

United States
Environmental Protection
Agency

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Office of Pollution Prevention and Toxics (7401)

EPA Chemicals in the Environment

METHYL ISOBUTYL KETONE

(CAS NO. 108 10 1)



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 METHYL ISOBUTYL KETONE, HOW IS IT USED, AND HOW MIGHT I BE EXPOSED?

Methyl isobutyl ketone (also called MIBK or hexone) is a colorless, flammable liquid. It occurs naturally in certain foods and beverages. It is produced in large amounts (an estimated 160 million pounds in 1992) by three companies in the United States. US demand for MIBK is likely to decrease gradually until makers of protective surface coatings begin using other substances. Once companies make this change, US demand for MIBK is likely to fall more rapidly. The largest users of MIBK are companies that add it to protective surface coatings. Other companies add MIBK to adhesives, printing ink, and special lubricating oils. Companies also use MIBK to make pesticides and to separate and purify several other organic and inorganic chemicals. Drug companies use MIBK to extract and purify antibiotics and other drugs. Companies that make textiles and leather also use MIBK.

Exposure to MIBK can occur in the workplace or in the environment following releases to air, water, land, or groundwater. Exposure can also occur when people use certain paints, varnishes, or glues. Methyl isobutyl ketone enters the body when breathed in with contaminated air or when consumed with contaminated food or water. It is also absorbed through skin contact. It is not likely to remain in the body due to its breakdown and removal in exhaled air and in urine.

WHAT HAPPENS TO METHYL ISOBUTYL KETONE IN THE ENVIRONMENT?

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

HOW DOES METHYL ISOBUTYL KETONE AFFECT HUMAN HEALTH AND THE ENVIRONMENT?

Effects of methyl isobutyl ketone on human health and the environment depend on how much MIBK 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 MIBK for short periods of time, such as when painting in a poorly vented area, can adversely affect the nervous system. Effects range from headaches, dizziness, nausea, and numbness in fingers and toes to unconsciousness and death. MIBK vapor irritates the eyes, the nose, and the throat. Direct, prolonged contact with liquid methyl isobutyl ketone irritates the skin. MIBK liquid also irritates the eyes. These effects are not expected to occur at levels of MIBK that are normally found in the environment.

Human health effects associated with breathing or otherwise consuming smaller amounts of MIBK over long periods of time are not known. Workers have developed nausea, headaches, weakness, and adverse liver effects as a result of repeated exposure to MIBK. Laboratory studies show that breathing large amounts of methyl isobutyl ketone during pregnancy causes adverse effects in the developing fetus of animals. Studies also show that repeat exposure to large amounts of MIBK in air causes kidney and liver damage in animals.

Methyl isobutyl ketone by itself is not likely to cause environmental harm at levels normally found in the environment. MIBK can contribute to the formation of photochemical smog when it reacts with other volatile organic carbon substances in air.

WHAT EPA PROGRAM OFFICES REGULATE METHYL ISOBUTYL KETONE, 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 & Emergency Response	Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)	(800) 535-0202
	Resource Conservation and Recovery Act / EPCRA (§ 304/311/312)	

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 METHYL ISOBUTYL KETONE?

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)