

Five Vapor Intrusion Sites in New York State

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New York state has perhaps the most advanced program, of any state or U.S. EPA region, for investigating and addressing the vapor intrusion pathway. The state is also in the midst of a debate over how best to promote the cleanup and productive reuse of brownfields properties. For these reasons, I visited five New York communities from July 31 to August 3, 2007, viewing contaminated properties and meeting with activists. The first four visits were upstate, and the fifth was on Long Island.

- Victor, near Rochester, where a plume of volatile organic compounds (VOCs) from apparent “midnight dumping” at an operating quarry has migrated under a residential neighborhood that gets its drinking water from private wells.
- Ithaca’s South Hill neighborhood, where VOCs from the Morse Chain factory, now owned and operated by Emerson Electric, flow underneath homes. New York’s Department of Environmental Conservation (DEC) is investigating possibly migration under an elementary school, and residents suspect a second source, a redeveloped property formerly occupied by NCR.
- Endicott, just west of Binghamton, where VOC contamination from IBM’s original plant has impacted five hundred homes. This was my third visit to Endicott, and as before, I also met with activists from nearby Hillcrest.
- Cortland, north of Binghamton, where the Smith Corona plant in Cortlandville released VOCs under a residential neighborhood.



Meeting in a Victor, NY living room

- Plainview-Old Bethpage, in Nassau County, where the local water district has been forced to conduct wellhead treatment to remove VOCs from water from the sole-source aquifer. The state has conducted some vapor testing on industrial properties, but the groundwater plumes are reportedly poorly characterized.



Reported release site in the Plainview [NY] Industrial Park

I gave public talks in the four upstate communities, with press coverage at the first three. The media blended my remarks with coverage of Sen. Clinton's recently introduced legislation designed to promote more protective standards for trichloroethylene (TCE), but at each of the four meetings I gave a primer on vapor intrusion, discussed the significance of the standards, and led discussions on site remediation.

I view my site visits as two-way learning exercises, and this was no exception. Below I summarize some of the more important lessons learned for both brownfields and vapor intrusion.

Reuse without Redevelopment

In Victor, two residents active in local government mentioned that new homes were being built, apparently over the contamination plume. Like most other communities in a similar situation, the town has no guidelines in place for determining whether and how to approve residential construction where vapor intrusion is likely.

Furthermore, at none of the sites I visited did the brownfields model drive the cleanup of the offending VOCs. By brownfields model, I mean that the funds generated by redevelopment pay (after the fact, usually) for cleanup.

Instead, I was struck that the source properties—except for the Victor Quarry—are now owned and operated by new entities, but the original buildings remain. Though the workforce is much smaller, Morse Chain is now Emerson Electric, which everyone

seemed to agree is stuck, by reason of corporate acquisition, with the responsibility for cleaning up another business's mess. Huron Real Estate manages an industrial park on the old IBM Campus; IBM is just one of many tenants. Smith Corona's old typewriter plant in Cortlandville is now occupied by several firms. And current businesses in the Plainview Industrial Park are not the companies suspected of past pollution. Most of the official concern seems to be for the occupants of homes over the groundwater plumes migrating from these sites; I have not seen information on indoor air contamination within the industrial structures on site.



Former Smith Corona plant in Cortlandville, NY

The only redevelopment site was Ithaca's South Hill Industrial Park, formerly NCR (National Cash Register), but thus far it is only *suspected* of contributing to the groundwater plumes. However, neighbors expect Emerson to shut down its remaining operations, opening the door to a major redevelopment in what appears to be a desirable location, between the attractive South Hill neighborhood and Ithaca College.

In general, these properties are brownfields, even though most are being reused without demolition and new construction. But the magnitude of the cleanup challenge, for most sites with migration volatile organic compounds, would make it difficult to fund cleanup as part of redevelopment. The responses in Endicott and Ithaca are being funded by the polluter or its corporate successor, and this may also be true in Cortland. Activity in Victor and Plainview is handicapped by the absence of a viable responsible party, though residents are not sure why the Victor quarry owners have not been held accountable for obvious releases on their property.

Viewing the New York sites along with others I have visited, including those in my own community, vapor intrusion is a major obstacle to redevelopment. In many cases, it is feasible, and it takes only a small percentage of construction costs to design mitigation into new structures, particularly for industrial or commercial use.

