UNION CARBIDE INTERNAL CORRESPONDENCE

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CHEMICALS AND PLASTICS • P. O. BOX 8361, SOUTH CHARLESTON, WEST VIRGINIA 25303

To (Name) Mr. M. E. Perry
Division Building 704-2
Location

Date August 20, 1979

Originating Dept. Technical Center IH/EP

Subject Cutting Asbestos Sheet Products in Services Machine Shop - Building 7

Copy to Mr. E. Creech
Mr. N. B. Ellingwood
Mr. G. F. Hurley
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Mr. D. H. Kerns
Mr. H. L. Robinson
Mr. C. L. Ruddle
Mr. W. T. Shelton

PROJECT

Survey for asbestos exposure of employees sawing, drilling and shaping asbestos-containing material.

DATES OF SURVEY

July 30, August 1 and August 4, 1979

SUMMARY

Exposure to asbestos of machinists cutting flat asbestos cement sheets using saws, lathes and drills and using dust collecting equipment in Building 704 Shop was well-below the recommended standard of 2 fibers/cc.

Area samples at approximately six feet from the operating machinery were < 0.1 fiber/cc.

DISCUSSION

Services machinists were asked to fabricate several items from marinite and transite, two types of asbestos sheet product that are flat and press produced. The composition of the fire and heat resistant board varies with the manufacturer, but the common component is asbestos.

Personal and area samples were collected during the machining of asbestos ring seals and transite frames for hot stages. All the samples collected were less than 0.24 fibers/cc, greater than 5 microns in length.

An effort was made to control the dust generated with a shop vacuum cleaner. The lathes and milling machine were run at low speed and the cutting tools were sharpened.

The dust collecting equipment on the Do-All saw is not efficient for capturing dust when using the saw to rough out transite pieces for set up in the lathes. Thus, quite a bit of dust was generated; however, the time involved in this operation was too short to obtain samples for analysis for asbestos.

Both machinists sampled wore 3M disposable dust respirators which are approved for asbestos work.

Since there is some uncertainty about precautions needed when working with asbestos-containing materials, a summary of the OSHA standard is appended. Salient features applicable to Services are listed below:

1. Exposure Levels

   Eight-hour time-weighted average, 2 fibers/cc and a ceiling of 10 fibers/cc > 5 microns long.

2. Methods of Compliance

   All asbestos dust generating equipment which may produce dust in excess of the standard must be controlled by local exhaust equipment or by wet methods when applicable.

3. Personal Protective Equipment

   Respiratory protection and protective clothing is required whenever the airborne concentration standards are exceeded.

4. Methods of Measurement

   Membrane filter method using a phase-contrast microscope at 400-500 magnification.

5. Housekeeping

   All machinery and equipment shall be maintained free of asbestos fiber accumulations.

6. Medical Examinations

OSHA directive, October 11, 1978, states that if an employee is exposed to more than 0.1 fibers/cc - eight-hour TWA, physicals should be provided. With a 10:1 ratio of protection when respirators are worn, this would mean medical surveillance when fiber counts greater than one/cc are found.

GENERAL RECOMMENDATIONS

For small and intermittent production and fabrication operations major dust collection systems of the usual high volume, low velocity type may not be necessary. Instead, systems of the low volume, high velocity type utilizing as their exhaust air source a high efficiency vacuum cleaner could be suitable.

All exhaust and dust collection systems should be inspected periodically for proper functioning.

Housekeeping

It is recommended that surface cleaning be done by vacuum. Portable vacuum cleaning units should be equipped with internal filtration and disposable dust bags.

If circumstances require floor sweeping with brooms, then the loose material being swept should be treated with water.

Asbestos waste which when handled or transported could generate airborne fibers in excess of the allowable exposure limits, must be disposed of in sealed bags or closed containers which are properly labeled.

Personal Hygiene

In the fabrication of asbestos-containing products every effort should be made to eliminate dust conditions and unnecessary exposure to dust.

Good personal hygiene practices are important in every working situation. When working with asbestos, workers are urged to observe the following personal hygiene practices for their own health protection, their families and those with whom they work:

- Avoid cigarette smoking.
- Wash thoroughly before eating.
- Shower after work.
- Wear proper protective clothing when the situation warrants.

. Use approved respirators when required. Be sure that respirators fit properly.

It makes good sense to have a dust free workplace. It is important to the health of all involved. Dust conditions can be controlled by the simple application of good practices and common sense in the workplace.

