

Letter Health Consultation

OLEAN WELL FIELD SITE

OLEAN, CATTARAUGUS COUNTY, NEW YORK

EPA FACILITY ID: NYD980529657

**Prepared by
State of New York Department of Health**

JANUARY 26, 2011

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

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR 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 which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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LETTER HEALTH CONSULTATION

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STATE OF NEW YORK DEPARTMENT OF HEALTH

Flanigan Square 547 River Street Troy, New York 12180-2216

January 13, 2011

Mr. Michael Walters
United States Environmental
Protection Agency
290 Broadway 20th Floor
New York, New York 10007

Re: Letter Health Consultation
Olean Well Field Off-site Plume
EPA Site #NYD980529657
Olean, Cattaraugus County

Dear Mr. Walters:

In April 2009 and January 2010, the United States Environmental Protection Agency (EPA) conducted soil vapor intrusion investigation sampling in the area of the Olean Well Field site. During the course of this investigation, the EPA collected air samples from beneath (known as sub-slab soil vapor samples) and within (indoor air samples) nearby residences. The New York State Department of Health (DOH), under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR), evaluated the indoor air and sub-slab soil vapor data that were collected by the EPA in the Olean Well Field site neighborhood and made conclusions about the public health implications of these data. This letter summarizes DOH's evaluation.

Site Background and Statement of Issues:

The Olean Well Field site is a one-square mile site located along the eastern portion of the City of Olean, and in the Town of Olean in Cattaraugus County, New York. A site location map is attached as Figure 1. Two groundwater aquifers underlay the site area, which serve as the primary source of drinking water for the City of Olean's 20,000 residents. The aquifers were also the source for many private drinking water wells in the area. In January of 1981, the Cattaraugus County Health Department detected trichloroethene (TCE) and other volatile organic compounds (VOCs) in three of the public water supply wells that served the Olean area (well numbers 18M, 37M and 38M, see Figure 1). Additional sampling determined that many private drinking water wells in the area were also contaminated with TCE. Groundwater is believed to have been contaminated with TCE and other VOCs from historic activities at several nearby commercial/industrial operations. Several actions have been taken to address potential exposures to VOCs through drinking contaminated groundwater in the site area,

including installation of private well treatment systems, provision of an alternate water supply, replacement of sewer lines, installation of public water supply treatment systems and remediation of identified sources of contamination.

In 1998, under a cooperative agreement with ATSDR, the DOH prepared a health consultation for the Olean Well Field site (ATSDR 1998). The health consultation concluded that drinking private well water contaminated with TCE and other VOCs from the Olean Well Field area aquifers could harm people's health. As previously stated, actions have been taken to address exposure via drinking water ingestion. The health consultation also concluded that contaminants in groundwater were not adversely affecting the indoor air of homes sampled in 1996, since the primary contaminant in groundwater, TCE, was not detected in the indoor air samples collected.

Since the 1998 health consultation was prepared, the understanding of how VOCs can move as vapors from soil or groundwater into the indoor air of an overlying building (a process known as soil vapor intrusion) has greatly increased. Additionally, a supplemental source investigation performed by the EPA identified elevated levels of TCE and other VOCs in the indoor air of Loohn's Dry Cleaning, which was one of the identified contamination sources of the Olean Well Field. Based on these considerations, the EPA performed a soil vapor intrusion investigation to determine if the Olean site area groundwater contaminants could be adversely affecting the indoor air of overlying buildings and residences, through soil vapor intrusion.

Environmental Sampling:

In April 2009, the EPA began a soil vapor intrusion investigation to determine if residences or buildings in the Olean Well Field site area might be impacted by soil vapor intrusion. The EPA Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway From Groundwater and Soils (EPA 2002) recommends that an evaluation of soil vapor intrusion use a tiered approach. Based on this approach, indoor air samples are collected in structures only where sub-slab soil vapor concentrations exceed EPA screening levels.

