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MCB CAMP LEJUENE
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LETTER AND RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION ON
HISTORICAL EXPOSURES TO TRICHLOROETHYLENE AND OTHER VOLATILE ORGANIC
COMPOUNDS IN DRINKING WATER MCB CAMP LEJEUNE NC
8/7/2007
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY



Centers for Disease Control
and Prevention (CDC)
Atlanta GA 30333

AUG 7 2007

The Honorable Joe Barton
House of Representatives
Washington, D.C. 20515-6115

Dear Mr. Barton:

I am responding to your letter to Dr. Howard Frumkin in which you requested additional information on historical exposures to trichloroethylene and other volatile organic compounds in drinking water at military facilities other than the Marine Corps Base Camp Lejeune.

Enclosed are responses to the questions outlined in your letter. The Agency for Toxic Substances and Disease Registry (ATSDR) has had extensive conversations with Mr. Dwight Cates of your staff to clarify the request of the House Committee on Energy and Commerce and to ensure our responses meet the Committee's needs. ATSDR takes the Committee's questions and concerns seriously and will continue to work with Mr. Cates to respond to additional requests for information that have been raised in telephone briefings. That information will continue to be provided to you through our Washington, D.C., office. While publicly available, ATSDR's current data system for hazardous waste sites was designed primarily as a tracking tool for internal purposes. It was not designed to provide answers quickly to the types of questions Mr. Cates and the Committee have posed. However, we are working to create a new data management system that will address some of the limitations of the current system. As discussed with your staff, ATSDR compiled the information in the enclosures to this letter by reviewing original reports, which has taken hundreds of workforce hours to accomplish.

I share your concern and interest in protecting the health of communities affected by the release of hazardous chemicals and hope this information is helpful. I also will provide a copy of this response to Senator Ed Whitfield who cosigned your letter. Should you have further questions or concerns, please contact Ms. Barbara A. Rogers, Associate Director for Environmental Health, in our Washington, D.C., office. She can be reached either by phone (202-245-0600) or e-mail (BRogers@cdc.gov).

Sincerely,

Julie Louise Gerberding, M.D., M.P.H.
Director, Centers for Disease Control and
Prevention, and
Administrator, Agency for Toxic Substances and
Disease Registry

Enclosures

cc:

Mr. Dwight Cates
The Honorable John D. Dingell
The Honorable Bart Stupak



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and Prevention (CDC)
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The Honorable Ed Whitfield
United States Senate
Washington, D.C. 20510

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The Honorable Bart Stupak

Responses to Committee Questions

1. *For each facility on the attached list, please describe what public health activities the Agency for Toxic Substances and Disease Registry (ATSDR) has conducted, and the results of those activities. Please provide information specific to trichloroethylene (TCE) and volatile organic compound contamination, exposures, and historical exposures. Please include an explanation of when the TCE contamination was discovered, whether/when other volatile organic compounds of public health significance were discovered, whether exposures were likely to have occurred, and whether/when such exposures were stopped.*

ATSDR staff members have created a table (see attached) to display the requested information for the 22 Department of Defense (DOD) sites mentioned in the Committee's letter. From our review of public health assessments and health consultations that ATSDR conducted, we confirmed that 19 of the 22 sites had a completed exposure pathway for TCE in drinking water, 1 had a potential pathway, and 2 did not have a pathway. ATSDR assumed a completed exposure pathway occurred if contamination was found in a public or private drinking water well, although the concentrations found in the well water did not necessarily reflect the concentrations found in the tap water. TCE levels "at the tap"—the concentrations that we know people drank—were provided for only 4 of the 22 (18 percent) sites. Of the sites, TCE tap levels were highest at the New Brighton site, at 440 parts per billion. With regard to other VOCs of public health significance, tetrachloroethylene (PCE or PERC) was found in groundwater at 13 of 22 (59 percent) sites, and benzene was found at 12 (55 percent) sites. The majority of other VOCs noted are TCE break-down products.

