



OPPT Chemical Fact Sheets

1,1'-Biphenyl (CAS No. 92-52-4)



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 BIPHENYL, HOW IS IT USED, AND HOW MIGHT I BE EXPOSED?

Biphenyl (also called diphenyl) is a colorless solid. It occurs naturally in trace amounts. It is produced in large amounts (53 million pounds in 1990) by four companies in the United States. U.S. demand for biphenyl is likely to remain constant over the next several years. Current use patterns of biphenyl are not available. The main users are thought to be textile mills that use biphenyl in mixtures that dissolve dyes. In the past, companies have used biphenyl:

- * As a heat transfer agent;
- * As a starting material to make polychlorinated biphenyls; and
- * As a treatment for paper used to pack citrus fruit.

Exposure can occur in the workplace or in the environment following releases to air, water, land, or groundwater. Biphenyl enters the body when people breathe air contaminated with biphenyl or consume food or water contaminated with biphenyl. It can also be absorbed through skin contact. It does not remain in the body due to its breakdown and removal.

WHAT HAPPENS TO BIPHENYL IN THE ENVIRONMENT?

Biphenyl dissolves poorly when mixed with water. Most releases of biphenyl to the U.S. environment are to air. In air, biphenyl breaks down to other chemicals or settles as dry deposits to water or land. Biphenyl attaches to solid material in water. Microorganisms living in water and in soil break down biphenyl to other chemicals. Because it is a solid that binds to soil, biphenyl is not likely to move through the ground and enter groundwater. Plants and animals may store small amounts of biphenyl.

HOW DOES BIPHENYL AFFECT HUMAN HEALTH AND THE ENVIRONMENT?

Effects of biphenyl on human health and the environment depend on how much biphenyl 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 biphenyl fumes for short periods of time have experienced nausea, vomiting, irritation of the eyes and respiratory tract, and bronchitis. These acute effects are not likely to occur at levels of biphenyl that are normally found in the U.S. environment.

Breathing small amounts of biphenyl over long periods of time has caused damage to the liver and nervous system of exposed workers. Other human health effects associated with exposure to small amounts of biphenyl over long periods of time are not known. Laboratory studies show that repeat exposure to large amounts of biphenyl by ingestion damages the kidney and blood and reduces growth and life expectancy of animals. Limited evidence suggests that repeat exposure to biphenyl dust adversely affects the respiratory tract of laboratory animals.

Biphenyl has high acute toxicity to aquatic life. The biphenyl industry has completed chronic aquatic toxicity studies in response to an EPA request for testing. These test show that biphenyl has low chronic toxicity to aquatic life.

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

EPA OFFICE	STATUTE	PHONE NUMBER
Pollution Prevention & Toxics	Pollution Prevention Act	(202) 260-1023
	Emergency Planning and Community Right-to-Know Act (§ 313/Toxics Release Inventory)	(800) 535-0202
	Toxic Substances Control Act (TSCA) (§4, §8A, §8D, §12B)	(202) 554-1404
Air	Clean Air Act (§111, §112B)	(919) 541-0888
Solid Waste & Emergency Response	Resource Conservation and Recovery Act (RCRA)	(800) 535-0202
	Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)	(800) 535-0202
Water	Clean Water Act	(202) 260-7588

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>