

INDUSTRIAL HYGIENE REPORT

FLEXITALLIC GASKET COMPANY
Deer Park, Texas

SCOPE & PURPOSE OF SURVEY

An Industrial Hygiene survey was conducted on December 10, 1974 in order to evaluate employee exposure to airborne concentrations of asbestos at Flexitalllic Gasket Company, Deer Park, Texas.

This survey was requested by the producing Loss Control Technician, Fireman's Fund American Insurance Companies, Philadelphia, Pennsylvania. One claim has been made alleging asbestosis from working at this plant. Following this claim, the Texas State Department of Health, Division of Occupational Health, conducted a survey with asbestos sampling and found an insufficient amount of asbestos fibers to perform an accurate count. They concluded the fibers were effectively controlled by the wax/latex binder material.

Air samples were taken at the wire wrapping area, asbestos slitting area and final assembly area to determine if any new exposures existed in plant operations.

CONCLUSIONS

1. The gasket wrapping operator was exposed to an acceptable level of asbestos during her normal operations. This exposure was acceptable when compared to standards for both short and long-term exposure.
2. The final assembly operator was exposed to an acceptable level of asbestos during her normal assembly operations.

SUGGESTIONS

1. Improve housekeeping in the plant.
2. Investigate means of controlling the emission of asbestos fibers to the plant air.

PROCESS DESCRIPTION

Flexitalllic Gasket Company operates as a combination metal and asbestos gasket manufacturer. High temperature gaskets are manufactured using asbestos with latex and wax binder in combination with metal.

The plant is divided into a heat exchanger section and soft gasket section which operate one shift per day. In the heat exchanger area, prepared asbestos sheets (1/8" thick) are received at the plant and cut into various forms. Asbestos is cut with a shear roller for the heat exchange section with no air disturbance in this area. Asbestos millboard is used in the heat exchanger liner and filler operation and asbestos gasket materials are all exposed in the final product.

The soft gasket section involves slitting varying lengths of 4" wide asbestos sheets into strips approximately 1/4" wide. These strips are then wound with a strip of

stainless steel and then tack-welded at the end. This operation involves two shifts of employees and utilizes 9 machines with one worker at each machine. Each worker must wrap the gaskets and periodically must slit his strip of asbestos paper into small strips. Slitting involves about 20 seconds on an average time for each roll that is slit. Each employee does his own slitting and then returns to his own work station. Workers average 20 slits per day.

The last section of operations involve final assembly. In these operations the wound gaskets are placed inside retaining rings and packaged according to order.

Therefore, a potential asbestos dust exposure exists in the soft gasket wrapping and slitting area and the final assembly area.

No ventilation is provided in the plant and air movement is dependant upon area fans located throughout the plant which during the summer will stir the air. However, in the winter, air is only heated with doors remaining closed most of the time.

One additional operation in the plant is a machine area which involves the use of a water soluble cutting oil, which contains an anti-bacterial agent, and appears suitable for these operations.

A punch press operation produces an excessive noise exposure and should be evaluated to determine the extent of this noise exposure. Subjective responses at the time of this survey were painful to our ears during observation of punch press operations. With proper authorization, a noise survey will be done in this plant.

DESCRIPTION OF HAZARDS

See the attached Industrial Hygiene Technical Bulletin No. 2, prepared by Fireman's Fund American Insurance Loss Control, concerning asbestos.

The Threshold Limit Values (TLV) refer to Time-Weighted-Average airborne concentrations of substances and represent conditions under which it is believed that nearly all workers may be repeatedly exposed 8-hours a day, day after day, without adverse effects.

TLVs are used as guidelines in the control of health hazards and should not be used as a fine line between safe and dangerous concentrations of asbestos fibers. They are based on the best available information from industrial experience, from experimental human and animal studies, and, when possible, from a combination of the three.

SURVEY & ANALYTICAL METHODS

Personal air sampling at the breathing zone areas of workers at the slitting machines, gasket wrapping machines, and final assembly area was accomplished by using Millipore membrane filters (0.8 micrometer pore size) in plastic cassettes. Air was drawn through these filters by means of personal sampling pumps which conform to NIOSH (National Institute for Occupational Safety and Health) standards for personal sampling pumps. All pumps were calibrated by approved methods prior to sampling. Sampling procedures followed NIOSH guidelines for silica dust sampling using a flow rate of approximately 2 liters per minute.

