What is vapour intrusion?

Vapour intrusion happens when harmful gases make their way into homes through cracks in the foundation or other entry points.

The gases are caused by substances or chemicals that travel through soil or groundwater near or under the home. For example, this could happen if there was a chemical or fuel spill or a leak from an underground storage tank.

Vapour intrusion isn't common and usually doesn't contaminate air inside the home. However, it's important to be aware of it if your home is near known soil or groundwater contamination.

What substances or chemicals can enter a home through vapour intrusion?

Gases from petroleum products such as oil, gasoline, diesel fuel or solvents are the most common causes of vapour intrusion. This is often caused by an oil or gas leak, or a spill from a storage tank at a gas station.

Usually there will be a petroleum odour if the contamination is significant.

However, there may not be an odour if the vapour intrusion is at a low level or is caused by other substances or chemicals that are not petroleum based and do not produce an odour.

What are the health risks?

Exposure to gases from petroleum products and other gases can affect your health.

A build-up of gases in the home could lead to an odour, and people might experience minor symptoms like eye irritation, headache, or nausea. These symptoms usually get better if ventilation is improved in the house, and when the person breathes fresh air.

It is important to improve indoor air quality and reduce the amount of vapour intrusion in the home. Exposure over a long period of time can lead to more serious health conditions, including some blood disorders or cancers.

How can I find out if there may be vapour intrusion in my home?

In general, soil gas or groundwater samples near the contaminated site can be tested. Testing near or inside a home may also be done.

If testing is done inside the home the results need to be interpreted carefully. This is because most buildings and homes have some level of gases, which are most often from household sources and not a contaminated site.

Gas levels can also change from day to day inside a home, which is why samples are usually taken outside or from underneath the foundation. These samples are more reliable to help find out if there is vapour intrusion.

What other substances affect indoor air quality?

There are many gases found in the average household that can affect air quality. They often come from products like paint, paint thinner, tobacco smoke, cleaning sprays, moth balls, air freshener, new furniture or carpet, glues and solvents, fuels stored in attached garages or sheds, and dry-cleaned clothing.

These substances are more likely to be the cause of indoor air quality problems than vapour intrusion.

What can be done to fix vapour intrusion?

The most common and effective solution is to install a radon mitigation system. This prevents gases – including those that cause vapour intrusion - from entering the home by venting them directly outside from below the foundation. The system uses minimal electricity and should not significantly affect heating or cooling efficiency. This system will also prevent radon from entering the home.

What can be done to improve indoor air quality?

There are many things you can do to improve the air quality in your home:

- Limit how many chemicals and cleaners you use and store at home, especially the ones listed above that can affect air quality.
- Store unused chemicals in proper containers and in a well-ventilated area.
- Your home shouldn't be airtight. Fresh air helps prevent a build-up of harmful chemicals.
- Check your major appliances and fireplaces every year to make sure they are in good condition and working properly.
- Fix any water leaks to prevent mould.
- Consider testing your home for radon.
- If you smell a chemical odour that does not seem to be from inside your house, contact Health Links-Info Santé at 204-788-8200 or 1-888-315-9257. For very strong odours, contact your local fire department.

Information on this fact sheet has been adapted from State of Wisconsin Department of Health and Family Services, Division of Public Health "Vapor Intrusion": www.dhs.wisconsin.gov/air/vi.htm

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