



NEW YORK CITY DEPARTMENT OF
HEALTH AND MENTAL HYGIENE
Thomas Farley, M.D., M.P.H.
Commissioner

Trichloroethylene (TCE) at Bronx Public School 51

Why does PS 51 have to move?

As part of the lease renewal process, the New York City Department of Education (DOE) and the New York City School Construction Authority (SCA) conducted an environmental investigation, including air sampling, to ascertain conditions in the building. The initial round of air test results indicated the presence of trichloroethylene (TCE) at levels above the New York State Department of Health (NYSDOH) air guideline. Additional tests were done to confirm the original results, determine the source of the TCE, and find out how it was entering the building. This summer, the DOE/SCA distributed a report that recommended mitigation measures and long term engineering controls. This extensive work could not be implemented by September 2011 or installed while the building was occupied.

What did the tests show?

TCE was found in indoor air above the NYSDOH air guideline and in soil vapor below the foundation of the school. TCE air levels were highest in an area of the basement and lower on the first floor. In the boiler room in the basement the levels ranged from 310 to 607 micrograms per cubic meter (mcg/m^3). The levels in the cafeteria and first floor hallway ranged from 1.7 to 53 mcg/m^3 . Outdoor air levels measured on the roof of the building ranged from undetected to 4.4 mcg/m^3 . At this time, it is not known where the TCE originally came from or when it got there.

What is TCE?

Trichloroethylene (also known as TCE) is a volatile organic compound (VOC). It is a clear, colorless chemical that evaporates readily into the air. TCE is widely used in products such as: metal degreasers; paint strippers; paints; varnishes; glues; adhesives; automotive cleaning products, spot removers, rug-cleaning fluids and to make other chemicals. TCE can be found at low levels in outdoor and indoor air because of its widespread use.

What do these results mean?

The levels of TCE in the school are above the NYSDOH guideline of 5 mcg/m^3 . The guideline is not a bright line between air levels that might cause health effects and those that do not. The purpose of the guideline is to help guide decisions about how to reduce exposure to TCE.

In humans, long-term exposure to workplace air containing high levels of TCE (generally more than 40,000 mcg/m^3) may affect the central nervous system (motor coordination problems, nausea, headaches, dizziness). Exposure to higher levels (more than 300,000 mcg/m^3) for short periods of time may irritate the eyes and respiratory tract, and further affect the central nervous system, leading to dizziness, headache, sleepiness/fatigue, nausea, confusion, and blurred vision.

In laboratory animals, exposure to high levels of TCE has damaged the central nervous system, liver, and kidneys, and adversely affected reproduction and development of offspring. Lifetime exposure to TCE has caused cancer in laboratory animals. It is not known if exposure to TCE causes the same health effects in humans as in laboratory animals. Some studies have shown an association between people working with TCE for long periods of time and an increased risk of certain types of cancer. It is not known whether this was due to exposure to TCE, other chemicals that were also present, or other factors that increase the risk of cancer. TCE is considered a probable human carcinogen but the air level at which the risk for cancer increases is unclear.

See chart at end of factsheet for test results and comparison levels for more information on what these results mean.

What happens to TCE when it is inhaled?

When people breathe air containing TCE, some of the TCE leaves right away when it is exhaled. Much of the TCE travels in the blood to other parts of the body. The body eliminates most of the inhaled TCE within a day or two. However, some of the TCE and its breakdown products can be stored in the fat or the liver and it may take a few weeks for them to leave the body after exposure stops.

What is the NYSDOH's guideline for TCE in air?

The NYSDOH set a guideline of 5 mcg/m³ for TCE in air after reviewing the scientific literature on TCE. This level is much lower than the levels that have caused health effects in animals and humans. In setting this level, the NYSDOH also considered the possibility that some individuals (infants, children, the elderly, and those with pre-existing health conditions) may be especially sensitive to the effects of TCE. In addition, the guideline assumes that people are continuously exposed to TCE in air all day, every day, for as long as a lifetime. This is rarely true for most people who are likely to be exposed for only part of the day and part of their lifetime.

Is there a medical test that can tell me whether I have been exposed to TCE?

TCE can be measured in people's breath soon after they are exposed. TCE and TCE breakdown products can be measured in the urine and blood within about a week of last exposure. Although urine and blood tests can indicate that you may have been recently exposed to a large amount of TCE, the tests cannot tell you the source of the exposure. Since the school has not been occupied for several weeks, any TCE to which students or staff may have been exposed at the school has left the body. These tests are not routinely available at a doctor's office and are most useful when exposures are very high.

Should my children or I see a doctor?

If you are concerned about your child's exposure or your own to TCE at PS 51, you may wish to consult your regular healthcare provider. Another resource for the school community is the Mount Sinai Pediatric Environmental Health Specialty Unit. Their toll free number is 1-866-265-6201.

TCE: PS51 Air Levels, Comparison Levels and Health Effects

	Air concentration in micrograms per cubic meter (mcg/m ³)
Typical indoor air levels	0.5 to 4.2
NYS DOH air guideline	5
Air levels found in occupied spaces of PS 51 X	1.7 to 53
Central nervous system effects from long-term exposure among people working with TCE	40,000
Irritation of eyes, nose, and throat from short-term exposure	300,000

TCE is measured in micrograms per cubic meter of air (mcg/m³ = µg/m³).

Please note: This factsheet will be updated as new information becomes available.

Additional Resources:

New York State Department of Health: Trichloroethene (TCE) in Indoor and Outdoor Air available on the web at www.health.state.ny.us/environmental/investigations/soil_gas/svi_guidance/fs_tce.htm

The Agency for Toxic Substance and Disease Registry: TCE Toxfaqs
<http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=172&tid=30>

For information on how to find a doctor or health insurance, please call 311 or visit:
<http://www.nyc.gov/html/doh/downloads/pdf/hca/hca-how-to-find-a-doctor.pdf>

Call 311 for more information or with questions about PS 51 and TCE