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HANDBOOK FOR HANDLING ASBESTOS MATERIAL

THE DOW CHEMICAL COMPANY
TEXAS DIVISION

Maintenance Department
Supporting Services

July 1972 Rev.

ST0613161

HANDBOOK FOR HANDLING ASBESTOS MATERIALS

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PURPOSE

The purpose of this handbook is to define safe handling procedures for asbestos materials used in the Texas Division. The intent is to control the exposure of employees to asbestos dust through the proper use of safe work procedures and by the substitution of non-asbestos containing materials.

Asbestos is widely used as structural wall board, insulation, and roofing material. Asbestos fibers are used as a mechanical reinforcing matrix in insulation, roofing paper, certain piping systems, etc. However, Dow Engineering Specifications were revised to exclude asbestos-containing insulation prior to installation of Federal regulations controlling the use and handling of asbestos.. Eventually, the use of asbestos will be eliminated as the ultimate solution to the problem.

The OSHA standards which became effective July 7, 1972, define the precautions required for asbestos handling and the allowable safe working limits.

Should a hazard exist, and these procedures appear insufficient, contact the superintendent of the Plant A or B Functional groups for exceptions or variations.

These procedures will be reissued prior to 7 December 72 to incorporate revisions dictated by results obtained from the Division Monitoring Program.

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SAFETY

The health of those who breathe asbestos dust may be seriously affected. Results can be similar but more serious than those caused by the more commonly known materials such as silica and coal dust. This phenomena has been observed for many centuries. Current medical discoveries show that handling of asbestos by a confirmed cigarette smoker is especially hazardous in the area of potentially serious lung disorders. It is recommended that those persons handling asbestos not smoke cigarettes in any quantity.

When working with materials which contain asbestos fiber, care must be taken to eliminate as much loose dust as possible. Wetting, isolating the work area, or other suitable procedures to eliminate the dust hazard are absolutely necessary. The main problem areas will be in removal of old, deteriorated insulation and the sawing of Transite.

Respiratory protection, dust collectors, blowers, etc., will be mandatory where asbestos-containing materials must be handled.

The two "nose and mouth" dust respirators which have been approved by the Safety Department are: (1) MSA Dustfoe 77, Dow Stock No. 15-26005, Cartridge No. 15-23775, and (2) Wilson Dust Respirator, Dow Stock No. 15-25460, Cartridge No. 15-23790.

Disposal of asbestos will be in polyethylene bags, Dow Stock No. 15-05080 for large bag and 15-04170 through 15-04185 for small bags.

As required, special protective clothing such as coveralls, head covering and gloves will be provided. Such requirements will be determined by the Division Monitoring Program.

Two lockers will be provided, so separated or isolated as to prevent contamination of the employee's street clothes from his work clothes.

Asbestos-contaminated clothing shall be placed in labeled, polyethylene bags for shipment to the laundry.

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USE OF HANDBOOK FOR HANDLING ASBESTOS MATERIALS

The Safe Work Procedures outlined in this handbook are minimum requirements for working with asbestos containing materials.

In some cases, job conditions may dictate more stringent requirements. These could include completely wetting down the area with water when removing old insulation, or completely isolating the work area with tarpaulins, etc. Specific requirements for each job will be detailed on the "Insulators Safety Check List."

Because Dow's Engineering Specifications have been revised to exclude use of asbestos-containing insulation, most of the Safe Work Procedures in this section of the Manual will seldom be referred to for new installations.

These procedures are to be used in conjunction with Plant Safety Rules, Maintenance Standard Safe Work Procedures for the Area, and Safety Standards.

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SAFE WORK PROCEDURE

Subject: Shop Fabrication With Asbestos Materials

Minimum Safety Equipment Requirements:

1. Side Shield Goggles must be worn.

2. Approved "Nose and Mouth" Dust Respirator must be worn at all times. (See Page 3)

3. There shall be a Dust Collecting System on Power Equipment adequate to remove large amounts of dust generated.

4. An Insulator Safety Check List is to be filled out prior to the job and properly approved. Turn in to supervisor at completion of job.

