United States Environmental Protection Agency
Region V
POLLUTION REPORT

Date: Thursday, April 17, 2008
From: Steven Renninger

To:
Randy Watterworth, OEPA
Rafael Gonzalez, EPA-OPA
Kevin Clouse, Ohio EPA
Mark Johnson, EPA
Bob Frey, Ohio Department of Health
Steve Letany, EQM
John Imbus, CEC
kaushalya khanna, EPA 5
Shari Kolar, EPA 5
Ralph Dollhopf, EPA 5
Stuart Hersch, EPA-5
Tracy Johnson, EPA
Jim Crawford, OEPA
Dale Farmer, Ohio EPA
Jason El-Zein, EPA 5
Patrick Titterington, Troy
Laura Ripley, EPA 5
David Chung, EPA
Mark Durno, EPA 5

Subject: Final POLREP
East Troy Contaminated Aquifer Site
Franklin Street, Troy, OH
Latitude: 40.0377100
Longitude: -84.2009700

POLREP No.:	2	**Site #:**	B5EN
Reporting Period:	6/13/2007-4/17/2008	**D.O. #:**	0077
Start Date:	5/31/2007	**Response Authority:**	CERCLA
Mob Date:	5/31/2007	**Response Type:**	Time-Critical
Demob Date:	4/2/2008	**NPL Status:**	Non NPL
Completion Date:	4/17/2008	**Incident Category:**	Removal Action
CERCLIS ID #:	OHN 000 510 096	**Contract #**	68-S5-03-06
RCRIS ID #:			

Site Description

The East Troy Contaminated Aquifer (ETCA) Site is an area on the eastern side of Troy, Ohio, that includes a volatile organic compound (VOC) plume(s) underlying a mix of residential, public, and commercial properties. The ETCA Site, is bordered by the Great Miami River, to the north; Race Drive, to the South; Williams Street, to the east, and South Market to the west. The Site's meridian coordinates (recorded at the intersection of Union and Franklin Streets) are 40.03635° north and 84.19897° west. The Ohio Environmental Protection Agency (OEPA) indicated to U.S. EPA that two or more sources are contributing to two groundwater contamination plumes within the Site. Unidentified source(s) created a Tetrachloroethylene (PCE) and Tricholoroethylene (TCE) groundwater contamination plume 0.5 mile to the east of downtown Troy between Walnut Street and the City of Troy municipal well field along the Great Miami River. U.S. EPA, OEPA, and the City of Troy are concerned that vapor intrusion into structures is occurring due to the groundwater contamination. Vapor Intrusion is the migration of volatile organic compounds such as PCE and TCE from contaminated groundwater to soil gas to indoor air.

On September 23, 2002, the OEPA completed an Expanded Site Inspection (ESI) Report for U.S. EPA Region V. The ESI noted that the City of Troy operates two well fields located along a 1.25 mile segment of the Great Miami River. Five wells are located in the west well field, and five wells are located in the east well field. The wells are screened in sand and gravel, and individual wells produce as much as 1,500 gallons per minute. The current production of the well fields is 5.4 million gallons per day.

The ESI was conducted from June 11 through July 9, 2002. OEPA collected groundwater samples from boreholes and installed and sampled monitoring wells to identify contaminant source areas and to delineate the pathways by which VOCs are entering the east well field. The ESI confirmed that the aquifer is contaminated with VOCs, and surmises based on available information that VOCs have emanated from multiple sources.

PCE is the primary contaminant at the Site and has historically been used in the dry cleaning industry as a cleaning solvent and in the automotive industry as a degreaser. OEPA has been conducting a multi-year

groundwater monitoring effort in both plume areas and has identified PCE concentrations greater than 40 parts per billion (ppb) in the Plume 1 area and at concentrations greater than 800 ppb in the Plume 2 area.

In 2006, the OEPA completed soil gas monitoring and groundwater monitoring well sampling in the City of Troy's residential east side along Franklin Street and Main Street. Groundwater sample results indicated PCE levels as high as 801 ppb under residential yards along Franklin Street. Soil gas monitoring indicated PCE levels as high as 58 ppb in residential yards along Franklin Street. Elevated levels of PCE in groundwater and soil gas were detected in a three block residential area between Franklin Street and Main Street.

LJB, Inc. (Consultant hired by the City of Troy)conducted two rounds of air sampling in Troy, Ohio, in 2006. LJB completed indoor ambient air sampling at 15 locations, including the Troy Police Station, St. Patrick Church, St. Patrick Elementary School, Forest Elementary School, and Total Team Sports store. Elevated levels of PCE were detected by LJB in indoor air at the following locations: Troy Police Station, St. Patrick Elementary School, Forest Elementary School, and Total Team Sports Store. LJB's "Inhalation Air Sampling Data Report" dated June 13, 2006, summarized the two air monitoring events and concluded that inhabitants of structures within and around the two plume areas are at risk of inhaling a potential carcinogenic compound.

