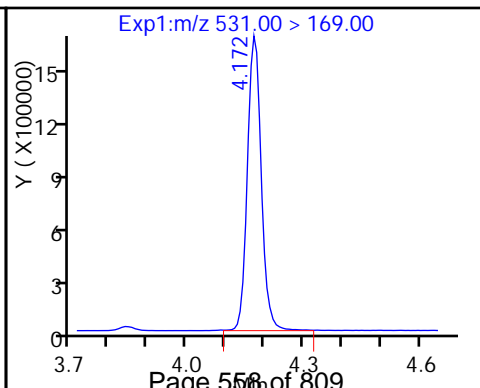
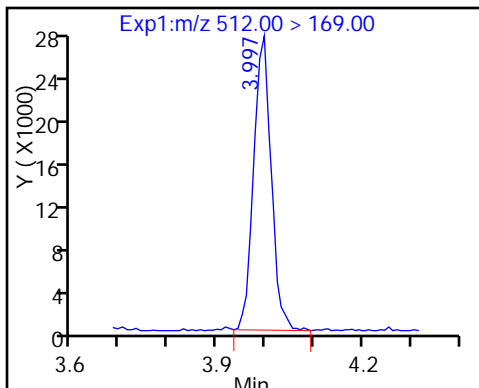
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



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	405060	3.87		81.7		
43 Sodium 1H,1H,2H,2H-perfluorooctane	527.00 > 507.00	3.511	3.511	0.0	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	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	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	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	326877	4.15		82.9		

Reagents:

LCPFC2-L3_00002

Amount Added: 1.00

Units: mL

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

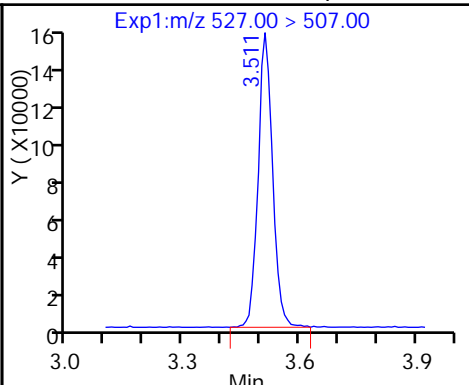
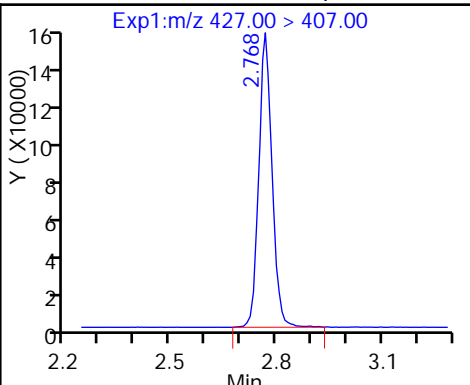
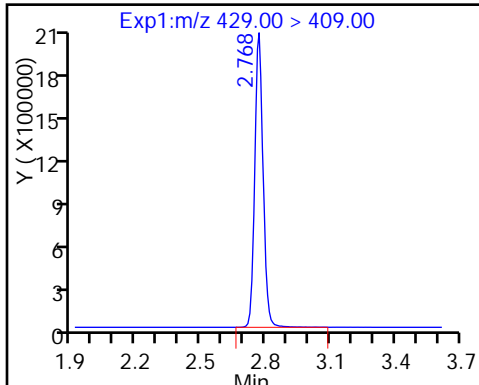
Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 47 M2-6:2FTS

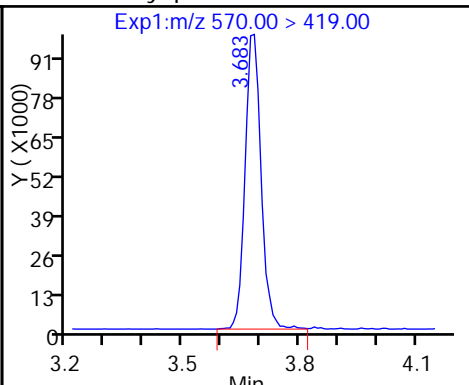
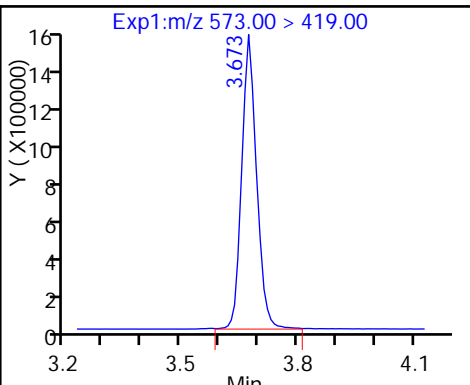
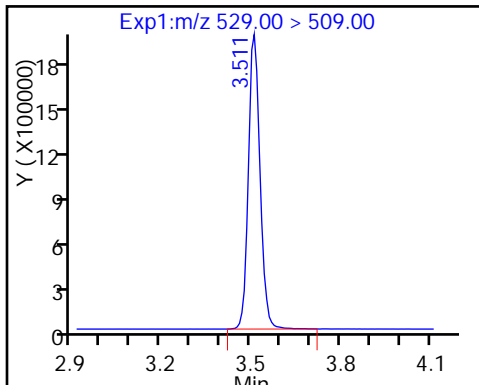
48 Sodium 1H,1H,2H,2H-perfluorooctane-4,3 Sodium 1H,1H,2H,2H-perfluorooctane



D 42 M2-8:2FTS

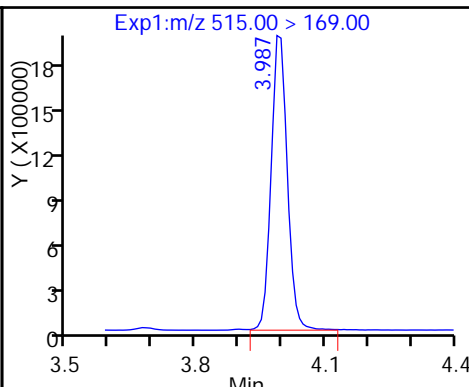
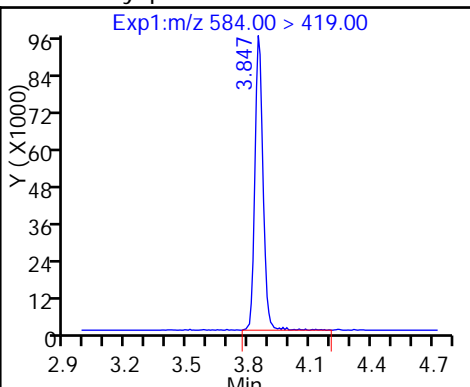
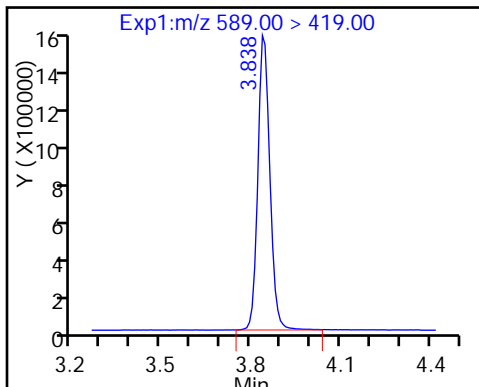
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonami



D 46 d5-NEtFOSAA

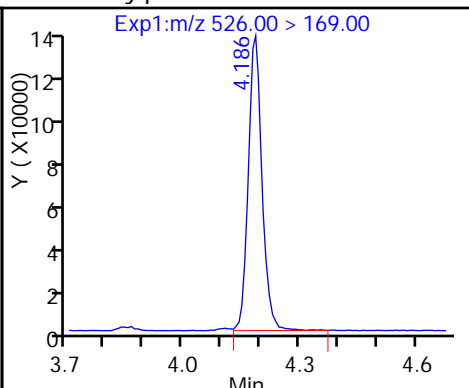
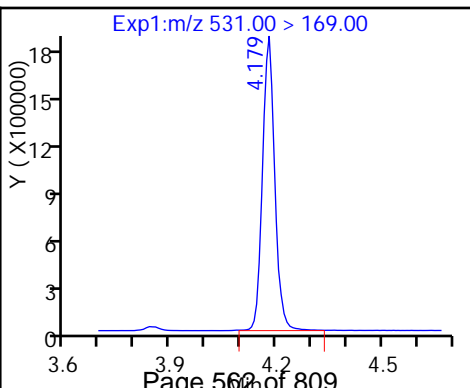
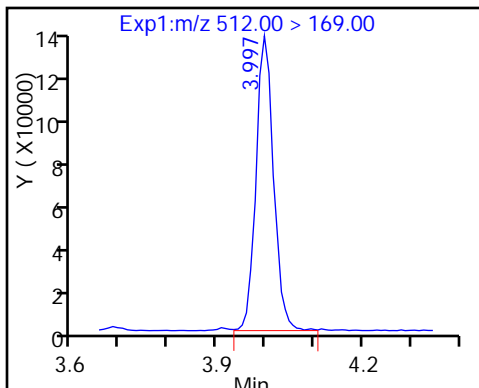
49 N-ethyl perfluorooctane sulfonamid D 52 d-N-MeFOSA-M



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	2416384	19.9		105		
43 Sodium 1H,1H,2H,2H-perfluorooctane	527.00 > 507.00	3.511	3.511	0.0	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	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	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	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	1813178	22.5		112		

Reagents:

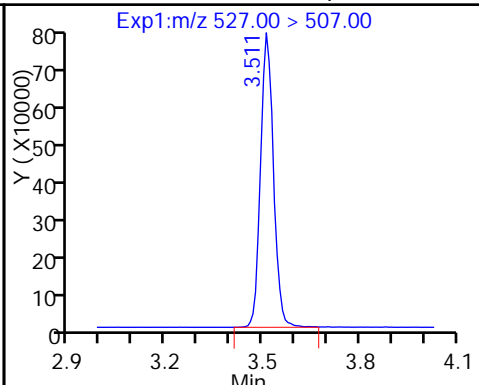
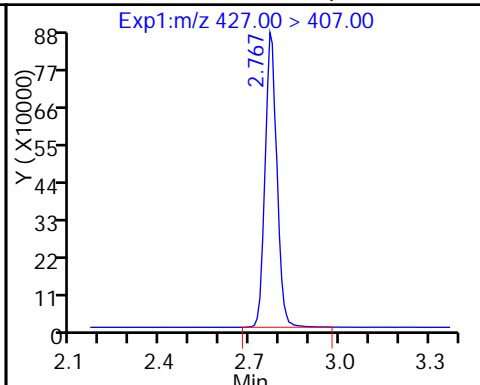
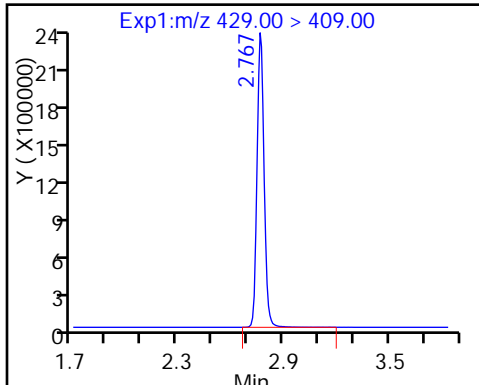
LCPFC2-L4_00003

Amount Added: 1.00

Units: mL

D 47 M2-6:2FTS

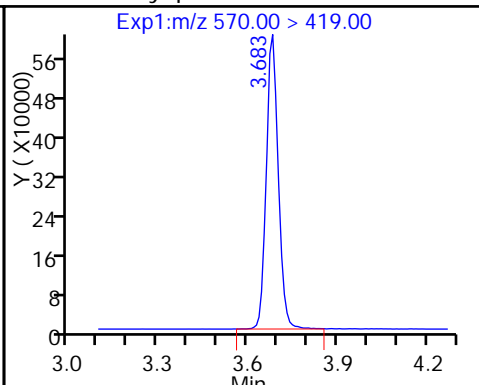
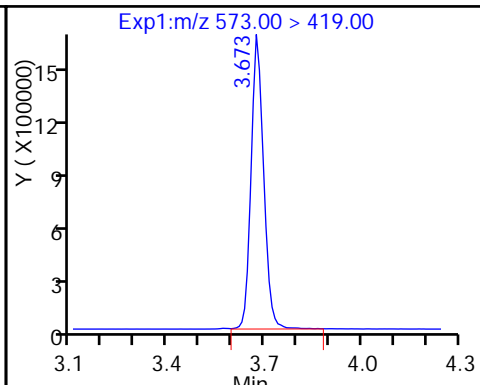
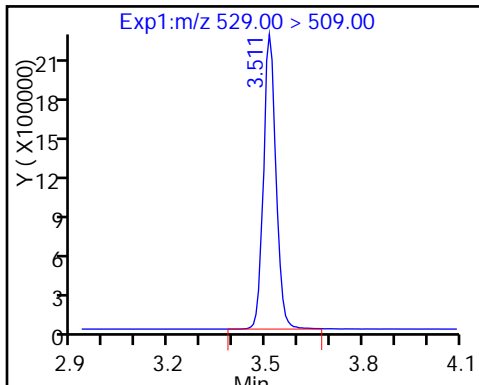
48 Sodium 1H,1H,2H,2H-perfluorooctane-4,4,4-trifluorobutanoate



D 42 M2-8:2FTS

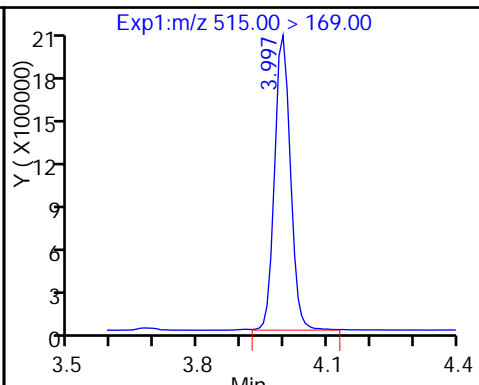
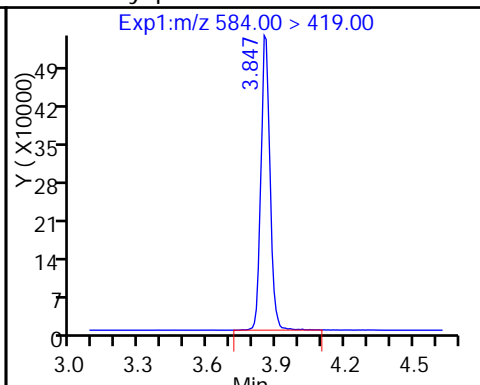
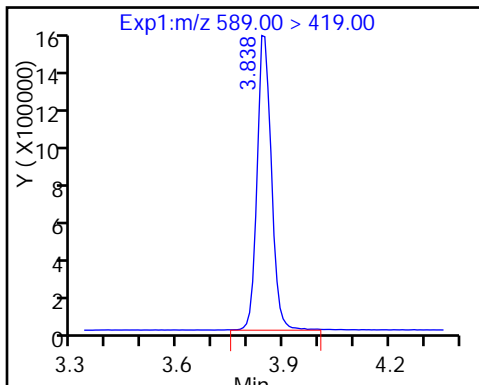
D 45 d3-NMeFOSAA

44 N-methyl perfluorooctane sulfonamide



D 46 d5-NEtFOSAA

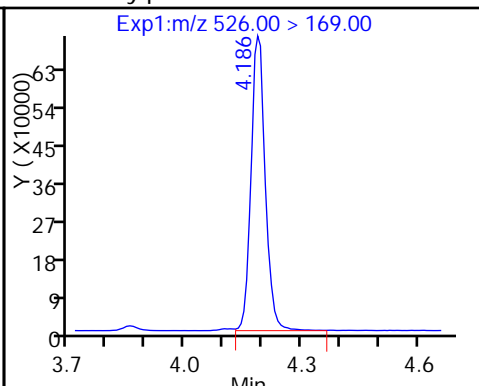
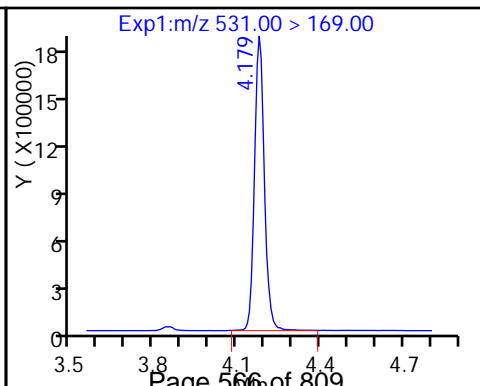
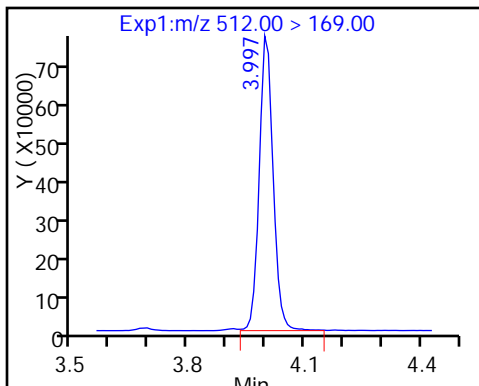
49 N-ethyl perfluorooctane sulfonamide D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonamide



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	5166665	52.3		110		
43 Sodium 1H,1H,2H,2H-perfluorooctane	527.00 > 507.00	3.512	3.511	0.001	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	3741936	61.8	1.003	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	3414301	61.8	1.002	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	4407328	58.3	1.000	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	4264314	59.5	1.000	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

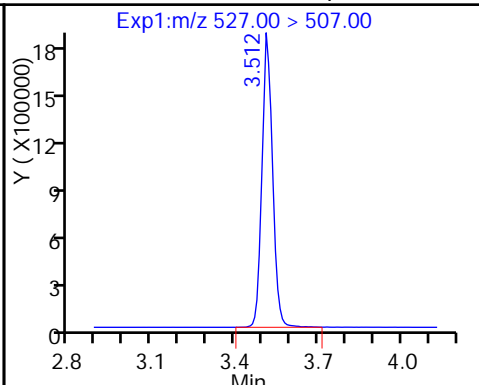
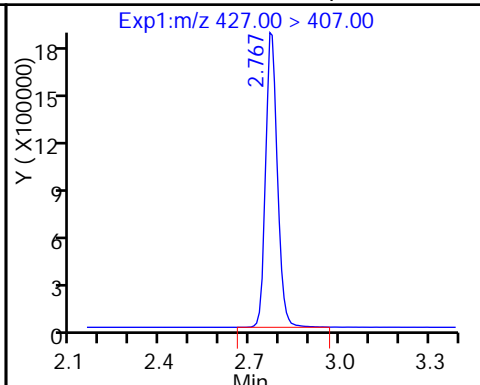
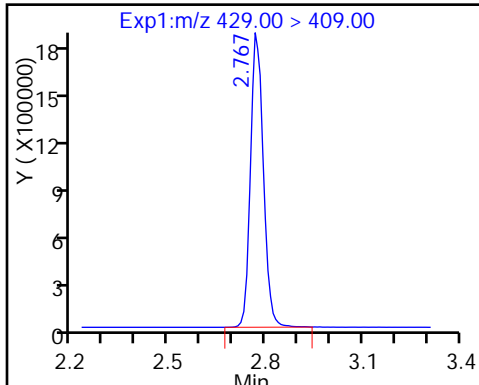
Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 47 M2-6:2FTS

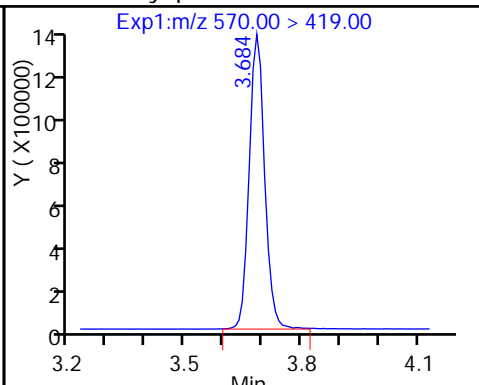
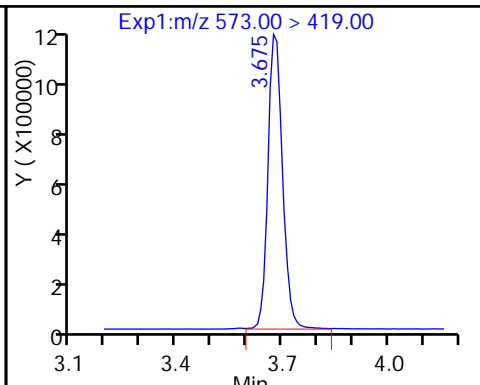
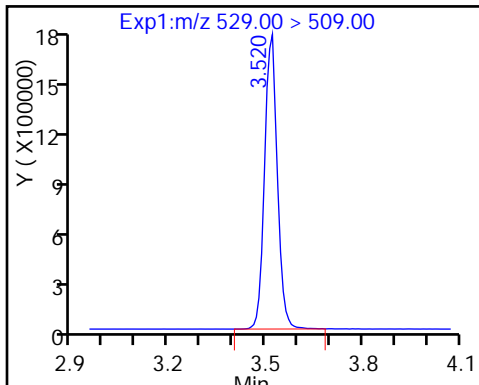
48 Sodium 1H,1H,2H,2H-perfluorooctane sulfonamide



D 42 M2-8:2FTS

D 45 d3-NMeFOSAA

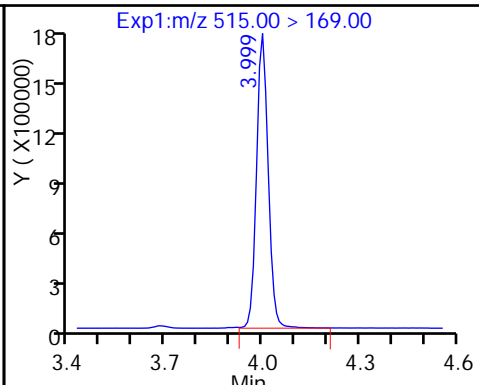
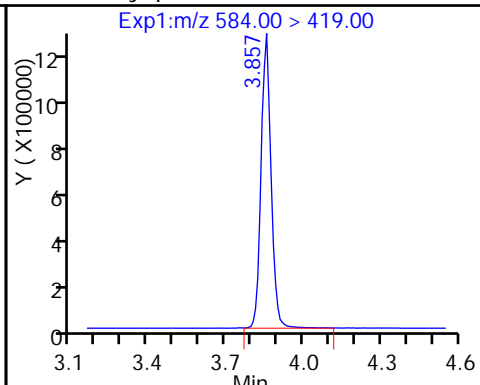
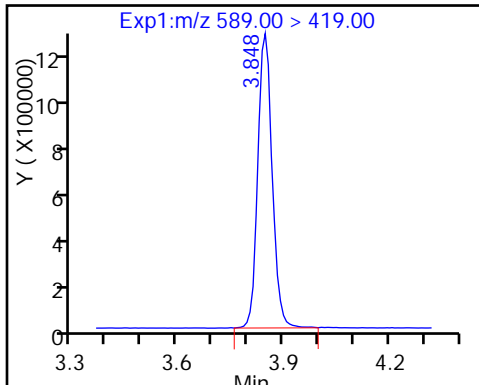
44 N-methyl perfluorooctane sulfonamide



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamide

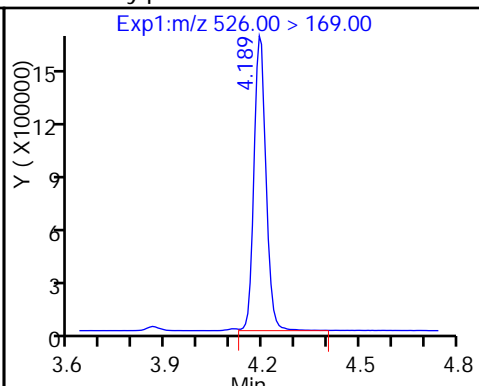
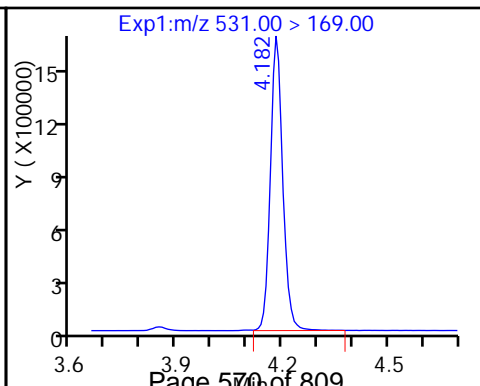
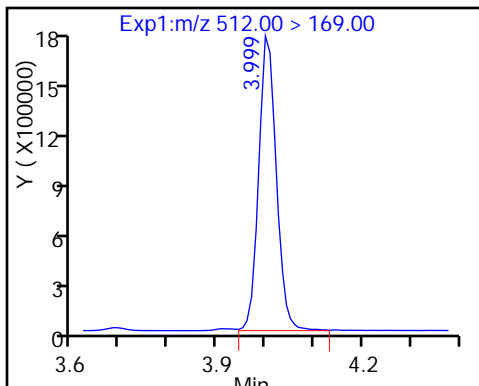
D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonamide



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	16907459	161.5		85.2		
43 Sodium 1H,1H,2H,2H-perfluorooctane	527.00 > 507.00	3.516	3.511	0.005	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	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	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	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	15780196	205.3		103		

Reagents:

LCPFC2-L6_00002

Amount Added: 1.00

Units: mL

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

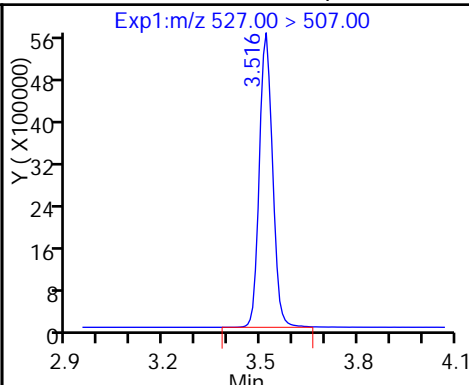
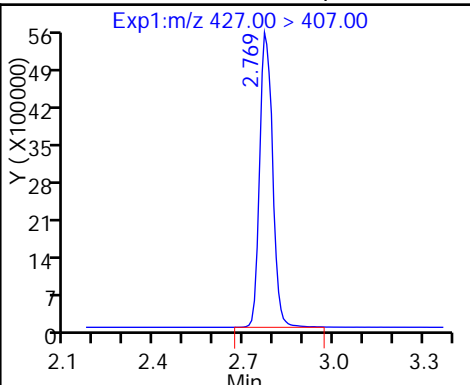
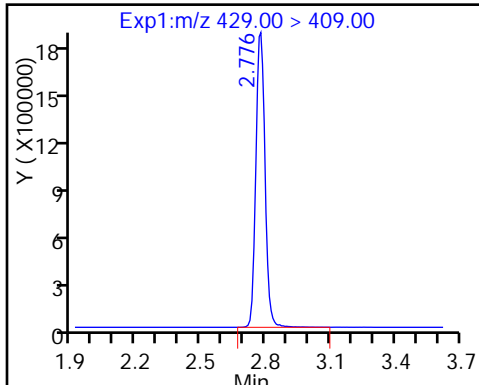
Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 47 M2-6:2FTS

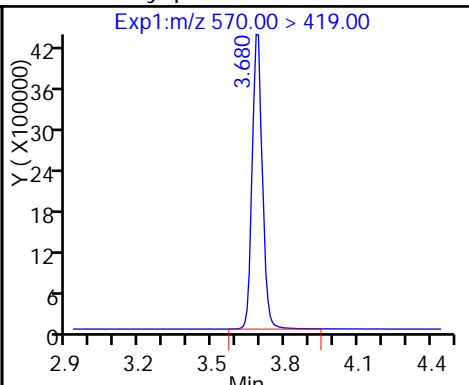
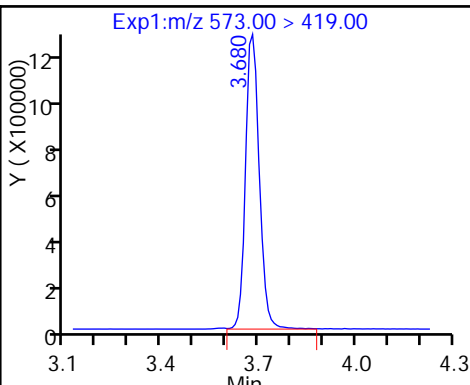
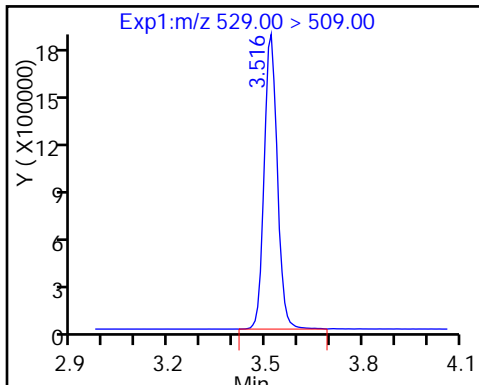
48 Sodium 1H,1H,2H,2H-perfluorooctane sulfonamide



D 42 M2-8:2FTS

D 45 d3-NMeFOSAA

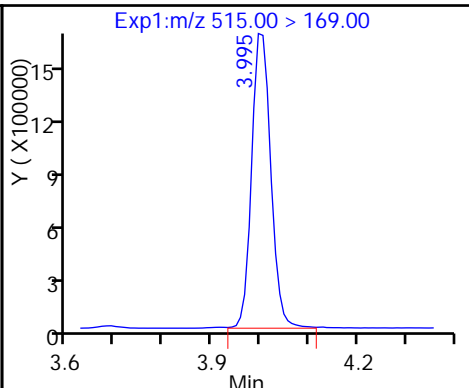
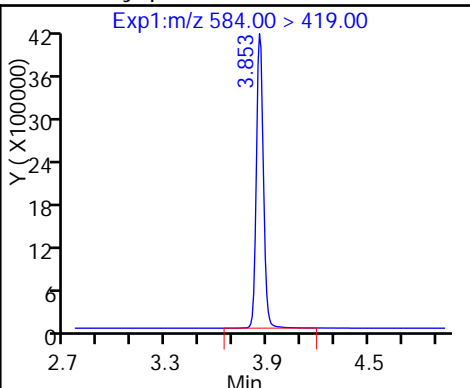
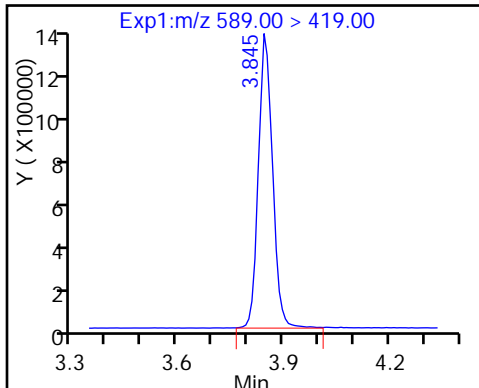
44 N-methyl perfluorooctane sulfonamide



D 46 d5-NEtFOSAA

49 N-ethyl perfluorooctane sulfonamide

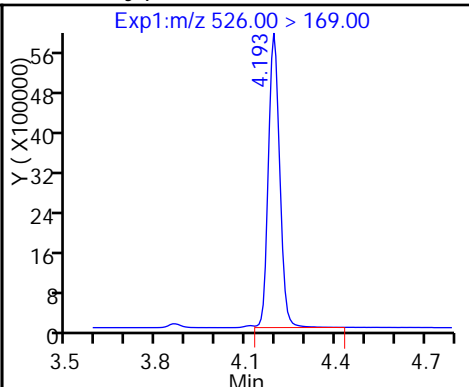
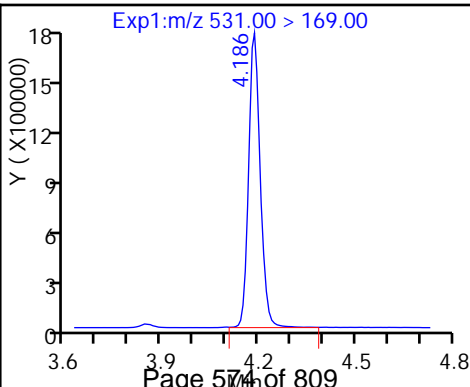
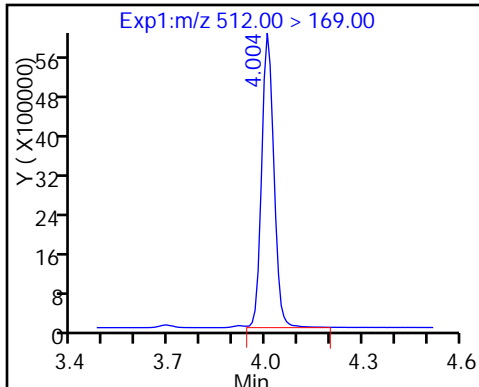
D 52 d-N-MeFOSA-M



54 MeFOSA

D 51 d-N-EtFOSA-M

53 N-ethylperfluoro-1-octanesulfonamide



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 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 Sulfonylamide (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	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	12149802	48.9			115067	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.848	1.848	0.0	20951066	46.2				
	298.90 > 99.00	1.848	1.848	0.0	9653760		2.17(0.00-0.00)			
7 Perfluorohexanoic acid	313.00 > 269.00	2.100	2.096	0.004	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	10426957	49.4			97176	
9 Perfluorohexanesulfonic acid	399.00 > 80.00	2.449	2.431	0.018	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 PFDoA										
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

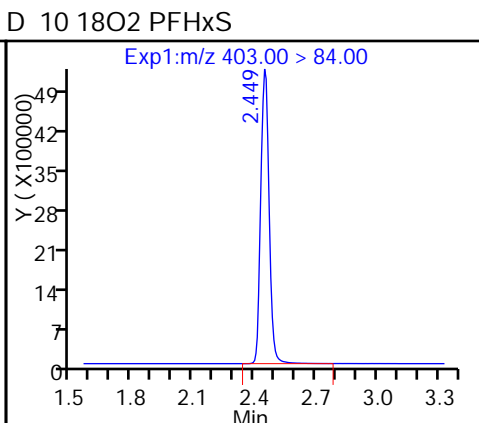
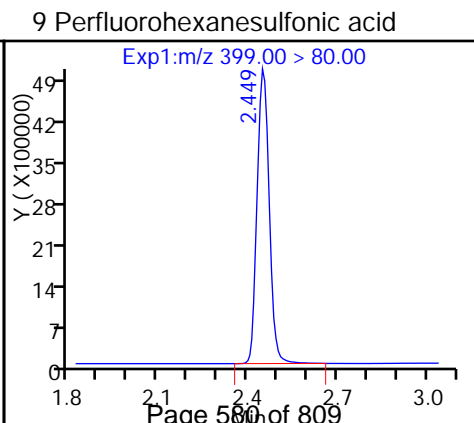
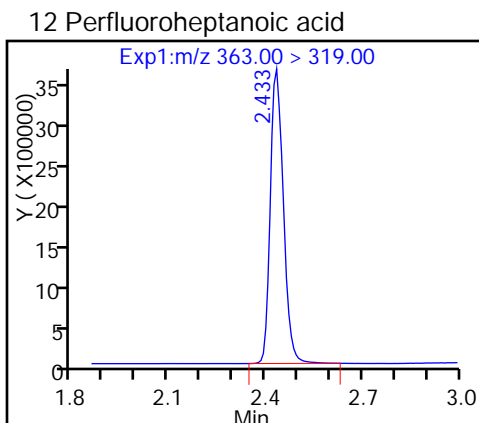
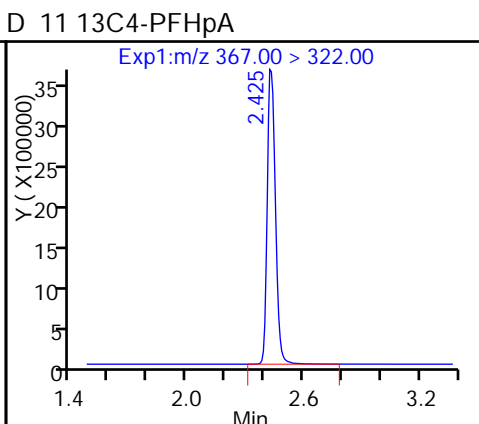
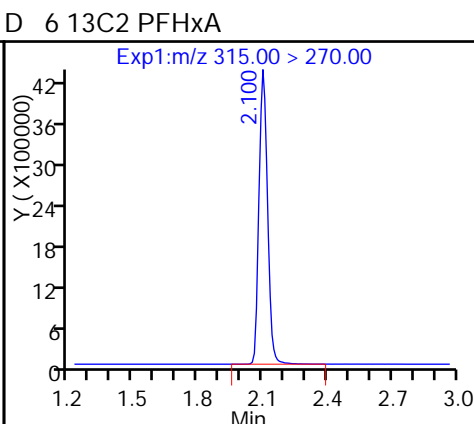
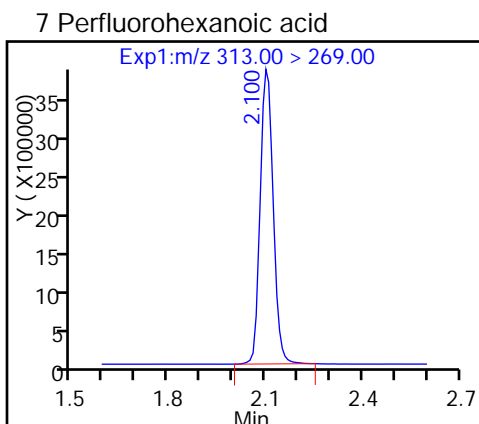
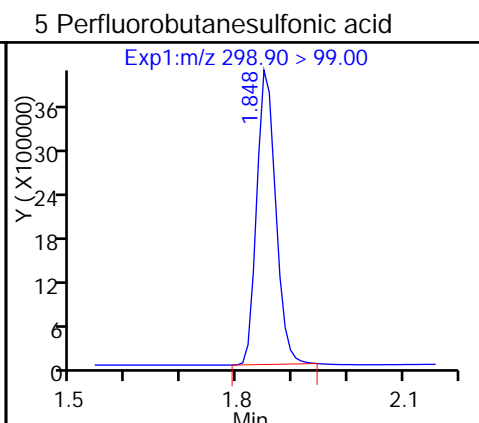
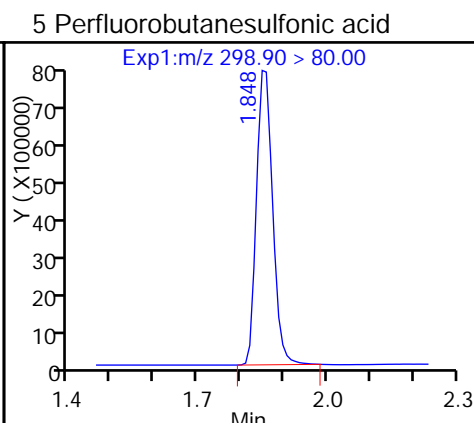
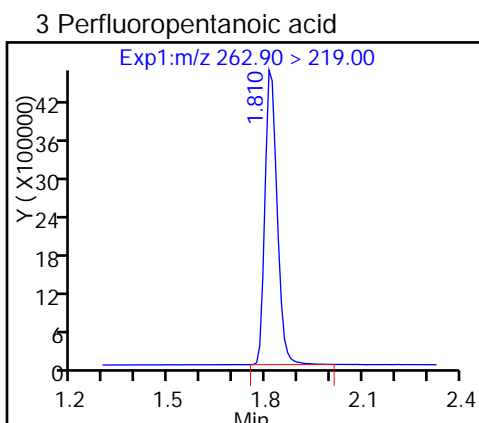
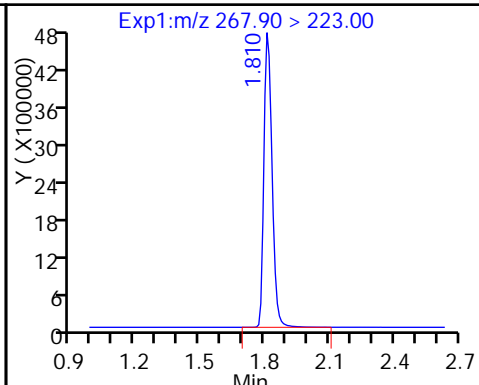
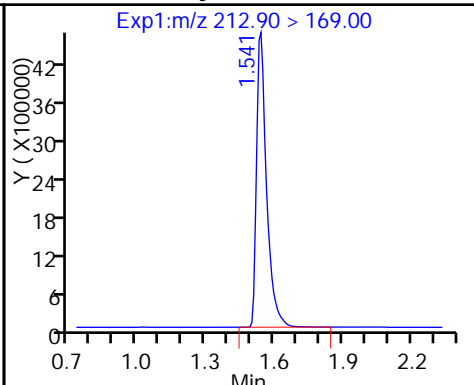
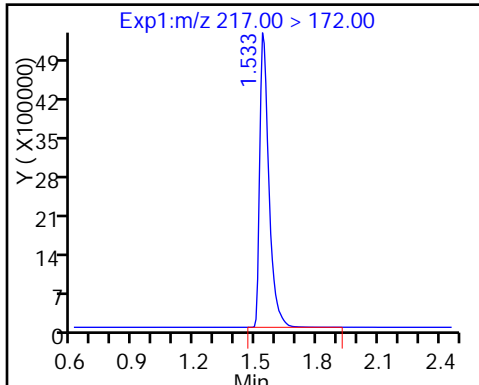
Method: A8_N

Limit Group: LC PFC_DOD ICAL

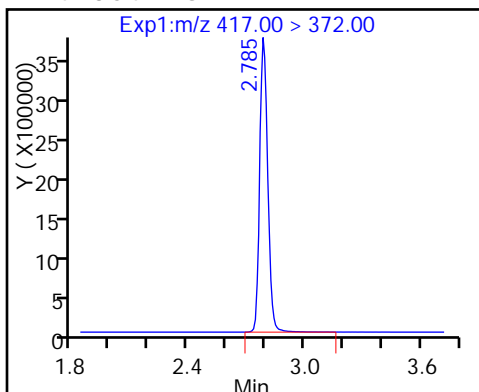
D 2 13C4 PFBA

1 Perfluorobutyric acid

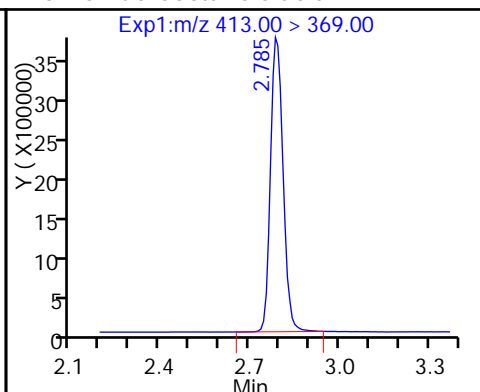
D 4 13C5-PFPeA



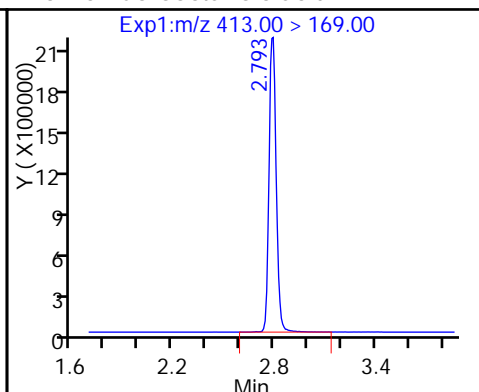
D 14 13C4 PFOA



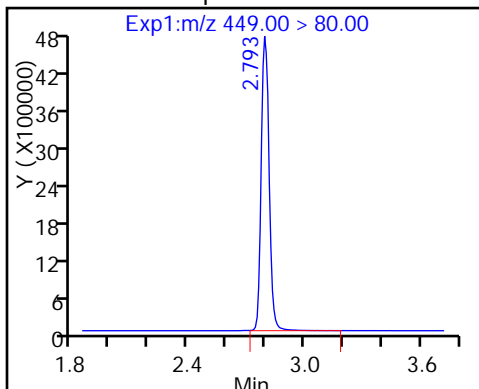
15 Perfluorooctanoic acid



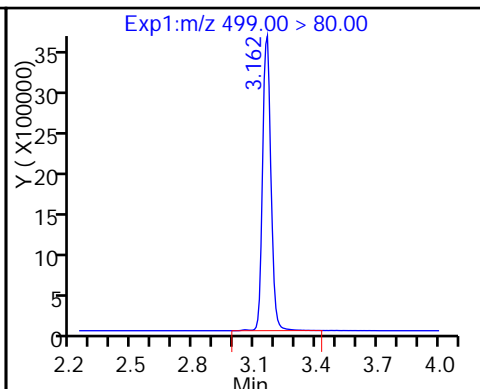
15 Perfluorooctanoic acid



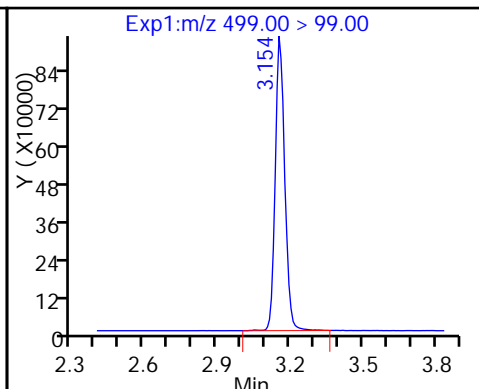
13 Perfluoroheptanesulfonic Acid



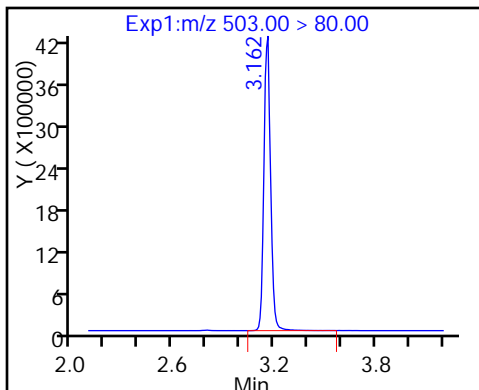
18 Perfluorooctane sulfonic acid



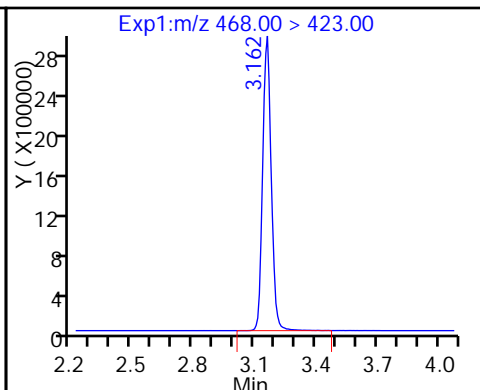
18 Perfluorooctane sulfonic acid



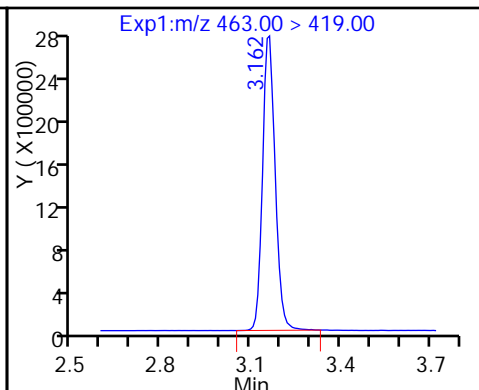
D 17 13C4 PFOS



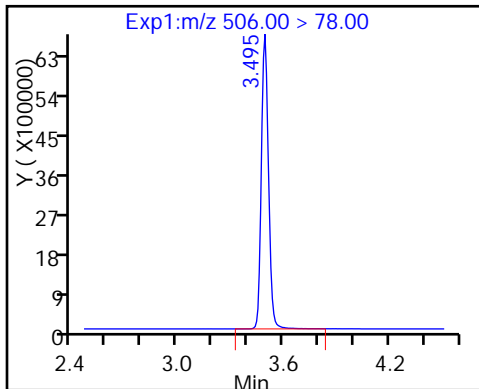
D 19 13C5 PFNA



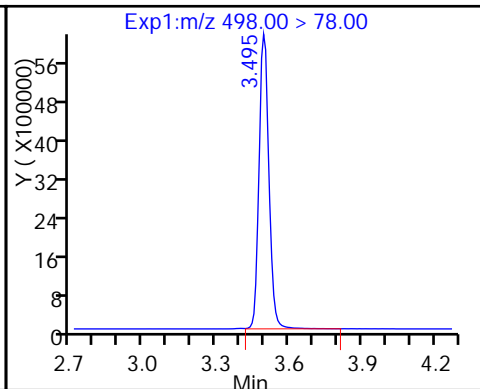
20 Perfluorononanoic acid



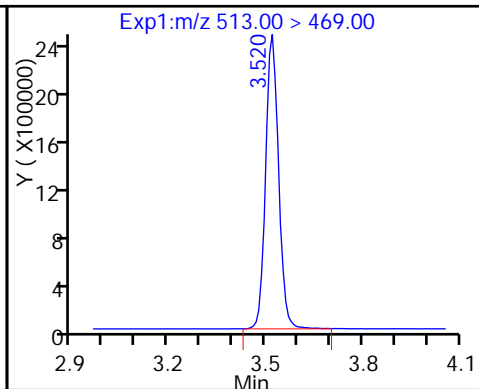
D 21 13C8 FOSA



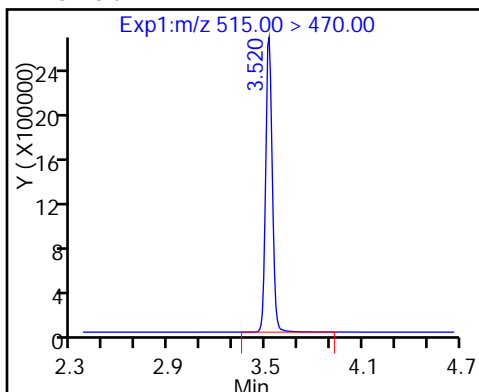
22 Perfluorooctane Sulfonamide



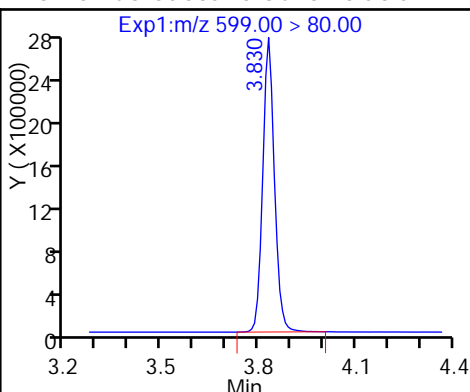
24 Perfluorodecanoic acid



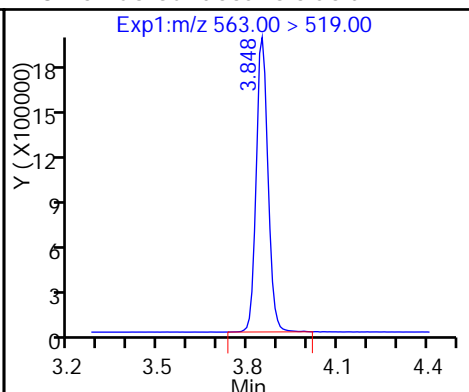
D 23 13C2 PFDA



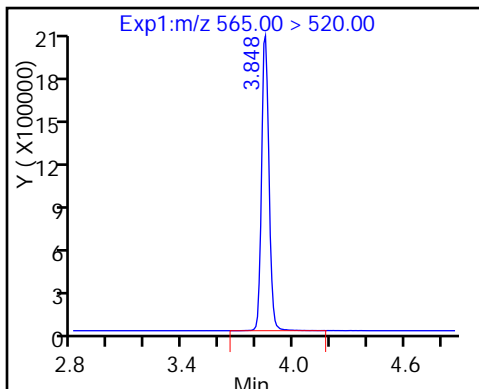
26 Perfluorodecane Sulfonic acid



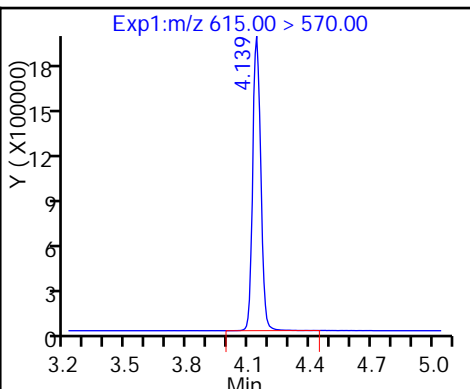
28 Perfluoroundecanoic acid



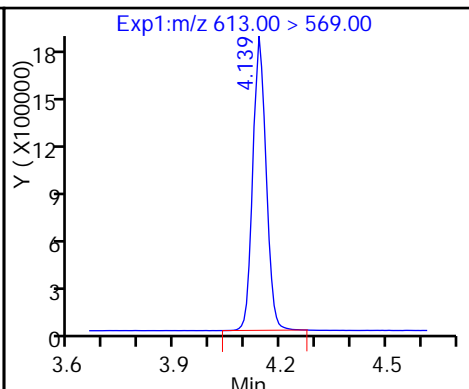
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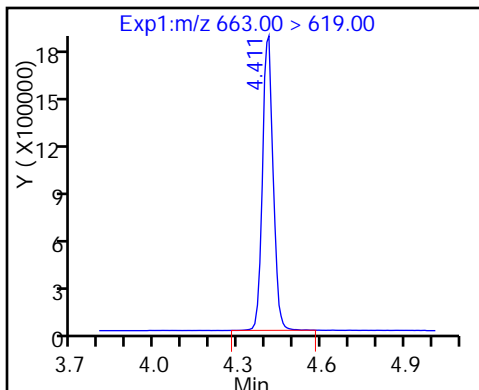
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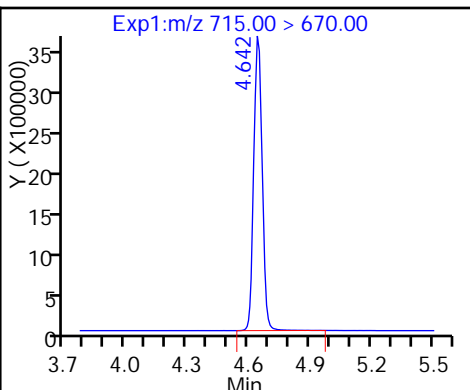
29 Perfluorododecanoic acid



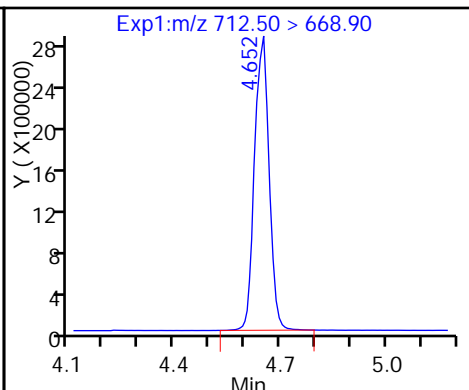
31 Perfluorotridecanoic acid



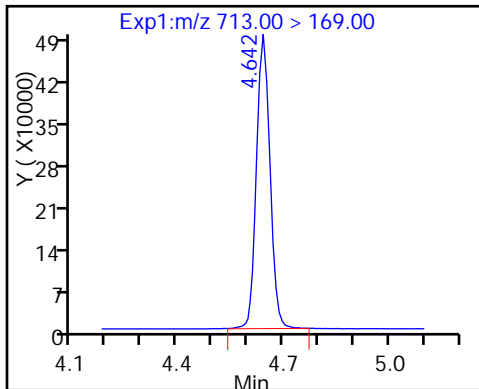
D 32 13C2-PFTeDA



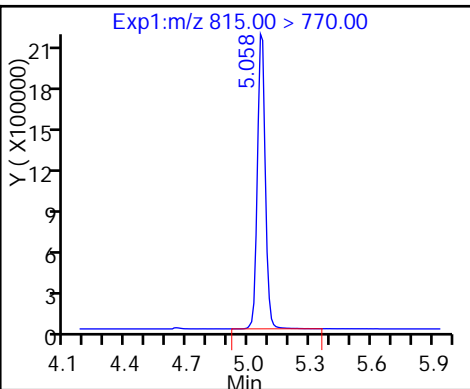
33 Perfluorotetradecanoic acid



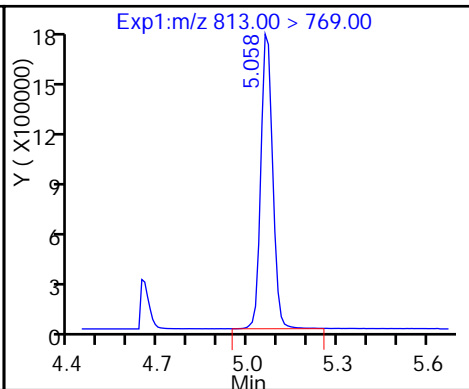
33 Perfluorotetradecanoic acid



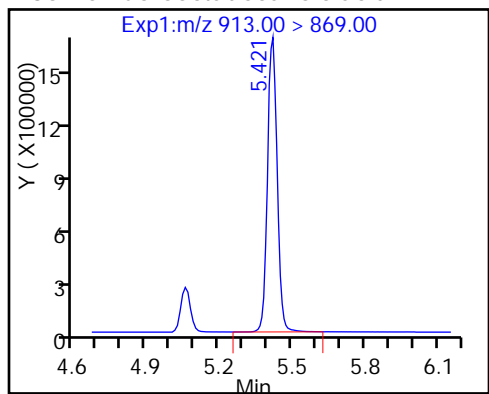
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 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

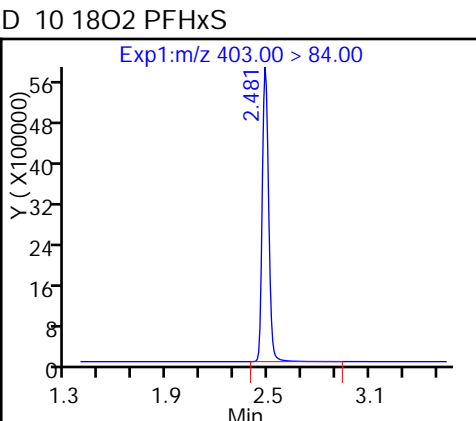
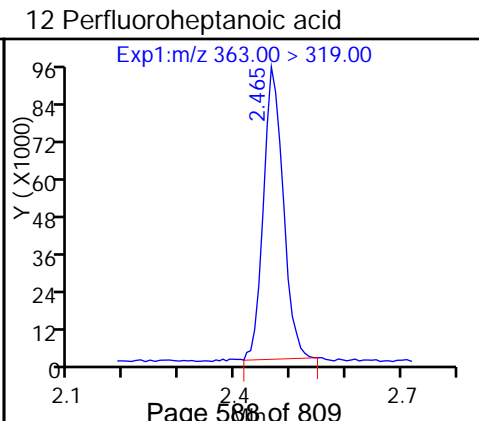
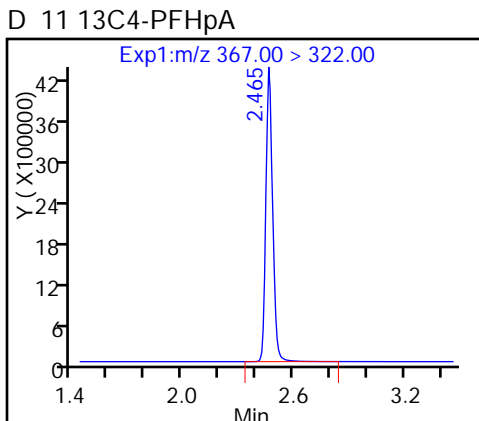
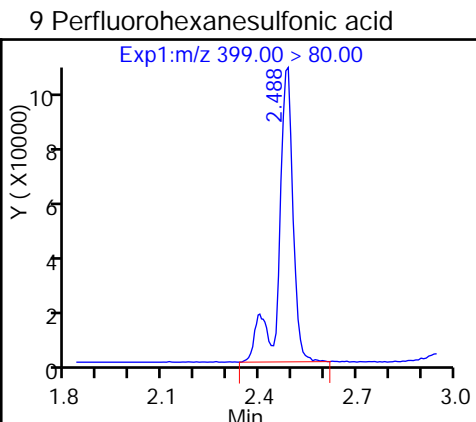
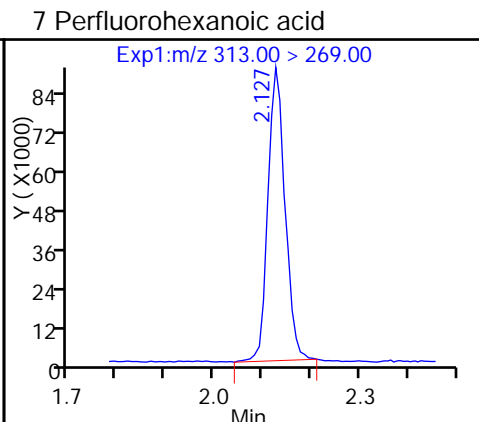
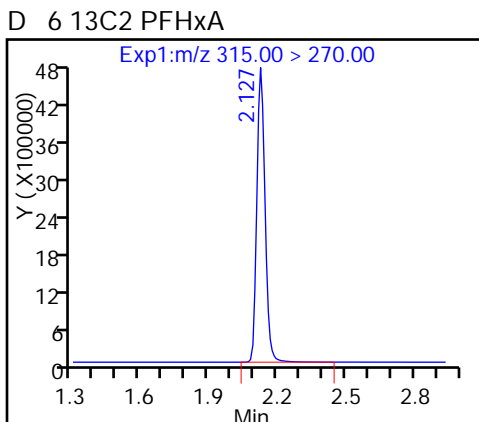
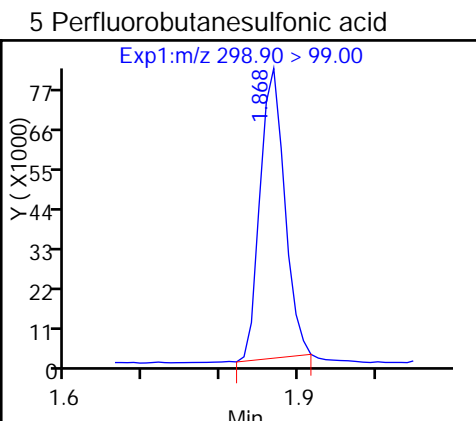
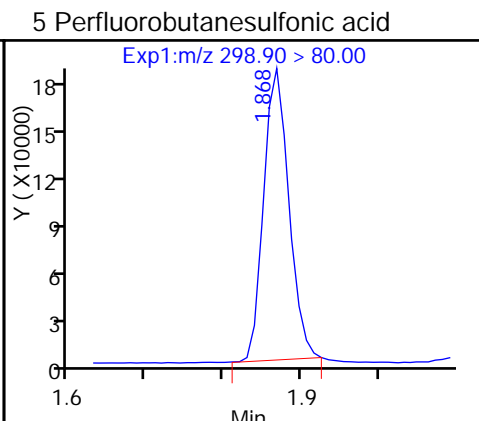
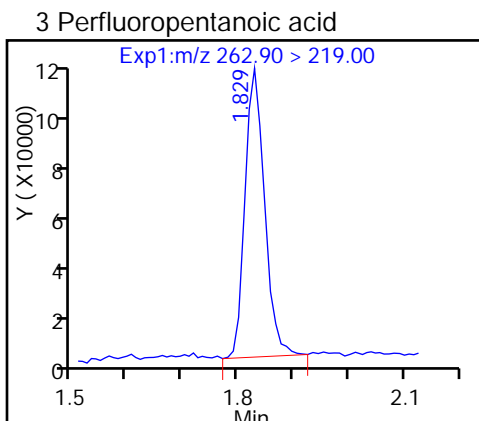
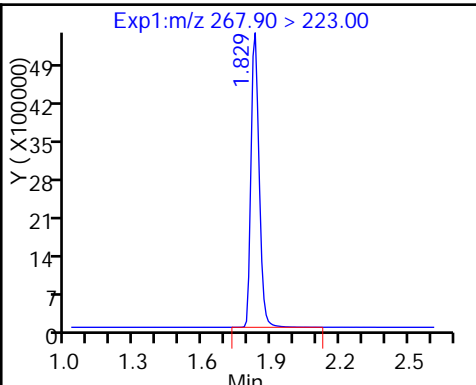
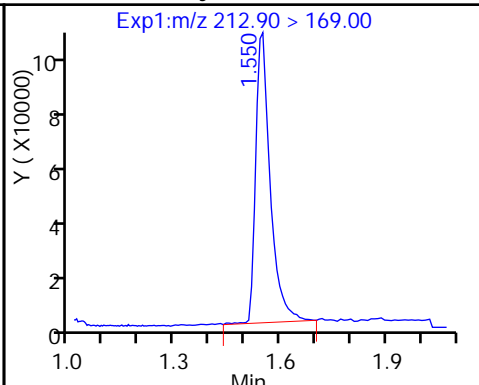
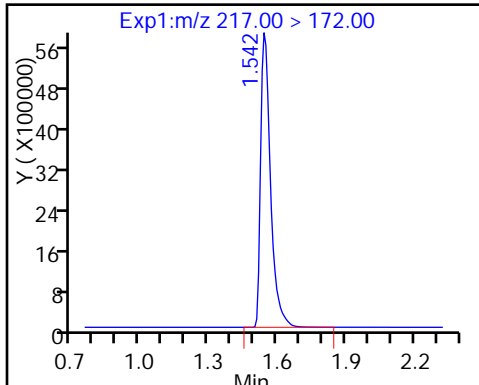
Method: A8_N

Limit Group: LC PFC_DOD ICAL

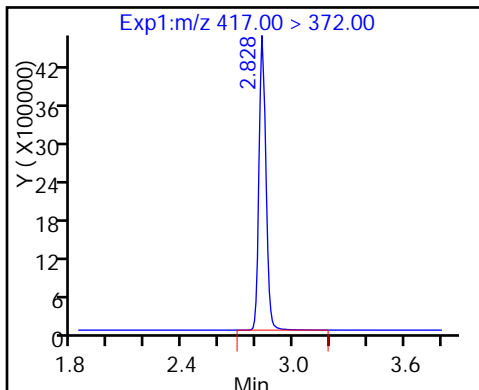
D 2 13C4 PFBA

1 Perfluorobutyric acid

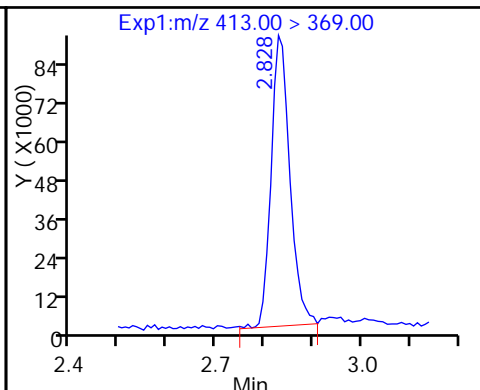
D 4 13C5-PFPeA



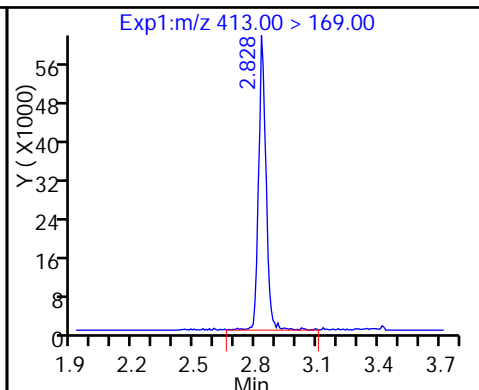
D 14 13C4 PFOA



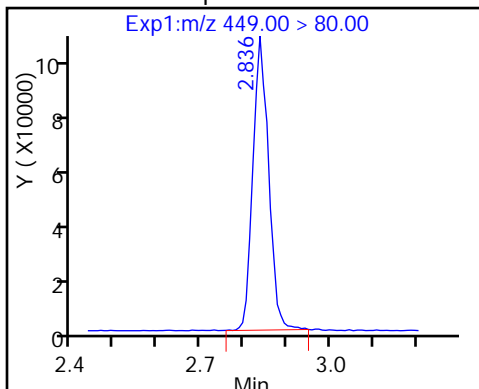
15 Perfluorooctanoic acid



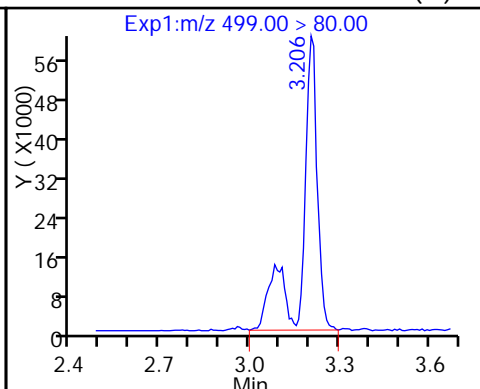
15 Perfluorooctanoic acid



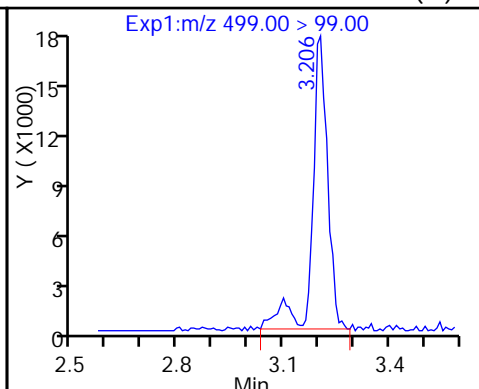
13 Perfluoroheptanesulfonic Acid



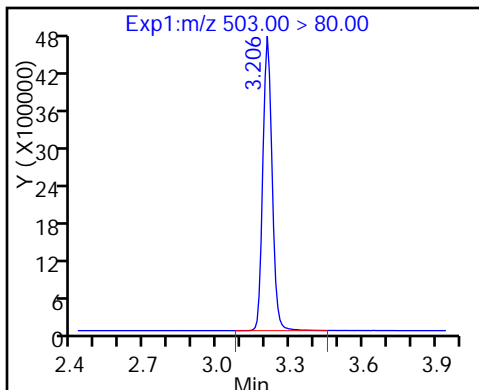
18 Perfluorooctane sulfonic acid (M)



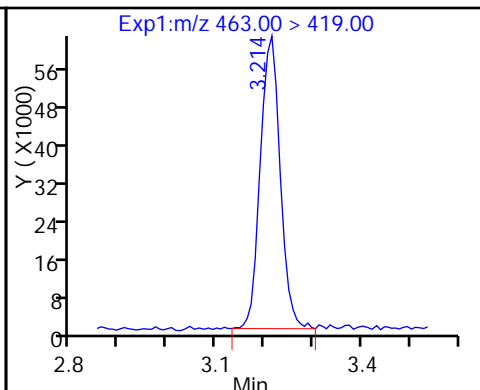
18 Perfluorooctane sulfonic acid (M)



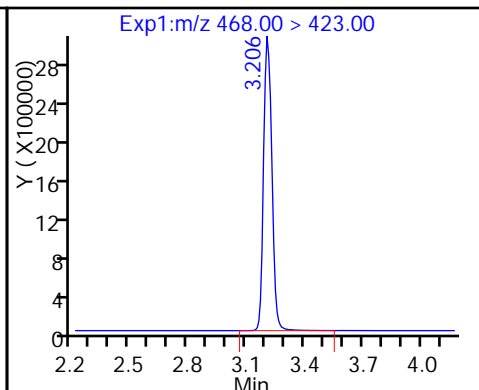
D 17 13C4 PFOS



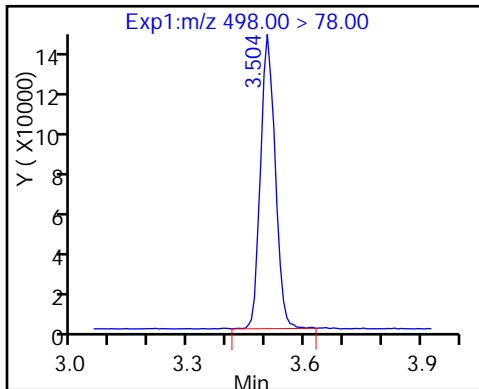
20 Perfluorononanoic acid



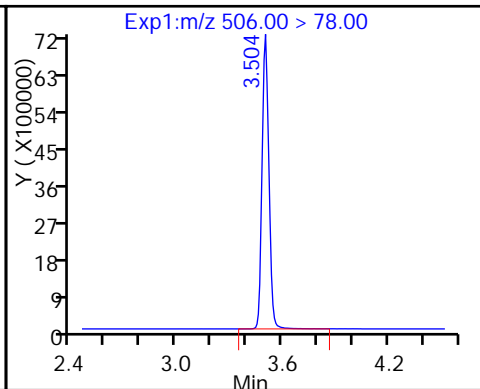
D 19 13C5 PFNA



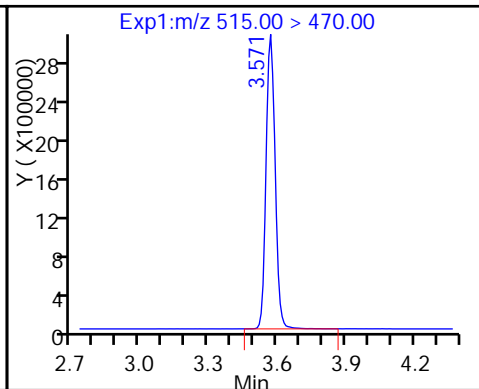
22 Perfluorooctane Sulfonamide

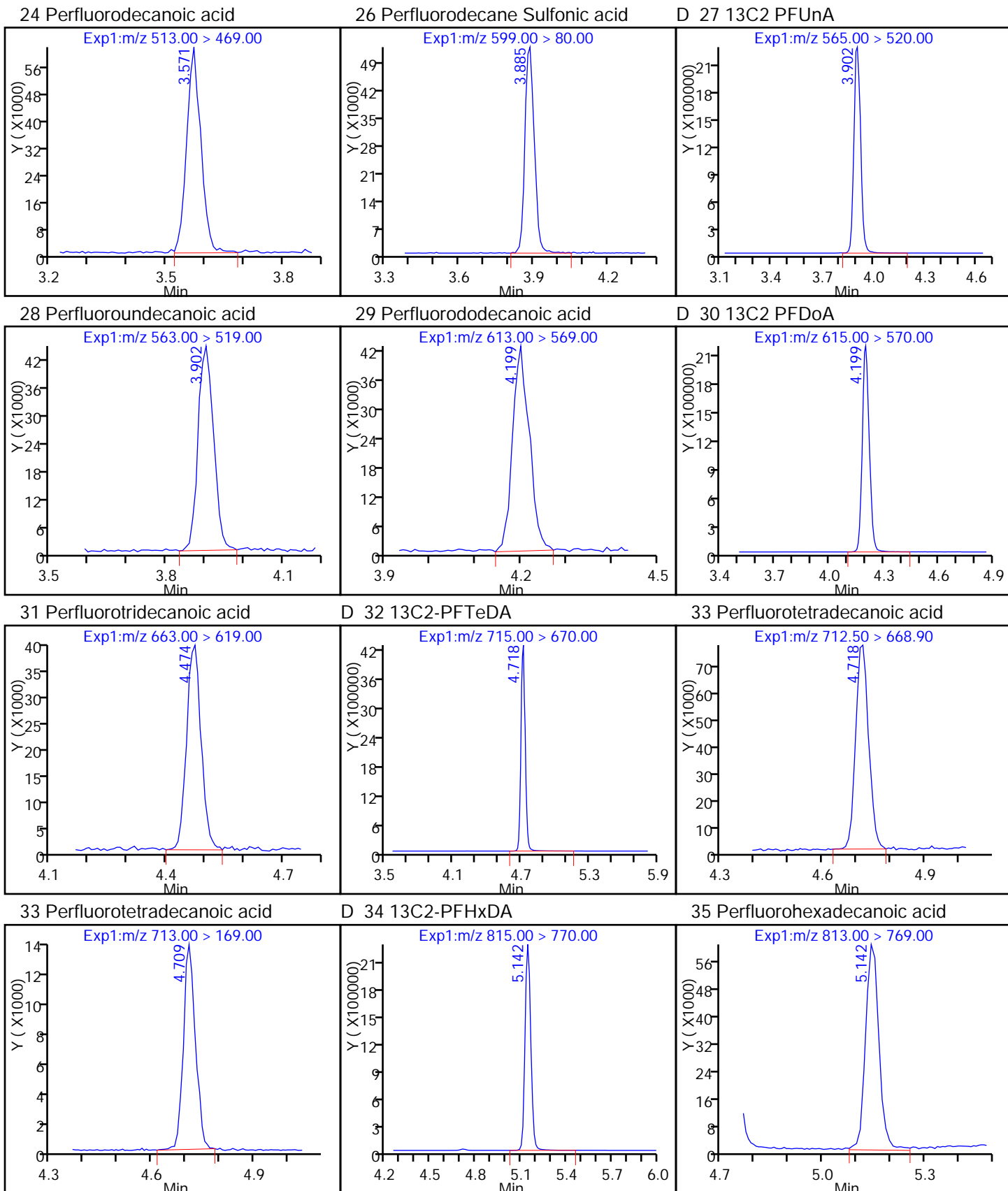


D 21 13C8 FOSA

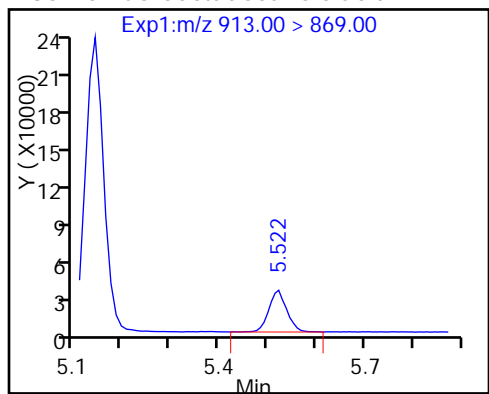


D 23 13C2 PFDA





36 Perfluorooctadecanoic acid



TestAmerica Sacramento

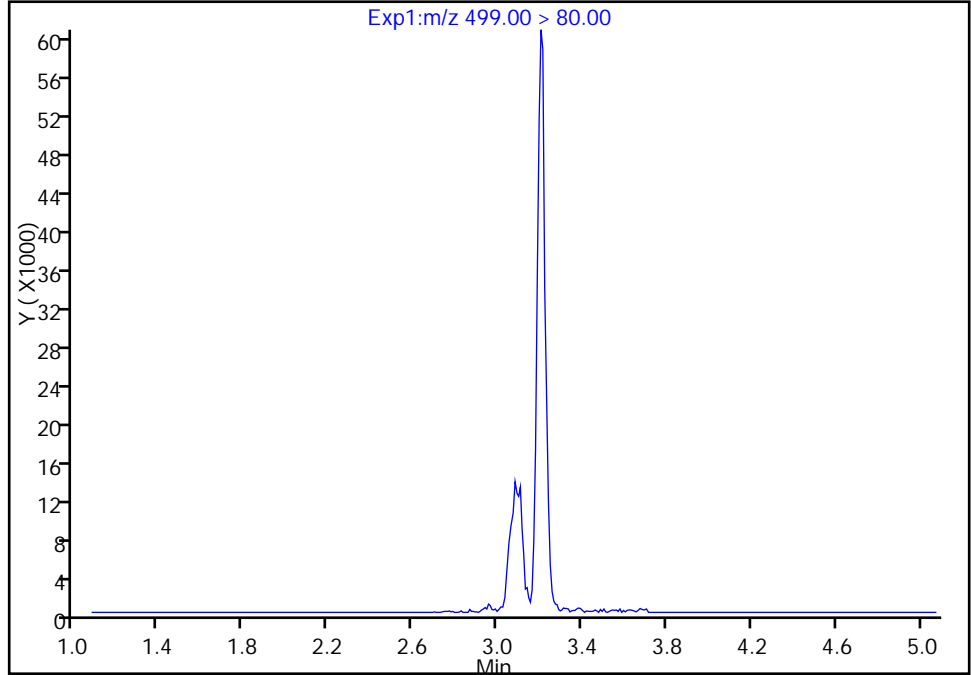
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161228-38280.b\28DEC2016A_005.d
Injection Date: 28-Dec-2016 16:51:42 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

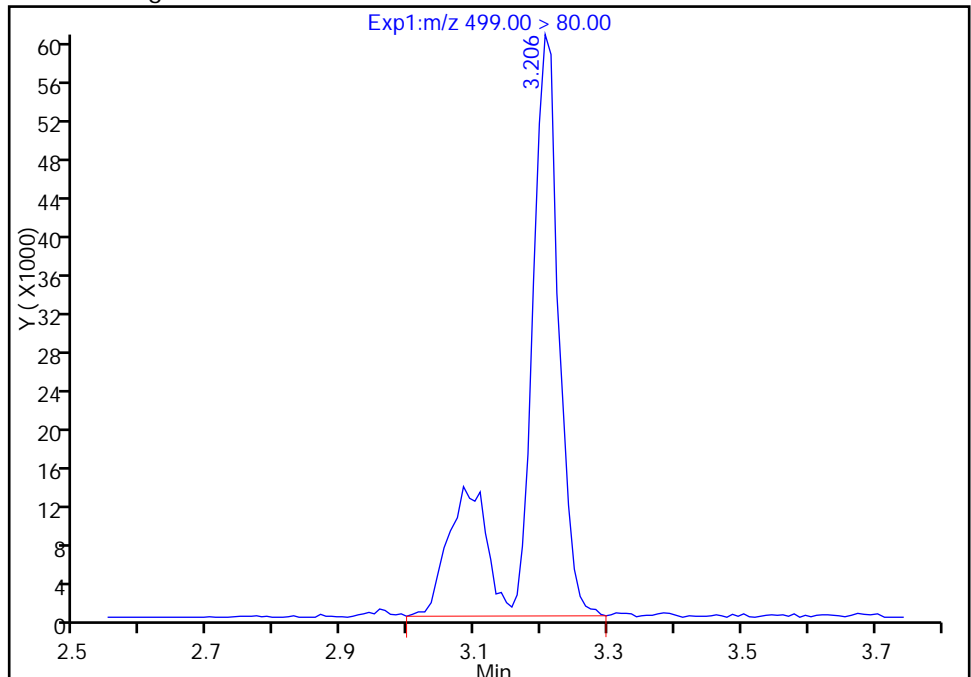
Not Detected
Expected RT: 3.08

Processing Integration Results



Manual Integration Results

RT: 3.21
Area: 214680
Amount: 0.820274
Amount Units: ng/ml



Reviewer: phomsophat, 29-Dec-2016 08:10:27

Audit Action: Manually Integrated

Audit Reason: Baseline

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

Method: A8_N

Limit Group: LC PFC_DOD ICAL

Column:

