Styrene Fact Sheet (CAS NO. 100-42-5)
United States Pollution Prevention December 1994
Environmental Protection and Toxics EPA 749-F-95-019
Agency (7407)
OPPT Chemical Fact Sheets
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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 STYRENE, HOW IS IT USED, AND HOW MIGHT I BE EXPOSED?

Styrene (also called vinylbenzene) is a flammable, oily liquid. It is colorless to yellowish in color and has a penetrating odor. **Styrene does not occur naturally.** Cigarette smoke and automobile exhaust contain small amounts of styrene.

Styrene is produced in very large amounts (10 billion pounds in 1993) by nine companies in the United States. U.S. demand for styrene increased about 12 percent from 1992 to 1993. Demand is likely to increase at a slower rate (2 to 4 percent) for the next several years. The largest users of styrene are chemical companies that make plastics, synthetic rubber, resins, and insulators. Acrylonitrile-butadiene-styrene plastics are used in business machines, luggage, and in construction materials. Acrylonitrile-styrene plastics are used in automotive and household goods and in packaging material. **Food processing companies use small amounts of styrene as a flavoring agent in foods such as ice cream and candy.**

Exposure can occur in the workplace or in the environment following releases to air, water, land, or groundwater. Exposure can also occur when people breathe air contaminated with cigarette smoke or automobile exhaust. **Styrene enters the body when people breathe in air or consume food or water contaminated with styrene.** It is less likely to be absorbed through skin contact. Styrene does not remain in the body due to its breakdown and removal.

WHAT HAPPENS TO STYRENE IN THE ENVIRONMENT?

Styrene evaporates when exposed to air. It dissolves only slightly when mixed with water. Most releases of styrene to the environment are to air. It can also evaporate from water and soil exposed to air. Once in air, styrene breaks down to other chemicals. Microorganisms that live in water and in soil can also break down styrene. Because it is a liquid that does not bind well to soil, styrene that makes its way into the ground can move through the ground and enter groundwater. Plants and animals are not likely to store styrene.

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HOW DOES STYRENE AFFECT HUMAN HEALTH AND THE ENVIRONMENT?

Effects of styrene on human health and the environment depend on how much styrene 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.

Styrene vapor irritates the eyes, the nose, and the throat. Styrene vapor can also adversely affect the human nervous system, causing adverse eye effects. These effects are not likely to occur at levels of styrene that are normally found in the environment.
Human health effects associated with breathing small amounts of styrene over long periods of time in the workplace include alterations in vision, hearing loss and increased reaction times. Other human health effects associated with exposure to small amounts of styrene over long periods of time are not known. EPA is currently reviewing the potential for styrene to cause cancer in humans. Laboratory studies show that repeated oral exposure to large amounts of styrene cause cancer and adversely affects the blood and the liver of animals. Laboratory studies also show that repeated exposure to large amounts of styrene in air can damage the respiratory system of animals.

Styrene has moderate toxicity to aquatic life. Styrene by itself is not likely to cause environmental harm at levels normally found in the environment. Styrene can contribute to smog formation when it reacts with other volatile substances in air.

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

EPA OFFICE	LAW	PHONE NUMBER
Pollution Prevention & Toxics	Emergency Planning and Community Right-to-Know Act (EPCRA) (§ 313/ Toxics Release Inventory data)	(202) 260-1531
	Toxic Substances Control Act (TSCA) (§8A)	(202) 554-1404
	Air Clean Air Act (§111, §112B)	(919) 541-0888
Solid Waste & Emergency Response		(800) 535-0202
	Resource Conservation and Recovery Act (RCRA)	
	Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)	
Water		
	Clean Water Act (§311)	(202) 260-7588
	Safe Drinking Water Act (Drinking Water Standard: 0.1 mg/L)	(800) 426-4791

For general information on reducing or eliminating industrial pollutants through technology transfer, education, and public awareness, contact the Pollution Prevention Information Clearinghouse, (202) 260-1023.

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

National Institute of Environmental Health Sciences
(EnviroHealth Clearinghouse) (800) 643-4794
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