Health Consultation

TRI-CITIES BARREL COMPANY
TOWN OF FENTON, BROOME COUNTY, NEW YORK

EPA FACILITY ID: NYD980509285

Prepared by:
New York State Department of Health

JANUARY 21, 2015

Prepared under a Cooperative Agreement with the
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Agency for Toxic Substances and Disease Registry
Division of Community Health Investigations
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

A health consultation is a verbal or written response from ATSDR or ATSDR's Cooperative Agreement Partners to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR or ATSDR's Cooperative Agreement Partner which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

You May Contact ATSDR Toll Free at
1-800-CDC-INFO
or
Visit our Home Page at: http://www.atsdr.cdc.gov

HEALTH CONSULTATION

TRI-CITIES BARREL COMPANY
TOWN OF FENTON, BROOME COUNTY, NEW YORK

EPA FACILITY ID: NYD980509285

Prepared By:

New York State Department of Health
Center for Environmental Health
Under a Cooperative Agreement with the
U. S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry
Atlanta, Georgia

For additional information about this document, you may contact the:

New York State Department of Health
Center for Environmental Health

Empire State Plaza
Corning Tower, Room 1787
Albany, New York 12237
518-402-7860 or 1-800-458-1158
E-mail beei@health.ny.gov

TABLE OF CONTENTS

Summary and Statement of Issues

The Tri-Cities Barrel Superfund site (Site) is a 14.9-acre site in the Town of Fenton, Broome County. The U.S. Environmental Protection Agency (EPA) added the Site to the National Priorities List in October 1989. In 1993, the New York State Department of Health (DOH) and the Agency for Toxic Substances and Disease Registry (ATSDR) released a public health assessment for the Site (ATSDR 1993). The public health assessment made conclusions and recommendations about the Site-related groundwater, sediment, and soil contamination. This health consultation summarizes Site-related public health actions taken to address issues identified in the conclusions and recommendations of the 1993 public health assessment.

Background, Site Description and History

From 1955 to 1992, the Tri-Cities Barrel Company reconditioned used chemical storage drums. The drums typically contained residues of a variety of chemical compounds employed in industrial or commercial operations. The reconditioning process involved washing the drums with a strong caustic agent. The wastewater from this process was then discharged into unlined lagoons and allowed to evaporate. This practice contaminated soil and groundwater at and near the Site. The company cleaned out and backfilled the lagoons in 1980 and the EPA listed the Site on the National Priorities List in October 1989.

In May 1992, pursuant to an Administrative Order on Consent with EPA, the potentially responsible parties (PRPs) initiated a remedial investigation (RI) and feasibility study to determine the nature and extent of contamination, and to evaluate remedial alternatives.

During the RI field work, containers, drums, and tanks containing unknown solids and liquids were found inside two on-site buildings. Because of the concern that their presence could increase the risk of fire, toxic vapor release, and/or further contamination of the site, on September 25, 1996, EPA and the PRPs entered into an Administrative Order on Consent for a removal action. From October 1996 through January 1997, a removal action was performed which resulted in the disposal of all on-Site containers, drums, and tanks, decontamination and removal of equipment that was used during the operation of the drum reconditioning business, and the decontamination, demolition, and disposal of all structures located on-Site.

A remedy for the Site (which included the excavation and off-Site treatment/disposal of the contaminated soils and sediments and the extraction and treatment of the contaminated groundwater) was selected in a Record of Decision (ROD) on March 31, 2000 (EPA 2000).

Following the completion of the design, the contaminated soils and sediments were excavated and removed from the Site for treatment/disposal in 2003 by the PRPs under EPA oversight.

Post-excavation groundwater samples were collected as part of a groundwater monitored natural attenuation study. The results of the study indicated that natural attenuation is occurring in most areas of the site. In one area of the site, however, natural attenuation is not occurring. Measures to address the contamination in this area, known as the MW-19 Area, were evaluated including an enhanced reductive dechlorination pilot-scale treatability study and a supplemental source investigation. A source for the contamination in this area could not be identified.

