Remediation and Redevelopment Program February 2018

# Mitigation: Protection from Vapor Intrusion

When test results show contaminant vapors (like petroleum or solvent fumes) are present in the air below a building, these vapors can get into the indoor air and present a health risk even if you cannot smell them. The good news is that **vapor mitigation** options are available to prevent these contaminant vapors from getting indoors. For more information and list of DNR contacts**, go to dnr.wi.gov and search "vapor intrusion".**

The DNR and the Department of Health Services (DHS) recommend that building owners allow installation of vapor mitigation systems when test results show chemical concentrations in the air below or near a building exceed the vapor screening criteria.

## Why Should I Allow Vapor Mitigation?

Exposure over time to chemical vapors can have negative health effects and increase cancer risk potential. By allowing a mitigation system to be installed, exposure to these contaminant vapors will be minimized. In addition, most vapor mitigation systems can also protect against exposure to radon (a naturally occurring element known to cause lung cancer) and can lessen the moisture entering through the lower level of a building.

These combined effects will improve the overall air quality inside a home or building, and having a mitigation system in place will demonstrate to future buyers that the building is already protected from these hazards.

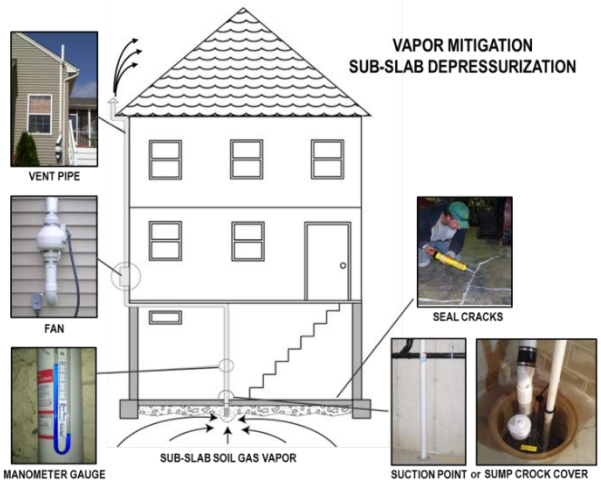
## What Does Vapor Mitigation Look Like?

Vapor mitigation designs will vary, and will take into consideration the specific layout and needs of a building. In most cases, significant cracks in the floor will be sealed and a sub-slab depressurization system will be installed. Sub-slab depressurization systems are commonly known as radon mitigation systems.

Sub-slab depressurization systems are fairly simple, and involve connecting a fan to a pipe to draw air from the soil beneath the building through a suction point in the floor. This energized fan creates a vacuum that collects air from below the building and vents the chemical vapors to the atmosphere where they are dispersed. A manometer gauge on the pipe shows the fan is drawing a vacuum.

## Who Pays for Installation?

When the risk from chemical vapors is discovered as part of an environmental cleanup, the party responsible for the cleanup is also responsible for paying for the design, installation, and start-up of vapor mitigation on affected properties. Start-up of a mitigation system typically requires testing to verify it is working correctly.




TYPICAL INSPECTION CHECKLIST

- ✓ Check manometer gauge for vacuum
- ✓ Check that fan is running
- ✓ Check that vent pipe is clear
- ✓ Check foundation for cracks

## Who Pays for Operation and Maintenance?

The responsible party is responsible for any necessary maintenance until the time the environmental cleanup case is "closed" by the DNR. After that, the responsibility for the operation and maintenance transfers to the owner of each affected property.

The amount of time after a mitigation system is installed until a property owner becomes responsible for the maintenance can vary from a few months to many years.

## How long is mitigation needed?

In most cases, it is expected that the vapor mitigation system will be a permanent addition to a building. However, in some instances the contaminant vapors beneath the building may decrease to safe levels, and the mitigation system can be removed.

Publication: RR-094
dnr.wi.gov Search: vapor intrusion

Testing and evaluation by an environmental professional, and review and approval by the DNR may be required before a vapor mitigation system can be turned off permanently. This testing is equivalent to work done during vapor intrusion sampling, explained in the DNR publication, What to Expect During Vapor Intrusion Sampling, (RR-954).

Because testing can carry a high cost, and vapor mitigation systems also protect against exposure to radon, property owners may find it desirable to keep the system operating.

## What is expected for maintenance?

Property owners are to be provided a maintenance plan by the system installer or party responsible for the cleanup. The plan should give specific instructions for how to keep the mitigation system running effectively.

The specific instructions for maintenance will vary, but typically includes simple steps such as checking a manometer gauge a few times a year and making sure cracks in the basement are sealed. There may also be a need to replace or repair parts from time to time.

A typical operation and maintenance plan for a sub-slab depressurization system might include:

- Run fan continuously
- Inspect vent pipe for obstructions
- Check vacuum reading on manometer gauge
- Seal any significant cracks in floor
- Keep a log of inspection and repairs

For instructions on how to obtain new copies of a maintenance plan, **go to dnr.wi.gov, search "vapor intrusion" and open the Maintenance tab**.

## What will it cost?

The costs to operate and maintain a mitigation system will vary by property, but generally, electrical costs for a sub-slab depressurization system on a single-family home can be expected to range from $10 - $15/month. Replacement and repairs would be in addition to this cost.

## Are there people to help with repairs?

Most maintenance can be done as part of standard upkeep by a property owner or caretaker of a building. If professional assistance is needed, the DHS keeps a list of radon mitigation contractors who may have the expertise to assist with larger repairs or remodeling projects. See the DHS website for a list of contractors in your area: dhs.wisconsin.gov/radon/radon-proficiency.htm

## Can I remodel my building?

Yes. However, if changes are made to the size of the building, or the mitigation system will be altered, contact a representative in the DNR's Remediation and Redevelopment Program before making these changes. (Wis. Admin. Code § NR 727 describes this requirement.) Depending on the situation, written approval may be needed by the DNR prior to completing the work.

It is recommended that an environmental professional test and verify that the vapor mitigation system works correctly after changes are made to the building.

## What does the law say?

When maintenance of a vapor mitigation system is necessary for protection from residual contamination, the DNR has authority to specify continuing obligations that require property owners to maintain the mitigation system on their property. This authority is defined in Wis. Stats. § 292.12 and Wis. Admin. Code §§ NR 722.15, and 726.

The continuing obligation responsibilities are explained in Wis. Admin. Code § NR 727.05. Property owners are required to notify purchasers or include the continuing obligations in the lease agreement for the property.

Continuing obligations are tracked in the DNR's database, and the DNR may conduct audits on these properties to help remind owners to stay in compliance with the maintenance requirements.

## Do I have options?

Property owners can choose not to allow installation or not to maintain the vapor mitigation system; however, these choices may subject them to future liability.

Property owners may also wish to negotiate with the responsible party prior to case closure for compensation or to make other arrangements for who will take care of system maintenance. These are private agreements to which the DNR is not a party. However, a copy of any written agreements must be provided to the DNR to keep on file. Additional information can be found in the DNR's publication, When Contamination Crosses a Property Line (RR-589).