EPA United States Environmental Protection Agency

What You Should Know About the Problem of Vapor Intrusion

EPA Superfund Division
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What you can do to improve indoor air quality

- Don't buy more chemicals than you need.
- Store unused chemicals in appropriate tightly sealed containers.
- Don't make your home too air-tight. Fresh air helps prevent chemical build-up and mold growth.
- Fix leaks promptly, as well as other moisture problems that encourage mold.
- Check all appliances and fireplaces annually.
- Test your home for radon. Test kits are available at hardware and home improvement stores or you can call the Radon Hotline at 800-767-7236 (800-SOSRADON).
- Install carbon monoxide detectors in your home. They are available at hardware and home improvement stores.

For more information

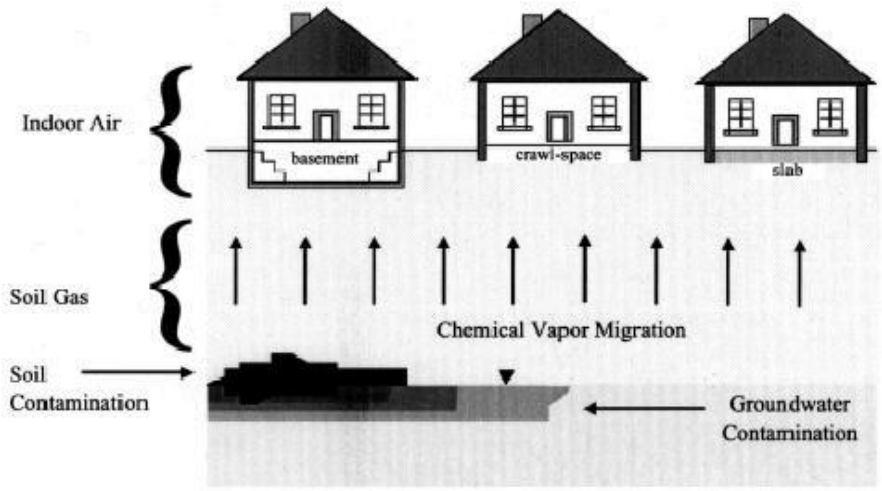
For questions on how vapor intrusion affects your health, contact your local health department or the federal Agency for Toxic Substances and Disease Registry at 888-422-8737, or visit www.atsdr.cdc.gov.

For detailed EPA information on vapor intrusion, visit www.epa.gov/oswer/vaporintrusion.

For more information on indoor air quality, visit www.epa.gov/iaq.

You may also call EPA Region 5 at 800-621-8431, 8:30 a.m. to 4:30 p.m. (Central), weekdays.

Vapor Intrusion into Indoor Air



This diagram shows how vapors can rise up through the soil and into your home.

Vapors and gases from contaminated ground water and soil have the potential to seep into indoor spaces and cause health problems. The U.S. Environmental Protection Agency wants you to know how to deal with vapor intrusion in your home.

What is vapor intrusion?

When chemicals or petroleum products are spilled or leak from underground storage tanks, they can give off gases or vapors that can get inside buildings. Common products that can cause vapor intrusion are gasoline or diesel fuel, dry cleaning solvents and industrial degreasers. The vapors can move through the soil and seep through cracks in basements, foundations, sewer lines and other openings.

Vapor intrusion is a concern because vapors can build up to a point where the health of residents or workers in those buildings could be at risk. Some vapors from petroleum products have a gasoline odor, others are odor-free.

Common household items can give off vapors

Common household products can be a source of indoor air problems. Vapors and gases can come from paint, paint strippers or thinners, moth balls, new carpeting and furniture, stored fuel, air fresheners, cleaning products, dry-cleaned clothing and cigarette smoke.

Vapor intrusion may affect your health

Health risks vary based on the type and amount of chemicals. How healthy you are and how long you are exposed are also factors. Some people may experience eye and respiratory irritation, headaches or nausea. These symptoms are temporary and should go away when the vapors are vented. Low-level chemical exposures over many years, however, may raise your lifetime risk of cancer or chronic disease.

Steps in the study of vapor intrusion

EPA first takes samples of gas in the soil and ground water near a site with known contamination. If we don't find the type of contamination that can turn into a gas – known as "volatile" – then vapor intrusion should not be a problem.

If we find volatile contamination, we may widen the search to include sampling closer to or on individual properties. The next step is to take vapor samples from the soil under building foundations. These are called "sub-slab soil" gas samples.

The results of these samples will tell EPA if indoor air samples are needed. The indoor air samples will tell us if there are vapors in the indoor air. The samples will also show if the vapors pose a health risk, or if they are at levels normally present in most buildings.

One way to keep harmful vapors out of your home is to make sure common household products, especially chemical- and petroleum-based products, are tightly sealed and properly stored in a well-ventilated area.

An example of a system that draws radon and other vapors out of the soil and vents them outside. It's known as a "sub-slab mitigation system."

EPA does not generally recommend indoor air sampling before sub-slab sampling because indoor air quality varies widely day to day. Also, household products may interfere with sampling results.

Finally, we will determine if there is enough of a problem to take action. Environmental law and EPA regulations tell us when we need to do something to protect your family's health.

If EPA finds a problem

The most common solution is to install systems often used to reduce naturally occurring radon that seeps into homes in some geographic areas. These systems remove soil vapors from below basements or foundations before they enter homes.

Vapors are vented into the outside air where they become dispersed and harmless. These systems use minimal electricity and do not affect heating and cooling efficiency. Once the source of the vapors is eliminated, the systems should no longer be needed.