But rarely will construction budgets cover complete source removal of volatile organic compounds or a complete response—including investigation, mitigation, and remediation—over migrating plumes. Thus, redevelopment may uncover vapor intrusion risks, but either designating responsible parties or allocating government funds will be necessary to get the entire job done.

Vapor Intrusion Lessons

There was a thirst, in all of the communities I visited, for a better understanding of vapor intrusion and how it is measured. Even community members with many public meetings under their belts seemed unfamiliar with the attenuation factor, “alpha” in the Johnson-Ettinger Model. Activists with engineering backgrounds were pleased to learn how to convert $\mu\text{g}/\text{m}^3$ (micrograms per cubic meter) to ppbv (parts per billion by volume), and *vice versa*. People were also confused by the roles and responsibilities of the various environmental agencies. I’ve attended numerous technical conferences on vapor intrusion, but usually I’m the only community member present. There’s a need for workshops on the subject, targeted at the impacted public.

Not surprisingly, the people I met with showed great interest in the sampling results from their own homes. They wanted to understand why some rooms register more TCE or PCE vapors than others. They told me that scientists from the New York Department of Environmental Conservation are conducting a study to help understand that variability, but that study relies on Summa canisters—vacuum vessels that collect samples for off-site analysis.



Sampling hole in an Ithaca, NY basement slab

Over the phone in Victor, Hopewell Junction (New York) activist Debra Hall explained how U.S. EPA surveyed her home with the Trace Atmospheric Gas Analyzer (TAGA) a real-time measuring instrument. I retold Debra's anecdotes at my other sessions. In every community, participants like the idea of sitting in a van, watching samples register on a computer screen, as a technician in their homes pointed the end of a long plastic tube at likely pathways and potential alternative sources.

On their own, a number of residents with subslab depressurization systems in place expressed concern that long-term monitoring was insufficient. In fact, some were unhappy that some homes were given "all clear" ratings based upon just one or two sampling events.

Like homeowners anywhere vapor intrusion is reported, residents were concerned about property sales and values as well as the health effects of vapor intrusion. We shared some anecdotes, but it appears there have been no systematic surveys of the economic impact of the discovery or mitigation of vapor intrusion.



**Handwriting on the wall, across the street from IBM old Endicott, NY plant
The roof has a large arrow pointing at "IBM's Toxic Plume"**

Finally, residents expressed concern about the protectiveness of action levels, the indoor air concentrations requiring that mitigation or remediation be initiated or enhanced. Though they showed interest in the background to the federal legislation, just introduced by Sen. Clinton and other Senators, in each town I explained the matrices establish by the New York Department of Health to determine where action is required. As I wrote last October (<http://www.cpeo.org/lists/brownfields/2006/msg00424.html>), the

difficult-to-comprehend table has two advantages. First, it allows for the mitigation of *potential* vapor intrusion and second, it discourages mitigation where it appears that the vapor source is *not in the subsurface*.

I asserted that the matrix for TCE essentially provided as much protection as the single-number, $1 \mu\text{g}/\text{m}^3$ action level used by numerous jurisdictions. One activist, from Hillcrest, New York, tactfully challenged me. He pointed out that box 7 in the TCE matrix only required monitoring. That's where indoor TCE levels are between 1 and $5 \mu\text{g}/\text{m}^3$ while subslab concentrations are between 5 and $50 \mu\text{g}/\text{m}^3$. I had stated that the 5 to 50 range suggested that the indoor contamination was likely from a source other than the subsurface. In those cases, subslab depressurization would do no good.

But the activist had a point: Where such subslab readings (between 5 and $50 \mu\text{g}/\text{m}^3$) occur in an area where nearby residences register above $50 \mu\text{g}/\text{m}^3$, that is a sign that whatever is showing up indoors is intruding from below. He, like community members at other locations, argued in essence for the “blanket” approach—a strategy used sometimes by regulators in New York and elsewhere. Under this approach, if a home is located between other structures requiring mitigation, it is also mitigated even if it falls into box 7 of the matrix, or if no sampling is done in that particular building. He made a good case: To fail to take action, based upon subslab measurements, at homes nested among others where it is required, is arbitrary and unprotective.

I have long argued that experts should listen to the people most affected by site contamination—that even where they lack the scientific background, they too are experts in their own right. In this instance, I was the “expert” who needed to hear from an impacted resident.