ASBESTOS STUDY

CHEMICAL SEALING CORPORATION
5401 BANKS AVENUE
KANSAS CITY, MISSOURI 64130

STUDY NUMBER: 71-49
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STUDY REQUESTED BY:

Chemical Sealing Corporation

Plant Engineer

STUDY PERFORMED BY:

National Institute for Occupational Safety and Health

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16. Abstract (Limit: 200 words)

A survey was conducted to determine environmental asbestos (1332214) exposures at Chemical Sealing Corporation (SIC-2891), Kansas City, Missouri, in March 1972. The survey was requested by a manager on behalf of 40 workers. Thirty five breathing zone samples of atmospheric dust were collected on Millipore filters. The Department of Labor emergency standard for asbestos dust exposure was 5 fibers per milliliter no more than 5 microns in length for an 8 hour time weighted exposure. One batch mixer was exposed to an asbestos concentration higher than the standard; he wore an approved respirator when loading the mixers. A vacuum cleaner was not available for dust removal. Employees provided and maintained their own work clothes. The lunch room was too close to the work area, and served as an entry to the locker areas. The authors recommend confinement of asbestos mixing using a slurry instead of dry asbestos. Floors and equipment should be vacuumed and vacuums should be available for removing dust from clothing. Coveralls should be provided and maintained by management. A separate entrance should be provided for wash rooms and locker rooms, and the lunch room should be located away from the dust producing areas.

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INTRODUCTION AND PURPOSE OF STUDY

On March 14, 1972 the Industrial Hygiene Services Branch of the National Institute for Occupational Safety and Health conducted a survey of the Chemical Sealing Corporation, Kansas City, Missouri, to determine the level of asbestos exposure in the environment. This investigation was requested by , Plant Manager.

The Chemical Sealing Corporation manufactures about 80 caulking and sealing compounds for the automotive and building trades. These mastic type compounds are blended in large kneaders or masticator mixers and extruded in ribbon or rope-like shapes. Approximatly 1,000,000 pounds of asbestos are used at this installation per year.

Blending is done in a concrete block building 50'x100', which houses the foreman's office, locker, wash-up, and lunchroom facilities (tables). The lunchroom opens directly into the work area, although most of the mixing is done at the opposite end of the building. It is necessary to pass through the lunchroom to reach the locker and wash rooms. A shop area about 20'x40' is along one wall and delineated by wire mesh particions on two sides.

A short covered passageway at the rear connects to the extrusion and storage building. This 60'x120' room also contains a vinyl plastisol mixing facility and laboratory.

A separate "mixer building," 40'x80', houses seven kneader-mixers, some tanks, and an office. Raw materials and finished goods are also stored here and in an adjacent smaller building (20'x60').

The plant operates on a three-shift basis, five days a week. Presently about 40 hourly workers are employed including at least three women in the extrusion area.

ENVIRONMENTAL STUDY PROCEDURES AND INSTRUMENTATION

Atmospheric samples for dust count were collected on Millipore filters, Type AA*, encased in three-piece plastic Millipore aerosol field monitors with face cap removed and filter completely exposed. The samples were taken in the operator's breathing zone using battery powered Mine Safety Appliance (MSA) gravimetric pumps, Type G. The pumps and samplers were worn by the employees. The pumps were calibrated to operate at 1.7 liters per minute with each sample being taken for one hour. All batch mixers were sampled three times.

TOXICOLOGY AND HYGIENIC STANDARDS

Asbestos is a general name given to a variety of fiberous minerals. The major types are chrysotile, crocidolite, amosite and anthophyllite. Asbestosis, lung cancer, and pleural and peritoneal mesotheliomas may follow exposure to asbestos. The risk is related to the length of exposure and the dust concentration.

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*Registered trade name of the Millipore Corp., Bedford, Mass.

The threshold limit value (TLV)** for asbestos dust as listed in the Threshold Limit Values for 1970 of the ACGIH is 5 million particles per cubic foot of air. On December 7, 1971, the U.S. Department of Labor established an "Emergency Standard for Asbestos Dust Exposure" of 5 fibers per milliliter > 5μ in length for an eight-hour time weighted exposure. The ceiling exposure conditions shall not exceed 10 fibers per milliliter > 5μ in length.

