

Inside Baseball: Vapor Intrusion at the Navy Yard Mill Dracut, Massachusetts

by Lenny Siegel

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As someone who grew up playing baseball in the suburban yards, parking lots, and athletic fields of southern California, it's hard for me to visualize a youth indoor baseball training facility. But during the colder months the youth of Dracut, Massachusetts, some 25 miles northwest of Fenway Park, have been practicing in an old industrial building, part of the Navy Yard Mill Site. At first glance, this seems like a creative adaptive reuse of an abandoned factory. But it turns out that for six years ballplayers and their families were being exposed to unacceptable levels of volatile organic compounds, due to vapor intrusion. And no one bothered to tell them about it.

Originally a cotton mill and then a woolen mill powered by the waters of adjacent Beaver Brook, the 3.8-acre Mill Site is currently home to 11 buildings, the oldest of which was built in 1860. The largest, Building 19, is leased to a woodworking facility, and from July, 2006 through October, 2012 it was also home to the Future Stars baseball practice area. From about 1971 to 2000, United Circuits manufactured printed-circuit boards on the property. United Circuits is believed to be the source of high subsurface concentrations of the chlorinated solvents, trichloroethylene (TCE) and tetrachloroethylene (PCE).



Also in July 2006, the Mills owner reported that TCE and PCE had been found on the premises. Working with a Licensed Site Professional (LSP), he undertook limited efforts to remediate the property, and he says he posted notices on site describing the contamination. In 2007, sampling confirmed the presence of those compounds in indoor air, and the Massachusetts Department of Environmental Protection (DEP) notified the owner that two other buildings should not be rented out as is. In 2008 DEP found that

order was being violated, and it asked U.S. EPA to take over the investigation. Today EPA is undertaking an emergency response focused on vapor intrusion.

Whether or not the owner posted the notice, it's clear that the baseball families did not know the site was contaminated. In fact, the operator of the baseball facility, a former minor league ballplayer, contends that he did not know. When I visited Dracut last October, one of the parents told me that air-purifying units, part of the initial remedial response, had been present, unplugged, in the baseball area, but that everyone thought they were ventilation fans.

This is a recurring theme at non-residential vapor intrusion sites: Building occupants are not adequately informed about the presence of contamination. Depending upon the site, better laws or better enforcement is required. Many of the Dracut families are aware of the TCE contamination in nearby Woburn, immortalized in the book and movie, *A Civil Action*. They believe they have a right to know and decide for themselves whether their children should be exposed to these toxic chemicals.

I've been arguing for better notification about the *potential* for vapor intrusion, at sites such as the Mott Haven schools campus in the South Bronx, New York. But in Dracut, actual exposure, at unusually high levels of TCE in indoor air, has been documented. In Better Cabinets, a showroom in Building 6, indoor PCE levels reached $194 \mu\text{g}/\text{m}^3$ in 2007. TCE levels exceeded $58 \mu\text{g}/\text{m}^3$ in the same building. In Future Stars, PCE sampled at $114 \mu\text{g}/\text{m}^3$ while TCE was found at $32 \mu\text{g}/\text{m}^3$. 2012 indoor air tests were comparable.

The Mill Site owner has suggested that regulatory agencies only took vapor intrusion seriously at the site after U.S. EPA revised its exposure standards for TCE in September 2011 and for PCE in February 2012. But even as the TCE standards were tightened for TCE, they were relaxed for PCE. More important, measured levels exceeded older EPA and Massachusetts standards.

The Federal Agency for Toxic Substances and Disease Registry, known for its reluctance to associate environmental exposure with increases in health problems, actually found possible risks at the Dracut site. In a July 2012 Health Consultation (see below), it linked potential problems to the duration of exposure, but to my knowledge no one has attempted to measure or estimate typical exposure times. When I visited Dracut, I advised a small group of baseball parents not to panic. Though exposures in Building 19 were unacceptable, the risk was mitigated by what I assumed to be relatively limited hours spent on site.



Once high indoor air readings were confirmed, the owner and his Licensed Site Professional embarked on an initial remediation strategy of installing indoor air filters, using carbon to remove contamination from indoor air. I have never seen this elsewhere! It appears, however, that these portable systems were frequently left unplugged, and when they were tested they proved much less effective than radon-type substructure depressurization systems. For example, in early 2012 indoor readings for PCE fell from a range of 96 to 110 $\mu\text{g}/\text{m}^3$ in a Building 1 office to 68 $\mu\text{g}/\text{m}^3$ when filters were turned on; TCE fell from a range of a range of 54 to 61 $\mu\text{g}/\text{m}^3$ down to 43 $\mu\text{g}/\text{m}^3$ with filters on. In Building 19, TCE levels actually were higher with the filters in operation.

Finally, some community members in Dracut see the inadequate response and failure to notify at the Navy Yard Mill Site as a consequence of the privatization of cleanup management in Massachusetts. At one point, the Licensed Site Professional who conducted the 2007 investigation and response resigned because he had not been paid and threatened to remove his equipment from the site. Whether or not he had been doing a satisfactory job, the fragility of the LSP relationship appears to have been a factor in the state's referral to EPA.

The baseball kids are at no further risk from TCE and PCE, since Future Stars was forced to find a home elsewhere. Only a handful of other employees still occupy the site, and EPA seems to be addressing the vapor intrusion risk. However, it does not intend to follow through to conduct or require a full site cleanup. More important, the recent history of the Navy Yard Mill Site illustrates that despite our improved understanding of vapor intrusion and its mitigation, we still do not consistently involve and inform those people whose health is at risk.

Location	Who	Amount of time in this location	Health Concern
Building 19 Baseball practice area - <u>Main Room</u> - Batting cage area	Exercising children and adolescents	More than 8 hours per week for several weeks to several months.	May be at risk for autoimmune effects (decreased thymus weight) due to TCE exposure
Building 19 Baseball practice area - <u>Main Room</u> - Batting cage area and waiting area	Women who are pregnant	More than 8 hours per week who exercise for several weeks to several months.	May be at risk of having a child with heart problems due to TCE exposure. No risk for pregnant women who watch family and friends practice sports for less than 35 hours per week
Building 19 Baseball practice area - <u>Main Room</u> Batting cage area	Non exercising adult men and non-pregnant women who watch family and friends practice sports	Any length of time	No risk while watching family and friends practice sports
Building 19 (baseball practice areas <u>both rooms</u>) full-time workers	Adult workers	More than 20 hours per week for several weeks to several months.	May be at risk for autoimmune effects (decreased thymus weight), and, if pregnant, at risk of having a child with heart problems due to TCE exposure. These workers (more than 30 hours per week in the <u>second room</u>) may also be at risk for neurologic effects (altered color vision) due to PCE exposure.

Portion of ATSDR Table Summarizing Its Findings