VINYLIDENE CHLORIDE ($C_2H_2Cl_2$)

Chemical Abstracts Service (CAS) Number: 75-35-4

General Information

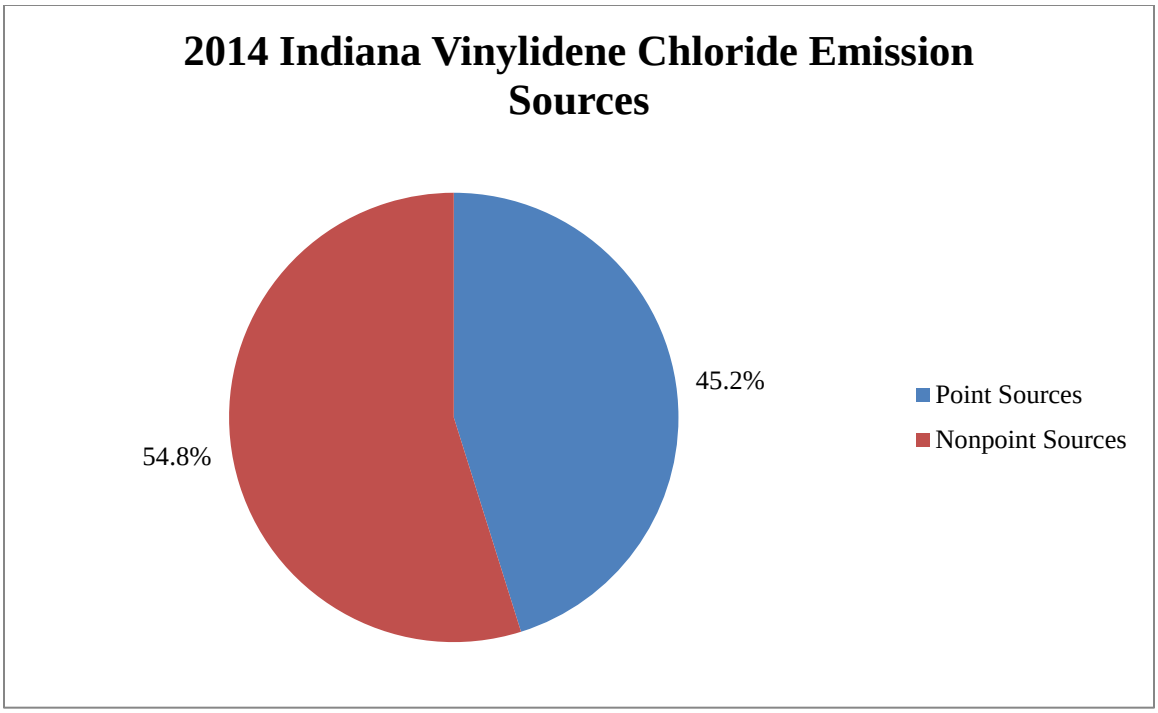
Vinylidene chloride is a colorless liquid with a mild sweet odor resembling that of chloroform. Acute (short-term) human exposure to vinylidene chloride has resulted in effects on the central nervous system, including symptoms of inebriation, convulsions, spasms, and unconsciousness at high concentrations. Chronic (long-term) exposure to vinylidene chloride may affect the liver in humans. Animal studies have shown that chronic exposure to vinylidene chloride causes effects on the central nervous system, kidneys, liver, and lungs. Human data are considered inadequate in providing evidence of cancer from exposure to vinylidene chloride.

Sources

- Vinylidene chloride is used as an intermediate for organic chemical synthesis.
- Vinylidene chloride is also used in the production of polyvinylidene chloride copolymers. The major application of these chloride copolymers is in the production of flexible food packaging.
- Air releases, primarily from emissions from polymer synthesis and fabrication industries, are the greatest source of ambient vinylidene chloride. Occupational exposure may occur by inhalation or dermal contact.
- Vinylidene chloride has been detected at low levels in a number of drinking water supplies across the United States.

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 vinylidene chloride totaled 0.08 tons in the 2014 calendar year. Of this total, 54.8% was attributed to nonpoint sources with the remaining 45.2% attributed to point 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 vinylidene chloride for the monitors analyzed from 2006-2015 was 9.4%. This detection rate is too low for IDEM to draw any conclusions about concentration

trends of vinylidene chloride. IDEM did not perform a trend analysis for any pollutant with a detection rate less than 50%.