In accordance with the EPA guidance, this tiered approach was used to evaluate the soil vapor intrusion pathway near the Olean Well Field site. In April 2009, the EPA collected sub-slab soil vapor samples in 34 buildings in the Olean Well Field site area. Based on the results, the EPA determined that the levels of TCE and tetrachloroethene (PCE) detected in the sub-slab soil vapor of 10 structures (including nine residential and one commercial structure) warranted additional sampling. Using data from DOH's Study of Volatile Organic Chemicals in Air of Fuel Oil Heated Homes (DOH, 2003) and the Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (DOH, 2006), DOH evaluated the subslab data and agreed with EPA's determination that no other homes required further sampling under current conditions. The sub-slab soil data for the 10 structures which were selected for additional sampling by the USEPA are

summarized in Table 1. For three of the larger buildings, the EPA collected two sub-slab samples. As indicated in Table 1, the sub-slab soil vapor TCE concentrations ranged from not detected (ND) to 350 micrograms per cubic meter (mcg/m³). Sub-slab soil vapor PCE concentrations in these 10 structures ranged from 1.0 mcg/m³ to 82 mcg/m³ and are also summarized in Table 1. Other VOCs were also detected and are shown on Table 1.

The EPA was granted access in January 2010 to sample 8 of the 10 structures that EPA determined warranted additional sampling. The January 2010 sampling included a re-sampling of sub-slab soil vapor and the concurrent collection of indoor air samples in each structure. The number of each type of sample collected per structure was determined based on the size of the home and where access was granted by the homeowner. Table 2 summarizes the January 2010 sub-slab soil vapor and indoor air sampling results.

Subslab and indoor air data from the January 2010 sampling (Table 2) were evaluated by DOH and ATSDR using the DOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (DOH, 2006). Particular attention was given to TCE and PCE, which are the primary contaminants at the Olean Wellfield site. Structure 117 had an elevated level of TCE in the subslab vapor sample (250 mcg/m³), which could affect indoor air quality. TCE was not detected in the indoor air of Structure 117. The DOH guidance calls for mitigation of structures having TCE at levels of 250 mcg/m³ or higher in the subslab vapor, regardless of the level in the indoor air. TCE was also detected at 350 mcg/m³ in the subslab soil vapor of Structure 117 during the April 2009 sampling (Table 1), which is further evidence of the need to take actions to mitigate potential exposures at this building. TCE and PCE were detected in subslab soil vapor samples of other structures. The ranges in the subslab samples were 2.8 to 45 mcg/m³ for TCE (6 structures) and 1.2 to 87 mcg/m³ for PCE (8 structures). TCE was not detected in the indoor air of any of the structures. The levels of PCE in indoor air (ranging from non-detect to 1.3 mcg/m³) were not significantly different than levels we typically expect to find in indoor air (Table 3), based on the DOH's Study of Volatile Organic Chemicals in Air of Fuel Oil Heated Homes (DOH, 2003). Based on the DOH guidance (DOH, 2006), no further action is recommended for these structures.

Low levels of other VOC contaminants were also detected in the indoor air of the structures during the January 2010 sampling (Table 2). We evaluated these indoor air sampling results by comparing them to typical indoor levels found in the DOH Study of Volatile Organic Chemicals in Air of Fuel Oil Heated Homes (DOH, 2003) (Table 3). The indoor air levels of 2-butanone did not exceed the 25th to 75th percentile range from the 2003 DOH study. The highest levels of five chemicals (benzene, *trans*-1,2-dichloroethene, methylene chloride, 1,1,1-trichloroethane and *o*-xylene) detected during the January 2010 sampling exceeded the 25th to 75th percentile range, but none exceeded the upper fence*.

**The 25th - 75th percentile is the mid-range of the measured values where 25% of the values are below the range and 25% of the values are above the range. The upper fence for indoor air sampling data is a calculated value used to define the upper end of what could be considered typical indoor air levels.*

In all the structures where the 25th to 75th percentile range was exceeded, the chemical was either not detected in the subslab or was present lower levels in the subslab than in the indoor air. None of these chemicals exceeded the 25th to 75th percentile range in more than one structure.

Based on these observations, the indoor air levels of these chemicals do not appear to be significantly different than levels we typically expect to find in indoor air, and it is more likely that they are due to indoor sources rather than site related contamination.

The indoor air levels of ethylbenzene, toluene and *m,p*-xylenes exceeded the 25th to 75th percentile range in some structures (Tables 2 and 3). In addition, *m,p*-xylenes levels exceeded the upper fence in two structures, and the levels of ethylbenzene and toluene each exceeded the upper fence in one structure. The elevated levels appear more likely to be due to indoor sources of the chemicals rather than the site, because in the corresponding subslab samples, the chemicals were either not detected or detected at lower levels than in the indoor air. Since the indoor air levels of ethylbenzene, toluene and *m,p*-xylenes were higher than what we typically expect to find in indoor air, these contaminants were further evaluated below, using public health assessment inhalation comparison values.