In a letter dated June 30, 2006, the OEPA requested U.S. EPA assistance in conducting a time-critical removal action at the ETCA Site. OEPA noted that groundwater is contaminated with VOCs from two or more sources, and wells within the Troy east well field have been impacted with VOCs above the federal MCLs. PCE has been detected in indoor air samples collected by the City of Troy from several occupied structures including the Troy Police Station, two elementary schools and a commercial business. OEPA noted that residences and other occupied structures above and adjacent to the ground water plumes are at risk for exposure to VOCs through vapor intrusion as the chemicals travel from the groundwater, into the soil gas, through the basement and then into the indoor air. OEPA requested that U.S. EPA conduct a removal action assessment to determine the extent of vapor intrusion contamination and to mitigate levels of VOCs in indoor air that exceed screening levels established by ATSDR and ODH.

From July 2006 through September 2006, the U.S. EPA collected Phase 1 sub-slab and indoor air samples from the east Troy residential area near Franklin Street in order to determine if there was a threat presented by vapor intrusion. A total of 19 locations were sampled, including 14 residential locations, 3 schools, a church and the City of Troy Police Station.

Air samples were collected in accordance with the U.S. EPA Environmental Response Team (ERT) standard operating procedures for the construction and installation of permanent sub-slab soil gas wells (vapor probes). The purpose of the sub-slab vapor probe sampling is to determine if VOCs are migrating from groundwater to surrounding soil gas to the foundation of a structure. Sub-slab vapor probe sampling is conducted prior to indoor air sampling. If sub-slab sampling results are less than the ATSDR sub-slab screening level (12 ppb for PCE) then no further action is taken. If sub-slab sampling results are greater than the ATSDR sub-slab screening level, then indoor air sampling is conducted. If indoor air samples are greater than the ATSDR indoor air screening level a completed exposure pathway is documented.
The sub-slab vapor probes were installed in residences or commercial buildings with basements having concrete slab floors or where the main floor was a concrete slab. Air samples were collected from the crawl space areas of structures that did not have concrete basements. All samples were collected using pre-cleaned, laboratory-supplied SUMMA canisters. The SUMMA canisters were fitted with regulators to allow for sample collection over a 24-hour period.

In a letter dated September 11, 2006, ATSDR and ODH provided U.S. EPA health-based guidance to evaluate the results of indoor and subsurface air sampling for PCE and TCE in Troy, Ohio. In the letter, ATSDR and ODH identified residential indoor air and sub-slab screening levels (including residences and schools) as well as non-residential building indoor air and sub-slab screening levels (police station, church, and commercial structures).

In the letter dated September 11, 2006, ATSDR and ODH concluded that several residential and school locations exceed the screening criteria and made the following recommendations upon the review of U.S. EPA air sample data at the Site:
"This groundwater plume may have been impacting these properties for an extended period of time. The implementation of a long-term remedy to remove the source is unlikely to occur in the near future. Therefore, we recommend that interim measures be taken at these properties to disrupt the vapor intrusion pathway into homes, which may include the installation of a sub-slab depressurization system, sealing cracks in walls and floors of the basement, and sealing or fixing drains that could be a pathway. These interim measures should be implemented as soon as feasible, while the long-term solution,

such as source removal at the Site, is being executed."

To further define the extent of contamination, the U.S. EPA conducted additional residential sampling in a Phase 2 investigation in 2006 and 2007. U.S. EPA conducted a public meeting in Troy, Ohio, on October 25, 2006, and invited residents to sign-up for sub-slab and indoor air sampling. In addition, U.S. EPA sent letters in December 2006, to 400 residences in the plume area, requesting access to conduct sub-slab and indoor air sampling. Approximately 60 additional residents agreed to provide access for the sub-slab and indoor air sampling.

From October 2006 through April 2007, the U.S. EPA collected sub-slab and indoor air samples from residential locations bounded by South Market Street to the west, Race Drive to the south, Williams Street to the east, and the Great Miami River to the north. A total of 60 sub-slab and 61 indoor air samples were collected.

In summary from July 2006 through April 2007, the U.S. EPA collected sub-slab and indoor air samples from a total of 85 locations, which included 78 residences, 2 churches, 4 schools and the Troy Police Station during Phase 1 and Phase 2 air sampling activities. U.S. EPA has contacted all property owners with elevated indoor air levels and conducted a meeting with owners and the Ohio Department of Health to explain the sample results, health issues, and proposed vapor abatement system. Property owners with indoor air levels less than the ATSDR and ODH screening levels have received a summary letter and sample results from U.S. EPA.

U.S. EPA has documented a total of 16 residential locations and one elementary school which show indoor air PCE and/or TCE vapor concentrations exceeding the ATSDR screening level of 1.2 ppb or 0.4 ppb, respectively.

EPA initiated installation of residential vapor abatement systems (VAS) on June 25, 2007.

Current Activities

June 2007: Installation of residential vapor abatement systems (VAS) was initiated on June 25, 2007. As of June 29, 2007, a total of 4 VAS were installed successfully by a local contractor. Pre and post-installation photo documentation occurred at all 4 residential locations.