In September 2011, an amendment to the 2000 ROD modifying the groundwater remedy was signed (EPA 2011a). The major components of the modified groundwater remedy include: natural attenuation of the groundwater contamination throughout the site, except in the MW-19 Area; long-term groundwater monitoring to verify that the level and extent of groundwater contaminants are declining within the timeframe projected; monitoring that conditions are protective of human health and the environment; and, periodic monitoring of nearby residential wells. EPA determined that the restoration of the groundwater in the MW-19 Area is technically impracticable from an engineering perspective due to: the ineffectiveness of active remedies in the low permeable soils found at the site; the limited mobility of the groundwater contamination; and, the inability to locate a source. A technical impracticability waiver was approved for the MW-19 Area.

Original Public Health Assessment

In 1993, while the RI was underway and before the removal action was performed, a public health assessment (ATSDR 1993) was prepared and released. The following conclusions and recommendations were presented in the public health assessment:

ATSDR concluded the site was an indeterminate public health hazard because not enough environmental data was available to evaluate exposures. Recommendations included determining the extent of on- and off-site soil and groundwater contamination.

The DOH also identified soil vapor intrusion as a possible additional exposure pathway to Site-related contamination. Potential exposures by soil vapor intrusion are addressed in this health consultation.

In the preparation of this updated health consultation, the DOH reviewed (in addition to the documents associated with the RODs) the following documents related to the remediation of the referenced Site: [1] *Removal Action Final Report*, (Environmental Strategies Corporation, 1997), [2] Final *Work Element I Remedial Action Report* (ESC Engineering of New York, 2004), and [3] *Concrete Rubble Removal Report (*WSP Engineering of New York, 2011).

Community Health Concerns

During the 2011 Public comment period, community members raised concerns to the EPA regarding the adequacy of the drinking water well monitoring program and whether

soil vapor intrusion may be occurring near the Site. The EPA provided responses to those concerns in the responsiveness summary of the 2011 ROD Amendment (EPA 2011a). We have further evaluated those same concerns in this health consult. No additional community health concerns have been brought up to the DOH since 2011.

Discussion

Groundwater

The first conclusion of the 1993 public health assessment stated that the extent of contamination in groundwater and areas north of Interstate-88 has not been defined. The corresponding recommendation stated that future investigations should determine the extent and depth of contaminant migration in groundwater off Site. Also, the investigation should evaluate whether Site contaminants are moving towards nearby private drinking water wells.

Subsequent groundwater investigations showed that the groundwater contamination at the Site is confined to the shallow groundwater on-Site (EPA 2000) and has not affected the bedrock aquifer, where the private wells take their water. Also, information obtained from efforts to define the extent and depth of contaminated groundwater indicates that the contamination does not appear to be increasing or migrating (EPA 2011b). Groundwater contaminant concentrations at the Site before and after the removal of contaminated soil are presented in Table 1:

Table 1. Maximum Volatile Organic Compound Contaminant Levels in Monitoring Wells at the Tri-Cities Barrel Site[1].

All values in micrograms per liter (mcg/L).

Contaminant	NYS AWQS[2]	Pre-2003 Removal	2004-2009	2010
toluene	5	7,500	190	<1[3]
1,1-dichloroethane	5	4,700	1,100	160
cis-1,2-dichloroethene	5	12,000	9,000	270
methylene chloride	5	1,600	59	4
trichloroethene	5	1,000	640	720
vinyl chloride	2	21,000	2,600	270

[1]Data taken from July 2011 EPA Proposed Remedial Action Plan (EPA, 2011b).
[2]NYS AWQS = New York State Ambient Water Quality Standard, which are derived to protect the New York State's groundwater and surface water from chemical contamination.
[3] "<" means that the chemical was not detected at the laboratory detection limit value shown.

The EPA (2011) concluded that this large reduction in the concentrations of groundwater contaminants was the result of removing the source of contamination (the large quantity of contaminated soil, discussed below) and natural biodegradation. Groundwater monitoring will continue.