Public Health Implications:

A chronic inhalation comparison value is an air concentration of an environmental contaminant that is unlikely to cause adverse health effects assuming a lifetime of exposure. The cancer comparison value is the air concentration that corresponds to an increased lifetime cancer risk of one in one million. The non-cancer comparison value is a lifetime air concentration of the chemical that is unlikely to cause adverse non-cancer health effects. Air concentrations lower than cancer or non-cancer public health comparison values are generally considered to pose very low or minimal risks for cancer and non-cancer health effects (see Appendix A for risk qualitative descriptors). Air concentrations higher than cancer or non-cancer public health comparison values indicate a need for further evaluation. As can be seen in Table 4, the highest levels of ethylbenzene, toluene and *m,p*-xylenes are all below their non-cancer health comparison values. Long-term exposure to these levels poses a minimal risk for non-cancer health effects. The indoor air levels of ethylbenzene exceeded the health comparison value based on carcinogenic effects in four structures (108, 109, 117 and 124). Long-term exposure to these levels of ethylbenzene (1.2 to 7.3 mcg/m³) is estimated to pose a low increased risk for cancer health effects (i.e., the risk is slightly higher than one in one million¹). The cancer comparison value is in the range of typical indoor air concentrations.

1 The estimated cancer risk is calculated by dividing the highest level of ethyl benzene detected in indoor air by the air concentration associated with an increased lifetime cancer risk of one in one million (1 mcg/m³, Table 4, based on the New York State unit risk), adjusting for less than lifetime exposure, and multiplying by a factor of 1E⁻⁶. The calculation used to in this estimate follows: 7.3 mcg/m³/1 mcg/m³ x 30 years/70 years x 1E⁻⁶ = 3 in one million.

Conclusions:

DOH and ATSDR conclude that volatile organic chemicals in the indoor air of the structures that were sampled near the Olean Well Field Site are not expected to harm people's health (see Appendix B). One structure (structure 117) merits further sampling or mitigation because of the potential for soil vapor intrusion, based on subslab levels of trichloroethene.

The indoor air of sampled structures does not appear to be affected by soil vapor intrusion. TCE was not detected in the indoor air of any of the structures. The levels of PCE in indoor air were not significantly different than levels we typically expect to find in indoor air. Most of the other chemicals that were detected in indoor air, but not related to soil vapor intrusion, were at levels within those found typically in indoor air. The indoor air levels of ethylbenzene, toluene and *m,p*-xylenes in some structures were higher than what we typically expect to find in indoor air; however, risks for health effects from exposure to these levels are estimated to be either minimal or low.

Based on our knowledge of site conditions, we do not expect soil vapor intrusion concerns to increase in the future. This is because groundwater contaminant levels are not increasing or expected to endanger additional buildings. EPA plans to continue monitoring groundwater conditions in the future.

Next Steps:

The EPA will collect an additional round of soil vapor and indoor air samples during the upcoming heating season to confirm that TCE and PCE in subslab soil vapor is not impacting indoor air quality and posing an increased risk to people's health.

The DOH and ATSDR will review the subslab soil vapor and indoor air quality data to be collected in the upcoming heating season by the EPA when it is made available. DOH will reevaluate conclusions made in this letter health consultation if changes in site conditions warrant.