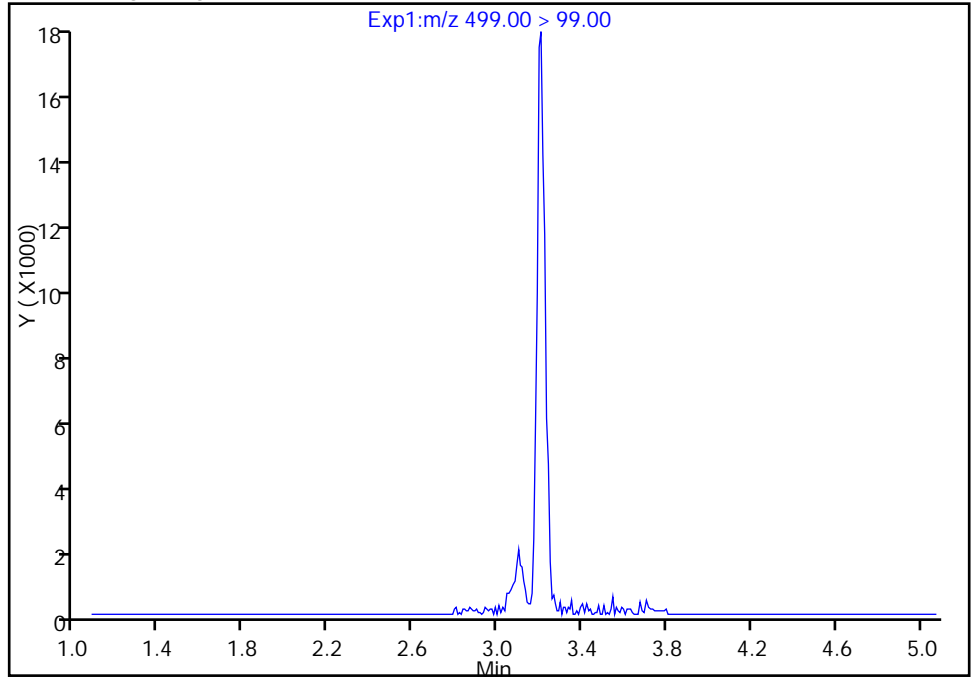
Detector: EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

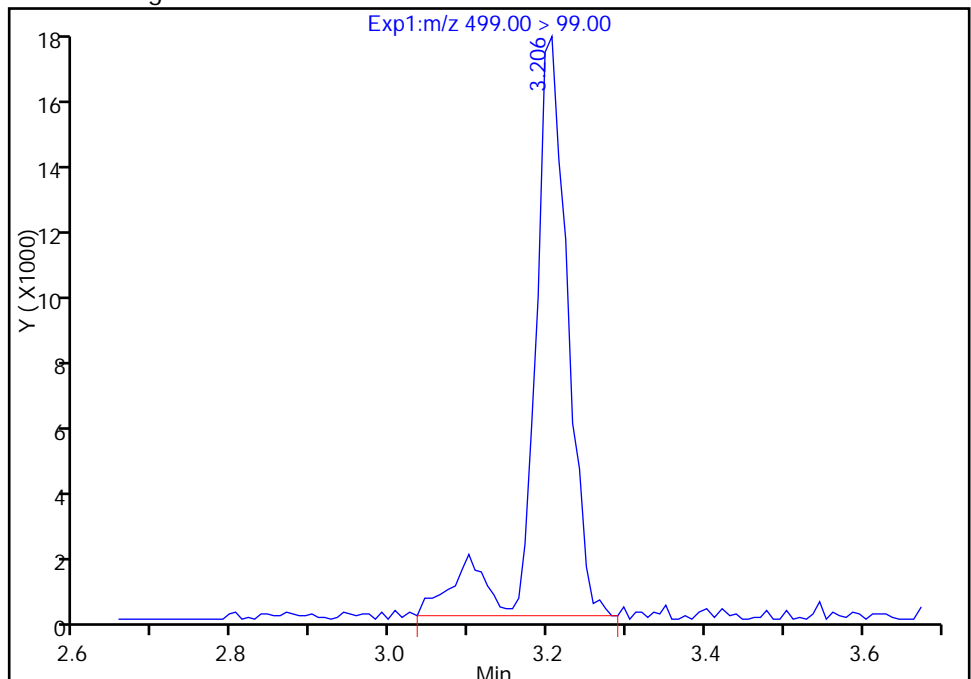
Not Detected
Expected RT: 3.08

Processing Integration Results



Manual Integration Results

RT: 3.21
Area: 51818
Amount: 0.820274
Amount Units: ng/ml



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.: 320-24184-1
 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
Perfluorooctanesulfonic Acid (PFOS)	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 PFDoA										
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

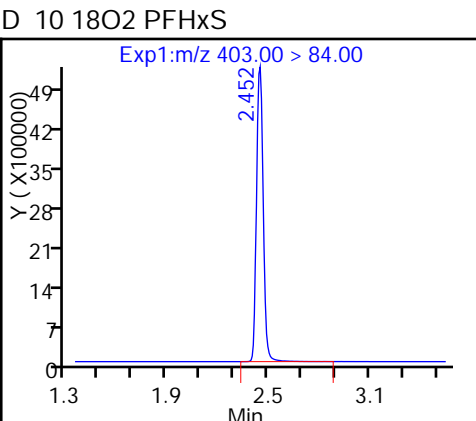
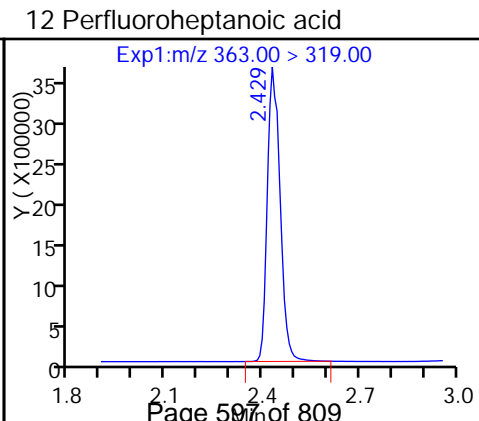
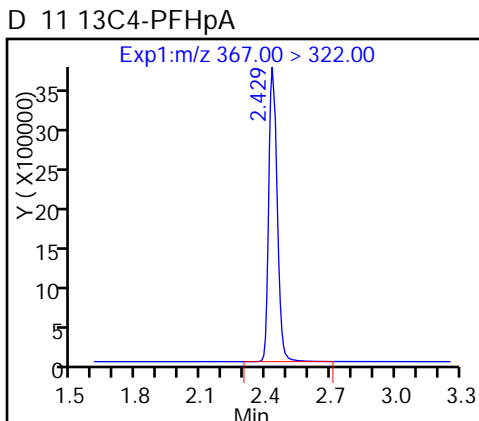
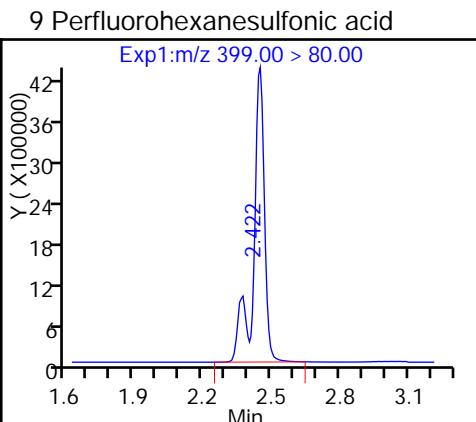
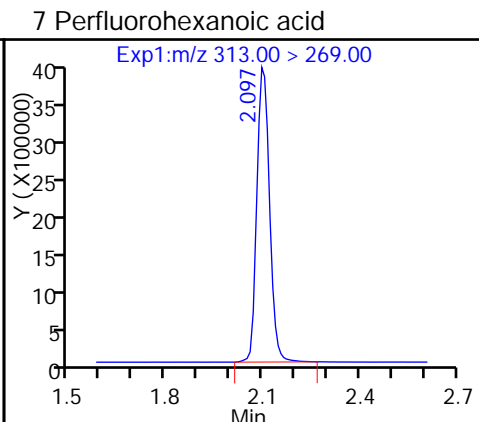
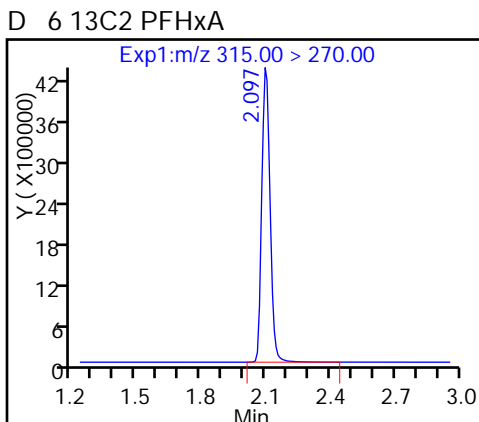
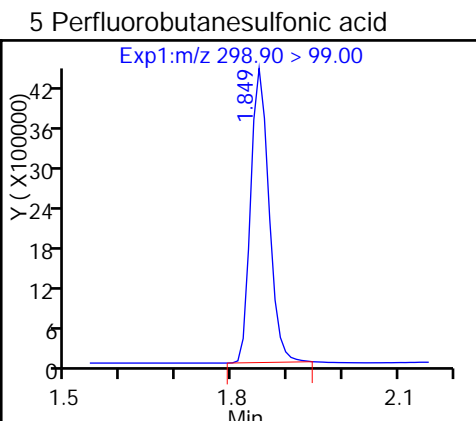
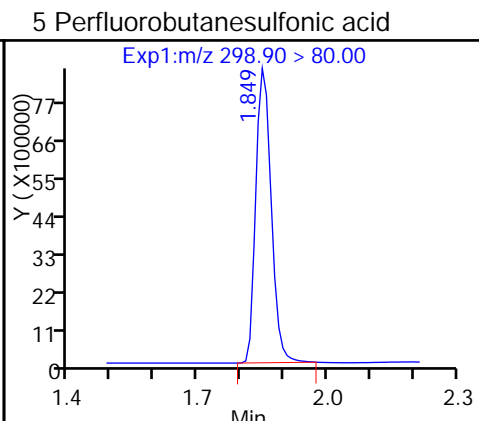
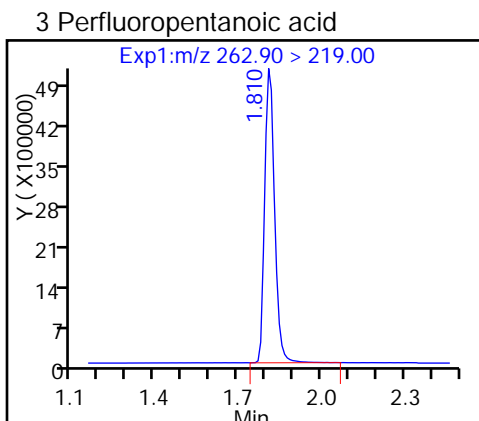
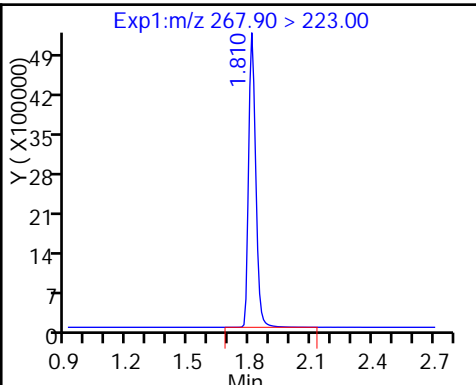
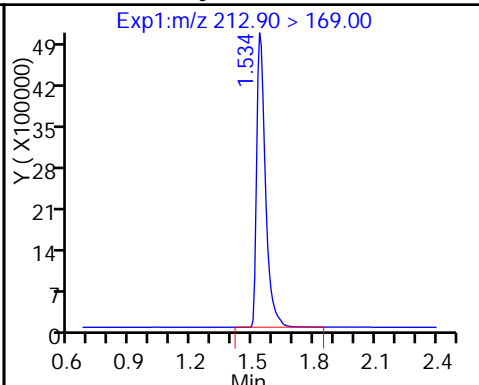
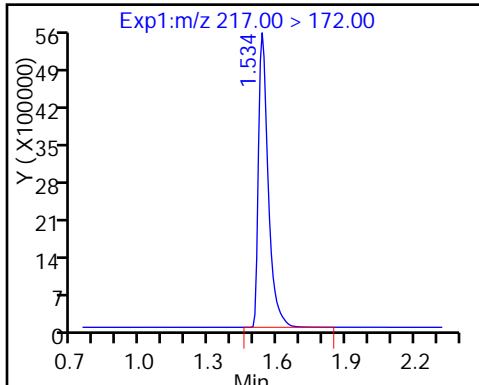
Method: A8_N

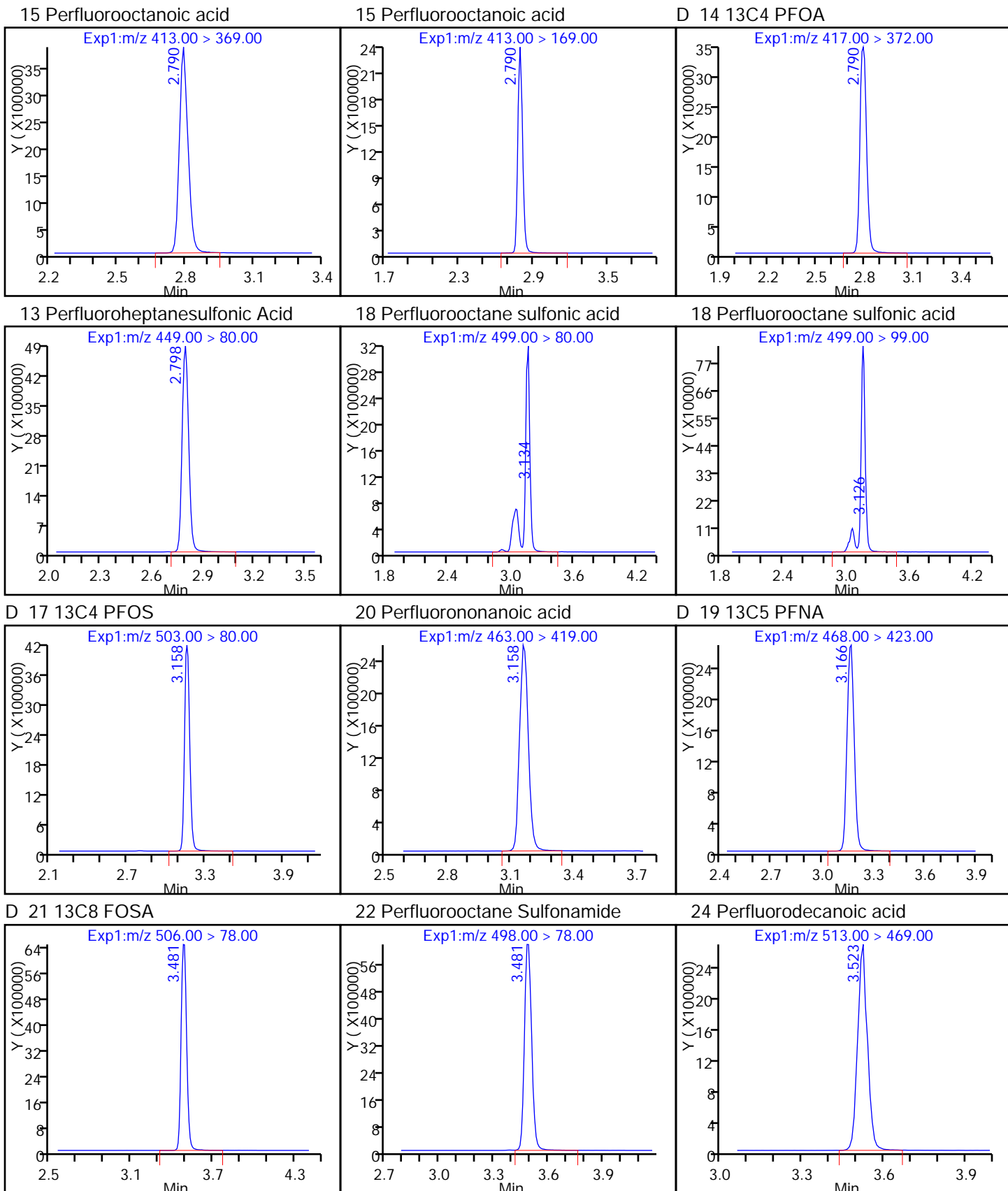
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

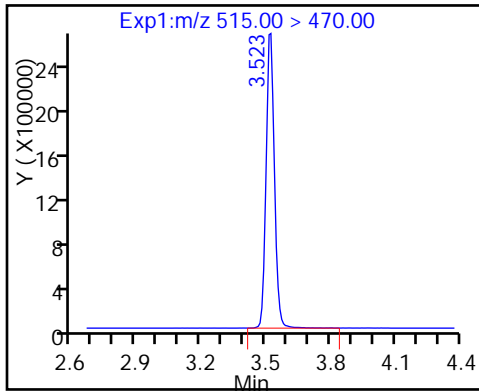
1 Perfluorobutyric acid

D 4 13C5-PFPeA

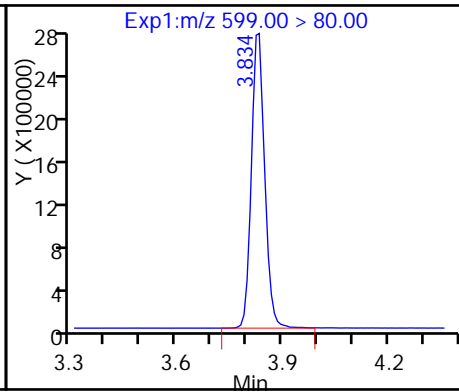




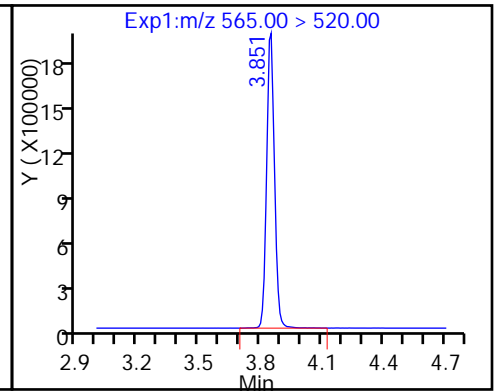
D 23 13C2 PFDA



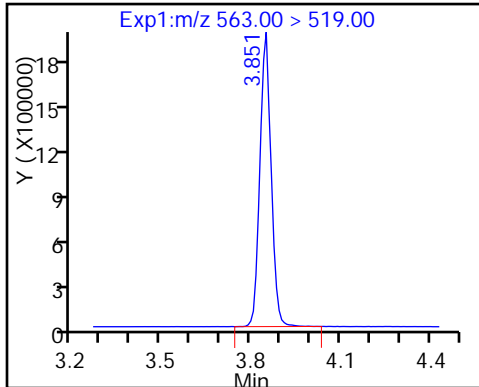
26 Perfluorodecane Sulfonic acid



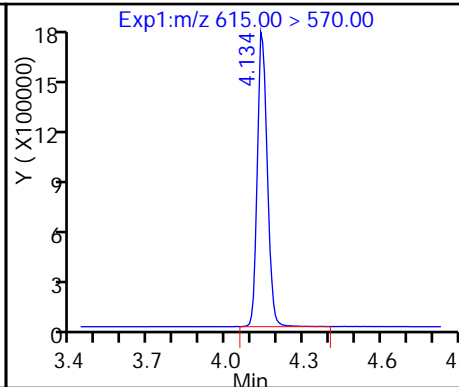
D 27 13C2 PFUnA



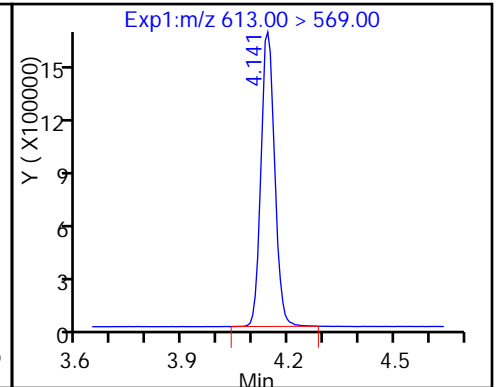
28 Perfluoroundecanoic acid



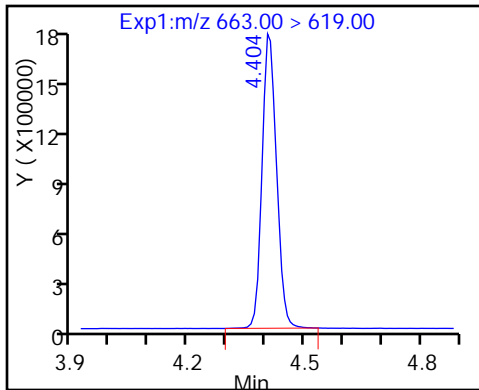
D 30 13C2 PFDaA



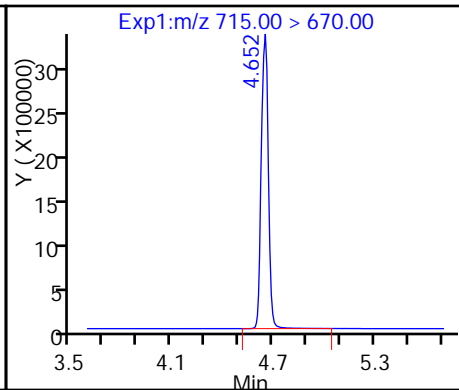
29 Perfluorododecanoic acid



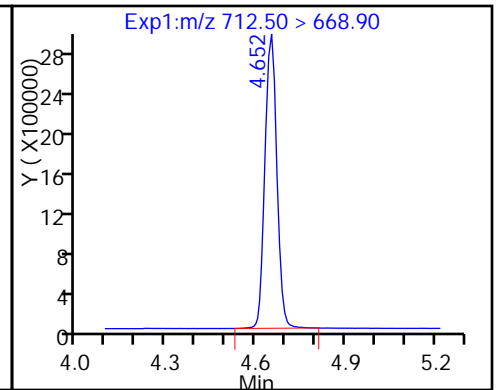
31 Perfluorotridecanoic acid



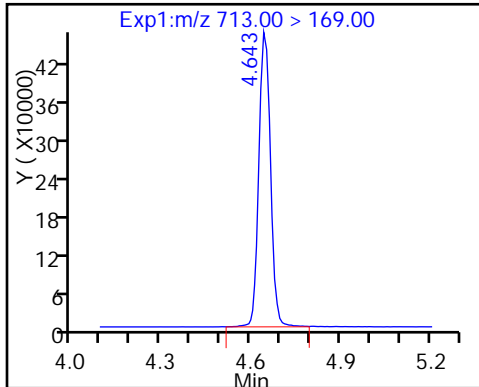
D 32 13C2-PFTeDA



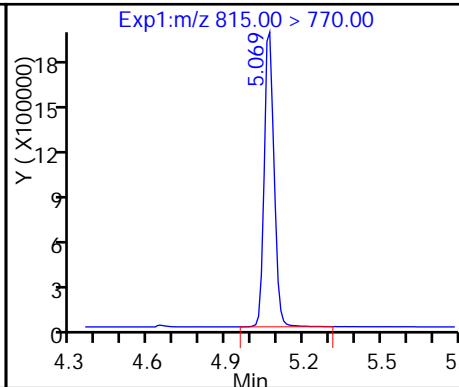
33 Perfluorotetradecanoic acid



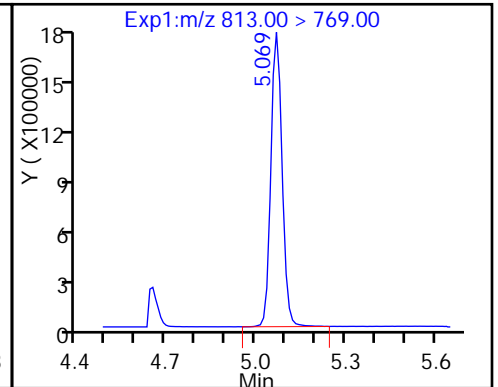
33 Perfluorotetradecanoic acid



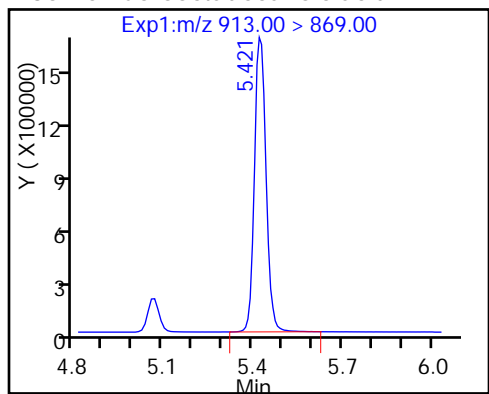
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 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 Sulfonylamide (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 PFDoA										
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

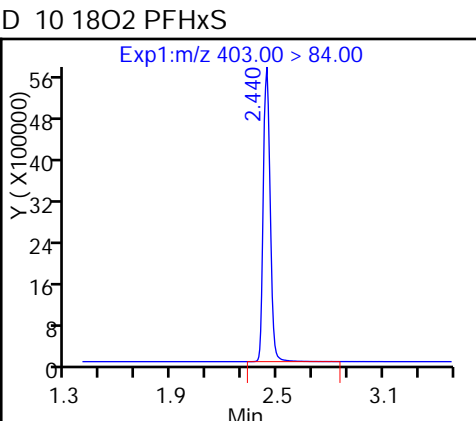
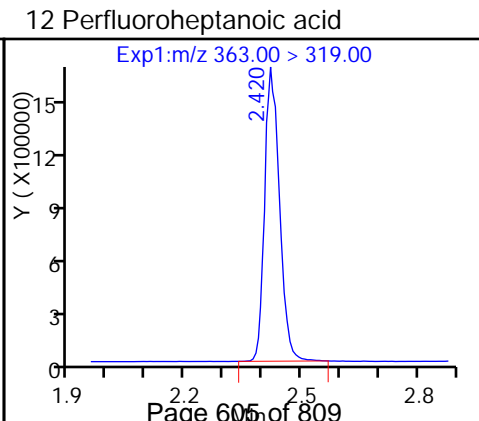
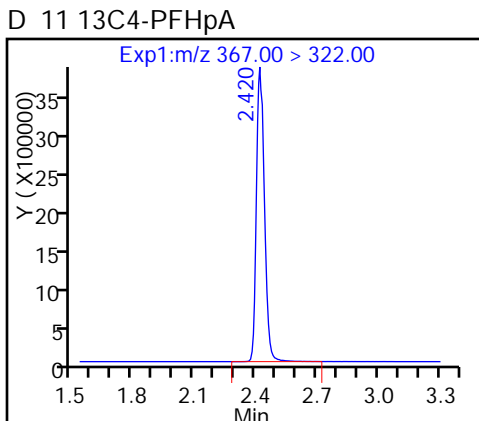
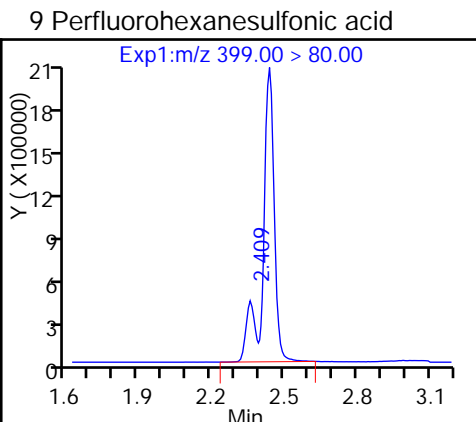
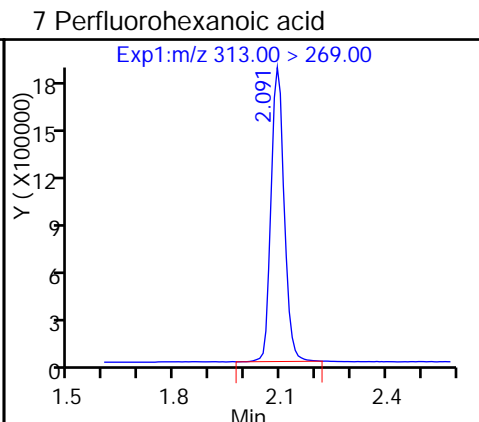
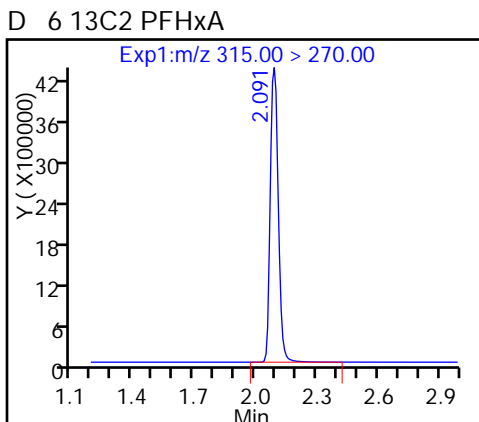
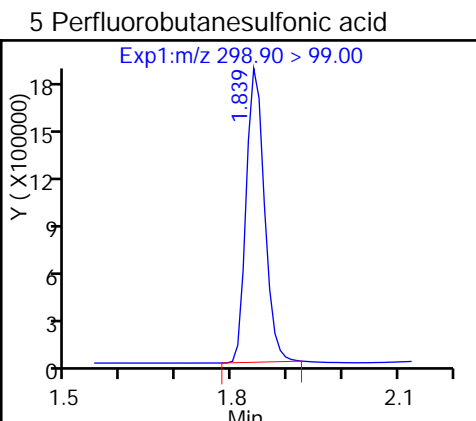
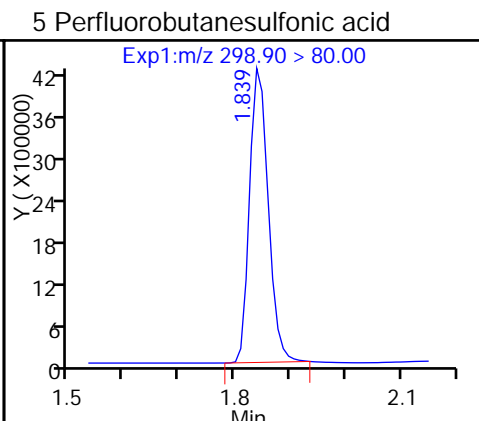
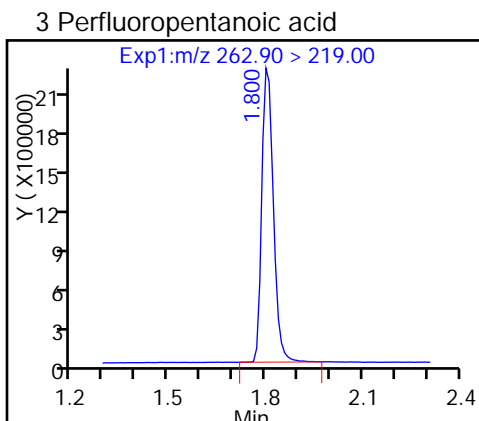
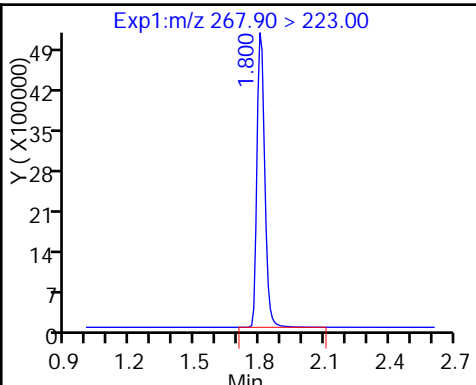
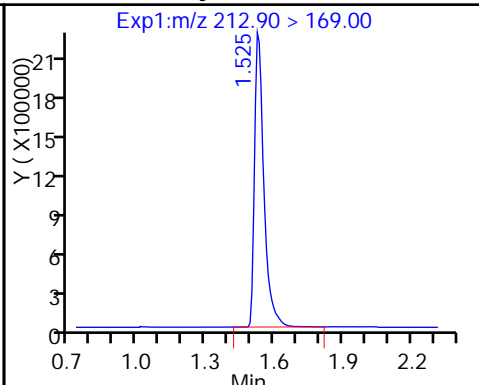
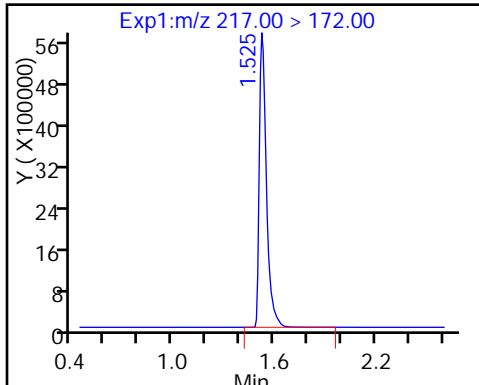
Method: A8_N

Limit Group: LC PFC_DOD ICAL

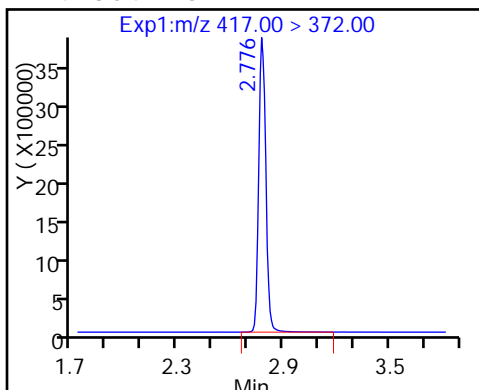
D 2 13C4 PFBA

1 Perfluorobutyric acid

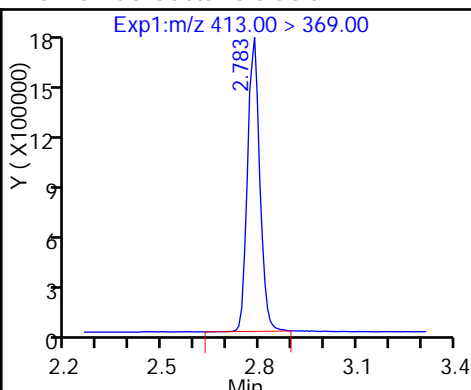
D 4 13C5-PFPeA



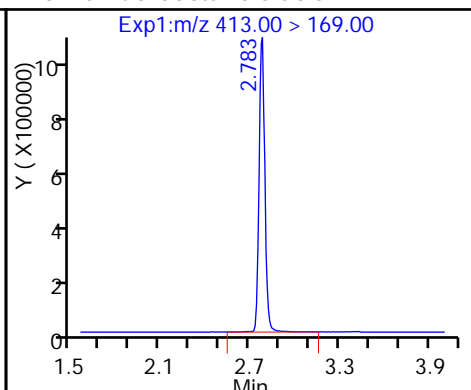
D 14 13C4 PFOA



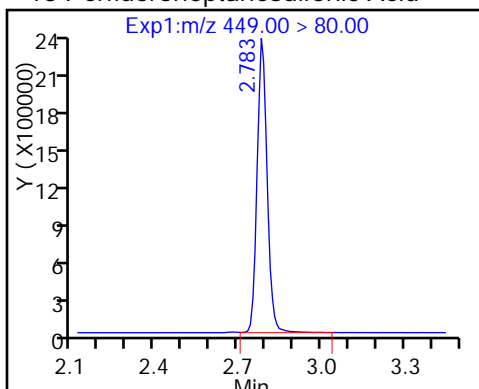
15 Perfluorooctanoic acid



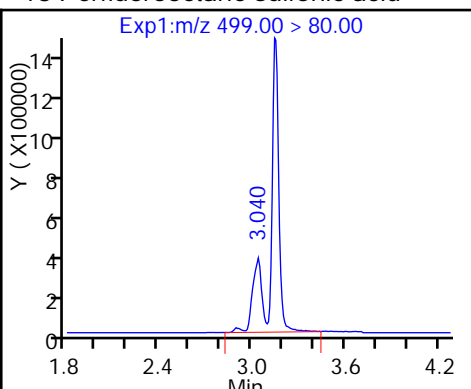
15 Perfluorooctanoic acid



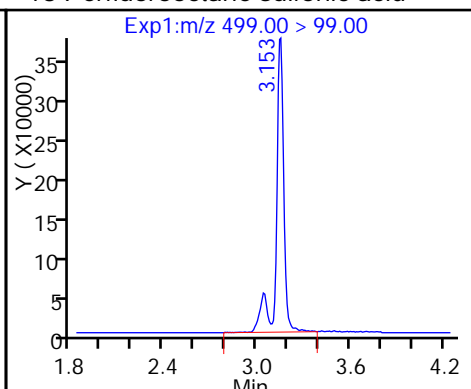
13 Perfluoroheptanesulfonic Acid



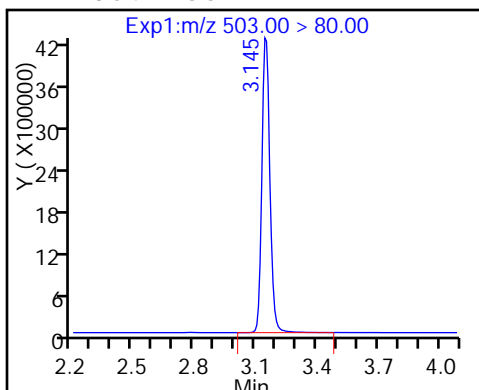
18 Perfluorooctane sulfonic acid



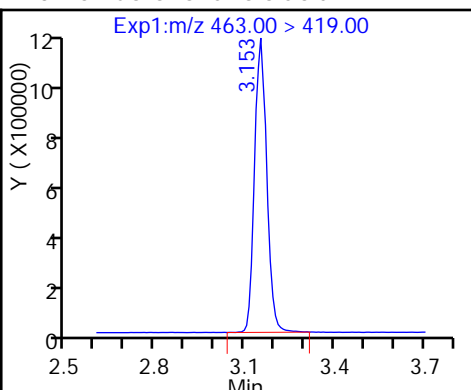
18 Perfluorooctane sulfonic acid



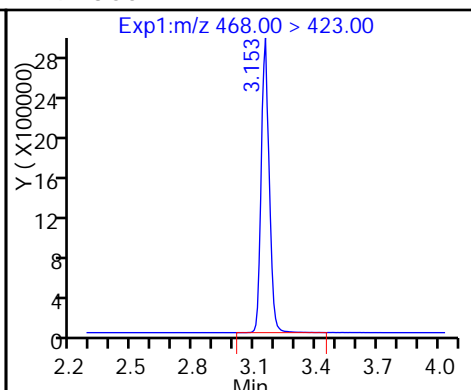
D 17 13C4 PFOS



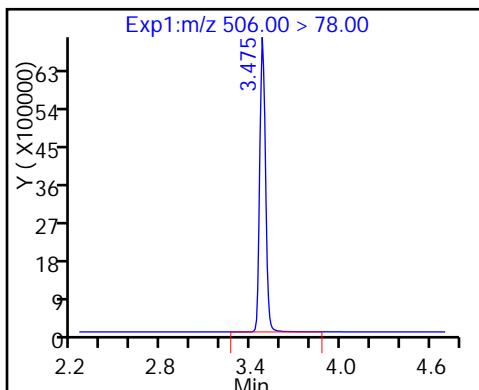
20 Perfluorononanoic acid



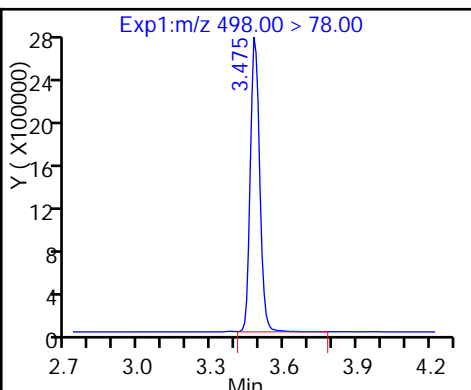
D 19 13C5 PFNA



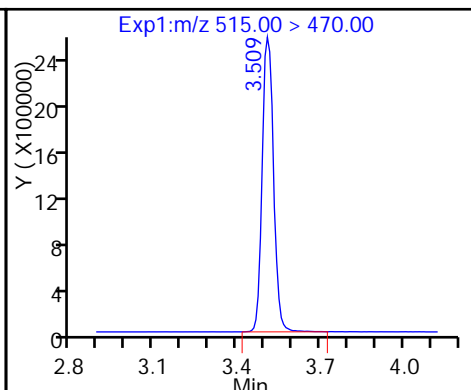
D 21 13C8 FOSA

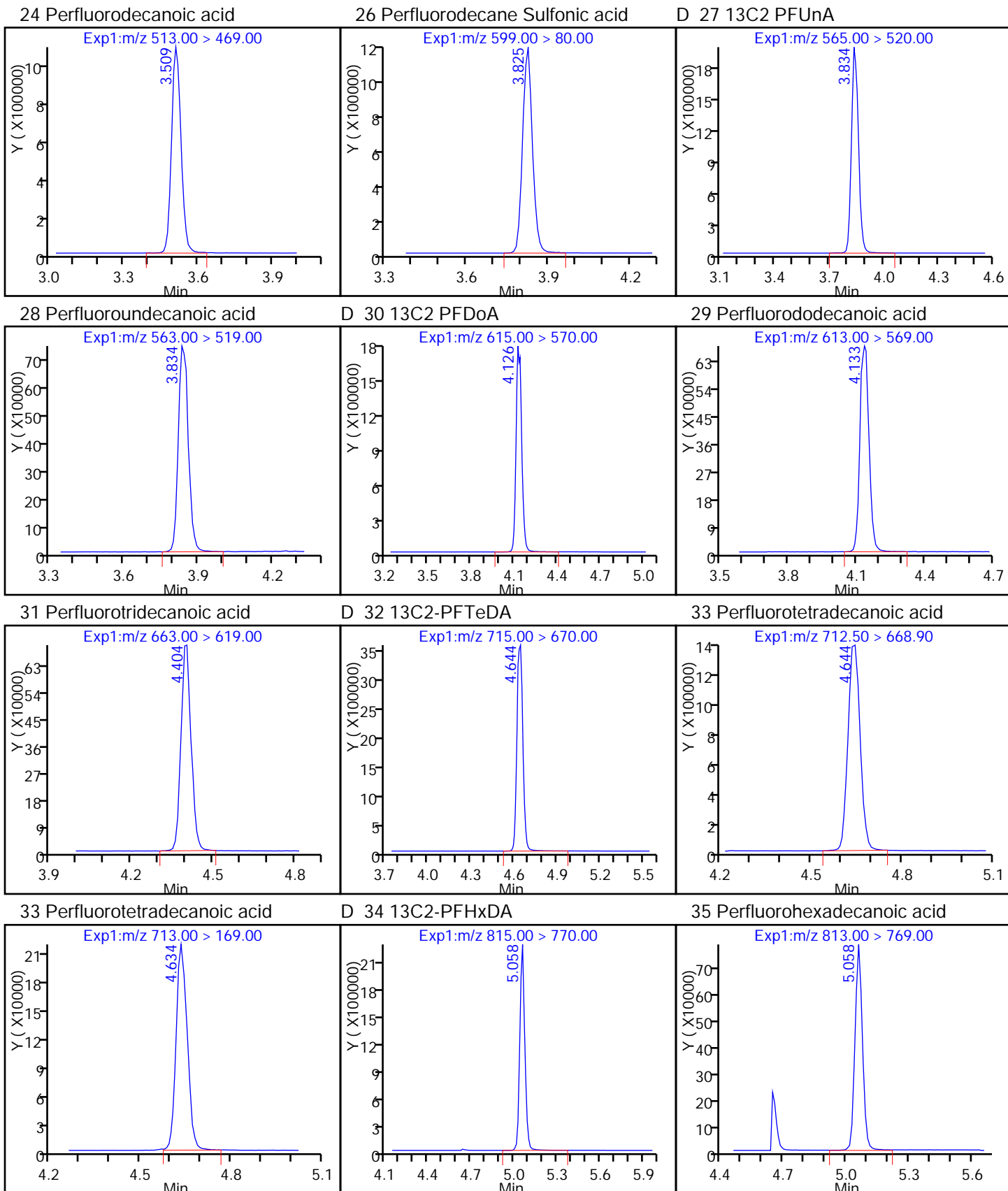


22 Perfluorooctane Sulfonamide

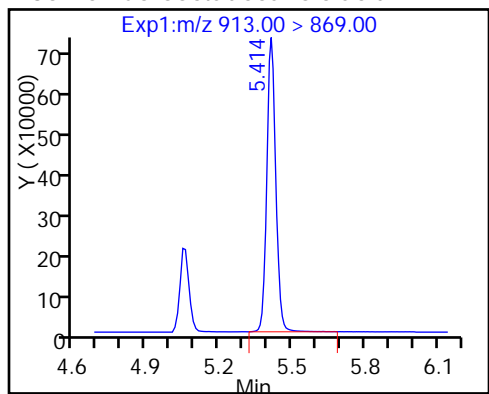


D 23 13C2 PFDA





36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 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 Sulfonylamide (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	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	12587077	50.8		102	156965	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.849	1.849	0.0	21225697	47.4		107		
	298.90 > 99.00	1.849	1.849	0.0	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	10749072	50.5		101	178961	
9 Perfluorohexanesulfonic acid	399.00 > 80.00	2.444	2.444	0.0	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	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 PFDoA										
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

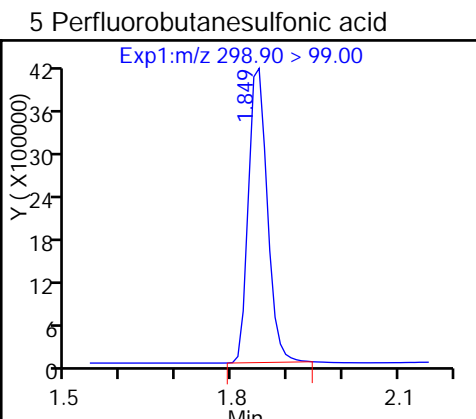
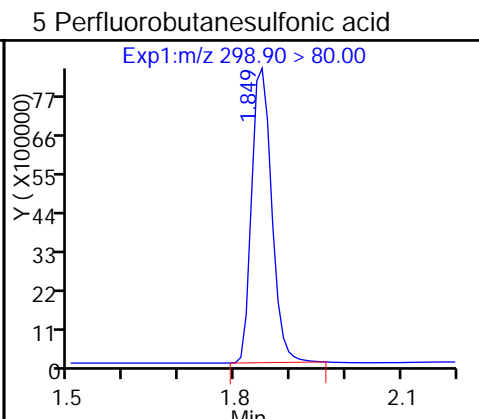
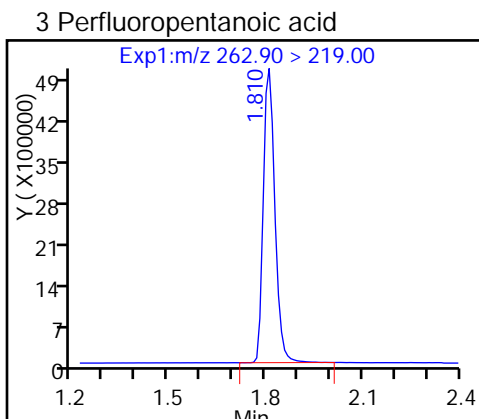
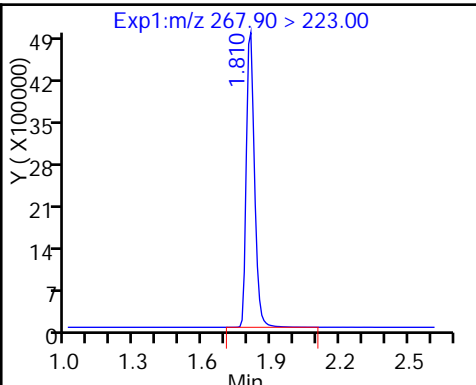
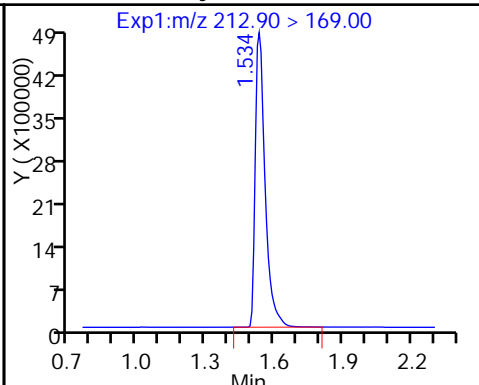
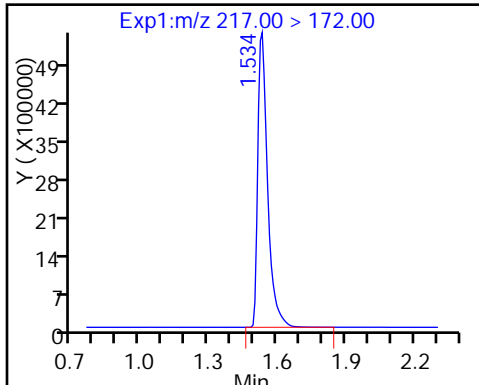
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

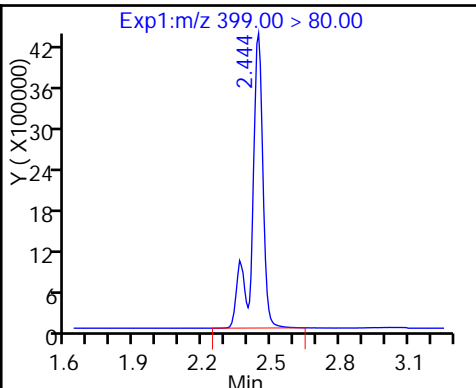
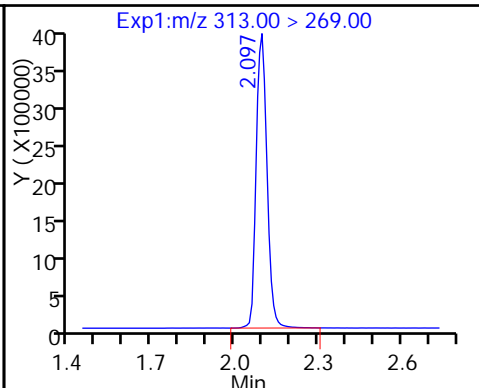
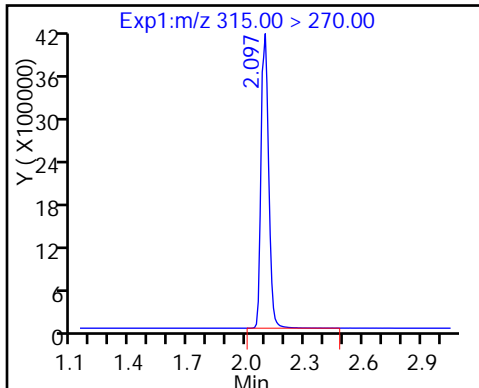
D 4 13C5-PFPeA



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

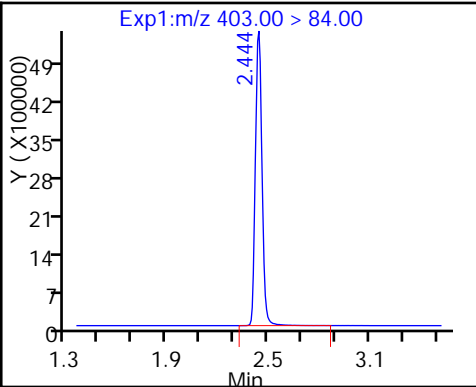
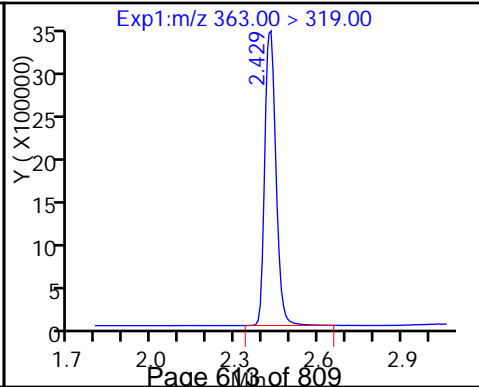
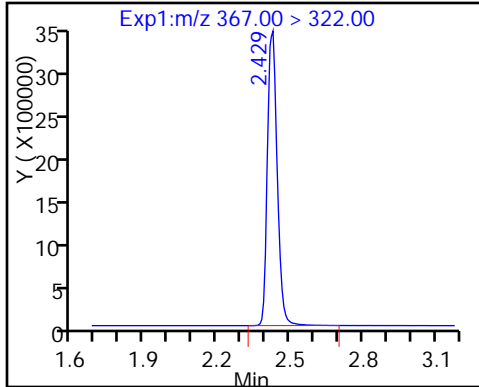
9 Perfluorohexanesulfonic acid



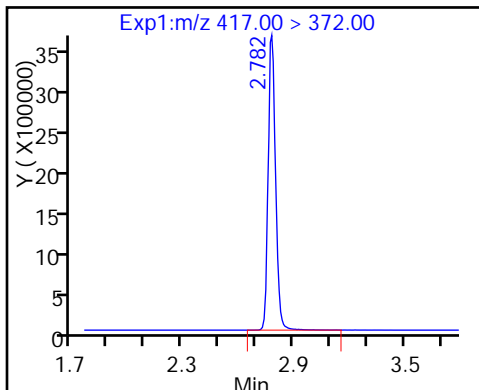
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid

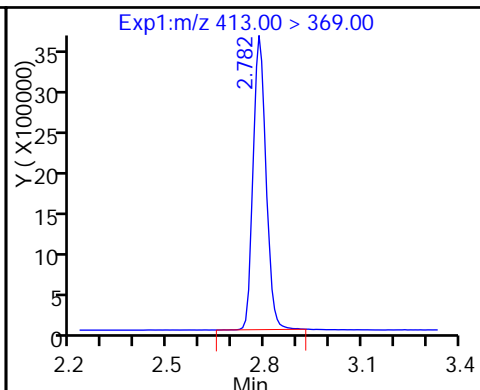
D 10 18O2 PFHxS



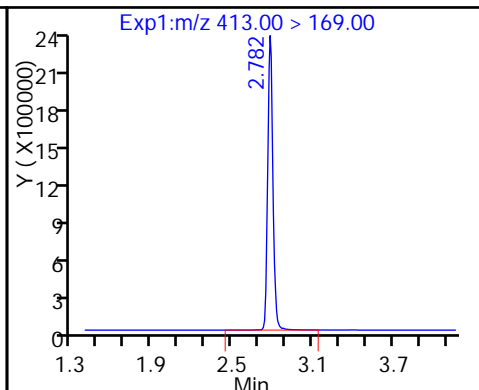
D 14 13C4 PFOA



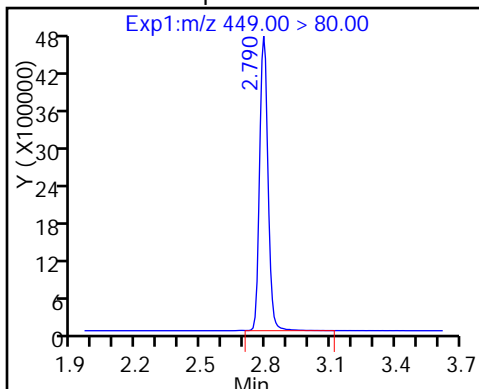
15 Perfluorooctanoic acid



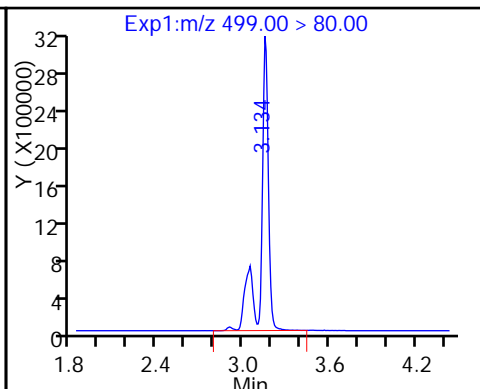
15 Perfluorooctanoic acid



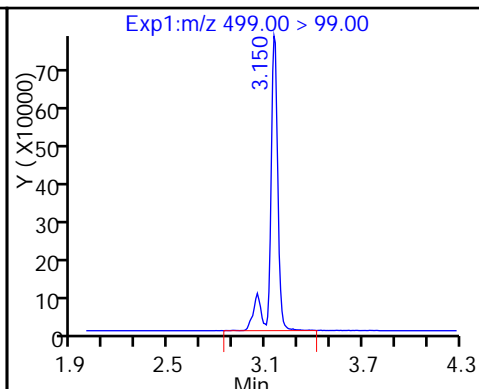
13 Perfluoroheptanesulfonic Acid



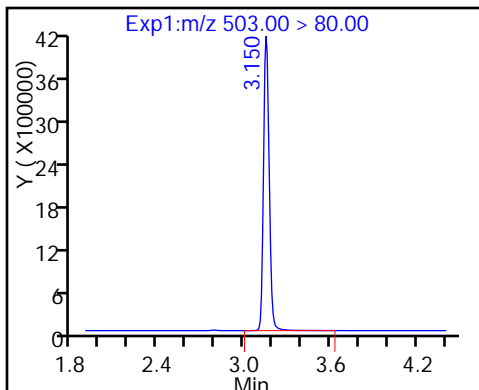
18 Perfluorooctane sulfonic acid



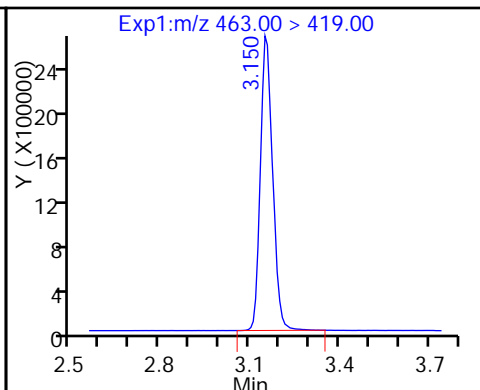
18 Perfluorooctane sulfonic acid



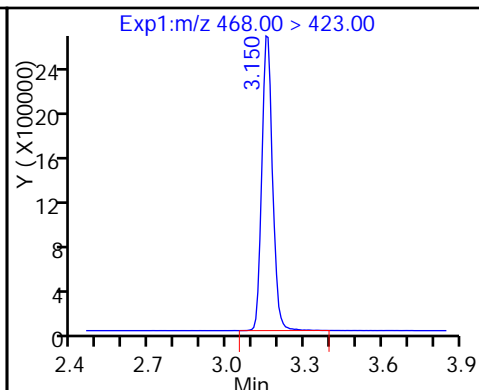
D 17 13C4 PFOS



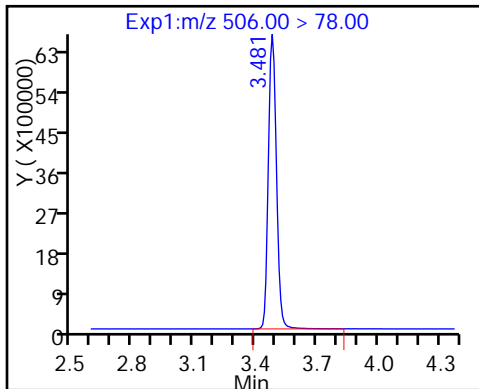
20 Perfluorononanoic acid



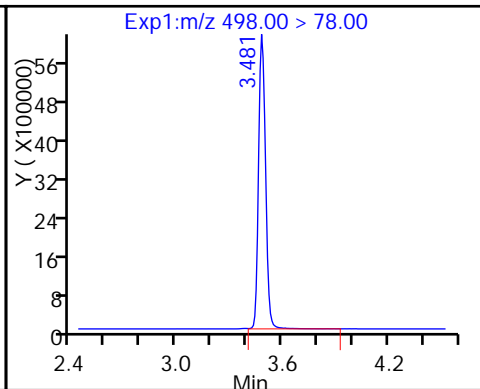
D 19 13C5 PFNA



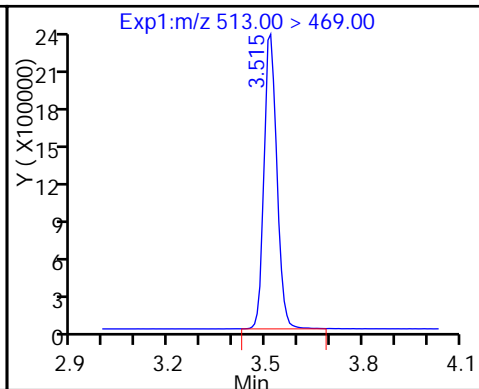
D 21 13C8 FOSA



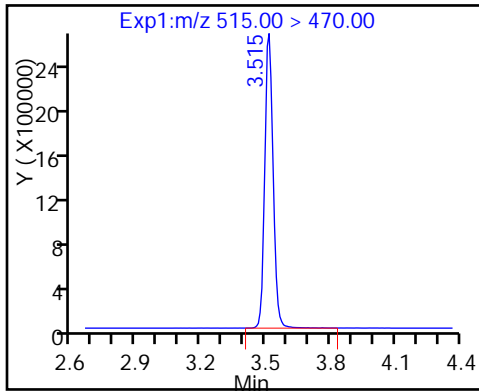
22 Perfluorooctane Sulfonamide



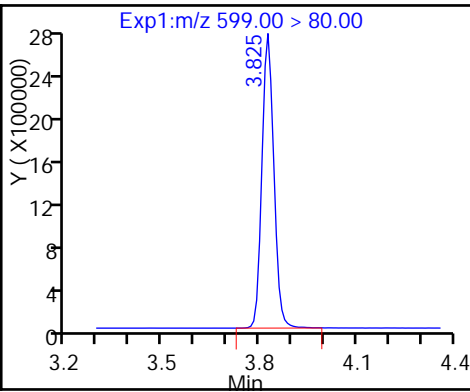
24 Perfluorodecanoic acid



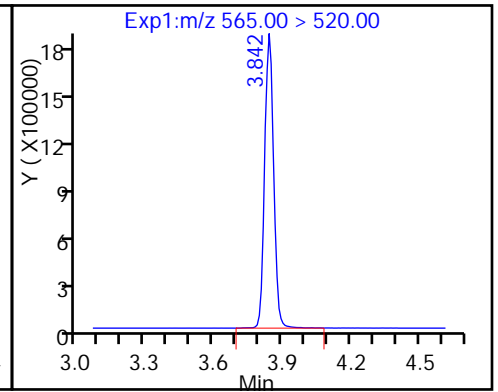
D 23 13C2 PFDA



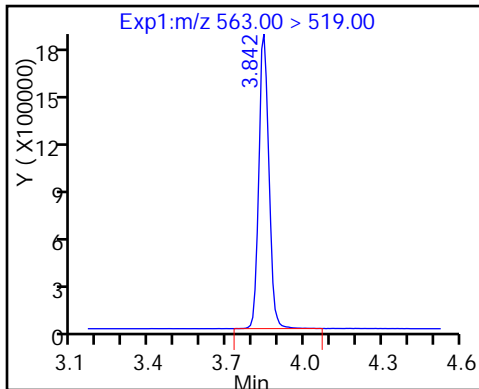
26 Perfluorodecane Sulfonic acid



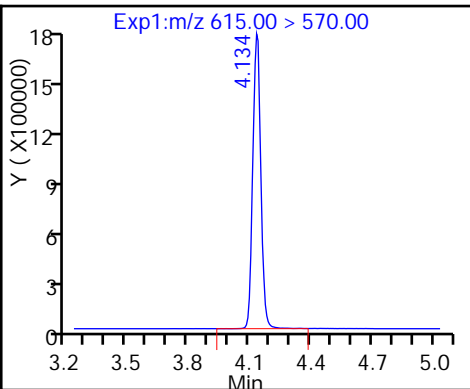
D 27 13C2 PFUnA



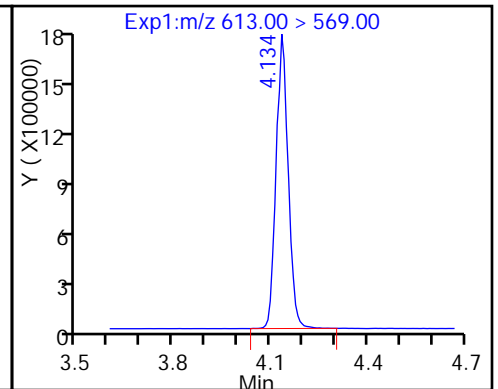
28 Perfluoroundecanoic acid



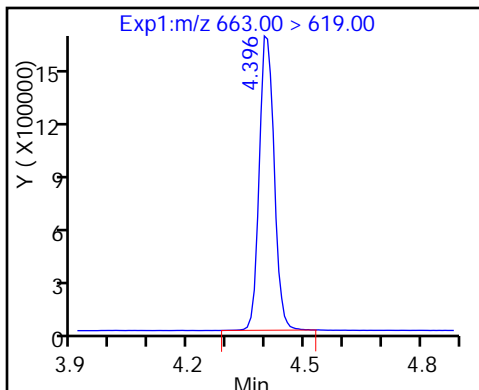
D 30 13C2 PFDaA



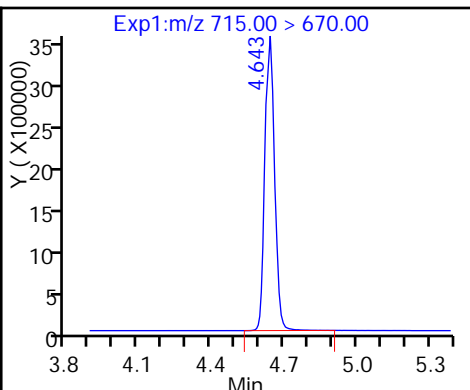
29 Perfluorododecanoic acid



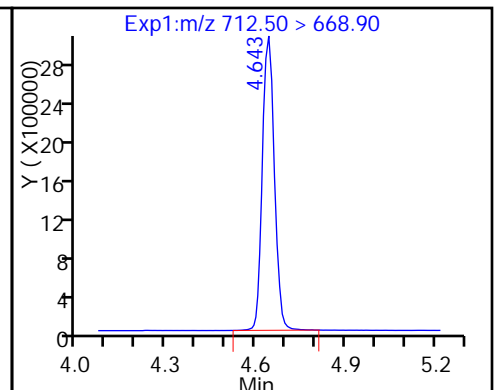
31 Perfluorotridecanoic acid



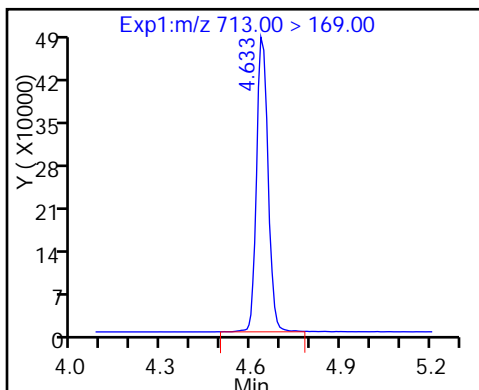
D 32 13C2-PFTeDA



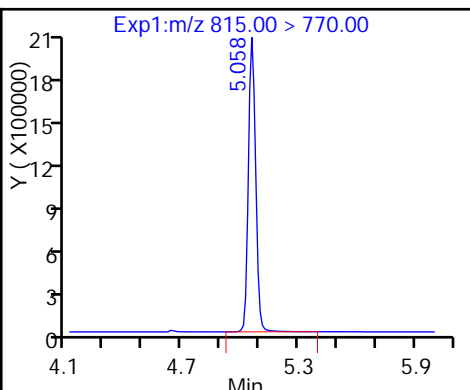
33 Perfluorotetradecanoic acid



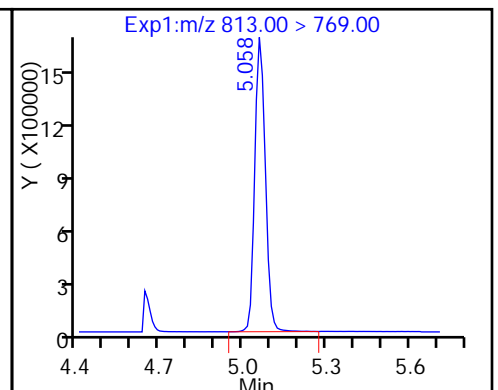
33 Perfluorotetradecanoic acid



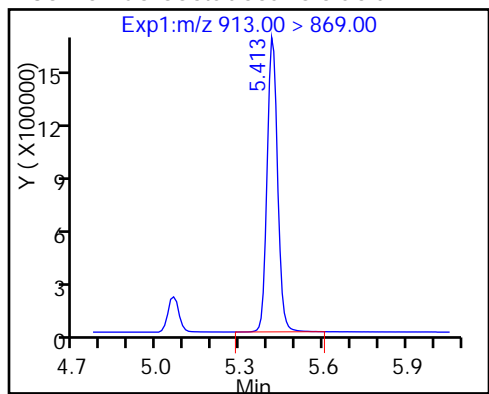
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 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	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	271656	1.02		102	3384	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.859	1.849	0.010	406676	0.8918		101		
	298.90 > 99.00	1.849	1.849	0.0	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	209736	0.9769		97.7	6314	
9 Perfluorohexanesulfonic acid	399.00 > 80.00	2.458	2.379	0.079	338751	1.02		112		M
										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	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

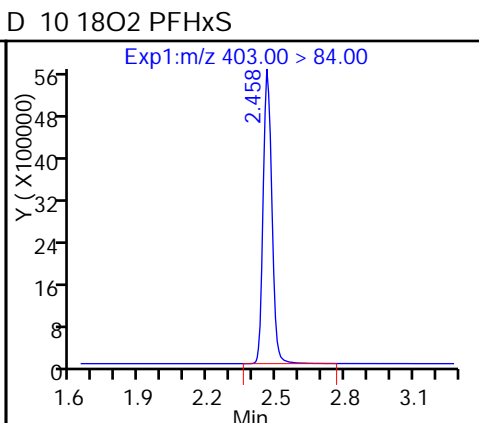
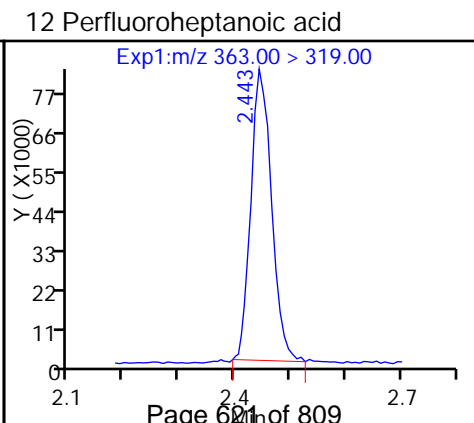
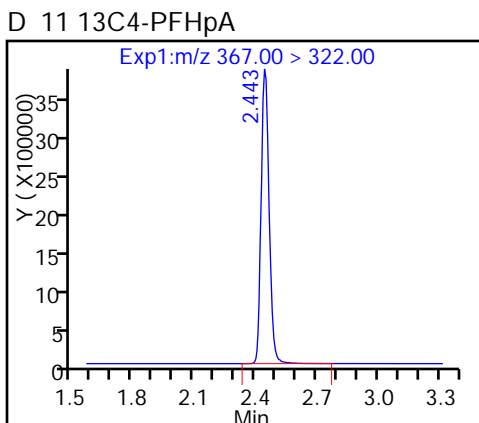
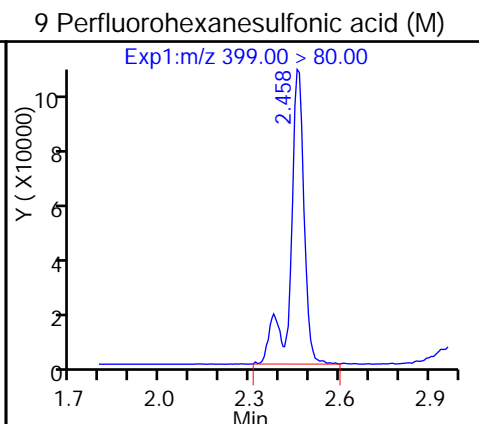
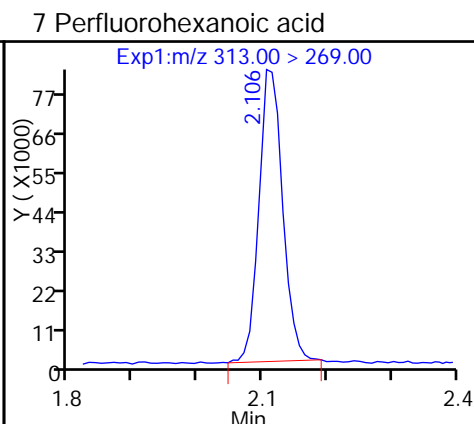
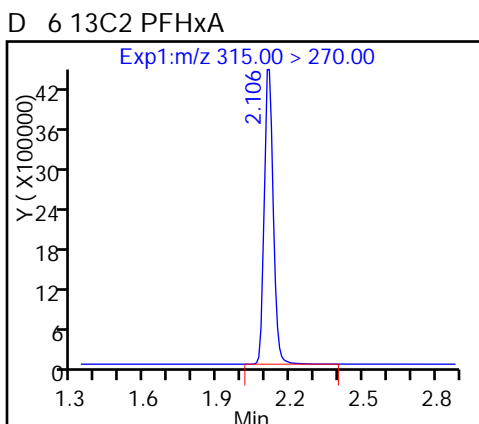
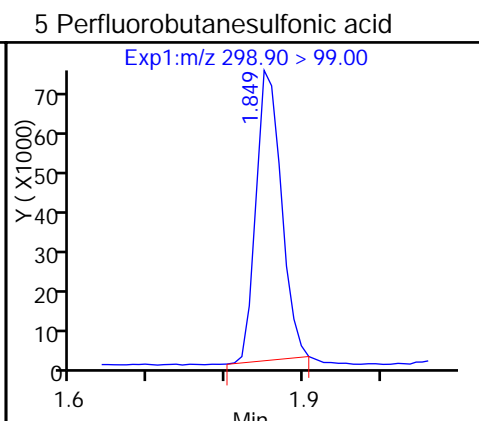
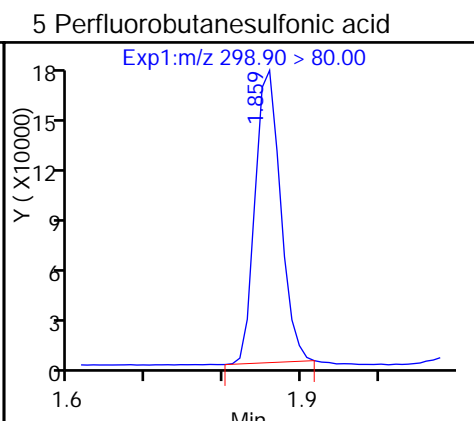
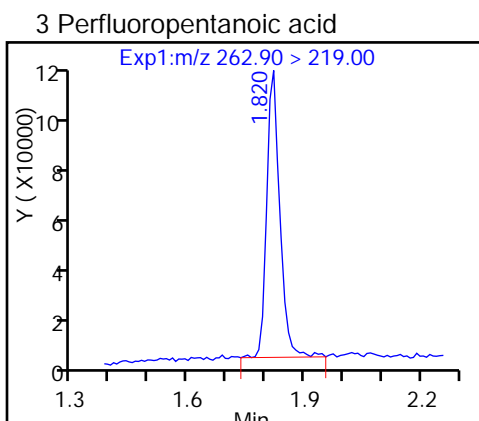
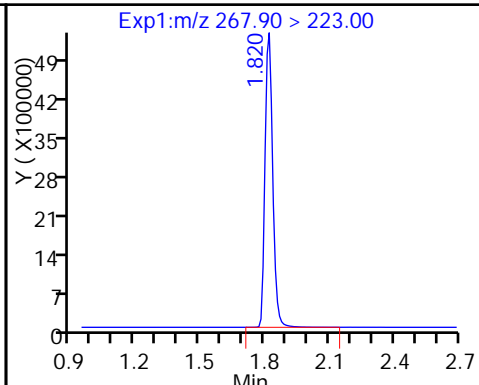
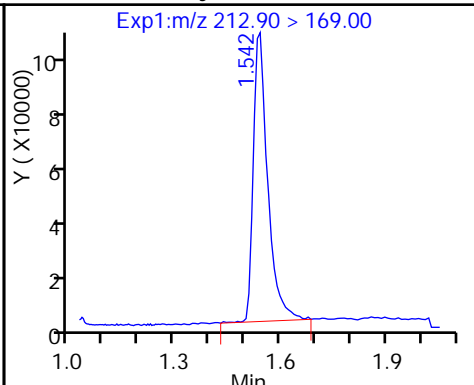
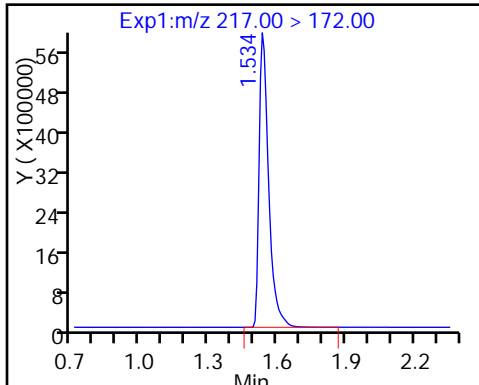
Method: A8_N

Limit Group: LC PFC_DOD ICAL

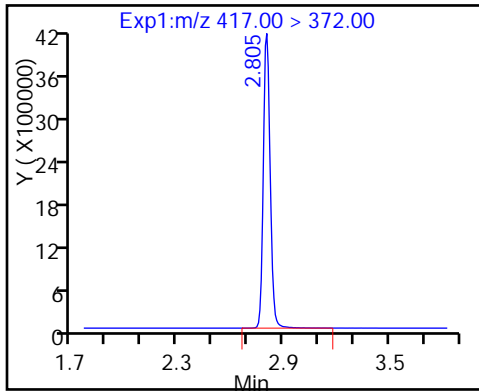
D 2 13C4 PFBA

1 Perfluorobutyric acid

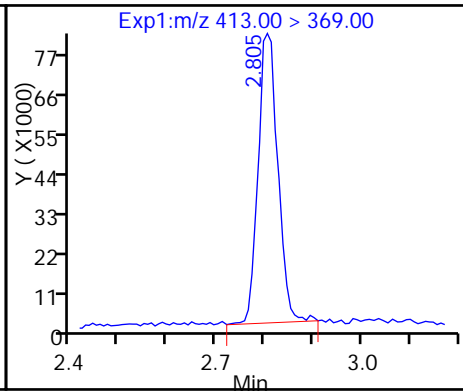
D 4 13C5-PFPeA



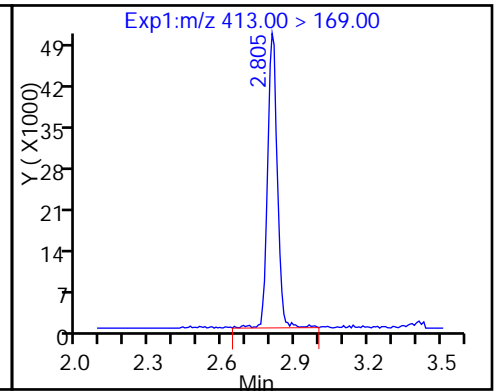
D 14 13C4 PFOA



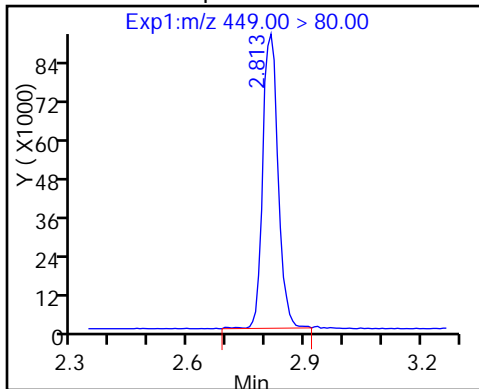
15 Perfluorooctanoic acid



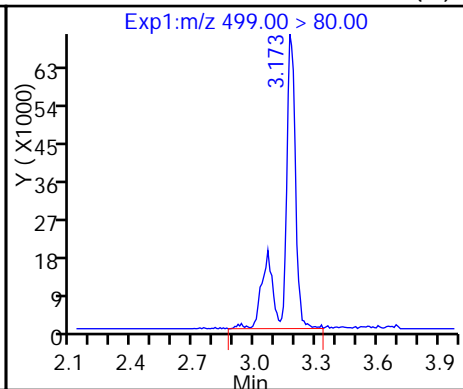
15 Perfluorooctanoic acid



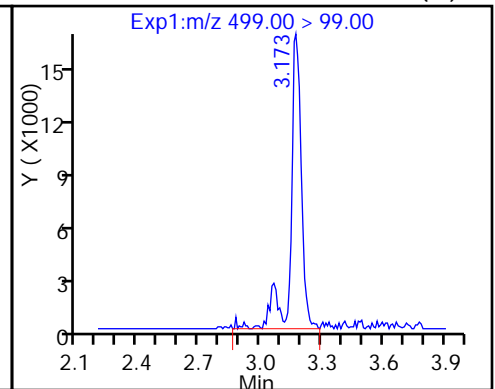
13 Perfluoroheptanesulfonic Acid



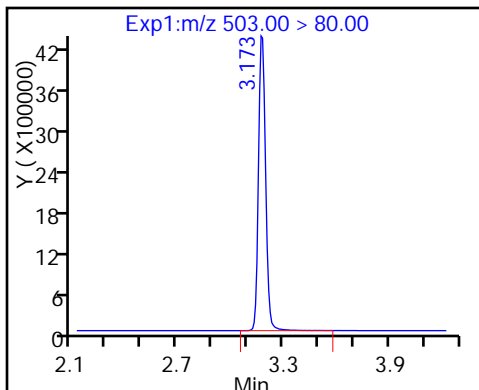
18 Perfluorooctane sulfonic acid (M)



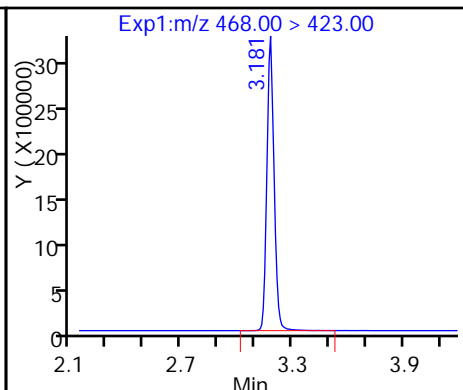
18 Perfluorooctane sulfonic acid (M)