2. *Please provide the same information requested in question #1 for any military facility missing from the attached list that ATSDR is aware had TCE or volatile organic compound contamination in tap water or groundwater used as a source of drinking water.*

ATSDR found an additional 13 DOD sites, other than Camp Lejeune, where completed exposures to TCE through drinking water were identified. Information on these sites is enclosed.

3. *Please explain why the data for several military facilities in the HazDat database have incomplete or missing information, and what ATSDR is doing to obtain that missing information, and any steps ATSDR is taking to ensure more complete information in the HazDat database.*

At times, data are unavailable in HazDat because the public health assessments or health consultation documents did not contain that data. There are several reasons why ATSDR documents would not have data or information. The two primary reasons are that (1) site-specific source documents (i.e., preliminary assessments, site investigations, remedial investigations, or feasibility studies) did not contain the information or provided only limited information on contaminant levels and locations; and (2) contaminants and exposure pathways were eliminated from further consideration during the analysis for

public health implications and, therefore, were not included in the ATSDR document. In those cases, HazDat will include blank fields or report unknown values.

In other cases, HazDat may have only the contaminant names and no information on contaminant concentrations. While it may appear that those records are incomplete because of the associated empty data fields, this is not the case. For the first two years of HazDat data collection, ATSDR extracted any information that was available from any documents or files received. While ATSDR routinely relies on data collected by other sources, such as the Environmental Protection Agency and state-level environmental and/or health departments, the Agency has also created a category of "other source" information that includes many files of limited value for the purposes of assessing exposures and the health effects of exposure. While the Agency originally collected this information, given its limited value and resource intensiveness to collect, the HazDat data process was streamlined to include only those files that were pertinent to the Agency's health consultations and public health assessments. The "other source" data are designated in Internet HazDat as Site File Audit data, and this category encompasses much of the incomplete or missing data in question. ATSDR leadership has implemented a plan to ensure more useful information is available in HazDat, and is exploring ways to automate data entry by using electronic methods to import document information directly into HazDat. Such an automated system should reduce the need for data extraction and entry.

Key Information Abstracted from Public Health Assessments and Health Consultations for 22 Department of Defense Sites¹

Site Name	Public Health Activities Conducted ²	Date of Activity	Health Hazard Category ^{3,4,5}	Maximum TCE Levels ⁶ Found in Groundwater	Completed Drinking Water Pathway and Concentrations at the Tap Where Known	Estimated Duration of Exposure	Date Contamination Found and Date Exposure Stopped	Other Significant VOCs in Groundwater
Air Force Plant #4	PHA#01– Final Release	10/26/1988	Potential health concern	450,000 ppb in groundwater	No completed pathway	Not applicable	Not applicable	1,2- dichloroethylene Tetrachloroethylene Benzene Methylene Chloride Toluene Vinyl Chloride
	PHA#02– Final Release	7/01/1998	No public health hazard	11,000 ppb in groundwater	No completed pathway	Not applicable	Not applicable	
	HC–topic is biota (fish) only–no drinking water issues	7/06/2000	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	

¹ The information included in this table has been abstracted from the site documents (not HazDat)

² Reflects products from various ATSDR activities, including public health assessments (PHAs) and health consultations (HCs)

³ Some products were issued prior to development of ATSDR's current health hazard categories. "Potential health concern" is equivalent to today's "indeterminate health hazard" category; "Public health concern" is equivalent to today's "public health hazard category"

⁴ In some instances, ATSDR found "no apparent" or "no" health hazard when completed exposure pathways were identified to TCE concentrations higher than EPA's MCL. MCLs are based on both a conservative estimate of a safe level of exposure over a 70-year lifetime and whether the technology is available for a public water system to maintain concentrations at or below that level. If exposure duration is considerably less than 70 years and toxicologic studies indicate that health effects are not expected to occur at those concentrations for that amount of time, then the health hazard category will reflect less of a hazard than if ATSDR used only the MCL.

