

ASBESTOS STANDARD AND REGULATIONS
COMPARISON FILE

NOVEMBER 17, 1983

DUP 1010857

DU 052899

ASBESTOS CONFERENCE AGENDA

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DUP 1010858

1. PERTINENT ASBESTOS STANDARDS

OSHA - 1910.1001 (1910.934)

ETS - DEC. 7, 1971 (5 FIBER/ML; 10 FIBER/ML CEILING)
STD. - JUNE 7, 1972 (5 FIBER/CC; 10 FIBER/CC CEILING)
STD. - JULY 1, 1976 (2 FIBER/CC; 10 FIBER/CC CEILING)

SECTIONS

A - DEFINITIONS	F - MONITORING
B - PEL	G - CAUTION SIGNS & LABELS
C - COMPLIANCE	H - HOUSEKEEPING
D - PERSONAL PROTECT. EQUIP.	I - RECORDKEEPING
E - MEASUREMENT	J - MEDICAL EXAMINATION

EMERGENCY TEMPORARY STANDARD - NOV. 4, 1983

SECTION - K

1) SCOPE	4) TRAINING
2) PEL	5) RESPIRATORY PROTECTION
3) COMPLIANCE	6) WARNING SIGNS

DUPONT - SAT MEASUREMENT AND CONTROL OF ASBESTOS DUST
ISSUED APRIL 1973; REVISED AS NECESSARY

SECTIONS

1. SCOPE	8. MEDICAL SURVEILLANCE
2. GENERAL	9. CLOTHING & CHANGE ROOMS
3. EXPOSURE LIMITS	10. EPA REGULATIONS
4. CONTROL	11. TRAINING
5. RESPIRATORY EQUIPMENT	12. CAUTION SIGNS & LABELS
6. IDENTIFICATION	
7. MONITORING	

III. DEFINITIONS/SCOPE

8-A

1910.1001

A) DEFINITIONS. FOR THE PURPOSE OF SECTION (1) "ASBESTOS" INCLUDES CHRYSOTILE, AMOSITE, CROCIDOLITE, TREMOLITE, ANTHOPHYLITE, AND ACTINOLITE. (2) "ASBESTOS FIBERS" MEANS ASBESTOS FIBERS LONGER THAN 5 MICROMETERS.

1910.1001

K) EMERGENCY TEMPORARY STANDARD EFFECTIVE NOVEMBER 4, 1983. (1) SCOPE. THIS EMERGENCY TEMPORARY STANDARD IS ISSUED PURSUANT TO SECTION 6(C) OF THE ACT AND APPLIES TO ALL WORKPLACES WHERE EMPLOYEES MAY BE EXPOSED TO ASBESTOS IN ALL INDUSTRIES COVERED BY THE ACT, INCLUDING GENERAL INDUSTRY, CONSTRUCTION AND MARITIME. EXCEPT TO THE EXTENT MODIFIED BY THIS EMERGENCY TEMPORARY STANDARD ALL PROVISIONS OF § 1910.1001 REMAIN IN EFFECT.

DUPONT SAT
(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 AREA. IT PROVIDES SUFFICIENT INFORMATION TO COMPLY WITH OSHA AND EPA REGULATIONS BUT GUIDANCE FROM THE DU PONT LEGAL DEPARTMENT SHOULD BE SOUGHT WHENEVER AN INTERPRETIVE PROBLEM ARISES.

$\frac{2.4T}{5.1-5.2} S_4T$

5.1.1 A FLAME TEST PER. (9) USING A PROPANE TORCH CAN BE USED TO SCREEN SAMPLES. THIS TEST PROVIDES RELIABLE INDICATIONS OF THE PRESENCE OF ASBESTOS, BUT DOES NOT PROVIDE A RELIABLE INDICATION OF THE ABSENCE OF ASBESTOS.

6.2.1 SAMPLES (APPROXIMATELY 1 GRAM) CAN BE SENT TO HASKELL LAB (7.4.1) FOR MICROSCOPIC EXAMINATION. HASKELL LAB WILL ARRANGE FOR X-RAY DIFFRACTION ANALYSIS IF THE RESULTS OF THE MICROSCOPIC EXAMINATION ARE INCONCLUSIVE.

6.2.3 THE k^2 TEST FOR SCREENING ASBESTOS DEVELOPED BY NIOSH CAN BE USED TO SCREEN FOR ASBESTOS. HOWEVER, BECAUSE THE TEST IS NONSPECIFIC, IT WILL GIVE FALSE POSITIVE IDENTIFICATION.

-4-

DUP 1010861

DU 052903

V. PERMISSIBLE EXPOSURE LIMITS

S-A 1916.1001
(1)(2)(3)

(B) PERMISSIBLE EXPOSURE TO AIRBORNE CONCENTRATIONS OF ASBESTOS FIBERS - (1) STANDARD EFFECTIVE JULY 7, 1972. THE 8-HOUR TIME-WEIGHTED AVERAGE AIRBORNE CONCENTRATIONS OF ASBESTOS FIBERS TO WHICH ANY EMPLOYEE MAY BE EXPOSED SHALL NOT EXCEED FIVE FIBERS, LONGER THAN 5 MICROMETERS, PER CUBIC CENTIMETER OF AIR, AS DETERMINED BY THE METHOD PRESCRIBED IN PARAGRAPH (F) OF THIS SECTION. (2) STANDARD EFFECTIVE JULY 1, 1976. THE 8-HOUR TIME-WEIGHTED AVERAGE AIRBORNE CONCENTRATIONS OF ASBESTOS FIBERS TO WHICH ANY EMPLOYEE MAY BE EXPOSED SHALL NOT EXCEED TWO FIBERS, LONGER THAN 5 MICROMETERS, PER CUBIC CENTIMETER OF AIR, AS DETERMINED BY THE METHOD PRESCRIBED IN PARAGRAPH (E) OF THIS SECTION. (3) CEILING CONCENTRATION. NO EMPLOYEE SHALL BE EXPOSED AT ANY TIME TO AIRBORNE CONCENTRATIONS OF ASBESTOS FIBERS IN EXCESS OF 10 FIBERS, LONGER THAN 5 MICROMETERS, PER CUBIC CENTIMETER OF AIR, AS DETERMINED BY THE METHOD PRESCRIBED IN PARAGRAPH (E) OF THIS SECTION.

ETS (k)

(2) PERMISSIBLE LEVELS OF EXPOSURE. THE 8-HOUR TIME-WEIGHTED AVERAGE AIRBORNE CONCENTRATION OF ASBESTOS FIBERS TO WHICH ANY EMPLOYEE MAY BE EXPOSED SHALL NOT EXCEED ONE-HALF (0.5) FIBER, LONGER THAN 5 MICROMETERS, PER CUBIC CENTIMETER OF AIR, AS DETERMINED BY THE METHOD PRESCRIBED IN PARAGRAPH (E) OF THIS SECTION.

DU PONT S-T
(3.1-3.3)

3.1 ASBESTOS FIBERS CONCENTRATIONS IN AIR SHALL NOT EXCEED AN 8-HOUR TIME-WEIGHTED AVERAGE (TWA) OF 0.5 FIBERS LONGER THAN 5 MICROMETERS PER CM³. AT NO TIME MAY THE CONCENTRATION EXCEED A CEILING OF 10 FIBERS LONGER THAN 5 MICROMETERS PER CM³.

3.2 THIS TWA EXPOSURE LIMIT IS DERIVED FROM THE AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH) THRESHOLD LIMIT VALUES (TLV).

<u>FORM</u>	TLV (FIBERS > 5UM/CM ³)
CHRYSTOTILE	2
AMOSITE	0.5
CROCIDOLITE	0.2

3.3 TESTING FOR VARIOUS FORMS OF ASBESTOS IS EXPENSIVE AND TIME CONSUMING. TESTS TO DATE HAVE SHOWN THAT ASBESTOS USED IN DU PONT IS ALMOST EXCLUSIVELY CHRYSTOTILE OR AMOSITE. THEREFORE, THE 0.5 FIBERS/CM³ EXPOSURE LIMIT SHOULD BE USED IN DU PONT UNLESS IT IS SUSPECTED OR KNOWN THAT THE MATERIAL IN CROCIDOLITE IN WHICH CASE A LIMIT OF 0.2 FIBERS LONGER THAN 5UM PER CM³ SHOULD BE USED.

VI. METHODS OF COMPLIANCE

SEE 1910. 1001

1910.1001 (1)

C) METHODS OF COMPLIANCE - (1) ENGINEERING METHODS. (1) ENGINEERING CONTROLS. ENGINEERING CONTROLS, SUCH AS, BUT NOT LIMITED TO, ISOLATION, ENCLOSURE, EXHAUST VENTILATION, AND DUST COLLECTION, SHALL BE USED TO MEET THE EXPOSURE LIMITS PRESCRIBED IN PARAGRAPH (B) OF THIS SECTION.

