

# FAQ

## Vapor Intrusion Investigation Groundwater Contamination Plume Residential Wells, Holly Road, Livingston County Frequently Asked Questions (FAQ)

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## Water

### 1. What is a groundwater contamination plume?

Groundwater contamination plumes are the result of chemicals released into soils moving into groundwater by rainwater leaching. The horizontal and vertical areas where leached chemical contamination is located is known as a groundwater contamination plume. Groundwater contamination plumes are generally controlled by gravity. The Residential Wells Holly Road Groundwater contamination plume is about 1/2-mile long.

### 2. How long has the groundwater contamination plume been in my neighborhood?

The Residential Wells Holly Road groundwater contamination plume was caused by releases of chemicals known as chlorinated compounds. The releases of these chemicals into soils and groundwater likely occurred in the late 1940's with subsequent contributions by manufacturing facilities occupying the property. When the Michigan Department of Environmental Quality (DEQ) began investigating the plume in the mid-1990's, it was found to extend to Brighton Road. In 1999 to 2000, the plume was found to extend to the north side of Brighton High School property.

### 3. Is my water safe to drink?

Yes. In 1993, the State of Michigan funded a water replacement project extending Brighton's municipal water supply to Genoa Township for 89 homes that were using private wells and later replaced additional private wells threatened by groundwater contamination. The City of Brighton municipal well field is outside of the groundwater contamination plume area.

### 4. What is being done to clean up the groundwater contamination plume?

In 2001, a soils treatment system was installed in the release area and is presently operating. In 2008, a groundwater treatment system was installed near Brighton High School building and has been continually operating. The DEQ cleanup actions have reduced concentrations of contaminants in groundwater plume by 40 to 50 percent.

### 5. Is the quality of Leith Lake and Brighton Lake threatened by the plume?

A portion of the groundwater contamination plume migrated under Brighton High School outside of the reach of the groundwater treatment system. The DEQ has monitored the water quality of Leith Lake since 2006 where the detached plume migrated. For brief periods, Trichloroethylene (TCE) venting into the lake posed a concern but did not harm fish. Recently, the detached plume diminished by about 90 percent.

## Vapor Intrusion and Soil Gas

### 6. What is *vapor intrusion*, why is it a concern, and how is it investigated?

Vapor intrusion sometimes occurs where chemicals were spilled, leaked, or dumped and not cleaned up. For example, properties such as gas stations, dry cleaners, or businesses operating metal parts degreasers use chemicals like gasoline or solvents that can cause vapor intrusion. If these chemicals are mishandled and get into the ground, they can move through the soil and groundwater. Although the chemicals are often released as liquid, they easily evaporate, becoming a vapor in the air that you often cannot see or smell. At some point, the vapors may come in contact with your home or business – usually around your basement or your floor. These vapors may get into your home through openings such as cracks, or other openings around pipes and sumps. This is a concern because you may breathe in these harmful vapors without knowing.

Vapor Intrusion is addressed in the available informational pamphlet titled: "[What is vapor intrusion and how is it investigated](#)" by the DEQ and the Michigan Department of Human Health and Services (DHHS).

### 7. Why is vapor intrusion from this groundwater plume a concern now?

One of the primary chemicals present in the Residential Wells Holly Road groundwater contamination plume is trichloroethylene, known as TCE. Recent evaluation by peer reviewed toxicologists at the federal and state level have determined that health risks from TCE are possible at very low doses.

**8. Did the DEQ consider vapor intrusion risks to school children and residents in its previous investigations of this groundwater contamination plume?**

Yes. In 1998, the DEQ staff began a site-specific evaluation of vapor intrusion risk for students and staff at Lindbom Elementary School because the plume is under a portion of the building. In 1999, the DEQ evaluation determined that the levels of TCE in the groundwater would have to be 10 times higher to pose health risk. In 2000, the DEQ's contractor installed and sampled 4 deep soil vapor wells along the center of the plume to further evaluate health risk to occupants of Lindbom School and in the residential areas. The TCE soil gas concentrations posing vapor intrusion risk into homes were found to be many times less than thresholds established at the time. In 2007, the DEQ conducted a soil gas survey under a section of Brighton High School (BHS) where the leading edge of the plume had migrated to. As a result, two soil gas and indoor air monitoring stations were established. Soil gas and indoor air monitoring at these locations have continued to the present day. While levels of TCE in soil gas under the BHS building are a concern, indoor air monitoring results have not shown health risks to occupants.