⁵ Information on past hazard is not always included in the documents but is presented where available. If completed exposure pathways existed in the past but exposure had stopped by the time of ATSDR's investigation, the health hazard call reflected the conditions at the time of investigation.

⁶ Levels are reported in parts per billion (ppb). Documents with reported concentrations in micrograms/liter (µg/L) and parts per million are converted to ppb. (1 ppb = 1 µg/L and 1 ppm = 1,000 ppb). Levels reported in documents as parts per million (ppm) were converted to parts per billion (ppb) for presentation in this table.

Site Name	Public Health Activities Conducted ²	Date of Activity	Health Hazard Category ^{3,4,5}	Maximum TCE Levels ⁶ Found in Groundwater	Completed Drinking Water Pathway and Concentrations at the Tap Where Known	Estimated Duration of Exposure	Date Contamination Found and Date Exposure Stopped	Other Significant VOCs in Groundwater
Andersen Air Force Base	PHA-Final Release	1/04/2002	No apparent public health hazard	466 ppb in groundwater 39 ppb in Base supply well	Yes; tap levels unknown	Unknown	Found-1978; Closed well in 1999, but air strippers were used for unknown period of time between 1978-1999	Tetrachloroethylene Chloroform Toluene
Barstow Marine Corps Logistics Base	PHA-Final Release	9/30/1999	No apparent public health hazard	422 ppb in groundwater 25 ppb on-Base supply well 11 ppb off-Base private well	Not applicable Yes; tap levels unknown Yes; tap assumed 11 ppb	Not applicable On-Base exposure duration unknown Off-Base exposure estimated 3 years	On-Base wells removed 1968-1997. Most Found: 1985-Most offline 1988. Found 1992-Ended 1993	Tetrachloroethylene Dibromochloromethane DI(2-thylhexyl)phthalate Chloromethane Benzene Chloroform 1,2,4-Trichlorobenzene 1,2,3-Trichlorobenzene 1,2-Dichloroethane
Cornhusker Army Ammunition Plant	PHA-Final Release	9/30/1992	Public health hazard (not based on VOC exposure)	32.1 ppb in private well	Yes; tap assumed 32.1 ppb	Unknown	Found: 1984-Ended: 1986	1,2-Dichloroethane 1,2-Dichloroethylene Dibromochloromethane 2,6-Dinitrotoluene

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Fairchild Air Force Base	PHA-Final Release (covers 4 separate areas)	12/22/1997	Area: Vietzke Village: Current: No public health hazard. Past: Indeterminate public health hazard until 8/1989 for children and pregnant women	581,000 ppb ² on site groundwater	Not applicable	Not applicable	Not applicable	1,1,1-trichloroethylene Tetrachloroethylene 1,1,1,2-tetrachloroethylene Methylene chloride Vinyl chloride Cis-1,2-dichloroethylene Benzene Trans-1,2-dichloroethylene
				2,800 ppb off site groundwater	Not applicable	Not applicable	Not applicable	
				79 ppb off-site community well	Yes; tap assumed 72 ppb	Estimated 21 years	Found 1984-Ended 1989	
	Area: Airway Hts.: Current: No apparent public health hazard	32 ppb off-site community well	Yes; tap assumed 32 ppb	Unknown	Found 1984-Ended 1989			
	Area: SCAF employees: Current: No apparent public health hazard	2 ppb off-site private well	Yes; tap assumed 2 ppb	Unknown	Found 1989-Ended 1992			
	HC-Surface water and soil only-no groundwater issues	7/23/1999	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	

