GR.I. 142-2

UNION CARBIDE

INTERNAL CORRESPONDENCE

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JUN 29 1972
J. L. Bissett

CHEMICALS AND PLASTICS — SOUTH CHARLESTON PLANT P. O. BOX 8004, SOUTH CHARLESTON, W. VA. 25303

RECEIVED
JUL 11 1972
E. B. WOTIZ

To (Name) Mr. E. O. Harrah
Division Building 109-2
Location South Charleston Plant

Date June 26, 1972
Originating Dept. Environmental Protection
Answering letter date

Copy to Mr. L. L. Bissett
Mr. G. M. Frisch
E. Q. Hull, M. D.
Mr. N. H. Ketcham
Mr. R. G. Lilley
Mr. R. J. Murphy/
Mr. D. C. Vickery

Subject Asbestos Dust Concentrations In Insulation Work - Maintenance Department South Charleston Plant Project No. D-1-72

Dear Dick:

Table I shows the results of exposure of insulators to airborne asbestos dust. The 8-hour time-weighted average (1) airborne concentrations of asbestos fibers (2) is less than the permissible exposure (3). (Standard effective July 7, 1972.)

These initial determinations were limited to personal monitoring(4). Environmental monitoring (5) was not included in this study.

In our discussion of these data, it was concluded that personal monitoring shall be continued and environmental monitoring be included in future tests. It was also of interest to note that to continue to prevent the emission of asbestos fibers in excess of the exposure limits, you plan to use wetted down drop cloths to restrict the spread of asbestos dust.

These asbestos dust samples were collected from within the insulator's breathing zone on membrane filters(4) mounted in an open face filter holder. The fibers on the filter were counted by the Research and Development Environmental Health Laboratory using phase contrast microscopy(6).

In addition to establishing sampling frequency and patterns, the long range objective shall be to make a concentrated effort through procedural standards and engineering controls to comply with the asbestos standards effective July 1, 1967. At that date, the 8-hour time weighted average limit reduces to 2 fibers. A ceiling concentration(7) of 10 fibers will also be effective.

Dick, records of personal or environmental monitoring for asbestos dust shall be maintained for a period of at least 3 years. Any employee found to

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UC-3192

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have been exposed at any time to airborne concentrations of asbestos fibers in excess of the permissible limits 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 (8).

Very truly yours,

B. L. Murray

BLM:ld

Attachment

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ASBESTOS DUST CONCENTRATION IN INSULATION WORK

EXAMPLES AND DEFINITIONS

(1) 8-hour time-weighted average - For example, job classification IV Table I - Computation formulae:

The cumulative exposure for an 8-hour work shift is computed as follows:

$$E = \frac{CaTa + CbTb + CcTc}{8}$$

E is the equivalent exposure for the working shift.
C is the concentration during any period of time T.
T is the duration in hours of the exposure at the concentration C.

$$E = \frac{(5.8)(2)+(0.23)(2)+(2.47)(2)}{8} = 0.71$$ 8-hour, time-weighted average (TWA) airborne concentration of asbestos fiber.

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

(3) Permissible exposure to airborne concentrations of asbestos fibers - The 8-hour, time-weighted average airborne concentrations of asbestos fibers to which an employee may be exposed shall not exceed five fibers, longer than 5 micrometers, per cubic centimeter of air.

(4) Personal monitoring - 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.

(5) Environmental monitoring - 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.

(6) Asbestos Dust - Determination by Membrane Filter Technique using phase contrast microscopy. The filter is mounted on a standard microscope slide using a media which renders the filter transparent. The fibers on the filter are counted with a phase contrast microscope using 430 X magnification. With phase contrast illumination, the light waves traveling through the filters are retarded by a fraction of a wave length to produce a change of phase over the mounting media, making the fibers visible with phase contrast optics as light or dark objects against the background.

(7) 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.

(8) Rules and Regulations - Title 29 - Labor - Chapter XVII - Occupational Safety and Health Administration, Department of Labor. Part 1910- Occupational Safety and Health Standards - Standard for Exposure to Asbestos dust. Federal Register, Vol. 37, No. 110, Wednesday, June 7, 1972.

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TABLE I

ASBESTOS DUST CONCENTRATION IN INSULATION WORK

EMPLOYEES BREATHING LEVEL EXPOSURES

SOUTH CHARLESTON PLANT

Job Class.	Type of Work	Sampling Date & Time 1972	Concentration Fibers/ml >5 μ in length	Exposure Time (Hrs)	Location	Employee	8-Hour Time-Weighted Average (TWA) Airborne Concentration of Asbestos Dust
I	Hand cutting and applying insulation block.	2/9 10:05-10:20 a.m.	7.3	3	Butanol Unit Building 135-1 Interior	(A)	2.74
I	Hand cutting and applying insulation block.	2/9 10:45-11:05 a.m.	2.9	3	Island Power Plant - Bldg. 151 - Interior	(B)	1.09
II	Hand cutting, applying insulation block and mixing mud.	2/9 1:30 1:45 a.m.	12.0	3	Island Power Plant - Bldg. 151 - Interior	(C)(D)	4.5
III	Hand cutting, applying insulation block and cleanup of spent insulation.	2/9 2:20-2:30 p.m.	7.1	3	Island Power Plant - Bldg. 151 - Interior	(C)(D)	3.1
IV	Stripping old insulation	2/14 8:20-8:23 a.m.	5.8	2	Island Power Plant - Bldg. 151 - Interior	(A)	0.71
IV	Stripping old insulation	2/14 8:28-8:31 a.m.	0.23	2	Island Power Plant - Bldg. 151 - Interior	(A)	0.71
IV	Stripping old Insulation	2/14 8:31-8:33 a.m.	2.47	2	Island Power Plant - Bldg. 151 - Interior	(A)	0.71

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TABLE I (cont.)

