

ISOPROPANOL (C₃H₈O)

Chemical Abstracts Service (CAS) Number: 67-63-0

General Information

Isopropanol is a colorless liquid with a sharp musty odor like rubbing alcohol. Acute (short-term) exposure to isopropanol can irritate the nose and throat causing coughing and wheezing. Overexposure can cause headache, dizziness, confusion, loss of coordination, unconsciousness and even death. Chronic (long-term) exposure to isopropanol may affect the liver and kidneys. Isopropanol is not classifiable as to its potential to cause cancer.

Sources

- Isopropanol can affect you when inhaled and by passing through the skin.
- Isopropanol is used in making cosmetics, skin and hair preparations, pharmaceuticals, perfumes, lacquer formulations, dye solutions, antifreezes, soaps, and window cleaners.

Indiana Emissions

Isopropanol emissions totals are not available from the National Emission Inventory (NEI) for the 2014 calendar year.

Measured Concentration Trends

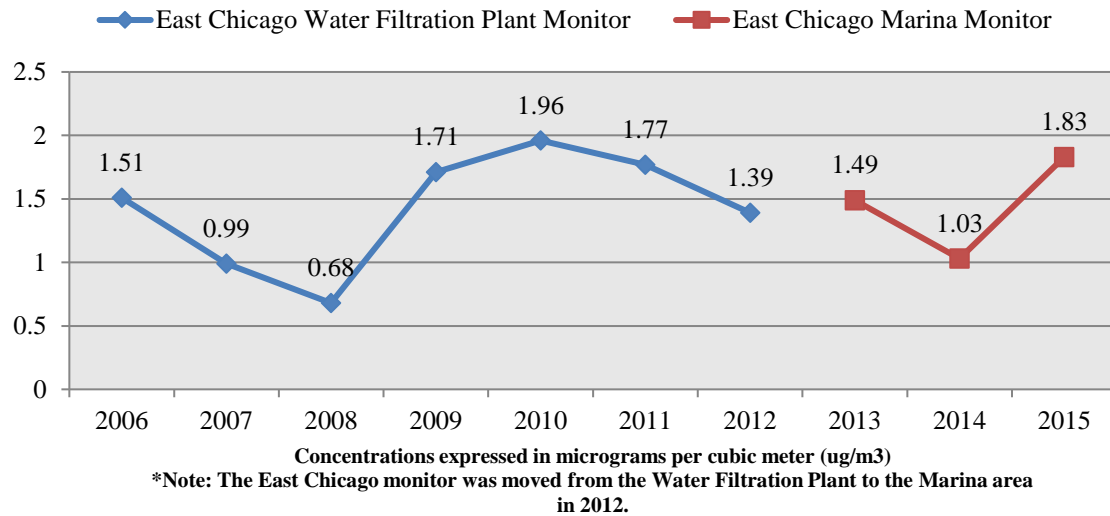
Ambient air monitoring data most accurately represents a limited area near the monitor location. All monitors for air toxics sample every sixth day. The monitoring locations by themselves are not sufficient to accurately characterize air toxic concentrations throughout the entire state, however, results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