Within 1,000 feet of the Site boundary, there are nine private drinking water wells. All the wells are located upgradient or cross-gradient from the Site and are installed in bedrock. The DOH sampled these private wells at least once in its 1990, 1992 and 1995 investigations (DOH 2014) and analyzed the samples for volatile organic compounds and metals. The results indicate that these private wells have not been contaminated by the Site.

The possibility that people on-Site could be exposed to the contamination that remains in the groundwater is being addressed through the current deed restriction, which prohibits the installation of wells and the use of groundwater for drinking water on the Site property.

Soil

A second conclusion of the 1993 public health assessment stated that the extent of contamination in on-Site soil had not been defined. Soil contamination had not been documented off Site. The corresponding recommendation stated that future investigations of the Site should include determination of the extent and depth of contamination in subsurface soil on-Site. Contaminants in on-Site soil should be fully investigated. Off-Site contamination in soil and sediment was insignificant based on preliminary findings. Because of recent (at the time) findings of additional contamination in areas north of Interstate-88, these areas needed additional investigation to identify the extent of contamination in off-Site soil and sediment. Biota sampling and analysis may have been warranted based on the findings of this additional investigation of soil and sediment.

The EPA conducted a significant investigation of on- and off-Site soil as part of the Site's RI. This investigation indicated that soil south of Interstate-88 was contaminated with volatile organic compounds (for example, 1,2-dichloroethene up to 1100 milligrams per kilogram soil [mg/kg]), pesticides (gamma chlordane up to 400 mg/kg, 4,4'-DDE up to 480 mg/kg), polychlorinated biphenyls (PCBs, up to 169.9 mg/kg) and lead (up to 8540 mg/kg). Soil north of Interstate-88 was contaminated with PCBs (up to 33 mg/kg) and dieldrin (up to 0.47 mg/kg) (EPA, 2000).

Table 2 lists some of the contaminant levels in the soil and their associated contaminant-specific EPA cleanup goals for the Site. These data are not a complete listing of the Site-related contaminants that were identified. A complete list of chemicals for which Site-specific soil cleanup objectives were established can be found in Appendix A, Exhibit 1. The PRPs' consultant reported that post-excavation soil sampling confirmed that all soil cleanup objectives were achieved (ESC Engineering of New York 2004).

Table 2. Selected Maximum Soil Contaminant Levels Detected at the Tri-Cities Barrel Site and their Respective EPA Cleanup Objectives*.

All values in milligrams per kilogram (mg/kg).

Chemical	Pre-cleanup Soil Concentration	EPA Cleanup Objective *
cis-1,2-dichloroethene	1100	0.3
gamma-chlordane	400	0.06
4,4'-DDE	480	0.07
dieldrin	0.47	0.0033
PCBs	170	1-10**
lead	8540	400

*These EPA cleanup objectives were identified in the 2000 ROD.

**The cleanup objective for PCBs was established as 1 mg/kg up to a depth of two feet and 10 mg/kg at depths greater than two feet below ground surface.

The removal of drums and storage tanks, the demolition of the on-Site building and the excavation and removal of 40,000 cubic yards of contaminated soil from both north and south of I-88 have addressed the potential for exposure to Site-related contaminants. The action refilled the areas where soil was removed with clean soil, leaving no contaminated soil of concern for future land use (e.g. residential).

Soil vapor

Volatile organic compounds in groundwater or soil may move into the air spaces within the soil (called soil vapor). This vapor may migrate into overlying buildings and affect indoor air quality (DOH 2006). This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. DOH identified soil vapor intrusion and subsequent inhalation as a potential human exposure pathway due to the presence of volatile organic compounds in on-Site groundwater.

Since the Site is vacant, exposure by soil vapor intrusion does not represent a current concern. There are no other Site-related contaminant sources off-Site because groundwater contamination is not migrating beyond the Site boundary and therefore soil vapor intrusion is currently not a concern for nearby residences. In accordance with the 2011 ROD amendment (EPA 2011a), if structures are proposed to be built on the property in the future, then a soil vapor intrusion evaluation, or alternatively soil vapor mitigation will be required. The ROD Amendment states that the Office of the Town of Fenton Building Inspector has acknowledged to the EPA that they will notify any person seeking to build structures at the Site of soil vapor concerns relating to the property and the need for a soil vapor intrusion evaluation.

