



# OPPT Chemical Fact Sheets

## Nitrobenzene (CAS No. 98-95-3)



**Chemicals can be released to the environment as a result of their manufacture, processing, and use. EPA has developed information summaries on selected chemicals to describe how you might be exposed to these chemicals, how exposure to them might affect you and the environment, what happens to them in the environment, who regulates them, and whom to contact for additional information. EPA is committed to reducing environmental releases of chemicals through source reduction and other practices that reduce creation of pollutants.**

### WHAT IS NITROBENZENE, HOW IS IT USED, AND HOW MIGHT I BE EXPOSED?

Nitrobenzene is an oily, flammable liquid. It smells like bitter almonds. Nitrobenzene does not occur naturally. It is produced in very large amounts (1.4 billion pounds in 1991) in the United States by four companies. U.S. demand is expected to increase about 3% to 4% per year for the next several years. The largest users of nitrobenzene are companies that make aniline. Other companies use smaller amounts of nitrobenzene to make explosives, aniline dyes, pesticides, and drugs. Companies also use nitrobenzene as a solvent in products like paint and shoe, floor, and metal polishes.

Exposure can occur in the workplace during its manufacture, processing, and use, or in the environment following releases to air, water, land, and groundwater. Exposure can also occur when people use nitrobenzene-containing paints and polishes. Nitrobenzene enters the body when people breathe air or consume food or water contaminated with nitrobenzene. It can also be absorbed through skin contact. It does not remain in the body due to its breakdown and removal.

### WHAT HAPPENS TO NITROBENZENE IN THE ENVIRONMENT?

Nitrobenzene can evaporate when exposed to air. It dissolves when mixed with water. Most releases of nitrobenzene to the U.S. environment are to underground injection sites. In 1992, only a small percent (6%) of environmental releases of nitrobenzene was to air. It can also evaporate slowly from water and soil exposed to air. Once in air, nitrobenzene breaks down to other chemicals. Microorganisms living in water and in soil also break down nitrobenzene. Because it is a liquid that does not bind well to soil, nitrobenzene that makes its way into the ground can move through the ground and enter groundwater. Nitrobenzene may be stored in plants, but is not expected to accumulate in fish.

## HOW DOES NITROBENZENE AFFECT HUMAN HEALTH AND THE ENVIRONMENT?

Effects of nitrobenzene on human health and the environment depend on how much nitrobenzene is present and the length and frequency of exposure. Effects also depend on the health of a person or the condition of the environment when exposure occurs.

Workers exposed to large amounts of nitrobenzene in air have experienced headaches, muscle spasms, nausea, convulsions, and coma. These effects occur because nitrobenzene decreases the capacity of blood to carry oxygen and because it affects the human nervous system directly. These effects are not likely to occur at levels of nitrobenzene that are normally found in the U.S. environment.

Adverse human health effects associated with breathing or otherwise consuming small amounts of nitrobenzene over long periods of time are not known. Repeat exposure to nitrobenzene in air over a lifetime causes cancer in animals. Nitrobenzene may likewise cause cancer in humans. Laboratory studies, exposing animals orally and by air, have shown that nitrobenzene causes adverse reproductive system effects. Laboratory studies show that repeat exposure to nitrobenzene in air adversely affects the blood, liver, kidneys, adrenal gland, and nervous system of animals.

Nitrobenzene is moderately toxic to aquatic life. Nitrobenzene is not likely to cause adverse environmental effects at levels normally found in the U.S. environment.

## WHAT EPA OFFICES OR OTHER FEDERAL AGENCIES OR OTHER GROUPS CAN I CONTACT FOR ADDITIONAL INFORMATION ON NITROBENZENE?

EPA OFFICE	STATUTE	PHONE NUMBER
Pollution Prevention & Toxics	Pollution Prevention Act (PPA)	(202) 260-1023
	Emergency Planning and Community Right-to-Know Act (EPCRA) (§313/TRI)	(800) 535-0202
Air	Toxic Substances Control Act (TSCA) (§4, 8D)	(202) 554-1404
	Clean Air Act	(919) 541-0888
Water	Clean Water Act	(202) 260-7588
Solid Waste & Emergency Response	Resource Conservation and Recovery Act (RCRA)	(800) 535-0202
	Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)	(800) 535-0202

OTHER FEDERAL AGENCY/DEPARTMENT OR GROUP	PHONE NUMBER
Agency of Toxic Substances & Disease Registry	(404) 639-6000
American Conference of Governmental Industrial Hygienists	(513) 742-2020
Consumer Product Safety Commission	(301) 504-0994
Food & Drug Administration	(301) 443-3170
National Institute for Occupational Safety & Health	(800) 356-4674
Occupational Safety & Health Administration	
(Check local phone book for phone number under Department of Labor)	

The Support Document for this and other OPPT Chemical Fact Sheets can be found on the Internet at: <http://www.epa.gov/chemfact>