July 2007: Installation of a VAS at one school was initiated on July 5, 2007. The VAS installation at the school was completed on July 17, 2007. Installation of residential vapor abatement systems (VAS) resumed on July 18, 2007. 10-day performance sampling was conducted at the school location on July 25, 2007. The performance sampling consisted of 3 sub-slab and 5 indoor air samples collected throughout the building. The performance sample results indicated that the VAS at the school is operating effectively (< ODH screening levels). As of July 31, 2007, a total of 13residential and 1 school VAS were installed successfully by a local contractor. Pre and post-installation photo documentation occurred at all locations.

August 2007: Installation of residential vapor abatement systems (VAS) resumed on August 2, 2007. The VAS installation for all 16 residential locations and 1 school location was completed on August 6, 2007. Pre and post-installation photo documentation occurred at all locations. 30-day VAS performance sampling was initiated on August 9, 2007. As of August 30, 2007, 30-day VAS performance sampling was completed for 6 residential locations. The performance sample results indicate that the VAS at 4 residential locations are operating effectively (< ODH screening levels) and the VAS at 2 residential locations required an upgrade (> ODH screening levels).

September 2007: 30-day VAS performance sampling was initiated on September 2, 2007. As of September 28, 2007, 30-day VAS performance sampling was completed for all 16 residential locations and 1 school location. The performance sample results indicate that the VAS at 10 residential locations and the 1 school location are operating effectively (< ODH screening levels) and the VAS at 6 residential locations required an upgrade (> ODH screening levels). 2 VAS at residential locations were upgraded on September 28, 2008. The upgrades included an upgraded fan, and/or supplemental sealing of membranes. Pre and post-upgrade photo documentation occurred at the 2 locations.

October 2007: Upgrades to 4 VAS at residential locations was initiated on October 8, 2007. The upgrades included an upgraded fan, and/or supplemental sealing of membranes. VAS upgrades at all residential locations were completed on October 18, 2007. Pre and post-upgrade photo documentation occurred at the 4 residential locations. 10-day VAS upgrade performance sampling was initiated on October 10, 2007. 10-day VAS upgrade performance sampling was completed at 5 residential locations on October 25, 2007. The performance sample results indicate that the upgraded VAS at the 5 residential

locations are operating effectively (< ODH screening levels).

November 2007: 10-day VAS upgrade performance sampling was initiated for 1 residential location on November 7, 2007. 10-day VAS upgrade performance sampling was completed for 1 residential location on November 8, 2007. The performance sample results indicate that the upgraded VAS at all 6 residential locations are operating effectively (< ODH screening levels). 90-day VAS performance sampling was initiated at 1 school location on November 23, 2007 and completed on November 24, 2007. The performance sample results indicated that the VAS at the school was operating effectively (< ODH screening levels).

December 2007: 90-day VAS performance sampling was initiated on December 17, 2007. 90-day performance sampling was completed for all 16 residential locations on December 19, 2007. The performance sample results indicate that the VAS at 12 residential locations were operating effectively (< ODH screening levels) and the VAS at 4 residential locations required an upgrade (> ODH screening levels).

January 2008: Upgrades to 4 VAS at residential locations was initiated on January 3, 2008. The upgrades included upgraded fans, supplemental sealing of membranes, and/or rewiring of VAS to a continual circuit. VAS upgrades at all residential locations were completed on January 4, 2008. Pre and post-upgrade photo documentation occurred at the 4 residential locations.

February 2008: VAS upgrade performance sampling was initiated at the 4 residential locations on February 5, 2008 and completed on February 6, 2008. The performance sample results indicated that the upgraded VAS at 3 residential locations were operating effectively (< ODH screening levels) and the VAS at 1 residential locations required an upgrade (> ODH screening levels).
March: Upgrades to 1 VAS at residential location was initiated and completed on March 18, 2008. The upgrades included applying membrane to the walls in basement area, sealing the floor/wall membrane intersection, and closing off crawlspace opening. Pre and post-upgrade photo documentation occurred at the residential location.

April 2008: VAS upgrade performance sampling was initiated at 1 residential location on April 1, 2008 and completed on April 2, 2008. The performance sample results indicated that the VAS at this residential locations was operating effectively (< ODH screening levels). VAS System Manuals are being sent to each owner by April 30, 2008. The VAS System Manual contains information about the VAS and its components, copies of all data and correspondence, warranty information, and the VAS system lock key.

Planned Removal Actions

Superfund removal action is completed.

Superfund remedial program plans: U.S. EPA proposed the site to the National Priorities List in the Federal Register on September 19, 2007. U.S. EPA is considering all comments which it received during the 60-day comment period following the proposal. The public comment period closed on November 19, 2007.

Next Steps

U.S. EPA proposed the site to the National Priorities List in the Federal Register on September 19, 2007.

Key Issues

Superfund removal program sampled 85 structures. 16 residences and one elementary school met the criteria for a VAS based on sub-slab and indoor air sampling. All 17 structures have a VAS installed. Performance sampling has been completed and all 17 locations are below ATSDR and ODH screening levels as of April 17, 2008.

Disposition of Wastes

N/A

response.epa.gov/troyvocplume