**9. Where is the area of TCE vapor intrusion concern and how is it being determined?**

The DEQ update and meeting announcement figure shows a boxed area of investigation. As a "rule of thumb", a 100 - foot distance from the edge of the plume is within the area of vapor intrusion concern. Given uncertainties associated with migration of vapors and the exact boundary and depth of the plume, the DEQ may investigate outside of the "boxed" area.

**10. How is a DEQ vapor intrusion study done?**

The DEQ first determines if vapors (soil gas) emanating from the plume poses potential risk by installing soil gas wells outside of structures and vapor pins inside structures where access is granted. The 2017 DEQ preliminary investigation identified potential risks, but not in all areas where the plume is located. The second phase of investigation involves obtaining access from owners of residences so that at least one sampling point is installed into the floor of the lowest level of the home, a soil gas sample and 24-hour duration indoor air sample collected. Prior to sampling, a household chemical survey is performed and products containing chemicals found in the groundwater contamination plume are removed. Re-sampling over a year is typically done in the areas of concern to account for seasonal soil gas and vapor intrusion variability.

**11. How is risk due to vapor intrusion in my home determined?**

The DEQ, DHHS and Livingston County Health Department (LCHD) evaluate paired soil gas and indoor air sample results as they compare with each other with consideration of the chemicals found in the residence. If the evaluation determines that the indoor air results reflect vapor intrusion from soil gas under the house originating from the groundwater contamination plume, the DHHS determines if concentrations of chemicals such as TCE in the indoor air could create a health risk for the residents.

**12. What happens if the DHHS determines vapor intrusion pose a risk to occupants of my home?**

The DHHS and/or the LCHD will contact you and explain the health risk and some options. Air purifying units are available to clean the indoor air as a temporary measure pending installation of a vapor mitigation system.

**13. How do vapor mitigations systems work and how are they tested for effectiveness?**

Vapor mitigation systems, also known as sub-slab depressurization (SSD) systems, work by creating vacuum suction under the slab or basement of your house to re-route the vapors to the outdoors. It is important that sumps, floor drains, cracks and other floor penetrations are properly sealed. The vapor mitigation systems are tested during and after installation by checking vacuum pressures through additional vapor pins installed for this purpose. Most residential vapor mitigation systems are radon or modified radon systems. After the SSD system operates for at least 3 days, an indoor air sample is collected from every level of the home to demonstrate that indoor air in the home is safe.

**14. What are my responsibilities after a SSD system is installed?**

The DEQ will return to your home periodically test the performance of the system. Typically, indoor air samples are taken by the DEQ consultant every 3 months for a year to evaluate effectiveness of the system to ensure that vapor intrusion health risks posed are controlled. Vacuum pressure checks, stack samples and other inspections may be completed every few months for a year. Afterwards, annual checks may be performed to ensure performance of the system. The DEQ may install an automatic alert system that informs the DEQ that the SSD system is impaired or non-operational.

**15. How is the progress of this investigation being communicated?**

The DEQ, DHHS and Livingston County staff are available to answer questions regarding the status of this investigation. The DEQ staff will provide informal and written communications of soil gas and indoor air results to participants of this study. Care is taken to ensure that privacy is protected. After the study is completed, a report will be made available at the local library and online.

**16. Who will answer my health-related questions if I believe that I have been exposed to TCE vapors?**

For health-related questions, contact the DHHS or talk to your doctor. A brochure explaining health concerns

**Contact information**

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*Meaningful involvement of residents ensures an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment and/or health.*