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Topeka, Kan, American Association of Zoo Keepers,
<https://www.biodiversitylibrary.org/bibliography/125504>

v.47:no.2 (2020:Feb.):

<https://www.biodiversitylibrary.org/item/301811>

Page(s): Page 58, Page 59

Holding Institution: American Association of Zoo Keepers
Sponsored by: American Association of Zoo Keepers

Generated 7 October 2023 9:56 PM
<https://www.biodiversitylibrary.org/pdf4/1628425i00301811.pdf>

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Asbestos: What an Animal Keeper Needs to Know

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Most zookeepers have probably worked around asbestos, and even if they aren't aware of its specific properties, they are aware that it is dangerous. Exposure to asbestos can be deadly—it is a known human carcinogen that can cause mesothelioma and lung cancer in humans and shorten a person's life (OSHA Fact Sheet, 2014; WHO, 2012). Asbestos is often found in buildings constructed before the 1980s, and many zoos across the country include older buildings. As a result, many zoo keepers have probably worked around asbestos. How can they stay safe around such a dangerous substance? Proper education about asbestos, its risks, and proper precautions can help protect keepers from harmful exposure.

What is asbestos?

Asbestos is a natural material that is mined and used for its various qualities. As a naturally occurring fibrous iron magnesium silicate, asbestos is part of our natural world. There are different types of asbestos, including chrysotile, amosite, and crocidolite. Asbestos is mined in different countries, including Russia, China, and Canada, before it is used in many different products (WHO, 2012).

Asbestos has been used since the early 1900s because it has many excellent qualities: it is fireproof, durable, a good insulator, has high tensile strength, and is very inexpensive (OSHA Fact Sheet, 2014). Before the health risks were known, asbestos was considered an almost perfect building material. It was used in textiles, caulk, paint, spackle, tile, automobile parts, insulation, and many other products, and can still be used in some products legally in the US today (OSHA Fact Sheet, 2014).

When the EPA (Environmental Protection Agency) and OSHA (Occupational Safety and Health Administration) were created in the US in the 1970s, the use of asbestos began to be regulated. In present day, asbestos is banned in many forms and is most likely to be found in buildings and cars that were created before the 1980s. Asbestos cannot be identified by sight, smell, or taste, and because it can be used in so many different products it is very difficult to know if a product contains asbestos (WHO, 2012).

Why is asbestos dangerous?

Many of the qualities that make asbestos a good building material, including its durability and high tensile strength, also allow it to evade the human body's defense mechanisms. If asbestos fibers enter the air and are inhaled, they can reach the smallest alveoli in the lungs and become trapped. The fibers can create scars that block the exchange of oxygen and blood in the lungs, causing asbestosis (WHO, 2012).

Asbestos fibers are also too strong to be broken up by the body's macrophages, or white blood cells. Over a period of 15 to 30 years, asbestos fibers can lead to asbestosis, lung cancer, or mesothelioma. There is no cure for any of these diseases, and a diagnosis of mesothelioma results in death within months (WHO, 2012). OSHA has created many policies to limit exposure to asbestos, including setting a permissible exposure level of 0.1 fiber per cc over an eight hour period (29 CFR 1910.1001). However, asbestos is a known carcinogen and there is no safe level of asbestos exposure (WHO, 2012).





Based on its use, asbestos can present different levels of risk. The most dangerous form of asbestos is friable asbestos. Friable means that a material can be crushed by hand, which releases the material into the air. Common friable forms of asbestos include pipe and ceiling insulation. Asbestos may be more or less dangerous based on the accessibility of a material (OSHA Fact Sheet, 2014). For example, floor tile that includes asbestos can be relatively safe if it is not broken or damaged, even if people walk on it every day. Frequency and length of exposure also affect a person's chances of developing diseases such as lung cancer or mesothelioma (WHO, 2012).

What should a keeper do if they think asbestos is present?

A keeper should never touch or handle any material they think contains asbestos and should contact their supervisor immediately. It is impossible to determine if asbestos is present based on the appearance or smell of a material. As a result, if any material is suspected to contain asbestos, employees should assume that it does contain asbestos. Only certain employees with specific asbestos training are allowed to handle or clean up asbestos under OSHA regulations. Unless the employee has specific training, they should not touch any suspect materials and should contact their supervisor immediately (29 CFR 1910.1001).

Asbestos testing and clean up requires trained staff and specific tools. Testing can be completed by examining a sample of the material using microscopy (40 CFR 763). If the material does contain asbestos, the response will be determined by the amount of the material. Small amounts of asbestos may be cleaned immediately, while larger amounts may result in the area being contained and restricted for a long period of time. Unless an employee has received training, they should not handle or clean up any material containing or suspected to contain asbestos (29 CFR 1910.1001).

Who is responsible for managing asbestos?

Employers and employees both have responsibilities when managing asbestos in the workplace. The EPA requires all commercial and public areas to have an Asbestos Management Plan that includes records of inspections, restrictions on the purchase of materials containing asbestos, occupant notification about asbestos or work, and a damage response plan. Employers have to inspect for and clean up asbestos and notify employees of work involving asbestos. Employers also must provide proper training and personal protective equipment for staff that handle asbestos (29 CFR 1910.1001, 40 CFR 763).

Employees have a right to working conditions that do not pose a risk of serious harm (OSHA Fact Sheet, 2014). However, the employee is ultimately responsible for their own personal health in the workplace. Every keeper should educate themselves about the risks of asbestos and follow their facility's rules and best practices for working around asbestos. Keepers can also take the time to connect with safety officials at their facility and learn more about their safety plans and policies. With education and effort from both employers and employees, the risks of working around asbestos can be greatly reduced. 🐘

References

- 29 CFR 1910.1001 (OSHA asbestos regulations)
- 40 CFR 763 (EPA asbestos regulations)
- 40 CFR 61 (EPA Asbestos National Emission Standard for Hazardous Air Pollutants)
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