♻EPA Chemicals in the Environment

METHYLCHLOROFORM (1,1,1-Trichloroethane)

(CAS NO 71-55-6)
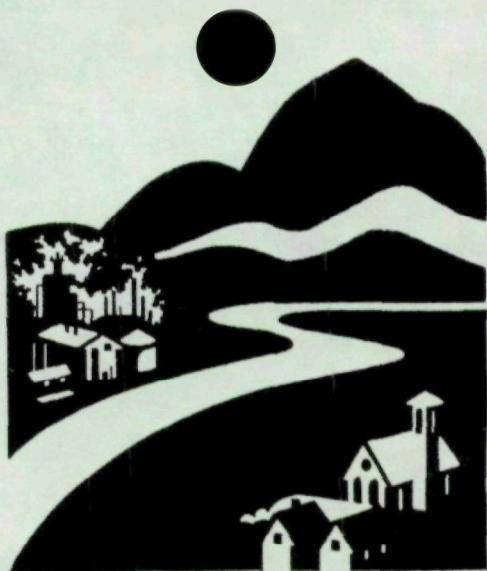
Chemicals can be released to the environment as a result of their manufacture, processing, and use. The EPA has developed information summaries on selected chemicals to describe how you might be exposed to these chemicals, how exposure to them might affect you and the environment, what happens to them 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 METHYLCHLOROFORM, HOW IS IT USED, AND HOW MIGHT I BE EXPOSED?

Methylchloroform (also called 1,1,1-trichloroethane) is a colorless, nonflammable liquid. It does not occur naturally but is produced in large amounts (648 million pounds in 1991) by three companies in the United States. Because of ozone depletion concerns, EPA has restricted future US production of methylchloroform. After 1995, US production of methylchloroform will be less than 50 million pounds per year. The major users of methylchloroform are companies that use the chemical to clean metal surfaces. It is also added to aerosol formulations, adhesives, protective surface coatings, cutting oils, and printing inks. Companies also use methylchloroform to make other chemicals, such as vinylidene chloride.

Exposure to methylchloroform can occur in the workplace or in the environment following releases to air, water, land, or groundwater. Exposure can also occur

when people use products containing the chemical. Methylchloroform enters the body when breathed in with contaminated air or when consumed with contaminated food or water. It is also absorbed through skin contact. Nearly all the methylchloroform that enters the body is removed with exhaled air. The body may store small amounts of the chemical in fat tissue before it is either removed with exhaled air or it breaks down and is removed in urine.

WHAT HAPPENS TO METHYLCHLOROFORM IN THE ENVIRONMENT?

Methylchloroform evaporates when exposed to air. It dissolves when mixed with water. Most direct releases of methylchloroform to the environment are to air. Methylchloroform also evaporates from water and soil exposed to air. Once in air, it either breaks down slowly to other chemicals or moves slowly to the upper atmosphere. Because it is a liquid that does not bind well to soil, methylchloroform that makes its way into the ground can move through the ground and enter groundwater. Plants and animals are not likely to store methylchloroform.

HOW DOES METHYLCHLOROFORM AFFECT HUMAN HEALTH AND THE ENVIRONMENT?

Effects of methylchloroform on human health and the environment depend on how much methylchloroform 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 methyl-chloroform for short periods of time adversely

affects the human nervous system and the cardiovascular system. Effects range from headaches, unsteadiness, and fatique to unconsciousness and death. Methylchloroform also can cause irregular heart beat. Direct contact with liquid methylchloroform irritates the skin. Its vapor irritates the eyes, the nose, and the throat. These effects are not likely to occur at levels of methylchloroform that are normally found in the environment.

Human health effects associated with breathing or otherwise consuming smaller amounts of methylchloroform over long periods of time are not known. Laboratory studies show that repeated exposure to large amounts of methylchloroform adversely affects the liver, the heart, and the kidneys of animals. The methylchloroform industry has completed several animal studies in response to an EPA request for testing. Methylchloroform causes adverse effects in the developing fetus of animals that breathe air contaminated with large amounts of the chemical.

Methylchloroform is not likely to cause immediate environmental harm at levels normally found in the environment. However, it is likely to remain in the air long enough to reach the upper atmosphere. Here it can be a source of chlorine atoms that damage the Earth's ozone layer. Ozone damage in the upper atmosphere can lead to increased levels of harmful ultraviolet (UV) radiation reaching the Earth's surface. Increased, surface UV radiation can adversely affect human health and the environment.

WHAT EPA PROGRAM OFFICES REGULATE METHYLCHLOROFORM, 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 (§ 313)	(800) 535-0202
	Toxics Release Inventory data	(202) 260-1531
Air	Clean Air Act	(919) 541-0888
Solid Waste &	Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)	(800) 535-0202
Emergency Response	Resource Conservation and Recovery Act / EPCRA (§ 304/311/312)	
Water	Clean Water Act	(202) 260-7588
	Safe Drinking Water Act (Drinking Water Standard: 0.2 mg/L)	(800) 426-4791

A technical support document is available from the TSCA Assistance Information Service, (202) 554-1404.

WHAT OTHER FEDERAL AGENCIES OR GROUPS CAN I CONTACT FOR INFORMATION ON METHYLCHLOROFORM?

AGENCY/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 Environmental Health Sciences (EnviroHealth Clearinghouse)	(800) 643-4794
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)