



New Jersey Department of Health HAZARDOUS SUBSTANCE FACT SHEET

COMMON NAME: ASBESTOS

CAS NUMBER: 1332-21-4 **DOT NUMBER:** UN 2212/UN 2590

HAZARD SUMMARY

- * Asbestos can affect you when breathed in.
- * Asbestos is a CARCINOGEN--HANDLE WITH EXTREME CAUTION.
- * Repeated exposure can cause a disease called *Asbestosis* to develop some years after exposure begins. *Asbestosis* causes scarring of the lungs, changes on chest x-ray, and symptoms of shortness of breath with exertion and possibly a dry cough. Progression of *Asbestosis* can lead to disability and death. The earlier exposure is stopped, the better the chance of stopping serious disease later.

IDENTIFICATION

Asbestos is the common name for a group of mineral fibers that range in color from white, green, brown, or blue. It is used as a fireproofing and insulating agent and in brake linings.

REASON FOR CITATION

- * Asbestos is on the Workplace Hazardous Substance List because it is regulated by OSHA and cited by NIOSH, IARC, NTP and CAG.
- * This chemical is also on the Special Health Hazard Substance List because it is a CANCER-CAUSING AGENT.
- * Definitions are provided on page 5.

WORKPLACE EXPOSURE LIMITS

OSHA: The legal airborne permissible exposure limit (PEL) is 2.0 fibers/cc averaged over an 8-hour workshift and 10.0 fibers/cc, not to be exceeded during any 15 minute work period.

NIOSH: The recommended airborne exposure limit is 0.1 fibers/cc averaged over an 8-hour workshift and 0.5 fibers/cc, not to be exceeded during any work period.

- * Asbestos is a CANCER-CAUSING AGENT in humans. There may be no safe level of exposure to a carcinogen, so all contact should be reduced to the lowest possible level.

HOW TO DETERMINE IF YOU ARE BEING EXPOSED

- * Exposure to hazardous substances should be routinely evaluated. This may include collecting personal and area air samples. You can obtain copies of sampling results from your employer. You have a legal right to this information under OSHA 1910.20.
- * If you think you are experiencing any work-related health problems, see a doctor trained to recognize occupational diseases. Take this Fact Sheet with you.

WAYS OF REDUCING EXPOSURE

- * Where possible, enclose operations and use local exhaust ventilation at the site of chemical release. If local exhaust ventilation or enclosure is not used, respirators should be worn.
- * A regulated, marked area should be established where Asbestos is handled, used, or stored.
- * Wear protective work clothing.
- * Wash thoroughly at the end of the workshift.
- * Post hazard and warning information in the work area. In addition, as part of an ongoing education and training effort, communicate all information on the health and safety hazards of Asbestos to potentially exposed workers.

This Fact Sheet is a summary source of information for workers, employers, and community residents. Health professionals may also find it useful. If this substance is part of a mixture, this Fact Sheet should be used along with the manufacturer-supplied Material Safety Data Sheet (MSDS).

HEALTH HAZARD INFORMATION

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to Asbestos:

- * There are no known acute effects. People who develop serious and fatal disease later in life may feel fine at the time of exposure.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to Asbestos and can last for months or years:

Cancer Hazard

- * Asbestos is a CANCER-CAUSING AGENT in humans. It has been shown to cause lung cancers (including *Mesothelioma*) as well as stomach, colon, rectal, vocal cord and kidney cancers.
- * Many scientists believe there is no safe level of exposure to a cancer-causing agent. Such substances may also have the potential for causing reproductive damage in humans.

Other Long-Term Effects

- * Repeated exposure to Asbestos can cause the disease *Asbestosis*. The higher the exposure, and the longer the time of exposure, the more chance there is of serious illness.
- * *Asbestosis* develops some years (from seven to thirty) after the period of exposure. It can progress to disability and death.
- * Symptoms of *Asbestosis* include shortness of breath on exertion, possibly a dry cough, and changes on the chest x-ray.

MEDICAL

Medical Testing

Before beginning employment and at regular times after that, the following are recommended:

- * Lung function tests (annually)
- * Chest x-ray should be considered every year beginning 10 years after exposure.

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under OSHA 1910.20.

Mixed Exposures

Because smoking can cause heart disease, as well as lung cancer, emphysema, and other respiratory problems, it may worsen respiratory conditions caused by chemical exposure. Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems. The risk of lung cancer may be as much as 92 times higher for people with Asbestos exposure who smoke than for those without both exposures.