SPECIFIC RECOMMENDATIONS

Lathes, mills and the Do-All saw when used to cut asbestos-containing material should be equipped with suitable dust control systems to contain asbestos dust, such as a low volume high velocity vacuum cleaner.

After fabricating and before the item leaves the shop area, all excess dust and chips should be removed to prevent dust contamination of the workplace.

All dust and waste must be disposed of in accordance with Tech Center policy. Reference: Letter from G. C. Merz/M. E. Perry, Demolition and Disposal of Asbestos Impregnated Insulation or Suspected Asbestos Impregnated Insulation, November 6, 1978.

DATA

Fabricating Items From Asbestos-Containing Material

Date	Time	Personnel/ Area	Exposure Fibers/cc	Comments
7/30/79	1653-1807	B.L. Schneider	0.24	Cinn. Lathe, asbesto: ring seals
	1807-2010	B.L. Schneider	0.12	Same as above
	1700-2000	Area	0.01	Approximately 6 ft. north side of lathe
	1700-2000	Area	0.01	Approximately 6 ft. east side of lathe
	1700-2000	Area	0.01	Approximately 6 ft. south side of lathe
	1712-2012	Area	0.01	Approximately 20 ft. walkway center of shop, near telephon

Computer Data Sheet No. WO-943

Date	Time	Personnel/ Area	Exposure Fibers/cc	Comments
8/1/79	1710-1845	P.K. Priddy	0.11	Am. Pacemaker Lathe, cutting transite frames for hot stages
	1845-1950	P.K. Priddy	0.11	Operating lathe
	1730-1830	Area	0.07	Approximately 6 ft. south side of lathe
	1730-1950	Area	0.01	Approximately 6 ft. east side of lathe
	1830-1950	Area	0.02	South side of lathe*

*Small air fan blowing from operator to south side of lathe.

Computer Data Sheet No. WO-944

Date	Time	Personnel/ Area	Exposure Fibers/cc	Comments
8/4/79	1215-1452	P.K. Priddy	0.01	Operating milling machine (Beavermill)
	1220-1452	Area	0.01	Approximately 6 ft. west side of mill
	1225-1455	Area	0.01	Approximately 6 ft. east side of mill
	1225-1455	Area	0.01	South side of mill on bed of Cinn. Shaper, approximate 10 ft.

Computer Data Sheet No. WO-945

REFERENCES

1. Volume 38C-29X4-R1a Asbestos, Dust Determination by Membrane Filter Technique Using Phase Contrast Microscopy

2. E. M. Fenner: Recommended Work Practices - Shop and Field Fabrication of Asbestos Sheet Products

REFERENCES - cont.

3. NIOSH: Criteria For A Recommended Standard - Occupational Exposure to Asbestos, 1972

REPORT PREPARED BY

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GWB/sc

Attachment - Appendix

APPENDIX

ASBESTOS STANDARD

1. Exposure Levels [1910.93a(b)]

It is the employer's responsibility to assure that exposure of employees to airborne concentrations of asbestos fibers does not exceed the limits prescribed by the standard.

The OSHA asbestos standard maximum permissible limits of asbestos fiber in the workplace air are:

a. Eight hour time-weighted average:

i. Effective July 1, 1976: 2 fibers per cubic centimeter

b. Ceiling Concentration:

i. Effective July 1, 1976: 10 fibers per cubic centimeter.

In both cases, the standard refers to fibers longer than 5 micrometers.

2. Methods of Compliance [1910.93a(c)]

Engineering Methods

Engineering controls such as isolation, enclosure, exhaust ventilation and dust collection shall be used to meet the prescribed exposure levels.

All hand-operated and power-operated tools which may produce airborne asbestos fibers in excess of permissible exposure levels shall be provided with local exhaust systems.

Wet Methods

When practicable, asbestos products shall be handled in a wet state sufficient to prevent the emission of dust to the atmosphere. This procedure is not required where the usefulness of the product might be diminished by wetting. The applicability of wet methods is limited. In most situations, engineering controls as noted above are more applicable.

3. Personal Protective Equipment and Clothing [1910.93a(d)]

3. Personal Protective Equipment and Clothing - cont.

Respiratory Protection

Respiratory protection is required whenever the airborne concentrations of asbestos fiber exceed either the permissible time-weighted average limit or permissible ceiling concentration. The type of respirator to be used is determined by the fiber concentration in the workplace.

a. Fiber concentrations up to, but not exceeding, 10 times the allowable limit:

Air purifying respirator, reusable or single use, such as the 3M disposable type.

b. Fiber concentrations up to, but not exceeding, 100 times the allowable limit:

Powered air purifying respirator.

c. Fiber concentrations exceeding 100 times the allowable limit:

Type "C" positive pressure supplied-air respirator.