Air samples were analyzed using Phase-Contrast Illumination Microscopy, the currently acceptable method for analysis of asbestos fiber samples. All samples were analyzed by George D. Clayton and Associates, Southfield, Michigan (an independent analytical laboratory).

Analytical results were reported as a total number of fibers per sample. This number of fibers was then divided by a total amount of air sampled and reported as fibers per cubic centimeter of air (fibers/cc). This method allows for reporting of fiber concentrations for comparison to the allowable exposures as reported by the Threshold Limit Values for substance in workroom air under Section 1910.93 of the OSHA regulations.

RESULTS & DISCUSSION

Table I displays the air sampling data results from sampling at the three locations.

The wire and asbestos wrapping operator works in a position where asbestos fiber concentrations were less than 1/3rd of a fiber per cubic centimeter of air during normal operations. In addition, the wire and asbestos wrapping worker was exposed to an asbestos fiber concentration of 3 fibers/cc during asbestos paper slitting operations. Using these two concentrations to determine a Time-Weighted-Average for an 8-hour exposure resulted in a Time-Weighted-Average of .42 fibers/cc. This was an acceptable exposure since the TLV for asbestos fibers is 5 fibers/cc greater than 5 Micrometers in length. (For a description of Time-Weighted-Average calculation refer to Table I of the attached Technical Bulletin No. 2).

The final assembly operator was exposed to an asbestos fiber concentration of 0.42 fibers/cc during her normal operations. This also was an acceptable concentration for these operations when compared to the TLV for asbestos.

Since these concentrations were below the present standard for asbestos fiber exposure, no recommendations were made. However, we suggest upgrading of housekeeping in the areas around the slitters and wire wrapping machines. This can be accomplished by periodic vacuuming of the area around the machines to prevent material accumulations. Avoid sweeping or brushing the machines and use a vacuum filter with a micro pore-size rating.

We also suggest additional reduction in asbestos exposure to comply with any further lowering of the asbestos exposure standard (NIOSH proposes lowering to 2 fibers/cc).

This can be accomplished by situating the intake of a local exhaust ventilation system as close to the exit side of the slitter as possible as shown in the diagram. The intake can be covered with a wire screen of suitable mesh so that the paper would feed over the screen. This exhaust duct should lead down and away from the traffic pattern.

Finally, the majority of loose fibers generated when the asbestos is sheared can be eliminated by using a brush-like material mounted in-among the slitters in such a way as to sweep the loose fibers from the paper and slitters. Therefore, the loose fibers will be exhausted as the slitters revolve and the paper is sheared.

We believe these exposures to be indicative of the normal exposures since operations at the time of this survey were within normal limits.

Michael R. Dwyer
Associate Industrial Hygienist
Fireman's Fund American Insurance Companies

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TABLE I

AIR SAMPLING DATA

FLEXITALLIC GASKET COMPANY
Deer Park, TX

December 10, 1974

Sample Description	Sample Number	Affected Job Description	Exposure Time (hrs)	Asbestos Concentration (fibers/cc)	TWA ^a (fibers/cc)	COMMENTS
Wire & Asbestos Wrap and Asbestos Slitting	73135	Wrapper Operator	7.75	0.35	0.43	Acceptable for both Long and Short Term Exposures
Asbestos Slitting Only	73131	Wrapper Operator	0.25	3.0		
Assembling Wound Gasket and Retainer	73128	Final Assembly	8.0	0.42	0.42	Acceptable

^a TWA - Time Weighted Average Concentration = $\frac{(\text{Concentration})(\text{Time at conc.}) + (\text{Second Conc.})(\text{Time at second conc.})}{8}$

TLV (Asbestos) - 5 fibers (greater than 5 micrometers in length)/ cubic centimeter (cc)

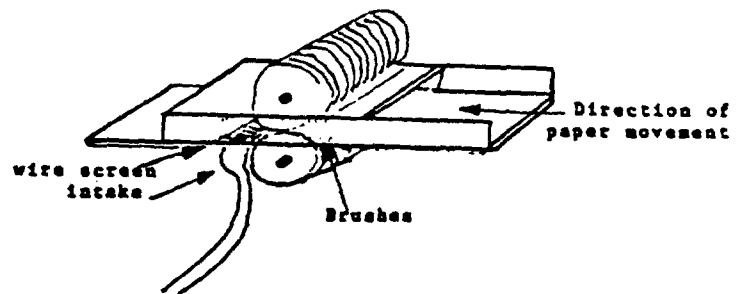
MAC (Maximum Allowable Concentration for any 15 minute period - 10 fibers (greater than 5 micrometers in length)/ cubic centimeter.

