Welcome to the Hard Hat Training Series!

Welcome to the Hard Hat Training Series. Today, we will discuss a few principles regarding asbestos. We will discuss where it can be found, the threat it poses to the body, and ways to avoid inhaling it.

Approximately 3,000 years ago, the Ancient Greeks began using a newly-discovered rock that could be integrated with their pottery and building materials. They soon found that this same material was incredibly strong and fire-proof. The fibrous mineral earned a name among those who used it that meant “inextinguishable” or “incombustible.” They called it asbestos.

Photo courtesy of ersjournals.com

Photo courtesy of University of Michigan

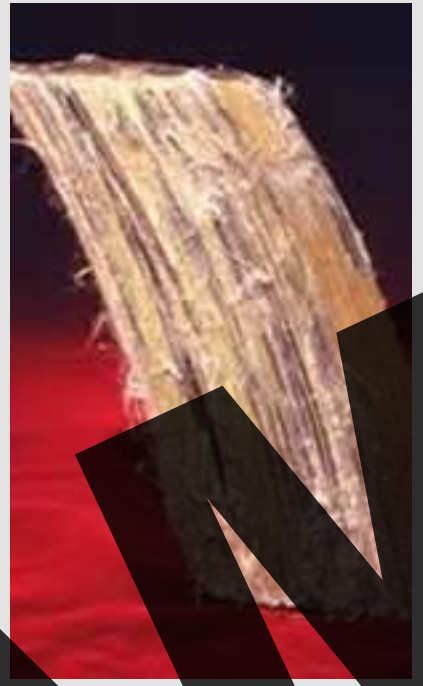
The use of asbestos-based products spiked in the late 1800s when its uses were rediscovered during the Industrial Revolution. Due to its unique properties, the uses for this “miracle mineral” grew to include insulation and building materials and was even woven into fire-resistant clothing. As a result of the increased demand for the mineral, asbestos-mining operations opened up around the globe.

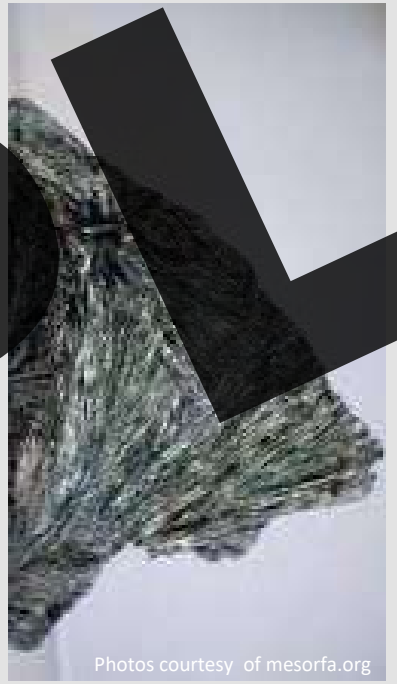
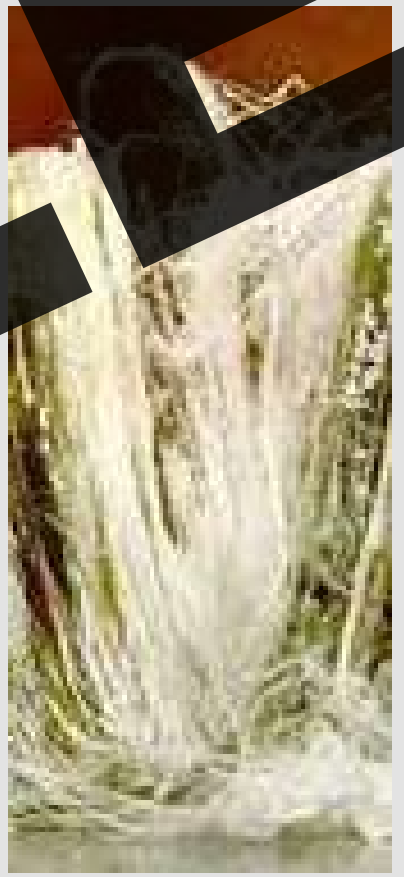
Unfortunately, employers and doctors began to see a pattern of increased respiratory and lung disease in workers who were constantly exposed to asbestos. Despite this, the production and use of asbestos would only increase during the next century.

Photo courtesy of youtube.com

It wasn't until the 1970s that the harmful effects of asbestos became public knowledge and the government began taking steps to protect workers from its deadly effects. Despite the dangers and hazards that asbestos presents to the public, it has still not been fully banned in the United States; however, its use has drastically declined since 1980.






Photos courtesy of mesorfa.org


What is asbestos?

Asbestos encompasses six different rocks that occur naturally throughout the world. These minerals all have unique characteristics that make them extremely useful in multiple ways. As a result, asbestos was used in multiple industries in order to improve the qualities their products.

Useful Properties

We mentioned in the previous slide that asbestos was manufactured and used in so many different ways because of its unique and useful properties. Understanding the characteristics of asbestos will help you appreciate why is was used so much and will better help you identify potential sources in the workplace.

Asbestos exists in abundance and has been found all over the world. During the height of its use, over four million tons of asbestos was being produced per year world wide. With countries such as Australia, Canada, and the U.S. participating in mass production

Photo courtesy of ABC.net

Photo courtesy of cmaj.ca

Despite the fact that asbestos is a rock, it takes the shape of a fiber and is very flexible. This has allowed it to be integrated into almost any building material. In fact, the mineral is so much like cloth that it has been used to make table cloths, curtains, and even clothes.

Perhaps the most useful characteristic of asbestos comes from its high resistance to fire. This is the main reason that it was integrated into so many types of building materials. If someone wanted to make a material more fire-resistant, they simply had to add asbestos to do so. In fact, asbestos was so fire-resistant that even table cloths and curtains made from the mineral would not ignite when exposed to an open flame.

Photo courtesy of gettyimages.com

Did you know?

Asbestos is so fire-resistant that asbestos-made napkins were cleaned by being thrown into the fire by the ancient Romans. King Charlemagne had a table cloth made of asbestos. He would have his guests eat directly off the table cloth, making it extremely dirty. He would then throw the table cloth into the fire and take out the stark white cloth as a show of power.

Not only is asbestos fireproof, it also is a highly effective insulator. Because of this, and despite the dangers it presents, asbestos has been used to insulate numerous structures over the years. Additionally, it was used as a coating for metal beams in buildings to keep them from overheating in the event of a fire and losing their form.

Asbestos is highly chemical resistant and does not conduct electricity. This made it useful for electrical boxes, wire covers, and general electrical insulation. It was also applied to lots of adhesives and used as a bonding agent for tile floors, roofs, and wallpaper.

While useful and convenient, it is these same unique properties that make asbestos so dangerous. When used, asbestos creates a dust containing microscopic fibers that can cause damage to the digestive tract, airways, and especially the lungs. This can lead to serious diseases in the respiratory system, as well as other systems in the body.

EPA Regulations

In 1978, the EPA banned any form of spray-on material that contained asbestos, as well as the asbestos-containing insulation that is easily broken down into dust. Though they attempted to ban the use of asbestos entirely in 1989, the appeal was overturned, allowing it to remain legal today. Despite this, the use of the mineral has been declining drastically since the revelation of the dangers that it presents.


Photo courtesy of hse.gov.uk


Photo courtesy of Summervillehomeinspections

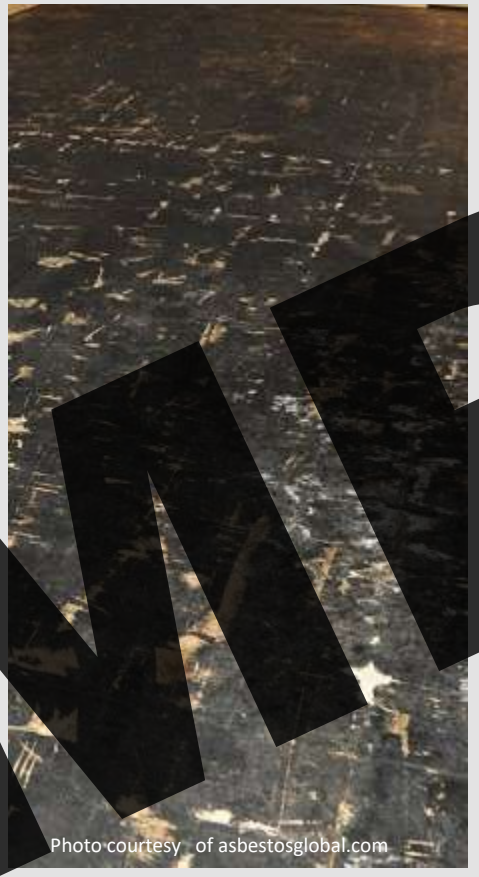


Photo courtesy of asbestosglobal.com


Photo courtesy of metropolitanconsultingandforensics

Under the Clean Air Act, pipe insulation containing asbestos was also banned. Following this, corrugated, specialty, and commercial paper, along with rollboard and flooring felt, were eventually banned, as well.