WORKPLACE CONTROLS AND PRACTICES

Unless a less toxic chemical can be substituted for a hazardous substance, **ENGINEERING CONTROLS** are the most effective way of reducing exposure. The best protection is enclosing operations and/or providing local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.

In evaluating the controls present in your workplace, consider: (1) how hazardous the substance is; (2) how much of the substance is released into the workplace, and (3) whether harmful skin or eye contact could occur. Better controls should be in place for highly toxic chemicals or when significant skin, eye, or breathing exposures are possible.

In addition, the following controls are recommended:

- * Specific engineering controls are required for this chemical by OSHA. Refer to the OSHA Standard: 1910.1001 also refer to the NIOSH criteria document: Occupational Exposure to *Asbestos* #77-169.
- * Substitute the less toxic *mineral wool* and *fiberglass* for Asbestos where possible. Many other substitutes are also available.
- * There are extensive recommended and required engineering and procedural regulations for construction and repair projects involving Asbestos material. Before disturbing any Asbestos containing materials you must be properly trained and you must follow the required guidelines. Contact the NJ DOH for more information.

Good WORK PRACTICES can help to reduce hazardous exposures. The following work practices are recommended:

- * Workers whose clothing has been contaminated by Asbestos must change into clean clothing.
- * Do not take contaminated work clothes home. Family members could be exposed.
- * Contaminated, disposable work clothes should be disposed of with asbestos waste.
- * Wash any areas of the body that may have contacted Asbestos at the end of each work day, whether or not known skin contact has occurred.
- * Do not eat, smoke, or drink where Asbestos is handled, processed, or stored, since the chemical can be swallowed. Wash hands carefully before eating or smoking.
- * Ongoing Asbestos abatement projects in sealed areas, become very hot and humid. There is a risk of heat stress. You should be trained by your employer to recognize the warning signs and the proper action to take to avoid serious dangerous working conditions.
- * Do not dry sweep for clean-up. Use a vacuum or a wet method to reduce dust during clean-up.
- * When vacuuming, a high efficiency particulate absolute (HEPA) filter

should be used, not a standard shop vacuum.

PERSONAL PROTECTIVE EQUIPMENT

WORKPLACE CONTROLS ARE BETTER THAN PERSONAL PROTECTIVE EQUIPMENT. However, for some jobs (such as outside work, confined space entry, jobs done only once in a while, or jobs done while workplace controls are being installed), personal protective equipment may be appropriate.

The following recommendations are only guidelines and may not apply to every situation.

Clothing

- * Avoid skin contact with Asbestos. Wear disposable protective gloves and clothing. Safety equipment suppliers/manufacturers can provide recommendations on the most protective glove/clothing material for your operation.
- * All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.
- * TYVEK is recommended as a most effective material for protective disposable clothing.

Eye Protection

- * Eye protection is included in the recommended respiratory protection.

Respiratory Protection

IMPROPER USE OF RESPIRATORS IS DANGEROUS. Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in OSHA 1910.134.

- * Asbestos is a known human carcinogen, therefore, for the absolute best protection, at any exposure level, use an MSHA/NIOSH approved supplied-air respirator with a full facepiece operated in the positive pressure mode or with a full facepiece, hood, or helmet in the continuous flow mode, or use an MSHA/NIOSH approved self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode.

* However, during asbestos abatement projects when it is impossible to use supplied air or self-contained breathing apparatus, use a full facepiece powered air purifying respirator with high efficient particulate filters.

Q: Don't all chemicals cause cancer?

A: No. Most chemicals tested by scientists are not cancer-causing.

QUESTIONS AND ANSWERS

Q: If I have acute health effects, will I later get chronic health effects?

A: Not always. Most chronic (long-term) effects result from repeated exposures to a chemical.

Q: Can I get long-term effects without ever having short-term effects?

A: Yes, because long-term effects can occur from repeated exposures to a chemical at levels not high enough to make you immediately sick.

Q: What are my chances of getting sick when I have been exposed to chemicals?

A: The likelihood of becoming sick from chemicals is increased as the amount of exposure increases. This is determined by the length of time someone is exposed and the amount of material they are exposed to.

Q: When are higher exposures more likely?

A: Conditions which increase risk of exposure include dust releasing operations (grinding, mixing, blasting, dumping, etc.), other physical and mechanical processes (heating, pouring, spraying, spills and evaporation from large surface areas such as open containers) and "confined space" exposures (working inside vats, reactors, boilers, small rooms, etc.).