DIAGRAM OF LOCAL EXHAUST VENTILATION

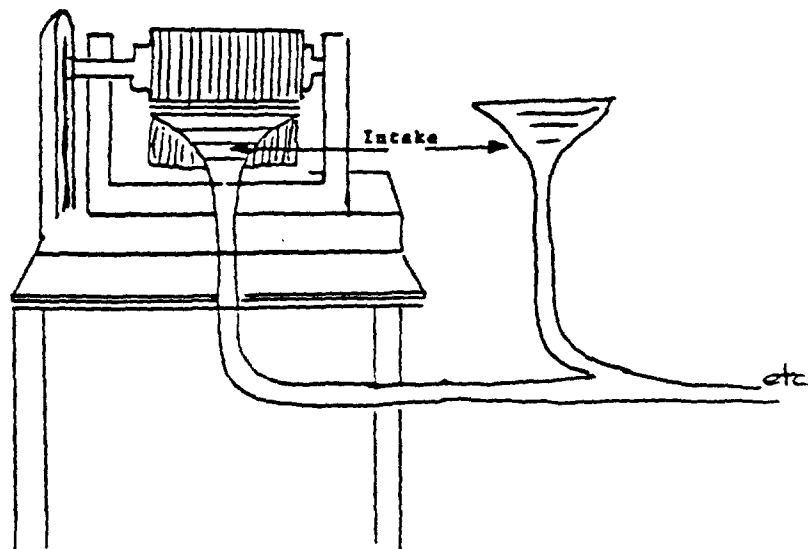
AT THE SLITTING

MACHINES

SIDE VIEW



FRONT VIEW



FIREMAN'S FUND

AMERICAN INSURANCE COMPANIES

DALLAS BRANCH OFFICE

MERCANTILE DALLAS BUILDING

P.O. BOX 218

DALLAS TEXAS 75201

TELEPHONE 216-7641

L. S. SHUTE, JR.

REGIONAL VICE PRESIDENT

January 7, 1975

Mr. Jim Ramsey, Plant Manager
Flexitallic Gasket Company
P. O. Box 338
Dear Park, Texas 77536

Dear Mr. Ramsey:

On December 10, 1974, a study was conducted at your plant to determine occupational exposure to airborne concentrations of asbestos fibers. This survey was requested by the Philadelphia Branch Loss Control Department, Fireman's Fund American Insurance Companies. Thank you for Mr. Gilbert's assistance through the plant.

Such a study should assist you, in part, in meeting your responsibilities under the Occupational Safety and Health Act of 1970. Employers are responsible under this Act to monitor environmental conditions, such as asbestos fibers, and take remedial action in order to reduce the exposures to within acceptable limits according to published criteria. Meeting the standards for environmental conditions in work areas should also greatly reduce the potential for developing occupational diseases.

The results of this survey indicate that airborne concentrations of asbestos fibers were below the present OSHA standard for the gasket cutting and wrapping workers and the final assembly workers. Since these standards have not been exceeded, corrective measures on your part are not mandatory. However, we recommend that you consider the suggestions that have been made in the attached report to reduce any exposures in your plant.

Mr. Ramsey, thank you for your cooperation during this survey. Please contact me if you have any further need for assistance at your plant. I can be contacted through Paul Monroe.

Sincerely yours,

Michael R. Donahue

Michael R. Donahue
Associate Industrial Hygienist

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ALT.

cc: Dave Phillips, Home Office Industrial Hygiene Services
Fred King, Philadelphia Loss Control Manager
Philadelphia Commercial Casualty Underwriting
Paul Monroe, Houston Loss Control
Michael R. Donahue, Dallas Loss Control