

## **1,1,2,2-TETRACHLOROETHANE (C<sub>2</sub>H<sub>2</sub>Cl<sub>4</sub>)**

Chemical Abstracts Service (CAS) Number: 79-34-5

### **General Information**

1,1,2,2-Tetrachloroethane is a colorless, dense liquid that has a sweet, chloroform like odor. The main effects of 1,1,2,2-tetrachloroethane are liver and neurological effects. Acute (short-term) inhalation exposure to very high levels of 1,1,2,2-tetrachloroethane has resulted in effects on the liver and respiratory, central nervous, and gastrointestinal systems in humans. Chronic (long-term) inhalation exposure to 1,1,2,2-tetrachloroethane in humans results in jaundice and an enlarged liver, headaches, tremors, dizziness, numbness, and drowsiness. Animal studies have shown a significantly increased incidence of liver tumors in mice orally exposed to 1,1,2,2-tetrachloroethane. U.S. EPA has classified 1,1,2,2-tetrachloroethane as a Group C possible human carcinogen.

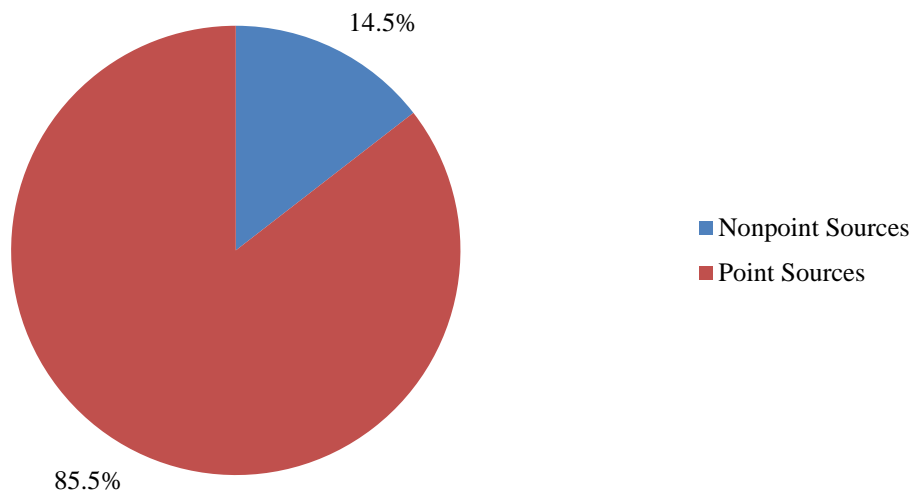
### **Sources**

- The production of 1,1,2,2-tetrachloroethane as an end-product has decreased significantly in the United States. As it is no longer widely used as an end-product, present sources of 1,1,2,2-tetrachloroethane are fugitive emissions or discharges when it is generated as a by-product and during chemical production activities in which it is an intermediate product.
- Low levels of 1,1,2,2-tetrachloroethane can be present in both indoor and outdoor air. It has been found, in trace amounts, in adhesives, oils, greases, and lubricants; these household products may contaminate indoor air.
- 1,1,2,2-Tetrachloroethane has been detected in surface water and groundwater; however, a nationwide survey of drinking water supplies in the 1980s did not find any supplies containing 1,1,2,2-tetrachloroethane.
- Limited occupational exposure to 1,1,2,2-tetrachloroethane may occur through inhalation of the vapors or through skin contact due to spills or accidents in the workplace.

### **Indiana Emissions**

IDEM collects HAP emissions information for the categories of point sources (large stationary sources like power plants and factories), nonpoint sources (aka area sources - smaller stationary sources like gas stations and dry cleaners), and mobile sources (vehicles, airplanes, marine vessels, etc.).\* Estimated statewide emissions of 1,1,2,2-tetrachloroethane totaled 0.46 tons in the 2014 calendar year. Of this total, 85.5% were attributed to point sources and 14.5% were attributed to nonpoint sources.

## 2014 Indiana 1,1,2,2-Tetrachloroethane Emission Sources



\* For additional examples of types of emission sources, please visit IDEM's Hazardous Air Pollutants page at: <http://www.in.gov/idem/toxic/pages/hap/index.html>. For specific details on industrial sources of air toxics, please visit U.S. EPA's Toxics Release Inventory (TRI) page at: <https://www.epa.gov/toxics-release-inventory-tri-program>.

### Measured Concentration Trends

Ambient air monitoring data most accurately represents a limited area near the monitor location. All monitors for air toxics sample every sixth day. The monitoring locations by themselves are not sufficient to accurately characterize air toxic concentrations throughout the entire state, however, results from the monitors will provide exposure concentrations with a great deal of confidence at the monitoring locations.

The ambient air monitoring results were analyzed using U.S. EPA recommended statistical methods. IDEM evaluated the data so that a 95% upper confidence limit of the mean (UCL) could be determined. A 95% UCL represents a value which one can be 95% confident that the true mean of the population is below that value.

To learn more about the current monitoring locations, please visit IDEM's Air Toxics Monitor Siting webpage at: <http://www.in.gov/idem/toxic/2337.htm>

Data analysis was performed for each monitor that operated for a significant portion of the analysis period. This analysis determined the detection rate, which is defined as the percentage of valid samples taken statewide that had a quantifiable concentration of the pollutant. The statewide detection rate of 1,1,2,2-tetrachloroethane for the monitors analyzed from 2006-2015 was 8.1%. This detection rate is too low for IDEM to draw any conclusions about concentration

trends of 1,1,2,2-tetrachloroethane. IDEM does not perform a trend analysis for any pollutant with a detection rate of less than 50%.