Sincerely,



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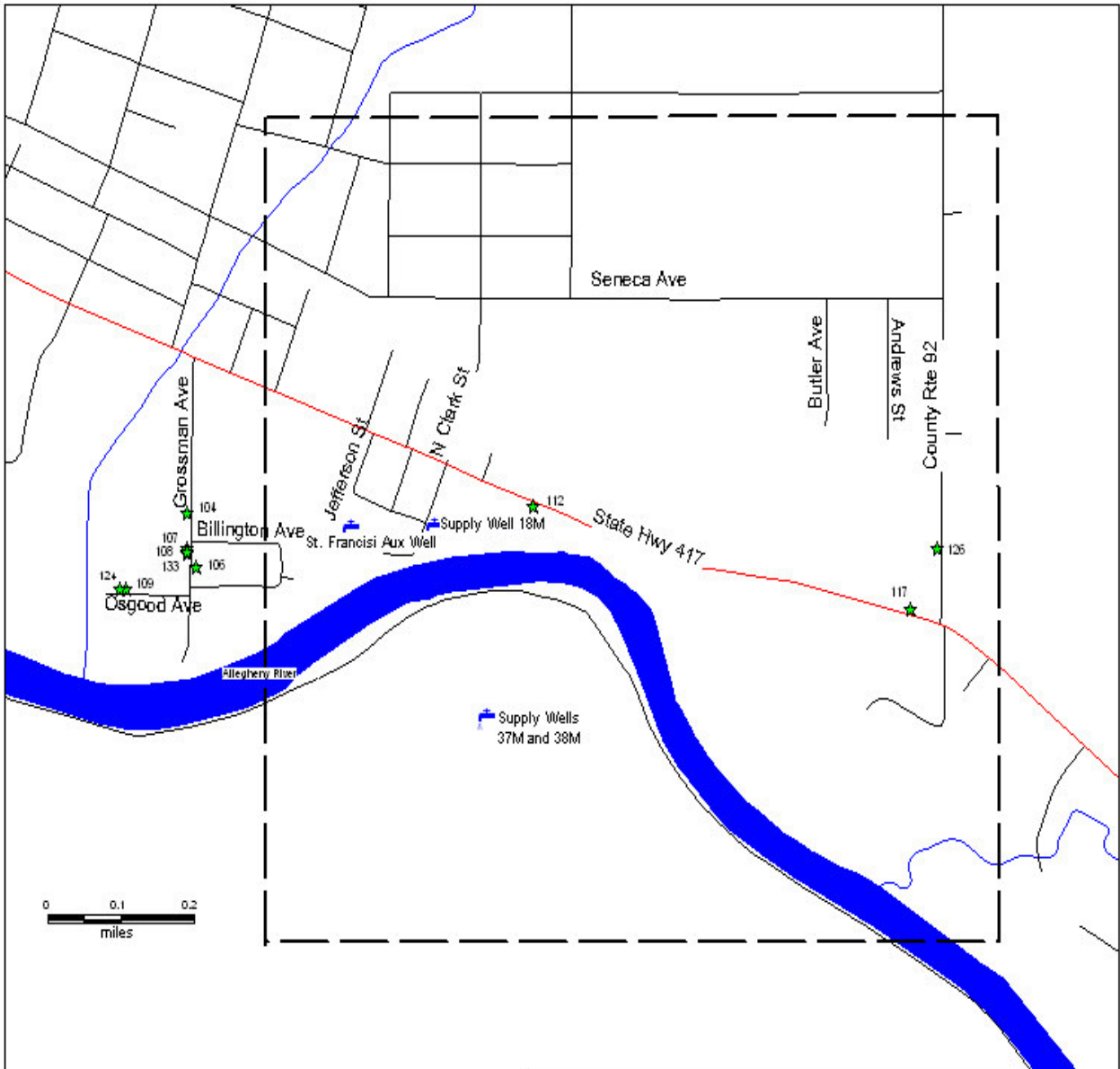
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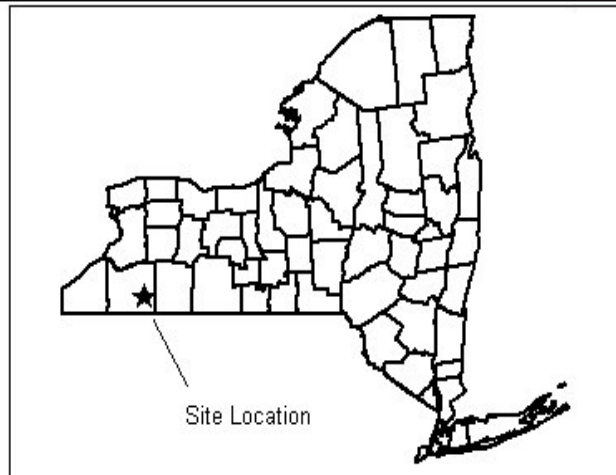
FIGURE

