

# MEASUREMENT AND CONTROL OF ASBESTOS DUST EXPOSURE

SAFETY  
ENGINEERING ST

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|------------------------|------------|
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PLAINTIFF'S  
EXHIBIT  
DUP-2086

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This standard includes requirements of the Occupational Safety and Health Act of 1970 (OSHA) as published in the Federal Register. OSHA information is printed in red.

## 1. SCOPE

**1.1** This standard presents the permissible asbestos dust exposure limits, methods of controlling asbestos dust exposures, special OSHA requirements for removal of asbestos insulation, respiratory protective equipment, and method of sampling asbestos dust concentrations in the work areas. It provides sufficient information to comply with OSHA and EPA regulations but guidance from the Du Pont Legal Dept (via the Departmental OSH Coordinator) should be sought whenever an interpretive problem arises.

**1.2** An Asbestos Compliance Package can be obtained from the Occupational Health and Water Treatment group of ESD. Ref (1) contains extensive additional information.

**1.3** A comprehensive book on asbestos removal and control has been published, Ref (14). It contains useful and detailed information on asbestos removal techniques, monitoring, and disposal. Also included are checklists for removal jobs and sample specifications for contractors. The removal technique detailed in the book is called "negative air filtration" and involves the use of a portable, HEPA equipped powered exhaust unit. That technique is also explained in an Environmental Protection Agency report that has been reprinted under the title "Controlling Asbestos Contamination with Negative Air Filtration Systems," Ref (15). The report contains a detailed operating procedure for asbestos removal and an evaluation form that would be useful in auditing the removal job. It also contains much of the same information in the more expensive book identified as Ref (14).

## 2. GENERAL

**2.1** Asbestosis and cancer are associated with over-exposure to asbestos. Historically, the incidence of these diseases has been significantly higher among asbestos workers than among the general population. Cigarette smoking greatly increases the incidence of respiratory cancers arising from exposure to asbestos. Asbestos-exposed persons who smoke have a 53-fold increase in risk from lung cancer over nonsmokers. Ref (2).

**2.2** Principal potential sources of exposure to airborne asbestos dust in Company operations are:

**a.** Removing old asbestos-containing insulation from lines and vessels, including gaskets on high-temperature lines

**b.** Removing, handling, and laundering of asbestos-contaminated clothing

**c.** Cutting new or removing weathered asbestos cement (Transite) siding, roofing, pipe, etc. or Havg pipe and equipment

**d.** Maintenance and operation of machinery and vehicle brake linings

**e.** Opening boxes and removing new asbestos materials

**f.** Handling asbestos materials used in production of Company products

**g.** Repair of laboratory equipment with asbestos insulated heaters, e.g., gas chromatographs, lab ovens

**h.** Cleaning and maintenance of vacuum systems for collection of asbestos fibers

**i.** Asbestos welding blankets and cloths

**j.** Removing old asbestos floor tile and adhesive

**2.3** Suitable nonasbestos substitutes should be used where practical and feasible whenever the use of asbestos-containing materials can release asbestos fibers. ESD can furnish information on asbestos substitutes.

**2.4** Some materials containing bound asbestos fibers, e.g., Transite siding or roofing, are not hazardous during normal use. Examples are: bonded compressed asbestos gaskets, asbestos roofing felt, Teflon<sup>®</sup> impregnated asbestos packing and fibrated asphalt cut-back (mastic). These materials could become hazardous if asbestos fibers are released because of loss of binder or a physical action such as grinding. Supervision should inspect use of these materials to determine if respirators are needed.

**2.5** A material which contains asbestos which might become airborne should be treated as asbestos unless it is determined that the asbestos present is not a potential health hazard. Talc, vermiculite, and other minerals are listed by Appendix 1 of Ref (1) as possibly containing asbestos.

Vendors and merchandise designations are given to describe materials and may not include all acceptable products. Substitutions by suppliers are to be made only on approval of the local authority initiating the use of this standard



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b. All determinations shall be made by the membrane filter method at 400 to 450X (magnification) (4 mm objective) with phase contrast illumination. All fibers meeting the proper aspect ratio (3 to 1 length-to-diameter) will be counted and reported as asbestos.

c. A qualified laboratory:

E. I. du Pont de Nemours & Co  
Industrial Hygiene Section  
Haskell Laboratory  
CR&D Dept  
Newark, DE 19711

In addition to Haskell, other accredited laboratories are listed in the AIHA Journal.