Special Precautions:

1. Do not breathe asbestos dust.

2. Do not operate equipment if provision cannot be made to eliminate dust in a safe manner.

3. Normal precautions must be taken for working with power equipment. (See specific Safe Work Procedure for Operating Power Driven Tools if in doubt).

4. When cleaning out the vacuum system of the machines, a respirator must be worn. Wet down dust prior to handling. Place the wet material in polyethylene bags, seal, label and notify Yard Department that asbestos waste is ready for proper disposal at landfill.

5. Good housekeeping in the shop area is to be practiced. Asbestos dust must be vacuumed throughout the shop area if and when such conditions exist.

6. Keep all personnel not directly involved in the fabrication operation away from the area unless they observe minimum safety requirements and have been apprised of the hazards involved.

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SAFE WORK PROCEDURE

Subject: Mixing Material Which Contains Asbestos

Minimum Safety Equipment Requirements:

1. Side Shield Goggles must be worn.

2. Approved "Nose and Mouth" Dust Respirator must be worn at all times. (See Page 3)

3. An Insulator Safety Check List is to be filled out prior to the job and properly approved. Turn in to supervisor at completion of job.

Special Precautions:

1. Do not breathe asbestos dust.

2. When mixing whole sacks, do not open sacks and dump into open mixing tray. Moisten asbestos by adding water through a small hole in sack until danger of dust is eliminated. Then the material can be removed if necessary to complete mixing operation to desired consistency.

3. Slipping or falling is a hazard to be considered when working around wet asbestos mud.

4. Back strains from handling containers of mixed mud are also a hazard. A means of handling this mixture may need to be provided, depending on the circumstances.

5. Keep all personnel not directly involved in the mixing operation away from the area unless they observe minimum safety requirements and have been apprised of the hazards involved.

6. All contaminated bags, boxes, waste, etc., shall be wetted, placed in labeled polyethylene bags and sent to landfill.

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SAFE WORK PROCEDURE

Subject: Handling and Storing Asbestos Materials

Minimum Safety Equipment Requirements:

1. Side Shield Goggles must be worn.

2. Approved "Nose and Mouth" Dust Respirator must be worn at all times. (See Page 3)

3. An Insulator Safety Check List is to be filled out prior to the job and properly approved. Turn in to supervisor at completion of job.

Special Precautions:

1. Do not breathe asbestos dust.

2. Handle materials in such a manner as to minimize exposure to dust. Moisten material with water spray before removing from container if material will not be damaged.

3. Areas used to store asbestos containing materials should be marked "Asbestos Material".

4. Cartons, boxes, etc., that have contained asbestos materials should be wetted, broken and placed in labeled polyethylene bags for disposal.

5. Good housekeeping of shop areas is to be practiced. Clean up all loose dust on floor, machines, shelves, etc., by vacuuming. Wet down, place in labeled polyethylene bags and dispose of dust while damp. Notify the Yard Department to dispose by landfill while material is still damp.

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SAFE WORK PROCEDURE

Subject: Sawing and Cutting by Hand

Minimum Safety Equipment Requirements:

1. Hard Hat must be worn.
2. Side Shield Goggles must be worn.
3. Approved "Nose and Mouth" Dust Respirator must be worn at all times. (See Page 3)
4. An Insulator Safety Check List is to be filled out prior to the job and properly approved. Turn in to supervisor at completion of job.
5. All other safety equipment which is required by job location must be used. (Read Area Safe Work Procedures.)

