

Key Facts for The Delbar Apartment Buildings, 601 West Spruce Street

- Prior to becoming The Delbar Apartment Buildings (Property), 601 West Spruce Street was owned by Delbar Products, Inc., a manufacturer of automotive and truck parts. Delbar Products' operations resulted in contamination of soil and groundwater beneath the Property with Volatile Organic Compounds (VOCs). The types of VOCs identified are persistent, and elevated concentrations remain beneath the Property today. VOCs can become vapor and disperse into air, rising into buildings through a process known as vapor intrusion. More information on vapor intrusion can be found on the attached "A Citizen's Guide to Vapor Intrusion Mitigation."
- VOC vapor in indoor air has been found at the Property. The VOC vapors can potentially cause harmful health effects to people who are breathing the indoor air.
- Trichloroethylene (TCE) is the primary VOC found in the Property indoor air. TCE is colorless and nonflammable. TCE can cause cancer in humans, whether it is ingested or inhaled. Only inhalation of TCE is of concern for the Property. For inhalation, the cancer risk estimate is based on kidney cancer, liver cancer, and non-Hodgkin's lymphoma, resulting from both human and test animal evidence. For non-cancer effects by inhalation, the hazard estimate is based on decreased immune function and increased fetal cardiac malformations in test animals, suggesting adverse effects on the immune system and the developing fetus in humans.
- The Property owner installed passive vapor mitigation systems in all buildings before residents moved in. Vapor mitigation systems are similar to the systems installed to address radon and designed to keep vapors from entering the building. However, sampling data have shown that the systems did not reduce VOC vapor in some apartments to concentrations below human risk-based screening values. In response, the Property owner provided residents with portable Air Purification Units (APUs). **For now, it is very important that the APUs remain on and running continuously in all apartments.**
- The Environmental Protection Agency (EPA) is working with the Pennsylvania Department of Environmental Protection (PADEP) to ensure that the Property owner upgrades the building wide vapor mitigation systems so that VOC indoor air concentrations are below human risk-based screening values without the need for APUs. The APUs are temporary, until the permanent vapor mitigation systems are proven effective. Additional indoor air sampling in all apartments must be conducted to prove effectiveness. Residents will be promptly notified of sampling requirements and ongoing results.



Site Background

From 1946 through 2008, Delbar Products Incorporated (Delbar) operated at the Property producing automotive and truck parts, including mirror components. Delbar's manufacturing processes involved stamping, pressing, degreasing, and painting of sheet metal and tubes in its production of mirror components. As part of its process, Delbar used VOCs, including TCE. As of 2008, Delbar ceased operations at the Property. After its operations had ceased, Delbar's assets were transferred to the Delbar Products Incorporated Liquidating Trust (Delbar Trust).

In 2017 the Property was purchased by a developer and has since been in the process of re-development for residential use. The Property is one of 356 sites in Pennsylvania subject to EPA's RCRA Corrective Action program. PADEP is not authorized to implement the RCRA Corrective Action program, however PADEP has been overseeing the remediation of the Facility under its state Act 2 Program through Pennsylvania's One Cleanup Program and through its state Hazardous Sites Cleanup Program. Remedial actions to date have included removal (excavation and disposal) of, and capping areas of known or suspected soil contamination, and installation of vapor mitigation systems to address known and potential vapor intrusion. Additional testing, modifications, and maintenance of vapor mitigation systems is required to ensure that the building conditions do not pose a risk of harmful health effects to current and future residents.

Next Steps

- EPA will continue to work in consultation with PADEP to ensure that necessary measures are taken to address potential risk associated with indoor concerns at the Property.
- Further investigation of off-site groundwater migration will also be conducted.
- Continued restriction of groundwater use on-site and near the Property.

