ASBESTOSIS

Responsibilities:

Hospital: Report by phone, fax, or mail
Lab: Report by phone, fax, or mail
Physician/Health care providers: Report by phone, fax, or mail
Medical Examiners: Report by phone, fax, or mail
Poison Control Centers: Report by phone, fax, or mail
Occupational Nurses: Report by phone, fax, or mail
Local Public Health Agency (LPHA): No follow-up required, unless outbreak occurrence

Report to the IDPH Division of Environmental Health:

Iowa Department of Public Health
Division of Environmental Health
Lucas State Office Building
321 E. 12th Street
Des Moines, Iowa 50319-0075
Phone (Mon-Fri 8 am - 4:30 pm): 800-972-2026
Fax: 515-281-4529
24-hour Disease Reporting Hotline: (For use outside of EH office hours) 800-362-2736
Web: https://idph.iowa.gov/ehs/reportable-diseases
Report Form: https://idph.iowa.gov/Portals/1/Files/ADPEREH/environ_occup_report_form.pdf

1. The Disease Definition

A. Clinical Description

Asbestosis is widespread scarring of lung tissue caused by breathing asbestos dust. Asbestos can cause serious disease when inhaled over a long period. Minute asbestos fibers are taken up by the lung cells. Unlike many ordinary dust particles, they cannot be removed by the lung. Because the fibers are small, thin, and narrow, they can penetrate the deepest lung tissues, where they remain permanently. Continued exposure can increase the amount of fibers that remain in the lung, causing one of several diseases to develop even two to three decades after exposure. These diseases include asbestosis, lung cancer, mesothelioma, and some less common conditions. Asbestosis is the most common form of asbestos-related lung disease. Smoking increases the risk of developing illness from asbestos exposure.

Signs and Symptoms of Asbestosis

- Shortness of breath.
- A persistent and productive cough (a cough that expels mucus).
- Chest tightness.
- Chest pain.
- Loss of appetite.
- A dry, crackling sound in the lungs while inhaling.

Symptoms of asbestosis appear gradually only after large areas of the lung become scarred. The scarring causes the lungs to lose their elasticity. The first symptoms are a mild shortness of breath and a decreased ability to exercise. Smokers who have chronic bronchitis along with asbestosis may cough and wheeze. Gradually, breathing becomes more and more difficult. In about 15% of people with asbestosis, severe shortness of breath and respiratory failure develop.

People with a noncancerous asbestos effusion may have difficulty breathing because of fluid accumulation. Pleural plaques cause only mild breathing difficulty resulting from stiffness of the chest wall. Mesothelioma is a form of cancer caused by exposure to asbestos. Persistent pain in the chest and shortness of breath are the most common symptoms of mesothelioma.

B. Sources of Exposure

The term "asbestos" is a generic name given to a fibrous variety of six naturally occurring minerals that have been used for decades in thousands of commercial products. Asbestos is a commercial name given to a group of minerals that possess high tensile strength, flexibility, resistance to chemical and thermal degradation, and electrical resistance. These minerals have been used in many products, including insulation and fireproofing materials, automotive brakes and textile products, and cement and wallboard materials.

Asbestos has over 3,000 uses, including insulation for boilers and pipes, automobile brake linings, and, until recently, insulating hair dryers. An estimated 30 million tons have been used in the United States since 1900. Most products made today do not contain asbestos. Those few products made which still contain asbestos that could be inhaled are required to be labeled as such. However, until the 1970s, many types of building products and insulation materials used in homes contained asbestos. Refer to the EPA Asbestos website listed under references for more information.

Naturally occurring asbestos (NOA) includes fibrous minerals found in certain types of rock formations. NOA can take the form of long, thin, separable fibers. Natural weathering or human disturbance can break NOA down to microscopic fibers, easily suspended in air. There is no health threat if NOA remains undisturbed and does not become airborne. Covering NOA with clean soil or planting grass reduces exposure.

C. Population at Risk

Asbestos is a well recognized health hazard, and is highly regulated by the government. When disturbed, the asbestos minerals have a tendency to separate into microscopic-size particles that can remain in the air and are easily inhaled. Although the use of asbestos and asbestos products has dramatically decreased, they are still found in many residential and commercial settings and continue to pose a health risk to workers and others.

The more a person is exposed to asbestos fibers, the greater the risk of developing an asbestos-related disease. People who regularly work with asbestos are at the greatest risk of developing lung disease, and can develop several types of life-threatening diseases, including lung cancer. Asbestosis is a much more common consequence of asbestos exposure than cancer. Between 1999 and 2004, there were 3,211 deaths due to asbestosis in the United States.