Special Precautions:

1. Do not breathe asbestos dust.
2. Wear the "Nose and Mouth" Dust Respirator when removing asbestos material from package, installing, or cutting.
3. Keep all personnel not directly involved in the operation away from the area unless they observe minimum safety requirements and have been apprised of the hazards involved.
4. Special precautions shall be taken when using "Skil-Saw" for sawing asbestos materials. To eliminate dust hazards and protect all people in the area, an air operated saw shall be used and the material shall be flooded with water.
5. If water will damage the material, a hand saw shall be used and sawdust collected with a portable vacuum whenever possible. If site work prohibits use of a vacuum pick-up, cuts should be made directly over a collection box or polyethylene bag.
6. All contaminated bags, boxes, waste, etc. shall be wetted, placed in labeled polyethylene bags and sent to landfill.

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SAFE WORK PROCEDURE

Subject: Insulation Removal

Minimum Safety Equipment Requirements:

1. Hard Hat must be worn.

2. Side Shield Goggles must be worn.

3. Approved "Nose and Mouth" Dust Respirator must be worn at all times. (See Page 3)

4. An Insulator Safety Check List is to be filled out prior to the job and properly approved. Turn in to supervisor at completion of job.

5. All other safety equipment which is required by job location must be used. (Read Area Safe Work Procedure.)

Special Precautions:

1. Do not breathe asbestos dust.

2. Hazards from asbestos dust that falls, blows or may be scattered throughout the area must be eliminated.

3. Keep all personnel not directly involved in the insulation removal operation away from the area unless they observe minimum safety requirements and have been apprised of the hazards involved.

4. Use water to wet down the insulation before and during removal.

5. Seal all material in labeled polyethylene bags as removed. The Yard Department is to be notified for disposal at landfill.

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INSULATOR SAFETY CHECK LIST

JOB DESCRIPTION: _____ DATE _____

LOCATION _____

I. AREA

		YES	NO
1.	Safe Work Permit Received	☐	☐
2.	Area Safe Work Procedure Known	☐	☐
3.	Nearest Phone _____		
4.	Nearest Eyebath and Safety Shower _____		
5.	Job Site in Safe Condition	☐	☐
6.	Is Pipe or Equipment Safe to Work On?	☐	☐
7.	Are Corrosive Chemicals Involved?	☐	☐
	a. Can lines or equipment be drained?	☐	☐
8.	Is Adjacent Piping and Equipment Safe	☐	☐
9.	Red Tags Needed?	☐	☐
10.	Burn Hazards Present?	☐	☐
11.	Craftsmen Lined Up With Check List?	☐	☐

Special Hazards _____

Special Safety Precautions _____

Checked and Approved By:	DATE:
Supt. _____	
Foreman _____	
Cr leader _____	
Craftsman _____	

II. ASBESTOS WORK

		YES
1.	Handbook for Handling Asbestos Materials Used?	☐
2.	Signs and/or Barricades Up to Warn Others ?	☐
3.	Has Disposal of Debris Been Arranged ?	☐
4.	Is Water Needed to Control Dust ?	☐
5.	Stencil on Job to Denote Materials Used ?	☐
6.	Have all Involved Personnel Been Informed ?	☐

III. Special Safety Equipment Required

- ☐ Coveralls
- ☐ Chemical Goggles
- ☐ Face Shield
- ☐ Acid Hood
- ☐ Air Mask
- ☐ Dust Respirator
- ☐ Rubber Gloves
- ☐ Rubber Boots
- ☐ Slicker Coat
- ☐ Slicker Pants
- ☐ Safety Belt
- ☐ Hearing Protection
- ☐ Other: Specify _____

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IV. Personnel on Job (Name)

	Personnel on Job (Name)	Exposure Time-Hrs
1.		
2.		
3.		
4.		
5.		
6.		

THRESHOLD LIMIT VALUE

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. The eight hour time-weighted average shall not exceed five (5) fibers per cubic centimeter.*

In order to assure compliance with these limits, the Environmental Health Group will make random samples. When special field testing is desired, call Environmental Health at 238-2121.

In order to keep asbestos dust concentration within the proper limits, any dusty conditions connected with the handling of asbestos materials must be kept to an absolute minimum. This must be done as outlined in the previous Safe Work Procedures by wetting down the area, pre-soaking the material, or vacuuming the material as it is cut. Each individual job should be planned with this uppermost in mind.

