

The Environmental Corner

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Vapor Intrusion or Process Emissions – Help Me, Help You

I've talked a lot about vapor intrusion over the past few years. Vapor intrusion occurs when volatile organic compounds (VOCs) in soil and groundwater off-gas and migrate into occupied buildings and store fronts. The need to conduct vapor intrusion sampling is often times the result of VOCs in the soil and groundwater. Typically, a vapor intrusion assessment will include collecting sub-slab soil gas samples along with the collection of indoor air samples. This paired sampling, as it is often times referred to, is designed to show two things: 1) whether or not there is contamination in the subsurface soil gas sample that could create a vapor intrusion issue; and 2) whether or not there are concentrations of VOCs in the breathing air that could be attributable to the subsurface contamination.

If it is determined that vapor intrusion exists and VOCs are migrating from the subsurface into the occupied building structures, you, as the responsible party, would be responsible for mitigating those

vapors. Additionally, the identification of a vapor intrusion issue could require you to expand your investigation to other buildings (residential and commercial), and there is always the potential for third party litigation, should it be determined that the occupants of those offsite buildings have been breathing contaminated air.

If vapor intrusion is identified, the first thing you will wonder is whether or not the results are accurate and valid. **Because the stakes are high when it comes to the identification of a vapor intrusion issue, it is im-**

portant for you to know what things can affect the sampling results.

The most important thing to understand about what I am telling you is that the results of your vapor intrusion assessment matter. The samples collected must be representative of the actual conditions. As you know, the allowable levels of perchloroethylene (perc) and other VOCs in an operating dry cleaner are regulated by the Occupational Health and Safety Administration (OSHA); those acceptable levels are about 100 parts per million

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by volume for acceptable exposure to a worker over an 8-hour workday. Conversely, the acceptable indoor air levels for a worker in a neighboring commercial suite or in a house are regulated by the state or federal environmental agencies and those acceptable levels are in the low parts per billion by volume range. To illustrate the discrepancy, in terms of volume, the acceptable OSHA standard would be equivalent to having a hot tub of red colored water introduced into an Olympic sized pool, while the acceptable level for indoor air exposure in a residential dwelling would be equivalent to a red colored water in a small Visine bottle introduced into the same sized pool.

This huge discrepancy between the acceptable limits of VOCs in the breathing zone could result in your dry cleaning operations affecting the vapor intrusion results. That is to say: **your dry cleaning operations may be contributing to the VOCs detected in the sub-slab samples and in the indoor air samples of neighboring structures.** That's right, your very legal business operations could be adversely affecting the results of the vapor intrusion assessment, even indicating a risk to building occupants when one doesn't exist.

Now that you understand that, you can do the following things to minimize this from happening:

1) Always work with qualified experts. Just because someone tells you he is an environmental consultant does not mean they have the qualifications to hold themselves out as a vapor intrusion expert.

2) Ask the expert what measures they are taking to ensure that the samples will not be cross contaminated or compromised from the process operations.

3) Ask the expert whether they have conducted an audit of the cleaning products being used in the buildings being sampled, so they are noted as a potential contributor to the air quality results.

4) If you are in a shared strip mall, identify any openings you see between your suite where perc is being used and the neighboring suites. Such openings could include piping runs between the suites (e.g. gas lines, water lines, etc.) or could be a common sewer and cleanouts underlying your space and the neighboring spaces. Common duct work and HVAC systems between suites should also be identified.

5) Make sure you take steps to minimize your process emissions.

In understanding how process emissions can affect a vapor intrusion assessment, I am reminded of the movie Jerry Maquire. In the movie, Jerry is frustrated because he is working hard to promote his star client and standout wide receiver, Rod Tidwell. He pleads with Rod saying, "Help me, help you." Sometimes we feel this way, because we are working our tails off to make sure that the data we are collecting is accurate, but the data can be skewed if the process emissions, even the emissions coming off dry cleaned garments, can impact indoor air samples. **Remember, the indoor air in an operating dry cleaner is regulated under OSHA, while the air in the building sharing a common wall will be governed under state and federal "environmental" regulations.**

In order to help me, you can make sure that you tell the expert conducting the vapor intrusion sampling if and at what time you are venting air from inside your business. Vents do not have to operate all of the time and par-

ticularly during sampling they should be turned off when the doors to your machine are opened, or when clothes are removed and handled, which is when perc may be off-gassing from garments. Make sure that you maintain stills and misters and that this maintenance includes minimizing emissions by having carbon replaced routinely as specified in the owners' manual. Make sure that spills, no matter how small, are promptly cleaned up and that rags and sorbent pads used to wipe up spills are placed in drums. Make sure that the lids are placed on all drums of waste and that the lids are secured. Keep an inventory of all products you are using that contain chlorinated solvents, because those are the constituents that are being analyzed for as part of the vapor intrusion assessment.

Understanding the above information will benefit you because you as the operator are the true expert in how your business operates and the different ways in which emissions containing VOCs can leave your premises. Knowing that your operations could influence indoor air and sub-slab soil gas samples can help ensure that the data being collected and generated as part of a vapor intrusion assessment will be representative of the contribution from the subsurface and not from your processes.

Help me, help you by keeping your business operations tidy and as odor free as possible. Tackle unnecessary emissions of VOCs and this in turn will help your vapor mitigation experts collect high quality defensible data during their vapor intrusion assessment.

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With 30 years of experience, Steve Henshaw holds professional geology registrations in numerous states. As President and CEO of EnviroForensics, Henshaw serves as a client and technical manager on projects associated with site characterization, remedial design, remedial implementation and operation, litigation support and insurance coverage matters. He has acted as Project Manager or Client Manager on several hundred projects involving dry cleaners, manufacturers, landfills, refineries, foundries, metal plating shops, food processors, wood treating facilities, chemical blenders and transportation facilities. Henshaw has built a leading edge environmental engineering company that specializes in finding the funding to pay for environmental liabilities. By combining responsible party searches with insurance archeology investigations, EnviroForensics has been successful at remediating and closing sites for property owners and small business owners across the country, with minimal capital outlay from clients. He is a regular contributing writer for several dry cleaning trade publications on environmental and regulatory issues and remains active with dry cleaning associations by providing insight on changes in law and policy. Contact www.enviroforensics.com; e-mail: shenshaw@enviroforensics.com.