An estimated 1.3 million workers in the construction and general industry face significant exposure to asbestos on the job. Shipbuilders, textile and construction workers, home remodelers, workers who do asbestos abatement, and miners who are exposed to asbestos fibers are among the many workers at risk. The heaviest exposures are in the construction industry, especially during the removal of asbestos during renovation or demolition. Workers exposed to deteriorating, damaged, or disturbed asbestos-containing products such as insulation, fireproofing, acoustical materials, and floor tiles have an increased risk of exposure. Workers can also be exposed to asbestos during manufacturing of asbestos products (such as textiles, friction products, insulation and other building materials) and during automotive brake and clutch repair work.

Although the general public has become more aware of the risks of asbestos, people who have no occupational exposure have a very low risk of developing asbestos-related lung disease. However, secondhand exposure may occur among family members of exposed workers and among people who live close to mines. Persons living in buildings that have undergone renovation and repair without proper control of asbestos-containing materials or dust may also experience an increased risk of disease.

D. Diagnosis, Treatment, and Prognosis

A thorough history, including a detailed work history over the patient's lifetime, physical exam, and diagnostic tests, is needed to evaluate asbestos-related disease. Chest x-rays are the best screening tool to identify lung

changes resulting from asbestos exposure. Lung function tests and CAT scans also assist in the diagnosis of asbestos-related disease.

If diagnosis or screening is being done for a worker covered by the Coal Workers' X-Ray Surveillance Program as mandated by the Federal Mine Safety and Health Act of 1977, regulations mandate that all physicians who participate in the examination and/or classify chest radiographs under the Act must utilize the ILO System and Standard Films. This may also apply for asbestos-exposed workers covered by U.S. Department of Labor regulations, or for other medical screening, surveillance, research, or compensation programs. B Reader approval is granted to physicians with a valid U.S. state medical license who demonstrate proficiency in the classification of chest radiographs for the pneumoconioses using the International Labour Office (ILO) Classification System. Additional information about the B Reader program can be found at www.cdc.gov/niosh/topics/chestradiography/breader-info.html.

Major health effects associated with asbestos exposure include:

Asbestosis – Asbestosis is a serious, progressive, long-term non-cancer disease of the lungs. It is caused by inhaling asbestos fibers that irritate lung tissues and cause the tissues to scar. The scarring makes it hard for oxygen to get into the blood. Symptoms of asbestosis include shortness of breath and a dry, crackling sound in the lungs while inhaling. Most treatments for asbestosis ease symptoms rather than cure the disease. Oxygen therapy relieves shortness of breath. Draining fluid from around the lungs may make breathing easier. Occasionally, lung transplantation has been successful in treating asbestosis. Asbestosis is not necessarily fatal. While asbestosis is not cancer, it may lead to cancer. If the patient smokes, he or she should stop because smoking significantly increases the risk of developing lung cancer in people with underlying asbestosis. Some patients can die from severe forms of the disease or from complications, such as pneumonia.

Lung Cancer -- Lung cancer causes the largest number of deaths related to asbestos exposure. People who work in the mining, milling, manufacturing of asbestos, and those who use asbestos and its products are more likely to develop lung cancer than the general population. The most common symptoms of lung cancer are coughing and a change in breathing. Other symptoms include shortness of breath, persistent chest pains, hoarseness, and anemia.

Mesothelioma -- Asbestos also causes cancer in the pleura, called mesothelioma, or in the membranes of the abdomen, called peritoneal mesothelioma. In the United States, asbestos is the only known cause of mesothelioma. Smoking is not a cause of mesothelioma. Mesotheliomas most commonly occur after exposure to crocidolite, one of four types of asbestos. Amosite, another type, also causes mesotheliomas. Chrysotile probably causes fewer cases of mesotheliomas than other types, but chrysotile is often contaminated with tremolite, which does. Mesotheliomas usually develop 30 to 40 years after exposure and can occur after low levels of exposure. Mesotheliomas are invariably fatal within 1 to 4 years of diagnosis. Chemotherapy and radiation therapy do not work well, and surgical removal of the tumor does not cure the cancer. Other treatment is focused on controlling pain and shortness of breath in an effort to preserve as much quality of life as possible.

