

The Environmental Corner

By: Steve Henshaw



Vapor Intrusion

What Is It And How Can It Affect Me?

What is It?

Vapor intrusion is the migration of volatile chemicals, primarily volatile organic chemicals (VOCs) from the subsurface into overlying buildings. Vapor intrusion requires three components: A source, an inhabited building and a pathway from the source to the inhabitants.

Over the past few years, vapor intrusion has become a significant environmental issue, one that may have a direct impact on your dry cleaning operation. In fact, just last spring, the American Society for Testing and Materials (ASTM), the association responsible for creating the procedures and standards for conducting due diligence for banks lending and financing on real property, has suggested that vapor intrusion issues be considered when loaning on real property. That is to say, is it likely that vapors are coming off of contaminated soil and groundwater that may migrate

underneath buildings and enter basements, crawl spaces and confined spaces and rooms. Figure 1 is an example of a situation where vapors could enter a commercial or residential building.

While dry cleaners have typically been using OSHA standards to determine the safety of employees, some states are ratcheting down the standards by applying what is known as Preliminary Exposure Levels or PELs. These standards are several orders of magnitude, hundreds and thousands of times lower and have the support of the

EPA. Even if these standards do not apply to the workers of a dry cleaning business, they most certainly would apply to employees working in neighboring commercial businesses and neighboring residences.

How is it Measured?

Vapor intrusion is measured by collecting soil gas samples in stainless steel canisters from the unsaturated zone or by collecting vapor samples in stainless steel canisters

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directly within confined spaces (basements, crawl spaces, etc.). The concentration of the vapors are calculated, and if necessary, run through a model to determine the potential exposure to workers and residence based on factors that include the likely length of time that individuals may be exposed on a daily or annual basis. If the calculations or models indicate that a potential health threat exists, the regulatory agency will require abatement of the vapor.

What Constitutes Abatement?

If vapors exceed the established regulatory levels, the party that is responsible for creating the vapors will generally be required to protect those individuals from inhaling the contaminated air. Commonly, this is called abating the problem

or the nuisance.

There are many inexpensive, cost effective solutions to abating a vapor intrusion problem. One approach is to install a venting system in the basement to remove the vapors and route them to the outside atmosphere, much like removing radon gas from basements using a low flow fan attached to the top of PVC piping. Another approach would be to increase the flow rate of the heating and air conditioning unit to push fresh air into basement or confined space, thereby diluting the contaminated air to acceptable levels. Still another inexpensive approach might include increasing the ventilation of the confined space by pulling contaminated air out of the confined space using high speed fans. These measures

have been generally accepted by the regulatory agency as a means of protecting the public while a more permanent cleanup of the contaminated soil and groundwater is implemented.

It is a good bet that attention will continue to be paid to vapor intrusion issues for the foreseeable future, but it is important to recognize that while the implications of health exposures to neighboring workers and residence can be alarming, the solutions can be simple.

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