For more information, please scan the QR code below to visit the site's website:



You and your health care provider can find comprehensive information about TCE and additional health risks on the Agency for Toxic Substances and Disease Registry (ASTDR) website:

For the General Public: <http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=172&tid=30>

For Health Professionals: <http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=30#12>

Please also see the attached: [A Citizens Guide to Vapor Intrusion Mitigation](#)

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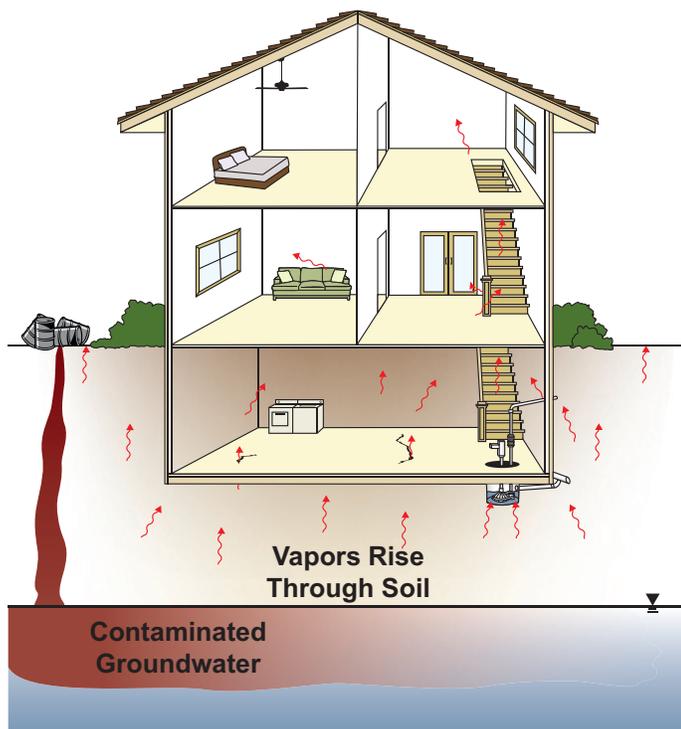
A Citizen's Guide to Vapor Intrusion Mitigation



What Is Vapor Intrusion Mitigation?

Vapor intrusion is the movement of chemical vapors from contaminated soil and groundwater into nearby buildings. Vapors primarily enter through openings in the building foundation or basement walls — such as cracks in the concrete slab, gaps around utility lines, and sumps. It also is possible for vapors to pass through concrete, which is naturally porous. Once inside the home or workplace, vapors may be inhaled posing immediate or long-term health risks for the occupants. In rare cases, the buildup of vapors, such as those from gasoline, may cause explosive conditions. Risks will depend on the types of chemical vapors and their concentrations, how much time people spend in the building, and the building's ventilation. Vapor concentrations will be higher indoors when windows and doors remain closed.

Mitigation methods, which lessen the effects of vapor intrusion, may be needed until contaminated soil or groundwater is cleaned up. Mitigation methods are available for both existing buildings and those planned for construction near the contaminated area.



Vapor intrusion into a home.

How Does It Work?

Vapor intrusion mitigation methods are classified as either “passive” or “active.” Passive methods prevent the entry of chemical vapors into the building, while active methods change the pressure difference between the sub-slab and the inside of the building to keep vapors out. Passive mitigation methods tend to be cheaper, while active methods tend to be more effective. Examples of each include:

Passive Vapor Intrusion Mitigation Methods:

- **Sealing openings** involves filling in cracks in the floor slab and gaps around pipes and utility lines found in basement walls. Concrete can be poured over unfinished dirt floors.
- Installing **vapor barriers** involves placing sheets of “geomembrane” or strong plastic beneath a building to prevent vapor entry. Vapor barriers are best installed during building construction, but can be installed in existing buildings that have crawl spaces.
- **Passive venting** involves installing a venting layer beneath a building. Wind or the build-up of vapors causes vapors to move through the venting layer toward the sides of the building where it is vented outdoors. A venting layer can be installed prior to building construction as well as within existing buildings. It is usually used with a vapor barrier.

