



TANK TIMES

Note: The articles in this issue were written from notes prepared for my September 24, 2009 presentation to the Portland Metropolitan Association of Realtors "Owners & Managers Forum". *Dana*

2009 Risk Based Cleanup Explained

The Oregon DEQ's Risk Based Decision Making (RBDM) Guidance Document establishes the criteria and methodologies which determine whether petroleum impacted soil from a heating oil tank (HOT) release poses a risk to human health and the environment, and whether such soil must be removed. The RBDM approach requires that we analyze the most contaminated (representative) sample to identify concentrations of petroleum constituents. We compare the laboratory results to the RBDM document's table of minimum risk based concentrations (RBCs: think threshold). The RBCs are listed separately for each possible pathway to human exposure. If any constituent concentrations exceed the minimum RBC for a given exposure pathway that exposure pathway must be explored and eliminated from concern. On residential heating oil cleanup projects the two exposure pathways most commonly addressed are "Leaching to Groundwater and Subsequent Human Ingestion" and "Volatilization and Vapor Intrusion to Indoor Airspace." The "Leaching to Groundwater" pathway usually presents no challenges unless contaminated soil is found in contact with groundwater, or there is a well in the immediate vicinity of the heating oil tank release. Exploration of the "Vapor Intrusion" pathway has frequently been required due to high benzene concentrations. In most cases use of a simple spreadsheet evaluation tool, provided by the DEQ, will demonstrate that the ratio of benzene to indoor airspace does not pose risk to the home's occupants.

Prior to January, 2009, the naphthalene RBC for the "Vapor Intrusion" exposure pathway was 160 parts per million (ppm), far above any concentrations we've seen on a heating oil cleanup site. Last January, due to the U.S. Environmental Protection Agency's reclassification of naphthalene from non-carcinogenic to carcinogenic, the RBC was changed to 4.5 ppm, then 6.5 ppm and now 5.4 ppm! Using the DEQ's vapor intrusion evaluation spreadsheet, when naphthalene values reach 4.6 ppm the maximum volume of contaminated soil which could remain

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near a 1200 square foot house is 0.6 cubic yards. When naphthalene is present in concentrations at or above 5.4 ppm on any heating oil tank cleanup project, there are additional activities and costs required for certified cleanup.

Solutions To High Naphthalene Concentrations in Soil

There are three solutions to high naphthalene on a residential heating oil tank site: excavation; additional risk assessment; and engineering controls. The most cost effective approach is to remove contaminated soil until naphthalene concentrations in remaining soil are below the risk based concentration (RBC). If that is not possible then, in addition to the normal tank decommissioning and RBDM site characterization work, a soil gas sampling and risk assessment must be conducted. This work almost always eliminates concerns regarding the "Vapor Intrusion" exposure pathway. I am aware of only one project, with a unique set of circumstances, where naphthalene vapors were present in sub-slab samples at levels which might pose a health risk. In the very rare instance where naphthalene vapors do pose a risk to the occupants, the remedy is an engineered system, similar to those used for radon, which will actively intercept and expel such vapors to the atmosphere.

The use of heavy equipment to remove both the tank and contaminated soil provides the best opportunity for a successful, cost effective cleanup. On sites where it is impossible to use heavy equipment, removal of contaminated soil by hand, through the bottom of the tank, is an option; however, the volume of soil which can be removed by hand is limited. Before beginning such work we recommend a sample of material be collected from the maximum practical depth of hand excavation, and analyzed for naphthalene concentrations. If naphthalene values in that sample are below the RBC, then the project can proceed as planned. If not, there is no reason to spend additional time and money on hand excavation because the soil gas sampling and risk assessment will still be required. In certain cases of super saturation and extremely high naphthalene concentrations there may be a value in removing some soil ahead of the soil gas work. In that situation there would be a two to four week wait before vapors levels might be impacted and any benefit enjoyed.

