

FILE NAME: Goodyear (GY)

DATE: 1972

DOC#: GY034

DOCUMENT DESCRIPTION: Industry Hygiene Manual

ASBESTOS

General

Asbestos is a term used to describe several fibrous silicates. The most important types of asbestos are: a simple magnesium silicate; amosite and anthophyllite, magnesium silicates; and actinolite, a complex sodium silicate. Chrysotile fiber is of the greatest importance of its qualities and extensive usage.

Toxicity

Systemic

Long continued inhalation of asbestos fibers may result in the development of asbestosis (a chronic lung disease) accompanied by severe respiratory symptoms, changes in pulmonary function and changes in the appearance of an x-ray of the lungs.

Asbestos fiber inhalation has also been implicated as a possible causative factor in lung cancer, particularly bronchogenic carcinoma, and another form of cancer called a mesothelioma.

Local

There are no specific local toxic effects.

Surveillance

The following medical surveillance procedures shall be followed on all applicants for hire, employees transferring to, employees presently working and terminating employment on job assignments involving the use of asbestos or materials containing asbestos.

Pre-placement

Routine pre-placement medical history and examination
Chest x-ray (PA view) 14x17
Pulmonary function test - FEV₁ one second forced expiratory volume using McKesson and Robins "Vitalor" or similar equipment.

Transfer

Medical history - with particular reference to symptoms of respiratory disease
Chest x-ray (PA view) 14x17 to be done only if no record of chest x-ray within previous one-year period in medical file
Pulmonary function test - FEV₁ using "Vitalor" or similar equipment.

50035443
00000603

Periodic

The following procedures shall be done annually:

Review of medical history - with special emphasis on symptoms of respiratory disease - cough, dyspnea, chest pain, etc.

Physical examination - with emphasis on auscultation, percussion, etc of the chest

Chest x-ray (PA view) 14x17

Pulmonary function test - FEV₁ using "Vitalor" or similar equipment

Termination

Must be done within thirty (30) days before or after termination of employment with the company.

Review of medical history - with particular reference to symptoms of respiratory disease

Physical examination - with emphasis on auscultation, percussion, etc of the chest

Chest x-ray (PA view) 14x17

Pulmonary function test - FEV₁ using "Vitalor" or similar equipment

NOTE: No medical examination is required of any employee if adequate medical records show that the employee has been examined in accordance with any of the above examination requirements within the past one-year period.

Interpretation

Any person with a history, symptoms, or physical findings of chronic lung disease or with an abnormal chest x-ray or FEV₁ shall not be hired for a work assignment involving the use of asbestos or materials containing asbestos.

Any employee with a history, symptoms or physical finding of chronic lung disease, or with an abnormal chest x-ray or FEV₁ shall not be permitted to transfer into a work assignment involving the use of asbestos or materials containing asbestos.

Any employee who while working with asbestos or materials containing asbestos develops symptoms or physical findings suggesting lung disease or who is found to have changes in the chest x-ray or FEV₁ shall be removed from the particular work assignment. The employee shall be referred to the plant physician for further medical evaluation.

50035444
60000604

It is in the best interest of the employee who develops any of the symptoms or findings of chronic lung disease to be permanently restricted from further work with asbestos or materials containing asbestos.

The normal range of the forced expiratory volume (FEV) is 70-85% of the vital capacity.

FEV₁ of 70% or less is not acceptable for employment or transfer

FEV₁ of decreasing value on periodic surveillance may be indicative of onset of lung disease

Chest x-ray - appearance of infiltrates in the lung bases may be indicative of the early stages of asbestosis. The increasing density of the infiltrates and the area of the lung involved indicates progress of the disease.

Medical Records

The records of the above medical examinations shall be retained in the Medical Department files for a minimum of twenty (20) years.

First Aid

There are no special first aid measures.

ASBESTOS

Threshold Limit Value

The 8-hour time-weighted average airborne concentration of dust asbestos to which employees are exposed shall not exceed 5 fibers per milliliter greater than 5 microns in length, as determined by the membrane filter method at 400-450 x magnification (4 millimeter objective) phase contrast illumination. Concentrations above 5 fibers per milliliter, but not to exceed 10 fibers per milliliter, may be permitted up to a total of 15 minutes in an hour for up to 5 hours in an 8-hour day. (OSHA as published in the Federal Register, Dec. 7, 1971).

Monitoring

OSHA limits are based on the membrane filter method at 400-450 x magnification (4 millimeter objective) phase contrast illumination. Initial routine air sampling shall be done weekly until sufficient data is obtained to assure complete coverage of all phases of the work. After the base data is complete, routine sampling shall be done monthly.

Personal Protection

Where engineering control methods are not feasible or where airborne concentrations exceed the Threshold Limit Values, employees shall be provided with and required to use respiratory protective devices. Each employee shall test his respirator before each use in order to insure a proper fit according to the manufacturer's instructions. Employees and supervision must be trained in these techniques.

- (a). For an atmosphere containing not more than 25 fibers per milliliter greater than 5 microns in length over an 8-hour average, or more than 50 fibers per milliliter over any period of 15 minutes, a reusable or single-use filter type respirator, operating with negative pressure during the inhalation phase of breathing approved by the U.S. Bureau of Mines (Schedule 21-B), or a valveless respirator providing equivalent protection shall be used. (Mine Safety Appliances Dustfoc or equal).
- (b). For an atmosphere containing not more than 250 fibers per milliliter greater than 5 microns in length over an 8-hour average, or more than 500 fibers per milliliter over any period of 15 minutes, a powered filter positive pressure respirator approved by the U.S. Bureau of Mines (Schedule 21-B) shall be used.

50035446
60000606

- (c). For an atmosphere containing more than 250 fibers per milliliter greater than 5 microns in length over an 8-hour average a type C positive pressure supplied air respirator approved by the U.S. Bureau of Mines (Schedule 19-B) shall be used.

All respirators provided employees shall be properly inspected, cleaned, repaired and stored. A respirator program in accordance with American National Standard Z 88.2-1969 shall be established.

Employees exposed to the spraying of asbestos or the demolition of pipes, structures, or equipment covered or insulated with asbestos shall be provided with respiratory protective devices as described in (C) above.

Special Handling

Asbestos cement, mortar, coatings, grout, and plaster shall be mixed in closed bags or other closed containers.

All hand- or power-operated tools, which produce asbestos dust such as saws, scorers, abrasive wheels, and drills shall be provided with local exhaust ventilation and dust collectors in accordance with American National Standard Z 9.2-1971.

Waste Disposal

All clean-up of asbestos dust and blowing shall be performed by vacuum cleaners. No dry sweeping shall be performed.

Asbestos waste and scrap shall be collected and disposed of in bags or other sealed containers.