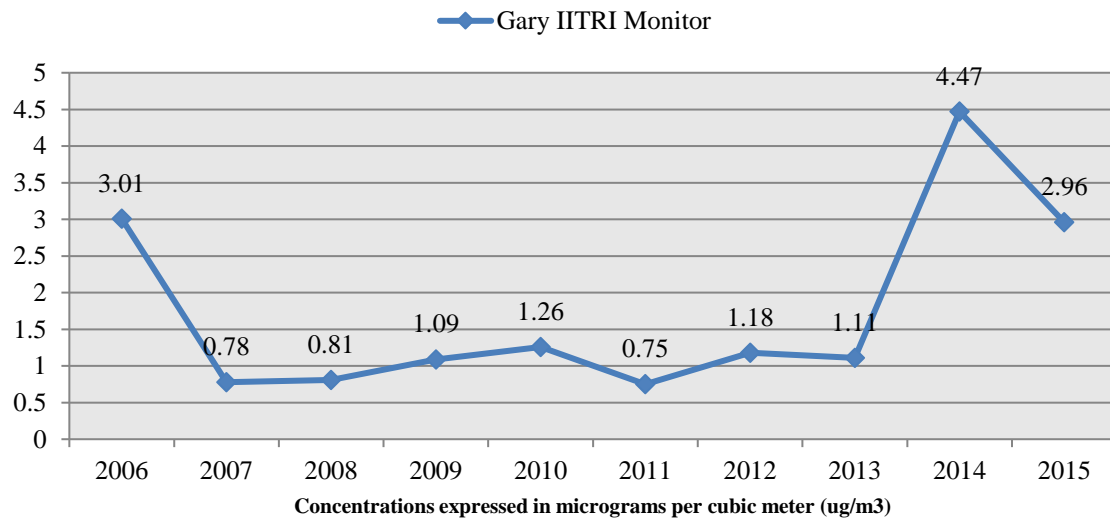
To learn more about the current monitoring locations, please visit IDEM's Air Toxics Monitor Siting webpage at: <http://www.in.gov/idem/toxic/2337.htm>

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 isopropanol for the monitors analyzed from 2006-2015 was 91.3%. Trend graphs for each of these monitors are provided below.

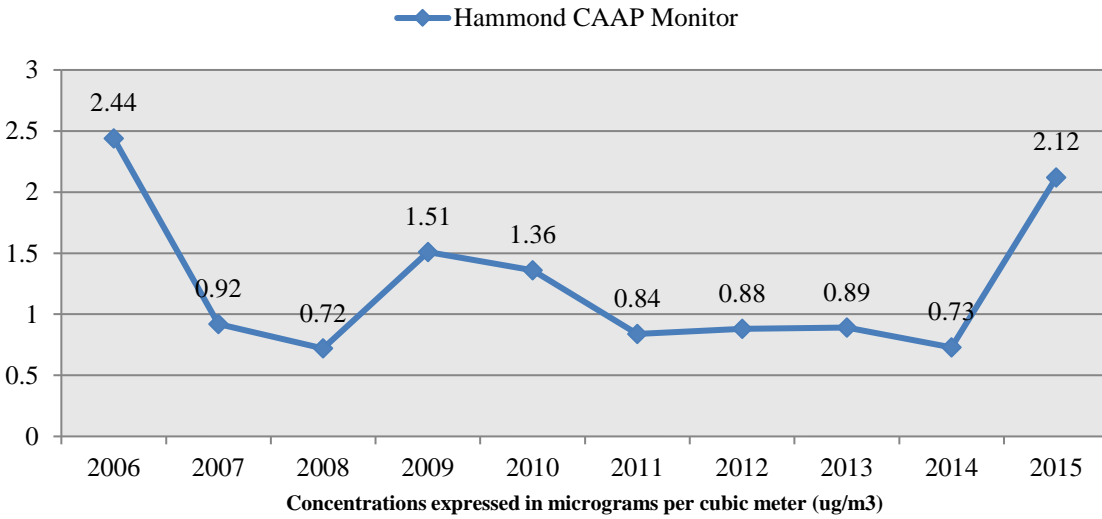
95% UCL Isopropanol Concentrations at East Chicago (2006-2015)