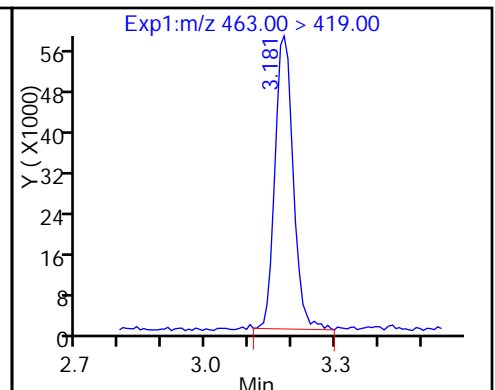
D 17 13C4 PFOS



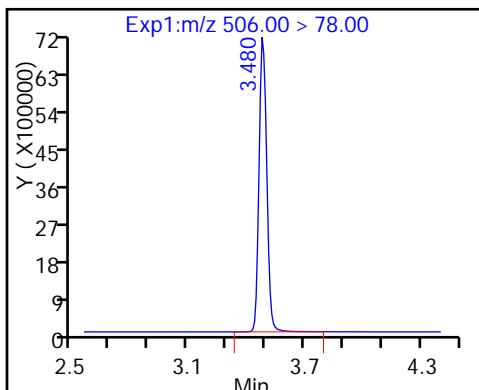
D 19 13C5 PFNA



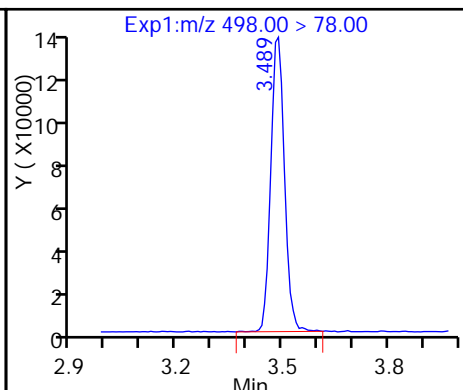
20 Perfluorononanoic acid



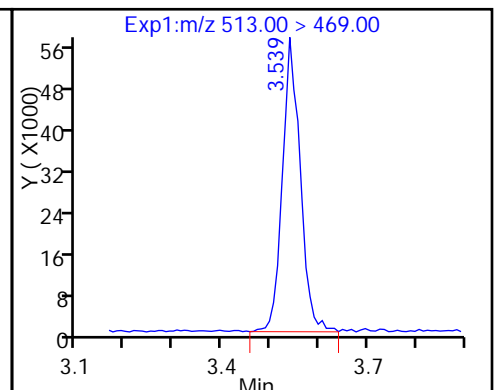
D 21 13C8 FOSA



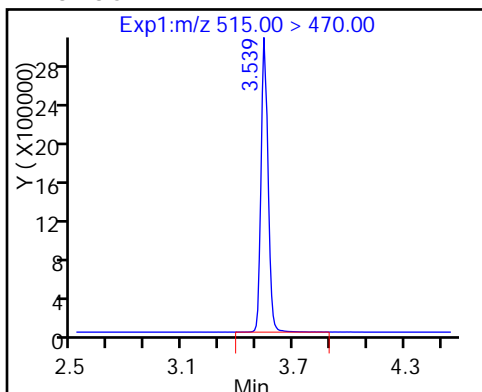
22 Perfluorooctane Sulfonamide



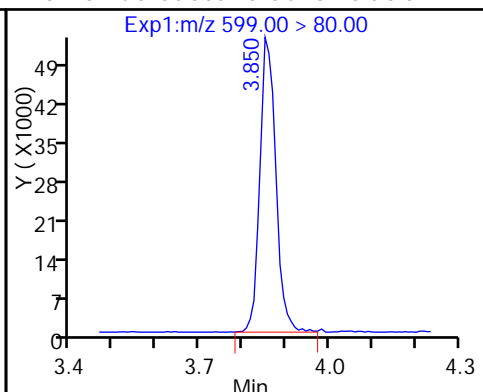
24 Perfluorodecanoic acid



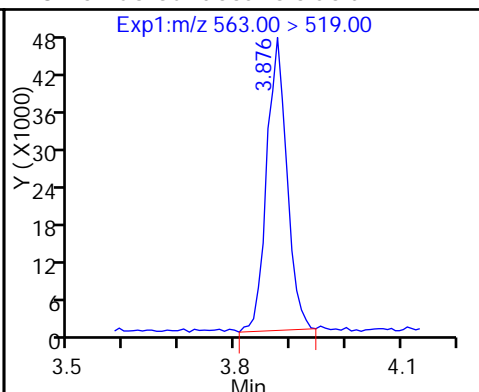
D 23 13C2 PFDA



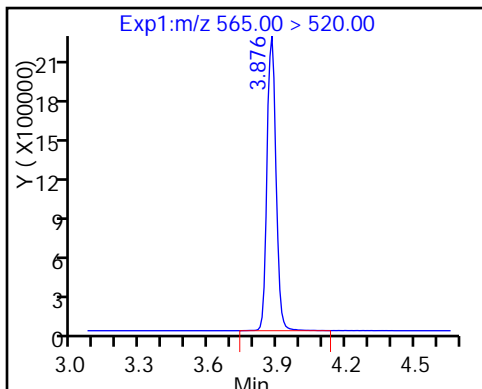
26 Perfluorodecane Sulfonic acid



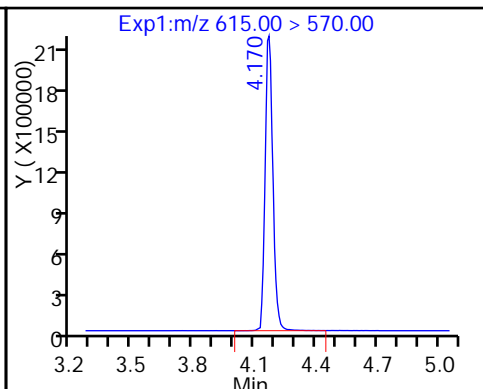
28 Perfluoroundecanoic acid



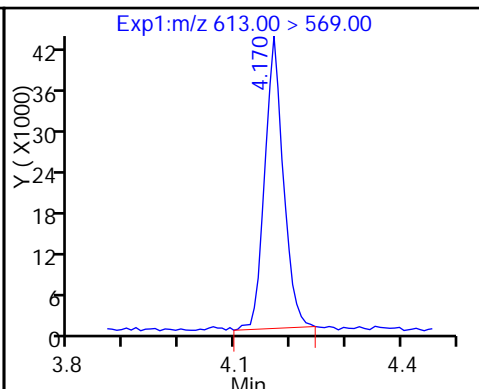
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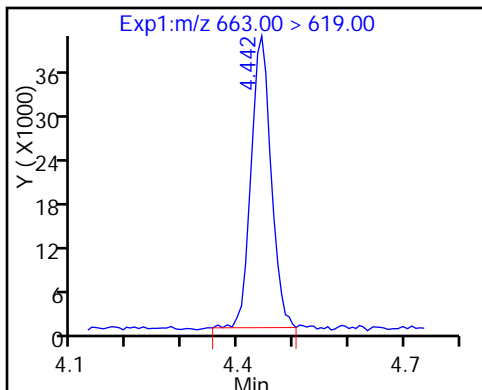
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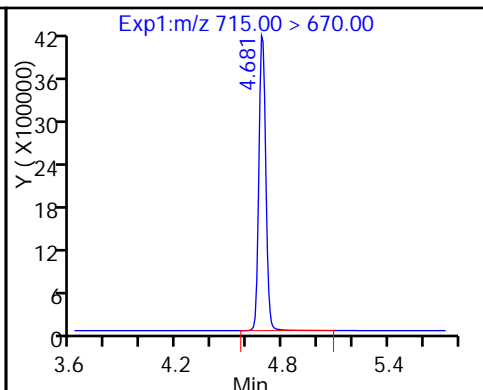
29 Perfluorododecanoic acid



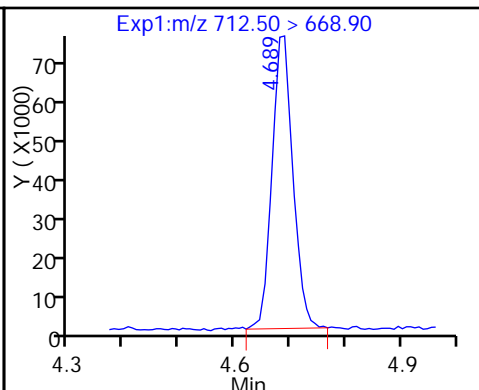
31 Perfluorotridecanoic acid



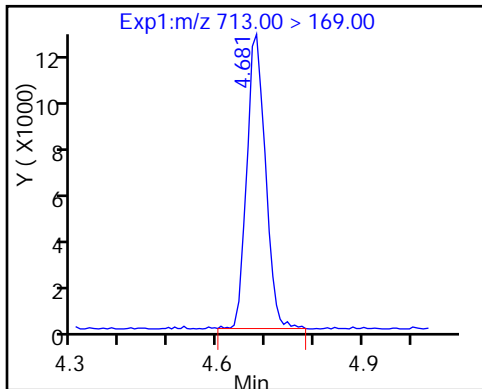
D 32 13C2-PFTeDa



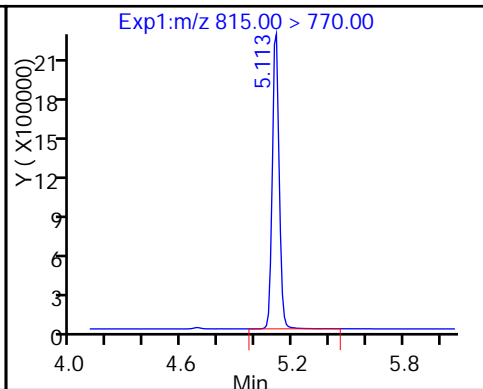
33 Perfluorotetradecanoic acid



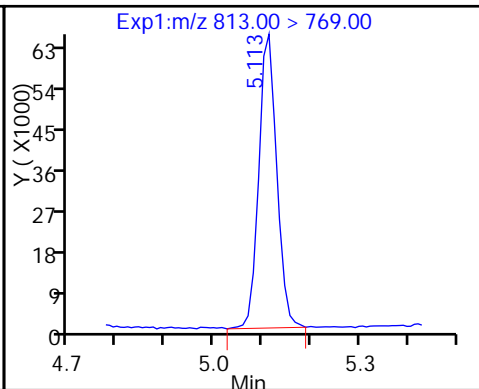
33 Perfluorotetradecanoic acid



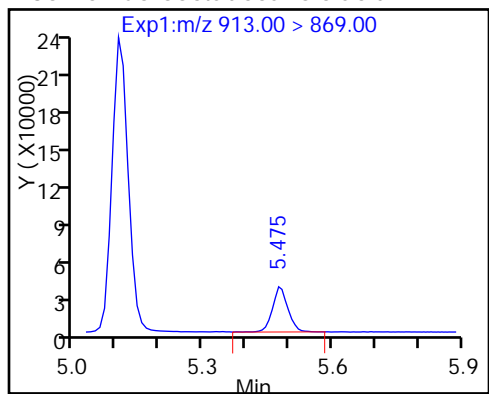
D 34 13C2-PFHxDa



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

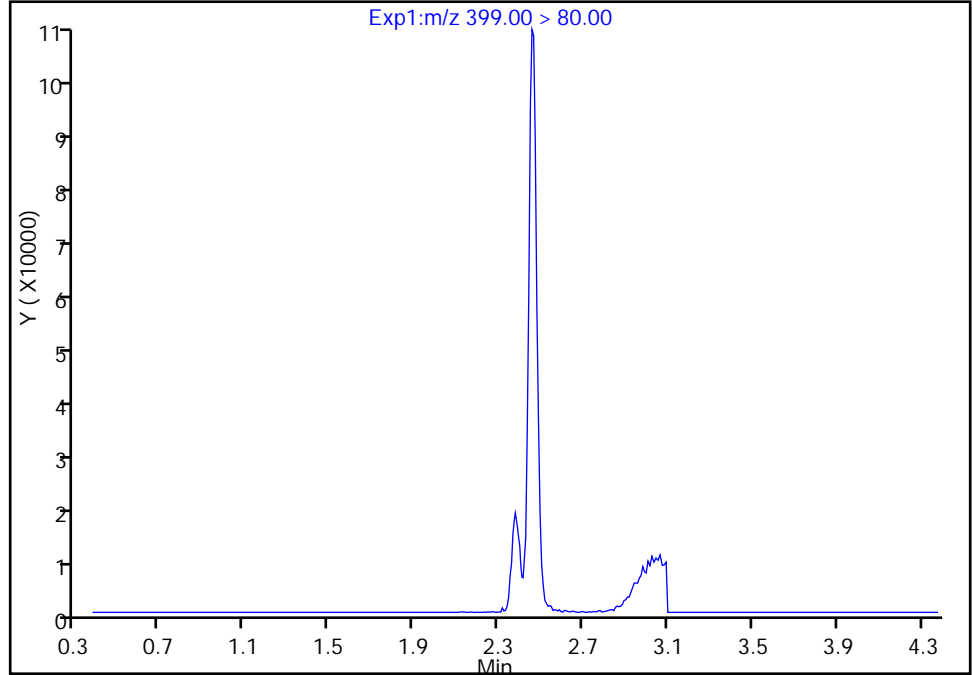
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Injection Date: 30-Dec-2016 11:26:29 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

9 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

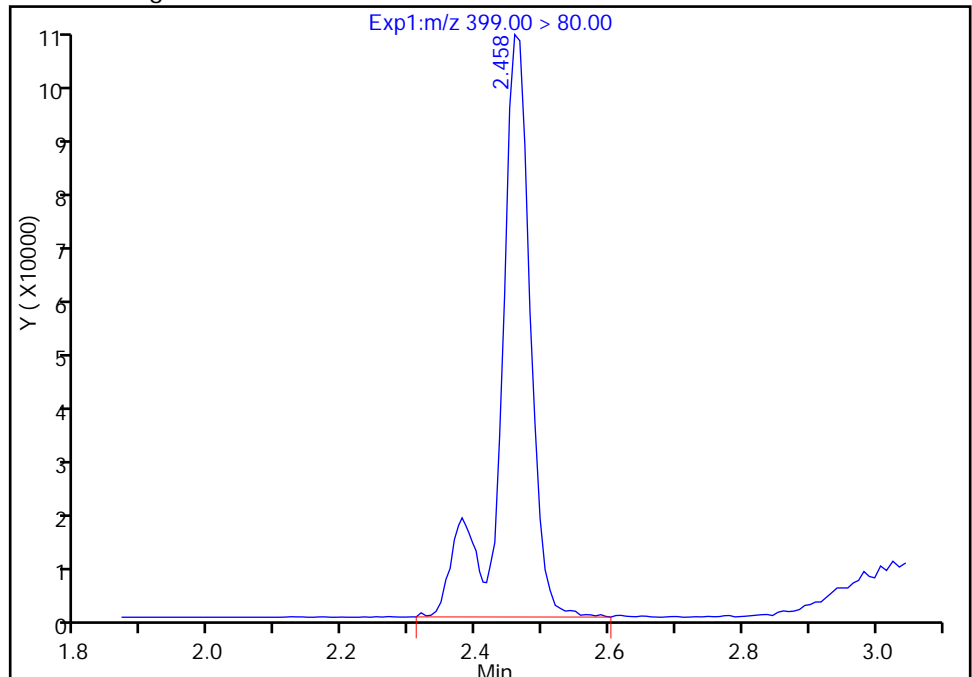
Not Detected
Expected RT: 2.38

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

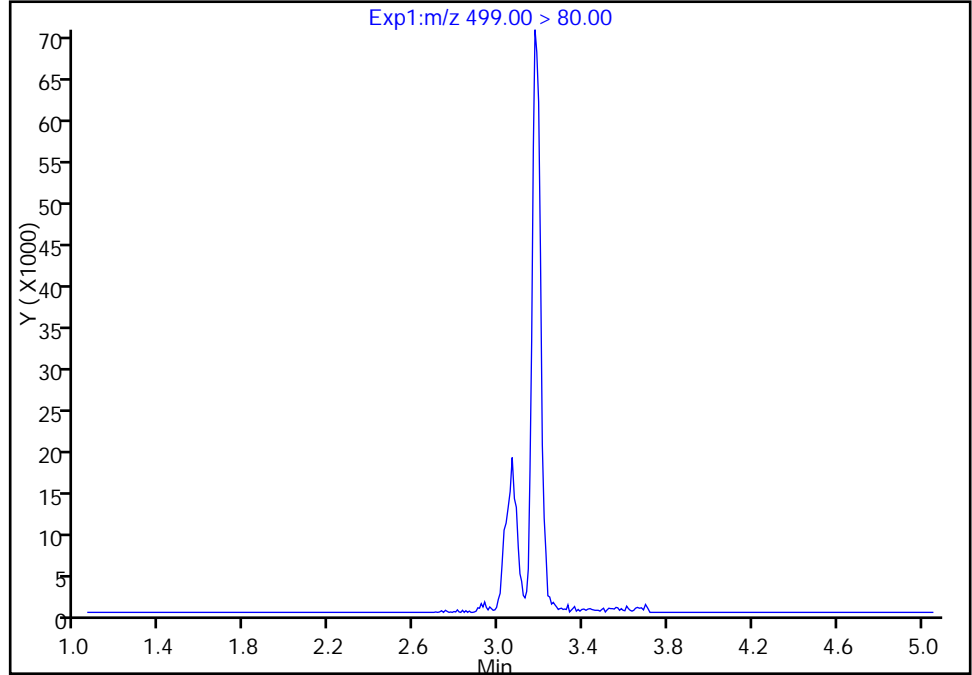
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Injection Date: 30-Dec-2016 11:26:29 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

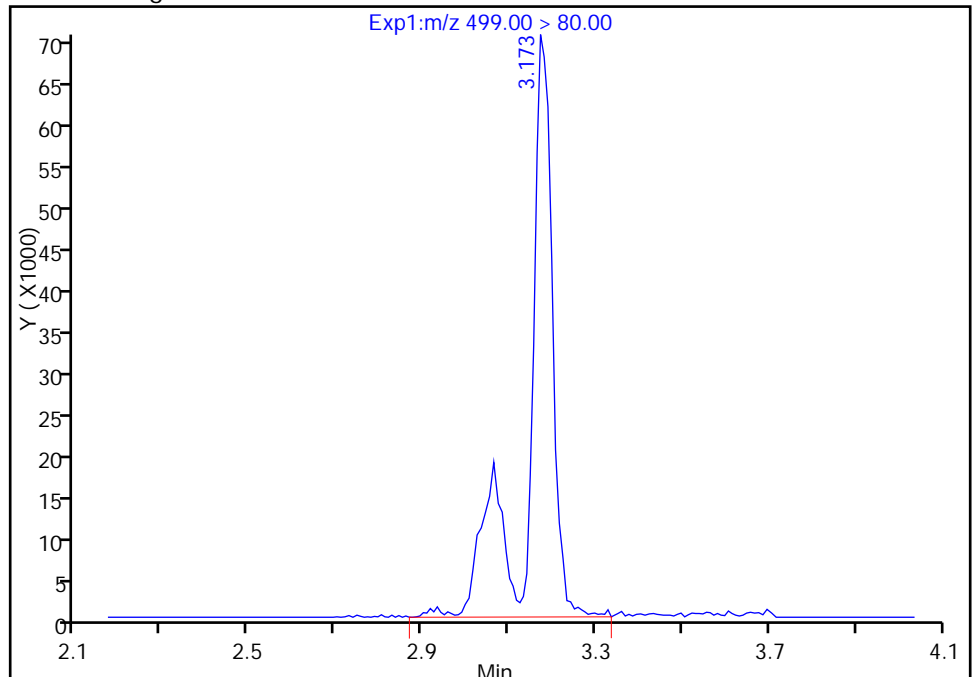
Signal: 1

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
Page 626 of 809

TestAmerica Sacramento

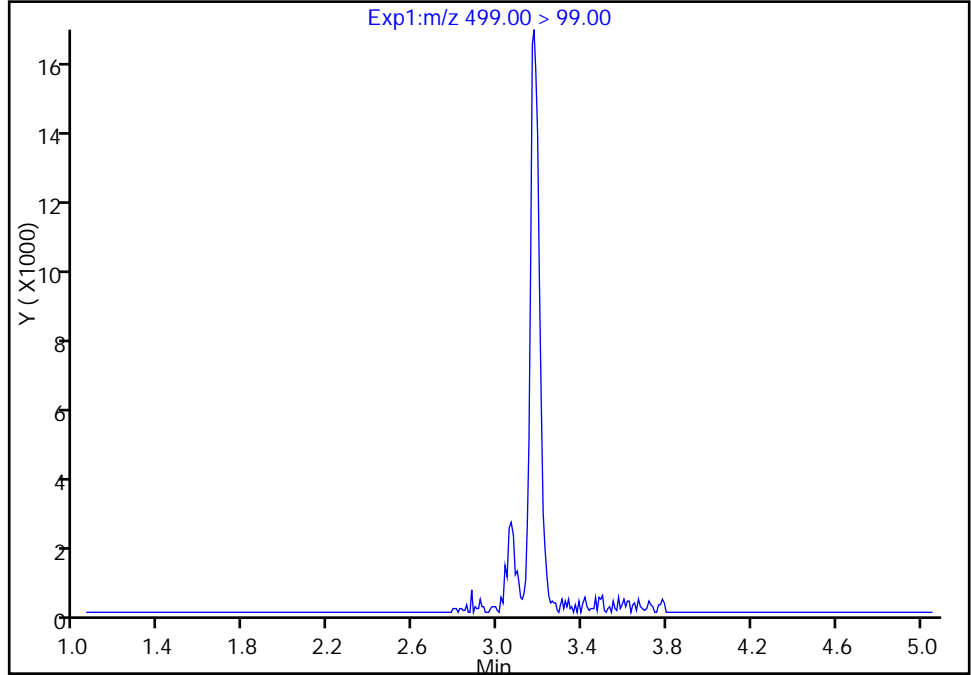
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Injection Date: 30-Dec-2016 11:26:29 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

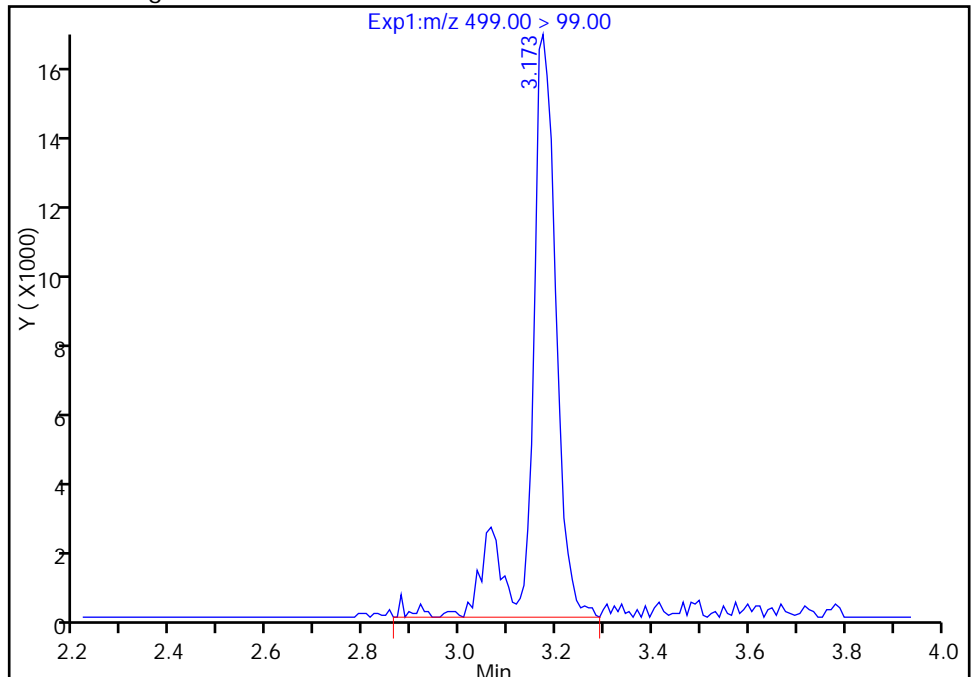
Not Detected
Expected RT: 3.05

Processing Integration Results



RT: 3.17
Area: 58719
Amount: 1.072313
Amount Units: ng/ml

Manual Integration Results



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.: 320-24184-1
 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
Perfluorooctanesulfonic 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	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	12131372	50.8		102	141916	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.849	1.849	0.0	19819046	47.4		107		
	298.90 > 99.00	1.849	1.849	0.0	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	10154370	50.2		100	252812	
9 Perfluorohexanesulfonic acid	399.00 > 80.00	2.424	2.424	0.0	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	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 PFDoA										
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

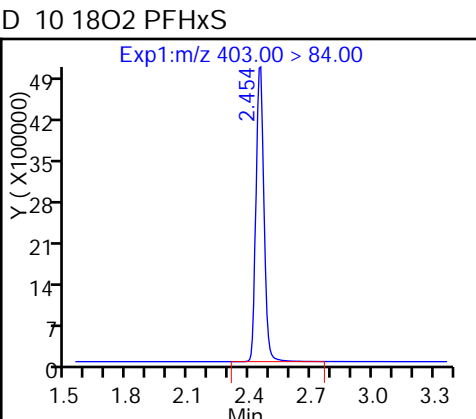
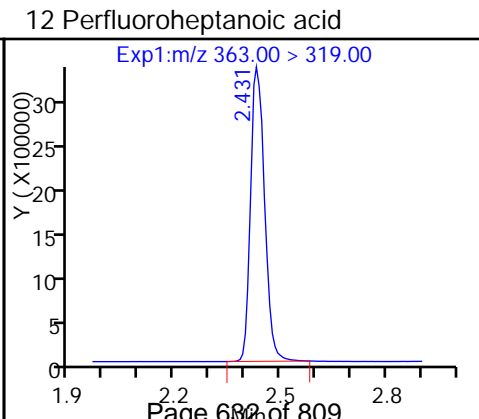
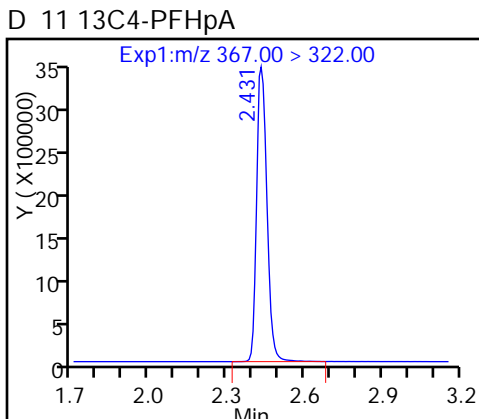
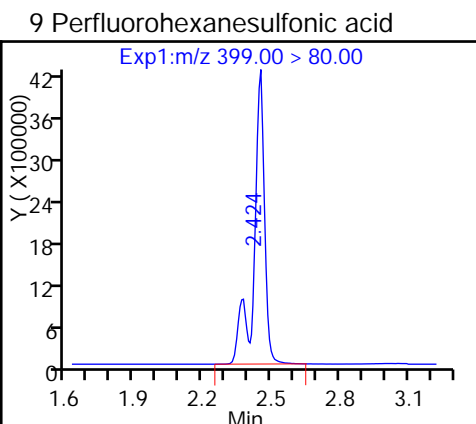
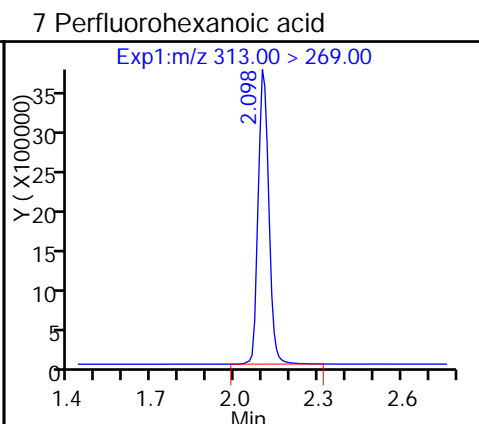
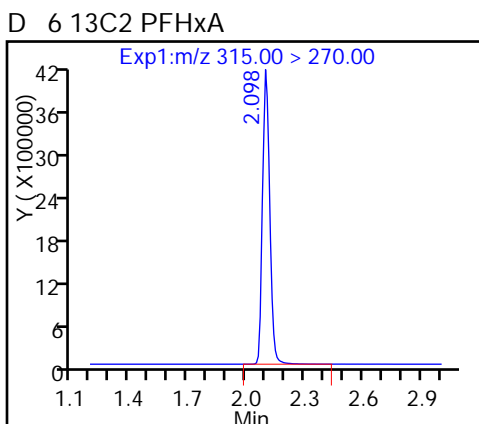
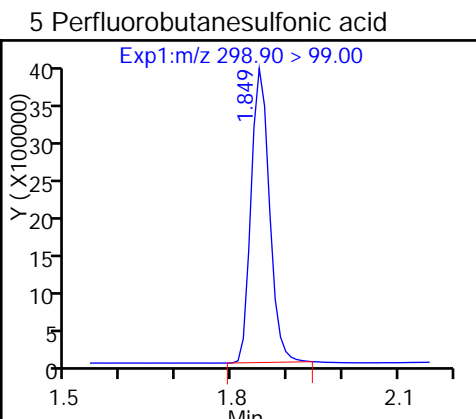
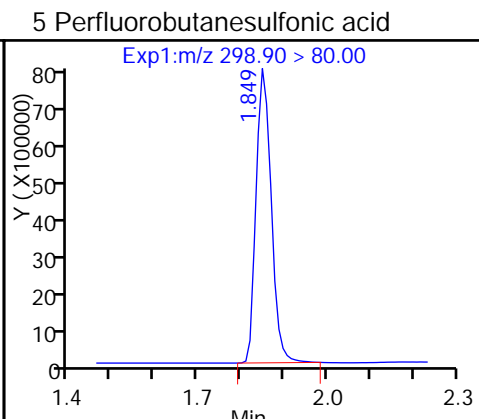
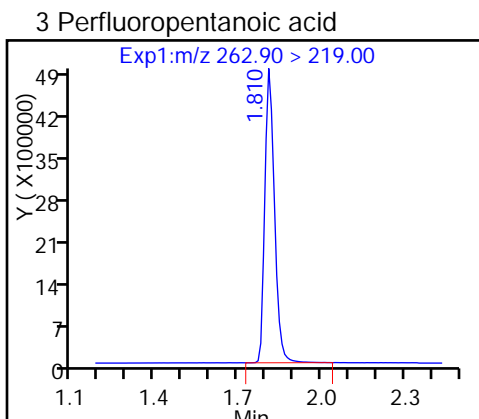
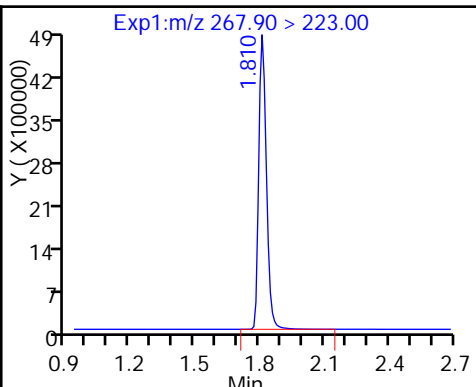
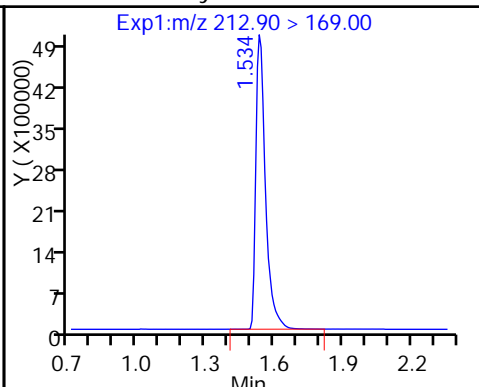
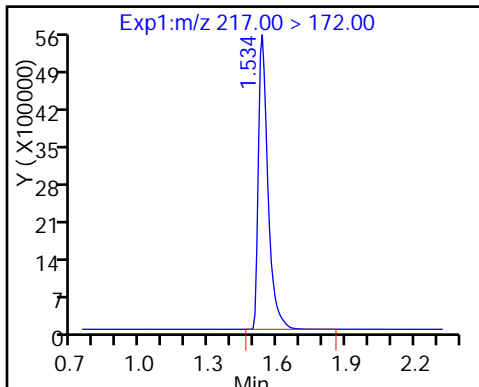
Method: A8_N

Limit Group: LC PFC_DOD ICAL

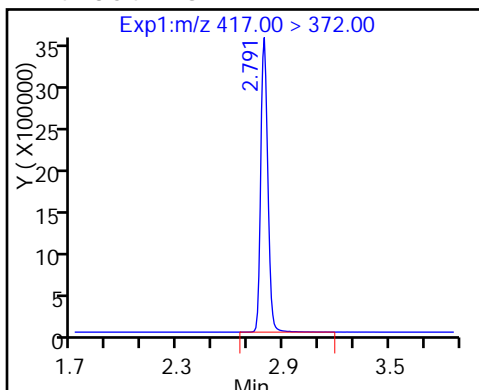
D 2 13C4 PFBA

1 Perfluorobutyric acid

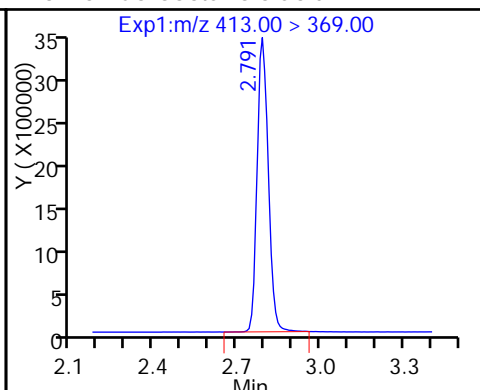
D 4 13C5-PFPeA



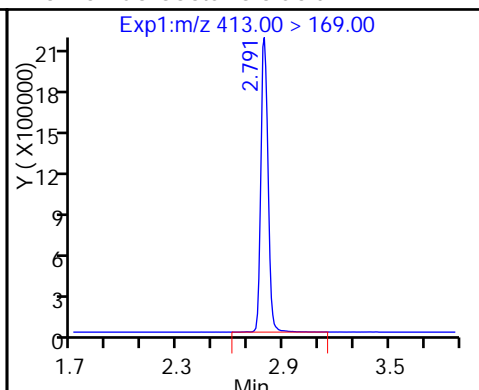
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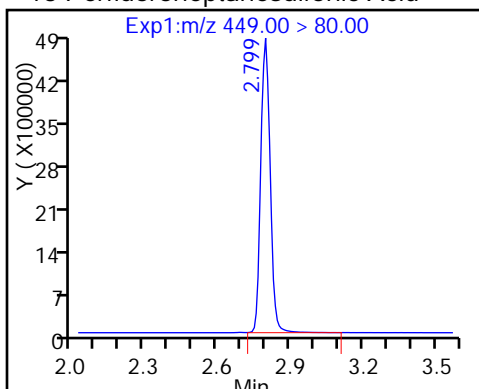
15 Perfluorooctanoic acid



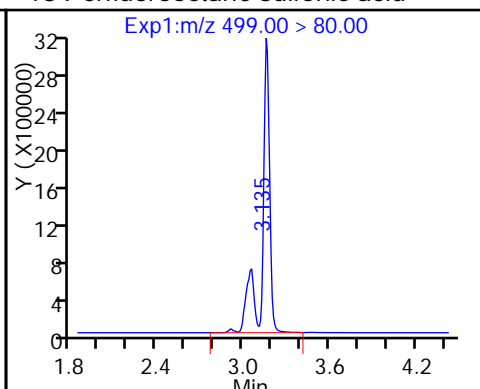
15 Perfluorooctanoic acid



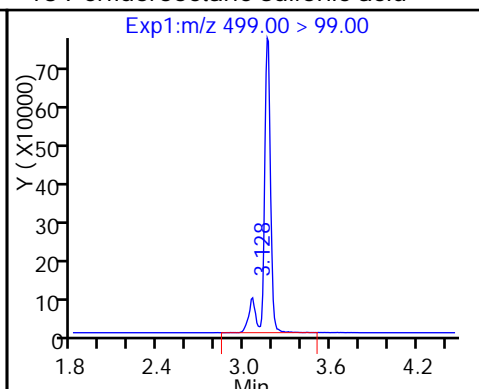
13 Perfluoroheptanesulfonic Acid



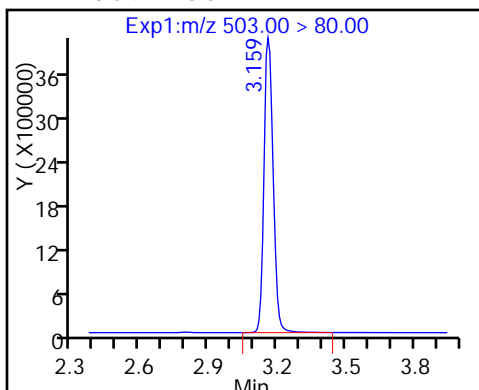
18 Perfluorooctane sulfonic acid



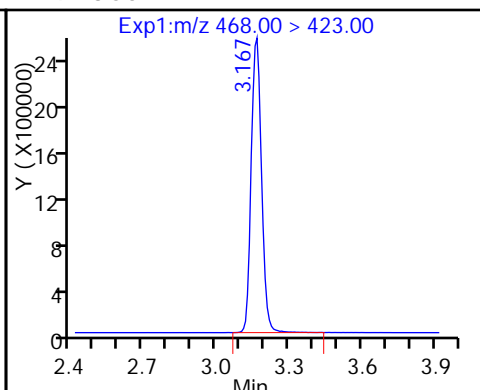
18 Perfluorooctane sulfonic acid



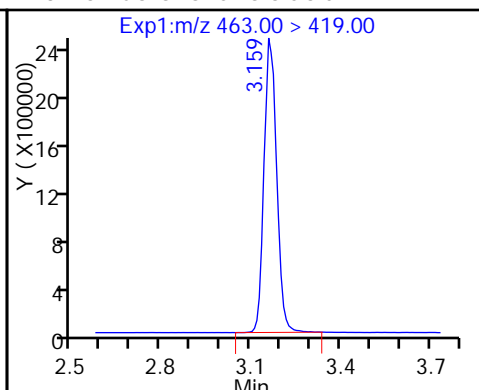
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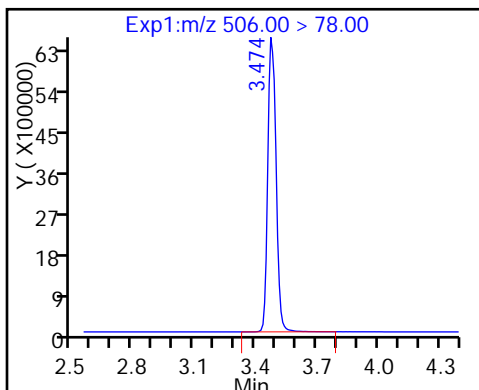
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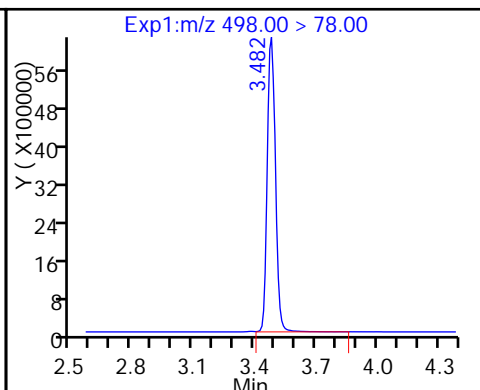
20 Perfluorononanoic acid



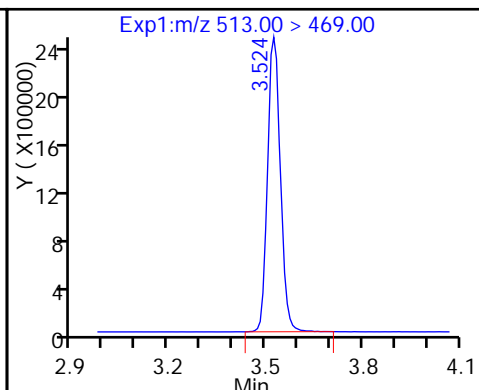
D 21 13C8 FOSA



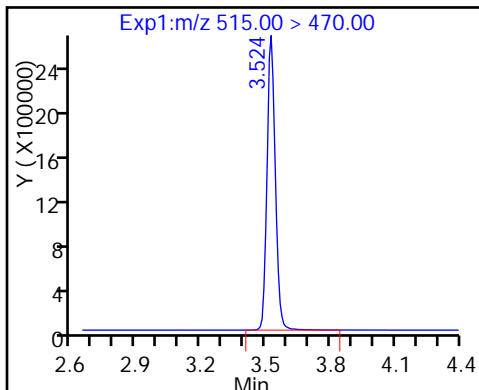
22 Perfluorooctane Sulfonamide



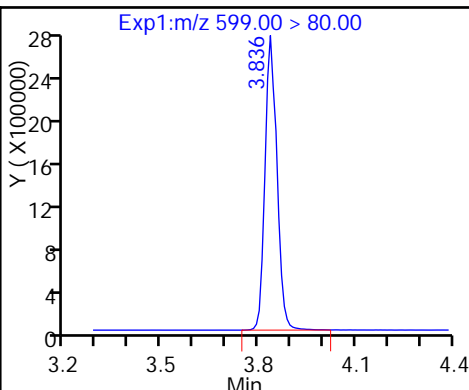
24 Perfluorodecanoic acid



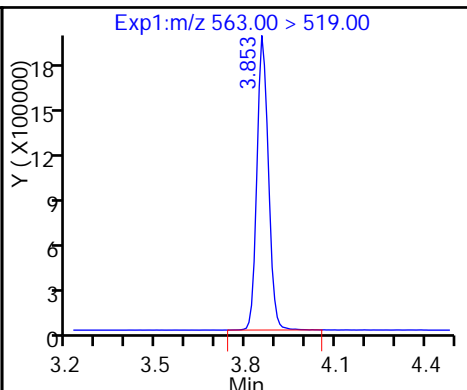
D 23 13C2 PFDA



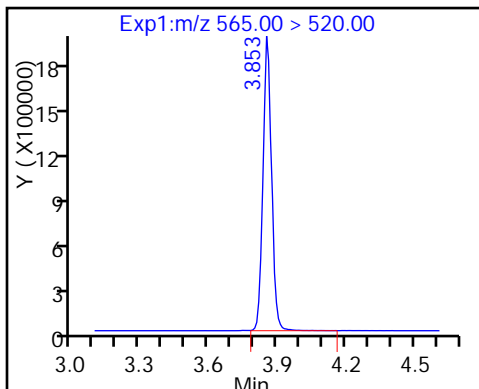
26 Perfluorodecane Sulfonic acid



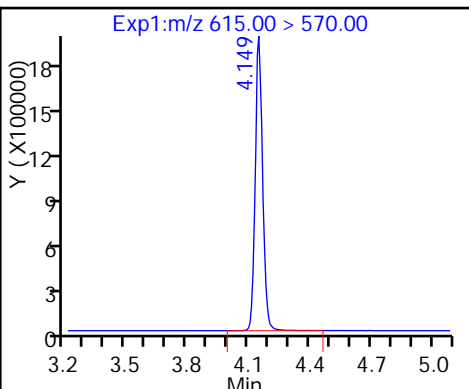
28 Perfluoroundecanoic acid



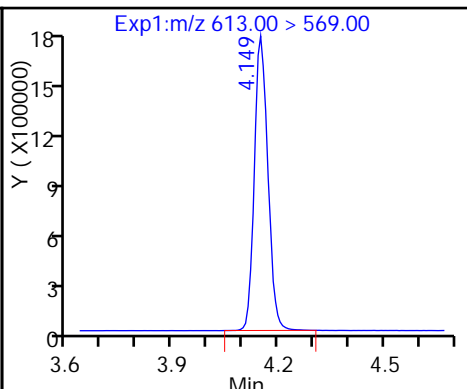
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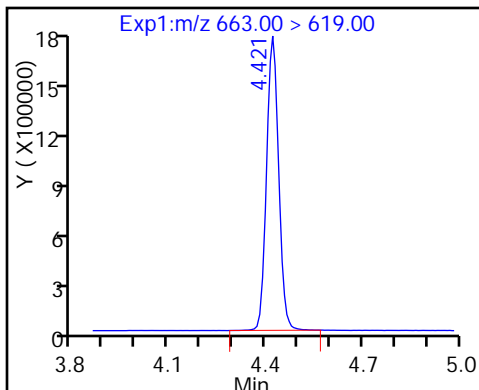
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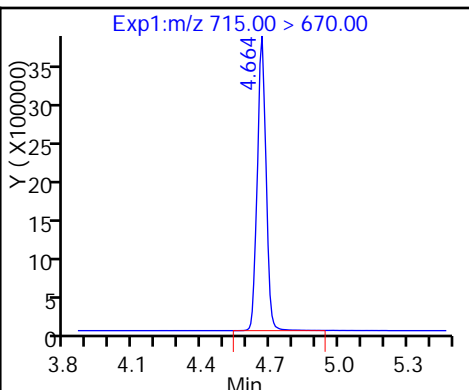
29 Perfluorododecanoic acid



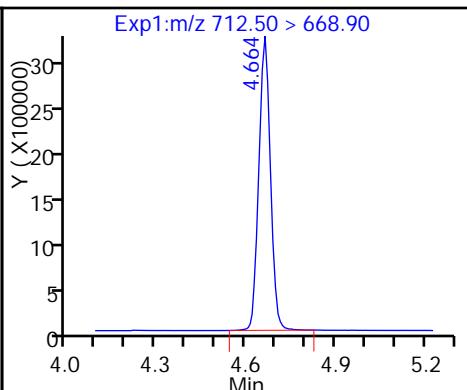
31 Perfluorotridecanoic acid



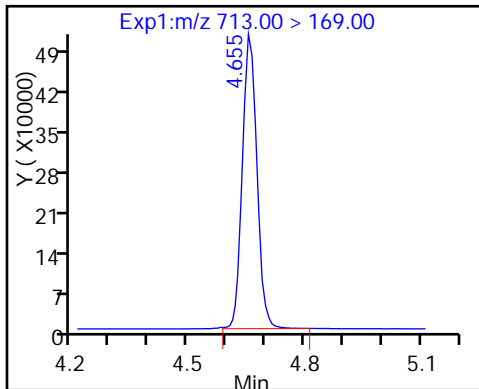
D 32 13C2-PFTeDA



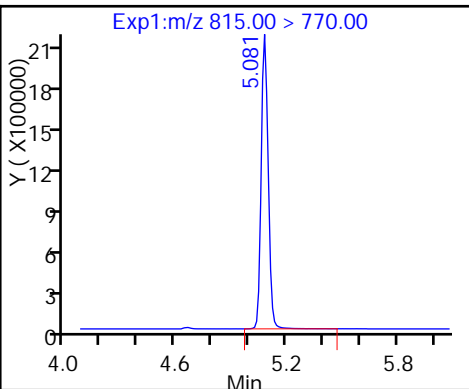
33 Perfluorotetradecanoic acid



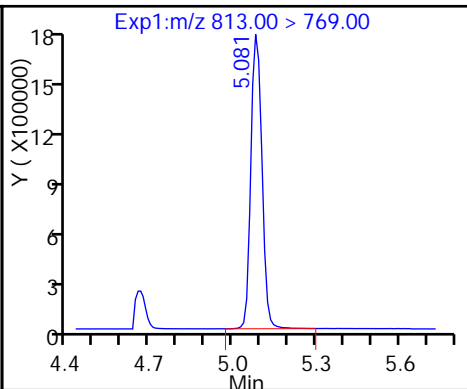
33 Perfluorotetradecanoic acid



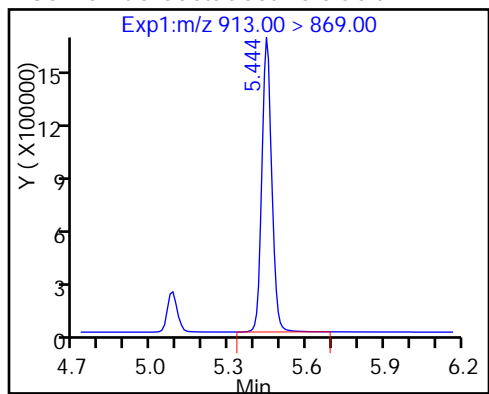
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 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
Perfluorooctanesulfonic 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 PFDoA										
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

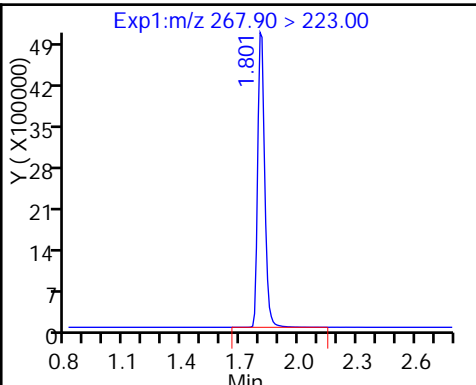
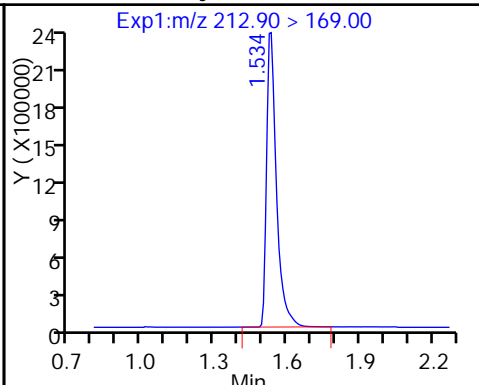
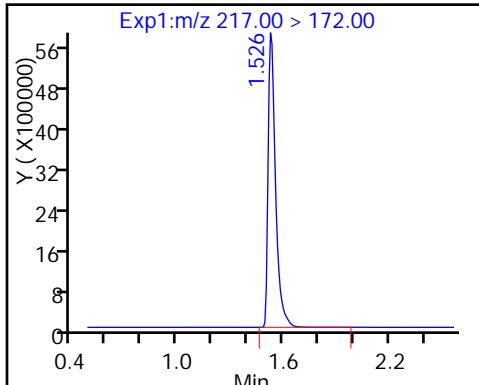
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

1 Perfluorobutyric acid

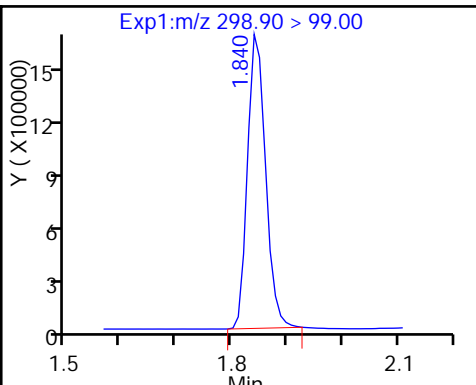
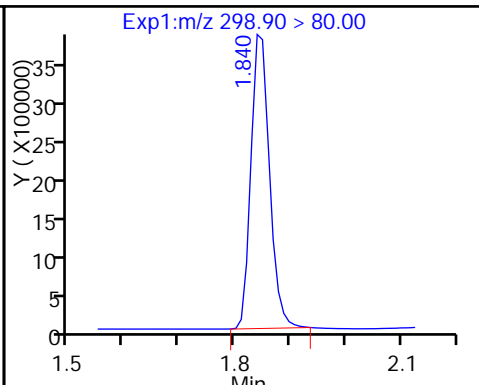
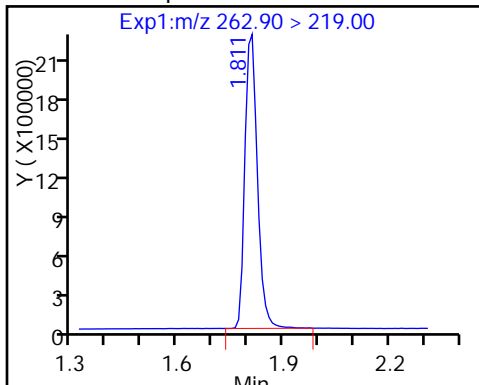
D 4 13C5-PFPeA



3 Perfluoropentanoic acid

5 Perfluorobutanesulfonic acid

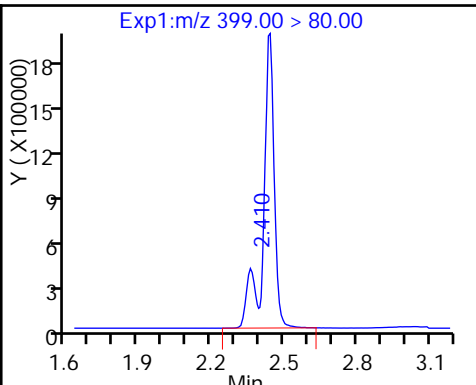
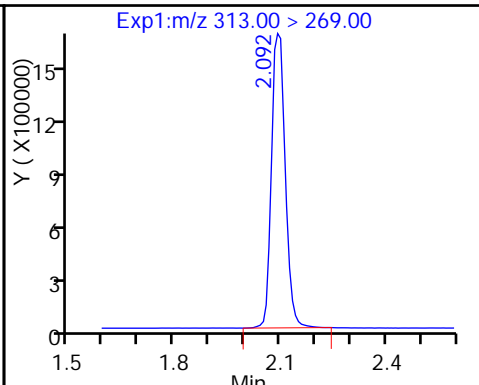
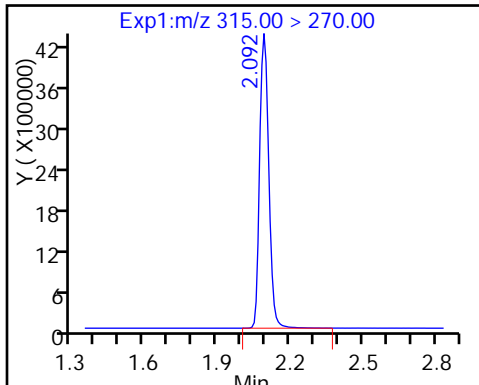
5 Perfluorobutanesulfonic acid



D 6 13C2 PFHxA

7 Perfluorohexanoic acid

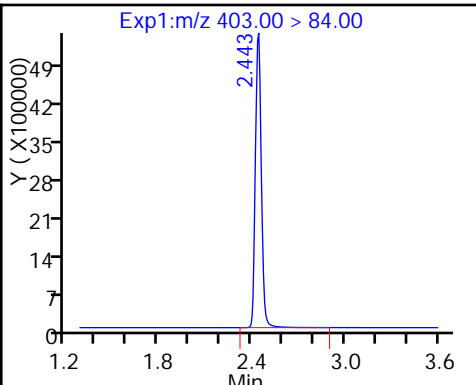
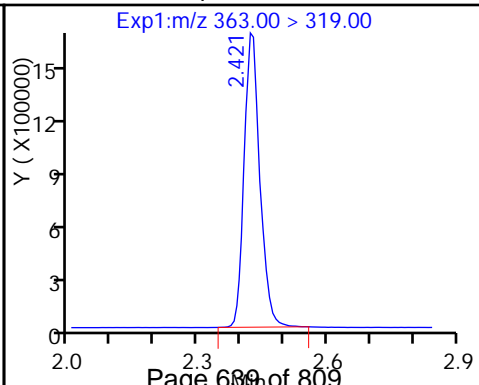
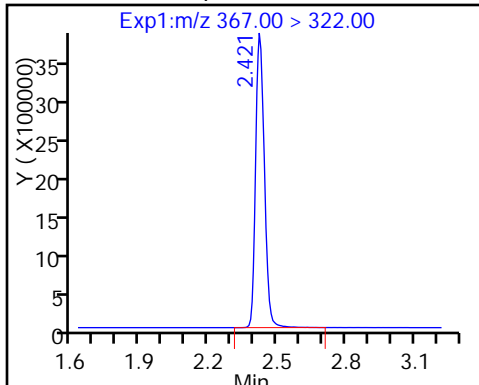
9 Perfluorohexanesulfonic acid



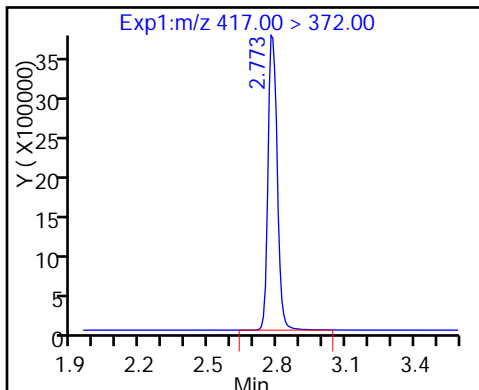
D 11 13C4-PFHpA

12 Perfluoroheptanoic acid

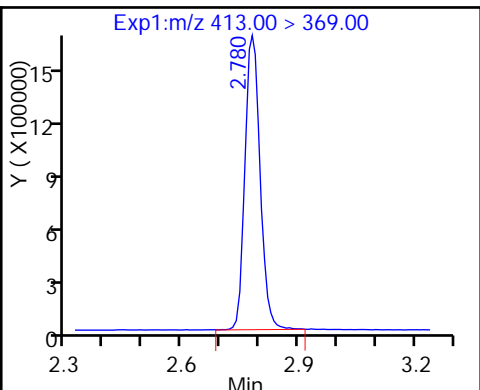
D 10 18O2 PFHxS



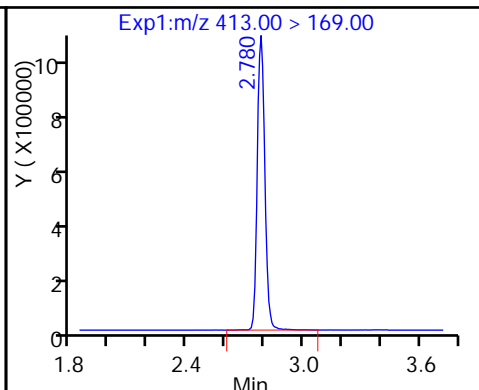
D 14 13C4 PFOA



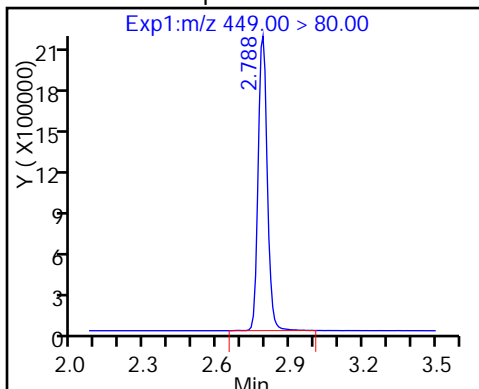
15 Perfluorooctanoic acid



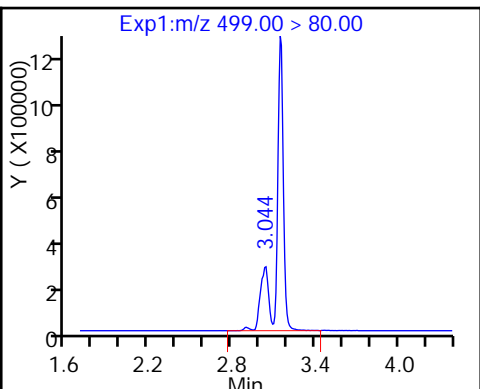
15 Perfluorooctanoic acid



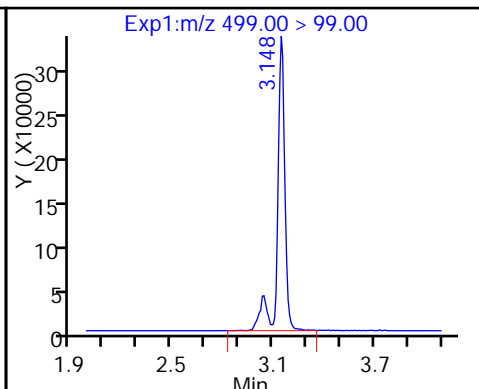
13 Perfluoroheptanesulfonic Acid



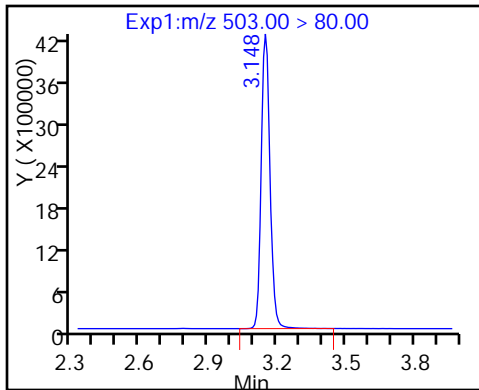
18 Perfluorooctane sulfonic acid



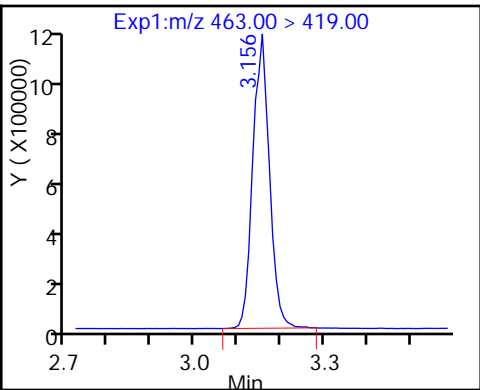
18 Perfluorooctane sulfonic acid



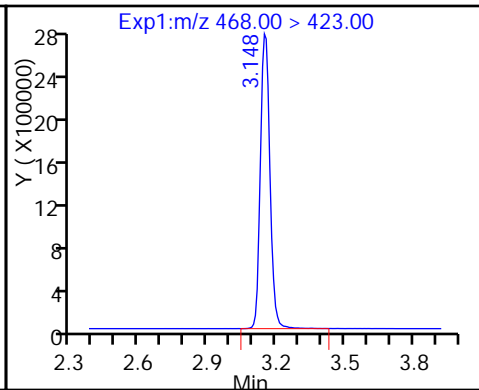
D 17 13C4 PFOS



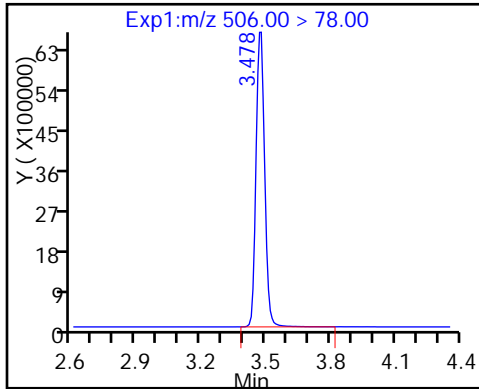
20 Perfluorononanoic acid



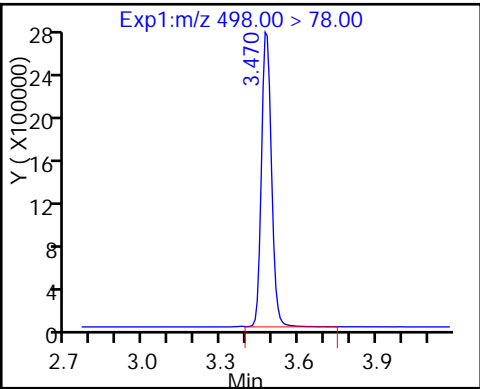
D 19 13C5 PFNA



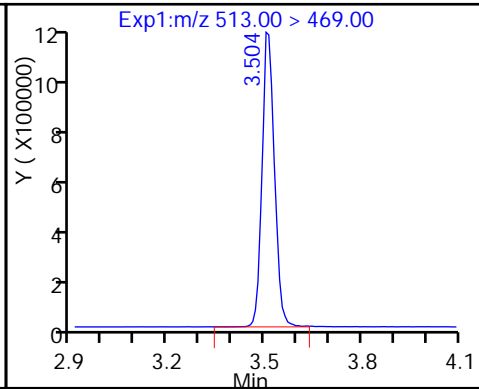
D 21 13C8 FOSA



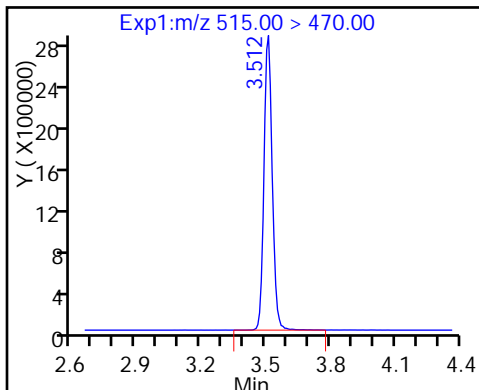
22 Perfluorooctane Sulfonamide



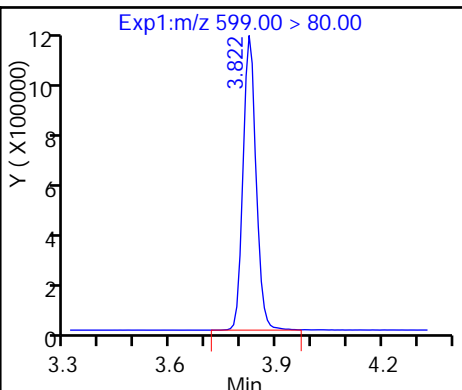
24 Perfluorodecanoic acid



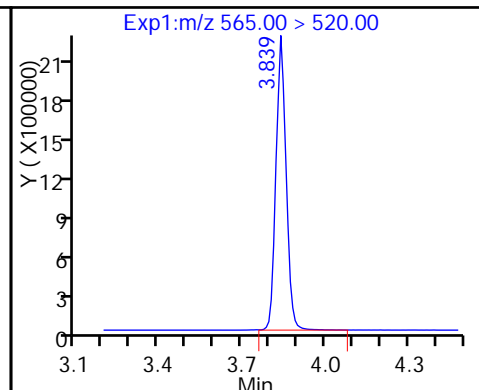
D 23 13C2 PFDA



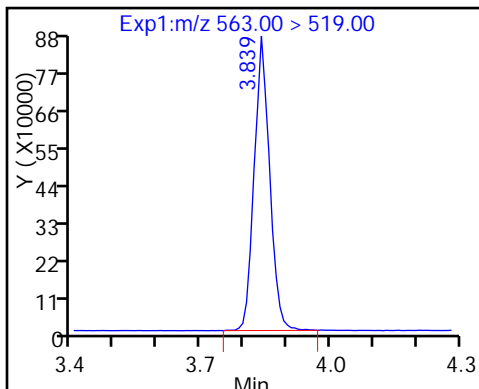
26 Perfluorodecane Sulfonic acid



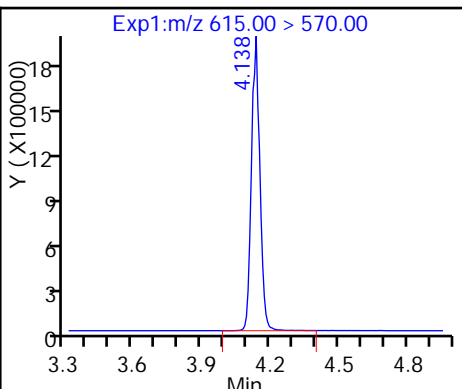
D 27 13C2 PFUnA



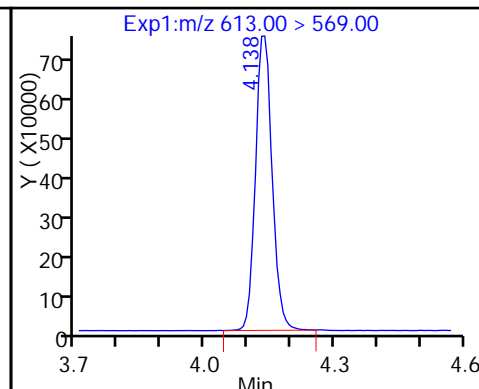
28 Perfluoroundecanoic acid



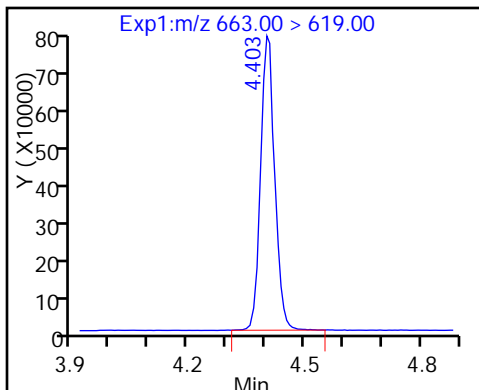
D 30 13C2 PFDaA



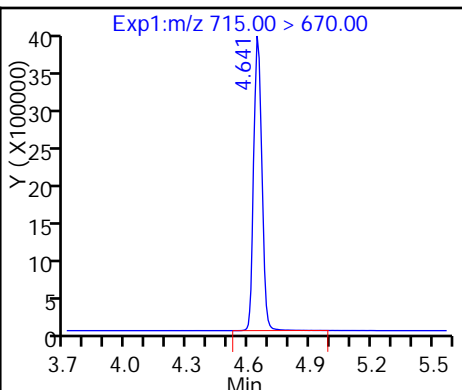
29 Perfluorododecanoic acid



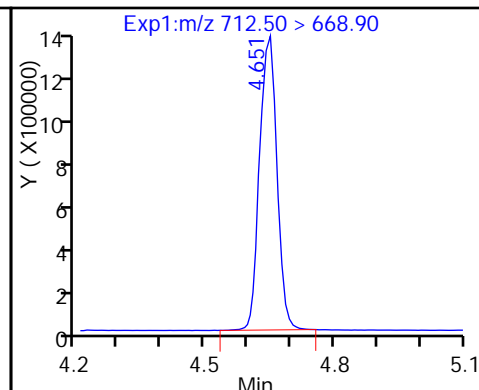
31 Perfluorotridecanoic acid



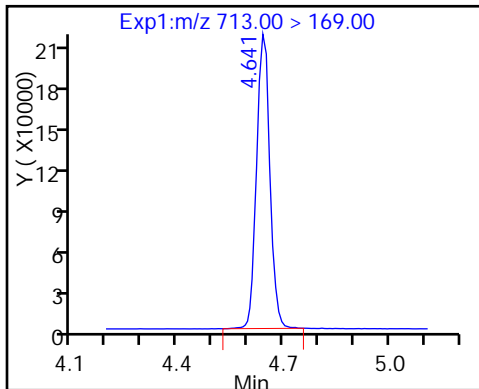
D 32 13C2-PFTeDA



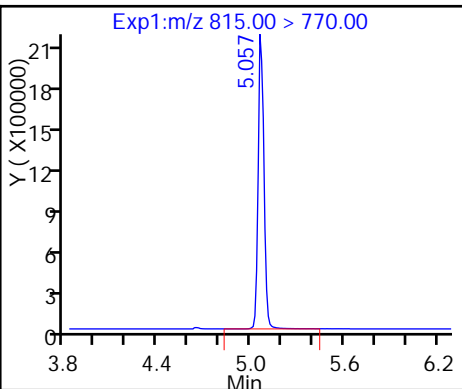
33 Perfluorotetradecanoic acid



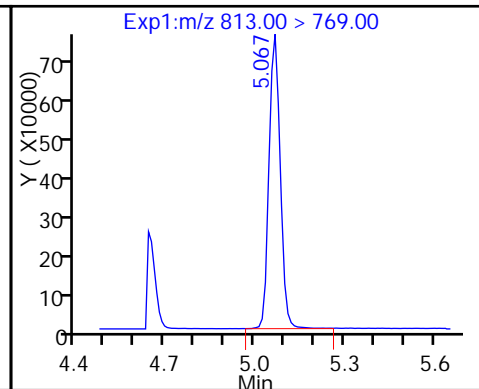
33 Perfluorotetradecanoic acid



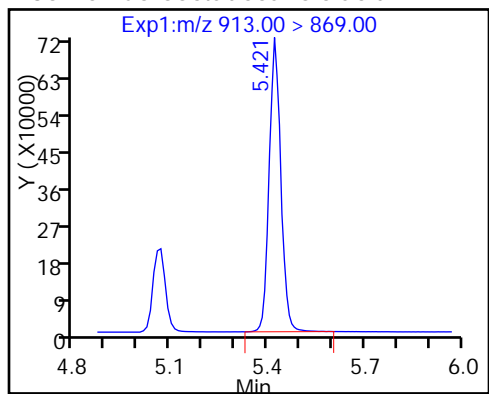
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 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 Sulfonylamide (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	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	11852936	50.8		102	180727	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.849	1.849	0.0	19068053	46.5		105		
	298.90 > 99.00	1.849	1.849	0.0	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	9717826	50.0		100	307055	
9 Perfluorohexanesulfonic acid	399.00 > 80.00	2.448	2.448	0.0	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	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	9652878	51.1		102	120863	
	413.00 > 169.00	2.778	2.786	-0.008	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

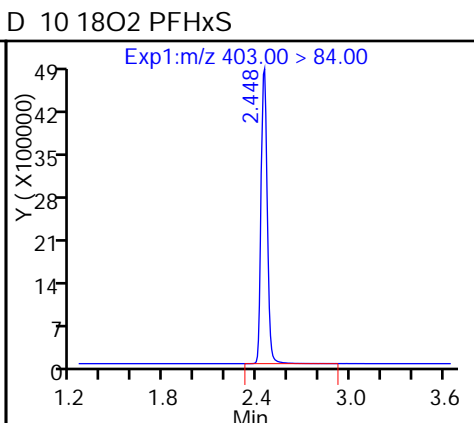
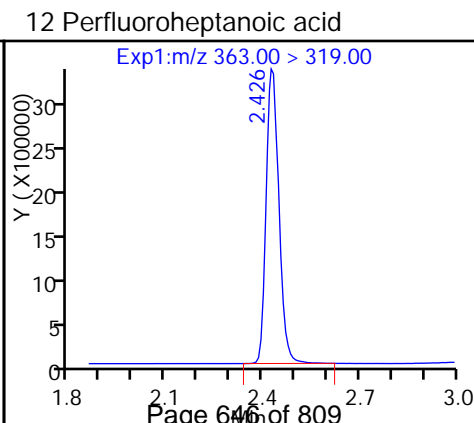
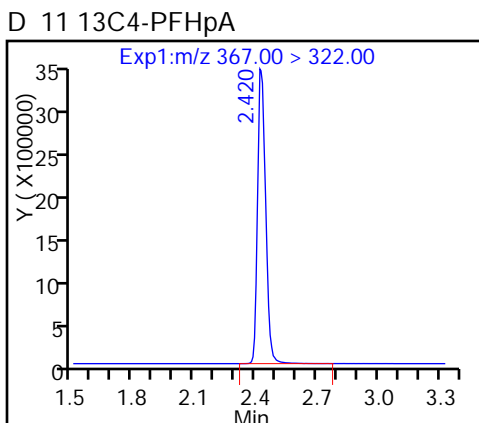
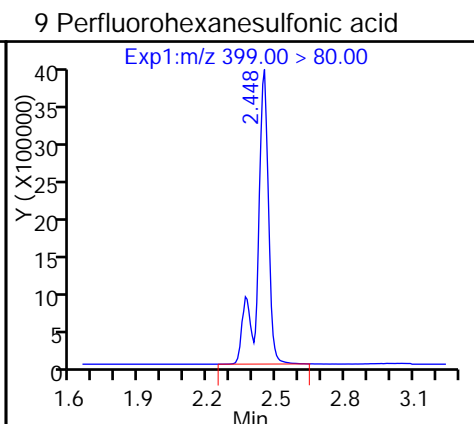
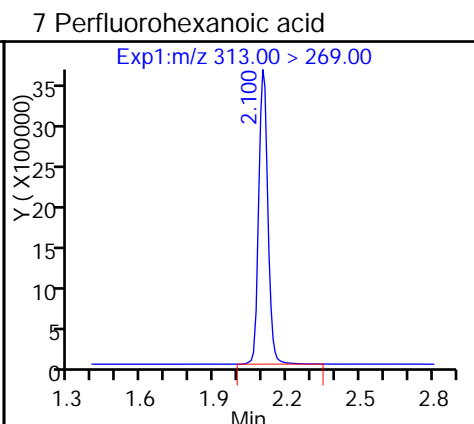
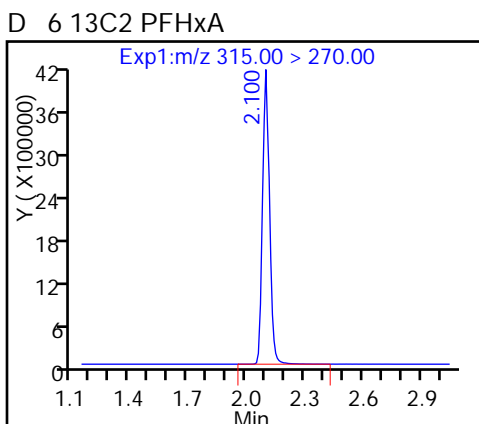
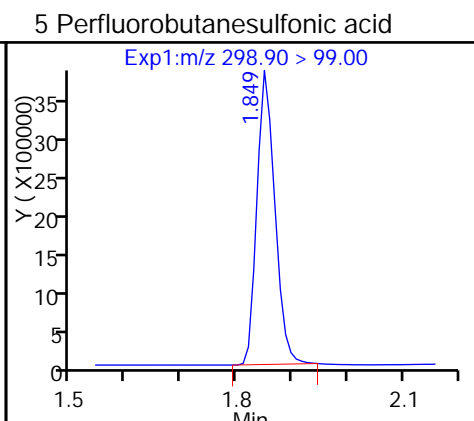
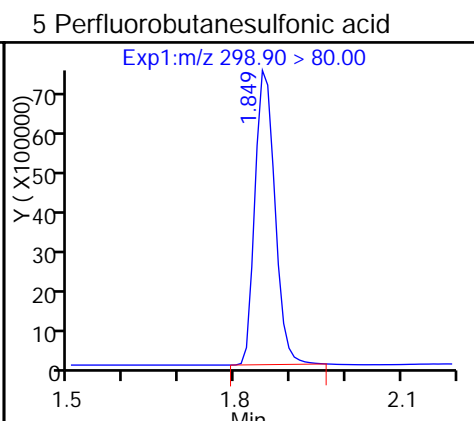
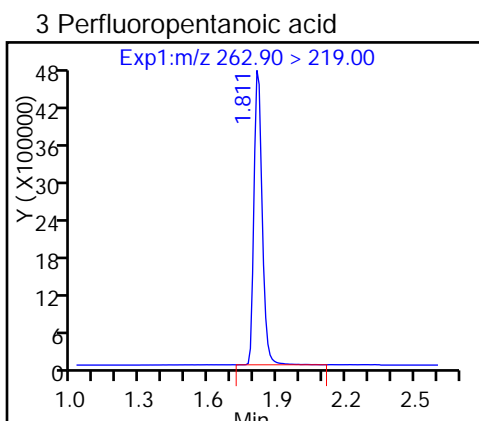
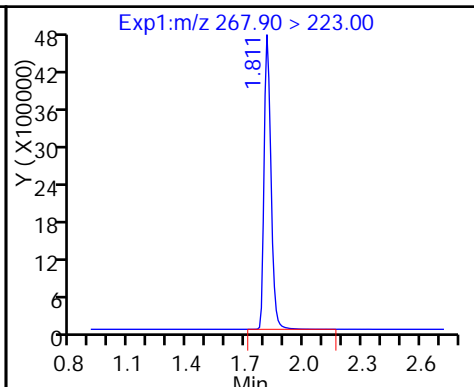
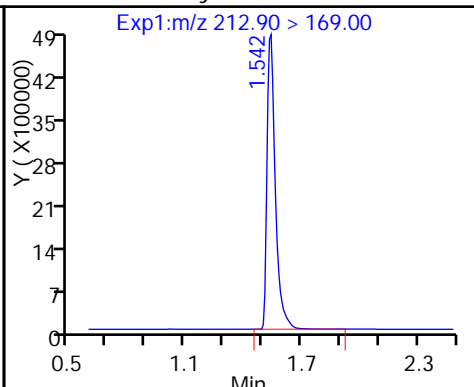
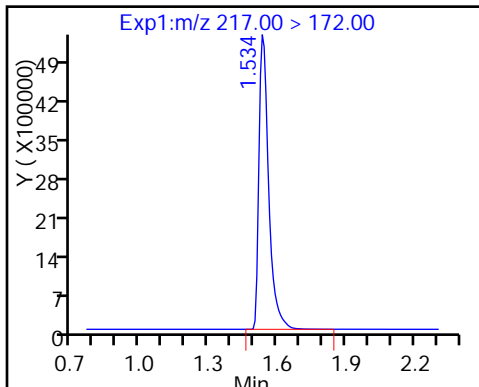
Method: A8_N

