

# Investigating Vapor Intrusion

## What is vapor intrusion?

Vapor intrusion is a way that volatile chemicals (see text box) in soil and groundwater can enter and build up inside buildings.

When chemicals spill or leak into the ground, they can contaminate the soil and the groundwater. Depending on the type and amount, these chemical vapors can possibly affect your health if you breathe them in indoor air.<sup>1</sup>

If scientists suspect that people are being exposed to chemicals through vapor intrusion, they may conduct a **vapor intrusion investigation**.

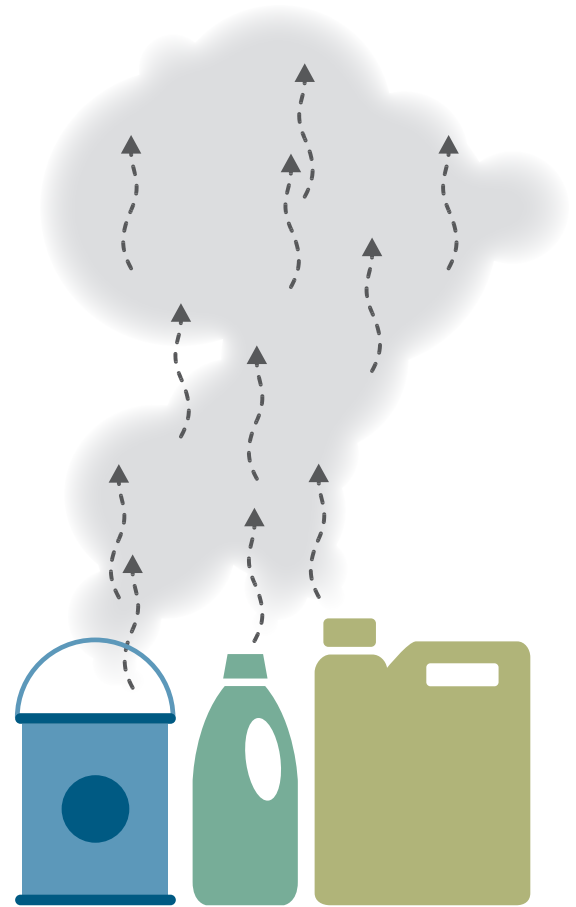
## What can I expect during a vapor intrusion investigation?

If scientists suspect vapor intrusion in a community, they first gather information about the type, amount, and location of contamination in soil, groundwater, and indoor air. If this information shows that vapor intrusion is a concern, scientists collect additional samples to confirm it.

- Scientists collect samples from indoor air, from beneath the building (sub-slab gas samples), and sometimes from outdoor air as well. Samples are usually collected from people's homes over a 24 hour period.
- If weather can affect the test results, scientists may collect samples during different times of the year.
- Scientists then send the air samples to a laboratory where they are tested for various chemicals. The results will then be shared with the occupants and/or owners of each home.

## Can chemicals in household products affect vapor intrusion investigations?

- Many of the chemicals found in vapor intrusion investigations are also found in common household products such as paints, air fresheners, and cleaning supplies.
- To focus on just the chemicals that may be coming from vapor intrusion, scientists may identify household products containing chemicals and remove them (whenever possible) before collecting indoor air samples.



**Volatile chemicals** are a class of chemicals that are volatile (evaporate easily) and form a vapor in the air. Some common volatile chemicals include the dry cleaning chemical tetrachloroethylene and benzene which is a component of automotive gasoline.

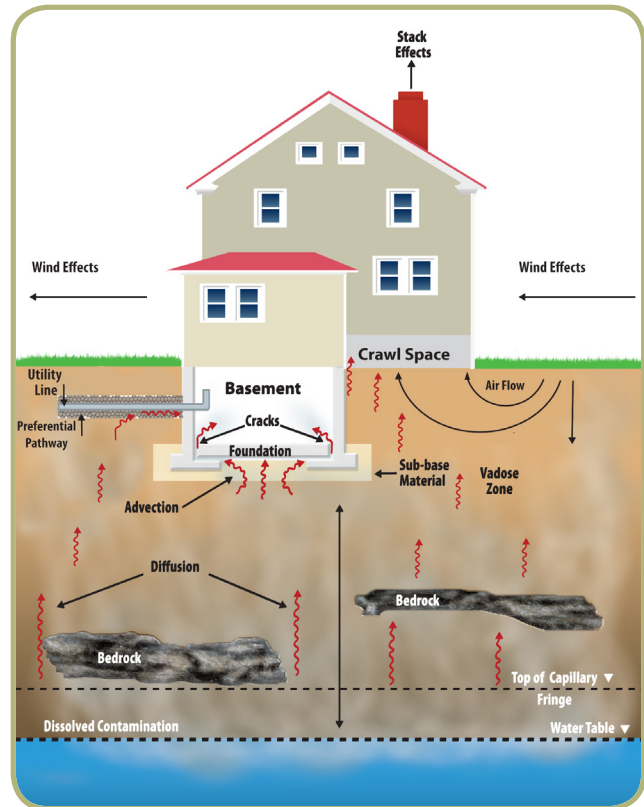
Chemicals detected during a sampling event that are not entirely the result of underground contamination are referred to as "background contamination."

<sup>1</sup>ATSDR's Toxic Substances Portal provides information about chemical health effects and is located at <http://www.atsdr.cdc.gov/substances/index.asp>

## How can I reduce the levels of volatile chemicals in my home?

You can take these steps to help improve your home's indoor air quality:

1. Get more fresh air into your homes. Ventilation can keep any volatile chemicals in your home from building up to unsafe levels.<sup>2</sup>
  - Open windows and use fans to bring in fresh air directly – unless you have asthma triggered by outdoor air pollution or pollen in your area.
  - If your ventilation, heating, and air conditioning systems have filters, you may be able to adjust the fresh-air intakes to increase air exchange while removing pollen, dust, or other asthma irritants brought in from outdoors.
2. Seal cracks or holes in the floor or foundation to keep any volatile chemicals under your home from coming in.
3. Use and store fewer products that contain volatile chemicals (such as fuels, certain paints, paint thinners, and products that remove glue and adhesives).
  - When you use such products, follow the product recommendations carefully.
  - Open windows and run a fan to reduce the amount of the chemical in indoor air.
  - Avoid smoking tobacco products indoors.



## What can environmental health scientists do to remove chemical contamination caused by vapor intrusion from your home?

- If scientists find that vapor intrusion could harm your health, they may install a **mitigation system** to keep volatile chemicals from entering your home.<sup>3</sup> Mitigation systems are usually made up of a fan and a system of pipes that draw the soil gases from beneath your home and release them outside so they can scatter and break down naturally.
- Scientists may recommend adjusting heating, ventilation and air conditioning systems in larger commercial buildings to regulate indoor air pressure and keep vapors from being pulled inside.
- Sealing openings and installing a vapor barrier (made of plastic sheeting) may also reduce vapor intrusion.

## Where can I learn more about vapor intrusion?

### U.S. Environmental Protection Agency

- Vapor intrusion website, visit: <http://www2.epa.gov/vaporintrusion>

### Interstate Technology & Regulatory Council

- Vapor intrusion website, visit: <http://www.itrcweb.org/Team/Public?teamID=22>

<sup>2</sup>Unless a significant source of outdoor air contamination has been identified.

<sup>3</sup>For more detailed information, see US EPA's Engineering Issue: Indoor Air Vapor Intrusion Mitigation Approaches <https://clu-in.org/download/char/600r08115.pdf>