Site Access

A third conclusion of the 1993 public health assessment stated that since the Site is no longer in full time operation, Site security is not adequate to prevent trespassers from entering the Site. However, since the remedial work removed the contaminated surface soil, and replaced it with clean soil, contact with contamination is unlikely. An institutional control in the form of a deed restriction has been placed on the property to prevent unauthorized disturbance of Site soil.

Conclusions

DOH and ATSDR conclude that the Tri-Cities Barrel site is not expected to harm people's health (see Appendix A). This is because the remedial actions have interrupted the exposure pathways. There are no structures on-site and contaminated soils and sediments have been removed. The contaminated shallow aquifer is not currently used as a drinking water source, and institutional controls are in place to prevent future exposure. Also, there have been no documented community exposures to contaminants in the past.

Recommendations

DOH and ATSDR recommend that the approved site management plan be followed to ensure that the institutional and engineering controls continue to prevent human exposures to site-related contaminants.

REFERENCES

ATSDR (Agency for Toxic Substances and Disease Registry). 1993. Preliminary Public Health Assessment for the Tri-Cities Barrel Company, Inc. Fenton, Broome County, NY. Available at: http://www.atsdr.cdc.gov/HAC/pha/PHA.asp?docid=269&pg=0

DOH (New York State Department of Health). 2006. Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York. Troy, NY: Center for Environmental Health, Bureau of Environmental Exposure Investigation. Available at: http://www.health.ny.gov/environmental/investigations/soil_gas/svi_guidance/

DOH (New York State Department of Health). 2014. Tri-Cities Barrels Site Files. Center for Environmental Health, Bureau of Environmental Exposure Investigation. Albany, NY

EPA (United States Environmental Protection Agency). 2000. EPA Superfund Record of Decision: Tri-Cities Barrel Co., Inc. EPA ID: NYD980509285, OU 01, Port Crane, NY. March 31. Available at: http://www.epa.gov/superfund/sites/rods/fulltext/r0200055.pdf

EPA (United States Environmental Protection Agency). 2011a. Amendment to the Record of Decision, Tri-Cities Barrel Superfund Site, Town of Fenton, Broome County, New York. Region II, New York, New York. Available at: http://www.epa.gov/region02/superfund/npl/tricities/pdf/tricities_barrel_ou1_rod_amendmentfy11.pdf

EPA (United States Environmental Protection Agency). 2011b. Superfund Proposed Plan for Remedy Modification, Tri-Cities Barrel Site, Town of Fenton, Broome County, New York. July 2011. Available at: http://www.epa.gov/region02/superfund/npl/tricities/pdf/tricities_PRAP.pdf

Environmental Strategies Corporation. 1997. Removal Action Final Report. Tri-Cities Barrel Superfund Site, Fenton, New York. February.

ESC Engineering of New York. 2004. Final Work Element I Remedial Action Report Tri-Cities Barrel Superfund Site. March.

WSP Engineering of New York. 2011. Concrete Rubble Removal Report. Tri-Cities Barrel Superfund Site, Fenton, New York. September.

AGENCY INFORMATION

New York State Department of Health Authors

Bridget Callaghan
Public Health Specialist
Bureau of Environmental Exposure Investigation

Don Miles
Public Health Specialist
Bureau of Environmental Exposure Investigation

ATSDR Technical Project Officer

Teresa C. Foster, MPH
Environmental Health Scientist
Division of Community Health Investigation

ATSDR Regional Representatives

Leah Graziano, R.S.
Regional Director - Region 2
Division of Community Health Investigation

Elena Vaouli
Lieutenant Commander, U.S. Public Health Service
Regional Representative, Region 2

Tables

Exhibit 1. Data from the EPA Remedial Investigation of Soil near the Tri-City Barrel Site (EPA 2000).

(PRGs are EPA risk-based preliminary remediation goals).