Olean Wellfield Site Cattaraugus County, New York



- ★ = Structures Recommended for Follow Up Sampling in April 2009
- = Approximate Site Boundary
- ⊕ = Public Water Supply Well

DOH STATE OF NEW YORK
DEPARTMENT OF HEALTH



TABLES

Table 1: Summary of EPA April 2009 Sub-Slab Soil Vapor Intrusion Investigation Results for Structures near the Olean Well Field Site Selected for Additional Sampling by the EPA*
All Values in Micrograms per Cubic Meter (mcg/m³)

Analyte	Structure Number												
	112	106	107	108	126	133	109	117	104	124			
benzene	0.51	1.1	0.51	3.0	0.56	0.36	2.0	0.68	0.20	0.28	0.27	0.26	0.88
2-butanone (MEK)	3.7	1.1	1.0	2.5	2.3	1.3	1.6	5.1	8.5	2.1	3.9	2.3	2.0
ethylbenzene	0.27	0.58	ND	2.3	0.43	0.27	0.59	0.29	0.67	ND	ND	ND	0.55
methylene chloride	ND	ND	ND	ND	2.4	ND	0.73	ND	ND	ND	ND	ND	ND
tetrachloroethene (PCE)	12	1.6	6.7	3.5	17	5.8	12	1.0	3.1	1	1.1	82	47
toluene	13	1.6	0.55	12	3.7	1.1	3.5	1.4	2.5	0.85	0.44	0.59	3.1
1,1,1-trichloroethane	2.5	ND	0.79	ND	32	3.6	0.29	43	1.1	0.17	ND	0.15	ND
trichloroethene (TCE)	ND	93	25	6.9	13	0.33	12	8.6	350	2.8	4.9	1.6	0.46
m,p-xylenes	0.58	0.41	0.79	12	1.6	1.3	2.8	0.94	1.1	0.55	0.61	0.46	2.6
o-xylene	0.27	1.2	0.7	4.2	0.55	0.45	1.1	0.33	0.5	0.21	0.29	0.17	1.0

* Analytes that were not detected in any sample are not shown. Sub-slab soil vapor samples are air samples from beneath a building.

ND - non detected

For more information on DOH's evaluation of sub-slab soil vapor intrusion sampling data, see Section 3 of DOH (New York State Department of Health). 2006. Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York. October. Available on-line at http://www.nyhealth.gov/environmental/investigations/soil_gas/svi_guidance/

Table 2: Summary of EPA January 2010 Sub-Slab Soil and Indoor Air Sample Results for Structures near the Olean Well Field Site *

All Values in Micrograms per Cubic Meter (mcg/m³)

Analyte	Structure Number																							
	Structure 112			Structure 106			Structure 108			Structure 126			Structure 109			Structure 117			Structure 104			Structure 124		
	SS	Base	1st fl	SS	Base	1st fl	SS	Base	1st fl	SS 1	SS 2	Base	SS	Base	1st fl	SS	Base	1st fl	SS	Base	1st fl	SS	Base	1st fl
benzene	ND	1.1	1.1	ND	1.8	1.9	0.34	9.3	5	ND	0.87	1.5	0.29	1.6	2.9	0.58	0.8	2.2	ND	1.6	1.4	ND	0.75	1.4
2-butanone (MEK)	ND	ND	1.4	2.6	3.3	3.4	3.2	2.1	1.7	2.5	ND	1.5	1.5	2.7	2.9	2.5	1.5	1.6	1.7	2.1	3	ND	2.1	3.8
trans-1,2-dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	0.29	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ethylbenzene	ND	0.36	0.44	ND	0.48	0.54	ND	4	2	ND	0.58	0.77	ND	0.4	7.3	0.3	0.33	1.2	ND	0.62	0.63	ND	3.9	6.4
methylene Chloride	ND	6.4J	ND	ND	ND	ND	ND	ND	ND	7.7J	ND	6.3J	7.3J	ND	14J	ND	ND	ND	ND	ND	ND	ND	ND	ND
tetrachloroethene (PCE)	14	ND	ND	1.2	ND	ND	4	ND	ND	35	1.1	1.3	3.9	ND	1.3	2.2	ND	ND	1.3	0.73	0.76	87	0.45	0.5
toluene	ND	1.9	4.5	0.2	3.8	6.5	2.6	26	14	0.48	5	5.8	0.96	2.2	6.5	3	1.8	6.2	0.36	5.4	11	0.4	44	67
1,1,1-trichloroethane	4.8	0.28	ND	ND	ND	ND	ND	ND	ND	44	ND	ND	1.3	0.41	2.1	0.77	ND	0.48	0.03	ND	ND	ND	ND	ND
trichloroethene (TCE)	ND	ND	ND	45	ND	ND	6	ND	ND	23	ND	ND	27	ND	ND	250	ND	ND	2.9	ND	ND	2.8	ND	ND
m,p-xylenes	ND	1.2	1.3	ND	1.5	1.7	ND	16	7.8	ND	1.7	2.5	ND	1.1	2.1	0.69	1.2	4	ND	1.8	1.8	ND	10	17
o-xylene	ND	0.57	0.47	ND	0.61	0.6	ND	5.1	2.5	ND	0.56	0.89	ND	0.42	0.72	0.3	0.42	1.6	ND	0.64	0.65	ND	1.5	2.6