E. Prevention of Exposure

Diseases caused by asbestos inhalation can be prevented by minimizing asbestos dust and fibers in the workplace. Because industries that use asbestos have improved dust control, fewer people develop asbestosis today, but mesotheliomas are still occurring in people who were exposed as many as 30 to 50 years ago. Asbestos-containing materials in a home are typically only a concern if the materials are going to be removed or the home renovated, in which case they should be removed by workers trained in safe removal techniques.

Smokers who have been in contact with asbestos can reduce their risk of lung cancer by giving up smoking and should probably have a chest x-ray annually. Pneumococcal and influenza vaccination are recommended for people who have been in contact with asbestos to help protect against infections to which workers may be more vulnerable.

Worker exposures to asbestos hazards are addressed in specific U.S. Occupational Safety and Health Administration (OSHA) standards for the construction industry, general industry and shipyard employment sectors. These standards reduce the risk to workers by requiring that employers provide personal exposure

monitoring to assess the risk and hazard awareness training for operations where there is any potential exposure to asbestos. Airborne levels of asbestos are never to exceed legal worker exposure limits. Where the exposure does, employers are required to further protect workers by establishing regulated areas, controlling certain work practices and instituting engineering controls to reduce the airborne levels. The employer is required to ensure exposure is reduced by using administrative controls and provide for the wearing of personal protective equipment. Medical monitoring of workers is also required when legal limits and exposure times are exceeded.

Little research documents the overall degree of exposure and the extent to which health effects occur because workers inadvertently carry home hazardous substances such as asbestos on their clothes, bodies, or tools. For known work-place hazardous substances, a modest investment of resources could prevent transport into workers' homes.

Training efforts should be emphasized to increase employee and employer awareness of hazards and acceptance of safe work and material-handling procedures (e.g., changing clothes and showering before going home, separating work areas from living or eating areas, and using personal protective equipment). Equally important are the development and distribution of information and education programs aimed at family members and health care professionals.

Take-home exposures can also be managed by instituting and adhering to engineering controls such as the proper use of equipment, substitution of safer materials, use of equipment with improved engineering designs when available, and habitual use of personal protective equipment. Although various control measures are available for preventing the adverse health effects of known take-home exposures in workers' families, limited information exists to assess or predict their effectiveness.

2. Reporting Criteria

A. Disease Reporting

All cases of asbestos-related disease are reportable in Iowa as a sub-section of the non-communicable respiratory disease surveillance program, under the definition found in the Iowa Administrative Code [641] Chapter 1: *"Noncommunicable respiratory illnesses"* means an illness indicating prolonged exposure or overexposure to asbestos, silica, silicates, aluminum, graphite, bauxite, beryllium, cotton dust or other textile material, or coal dust. "Noncommunicable respiratory illnesses" includes, but is not limited to asbestosis, coal worker's pneumoconiosis, and silicosis."

Mandatory reporting is required of health care providers, clinics, hospitals, clinical laboratories, and other health care facilities; school nurses or school officials; poison control and information centers; medical examiners; occupational nurses. Hospitals, health care providers, and clinical laboratories outside the state of Iowa for confirmed or suspect cases in an Iowa resident. Primary responsibility for reporting falls to the physician or other health practitioner attending the patient and to laboratories performing tests identifying the disease, including tissue biopsy testing that is diagnostic of the disease.

Additional information and reporting forms can be found in the Iowa Administrative Code [641] Chapter 1, which can be accessed through a link on the IDPH EH Division Web page at https://idph.iowa.gov/ehs/reportable-diseases. Call the IDPH Environmental Health hotline at 800-972-2026 during regular business hours if you have questions.

B. References

National Institute of Occupational Health and Safety (NIOSH):

- NIOSH asbestos website: www.cdc.gov/niosh/topics/asbestos/

US Environmental Protection Agency (EPA)

- EPA asbestos website: www.epa.gov/asbestos/

Agency for Toxic Substances and Disease Registry (ATSDR)

- ATSDR Toxic Substances Portal - asbestos: www.atsdr.cdc.gov/toxfaqs/tf.asp?id=29&tid=4

US Department of Labor Occupational Safety and Health Administration (OSHA):

- OSHA asbestos website: www.osha.gov/SLTC/asbestos/index.html

Merck online Medial Manuals, 2008. Asbestosis.
www.merckmanuals.com/professional/sec05/ch057/ch057c.html and
www.merckmanuals.com/home/sec04/ch049/ch049b.html?qt=asbestosis&alt=sh

American Lung Association: www.lungusa.org/lung-disease/asbestosis/