

INFO TECH: ENVIRONMENTAL CONCERNS

**A Summary of Environmental Concerns Regarding Contamination at
Information Technology High School (Q502)**

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INTRODUCTION

On September 17, Fox 5 News ran a story about increased levels of contamination found beneath the Information Technology High School (“Info Tech”) in Queens, New York.¹ The report raised concerns about the school’s safety, noting that Info Tech is housed within a former metal plating factory leased by the Department of Education in 2003 for use as an educational facility. This summary seeks to inform the affected school community about environmental concerns at conditions at Info Tech, and we offer recommendations for improving community understanding and oversight not only at Info Tech, but in the surrounding area and at other toxic school sites in New York City.

Lenny Siegel, of the Center for Public Environmental Oversight, and Peter Strauss of Peter M. Strauss & Associates have provided New York Lawyers for the Public Interest (NYLPI) and their community clients with environmental consultation around the siting of schools on contaminated properties in the past. We were asked by NYLPI Staff Attorney David Palmer to provide a brief analysis of our concerns at the site, including commentary on the two air quality reports detailing the results of testing conducted inside Info Tech on September 5 and September 22-25, 2007. We have also reviewed documents provided to Mr. Palmer by Fox 5 reporter Mary Garofalo and used in her report. These documents include quarterly monitoring reports retrieved from the Department of Environmental Conservation (DEC) through a Freedom of Information Law request. Finally, we have discussed the site with the DEC project manager.

This analysis has been created on a *pro bono* basis for NYLPI out of our concern for the health of the building’s current and future occupants. We hope to aid NYLPI in its work with the community to ensure the safety and integrity of this school site, and in pushing for larger policy changes that would create more opportunities for meaningful community participation in the school siting process. However, we did not conduct a full-scale review of the remedial action work plan and all other associated documents.

*Still, we do feel comfortable assuring the Info Tech community that the site is indeed safe, or at least as safe as any other building in this traditionally industrial area. The state-approved remediation has been designed to protect school occupants from vapor intrusion, (the migration of volatile organic compounds from the subsurface). Nevertheless, we believe that steps should be taken to better inform the community and involve it in future activities, including long-term monitoring and site-management designed to prevent toxic exposures at and near the school. **The “Concerns and Recommendations” section begins on page 6.***

¹ Fox 5 story can be found at:
<http://www.myfoxny.com/myfox/pages/Home/Detail.jsessionid=B7B3C38610A37EE84843836805D56102?contentId=4382570&version=2&locale=EN-US&layoutCode=VSTY&pageId=1.1.1&sflg=1> (October 3, 2007)

THE PROBLEM: Contamination, Air Quality, and Cleanup

Contamination

Contaminants under the school building include volatile organic compounds (VOCs) such as tetrachloroethylene (PCE), trichloroethane (TCA), and their breakdown products, including trichloroethylene (TCE), as well as the heavy metal, lead. VOCs in groundwater, as their name suggests, volatilize and often rise into buildings, putting the occupants at risk. This is referred to as “vapor intrusion.” Volatile contaminants are also present in outdoor air.

The health risk associated with exposure to the various VOCs found at or near Info Tech depends of course, on the dose and duration of exposure. Though scientists debate how hazardous these compounds are, it is widely believed that even low levels of PCE and TCE can cause multiple forms of cancer. Elevated blood-lead levels have been linked to decreased I.Q., learning disabilities, and behavioral problems.

Air Quality

Our first concern at Info Tech was the air quality inside the building. Based upon samples taken at the end of September, we believe the air quality in the school currently meets New York State Department of Health’s (DOH) safety standards. Thus the building is useable for educational purposes.

After the Fox 5 story broke, we were asked by NYLPI to review a September 5, 2007 air quality report that the Department of Education (DOE) and School Construction Authority (SCA) used to assure parents that the air within the school was safe. We were surprised to discover that the released results did not support that conclusion (nor did the results show the building’s air to be unsafe). According to the DOH October, 2006 *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, New York’s current action level (the minimum requiring a response) for TCE in indoor air, from vapor intrusion, ranges from 0.25 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) to 5.0 $\mu\text{g}/\text{m}^3$, depending upon contamination levels in the sub-slab soil gas (*i.e.*, vapors in the ground beneath the school). The reported results only showed (and with the instruments used, could only show) that levels were below 1 milligram per cubic meter—that’s 1000 $\mu\text{g}/\text{m}^3$, three orders of magnitude above the action level. At the time, we concluded that we could not know, based on those tests, whether the air inside or outside the High School was safe according to current health-based standards.