(II) LOCAL EXHAUST VENTILATION (A) LOCAL EXHAUST VENTILATION AND DUST COLLECTION SYSTEMS SHALL BE DESIGNED, CONSTRUCTED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THE AMERICAN NATIONAL STANDARD FUNDAMENTALS GOVERNING THE DESIGN AND OPERATION OF LOCAL EXHAUST SYSTEMS, ANSI Z9.2-1971, WHICH IS INCORPORATED BY REFERENCE HEREIN.

(III) PARTICULAR TOOLS. ALL HAND-OPERATED AND POWER-OPERATED TOOLS WHICH MAY PRODUCE OR RELEASE ASBESTOS FIBERS IN EXCESS OF THE EXPOSURE LIMITS PRESCRIBED IN PARAGRAPH (B) OF THIS SECTION, SUCH AS, BUT NOT LIMITED TO, SAWS, SCORERS, ABRASIVE WHEELS, AND DRILLS, SHALL BE PROVIDED WITH LOCAL EXHAUST VENTILATION SYSTEMS IN ACCORDANCE WITH SUBDIVISION (II) OF THIS SUBPARAGRAPH.

1910.1001 SUB
1910.1001-4.3)

4.1 ENGINEERING CONTROLS, SUCH AS, BUT NOT LIMITED TO, ISOLATION, ENCLOSURE, EXHAUST VENTILATION, AND DUST COLLECTION SHALL BE USED TO MEET THE PERMISSIBLE EXPOSURE LIMITS IN 3.1.

4.1.1 LOCAL EXHAUST VENTILATION AND COLLECTION SYSTEMS SHALL BE IN ACCORDANCE WITH ANSI Z9.2-1971, "FUNDAMENTALS GOVERNING THE DESIGN AND OPERATION OF LOCAL EXHAUST SYSTEMS".

4.1.2 ADDITIONAL INFORMATION ON THE DESIGN OF VENTILATION SYSTEMS IS CONTAINED IN DH10, H30, DG20D AND REF. (1) AND (6).

4.3 TOOLS USED ON ASBESTOS

4.4.1 AVOID SAWING WHERE POSSIBLE; KNIFE CUTTING IS PREFERRED.

4.3.2 ALL HAND-OPERATED AND POWER-OPERATED TOOLS WHICH MAY PRODUCE OR RELEASE ASBESTOS FIBERS IN EXCESS OF THE PERMISSIBLE EXPOSURE LIMITS (I.E., SAWS, SCORES, ABRASIVE WHEELS, AND DRILLS) SHALL BE PROVIDED WITH A DUST-COLLECTION SYSTEM AS SPECIFIED IN 4.1.

4.4.4 ALL ASBESTOS-CUTTING OPERATIONS SHOULD BE ISOLATED TO MINIMIZE UNAUTHORIZED ACCESS. THIS CAN BE A TEMPORARY AREA FOR NONROUTINE OPERATIONS WITH BARRICADES AND SIGNS PER SECTION 12. ROUTINE WORK SHOULD BE ISOLATED IN A PROPERLY POSTED SEPARATE WORK AREA.

VII. WORK PRACTICES

2910.1001 (2) WORK PRACTICES - (I) WET METHODS. IN SO FAR AS PRACTICABLE, ASBESTOS SHALL BE HANDLED, MIXED, APPLIED, REMOVED, CUT, SCORED, OR OTHERWISE WORKED IN A WET STATE SUFFICIENT TO PREVENT THE EMISSION OF AIRBORNE FIBERS IN EXCESS OF THE EXPOSURE LIMITS PRESCRIBED IN PARAGRAPH (B) OF THIS SECTION, UNLESS THE USEFULNESS OF THE PRODUCT WOULD BE DIMINISHED THEREBY.

(II) PARTICULAR PRODUCTS AND OPERATIONS. NO ASBESTOS CEMENT, MORTAR, COATING, GROUT, PLASTER, OR SIMILAR MATERIAL CONTAINING ASBESTOS SHALL BE REMOVED FROM BAGS, CARTONS, OR OTHER CONTAINERS IN WHICH THEY ARE SHIPPED, WITHOUT BEING EITHER WETTED, OR ENCLOSED, OR VENTILATED SO AS TO PREVENT EFFECTIVELY THE RELEASE OF AIRBORNE ASBESTOS FIBERS IN EXCESS OF THE LIMITS PRESCRIBED IN PARAGRAPH (B) OF THIS SECTION.

ETS (k) (3) (3) METHODS OF COMPLIANCE WITH THE EMERGENCY TEMPORARY STANDARD. NOTWITHSTANDING ANY OTHER REQUIREMENTS OF THIS SECTION, COMPLIANCE WITH THE REDUCED EXPOSURE LIMIT OF 0.5 F/CC SHALL BE ACHIEVED BY ANY FEASIBLE COMBINATION OF ENGINEERING CONTROLS, WORK PRACTICES, AND PERSONAL PROTECTIVE EQUIPMENT AND DEVICES.

POINT S-T
(4.2-4.4)

4.2.1 IN SO FAR AS PRACTICAL, ASBESTOS CONTAINING MATERIALS SHALL BE HANDLED, MIXED, APPLIED, REMOVED, CUT, SCORED, OR OTHERWISE WORKED IN A WET STATE SUFFICIENT TO PREVENT THE EMISSION OF AIRBORNE FIBERS IN EXCESS OF THE EXPOSURE LIMITS IN SECTION 3.

4.4.3 THE WORK AREA SHALL BE BARRICADED AND CAUTION SIGNS SHALL BE POSTED AS DESCRIBED IN SECTION 12 AT APPROACHES TO AREAS WHERE ASBESTOS MATERIALS ARE BEING HANDLED. THIS EQUIPMENT DOES NOT APPLY UNDER CONDITIONS DESCRIBED IN 4.4.2.1 A AND B.

4.4.4 IN SO FAR AS PRACTICAL, ALL ASBESTOS MATERIALS SHALL BE THOROUGHLY WETTED AND STEPS TAKEN TO ENSURE THAT THEY REMAIN WET UNTIL PLACED IN SEALED IMPERMEABLE BAGS OR OTHER IMPERMEABLE CONTAINERS LABELED PER SECTION 12. WETTING MAY HAVE TO BE SUSPENDED ON OUTSIDE OPERATIONS, E.G., WHEN TEMPERATURES GET BELOW 0°C. IF ASBESTOS CANNOT BE WETTED DUE TO FREEZING TEMPERATURES, OR OTHER CONDITIONS, IT SHOULD, TO THE EXTENT POSSIBLE, BE REMOVED AS UNIT SECTIONS. THE USE OF A SURFACTANT IN SPRAY WATER ENHANCES FIBERS CONTROL BY ~ 15% AND SHOULD BE CONSIDERED FOR LARGE JOBS.

4.4.5 SUPPORT FASTENERS SHALL BE REMOVED WITH CARE. HANDLE ASBESTOS-CONTAINING MATERIALS IN SUCH A MANNER TO MINIMIZE GENERATION OF AIRBORNE ASBESTOS FIBERS. DO NOT DROP.

4.4.6 REMOVED ASBESTOS MATERIALS SHALL NOT BE ALLOWED TO LIE ABOUT THE WORK AREA, BUT SHALL BE IMMEDIATELY SEALED IN BAGS.

4.4.7 MAINTAIN GOOD HOUSEKEEPING. VACUUM EQUIPMENT MEETING REQUIREMENTS OF 4.1.1 SHALL BE USED TO PREVENT LOOSE ACCUMULATIONS OF FRAGMENTS.

VIII. REMOVAL OF ASBESTOS INSULATION

SHA 1910.1001
(1111)

(111) SPRAYING, DEMOLITION, OR REMOVAL. EMPLOYEES ENGAGED IN THE SPRAYING OF ASBESTOS, THE REMOVAL, OR DEMOLITION OF PIPES, STRUCTURES, OR EQUIPMENT COVERED OR INSULATED WITH ASBESTOS, AND IN THE REMOVAL OR DEMOLITION OF ASBESTOS INSULATION OR COVERINGS SHALL BE PROVIDED WITH RESPIRATORY EQUIPMENT IN ACCORDANCE WITH PARAGRAPH (D) (2) (111) OF THIS SECTION AND WITH SPECIAL CLOTHING IN ACCORDANCE WITH PARAGRAPH (E) (3) OF THIS SECTION.

4.4.1
4.4.1

4.4.1 If the composition of the material is unknown, it shall be treated as being asbestos. For use of labels to identify nonasbestos insulation, see SN18P.

4.4.2 Proper respirators (per section 5) and special protective clothing (per section 9) shall be provided all employees engaged in removal or demolition of asbestos insulation or covering. Atmosphere supplying respirators (5.4) are required except where it has clearly been demonstrated that the wet method is effective and monitoring has shown that airborne concentrations of asbestos on the job will not exceed 50 times the TLV or the OSHA ceiling.