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* Effective 1 July 1976, this limited is reduced from five (5) to two (2) fibers per cubic centimeter.

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Color: Dark green background with white lines
Mtrl: Same as red danger tags but with twist wire instead of string.

CAUTION

Contains Asbestos Fibers

Avoid Creating Dust

Breathing Asbestos Dust May Cause Serious Bodily Harm

(SEE OTHER SIDE)

FRONT

CAUTION

This tag may be removed by authorized personnel only.

Attached by: _____ Date: _____

(SEE OTHER SIDE)

BACK

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ST0613174

Forms Lung Deposits

Asbestos, Cancer Linked, Cities Are Banning Its Use

BY MICHAEL KNIGHT
Chronicle News Services

New York — Several tons of it are sprayed into the air in American cities every year. Those who breathe its microscopic particles will carry it with them throughout life. And sometimes, 20 or 30 years later, the deadly effects — inability to breathe or lung cancer — begin to be felt.

The substance is asbestos, a mineral whose fireproof fibers have long been matted into felt-like sheets, and is now increasingly being sprayed on the steel beams of high rise buildings.

Regulations Started

Cities across the country, often with the help of the Asbestos Workers Unions, are beginning to regulate or ban its use as the deadly and delayed effects of contact with it are becoming known.

Most endangered are the workers who install asbestos sheets around boilers and steam pipes, or who spray it on automobile brakes or onto steel beams during construction.

But increasingly there is worry that the large amounts allowed to escape into the air during the spraying may infect thousands of residents.

'Really Dangerous'

When the new Missouri State Office Building in Kansas City was sprayed recently, "the stuff blew all over the devil," according to Richard Maupin, business manager of Asbestos Workers Local No. 27.

"Some of it went all the way downtown," he said. "The stuff is really dangerous. People can see it, but they don't know it's harmful."

An estimated 50 percent of the asbestos used in spraying is lost into the air, according to industry publications.

Forms Deposits

Inhalation of the asbestos dust forms deposits on the lungs that are never absorbed or broken down. It scars the lungs, causing difficulty in breathing called asbestosis, is incurable and often is fatal.

Persons exposed to asbestos have, in addition, a much higher rate of lung and intestinal cancer than people never exposed to it. Smoking drastically increases the risk; persons who smoke cigarettes and are exposed to the dust have a lung cancer rate 90 times higher than the statistical norm.

Wives Endangered

Even the wives of men who work with asbestos are endangered by the dust their husbands bring home on their clothes, according to Milton Goldberg, an environmental field engineer in the Allegheny County Department of Health in Pittsburgh.

"You can walk down a street where asbestos has been sprayed," he said, "and it may not affect you for 20 or 30 years."

Dr. Irving J. Selikoff, director of the Environmental Sciences Laboratory at Mount Sinai Medical Center here and the national health authority on asbestos, said that as long ago as 1924 it was discovered that people who worked with asbestos developed scarred lungs. It took almost 30 more years of study, he said, to link it with cancer.

Cities Ban Spraying

Selikoff, speaking at city hearings here that resulted in regulations on spraying asbestos, said that "every person in New York has some asbestos in his lungs."

Boston and Chicago last May became the first cities in the country to ban totally the spraying of asbestos.

New York banned it from city projects a month later, and has severely restricted its use, as have Los Angeles, Detroit, and Philadelphia. Other areas throughout the country are considering bans or regulations on spraying.

Substitutes for asbestos are

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TORONTO

... David Lacey wanted to find out if the TTC ... ders will go down ... from the St. George Station by way of the University line.

GLOBE & MAIL, JUNE 30, 1971

Johns-Manville plant

Fear of asbestosis triggers union strike

The International Chemical Workers Union charged yesterday that asbestos fibres in the air at the Toronto plant of the Canadian Johns-Manville Co. Ltd. threaten the lives of workers and the health of neighboring residents.

A strike by the union's Local 346 has closed the plant since Sunday, with health as the main issue.

"We believe the (Ontario) Government should order the plant closed and not permit it to open until workers can be assured of a safe environment," Robert Stewart, assistant Canadian director of the union, said.

There is also concern about the effects of plant emissions on neighbors. A subdivision of $40,000 homes has sprung up near the site on Colonel Danforth Trail in eastern Scarborough, and the new Sir Oliver Mowat Collegiate Institute is across the road.

The union maintains that at least three workers have died of asbestosis, a lung disease caused by long-term inhalation of asbestos fibres.

Five of its retired members and six still working also have the disease. "These are the ones who came forward themselves—the company won't tell us all they know," Mr. Stewart said. "They say medical reports are confidential."

Union leaders were speaking at a press conference called to express their frustration about the lack of action by the company and the provincial Government.

At Queen's Park, James McNair, director of the Department of Labor's industrial safety branch, said the results of tests made in May at Johns-Manville will be known "very shortly." His branch asked the Health Department for tests following complaints from the union, he said.

Provincial standards call for no more than five asbestos fibres longer than five microns in a cubic centimetre of air. A micron is 1-25,000th of an inch.

In the past few years a new wave of research into asbestos hazards has raised alarm among some experts.

Dr. Irving Selikoff, director of the environmental health laboratory at Mount Sinai Hospital in New York, a leader in the field, suggests asbestos may be the worst air pollutant. This has been scoffed at by the asbestos industry.

For the union members, Mr. Stewart said, Dr. Selikoff's findings have been frightening. He came to Toronto late in May in hopes of doing air tests in the local plant but was barred by the management, Mr. Stewart said.

Only lately have health problems been found among the Johns-Manville workers. Dr. Selikoff's theory is that the damage is cumulative and rarely shows up in less than 20 years. The Toronto plant opened 23 years ago, in 1948.

"Now we're getting it in the long-time workers," Mr. Stewart said.

On his May visit Dr. Selikoff left a tape-recorded discussion which clearly has frightened the workers, the union leader said. There have been no resignations as a result, "but a lot are saying they wished they never started their jobs."

In the recording Dr. Selikoff describes a study of 632 members of a New York insulation workers union who handled asbestos steadily from 1943. By 1963—20 years later—255 had died, 53 more than statistically expected.

Lung cancer killed 45; statistically its expected toll was 6.6. Cancer of the stomach and colon killed 29 rather than the expected 9 or 10. Lung scarring killed 11 where no deaths were expected.

By 1967, when 47 deaths might have been predicted, 94 of the 632 men were dead.

"Now 1 of 5 men dies of lung cancer—a disaster—1 of 10 of asbestosis, 1 in 10 of mesothelioma (a disease of the lung or stomach lining)."

Dr. Selikoff now is studying death rates of asbestos workers across the United States.

He was kinder to Johns-Manville than the Toronto union spokesmen. "Johns-Manville may honestly feel there is no problem at the (Toronto) plant because they have seen no problem until now. And it's because of this weird 20-year rule. The first people to work in the plant will just be beginning to show diseases now."

Mr. Stewart said: "It's unfettered industrial homicide as far as we're concerned."

He said the system that filters fibres from the air in the plant is overloaded by 50 per cent, even on present standards. Dr. Selikoff is questioning these standards.

He is concerned about the effects of fibres too small to be seen in an optical microscope, visible only through an electrical microscope.

The company has monitoring equipment in the plant but will not tell the union the test results, Mr. Stewart said. In bargaining, the union is asking for daily air tests and full access to the results.

Johns-Manville uses asbestos—a white, grey or grey-green fibrous material—mainly with cement in Transite pipe. This is used extensively in municipal water and sewage services.

The Toronto plant employs 527 members of the chemical workers union plus about 180 others.

The union calls wages a secondary issue in the strike. It is asking for a $1-an-hour raise over two years on a current average rate of $3.03. Negotiations have broken off, with no new talks in sight.

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