

TRICHLOROETHENE (C₂HCl₃)

aka Trichloroethylene

Chemical Abstracts Service (CAS) Number: 79-01-6

General Information

Trichloroethene is a nonflammable colorless liquid with a sweet odor similar to ether or chloroform. Acute (short-term) inhalation exposure to trichloroethene can impact the central nervous system, with symptoms including sleepiness, fatigue, headache, confusion, and feelings of euphoria. Effects on the liver, kidneys, gastrointestinal system, and skin have also been noted. Chronic (long-term) inhalation exposure to trichloroethene also affects the human central nervous system. Case reports of chronic occupational exposures included effects such as dizziness, headache, sleepiness, nausea, confusion, blurred vision, facial numbness, and weakness. The cancer epidemiology for trichloroethene has grown in recent years with several large, well-designed studies being published. Animal studies have reported increases in lung, liver, kidney, and testicular tumors and lymphoma in rats and mice. U.S. EPA does not currently have a consensus classification for the carcinogenicity of trichloroethene. However, the Agency is currently reassessing its potential carcinogenicity, and new data suggest that trichloroethene is a likely human carcinogen.

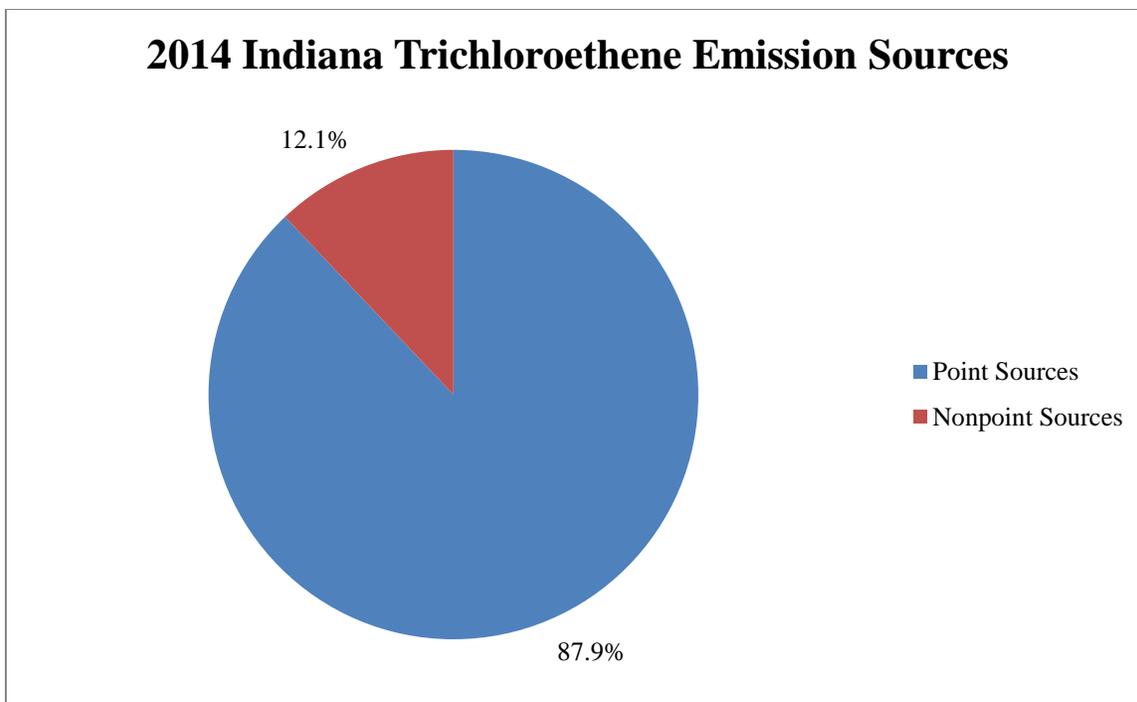
Sources

- Most of the trichloroethene used in the United States is released into the atmosphere from industrial degreasing operations. It is also used as an extraction solvent for greases, oils, fats, waxes, and tars, a chemical intermediate in the production of other chemicals, and as a refrigerant.
- Trichloroethene is used in consumer products such as typewriter correction fluids, paint removers/strippers, adhesives, spot removers, and rug-cleaning fluids.
- Workers may be exposed to trichloroethene in the factories where it is manufactured or used. In addition, persons breathing air around these factories may be exposed to trichloroethene.
- Persons may also be exposed to trichloroethene through the use of products containing the chemical and from evaporation and leaching from waste disposal sites.

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 trichloroethene totaled 213.26 tons in the 2014 calendar year. Of this total, 87.9% was attributed to point sources with the remaining 12.1% attributed to nonpoint sources.

2014 Indiana Trichloroethene 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 trichloroethene for the monitors analyzed from 2006-2015 was 28.6%. This detection rate is too low for IDEM to draw any conclusions about concentration trends of

trichloroethene. IDEM did not perform a trend analysis for any pollutant with a detection rate less than 50%.