Photo courtesy of enviroscience.com.au

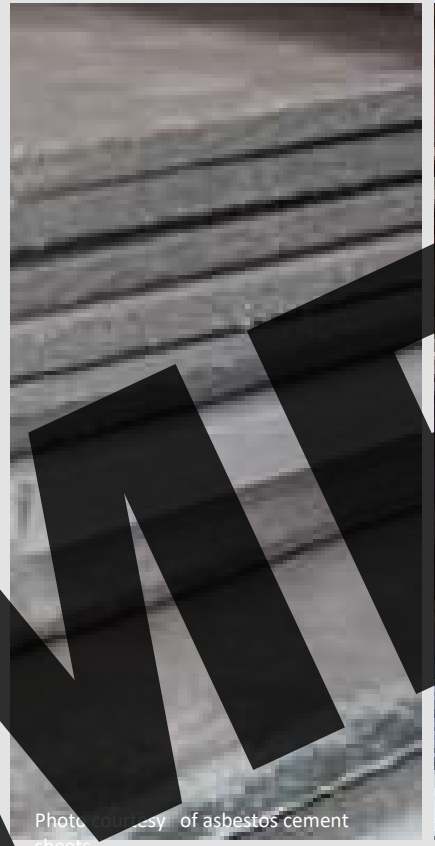


Photo courtesy of asbestos cement sheets

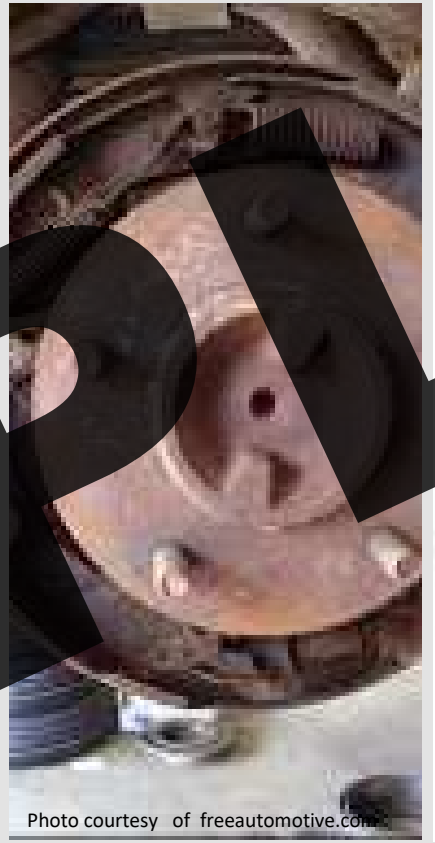


Photo courtesy of freeautomotive.com

Photo courtesy of frictionindia.com

Unfortunately, many materials are still permitted to be made with asbestos. These include multiple car parts, such as disk brake pads, drum brake linings, gaskets, and clutch facings; construction materials, such as cement flat sheets, vinyl floor tiles, and cement pipes; and even clothing, such as pants and jackets. However, although these resources, as well as many others, can still be legally produced using the mineral, most are not currently made with asbestos.

Helpful Terms

Before proceeding, let's take the time to define a few terms that will be helpful as you navigate the course. The first is **permissible exposure limit (PEL)**. This is the legal limit to which a worker can be exposed to a particular substance over an eight-hour shift. Another term you should be familiar with is **excursion limit**, which is the maximum exposure that a worker may have to a particular substance over a short period of time (usually 30 minutes).

Did you know?

Because of the dangerous nature of asbestos, the permissible exposure limit is .1 fiber per cubic centimeter of air during an eight-hour work day. This effectively ensures that any time a worker might be exposed to airborne asbestos, they will be required to wear a respirator and don the proper PPE in order to work in the area.

Regulated Areas: Areas that are marked off and designated by the employer where asbestos is or might be present. These areas should have appropriate warning signs. Only workers who have been properly trained should ever enter a regulated area.

Asbestos-Containing Material (ACM):
Any material of which one percent or more is made of asbestos is considered an ACM and a health risk for those working with or around it.

Presumed Asbestos-Containing Material (PACM):
Any material with a likelihood of containing one percent or more asbestos in its make up. These are to be treated with the same level of caution as any ACM. We will discuss how to identify ACMs and PACMs later in this training.