Site Name	Public Health Activities Conducted ²	Date of Activity	Health Hazard Category ^{3,4,5}	Maximum TCE Levels ⁶ Found in Groundwater	Completed Drinking Water Pathway and Concentrations at the Tap Where Known	Estimated Duration of Exposure	Date Contamination Found and Date Exposure Stopped	Other Significant VOCs in Groundwater
Lake City Army Ammunition Plant	PHA-Final Release	8/6/2001	No public health hazard	52 ppb on-site supply well	Yes; tap unknown	Unknown	Found 1990-Ended 1998	Benzene Chloromethane Vinyl chloride Trihalomethanes
				6.4 ppb off-site private well	Yes; tap assumed 6.4 ppb	Unknown	Found 1993-Ended 1998	
March Air Force Base	PHA-Final Release	3/13/2001	No apparent public health hazard	2.6 ppb in on-Base tap water	Yes; tap 2.6 ppb	Unknown	Found 1978-Ended 1984	Tetrachloroethene Carbon tetrachloride Chloroform Bromodichloromethane Dibromochloromethane
				57.6 ppb in Base supply well	Yes; tap 2.6 ppb	Unknown	Found 1978-Ended 1984	
				17 ppb in off-Base private well	Yes; tap assumed 17 ppb	Unknown	Found 1985-Ended 1986	
Mather Air Force Base	PHA-Final Release	9/29/2000	No public health hazard	800 ppb in groundwater	Not applicable	Not applicable	Found 1979-Ended 1979	1,1-Dichloro-1-propane 1,1-Dichloroethylene Cis-1,2-Dichloroethane Benzene Perchlorate Tetrachloroethylene Carbon tetrachloride
				112 ppb Base supply well	Yes; tap unknown	Unknown	Found 1996-Ended 1997	
				5 ppb off-site commun. well	Yes; tap assumed 5 ppb	Unknown	Found 1996-Ended 1996	
				44 ppb off-site private well	Yes; tap assumed 44 ppb	Unknown	Found 1979-Ended 1984	

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McChord Air Force Base	PHA—Final Release	1/19/1989	Potential public health concern	260 ppb in groundwater	Not stated	Not applicable	Not applicable	Trans-1,2-dichloroethylene Cis-1,2-dichloroethylene Methylene chloride Tetrachloroethylene Benzene 1,1,1-trichloroethane
	PHA—Final Release	1/11/1995	No apparent public health hazard	12 ppb on-site supply well Detected (no level given) off-site private well	Yes; 3.4 ppb at tap Yes; tap unknown	On-going	Found 1983— On going Found 1983— Ended 1992	
McClellan Air Force Base	PHA—Final Release	3/17/1989	Public health concern	14,000 ppb in groundwater	Yes; tap unknown	Unknown	No date given on Base; wells removed from service.	1,1-Dichloroethylene Vinyl chloride 1,2-Dichloroethane
				48 ppb in off-site private well	Yes; tap assumed 48 ppb	Unknown	No dates for private wells	
	PHA—Final Release	03/22/1994	Operable Units A,B,C,D= Public health hazard Other areas: Indeterminate public health hazard	52,000 ppb in groundwater 55 ppb in off site private well	Yes; 15.8 ppb at tap Yes; tap assumed 55 ppb	Unknown Unknown	Found 1979— Ended 1980 Found 1985— Ended 1987	
Middletown Air Field	PHA—Final Release	4/1/1988	Potential public health concern	311 ppb in supply well 19 ppb in supply well	Yes; tap unknown	Unknown	Found 1983— Ended unknown; supply wells now at <4.5 ppb	Tetrachloroethylene trans-1,2-dichloroethylene Vinyl chloride

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Naval Air Development Center	PHA-Final Release	1/17/1989	Potential public health concern	10 ppb in off-site groundwater	No completed pathways	Not applicable	Not applicable	Tetrachloroethylene 1,1,1,-trichloroethane 1,1 dichloroethane
Naval Weapons Industrial Reserve Plant	PHA-Final Release	8/19/2005	No apparent public health hazard	2,300 ppb in groundwater 33 ppb in municipal wells	Not applicable Yes; tap unknown	Not applicable Unknown	Not applicable Found unknown-Ended 1984	Benzene Toluene Ethylbenzene Xylene
Nebraska Ordnance Plant	PHA-Final Release	4/16/1992	Public health hazard	742 ppb in groundwater 92 ppb on-site supply	Not applicable Yes; tap unknown	Not applicable Unknown	Not applicable Found unknown-Ended unknown for on-site	Cyclotrimethylene-trinitramine
	HC (soil and surface water only-no groundwater issues)	10/15/1996	Not applicable	89 ppb off-site private well Not applicable	Yes; tap assumed 89 ppb Not applicable	Unknown Not applicable	Found unknown-Ended unknown, but filter was added Not applicable	