4.4.2.1 At a minimum, air purifying respirators (5.3) and special clothing shall be worn during the removal of asbestos insulation. Many plants have found disposable dust masks (5.3.1) (NIOSH approved for asbestos) and disposable paper clothing, satisfactory.

A. This requirement does not apply to removal of insulation, fabricated, and protected to withstand repeated removal and reinstallation for equipment maintenance or other reasons, providing the techniques employed have been demonstrated to maintain asbestos concentrations within exposure limits of section 5.

B. The clothing requirements does not apply to removal for maintenance or alterations when the wet method is used and monitoring of identical work has shown the precautions maintain asbestos concentrations within the ceiling limit of section 3.

1. PERSONAL PROTECTIVE EQUIPMENT - RESPIRATORS

2-4 1910.1001

5 (1)(2)

(D) PERSONAL PROTECTIVE EQUIPMENT - (1) COMPLIANCE WITH THE EXPOSURE LIMITS PRESCRIBED BY PARAGRAPH (E) OF THIS SECTION MAY NOT BE ACHIEVED BY THE USE OF RESPIRATORS OR SHIFT ROTATION OF EMPLOYEES, EXCEPT:

(I) DURING THE TIME PERIOD NECESSARY TO INSTALL THE ENGINEERING CONTROLS AND TO INSTITUTE THE WORK PRACTICES REQUIRED BY PARAGRAPH (C) OF THIS SECTION;

(II) IN WORK SITUATIONS IN WHICH THE METHODS PRESCRIBED IN PARAGRAPH (C) OF THIS SECTION ARE EITHER TECHNICALLY NOT FEASIBLE OR FEASIBLE TO AN EXTENT INSUFFICIENT TO REDUCE THE AIRBORNE CONCENTRATIONS OF ASBESTOS FIBERS BELOW THE LIMITS PRESCRIBED BY PARAGRAPH (B) OF THIS SECTION; OR

(III) IN EMERGENCIES.

(IV) WHERE BOTH RESPIRATORS AND PERSONNEL ROTATION ARE ALLOWED BY SUBDIVISIONS (I), (II), OR (III) OF THIS SUBPARAGRAPH, AND BOTH ARE PRACTICABLE, PERSONNEL ROTATION SHALL BE PREFERRED AND USED.

(2) WHERE A RESPIRATOR IS PERMITTED BY SUBPARAGRAPH (1) OF THIS PARAGRAPH, IT SHALL BE SELECTED FROM AMONG THOSE APPROVED BY THE BUREAU OF MINES, DEPARTMENT OF THE INTERIOR, OR THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, UNDER THE PROVISIONS OF 30 CFR PART 11 (37 F.R. 6244, MAR. 25, 1972), AND SHALL BE USED IN ACCORDANCE WITH SUBDIVISIONS (I), (II), (III), AND (IV) OF THIS SUBPARAGRAPH.

(I) AIR PURIFYING RESPIRATORS. A REUSABLE OR SINGLE USE AIR PURIFYING RESPIRATOR, OR A RESPIRATOR DESCRIBED IN SUBDIVISION (II) OR (III) OF THIS SUBPARAGRAPH, SHALL BE USED TO REDUCE THE CONCENTRATIONS OF AIRBORNE ASBESTOS FIBERS IN THE RESPIRATOR BELOW THE EXPOSURE LIMITS PRESCRIBED IN PARAGRAPH (B) OF THIS SECTION, WHEN THE CEILING OR THE 8-HOUR TIME-WEIGHTED AVERAGE AIRBORNE CONCENTRATIONS OF ASBESTOS FIBERS ARE REASONABLY EXPECTED TO EXCEED NO MORE THAN 10 TIMES THOSE LIMITS.

(II) POWERED AIR PURIFYING RESPIRATORS. A FULL FACEPIECE POWERED AIR PURIFYING RESPIRATOR, OR A POWERED AIR PURIFYING RESPIRATOR, OR A RESPIRATOR DESCRIBED IN SUBDIVISION (III) OF THIS SUBPARAGRAPH, SHALL BE USED TO REDUCE THE CONCENTRATIONS OF AIRBORNE ASBESTOS FIBERS IN THE RESPIRATOR BELOW THE EXPOSURE LIMITS PRESCRIBED IN PARAGRAPH (B) OF THIS SECTION, WHEN THE CEILING OR THE 8-HOUR TIME-WEIGHTED AVERAGE CONCENTRATIONS OF ASBESTOS FIBERS ARE REASONABLY EXPECTED TO EXCEED 10 TIMES, BUT NOT 100 TIMES, THOSE LIMITS.

(III) TYPE "C" SUPPLIED-AIR RESPIRATORS, CONTINUOUS FLOW OR PRESSURE-DEMAND CLASS. A TYPE "C" CONTINUOUS FLOW OR PRESSURE-DEMAND, SUPPLIED-AIR RESPIRATOR SHALL BE USED TO REDUCE THE CONCENTRATIONS OF AIRBORNE ASBESTOS FIBERS IN THE RESPIRATOR BELOW THE EXPOSURE LIMITS PRESCRIBED IN PARAGRAPH (B) OF THIS SECTION, WHEN THE CEILING OR THE 8-HOUR TIME-WEIGHTED AVERAGE AIRBORNE CONCENTRATIONS OF ASBESTOS FIBERS ARE REASONABLY EXPECTED TO EXCEED 100 TIMES THOSE LIMITS.

(IV) ESTABLISHMENT OF A RESPIRATOR PROGRAM. (A) THE EMPLOYER SHALL ESTABLISH A RESPIRATOR PROGRAM IN ACCORDANCE WITH THE REQUIREMENTS OF THE AMERICAN NATIONAL STANDARDS PRACTICES FOR RESPIRATORY PROTECTION, ANSI Z88.2-1969, WHICH IS INCORPORATED BY REFERENCE HEREIN.

14. PERSONAL PROTECTIVE EQUIPMENT - RESPIRATORS, CONT'D.

8-21910.1001

(5)

(5) RESPIRATORY PROTECTION DURING THE ETS.
NOTWITHSTANDING ANY OTHER REQUIREMENT OF THIS SECTION, WHERE RESPIRATORS ARE USED TO ACHIEVE THE PERMISSIBLE EXPOSURE LIMIT OF 0.5 F/CC THEY SHALL BE SELECTED ACCORDING TO TABLE 1.

TABLE 1
RESPIRATORY PROTECTION
FOR AIRBORNE CONCENTRATIONS OF ASBESTOS

<u>AIRBORNE CONCENTRATION OF ASBESTOS (TWA)</u>	<u>REQUIRED RESPIRATOR</u>
NOT IN EXCESS OF 5 F/CC (10 X PEL)	REUSABLE OR SINGLE USE AIR PURIFYING RESPIRATOR
NOT IN EXCESS OF 50 F/CC (100 X PEL)	FULL FACEPIECE AIR PURIFYING RESPIRATOR, OR A POWERED AIR PURIFYING RESPIRATOR
GREATER THAN 50 F/CC	A TYPE "C" CONTINUOUS FLOW OR PRESSURE DEMAND, SUPPLIED AIR RESPIRATOR

RESPIRATORS SPECIFIED FOR HIGH CONCENTRATIONS MAY BE USED
AT LOWER CONCENTRATIONS OF ASBESTOS.

10. POINTS
(5.1-5.3)

5.1 RESPIRATORY PROTECTION SHALL BE PROVIDED TO ALL PERSONNEL IN AREAS WHERE PERMISSIBLE EXPOSURE LIMITS MAY BE EXCEEDED OR WHERE ASBESTOS IS BEING REMOVED (SEE 4.4.2.1). RESPIRATORY PROTECTION CAN BE USED TO MEET PERMISSIBLE EXPOSURE LIMITS ONLY UNDER THE FOLLOWING CONDITIONS:

A. DURING THE TIME NECESSARY TO INSTALL ENGINEERING CONTROLS PER 4.1. WRITTEN PLANS FOR THE INSTALLATION OF ENGINEERING CONTROLS OR REASONS WHY THEY ARE NOT FEASIBLE SHOULD BE AVAILABLE.

B. WHEN ENGINEERING CONTROLS ARE TECHNICALLY NOT FEASIBLE OR INSUFFICIENT TO MEET THE LIMITS IN SECTION 3.

C. IN EMERGENCIES.

5.2 IF RESPIRATORS ARE REQUIRED, A WRITTEN RESPIRATOR PROGRAM SHALL BE PREPARED.

5.2.1 STANDARD S2H SHOULD BE REFERRED TO FOR FURTHER GUIDANCE IN ESTABLISHING A RESPIRATOR PROGRAM.

5.2.2 ALL RESPIRATORS SHOULD BE NIOSH/MSHA APPROVED FOR USE WITH ASBESTOS.

DUP 1010867

IX. PERSONAL PROTECTIVE EQUIPMENT - RESPIRATORS, CONT'D.

5.3.1

5.3.1

5.3 AIR PURIFYING (MECHANICAL FILTER-TYPE) RESPIRATORS SHALL BE USED WHEN THE TWA OR CEILING CONCENTRATIONS ARE REASONABLY EXPECTED TO EXCEED NO MORE THAN 10 TIMES THE LIMITS IN SECTION 3.