* Analytes that were not detected in any sample are not shown. Sub-slab soil vapor (SS) samples are air samples from beneath buildings.

ND indicates that the analyte was not detected in the sample at a concentration greater than the analytical reporting limit

J indicates that the value is estimated

SS - subslab soil vapor

Base - Basement indoor air sample.

1st fl. - First floor indoor air sample.

Table 3: Indoor Air Sampling Results for Structures Near Olean Well Field Site Compared to Levels from Study of Volatile Organic Chemicals in Air of Fuel Oil Heated Homes (DOH, 2003)^a

All values in micrograms per cubic meter (mcg/m³)

Contaminant	Range of Detection	NYSDOH (2003) Air Levels	
		25 th - 75 th Percentile ^c	Upper Fence ^d
benzene	0.75 - 9.3	1.1 - 5.9	13
2-butanone	ND ^b - 3.8	1.4 - 7.3	16
<i>trans</i> -1,2-dichloroethene	ND - 0.29	<0.25	0.4
ethylbenzene	0.33 - 7.3	0.4 - 2.8	6.4
methylene chloride	ND - 14	0.3 - 6.6	16
tetrachloroethene	ND - 1.3	<0.25 - 1.1	2.5
toluene	1.8 -67	3.5 - 25	57
1,1,1-trichloroethane	ND - 2.1	<0.25 - 1.1	2.5
trichloroethene	ND	<0.25	0.5
<i>m,p</i> -xylenes	1.1 - 17	0.5 - 4.6	11
<i>o</i> -xylene	0.42 - 5.1	0.4 - 3.1	7.1

^aDOH (New York State Department of Health) 2003. Study of Volatile Organic Chemicals in Air of Fuel Oil Heated Homes. Available on-line at http://www.nyhealth.gov/environmental/indoors/air/fuel_oil.htm

^bND = non-detect

^cThe 25th - 75th percentile is the mid-range of the measured values where 25% of the values are below the range and 25% of the values are above the range

^dThe upper fence is calculated as 1.5 times the difference between the 25th and 75th percentile values and is a boundary used for identifying the presence of outliers in the data

Table 4: Indoor Air Levels of Ethylbenzene, Toluene and *m,p*-Xylenes from January 2010 Sampling of Structures Near the Olean Wellfield Site and Public Health Assessment Air Comparison Values

All values in micrograms per cubic meter (mcg/m³)

Contaminant	Range of Indoor Air Levels	Health Comparison Values			
		Cancer	Basis**	Noncancer	Basis**
ethylbenzene	0.33 – 7.3	1*	DOH UR	2000	CA REL
toluene	1.8 - 67	NA	---	300	ATSDR MRL
<i>m,p</i> -xylenes	1.1 - 17	NA	---	100	EPA RfC

*The cancer comparison value is the air concentration associated with an increased lifetime cancer risk of one in one million. The value calculated for ethylbenzene is within the range of typical indoor air concentrations

NA = not applicable

**DOH UR = New York State Department of Health Unit Risk

CA REL = California Environmental Protection Agency Reference Exposure Level

ATSDR MRL = Agency for Toxic Substances and Disease Registry Minimal Risk Level

EPA RfC = United States Environmental Protection Agency Reference Concentration

Appendix A - DOH PROCEDURE FOR EVALUATING POTENTIAL HEALTH RISKS FOR CONTAMINANTS OF CONCERN

To evaluate the potential health risks from contaminants of concern associated with the Olean Well Field site, the DOH assessed the risks for cancer and non-cancer health effects.