Site Name	Public Health Activities Conducted ²	Date of Activity	Health Hazard Category ^{3,4,5}	Maximum TCE Levels ⁶ Found in Groundwater	Completed Drinking Water Pathway and Concentrations at the Tap Where Known	Estimated Duration of Exposure	Date Contamination Found and Date Exposure Stopped	Other Significant VOCs in Groundwater
New Brighton/ Arden Hills/ TCAPP	PHA-Final Release	9/30/1988	Potential health concern	205,000 ppb in groundwater	Not applicable	Not applicable	Not applicable	1,1-Trichloroethane 1,1-Dichloroethylene 1,1-Dichloroethane Vinyl chloride Trans-1,2-Dichloroethylene Cis-1,2-Dichloroethylene Methylene chloride Methylethylketone
	PHA-Final Release	5/24/1994	Past: Public health hazard Current: Indeterminate public health hazard	440 ppb Base tap water	Yes; tap assumed >27 ppb	Unknown	Found 1981-Some ended 1989	
				130 ppb municipal well	Yes; tap unknown	Estimate 5-20 years	Found 1982-Ended 1993	
				560 ppb community well	Yes; tap unknown	Estimate 5-20 years	Found 1981-Ended 1993 or before	
HC	2/25/2000	No public health hazard	7,000 ppb in private well	Yes; tap assumed 7,000 ppb	Estimate 5-20 years	Found 1983-Ended 1984		
Norton Air Force Base	PHA-Final Release	5/29/1998	No public health hazard	150 ppb in irrigation well 800 ppb in groundwater	No completed pathways	Not applicable	Not applicable	Tetrachloroethylene
				<200 ppb in groundwater	Not applicable	Not applicable	Not applicable	
				8.7 ppb in supply wells	Yes; tap unknown	Unknown; Max. of 30 years	Found 1970s-Ended before 1980	

Site Name	Public Health Activities Conducted ²	Date of Activity	Health Hazard Category ^{3,4,5}	Maximum TCE Levels ⁶ Found in Groundwater	Completed Drinking Water Pathway and Concentrations at the Tap Where Known	Estimated Duration of Exposure	Date Contamination Found and Date Exposure Stopped	Other Significant VOCs in Groundwater
Old Roosevelt Field	PHA-Final Release	9/13/2004	No apparent public health hazard	170 ppb in supply well	Yes; tap unknown	13 years known; pre-1976 unknown	Found 1976-Ended 1989	Carbon tetrachloride Benzene Cis-1,2-dichloroethene Tetrachloroethene Toluene Trichloromethane Trichlorofluoromethane 1,2,3-trichlorobenzene 1,2,4-trichlorobenzene Hexachlorobutadiene
	HC	6/23/1997	Past: Public health hazard Current: No apparent public health hazard	38,000 ppb in non-potable well	No completed pathways	Not applicable	All wells out of service by 1989 until air strippers added	
Otis Air National Guard Base	PHA-Final Release	1/25/1994	Public health hazard	Onsite: 4 ppb in public water well Offsite: 125 ppb in private well	Yes; tap unknown Yes; tap assumed 124 ppb	Unknown Unknown	Found 1962-Ended as found Found 1985-Ended 1986-1991	Tetrachloroethylene 1,2-dichloroethane Chloroform Benzene Ethylene dibromide Phenols 1,1-Dichloroethane
	HC (11 additional HCs on various non-groundwater issues)	11/01/2000	No public health hazard	8 ppb on-site well	Yes; tap unknown	At least 6 yrs; pre 1979 Unknown	Found 1979-Ended 1985	