5.3.1 ALTHOUGH OSHA PERMITS USE OF BOTH SINGLE USE OR REUSABLE AIR PURIFYING RESPIRATORS FOR UP TO 10 TIMES THE LIMITS IN SECTION 3, SINGLE USE AND QUARTER-MASK RESPIRATORS SHOULD NOT BE USED FOR MORE THAN 5 TIMES THE LIMITS REF. (10), (11), AND (12). HALF-FACE AIR PURIFYING RESPIRATORS ARE ACCEPTABLE FOR USE AT UP TO 10 TIMES THE LIMITS.

5.3.2 AIR PURIFYING RESPIRATORS USED TO HANDLE ASBESTOS SHOULD BE FIT TESTED TO THE WORKER ACCORDING TO ENGINEERING STANDARD S8H.

5.5 POWERED AIR PURIFYING RESPIRATORS ARE PERMITTED BY OSHA WHEN CONCENTRATIONS ARE EXPECTED TO BE BETWEEN 10 AND 100 TIMES THE LIMITS IN SECTION 3.

X. PERSONAL PROTECTIVE EQUIPMENT - CLOTHING - CHANGE ROOMS - LAUNDERING

1910.1001
(1)(4)

(3) SPECIAL CLOTHING: THE EMPLOYER SHALL PROVIDE, AND REQUIRE THE USE OF, SPECIAL CLOTHING, SUCH AS COVERALLS OR SIMILAR WHOLE BODY CLOTHING, HEAD COVERINGS, GLOVES, AND FOOT COVERINGS FOR ANY EMPLOYEE EXPOSED TO AIRBORNE, CONCENTRATIONS OF ASBESTOS FIBERS, WHICH EXCEED THE CEILING LEVEL PRESCRIBED IN PARAGRAPH (B) OF THIS SECTION.

(4) CHANGE ROOMS: (I) AT ANY FIXED PLACE OF EMPLOYMENT EXPOSED TO AIRBORNE CONCENTRATIONS OF ASBESTOS FIBERS IN EXCESS OF THE EXPOSURE LIMITS PRESCRIBED IN PARAGRAPH (B) OF THIS SECTION, THE EMPLOYER SHALL PROVIDE CHANGE ROOMS FOR EMPLOYEES WORKING REGULARLY AT THE PLACE.

(II) CLOTHES LOCKERS: THE EMPLOYER SHALL PROVIDE TWO SEPARATE LOCKERS OR CONTAINERS FOR EACH EMPLOYEE, SO SEPARATED OR ISOLATED AS TO PREVENT CONTAMINATION OF THE EMPLOYEE'S STREET CLOTHES FROM HIS WORK CLOTHES.

(III) LAUNDERING: (A) LAUNDERING OF ASBESTOS CONTAMINATED CLOTHING SHALL BE DONE SO AS TO PREVENT THE RELEASE OF AIRBORNE ASBESTOS FIBERS IN EXCESS OF THE EXPOSURE LIMITS PRESCRIBED IN PARAGRAPH (B) OF THIS SECTION.

(B) ANY EMPLOYER WHO GIVES ASBESTOS-CONTAMINATED CLOTHING TO ANOTHER PERSON FOR LAUNDERING SHALL INFORM SUCH PERSON OF THE REQUIREMENT IN (A) OF THIS SUBDIVISION TO EFFECTIVELY PREVENT THE RELEASE OF AIRBORNE ASBESTOS FIBERS IN EXCESS OF THE EXPOSURE LIMITS PRESCRIBED IN PARAGRAPH (B) OF THIS SECTION.

(C) CONTAMINATED CLOTHING SHALL BE TRANSPORTED IN SEALED IMPERMEABLE BAGS, OR OTHER CLOSED, IMPERMEABLE CONTAINERS, AND LABELED IN ACCORDANCE WITH PARAGRAPH (G) OF THIS SECTION.

1910.1001
(1)(4)

9.1 SPECIAL CLOTHING, SUCH AS COVERALLS, HEAD COVERING, GLOVES, AND FOOT COVERING SHALL BE REQUIRED WHERE EXPOSURE EXCEED CEILING LIMITS OF SECTION 3 AND DURING REMOVAL OF ASBESTOS INSULATION, SEE 4.4.

9.2 CHANGE ROOMS SHALL BE PROVIDED FOR ALL EMPLOYEES WORKING IN JOBS IN WHICH THE 8-HOUR TWA OR CEILING LIMIT OF 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 IN ACCORDANCE WITH SECTION 12.

XI. METHOD OF MEASUREMENT/ANALYSES

S-1, 1910.1001

(E)

METHOD OF MEASUREMENT. ALL DETERMINATIONS OF AIRBORNE CONCENTRATIONS OF AIRBORNE CONCENTRATIONS OF ASBESTOS FIBERS SHALL BE MADE BY THE MEMBRANE FILTER METHOD AT 400-450 X (MAGNIFICATION) (4 MILLIMETER OBJECTIVE) WITH PHASE CONTRAST ILLUMINATION.

7.4.5

ANALYSIS

ANALYSIS MUST BE DONE AT QUALIFIED LABORATORIES. COMPLETED SAMPLES ARE PLACED IN A MAILING TUBE, SEALED, AND SENT TO A QUALIFIED LABORATORY WITH 2 COPIES OF THE SAMPLING RECORD.

A. IT IS RECOMMENDED THAT AN UNEXPOSED FILTER BE INCLUDED WITH EACH BATCH OF SAMPLES AS A BLANK.

B. ALL DETERMINATIONS SHALL BE MADE BY THE MEMBRANE FILTER METHOD AT 400 TO 450X (MAGNIFICATION) (4MM OBJECTIVE) WITH PHASE CONTRAST ILLUMINATION. ALL FIBERS MEETING THE PROPER ASPECT RATIO WILL BE COUNTED AND REPORTED AS ASBESTOS.

C. QUALIFIED LABORATORIES, ARE:

E. I. DU PONT DE NEMOURS & Co., Inc.
INDUSTRIAL HYGIENE SECTION
HASKELL LABORATORY
CR&D DEPT.
NEWARK, DE 19711

CLAYTON ENVIRONMENTAL CONSULTANTS
2571 SOUTHFIELD ROAD
SOUTHFIELD, MI 48075

HAGER LABORATORIES, INC.
4725 PARIS STREET
DENVER, CO 80239

NATIONAL LOSS CONTROL SERVICE CORP.
(LUMBERMAN MUTUAL CASUALTY CO.)
ENVIRONMENTAL SCIENCES LABORATORY
LONG GROVE, IL 60047

XII. PERSONAL MONITORING

3-8 1910.1001

F 17(2)

(F) MONITORING - (1) INITIAL DETERMINATIONS. WITHIN 6 MONTHS OF THE PUBLICATION OF THIS SECTION, EVERY EMPLOYER SHALL CAUSE EVERY PLACE OF EMPLOYMENT WHERE ASBESTOS FIBERS ARE RELEASED TO BE MONITORED IN SUCH A WAY AS TO DETERMINE WHETHER EVERY EMPLOYEE'S EXPOSURE TO ASBESTOS FIBERS IS BELOW THE LIMITS PRESCRIBED IN PARAGRAPH (B) OF THIS SECTION. IF THE LIMITS ARE EXCEEDED, THE EMPLOYER SHALL IMMEDIATELY UNDERTAKE A COMPLIANCE PROGRAM IN ACCORDANCE WITH PARAGRAPH (C) OF THIS SECTION.

(2) PERSONAL MONITORING - (1) SAMPLES SHALL BE COLLECTED FROM WITHIN THE BREATHING ZONE OF THE EMPLOYEES, ON MEMBRANE FILTERS OF 0.8 MICROMETER POROSITY MOUNTED IN AN OPEN-FACE FILTER HOLDER. SAMPLES SHALL BE TAKEN FOR THE DETERMINATION OF THE 8-HOUR TIME-WEIGHTED AVERAGE AIRBORNE CONCENTRATIONS AND OF THE CEILING CONCENTRATIONS OF ASBESTOS FIBERS.