Active Vapor Intrusion Mitigation Methods:

- **Sub-slab depressurization** involves connecting a blower (an electric fan) to a small suction pit dug into the slab in order to vent vapors outdoors. (Most common method.)
- **Building over-pressurization** involves adjusting the building's heating, ventilation, and air-conditioning system to increase the pressure indoors relative to the sub-slab area. This method is typically used for office buildings and other large structures.

How Long Will It Take?

Mitigation will be needed to prevent vapor migration into buildings as long as vapor intrusion poses a health risk to occupants. This may be several years, or even decades, until cleanup of soil and groundwater is complete.

Is It Safe?

Vapor intrusion mitigation systems are quite safe to use and will improve the quality of the indoor air by removing chemical vapors due to vapor intrusion as well as radon (another health risk) and moisture, which may lead to mold growth. However, mitigation systems will not reduce vapors from indoor sources of chemicals, such as paints, plastic items, and hobby supplies.

Until the threat of vapor intrusion is gone, mitigation systems should be inspected regularly to make sure they are working correctly. For example, floors and walls are checked to see that no new cracks develop, a geomembrane in a crawlspace is checked for rips and holes, and electric fans are checked to ensure they are working correctly. Homeowners should not turn off the electric fans until EPA or state agency notifies them that it is appropriate to do so. Homeowners should report broken fans and vent pipes to the lead agency.

How Might It Affect Me?

An occupant of a home or office constructed with a vapor mitigation system will not likely notice it. However, the installation of systems in existing homes typically takes one or two days, and workers may need to access crawl spaces or indoor living areas. They may need to pull back carpet or move furniture to find and seal cracks or to drill holes in the foundation for sub-slab pipes. They typically place these pipes near the basement walls, in closets, and in low-traffic areas for the convenience of the homeowner. The vent pipes and fan may be visible on the outside of the house. However, in some cases, the pipes may be run through a closet to the attic and vented through the roof. Later, workers may need to visit homes periodically to inspect mitigation systems to ensure the systems are working properly.

Homeowners may notice the hum of the electric fans, if they have a depressurization system. These fans use less electricity than an LED television; electric bills will rise slightly.

Why Use Vapor Intrusion Mitigation?

Vapor intrusion mitigation systems are installed to reduce health risks in buildings where chemical vapors from contaminated soil and groundwater may be inhaled by indoor occupants. They also may be installed as a precaution where vapor intrusion might occur in the future. Installing a system during building construction typically is cheaper, more effective, and less disruptive than waiting until after construction. Depressurization systems offer the added benefit of reducing radon, moisture, and mold inside the building.

Mitigation systems have been installed and operated at hundreds of homes near Superfund sites and other contaminated sites across the country.



Typical fan and vent pipe.

Example

Mitigation is reducing possible risks from vapor intrusion at 43 homes near the Nyanza Superfund site in Massachusetts. Dye manufacturing from the 1910s to 1978 contaminated groundwater with trichloroethene (TCE) and other chemicals. By the 1980s, a plume of groundwater contamination was found to extend beneath a nearby neighborhood. Sampling of indoor air, sub slab air, and groundwater showed that vapor intrusion was occurring, and TCE concentrations posed a risk to some homeowners. Vapor intrusion also had the potential to occur at several other homes.

As a result, EPA installed depressurization systems in homes located above the most contaminated groundwater where vapor intrusion is most likely to be a problem. Before installing the systems in 2007, EPA sealed cracks in basement walls and floors, and covered sump pits. In homes with dirt basements, they poured a concrete floor or installed a vapor barrier. Following installation, each depressurization system was tested to ensure that it worked properly. The systems are inspected annually to ensure that they continue to work.

For More Information

For more information about this and other technologies in the Citizen's Guide Series, visit:

www.cluin.org/remediation
www.cluin.org/products/citguide
www.cluin.org/vi
www.epa.gov/oswer/vaporintrusion/

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