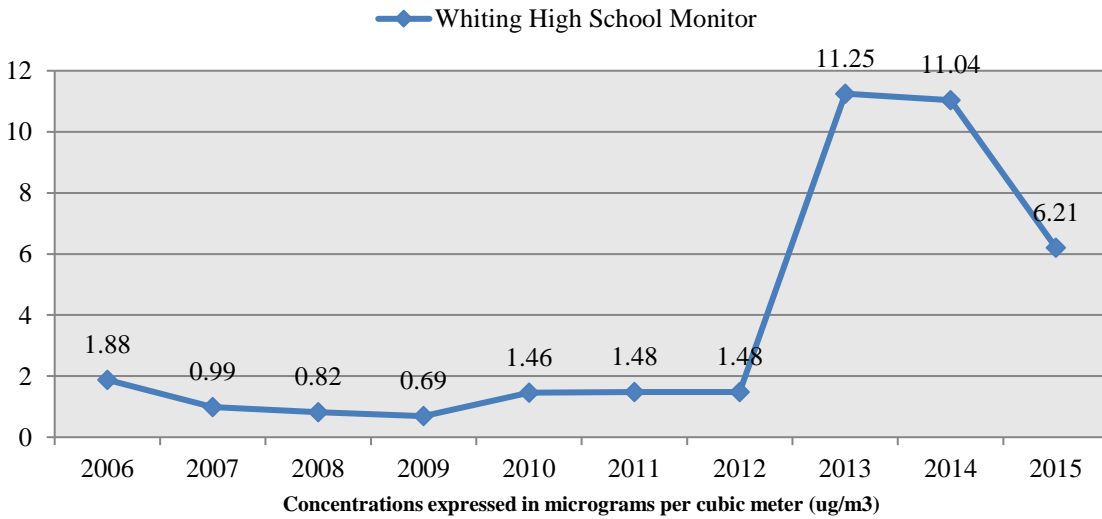
95% UCL Isopropanol Concentrations at Gary (2006-2015)



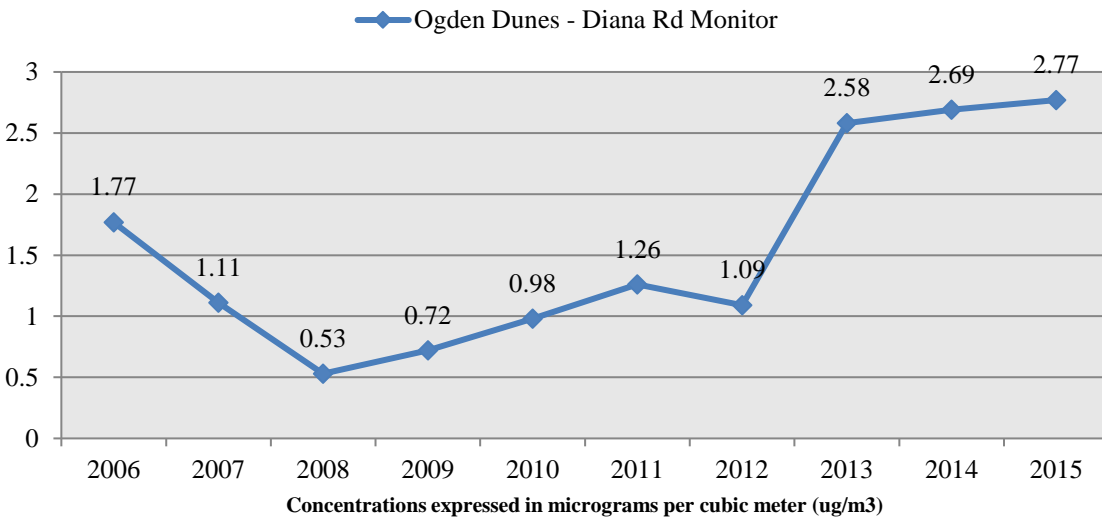
95% UCL Isopropanol Concentrations at Hammond (2006-2015)