Limit Group: LC PFC_DOD ICAL

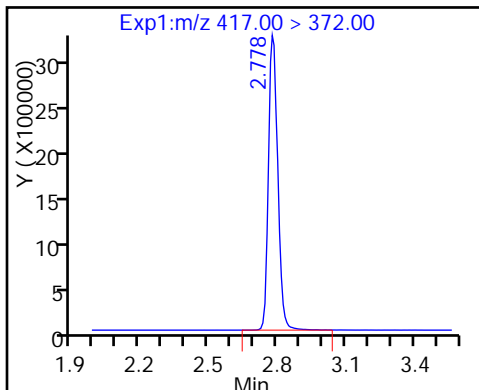
D 2 13C4 PFBA

1 Perfluorobutyric acid

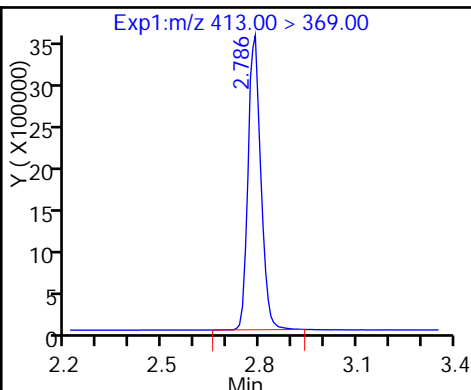
D 4 13C5-PFPeA



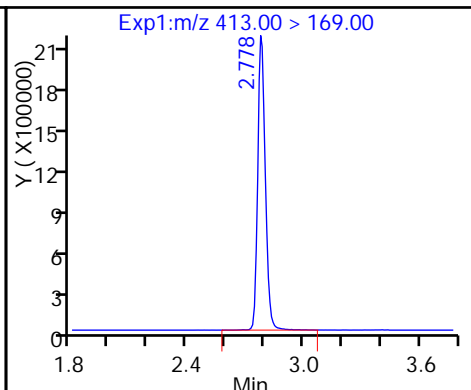
D 14 13C4 PFOA



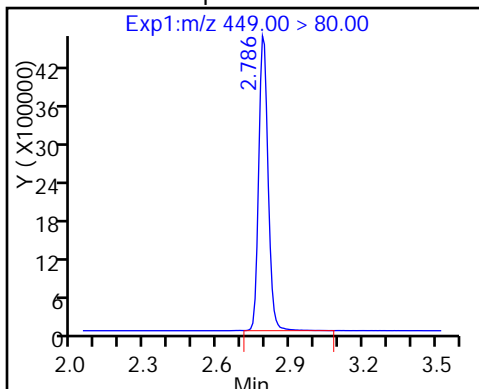
15 Perfluorooctanoic acid



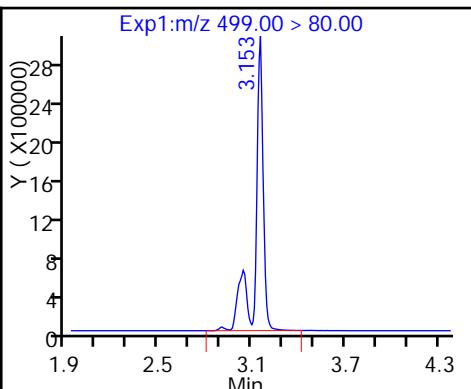
15 Perfluorooctanoic acid



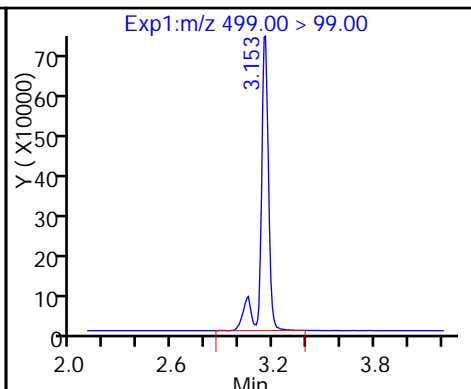
13 Perfluoroheptanesulfonic Acid



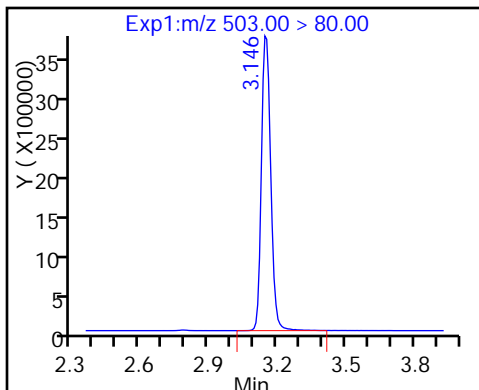
18 Perfluorooctane sulfonic acid



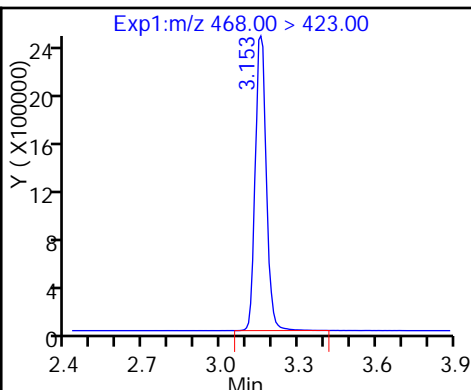
18 Perfluorooctane sulfonic acid



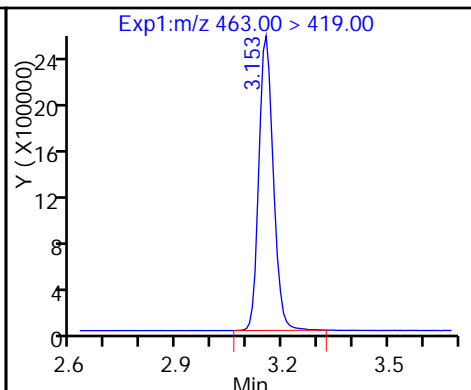
D 17 13C4 PFOS



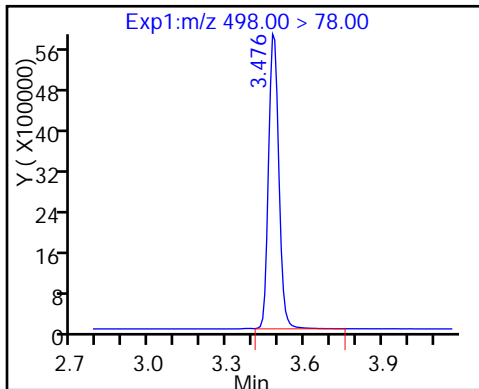
D 19 13C5 PFNA



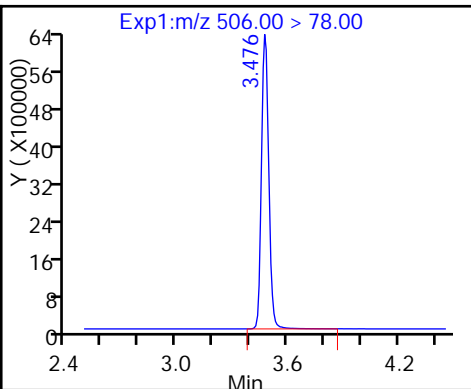
20 Perfluorononanoic acid



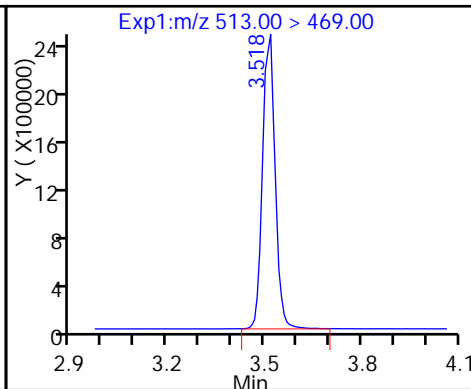
22 Perfluorooctane Sulfonamide



D 21 13C8 FOSA



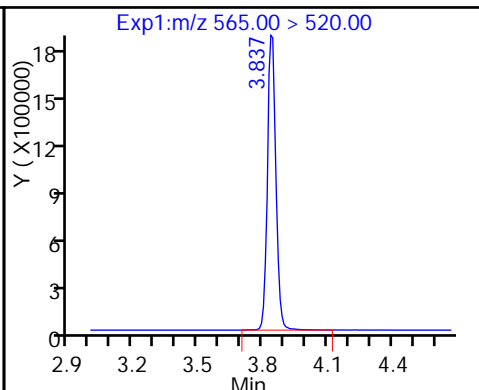
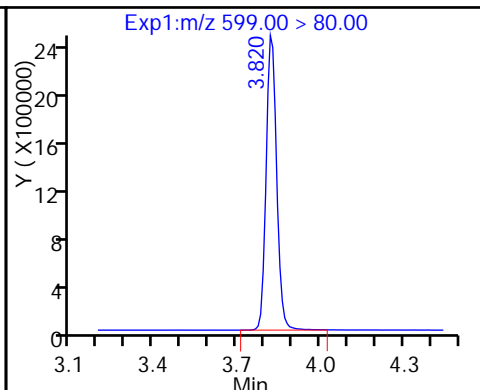
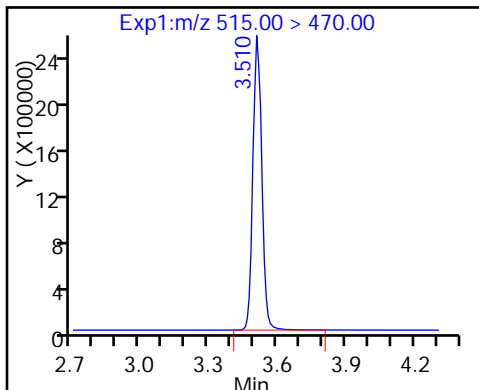
24 Perfluorodecanoic acid



D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

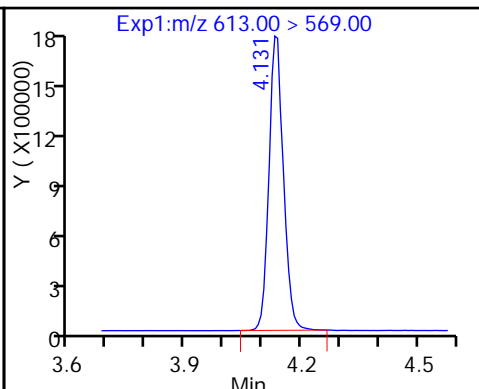
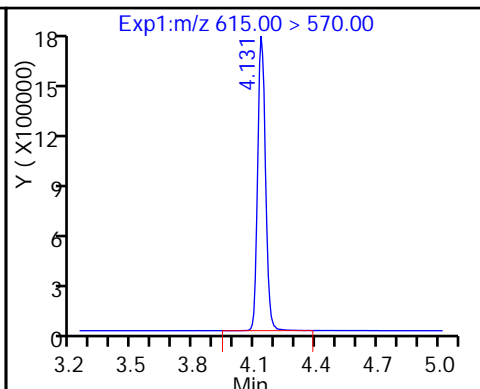
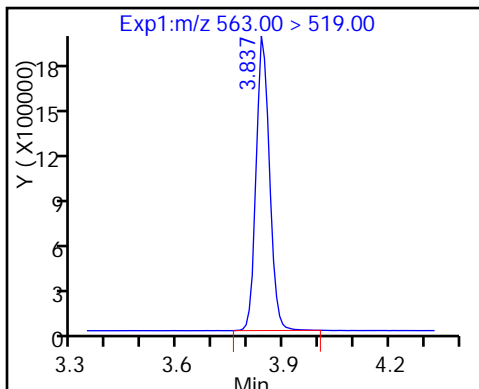
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

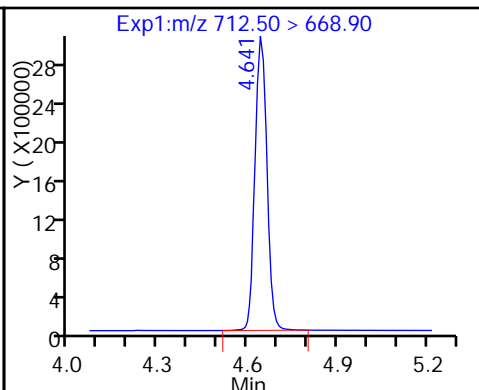
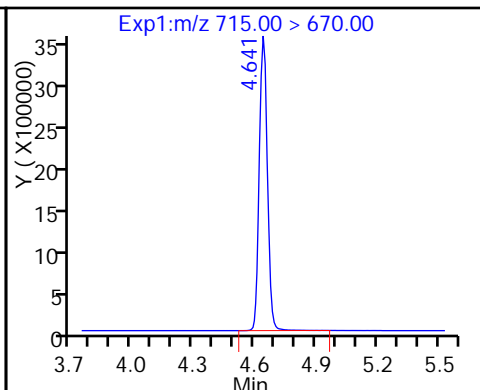
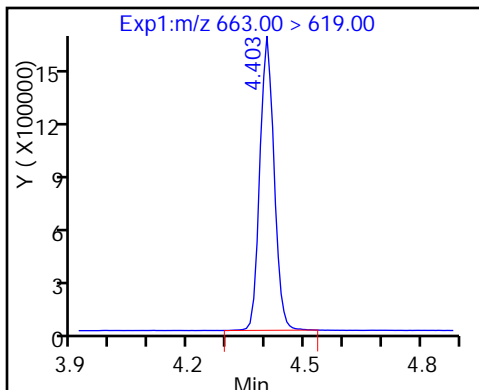
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

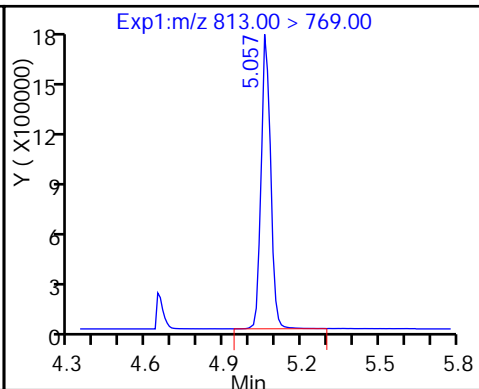
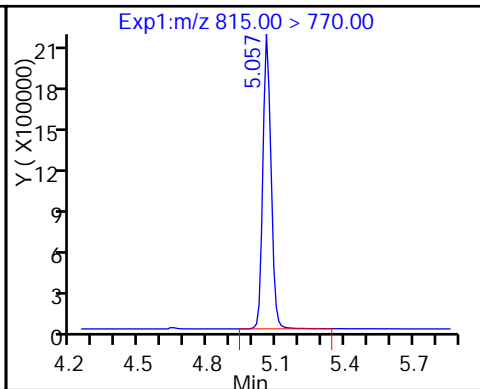
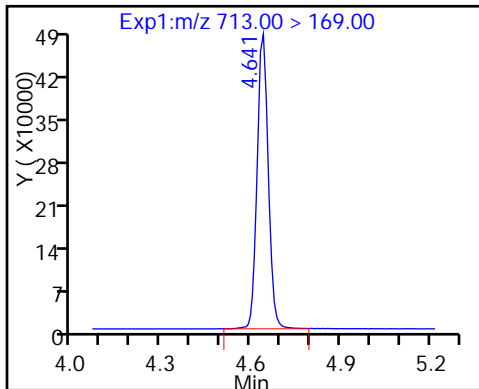
33 Perfluorotetradecanoic acid



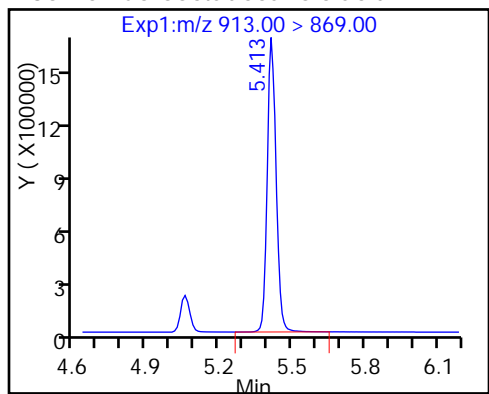
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 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
Perfluorooctanesulfonic Acid (PFOS)	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 Sulfonylamide (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-PFTeA	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 PFDoA										
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

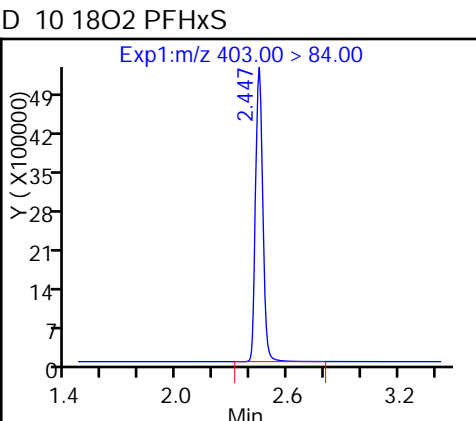
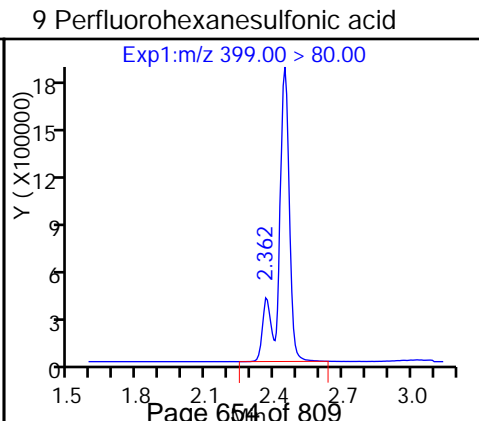
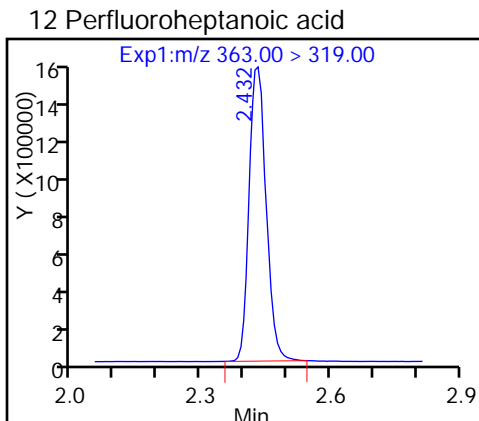
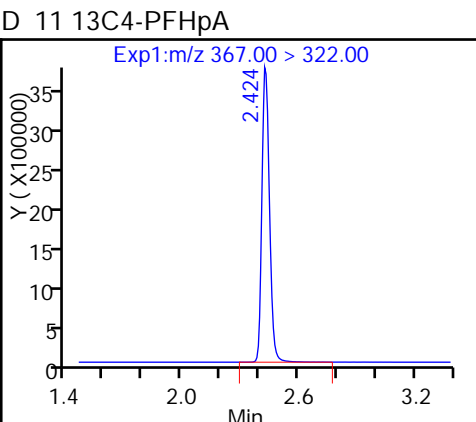
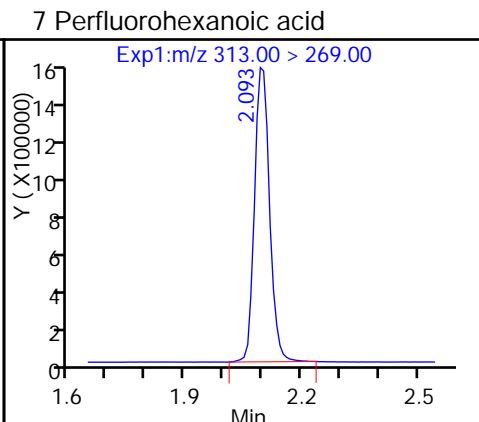
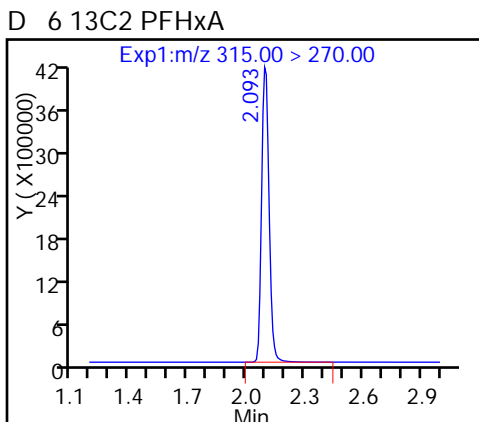
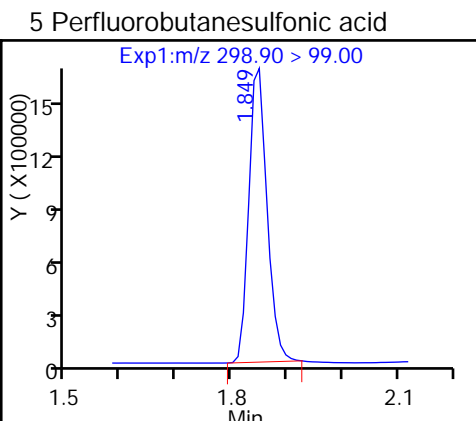
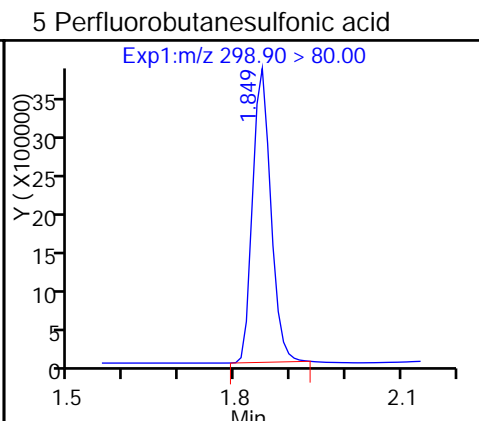
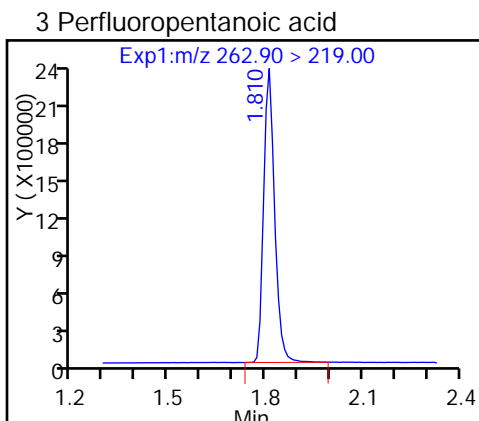
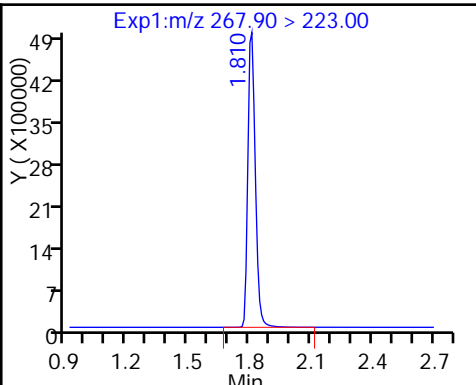
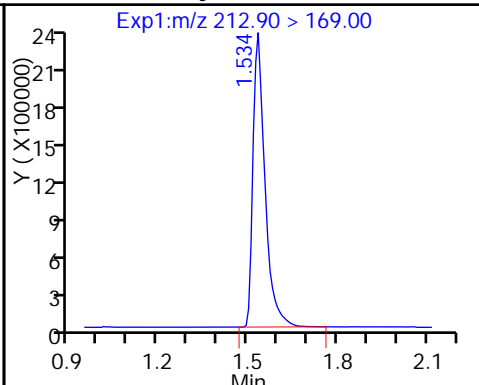
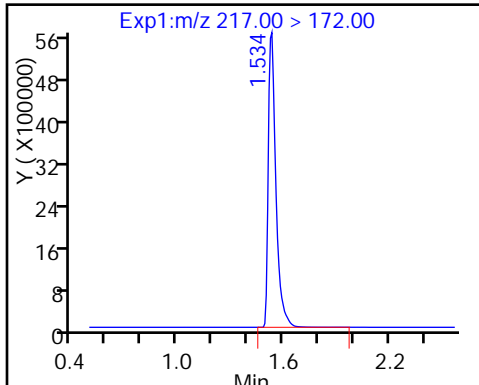
Method: A8_N

Limit Group: LC PFC_DOD ICAL

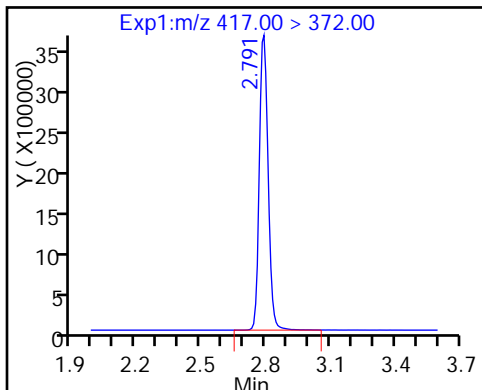
D 2 13C4 PFBA

1 Perfluorobutyric acid

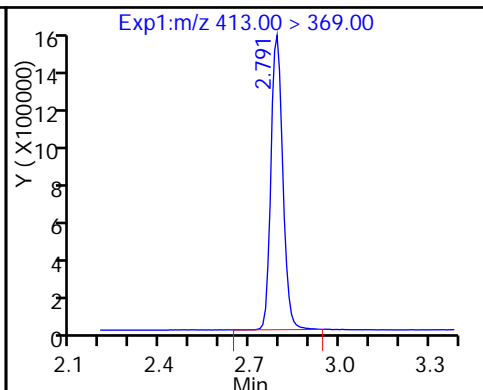
D 4 13C5-PFPeA



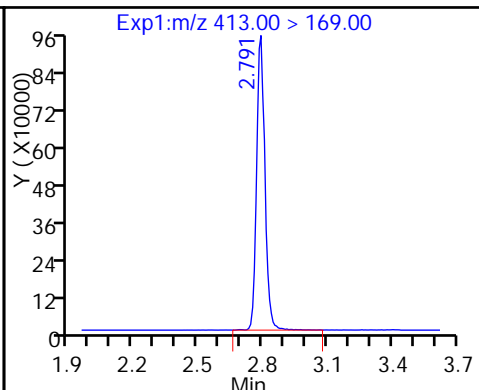
D 14 13C4 PFOA



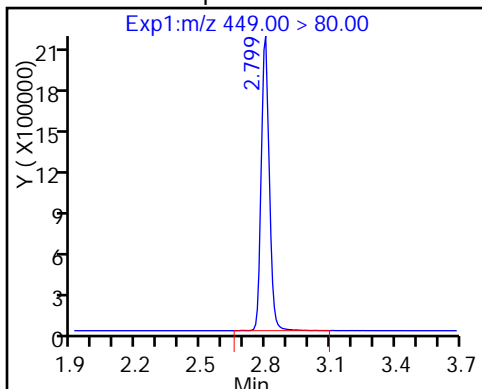
15 Perfluorooctanoic acid



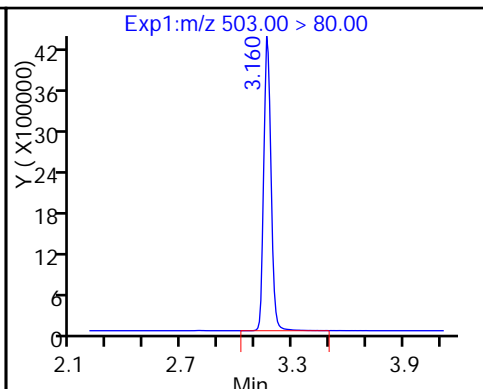
15 Perfluorooctanoic acid



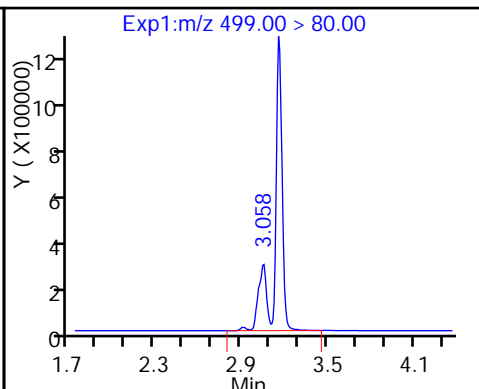
13 Perfluoroheptanesulfonic Acid



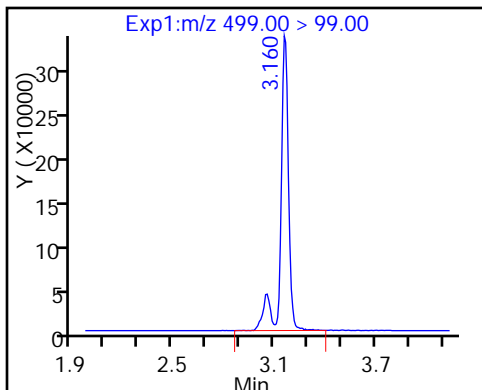
D 17 13C4 PFOS



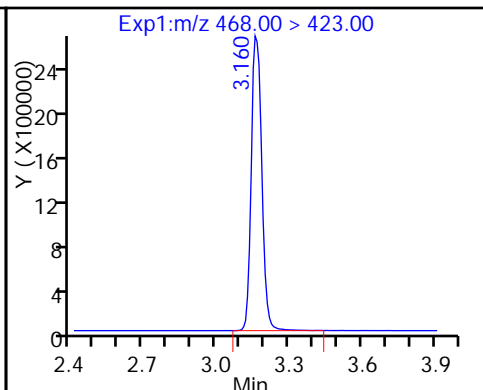
18 Perfluorooctane sulfonic acid



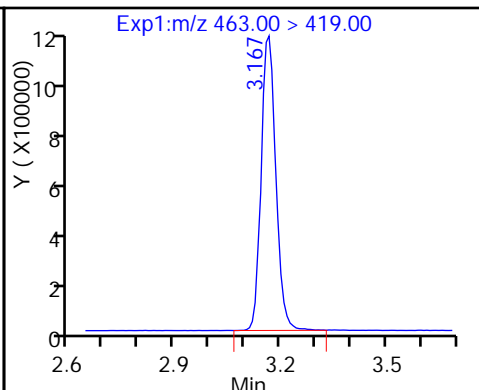
18 Perfluorooctane sulfonic acid



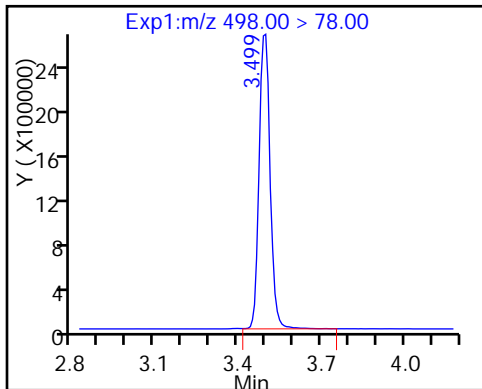
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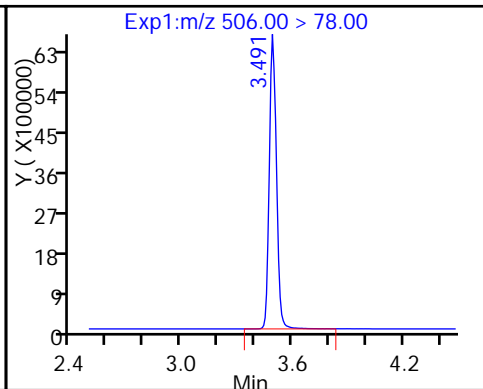
20 Perfluorononanoic acid



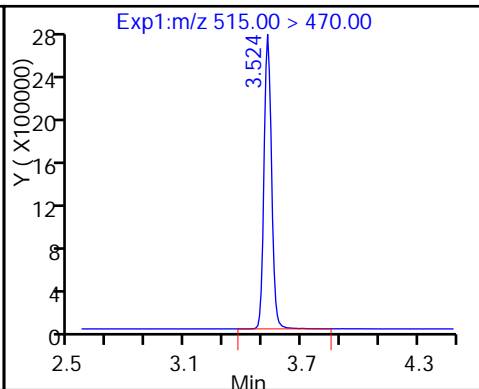
22 Perfluorooctane Sulfonamide

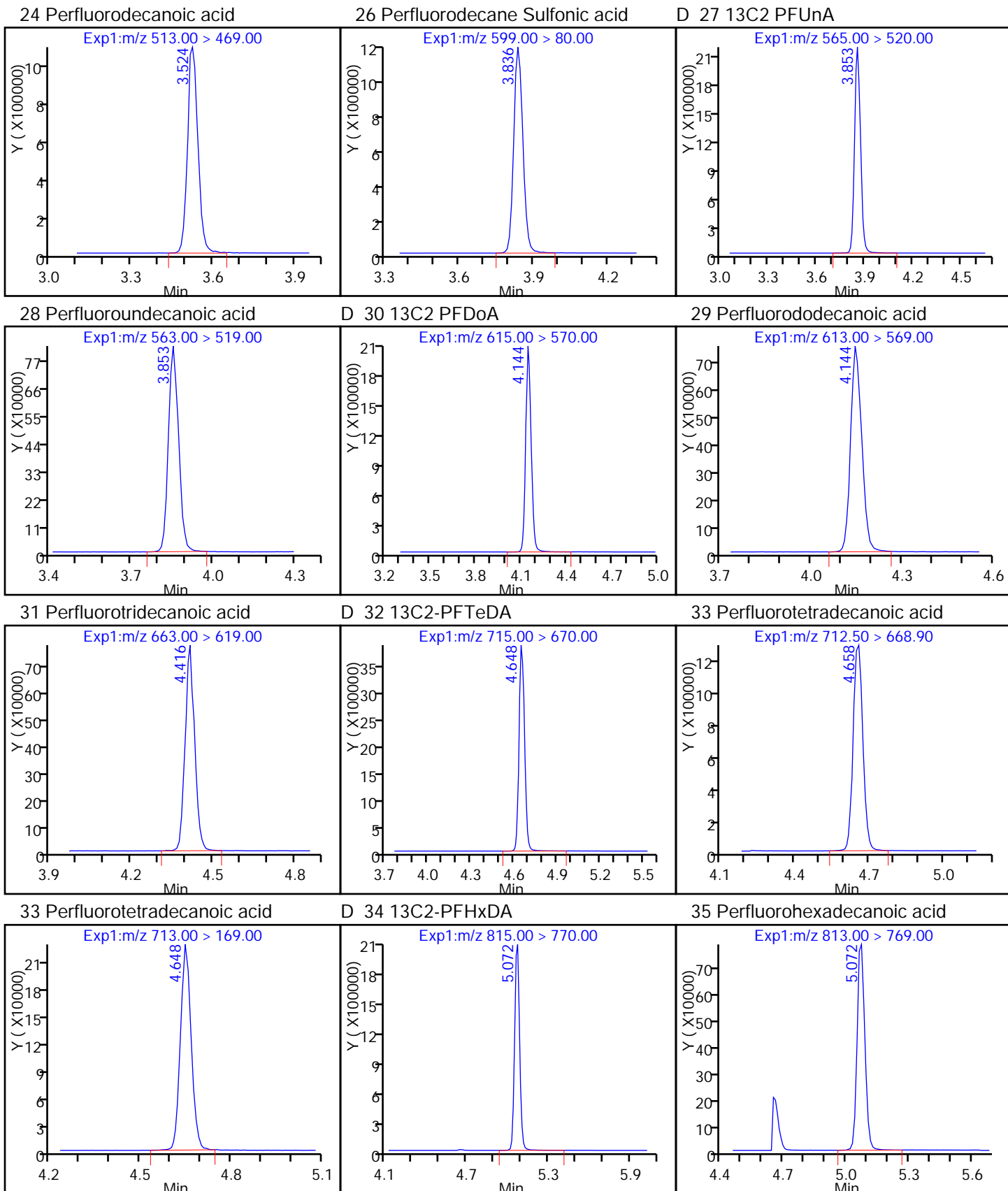


D 21 13C8 FOSA

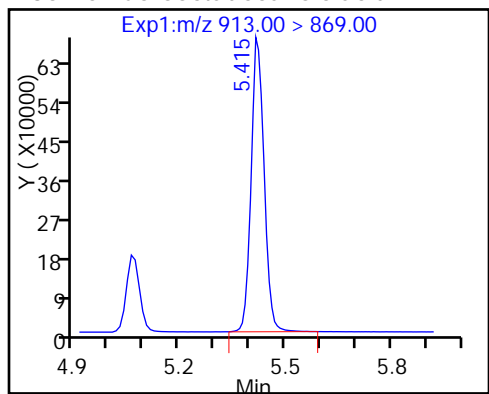


D 23 13C2 PFDA





36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 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
Perfluorooctanesulfonic Acid (PFOS)	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	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	12059305	50.6		101	178809	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.842	1.842	0.0	19329899	47.0		106		
	298.90 > 99.00	1.842	1.842	0.0	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	10071498	51.6		103	272120	
9 Perfluorohexanesulfonic acid	399.00 > 80.00	2.415	2.415	0.0	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	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 PFDoA										
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

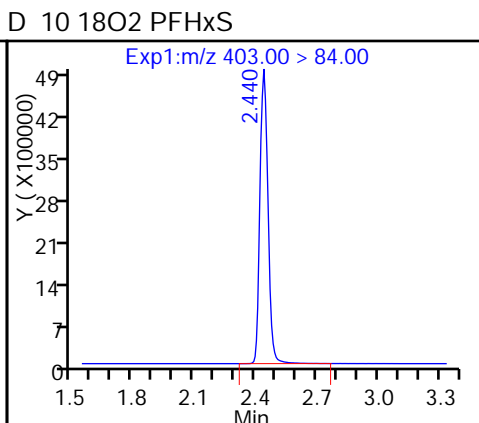
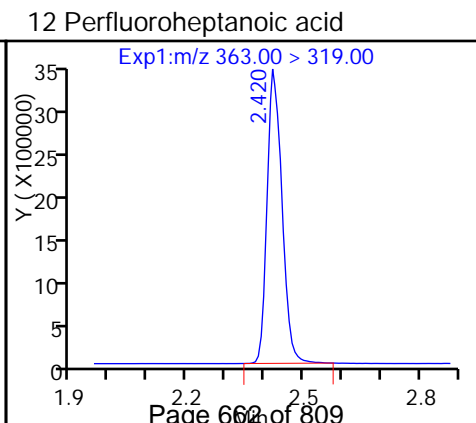
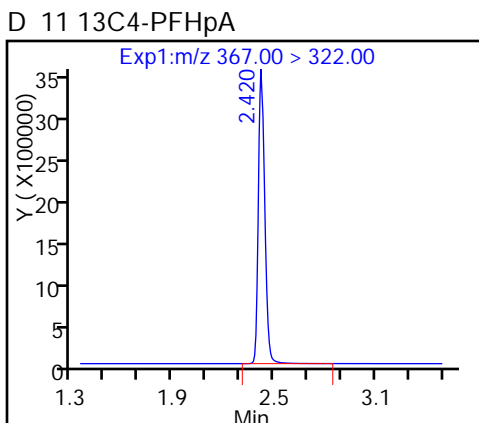
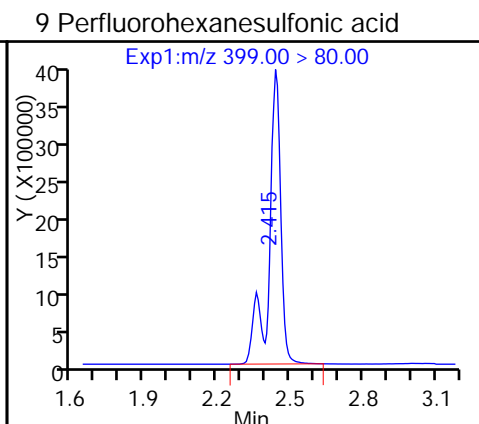
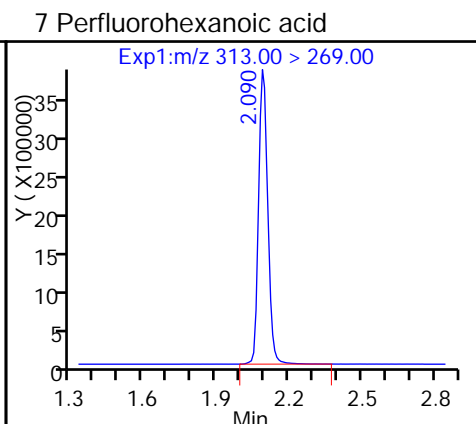
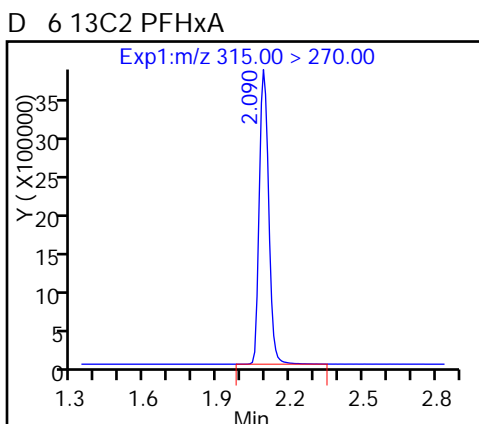
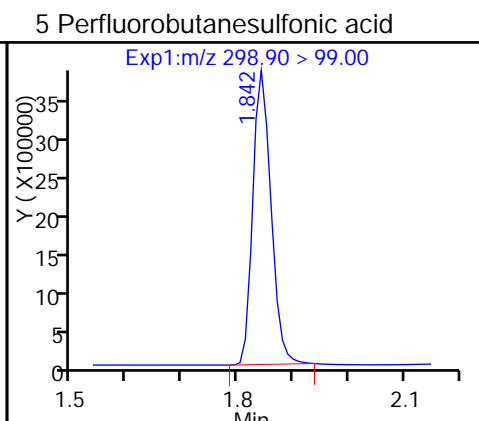
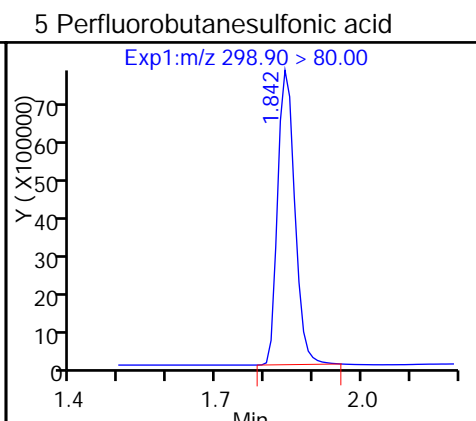
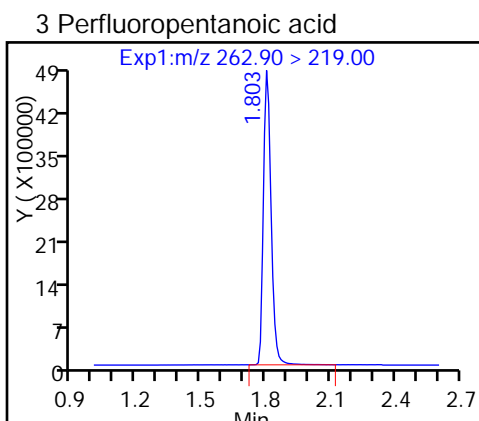
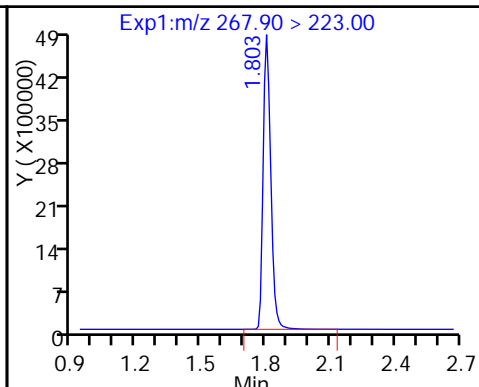
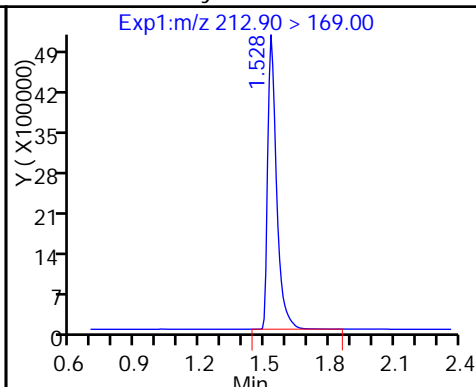
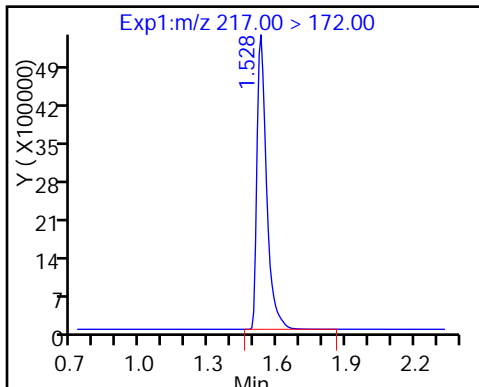
Method: A8_N

Limit Group: LC PFC_DOD ICAL

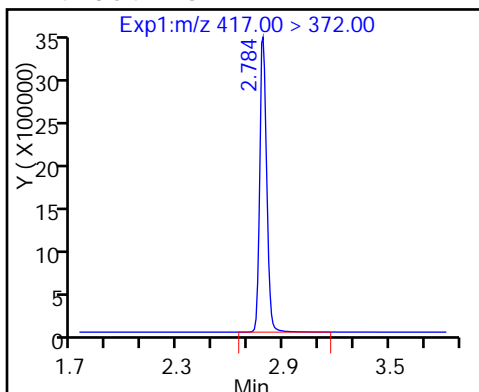
D 2 13C4 PFBA

1 Perfluorobutyric acid

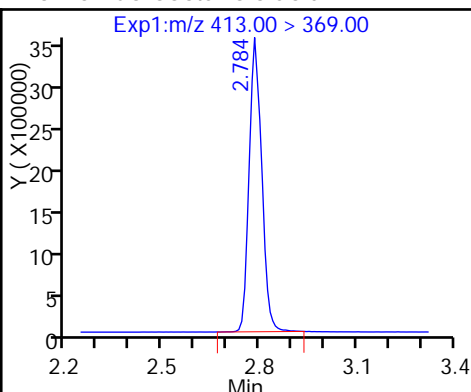
D 4 13C5-PFPeA



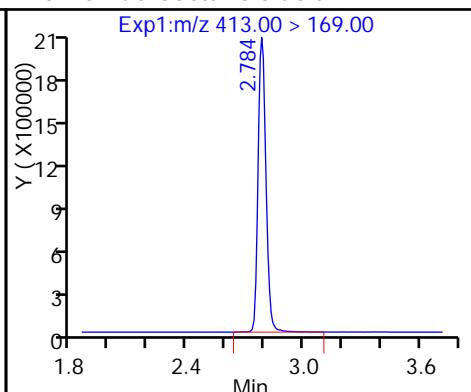
D 14 13C4 PFOA



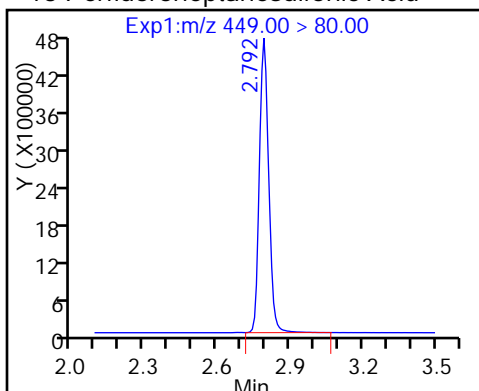
15 Perfluorooctanoic acid



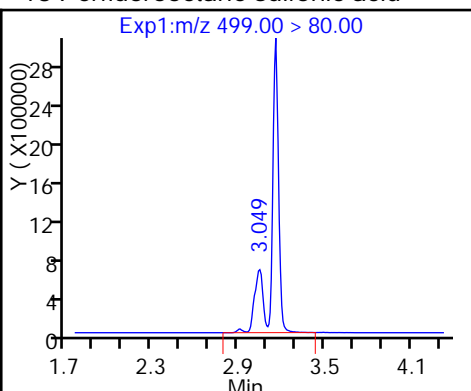
15 Perfluorooctanoic acid



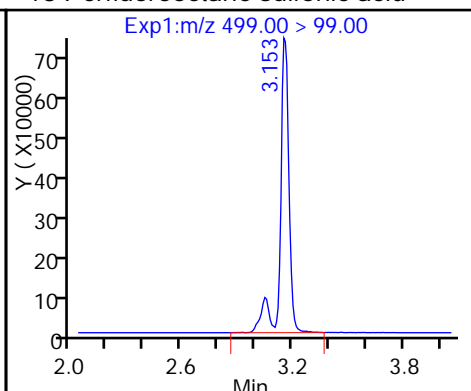
13 Perfluoroheptanesulfonic Acid



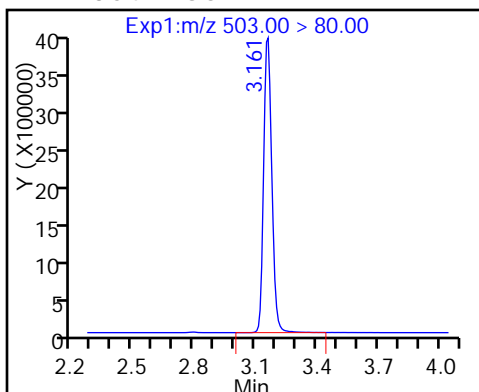
18 Perfluorooctane sulfonic acid



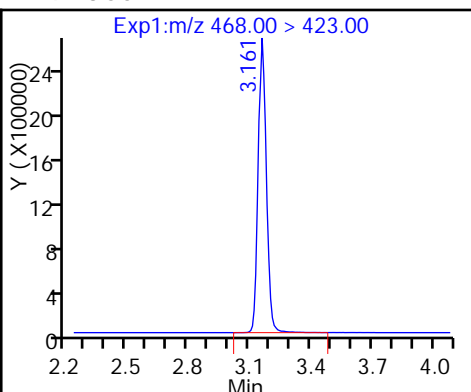
18 Perfluorooctane sulfonic acid



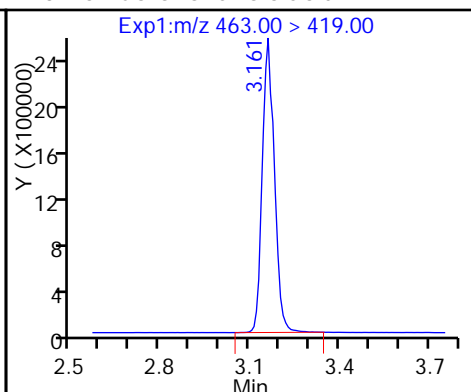
D 17 13C4 PFOS



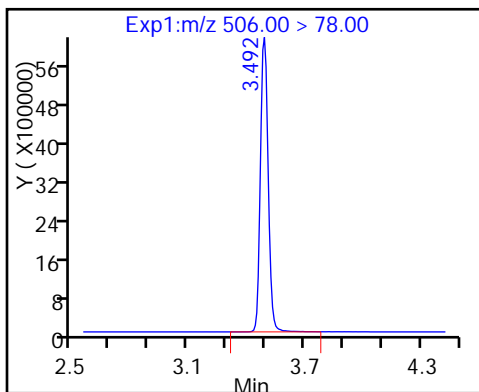
D 19 13C5 PFNA



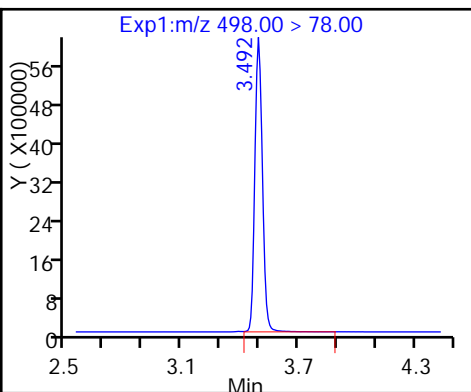
20 Perfluorononanoic acid



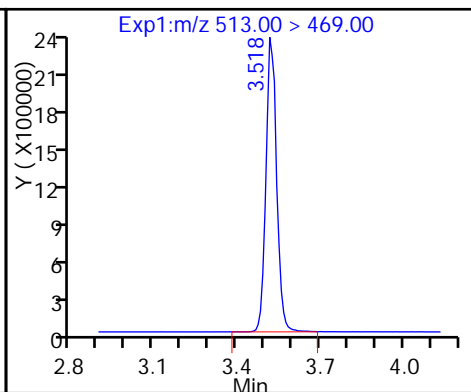
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide



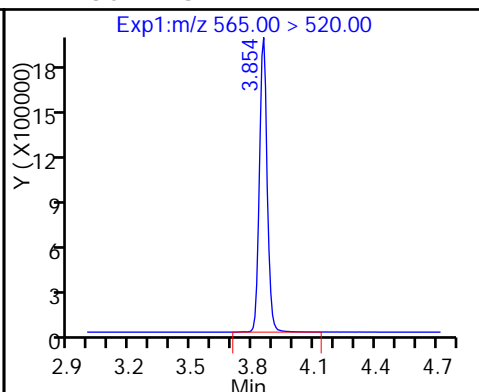
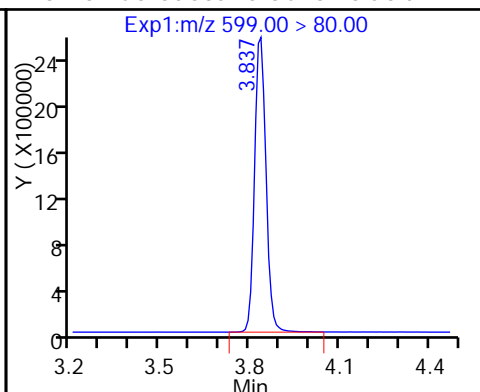
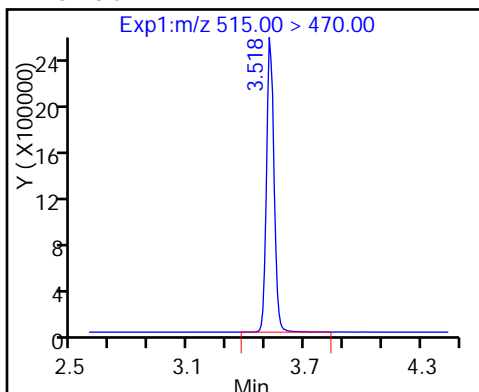
24 Perfluorodecanoic acid



D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

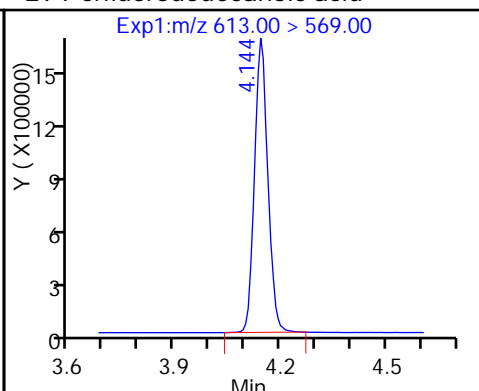
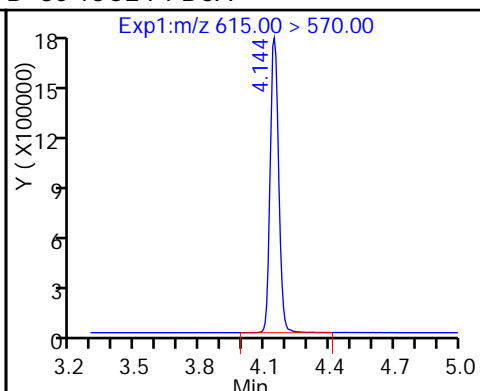
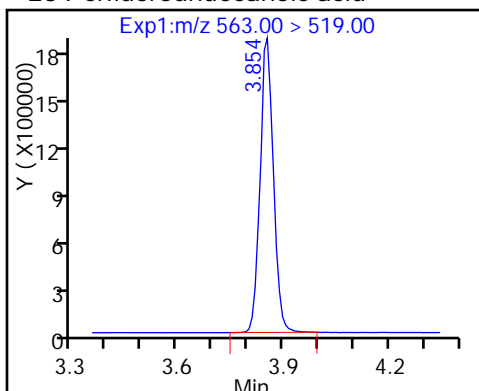
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

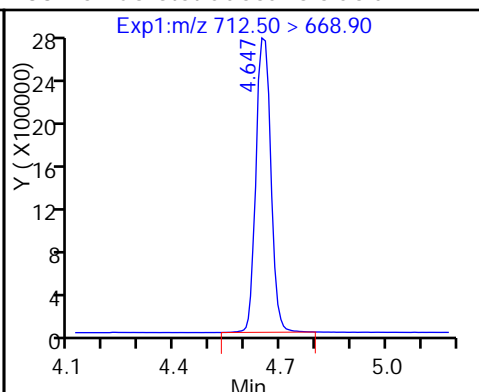
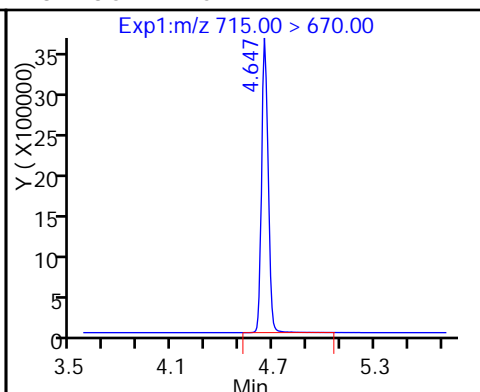
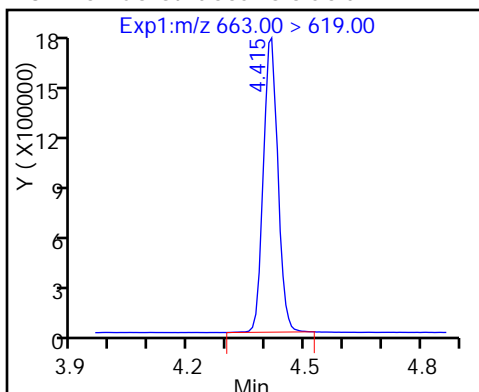
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

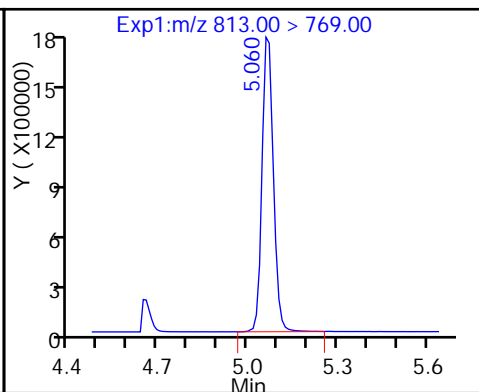
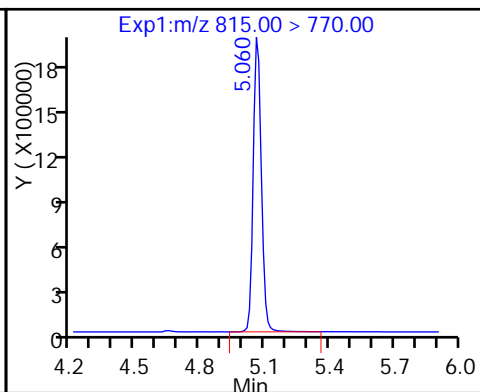
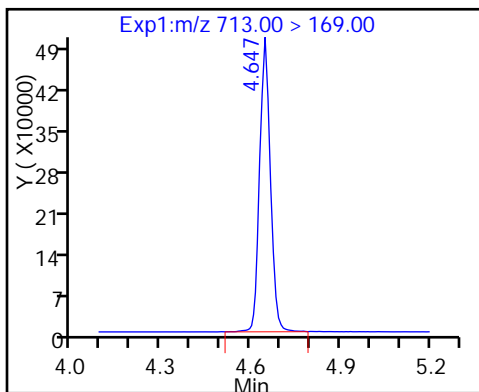
33 Perfluorotetradecanoic acid



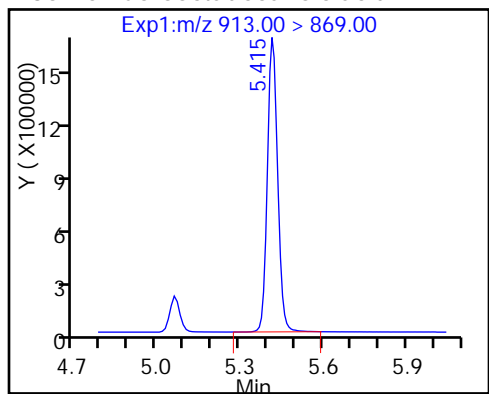
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 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	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	280611	0.9774		97.7	2894	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.954	1.945	0.009	448064	0.9411		106		
	298.90 > 99.00	1.945	1.945	0.0	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	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	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	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 PFDoA										
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

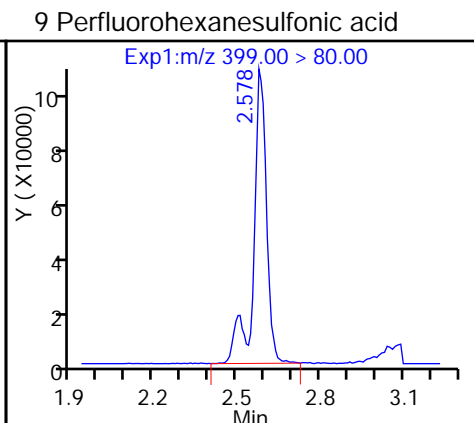
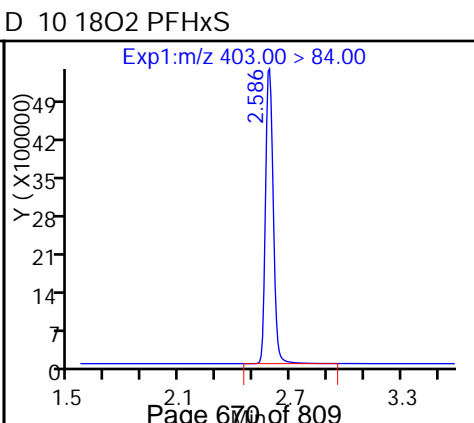
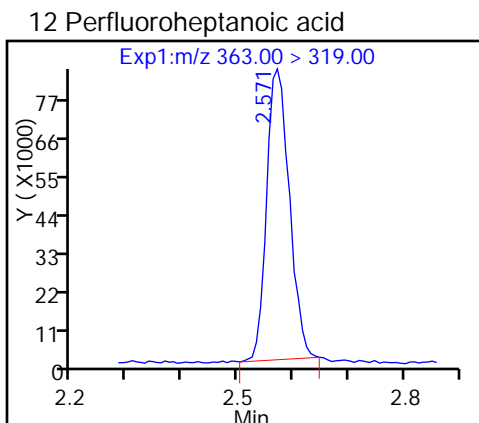
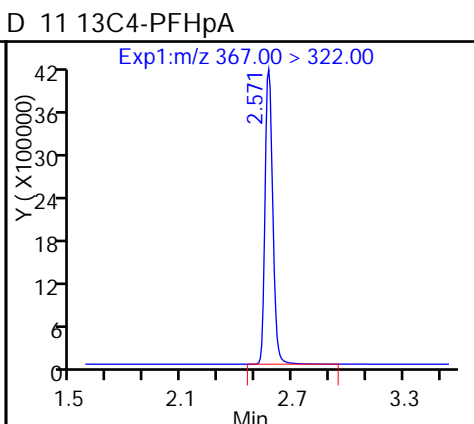
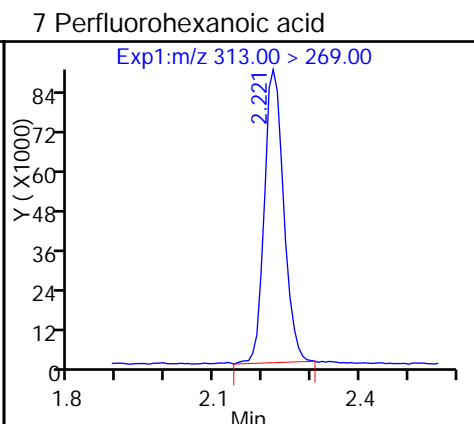
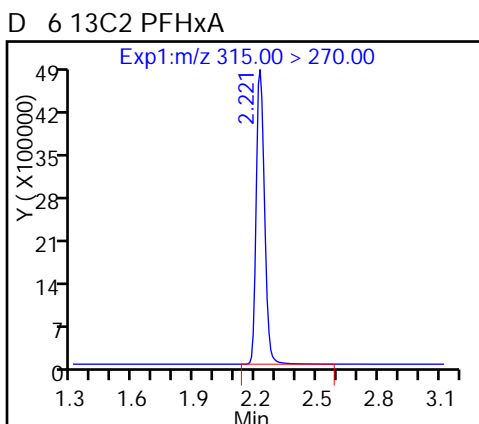
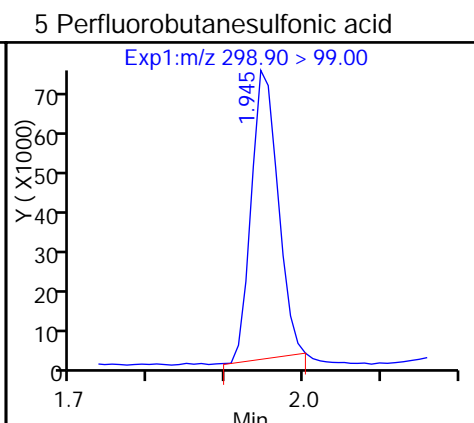
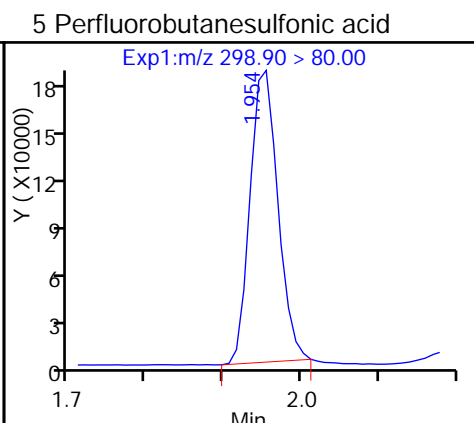
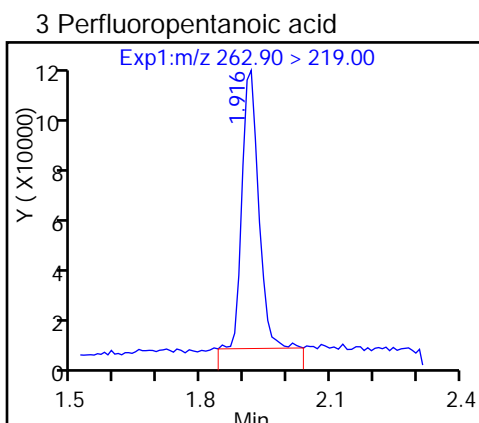
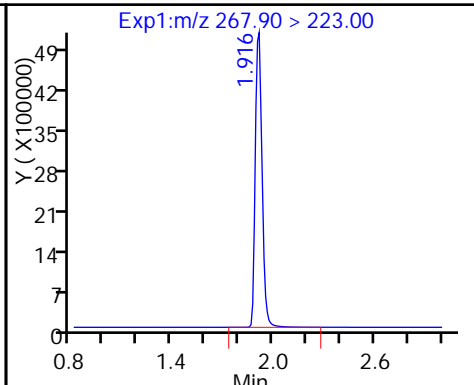
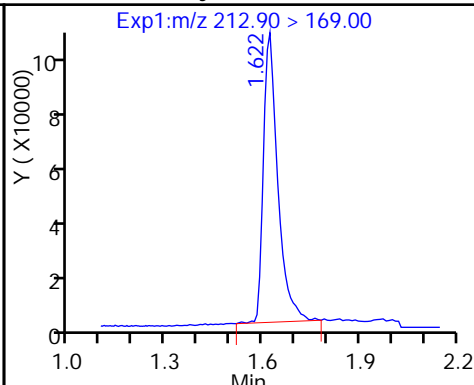
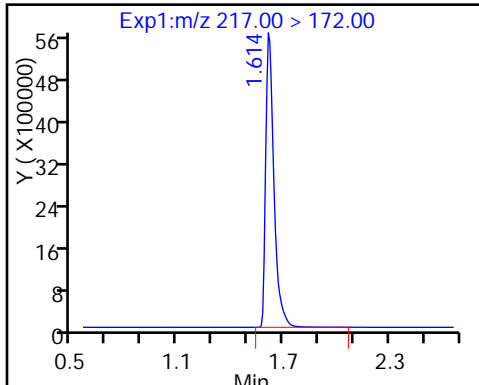
Method: A8_N

Limit Group: LC PFC_DOD ICAL

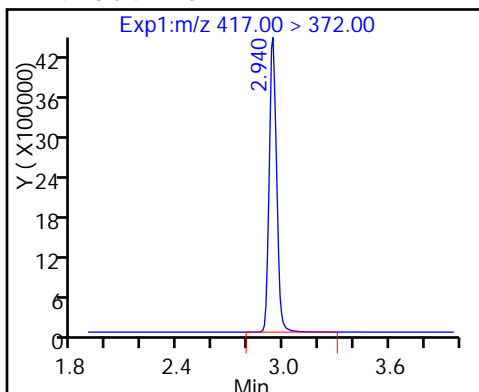
D 2 13C4 PFBA

1 Perfluorobutyric acid

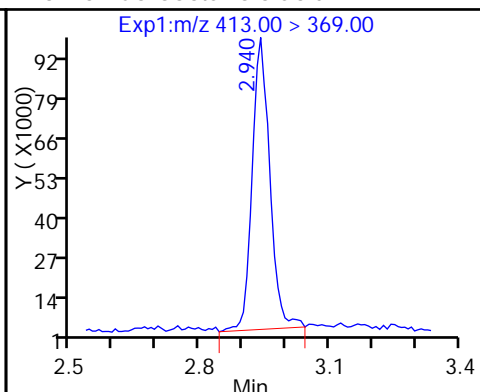
D 4 13C5-PFPeA



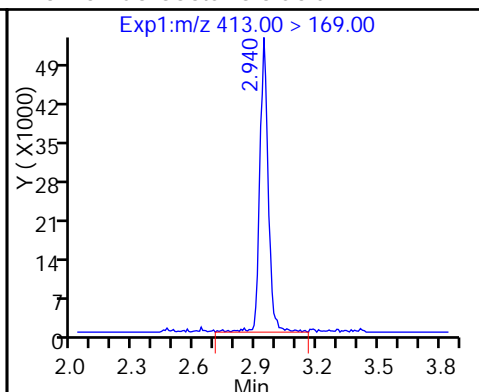
D 14 13C4 PFOA



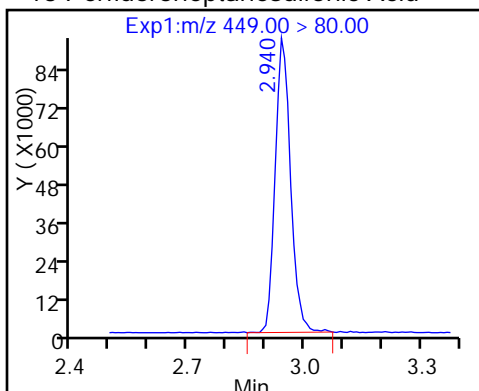
15 Perfluorooctanoic acid



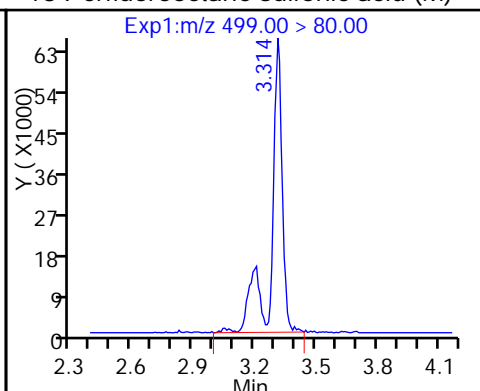
15 Perfluorooctanoic acid



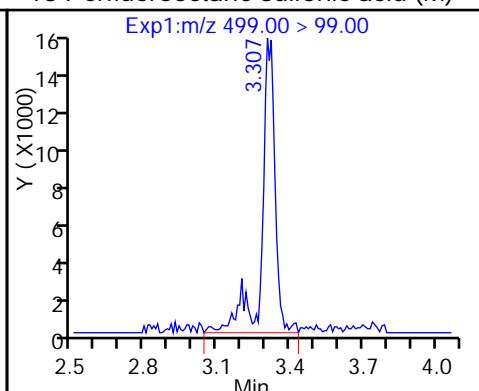
13 Perfluoroheptanesulfonic Acid



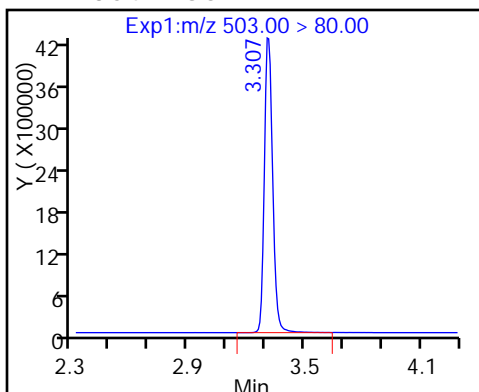
18 Perfluorooctane sulfonic acid (M)



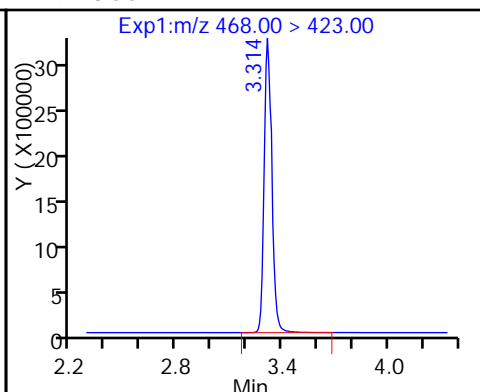
18 Perfluorooctane sulfonic acid (M)



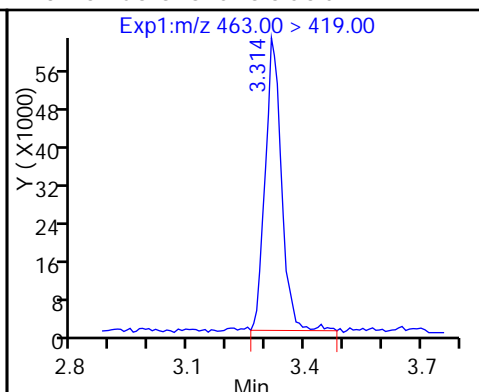
D 17 13C4 PFOS



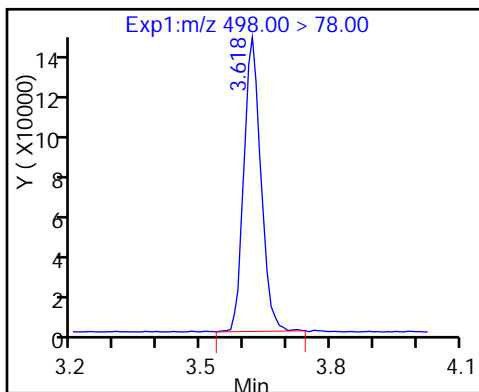
D 19 13C5 PFNA



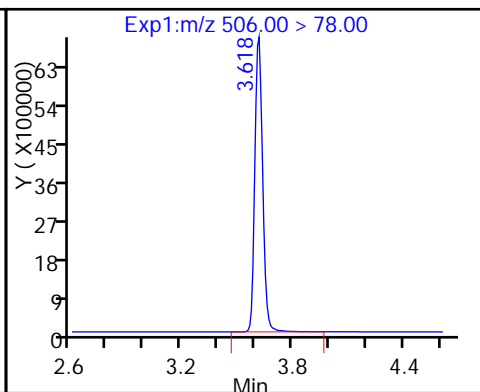
20 Perfluorononanoic acid



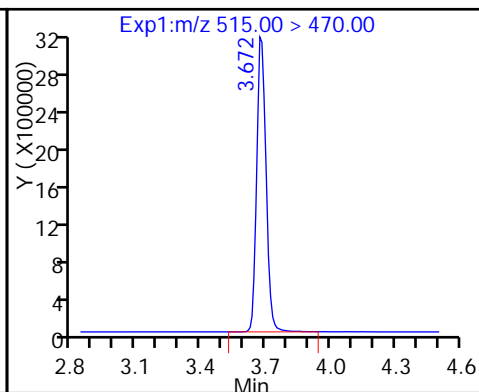
22 Perfluorooctane Sulfonamide

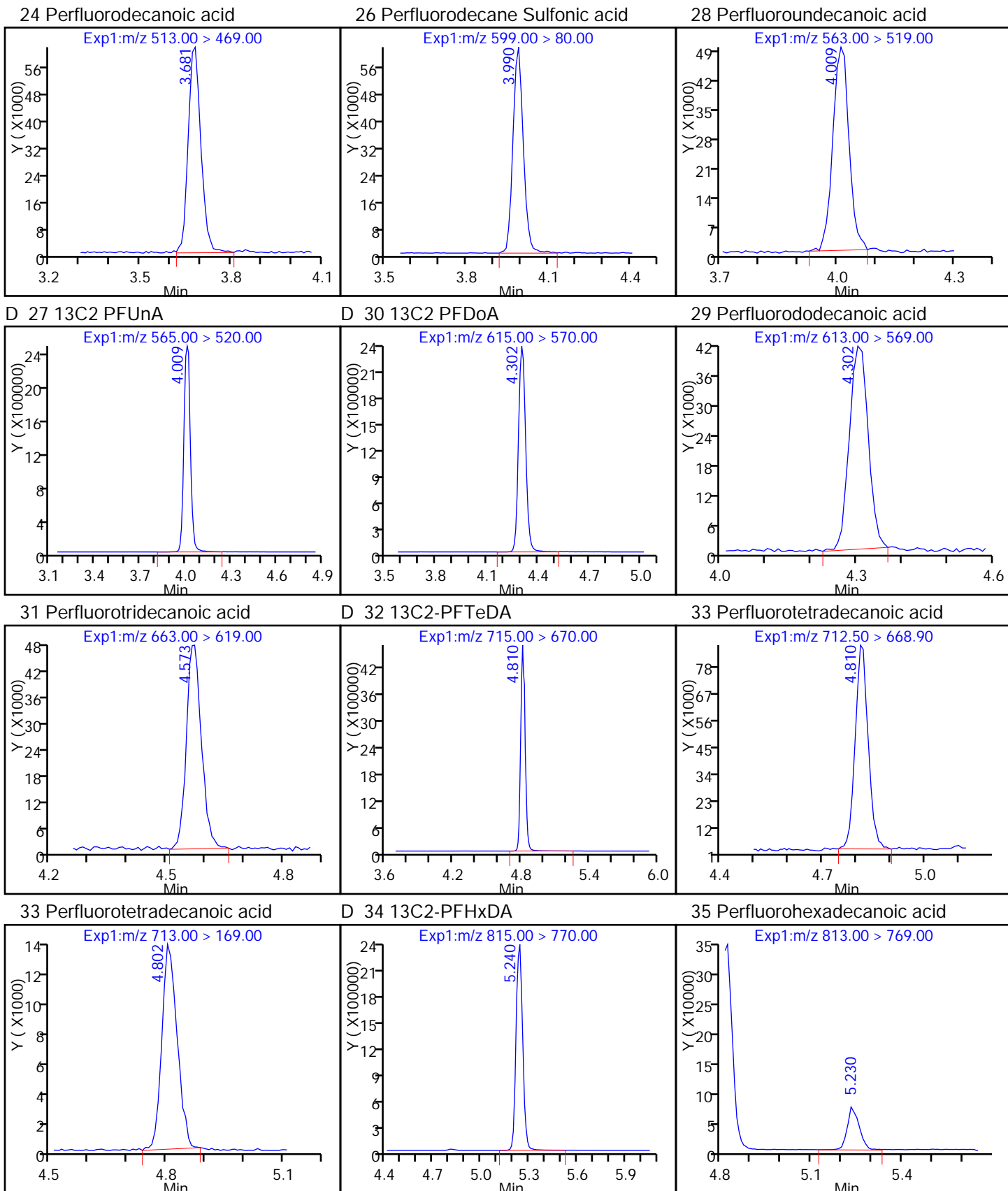


D 21 13C8 FOSA

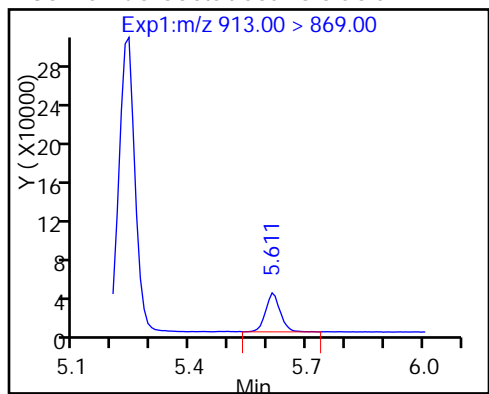


D 23 13C2 PFDA





36 Perfluorooctadecanoic acid



TestAmerica Sacramento

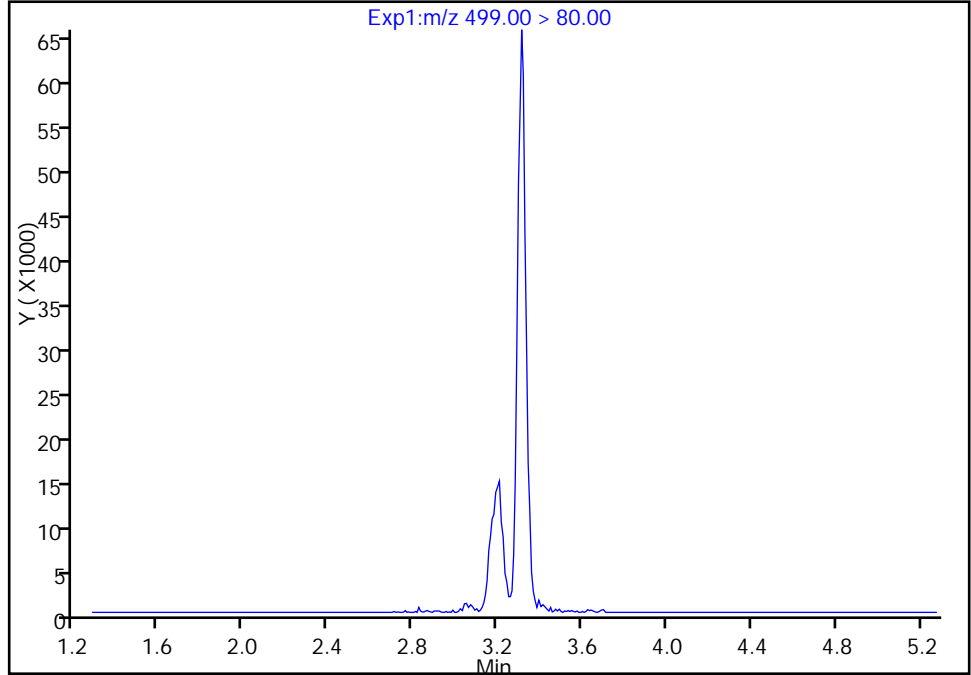
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170105-38480.b\04JAN2017A_005.d
Injection Date: 04-Jan-2017 16:33:05 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

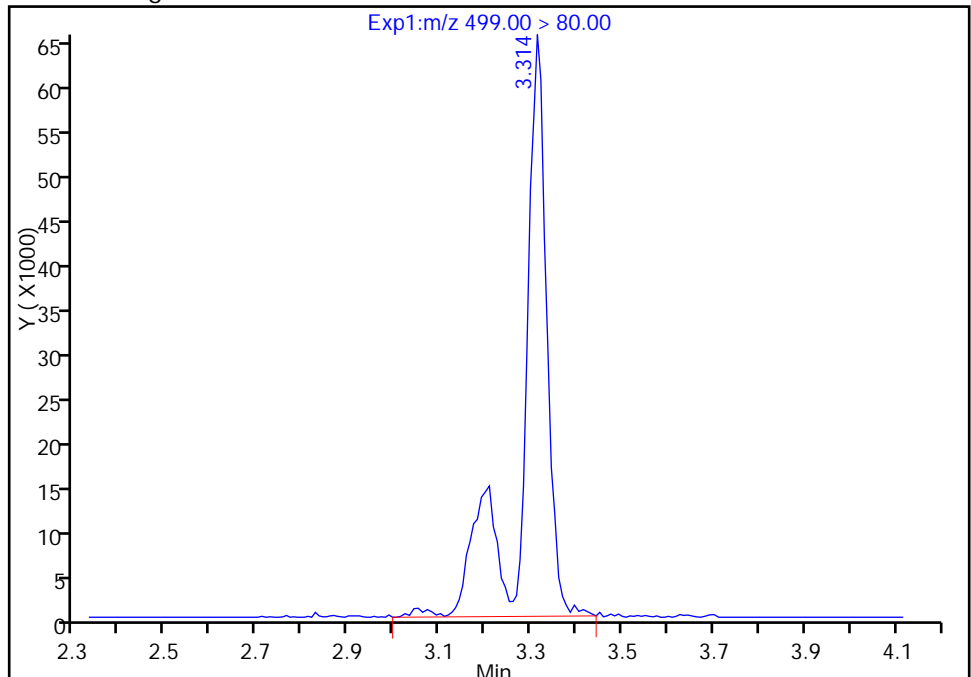
Not Detected
Expected RT: 3.28

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

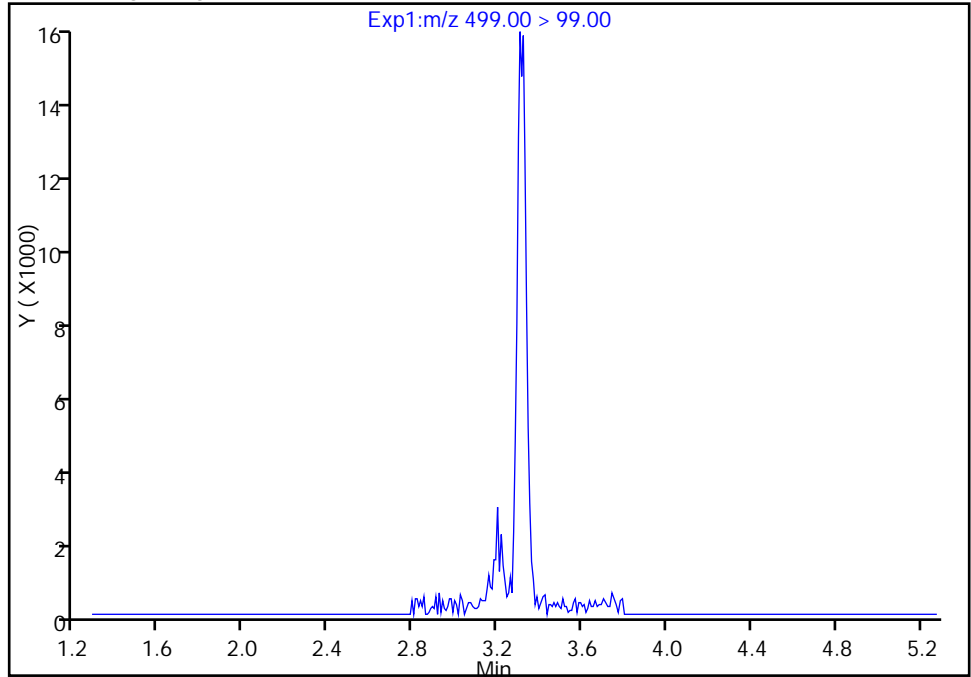
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Injection Date: 04-Jan-2017 16:33:05 Instrument ID: A8_N
Lims ID: CCV L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

