Two Connecticut Vapor Intrusion Sites Lenny Siegel

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On May 29, 2007 I visited two major vapor intrusion sites on the Connecticut coast, the Raymark Superfund site in Stratford and the Milford Condominiums, in nearby Milford. My hosts were project managers from the Connecticut Department of Environmental Protection (DEP). Connecticut was one of the first states to actively investigate vapor intrusion, and it appears to have a strong, protective program. Its approach is not unique, but in my brief visit I learned a number of practical lessons.

Raymark Industries manufactured brakes and other automotive components in Stratford from 1919 to 1989. It released volatile organic compounds, asbestos, and other persistent contaminants, not only on its 34-acre manufacturing site, but also in nearby wetlands along the Housatonic River. Placed on the National Priorities List in 1995, its cleanup is managed both by Connecticut DEP and U.S. EPA's New England Region. It has nine distinct operable units. A final remedy—Engineered Control with an Environmental Land Use Restriction—is in place only for Operable Unit 1, the Raymark property now the site of a shopping center.

Though the Raymark property is on the Superfund list, cleanup is being funded by a brownfields-type mechanism. Raymark Industries is bankrupt, and a judge ordered that the property be auctioned off with the proceeds dedicated to cleanup. The shopping center developers paid money to the state and federal governments, and some of that money was used for the vapor intrusion response (technically, a time-critical removal action) described below.



The small building behind the bank at the Raymark site houses a soil vapor extraction system and a contaminant recovery holding tank.

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The Milford Condominiums are a high-end residential complex, on the Housatonic waterfront. DEP has identified several potential responsible parties, but their contributions to the volatile organic compound plume that flows under the property have not yet been determined. The Condos residents are particularly empowered: Connecticut General Assembly Speaker Jim Amman owns and lives in one of the vapor-impacted residences.



Milford Condos, with treatment system rising on side of building

Vapor intrusion is the cleanup driver at both sites, since groundwater is not used as a drinking water source. DEP utilized a blanket approach at Raymark, setting the mitigation boundary at the first groundwater wells with non-detect for TCE. Within that boundary, it offered active sub-slab depressurization systems to residents to mitigate exposures to TCE and DCE vapors, rather than focus spending on sampling. Most of the 120 properties—including apartment buildings—within the boundary accepted.

In Milford, DEP conducted a groundwater and soil vapor investigation on the Condo property and offered systems to each building with a potential risk from soil vapor. Connecticut's action level for TCE in *soil vapor* is 140 parts per billion by volume, and it utilizes a 27 parts per billion screening level for TCE in *groundwater*. If groundwater indicated potential vapor intrusion risk, soil vapor was investigated. Note that this contrasts significantly with the weak groundwater screening levels in place in some states, such as Michigan and Texas—measured in the tens of thousands of parts per billion.

Both sites established active community relations programs, in which regulators held a series of community meetings. At Raymark, there is an official advisory committee. Still, both project managers have spent a great deal of time meeting

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individually with property owners and other occupants. This matches my experience elsewhere. Engineering and geology schools do not provide courses in door-to-door canvassing, but that is an essential component of vapor intrusion response.

At Raymark, each homeowner was asked to sign an access agreement, but it was revocable until the mitigation system was installed. To encourage property owners to join the program, the state made it a one-time offer. If owners did not sign the access agreement and later decided that they wanted a system, they would have to pay for it themselves. Once the project was complete there would be no funds to cover future installation costs.



Home on Housatonic, with treatment system barely visible

At both Milford and Raymark, DEP not only installed sub-slab depressurization systems, but they made construction repairs and even removed debris at Milford. This extra activity, conducted at state expense, was necessarily completed before installation of the systems.

DEP utilized off-the-shelf radon mitigation hardware, but it found that existing systems for radon, installed earlier in several Raymark-plume homes, were inadequate for vapor intrusion response. According to DEP, the existing systems influenced (the vapor under) only about 25% of the foundation slabs—not the 100% required.

Connecticut officials ran into a problem I've never seen in California, condensation in vent-pipes leading to icing in blowers. Once recognized, this problem

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was eliminated by the placement of small "drip-leg" pipes that route condensation around the blowers.

One of the residents' primary concerns, at both Milford and Raymark, has been aesthetics. DEP has worked hard to minimize the visibility of the depressurization hardware, painting vent-pipes to match house colors and in cases using downspout piping At one Milford building, DEP built mini-sheds and false chimneys, complete with expensive soundproofing material, to hide the systems. Restoring lawns at Milford, after project excavation, has been a major challenge.

At both sites, mitigation blowers are equipped with alarms, which sound when systems are not working. Either the homeowner or (at Milford) the maintenance staff contacts DEP, which provides continuing maintenance support. At Milford, written instructions are visible should condo staff not know what to do. Note that residents are responsible for supplying and paying for electricity.



Hidden treatment system at Milford Condos

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The commitment to long-term maintenance support is important, but there is a weakness. It is entirely dependent upon the property owners contacting the state. One can envision residents shutting off and ignoring alarms, or new residents not knowing what to do. For those Raymark-impacted homes that do not have systems, protection after sale is entirely dependent upon the voluntary notification by real estate professionals, who are at this time well aware of the vapor intrusion problem. Thus, if there is any weakness in these programs, it's the absence of deed language or other measures to ensure long-term system operation.

As in other locales, residents at the Connecticut sites have expressed concerns about potential declines in property value. To answer those concerns, the state provides Comfort Letters, declaring that residents are safe from vapor intrusion as long as the mitigation system remains in operation. DEP reports that except for a small decline at first sales prices appear not to have been affected by the announcement of the vapor intrusion problem at Raymark.

It may be a long time, if ever, that the contaminant plumes in Stratford and Milford at totally remediated. For now, at least, the people who live above them are protected from their vapors.