The standard sampling approach is to use Summa canisters (spherical vessels under a vacuum) with a detection limit of 0.2 $\mu\text{g}/\text{m}^3$ or below. This is what New York State agencies normally use when investigating vapor intrusion, and that’s the method that was used in late September 2007. The late September air quality report *was* based upon laboratory-analyzed, Summa canister samples. That report demonstrated that the concentrations of VOCs in the indoor air were legally acceptable. However, we also

believe that New York's standards for PCE are particularly weak. For example, the PCE levels found within the school exceeded by 50% the "10⁻⁶" screening level in EPA's 2002 draft national guidance on vapor intrusion—the concentration at which it is predicted that one additional person will contract cancer out of every million people exposed over 30 years. To be clear, we don't think these levels are hazardous enough to close the school or pull out students, but they are cause for concern and, if practical, remediation.

All of the PCE results taken when the Heating, Ventilation, and Air Conditioning (HVAC) system was operating were between 1.0 and 1.2 micrograms per cubic meter. This is slightly over the 0.81 µg/m³ target associated with the 10⁻⁶ risk in EPA's draft guidance, but it's below New York's PCE standard. Some of the samples taken when the HVAC system was turned off were even higher: double the federal guidance target level.

However, *the evidence we have seen suggests that the source is the ambient (outdoor) air, not vapor intrusion.* Even if it were possible to reduce concentrations inside the school, contamination would continuously enter from outside. We do not have enough information to determine the source, but DEC tells us that such levels are typical in Queens. That doesn't show that the air is safe; it suggests to us that an area-wide program of cleanup, emission controls, and pollution prevention is needed to protect the community in the long run.

The low levels of PCE inside the school, compared to the high original (2002) levels of contaminated soil gas (even after adjusting for typical dispersion at the surface) and groundwater suggest that the mitigation measures installed during school construction are working. That is, indoor air concentrations would probably be much higher were it not for the remediation and mitigation systems (see below). While this represents a success for the response strategy, it also means that long-term monitoring and site management is necessary as long as groundwater contamination remains roughly comparable to what it was when the soil gas samples were taken in 2002.

To our knowledge, the only sufficiently precise indoor air tests were conducted in late September 2007. As we reported above, those showed legally acceptable levels of the contaminants of concern. Still, we understand that more testing rounds lie ahead, at least one, under DOH guidance, during the heating season—typically the worst case scenario in New York.

Cleanup

The City's Department of Education and School Construction Authority, the state DEC, and the property's owners have implemented a robust remediation strategy to prevent exposure to hazardous substances and reduce the level of contamination at the site.

To reduce the risk of exposure to lead-contaminated soil in the parking lot area, in 2002 a contractor removed a large "hot-spot" of lead contaminated soil. The rest of the parking lot, containing lower but potentially hazardous levels of lead, is capped with

asphalt. To ensure that no lead leaches through the asphalt, a certified professional engineer is supposed to inspect the parking lot each year.

To remove VOCs, the cleanup team has implemented a multi-part remediation strategy, including excavation, groundwater extraction and treatment (“pump and treat”), soil vapor extraction (SVE), and sub-slab depressurization. To prevent any remaining toxic vapors from rising into the building, they have constructed a multi-layer vapor barrier.

Excavation. In remodeling the old factory, they removed the old slab floor and then excavated two feet of contaminated fill (soil) beneath the surface. The walls and framework of the existing factory structure were saved.

Pump and treat. There is one groundwater recovery well. Under pumping pressure, water is removed through a screen reaching from 9 feet to 21 feet below ground. Extracted water is run through a carbon filter, to remove the VOCs, before being released into the combined sewer system.

In their monitoring reports, the cleanup consultants contend that the system is pulling contaminated groundwater from off site toward Info Tech. They note that contamination has increased significantly in one monitoring well, and they say the groundwater is flowing onto the site from two directions. They have repeatedly proposed turning off the pump.

DEC, on the other hand, argues persuasively that the pumping, at a very low rate, is unlikely to draw contaminants onto the site. The reported rise in groundwater contaminants is probably due to natural groundwater flow, and they note that the pump and treat system is removing VOCs from the groundwater, no matter where they have originated. They appear to have good reason to insist that the system remain in operation.

The treatment part of the pump-and-treat systems has had problems. Contamination from the groundwater treatment system has “broken through.” Water containing 40 parts per billion (ppb) of PCE and 3.9 ppb of TCE were discharged into the combined sewer system. These levels are respectively eight times higher and slightly below the legal limit of 5 ppb, for both compounds. Presumably the more frequent change-out of carbon filters in the treatment system has since solved this problem, but we have thus far seen no confirmation.

Soil Vapor Extraction. SVE uses vacuum pressure to collect VOC vapors from four vertical wells. The gas is run through a carbon filter to remove the VOCs before release into the atmosphere.

Sub-Slab Depressurization System. An expanded version of commonly used Radon removal systems, this system uses horizontal piping and a fan to remove gas that collects beneath the vapor membrane and new slab. It too is run through a carbon filter to remove the VOCs before release into the atmosphere.