Table 1-1 Summary of Surface Soil Data, North of I-88

Analyte	Number of Detections	Number Analyzed	Min. Conc. mg/kg	Max Conc. mg/kg	Background Conc. mg/kg	PRG Conc. mg/kg
VOCs						
SVOCs						
bis(2-ethylhexyl)phthalate	19	35	ND	31		2
Pesticides						
heptachlor	7	37	ND	0.099		0.010
dieldrin	7	37	ND	0.47		0.0033
alpha-chlordane	8	37	ND	0.66		0.06
gamma-chlordane	16	37	ND	0.12		0.06
PCBs						
Total PCBs	24	37	ND	33.0		1.0
Metals						
Arsenic	21	21	6.1	13.6	9.22	18.45
Barium	21	21	44	164	91.66	300
Beryllium	21	21	0.34	2.4	0.627	518
Cadmium	7	21	ND	3	0.88	1.76
Lead	17	17	12.5	86.6	27.27	400
Manganese	21	21	319	2,230	940.67	2,039
Mercury	12	21	ND	2.1	0.047	10
Nickel	12	21	10	30.9	23.39	2212
Silver	5	21	ND	1.9	0.461	0.92
Sodium	21	21	43.8	751	101.56	203.02
Thallium	8	21	ND	1.4	0.551	1.1
Zinc	21	21	55.5	686	71.97	143.95

Table 2-1 Summary of Surface Soil Sampling Data, South of I-88

Analyte	Number of Detections	Number Analyzed	Min. Conc. mg/kg	Max Conc. mg/kg	Background Conc. mg/kg	PRG Conc. mg/kg
VOCs						
toluene	11	54	ND	210	1.5	5148
ethylbenzene	14	54	ND	120	5.5	5.5
xylene (total)	15	54	ND	640	1.2	1.2
4-methyl-2-pentanone	3	54	ND	13	1	1
tetrachloroethene	16	54	ND	120	1.4	1
acetone	18	54	ND	11	0.2	0.2
1,1,1-trichloroethane	5	54	ND	35	0.8	0.8
vinyl chloride	3	54	ND	14	0.012	0.01
1,1-dichloroethane	5	54	ND	26	0.2	1643
1,2-dichloroethene	7	54	ND	1,100	0.3	156
2-butanone	4	54	ND	0.8	0.3	1798
trichloroethene	9	54	ND	4.9	0.7	5
SVOCs						
indeno(1,2,3-cd)pyrene	12	54	ND	28		0.33
phenol	8	54	ND	120		30
2-methylphenol	1	54	ND	13		0.1
4-methylphenol	3	54	ND	42		0.9
naphthalene	1	54	ND	49		13
dibenzofuran	4	54	ND	41		6.2
diethyl phthalate	8	54	ND	80		7.1
fluorene	6	54	ND	77		50
phenanthrene	19	54	ND	190		50
di-butyl phthalate	14	54	ND	8.8		8.1
fluoranthene	22	54	ND	120		50
pyrene	21	54	ND	120		50
benzo(a)anthracene	14	54	ND	64		0.33
chrysene	13	54	ND	67		0.4
bis(2-ethylhexyl)phthalate	36	54	ND	13,000		50
benzo(b)fluoroanthene	22	54	ND	30		0.33
benzo(k)fluoroanthene	11	54	ND	19		0.33
benzo(a)pyrene	12	54	ND	65		0.33
dibenzo(a,h)anthracene	2	54	ND	17		0.33

Table 2-1 Summary of Surface Soil Sampling Data, South of I-88 (continued)

