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MIDLAND,
MICHIGAN

DEPARTMENT

Chemical Biology Research

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AUTHORS

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PROBLEM NUMBER

9080003

TITLE

EXPOSURES TO FIBROUS DUST DURING THE HANDLING OF ASBESTOS AND
GLASS FROM INSULATION

INFORMATIVE SUMMARY WITH CONCLUSIONS

Measurements of fibrous dust levels were made during the installation of insulation from process equipment. During the removal of asbestos insulation, exposures to asbestos fibers could exceed the maximum allowable concentration. Respiratory protection is recommended when removing asbestos insulation and if feasible, wetting down the insulation is also recommended to minimize the dust levels. During the installation of fibrous glass insulation, the fiber concentrations were at safe levels.

REVIEWED BY

HR Hoyle 5-21-73

scb

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**PLAINTIFF'S
EXHIBIT**

DOW 15

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PROBLEM

Industrial Hygiene was asked to evaluate the exposures of maintenance personnel to fibrous dust during the installation and removal of insulation from pipes and tanks.

CONCLUSIONS

1. During the removal of asbestos insulation from an outdoor tank, breathing zone concentrations of asbestos fibers ranged from 2.0 to 6.7 fibers/ml. In this situation, with adequate ventilation available, the asbestos concentrations were within acceptable levels.
2. Removal of asbestos insulation from equipment located indoors (or outdoors in confined areas) could easily result in asbestos levels exceeding the maximum allowable concentration of 10 fibers/ml. Respiratory protection is recommended for the men handling the asbestos insulation. If feasible, wetting down the insulation before removal is also recommended to help keep the dust levels to a minimum.
3. During the installation of fibrous glass insulation on an indoor tank, the levels of airborne glass fibers were relatively low ranging from 0.1 to 0.3 fibers/ml. Residual amounts of asbestos on the equipment and floor grating (from recently removed insulation) resulted in asbestos fiber concentrations ranging from 0.1 to 0.7 fibers/ml.

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PRESENTATION OF DATA

During the removal of asbestos insulation from an outdoor tank (339 Building), several breathing zone samples were collected to indicate the levels of exposure to asbestos fibers. The men were working at the top of the tank when the samples were taken. A relatively strong wind tended to carry any dust away from the men, though occasionally there was enough turbulence to create a dust cloud in the work area. Table 1 shows the result of four samples collected during the morning and afternoon. In this case, the asbestos fiber levels were within acceptable levels. However, without a strong wind or removing asbestos insulation indoors, the fiber concentrations would easily reach excessive levels.

At 206 Building, several breathing zone samples of airborne dust were collected during the installation of glass fiber insulation. The samples were checked for asbestos fiber concentrations since asbestos insulation had recently been removed from the equipment. Some asbestos was evident on the equipment and also on the floor gratings at various levels in the building. The concentrations of glass fibers were also determined for comparative purposes. Table 2 shows the results of the seven samples collected at several work sites in the building. The asbestos fiber concentrations in the work areas were within acceptable levels. The glass fiber concentrations were relatively low ranging from 0.1 to 0.3 fibers/ml.

The air samples were collected on personal monitors mounted on the men's collar (37 mm diameter filter, 0.8 microm pore) at sample rates of about 2.0 liters/minute. The fiber concentrations were

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determined by the Midland Division Microscopy Laboratory using
the standard phase-contrast method for asbestos fiber analysis.

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TABLE 1ASBESTOS FIBER CONCENTRATION DURING REMOVAL OF ASBESTOS
INSULATION, TANK 6T4, 339 BUILDING

<u>SAMPLE</u>	<u>AIR VOLUME SAMPLES (LITER)</u>	<u>ASBESTOS CONCENTRATION FIBERS >5μ (FIBERS/ml)</u>
1 (Morning)	40	2.25
2 (Morning)	32	3.75
3 (Afternoon)	18	1.99
4 (Afternoon)	14	6.71

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TABLE 2

ASBESTOS AND GLASS FIBER CONCENTRATIONS DURING INSTALLATION
OF GLASS FIBER INSULATION
206 BUILDING

<u>SAMPLE</u>	<u>AIR VOLUME SAMPLES (L)</u>	<u>FIBER CONCENTRATION</u> (FIBERS/ml)	
		<u>ASBESTOS</u>	<u>GLASS FIBERS</u>
1	63.6	0.14	0
2	66.0	0.38	0.20
3	20.0	0.66	0.13
4	22.0	0.48	0.30
5	27.2	0.19	0.10
6	30.0	0.22	0.13
7	33.0	0.12	0.20

Sample 1 - man working below tank being insulated

Samples 2-7 - men cutting glass fiber insulation and covering
tank, (loose asbestos on tank and floor grating
being kicked around)