Protective Clothing

Whenever the airborne fiber concentrations exceed the prescribed ceiling limit 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.

Whenever the airborne fiber concentrations exceed either the permissible time-weighted average concentration or permissible ceiling concentration, the employer shall provide change rooms for his employees. The change rooms shall be equipped with 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.

4. Method of Measurement [1910.93a(e)]

Monitoring [1910.93a(f)]

All monitoring shall be done by the membrane filter method at 400-500 X (magnification) (4 millimeter objective) with phase contrast illumination.

Monitoring must be repeated at six-month intervals after the initial determinations if the fiber concentrations are above permissible limits. If fiber concentrations are below

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4. Method of Measurement - cont.

Monitoring - cont.

permissible limits, monitoring should be repeated at reasonable intervals at the employer's discretion.

Affected employees or their representatives shall be given a reasonable opportunity to observe any required monitoring and shall have access to the monitoring records.

Any employee found to have been exposed at any time to airborne concentrations of asbestos fibers in excess of the prescribed limits shall be notified in writing of the exposure as soon as practicable, but not later than five days of the finding.

5. Caution Signs and Labels [1910.93a(g)]

Caution signs shall be displayed at each workplace where asbestos fiber concentrations exceed permissible exposure limits.

Caution signs shall be applied to all materials and products which during any reasonable foreseeable use might release concentrations of asbestos fiber in excess of permissible exposure limits.

6. Housekeeping [1910.93a(h)]

All external surfaces, machinery and equipment shall be maintained free of asbestos fiber accumulations that might, if dispersed, create asbestos fiber concentrations above permissible exposure limits.

7. Recordkeeping [1910.93a(i)]

Every employer shall maintain records of any personal or environmental monitoring required by the standard. Records shall be maintained for a period of at least three years.

8. Medical Examinations [1910.93a(j)]

Preplacement, annual, and termination medical examinations must be provided or made available by the employer for any employee "engaged in occupations exposed to airborne concentrations of asbestos fibers." These medical records must be kept for twenty years and are available to employee's physician.

"Exposure to asbestos" by an OSHA directive issued October 11, 1978, means "exposed to a minimum of 0.1 fiber/cc" on a seven or eight hour time-weighted average basis.

GWB
8/21/79

UCC 024205

INDUSTRIAL HYGIENE - ENVIRONMENTAL PROTECTION

ENVIRONMENTAL HAZARD REPORT

DATE April 28, 1977 TIME 1400 hrs.

PERSON REQUESTING ASSISTANCE W. T. Shelton

LOCATION 704 Shop DEPARTMENT Services

IH DEPARTMENT CONTACT Bill Blythe

REQUEST Monitor insulation stripping operation in Cell 1 of Bldg. 705. Insulation could not be wetted with water during removal.

ACTION TAKEN One area sample and two personal samples were taken during the operation. Mr. E.H. Davis wore fresh air and Mr. R.E. Raines wore a cartridge respirator. Dust was visible in the air. The area sample, located approx. 5 ft. from the operation, indicated a concentration of 3.2 fibers/cc. The personal samples on Mr. Davis and Mr. Raines indicated concentrations of 14.8 fibers/cc and 12.8 fibers/cc, respectively. These values are over the OSHA Ceiling Threshold Limit Value of 10 fibers/cc, therefore respiratory protection must continue to be utilized during this type of operations.

IH FILE

(IH #1 2/77)

File Asbestos Bldg. 705

INDUSTRIAL HYGIENE - ENVIRONMENTAL PROTECTION

ENVIRONMENTAL HAZARD REPORT

DATE 4/7/77 TIME _____

PERSON REQUESTING ASSISTANCE Wilson Shelton

LOCATION 704 Shop DEPARTMENT Services

IH DEPARTMENT CONTACT Bill Blythe

REQUEST We were requested to monitor removal of insulation possibly containing asbestos at Bldg. 704 and behind Bldg. 778.

ACTION TAKEN Personal samples were taken on J. R. Monin while he removed the insulation. The insulation was wetted with water before and during removal and Mr. Monin wore a respirator. Concentrations of asbestos in air were 0.26 fibers/cc at the job in 704 at 0.06 fibers/cc at the job west of 778. These are well below the OSHA TLV of 2 fibers/cc.

IH FILE Asbestos 704, 778

(IH #1 2/77)

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