

Technical Factsheet on: ASBESTOS

[List of Contaminants](#)

As part of the Drinking Water and Health pages, this fact sheet is part of a larger publication:
National Primary Drinking Water Regulations

Drinking Water Standards

MCLG: 7 million fibers per liter (MFL) (fibers > 10 microns in length)

MCL: 7 million fibers per liter (MFL)

HAL(child): none

Health Effects Summary

Acute: No reliable data are available on the acute toxic effects from short-term exposures to asbestos. No Health Advisories have been established for short-term exposures.

Chronic: Asbestos has the potential to cause lung disease from a lifetime exposure at levels above the MCL.

Cancer: Asbestos has the potential to cause cancer of the lung and other internal organs from a lifetime exposure at levels above the MCL.

Usage Patterns

Because asbestos fibers are resistant to heat and most chemicals, they have been mined for use in a variety of products (over 3,000 different products in the United States). In 1988, asbestos was consumed in roofing products, 28%; friction products, 26%; asbestos cement pipe, 14%; packing and gaskets, 13%; paper, 6%; and other 13%.

Pipe products find use in water supply, sewage disposal, & irrigation systems. Asbestos cement sheets are used in a wide variety of construction applications. Other uses of asbestos include fire resistant textiles, friction materials (ie, brake linings), underlayment & roofing papers, & floor tiles.

Crocidolite can be spun & woven using modified cotton industry machinery; the asbestos cloth is used for fireproof clothing & curtains.

Most uses of asbestos were banned in the United States by the EPA on July 12, 1989 because of potential adverse health effects in exposed persons. The remaining, currently allowed uses of asbestos include battery separators, sealant tape, asbestos thread, packing materials, and certain industrial uses of both sheet gaskets and beater-add gaskets.

Release Patterns

Asbestos fibers may enter the environment from natural sources such as erosion of asbestos-containing ores, but the primary source of asbestos in the environment is through the wear or breakdown of asbestos-containing materials. Asbestos fibers have been released into water by the dumping of mining tailings into lakes, by the runoff of process and air scrubber water into lakes and streams, and by the use of asbestos cement pipes in water supply systems.

Over one million tons of asbestos is contained in friable materials in ships, buildings, power plants, chemical plants, refineries, and other locations of high temperature equipment. Other products may include insulation, automobile brakes, cement pipes, and roofing materials. The maintenance, repair, and removal of this material will account for the principal releases in the future. Asbestos fibers also can be released to the environment from asbestos processing, including milling, manufacturing, and fabrication.

From 1987 to 1993, according to the Toxics Release Inventory, asbestos releases to land totalled nearly 9 million lbs., and releases to water totalled nearly 33,000 lbs. These releases were primarily from asbestos products industries which use asbestos in roofing materials friction materials, and cement. The largest releases occurred in Pennsylvania and Louisiana.

Environmental Fate

As a naturally occurring substance, asbestos can be present in surface and ground water. Because asbestos fibers in water do not evaporate into air or break down in water, small fibers and fiber-containing particles may be carried long distances by water currents before settling to the bottom; larger fibers and particles tend to settle more quickly.

Asbestos does not tend to adsorb to solids normally found in natural water systems, but some materials (trace metals and organic compounds) have an affinity for asbestos minerals. The fibers are not able to move down through soil to ground water.

Asbestos is not affected by photolytic processes and is considered to be non-biodegradable by aquatic organisms. Asbestos fibers are not broken down to other compounds in the environment and, therefore, can remain in the environment for decades or longer.

There are no data regarding the bioaccumulation of asbestos in aquatic organisms.

Chemical/Physical Properties

CAS Number: 1332-21-4

Color/ Form/Odor: White, gray, green or brown crystalline fibers; odorless

Solubilities: insoluble

Soil sorption coefficient: N/A

Bioconcentration Factor: N/A; not expected to bioconcentrate

Common Ores: Amosite, Chrysotile, Crocidolite; Tremolite; Ascarite

Other Regulatory Information

Monitoring:

-- For Ground and Surface Water Sources:

Initial Frequency-1 sample once every 9 years

Repeat Frequency-1 sample once every 9 years

-- Triggers - If detect at > 7 MFL, sample quarterly.

Analysis

Reference Source

Transmission Electron Microscopy

Method Number

EPA 800/4-83-043

Treatment/Best Available Technologies: Coagulation/Filtration; Direct and Diatomite Filtration; Corrosion Control

Toxic Release Inventory - Releases to Water and Land, 1987 to 1993 (in pounds):

	Water		Land
TOTALS	32,650		8,620,439
Top Five States*			
PA	0	2,945,049	
LA	61	2,256,400	
TX	0	1,737,200	
AR	1,000	568,227	
VA	0	480,000	
Major Industries*			
Asbestos products		3,005	2,510,227
Alkalis, chlorine		1,973	2,256,404
Industrial organic chems		0	1,230,000
Asphalt felts, coatings		5	871,067
Auto parts		0	563,694
Petroleum refining		0	314,560
Plastic pipes		0	235,200
Shipbuilding, repairing		0	211,400

* State/Industry totals only include facilities with releases greater than a certain amount - usually 1000 to 10,000 lbs.

For Additional Information:

EPA can provide further regulatory and other general information:
EPA Safe Drinking Water Hotline - 800/426-4791

Other sources of toxicological and environmental fate data include:
Toxic Substance Control Act Information Line - 202/554-1404
Toxics Release Inventory, National Library of Medicine - 301/496-6531
Agency for Toxic Substances and Disease Registry - 404/639-6000