Increased cancer risks were estimated by using site-specific information on exposure levels for the contaminant of concern and interpreting them using cancer potency estimates derived for that contaminant by the EPA or, in some cases, by the DOH. The following qualitative ranking of cancer risk estimates, developed by the DOH, was then used to rank the risk from very low to very high. For example, if the qualitative descriptor was "low," then the excess lifetime cancer risk from that exposure is in the range of greater than one per million to less than one per ten thousand. Other qualitative descriptors are listed below:

Qualitative Descriptors for Excess Lifetime Cancer Risk

<u>Risk Ratio</u>	<u>Qualitative Descriptor</u>
equal to or less than one per million	very low
greater than one per million to less than one per ten thousand	low
one per ten thousand to less than one per thousand	moderate
one per thousand to less than one per ten	high
equal to or greater than one per ten	very high

An estimated increased excess lifetime cancer risk is not a specific estimate of expected cancers. Rather, it is a plausible upper-bound estimate of the probability that a person may develop cancer sometime in his or her lifetime following exposure to that contaminant.

There is insufficient knowledge of cancer mechanisms to decide if there exists a level of exposure to a cancer-causing agent below which there is no risk of getting cancer, namely, a threshold level. Therefore, every exposure, no matter how low, to a cancer-causing compound is assumed to be associated with some increased risk. As the dose of a carcinogen decreases, the chance of developing cancer decreases, but each exposure is accompanied by some increased risk.

There is general consensus among the scientific and regulatory communities on what level of estimated excess cancer risk is acceptable. An increased lifetime cancer risk of one in one million or less is generally not considered a significant public health concern.

For non-carcinogenic health risks, the contaminant intake was estimated using exposure assumptions for the site conditions. This dose was then compared to a risk reference dose (estimated daily intake of a chemical that is likely to be without an appreciable risk of health effects) developed by the EPA, ATSDR and/or DOH. The resulting ratio was then compared to the following qualitative scale of health risk:

Qualitative Descriptors for Non-carcinogenic Health Risks

Ratio of Estimated Contaminant Intake to Risk Reference Dose	Qualitative Descriptor
equal to or less than the risk reference dose	minimal
greater than one to five times the risk reference dose	low
greater than five to ten times the risk reference dose	moderate
greater than ten times the risk reference dose	high

Non-carcinogenic effects, unlike carcinogenic effects, are believed to have a threshold, that is, a dose below which adverse effects will not occur. As a result, the current practice is to identify, usually from animal toxicology experiments, a no-observed-effect-level (NOEL). This is the experimental exposure level in animals at which no adverse toxic effect is observed. The NOEL is then divided by an uncertainty factor to yield the risk reference dose. The uncertainty factor is a number that reflects the degree of uncertainty that exists when experimental animal data are extrapolated to the general human population. The magnitude of the uncertainty factor takes into consideration various factors such as sensitive sub-populations (for example, children or the elderly), extrapolation from animals to humans and the incompleteness of available data. Thus, the risk reference dose is not expected to cause health effects because it is selected to be much lower than dosages that do not cause adverse health effects in laboratory animals.

The measure used to describe the potential for non-cancer health effects to occur in an individual is expressed as a ratio of estimated contaminant intake to the risk reference dose. A ratio equal to or less than one is generally not considered a significant public health concern. If exposure to the contaminant exceeds the risk reference dose, there may be concern for potential non-cancer health effects because the margin of protection is less than that afforded by the reference dose. As a rule, the greater the ratio of the estimated contaminant intake to the risk reference dose, the greater the level of concern. This level of concern depends upon an evaluation of a number of factors such as the actual potential for exposure, background exposure and the strength of the toxicologic data.

Appendix B - 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.


CERTIFICATION

The letter health consultation for the Olean Well Field site was prepared by the New York State Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was initiated. Editorial review was completed by the cooperative agreement partner.



Technical Project Officer, CAT, CAPEB, DHAC

The Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this health consultation, and concurs with its findings.



Team Leader, CAT, CAPEB, DHAC, ATSDR