OPPT Chemical Fact Sheet EPA 749-F-94-022

CHEMICALS IN THE ENVIRONMENT: 1,2,4-TRIMETHYLBENZENE (CAS NO. 95-63-6)

prepared by
OFFICE OF POLLUTION PREVENTION AND TOXICS
U.S. ENVIRONMENTAL PROTECTION AGENCY
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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 1,2,4-TRIMETHYLBENZENE, HOW IS IT USED, AND HOW MIGHT I BE EXPOSED?

1,2,4-Trimethylbenzene (also called TMB or pseudocumene) is a colorless, flammable liquid. It occurs naturally in coal tar and petroleum crude oil. It is a major component (typically 40%) of a petroleum refinery distillation fraction known as the C9 aromatic fraction (or simply the C9 fraction). Oil refineries produce large amounts (an estimated 80 billion pounds) of the C9 fraction each year. Most of the C9 fraction is not isolated. Refineries pump this "unrecovered" C9 fraction to some other location where it is usually added directly to gasoline. Refineries isolate less than one-half percent of the C9 fraction. Companies add this "recovered" C9 fraction to protective surface coatings and cleaners.

Oil refineries generally do not isolate 1,2,4-trimethylbenzene from crude oil or from the C9 fraction. Currently only one refinery in the United States "recovers" TMB. The Environmental Protection Agency estimates that the amount of "recovered" 1,2,4-trimethylbenzene is in excess of 10 million pounds per year. US demand for this isolated 1,2,4-trimethylbenzene is likely to remain stable. The largest users of isolated 1,2,4-trimethylbenzene are chemical companies that make trimellitic anhydride. Companies also use it to make dyes and drugs.

Exposure to 1,2,4 trimethylbenzene can occur in the workplace or in the environment following releases to air, water, land, or groundwater. Exposure can also occur when people use gasoline or certain paints and cleaners. 1,2,4-Trimethylbenzene enters the body when breathed in with contaminated air or when consumed with contaminated food or water. It can also be absorbed through skin contact. It may remain in the body, stored in fat, before its removal in expired air or in urine.

WHAT HAPPENS TO 1,2,4-TRIMETHYLBENZENE IN THE ENVIRONMENT?

1,2,4-Trimethylbenzene evaporates when exposed to air. It dissolves only slightly when mixed with water. Most direct releases of 1,2,4-trimethylbenzene to the environment are to air. It also evaporates from water and soil exposed to air. Once in air, it breaks down to other chemicals. Microorganisms that live in water and in soil can also break down TMB. Because it is a liquid that does not bind well to soil, 1,2,4-trimethylbenzene that makes its way into the ground can move through the ground and enter groundwater. Plants and animals living in environments contaminated

with TMB can store small amounts of the chemical.

HOW DOES 1,2,4-TRIMETHYLBENZENE AFFECT HUMAN HEALTH AND THE ENVIRONMENT?

Effects of 1,2,4-trimethylbenzene on human health and the environment depend on how much TMB 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.

Breathing large amounts of 1,2,4-trimethylbenzene for short periods of time adversely affects the human nervous system. Effects range from headaches to fatigue and drowsiness. TMB vapor irritates the nose and the throat. Prolonged contact with liquid TMB irritates the skin. These effects are not likely to occur at levels of 1,2,4-trimethylbenzene that are normally found in the environment.

Human health effects associated with breathing or otherwise consuming smaller amounts of 1,2,4-trimethylbenzene are not known. The petroleum industry has conducted several studies on the C9 fraction in response to an EPA request for testing. These studies show that repeat exposure to this mixture of chemicals in air adversely affects the reproductive system and the developing fetus of animals. EPA believes that adverse effects associated with exposure to the C9 fraction are similar to those expected to occur as a result of exposure to individual chemicals, like 1,2,4-trimethylbenzene, that make up this mixture.

1,2,4-Trimethylbenzene by itself is not likely to cause environmental harm at levels normally found in the environment. TMB can contribute to the formation of photochemical smog when it reacts with other volatile organic carbon substance in air.

WHAT EPA PROGRAM OFFICES REGULATE 1,2,4-TRIMETHYLBENZENE, AND UNDER WHAT LAWS IS IT REGULATED?

EPA OFFICE	LAW	PHONE NUMBER
Pollution Prevention & Toxics	Toxic Substances Control Act	(202) 554-1404
	Emergency Planning and Community Right-to-Know Act (EPCRA) Regulations (Sec. 313)	(800) 424-9346
	Toxics Release Inventory data	(202) 260-1531
Air	Clean Air Act	(919) 541-0888
Solid Waste & Emergency Response	EPCRA (Sec. 311/312)	(800) 424-9346

A technical support document can be requested from the TSCA Assistance Information Service, (202) 554-1404.

WHAT OTHER FEDERAL AGENCIES OR GROUPS CAN I CONTACT FOR INFORMATION ON 1,2,4-TRIMETHYLBENZENE?

AGENCY/GROUP	PHONE NUMBER
Consumer Product Safety Commission	(301) 504-0994
National Institute for Occupational Safety and Health (NIOSH)	(800) 356-4674
Occupational Safety and Health Administration (Check your local phone book under U.S. Department of Labor)	