18 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

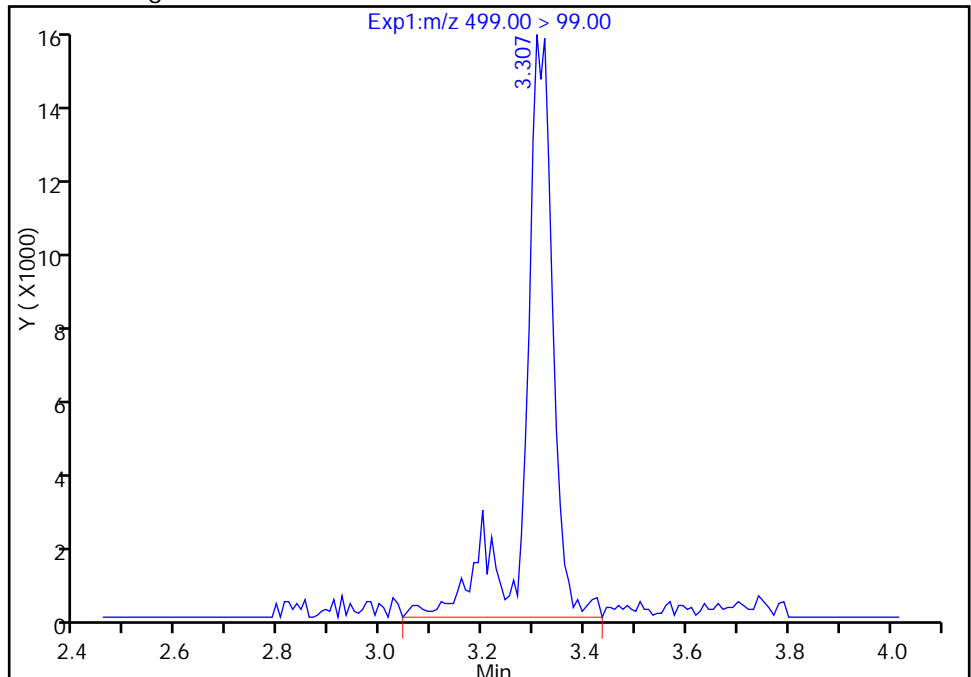
Not Detected
Expected RT: 3.28

Processing Integration Results



RT: 3.31
Area: 58677
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

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 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 Sulfonylamide (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-PFTeA	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 PFDoA										
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

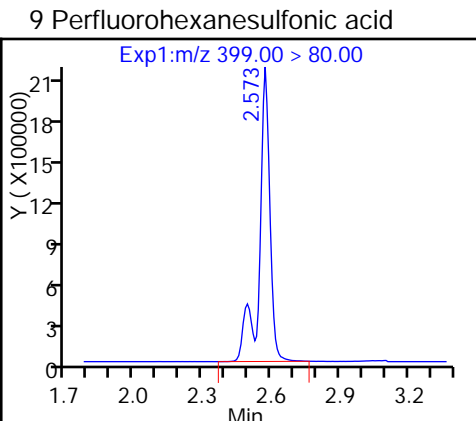
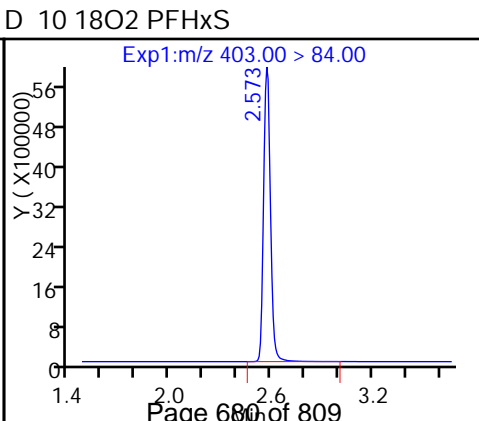
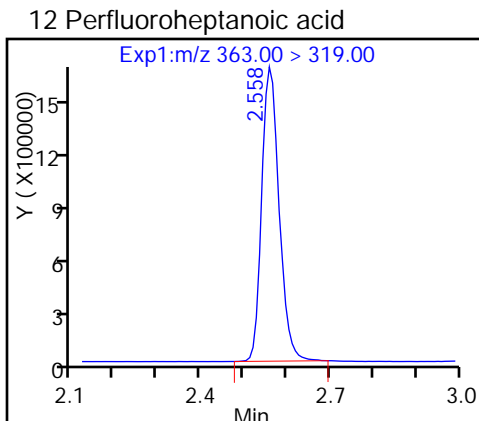
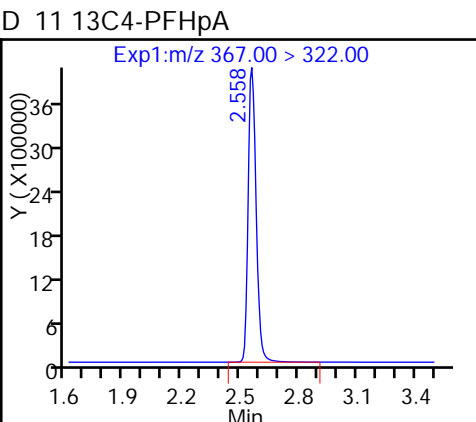
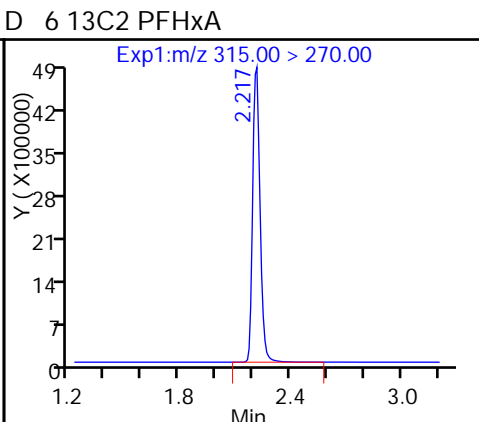
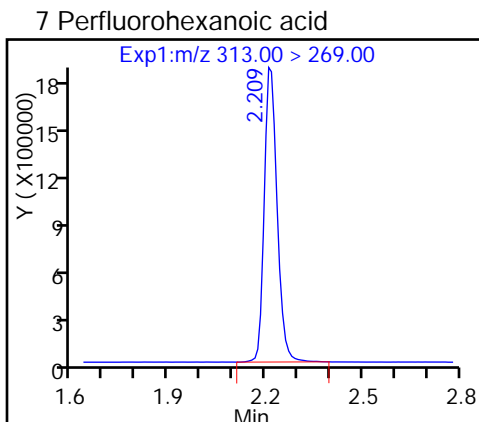
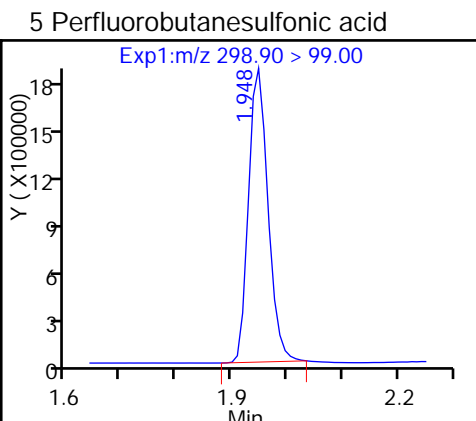
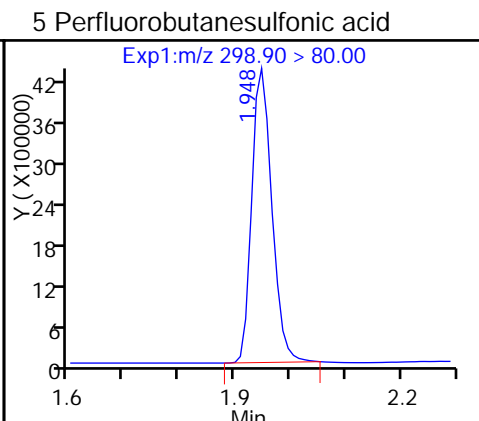
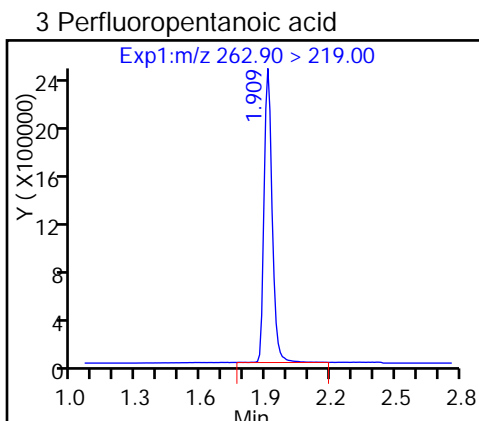
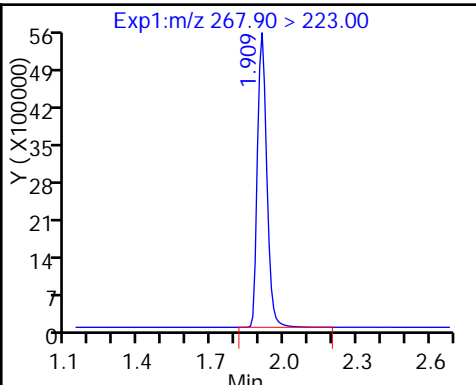
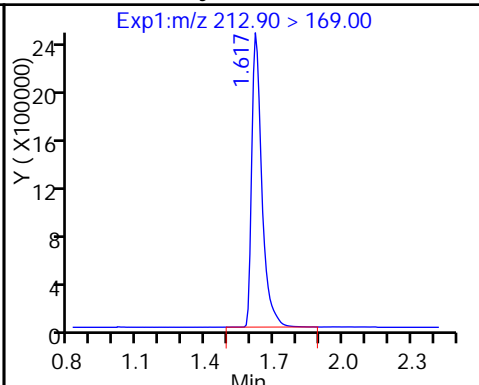
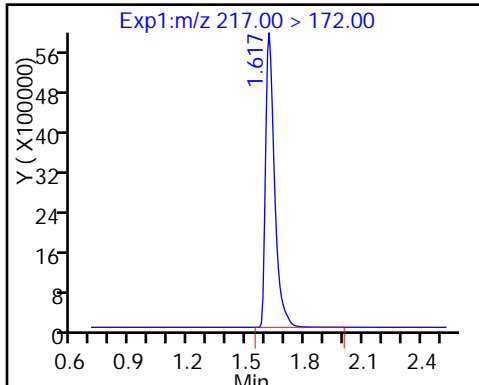
Method: A8_N

Limit Group: LC PFC_DOD ICAL

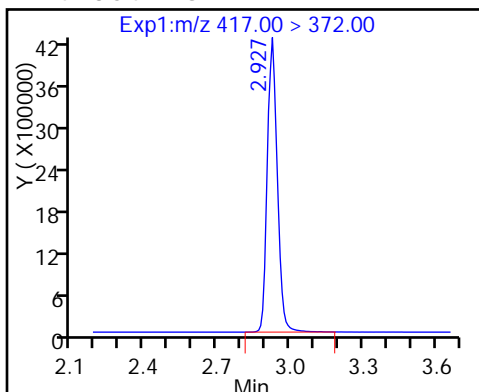
D 2 13C4 PFBA

1 Perfluorobutyric acid

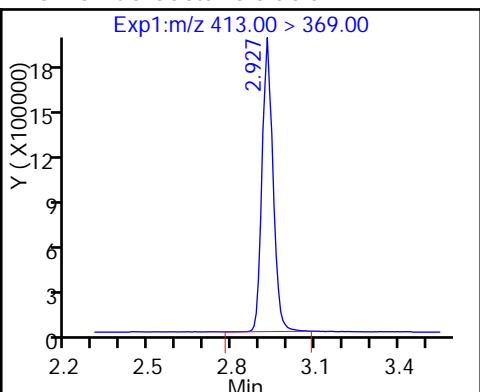
D 4 13C5-PFPeA



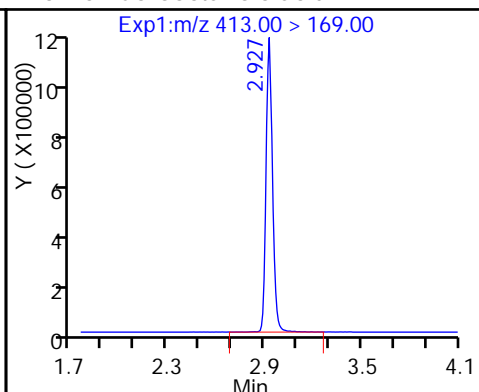
D 14 13C4 PFOA



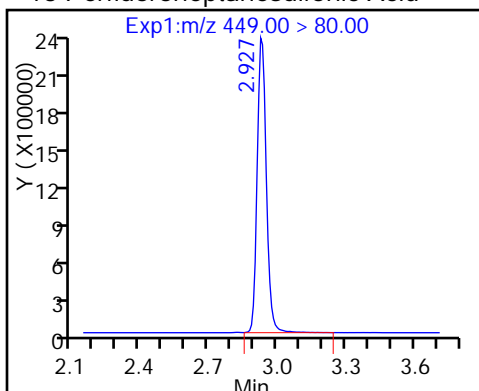
15 Perfluorooctanoic acid



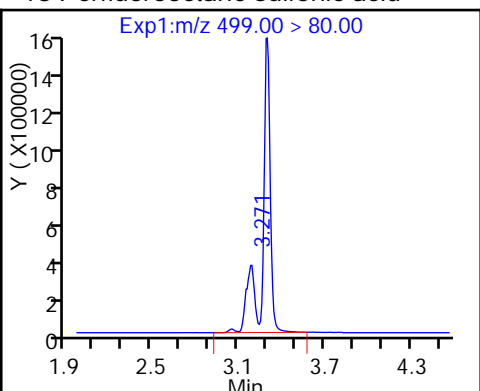
15 Perfluorooctanoic acid



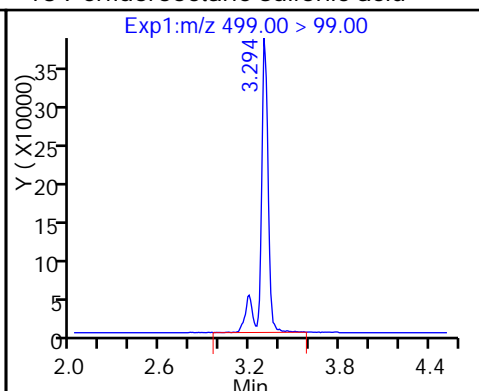
13 Perfluoroheptanesulfonic Acid



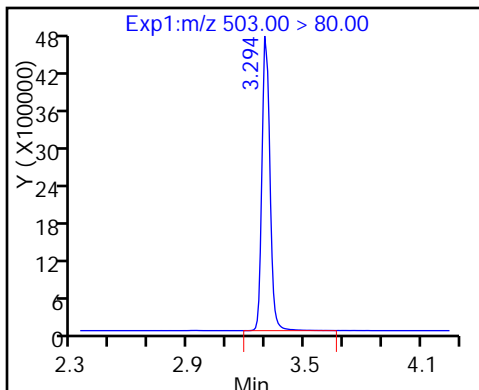
18 Perfluorooctane sulfonic acid



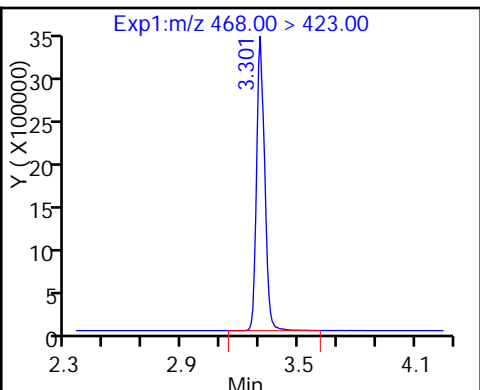
18 Perfluorooctane sulfonic acid



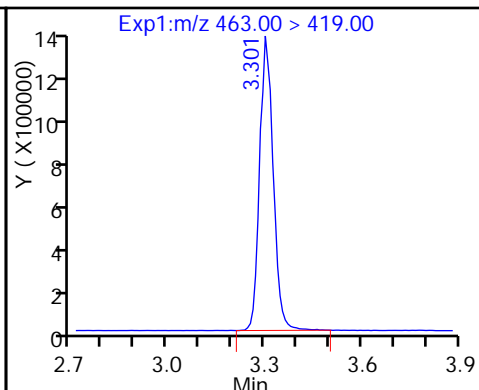
D 17 13C4 PFOS



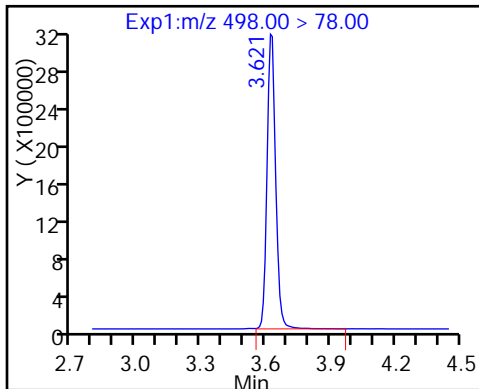
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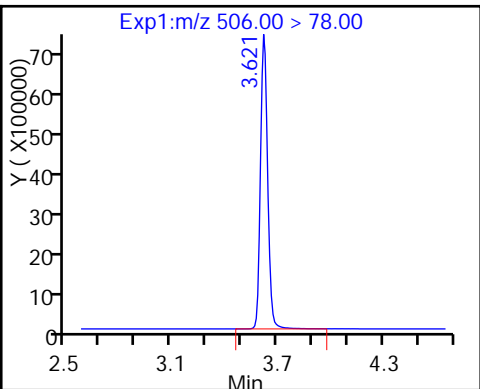
20 Perfluorononanoic acid



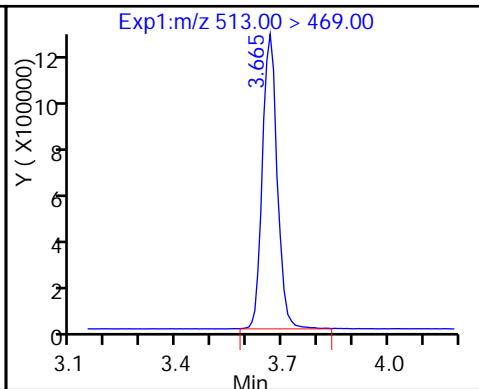
22 Perfluorooctane Sulfonamide



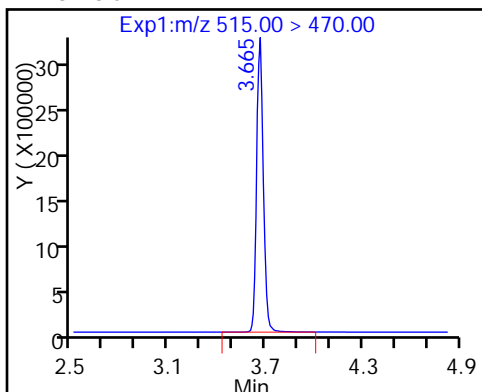
D 21 13C8 FOSA



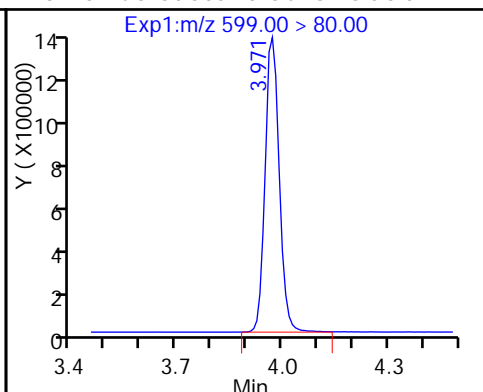
24 Perfluorodecanoic acid



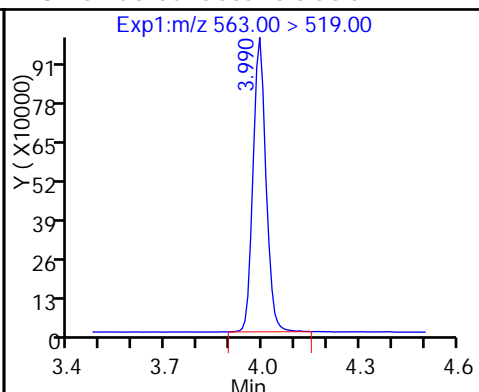
D 23 13C2 PFDA



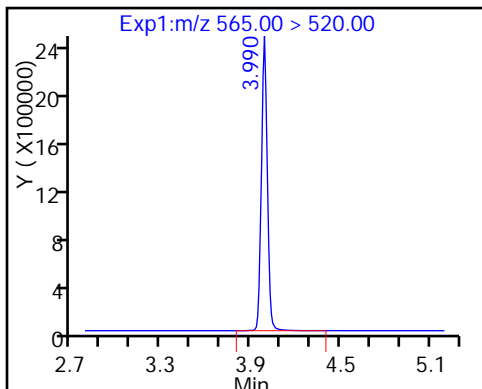
26 Perfluorodecane Sulfonic acid



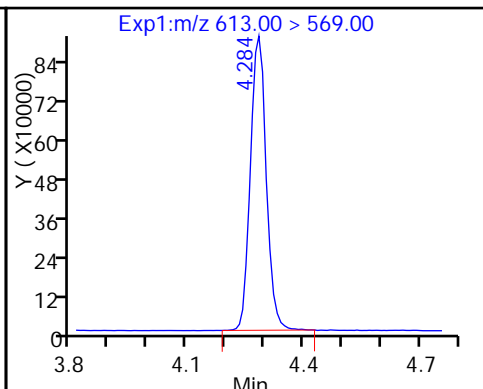
28 Perfluoroundecanoic acid



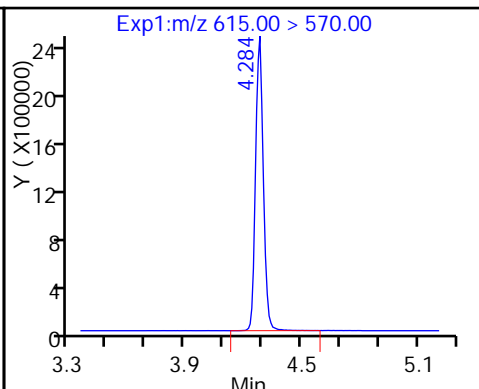
D 27 13C2 PFUa



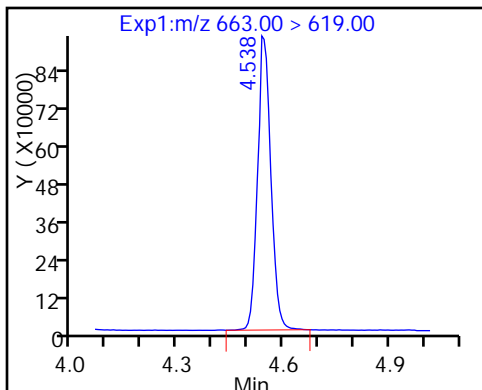
29 Perfluorododecanoic acid



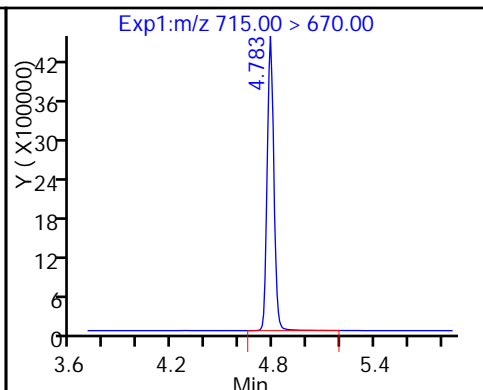
D 30 13C2 PFDa



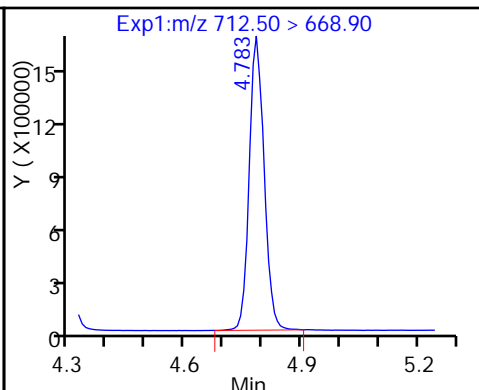
31 Perfluorotridecanoic acid



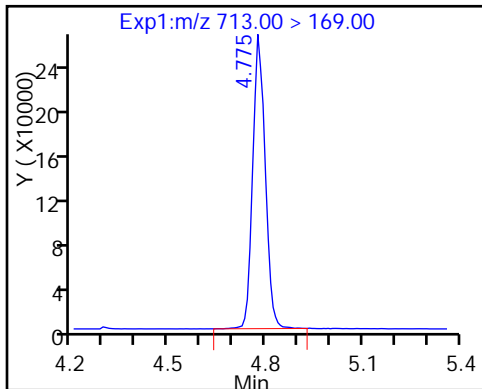
D 32 13C2-PFTeDA



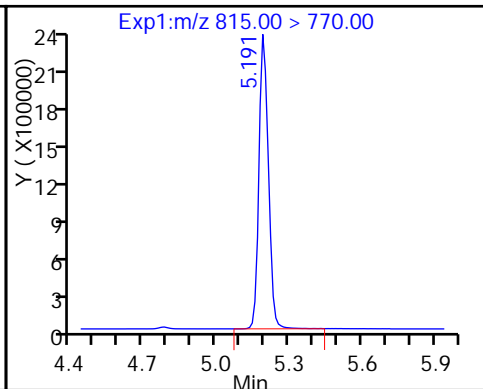
33 Perfluorotetradecanoic acid



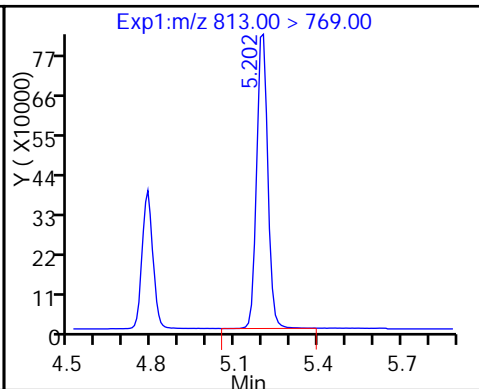
33 Perfluorotetradecanoic acid



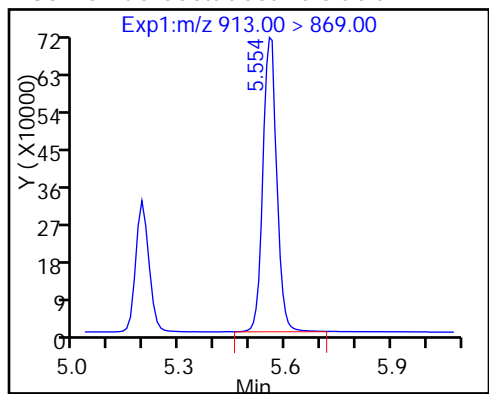
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 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 Sulfonylamide (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

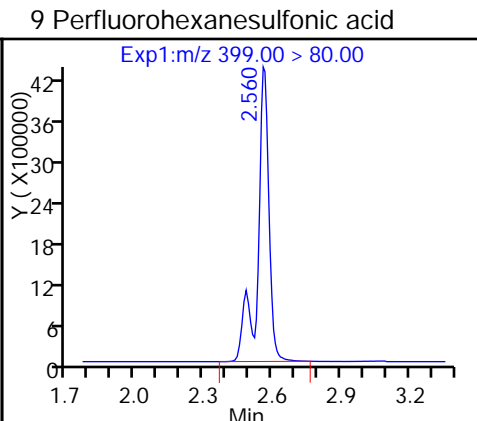
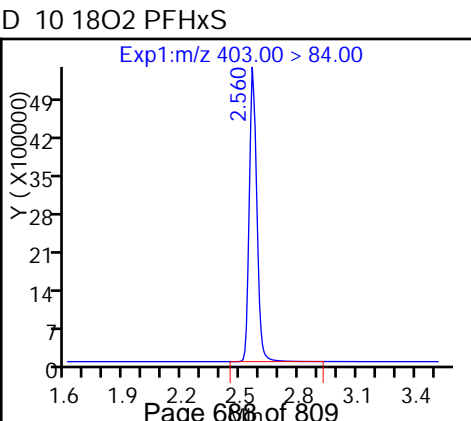
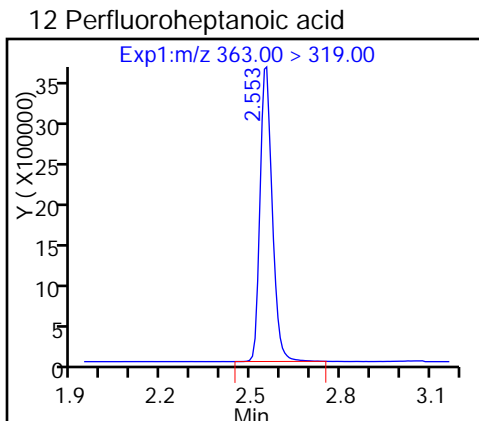
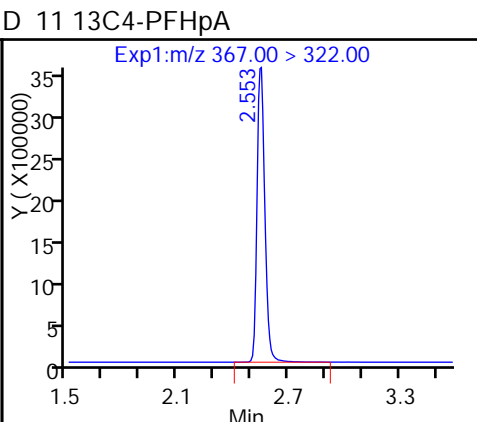
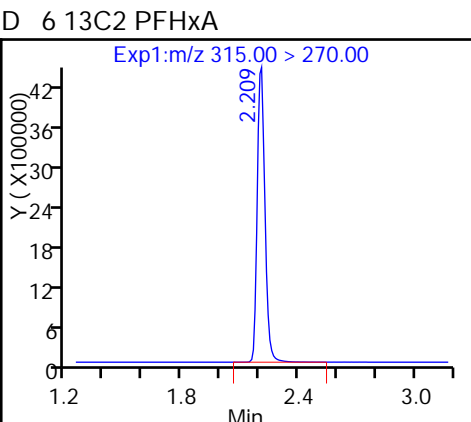
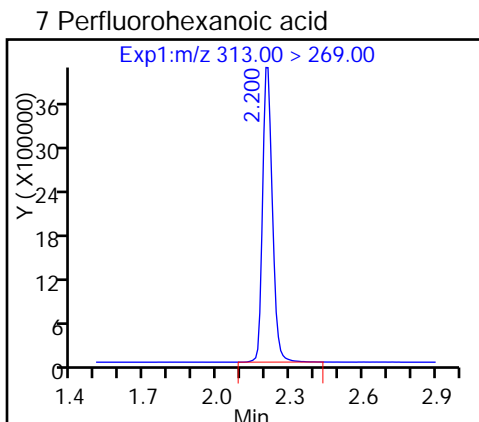
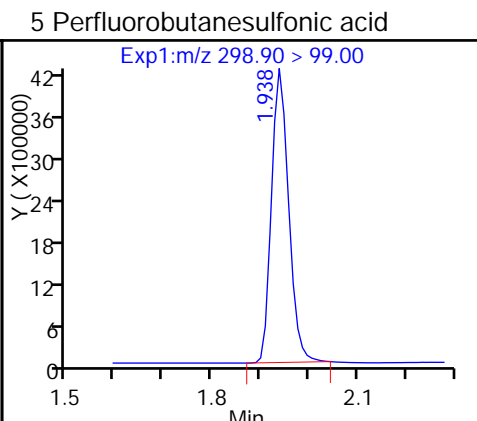
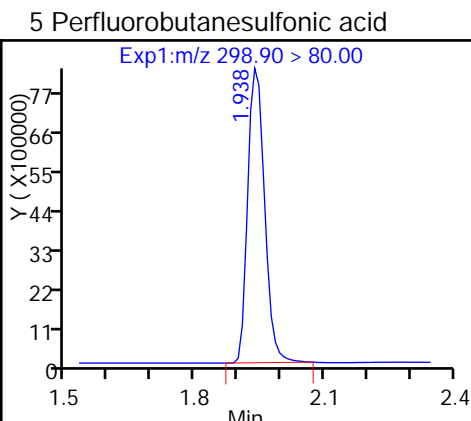
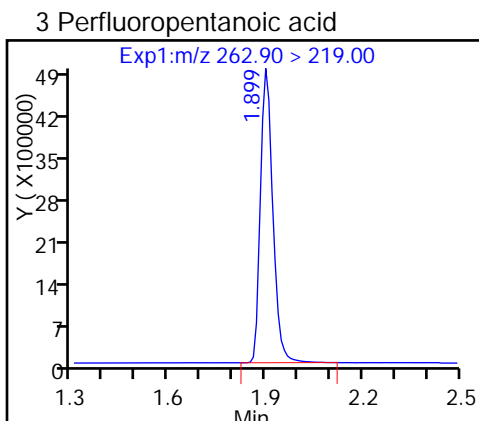
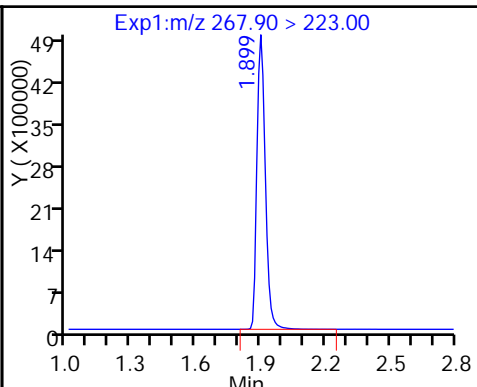
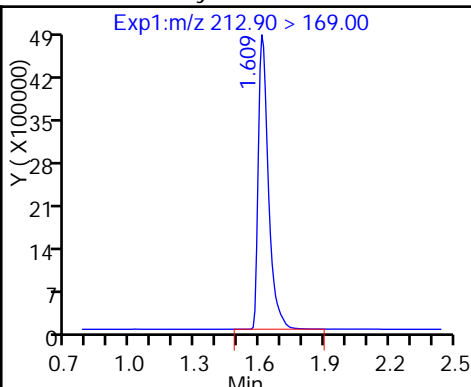
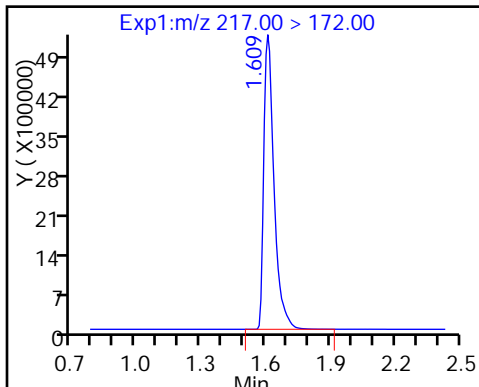
Method: A8_N

Limit Group: LC PFC_DOD ICAL

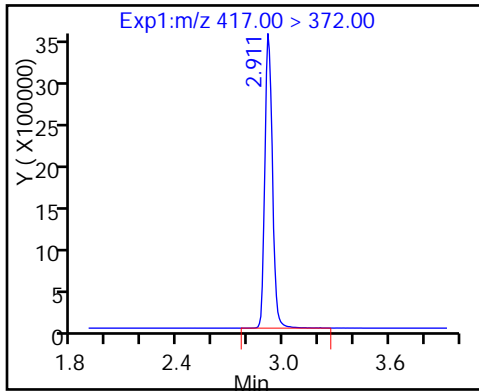
D 2 13C4 PFBA

1 Perfluorobutyric acid

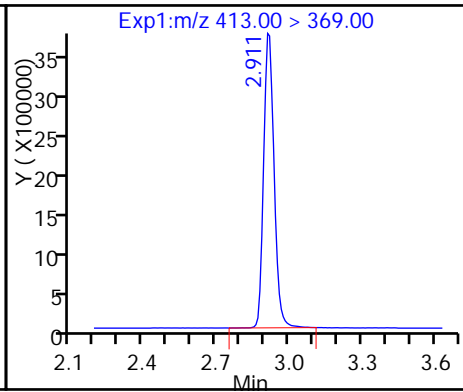
D 4 13C5-PFPeA



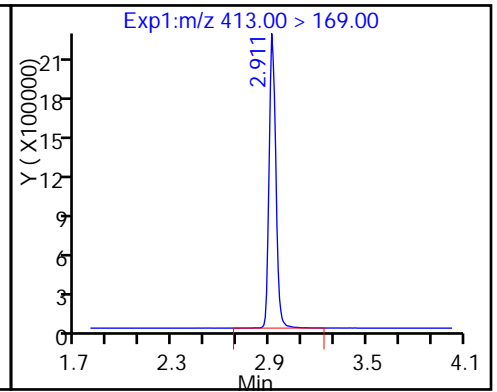
D 14 13C4 PFOA



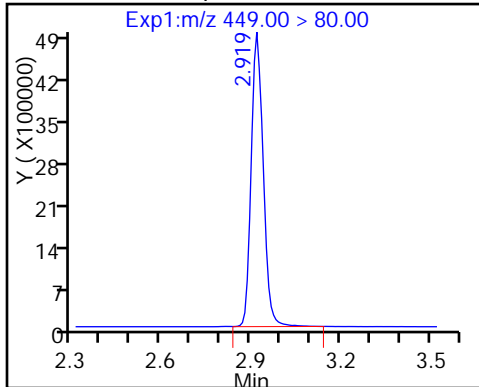
15 Perfluorooctanoic acid



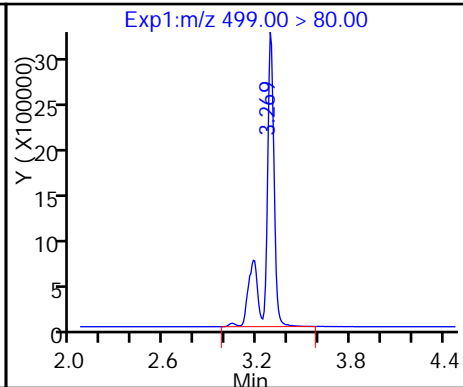
15 Perfluorooctanoic acid



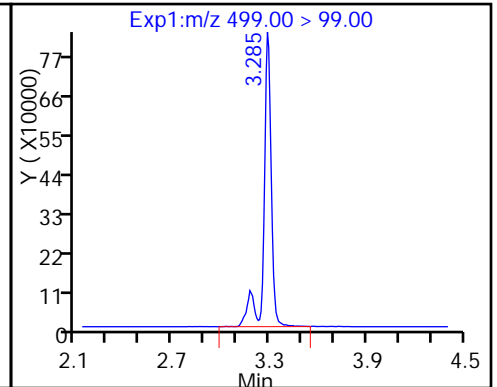
13 Perfluoroheptanesulfonic Acid



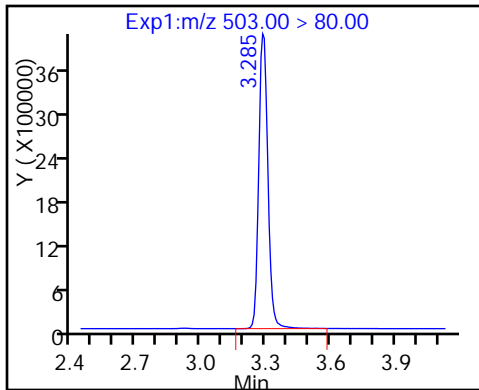
18 Perfluorooctane sulfonic acid



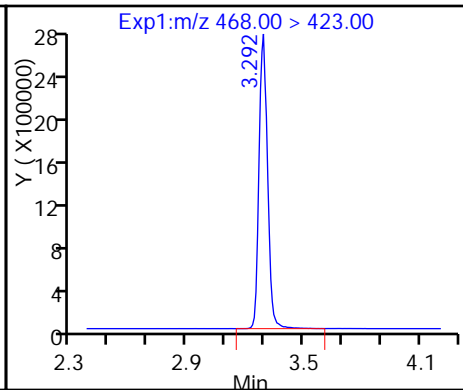
18 Perfluorooctane sulfonic acid



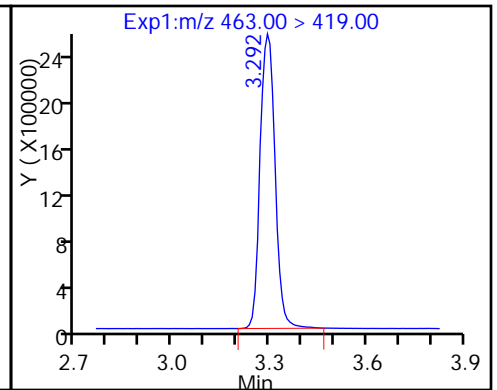
D 17 13C4 PFOS



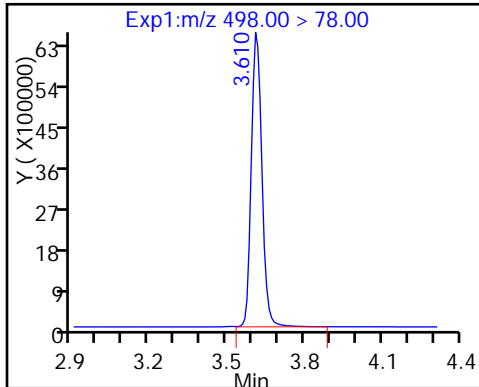
D 19 13C5 PFNA



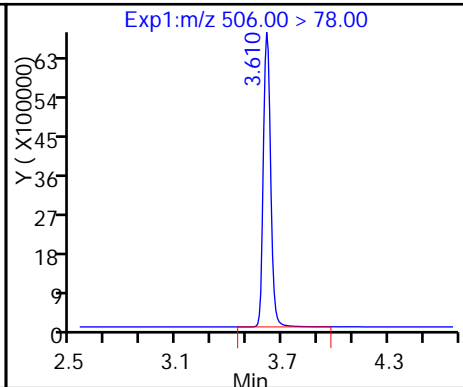
20 Perfluorononanoic acid



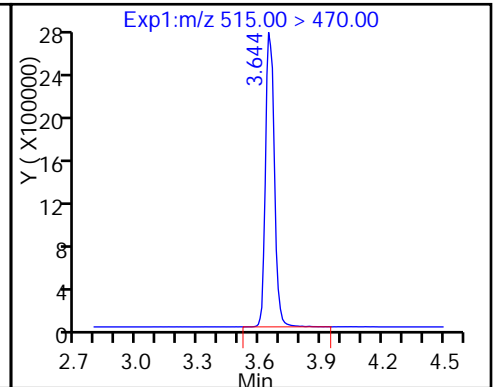
22 Perfluorooctane Sulfonamide

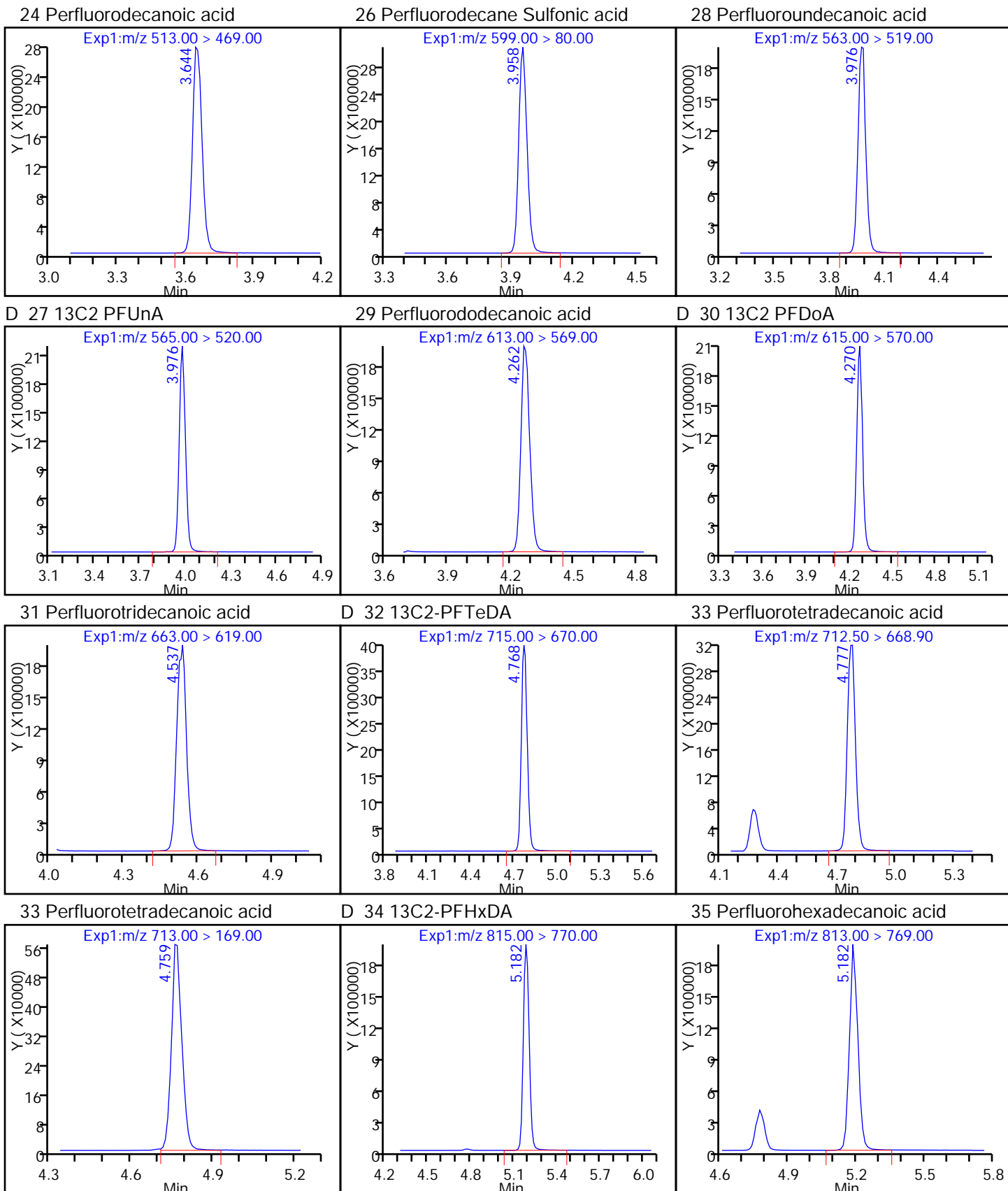


D 21 13C8 FOSA

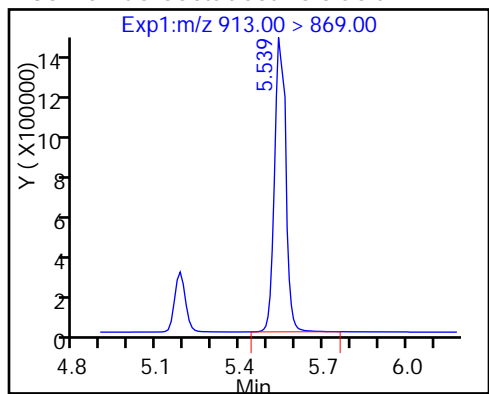


D 23 13C2 PFDA





36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Lab Sample ID: CCV 320-145242/2 Calibration Date: 01/05/2017 14:53
 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: 05JAN2017B_002.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	0.9204		53.9	50.0	7.8	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.013		51.3	50.0	2.7	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.620		50.5	44.2	14.3	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9243		49.8	50.0	-0.5	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.053		46.5	45.5	2.2	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	0.9859		50.4	50.0	0.7	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.034		51.6	50.0	3.1	25.0
Perfluorooctanesulfonic Acid (PFOS)	AveID	1.102	1.161		50.2	47.6	5.4	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9945	1.056		49.3	46.4	6.2	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	0.9745		51.2	50.0	2.4	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	0.9372		50.2	50.0	0.5	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9245		49.0	50.0	-2.0	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6829		56.4	48.2	16.9	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9906		51.8	50.0	3.6	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9512		51.8	50.0	3.6	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9410		51.9	50.0	3.8	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.795		56.6	50.0	13.2	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.8258		42.6	50.0	-14.7	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.5832		28.3	50.0	-43.4*	25.0
13C4 PFBA	Ave	347743	377525		54.3	50.0	8.6	50.0
13C5-PFPeA	Ave	266072	281801		53.0	50.0	5.9	50.0
13C2 PFHxA	Ave	245110	258642		52.8	50.0	5.5	50.0
13C4-PFHpA	Ave	226344	217457		48.0	50.0	-3.9	50.0
18O2 PFHxS	Ave	326976	329627		47.7	47.3	0.8	50.0
13C4 PFOA	Ave	230362	225059		48.8	50.0	-2.3	50.0
13C4 PFOS	Ave	248847	266154		51.1	47.8	7.0	50.0
13C5 PFNA	Ave	177687	180943		50.9	50.0	1.8	50.0
13C8 FOSA	Ave	384141	420046		54.7	50.0	9.3	50.0
13C2 PFDA	Ave	157302	181454		57.7	50.0	15.4	50.0
13C2 PFUnA	Ave	117250	132398		56.5	50.0	12.9	50.0
13C2 PFDoA	Ave	110957	123931		55.8	50.0	11.7	50.0
13C2-PFTeDA	Ave	227387	243417		53.5	50.0	7.0	50.0
13C2-PFHxDA	Ave	124568	120863		48.5	50.0	-3.0	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38534.b\05JAN2017B_002.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 05-Jan-2017 14:53:18 ALS Bottle#: 41 Worklist Smp#: 2
 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\20170106-38534.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2017 09:59:21 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: XAWRK021

First Level Reviewer: chandrasenas Date: 06-Jan-2017 09:41:37

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	1.598	1.598	0.0	18876268	54.3		109	945067	
1 Perfluorobutyric acid	212.90 > 169.00	1.606	1.606	0.0	1.000	17374360	53.9	108	145123	
D 4 13C5-PFPeA	267.90 > 223.00	1.887	1.887	0.0	14090073	53.0		106	1018033	
3 Perfluoropentanoic acid	262.90 > 219.00	1.887	1.887	0.0	1.000	14274441	51.3	103	142736	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.935	1.935	0.0	1.000	23598940	50.5	114		
	298.90 > 99.00	1.926	1.935	-0.009	0.995	10752949	2.19(0.00-0.00)			
D 6 13C2 PFHxA	315.00 > 270.00	2.195	2.195	0.0	12932078	52.8		106	787179	
7 Perfluorohexanoic acid	313.00 > 269.00	2.195	2.195	0.0	1.000	11953110	49.8	99.5	343034	
9 Perfluorohexanesulfonic acid	399.00 > 80.00	2.476	2.476	0.0	1.000	15790470	46.5	102		
D 11 13C4-PFHpA	367.00 > 322.00	2.536	2.536	0.0	10872873	48.0		96.1	1290283	
12 Perfluoroheptanoic acid	363.00 > 319.00	2.536	2.536	0.0	1.000	10719114	50.4	101	160146	
D 10 18O2 PFHxS	403.00 > 84.00	2.552	2.552	0.0	15591366	47.7		101	783835	
15 Perfluorooctanoic acid	413.00 > 369.00	2.902	2.902	0.0	1.000	11640842	51.6	103	128331	
	413.00 > 169.00	2.902	2.902	0.0	1.000	7031669	1.66(0.90-1.10)		335091	
D 14 13C4 PFOA	417.00 > 372.00	2.902	2.902	0.0	11252959	48.8		97.7	641187	

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	2.910	2.910	0.0	1.000	14714792	50.2	105		
18 Perfluorooctane sulfonic acid	499.00 > 80.00	3.259	3.259	0.0	1.000	13037780	49.3	106	198714	
	499.00 > 99.00	3.275	3.259	0.016	1.005	2826394	4.61(0.90-1.10)		143196	
D 17 13C4 PFOS	503.00 > 80.00	3.275	3.275	0.0		12722140	51.1	107	222414	
D 19 13C5 PFNA	468.00 > 423.00	3.283	3.283	0.0		9047140	50.9	102	771300	
20 Perfluorononanoic acid	463.00 > 419.00	3.275	3.275	0.0	1.000	8816365	51.2	102	131929	
D 21 13C8 FOSA	506.00 > 78.00	3.600	3.600	0.0		21002313	54.7	109	1204876	
22 Perfluorooctane Sulfonamide	498.00 > 78.00	3.600	3.600	0.0	1.000	19683048	50.2	100	358361	
24 Perfluorodecanoic acid	513.00 > 469.00	3.642	3.642	0.0	1.000	8387491	49.0	98.0	237554	
D 23 13C2 PFDA	515.00 > 470.00	3.642	3.642	0.0		9072678	57.7	115	154937	
26 Perfluorodecane Sulfonic acid	599.00 > 80.00	3.945	3.945	0.0	1.000	8760493	56.4	117		
28 Perfluoroundecanoic acid	563.00 > 519.00	3.963	3.963	0.0	1.000	6557406	51.8	104	186777	
D 27 13C2 PFUnA	565.00 > 520.00	3.972	3.972	0.0		6619921	56.5	113	438106	
29 Perfluorododecanoic acid	613.00 > 569.00	4.265	4.265	0.0	1.000	5894209	51.8	104	88638	
D 30 13C2 PFDoA	615.00 > 570.00	4.265	4.265	0.0		6196561	55.8	112	160763	
31 Perfluorotridecanoic acid	663.00 > 619.00	4.526	4.526	0.0	1.000	5831202	51.9	104	6297	
D 32 13C2-PFTeDA	715.00 > 670.00	4.764	4.764	0.0		12170859	53.5	107	899275	
33 Perfluorotetradecanoic acid	712.50 > 668.90	4.772	4.772	0.0	1.000	11120763	56.6	113	3415	
	713.00 > 169.00	4.755	4.772	-0.017	0.996	1618506	6.87(0.00-0.00)		146114	
35 Perfluorohexadecanoic acid	813.00 > 769.00	5.178	5.178	0.0	1.000	5117000	42.6	85.3	2985	
D 34 13C2-PFHxDA	815.00 > 770.00	5.188	5.188	0.0		6043137	48.5	97.0	60305	
36 Perfluorooctadecanoic acid	913.00 > 869.00	5.536	5.536	0.0	1.000	3613945	28.3	56.6	2679	

Reagents:

LCPFC-L5_00022

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38534.b\05JAN2017B_002.d

Injection Date: 05-Jan-2017 14:53:18

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 41

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

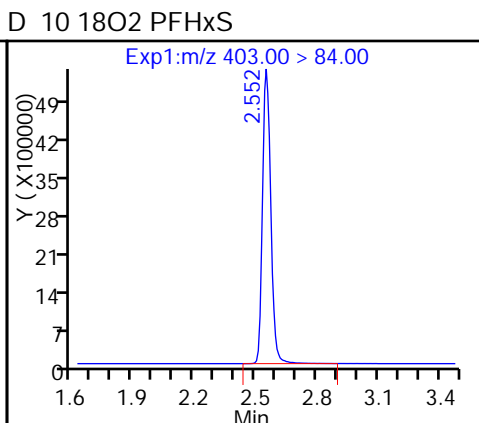
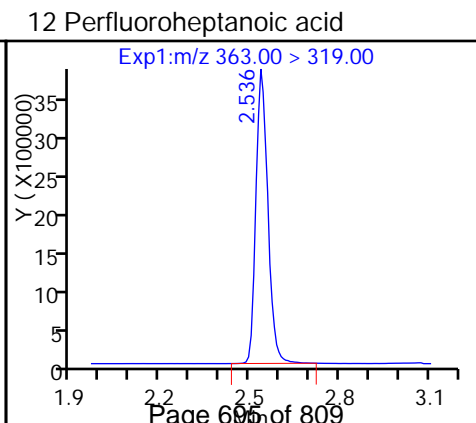
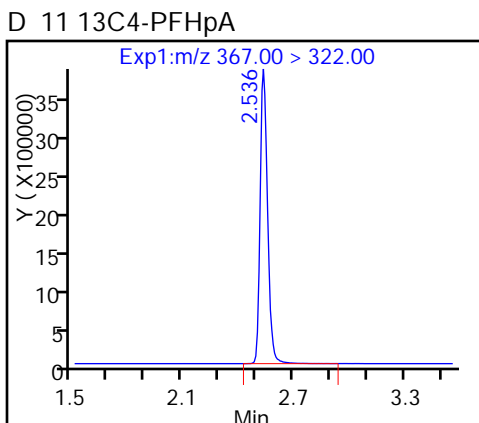
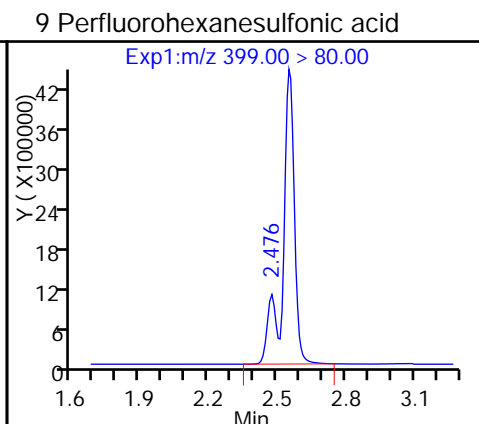
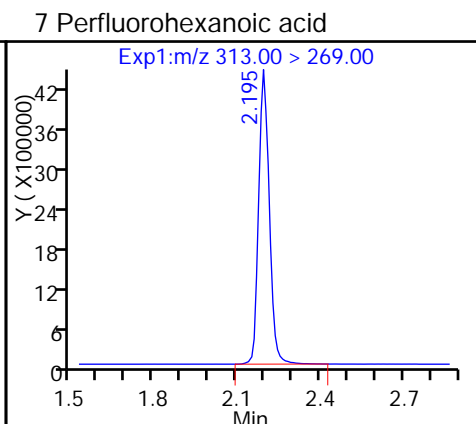
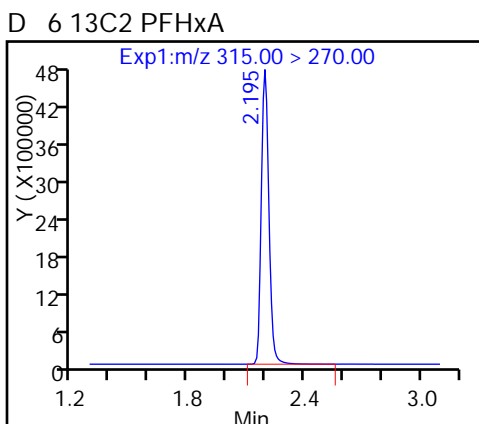
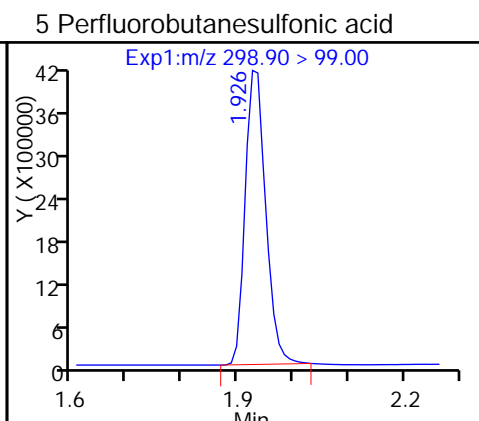
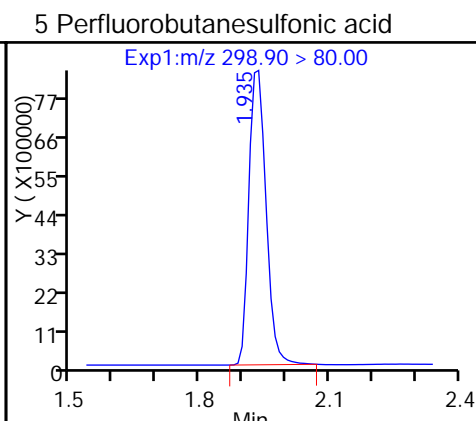
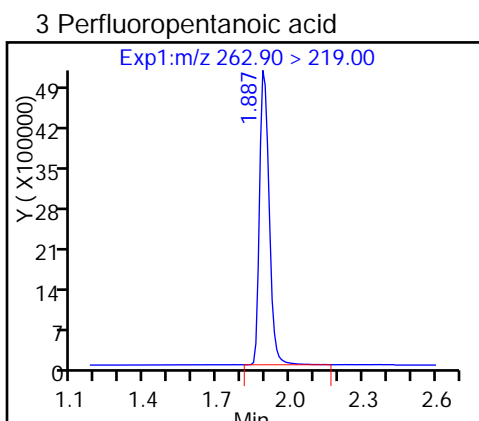
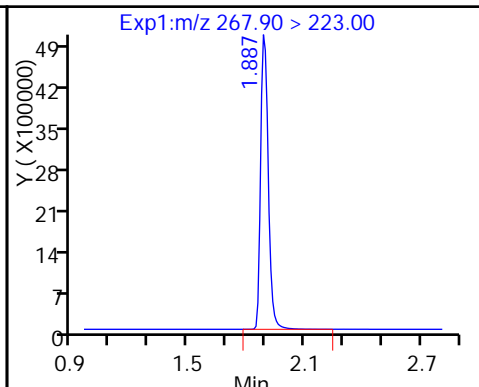
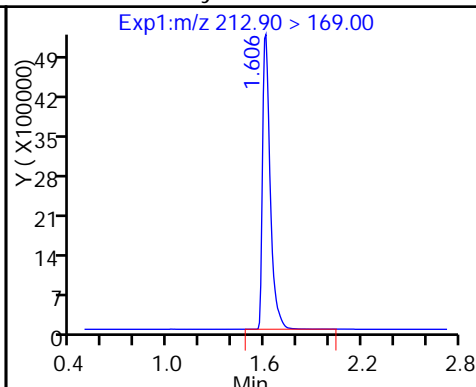
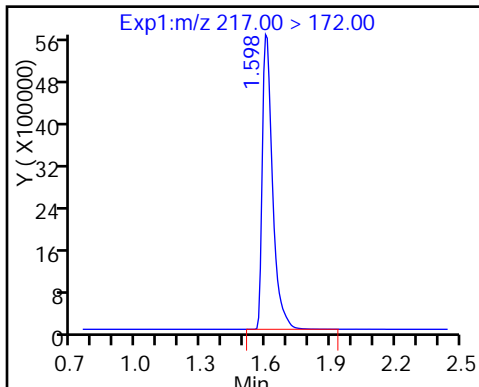
Method: A8_N

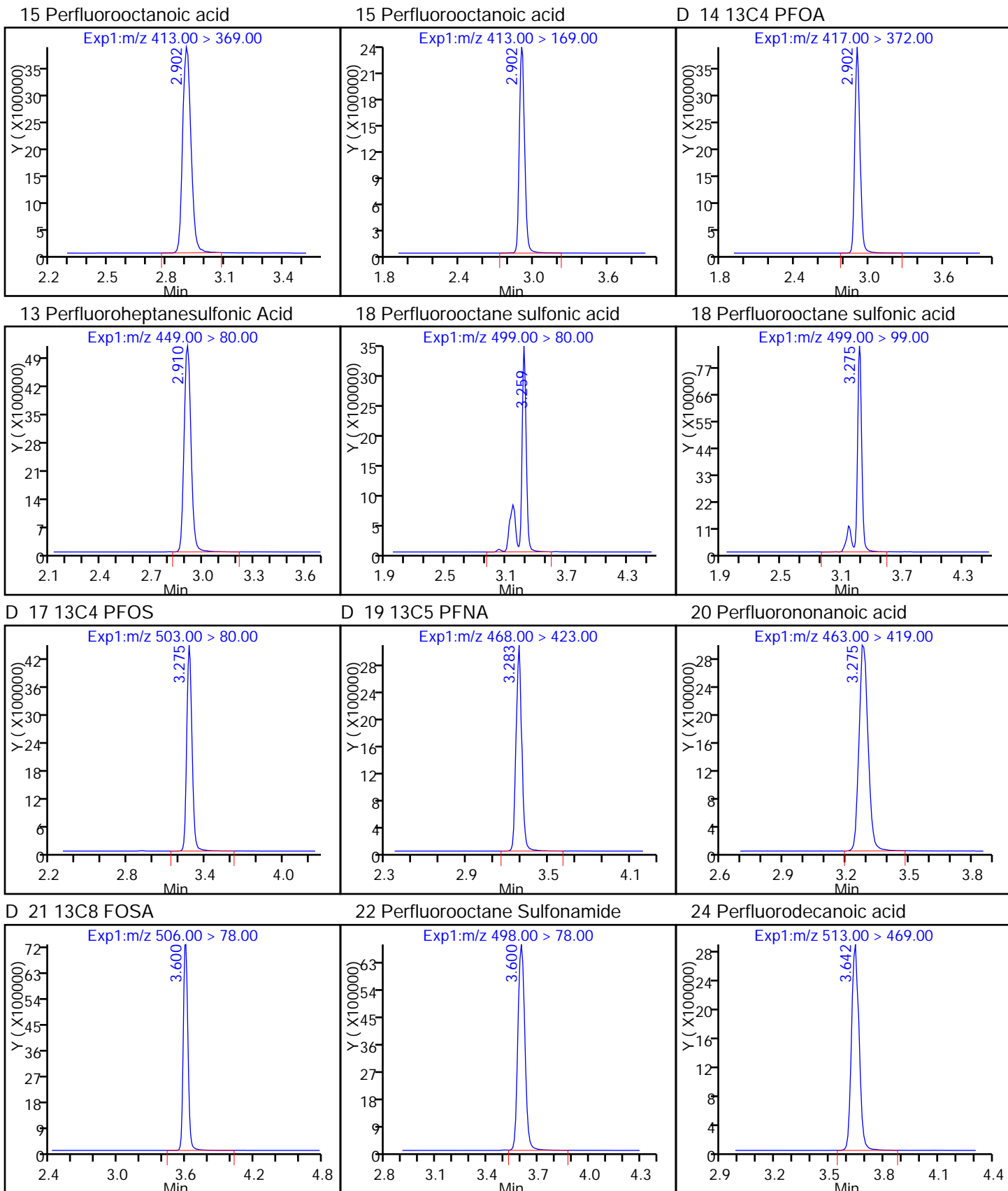
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

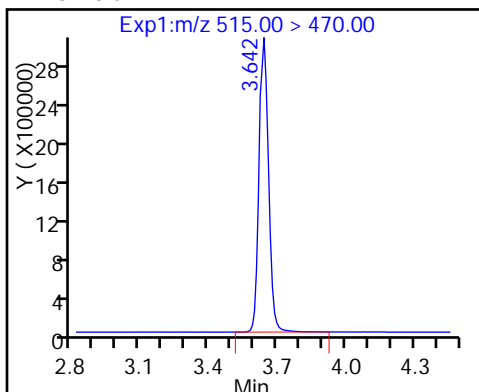
1 Perfluorobutyric acid

D 4 13C5-PFPeA

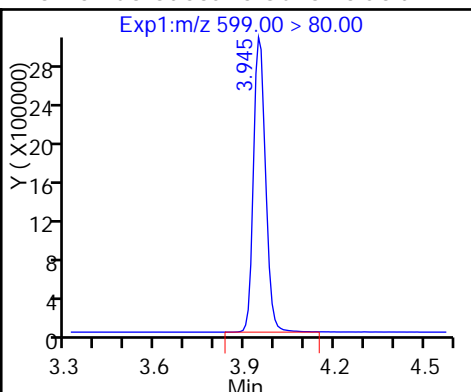




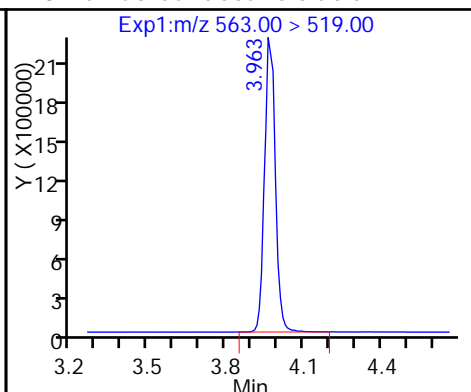
D 23 13C2 PFDA



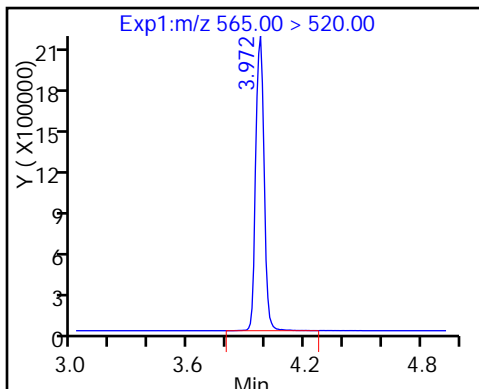
26 Perfluorodecane Sulfonic acid



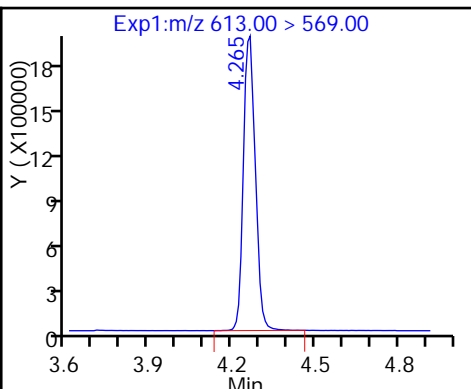
28 Perfluoroundecanoic acid



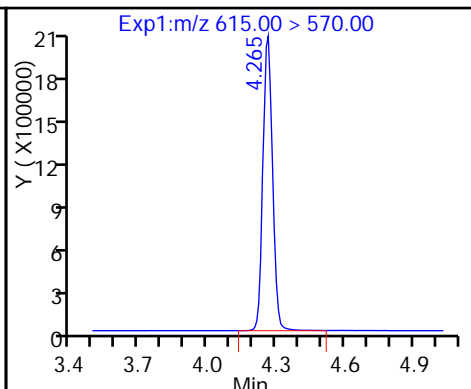
D 27 13C2 PFUa



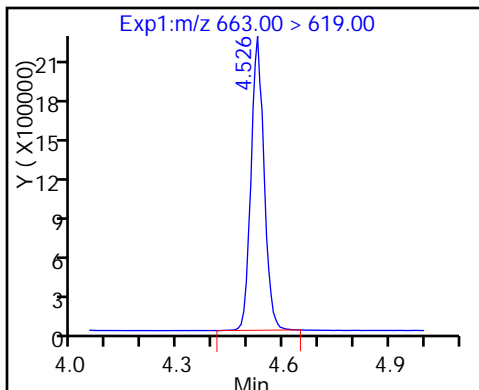
29 Perfluorododecanoic acid



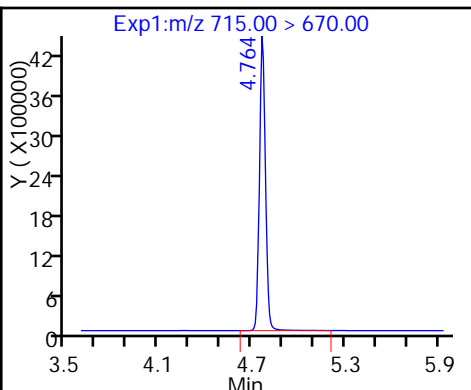
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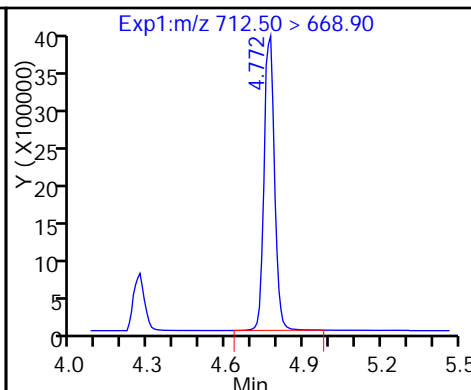
31 Perfluorotridecanoic acid



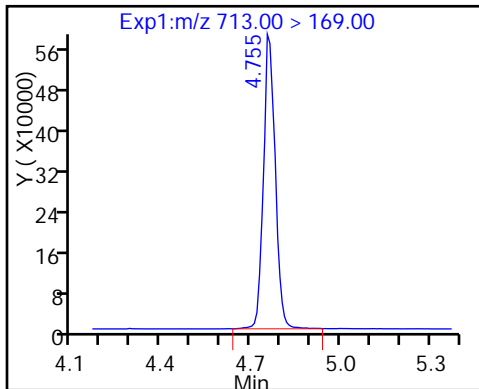
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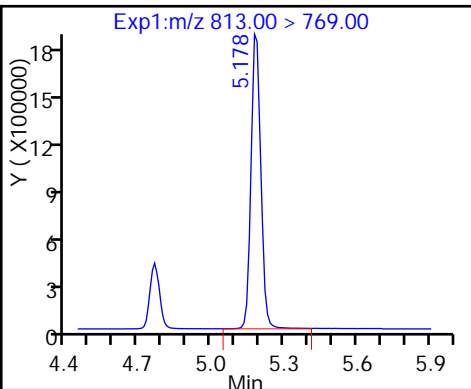
33 Perfluorotetradecanoic acid



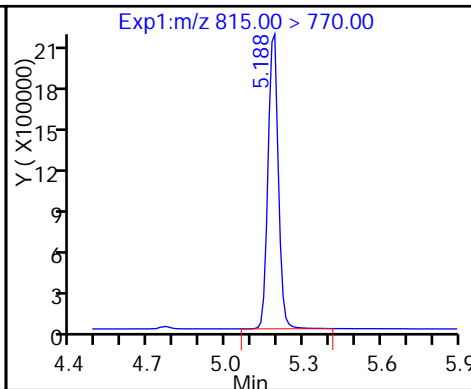
33 Perfluorotetradecanoic acid



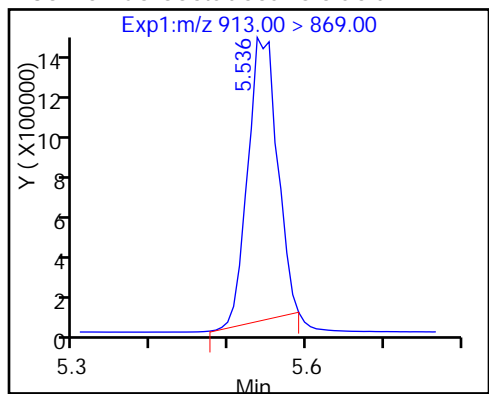
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Lab Sample ID: CCV 320-145242/11 Calibration Date: 01/05/2017 16:00
 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: 05JAN2017B_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	0.9829		23.0	20.0	15.1	25.0
Perfluoropentanoic acid (PFPeA)	AveID	0.9868	1.085		22.0	20.0	9.9	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.417	1.780		22.2	17.7	25.6*	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9288	0.9685		20.9	20.0	4.3	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.030	1.104		19.5	18.2	7.2	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9788	1.029		21.0	20.0	5.1	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.003	1.067		21.3	20.0	6.4	25.0
Perfluorooctanesulfonic Acid (PFOS)	AveID	1.102	1.186		20.5	19.0	7.7	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	0.9945	1.067		19.9	18.6	7.3	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9518	1.003		21.1	20.0	5.4	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9327	1.018		21.8	20.0	9.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9438	0.9793		20.8	20.0	3.8	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5840	0.6539		21.6	19.3	12.0	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9563	0.9462		19.8	20.0	-1.1	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9180	0.9582		20.9	20.0	4.4	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9069	0.9108		20.1	20.0	0.4	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.585	1.765		22.3	20.0	11.4	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	LlID		0.8369		16.9	20.0	-15.3	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.030	0.7569		14.7	20.0	-26.5*	25.0
13C4 PFBA	Ave	347743	393687		56.6	50.0	13.2	50.0
13C5-PFPeA	Ave	266072	298049		56.0	50.0	12.0	50.0
13C2 PFHxA	Ave	245110	274774		56.1	50.0	12.1	50.0
13C4-PFHpA	Ave	226344	233124		51.5	50.0	3.0	50.0
18O2 PFHxS	Ave	326976	352109		50.9	47.3	7.7	50.0
13C4 PFOA	Ave	230362	248354		53.9	50.0	7.8	50.0
13C4 PFOS	Ave	248847	289320		55.6	47.8	16.3	50.0
13C5 PFNA	Ave	177687	194068		54.6	50.0	9.2	50.0
13C8 FOSA	Ave	384141	422735		55.0	50.0	10.0	50.0
13C2 PFDA	Ave	157302	183776		58.4	50.0	16.8	50.0
13C2 PFUnA	Ave	117250	140710		60.0	50.0	20.0	50.0
13C2 PFDoA	Ave	110957	128262		57.8	50.0	15.6	50.0
13C2-PFTeDA	Ave	227387	239486		52.7	50.0	5.3	50.0
13C2-PFHxDA	Ave	124568	120671		48.4	50.0	-3.1	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38534.b\05JAN2017B_011.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 05-Jan-2017 16:00:45 ALS Bottle#: 40 Worklist Smp#: 11
 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\20170106-38534.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2017 09:59:35 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 09:56:07

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	1.598	1.598	0.0	19684341	56.6		113	1014612	
1 Perfluorobutyric acid	212.90 > 169.00	1.598	1.598	0.0	1.000	7739007	23.0	115	57859	
D 4 13C5-PFPeA	267.90 > 223.00	1.887	1.887	0.0	14902472	56.0		112	1785424	
3 Perfluoropentanoic acid	262.90 > 219.00	1.887	1.887	0.0	1.000	6466957	22.0	110	79052	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.925	1.925	0.0	1.000	11081705	22.2	126		
	298.90 > 99.00	1.925	1.925	0.0	1.000	4589305	2.41(0.00-0.00)			
D 6 13C2 PFHxA	315.00 > 270.00	2.184	2.184	0.0	13738716	56.1		112	989116	
7 Perfluorohexanoic acid	313.00 > 269.00	2.193	2.193	0.0	1.000	5322432	20.9	104	195424	
9 Perfluorohexanesulfonic acid	399.00 > 80.00	2.472	2.472	0.0	1.000	7073050	19.5	107		
D 11 13C4-PFHpA	367.00 > 322.00	2.528	2.528	0.0	11656182	51.5		103	775575	
12 Perfluoroheptanoic acid	363.00 > 319.00	2.535	2.535	0.0	1.000	4796247	21.0	105	64853	
D 10 18O2 PFHxS	403.00 > 84.00	2.550	2.550	0.0	16654766	50.9		108	1449993	
15 Perfluorooctanoic acid	413.00 > 369.00	2.896	2.896	0.0	1.000	5301897	21.3	106	53740	
	413.00 > 169.00	2.904	2.896	0.008	1.003	3168631	1.67(0.90-1.10)		110905	
D 14 13C4 PFOA	417.00 > 372.00	2.896	2.896	0.0	12417692	53.9		108	877108	

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	2.904	2.904	0.0	1.000	6535016	20.5	108		
18 Perfluorooctane sulfonic acid	499.00 > 80.00	3.271	3.271	0.0	1.000	5727684	19.9	107	190464	
	499.00 > 99.00	3.271	3.271	0.0	1.000	1224245	4.68(0.90-1.10)		92727	
D 17 13C4 PFOS	503.00 > 80.00	3.271	3.271	0.0		13829478	55.6	116	363607	
20 Perfluorononanoic acid	463.00 > 419.00	3.278	3.278	0.0	1.000	3892254	21.1	105	82696	
D 19 13C5 PFNA	468.00 > 423.00	3.271	3.271	0.0		9703397	54.6	109	801567	
D 21 13C8 FOSA	506.00 > 78.00	3.593	3.593	0.0		21136743	55.0	110	1040410	
22 Perfluorooctane Sulfonamide	498.00 > 78.00	3.593	3.593	0.0	1.000	8605329	21.8	109	263486	
24 Perfluorodecanoic acid	513.00 > 469.00	3.635	3.635	0.0	1.000	3599537	20.8	104	93882	
D 23 13C2 PFDA	515.00 > 470.00	3.635	3.635	0.0		9188780	58.4	117	242345	
26 Perfluorodecane Sulfonic acid	599.00 > 80.00	3.937	3.937	0.0	1.000	3647254	21.6	112		
28 Perfluoroundecanoic acid	563.00 > 519.00	3.963	3.963	0.0	1.000	2662905	19.8	98.9	63711	
D 27 13C2 PFUnA	565.00 > 520.00	3.963	3.963	0.0		7035510	60.0	120	265301	
29 Perfluorododecanoic acid	613.00 > 569.00	4.246	4.246	0.0	1.000	2458098	20.9	104	49219	
D 30 13C2 PFDaA	615.00 > 570.00	4.255	4.255	0.0		6413083	57.8	116	153937	
31 Perfluorotridecanoic acid	663.00 > 619.00	4.519	4.519	0.0	1.000	2336335	20.1	100	2792	
D 32 13C2-PFTeDA	715.00 > 670.00	4.750	4.750	0.0		11974298	52.7	105	947951	
33 Perfluorotetradecanoic acid	712.50 > 668.90	4.750	4.750	0.0	1.000	4527915	22.3	111	1332	
	713.00 > 169.00	4.750	4.750	0.0	1.000	679277	6.67(0.00-0.00)		83627	
35 Perfluorohexadecanoic acid	813.00 > 769.00	5.167	5.167	0.0	1.000	2146884	16.9	84.7	1578	
D 34 13C2-PFHxDA	815.00 > 770.00	5.167	5.167	0.0		6033570	48.4	96.9	71219	
36 Perfluorooctadecanoic acid	913.00 > 869.00	5.531	5.531	0.0	1.000	1941608	14.7	73.5	1612	

Reagents:

LCPFC-L4_00024

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38534.b\05JAN2017B_011.d

Injection Date: 05-Jan-2017 16:00:45

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 40

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

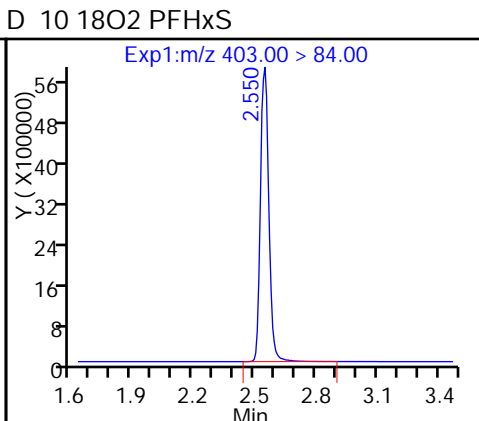
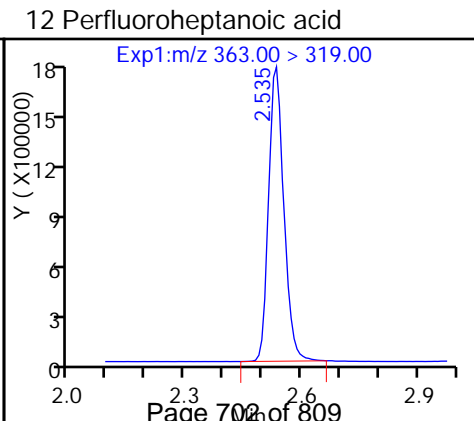
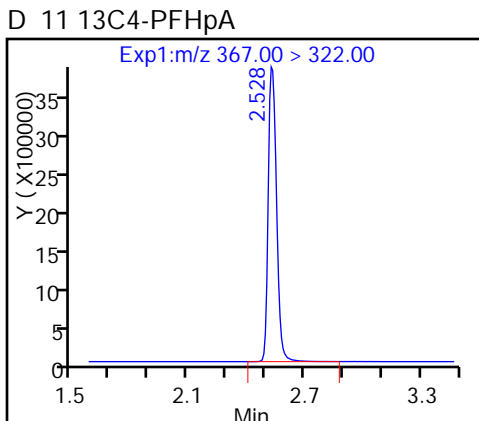
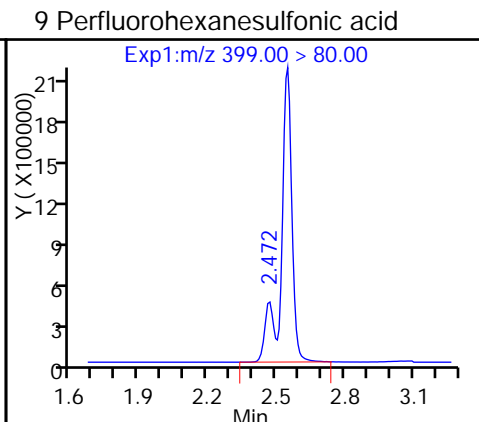
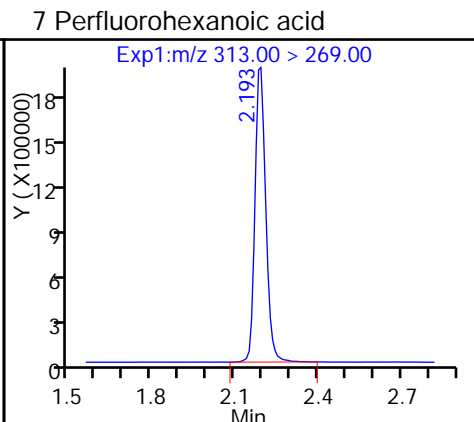
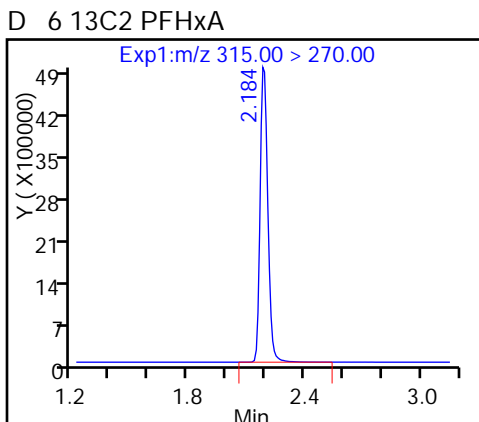
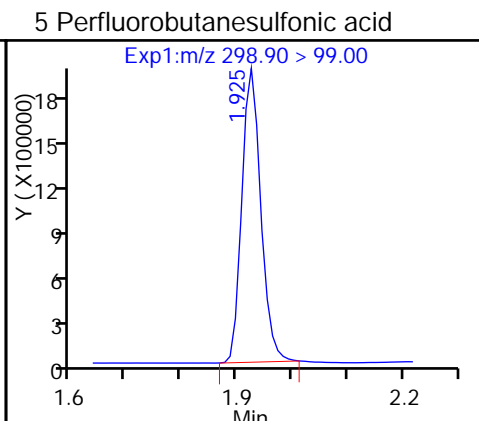
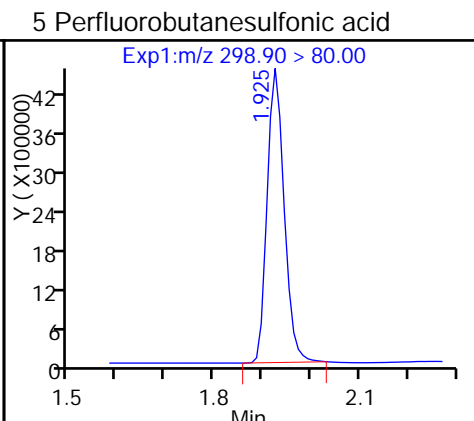
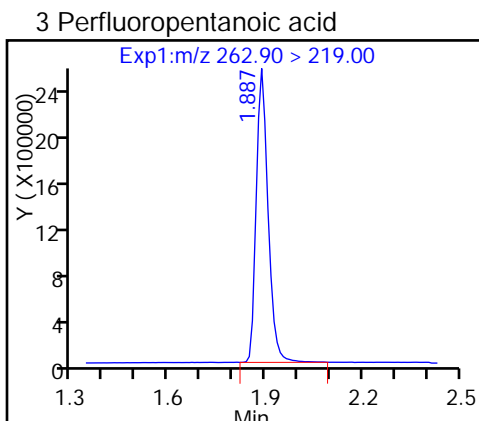
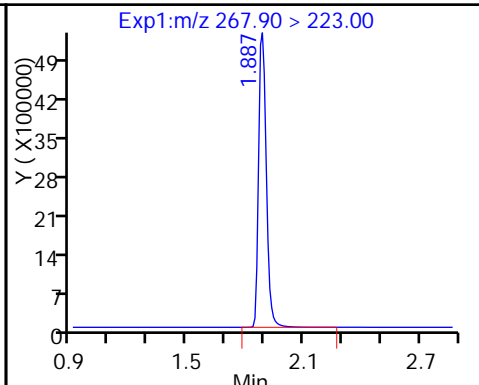
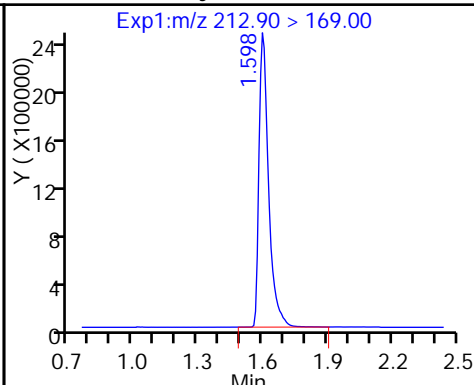
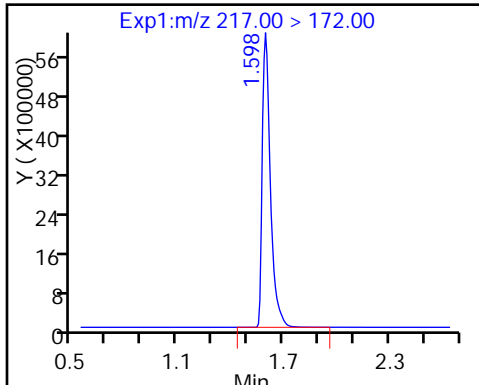
Method: A8_N

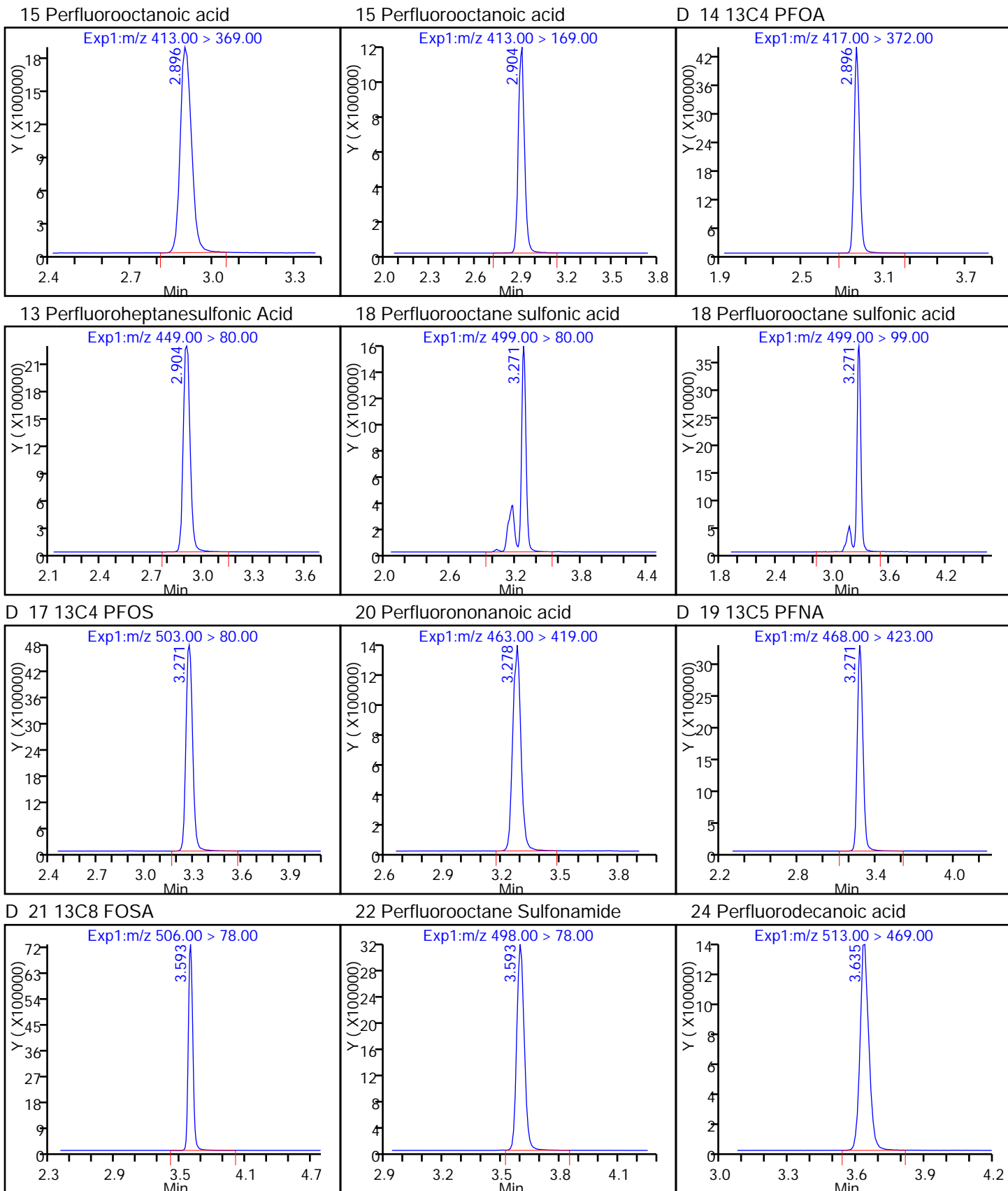
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

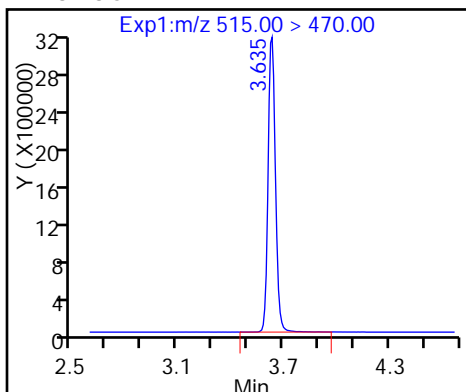
1 Perfluorobutyric acid

D 4 13C5-PFPeA

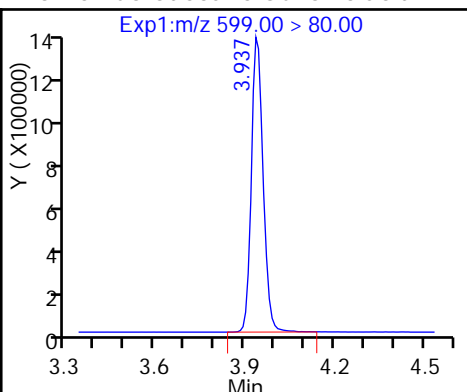




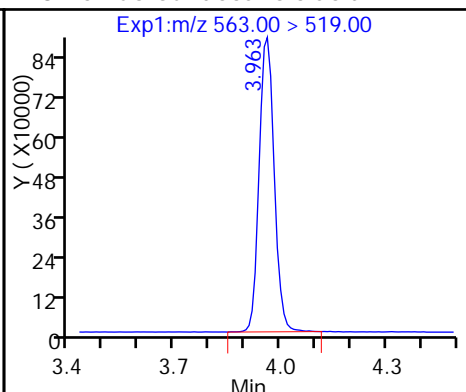
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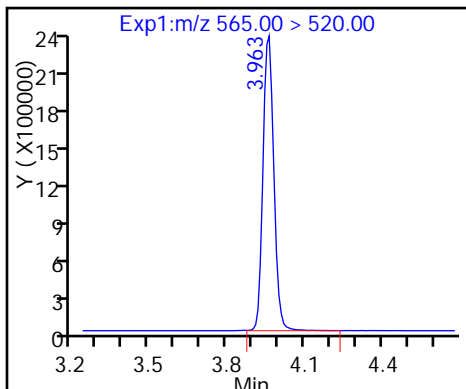
26 Perfluorodecane Sulfonic acid



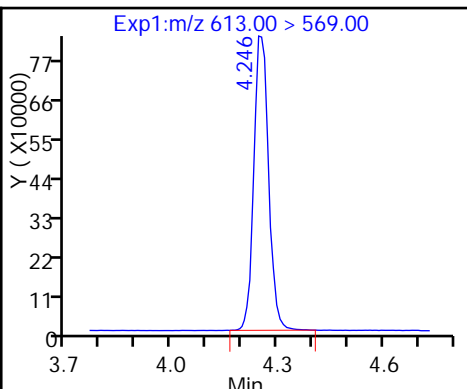
28 Perfluoroundecanoic acid



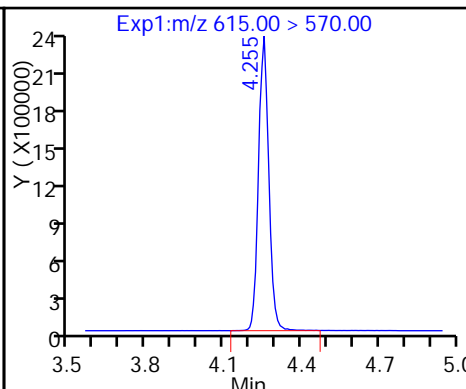
D 27 13C2 PFUa



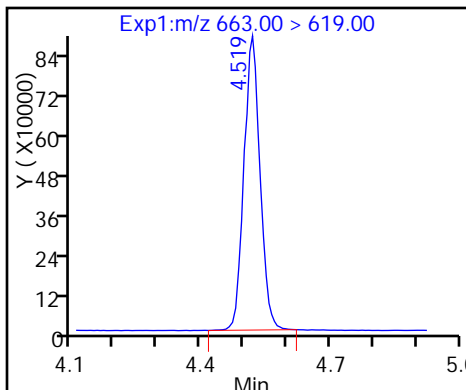
29 Perfluorododecanoic acid



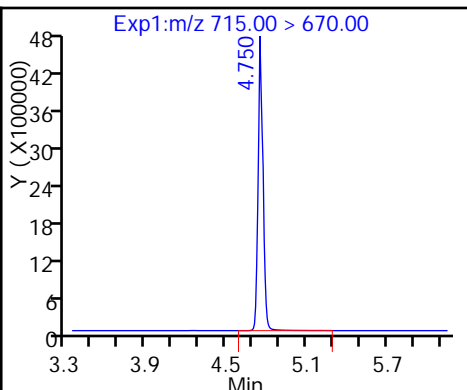
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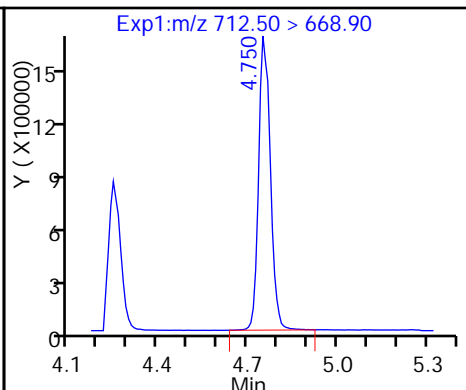
31 Perfluorotridecanoic acid



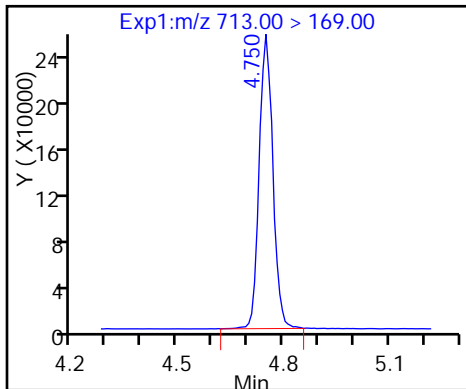
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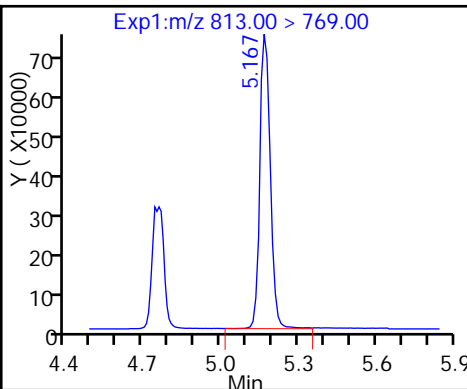
33 Perfluorotetradecanoic acid



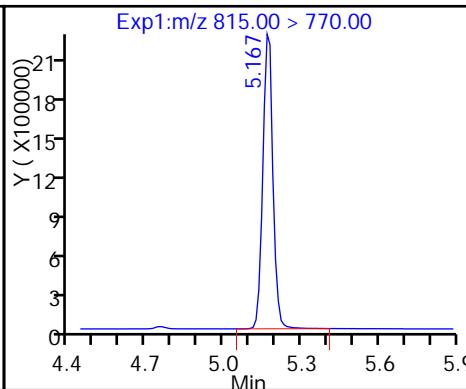
33 Perfluorotetradecanoic acid



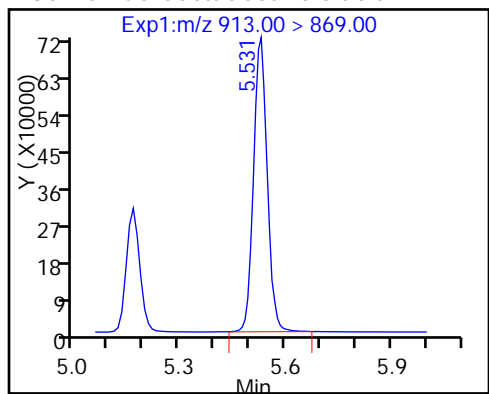
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-142967/1-A
 Matrix: Water Lab File ID: 28DEC2016C_003.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 250 (mL) Date Analyzed: 12/29/2016 00:06
 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.: 144253 Units: ug/L

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: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-142967/1-A
 Matrix: Water Lab File ID: 28DEC2016C_003.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 250 (mL) Date Analyzed: 12/29/2016 00:06
 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.: 144253 Units: ug/L

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

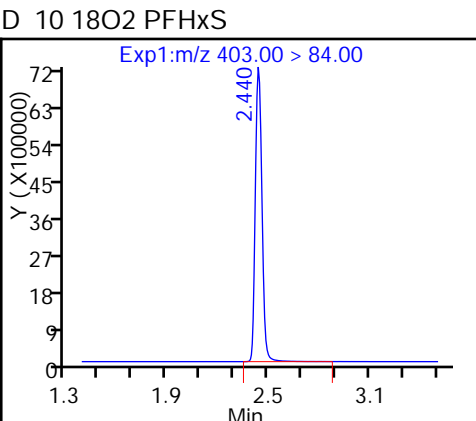
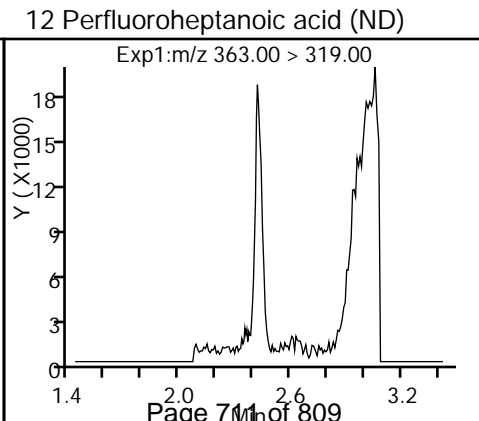
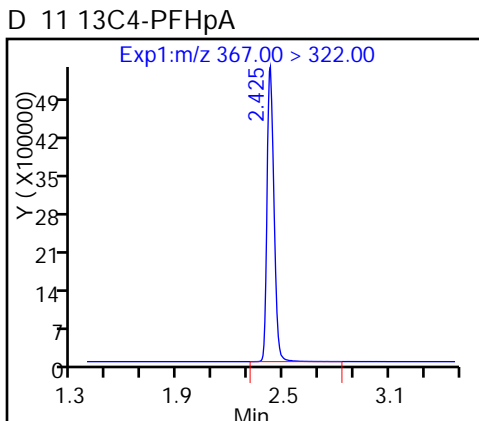
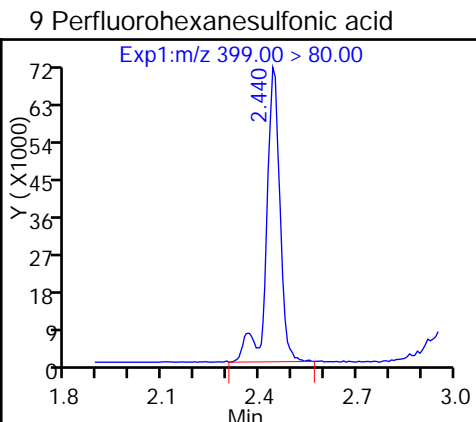
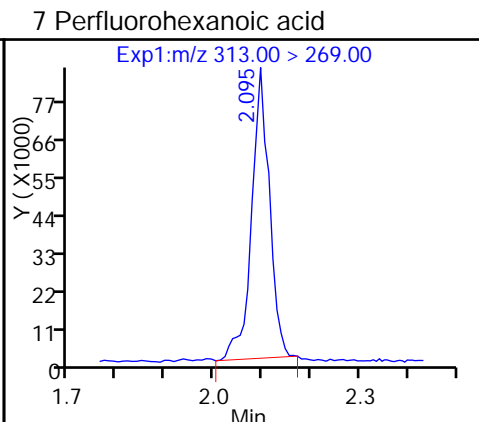
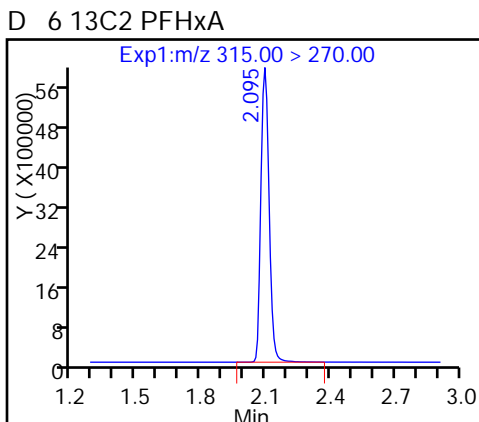
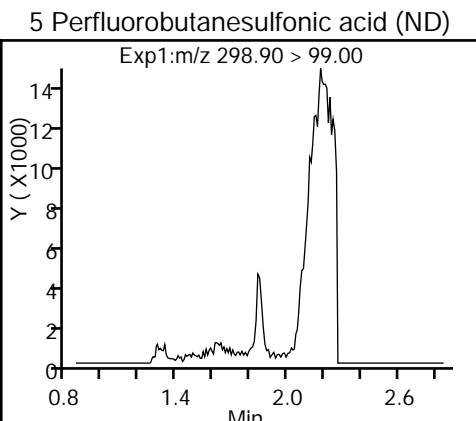
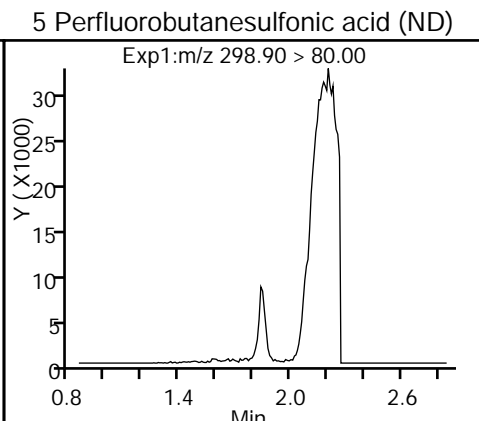
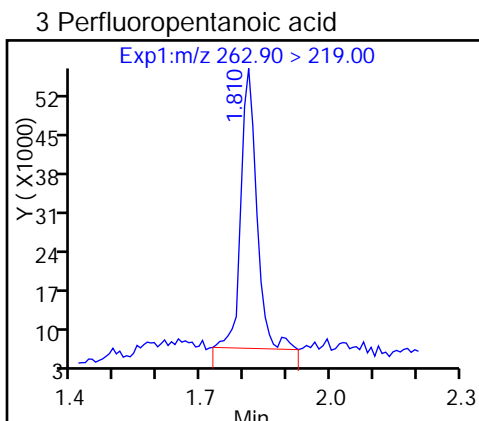
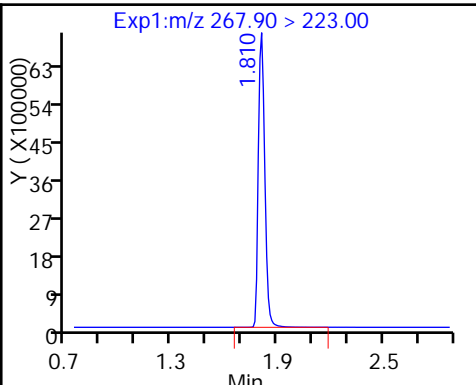
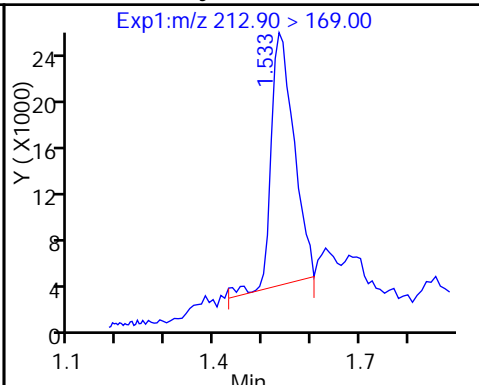
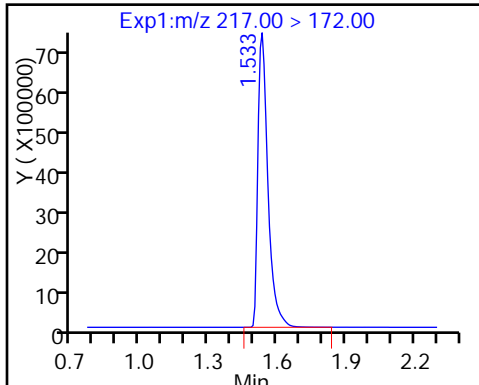
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

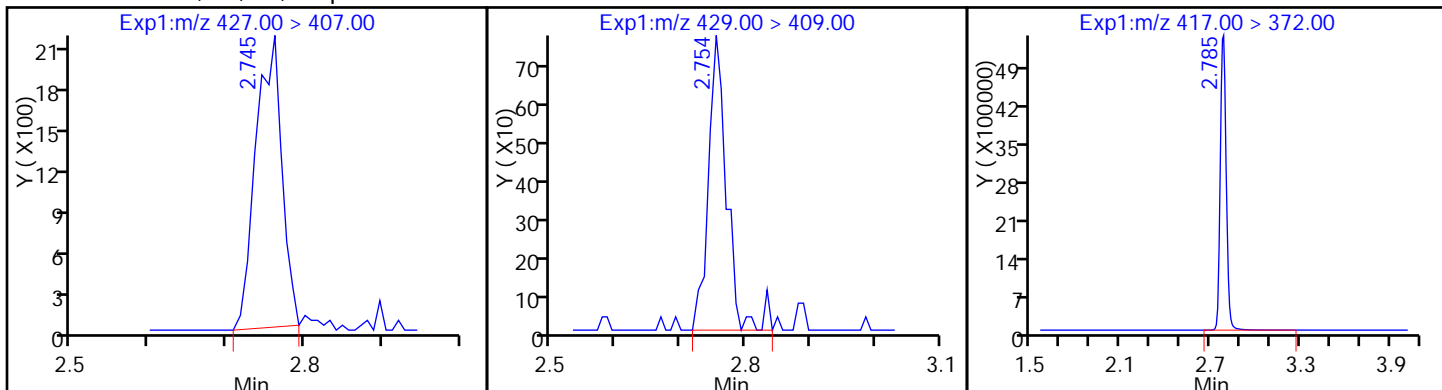
1 Perfluorobutyric acid

D 4 13C5-PFPeA



48 Sodium 1H,1H,2H,2H-perfluorooctanoate

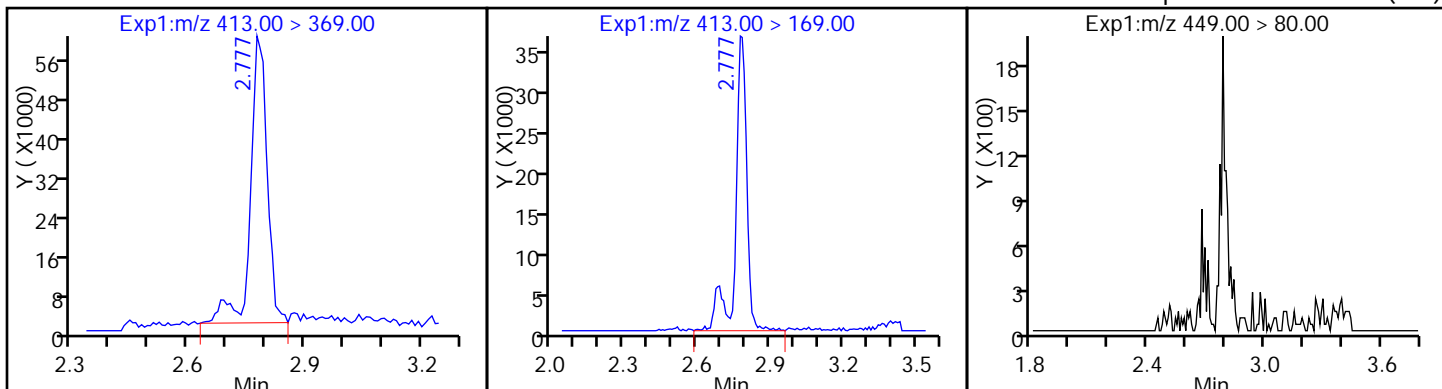
D 14 13C4 PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

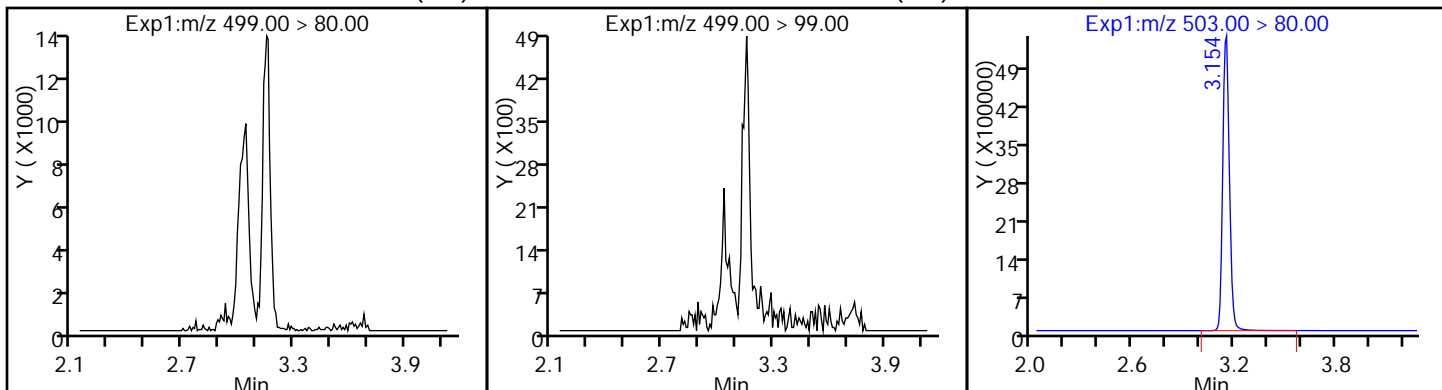
13 Perfluoroheptanesulfonic Acid (ND)



18 Perfluorooctane sulfonic acid (ND)

18 Perfluorooctane sulfonic acid (ND)

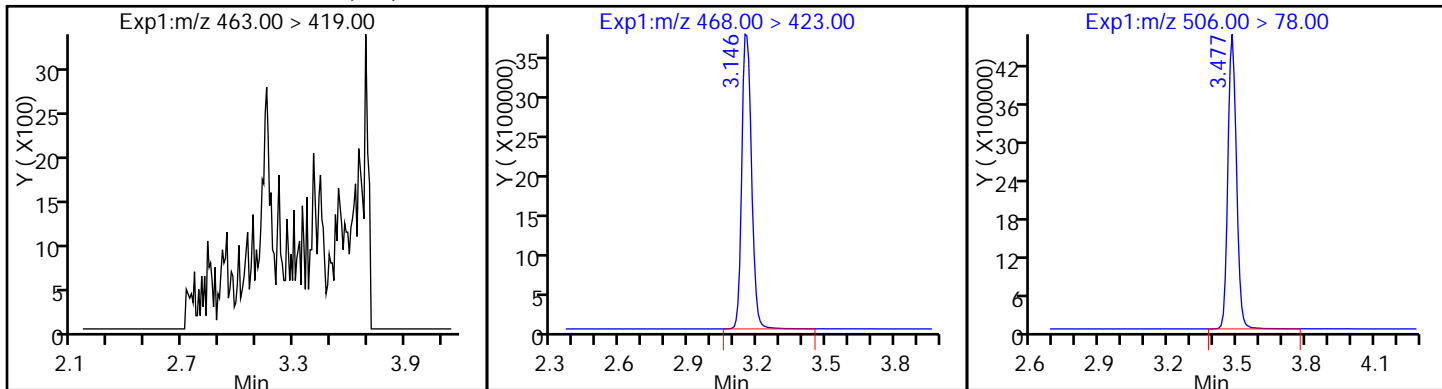
D 17 13C4 PFOS



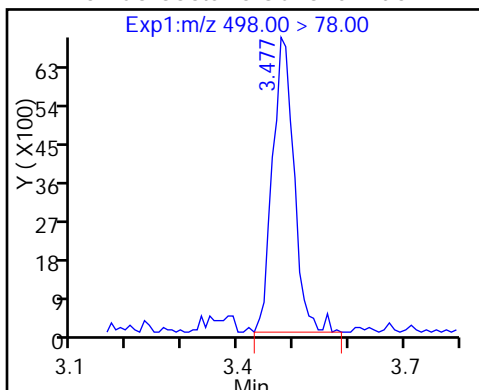
20 Perfluorononanoic acid (ND)

D 19 13C5 PFNA

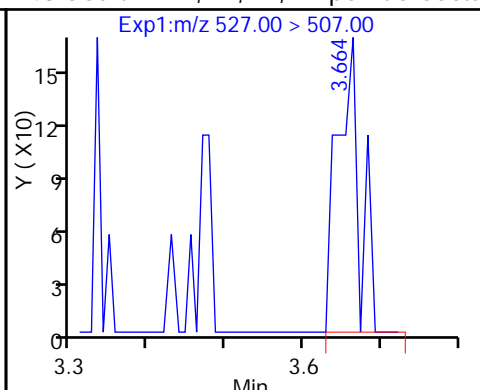
D 21 13C8 FOSA



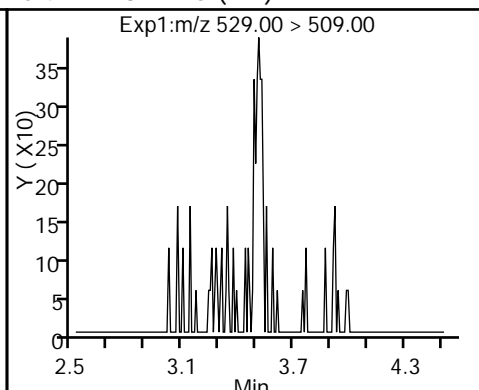
22 Perfluorooctane Sulfonamide



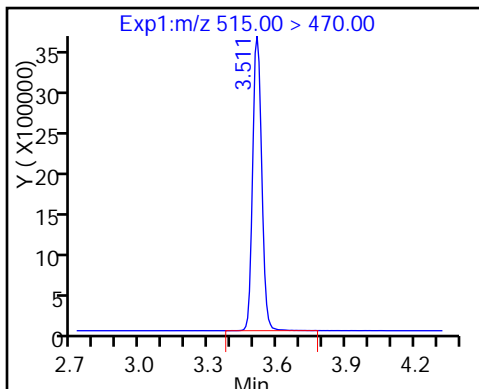
43 Sodium 1H,1H,2H,2H-perfluorooctane



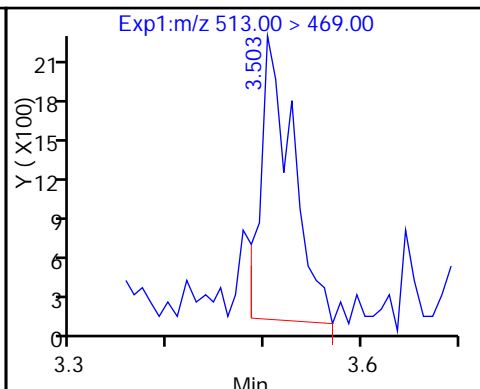
42 M2-8:2FTS (ND)



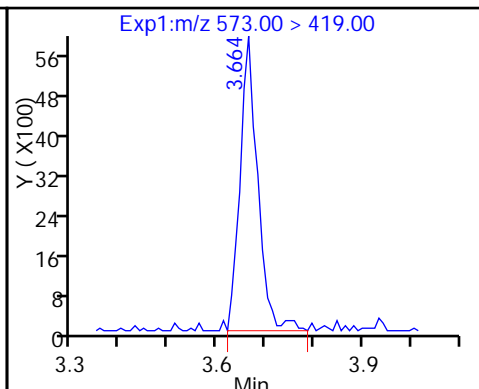
D 23 13C2 PFDA



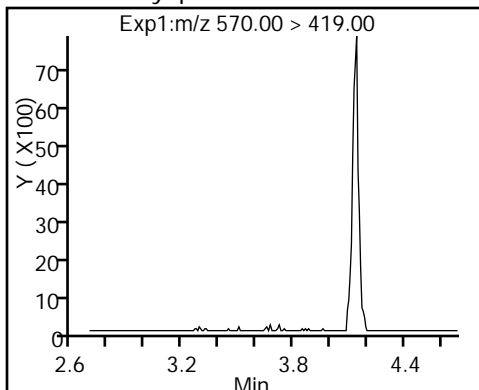
24 Perfluorodecanoic acid



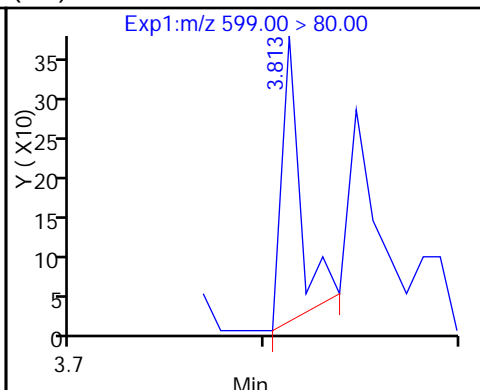
D 45 d3-NMeFOSAA



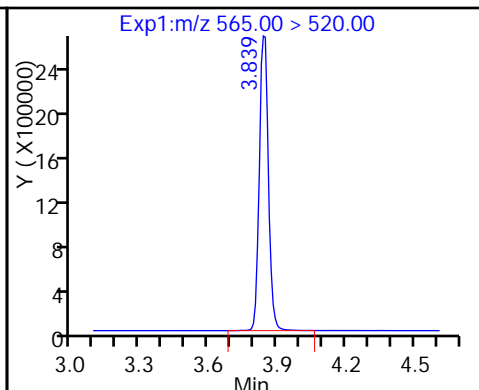
44 N-methyl perfluorooctane sulfonamide



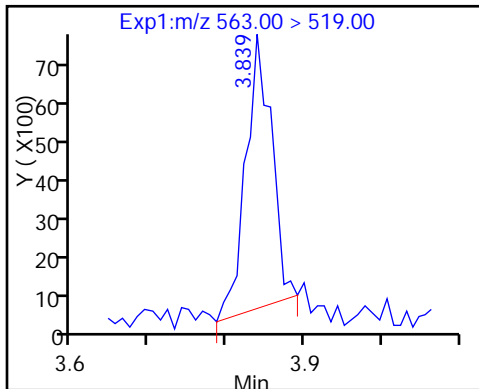
45 Perfluorodecanoic Sulfonic acid



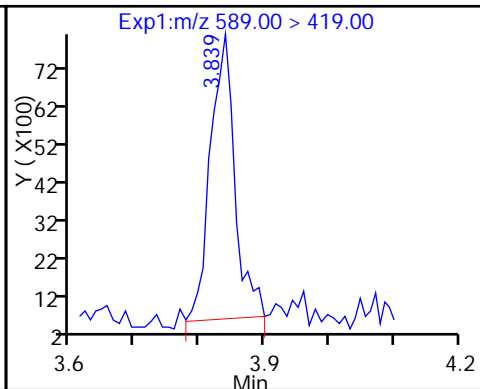
D 27 13C2 PFUnA



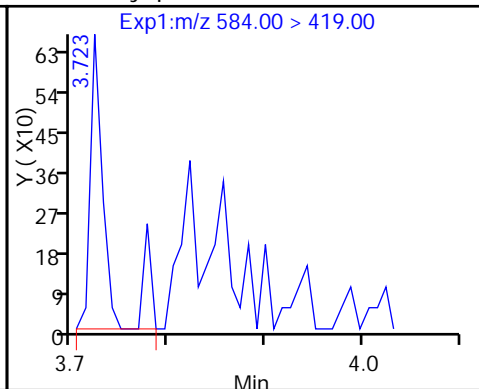
28 Perfluoroundecanoic acid



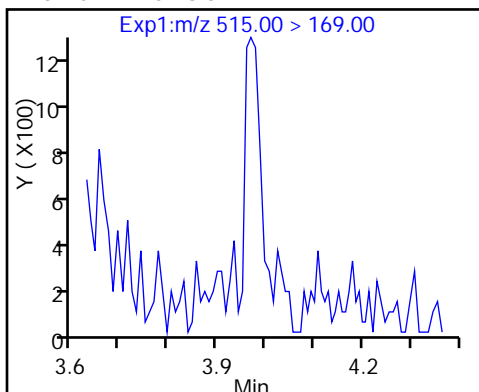
D 46 d5-NEtFOSAA



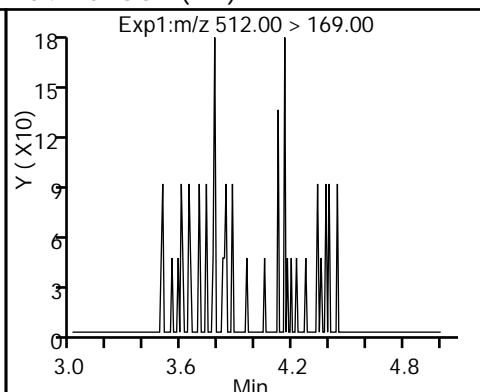
49 N-ethyl perfluorooctane sulfonamid



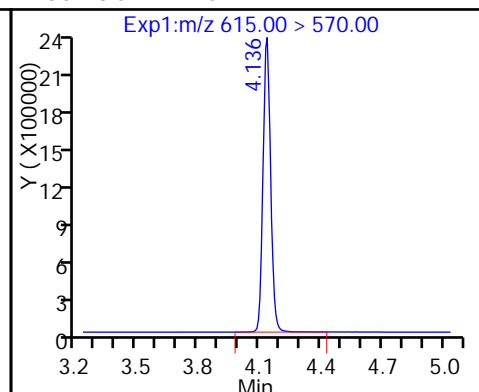
D 52 d-N-MeFOSA-M



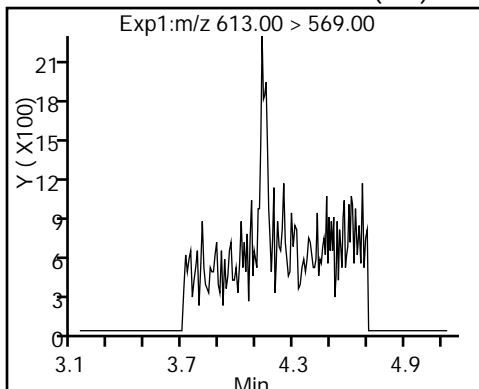
54 MeFOSA (ND)



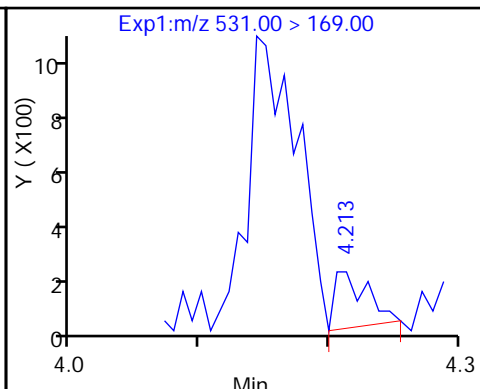
D 30 13C2 PFDaA



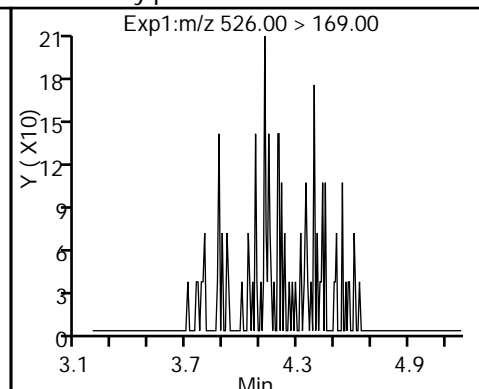
29 Perfluorododecanoic acid (ND)



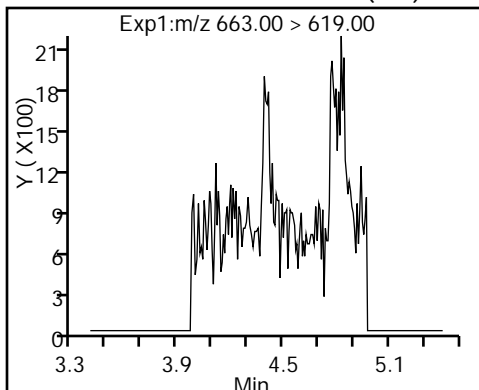
D 51 d-N-EtFOSA-M



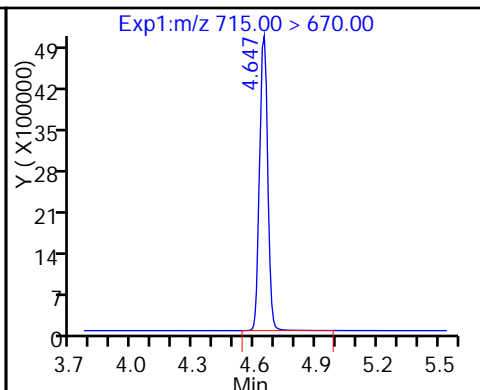
53 N-ethylperfluoro-1-octanesulfonami (ND)



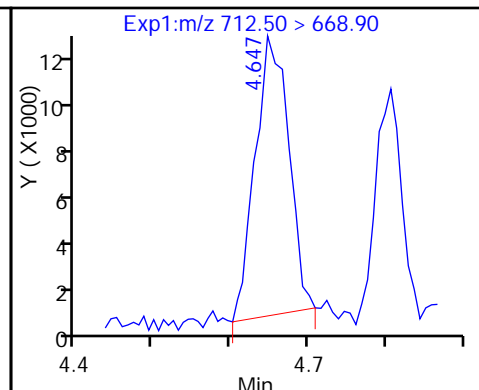
31 Perfluorotridecanoic acid (ND)



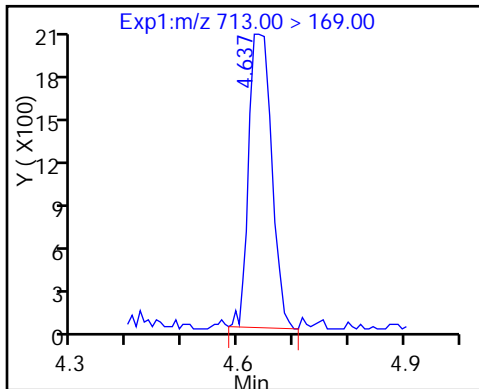
D 32 13C2-PFTeDA



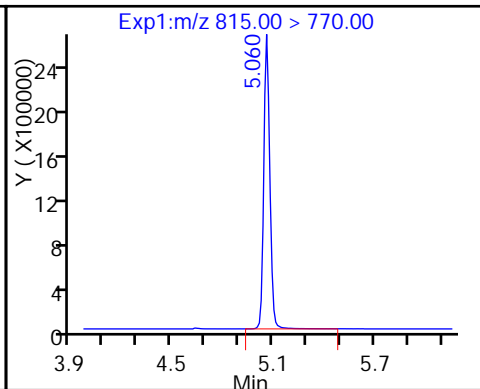
33 Perfluorotetradecanoic acid



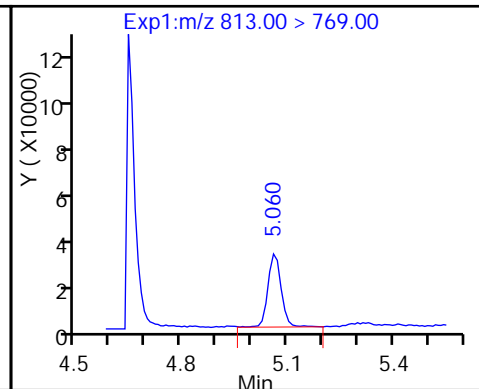
33 Perfluorotetradecanoic acid



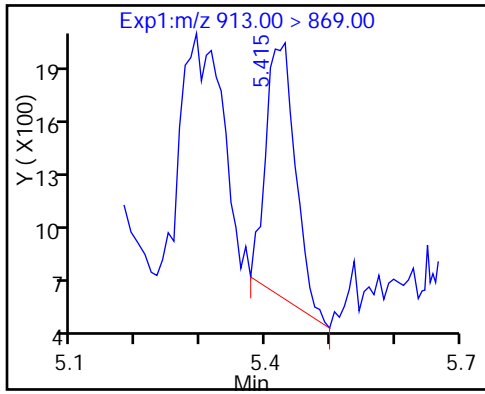
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 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

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

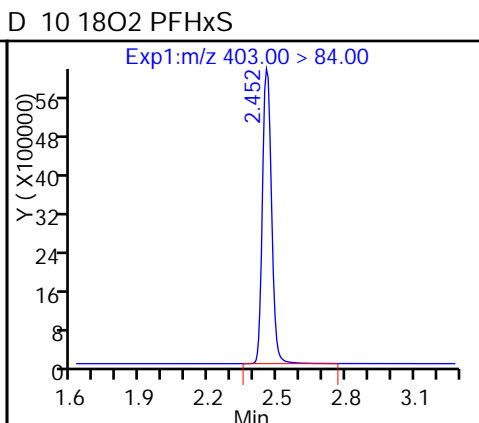
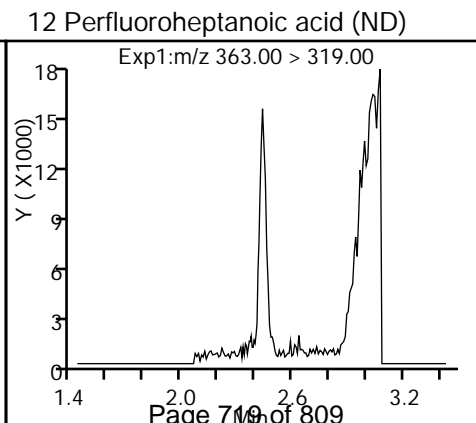
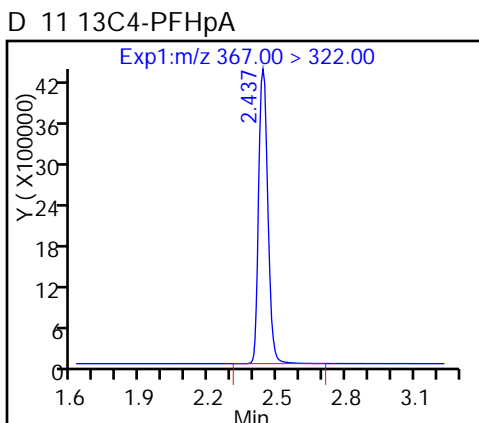
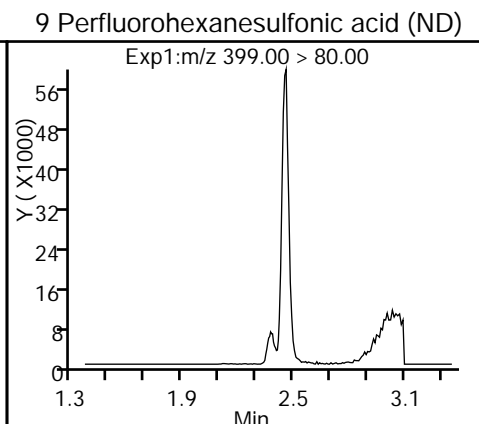
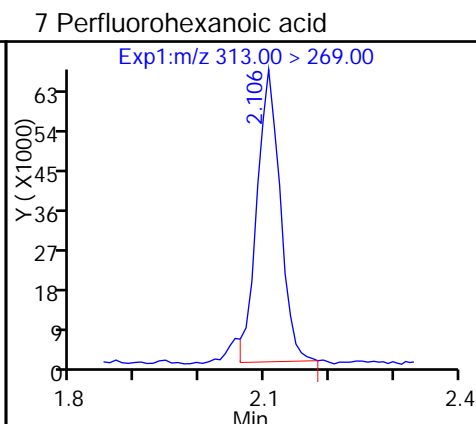
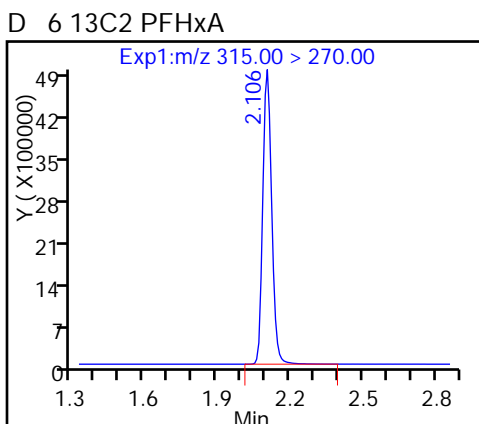
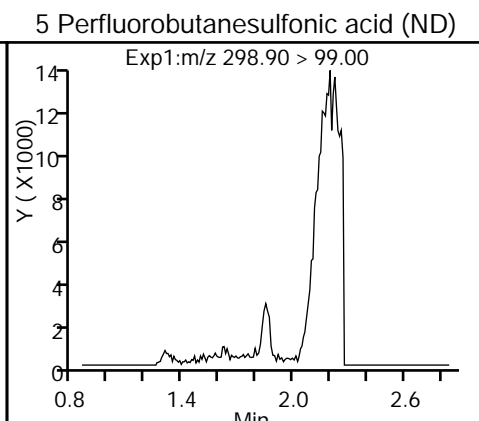
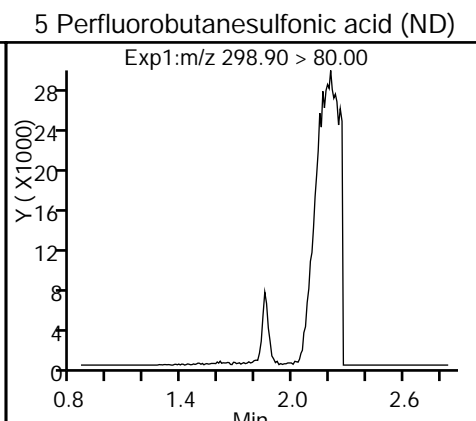
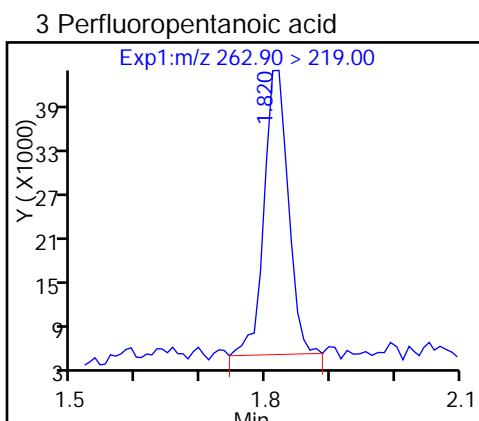
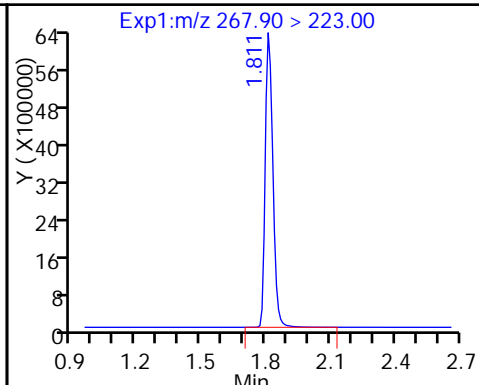
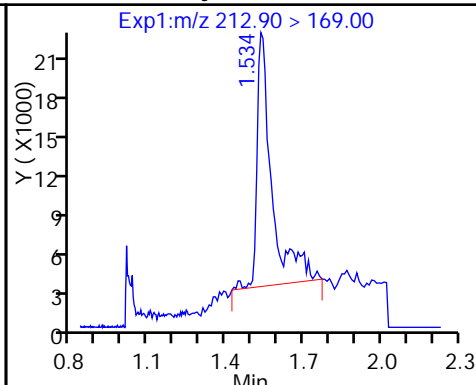
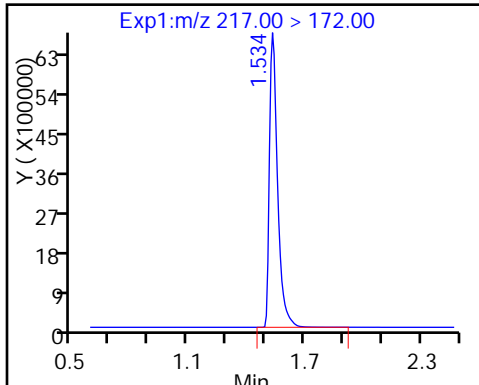
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

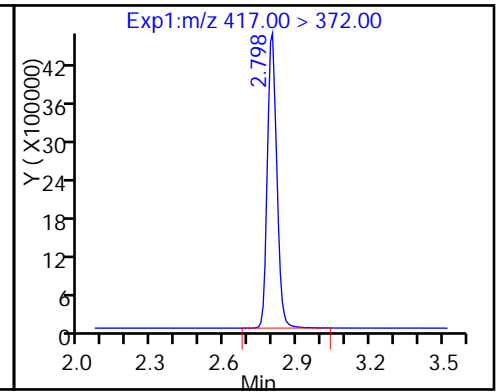
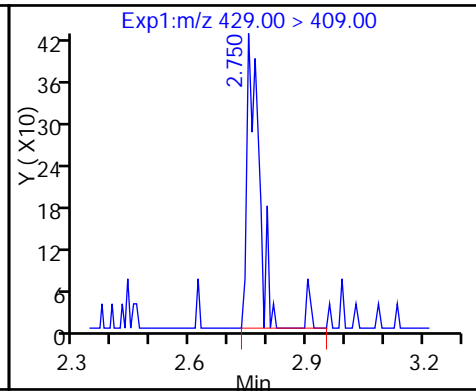
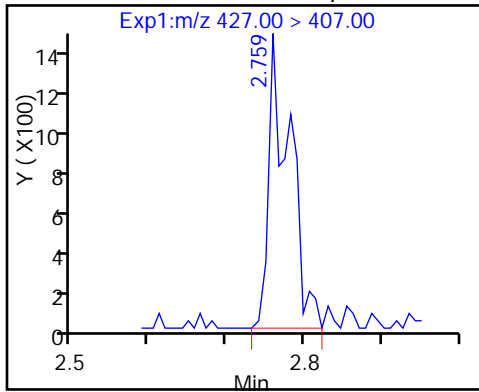
1 Perfluorobutyric acid

D 4 13C5-PFPeA



48 Sodium 1H,1H,2H,2H-perfluorooctanoate

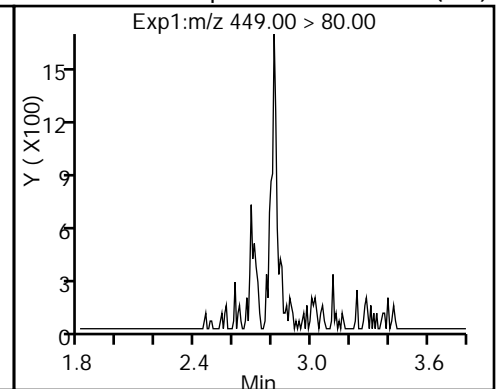
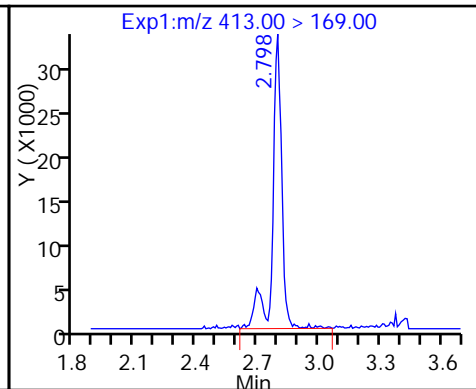
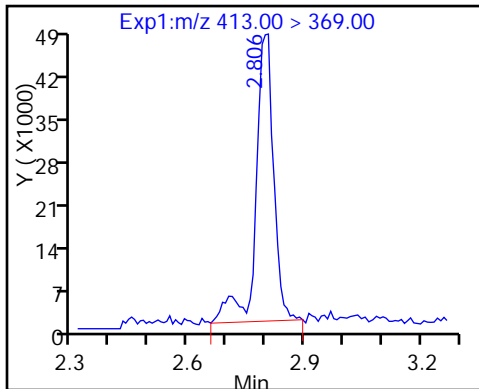
D 14 13C4 PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

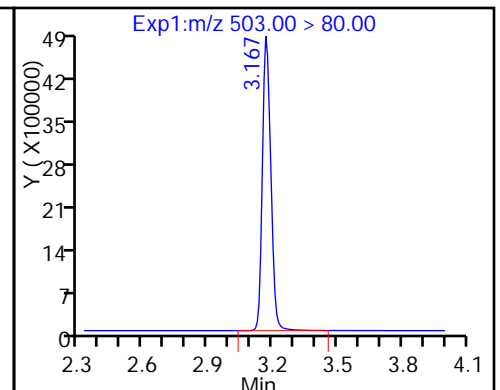
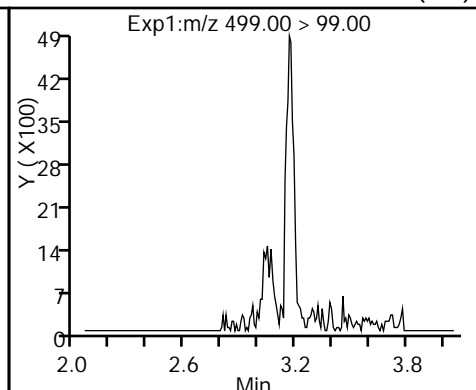
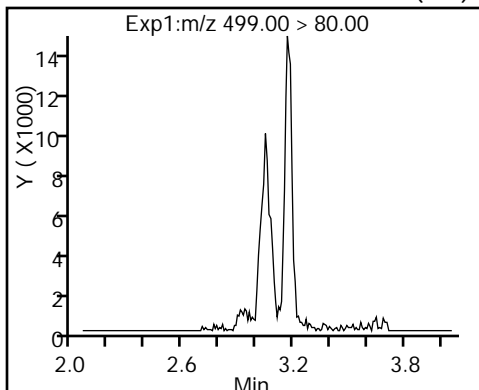
13 Perfluoroheptanesulfonic Acid (ND)



18 Perfluorooctane sulfonic acid (ND)

18 Perfluorooctane sulfonic acid (ND)

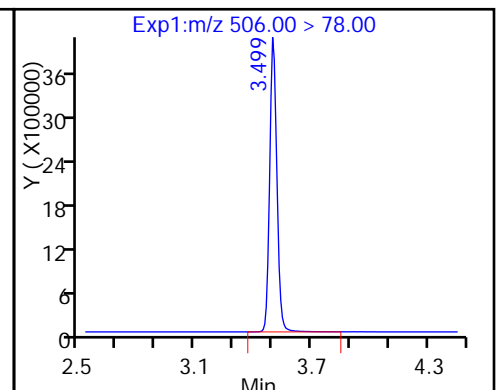
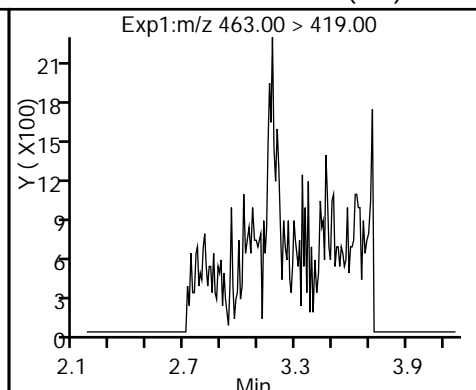
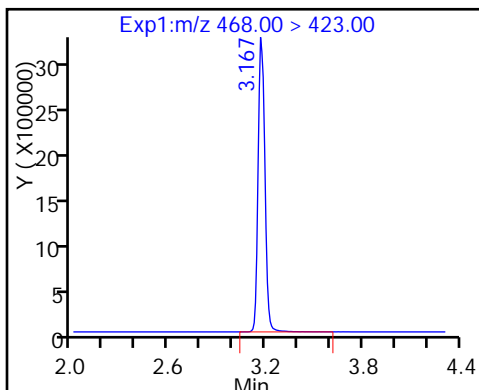
D 17 13C4 PFOS



D 19 13C5 PFNA

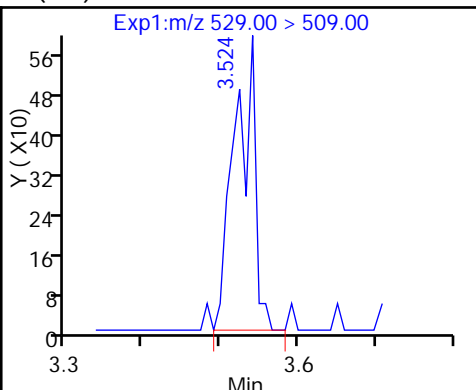
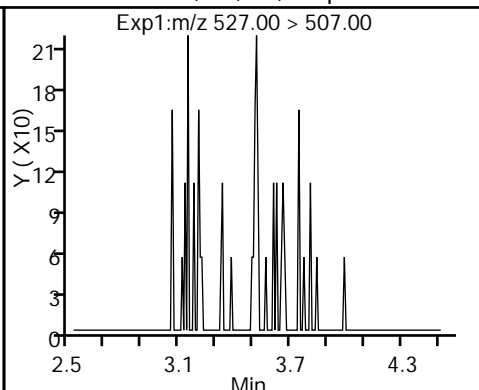
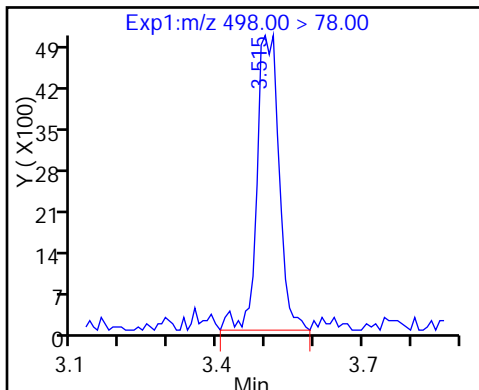
20 Perfluorononanoic acid (ND)

D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

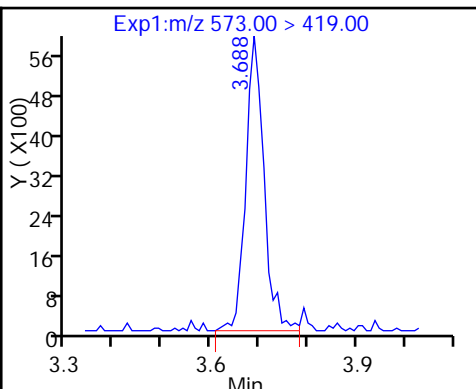
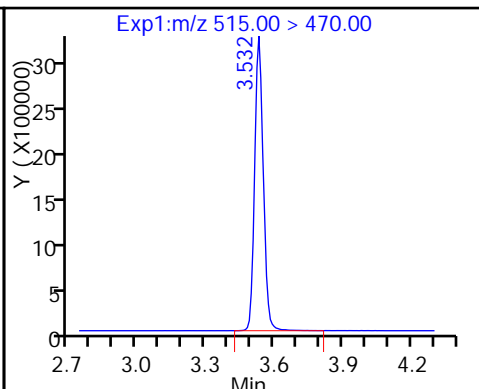
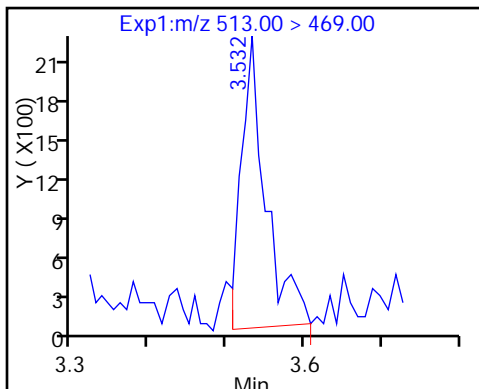
43 Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (PFOS) 2-8:2FTS



24 Perfluorodecanoic acid

D 23 13C2 PFDA

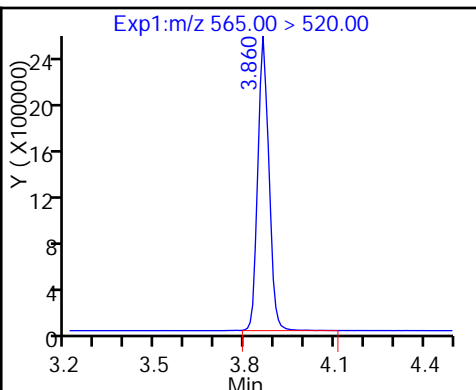
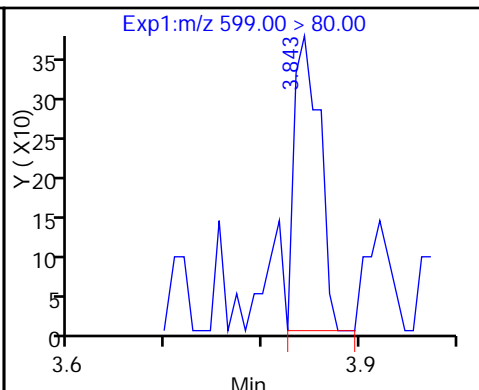
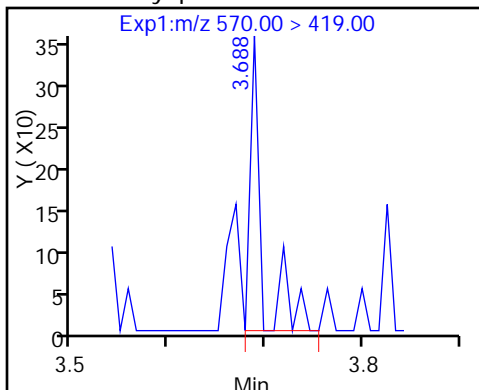
D 45 d3-NMeFOSAA



44 N-methyl perfluorooctane sulfonamide

26 Perfluorodecane Sulfonic acid

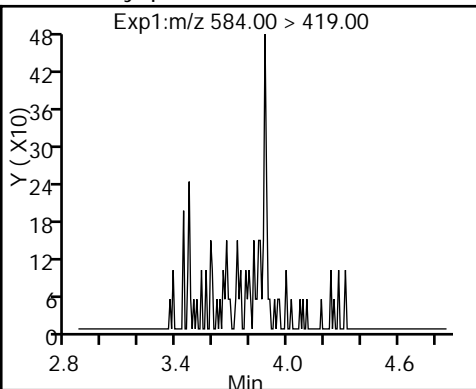
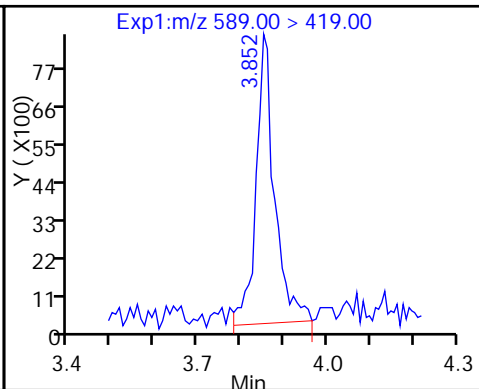
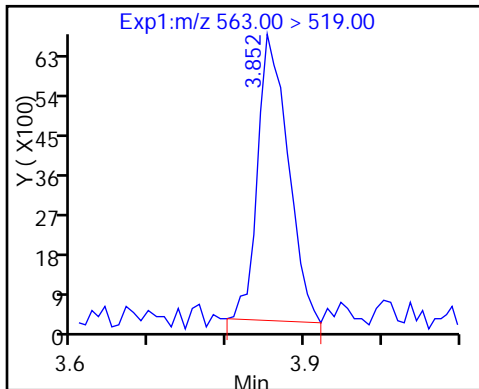
D 27 13C2 PFUnA



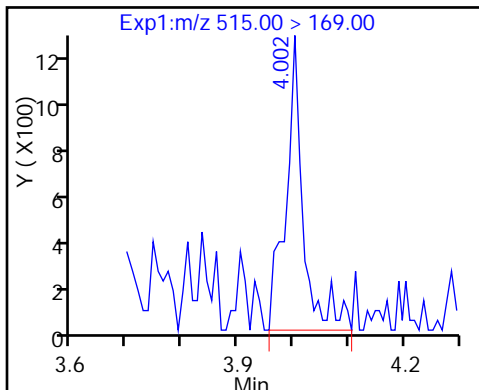
28 Perfluoroundecanoic acid

D 46 d5-NEtFOSAA

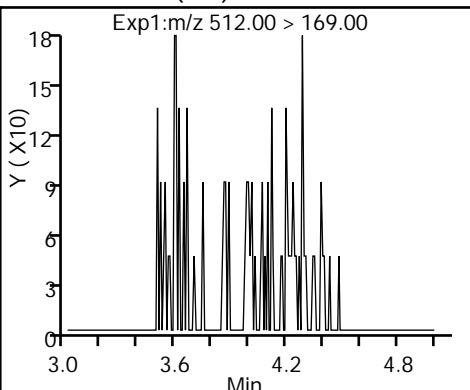
49 N-ethyl perfluorooctane sulfonamid (ND)



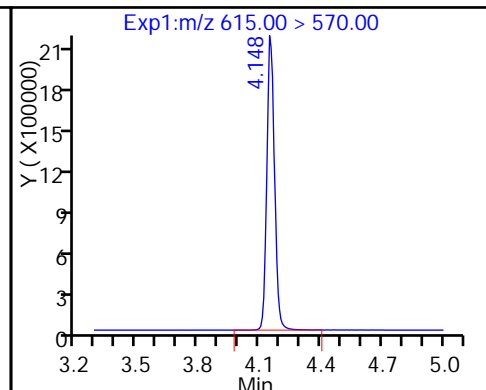
D 52 d-N-MeFOSA-M



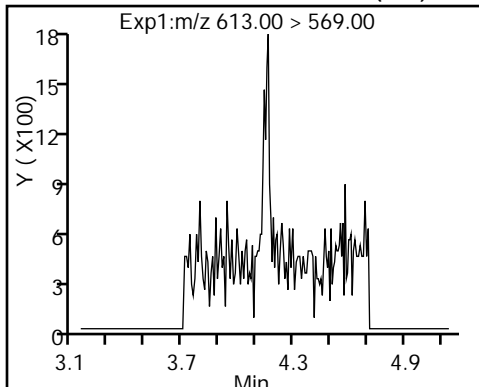
54 MeFOSA (ND)



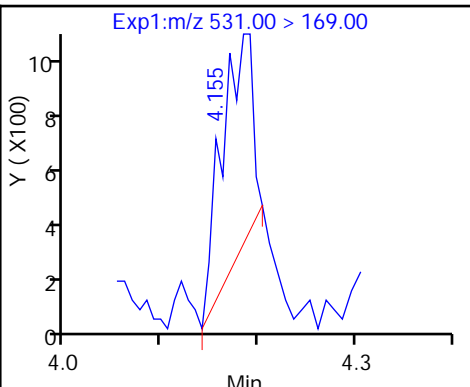
D 30 13C2 PFDaA



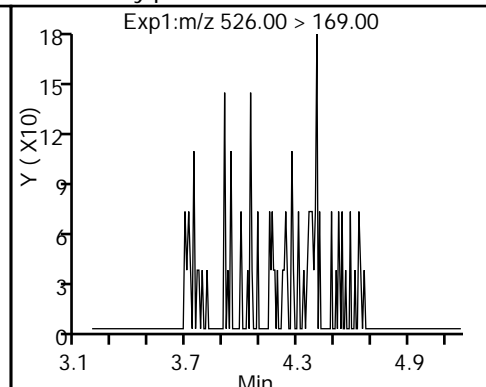
29 Perfluorododecanoic acid (ND)



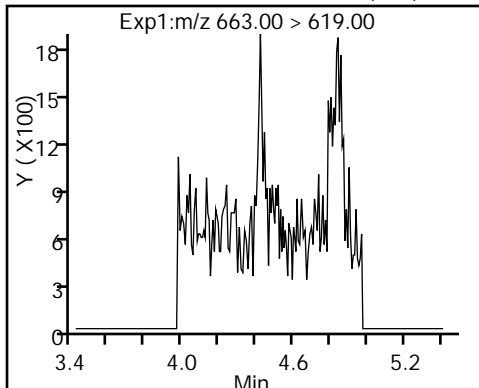
D 51 d-N-EtFOSA-M



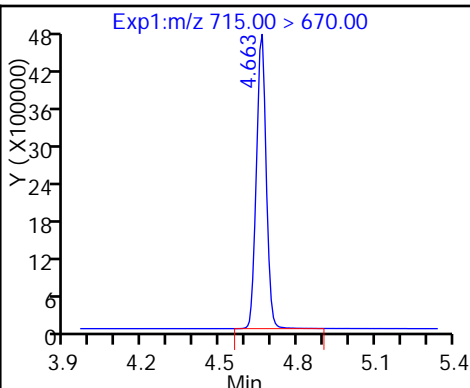
53 N-ethylperfluoro-1-octanesulfonami (ND)



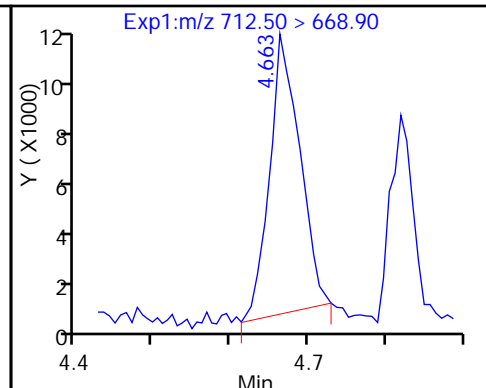
31 Perfluorotridecanoic acid (ND)



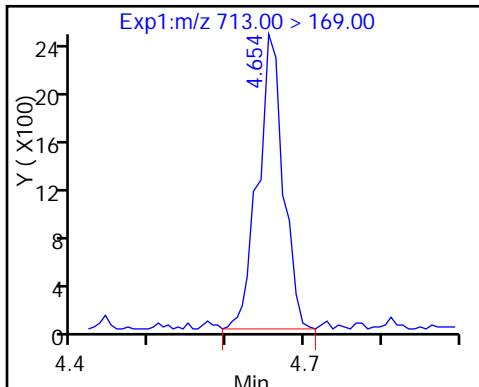
D 32 13C2-PFTeDA



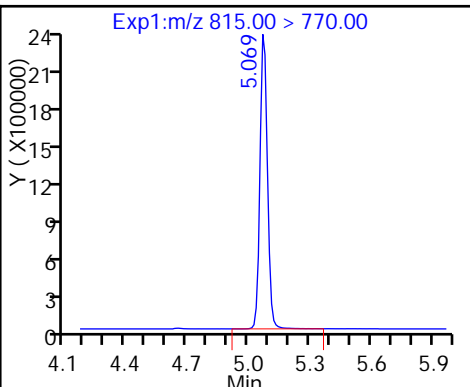
33 Perfluorotetradecanoic acid



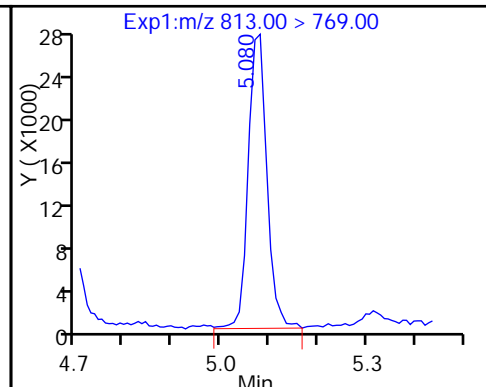
33 Perfluorotetradecanoic acid



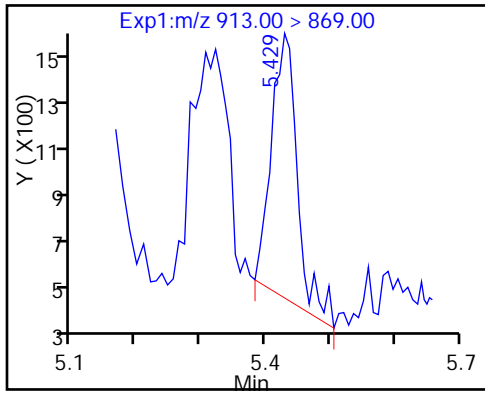
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-144971/1-A
 Matrix: Water Lab File ID: 05JAN2017B_005.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 01/04/2017 16:57
 Sample wt/vol: 250.00 (mL) Date Analyzed: 01/05/2017 15:15
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 145242 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0020	U	0.0025	0.0020	0.00079