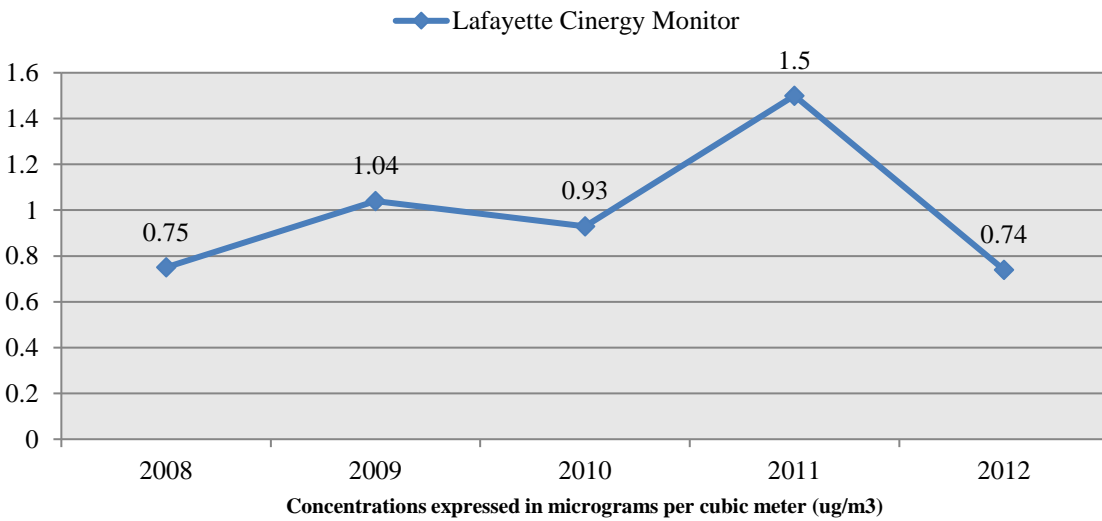
95% UCL Isopropanol Concentrations at Whiting (2006-2015)



95% UCL Isopropanol Concentrations at Ogden Dunes (2006-2015)

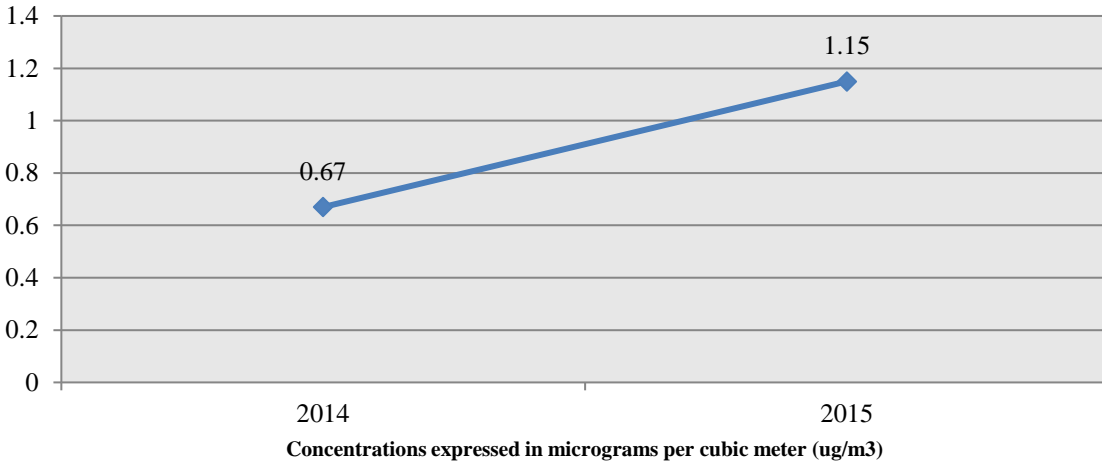


95% UCL Isopropanol Concentrations at Lafayette (2008-2012)



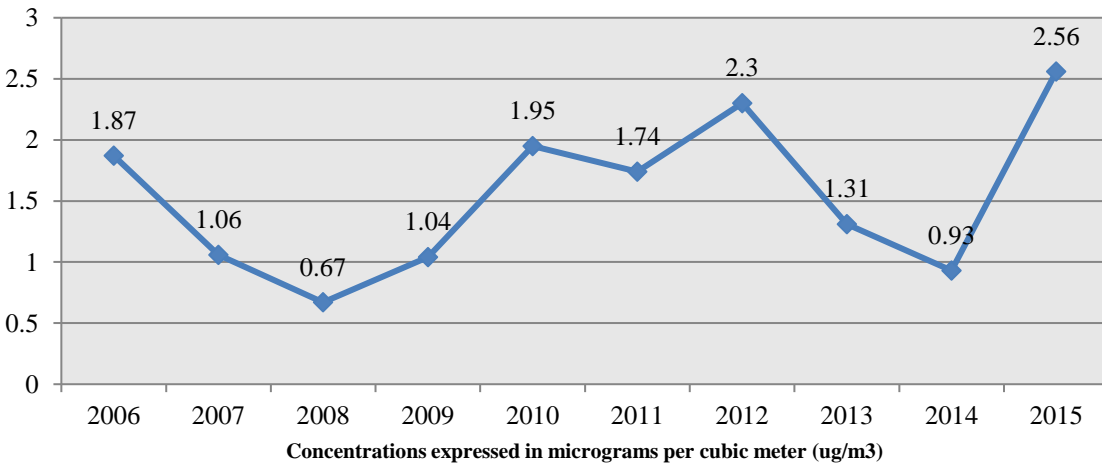
95% UCL Isopropanol Concentrations at Terre Haute (2014-2015)