(II) SAMPLING FREQUENCY AND PATTERNS. AFTER THE INITIAL DETERMINATIONS REQUIRED BY SUBPARAGRAPH (1) OF THIS PARAGRAPH, SAMPLES SHALL BE OF SUCH FREQUENCY AND PATTERN AS TO REPRESENT WITH REASONABLE ACCURACY THE LEVELS OF EXPOSURE OF EMPLOYEES. IN NO CASE SHALL THE SAMPLING BE DONE AT INTERVALS GREATER THAN 6 MONTHS FOR EMPLOYEES WHOSE EXPOSURE TO ASBESTOS MAY REASONABLY BE FORESEEN TO EXCEED THE LIMITS PRESCRIBED BY PARAGRAPH (B) OF THIS SECTION.

7.1 MONIT. S&T
1-7.5)

7.1 MONITORING IS REQUIRED WHERE EMPLOYEES MAY BE EXPOSED TO ASBESTOS DUST FROM WORK-RELATED ACTIVITY, TO DETERMINE THE EMPLOYEE'S EXPOSURE.

7.2.1 PERSONAL MONITORING. SAMPLES SHALL BE TAKEN FROM THE BREATHING ZONE OF EMPLOYEES.

7.3 SAMPLING FREQUENCY AND PATTERNS SHALL BE SUCH THAT SAMPLES REPRESENT THE LEVEL OF EXPOSURE OF EMPLOYEES WITH REASONABLE ACCURACY. SAMPLES FOR DETERMINATION OF BOTH 8-HOUR TIME-WEIGHTED AVERAGE AND CEILING CONCENTRATIONS SHALL BE TAKEN.

7.3.1 SAMPLES SHALL BE TAKEN FOR EACH TYPE OF JOB OR WHEN A JOB IS CHANGED IN SUCH A WAY AS TO INCREASE ASBESTOS EXPOSURE.

7.3.2 FOR EMPLOYEES WHOSE EXPOSURE MAY REASONABLY BE FORESEEN TO EXCEED THE LIMITS OF SECTION 5 SAMPLING SHALL BE DONE AT INTERVALS NOT GREATER THAN 6 MONTHS.

7.3.3 CEILING SAMPLES SHALL BE TAKEN FOR THOSE SHORT TASKS FOR WHICH HIGHEST EXPOSURE IS EXPECTED. CEILING SAMPLES FOR OSHA COMPLIANCE TESTING SHOULD BE TAKEN FOR 15 MINUTES. SHORT-TERM SAMPLES MAY ALSO BE TAKEN FOR SHORTER OR LONGER PERIOD (DURATION OF A GIVEN TASK) FOR INVESTIGATIVE PURPOSES.

DUP 1010871

III. ENVIRONMENTAL MONITORING

1-4 1910.1001

(1)(1)

(3) ENVIRONMENTAL MONITORING (1) SAMPLES SHALL BE COLLECTED FROM AREAS OF A WORK ENVIRONMENT WHICH ARE REPRESENTATIVE OF THE AIRBORNE CONCENTRATIONS OF ASBESTOS FIBERS WHICH MAY REACH THE BREATHING ZONE OF EMPLOYEES. SAMPLES SHALL BE COLLECTED ON A MEMBRANCE FILTER OF 0.8 MICROMETER POROSITY MOUNTED IN AN OPEN-FACE FILTER HOLDER. SAMPLES SHALL BE TAKEN FOR THE DETERMINATION OF THE 8-HOUR TIME-WEIGHTED AVERAGE AIRBORNE CONCENTRATIONS AND OF THE CEILING CONCENTRATIONS OF ASBESTOS FIBERS.

(11) SAMPLING FREQUENCY AND PATTERNS. AFTER THE INITIAL DETERMINATIONS REQUIRED BY SUBPARAGRAPH (1) OF THIS PARAGRAPH, SAMPLES SHALL BE OF SUCH FREQUENCY AND PATTERN AS TO REPRESENT WITH REASONABLE ACCURACY THE LEVELS OF EXPOSURE OF THE EMPLOYEES. IN NO CASE SHALL SAMPLING BE AT INTERVALS GREATER THAN 6 MONTHS FOR EMPLOYEES WHOSE EXPOSURES TO ASBESTOS MAY REASONABLY BE FORESEEN TO EXCEED THE EXPOSURE LIMITS PRESCRIBED IN PARAGRAPH (B) OF THIS SECTION.

7.2.2 ENVIRONMENTAL MONITORING

(1.2, 7.4)

7.2.2 ENVIRONMENTAL MONITORING. THESE SAMPLES ARE TAKEN FROM A FIXED LOCATION WHERE ASBESTOS FIBERS MAY BE RELEASED. SUCH SAMPLING MAY BE USEFUL IN DETERMINING THE NEED FOR LOCAL VENTILATION OF ASBESTOS RELEASING TOOLS. THE SAMPLING FILTER IS PLACED CLOSE TO THE AREA REPRESENTATIVE OF THE BREATHING ZONE OF EMPLOYEES.

IV. SAMPLING - PROCEDURES

7.4.1 (7.4) 7.4.1 METHODS OF SAMPLING ASBESTOS FIBERS IN AIR ARE GIVEN IN REF (3). SAMPLING PROCEDURES SHOULD BE REVIEWED WITH THE LABORATORY WHICH WILL COUNT THE FIBERS PRIOR TO SAMPLING TO HELP ENSURE PROPER TECHNIQUES ARE USED.

THE SAMPLE SHOULD BE TAKEN AT A RATE OF 1.5 TO 2 LITERS PER MINUTE. THE FILTER FACE SHOULD BE POSITIONED SO THAT FIBERS WILL NOT SETTLE ON IT.

7.4.2 SAMPLING ATMOSPHERES CONTAINING ASBESTOS FIBER WITH LOW LEVELS OF OTHER DUSTS:

A. FOR EXPOSURE EXPECTED TO BE BELOW 2 FIBERS PER CM^3 , SAMPLE FOR 2 TO 8 HOURS.

B. FOR EXPOSURES EXPECTED TO BE ABOVE 2, BUT LESS THAN 5 FIBERS PER CM^3 , SAMPLE FOR 45 MINUTES TO 4 HOURS.

C. FOR EXPOSURES EXPECTED TO BE HIGHER THAN 5 FIBERS PER CM^3 , SAMPLE FOR 30 MINUTES TO 2 HOURS DEPENDING UPON EXPERIENCE AND CONSULTATION WITH THE LABORATORY WHICH WILL COUNT THE FIBERS.

7.4.3 SAMPLING ATMOSPHERES CONTAINING ASBESTOS FIBERS WITH HIGH LEVELS OF OTHER DUSTS: SAMPLE TIMES WILL VARY DEPENDING UPON THE AMOUNT OF OTHER DUSTS PRESENT. THE LABORATORY WHICH WILL COUNT THE FIBERS SHOULD BE CONSULTED TO OBTAIN APPROXIMATE SAMPLE TIMES.

7.4.4 EQUIPMENT. ALL SAMPLING MUST BE DONE ON MEMBRANE FILTERS OF 0.8 MICROMETERS POROSITY MOUNTED IN AN OPEN-FACED FILTER HOLDER. THE MILLIPORE CELLULOSE ACETATE 0.8 MICROMETER FILTER, CATALOG NUMBER MAWP 037A0, IS RECOMMENDED. PARTICULATE SAMPLING EQUIPMENT IS DESCRIBED IN S13T, SECTION 10.

XV. EMPLOYEE OBSERVATION

SEA 1910.1001
(F) (4)

(4) EMPLOYEE OBSERVATION OF MONITORING. AFFECTED EMPLOYEES, OR THEIR REPRESENTATIVES, SHALL BE GIVEN A REASONABLE OPPORTUNITY TO OBSERVE ANY MONITORING REQUIRED BY THIS PARAGRAPH AND SHALL HAVE ACCESS TO THE RECORDS THEREOF.

SEA 1910.1001
(F) (4)

7.7 AFFECTED EMPLOYEES OR THEIR REPRESENTATIVES SHALL BE GIVEN REASONABLE OPPORTUNITY TO OBSERVE MONITORING AND REVIEW THE RESULTS.

XVI. CAUTION SIGNS AND LABELS

1910.1001
1910.1012

(G) CAUTION SIGNS AND LABELS. (1) CAUTION SIGNS. (i) POSTING. CAUTION SIGNS SHALL BE PROVIDED AND DISPLAYED AT EACH LOCATION WHERE AIRBORNE CONCENTRATIONS OF ASBESTOS FIBERS MAY BE IN EXCESS OF THE EXPOSURE LIMITS PRESCRIBED IN PARAGRAPH (B) OF THIS SECTION. SIGNS SHALL BE POSTED AT SUCH A DISTANCE FROM SUCH A LOCATION SO THAT AN EMPLOYEE MAY READ THE SIGNS AND TAKE NECESSARY PROTECTIVE STEPS BEFORE ENTERING THE AREA MARKED BY THE SIGNS. SIGNS SHALL BE POSTED AT ALL APPROACHES TO AREAS CONTAINING EXCESSIVE CONCENTRATIONS OF AIRBORNE ASBESTOS FIBERS.