**7.5 Employee Notification.** Employees should be notified of exposure monitoring results. Any employee exposed above the OSHA limits [Ref (8)] shall be notified, in writing, within 5 days of the finding and of corrective action being taken. Notification is required even if employee was wearing protective equipment at the time of exposure.

**7.6 Exposure records** shall be maintained at least 30 years. Other record keeping requirements will generally require records be kept for longer periods.

**7.6.1** Employees and former employees shall have reasonable access to records which indicate the employee's own exposure to asbestos.

**7.7** Affected employees or their representatives shall be given reasonable opportunity to observe monitoring and review the results.

## 8. MEDICAL SURVEILLANCE

**8.1 Medical Examinations.** Preplacement, annual, and termination medical examinations shall be made available to employees in an occupation exposed to asbestos (as defined in 8.1.1 a through e). These examinations shall include, as a minimum, a PA chest x-ray, medical history, and pulmonary function tests.

**8.1.1** Each plant shall assure that all employees in the following categories receive the medical examinations prescribed in 8.1:

a. All employees working in jobs that require handling of asbestos which might become airborne (such as carpenters working with Transite, insulators, pipe-fitters, and millwrights).

b. All employees working in jobs which are exposed to airborne asbestos fiber concentrations of 0.1 fibers per cm<sup>3</sup>, or greater, of air 8-hour TWA.

c. Those who during their Du Pont employment have previously worked in jobs with an exposure described in 8.1.1.

d. Those with a known off-plant asbestos exposure prior to or during employment at Du Pont. At time of employment and periodically thereafter, care should be taken to record any history of off-plant exposure to asbestos.

e. Those with an x-ray showing changes of the type which are known to result from asbestos exposure.

**8.3 "Guidelines for Physicians"** [see Ref (5)] contains additional information on interpretation and frequency of x-rays for asbestos-exposed employees.

## 9. CLOTHING AND CHANGE ROOMS

**9.1** Special clothing, such as disposable coveralls, head covering, gloves, and foot covering, shall be required where exposures exceed the ceiling limit, Section 3, and during removal of asbestos insulation, see 4.4. All employees should be alert for potential heat stress during work, based upon the special clothing selected and work area temperatures.

**9.1.1** Contaminated clothing should be vacuumed or wiped with a wet rag before the clothing is removed. The respirator should be removed last.

**9.2** Change rooms shall be provided for all employees working in jobs in which the exposure limits in section 3 are exceeded.

**9.2.1** Separate clothing lockers or similar arrangements are required in those change rooms to prevent contamination of street clothes from work clothing.

**9.3** Laundering of asbestos-contaminated clothes must be done to prevent the release of asbestos fibers into the air.

**9.3.1** Those laundering contaminated clothing shall be informed of the need to prevent release of asbestos fibers.

**9.3.2** Contaminated clothing shall be transported in sealed impermeable containers labeled per section 12.

**9.4** When maintenance is performed on changehouse air exhaust systems (fans, ducts, filters), personnel should be alert to the presence of airborne asbestos fibers and take appropriate precautions.

Portions printed in red meet OSHA regulations. Section 1910.1001 (formerly .93a) for all sections except 5.2 which is covered by Section 1910.134



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**DON'T SAY IT-WRITE IT**

o LINDA McCLOY Location MEDICAL Phone No. \_\_\_\_\_  
from LARRY WILLIAMS Location \_\_\_\_\_ Date 7/1  
Subject ATTACHMENT

ATTACHED IS A COPY OF THE  
ENGINEERING STD. YOU REQUESTED.  
I ONLY SENT YOU PART OF THE  
STANDARD AS THERE IS ONLY ONE  
SECTION (8) THAT ADDRESSES MEDICAL  
SUBSTANCE -

G-88 REV. 10-62

SAFETY IS THOUGHT AND CARE IN ACTION

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