Trichloroethylene (TCE) Health Effects

Frequently Asked Questions

- Where did the screening value of 2 μg/m³ come from?: The Environmental Protection Agency (EPA) considers that all people are safe breathing 2 μg/m³ of Trichloroethylene (TCE) 24 hours a day for a lifetime. Pronounced micrograms per cubic meter, “μg/m³” is a unit of measurement that states how much of a substance is present in a given amount of air.

- How did the EPA determine 2 μg/m³ is safe?: The EPA assembled a group of scientists who have carefully evaluated studies conducted on the toxicity of TCE. This group of scientists concluded that it is safe for all people to breathe 2 μg/m³ of TCE 24 hours a day for a lifetime. This level is safe even for pregnant women and people who have a weakened immune system. 2 μg/m³ of TCE is considered a safe level for both short-term and long-term exposures to TCE. Short-term can be defined as being less than 1 month and long-term as being longer than 3 months.

- What are the health risks for pregnant women and the unborn child?: The EPA considers 2 μg/m³ of TCE to be a safe level for pregnant women and unborn children to breathe. Animal studies that use much higher concentrations of TCE indicate that TCE may cause birth defects, more specifically, heart defects and immune system dysfunction. The developing fetus is more susceptible to organ damage during the first 3-8 weeks of pregnancy because this is the time during which the internal organs are developing. Levels of TCE used in these animal studies are many times higher than what has been measured in the Como neighborhood.

- What type of toxic effects can TCE cause?: What is currently known about TCE is typically based on occupational studies, studies investigating the effects of TCE on people who work with TCE in their jobs. People who work with or around TCE may sometimes experience headaches, dizziness and fatigue after short-term exposure at high levels, levels of TCE that are multiple times higher then what has been measured in the Como neighborhood. Long-term exposure to TCE in the workplace has been associated with damage to the kidneys and liver, which may develop into cancer. Development of non-Hodgkin’s lymphoma may also develop from long-term exposures to TCE. These health effects are typically found among people who work with TCE in their jobs. It is important to remember that these health effects are typically found in people who are exposed to inhalation levels significantly higher than the levels of TCE found sub-slab in the Como neighborhood.

- Should I be concerned that TCE can cause cancer?: Cancer is more likely to develop when people are exposed to very high concentrations of TCE for many years. This may occur in workplace settings where TCE is used as an industrial degreaser. Exposures to low levels of TCE are not likely to cause cancer.

- Does exposure to TCE harm the male reproductive system?: Animal studies have suggested that damage to the cells in the testes may occur when exposure at high concentrations of TCE occurs over an extended period of time. Animal studies that investigated these effects used levels of TCE that are 350 times higher than what has been found in the Como neighborhood; these high levels are extremely unlikely to be observed in the Como neighborhood. Adverse effects to the reproductive system are unlikely to develop from exposure to the low levels of TCE found in the Como neighborhood.

- Is TCE only present in the Como neighborhood?: TCE can be detected in the soil, groundwater and outdoor air throughout the United States. TCE may be introduced into the environment through landfills, discharge from water and sewage treatment facilities and through various industrial practices. TCE is one of the most common chemicals found in Superfund sites across the country. It is most commonly detected in the air in urban areas due to its extensive industrial use but it can also been detected in rural areas.

Glossary of Terms:
- adverse: something that is harmful or unfavorable
- concentration: the amount of a substance dissolved in a volume of solvent
- long term: chronic: long time period, typically three months or more
- short term: acute: short time period, typically less than one month
- Superfund site: a place where hazardous waste is located, possibly affecting people or local ecosystems
- susceptible: likely to be harmed by a particular thing
- toxicity: how much damage a substance can cause to an organism
- μg/m³: micrograms per cubic meter, a unit of measurement of a substance in a volume of air

References: