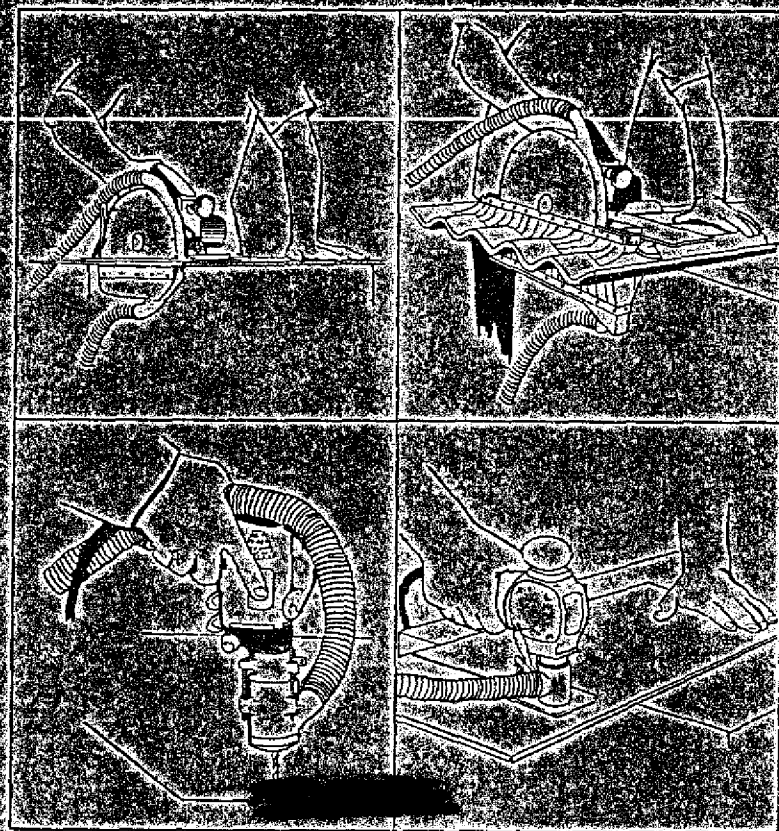




Recommended Work Practices for Field Fabrication of Asbestos- Cement Sheet

Contents

Introduction	2
Asbestos and Health	3
Summary of OSHA Asbestos Standard	4
Products and Operations	5
Recommended Work Practices	
Shipping Receiving & Handling	6
Cutting	
Circular Saw — Flat Sheets	7
Circular Saw — Corrugated Sheets	8
Handsaw	9
Hand Clippers	10
Scoring Knife	11
Drilling	
Power Drill	12
Hole Cutting and Cutouts	
Sabre Saw	13
Rasp	14
Housekeeping and Waste Disposal	15
Vacuum Cleaner Specifications	16
Equipment Suppliers	17
Appendix A — Manufacturer's Operating Instructions	
Appendix B — OSHA Standard for Exposure to Asbestos Dust	
Appendix C — EPA Waste Disposal Requirements	

Introduction

The Occupational Safety and Health Act in the United States and similar laws in Canada and other countries were enacted to ensure every worker, as far as possible, a safe and healthy work place. This legislation is far-reaching. It covers millions of employees and nearly every employer.

To assist in assuring compliance with these laws, the asbestos-cement industry is disseminating information regarding the hazards of exposure to airborne asbestos. One means of reducing hazards of exposure is to reduce the exposure through good work practices.

Good work practices is what this booklet is about. The recommendations that appear on the following pages were developed through study and field testing. They are designed to achieve safer and more healthful job site conditions when working with asbestos-cement (A/C) sheet products. Since field conditions will vary, adherence to these work practices will not necessarily guarantee compliance with national, state or local regulations. Questions relating to compliance should be directed to appropriate regulatory agencies.

The Asbestos Information Association/North America believes this booklet will help engineers, superintendents, contractors, foremen and crews to understand procedures for the safer handling and fabrication of A/C sheet products.

This booklet supersedes AIA/NA recommended work practices for field fabrication of asbestos sheet products previously distributed in 1975.

January 25, 1980

Asbestos and Health

Airborne asbestos fiber has been identified as a possible health hazard. Inhalation of these fibers in excessive quantities may cause pulmonary disease. But like the automobile, electricity, and x-rays, there are non-harmful ways to use potentially harmful things.

Asbestos-cement (A/C) sheet products contain 15% to 40% asbestos. The asbestos fibers are not free, but "locked-in" the cement binder, like reinforcing rods in concrete. The distinction between "free" and "bound" asbestos is extremely important. First of all, it determines the probability of fiber release, which in turn, directly relates to the probability of risk. More importantly, it explains clearly and simply why A/C sheet is a proper use of asbestos.

The present state of scientific learning on asbestos shows that minimizing exposure to airborne asbestos dust reduces the hazards of asbestos-related disease. During the use and handling of A/C sheet, the only time that fibers may be released in significant quantities from a health standpoint is during fabrication operations when sufficient mechanical energy is applied to the product to literally "tear" the fibers from the cement binder. One means of reducing airborne fiber generation is through good work practices.

Summary of OSHA Asbestos Standard

Under the current OSHA standard for occupational exposures to asbestos, it is the employer's responsibility to assure that exposure of employees to airborne concentrations of asbestos fibers does not exceed the following permissible exposure levels:

- a. Eight-hour time-weighted average: Two fibers, longer than 5 micrometers, per cubic centimeter.
- b. Ceiling concentrations: Ten fibers, longer than 5 micrometers, per cubic centimeter.

In October, 1975, OSHA proposed a revision to the current standard which would reduce the eight-hour time-weighted average exposure to 0.5 fibers per cubic centimeter of air and ceiling concentrations to 5.0 fibers per cubic centimeter. OSHA specifically excluded the construction industry from coverage within that proposal. In their notice, OSHA stated that a separate standard would be proposed to cover workers who handle asbestos-containing products in the construction industry.

The work practices recommended in this booklet are based on data for "peak dust concentrations" representing short time periods of maximum exposure. Field fabricating operations involving the cutting of A/C sheet are normally infrequent and of short duration. Using these recommended work practices, which will maintain fiber levels below OSHA allowable ceiling concentrations, it is improbable that field personnel would be exposed in a typical working day to levels exceeding the current OSHA eight-hour time-weighted average permissible exposure limit.

For full text of OSHA standard for occupational exposure to asbestos dust (29 CFR 1910.1001) refer to Appendix B.

Products and Operations

The following work practices are applicable to flat and corrugated A/C sheet products:

Operations to which these work practices apply include:

Shipping, Receiving and Handling

Cutting

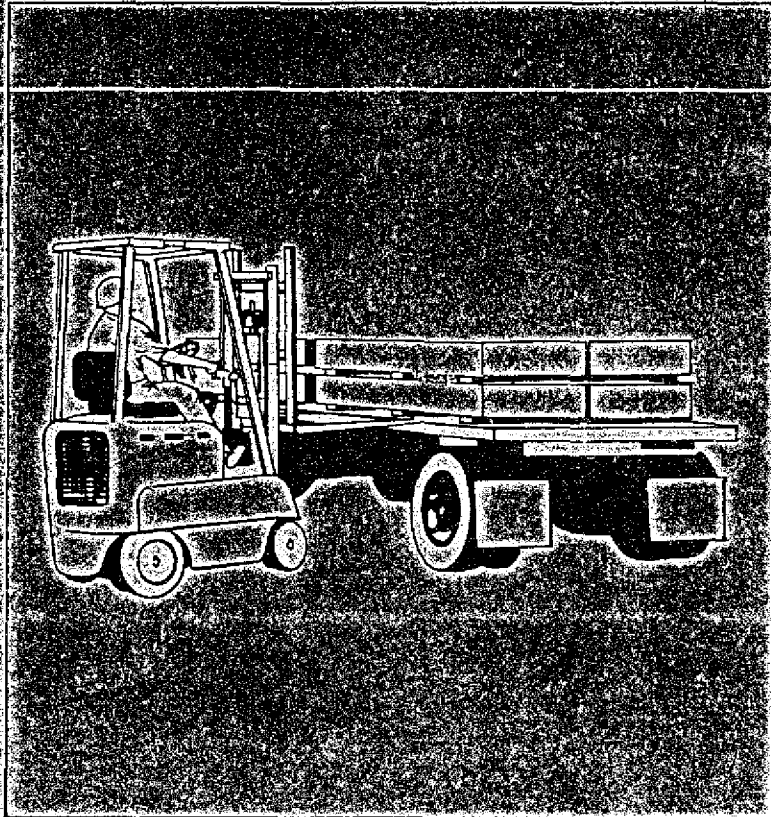
Drilling

Hole Cutting and Cutouts

Housekeeping and Waste Disposal

Equipment used with these work practices is available from the sources shown in the equipment list (page 17).

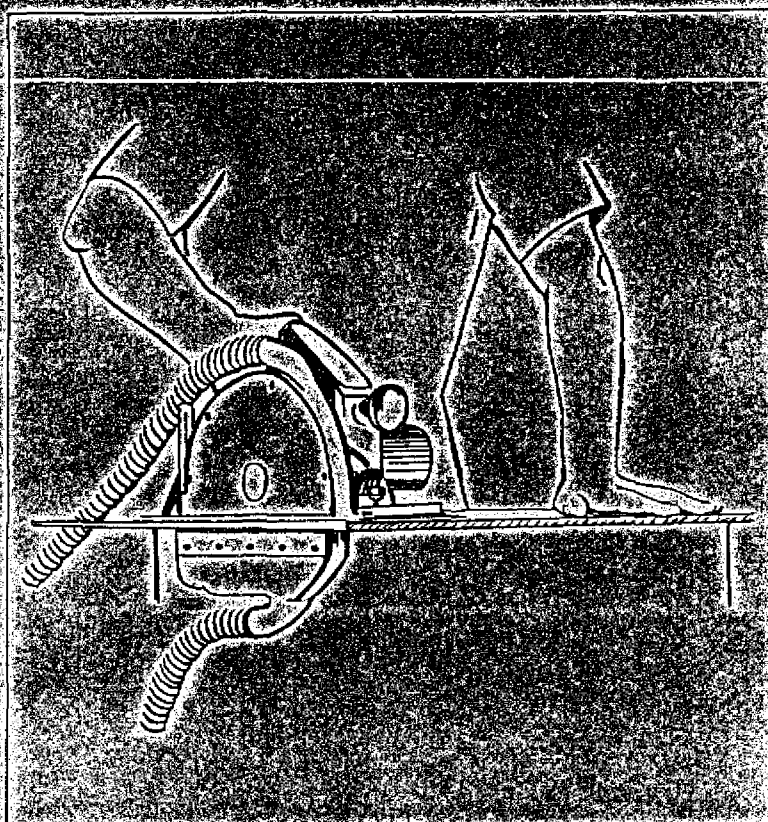
Shipping, Receiving and Handling



A/C sheet is shipped from the factory with clean surfaces, generally in pallet loads, using shipping methods acceptable to the producer and the customer.

All unloading operations should be carefully performed to avoid sheet damage. Pallet loads are normally unloaded by fork truck. Small shipments may require manual unloading.

Cutting — Flat Sheets Circular Saw



Circular Saw With Dust Collection Hood

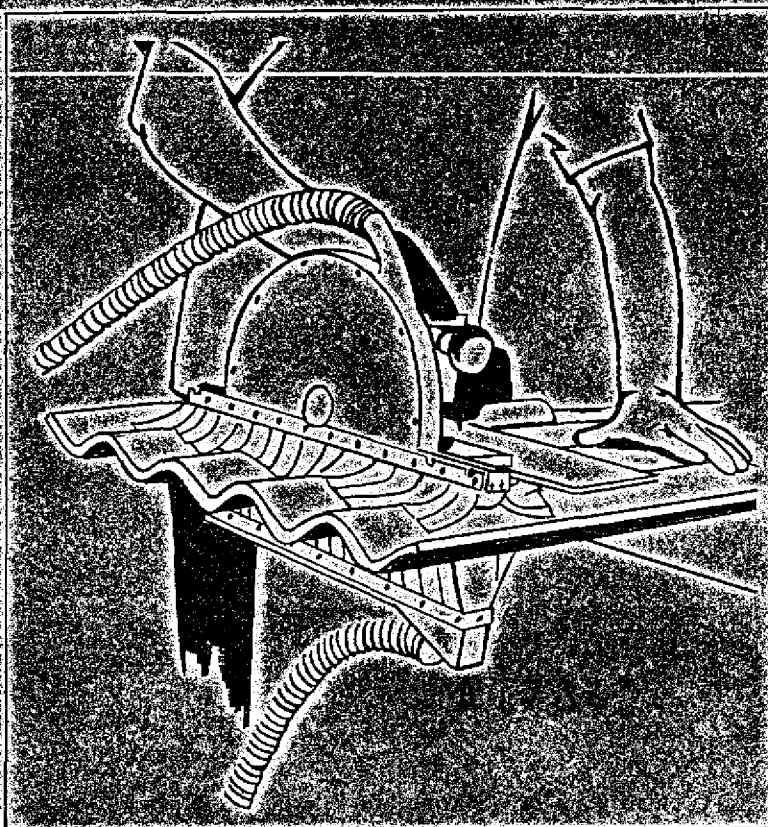
Circular saws for cutting flat sheets should be used *only* when equipped with the specific dust collection hoods pictured above. Exhaust ventilation and dust collection is provided by a vacuum cleaner as described in the specifications (page 15).

A circular saw cuts by a pulverizing action which releases asbestos fibers and fine particulate. The combination of hood and vacuum source is highly effective in capturing and collecting these particles and fibers. Saw operating techniques are those normally employed. No special procedures are required except adjustment of the lower hood section to suit thickness of sheet being cut. Saw design requires the use of blades recommended by the tool supplier (abrasive disc or diamond).

For additional information on saw operation, refer to the supplier's instructions in Appendix A.

Cutting — Corrugated Sheets

Circular Saw



Circular Saw With Dust Collection Hood

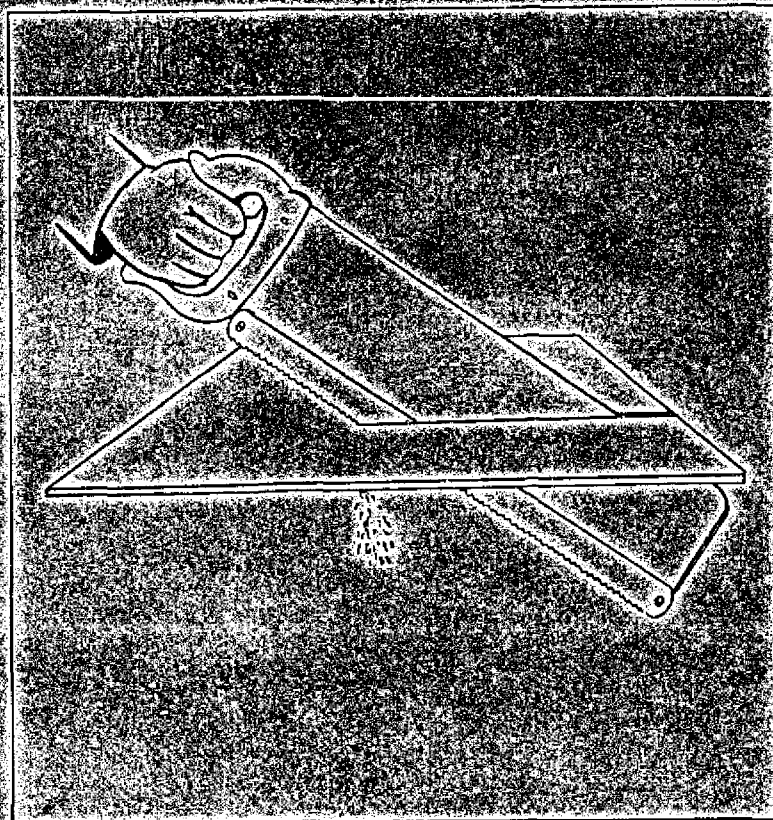
Circular saws for cutting corrugated sheets should be used *only* when equipped with the specific dust collection hood pictured above. Exhaust ventilation and dust collection is provided by a vacuum cleaner as described in the specifications (page 15).

A circular saw cuts by a "pulverizing" action which releases asbestos fibers and fine particulate. The combination of hood and vacuum source is highly effective in capturing and collecting these particles and fibers. Saw operating techniques are those normally employed. Saw design requires the use of blades recommended by the tool supplier (abrasive disc or diamond).

This tool depends on pliable fingers to seal the cutting zone and is designed for use on sheets with 1 1/4" deep corrugations. For cutting sheets with deeper or irregular corrugations, consult the tool supplier.

For additional information on saw operation, refer to the supplier's instructions in Appendix A.

Cutting Handsaw

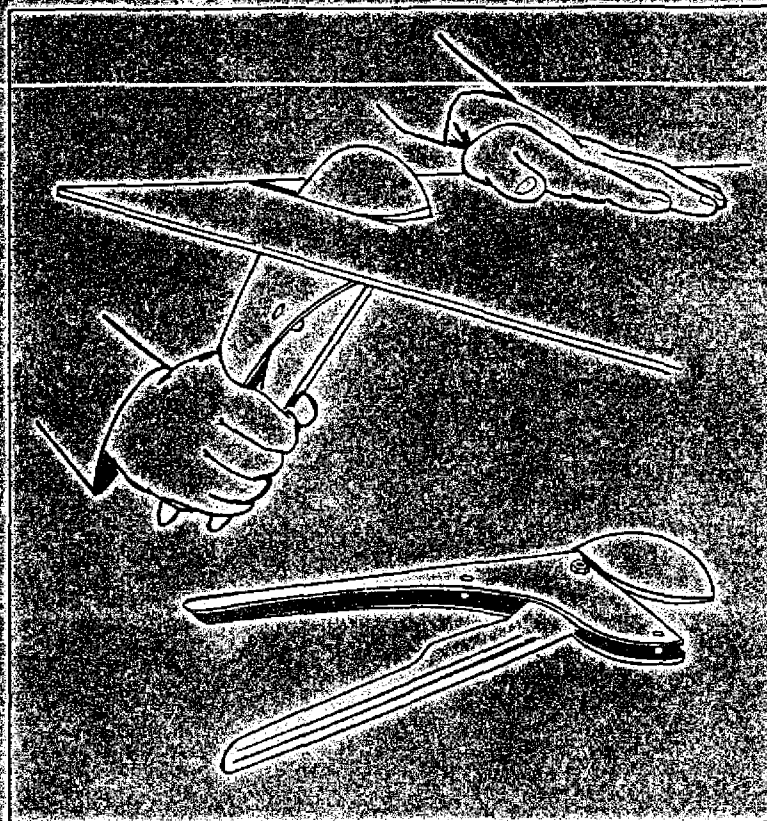


Handtools — Handsaw

This is a handsaw equipped with a carbide blade designed for cutting asbestos-cement sheet. Practical use of this saw is limited by its slow cutting speed. It is most useful in operations where cutting is infrequent and of short duration.

Because of the slow cutting speed, saw operation generates coarse particles of asbestos-cement with few airborne fibers. Its use does not require dust collection equipment for compliance with present exposure limits.

Cutting — Flat Sheets Hand Clippers

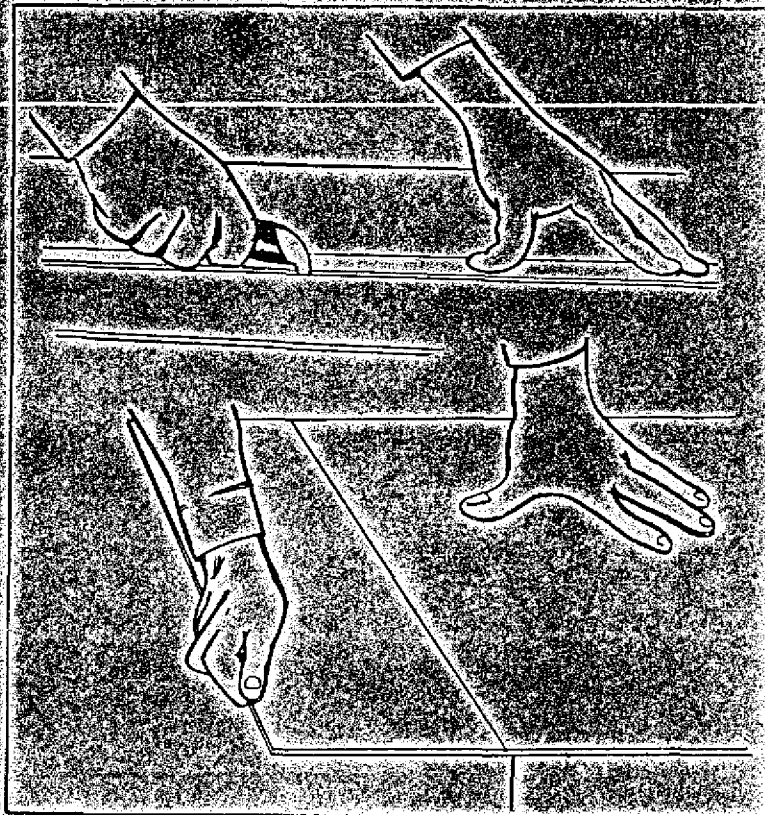


Handtools — Hand Clippers

These hand clippers are designed for cutting sheet material up to $\frac{1}{4}$ " in thickness. Practical use is limited by slow cutting speed. It is most useful in operations where cutting is infrequent and of short duration.

The clipper cutting action generates coarse particles of asbestos-cement with few airborne fibers. Its use does not require dust collection equipment for compliance with present exposure limits.

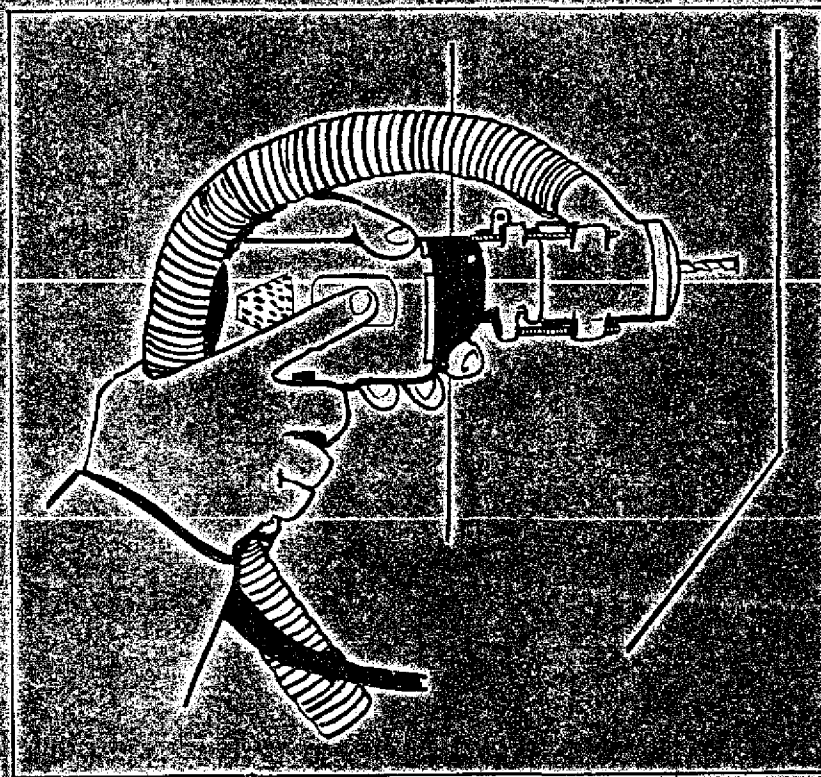
Cutting — Flat Sheets Score & Snap Knife



Handtools — Scoring Knife

The scoring knife can be used with sheets up to $\frac{1}{4}$ " in thickness. However, it performs best with sheets $\frac{1}{8}$ " and $\frac{3}{16}$ " thick. The sheet is placed on a worktable or saw horses. A suitable guide bar is placed or clamped along the cut line and the sheet scored repeatedly. After scoring, the sheet is hand snapped along the score line. This cutting procedure generates little dust and few airborne fibers. Its use does not require dust collection equipment for compliance with present exposure limits.

Drilling Power Drill



Drill With Dust Collection Hood

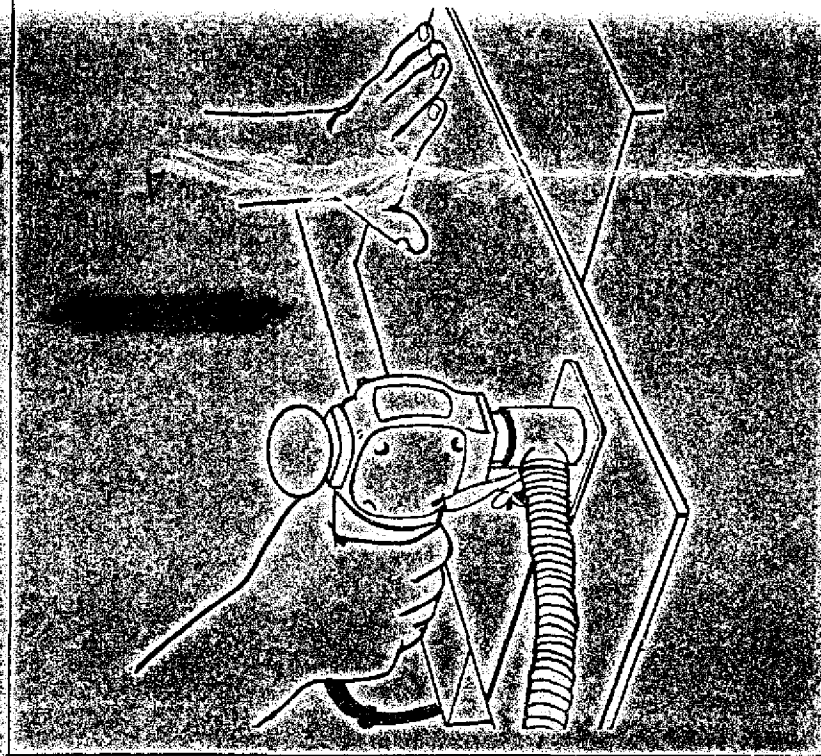
Drilling of small holes ($\frac{1}{4}$ inch or less) on vertical surfaces or downward usually can be done without dust collection equipment and in compliance with present exposure limits.

Drilling of larger holes, and drilling overhead, requires dust collection equipment on the drill in order to achieve compliance. Equipment includes a hood (Cape Universal Building Products, Ltd.) and vacuum cleaner to provide exhaust ventilation and dust collection. Vacuum cleaner should be as described in specifications (page 15).

Drilling techniques are those normally employed. No special procedures are required.

12

Hole Cutting and Cutout Flat Sheets — Sabre Saw



Sabre Saw With Dust Collection Hood

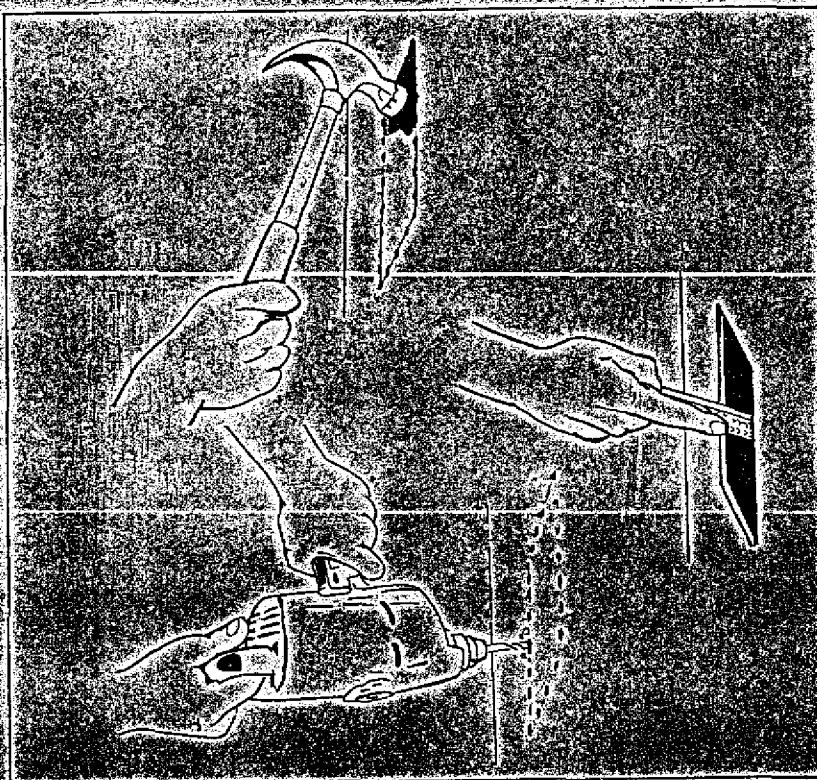
Sabre saws should be used only when equipped with the specific dust collection hood pictured above. Exhaust ventilation and dust collection is provided by a vacuum cleaner as described in the specifications (page 15).

Saw operating techniques are those normally employed. No special procedures are required.

For additional information on saw operation, refer to supplier's instructions in Appendix A.

13

Hole Cutting and Cutouts Drill and Rasp



A simple method of making cutouts is to drill small holes around the edge of the opening to be cut and knocking out the material to be removed with a hammer. A rasp is used to dress or bevel edges of the cut.

This procedure does not require dust collection equipment for compliance with present exposure limits.

Housekeeping and Waste Disposal

Housekeeping is an essential part of any safe construction operation. It is even more essential when airborne dust created by the lack of good housekeeping has the potential for harm to employees and others.

EQUIPMENT: All external surfaces of equipment should be maintained free of dust accumulations that might, if dispersed, create asbestos fiber concentrations above permissible exposure limits.

WASTE DISPOSAL: Asbestos-cement dust chips and cuttings from the field operations described in this booklet must be collected in a manner that will not contribute airborne asbestos dust to the atmosphere. *Loose material should never be dry swept.* When vacuum equipment is available, it should be used. Water or other dust suppressants should be applied in those circumstances where sweeping is unavoidable. **DO NOT BLOW WASTE MATERIAL WITH COMPRESSED AIR.**

No visible emissions to the atmosphere are permitted from the collection, processing, packaging, transporting or deposition of any asbestos-containing material. Wastes must be collected and disposed in accordance with the requirements of the U.S. Environmental Protection Agency. For full text of EPA waste disposal requirements (40 CFR, Chapter 1, Part 61) refer to Appendix C.

Vacuum Cleaner Specifications

(Values shown below are minimum recommended)

Circular Saw — Flat and Corrugated Sheet Cutting

Vacuum (lift):

59" W.G. (water gage)

Airflow:

175 SCFM (standard cubic feet per minute)

Filtration System:

Multi-stage, designed for use with asbestos-containing dusts

Dust Collection:

Unit must be provided with, or capable of using, a disposable plastic or paper bag for collecting and removing dust

Sabre Saw and Drill:

Vacuum (lift):

59" W.G.

Airflow:

65 SCFM

Filtration System:

See Above

Dust Collection:

See Above

16

Equipment Suppliers

Tools shown in this pamphlet are available from:

Wheeler-Pilot International

P.O. Box 3128

20433 Earl Street

Torrance, CA 90510

(213) 371-1238

Nilfisk of America, Inc.

201 King Manor Drive

King of Prussia, PA 19406

(215) 277-3900

Suppliers claiming to have vacuum cleaning units suitable for use with asbestos-containing dusts are:

American Cleaning Equipment Corp., 111 South Route 53, Addison, IL 60101

Beamco, Inc., 707 Sterlin Road, Mountain View, CA 94040

Breuer Electric Manufacturing Co., 5100 No. Ravenswood Ave., Chicago, IL 60640

Hild Floor Machine Co., Inc., 5339 West Lake St., Chicago, IL 60644

Kari-Vac Inc., 4360 W. 127th St., Alsip, IL 60658

Nilfisk of America, 201 King Manor Drive, King of Prussia, PA 19466

Pullman/Holt Products, 10702 46th Street, Tampa, FL 33617

Vac-U-Max, 227 Main St., Belleville, NJ 07109

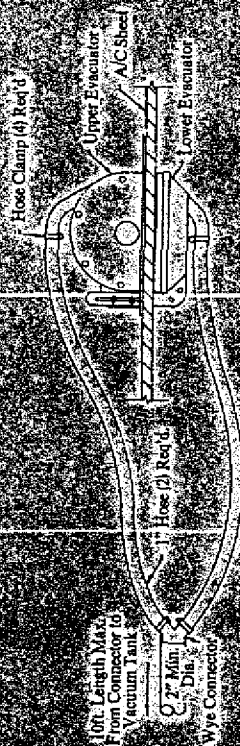
Wheeler-Pilot International, 20433 Earl Street, Torrance, CA 90510

NOTE:

It is recognized that equipment suppliers other than those listed above may be available. Mention of any company is not to be considered an endorsement by AIA/NA.

17

Operating Instructions Wheeler-Pilot Flat Sheet Circular Saw Model 888



1. The WPI Model 888 uses the Black & Decker Model 3037 Circular Saw. Black & Decker operating instructions for Model 3037 must be read and understood prior to operation.
2. Only vacuum cleaners certified by the manufacturer for use with asbestos dust and having a capability of 175 CFM minimum are to be used with this tool. A vacuum hose of not less than 2 inches in diameter and not more than 10 feet long is to be used between the Wye Connector and vacuum tank. The vacuum manufacturer's operating instructions must be read and understood before operation.
3. Inspect all system elements for cracks, punctures or openings. If hood, vacuum hose and connectors must be read and understood before operation.
4. Connect the vacuum hoses as shown, insuring all connections and clamps are tight.
5. Turn on vacuum and check for any stoppages or air leaks in the vacuum line or hood and insure adequate air flow in the open area of the saw.
6. If any leaks or stoppages are located, change or repair faulty item.
7. Adjust lower evacuator so that the rubber skirt contacts the underside of the sheet to be cut.
8. Connect circular saw to electrical outlet and feed into work. There should be virtually no visible dust or debris. If excess dust is visible, (a) check vacuum cleaner bag for overload per manufacturer's instructions, (b) check lines for air leaks and (c) check proper adjustment of lower evacuator.
9. Avoid using excessive force feeding saw into work. If great force is required, stop and check tool for proper operation.

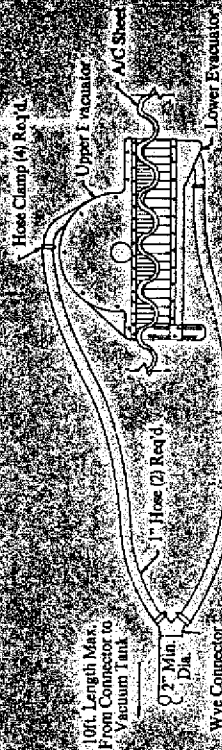
BLADE REPLACEMENT

(In addition to Black & Decker operating instructions)

1. Disconnect unit from electrical outlet.
2. Lower or remove lower evacuating hood.
3. Remove (4) screws and cover to expose blade.
4. Grasp the exposed lower portion of the blade and remove hub screw with wrench.
5. Blade can be removed or replaced (caution: Silicon carbide blades must be mounted with appropriate side out; the blades are marked accordingly).

A1

Operating Instructions Wheeler-Pilot Corrugated Sheet Circular Saw — Model 898



1. The WPI Model 898 uses the Black & Decker Model 3037 Circular Saw. Black & Decker operating instructions for Model 3037 must be read and understood prior to operation.
2. Only vacuum cleaners certified by the manufacturer for use with asbestos dust and having a capability of 175 CFM minimum are to be used with this tool. A vacuum hose of not less than 2 inches in diameter and not more than 10 feet long is to be used between the Wye Connector and vacuum tank. The vacuum manufacturer's operating instructions must be read and understood before operation.
3. Inspect all system elements for cracks, punctures or openings. If hood, vacuum hose and connectors must be read and understood before operation.
4. Connect the vacuum hoses as shown, insuring all connections and clamps are tight.
5. Turn on vacuum and check for any stoppages or air leaks in the vacuum line of hood and insure adequate air flow in the open area of the saw.
6. If any leaks or stoppages are located, change or repair faulty item.
7. Adjust lower evacuator so that the runners on the inside of the skirt fingers are approximately 1/4 inch from the bottom of the sheet.
8. Connect circular saw to electrical outlet and feed into work. There should be virtually no visible dust or debris. If excess dust is visible, (a) check vacuum cleaner bag for overload per manufacturer's instructions, (b) check lines for air leaks and (c) check proper adjustment of lower evacuator.
9. Avoid using excessive force feeding saw into work. If great force is required, stop and check tool for proper operation.

BLADE REPLACEMENT

(In addition to Black & Decker operating instructions)

1. Disconnect unit from electrical outlet.
2. Lower or remove lower evacuating hood.
3. Remove (8) screws and cover to expose blade.
4. Grasp the exposed lower portion of the blade and remove hub screw with wrench.
5. Blade can be removed or replaced (caution: Silicon carbide blades must be mounted with appropriate side out; the blades are marked accordingly).

A2

Operating Instructions Wheeler-Pilot Saber Saw Model 878



1. The WPI Model 878 uses the Black & Decker Model 3155 Saber/JIG Saw, Black & Decker operating instructions for Model 3155 must be read and understood prior to operating this unit.
 2. Only vacuum cleaners certified by the manufacturers for use with asbestos dust and having a capability of 65 CFM minimum are to be used with this tool. A vacuum hose of not less than 1 1/2 inches in diameter and not more than 10 feet long is to be used. The vacuum manufacturer's operating instructions must be read and understood before operation.
 3. Inspect all system elements for cracks, punctures or openings, i.e., hood, vacuum hose and connectors. Repair or replace any faulty item.
 4. Assemble vacuum hose as shown above, insuring all connections and clamps are tight.
 5. Turn on vacuum and check for any stoppages or air leaks in the vacuum line or hood and insure adequate air flow in the open area of the saw.
 6. If any leaks or stoppages are located, change or repair faulty item.
 7. Connect saber saw to electrical outlet and feed into work. There should be no visible dust or debris (if excess dust is visible, (a) erect vacuum cleaner bag for over head per manufacturer's instructions, (b) check lines for air leaks.
- TO INSTALL OR REMOVE BLADE**
(In addition to Black & Decker operating instructions)
1. Disconnect unit from electrical outlet.
 2. Remove the two screws which retain the shield.
 3. Pull shield straight down (shield fits firmly in position, a soft tap may be necessary).
 4. Remove blade (see Black & Decker operating instructions).
 5. Reassemble.

A-3

NOTE: Federal Register, Vol. 40, No. 103, May 28, 1975, announced that the OSHA standard for exposure to asbestos dust was reclassified from 1910.93a to 1910.1001. This change simplified the reference system for toxic substance standards in Subpart F, Part 1910, Occupational Safety & Health Standards.

Appendix B OSHA Standard For Occupational Exposure to Asbestos

§ 1910.93. Abatement.

(a) Definitions. For the purpose of this section: (1) "Asbestos" includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

(2) "Asbestos fibers" means asbestos fibers longer than 5 micrometers.

(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 (c) 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 (c) 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 (c) of this section.

(c) Methods of compliance—(1) Engineering methods. (i) 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.

(b) See § 1910.8 concerning the availability of ANSI Z9.2-1971, and the maintenance of a historic file in connection therewith. The address of the American National Standards Institute is given in § 1910.100.

(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 shall be used, but not limited to, saws, scoring wheels, and drills, shall be provided with local exhaust ventilation systems in accordance with subdivision (ii) of this subparagraph.

(1) Work practices—(i) Work methods. Insofar 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 wetness of the product would be diminished thereby.

(ii) Particular products and operations. No asbestos cement, mortar, coating, grout, plaster, or air material containing asbestos shall be removed from bags, cartons, or other containers in which they are shipped, without being so as to prevent effectively the release of airborne asbestos fibers in excess of the limits prescribed in paragraph (b) of this section.

(iii) Spraying, demolition, chipping. 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 in situ, shall be provided with respiratory equipment in accordance with paragraph (d) (2) (iii) of this section and with special clothing in accordance with paragraph (d) (3) of this section.

(d) Personal protective equipment—(1) Compliance with the exposure limits prescribed by paragraph (b) of this section may not be achieved by the use of respiratory 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 infeasible 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.

(2) 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.

(3) Where a respirator is permitted by subparagraph (i) 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. 8344, May 26, 1972), and shall be used in accordance with subdivisions (i), (ii), (iii), and (iv) of this subparagraph.

(3) Special clothing: The employer shall provide and require the use of, special clothing, such as coveralls or overalls, shoes, and foot wear for any employee exposed to airborne concentrations of asbestos fibers, which exceed the recommended level prescribed in paragraph (b) of this section.

(4) Change rooms: (A) Any fixed place of employment exposed to airborne concentrations of asbestos fibers in excess of the exposure limit prescribed in paragraph (b) of this section, the employer shall provide change rooms for employees working regularly at the place.

(5) Clothes lockers: The employer shall provide two separate lockers or containers for each employee, so separated that one locker is for clean clothes and the other is for soiled clothes, to prevent contamination or isolation of asbestos fibers in excess of the exposure limit prescribed in paragraph (b) of the employee's street clothes from his work clothes.

(6) 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 limit prescribed in paragraph (b) of this section.

(4) Clothes lockers. The employer shall provide two separate lockers or containers for each employee, so separated that they cannot be used for storing or isolated as to prevent contamination of the employee's street clothes from his work clothes.

(5) 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 employee who gives asbestos-contaminated clothing to another person for laundering shall inform such person of the requirement in (c) 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.

transported in sealed impermeable bags or other closed impermeable containers, and labeled in accordance with paragraph (e) of this section.

(f) *Method of measurement.* All determinations of airborne concentrations of asbestos fibers shall be made by the membrane filter method at 40–150 X magnification (4 millimeter objective) with phase contrast illumination.

(g) *Monitoring.* (1) *Visual determination.* Within 6 months of the publication of this section, every employer conducting this section

(3) Personal monitoring—If the same player shall be collected from the same breathing zone of the employee, on a membrane filter of 0.8 micrometer pore size, the sample shall be taken for the number of samples shall be taken for the compliance program in accordance with paragraph C of this section.

(1) Sampling frequency and pattern. 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 to airborne concentrations of asbestos in any area in which the sampling is planned. In no case shall the sampling be infrequent at intervals greater than 6 months for employees whose exposure to asbestos may reasonably be foreseen to exceed the limits prescribed by paragraph (2) of this section.

125—THURSDAY, JUNE 27, 1974

(2) **Cashion Label**—(i) Labeling. Caution labels shall be affixed to all raw materials, mixtures, scraps, waste, debris, and other products containing asbestos fibers, or to their containers, except that no label is required where asbestos is not known to be contained in the material. Labels must clearly indicate the hazard and must be legible and durable throughout the life of the material during any reasonably foreseeable handling, storage, disposal, processing, or transportation, no airborne concentration of asbestos fibers in excess of the exposure limits prescribed in paragraph (c) of this section will be released.

(ii) **Label**. Specifications. The caution labels required by subdivision (i) of this paragraph shall be printed in letters of sufficient size and contrast as to be easily visible and legible. The label shall state:

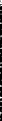
DANGER
ASBESTOS
CAUTION: AVOID CREATING DUST
Breathing Asbestos Dust May Cause Serious Bodily Harm

[illegible]

(2) Employee access. Every employee and former employee shall have reasonable access to any record required to be maintained by subparagraph (1) of this paragraph, which includes, but is not limited to, the following:

(a) Employee notification. Any employee who is to have been exposed to any substance shall be notified of the substance exposure by means of the notification described 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.

(b) Medical examinations. (1) If required, the employer shall provide or make available at his cost, medical examinations relative to exposure to asbestos required by this paragraph.



Appendix C

U.S. Environmental Protection Agency

Regulations for Disposal of Asbestos-Containing Wastes

shall be labeled with a warning label that states: "Contains Asbestos. Avoid Opening or Breathing Containing Asbestos. Wear Protective Clothing."

Alternatively, warning labels specified by Occupational Safety and Health Standards of the Department of Labor, Occupational Safety and Health Administration (OSHA) under 29 CFR 1910.120(a)(3)(ii) may be used.

(1) Processing of asbestos-containing waste material into non-friable form. (A) All asbestos-containing waste material shall be formed into non-friable pellets or other shapes and deposited at waste disposal sites which are operated in accordance with the provisions of § 61.23.

(2) There shall be no visible emissions to the outside air, except as provided in paragraph (k)(3) of this section, during the collection, processing, packing, transporting or reconditioning of any asbestos-containing waste material which is generated by such source.

(3) All asbestos-containing waste material shall be deposited at a waste disposal site which is operated in accordance with the provisions of § 61.23.

(4) Rather than meet the requirement of paragraph (k)(1) of this section, an owner or operator may elect to meet the following requirements in paragraphs (k)(2) (i) and (k)(2) (ii) as an alternative disposal method which has received prior approval by the Administrator.

(A) Control device asbestos waste shall be thoroughly mixed with water into a slurry and other asbestos-containing waste material shall be adequately wetted. There shall be no visible emissions to the outside air from the collection, mixing and wetting operations, except as provided in paragraph (k)(3) of this section.

(B) After wetting, all asbestos-containing waste material shall be placed in leak-tight containers for transport and such containers shall be deposited at a waste disposal site which is operated in accordance with the provisions of § 61.23.

(C) The containers specified under paragraph (k)(3)(i) of this section may be suspended when the ambient

temperature is below 32°F (0°C) and the ambient relative humidity is less than 50%.

(D) The containers specified under paragraph (k)(3)(ii) of this section may be suspended when the ambient

temperature is below 32°F (0°C) and the ambient relative humidity is less than 50%.

Appendix D

U.S. Environmental Protection Agency

Regulations for Disposal of Asbestos-Containing Wastes

shall be labeled with a warning label that states: "Contains Asbestos. Avoid Opening or Breathing Containing Asbestos. Wear Protective Clothing."

Alternatively, warning labels specified by Occupational Safety and Health Standards of the Department of Labor, Occupational Safety and Health Administration (OSHA) under 29 CFR 1910.120(a)(3)(ii) may be used.

(1) Processing of asbestos-containing waste material into non-friable form. (A) All asbestos-containing waste material shall be formed into non-friable pellets or other shapes and deposited at waste disposal sites which are operated in accordance with the provisions of § 61.23.

(2) There shall be no visible emissions to the outside air, except as provided in paragraph (k)(3) of this section, during the collection, processing, packing, transporting or reconditioning of any asbestos-containing waste material which is generated by such source.

(3) All asbestos-containing waste material shall be deposited at a waste disposal site which is operated in accordance with the provisions of § 61.23.

(4) Rather than meet the requirement of paragraph (k)(1) of this section, an owner or operator may elect to meet the following requirements in paragraphs (k)(2) (i) and (k)(2) (ii) as an alternative disposal method which has received prior approval by the Administrator.

(A) Control device asbestos waste shall be thoroughly mixed with water into a slurry and other asbestos-containing waste material shall be adequately wetted. There shall be no visible emissions to the outside air from the collection, mixing and wetting operations, except as provided in paragraph (k)(3) of this section.

(B) After wetting, all asbestos-containing waste material shall be placed in leak-tight containers for transport and such containers shall be deposited at a waste disposal site which is operated in accordance with the provisions of § 61.23.

(C) The containers specified under paragraph (k)(3)(i) of this section may be suspended when the ambient

temperature is below 32°F (0°C) and the ambient relative humidity is less than 50%.

(D) The containers specified under paragraph (k)(3)(ii) of this section may be suspended when the ambient

temperature is below 32°F (0°C) and the ambient relative humidity is less than 50%.

Appendix E

U.S. Environmental Protection Agency

Regulations for Disposal of Asbestos-Containing Wastes

shall be labeled with a warning label that states: "Contains Asbestos. Avoid Opening or Breathing Containing Asbestos. Wear Protective Clothing."

Alternatively, warning labels specified by Occupational Safety and Health Standards of the Department of Labor, Occupational Safety and Health Administration (OSHA) under 29 CFR 1910.120(a)(3)(ii) may be used.

(1) Processing of asbestos-containing waste material into non-friable form. (A) All asbestos-containing waste material shall be formed into non-friable pellets or other shapes and deposited at waste disposal sites which are operated in accordance with the provisions of § 61.23.

(2) There shall be no visible emissions to the outside air, except as provided in paragraph (k)(3) of this section, during the collection, processing, packing, transporting or reconditioning of any asbestos-containing waste material which is generated by such source.

(3) All asbestos-containing waste material shall be deposited at a waste disposal site which is operated in accordance with the provisions of § 61.23.

(4) Rather than meet the requirement of paragraph (k)(1) of this section, an owner or operator may elect to meet the following requirements in paragraphs (k)(2) (i) and (k)(2) (ii) as an alternative disposal method which has received prior approval by the Administrator.

(A) Control device asbestos waste shall be thoroughly mixed with water into a slurry and other asbestos-containing waste material shall be adequately wetted. There shall be no visible emissions to the outside air from the collection, mixing and wetting operations, except as provided in paragraph (k)(3) of this section.

(B) After wetting, all asbestos-containing waste material shall be placed in leak-tight containers for transport and such containers shall be deposited at a waste disposal site which is operated in accordance with the provisions of § 61.23.

(C) The containers specified under paragraph (k)(3)(i) of this section may be suspended when the ambient

temperature is below 32°F (0°C) and the ambient relative humidity is less than 50%.

(D) The containers specified under paragraph (k)(3)(ii) of this section may be suspended when the ambient

temperature is below 32°F (0°C) and the ambient relative humidity is less than 50%.

temperatures of the waste disposal site is less than 10°C (50°F). The ambient air temperature shall be determined by an appropriate measurement method with a thermometer of ±1°C (±1.8°F) and recorded at least at hourly intervals during the period that the operation of the waste disposal system is suspended. Records of such temperature measurements shall be retained at the source for a minimum of two years and made available for inspection by the Administrator.

(1) The source of any inactive waste disposal site which was operated by the source covered under § 61.23 (a), (b), or (c) and where asbestos-containing waste material produced by such sources was deposited, shall meet the following standards:

(1) There shall be no visible emissions to the outside air from an inactive waste disposal site subject to this paragraph except as provided in paragraph (1)(b) of this section.

(2) Warning signs shall be displayed at all entrances and along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material was deposited at intervals of 100 m (ca. 320 ft) or less, except as specified in paragraph (1)(c) of this section. Signs shall be posted in such a manner and location that a person may easily read the legend. The warning signs required by this paragraph shall conform to the requirements of 29 CFR 1910.146(d)(4) and this paragraph. The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to those specified in this paragraph:

Legend

Asbestos Waste Disposal Site

Do Not Create Dust

Breathing Asbestos

Is Hazardous to Your Health

Notation

1" Sans Serif Gothic or Bold

14 Point Gothic

Spacing between lines shall be at least equal to the height of the upper of the two lines.

(3) The perimeter of the site shall be fenced in a manner adequate to deter access by the general public, except as specified in paragraph (1)(4) of this section.

(4) Warning signs and fencing are required where the requirements of paragraphs (1)(b), (1)(c), or (1)(d) of this section are met or where a natural barrier adequately deters access by the general public. Upon request and supply of appropriate information, the Administrator will determine whether a fence or a natural barrier adequately deters access to the general public.

(5) The owner of this section shall meet the requirements of paragraph (1)(1) of this section. The owner may elect to meet the requirements of this paragraph or may use an alternative control method for emissions from inactive waste disposal sites which

has received prior approval by the Administrator.

(1) The asbestos-containing waste material shall be covered with at least 15 centimeters (ca. 6 inches) of compacted non-asbestos-containing material, and a layer of vegetation shall be grown and maintained on the area adjacent to prevent exposure of the waste material.

(2) The waste material shall be covered with at least 60 centimeters (ca. 2 feet) of compacted non-asbestos-containing material, and maintained to prevent exposure of the asbestos-containing waste material.

(3) For inactive waste disposal sites for asbestos tailings, a roadway or petroleum-based dust suppression agent which effectively binds dust and controls wind erosion shall be applied. Such agent shall be used as recommended for the particular asbestos tailings by the dust suppression agent manufacturer. Other equally effective dust suppression agents may be used upon prior approval by the Administrator. For purposes of this paragraph, waste crumcake oil is not considered a dust suppression agent.

7. The first sentence in § 61.23 is revised as follows:

§ 61.23 (a) Cleaning.

If cleaning is needed, as permitted by § 61.23 (1) and § 61.23 (4) (iv), the requirements of this section must be met.

8. The first sentence in § 61.24 is revised and redesignated as paragraph (e) and new paragraphs (c) and (d) are added as follows:

§ 61.24 Reporting.

(c) For sources subject to § 61.23 (1) and § 61.23 (4) (iv):

(1) A brief description of each process that generates asbestos-containing waste material.

(2) The average weight of asbestos-containing waste material disposed or measured in kg/day.

(3) The emission control methods used in all stages of waste disposal.

(4) The type of disposal site or incineration site used for ultimate disposal, the name of the site operator, and the name and location of the disposal site.

(d) For sources subject to § 61.23 (1):

(1) A brief description of the site.

(2) The method or methods used to comply with the standard or alternative procedures to be used.

(e) Such information shall accompany the information required by § 61.10. The information described in this section shall be reported using the format of Appendix A of this part.

9. A new section 61.25 is added to subpart B as follows:

§ 61.25 Waste disposal sites.

In order to be an acceptable site for disposal of asbestos-containing waste material under § 61.23 (1) and (2), an active waste disposal site shall meet the requirements of this section.

(1) There shall be no visible emissions to the outside air from any active waste disposal site.

Asbestos Waste Disposal Site

Do Not Create Dust

Breathing Asbestos

Is Hazardous to Your Health

Notation

1" Sans Serif Gothic or Bold

14 Point Gothic

Spacing between lines shall be at least equal to the height of the upper of the two lines.

(3) The perimeter of the site shall be fenced in a manner adequate to deter access by the general public, except as specified in paragraph (1)(4) of this section.

(4) Warning signs and fencing are required where the requirements of paragraphs (1)(b), (1)(c), or (1)(d) of this section are met or where a natural barrier adequately deters access by the general public. Upon request and supply of appropriate information, the Administrator will determine whether a fence or a natural barrier adequately deters access to the general public.

(5) The owner of this section shall meet the requirements of paragraph (1)(1) of this section. The owner may elect to meet the requirements of this paragraph or may use an alternative control method for emissions from inactive waste disposal sites which

disposal site where asbestos-containing waste material has been deposited, except as provided in paragraph (e) of this section.

(b) Warning signs shall be displayed at all entrances and along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material is deposited at intervals of 100 m (ca. 320 ft) or less, except as specified in paragraph (d) of this section. Signs shall be posted in such a manner and location that a person may easily read the legend. The warning signs required by this paragraph shall conform to the requirements of 29 CFR 1910.146(d)(4) and this paragraph. The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to those specified in this paragraph:

Legend

Asbestos Waste Disposal Site

Do Not Create Dust

Breathing Asbestos

Is Hazardous to Your Health

Notation

1" Sans Serif Gothic or Bold

14 Point Gothic

Spacing between lines shall be at least equal to the height of the upper of the two lines.

(3) The perimeter of the disposal site shall be fenced in order to adequately deter access to the general public, except as specified in paragraph (d) of this section.

(4) Warning signs and fencing are not required where the requirements of paragraph (1)(b), (1)(c), or (1)(d) of this section are met or where a natural barrier adequately deters access by the general public. Upon request and supply of appropriate information, the Administrator will determine whether a fence or a natural barrier adequately deters access to the general public.

(5) Rather than meet the requirements of paragraph (1) of this section, an owner of a disposal site may elect to meet the requirements of paragraph (1)(1) or (1)(2) of this section. The owner may elect to use an alternative control method for emissions from active waste disposal sites which has received prior approval by the Administrator.

(1) At the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material which was deposited at the site during the operating day or previous 24-hour period shall be covered with at least 15 centimeters (ca. 6 inches) of compacted non-asbestos-containing material.

(2) At the end of each operating day, or at least once every 24-hour period while the disposal site is in continuous operation, the asbestos-containing waste material which was deposited at the site during the operating day or previous 24-hour period shall be covered with a reservoir of petroleum-based dust suppression agent which effectively binds dust



ASBESTOS INFORMATION ASSOCIATION
1745 Jefferson Davis Highway
Arlington, Virginia 22202

A 17354

A blacked-out rectangular area, likely used to redact sensitive information.