

**Testimony of George Pavlou**  
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**Before the Subcommittee on Water Resources**  
**House Committee on Transportation and Infrastructure**

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Thank you, Madam Chairman and Members of the Committee, for the invitation to appear here today on behalf of the U.S. Environmental Protection Agency (EPA). I am George Pavlou, Director of EPA Region 2's Division of Emergency and Remedial Response. Thank you for the opportunity to discuss the EPA's efforts to address vapor intrusion issues and the actions we have taken at Superfund sites in New York's 19<sup>th</sup> Congressional District.

EPA considers vapor intrusion from contaminated soils or groundwater into homes and buildings to be a significant environmental concern and one in which the science is still evolving. EPA and the states have paid increased attention to indoor air concerns at sites where soil or groundwater is contaminated with volatile organic compounds or VOCs. A challenge in evaluating vapor intrusion, is the potential presence of some of the chemicals like commonly used household cleaning products and dry-cleaned clothing that may produce false positive-test results.

Due to the potential number of sites in Region 2 where vapor intrusion could be of concern, and given both the evolving science in this area, and the difficulty of relating contamination in the soil and groundwater to indoor air at a given location, EPA's

approach to determine whether there is a likely concern at a given location is to conduct sampling from beneath the slab of a building (sub-slab) and of the indoor air environment when the possibility of vapor intrusion at levels of concern cannot be ruled out.

Two common chemicals of concern for vapor intrusion sites are trichloroethylene (TCE) and perchloroethylene (PCE). These contaminants occur at approximately one-third to one-half of NPL sites, which includes Federal Facilities. The Agency's ongoing human health assessment of TCE is a complex scientific activity. While a 2001 draft TCE health assessment underwent independent peer review by the Agency's Science Advisory Board (SAB) and public comment, a number of scientific issues remained and a large amount of important new scientific literature had been published since the 2001 draft assessment. As a result, in September 2004, EPA and other federal agencies (the Department of Energy, National Atmospheric and Space Administration and the Department of Defense) commissioned a National Academy of Sciences (NAS) report to assess the critical scientific issues that should be addressed in any health risk assessment of TCE. NAS provided the report in July 2006. The Agency is considering the scientific advice of the NAS as well as recently published scientific literature, as it proceeds with the development of a new TCE health assessment. The TCE assessment is a top priority for EPA's chemical assessment program.

The PCE assessment is also a top priority for EPA's chemical assessment program. The toxicity of PCE is currently under review by EPA and is expected to be completed by 2010.

At this point, I would like to address how the Region 2 office of EPA is addressing vapor intrusion in New York State at several Superfund sites in the 19<sup>th</sup> Congressional District. These sites are the Hopewell Precision and the Shenandoah Road Sites in Dutchess County. Though these sites have similar groundwater contamination problems, one site has experienced widespread vapor intrusion while the other site has not. A key point to keep in mind is that individual site characteristics, such as geology and soil conditions as well as the chemicals present, can greatly affect the potential for vapor intrusion. In addition, much like the radon gas phenomenon, the extent of vapor intrusion within any given site, may be considerably different from one home to the next. This makes for challenging and resource intensive site investigations.

### **Hopewell Precision Area Groundwater Contamination Site**

The Hopewell Precision Area Groundwater Contamination Superfund site is located in Hopewell Junction, NY. Hopewell Precision Inc., a manufacturer of sheet metal parts and assemblies, operated at the site since approximately 1977. Various painting and degreasing processes used at the facility generated wastes that the company disposed of directly on the ground resulting in a ground water contamination plume. The plume extends about 1.5 miles from the facility. The area surrounding the site consists mostly of residences, all of which are served by private drinking water wells and septic systems.

A Superfund Removal Action was initiated at this site in March 2003 to provide a quick response to the EPA's identification of several contaminated residential wells down

gradient and in close proximity to the Hopewell Precision facility. Our sampling of the wells found elevated levels of VOCs, including TCE and 1,1,1-trichloroethane (TCA), both of which present health concerns.

Since March 2003, EPA has sampled 450 residential drinking water wells located in the vicinity of the Hopewell site. The samples were analyzed for VOCs. Based on laboratory results, we identified TCE in 53 wells and TCA in 100 wells. For the 39 wells that were found to exceed the state and federal drinking water standard of 5 ppb for TCE, we installed carbon filtration systems which are highly effective in removing VOCs from drinking water. These systems are tested regularly by EPA to ensure that they are working as intended. For the 14 wells found to exceed the state standard of 5 ppb for TCA, the NYSDEC installed similar filtration systems.

