

## Vapor Intrusion and Your Health

Vapors from polluted soil and groundwater can move into buildings, contaminate the indoor air, and cause health concerns.

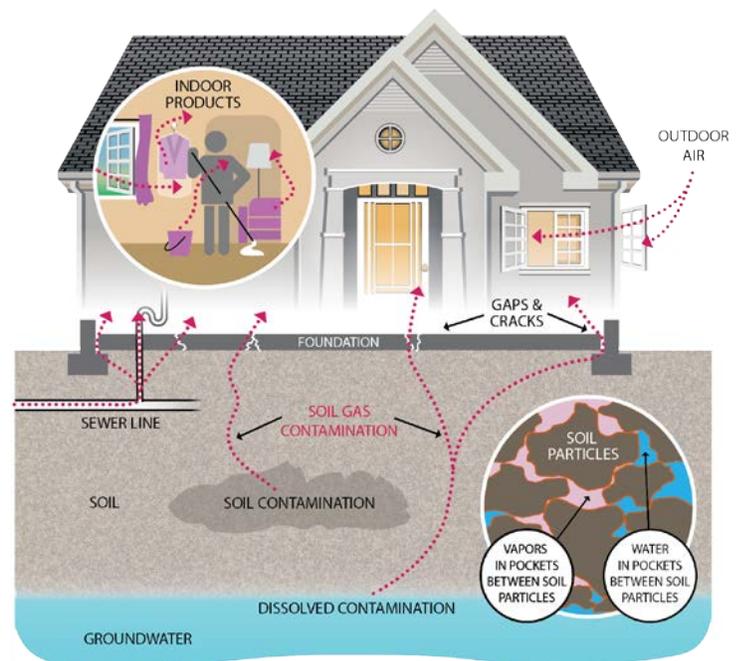
### What is vapor intrusion?

When some chemicals are spilled or dumped, they can form vapors that travel through the soil, reach under buildings, and contaminate the indoor air. Vapors can reach the indoor air through cracks in foundations, utility pipes, and sewer lines. If groundwater is contaminated, it can spread farther and affect buildings and homes at a greater distance.

### What are vapor-forming chemicals?

Vapor-forming chemicals can easily move into the air and form vapors. Common ones include solvents used in dry cleaning, degreasing, gasoline and diesel fuel. Examples of toxic vapor-forming chemicals are:

- **Tetrachloroethylene**, also called **perchloroethylene (“perc” or PCE)**: PCE is known to the State of California to cause cancer. Many dry cleaners have used PCE for decades, but this use will be phased out by 2023.
- **Trichloroethylene (TCE)**: TCE is known to the State of California to cause cancer and harm reproductive health. TCE is commonly used in industries to remove oil or grease. It’s also in some household products such as stain removers and adhesives.
- **Naphthalene**: Naphthalene is known to the State of California to cause cancer. Sources include inks, dyes, fossil fuels, mothballs, tar, tobacco smoke, and burning of wood.



*Figure 1: Toxic vapors in indoor air can come from multiple sources – underground contamination, consumer products, or outdoor air. Vapors can travel between soil particles and reach ground surface.*

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## What are other sources of vapor-forming chemicals?

Many consumer products, such as household cleaners, furniture, adhesives and paints, contain these chemicals and can pollute indoor air. Vapor-forming chemicals in outdoor air can also enter buildings.



## Is it harmful to my health?

Breathing vapor-forming chemicals can affect your health. Health effects depend on the chemical, concentration, and duration of the exposure. High concentrations, even for a short time, can be harmful. Symptoms include headache, nausea, and shortness of breath.

Breathing air with vapor-forming chemicals for extended periods can cause other health effects, including cancer and damage to liver, kidney, and other organs. For example, exposure to TCE during the first three months of pregnancy is of concern because of potential harm to the developing embryo or fetus. If you believe your health has been affected, please contact your physician.

## How is vapor intrusion discovered?

When a spill is discovered, soil, groundwater, and soil vapor are sampled, usually under supervision of a local, state, or federal agency. If sampling results show high levels of contamination, the investigation may extend to nearby properties and buildings. Indoor air sampling may also be required. Samples from beneath and outside a building could be used to identify which chemicals are related to the spill and which are coming from household products and outdoor sources.

## What can be done about vapor intrusion in my home or building?

There are several ways to stop or reduce vapor intrusion and decrease indoor air contamination. Cleanup at the spill site will reduce the amount of vapor-forming chemicals coming from soil and groundwater. During the cleanup process, in consultation with environmental experts, the following actions can limit exposure to protect health:

- Increase ventilation by opening doors and windows.
- Seal cracks in the building's foundation.
- Work with a technician to adjust the heating and ventilation (HVAC) system to prevent vapors from entering or accumulating inside a building.
- Use air purifiers to reduce the amount of vapor-forming chemicals in the indoor air.
- Install ventilation systems under buildings to prevent vapor-forming chemicals from getting into the indoor air (under supervision of oversight agency).

## **Where can I learn more about vapor intrusion in California?**

### [Department of Toxic Substances Control \(DTSC\)](#)

<https://www.dtsc.ca.gov/vapor-intrusion/>

Email: [vaporintrusion@dtsc.ca.gov](mailto:vaporintrusion@dtsc.ca.gov)

### [State Water Resources Control Board](#)

[https://www.waterboards.ca.gov/water\\_issues/programs/scp/vapor\\_intrusion/](https://www.waterboards.ca.gov/water_issues/programs/scp/vapor_intrusion/)

Email: [DWQ-vaporintrusion@waterboards.ca.gov](mailto:DWQ-vaporintrusion@waterboards.ca.gov)

### [San Francisco Bay Regional Water Quality Control Board](#)

[https://www.waterboards.ca.gov/sanfranciscobay/water\\_issues/programs/esl.html](https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/esl.html)