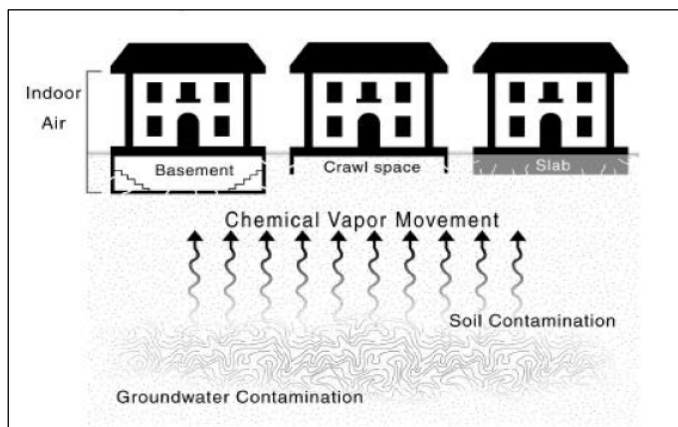


DOH PUB 334-133

What is vapor intrusion?

Chemicals that are spilled, dumped on the ground, or leak from an underground storage tank can seep into the soil. If the spill or leak is large enough, it can travel down through the soil and get into the groundwater. When a group of chemicals known as volatile organic compounds (volatile chemicals) are released into soil or shallow groundwater, these chemicals evaporate, producing vapors that travel up through the soil. These vapors can enter nearby homes and businesses through crawlspaces and cracks or other openings in the foundation. This process is known as *vapor intrusion*. When it occurs, vapor intrusion may cause unhealthy indoor air quality.



Reference: New York State, Department of Health, Guidance for Evaluating Soil Vapor Intrusion in the State of New York, February 2005.

What volatile chemicals might enter my home or business through vapor intrusion?

Petroleum products and solvents are common volatile chemicals that can cause vapor intrusion.

Gasoline, diesel fuel, and home heating oil are examples of petroleum products. Examples of solvents include tetrachloroethylene (a common solvent used in the dry cleaning industry, also known as “Perc” or PCE), and trichloroethylene (a

common solvent used for cleaning and degreasing, also known as TCE).

Odors are usually associated with petroleum spills or leaks. However, odors are not usually associated with solvent leaks or spills unless large amounts are released.

What is the health concern associated with volatile chemicals in indoor air?

Low levels of volatile chemicals are normally found in indoor air at a typical home or business. Vapor intrusion can add to these types of chemicals but usually at very low levels.

When volatile chemical levels are high enough, people might temporarily experience headaches, nausea, and/or eye and respiratory irritation. These symptoms usually go away when the person moves into fresh air. If people breathe low levels of these chemicals for many years, there may be a small health risk. Government agencies may take steps to reduce even low levels of volatile chemicals in order to be cautious and protective of people’s health.

What other sources of volatile chemicals can make indoor air at my home or business unhealthy?

Paints, paint strippers and thinners, glues, solvents, and air fresheners are examples of products that contain volatile chemicals that can affect indoor air quality. Dry cleaned clothing and cigarette smoke also contribute volatile chemicals to indoor air.

Volatile chemicals occur in outdoor air when they are released from various industries and vehicles. Because buildings are not airtight, outdoor air can enter buildings and affect indoor air quality.

These sources are taken into account when evaluating whether vapor intrusion is contributing to unhealthy indoor air.

Some steps you can take to prevent releases of volatile chemicals from products stored or used at your home or business:

- Do not buy more chemicals than you need at one time;
- Store unused chemicals in appropriate containers in well ventilated areas away from living spaces or work spaces; and,
- Place freshly dry cleaned clothes in a well ventilated area.

What happens if vapor intrusion is a possible problem near my home or business?

When vapor intrusion is suspected, it should be investigated by the party responsible for the contamination. An investigation typically involves testing soil, groundwater, and soil gas (air trapped between soil particles). This testing helps to determine if volatile chemicals might pose an indoor air quality problem.

At many contaminated sites, volatile chemical levels are low and are not considered a problem. Sometimes these levels in soil, groundwater, or soil gas are high enough to cause concerns about indoor air quality in nearby homes or businesses.

When a concern about indoor air quality exists, samples are often collected inside homes or businesses. The samples are needed to determine if the volatile chemical levels in buildings are making indoor air unhealthy and whether vapor intrusion might be responsible. **Any air sampling planned at your home or business requires your permission.**

What happens if a vapor intrusion problem is found?

If soil or groundwater contaminated with volatile chemicals poses a health concern, the most common solution is to install a system that removes the chemicals before vapors enter a home or business. These systems are similar to those installed in homes in regions of the country where radon is an issue and are commonly known as soil vapor vacuum systems.

Soil vapor vacuum systems remove the volatile chemicals from the soil below the foundation by sucking the vapors out of the soil. The vapor is moved through pipes and discharged into outdoor air. If the chemical levels are high, the vapors are treated before being discharged. When these systems are needed, the party responsible for contamination usually pays for them.

Vapor intrusion questions? Please contact:

**Washington State Department of Health
Office of Environmental Health Assessments,
Site Assessment Section**

1-877-485-7316 (toll free)

For persons with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TDD/TTY 1-800-833-6388).