Given what we know about the characteristics of the Hopewell Precision site, we were aware that there was the potential for TCE and TCA to volatilize from groundwater and enter homes. EPA conducted sampling to investigate if TCE vapors were entering homes. Between April 2003 and March 2008, EPA collected air samples from a number of residences in the vicinity of the Hopewell Precision site. EPA collected air samples from underneath the homes (which we refer to as sub-slab samples) as well as from basements and first floors. EPA conducted sub-slab air sampling at 278 homes: of these, 67 homes were found to have detectable concentrations of TCE. Working with NYSDEC, NYSDOH, and the Agency for Toxic Substances and Disease Registry, EPA

determined that there were residences requiring mitigation due to elevated concentrations of TCE in indoor air.

To date, EPA has installed sub-slab ventilation systems in 53 residences to mitigate the intrusion of TCE vapors into these homes. The majority of the remaining residences have been re-sampled and future actions are pending evaluation of the analytical results. In addition, 148 residences have detectable concentrations of TCA in sub-slab air; however, they are not above levels of concern.

These ventilation systems, which are very similar to equipment used to reduce the level of radon in homes, have been successful in addressing vapor intrusion problems. A number of months, however, may be required to reduce the vapors to acceptable levels. The systems that have been installed have successfully remediated the vapor intrusion problems that can be attributed to the contaminated ground water (some homes have sources of TCE within the home not related to the site). We will continue to monitor these systems.

EPA initially addressed all homes with sub-slab TCE vapor levels exceeding 50 ug/m<sup>3</sup>. However, in February 2005, we adopted a revised indoor air cleanup goal of 0.38 ug/m<sup>3</sup> for the Hopewell Precision site. This was a result of a number of considerations, namely, our growing experience with indoor air remediation, the effectiveness of the vapor mitigation systems at Hopewell Precision, the ability of laboratories to detect TCE

at lower levels using EPA analytical methods and the cost of mitigation compared to further sampling, for those homes where a sub-slab system is necessary.

To date, EPA has spent \$8.5 million in Superfund funds on activities at the Hopewell site. On April 27, 2005, the Hopewell Junction site was placed on the National Priorities List, making it eligible for long-term federal cleanup funding. In December 2005, EPA initiated a remedial investigation and feasibility study (RI/FS) as part of the long-term site cleanup phase. The RI/FS will evaluate the nature and extent of groundwater, soil, sediment, surface water, and vapor contamination at the site, and will help EPA identify the appropriate cleanup alternatives and develop a comprehensive cleanup plan for the site. EPA completed all RI field activities during the summer of 2007 and expects to release the RI/FS reports to the public during the summer of 2008. In addition, EPA is also preparing a Focused Feasibility Study (FFS) to evaluate alternatives for the area of the identified groundwater plume. We expect that the FFS will be ready for public release later this spring. EPA continues to reach out to local residents in the Hopewell area in an effort to establish a close working relationship with the Hopewell community. Ensuring community involvement was a key to the progress and success we have achieved at the site.

### **Shenandoah Road Groundwater Contamination Area**

Another site that EPA is currently working on in Dutchess County is the Shenandoah Road Groundwater Contamination Area Superfund Site, which is located here in East Fishkill. The site encompasses an area of contaminated groundwater in the

East Fishkill community known as Shenandoah. Investigatory work by NYSDEC and EPA discovered that PCE had seeped or leaked from a 1,200 gallon metal septic tank and acid pit and was responsible for contaminating groundwater. There are approximately 150 homes in the immediate vicinity of the site, which is predominantly a residential area where local residences obtain drinking water from individual wells. These wells draw from the bedrock aquifer which is contaminated with VOCs, mainly PCE. The IBM Corporation has been identified as a party potentially responsible for the contamination at the Shenandoah site.

In 2000, EPA excavated the septic tank and removed its contents for transportation and off-site treatment and disposal. EPA also excavated contaminated soil associated with the septic tank which was temporarily stockpiled on the site. Based on field screening results and post-excavation soil sampling results collected by EPA, it was evident that high levels of PCE still remained in the soil beneath the facility. As a result, it was necessary for EPA to demolish the facility prior to excavation of the underlying contaminated soil. During excavation of the contaminated soil associated with the former septic tank, two additional PCE disposal areas were discovered. Approximately 4,800 tons of contaminated soil associated with the former septic tank and the two PCE disposal areas were staged at the site and removed for off-site disposal by IBM. Field sampling results revealed high concentrations of PCE in the soil surrounding the acid pit and EPA directed IBM to excavate the contaminated soil. Excavation activities and off-site disposal of approximately 2,000 tons of contaminated soil associated with the former acid pit were completed by January 2002.