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	139		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38534.b\05JAN2017B_005.d
 Lims ID: MB 320-144971/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 05-Jan-2017 15:15:45 ALS Bottle#: 16 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-144971/1-a
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38534.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2017 09:59:23 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 09:42:31

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	1.598	1.598	0.0	24791747	71.3		143	1067653	
1 Perfluorobutyric acid	212.90 > 169.00	1.630	1.606	0.024	1.000	97284	0.2298		455	
D 4 13C5-PFPeA	267.90 > 223.00	1.887	1.887	0.0	8286031	31.1		62.3	34588	
3 Perfluoropentanoic acid	262.90 > 219.00	1.887	1.887	0.0	1.000	32329	0.1977		250	
D 6 13C2 PFHxA	315.00 > 270.00	2.194	2.195	-0.001	17046370	69.5		139	859937	
7 Perfluorohexanoic acid	313.00 > 269.00	2.186	2.195	-0.009	1.000	19665	0.0621		475	
D 11 13C4-PFHpA	367.00 > 322.00	2.532	2.536	-0.004	14978396	66.2		132	1021342	
D 10 18O2 PFHxS	403.00 > 84.00	2.548	2.552	-0.004	20298038	62.1		131	1737161	
D 47 M2-6:2FTS	429.00 > 409.00	2.883	2.879	0.004	2739	0.0234		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane	427.00 > 407.00	2.883	2.879	0.004	1.000	10220	NR			
D 14 13C4 PFOA	417.00 > 372.00	2.899	2.902	-0.003	16637297	72.2		144	807488	
D 17 13C4 PFOS	503.00 > 80.00	3.271	3.275	-0.004	16369178	65.8		138	807167	
D 19 13C5 PFNA	468.00 > 423.00	3.279	3.283	-0.004	12560266	70.7		141	479320	
D 21 13C8 FOSA	506.00 > 78.00	3.595	3.600	-0.005	6913923	18.0		36.0	380507	

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	3.603	3.600	0.003	1.000	6956	0.0539		522
D 42 M2-8:2FTS	529.00	> 509.00	3.611	3.626	-0.015		3215	0.0299		0.0
43 Sodium 1H,1H,2H,2H-perfluorooctane	527.00	> 507.00	3.620	3.626	-0.006	1.002	847	NR		
24 Perfluorodecanoic acid	513.00	> 469.00	3.637	3.642	-0.005	1.000	8692	0.0380		210
D 23 13C2 PFDA	515.00	> 470.00	3.637	3.642	-0.005		12127067	77.1	154	542620
D 45 d3-NMeFOSAA	573.00	> 419.00	3.802	3.792	0.010		20104	0.2669		0.0
44 N-methyl perfluorooctane sulfonami	570.00	> 419.00	3.783	3.801	-0.018	0.995	3622	NR		
26 Perfluorodecane Sulfonic acid	599.00	> 80.00	3.942	3.945	-0.003	1.000	3543	0.0177		
D 46 d5-NEtFOSAA	589.00	> 419.00	3.933	3.957	-0.024		20132	0.2570		0.0
28 Perfluoroundecanoic acid	563.00	> 519.00	3.968	3.963	0.005	1.000	32393	0.1846		874
49 N-ethyl perfluorooctane sulfonamid	584.00	> 419.00	3.977	3.965	0.012	1.011	8892	NR		
D 27 13C2 PFUnA	565.00	> 520.00	3.968	3.972	-0.004		9175084	78.3	157	439515
D 52 d-N-MeFOSA-M	515.00	> 169.00	4.090	4.089	0.001		1768	0.0186		0.0
54 MeFOSA	512.00	> 169.00	4.098	4.089	0.009	1.000	484	NR		
29 Perfluorododecanoic acid	613.00	> 569.00	4.257	4.265	-0.008	1.000	5690	0.0383		139
D 30 13C2 PFDoA	615.00	> 570.00	4.257	4.265	-0.008		8089794	72.9	146	183239
53 N-ethylperfluoro-1-octanesulfonami	526.00	> 169.00	4.274	4.275	-0.001	1.000	1037	NR		
D 51 d-N-EtFOSA-M	531.00	> 169.00	4.266	4.275	-0.009		4502	0.0525		0.0
31 Perfluorotridecanoic acid	663.00	> 619.00	4.519	4.526	-0.007	1.000	2892	0.0197		6.5
D 32 13C2-PFTeDA	715.00	> 670.00	4.766	4.764	0.002		18661726	82.1	164	1388686
33 Perfluorotetradecanoic acid	712.50	> 668.90	4.766	4.772	-0.006	1.000	60728	0.2368		15.4
	713.00	> 169.00	4.758	4.772	-0.014	0.998	11541		5.26(0.00-0.00)	2107
35 Perfluorohexadecanoic acid	813.00	> 769.00	5.178	5.178	0.0	1.000	111766	0.1239		118
D 34 13C2-PFHxDA	815.00	> 770.00	5.178	5.188	-0.010		8232534	66.1	132	138326

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctadecanoic acid	913.00	> 869.00	5.529	5.536	-0.007	1.000	4158	0.0249		2.5

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38534.b\05JAN2017B_005.d

Injection Date: 05-Jan-2017 15:15:45

Instrument ID: A8_N

Lims ID: MB 320-144971/1-A

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 16

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

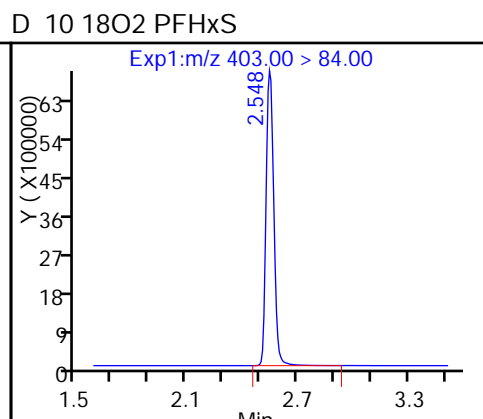
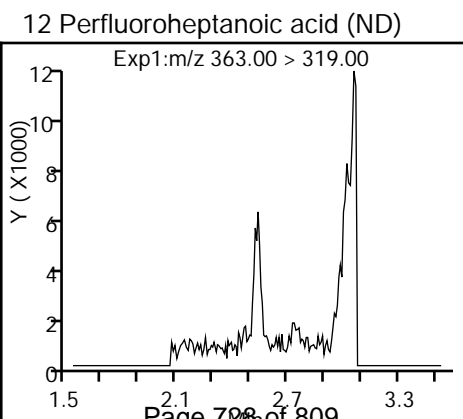
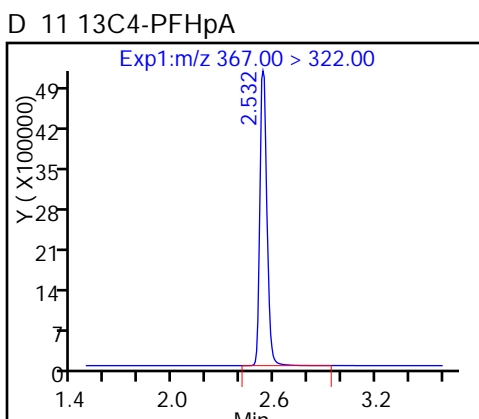
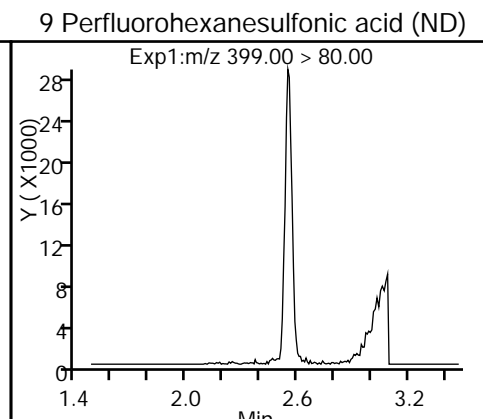
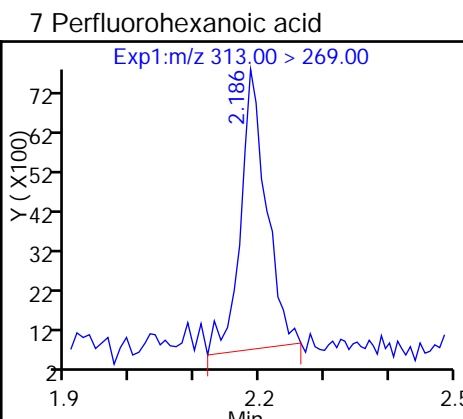
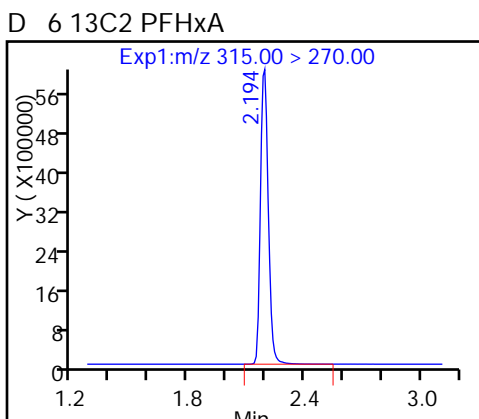
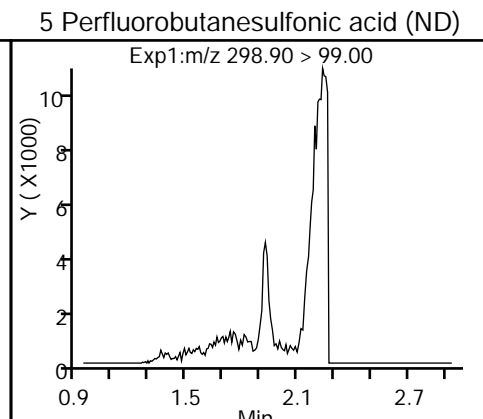
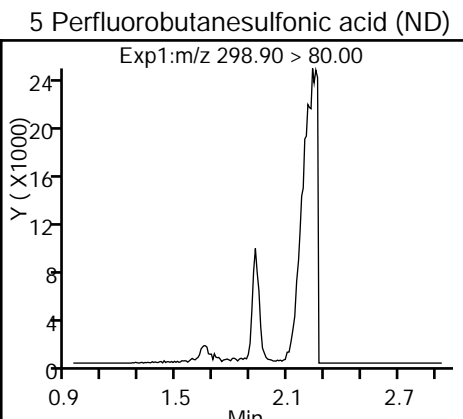
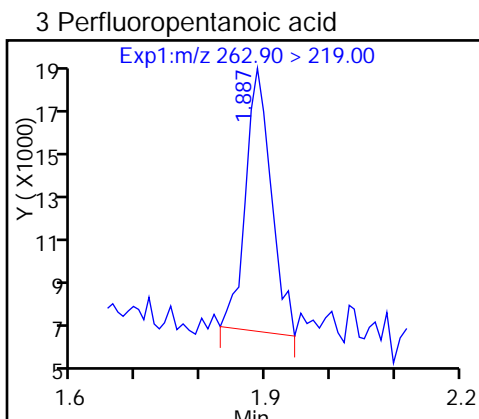
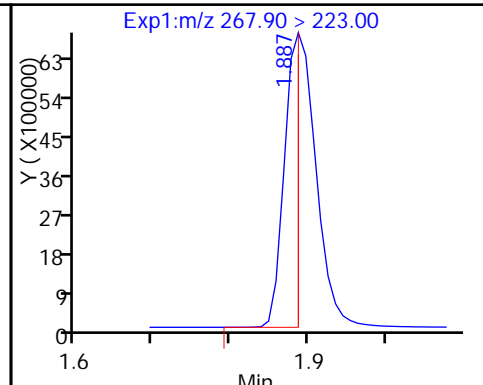
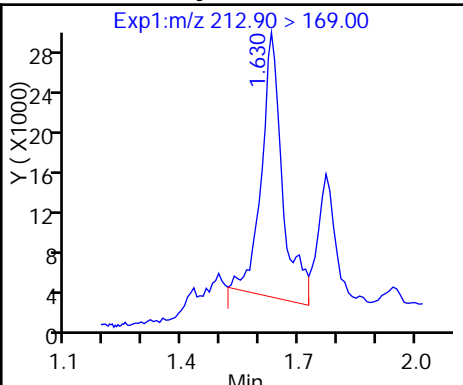
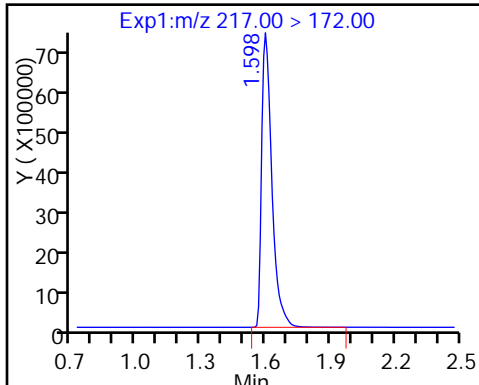
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

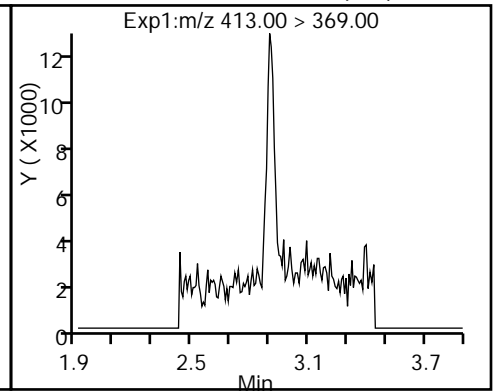
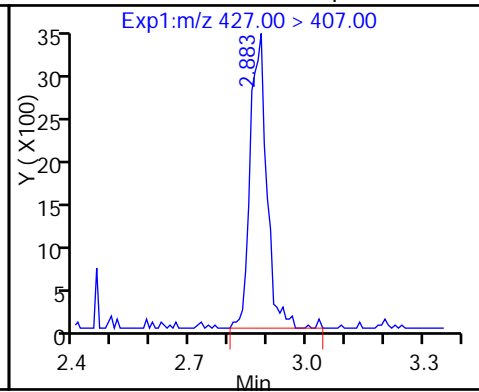
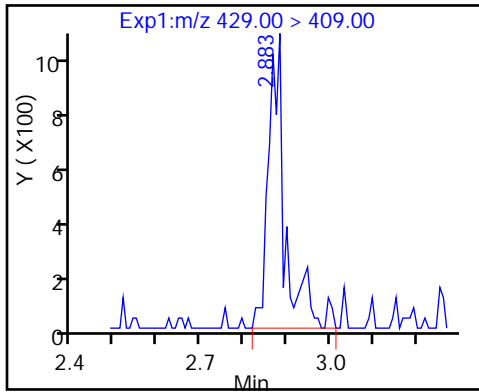
1 Perfluorobutyric acid

D 4 13C5-PFPeA



D 47 M2-6:2FTS

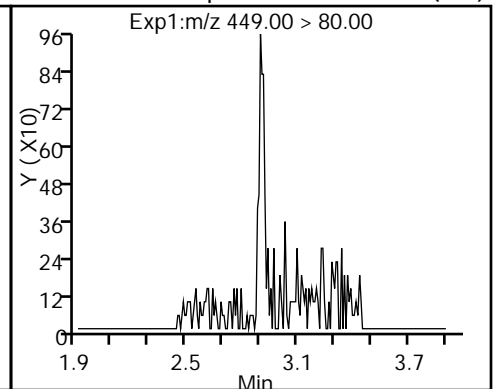
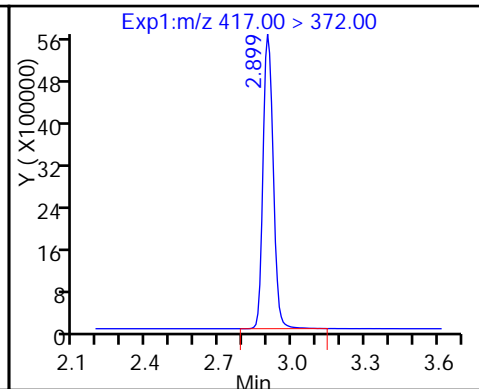
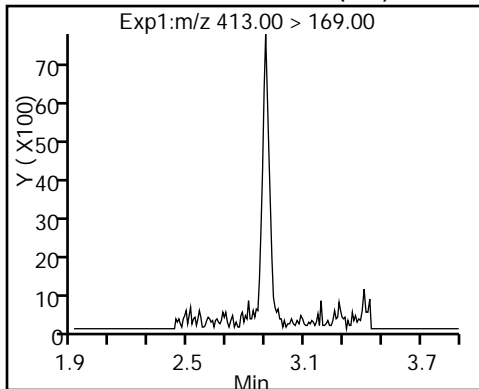
48 Sodium 1H,1H,2H,2H-perfluorooctane15 Perfluorooctanoic acid (ND)



15 Perfluorooctanoic acid (ND)

D 14 13C4 PFOA

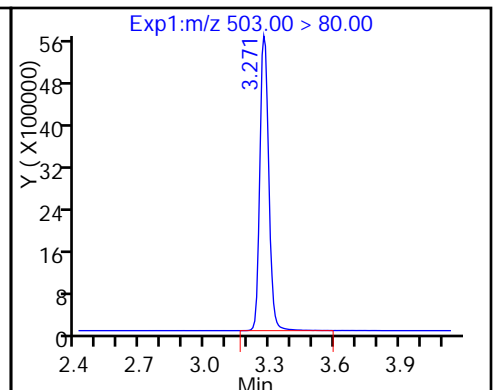
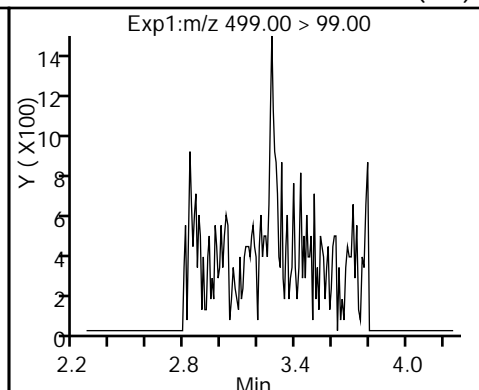
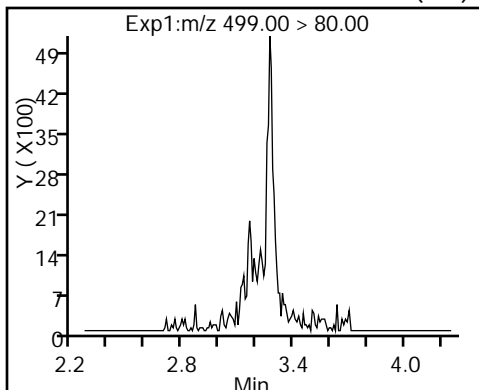
13 Perfluoroheptanesulfonic Acid (ND)



18 Perfluorooctane sulfonic acid (ND)

18 Perfluorooctane sulfonic acid (ND)

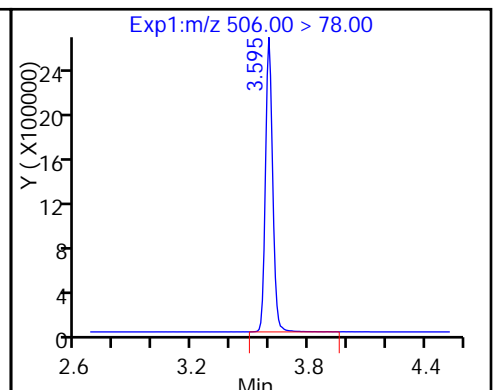
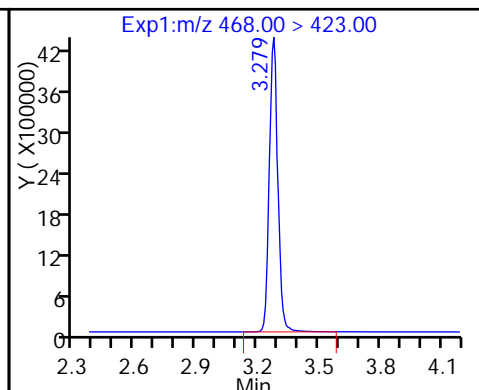
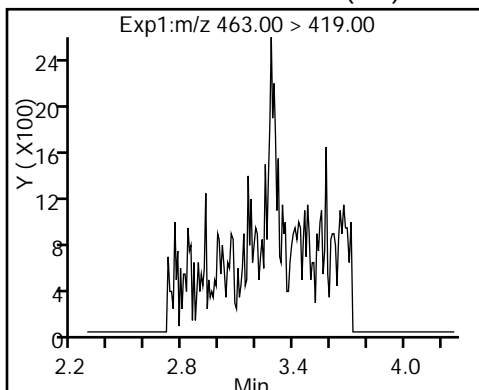
D 17 13C4 PFOS

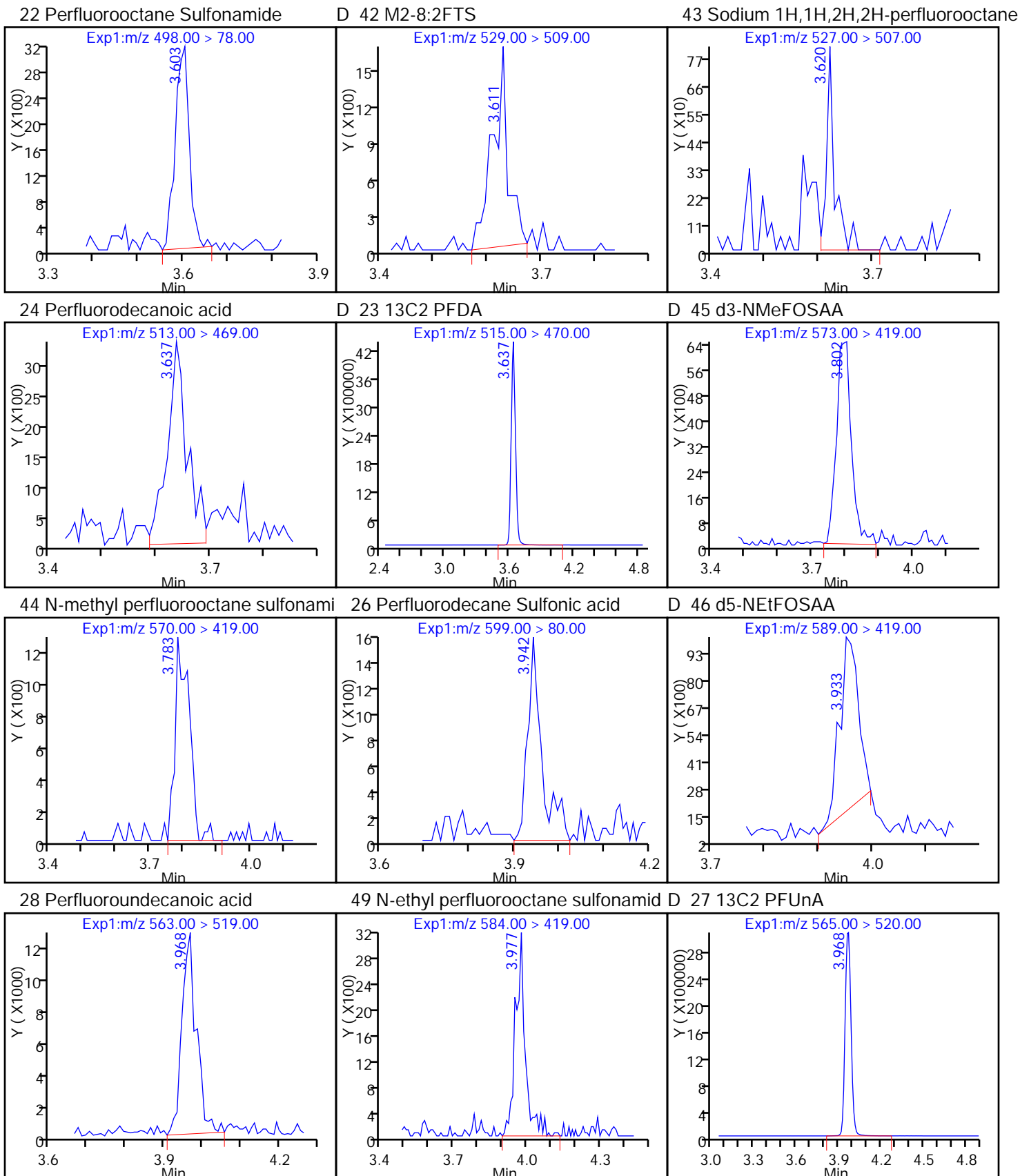


20 Perfluorononanoic acid (ND)

D 19 13C5 PFNA

D 21 13C8 FOSA

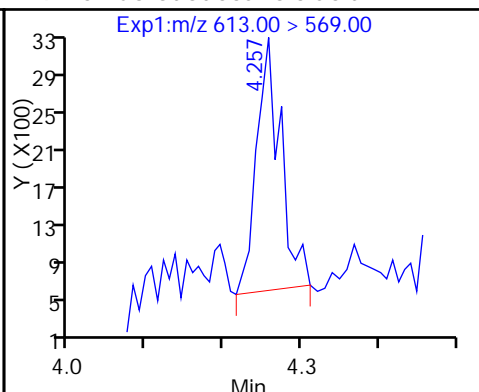
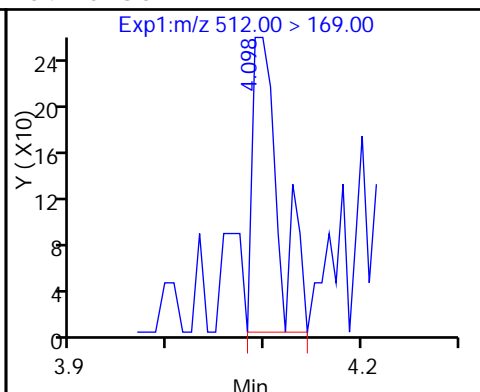
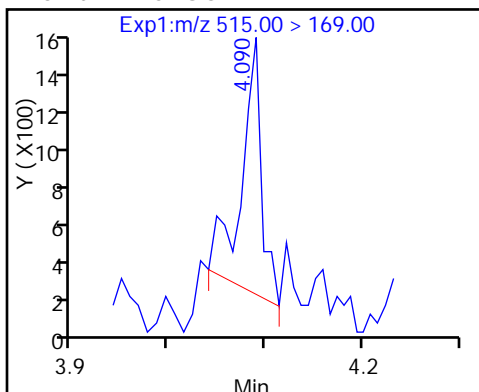




D 52 d-N-MeFOSA-M

54 MeFOSA

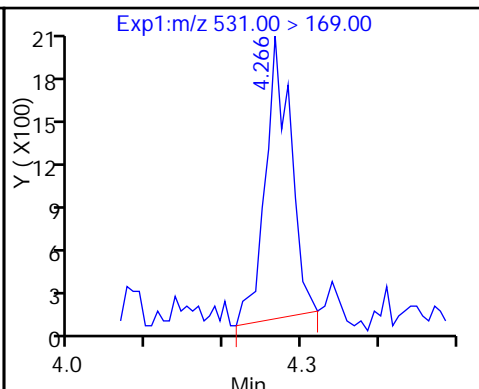
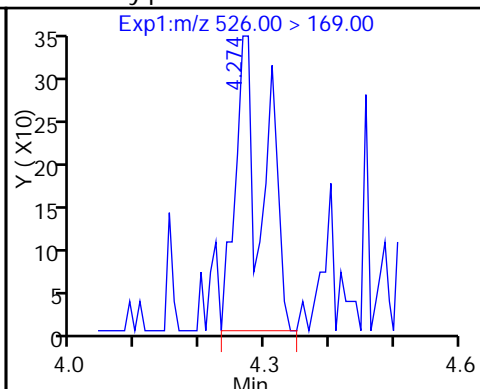
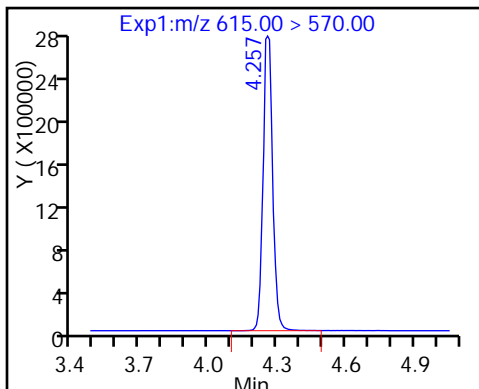
29 Perfluorododecanoic acid



D 30 13C2 PFDaA

53 N-ethylperfluoro-1-octanesulfonami

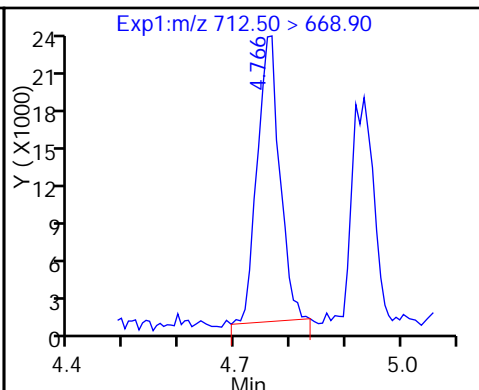
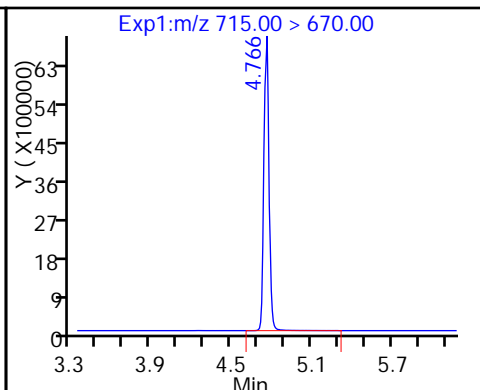
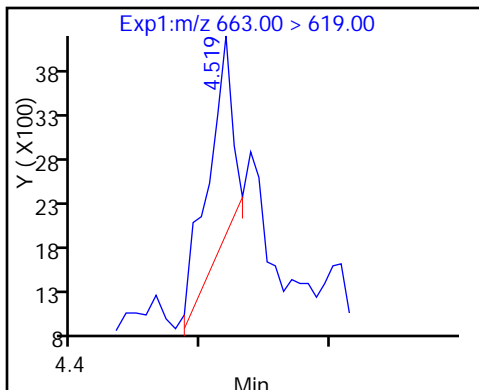
D 51 d-N-EtFOSA-M



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

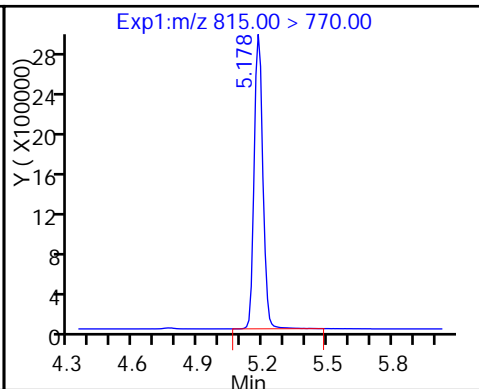
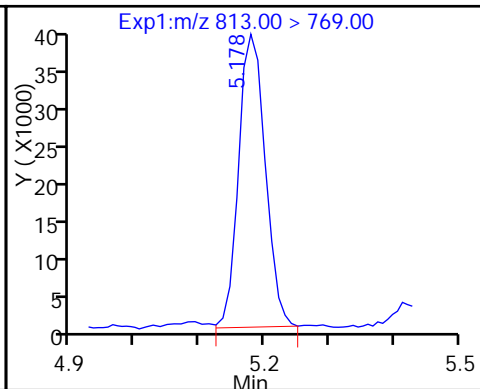
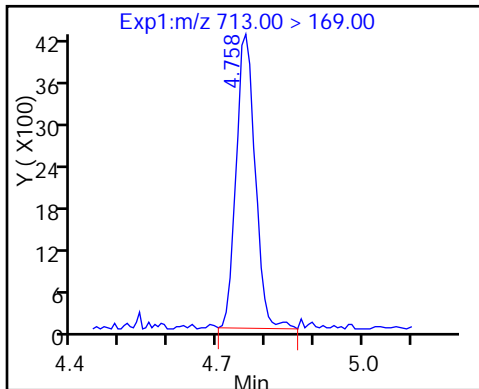
33 Perfluorotetradecanoic acid



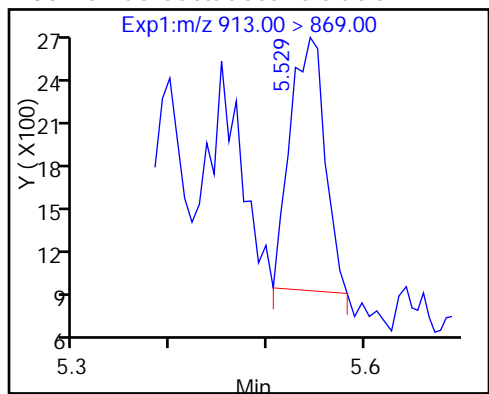
33 Perfluorotetradecanoic acid

35 Perfluorohexadecanoic acid

D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-142967/2-A
 Matrix: Water Lab File ID: 28DEC2016C_004.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 250 (mL) Date Analyzed: 12/29/2016 00:14
 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.: 144253 Units: ug/L

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: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-142967/2-A
 Matrix: Water Lab File ID: 28DEC2016C_004.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 12/19/2016 14:38
 Sample wt/vol: 250 (mL) Date Analyzed: 12/29/2016 00:14
 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.: 144253 Units: ug/L

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

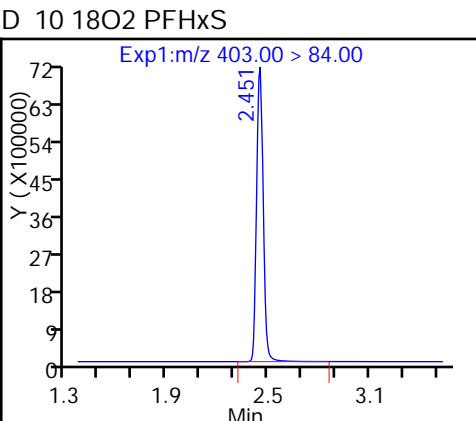
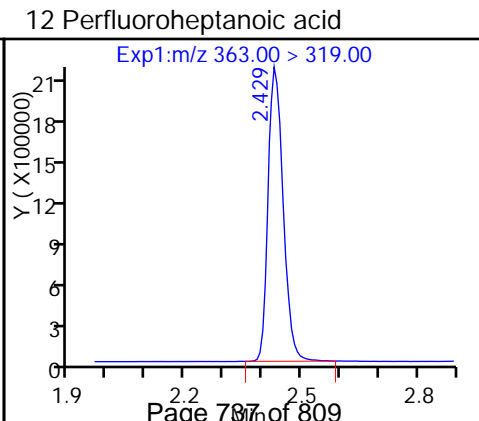
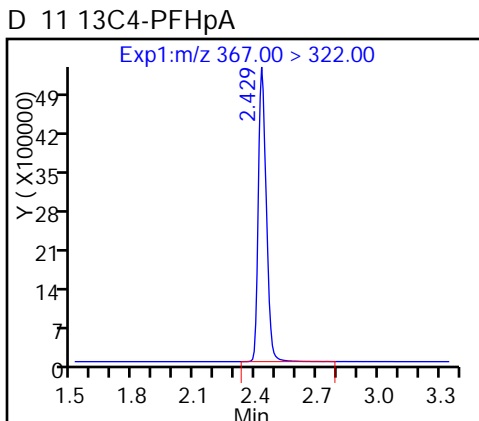
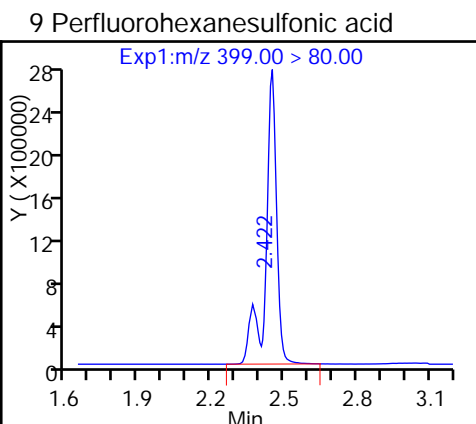
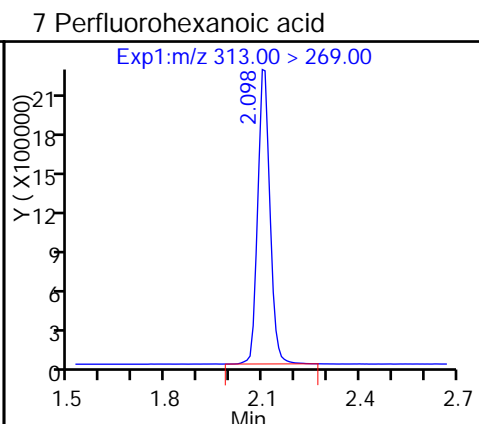
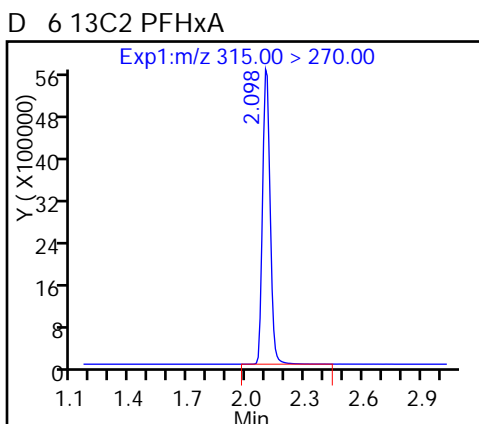
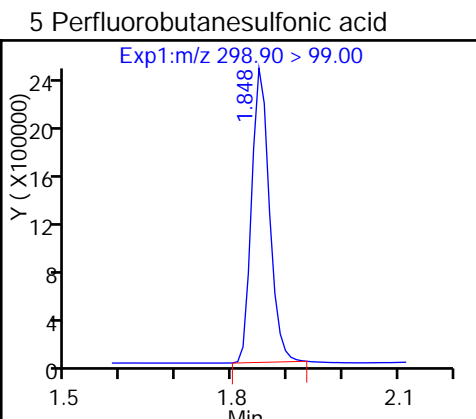
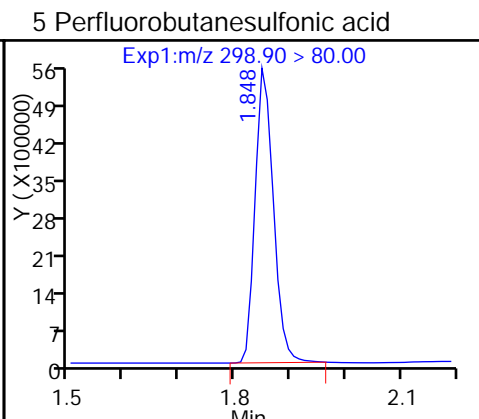
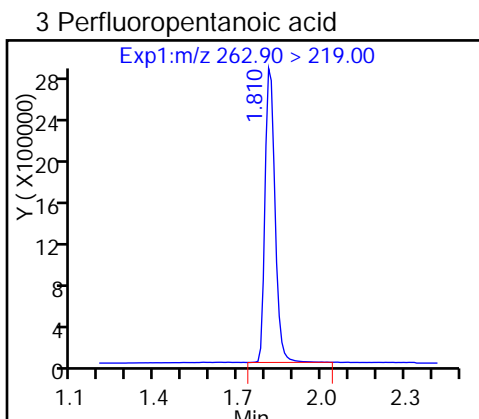
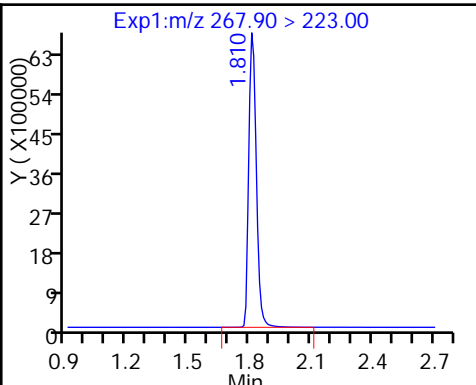
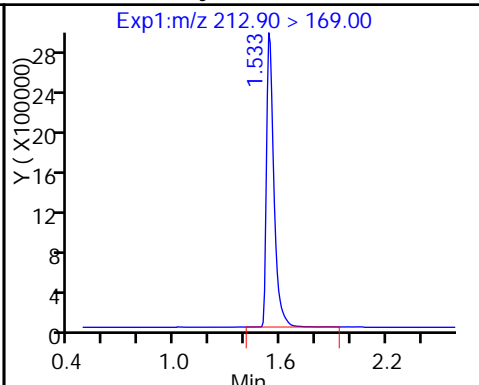
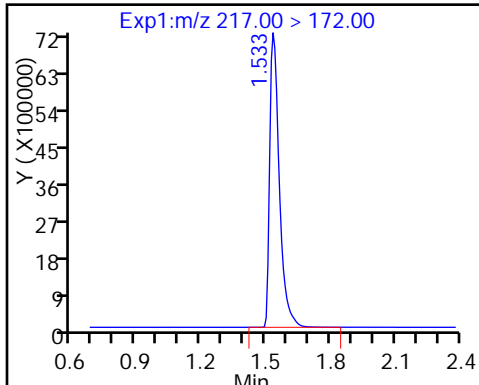
Method: A8_N

Limit Group: LC PFC_DOD ICAL

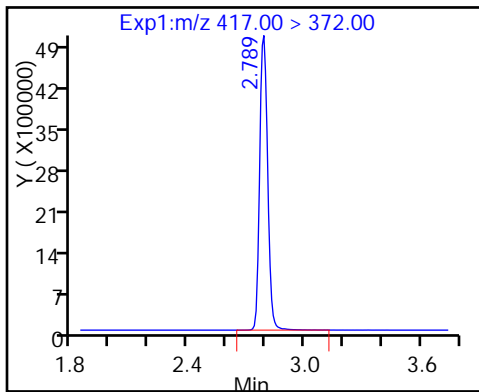
D 2 13C4 PFBA

1 Perfluorobutyric acid

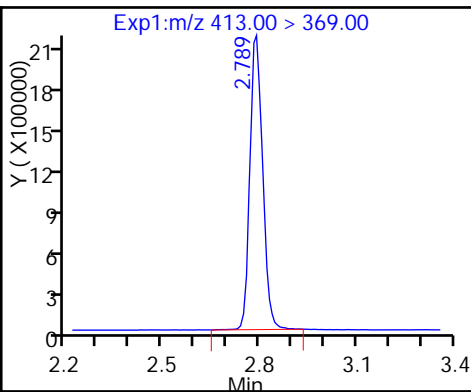
D 4 13C5-PFPeA



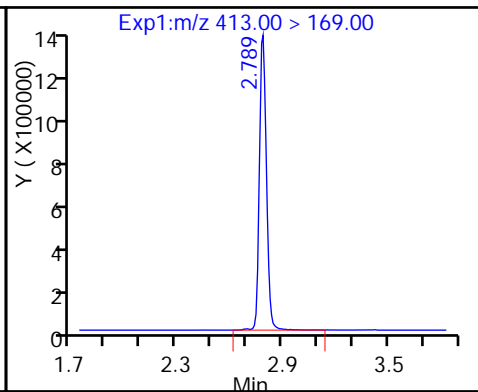
D 14 13C4 PFOA



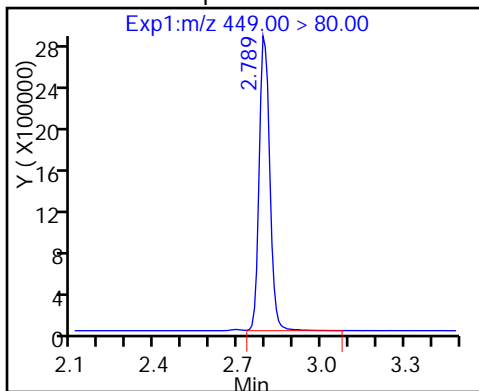
15 Perfluorooctanoic acid



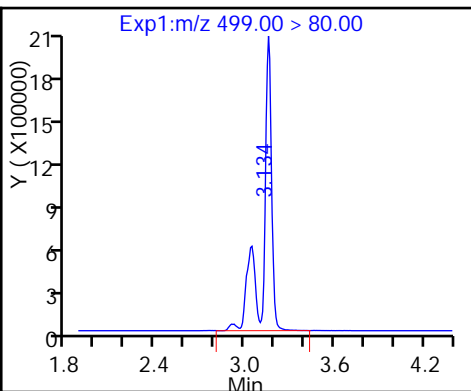
15 Perfluorooctanoic acid



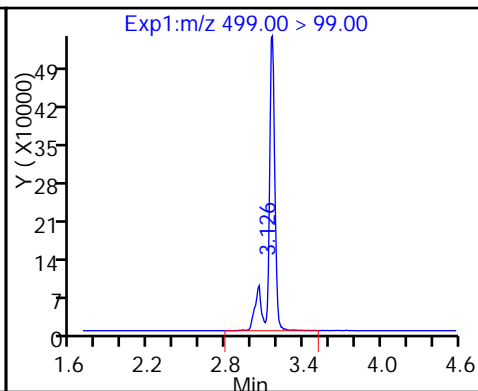
13 Perfluoroheptanesulfonic Acid



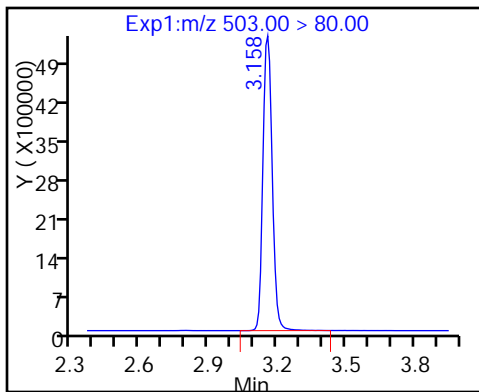
18 Perfluorooctane sulfonic acid



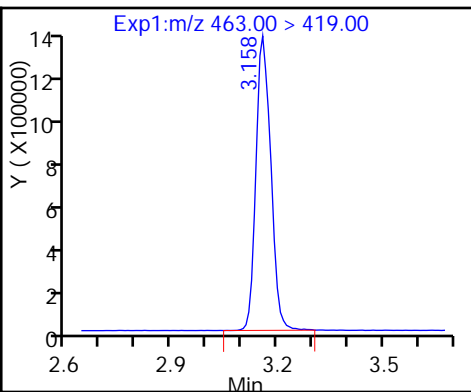
18 Perfluorooctane sulfonic acid



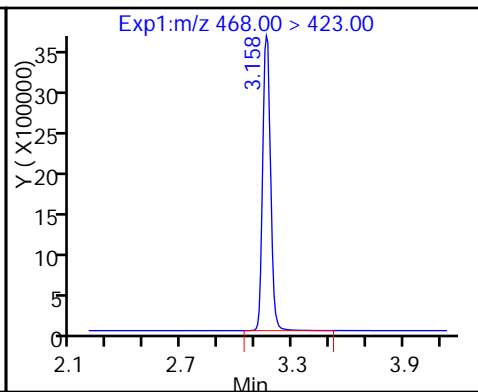
D 17 13C4 PFOS



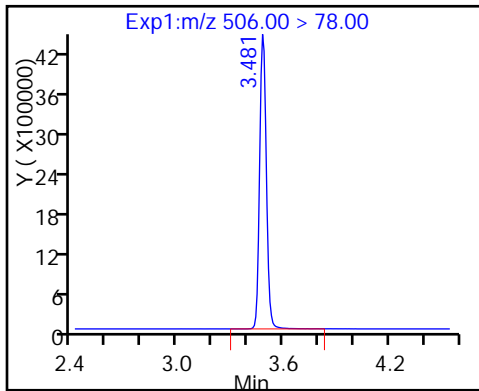
20 Perfluorononanoic acid



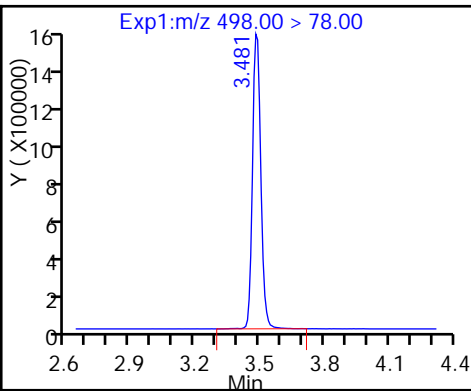
D 19 13C5 PFNA



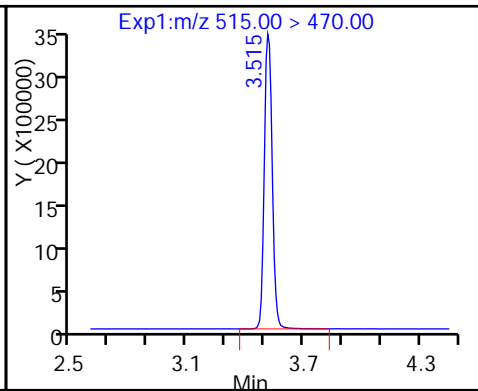
D 21 13C8 FOSA

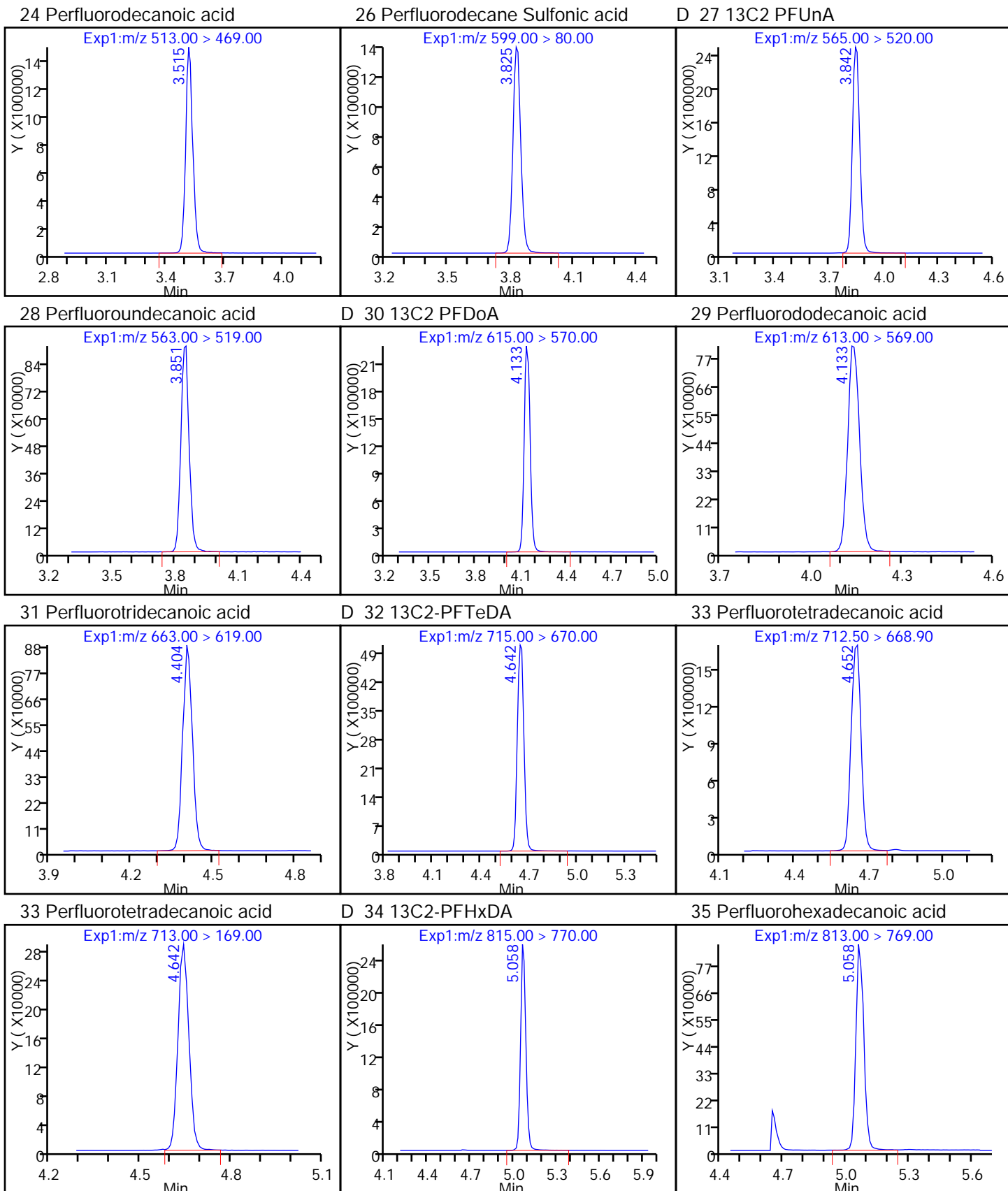


22 Perfluorooctane Sulfonamide

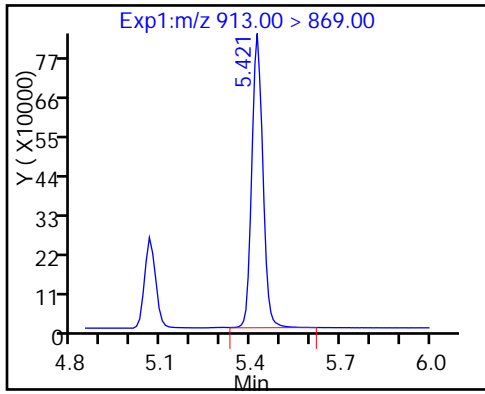


D 23 13C2 PFDA





36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 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	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	7164736	21.2		106	92618	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.851	1.849	0.002	11666172	20.5		116		
	298.90 > 99.00	1.841	1.849	-0.008	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	5364684	20.2		101	110148	
9 Perfluorohexanesulfonic acid	399.00 > 80.00	2.416	2.362	0.054	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	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	5557698	20.4		102	80738	
	413.00 > 169.00	2.789	2.791	-0.002	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

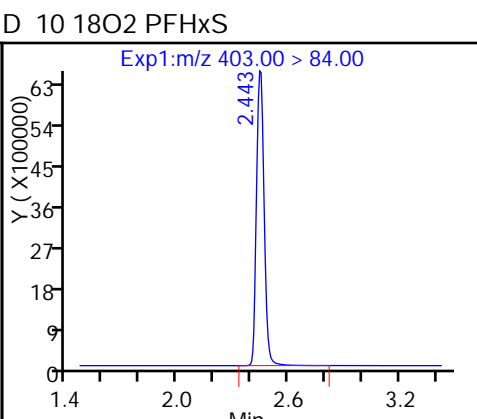
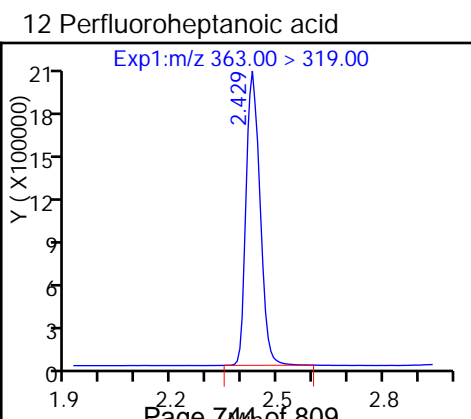
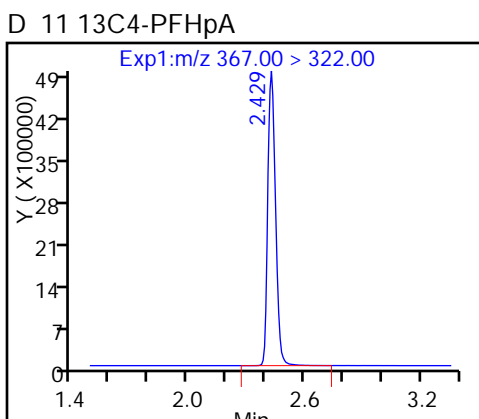
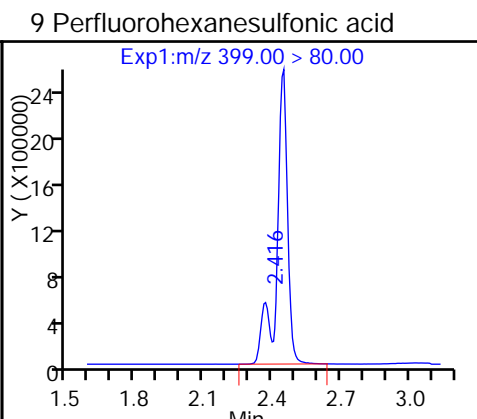
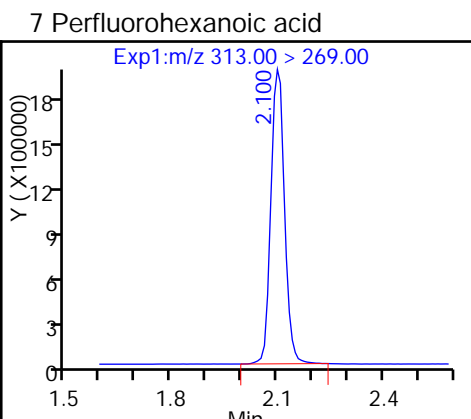
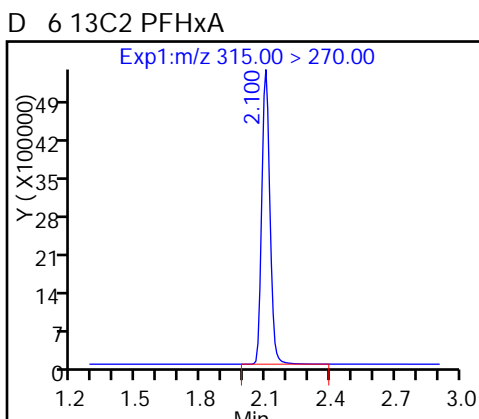
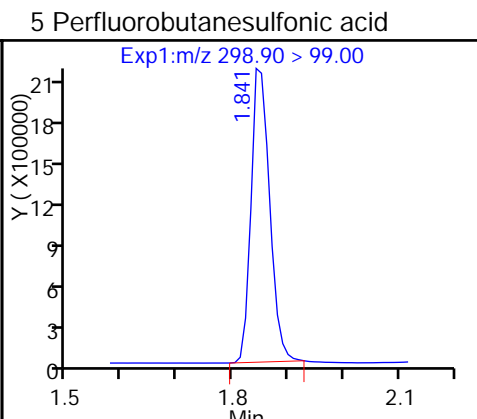
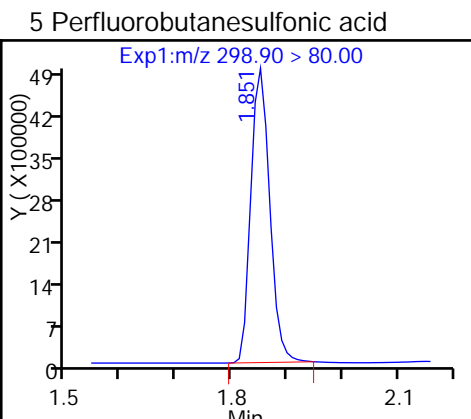
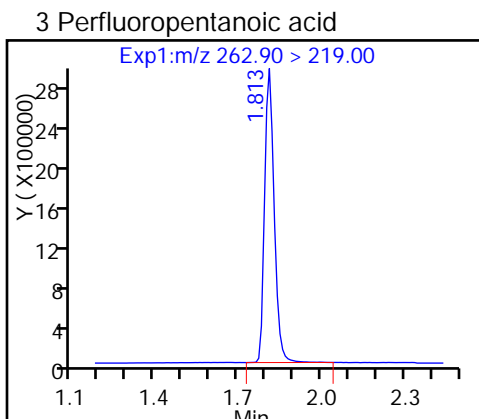
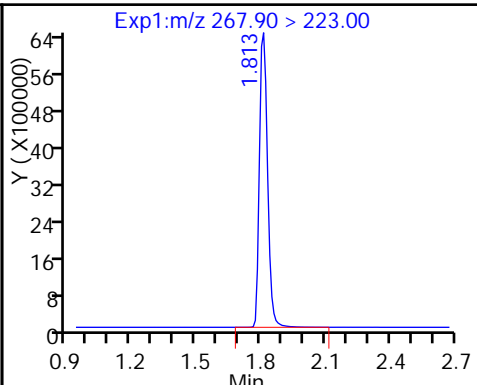
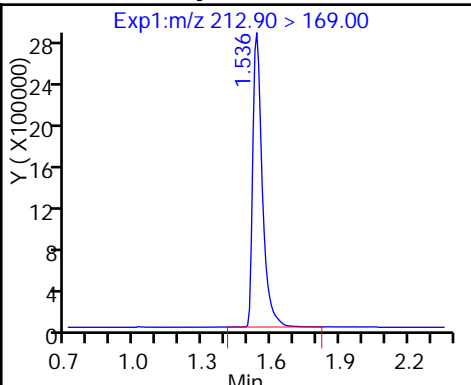
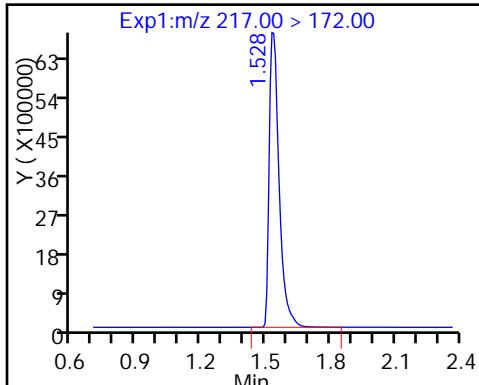
Method: A8_N

Limit Group: LC PFC_DOD ICAL

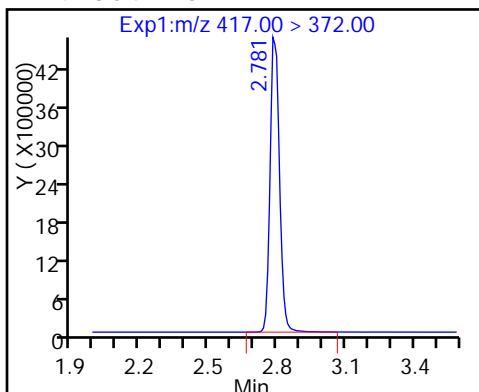
D 2 13C4 PFBA

1 Perfluorobutyric acid

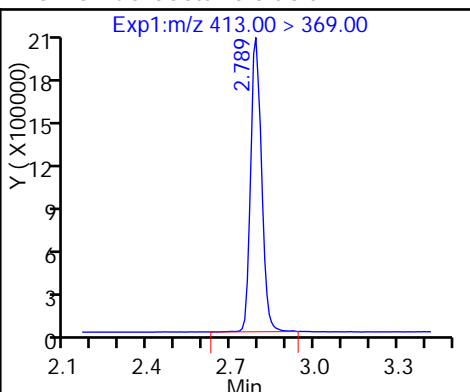
D 4 13C5-PFPeA



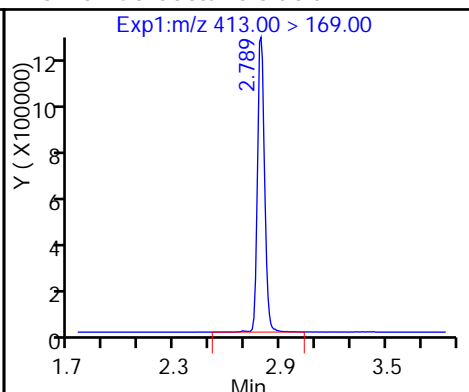
D 14 13C4 PFOA



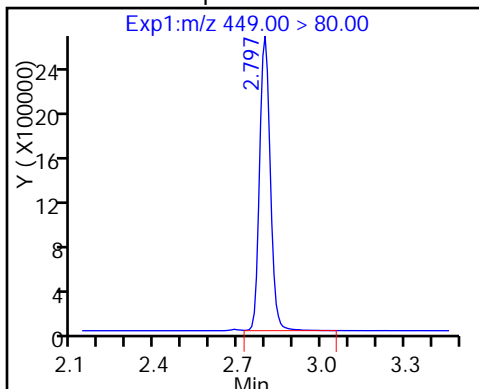
15 Perfluorooctanoic acid



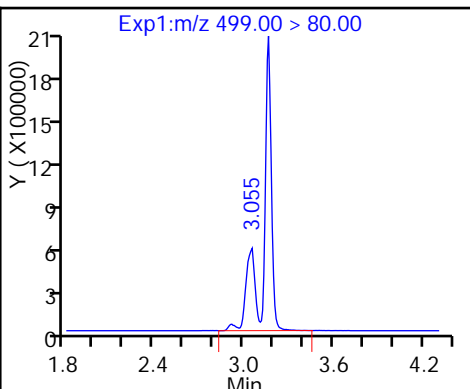
15 Perfluorooctanoic acid



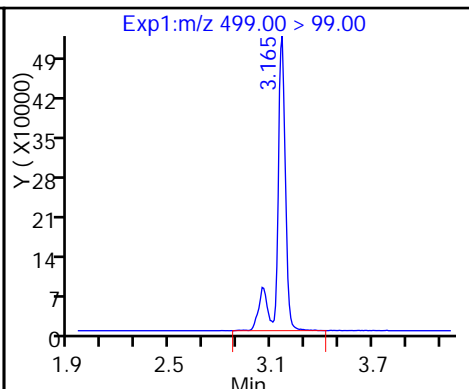
13 Perfluoroheptanesulfonic Acid



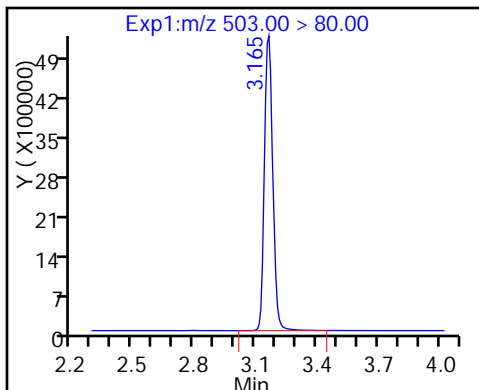
18 Perfluorooctane sulfonic acid



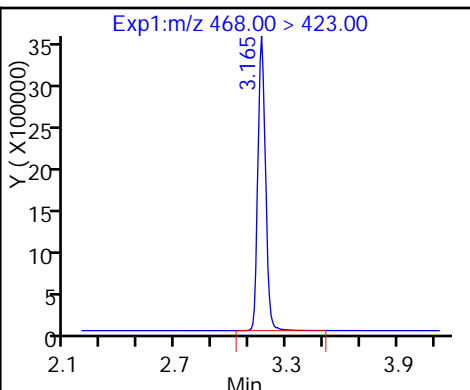
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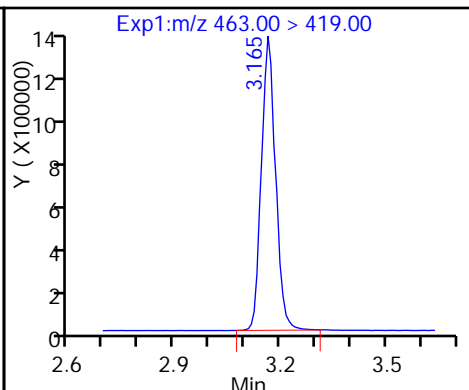
D 17 13C4 PFOS



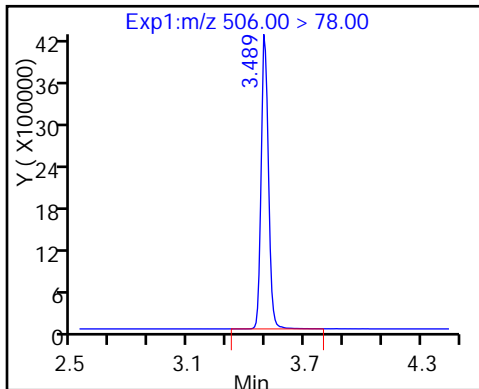
D 19 13C5 PFNA



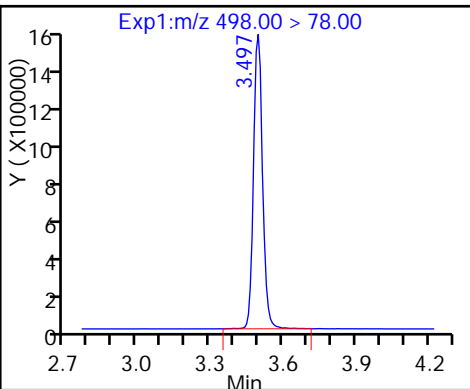
20 Perfluorononanoic acid



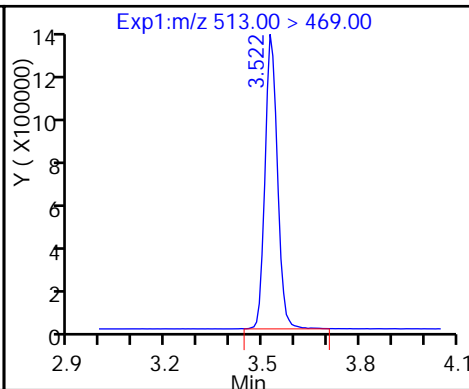
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide



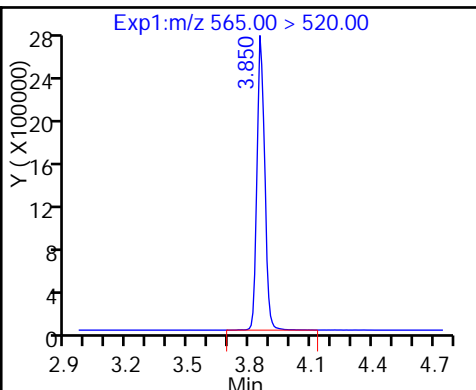
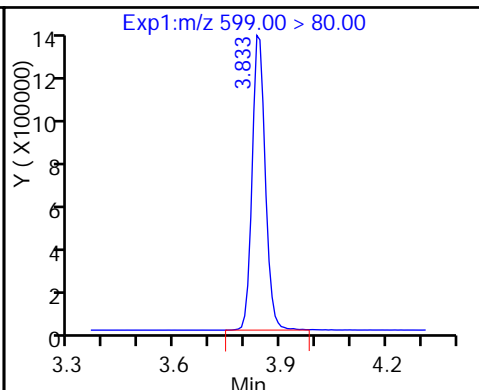
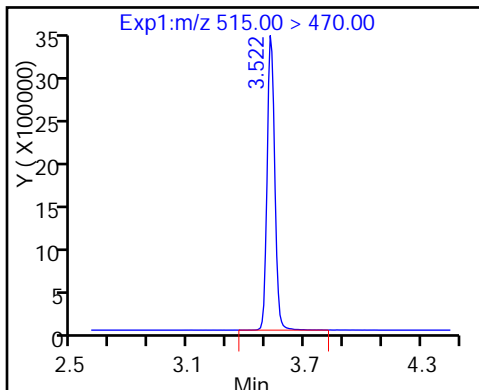
24 Perfluorodecanoic acid



D 23 13C2 PFDA

26 Perfluorodecane Sulfonic acid

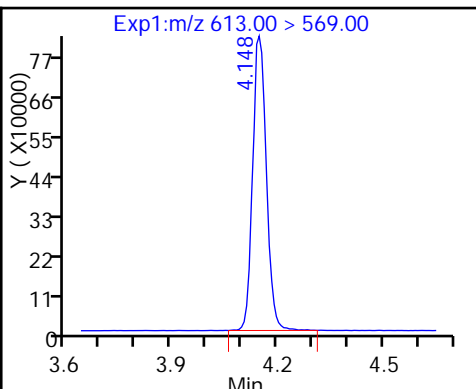
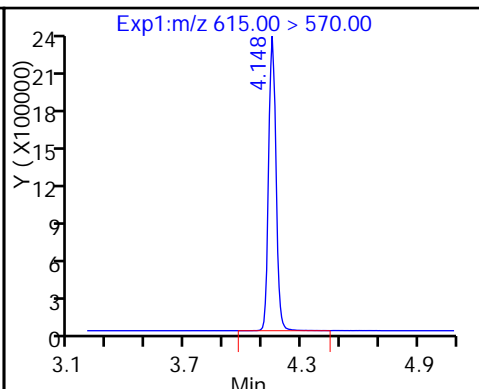
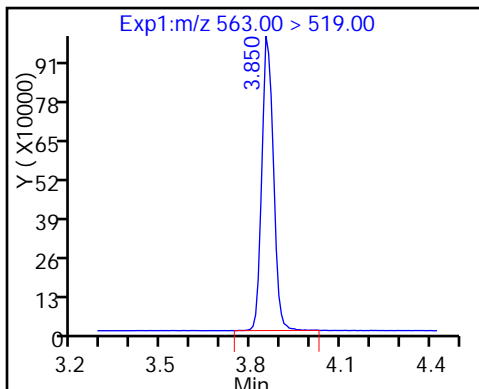
D 27 13C2 PFUnA



28 Perfluoroundecanoic acid

D 30 13C2 PFDaA

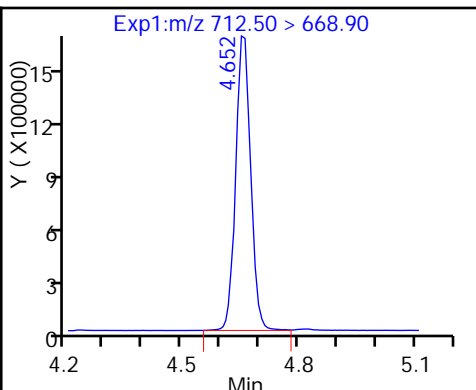
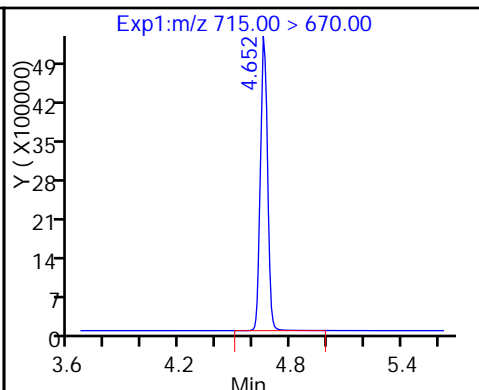
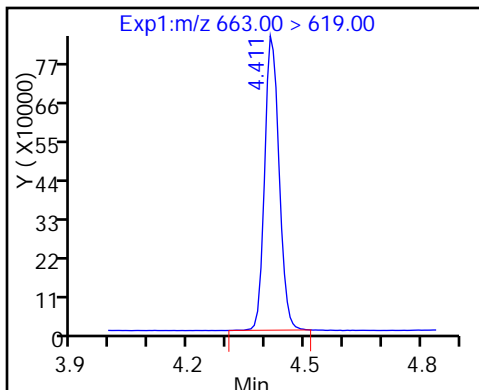
29 Perfluorododecanoic acid



31 Perfluorotridecanoic acid

D 32 13C2-PFTeDA

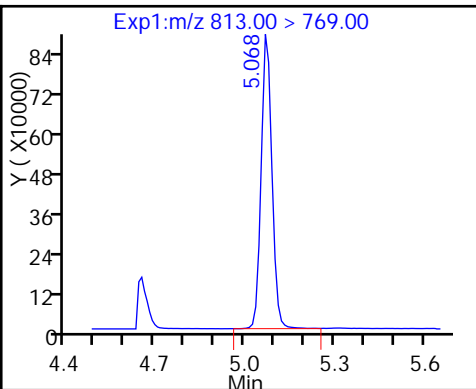
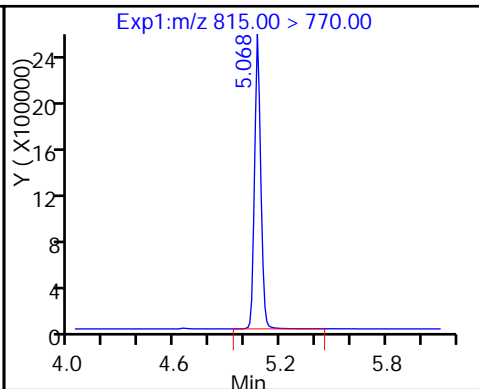
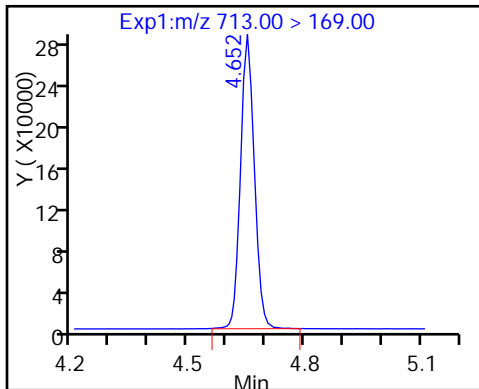
33 Perfluorotetradecanoic acid



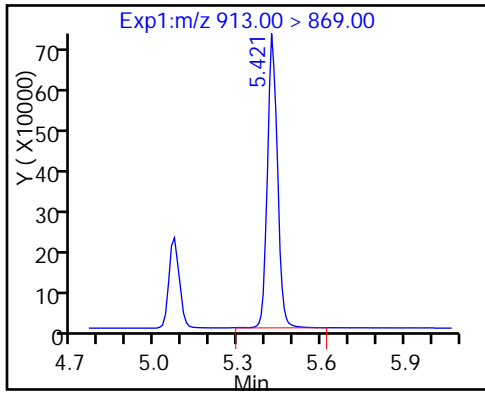
33 Perfluorotetradecanoic acid

D 34 13C2-PFHxDA

35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-144971/2-A
 Matrix: Water Lab File ID: 05JAN2017B_006.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 01/04/2017 16:57
 Sample wt/vol: 250.00 (mL) Date Analyzed: 01/05/2017 15:23
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 145242 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0402		0.0025	0.0020	0.00079

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	109		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38534.b\05JAN2017B_006.d
 Lims ID: LCS 320-144971/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 05-Jan-2017 15:23:14 ALS Bottle#: 17 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-144971/2-a
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38534.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2017 09:59:23 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 09:52:08

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	1.590	1.598	-0.008	20068008	57.7		115	1028395	
1 Perfluorobutyric acid	212.90 > 169.00	1.590	1.606	-0.016	7549948	22.0		110	51034	
D 4 13C5-PFPeA	267.90 > 223.00	1.877	1.887	-0.010	15582645	58.6		117	1160833	
3 Perfluoropentanoic acid	262.90 > 219.00	1.877	1.887	-0.010	6319213	20.5		103	53764	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.916	1.935	-0.019	10731240	21.9		124		
	298.90 > 99.00	1.916	1.935	-0.019	4458963		2.41(0.00-0.00)			
D 6 13C2 PFHxA	315.00 > 270.00	2.181	2.195	-0.014	13360123	54.5		109	714824	
7 Perfluorohexanoic acid	313.00 > 269.00	2.181	2.195	-0.014	4993729	20.1		101	154887	
9 Perfluorohexanesulfonic acid	399.00 > 80.00	2.465	2.476	-0.011	6919944	19.5		107		
D 11 13C4-PFHpA	367.00 > 322.00	2.520	2.536	-0.016	11837395	52.3		105	709715	
12 Perfluoroheptanoic acid	363.00 > 319.00	2.527	2.536	-0.009	4891459	21.1		106	63647	
D 10 18O2 PFHxS	403.00 > 84.00	2.542	2.552	-0.010	16326675	49.9		106	1161990	
15 Perfluorooctanoic acid	413.00 > 369.00	2.894	2.902	-0.008	5140748	20.5		102	65742	
	413.00 > 169.00	2.894	2.902	-0.008	3051290		1.68(0.90-1.10)		157538	
D 14 13C4 PFOA	417.00 > 372.00	2.894	2.902	-0.008	12522789	54.4		109	847003	

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	2.894	2.910	-0.016	1.000	6064601	20.2	106		
18 Perfluorooctane sulfonic acid	499.00 > 80.00	3.243	3.259	-0.016	1.000	5544383	20.5	110	128951	
	499.00 > 99.00	3.260	3.259	0.001	1.005	1220881		4.54(0.90-1.10)	76638	
D 17 13C4 PFOS	503.00 > 80.00	3.260	3.275	-0.015		13009941	52.3	109	313704	
20 Perfluorononanoic acid	463.00 > 419.00	3.268	3.275	-0.007	1.000	3757453	19.9	99.7	77605	
D 19 13C5 PFNA	468.00 > 423.00	3.268	3.283	-0.015		9903644	55.7	111	372146	
D 21 13C8 FOSA	506.00 > 78.00	3.582	3.600	-0.018		6725638	17.5	35.0	276172	
22 Perfluorooctane Sulfonamide	498.00 > 78.00	3.590	3.600	-0.010	1.000	2473421	19.7	98.6	183692	
24 Perfluorodecanoic acid	513.00 > 469.00	3.624	3.642	-0.018	1.000	3699603	20.2	101	100390	
D 23 13C2 PFDA	515.00 > 470.00	3.624	3.642	-0.018		9694873	61.6	123	267148	
26 Perfluorodecane Sulfonic acid	599.00 > 80.00	3.931	3.945	-0.014	1.000	3418802	21.5	112		
28 Perfluoroundecanoic acid	563.00 > 519.00	3.948	3.963	-0.015	1.000	2879436	20.0	99.8	82423	
D 27 13C2 PFUnA	565.00 > 520.00	3.948	3.972	-0.024		7543368	64.3	129	441329	
29 Perfluorododecanoic acid	613.00 > 569.00	4.249	4.265	-0.016	1.000	2297087	19.3	96.5	50860	
D 30 13C2 PFDoA	615.00 > 570.00	4.241	4.265	-0.024		6484451	58.4	117	158514	
31 Perfluorotridecanoic acid	663.00 > 619.00	4.508	4.526	-0.018	1.000	2440395	20.7	104	6080	
D 32 13C2-PFTeDA	715.00 > 670.00	4.744	4.764	-0.020		14466941	63.6	127	937907	
33 Perfluorotetradecanoic acid	712.50 > 668.90	4.753	4.772	-0.019	1.000	5431334	26.4	132	1814	
	713.00 > 169.00	4.736	4.772	-0.036	0.997	814510		6.67(0.00-0.00)	100594	
35 Perfluorohexadecanoic acid	813.00 > 769.00	5.168	5.178	-0.010	1.000	2372317	18.6	92.8	3050	
D 34 13C2-PFHxDA	815.00 > 770.00	5.158	5.188	-0.030		6410714	51.5	103	115180	
36 Perfluorooctadecanoic acid	913.00 > 869.00	5.524	5.536	-0.012	1.000	2552878	19.1	95.5	1935	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38534.b\05JAN2017B_006.d