Photo courtesy of asbestosexposure.info

Surfacing asbestos: Any material on the surface of an area of which one percent or more contains asbestos.

Thermal System Insulation (TSI): any thermal insulation system that is applied to pipes, boilers, breeching, tanks, ducts, or other components used to prevent heat loss or gain.

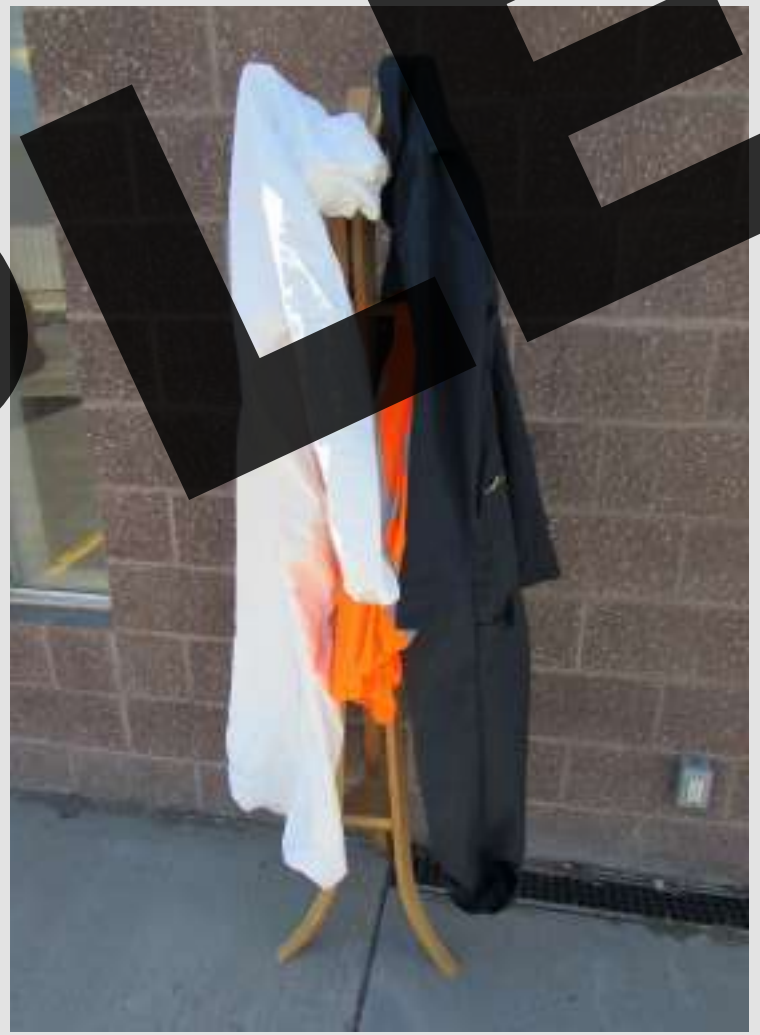
Photo courtesy of ADS Service, Inc.

Competent Person: One who is able and has the authority to identify potential asbestos hazards and create a plan to control exposure to them. Depending on the type of work that is being done, a competent person will likely need special accreditation by the EPA while working with asbestos.

Authorized Person: One who is certified by the employer to enter and work in a regulated area. All authorized personnel need to be trained on the dangers of working with asbestos and what protocols to follow.

Abatement: Refers to the process of removing asbestos from a building or workplace. Due to the hazardous nature of asbestos, abatement requires very stringent procedures. Regulation requires that only those who are properly trained and accredited by the EPA through the Model Accreditation Plan can perform asbestos abatement. When possible, abatement is the most effective way to ensure a safe work environment.

The last term to become familiar with is **PPE (Personal Protective Equipment)**. This term refers to any equipment or gear used to help keep you safe.



STANDARDS

- 29 CFR 1910.1001 Asbestos in General industry
- 29 CFR 1926.1101 Asbestos in Construction
- 1910.1001(i)(7): The employer shall train each employee who is exposed to airborne concentrations of asbestos at or above the PEL and/or excursion limit in accordance with the requirements of this section. The employer shall institute a training program and ensure employee participation in the program.