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Picatinny Arsenal	PHA-Final Release	8/20/2001	No apparent public health hazard	260 ppb in on-site supply well	Yes; tap unknown	Assumed for 30 years	Found 1970s-Ended possibly in 2000	Benzene Bromodichloromethane Bromoform Carbon tetrachloride Chlorobenzene Chloroform Chloromethane Cyclo-trimethylenetrinitramine (RDX) Tetrachloroethylene
	HC (Soil issue only)	1/21/1999	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	
Pease Air Force Base	PHA-Final Release	09/30/1999	No apparent public health hazard	391 ppb on-site production well	Yes; <28 µg/L	Unknown	Found 1977-On-going, <5µg/L	None reported in groundwater
	HC	8/28/1991	No apparent public health hazard	69 ppb in groundwater	No completed pathways	Not applicable	Not applicable	
Whiting Field Naval Air Station	PHA-Final Release	9/11/2000	No apparent public health hazard	620 ppb on-site supply well	Yes; 7 ppb at tap	At least 6 years; prior to mid 1980s unknown	Found mid-1980s-Ended 1986	Chloroform 1,2-dichloroethane Benzene Toluene Xylenes Bis(2-chloroethyl)ether Carbazole Ethylbenzene 1,1-dichloroethene Chlorobenzene

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Wurtsmith Air Force Base	PHA-Final Release	4/30/2001	No apparent public health hazard	5,173 ppb in on-site public well 1,281 ppb in private well	No completed pathways-potential pathway; tap unknown No completed pathways-potential tap 1,281 ppb	Unknown Unknown	For both on and off site: Found 1977- Ended: wells taken off line as contamination was found; completely new source by 1997	Benzene Chloroform 1,2-Dichloroethylene Chlorodibromomethane 1,1,2,2-Tetrachloroethane

Key Information Abstracted from Public Health Assessments and Health Consultations for Additional 13 DoD Sites

Site Name	Public Health Activities Conducted ¹	Date of Activity	Health Hazard Category ^{2,3,4}	Maximum TCE Levels ⁵ Found in Groundwater	Completed Drinking Water Pathway and Concentrations at the Tap Where Known	Estimated Duration of Exposure	Date Contamination Found and Date Exposure Stopped	Other Significant VOCs in Groundwater
Brandywine Defense Reutilization and Marketing Service	PHA-Final	5/1/2001	Past: indeterminate public health hazard (not based on VOC exposure). Current: no apparent public health hazard. Future: indeterminate public health hazard.	65,000 ppb in groundwater 10 ppb off-site private well	not applicable yes, tap assumed 5.3 ppb	not applicable unknown	not applicable found: 1987 ended: 1989	not applicable

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² Some products were issued prior to development of ATSDR's current health hazard categories. "Potential health concern" is equivalent to today's "indeterminate health hazard" category; "Public health concern" is equivalent to today's "public health hazard category"

³ In some instances, ATSDR found "no apparent" or "no" health hazard when completed exposure pathways were identified to TCE concentrations higher than EPA's MCL. MCLs are based on both a conservative estimate of a safe level of exposure over a 70-year lifetime and whether the technology is available for a public water system to maintain concentrations at or below that level. If exposure duration is considerably less than 70 years and toxicologic studies indicate that health effects are not expected to occur at those concentrations for that amount of time, then the health hazard category will reflect less of a hazard than if ATSDR used only the MCL.