(ii) SIGN SPECIFICATIONS. THE WARNING SIGNS REQUIRED BY SUBDIVISION (1) OF THIS SUBPARAGRAPH SHALL CONFORM TO THE REQUIREMENTS OF 20" X 14" VERTICAL FORMAT SIGNS SPECIFIED IN § 1910.145(D)(4), AND TO THIS SUBDIVISION. THE SIGNS SHALL DISPLAY THE FOLLOWING LEGEND IN THE LOWER PANEL, WITH LETTER SIZES AND STYLES OF A VISIBILITY AT LEAST EQUAL TO THAT SPECIFIED IN THIS SUBDIVISION.

LEGEND

NOTATION

ASBESTOS.....	1" SANS SCRIF, GOTHIC OR BLOCK
DUST HAZARD.....	3/4" SANS SCRIF, GOTHIC OR BLOCK
AVOID BREATHING DUST.....	1/4" GOTHIC
WEAR ASSIGNED PROTECT-EQUIP.....	1/4" GOTHIC
DO NOT REMAIN IN YOUR AREA.....	1/4" GOTHIC
UNLESS YOUR WORK REQUIRES IT	
BREATHING ASBESTOS DUST.....	14 POINT GOTHIC
MAY BE HAZARDOUS TO YOUR HEALTH	

SPACING BETWEEN LINES SHALL BE AT LEAST EQUAL TO THE HEIGHT OF THE UPPER OF ANY TWO LINES.

(2) CAUTION LABELS - (1) LABELING. CAUTION LABELS SHALL BE AFFIXED TO ALL RAW MATERIALS, MIXTURES, SCRAP, WASTE, DEBRIS, AND OTHER PRODUCTS CONTAINING ASBESTOS FIBERS, OR TO THEIR CONTAINERS, EXCEPT THAT NO LABEL IS REQUIRED WHERE ASBESTOS FIBERS HAVE BEEN MODIFIED BY A BONDING AGENT, COATING, BINDER, OR OTHER MATERIAL SO THAT DURING ANY REASONABLY FORESEEABLE HANDLING, STORAGE, DISPOSAL, PROCESSING, TRANSPORTATION, NO AIRBORNE CONCENTRATIONS OF ASBESTOS FIBERS IN EXCESS OF THE EXPOSURE LIMITS PRESCRIBED IN PARAGRAPH (B) OF THIS SECTION WILL BE RELEASED.

(ii) LABEL SPECIFICATIONS. THE CAUTION LABELS REQUIRED BY SUBDIVISION (1) OF THE SUBPARAGRAPH SHALL BE PRINTED IN LETTERS OF SUFFICIENT SIZE AND CONTRAST AS TO BE READILY VISIBLE AND LEGIBLE. THE LABEL SHOULD STATE:

CAUTION
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
BREATHING ASBESTOS DUST MAY CAUSE
SERIOUS BODILY HARM

DUP 1010875

XVI. CAUTION SIGNS AND LABELS, CONT'D.

12.1.1001
• 37

(5) WARNING SIGNS DURING THE ETS. IN ADDITION TO THE REQUIREMENTS OF PARAGRAPH (G)(1) OF THIS SECTION, LEGIBLE SIGNS WARNING OF THE HEALTH HAZARDS OF ASBESTOS SHALL BE PROVIDED AND DISPLAYED AT EACH LOCATION WHERE AIRBORNE CONCENTRATIONS OF ASBESTOS FIBERS MAY EXCEED 0.5 F/CC.

12.1-12.3
12.1-12.3)

12.1 CAUTION SIGNS CONFORMING TO FIGURE 1 SHALL BE POSTED AT ALL APPROACHES TO AREAS WHERE ASBESTOS CONCENTRATIONS MAY BE ABOVE PERMISSIBLE EXPOSURE LIMITS. THEY SHALL BE PLACED AT A SUFFICIENT DISTANCE TO PERMIT AN EMPLOYEE TO READ THE SIGNS AND TAKE NECESSARY PRECAUTIONS BEFORE ENTERING THE AREA.

12.2 CAUTION LABELS CONFORMING TO FIGURE 2 SHALL BE USED TO IDENTIFY CONTAINERS OF RAW MATERIALS, SCRAP, WASTE, OTHER PRODUCTS CONTAINING ASBESTOS, AND ASBESTOS-CONTAMINATED CLOTHING.

12.3 IDENTIFICATION LABELS ARE SUGGESTED FOR IDENTIFICATION OF ASBESTOS-CONTAINING AND ASBESTOS-FREE INSULATION, SEE SN218P.

XVII. HOUSEKEEPING

SHA 1910.1001
(1) (1)(2)

(B) HOUSEKEEPING-(1) CLEANING. ALL EXTERNAL SURFACES IN ANY PLACE OF EMPLOYMENT SHALL BE MAINTAINED FREE OF ACCUMULATIONS OF ASBESTOS FIBERS IF, WITH THEIR DISPERSION, THERE WOULD BE AN EXCESSIVE CONCENTRATION.

(2) WASTE DISPOSAL. ASBESTOS WASTE, SCRAP, DEBRIS, BAGS, CONTAINERS, EQUIPMENT, AND ASBESTOS-CONTAMINATED CLOTHING, CONSIGNED FOR DISPOSAL, WHICH MAY PRODUCE IN ANY REASONABLY FORESEEABLE USE, HANDLING, STORAGE, PROCESSING, DISPOSAL, OR TRANSPORTATION AIRBORNE CONCENTRATIONS OF ASBESTOS FIBERS IN EXCESS OF THE EXPOSURE LIMITS PRESCRIBED IN PARAGRAPH (B) OF THIS SECTION SHALL BE COLLECTED AND DISPOSED OF IN SEALED IMPERMEABLE BAGS, OR OTHER CLOSED, IMPERMEABLE CONTAINERS.

10.2 WASTE DISPOSAL
4.2, 10.2)

4.2.2 HOUSEKEEPING. ALL EXTERNAL SURFACES SHALL BE MAINTAINED FREE OF ASBESTOS FIBERS IF, WITH THEIR DISPERSION, THERE WOULD BE AN EXCESSIVE CONCENTRATION.

A. ALL AREAS WHERE ASBESTOS IS ROUTINELY HANDLED SHALL HAVE A VACUUM CLEANUP SYSTEM. THIS CAN BE A SYSTEM OF HOSES CONNECTED TO A CENTRAL VACUUM SYSTEM DESIGNED IN ACCORDANCE WITH 4.1.1.

B. NO DRY SWEEPING SHALL BE PERFORMED. COMPRESSED AIR HOSE IS NOT TO BE USED FOR CLEANUP.

4.2.3 CAUTION SIGNS AND LABELS SHALL BE USED PER SECTION 11.

4.2.4 NO ASBESTOS CEMENT, MORTAR, ETC., OR SIMILAR MATERIAL CONTAINING DRY FRAGILE ASBESTOS FIBERS SHALL BE REMOVED FROM BAGS, CARTONS, OR OTHER CONTAINERS IN WHICH THEY ARE SHIPPED WITHOUT BEING EITHER WETTED, ENCLOSED OR VENTILATED SO AS TO PREVENT EFFECTIVELY THE RELEASE OF ASBESTOS FIBERS IN EXCESS OF THE LIMITS IN SECTION 3.

10.2 WASTE DISPOSAL. ALL ASBESTOS WASTE, INCLUDING ITEMS SUCH AS SCRAP, EMPTY BAGS OR CLOTHING TO BE DISCARDED, VACUUM-SYSTEM COLLECTION, AND OTHER WASTES WHICH MAY CREATE AIRBORNE DUST CONCENTRATIONS, SHALL BE COLLECTED AND DISPOSED OF IN SEALED, IMPERMEABLE BAGS, OR CONTAINERS. CAUTION LABELS SHALL BE ATTACHED CONFORMING TO SECTION 12.

XVIII. RECORDKEEPING

29 CFR 1910.1001

(1) RECORDKEEPING - (1) EXPOSURE RECORDS. EVERY EMPLOYER SHALL MAINTAIN RECORDS OF ANY PERSONAL OR ENVIRONMENTAL MONITORING REQUIRED BY THIS SECTION. RECORDS SHALL BE MAINTAINED FOR A PERIOD OF AT LEAST 20 YEARS AND SHALL BE MADE AVAILABLE UPON REQUEST TO THE ASSISTANT SECRETARY OF LABOR FOR OCCUPATIONAL SAFETY AND HEALTH, THE DIRECTOR OF THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH, AND TO AUTHORIZED REPRESENTATIVES OF EITHER.

29 CFR 1910.1001
7.6

EXPOSURE RECORDS SHALL BE MAINTAINED AT LEAST 30 YEARS. OTHER RECORDKEEPING REQUIREMENTS WILL GENERALLY REQUIRE RECORDS BE KEPT FOR LONGER PERIODS.