Vapor Membrane. According the documents we have reviewed, gravel was placed above the depressurization system, followed by a layer of felt. Above that there is now a high-density polyethylene (HDPE) liner, sealed at all edges and openings, to prevent vapors from intruding into the building. Above that there is a thin protective board and an eight-inch concrete slab.

WHAT NOW? Concerns and Recommendations

CONCERN ONE: The community has not had the opportunity to participate meaningfully in the school-siting process. Indeed, it has not been adequately informed about site contamination.

In their apparent intent to avoid triggering fear among members of the school community, DOE and SCA have been less than forthcoming with information. It seems clear that parents, students, teachers, and their elected representatives were not informed that the school is housed on contaminated property. News outlets should not be the first source of information for parents or teachers. More important, it was grossly improper to declare the building safe for occupancy based on the September 5, 2007 air quality report that used detection limits so high that they would never find a problem. The school may indeed be safe for occupancy, but why should the community believe such assurances in the future when they've been given hollow guarantees in the past?

When the City proposes to build a school on City-owned or acquired toxic property, the local community board is notified. The New York City Council has an opportunity to vote on the appropriateness of the site. And the site is subject to the state's standard environmental review process. This notice and review did not occur at Info Tech.

DOE and SCA say that those public processes do not apply at leased school sites. If indeed their interpretation of the law is correct, it is an unjustified loophole. Students and teachers on leased property inhale and ingest the same way as students and teachers on purchased property.

Recommendations

- 1) The environmental consequences of school siting, including potential exposures and both the short-term and long-term costs of preventing them, should be evaluated publicly before a school-siting decision is made. Ideally, several sites should be compared on multiple criteria, including environmental safety, before site selection.
- 2) Schools on leased property should be subject to the same review as schools on City-owned property.
- 3) Even if a school is constructed on a toxic site after a proper environmental review, parents and teachers, as well as students at high schools—should be informed of past

contamination, potential exposures, and long-term monitoring and management activity at the site. In fact, it should be a standard part of school orientation each year. Conceivably, detailed study of the contamination and cleanup could be integrated into the curriculum of appropriate classes.

CONCERN TWO: Despite a professional cleanup, contamination remains under the school.

As long as contamination remains at a site above “safe” levels—that is, concentrations which would allow unrestricted use and unlimited access—it is essential to implement a site management plan that includes a mix of passive (membranes, caps, fences, etc.) and active engineering controls (sub-slab depressurization, for example); regular monitoring of all media (air, water, soil); and institutional controls (activity and use limitations, such as a requirement that no holes be drilled through a vapor membrane). It should also include periodic air monitoring for the life of the sub-surface contamination.

Recommendations

4) Air testing—indoors, ambient, and at a background location not near a potential source of VOCs—should be conducted (as reportedly planned) during the heating season, using appropriately precise technology. If indeed ambient contamination is the source of elevated levels of PCE within the school, the source of that contamination should be determined.

5) The legally required site management plan should be made available to the public. Presumably, it is enforceable by environmental and health regulators and backed with a continuing source of funds. If it doesn’t include all the features described above, it should be improved. Ideally, the DOE or DEC should provide support for an independent technical consultant to review the plan on behalf of the community.

6) The cleanup team should proactively distribute all air monitoring data to interested parties. Particularly because of the original (early September) unsubstantiated conclusions, they should provide support for an independent technical consultant to interpret the data. All presentations of this data or any other information regarding contamination issues should be open to the public.

CONCERN THREE: Contaminated groundwater appears to be migrating onto the site.

Based upon the information we have received, we tend to agree with DEC that recently elevated groundwater readings for PCE are a result of natural groundwater flow. Regardless of the cause, we agree with the cleanup consultants that DEC should conduct off-site sampling to find the sources of contamination. DEC agrees too. It has not only begun the process, but it promises to require or conduct cleanup at any other sources of groundwater VOCs in the area.

Recommendation

7) DEC should work with the public to develop an area-wide investigation and remediation strategy. To do this, we recommend the formation of an area-wide community advisory group (CAG). This group could be affiliated with an existing organization, such as the local Community Board or a school-related organization. A community advisory group would meet regularly with those responsible for cleanup, learning about the cleanup process and technologies, as well as the fate and transport of contamination from sites within the neighborhood. Ideally, once again, it would be advised by independent technical consultants. Across the country, community advisory groups allow concerned residents and other property users to constructively participate in investigative and remedial decisions.

CONCLUSION

The release of the re-assuring indoor air sampling results this month is cause for relief, but it should not be seen as the end of a process. Instead, it must be viewed as the beginning of a continuing effort to involve the Info Tech community in the development of a strategy for both long-term protection of the building's occupants and long-term remediation of the site. Furthermore, the lessons of Info Tech should be added to the lessons of Soundview, Mott Haven, and other New York City school sites. The public should be involved and supported in the oversight of the construction and operation of any school on a toxic site, starting the date that the new school is first conceived or a site is first proposed.