RESULTS OF STUDY

A total of 35 personal samples were taken during the day shift when the asbestos was blended. One man was exposed to an asbestos concentration higher than the present emergency standard. This man is a batch mixer and wears a U.S. Bureau of Mines approved respirator when loading the mixers.

Although the one man working in a high asbestos area wears a respirator, his working environment is out of compliance and should be corrected. The plant engineer indicated that they are currently investigating several avenues to accomplish this such as: a) new formulas to utilize alternate materials or to reduce the asbestos content of the

**Threshold limit values refer to airborne concentrations of substances and represent conditions under which it is believed that nearly all workers may be repeatedly exposed, day after day, without adverse effect. Because of the wide variation in individual susceptibility, however, a small percentage of workers may experience discomfort from some substances at concentrations at or below the threshold limit, a smaller percentage may be affected more seriously by aggravation of a pre-existing condition or by development of an occupational illness.

products, b) recalculation of the batch to utilize only full bags of asbestos fibers, thus eliminating the need to weigh smaller amounts or store open bags, and c) design of small bag filters to be installed on the individual mixers. Two such filters already installed, while not entirely effective, show promise in reducing the dust concentration.

OTHER HEALTH HAZARDS

After charging the materials to the mixers, the men shake, beat, or brush the dust from their clothing as best they can. As a minimum, a shop vac or other vacuum cleaner should be made available to clean off dusty apparel and equipment, so that dust and fibers are not disseminated throughout the plant as these men move about. The employees supply, launder, and maintain their own work clothes. Ideally, management should provide the men exposed to asbestos fibers with protective clothing such as coveralls and launder them as well to prevent asbestos exposure to the families of the workers.

Mastic and airborne dust and dirt which falls on the floor is currently removed by the porter using a motorized wire brush scrubber and push broom. This redisperses dust and is forbidden by the OSHA emergency standard.

The proximity of the lunchroom to the work area is undesirable, as well as the necessity to pass through it to reach the washroom and locker facilities. A separate entrance to the washroom and locker

facilities should be provided; this would permit the dining area to be shut off from the plant area when it is not being used.

RECOMMENDATIONS

1. Intensification of effort and implementation of current investigations to reduce asbestos dust formation, such as:

   a. Reformulation to utilize only full bags of asbestos.

   b. Installation of adequate unit bag filters or design of central ventilation system to control dust.

   c. Utilization of alternate materials.

2. Confine asbestos mixing to as few mixers as possible and install engineering controls for these units.

3. Investigate the possibility of preparing a mineral oil-asbestos slurry which can be pumped to the various mixers as required (all present formulations contain mineral oil). This would confine the use of dry asbestos fibers to one point where engineering controls could be installed and the scrap, waste, and used bags could be isolated as well, and handled separately from other trash.

4. Use of vacuum equipment to clean floors and equipment.

5. Provide separate entrance to wash and locker rooms.

6. Relocate lunchroom from proximity of dust producing areas - or as a minimum safeguard, close off the dining area during work periods.

7. Provide personal protective clothing for workers.

8. Provide laundry facilities for asbestos contaminated clothing.

REPORT PREPARED BY:

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TABLE 1: Employee Exposure to Asbestos

Employee	Position	Filter No.	Conc. (fibers>5μ/ml)
	Batch Mixer	502	3.0
		520	3.3
		528	2.2
		540	1.9
	Batch Mixer	504	5.3
		517	4.7
		527	5.9
		535	6.7
	Shop Foreman	510	2.3
		519	2.6
		524	1.4
	Electrician	507	1.0
		511	0.3
		526	1.6
	Maintenance	530	0.2
	Maintenance	531	0.7
	Porter	509	4.1
		516	2.5
		518	3.0
		539	0.6
	#5 Extruder Operator	508	0.9
		513	0.5
		532	0.3
	#6 Extruder Operator	503	2.1
		512	1.4
		523	2.6
	#7 Extruder Operator	533	1.8
	Plastisol Mixer	534	2.8
	Lead Man-Mixer Bldg.	501	1.8
		515	0.8
		521	0.5
	Mixer-Mixer Bldg.	506	3.1
		514	1.7
		522	2.2
		529	0.4