Job Class.	Type of Work	Sampling Date & Time 1972	Concentration Fibers/ml >5 μ in length	Exposure Time (hrs)	Location	Employee	8-Hour Time-Weighted Average (TWA) Airborne Concentration of Asbestos Dust
V	Applying insulation block and mixing mud	3/15 8:30-8:45 a.m.	4.1	4	Island Power Plant -, Bldg. 151-Interior	(A)	2.2
I	Hand cutting and applying insulation block	3/22 10:30-10:45 a.m.	4.3	3	Acetaldehyde Unit Bldg. 134-2 Interior	(A)	1.61
VI	Hand cutting insulation block	3/22 10:50-11:05 a.m.	1.97	1	Acetaldehyde Unit Bldg. 134-2 Interior	(A)	0.25
VII	Hand cutting and applying insulation block - cut anchor holes with knife.	3/23 8:40-8:55 a.m.	6.5	5	Maint. Shop Bldg. 8-96 Interior	(A)(B)(C)(D)	4.14
VII	Hand cutting and applying insulation block - cut anchlor holes with knife	3/23 9:00 9:15 a.m.	4.7	5	Maint. Shop Bldg. 8-96 Interior	(A)(B)(C)(D)	4.14
VII	Hand cutting and applying insulation block - cut anchor holes with knife.	3/23 9:30-9:35 a.m.	8.6	5	Maint. Shop Bldg. 8-96 Interior	(A)(B)(C)(D)	4.14
VIII	Hand cutting and applying insulation block - cut anchor holes with electric drill.	3/23 9:45-10:00 a.m.	6.1	5	Maint. Shop Bldg. 8-96 Interior	(A)(B)(C)(D)	4.32
VIII	Hand cutting and applying insulation block - cut anchor holes with electric drill.	3/23 10:15-10:30 a.m.	3.4	5	Maint. Shop Bldg. 8-96 Interior	(A)(B)(C)(D)	4.32

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TABLE I (cont.)

Job Class.	Type of Work	Sampling Date & Time 1972	Concentration Fibers/ml >5 μ in length	Exposure Time (hrs)	Location	Employee	8-Hour Time-Weighted Average (TWA) Airborne Concentration of Asbestos Dust
VIII	Hand cutting and applying insulation block - cut anchor holes with electric drill.	3/23 1:15-1:30 p.m.	7.7	5	Maint. Shop Bldg. 8-96 Interior	(A)(B) (C)(D)	4.32
VIII	Hand cutting and applying insulation block - cut anchor holes with electric drill.	3/23 1:35-1:50 p.m.	5.4	5	Maint. Shop Bldg. 8-96 Interior	(A)(B) (C)(D)	4.32
VIII	Hand cutting and applying insulation block - cut anchor holes with electric drill.	3/23 1:55-2:10 p.m.	11.8	5	Maint. Shop Bldg. 8-96 Interior	(A)(B) (C)(D)	4.32
IX	Cleaning up Spent insulation	3/23 2:15-2:30 p.m.	10.4	1/2	Maint. Shop Bldg. 8-96 Interior	(A)(B) (C)(D)	0.65
I	Hand cutting and applying insulation block.	4/3 1:30-1:45 p.m.	1.8	3	Plasticizers Unit Bldg. 208-2 Exterior	(A)(B)	0.68
I	Hand cutting and applying insulation block	4/3 1:50-2:05 p.m.	2.2	3	Plasticizers Unit Bldg. 208-2 Exterior	(A)(B)	0.82
II	Hand cutting, applying insulation block and mixing mud	5/3 10:30-10:45a.m.	8.1	5	Acetaldehyde Unit Bldg. 136-3 Interior	(A)	5.0
II	Hand cutting, applying insulation block and mixing mud	5/3 10:50-11:05 a.m.	8.0	5	Acetaldehyde Unit Bldg. 136-3 Interior	(A)	5.0

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TABLE I (cont.)

Job Class.	Type of Work	Sampling Date & Time 1972	Concentration Fibers/ml ≥5 μ in length	Exposure Time (hrs)	Location	Employee	8-Hour Time-Weighted Average (TWA) Airborne Concentration of Asbestos Dust
I	Hand cutting and applying insulation block.	5/3 1:25-1:40 p.m.	9.4	3	Acetaldehyde Unit Bldg. 136-3 Interior	(A)(B)	3.52

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B. L. Murray:ld
6/26/72

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