11. EMPLOYEE ACCESS AND NOTIFICATION

CS-A 1910.1001

(1) (2)

(2) ACCESS. EMPLOYEE EXPOSURE, RECORDS REQUIRED BY THIS PARAGRAPH SHALL BE PROVIDED UPON REQUEST TO EMPLOYEES, DESIGNATED REPRESENTATIVES, AND THE ASSISTANT SECRETARY IN ACCORDANCE WITH 29 CFR 1910.20(A)-(E) AND (G)-(I). ~~1910.1001(1)(2)~~ AMENDED AT 45 F.R. 35281, MAY 23, 1980; EFFECTIVE AUGUST 21, 1980.

7.5.1

(1) (1)

7.5.1 EMPLOYEES AND FORMER EMPLOYEES SHALL HAVE REASONABLE ACCESS TO RECORDS WHICH INDICATE THE EMPLOYEE'S OWN EXPOSURE TO ASBESTOS.

CS-A 1910.1001

(1) (3)

(3) EMPLOYEE NOTIFICATION. ANY EMPLOYEE FOUND TO HAVE BEEN EXPOSED AT ANY TIME TO AIRBORNE CONCENTRATIONS OF ASBESTOS FIBERS IN EXCESS OF THE LIMITS PRESCRIBED IN PARAGRAPH (B) OF THIS SECTION SHALL BE NOTIFIED IN WRITING OF THE EXPOSURE AS SOON AS PRACTICABLE, BUT NOT LATER THAN 5 DAYS OF THE FINDING. THE EMPLOYEE SHALL ALSO BE TIMELY NOTIFIED OF THE CORRECTIVE ACTION BEING TAKEN.

7.5.1

(1) (3)

7.5 EMPLOYEE NOTIFICATION. EMPLOYEES SHOULD BE NOTIFIED OF EXPOSURE MONITORING RESULTS. ANY EMPLOYEE FOUND TO HAVE BEEN EXPOSED ABOVE THE PERMISSIBLE EXPOSURE LIMITS IN SECTION 3 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.

DUF 1010879

XX. MEDICAL EXAMINATIONS

1-1 1910.1001
1-1-1

(1) MEDICAL EXAMINATIONS-(1) GENERAL. THE EMPLOYER SHALL PROVIDE OR MAKE AVAILABLE AT HIS COST, MEDICAL EXAMINATIONS RELATIVE TO EXPOSURE TO ASBESTOS REQUIRED BY THIS PARAGRAPH.

(2) PREPLACEMENT. THE EMPLOYER SHALL PROVIDE OR MAKE AVAILABLE TO EACH OF HIS EMPLOYEES, WITHIN 30 CALENDAR DAYS FOLLOWING HIS FIRST EMPLOYMENT IN AN OCCUPATION EXPOSED TO AIRBORNE CONCENTRATIONS OF ASBESTOS FIBERS, A COMPREHENSIVE MEDICAL EXAMINATION, WHICH SHALL INCLUDE, AS A MINIMUM, A CHEST ROENTGENOGRAM (POSTERIOR-ANTERIOR 14 X 17 INCHES), A HISTORY TO ELICIT SYMPTOMATOLOGY OF RESPIRATORY DISEASE, AND PULMONARY FUNCTION TESTS TO INCLUDE FORCED VITAL CAPACITY (FVC) AND FORCED EXPIRATORY VOLUME AT 1 SECOND (FEV).

(3) ANNUAL EXAMINATIONS. ON OR BEFORE JANUARY 31, 1973, AND AT LEAST ANNUALLY THEREAFTER, EVERY EMPLOYER SHALL PROVIDE, OR MAKE AVAILABLE, COMPREHENSIVE MEDICAL EXAMINATIONS TO EACH OF HIS EMPLOYEES ENGAGED IN OCCUPATIONS EXPOSED TO AIRBORNE CONCENTRATIONS OF ASBESTOS FIBERS. SUCH ANNUAL EXAMINATION SHALL INCLUDE, AS A MINIMUM, A CHEST ROENTGENOGRAM (POSTERIOR-ANTERIOR 14 X 17 INCHES), A HISTORY TO ELICIT SYMPTOMATOLOGY OF RESPIRATORY DISEASE, AND PULMONARY FUNCTION TESTS TO INCLUDE FORCED VITAL CAPACITY (FVC) AND FORCED EXPIRATORY VOLUME AT 1 SECOND (FEV).

XX. MEDICAL EXAMINATIONS, CONT'D.

(4) TERMINATION OF EMPLOYMENT. THE EMPLOYER SHALL PROVIDE, OR MAKE AVAILABLE, WITHIN 30 CALENDAR DAYS BEFORE OR AFTER THE TERMINATION OF EMPLOYMENT OF ANY EMPLOYEE ENGAGED IN AN OCCUPATION EXPOSED TO AIRBORNE CONCENTRATIONS OF ASBESTOS FIBERS, A COMPREHENSIVE MEDICAL EXAMINATION WHICH SHALL INCLUDE, AS A MINIMUM, A CHEST ROENTGENOGRAM (POSTER-ANTERIOR 14 X 17 INCHES), A HISTORY TO ELICIT SYMPTOMATOLOGY OF RESPIRATORY DISEASE, AND PULMONARY FUNCTION TESTS TO INCLUDE FORCED VITAL CAPACITY (FVC) AND FORCED EXPIRATORY VOLUME AT 1 SECOND (FEV).

(5) RECENT EXAMINATIONS. NO MEDICAL EXAMINATION IS REQUIRED OF ANY EMPLOYEE, IF ADEQUATE RECORDS SHOW THAT THE EMPLOYEE HAS BEEN EXAMINED IN ACCORDANCE WITH THIS PARAGRAPH WITHIN THE PAST 1-YEAR PERIOD.

8.1 - UNIT 841
(8.1-8.3)

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 AND B). THESE EXAMINATIONS SHALL INCLUDE, AS A MINIMUM, A PA CHEST X-RAY, MEDICAL HISTORY, AND PULMONARY FUNCTION TESTS.

8.1.1 EACH PLANT SHOULD MAINTAIN LIST(S) OF EMPLOYEES IN THE FOLLOWING CATEGORIES. THE PLANT MEDICAL DEPARTMENT SHALL BE KEPT INFORMED OF THOSE LISTED.

A. ALL EMPLOYEES WORKING IN JOBS THAT REQUIRE HANDLING OF ASBESTOS WHICH MIGHT BECOME AIRBORNE (SUCH AS CARPENTERS WORKING WITH TRANSITE, INSULATORS, PIPEFITTERS, AND MILLWRIGHTS).

B. ALL EMPLOYEES WORKING IN JOBS WHICH ARE EXPOSED TO MEASURABLE QUANTITIES OF ASBESTOS. THE LOWER LIMIT OF RELIABLE QUANTIFICATION OF THE REQUIRED MEASUREMENT TECHNIQUE IS 0.1 FIBERS/CM³ OF AIR, SEE REF (4).

8.2 DU PONT MEDICAL POLICY ALSO REQUIRES, IN ADDITION, SPECIAL MEDICAL SURVEILLANCE OF EMPLOYEES IN CATEGORIES DEFINED IN 8.2.1.

8.2.1 EACH SITE SHOULD MAINTAIN LIST(S) OF EMPLOYEES IN THE FOLLOWING CATEGORIES. THE PLANT MEDICAL DEPARTMENT SHALL BE KEPT INFORMED OF THOSE LISTED.

A. THOSE WHO DURING THEIR DU PONT EMPLOYMENT HAVE PREVIOUSLY WORKED IN JOBS WITH AN EXPOSURE DESCRIBED IN 8.1.1.

B. 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.

C. THOSE WHOSE X-RAYS SHOW CHANGES OF THE TYPE WHICH ARE KNOWN TO RESULT FROM ASBESTOS EXPOSURE.

DUP 1010881

XX. MEDICAL EXAMINATIONS, CONT'D.

8.3 "GUIDELINES FOR PHYSICIANS" [SEE REF (5)] CONTAINS
ADDITIONAL INFORMATION IN INTERPRETATION AND FREQUENCY OF
X-RAYS FOR ASBESTOS-EXPOSED EMPLOYEES.

XXI. MEDICAL RECORDS AND ACCESS

SHA 1910.1001
(c) (6)

(6) MEDICAL RECORDS-(i) MAINTENANCE. EMPLOYERS OF EMPLOYEES EXAMINED PURSUANT TO THIS PARAGRAPH SHALL CAUSE TO BE MAINTAINED COMPLETE AND ACCURATE RECORDS OF ALL SUCH MEDICAL EXAMINATIONS. RECORDS SHALL BE RETAINED BY EMPLOYERS FOR AT LEAST 20 YEARS.