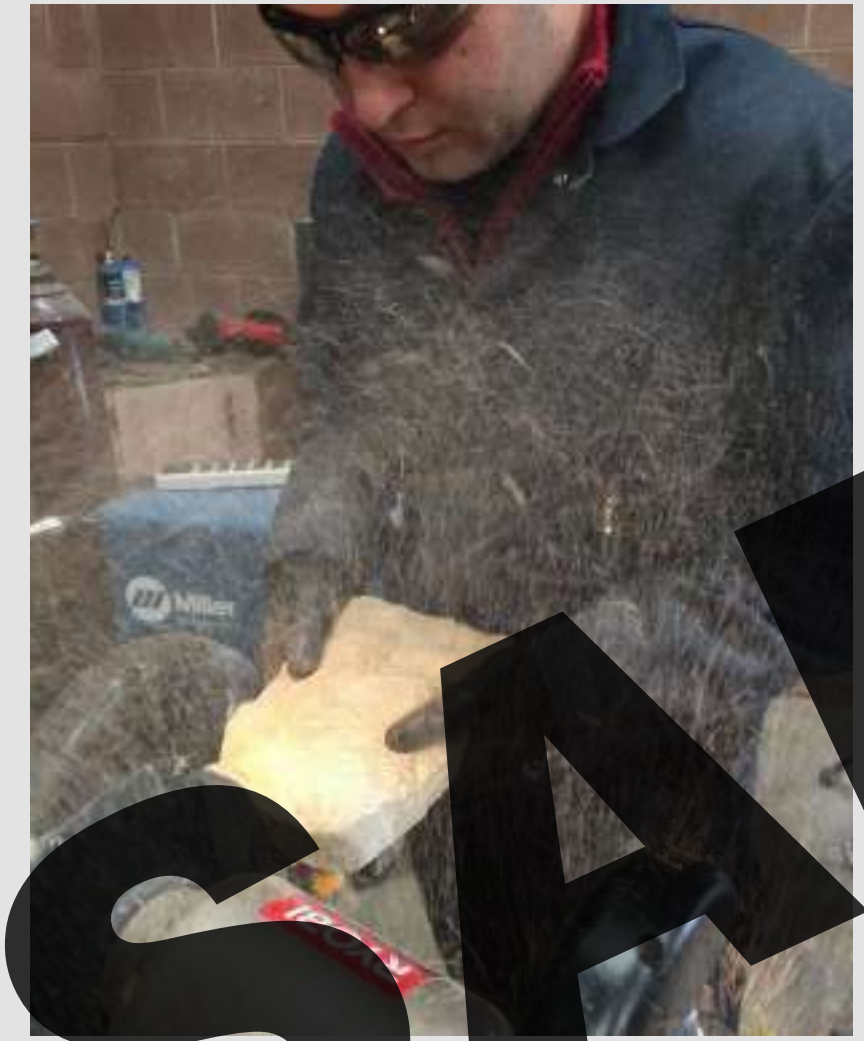
These are some of the main standards concerning asbestos. Many states have additional standards, as do some industries. We have provided these standards as a guide; it's your responsibility to know all federal, local and company rules that apply to your work site.

The purpose of this presentation is to help you understand the hazards that asbestos presents and how to safely work when there is a potential for exposure. This training is designed to meet OSHA requirements for asbestos in general industry (OSHA 29 CFR 1910.1001). It does not qualify employees as competent persons or meet the training requirements for removing asbestos.

In today's training, we will cover numerous topics, including the various health effects and exposure routes of asbestos. We will also discuss the dangers of smoking while exposed to the mineral.

Photo courtesy of seatlepi.com

Although the only way to know for sure if a material contains asbestos is to send a sample to an accredited lab, there are other ways to identify potential ACMs. In this training, we will go over common building materials and discuss the identifiers for PACMs.



We will also discuss the different classifications of asbestos operations and cover general work practices that must be carried out to keep you safe when working with ACMs or in areas with ACMs in them. As a reminder, this training does not qualify you for asbestos abatement. In order to perform any abatement, you will need to be accredited through the EPA's Model Accreditation Plan.

We will spend time going over the PPE that you must wear while risk of exposure to asbestos is present. This will include instruction on proper procedures to care for your PPE and donning and doffing PPE in asbestos-contaminated worksites.

Photo courtesy of newstatesman.com

Once again, although we will cover general safe practices and procedures for working with asbestos, most operations regarding this mineral require more training, according to the EPA.

Asbestos is dangerous. Nevertheless, despite the high risk of working with asbestos, thousands of people are knowingly exposed every year. It's hard to know how many are killed due to asbestos-related diseases; however, estimates range from ten to fifteen thousand per year. Although asbestos can be found everywhere, with the proper precautions, procedures, and safe practices, you can keep yourself and your family safe from the harmful effects of this deadly material.

Exposure and Diseases

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