Residential well sampling conducted at the site by NYSDOH and EPA in 2000 indicated that a total of 60 residential wells contained PCE and/or TCE at or above the drinking water standard of 5 ppb. Of these 60 wells, 20 had levels exceeding the removal action level of 70 ppb for PCE, which posed an immediate threat to public health. Following discovery of these residential wells in June 2000, EPA initiated an emergency response action at the site and began the delivery of bottled water to the affected residents. Subsequently EPA installed carbon filtration systems at 57 homes. In addition, IBM installed 45 carbon filtration systems in homes that were “at risk” of having their wells contain elevated PCE and three homeowners installed their own systems. To date, a total of 105 residential well treatment systems have been installed and continued monitoring of affected homes and nearby wells is addressing the immediate threat.

As with the Hopewell Precision site, we were aware that there was the potential for PCE to volatilize from groundwater and enter homes. Between April 2004 and March 2008, EPA collected air samples from a number of residences in the vicinity of the Shenandoah Road site. EPA collected sub-slab samples, as well as indoor air samples from basements and first floors. EPA conducted sub-slab sampling in 78 homes: of these, 16 homes were found to have PCE concentrations of concern in the soil gas underneath their sub-slab. After completing its evaluation of all the sub-slab and indoor air data, EPA has determined that five of the 16 properties should receive sub-slab vapor mitigation systems. The installation of these systems is expected to be performed by

EPA over the next few months. The other homes will continue to be monitored during the winter heating season.

EPA has also been working toward a permanent solution to address the groundwater contamination in the Shenandoah Road area. This solution involves securing a public water supply system to the area. Under an EPA order, IBM agreed to construct a waterline that will serve approximately 150 homes at a cost of around \$10 million. Work on this portion of the project is progressing, and the waterline is expected to be completed by this fall. IBM is also performing a Remedial Investigation/Feasibility Study (RI/FS) investigation. The RI involves gathering of groundwater, surface water and hydrogeological data needed to determine the nature and extent of contamination at the site. The FS involves evaluating appropriate alternatives to address the contamination. The RI/FS should be completed in 2009.

### **Hudson River PCBs Site**

In September 2005, EPA and General Electric (GE) Company reached agreement on a Consent Decree under which GE would implement the first phase of the dredging project. A legal challenge to the Consent Decree delayed construction of the sediment processing facility needed for the project and ultimately pushing the start of dredging to 2009.

GE began constructing the sediment processing/transfer facility in April 2007, which includes: the widening of the Champlain Canal for a wharf for unloading barges; a

rail yard with five miles of rail to facilitate the loading and transport of sediments by rail to a permitted landfill in Texas; a two-mile access road that will alleviate the impacts of project traffic on the Town of Fort Edward; a two million gallon per day treatment plant; and a dewatering plant capable of processing more than 5,000 cubic yards of sediment per day. Construction of the 110-acre facility is on schedule for GE to begin dredging the river in late spring of 2009. It is anticipated that GE will award a contract for the first year of dredging by the end of May 2008. GE has already entered into contracts for rail transport and disposal of the sediments.

EPA has developed a set of Engineering Performance Standards for the dredging project. The standards are intended to ensure that the cleanup meets the objectives for protecting human health and the environment, and does not cause adverse health or environmental impacts.

### **Other Superfund Sites in the 19<sup>th</sup> Congressional District**

EPA has made substantial progress in addressing other Superfund sites in Congressman Hall's district. Substantial work has been undertaken at the Brewster Well Field, Carroll and Dubies Sewage Disposal, Katonah Municipal Well, Nepera Chemical, and Warwick Landfill sites.

## **Conclusion**

In conclusion, I would like to emphasize that EPA will continue to work closely with NYSDEC and NYSDOH to address all phases of site remediation, including the vapor intrusion issue in New York State. The vapor intrusion issue presents unique challenges that EPA and the states will have to address. As more sites that have vapor intrusion problems are identified, we anticipate the challenge will only get larger.

Before I close, I would like to thank Representative Hall for his ongoing interest and support at these sites.

Thank you again for the opportunity to address the Subcommittee. I am happy to answer any questions you may have.