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Cleanup = Investigation**Suggestions for Property Transactions**

It is important to remember that each underground heating oil cleanup project, whether an excavation or a risk assessment, is an investigative project. There is no way to know the actual conditions at a site until the investigation is complete and all the data is in hand. While experience provides us with a sense of what we can expect, and that expectation may prove to be correct, major changes in the scope of work can be just one soil boring or one excavator bucket away. With this in mind, these are my recommendations for property transactions:

1. NO ONE should ever take possession of a property with an unknown environmental condition. Since all cleanup projects are investigative, no one can know the environmental condition until the work is complete, the lab data is in and the contractor has issued a certification letter.
2. Start early. Ideally, any heating oil tank, abandoned or active, should be addressed before the property is listed. This empowers the seller to negotiate based on the known, versus the unknown. Buyers should schedule a tank locate and/or initial site assessment samples at the earliest possible moment. Time is of the essence, and you can no longer be confident of a quick cleanup project before closing.
3. Plan ahead and be patient. Complex projects require more decisions, before and during the project. We've been taking more time to think and evaluate conditions before providing bids. Some times work is halted pending a soil sample lab result. Standard laboratory turn-around time for soil gas samples is two weeks. (see # 2 above)
4. Choose your contractor carefully. Oregon DEQ personnel do not routinely supervise or audit cleanup projects. There are no permitting or notification requirements for HOT cleanup projects, so in most cases the DEQ has no knowledge of site activities until final cleanup reports are received in their office. The DEQ Heating Oil Tank Program relies entirely on the integrity, experience and capabilities of the contractor and his staff.
5. Decommission BEFORE the tank leaks. The DEQ puts the life expectancy of a heating oil tank at fifteen to twenty years. Most of the tanks in the Portland area were installed prior to 1960. As I always say: "If it hasn't leaked, it will!" Clearly, the best time to decommission an aging underground heating oil tank is when the samples are clean!

Introducing Our Staff

We have always maintained a positive work environment and offered the wages and benefits necessary to attract and retain high quality employees. I believe our staff to be the most qualified, experienced and conscientious in the business. If you've ever attended one of my classes or presentations, you've probably heard me praise their performance and our overall team approach. I thought I'd use remaining space in this issue to tell you a little bit about each of them.

Joshua Langford, Vice President, HOT Supervisor

Josh is my clear favorite among our staff. He is my son, and he owns stock in our corporation. Josh started working with me in 2001, after a three month sojourn in Southeast Asia. He is responsible for final report editing, assembly and distribution. He also manages our accounts payable and is responsible for critical decisions in my absence.

Mark Bradley, Customer Service, HOT Supervisor

Mark received a BA in Earth Science from University of North Carolina, Charlotte. He began working in the field for DTT&S in Spring 2002, left to pursue other opportunities, and returned in late 2006 to take his spot at the front desk. In addition to his customer service duties, Mark stays abreast of all projects as they proceed, double checks all data and writes the first version of each final report.

Bill Burnett, HOT Supervisor

A long-time friend of Josh's (and mine), Bill came to work for us in the Spring of 2005. While our field crews are all highly skilled and experienced with underground tanks & cleanup, Bill's mechanical skills have placed him in the lead position on most of our above ground tank installations.

Dan Sajko, HOT Supervisor

Dan has been working with us since late Spring, 2005, as he was finishing work on his bachelor's degree at PSU. He is the supervisor most likely to be seen (smiling) while running heavy equipment or the dump truck.

Clinton Anderson, HOT Supervisor

Clint also came to work with us as he was completing a degree (biology) at PSU in the summer of 2006. Clint's long-term plan is to work as a firefighter/EMT. Fortunately for us, he has not yet found such a position.

Alex Reff, Environmental Technician

Alex recently graduated from Oregon State University with a degree in construction management. The industry slowdown led Alex to our company last August. Alex is a great addition to our team.

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