United States
Environmental Protection
Agency

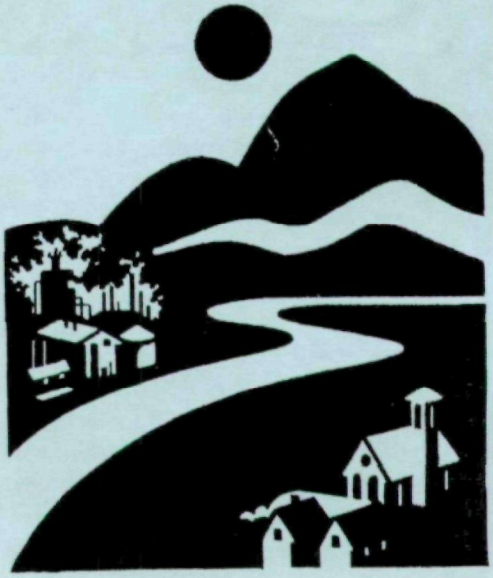
EPA 749-F-94-013
December 1994

Office of Pollution Prevention and Toxics (7401)

EPA Chemicals in the Environment

METHANOL

(CAS NO. 67-56-1)



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

Methanol (also known as methyl alcohol and wood alcohol) is a colorless liquid that may explode when exposed to an open flame. It occurs naturally in wood and in volcanic gases. Methanol is also a product of decaying organic material. It is produced in very large amounts (approximately 1.3 billion gallons in 1992) by thirteen companies in the United States. US demand for methanol is likely to increase over the next several years. The largest users of the methanol sold in the US are companies that make methyl t-butyl ether, a gasoline additive. Companies also use methanol to make chemicals such as formaldehyde, acetic acid, chloromethanes, and methyl methacrylate. Companies add methanol to paint strippers, aerosol spray paints, wall paints, carburetor cleaners, and car windshield washer products. Methanol is also a gasoline additive and, in some cases, a gasoline substitute for use in automobiles and other small engines.

Exposure to methanol can occur in the workplace or in the environment following releases to air, water, land, or groundwater. Exposure can occur when people use certain paint strippers, aerosol spray paints, wall paints, windshield wiper fluid, and small engine fuel. Methanol 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 does not remain in the body due to its breakdown and removal in expired air or urine.

WHAT HAPPENS TO METHANOL IN THE ENVIRONMENT?

Methanol evaporates when exposed to air. It dissolves completely when mixed with water. Most direct releases of methanol to the environment are to air. Methanol 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 methanol. Because it is a liquid that does not bind well to soil, methanol that makes its way into the ground can move through the ground and enter groundwater. Plants and animals are not likely to store methanol.

HOW DOES METHANOL AFFECT HUMAN HEALTH AND THE ENVIRONMENT?

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

People have died as a result of drinking large amounts of methanol. Drinking smaller, non lethal amounts of methanol adversely affects the human nervous system. Effects range from headaches to incoordination similar to that associated with drunkenness. Delayed effects such as severe abdominal, leg, and back pain can follow the inebriation effects of methanol. Loss of vision and even blindness can also occur after exposure to amounts of methanol causing inebriation. These effects are not likely to occur at levels of methanol that are normally found in the environment.

Human health effects associated with breathing or otherwise consuming smaller amounts of methanol over long periods of time are not known. Workers repeatedly exposed to methanol have experienced several adverse effects. Effects range from headaches to sleep disorders and gastrointestinal problems to optic nerve damage. Laboratory studies show that repeat exposure to large amounts of methanol in air or in drinking water cause similar adverse effects in animals.

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

WHAT EPA PROGRAM OFFICES REGULATE METHANOL, 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 METHANOL?

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)