

## **1,2-DIBROMOETHANE (C<sub>2</sub>H<sub>4</sub>Br<sub>2</sub>)**

*also known as Ethylene Dibromide*

Chemical Abstracts Service (CAS) Number: 106-93-4

### **General Information**

1,2-Dibromoethane is a colorless liquid with a mild sweet odor, like chloroform. Exposure to 1,2-dibromoethane primarily occurs from its past use as an additive to leaded gasoline and as a fumigant. It is extremely toxic to humans. The chronic (long-term) effects of exposure to 1,2-dibromoethane have not been well documented in humans. Animal studies indicate that chronic exposure to 1,2-dibromoethane may result in toxic effects to the liver, kidney, and the testis, irrespective of the route of exposure. Limited data on men occupationally exposed to 1,2-dibromoethane indicate that long-term exposure can impair reproduction by damaging sperm cells in the testicles. Several animal studies indicate that long-term exposure to 1,2-dibromoethane increases the incidences of a variety of tumors in rats and mice in both sexes by all routes of exposure. U.S. EPA has classified 1,2-dibromoethane as a Group B2, probable human carcinogen.

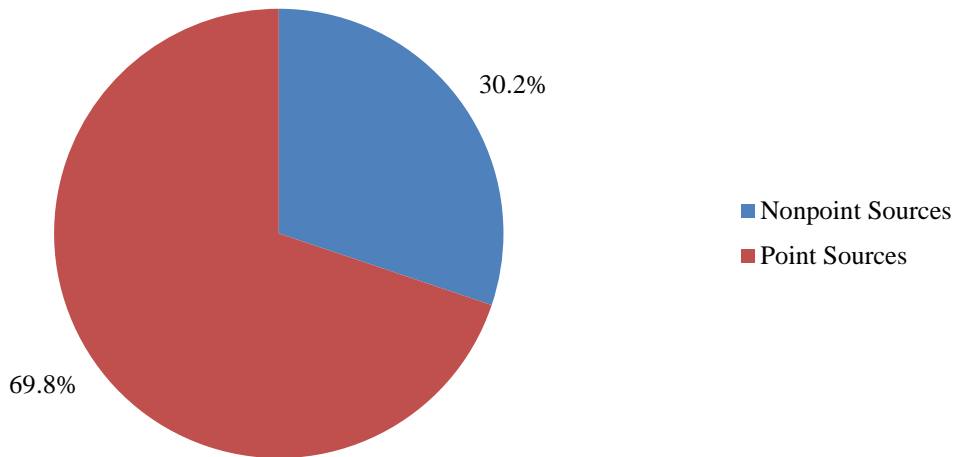
### **Sources**

- 1,2-Dibromoethane was used in the past as an additive to leaded gasoline; however, since leaded gasoline is now banned, it is no longer used for this purpose.
- 1,2-Dibromoethane was used as a fumigant to protect against insects, pests, and nematodes in citrus, vegetable, and grain crops, and as a fumigant for turf, particularly on golf courses. In 1984, U.S. EPA banned its use as a soil and grain fumigant.
- 1,2-Dibromoethane is currently used in the treatment of felled logs for bark beetles and termites, and control of wax moths in beehives.
- 1,2-Dibromoethane is also used as an intermediate for dyes, resins, waxes, and gums.
- Exposure could occur from inhalation of ambient air near industries that use 1,2-dibromoethane or through the ingestion of contaminated drinking water. There is no known reliable medical test to determine whether someone has been exposed to 1,2-dibromoethane.

### **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 1,2-dibromoethane totaled 0.2 tons in the 2014 calendar year. Of this total, 69.8% were attributed to point sources, and the remaining 30.2% to nonpoint sources. No emissions were attributed to mobile sources.

## 2014 Indiana 1,2-Dibromoethane 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 the majority of 2015 and each historical 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 1,2-dibromoethane for the monitors analyzed from 2006-2015 was 3.9%. This detection rate is

too low for IDEM to draw any conclusions about concentration trends of 1,2-dibromoethane. IDEM did not perform a trend analysis for any pollutant with a detection rate less than 50%.