Injection Date: 05-Jan-2017 15:23:14

Instrument ID: A8_N

Lims ID: LCS 320-144971/2-A

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 17

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

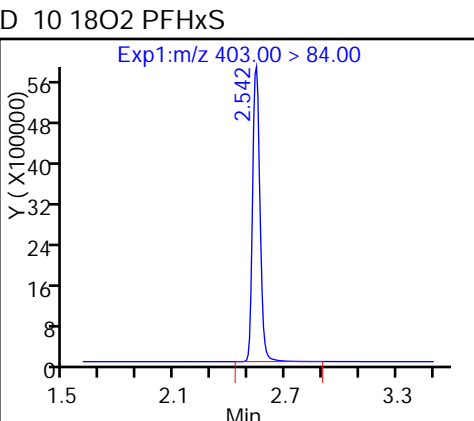
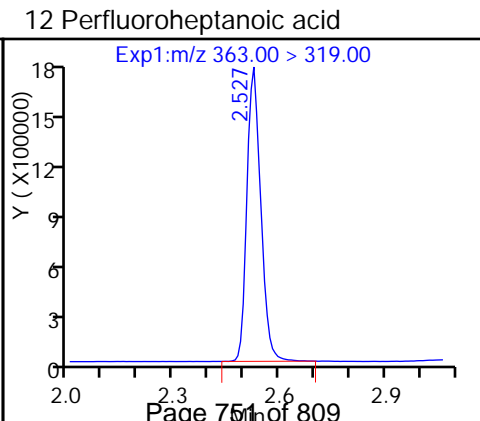
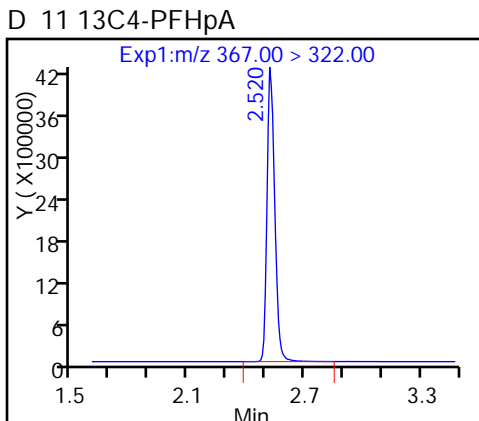
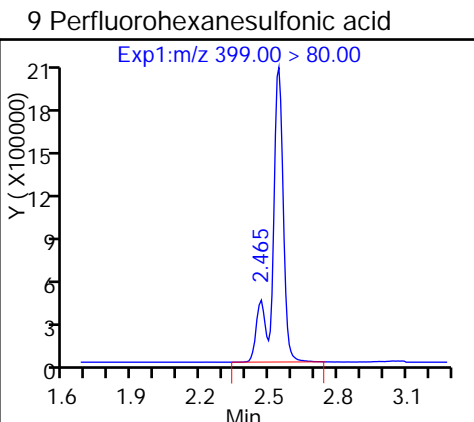
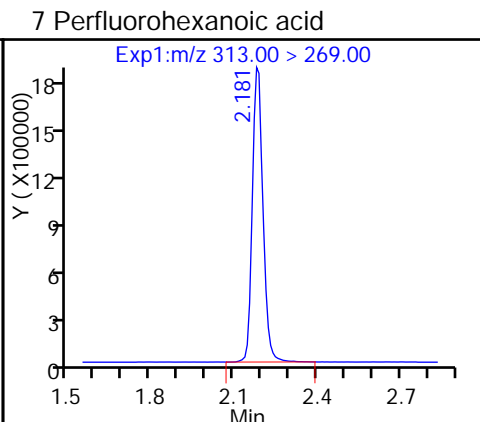
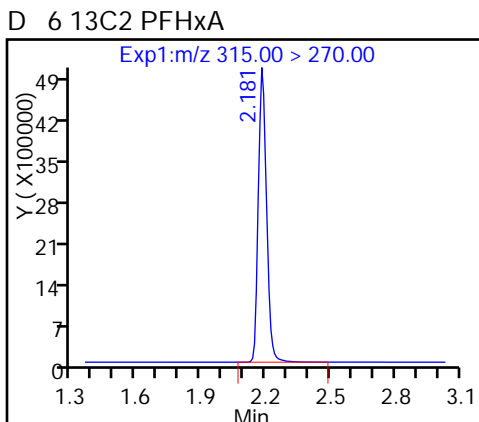
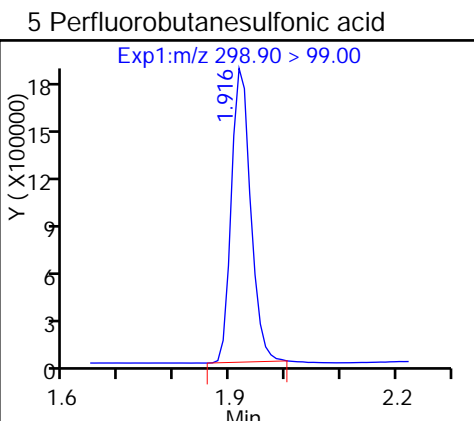
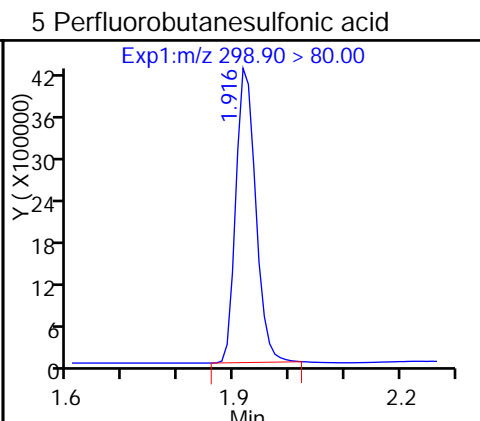
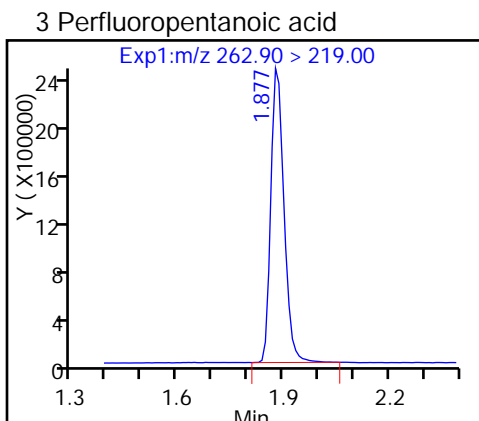
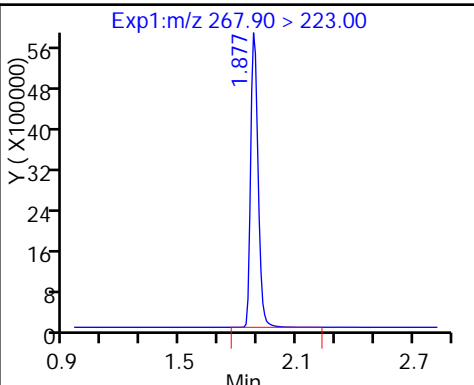
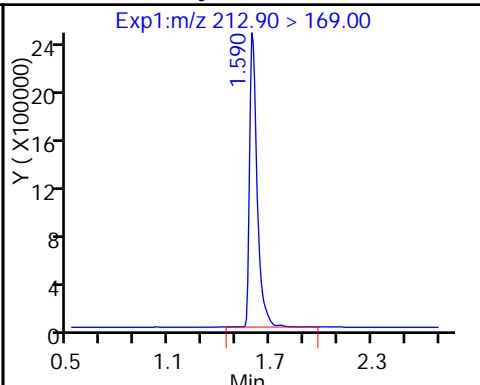
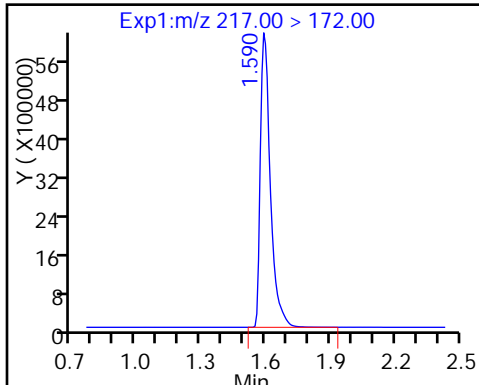
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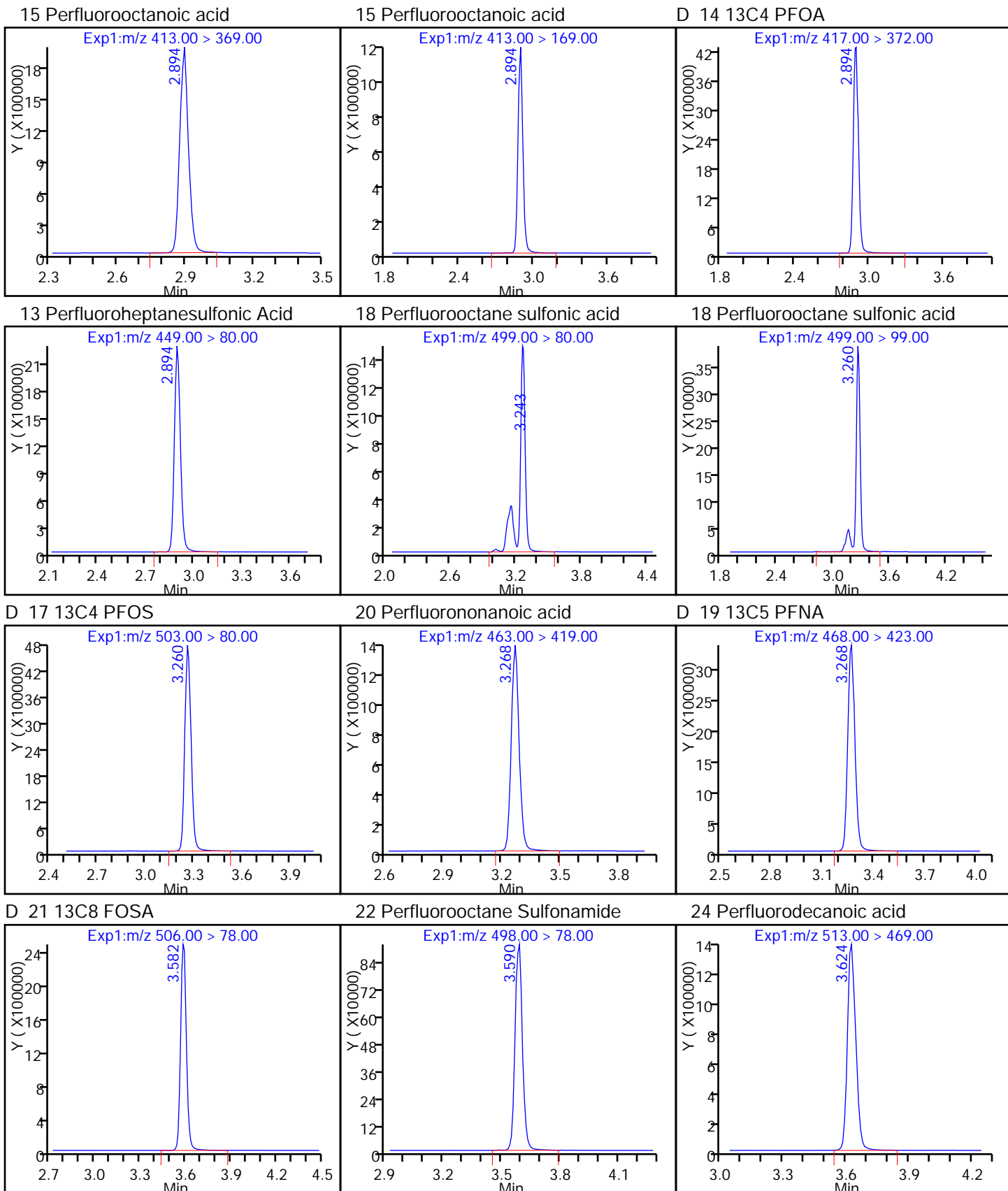
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

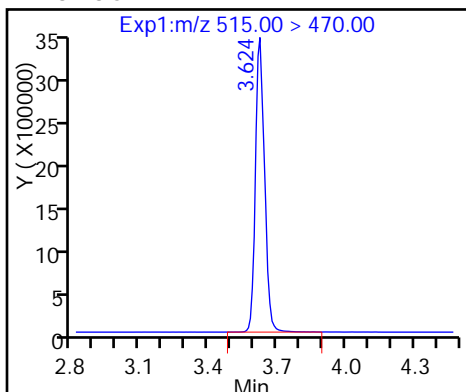
1 Perfluorobutyric acid

D 4 13C5-PFPeA

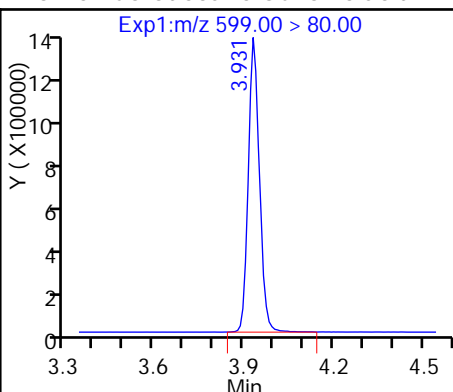




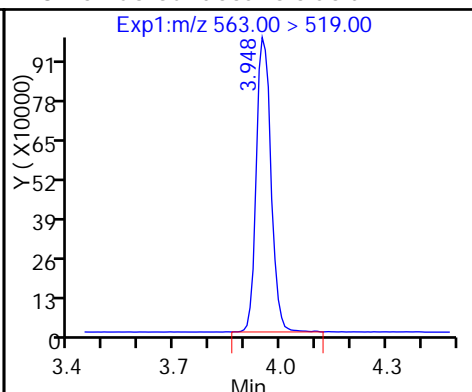
D 23 13C2 PFDA



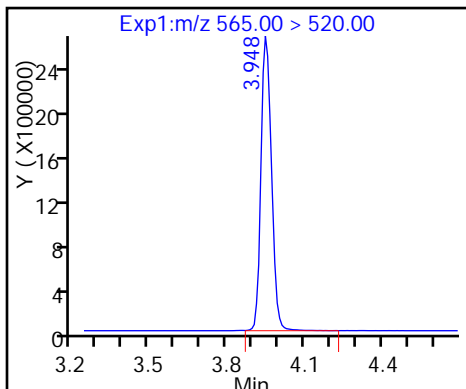
26 Perfluorodecane Sulfonic acid



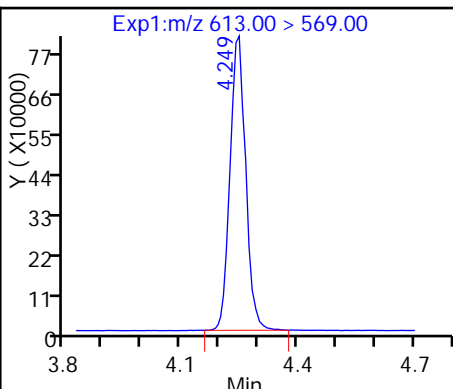
28 Perfluoroundecanoic acid



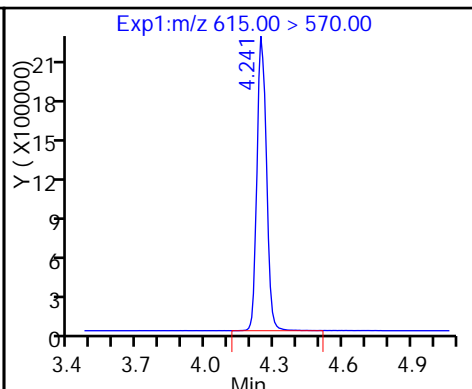
D 27 13C2 PFUa



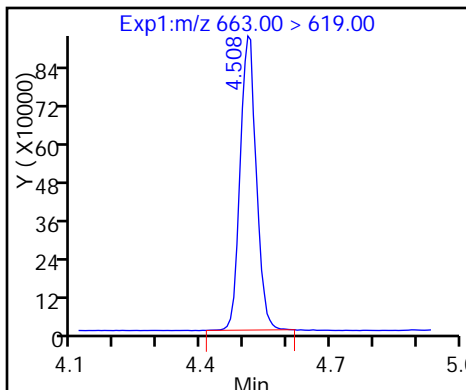
29 Perfluorododecanoic acid



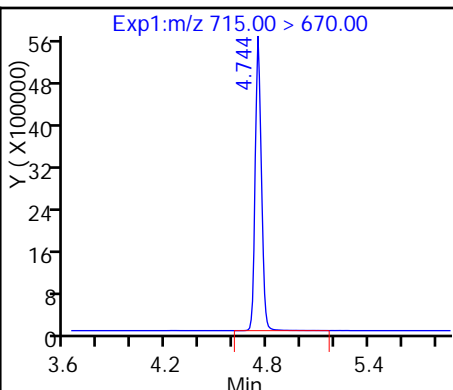
D 30 13C2 PFDa



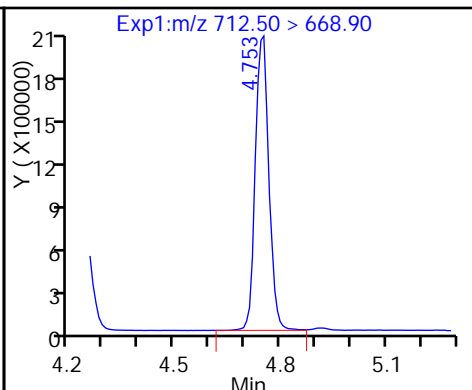
31 Perfluorotridecanoic acid



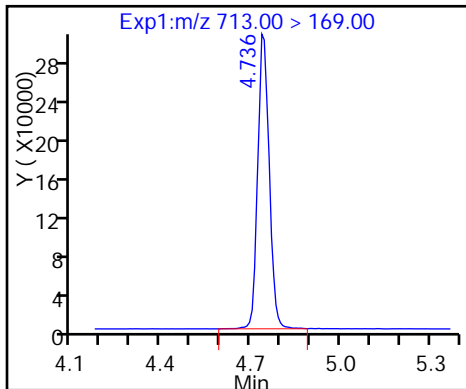
D 32 13C2-PFTeDA



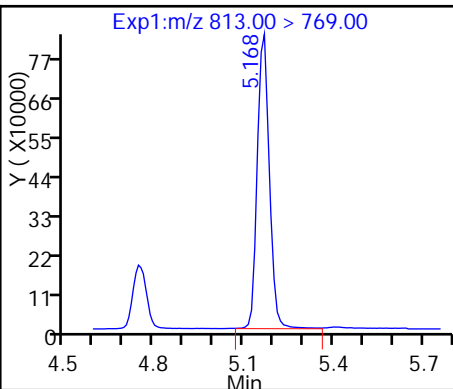
33 Perfluorotetradecanoic acid



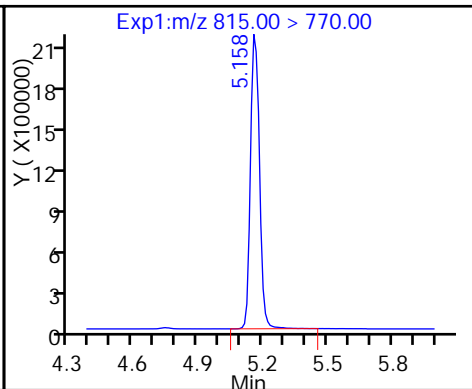
33 Perfluorotetradecanoic acid



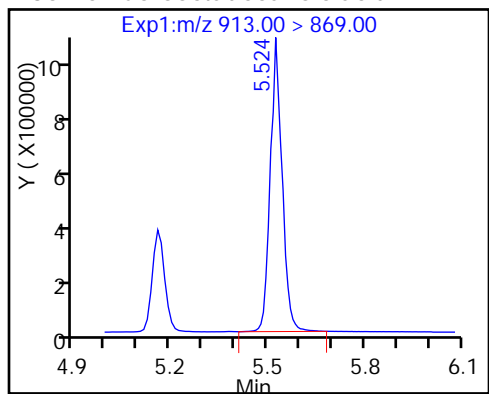
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-144971/3-A
 Matrix: Water Lab File ID: 05JAN2017B_007.d
 Analysis Method: 537 (Modified) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 01/04/2017 16:57
 Sample wt/vol: 250.00 (mL) Date Analyzed: 01/05/2017 15:30
 Con. Extract Vol.: 0.50 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: Acquity ID: 2.1 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 145242 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0424		0.0025	0.0020	0.00079

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	117		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38534.b\05JAN2017B_007.d
 Lims ID: LCSD 320-144971/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 05-Jan-2017 15:30:45 ALS Bottle#: 18 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcsd 320-144971/3-a
 Misc. Info.: Plate: 1 Rack: 3
 Operator ID: A8-PC\A8 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38534.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 06-Jan-2017 09:59:23 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 09:54:33

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	1.598	1.598	0.0	21131365	60.8		122	1063797	
1 Perfluorobutyric acid	212.90 > 169.00	1.598	1.606	-0.008	1.000	8432768	23.4	117	56811	
D 4 13C5-PFPeA	267.90 > 223.00	1.887	1.887	0.0	16600736	62.4		125	1006552	
3 Perfluoropentanoic acid	262.90 > 219.00	1.887	1.887	0.0	1.000	7128523	21.8	109	72150	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.926	1.935	-0.009	1.000	11942908	22.9	129		
	298.90 > 99.00	1.926	1.935	-0.009	1.000	4969882	2.40(0.00-0.00)			
D 6 13C2 PFHxA	315.00 > 270.00	2.195	2.195	0.0	14324383	58.4		117	872638	
7 Perfluorohexanoic acid	313.00 > 269.00	2.186	2.195	-0.009	1.000	5636101	21.2	106	159740	
9 Perfluorohexanesulfonic acid	399.00 > 80.00	2.473	2.476	-0.003	1.000	7653959	20.2	111		
D 11 13C4-PFHpA	367.00 > 322.00	2.536	2.536	0.0	12744114	56.3		113	916764	
12 Perfluoroheptanoic acid	363.00 > 319.00	2.536	2.536	0.0	1.000	5455891	21.9	109	65012	
D 10 18O2 PFHxS	403.00 > 84.00	2.551	2.552	-0.001	17425681	53.3		113	1580468	
15 Perfluorooctanoic acid	413.00 > 369.00	2.902	2.902	0.0	1.000	5729059	21.4	107	58752	
	413.00 > 169.00	2.894	2.902	-0.008	0.997	3317387	1.73(0.90-1.10)		127768	
D 14 13C4 PFOA	417.00 > 372.00	2.902	2.902	0.0	13317083	57.8		116	878647	

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	2.910	2.910	0.0	1.000	6819933	21.3		112
18 Perfluorooctane sulfonic acid	499.00	> 80.00	3.251	3.259	-0.008	1.000	5996003	20.8		112
	499.00	> 99.00	3.275	3.259	0.016	1.007	1301463		4.61(0.90-1.10)	81845
D 17 13C4 PFOS	503.00	> 80.00	3.275	3.275	0.0		13881164	55.8		117
20 Perfluorononanoic acid	463.00	> 419.00	3.275	3.275	0.0	1.000	4113690	20.2		101
D 19 13C5 PFNA	468.00	> 423.00	3.275	3.283	-0.008		10673078	60.1		120
D 21 13C8 FOSA	506.00	> 78.00	3.598	3.600	-0.002		7940426	20.7		41.3
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.598	3.600	-0.002	1.000	3001234	20.3		101
24 Perfluorodecanoic acid	513.00	> 469.00	3.640	3.642	-0.002	1.000	3943571	20.9		104
D 23 13C2 PFDA	515.00	> 470.00	3.632	3.642	-0.010		10000886	63.6		127
26 Perfluorodecane Sulfonic acid	599.00	> 80.00	3.942	3.945	-0.003	1.000	3578238	21.1		109
28 Perfluoroundecanoic acid	563.00	> 519.00	3.959	3.963	-0.004	1.000	2866129	20.4		102
D 27 13C2 PFUnA	565.00	> 520.00	3.959	3.972	-0.013		7334883	62.6		125
29 Perfluorododecanoic acid	613.00	> 569.00	4.256	4.265	-0.009	1.000	2434433	19.8		98.8
D 30 13C2 PFDoA	615.00	> 570.00	4.256	4.265	-0.009		6708219	60.5		121
31 Perfluorotridecanoic acid	663.00	> 619.00	4.517	4.526	-0.009	1.000	2629342	21.6		108
D 32 13C2-PFTeDA	715.00	> 670.00	4.755	4.764	-0.009		15407982	67.8		136
33 Perfluorotetradecanoic acid	712.50	> 668.90	4.755	4.772	-0.017	1.000	5866478	27.6		138
	713.00	> 169.00	4.755	4.772	-0.017	1.000	866111		6.77(0.00-0.00)	107658
35 Perfluorohexadecanoic acid	813.00	> 769.00	5.169	5.178	-0.009	1.000	2424000	18.3		91.6
D 34 13C2-PFHxDA	815.00	> 770.00	5.169	5.188	-0.019		6990982	56.1		112
36 Perfluorooctadecanoic acid	913.00	> 869.00	5.534	5.536	-0.002	1.000	2860553	20.7		103

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38534.b\05JAN2017B_007.d

Injection Date: 05-Jan-2017 15:30:45

Instrument ID: A8_N

Lims ID: LCSD 320-144971/3-A

Client ID:

Operator ID: A8-PC\A8

ALS Bottle#: 18

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

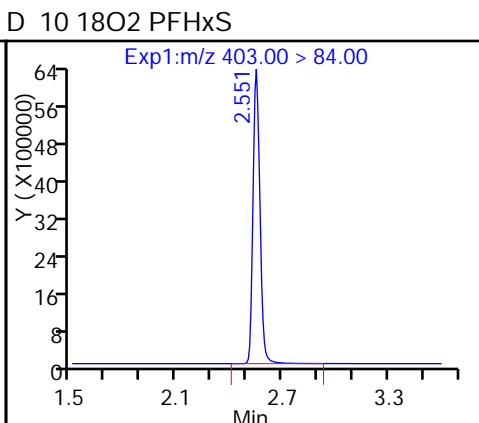
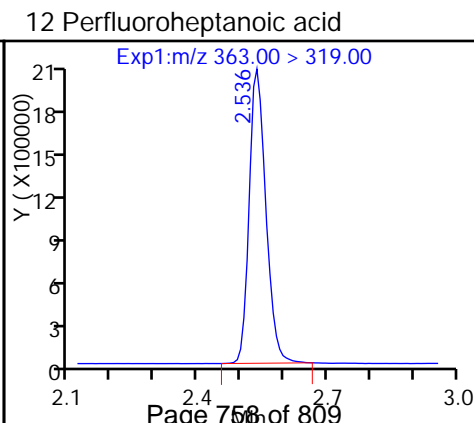
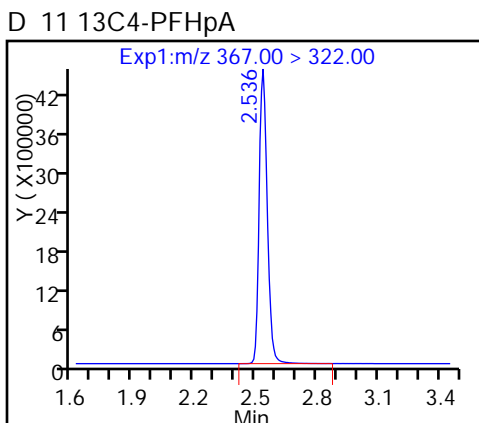
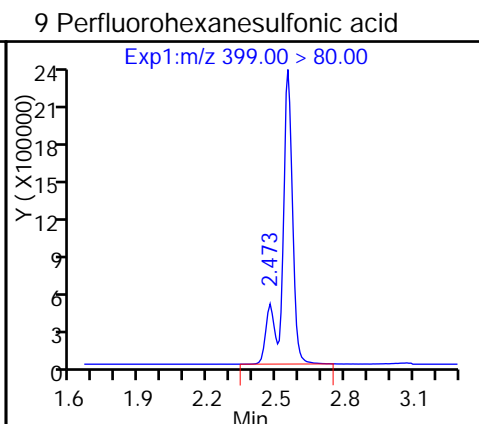
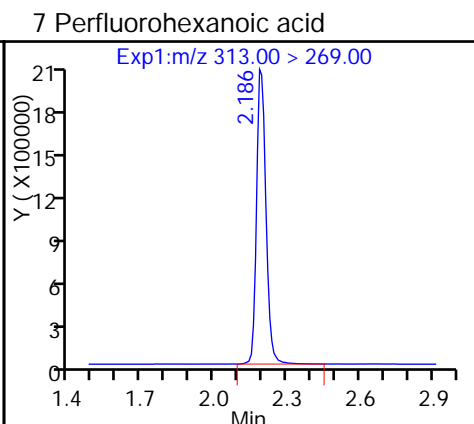
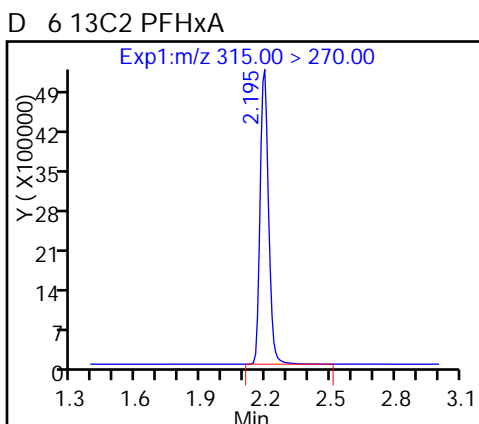
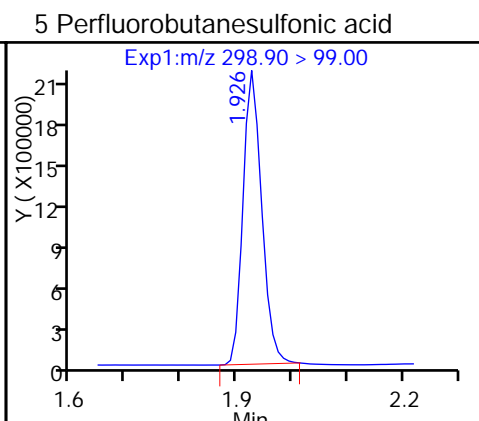
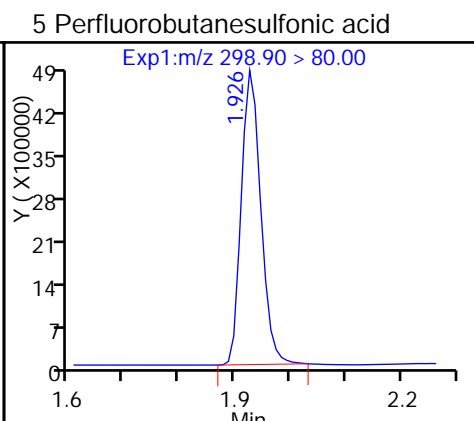
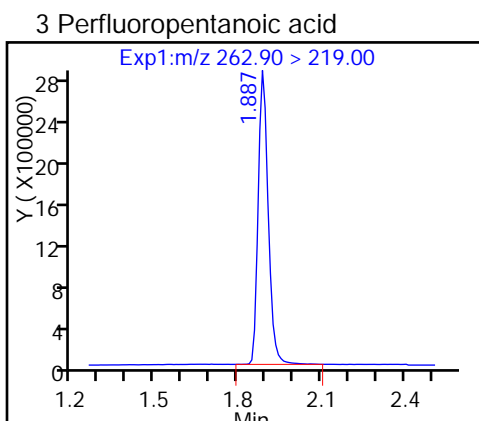
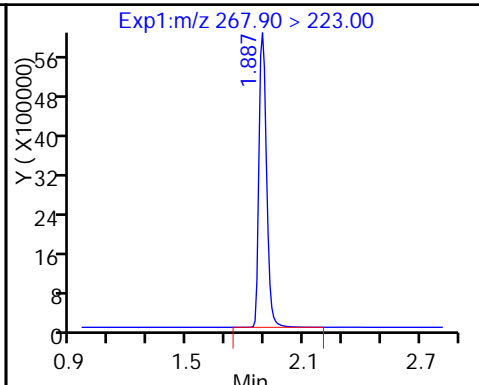
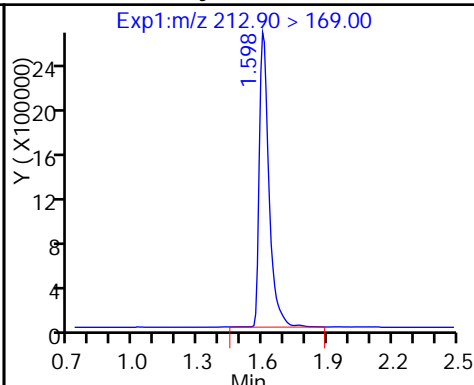
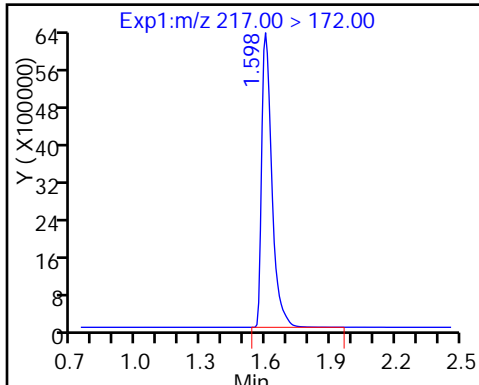
Method: A8_N

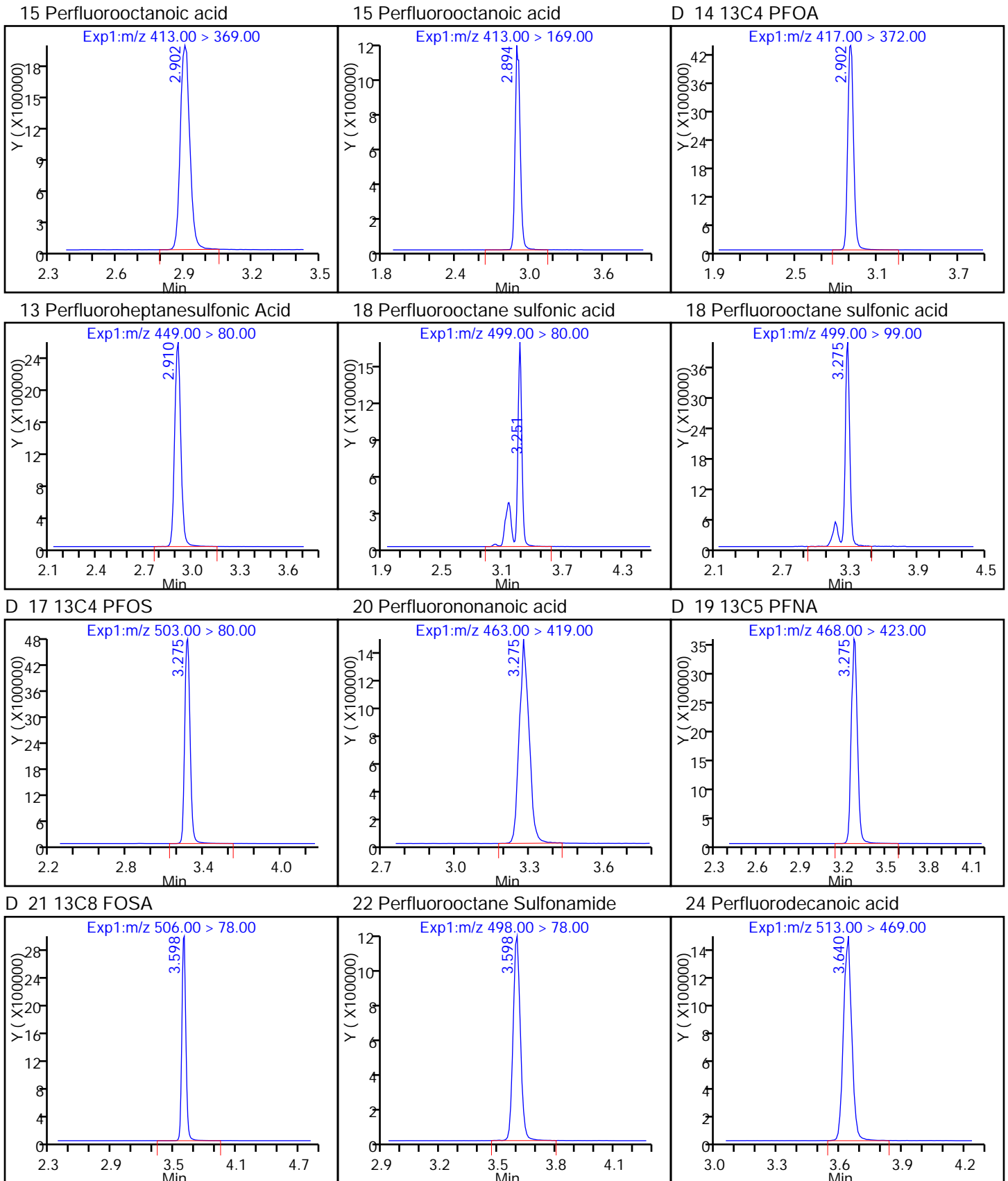
Limit Group: LC PFC_DOD ICAL

D 2 13C4 PFBA

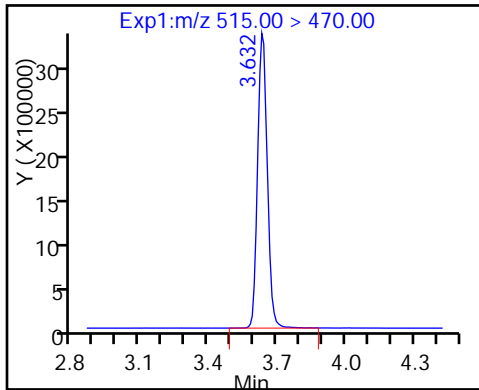
1 Perfluorobutyric acid

D 4 13C5-PFPeA

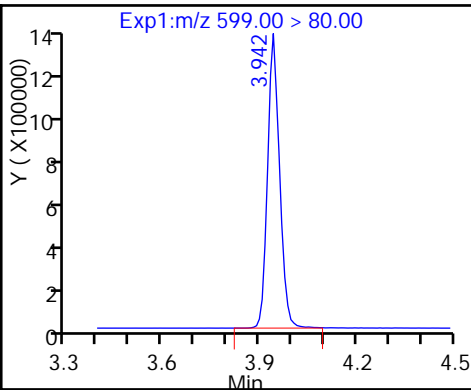




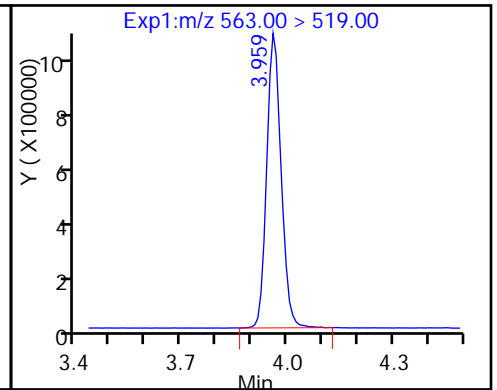
D 23 13C2 PFDA



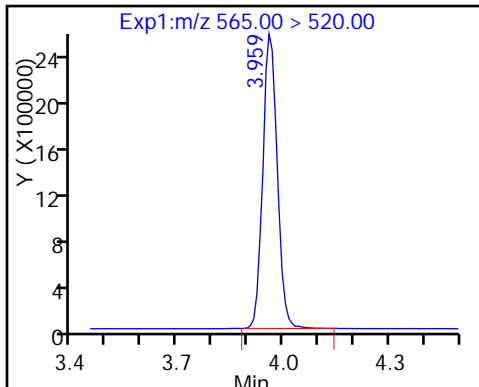
26 Perfluorodecane Sulfonic acid



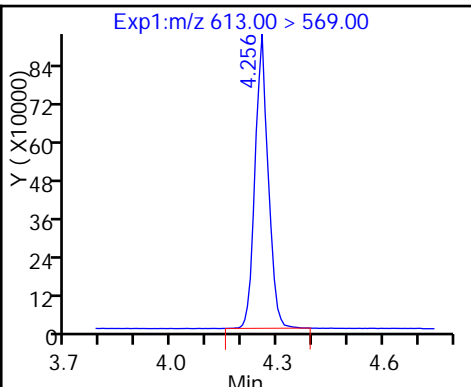
28 Perfluoroundecanoic acid



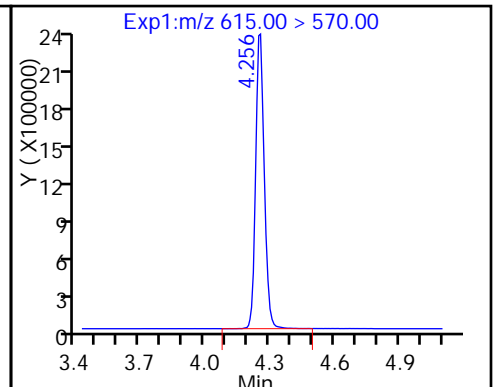
D 27 13C2 PFUa



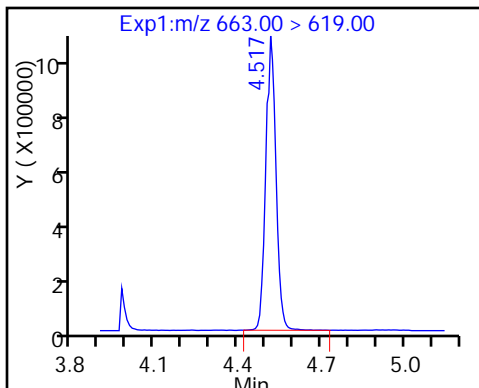
29 Perfluorododecanoic acid



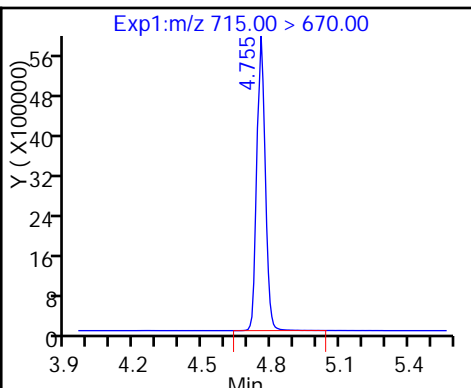
D 30 13C2 PFDa



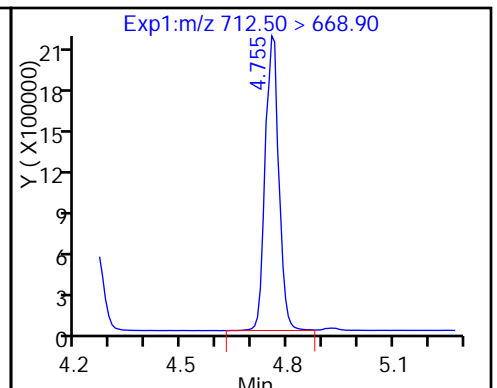
31 Perfluorotridecanoic acid



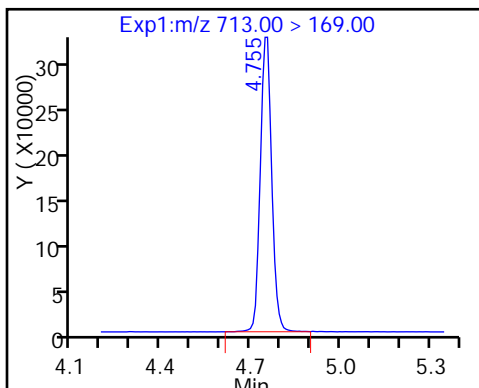
D 32 13C2-PFTeDA



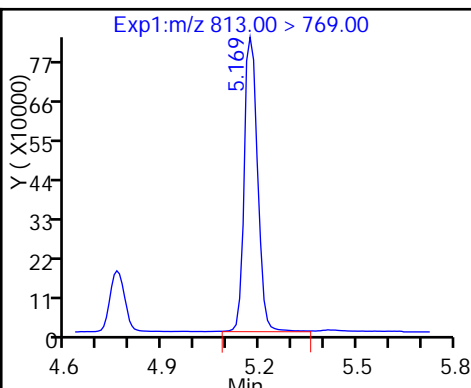
33 Perfluorotetradecanoic acid



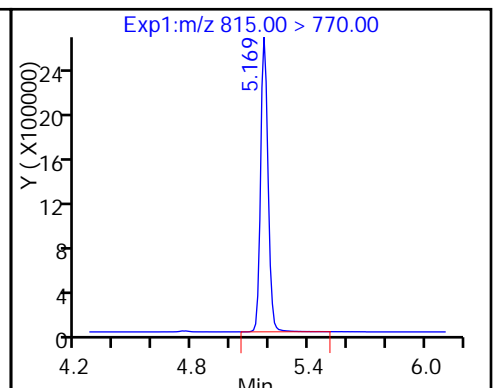
33 Perfluorotetradecanoic acid



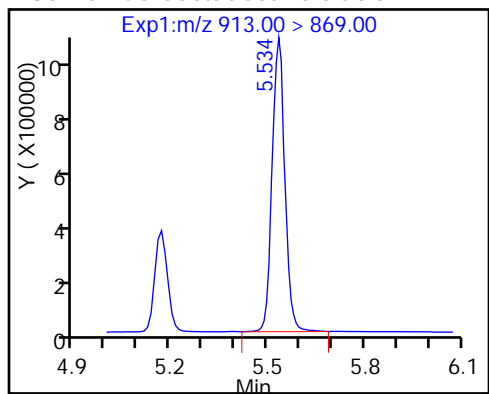
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1

SDG No.: _____

Instrument ID: A8_N Start Date: 12/15/2016 12:06

Analysis Batch Number: 142379 End 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.: 320-24184-1

SDG No.: _____

Instrument ID: A8_N Start Date: 12/28/2016 16:21

Analysis 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
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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 Sacramento Job No.: 320-24184-1

SDG No.: _____

Instrument ID: A8_N Start Date: 12/28/2016 23:51

Analysis Batch Number: 144253 End 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)
320-24184-1		12/29/2016 00:52	1	28DEC2016C_009.d	Acquity 2.1(mm)
ZZZZZ		12/29/2016 00:59	1		Acquity 2.1(mm)
320-24184-3		12/29/2016 01:07	1	28DEC2016C_011.d	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)
ZZZZZ		12/29/2016 01:37	1		Acquity 2.1(mm)
ZZZZZ		12/29/2016 01:44	1		Acquity 2.1(mm)
ZZZZZ		12/29/2016 01:52	1		Acquity 2.1(mm)
ZZZZZ		12/29/2016 01:59	1		Acquity 2.1(mm)
ZZZZZ		12/29/2016 02:07	1		Acquity 2.1(mm)
ZZZZZ		12/29/2016 02:14	1		Acquity 2.1(mm)
ZZZZZ		12/29/2016 02:22	1		Acquity 2.1(mm)
ZZZZZ		12/29/2016 02:29	1		Acquity 2.1(mm)
ZZZZZ		12/29/2016 02:37	1		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)
ZZZZZ		12/29/2016 02:59	1		Acquity 2.1(mm)
ZZZZZ		12/29/2016 03:07	1		Acquity 2.1(mm)
ZZZZZ		12/29/2016 03:14	1		Acquity 2.1(mm)
CCV 320-144253/29		12/29/2016 03:22	1		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 Sacramento Job No.: 320-24184-1

SDG No.: _____

Instrument ID: A8_N Start Date: 12/30/2016 10:56

Analysis 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 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)
320-24184-3 DL		12/30/2016 12:41	200	30DEC2016B_004. d	Acquity 2.1(mm)
ZZZZZ		12/30/2016 12:48	200		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)
320-24184-1 DL		12/30/2016 13:33	50	30DEC2016B_011. d	Acquity 2.1(mm)
320-24184-2		12/30/2016 13:41	1	30DEC2016B_012. d	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)
320-24184-4 DL		12/30/2016 14:03	10	30DEC2016B_015. d	Acquity 2.1(mm)
320-24184-4		12/30/2016 14:11	1	30DEC2016B_016. d	Acquity 2.1(mm)
ZZZZZ		12/30/2016 14:18	50		Acquity 2.1(mm)
ZZZZZ		12/30/2016 14:26	20		Acquity 2.1(mm)
ZZZZZ		12/30/2016 14:34	20		Acquity 2.1(mm)
ZZZZZ		12/30/2016 14:41	20		Acquity 2.1(mm)
ZZZZZ		12/30/2016 14:49	1		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.: 320-24184-1

SDG No.: _____

Instrument ID: A8_N Start Date: 12/30/2016 10:56

Analysis 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)
ZZZZZ		12/30/2016 16:34	1		Acquity 2.1(mm)
ZZZZZ		12/30/2016 16:41	1		Acquity 2.1(mm)
ZZZZZ		12/30/2016 16:49	1		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.: 320-24184-1

SDG No.: _____

Instrument ID: A8_N Start Date: 01/04/2017 16:33

Analysis Batch Number: 145022 End 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)
320-24184-3 DL2		01/04/2017 21:33	1	04JAN2017A_045. d	Acquity 2.1(mm)
ZZZZZ		01/04/2017 21:40	1		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 ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1

SDG No.: _____

Instrument ID: A8_N Start Date: 01/05/2017 14:45

Analysis Batch Number: 145242 End Date: 01/05/2017 21:08

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-145242/1 CCB		01/05/2017 14:45	1		Acquity 2.1(mm)
CCV 320-145242/2		01/05/2017 14:53	1	05JAN2017B_002.d	Acquity 2.1(mm)
CCV 320-145242/3		01/05/2017 15:00	1		Acquity 2.1(mm)
ZZZZZ		01/05/2017 15:08	1		Acquity 2.1(mm)
MB 320-144971/1-A		01/05/2017 15:15	1	05JAN2017B_005.d	Acquity 2.1(mm)
LCS 320-144971/2-A		01/05/2017 15:23	1	05JAN2017B_006.d	Acquity 2.1(mm)
LCSD 320-144971/3-A		01/05/2017 15:30	1	05JAN2017B_007.d	Acquity 2.1(mm)
320-24184-2 RE		01/05/2017 15:38	1	05JAN2017B_008.d	Acquity 2.1(mm)
320-24184-4 RE		01/05/2017 15:45	1	05JAN2017B_009.d	Acquity 2.1(mm)
ZZZZZ		01/05/2017 15:53	1		Acquity 2.1(mm)
CCV 320-145242/11		01/05/2017 16:00	1	05JAN2017B_011.d	Acquity 2.1(mm)
CCV 320-145242/12		01/05/2017 16:08	1		Acquity 2.1(mm)
RB 320-145242/13 CCB		01/05/2017 16:15	1		Acquity 2.1(mm)
RB 320-145242/23 CCB		01/05/2017 17:30	1		Acquity 2.1(mm)
CCV 320-145242/24		01/05/2017 17:38	1		Acquity 2.1(mm)
CCV 320-145242/25		01/05/2017 17:45	1		Acquity 2.1(mm)
RB 320-145242/26 CCB		01/05/2017 17:53	1		Acquity 2.1(mm)
CCV 320-145242/36		01/05/2017 19:08	1		Acquity 2.1(mm)
CCV 320-145242/37		01/05/2017 19:15	1		Acquity 2.1(mm)
RB 320-145242/38 CCB		01/05/2017 19:23	1		Acquity 2.1(mm)
RB 320-145242/49 CCB		01/05/2017 20:45	1		Acquity 2.1(mm)
CCV 320-145242/50		01/05/2017 20:53	1		Acquity 2.1(mm)
CCV 320-145242/51		01/05/2017 21:00	1		Acquity 2.1(mm)
RB 320-145242/52 CCB		01/05/2017 21:08	1		Acquity 2.1(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1

SDG No.: _____

Batch Number: 142967 Batch Start Date: 12/19/16 14:38 Batch Analyst: Marchenko, Veronika P

Batch 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	LCPFCSU 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
320-24184-A-1	308A51MW-LF-1216	3535, 537 (Modified)	T	298.32 g	27.31 g	271 mL	0.5 mL	25 uL	
320-24184-A-2	SWMU1-01-1216	3535, 537 (Modified)	T	280.69 g	27.19 g	253.5 mL	0.5 mL	25 uL	
320-24184-A-3	FSS3TMW-1216	3535, 537 (Modified)	T	307.26 g	26.57 g	280.7 mL	0.5 mL	25 uL	
320-24184-A-4	SWMU1-02-1216	3535, 537 (Modified)	T	306.47 g	26.67 g	279.8 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.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1

SDG No.: _____

Batch Number: 142967 Batch Start Date: 12/19/16 14:38 Batch Analyst: Marchenko, Veronika P

Batch 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	
320-24184-A-3	FSS3TMW-1216	3535, Dilution, 537 (Modified)	T	307.26 g	26.57 g	280.7 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.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-24184-1

SDG No.: _____

Batch Number: 144971 Batch Start Date: 01/04/17 16:57 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 01/05/17 11:40

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00046	LCPFCSP 00073
MB 320-144971/1		3535, 537 (Modified)				250.00 mL	0.50 mL	25 uL	
LCS 320-144971/2		3535, 537 (Modified)				250.00 mL	0.50 mL	25 uL	20 uL
LCSD 320-144971/3		3535, 537 (Modified)				250.00 mL	0.50 mL	25 uL	20 uL
320-24184-B-2	SWMU1-01-1216	3535, 537 (Modified)	T	292.17 g	27.43 g	264.7 mL	0.50 mL	25 uL	
320-24184-B-4	SWMU1-02-1216	3535, 537 (Modified)	T	299.13 g	26.69 g	272.4 mL	0.50 mL	25 uL	

Batch Notes	
Balance ID	QA-070
H2O ID	1/03/17
Hexane ID	0000146278
Manifold ID	7
Methanol ID	816942
Sodium Hydroxide ID	0.1N NaOH/H2O: 794894
Pipette ID	MD05306
Analyst ID - Reagent Drop	JER
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	NSH
Solvent Lot #	811075
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	186004647

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.: 320-24184-1

SDG No.: _____

Batch Number: 145739 Batch Start Date: 12/19/16 14:38 Batch Analyst: Phomsopha, Thep

Batch 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
320-24184-A-3-A	FSS3TMW-1216	Dilution, 537 (Modified)	T	30 uL	300 uL	15 uL	300 uL	30 uL	300 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	DilutionFactor	CalcMsg	LCMPFCSU 00046			
320-24184-A-3-A	FSS3TMW-1216	Dilution, 537 (Modified)	T	2000 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.

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
Instrument Name: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20161229-38288.b
QC Batching: Disabled

Worklist Number: 38288
Chrom Method: A8_N
Limit Group Batching: Enabled

TAL BATCH: 144253

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	
✓ # 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 - Repro	# 10 320-24184-A-2-A		
✓ # 11 320-24184-A-3-A	# 11 320-24184-A-3-A		
# 12 320-24184-A-4-A - Repro	# 12 320-24184-A-4-A		
# 13 CCV L4 - PFOS Failed	# 13 CCV L4		# 13 CCV L4
# 14 RB	# 14 RB		# 14 RB
✓ # 15 320-24236-A-1-A	# 15 320-24236-A-1-A		
✓ # 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	# 24 CCV L5	
# 25 RB	# 25 RB	# 25 RB	
✓ # 26 320-24236-A-8-A	# 26 320-24236-A-8-A		
# 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	# 29 CCV L4	
# 30 RB	# 30 RB	# 30 RB	
# 31 RB	# 31 RB	# 31 RB	
# 32 RB	# 32 RB	# 32 RB	

CCV L2 144213

ICV 142379

Tune NCM

73213

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 30DEC2016A_PFC
Instrument Name: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20161230-38358.b
QC Batching: Disabled

Worklist Number: 38358
Chrom Method: A8_N
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
✓ #17 320-24149-A-2-A	#17 320-24149-A-2-A		
✓ #18 320-24149-A-2-A	#18 320-24149-A-2-A		
#19 RB	#19 RB	#19 RB	
#20 320-24149-A-3-A	#20 320-24149-A-3-A	#19 RB NEM 74501	#19 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	#23 CCV L4	#23 CCV L4
#24 RB	#24 RB	#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		
✓ #33 320-24236-A-10-A	#33 320-24236-A-10-A		
#34 CCV L5	#34 CCV L5	#34 CCV L5	#34 CCV L5
#35 RB	#35 RB	#35 RB	#35 RB
#36 320-24282-A-1-A	#36 320-24282-A-1-A		#36 320-24282-A-1-A
#37 320-24282-A-2-A	#37 320-24282-A-2-A		#37 320-24282-A-2-A
#38 320-24282-A-2-B MS	#38 320-24282-A-2-B MS		#38 320-24282-A-2-B MS
#39 320-24282-A-2-C MSD	#39 320-24282-A-2-C MSD		#39 320-24282-A-2-C MSD
#40 CCV L4	#40 CCV L4	#40 CCV L4	#40 CCV L4
#41 RB	#41 RB	#41 RB	#41 RB
#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		
#48 320-24236-A-8-A	#48 320-24236-A-8-A		
#49 CCV L5	#49 CCV L5	#49 CCV L5	#49 CCV L5
#50 RB	#50 RB	#50 RB	#50 RB

RL Dil
NEM 74508

1CV 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

CCV L2 144794

IDA FOSA low NCM 74533
 IDA high NCM 74534
 Dilution NCM 74535

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Aqueous Extraction Analysis Sheet

AB 12/28/16

(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	
			0.5 mL							
2 LCS-320-142967/2 N/A	N/A		250 mL			N/A	N/A	N/A	RI	
			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	
		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	
		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	
		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	
		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	
		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	
		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	
		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	
		26.67 g	0.5 mL							

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)










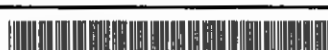


Batch Number: 320-142967

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	245.3 mL			12/28/16	12_Days	4	Sox / 100x	
			26.16 g	0.5 mL							
12	320-24236-A-2 (PFC_IDA_DOD5)	N/A (320-24236-1)	280.04 g	253 mL			12/28/16	12_Days	4	300x 200x 100x	
			27.00 g	0.5 mL							
13	320-24236-A-3 (PFC_IDA_DOD5)	N/A (320-24236-1)	268.47 g	241.5 mL			12/28/16	12_Days	4	20x	
			26.98 g	0.5 mL							
14	320-24236-A-3-MS (PFC_IDA_DOD5)	N/A (320-24236-1)	264.35 g	233.7 mL			12/28/16	12_Days	4	20x	
			30.69 g	0.5 mL							
15	320-24236-A-3-MSD (PFC_IDA_DOD5)	N/A (320-24236-1)	263.98 g	236 mL			12/28/16	12_Days	4	20x	
			28.01 g	0.5 mL							
16	320-24236-A-4 (PFC_IDA_DOD5)	N/A (320-24236-1)	306.35 g	279.2 mL			12/28/16	12_Days	4	1x	
			27.17 g	0.5 mL							
17	320-24236-A-5 (PFC_IDA_DOD5)	N/A (320-24236-1)	286.26 g	259.2 mL			12/28/16	12_Days	4	RI	
			27.08 g	0.5 mL							
18	320-24236-A-6 (PFC_IDA_DOD5)	N/A (320-24236-1)	269.41 g	241.5 mL			12/28/16	12_Days	4	RI	
			27.94 g	0.5 mL							
19	320-24236-A-7 (PFC_IDA_DOD5)	N/A (320-24236-1)	292.74 g	266.1 mL			12/28/16	12_Days	4	RI	
			26.64 g	0.5 mL							
20	320-24236-A-8 (PFC_IDA_DOD5)	N/A (320-24236-1)	299.51 g	273 mL			12/28/16	12_Days	4	RI	
			26.49 g	0.5 mL							
21	320-24236-A-9 (PFC_IDA_DOD5)	N/A (320-24236-1)	288.85 g	261.1 mL			12/28/16	12_Days	4	Sox / 100x	
			27.77 g	0.5 mL							
22	320-24236-A-10 (PFC_IDA_DOD5)	N/A (320-24236-1)	289.02 g	260.7 mL			12/28/16	12_Days	4	Sox / 100x	
			28.33 g	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:

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

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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:

Batch Comment 0.1N NaOH/H2O: 794893

Comments

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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	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	VAM 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		

Other Reagents:

Reagent

Amount/Units

Lot#:

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Preparation Batch Number(s): 1429107 Test: PFC-10A-0005(L)
 Earliest Holding Time: 12/20/16

	1 st Level Reviewer	2 nd Level Reviewer
Sample List Tab		
Samples identified to the correct method	/	/
All necessary NCMs filed (including holding time)	/	/
Method/sample/login/QAS checked and correct	/	/
Worksheet Tab		
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		
All necessary reagents not expired and entered into TALS	/	/
All spike amounts correct and added to necessary samples and QC	/	/
Batch Information		
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: _____

Method ID PFC-IDA

Job # 320-24149, 320-24184, ~~320-24236~~
320-24236 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:

Method ID PFC_IDA

Job # 320-24236

Analyst (Print Name) Ther Phomsopha Analyst Initials TP

Date 1/3/17

Sample#	Original F.V. (uL)	Aliquot (uL)	Dilution F.V. (uL)	Dilution Factor
24236-1	500	15	1500	100X
↓ -9	500	15	1500	100X
↓ -10	500	15	1500	100X
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 ^{10/10/17}

Due Date: 12/23/16; 12/27/16; 12/29/16

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 ($r^2 > 0.990$).			✓
• 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: Mway

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-fortification of Standards

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
1 320-24149-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

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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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HPLC/LCMS Data Review Checklist

Job Number(s): 24184; 24209

Work List ID(s): 38534; 38535

Extraction Batch: 144971; 142632

Analysis Batch(es): 145242; 145245 ¹⁴⁵²⁴⁶ _{1/6/2017}

Delivery Rank 2, 4


Due Date: 12/27/16; 12/21/16

A. Calibration/Instrument Run QC	1 st Level	2 nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# <u>142379; 142380</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): 

Date: 1/6/17

2nd Level Reviewer: 

Date: 1/6/2017

NCMS: 74637; 73213; 74660

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 05JAN2017B_PFC Worklist Number: 38534
 Instrument Name: A8_N Chrom Method: A8_N
 Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38534.b
 QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 145242	LC PFC ICAL Raw Batch: 145243	LC PFAS ICAL Raw Batch: 145244
# 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 MB 320-144971/1-A	# 5 MB 320-144971/1-A		
# 6 LCS 320-144971/2-A	# 6 LCS 320-144971/2-A		
# 7 LCSD 320-144971/3-A	# 7 LCSD 320-144971/3-A		
# 8 320-24184-B-2-A	# 8 320-24184-B-2-A		
# 9 320-24184-B-4-A	# 9 320-24184-B-4-A		
#10 RB	#10 RB	#10 RB	#10 RB
#11 CCV L4	#11 CCV L4	#11 CCV L4	#11 CCV L4
#12 CCV L4 ADD ON	#12 CCV L4 ADD ON	#12 CCV L4 ADD ON	#12 CCV L4 ADD ON
#13 RB	#13 RB	#13 RB	#13 RB
#14 MB 320-144960/1-A	#14 MB 320-144960/1-A	#14 MB 320-144960/1-A	#14 MB 320-144960/1-A
#15 LCS 320-144960/2-A	#15 LCS 320-144960/2-A	#15 LCS 320-144960/2-A	#15 LCS 320-144960/2-A
#16 LCSD 320-144960/3-A	#16 LCSD 320-144960/3-A	#16 LCSD 320-144960/3-A	#16 LCSD 320-144960/3-A
#17 320-24606-B-1-A	#17 320-24606-B-1-A	#17 320-24606-B-1-A	#17 320-24606-B-1-A
#18 320-24614-B-2-A	#18 320-24614-B-2-A	#18 320-24614-B-2-A	#18 320-24614-B-2-A
#19 320-24614-B-1-A	#19 320-24614-B-1-A	#19 320-24614-B-1-A	#19 320-24614-B-1-A
#20 320-24614-B-3-A	#20 320-24614-B-3-A	#20 320-24614-B-3-A	#20 320-24614-B-3-A
#21 320-24614-B-4-A	#21 320-24614-B-4-A	#21 320-24614-B-4-A	#21 320-24614-B-4-A
#22 320-24614-B-5-A	#22 320-24614-B-5-A	#22 320-24614-B-5-A	#22 320-24614-B-5-A
#23 RB	#23 RB	#23 RB	#23 RB
#24 CCV L5	#24 CCV L5	#24 CCV L5	#24 CCV L5
#25 CCV L5 ADD ON	#25 CCV L5 ADD ON	#25 CCV L5 ADD ON	#25 CCV L5 ADD ON
#26 RB	#26 RB	#26 RB	#26 RB
#27 MB 320-144944/1-A	#27 MB 320-144944/1-A	#27 MB 320-144944/1-A	#27 MB 320-144944/1-A
#28 LCS 320-144944/2-A	#28 LCS 320-144944/2-A	#28 LCS 320-144944/2-A	#28 LCS 320-144944/2-A
#29 320-24735-A-1-A	#29 320-24735-A-1-A	#29 320-24735-A-1-A	#29 320-24735-A-1-A
#30 320-24735-A-1-B MS	#30 320-24735-A-1-B MS	#30 320-24735-A-1-B MS	#30 320-24735-A-1-B MS
#31 320-24735-A-1-C DU	#31 320-24735-A-1-C DU	#31 320-24735-A-1-C DU	#31 320-24735-A-1-C DU
#32 320-24735-A-2-A	#32 320-24735-A-2-A	#32 320-24735-A-2-A	#32 320-24735-A-2-A
#33 320-24735-A-3-A	#33 320-24735-A-3-A	#33 320-24735-A-3-A	#33 320-24735-A-3-A
#34 320-24735-A-4-A	#34 320-24735-A-4-A	#34 320-24735-A-4-A	#34 320-24735-A-4-A
#35 MB 320-144928/1-A	#35 MB 320-144928/1-A	#35 MB 320-144928/1-A	#35 MB 320-144928/1-A
#36 CCV L4	#36 CCV L4	#36 CCV L4	#36 CCV L4
#37 CCV L4 ADD ON	#37 CCV L4 ADD ON	#37 CCV L4 ADD ON	#37 CCV L4 ADD ON
#38 RB	#38 RB	#38 RB	#38 RB
#39 LCS 320-144928/2-A	#39 LCS 320-144928/2-A	#39 LCS 320-144928/2-A	#39 LCS 320-144928/2-A
#40 LCSD 320-144928/3-A	#40 LCSD 320-144928/3-A	#40 LCSD 320-144928/3-A	#40 LCSD 320-144928/3-A
#41 320-24713-A-1-A	#41 320-24713-A-1-A	#41 320-24713-A-1-A	#41 320-24713-A-1-A
#42 320-24713-A-2-A	#42 320-24713-A-2-A	#42 320-24713-A-2-A	#42 320-24713-A-2-A
#43 320-24697-A-1-A	#43 320-24697-A-1-A	#43 320-24697-A-1-A	#43 320-24697-A-1-A
#44 320-24697-A-2-A	#44 320-24697-A-2-A	#44 320-24697-A-2-A	#44 320-24697-A-2-A
#45 320-24671-A-1-A	#45 320-24671-A-1-A	#45 320-24671-A-1-A	#45 320-24671-A-1-A
#46 320-24671-A-2-A	#46 320-24671-A-2-A	#46 320-24671-A-2-A	#46 320-24671-A-2-A
#47 320-24671-A-3-A	#47 320-24671-A-3-A	#47 320-24671-A-3-A	#47 320-24671-A-3-A
#48 320-24671-A-4-A	#48 320-24671-A-4-A	#48 320-24671-A-4-A	#48 320-24671-A-4-A
#49 RB	#49 RB	#49 RB	#49 RB
#50 CCV L5	#50 CCV L5	#50 CCV L5	#50 CCV L5
#51 CCV L5 ADD ON	#51 CCV L5 ADD ON	#51 CCV L5 ADD ON	#51 CCV L5 ADD ON
#52 RB	#52 RB	#52 RB	#52 RB

tune 73213

10x DL
↓

ICV 142379

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 05JAN2017C_PFC Worklist Number: 38535
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170106-38535.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 145245	LC PFC ICAL Raw Batch: 145246	LC PFAS ICAL Raw Batch: 145247
# 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-1-B	<i>10x not necessary</i> <i>8:2 IDA high</i> <i>NCM 74637</i>	# 5 320-24209-A-1-B	# 5 320-24209-A-1-B
# 6 320-24209-A-2-B		# 6 320-24209-A-2-B	# 6 320-24209-A-2-B
# 7 320-24209-A-3-B		# 7 320-24209-A-3-B	# 7 320-24209-A-3-B
# 8 320-24209-B-3-B DU		# 8 320-24209-B-3-B DU	# 8 320-24209-B-3-B DU
# 9 320-24209-A-1-B		# 9 320-24209-A-1-B	# 9 320-24209-A-1-B
# 10 320-24209-A-2-B		# 10 320-24209-A-2-B	# 10 320-24209-A-2-B
# 11 320-24209-A-3-B		# 11 320-24209-A-3-B	# 11 320-24209-A-3-B
# 12 320-24209-B-3-B DU		# 12 320-24209-B-3-B DU	# 12 320-24209-B-3-B DU
# 13 RB		# 13 RB	# 13 RB
# 14 CCV L5		# 14 CCV L5	# 14 CCV L5
# 15 CCV L5 ADD ON		# 15 CCV L5 ADD ON	# 15 CCV L5 ADD ON
# 16 RB		# 16 RB	# 16 RB
# 17 QC LCMPFC2SU_00010 1/2	# 17 QC LCMPFC2SU_00010 1/2	# 17 QC LCMPFC2SU_00010 1/2	# 17 QC LCMPFC2SU_00010 1/2
# 18 QC LCMPFC2SU_00010 2/2	# 18 QC LCMPFC2SU_00010 2/2	# 18 QC LCMPFC2SU_00010 2/2	# 18 QC LCMPFC2SU_00010 2/2
# 19 CCV L5 ADD ON	# 19 CCV L5 ADD ON	# 19 CCV L5 ADD ON	# 19 CCV L5 ADD ON

Reporting 8:2 FTS only
ICV 142380
CCV L2 145138

43 Rx

Aqueous Extraction Analysis Sheet

AB 1/5/17

(To Accompany Samples to Instruments)

Batch Number: 320-144971

Analyst: Reed, Jonathan E

Batch Open: 1/4/2017 4:57:00PM

Method Code: 320-3535_PFC-320

Batch End: 1/5/17 11:40

Solid-Phase Extraction (SPE)

Due 12/30

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	Adj1	Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 MB-320-144971/1 N/A	N/A		250.00 mL				N/A	N/A	N/A		
			0.50 mL								
2 LCS-320-144971/2 N/A	N/A		250.00 mL				N/A	N/A	N/A		
			0.50 mL								
3 LCSD-320-144971/3 N/A	N/A		250.00 mL				N/A	N/A	N/A		
			0.50 mL								
320-24184-B-2 (PFC_IDA_DOD5)	N/A (320-24184-1)	292.17 g	264.7 mL				12/27/16	12_Days	4		
		27.43 g	0.50 mL								
320-24184-B-4 (PFC_IDA_DOD5)	N/A (320-24184-1)	299.13 g	272.4 mL				12/27/16	12_Days	4		
		26.69 g	0.50 mL								

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Rx for PFHxA in MB and <10x in samples 2 & 4

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-144971

Analyst: Reed, Jonathan E

Batch Open: 1/4/2017 4:57:00PM

Method Code: 320-3535_PFC-320

Batch End:

Batch Notes

Manifold ID	7
Methanol ID	816942
Hexane ID	0000146278
Sodium Hydroxide ID	0.1N NaOH/H2O: 794894
First Start time	NA
First End time	NA
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	186004647
Balance ID	QA-070
H2O ID	1/03/17
Pipette ID	MD05306
Solvent Name	0.3% NH4OH/MeOH
Solvent Lot #	811075
Analyst ID - Reagent Drop	JER
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	<i>JSTH</i>
Acid Name	NA
Acid ID	NA
Reagent ID	NA
Reagent Lot Number	NA
SOP Number	WS-LC-0025

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-144971

Analyst: Reed, Jonathan E

Batch Open: 1/4/2017 4:57:00PM

Method Code: 320-3535_PFC-320

Batch End:

Batch Comment _____

Comments

320-24184-B-2

Rework Comments: MB above 1/2 the RL for PFHxA

320-24184-B-4

Rework Comments: MB above 1/2 the RL for PFHxA

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-144971

Analyst: Reed, Jonathan E

Batch Open: 1/4/2017 4:57:00PM

Method Code: 320-3535_PFC-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-144971/1	LCMPFCSU_00046	25 uL	0.50 mL		NSH 1-4-17
LCS 320-144971/2	LCMPFCSU_00046	25 uL	0.50 mL		
LCS 320-144971/2	LCPFCSP_00073	20 uL	0.50 mL		
LCSD 320-144971/3	LCMPFCSU_00046	25 uL	0.50 mL		
LCSD 320-144971/3	LCPFCSP_00073	20 uL	0.50 mL		
320-24184-B-2	LCMPFCSU_00046	25 uL	0.50 mL		
320-24184-B-4	LCMPFCSU_00046	25 uL	0.50 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

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Preparation Batch Number(s): 320-144971 Test: 3535-PFC (L)
 Earliest Holding Time: 12/21/16

	1 st Level Reviewer	2 nd Level Reviewer
Sample List Tab		
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	NA	NA
Method/sample/login/QAS checked and correct	✓	✓
Worksheet Tab		
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		
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Batch Information		
Date and time accurate and entered into TALS correctly	✓	✓
All necessary 'batch information' complete and entered into TALS correctly	✓	✓

1st Level Reviewer: VPM

Date: 1/5/17

2nd Level Reviewer: ceb

Date: 1/5/17

Comments: _____

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142632

Analyst: Reed, Jonathan E

Method Code: 320-3535_IVWT-320

Ag 12/30/16









Batch Open: 12/16/2016 5:40:00PM

Batch End: 12/16/16 4:25

ix 1/5/17

Due 1/10

Solid-Phase Extraction (SPE)

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	Adj1	Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 MB~320-142632/1 N/A	N/A		250.00 mL				N/A	N/A	N/A		
			0.5 mL								
2 LCS-320-142632/2 N/A	N/A		250.00 mL				N/A	N/A	N/A		
			0.5 mL								
3 LCSD-320-142632/3 N/A	N/A		250.00 mL				N/A	N/A	N/A		
			0.5 mL								
320-24209-A-1 (PFC_IDA)	N/A (320-24209-1)	270.14 g	242.6 mL				12/21/16	8_Days	2	ix Screen 100%	
		27.51 g	0.5 mL								
320-24209-A-2 (PFC_IDA)	N/A (320-24209-1)	265.26 g	238.2 mL				12/21/16	8_Days	2		
		27.02 g	0.5 mL								
6 320-24209-A-3 (PFC_IDA)	N/A (320-24209-1)	262.55 g	235.8 mL				12/21/16	8_Days	2		
		26.71 g	0.5 mL								
7 320-24209-B-3-DU (PFC_IDA)	N/A (320-24209-1)	266.53 g	239.3 mL				12/21/16	8_Days	2		
		27.28 g	0.5 mL								
8 320-24209-A-4 (PFC_IDA)	N/A (320-24209-1)	272.35 g	245.5 mL				12/21/16	8_Days	2	RI @ ix	
		26.87 g	0.5 mL								

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142632

Analyst: Reed, Jonathan E

Batch Open: 12/16/2016 5:40:00PM

Method Code: 320-3535_IVWT-320

Batch End:

Batch Notes

Manifold ID 5
Methanol ID 807182
Hexane ID 0000135581
Sodium Hypochlorite ID NA
First Start time NA
First End time NA
Balance ID QA-070
SPE Cartridge Type WAX 500mg
Solid Phase Extraction Disk ID 002836112A
H2O ID 12/15/16
Pipette ID MD05306
Solvent Name 0.3% NH4OH/MeOH
Solvent Lot # 800649
Analyst ID - Reagent Drop JER
Analyst ID - SU Reagent Drop JER
Analyst ID - SU Reagent Drop Witness *VPM*
Acid Name NA
Acid ID NA
Reagent ID NA
Reagent Lot Number NA
NaCl ID NA

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142632

Analyst: Reed, Jonathan E

Batch Open: 12/16/2016 5:40:00PM

Method Code: 320-3535_IVWT-320

Batch End:

SOP Number WS-LC-0025

Batch Comment

Comments

320-24209-A-1

Method Comments: include add-on spikes for 6:2FTS and 8:2FTS

320-24209-A-2

Method Comments: include add-on spikes for 6:2FTS and 8:2FTS

320-24209-A-3

Sample Comments: Use this sample to extract a duplicate in the batch

Method Comments: include add-on spikes for 6:2FTS and 8:2FTS

320-24209-B-3~DU

Sample Comments: Use this sample to extract a duplicate in the batch

Method Comments: include add-on spikes for 6:2FTS and 8:2FTS

320-24209-A-4

Method Comments: include add-on spikes for 6:2FTS and 8:2FTS

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142632

Analyst: Reed, Jonathan E

Batch Open: 12/16/2016 5:40:00PM

Method Code: 320-3535_IVWT-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-142632/1	LCMPFC2SU_00010	25 uL	0.5 mL	<i>J. Reed</i> 12/16/16	VPM 12/16/16
MB 320-142632/1	LCMPFC2SU_00046	25 uL	0.5 mL		
LCS 320-142632/2	LCMPFC2SU_00010	25 uL	0.5 mL	↓	↓
LCS 320-142632/2	LCMPFC2SU_00046	25 uL	0.5 mL		
LCS 320-142632/2	LCPFC2SP_00016	20 uL	0.5 mL		
LCS 320-142632/2	LCPFC2SP_00073	20 uL	0.5 mL		
LCSD 320-142632/3	LCMPFC2SU_00010	25 uL	0.5 mL		
LCSD 320-142632/3	LCMPFC2SU_00046	25 uL	0.5 mL		
LCSD 320-142632/3	LCPFC2SP_00016	20 uL	0.5 mL		
LCSD 320-142632/3	LCPFC2SP_00073	20 uL	0.5 mL		
320-24209-A-1	LCMPFC2SU_00010	25 uL	0.5 mL		
320-24209-A-1	LCMPFC2SU_00046	25 uL	0.5 mL		
320-24209-A-2	LCMPFC2SU_00010	25 uL	0.5 mL		
320-24209-A-2	LCMPFC2SU_00046	25 uL	0.5 mL		
320-24209-A-3	LCMPFC2SU_00010	25 uL	0.5 mL		
320-24209-A-3	LCMPFC2SU_00046	25 uL	0.5 mL		
320-24209-B-3 DU	LCMPFC2SU_00010	25 uL	0.5 mL		
320-24209-B-3 DU	LCMPFC2SU_00046	25 uL	0.5 mL		

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-142632

Analyst: Reed, Jonathan E

Batch Open: 12/16/2016 5:40:00PM

Method Code: 320-3535_IVWT-320

Batch End:

320-24209-A-4	LCMPFC2SU_00010	25 uL	0.5 mL	<i>[Signature]</i> 12/16/16	VPM 12/26/16
320-24209-A-4	LCMPFC2SU_00046	25 uL	0.5 mL	↓	↓

Other Reagents:

Reagent	Amount/Units	Lot#:

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Preparation Batch Number(s): 142632 Test: PFe-10A

Earliest Holding Time: 12/21/10

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	MA	MA
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	MA	MA
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: [Signature]

Date: 12/17/10

2nd Level Reviewer: [Signature]

Date: 12/17/10

Comments: _____

Shipping and Receiving Documents



**RESOLUTION
CONSULTANTS**

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

COC No. ESTB120716

Page 1 of 1

Project Name: FFAs Groundwater Investigation

PO No. 21529

Project No. 083312794 Phase F1 F2

Site Location: NAS Dallas

Sample Analysis Requested (Enter number of containers for each test)

CTO No. JM79 RC Project Manager: Tom Wilberg

(3)→

Sampler/Site Phone#

Lab Name: TestAmerica Sacramento Turnaround Time(specify): 21-Day

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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											Extra Volume for MS/MSD	HOLD
	308 ASD MW-LF-1216	308 ASD MW	12/7/16	1340	WG	N	N	2	✓											
	SWMW1-01-1216	SWMW1-01	12/7/16	1445	WG	N	N	2	✓											
	FFTA3 T MW-1216	FFTA3 T MW	12/7/16	0855	WG	N	N	2	X											
	SWMW1-02-1216	SWMW1-02	12/7/16	1200	WG	N	N	2	X											



320-24184 Chain of Custody

Field Comments:

Lab Comments:

Sample Shipment and Delivery Details

TRRP Reporting - no preservative -

Relinquished by (signature) [Signature] Date 12/7/2016 Time 1630

Microbial 7 day hold

Received by (signature) [Signature] Date 12/8/16 Time 1000

Number of coolers in shipment: 1

Samples Iced?(check) Yes No

Method of Shipment: FEDEX

Airbill No:

Date Shipped: 12/7/2016

(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

Login Sample Receipt Checklist

Client: EnSafe, Inc.

Job Number: 320-24184-1

Login Number: 24184
List Number: 1
Creator: Edman, Connor M

List Source: TestAmerica Sacramento

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	320-24184-1	SWMU 00001	SWMU 00001	30807MW	Monitoring well	2438337.552	6951512.294	N6247011D8013	JM37	RESOLUTION CONSULTANTS	SWMU1-01-1216	Ground water	Normal (Regular)	7-Dec-16	537_MOD	Perfluoroalkyl Compounds	20170918061901.00
SOUTHEAST	DALLAS_NAS	320-24184-1	SWMU 00001	SWMU 00001	30809MW	Monitoring well	2438588.837	6952047.867	N6247011D8013	JM37	RESOLUTION CONSULTANTS	SWMU1-02-1216	Ground water	Normal (Regular)	7-Dec-16	537_MOD	Perfluoroalkyl Compounds	20170918061901.00
SOUTHEAST	DALLAS_NAS	320-24184-1	SWMU 00004	SWMU 00004	FSS3TMW	Temporary well point	2440456.543	6956806.25	N6247011D8013	JM37	RESOLUTION CONSULTANTS	FSS3TMW-1216	Ground water	Normal (Regular)	7-Dec-16	537_MOD	Perfluoroalkyl Compounds	20170918061901.00
SOUTHEAST	DALLAS_NAS	320-24184-1	SWMU 00006	SWMU 00006	308A51MW	Monitoring well	2437817.046	6952017.295	N6247011D8013	JM37	RESOLUTION CONSULTANTS	308A51MW-LF-1216	Ground water	Normal (Regular)	7-Dec-16	537_MOD	Perfluoroalkyl Compounds	20170918061901.00