Q: Is the risk of getting sick higher for workers than for community residents?

A: Yes. Exposures in the community, except possibly in cases of fires or spills, are usually much lower than those found in the workplace. However, people in the community may be exposed to contaminated water as well as to chemicals in the air over long periods. Because of this, and because of exposure of children or people who are already ill, community exposures may cause health problems.

The New Jersey State Department of Health, Occupational Disease Prevention and Information Program offers multiple services in occupational health. These include: Right to Know Information Resources, Public Presentations, General References, Industrial Hygiene Information, Surveys and Investigations, and Medical Evaluation. Consult another Fact Sheet for a more detailed description of these services or call (609) 984-1863.

DEFINITIONS

ACGIH is the American Conference of Governmental Industrial Hygienists. It recommends upper limits (called TLVs) for exposure to workplace chemicals.

CAG is the Carcinogens Assessment Group of the federal EPA.

A carcinogen is a substance that causes cancer.

The CAS number is assigned by the Chemical Abstracts Service to identify a specific chemical.

A combustible substance is a solid, liquid or gas that will burn.

A corrosive substance is a gas, liquid or solid that causes irreversible damage to human tissue or containers.

DEP is the New Jersey Department of Environmental Protection.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

A fetus is an unborn human or animal.

A flammable substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The flash point is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer, a scientific group that classifies chemicals according to their cancer-causing potential.

A miscible substance is a liquid or gas that will evenly dissolve in another.

mg/m³ means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

MSHA is the Mine Safety and Health Administration, the federal agency that regulates mining. It also evaluates and approves respirators.

A mutagen is a substance that causes mutations. A mutation is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NCI is the National Cancer Institute, a federal agency that determines the cancer-causing potential of chemicals.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

A reactive substance is a solid, liquid or gas that can cause an explosion under certain conditions or on contact with other specific substances.

A teratogen is a substance that causes birth defects by damaging the fetus.

TLV is the Threshold Limit Value, the workplace exposure limit recommended by ACGIH.

The vapor pressure is a measure of how readily a liquid or a solid mixes with air at its surface. A higher vapor pressure indicates a higher concentration of the substance in air and therefore increases the likelihood of breathing it in.

EMERGENCY INFORMATION

WARNING

Common Name: ASBESTOS

DOT Number: UN 2212/ UN 2590
NFPA Flammability: No Citation
NFPA Reactivity: No Citation

CANCER-CAUSING AGENT
DOES NOT BURN
Health hazards on front page

FIRE HAZARDS

- * Extinguish fire using an agent suitable for type of surrounding fire. Asbestos itself does not burn.
- * Care should be taken to contain Asbestos materials disturbed in a fire.
- * If employees are expected to fight fires, they must be trained and equipped as stated in OSHA 1910.156.

SPILLS AND EMERGENCIES

If Asbestos is spilled or damaged take the following steps:

- * Restrict persons not wearing protective equipment from area of spill until cleanup is complete.
- * Proper procedures for repair or removal of the material must be followed by trained personnel.
- * Spills and damaged Asbestos material MUST be cleaned using wet methods. DO NOT DRY SWEEP, SHOVEL, or VACUUM.
- * It may be necessary to contain and dispose of Asbestos as a HAZARDOUS WASTE. Contact the NJ Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.

FOR LARGE SPILLS AND FIRES immediately call your local Fire Department. You can also request emergency information from the following:

DEP HOTLINE: (609) 292-7172
CHEMTREC: (800) 424-9300

HANDLING AND STORAGE

- * Prior to working with Asbestos you should be trained on its proper handling and storage.
- * A regulated, marked area should be established where Asbestos is handled, used, or stored.
- * Airborne Asbestos dust is very difficult to remove. It is therefore essential that any area where Asbestos is handled be enclosed and isolated. The material should be kept wet with special surfactants and water.
- * Enclose operations and use local exhaust ventilation with negative pressure air filtration and high efficiency particulate filters in areas of Asbestos removal. If enclosure with containment "glove" bags is not used for minor repairs, respirators must be worn and proper procedures must be followed.
- * All Asbestos materials must be removed and disposed of according to regulations. The area must be monitored to ensure airborne Asbestos levels are below limits prior to reoccupation of the area where Asbestos was disturbed.

FIRST AID

Eye Contact

- * Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids.

NJ POISON INFORMATION 1-800-962-1253

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Date prepared November 1985

Revision:

OES-16

AUG 84