(ii) ACCESS. THE CONTENTS OF THE RECORDS OF THE MEDICAL EXAMINATIONS REQUIRED BY THIS PARAGRAPH SHALL BE MADE AVAILABLE, FOR INSPECTION AND COPYING, TO THE ASSISTANT SECRETARY OF LABOR FOR OCCUPATIONAL SAFETY AND HEALTH, THE DIRECTOR OF NIOSH, TO AUTHORIZED PHYSICIANS AND MEDICAL CONSULTANTS OF EITHER OF THEM, AND, UPON THE REQUEST OF AN EMPLOYEE OR FORMER EMPLOYEE, TO HIS PHYSICIAN. ANY PHYSICIAN WHO CONDUCTS A MEDICAL EXAMINATION REQUIRED BY THIS PARAGRAPH SHALL FURNISH TO THE EMPLOYER OF THE EXAMINED EMPLOYEE ALL THE INFORMATION SPECIFICALLY REQUIRED BY THIS PARAGRAPH, AND ANY OTHER MEDICAL INFORMATION RELATED TO OCCUPATIONAL EXPOSURE TO ASBESTOS FIBERS.

AXII.EMPLOYEE INFORMATION AND TRAINING

S-1
E-5 (x)(4)

(4) EMPLOYEE INFORMATION AND TRAINING-(1). AS SOON AS POSSIBLE, BUT NOT LATER THAN THIRTY (30) DAYS FROM THE EFFECTIVE DATE OF THIS EMERGENCY TEMPORARY STANDARD, THE EMPLOYER SHALL INSTITUTE A TRAINING PROGRAM FOR ALL EMPLOYEES EXPOSED TO AIRBORNE CONCENTRATIONS OF ASBESTOS IN EXCESS OF 0.3 F/CC, WITHOUT REGARD TO THE USE OF RESPIRATORS AND SHALL ASSURE THEIR PARTICIPATION IN THE PROGRAM DURING THE EFFECTIVE PERIOD OF THIS EMERGENCY TEMPORARY STANDARD.

(II) THE EMPLOYER SHALL ASSURE THAT EACH SUCH EMPLOYEE IS INFORMED OF THE FOLLOWING:

(A) THE HEALTH EFFECTS ASSOCIATED WITH ASBESTOS EXPOSURE.

(B) THE RELATIONSHIP BETWEEN ASBESTOS AND SMOKING IN PRODUCING LUNG CANCER.

(C) THE NATURE OF OPERATIONS WHICH COULD RESULT IN EXPOSURE TO ASBESTOS AND NECESSARY PROTECTIVE STEPS TO MINIMIZE EXPOSURE INCLUDING, AS APPLICABLE, ENGINEERING CONTROLS, WORK PRACTICES, RESPIRATORS, HOUSEKEEPING AND PROTECTIVE CLOTHING.

(D) THE PURPOSE, PROPER USE, FITTING INSTRUCTIONS AND LIMITATIONS OF RESPIRATORS PERMITTED BY THE STANDARD, AND

(E) A REVIEW OF ALL THE PROVISIONS CONTAINED IN 1910.1001.

DU PONT S-I
(11.1)

11.1 IN AREAS WHERE PEOPLE WORK WITH ASBESTOS, EMPLOYEES SHOULD BE TRAINED WITH THE GOAL OF INCREASING KNOWLEDGE OF:

A. WORK PRACTICES INVOLVING ASBESTOS AND THE POTENTIAL FOR FIBER EMISSIONS

B. THE PHYSICAL CHARACTERISTICS OF ASBESTOS

C. DISEASES WHICH MAY RESULT FROM EXPOSURE TO ASBESTOS FIBERS INCLUDING THE ROLE OF SMOKING IN LUNG CANCER

D. REASONS FOR, AND METHODS OF, EXPOSURE MONITORING

E. THE PURPOSE AND NATURE OF ENGINEERING AND WORK PRACTICE CONTROL METHODS, PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING, AND PERSONAL HYGIENE

F. THE ELEMENTS OF MEDICAL SURVEILLANCE.

XXIII. EPA - WASTE DISPOSAL

11. PLANT S&T
(11.2-11.3)

10.2 WASTE DISPOSAL. ALL ASBESTOS WASTE, INCLUDING ITEMS SUCH AS SCRAP, EMPTY BAGS OR CLOTHING TO BE DISCARDED, VACUUM SYSTEM COLLECTION, AND OTHER WASTES WHICH MAY CREATE AIRBORNE DUST CONCENTRATIONS, SHALL BE COLLECTED AND DISPOSED OF IN SEALED, IMPERMEABLE BAGS, OR CONTAINERS. CAUTION LABELS SHALL BE ATTACHED CONFORMING TO SECTION 12.

10.2.1 ALL DISPOSAL SITES MUST HAVE SPECIFIC WARNING SIGNS, FENCING, AND DUST SUPPRESSION METHODS AS REQUIRED BY THE EPA REGULATION (40 CFR 61.25).

10.3 FOR SPECIFIC REPORT AND COMPLIANCE REQUIREMENTS, REFER TO THE EPA REGULATIONS, SECTION 61.22D OF REF (7). LOCAL OR STATE REGULATIONS ALSO SHOULD BE REVIEWED SINCE THEY MAY BE MORE RESTRICTIVE.

XXIV. EPA EMISSION REGULATIONS

DU POINT SAT
(10.1-10.3)

10.1 APPLICATION. REGULATIONS ALSO HAVE BEEN PROMULGATED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA), REF (7). THESE APPLY TO FRIABLE ASBESTOS MATERIALS WHICH CONTAIN MORE THAN 1 PERCENT ASBESTOS BY WEIGHT AND WHICH CAN BE CRUMBLED, PULVERIZED, OR REDUCED TO POWDER BY HAND PRESSURE WHEN DRY. DU POINT OPERATIONS WITHIN THIS CRITERION NORMALLY WILL BE LIMITED TO RENOVATION OR DEMOLITION INVOLVING ASBESTOS INSULATION.

10.1.1 RENOVATION INVOLVES REMOVING OR STRIPPING AWAY ASBESTOS FROM PIPES, DUCTS, BOILERS, TANKS, REACTORS, FURNACES, OTHER EQUIPMENT OR STRUCTURAL MEMBERS. DEMOLITION INVOLVES WRECKING OR REMOVAL OF A LOAD-SUPPORTING STRUCTURAL MEMBER (BEAMS OR LOAD-SUPPORTING WALLS) AND ANY RELATED REMOVING OR STRIPPING OF FRIABLE ASBESTOS MATERIALS. DURING DEMOLITION ASBESTOS SHALL BE REMOVED OR STRIPPED PRIOR TO THE WRECKING OR TAKING OUT OF LOAD-SUPPORTING STRUCTURAL MEMBERS.

10.1.2 WHEN AN INDIVIDUALLY SCHEDULED RENOVATION OR DEMOLITION JOB AMOUNTS TO MORE THAN THE QUANTITIES LISTED BELOW, A DETAILED REPORT SHALL BE FILED WITH EPA (AND IN SOME CASES A STATE OR LOCAL AGENCY) PRIOR TO REMOVAL. THE REMOVAL OPERATION SHALL FOLLOW THE OTHER REQUIREMENTS OF THIS STANDARD, PARTICULARLY 4.4.

A. 260 LINEAR FT. (80 M) OF ASBESTOS CONTAINING PIPE INSULATION

B. 160 FT^2 (15 M^2) OF ASBESTOS-CONTAINING INSULATION ON DUCTS, BOILERS, TANKS, OR STRUCTURAL MEMBERS.

FOR PLANNED, BUT NOT INDIVIDUALLY SCHEDULED, REMOVATIONS A LONG-RANGE ESTIMATE OF THE TOTAL AMOUNT OF ASBESTOS TO BE REMOVED OR STRIPPED MUST BE MADE. THE PERIOD COVERED MUST BE AT LEAST 30 DAYS, BUT NOT MORE THAN A YEAR. EPA MUST BE GIVEN NOTICE IF THE AMOUNT ESTIMATED EXCEEDS 10.1.2 A OR B.

10.1.3 WHEN RENOVATION AMOUNTS TO LESS THAN 10.1.2 A OR B, NOTICE TO EPA IS NOT REQUIRED.

10.1.4 WHEN DEMOLITION AMOUNTS TO LESS THAN 10.1.2 A OR B, A SIMPLIFIED REPORT SHALL BE FILED WITH THE EPA PRIOR TO REMOVAL. THE REMOVAL OPERATION ALSO SHALL FOLLOW THE OTHER REQUIREMENTS OF THIS STANDARD, PARTICULARLY 4.4.

10.1.5 THE REQUIREMENTS OF THIS STANDARD SHOULD MORE THAN MEET THE ADDITIONAL PRECAUTIONS SPECIFIED BY EPA REGARDING WETTING, CONTAINERIZING, DISPOSAL, AND EXHAUSTING.