◆ Terre Haute - Fort Harrison Rd Monitor

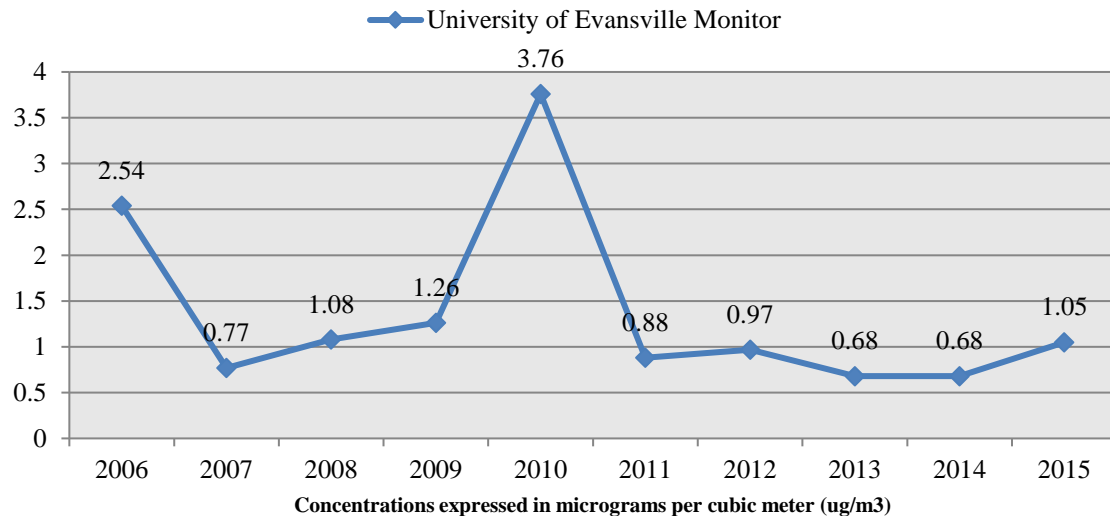


95% UCL Isopropanol Concentrations at Indianapolis (2006-2015)

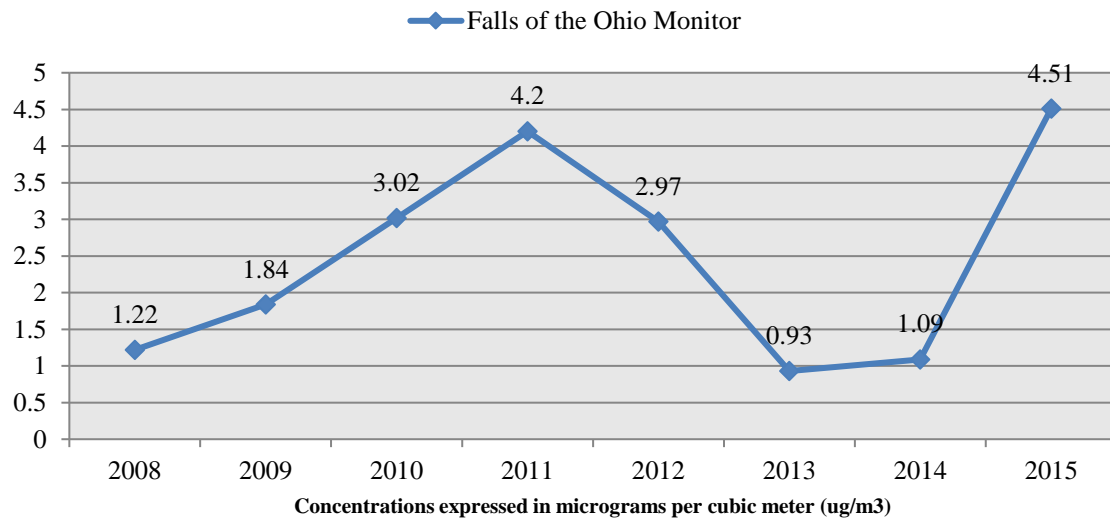
◆ Indianapolis - Washington Park Monitor



