

The Environmental Corner

By: Steve Henshaw

President & CEO of EnviroForensics



Risk Based Closures Require Long Term Monitoring

What is the True Cost of Implementing Institutional Controls?

I've been involved with a number of environmental site cleanups where the chemicals in the soil and groundwater were not believed to be a significant threat to human health or the environment. There are a number of situations where this scenario applies, such as an old light-industrial manufacturing site in the middle of a blighted industrial urban area. In such a case, the surrounding sites were identified as being the cause for the majority of the groundwater impacts in the near vicinity and if we were to remediate the groundwater beneath our site, the contamination from neighboring sites would continue to migrate beneath our property essentially re-contaminating it. Another example would be when a site exhibits soil impacts, but the groundwater does not indicate significant impacts, even though the contamination has persisted for 20 plus years. The site is capped with an asphalt or concrete parking lot and building.

There are many, many scenarios where it would appear that a risk-

based closure with no physical remediation is warranted. The assumptions are that the site has been adequately characterized so the extent of the contamination is known in the soil and groundwater. The contamination is not reaching the groundwater and that an inventory has been conducted to determine that no wells are located nearby and that no person is drinking from nearby wells. Finally, a risk evaluation is conducted to determine what pathways might exist whereby contaminants from the site could have an adverse impact on people or the

environment. That is to say that no person or animal (including wildlife and marine organisms) would come into physical contact with the contamination, breathe vapors emanating from the contaminants or drink contaminated water.

Assuming that the exposure pathways are not considered "completed" and they show no likely impacts, a "risk-based closure" may be a reasonable, cost effective alternative for obtaining site closure. Such a risk-based closure usually includes imposing future land use restrictions on the contaminated property. Land use restrictions are then drafted into an Environmental Restrictive Cov-

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enant or ERC that is placed on the property deed and is supposed to follow the property through future transactions and ownership changes. The ERC typically includes language that states certain contaminants remain in soil and/or groundwater and that the regulatory agency has determined that the contaminants do not pose an unacceptable risk to human health and the environment. The restrictions, commonly called institutional controls, are then listed and they may include future land use of the site, such as no residential use, no use as a day care center, or use as a school for grades K through 12. The restrictions usually impose a “no use of the groundwater” or “drilling of wells,” even if the wells are only to be used for irrigation. In parallel with the implementing the ERC, the regulatory agency may determine that groundwater must be monitored for a period of time. If this were all that was required, many, if not most people would be thrilled to close the site under those conditions.

Unfortunately, most sites now must address the potential for vapor intrusion to adversely impact occupants of any structures on the property or in the “near” vicinity of the property (e.g. businesses, store fronts, homes, etc.). Vapor intrusion or VI is the term used to determine whether contaminants in soil and groundwater would or are likely to volatilize (off gas) and migrate through cracks in the floors, openings where pipes enter buildings, and along utility corridors where pipes are laid and backfilled with a gravel or sand, into buildings. Air (gas) samples are collected beneath the building slab and inside of the building to determine whether the vapor levels contain harmful constituents above acceptable levels developed by the regulatory agencies. If vapors

are present in the sub-slab and/or indoor air samples that show a VI problem, mitigation measures are required. Such mitigation measures commonly include the installation of sub-slab depressurization systems (SSDS), which are similar to a radon gas mitigation system that would be installed on a residential house when radon has been detected above regulatory levels.

If an SSDS is required and installed, its long-term maintenance and the long-term effectiveness of the system would be required. Essentially, this will require an annual inspection to ensure the system is operating in accordance with its design and routine sampling to demonstrate that it is working properly and no contaminant vapors are found in the buildings at unacceptable levels. The cost to conduct such an inspection and associated testing could be several thousands of dollars per year for the next several decades. This, along with reporting the information to the agency, constitutes an expense and management requirement that will follow the life of the ERC. The US EPA is currently developing guidance on restrictions and controls that will be applied to sites wishing to close using an ERC.

Where I believe that this issue will become important is on sites where consultants are recommending the site be closed using a risk-based approach, yet a mass of highly impacted soil (hot spot) remains in place beneath the building slab. In this scenario, the contamination will persist and the volatilization will persist in the form of a vapor intrusion issue for decades. If the contaminants continue to volatilize for decades and create an ongoing vapor intrusion issue, the long term monitoring of the SSDS and the institutional controls for all intent in a real estate context

could go on in perpetuity.

Make sure before you agree to a risk-based closure, where an ERC and institutional controls are being placed on the property and will follow the property forever, that you get all of the long term costs for maintaining, monitoring and reporting on such institutional controls. The devil is in the details.

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. He 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. Visit www.enviroforensics.com; e-mail: shenshaw@enviroforensics.com.