Analyte	Number of Detections	Number Analyzed	Min. Conc. mg/kg	Max Conc. mg/kg	Background Conc. mg/kg	PRG Conc. mg/kg
Pesticides						
heptachlor	9	54	ND	36		0.01
Aldrin	4	54	ND	0.64		0.002
dieldrin	17	53	ND	65		0.0033
endrin	8	53	ND	0.75		0.1
alpha-chlordane	48	54	ND	300		0.06
gamma-chlordane	52	54	ND	400		0.06
4,4'-DDD	19	53	ND	8.5		0.08
4,4'-DDE	9	53	ND	0.68		0.07
4,4'-DDT	15	54	ND	4.3		0.07
PCBs						
Total PCBs	14	55	ND	169.9		1.0
Metals						
Antimony	15	54	ND	137	4.08	52
Barium	54	54	45.6	1,210	91.66	300
Cadmium	37	54	ND	10.2	0.88	1.76
Chromium	54	54	12.8	1,610	16.48	736
Cobalt	54	54	10.0	37.2	12.3	24.7
Copper	53	53	13.8	515	19.2	38.3
Lead	54	54	12.9	8,540	27.27	400
Mercury	48	54	ND	7.9	0.047	10
Selenium	17	54	ND	1.7	0.26	0.52
Silver	27	54	ND	51.7	0.461	0.92
Sodium	48	48	33	853	101.56	203
Thallium	20	54	ND	4.3	0.55	1.1
Zinc	54	54	61.5	510	71.97	143.95

Table 3-1 Summary of Surface Soil Sampling Data, South of Osborne Hollow Road

Analytes	Number of Detections	Number Analyzed	Min. Conc. mg/kg	Max Conc. mg/kg	Background Conc. mg/kg	PRG Conc. mg/kg
VOCs						
SVOCs						
bis(2-ethylhexyl)phthalate	6	6	0.057	7.0		2/50
benzo(b)fluoranthene	5	6	ND	0.340		0.33
Pesticides						
dieldrin	1	6	ND	0.0056		0.0033
endrin	1	6	ND	0.12		0.10
PCBs						
Metals						
Antimony	1	5	ND	11.7	4.08	52
Arsenic	6	6	8.1	13.1	9.22	18.45
Barium	6	6	81	188	91.66	300
Beryllium	6	6	0.55	1.0	0.627	518
Cadmium	5	6	ND	3.4	0.88	1.76
Chromium	6	6	14.3	21.3	16.48	736
Copper	6	6	18.3	34.0	19.2	38.3
Lead	6	6	17.7	141	27.27	400
Manganese	6	6	517	1,640	940.67	2039
Mercury	6	6	0.05	1.4	0.047	10
Selenium	5	6	ND	1.2	0.258	0.516
Silver	5	6	ND	2.3	0.461	0.92
Vanadium	6	6	19.0	23.0	17.9	35.9
Zinc	6	6	70.5	407	71.97	143.95

Appendix A:
Conclusion Categories and Hazard Statements

Conclusion Categories and Hazard Statements

ATSDR has five distinct descriptive conclusion categories that convey the overall public health conclusion about a site or release, or some specific pathway by which the public may encounter site-related contamination. These defined categories help ensure a consistent approach in drawing conclusions across sites and assist the public health agencies in determining the type of follow-up actions that might be warranted. The conclusions are based on the information available to the author(s) at the time they are written.

1. Short-term Exposure, Acute Hazard "ATSDR concludes that...could harm people's health."

This category is used for sites where short-term exposures (e.g. < 1 yr) to hazardous substances or conditions could result in adverse health effects that require rapid public health intervention.

2. Long-term Exposure, Chronic Hazard "ATSDR concludes that...could harm people's health."

This category is used for sites that pose a public health hazard due to the existence of long-term exposures (e.g. > 1 yr) to hazardous substance or conditions that could result in adverse health effects.

3. Lack of Data or Information "ATSDR cannot currently conclude whether...could harm people's health."

This category is used for sites in which data are insufficient with regard to extent of exposure and/or toxicologic properties at estimated exposure levels to support a public health decision.

4. Exposure, No Harm Expected "ATSDR concludes that ... is not expected to harm people's health."

This category is used for sites where human exposure to contaminated media may be occurring, may have occurred in the past and/or may occur in the future, but the exposure is not expected to cause any adverse health effects.

5. No Exposure, No Harm Expected "ATSDR concludes that ...will not harm people's health."

This category is used for sites that, because of the absence of exposure, are not expected to cause any adverse health effects.