95% UCL Isopropanol Concentrations at Evansville (2006-2015)



95% UCL Isopropanol Concentrations at Clarksville (2008-2015)



The analysis of monitoring data from 2006 to 2015 indicates that concentrations of isopropanol have increased in several areas of the state, particularly in northwest Indiana. The largest spike in isopropanol concentrations appears to have occurred in Whiting during 2013 and 2014, but those numbers were heavily influenced by outliers of 143.52 on 9/7/2013 and 121.77 on 1/23/2014. There are also signs of increased concentrations in other areas of the state. Spikes in concentration were observed in 2015 at the Clarksville and Indianapolis monitors. The spike in

Indianapolis was heavily influenced by a single outlier of 22.98 recorded on 10/27/2015. Overall, the highest reading taken in the state was the 143.52 in Whiting. This was still well below the Reference Concentration of 7000.00. More information about the reference concentration can be found in the hazard quotient section below.

Hazard Quotient

IDEM evaluates chronic (lifetime) non-cancer hazard assuming a threshold for each pollutant at which a health effect can be observed. That is, it assumes safe exposure to the pollutant up to a certain level before it is possible to experience a health effect from breathing the pollutant. IDEM uses health protective assumptions by taking into account people who might be more sensitive to the pollutants. The hazard quotient is a ratio that divides the measured concentration of a pollutant by the reference concentration (RfC). A hazard quotient under 1.0 is commonly recognized to be below the health-protective level. Hazard quotients over 1.0 indicate that further investigation may be necessary and does not necessarily mean that health effects are expected. Given the many health-protective assumptions used in the evaluation, most non-cancer hazards over 1.0 are still unlikely to be associated with observable adverse health effects.

The average concentration of isopropanol was evaluated for each air pollutant monitor over the span of this study. The results for each monitor are displayed in the table below. The calculated hazard quotient is well below 1.0 at all monitors, which indicates that the measured concentrations of isopropanol do not present a risk for non-cancer health effects.

Table 1. Isopropanol Hazard Quotients (concentrations expressed in micrograms per cubic meter)

Monitor	Years	Average Concentration	Reference Concentration (RfC)*	Hazard Quotient
East Chicago Water Filtration Plant	2006-2012	1.31	7000.00	0.0002
East Chicago Marina	2013-2015	1.32	7000.00	0.0002
Gary IITRI	2006-2015	1.50	7000.00	0.0002
Hammond CAAP	2006-2015	1.08	7000.00	0.0002
Whiting High School	2006-2015	3.26	7000.00	0.0005
Ogden Dunes – Diana Rd	2006-2015	1.29	7000.00	0.0002
Lafayette Cinergy	2008-2012	0.89	7000.00	0.0001
Terre Haute – Fort Harrison Rd	2014-2015	0.89	7000.00	0.0001
Indianapolis – Washington Park	2006-2015	1.33	7000.00	0.0002
University of Evansville	2006-2015	1.17	7000.00	0.0002
Clarksville – Falls of the Ohio	2008-2015	2.23	7000.00	0.0003

* Reference Concentration Source: The California Environmental Protection Agency

Cancer Risk

Isopropanol is not classifiable as to its potential to cause cancer.