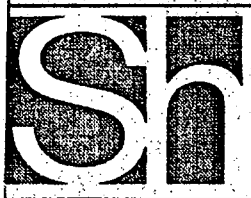


THE INDUSTRIAL COMMISSION OF OHIO
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June 21, 1984

Mr. Roger Smith, Laboratory Director
Eaton Corporation, Air Flex Plant
9919 Clinton Road
Cleveland, Ohio 44144

Dear Mr. Smith:

On May 10, 1984, an industrial hygiene investigation was conducted as a result of your request made on April 27, 1984. Airborne asbestos levels were evaluated in the testing lab where approximately four employees work.

Air monitoring was conducted by using personal sampling pumps attached with 0.8 micrometer pore size mixed cellulose ester filters. The pumps were calibrated before their use and the calibration was checked after their use. The filters were used with the cassettes open face. Analysis was done by an industrial hygiene accredited laboratory. Filters were analyzed by phase contrast microscopy and bulks by polarized light dispersion staining microscopy.

On this date in the 300 horsepower dynamometer room, a press brake was operating with a 9CS brake containing Penner 333 friction material and a CB clutch containing NF 125 friction material. Both friction materials contain asbestos. The press brake was operating at 80 cycles per minute. The dynamometer was operating but did not have any asbestos-containing friction materials. On one end of the room there was a window exhaust fan operating and on the other end there was an open window. The weather on this day was sunny, 60° F, with little or no wind.

The airborne asbestos sample was taken at a five-foot height approximately four feet from the press brake. The sample result was below mandatory and recommended limits as shown in the table.

An area and two personal samples were taken in the main laboratory room. Air was being circulated around this room by an air dryer and for part of the day by open windows. Because of the warmth of the day, the space heaters were operating little, if any, of the day. Approximately a week prior to the date of this investigation thirty pieces of 33VC asbestos-containing friction material were milled. The operator used two shop vacuums to locally ventilate the milling machine. Only one of the shop vacuums was equipped with a

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filter for use with asbestos-containing particulates. For the latter half of the four-hour sampling, several pieces of asbestos-containing friction material were cut, ground, and sanded on machines that are locally exhausted. All air monitoring sample results (see table) are below current mandatory and recommended limits.

An area sample was taken around the dust collector used to capture particulates produced while machining friction material. The dust collector was running but there was no friction material being machined. This sample result also was below current mandatory and recommended limits (see table).

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 wide variations 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.

A bulk sample of mill shavings of 33VC friction material was analyzed and found to contain 10% chrysotile asbestos. A bulk sample of particulates on the milling machine, used to mill 33VC friction material the week before this survey, was analyzed and found not to contain asbestos. Cellulose fibers and metal shavings were found. A bulk sample of particulates on a overhead light fixture which had not been cleaned for some time was analyzed and found not to contain asbestos. Cellulose fibers and dust were found.

Asbestos fibers find entry into the body by inhalation and ingestion. The fibers are retained in the body tissues throughout the lifetime of the host, even long after cessation of exposure. Fibers may migrate to other organs following retention in the lung. Asbestosis and certain malignancies are related to exposure to fibers of the asbestos minerals.

Asbestosis is a progressive restrictive pulmonary fibrosis associated with inhalation of asbestos fibers. Malignancies related to the inhalation and possibly ingestion of asbestos fibers by epidemiological studies include carcinomas of the lung, mesotheliomas of the pleura and peritoneum, and neoplasms of other sites.

Asbestos has a synergistic effect with cigarette smoking in producing carcinoma of the lung. Asbestos workers who are smokers have over 90 times the risk of non-exposed non-smokers of contracting lung cancer.

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It is imperative that all operations that involve cutting, milling, and sanding of materials that contain asbestos be locally ventilated. The dust collector used must be designed for collection of asbestos fibers. Any shop vacuum should not be used for localized ventilation and especially one not equipped with a filter designed for asbestos fiber collection. A collector not approved for collection of asbestos fibers may actually make matters worse since the fibers may pass through the filters and spread asbestos fibers over a larger area. Exhaust ventilation must comply with ANSI 29.2-1971.

While the present OSHA standard, 29 CFR 1910.1001, limits workers' asbestos exposure to two fibers greater than five micrometers in length per cubic centimeter (fibers >5 /cc), many health experts believe that there may not be a safe level for carcinogen exposure. OSHA has proposed a new asbestos standard that may lower the Permissible Exposure Limit down to 0.2 fibers >5 /cc.

For the asbestos levels found on this day of monitoring, additional worker protection may be afforded by using a reusable or single-use air purifying respirator.

Engineering controls should be used whenever feasible to maintain airborne contaminant concentrations below the recommended standards. Compliance with the permissible exposure limits by the use of respirators is only permitted while required engineering controls are being installed or tested, when non-routine maintenance or repair is being accomplished, or during emergencies. The reasons that respirators can only be used as an interim control are: (1) So many factors affect obtaining a proper fit. For example beards, sideburns, eyeglasses, the absence of dentures, etc., prevent a proper face seal and thus completely negate a respirator's usefulness. (2) Respirators can cause wearer discomfort. (3) Respirators cause resistance to breathing.

When properly selected, used, and maintained, respirators can also provide added protection for workers who are exposed to contaminants below a standard. Although their use is not mandated by law in such cases, prudent Industrial Hygiene practice supports the need for their use regardless of the level of contaminant present. That position is based on the fact that no known safe level of exposure exists for exposure to a carcinogen. Consequently, when working with any known or suspected cancer causing agent, all precautions to include the use of a proper respirator should be implemented. Publications are available from the National Institute for Occupational Safety and Health (NIOSH) which are routinely updated, listing those respirators certified by NIOSH and their uses.

Whenever respirators are used in a plant, the Occupational Safety and Health Administration (OSHA) requirements include a written

