Analysis of Vapor Intrusion Pathway in the Pompton Lakes Neighborhood Impacted by the DuPont Groundwater Plume

Pompton Lakes, Passaic County, NJ

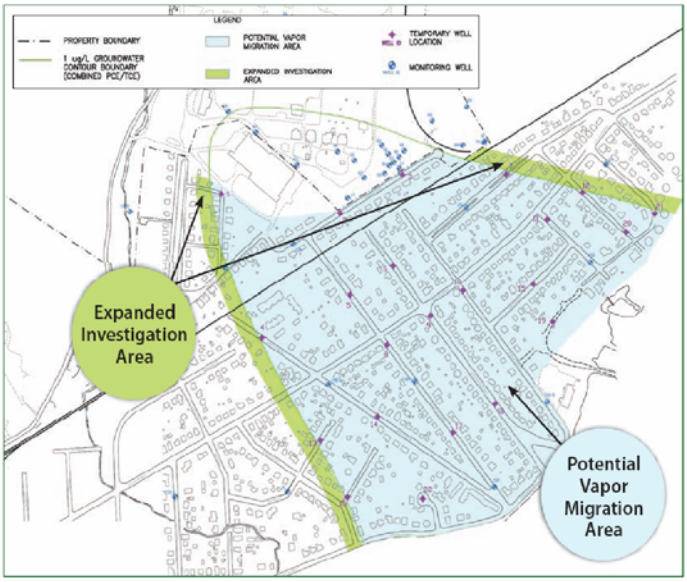
December 2009

A Citizen's Guide to the Health Consultation

What is the purpose of this Health Consultation?

The New Jersey Department of Environmental Protection asked the New Jersey Department of Health and Senior Services (NJDHSS) if chemicals found in some Pompton Lakes residences could be harmful to health. The chemicals were entering some of the houses that are above groundwater that is contaminated with volatile organic compounds (VOCs) originating from the DuPont Pompton Lakes Works site. VOCs that are in groundwater can enter into buildings above the contaminated groundwater by a process known as "vapor intrusion."

Potential Vapor Migration Area and Expanded Investigation Area



What contaminants were found in the groundwater that were also found in people's houses?

Chemicals found in both groundwater and inside of some residences include the following volatile compounds: carbon tetrachloride, 1,2-dichloroethane, methylene chloride, trichloroethylene, tetrachloroethylene, and vinyl chloride. These are referred to as "plume-related contaminants," since the contaminated groundwater is also called a plume.

What other chemicals have been found in people's basements?

In addition to the plume-related chemicals, other volatile compounds were found in some people's basements. These include: benzene, 1,3-butadiene, chloroform, 1,4-dichlorobenzene, 1,2-dichloropropane, and methyl tert-butyl ether. There are a number of indoor sources for these "non-plume" contaminants, including emissions from burning oil and coal, tobacco smoke, and evaporation from the use or storage of household cleaners, paint strippers, varnishes, furniture finish removers, and gasoline.

How are people exposed to plume and non-plume contaminants?

Not all houses that were tested had chemicals in basement air. For houses that had any of these chemicals, people are exposed by breathing in these chemicals.

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http://www.state.nj.us/health/

What are the risks to area residents from exposures to:

plume-related contaminants?

The possible health risks from exposures depend on *how much* of a chemical is in the air, and *how long* someone is exposed. The indoor air testing that was done at some of the houses gives us a snap-shot of the type and amount of chemicals in the air at the time the testing was done, but might not reflect past and potentially future exposures. Based on these measurements, the NJDHSS and ATSDR estimate that long-term exposures to the plume-related contaminants won't cause non-cancer effects, but may result in a low increased risk for cancer.

non-plume contaminants?

As mentioned earlier, several consumer products contain chemicals which are widely found in indoor air. Two chemicals (1,3-butadiene and 1,4-dichlorobenzene) were found in some houses at concentrations that are higher than an environmental screening level, but well below concentrations that result in health effects. However, as with the plume-related contaminants, long-term exposures may result in a very low increased risk for cancer.

What do the NJDHSS and ATSDR conclude about the vapor intrusion pathway?

We have the following 3 conclusions regarding **plume-related** chemicals found in people's houses:

1. *current and future exposures to plume-related contaminants in indoor air at residences where properly functioning mitigation systems have been installed will not occur, and therefore will not harm people's health.* This is because the exposure pathway has been interrupted for these residences due to the installation of the vapor mitigation systems. NJDEP should ensure that DuPont installs and maintains the mitigation systems correctly.

2. *current and future exposures to plume-related contaminants in indoor air at residences where mitigation systems have <u>not</u> been installed may harm people's health.* If conditions change (such as temperature, wind, moisture, cracks in the basements), there is potential for plume-related contaminants found in sub-slab soil gas to enter the basement air. All residences above the groundwater plume should get the mitigation system installed.

3. *NJDHSS and ATSDR cannot conclude if past exposures to plume-related contaminants in indoor air at residences in the plume area may have harmed people's health.* The extent of past plume contamination is unknown and could have been higher. Based on the information currently available, it is recommended that all residences impacted by the groundwater plume get the mitigation system installed.

We have the following 2 conclusions regarding **non-plume related** chemicals found in people's houses:

1. *Current and future exposures to non-plume related contaminants in indoor air are not expected to harm people's health.* Although the average concentrations of some non-plume related chemicals were above comparison values, the likelihood of health effects is low. Residents with elevated levels of non-plume related contaminants can choose to identify the sources of the chemicals in indoor air and take steps to reduce or eliminate exposures.

2. *NJDHSS and ATSDR cannot conclude if past exposures to non-plume related contaminants in contaminants in indoor air could have harmed people's health.* It is unknown what past levels of these contaminants were in the residences, especially since consumer products are the most likely source for the indoor air levels of these contaminants. Residents with elevated levels of non-plume related contaminants can choose to identify the sources of the chemicals in indoor air and take steps to reduce or eliminate exposures.