

This fact sheet answers the most frequently asked health questions (FAQs) about isophorone. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

**HIGHLIGHTS: Isophorone is used in the printing industry. Exposure to high levels causes irritation of the nose and throat, dizziness, and fatigue. This chemical has been found in at least 9 of the 1,177 National Priorities List sites identified by the Environmental Protection Agency (EPA).**

## What is isophorone?

(Pronounced ī'sə-fō'rōn)

Isophorone is a clear liquid that smells like peppermint. It can be dissolved in water and evaporates somewhat faster than water. It is an industrial chemical used as a solvent in some printing inks, paints, lacquers, and adhesives. It is also used as an intermediate in the production of certain chemicals. Although isophorone is an industrial chemical, it also occurs naturally in cranberries.

## What happens to isophorone when it enters the environment?

- Isophorone is released to the air from inks, paints, and other products containing it.
- It disappears in air very quickly, half of it disappears in less than 5 hours.
- Isophorone may be present in water from industrial releases.
- In water, it can be broken down by bacteria over a period of several days to about a month.

- In soil, it may be broken down by bacteria, filter to groundwater, or evaporate to the air; however, there is not much information on its presence in soil.
- It does not build up in the food chain.

## How might I be exposed to isophorone?

- Breathing low levels found in air.
- Drinking water contaminated with isophorone.
- Eating food that contains isophorone.
- Working in the printing, adhesives, and coatings industries where isophorone is used.

## How can isophorone affect my health?

The only effects of isophorone reported by people who have been exposed are irritation of the skin, eyes, nose, and throat, and dizziness and fatigue. These effects have occurred in workers who breathed vapors of isophorone and other chemicals in the printing industry.

Short-term exposure of animals to high levels of isophorone has caused inactivity and coma. Some animal studies suggest that isophorone may cause birth defects and

ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>

slower growth in the offspring of rats and mice that breathed the vapors during pregnancy. These studies found some harmful health effects in adult female animals. When rats and mice were given high doses of isophorone in food or water for a long time, the male rats developed kidney disease.

### How likely is isophorone to cause cancer?

No studies are available on whether isophorone causes cancer in people. In male rats, isophorone caused an increase in tumors of the kidney, liver, and lymph and reproductive glands when they were exposed to it by ingestion. There was no increase in tumors in female rats or mice. The EPA has determined that isophorone is a possible human carcinogen, based on adequate evidence in animals and inadequate evidence in people.

### Is there a medical test to show whether I've been exposed to isophorone?

There is no medical test to determine whether you have been exposed to isophorone. A few studies in rats and rabbits have shown that isophorone and its breakdown products can be found in the urine of these animals, so it may be possible to find a method for testing the urine of people to determine exposure to isophorone. We do not know whether such a measurement would predict how much exposure had occurred or the possible health effects.

### Has the federal government made recommendations to protect human health?

The EPA recommends that levels in lakes and streams should be limited to 8.4 parts of isophorone per billion parts of water (8.4 ppb) to prevent possible health effects from drinking water or eating fish contaminated with isophorone.

The EPA requires that discharges, spills, or accidental releases of 5,000 pounds or more of isophorone must be re-

ported to the EPA.

The Occupational Safety and Health Administration (OSHA) has set a permissible exposure limit of 140 milligrams of isophorone per cubic meter of air (140 mg/m<sup>3</sup>) for an 8-hour workday in a 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) recommends an occupational exposure limit of 23 mg/m<sup>3</sup> for isophorone for a 10-hour workday in a 40-hour workweek.

The federal recommendations have been updated as of July 1999.

### Glossary

Carcinogen: A substance that can cause cancer.

CAS: Chemical Abstracts Service.

Ingestion: Taking food or drink into your body.

Milligram (mg): One thousandth of a gram.

National Priorities List: A list of the nation's worst hazardous waste sites.

ppm: Parts per million.

Short-term: Lasting 14 days or less.

Solvent: A substance that dissolves another substance.

Tumor: An abnormal mass of tissue.

### References

Agency for Toxic Substances and Disease Registry (ATSDR). 1990. Toxicological profile for isophorone. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

**Where can I get more information?** For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