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Castle Air Force Base	Preliminary PHA-Final	10/27/1988	potential health concern	nature and extent of contamination unknown	not applicable	not applicable	not applicable	not applicable
	PHA-Final	3/29/1999	no public health hazard	740 ppb in groundwater 5 ppb in on-base production well 24 ppb in off-base private well	not applicable yes, tap assumed 5 ppb yes, tap assumed 24 ppb	not applicable unknown unknown	not applicable found: 1978 exceeded MCL: 1984 ended: 1985 found: 1984 exceeded MCL: 1985 ended: 1985	not applicable
U.S. Defense General Supply Center -VA	PHA-Final	4/21/1993	no apparent public health hazard	300,000 ppb in groundwater 5.2 ppb in private well	not applicable yes, tap assumed 5.2 ppb	not applicable unknown	not applicable found: 1984 ended: 1987	1,2-dichloroethane (1,2-DCA) 1,1,1-trichloroethane (1,1,1-TCA)
Dover Air Force Base	Preliminary PHA-Final	1/20/1989	public health concern	45 ppb in groundwater 350 ppb in private well	unknown	not applicable	not applicable	not applicable
	PHA-Final	12/31/2003	no apparent public health hazard	21,000 ppb in groundwater 350 ppb in private well	not applicable yes, tap assumed 7.2 ppb	not applicable unknown	not applicable found: 1984 ended: 1984	tetrachloroethylene (PCE) benzene
Ellsworth Air Force Base	PHA-Final	9/30/1993	indeterminate public health hazard	310 ppb in groundwater 140 ppb in off-base supply well	not applicable yes, tap assumed 25 ppb	not applicable unknown; Estimated 10 years	not applicable found: 1990 ended: 1991	not applicable

Ft. Lewis Logistics Center	PHA-Final	8/6/1993	indeterminate public health hazard	2,400 ppb in groundwater 41 ppb in private well	not applicable yes, tap assumed 41 ppb	not applicable unknown	not applicable found: 1985 ended: 1985 4/5 wells disconnected; 1 owner chose to remain on private water supply	not applicable
Fort Riley	PHA-Final	3/29/2000	no apparent public health hazard	190 ppb in groundwater 96 ppb in private well	not applicable yes, tap assumed 76 ppb	not applicable unknown; Estimated 13 years	not applicable found: 1993 ended: 1993	1,2-dichloroethylene (1,2-DCE)PCE
Griffiss Air Force Base	PHA-Final	6/9/1988	potential public health concern	1 ppb in private well	yes, tap assumed 1 ppb	unknown	unknown	not applicable
	PHA-Final Addendum	9/9/1996	indeterminate public health hazard (not based on TCE exposure)	non-detect	no for TCE; yes, other VOCs	unknown	found: 1982 ended: 1990	PCE methylene chloride carbon tetrachloride
Plattsburgh Air Force Base	PHA-Final	10/5/2000	no apparent public health hazard	2 ppb in private well	yes, tap assumed 1 ppb	unknown	found: 1990 possibly ongoing at low (less than MCL) levels in 4 wells	not applicable
Rocky Mountain Arsenal	PHA - Final	9/30/1996	On-post present and future: no apparent public health hazard. Off-post past and present: indeterminate public health hazard.	190 ppb in groundwater off-post	yes, tap levels unknown	unknown	found: 1981 ended: 1990 for those accepting alternative water sources	chloroform PCE 1,2-DCA benzene

Sacramento Army Depot	Preliminary PHA-Final	2/3/1989	potential public health concern	120 ppb in groundwater	unknown	not applicable	not applicable	not applicable
	PHA-Final	10/30/1997	no apparent public health hazard	92 ppb in private well	yes, tap assumed 92 ppb	unknown	found: 1981 ended: 1986	not applicable
Schofield Barracks	PHA-Final	2/11/1998	no apparent public health hazard	65 ppb in groundwater	not applicable	not applicable	not applicable	not applicable
				53 ppb in supply well	yes, tap assumed 30 ppb	unknown; Estimated 20 years	found: 1985 ended: 1985	
Tracy Defense Depot	PHA-Final	9/2/1998	no apparent public health hazard	560 ppb in groundwater 6.7 ppb in private well 12 ppb in agricultural well	not applicable yes, tap assumed 6.7 ppb	not applicable unknown; est. 30 yrs. for exposure dose calc.	not applicable found: 1980 ended: Prior to 1998 (date not specified). Residents switched to alternate water supply.	not applicable