



Inter Office

Personnel and Organization Staff

June 5, 1974

Mr. J. R. Inatsch, Manager
Industrial Relations Department
Livonia Transmission Plant

cc G. Bruce
D. Martinek
R. C. Sargent, M.D.

Subject: Asbestos in Air Sampling - Livonia Transmission Plant

In response to your request, the Industrial Hygiene Section completed a study to determine employee exposure to asbestos in air concentrations at several different locations at the Livonia Transmission Plant. Results of this study and the instrumentation employed are attached.

This study was conducted to determine compliance with OSHA asbestos standards as published in the Federal Register of October 18, 1972, pages 22142-22144, Section 1910.93A "Asbestos." The results show that two of the operations studied exceeded OSHA standards. These operations were front clutch assembly table loading at H 34 and the gasket installation of the Servo Piston at G 30.

The provisions of the OSHA asbestos standard enumerated in Section 1910.93a of the Federal Register applicable to employee asbestos exposure are:

- A Threshold Limit Value (TLV) of five fibers greater than five microns in length per milliliter of air, and a ceiling concentration of 10 fibers greater than five microns in length per milliliter of air. The TLV will be reduced effective July 1, 1976 to two fibers greater than five microns in length per milliliter of air.
- Local exhaust ventilation of processes if airborne fiber concentrations exceed the TLV or ceiling concentration.
- Special work practices such as wet methods and isolation if airborne fiber concentrations exceed the TLV or ceiling concentration.
- Approved respirators varying with the intensity of the exposure shall be used when exposed to asbestos laden materials.
- Special clothing and change rooms must be furnished employees exposed to asbestos concentrations exceeding the ceiling concentration limit.
- Special clothing furnished must be collected in sealed containers and labeled per labeling specifications stated in subparagraph (ii), page 22144, of the Federal Register. In addition, the laundry must be made aware of the asbestos hazard.

(over)

8005 0780

PRODUCED BY FORD

SCF-FORD-1190



- Air samples must be collected representative of employee breathing zone exposure at intervals no greater than every six months if the T17 or ceiling concentration limit may be expected to be exceeded.
- If air samples taken indicate exposures greater than prescribed limits, then caution signs must be posted per pages 22143 and 22144, subparagraph g of the Federal Register.
- Asbestos or asbestos laden waste materials must be cleaned by vacuum and disposed of in sealed containers and labeled per labeling specifications stated in subparagraph (11), page 22144, of the Federal Register.
- Employees exposed to concentrations of asbestos fiber exceeding prescribed limits must be notified in writing of the exposure and corrective action contemplated.
- The employer shall provide or make available medical examinations to employees who may be exposed to concentrations exceeding prescribed limits. These examinations shall include a pre-employment, annual and termination examination consisting of posterior-anterior 14 x 17 inches chest roentgenogram and pulmonary function tests to include forced vital capacity FVC and forced expiratory volume at one second FEV. In addition, a history to previous exposure to carcinogens and smoking should be obtained.

Based on the results of our study, it is our opinion that the following measures are required to comply with OSHA standards and to protect employee health.

- The concerned employees who were found to be exposed to asbestos fiber concentrations in excess of the prescribed limits by OSHA should be notified in writing.
- The concerned employees should be given immediate medical examinations meeting the requirements specified by OSHA.
- Until feasible engineering controls can be installed, the concerned employees should be provided with approved type respirators and special clothing specified by OSHA. Other procedures prescribed by OSHA relative to special clothing must also be followed.
- Cleanup should be effected by means of vacuum cleaning and disposal of the dust be carried out in accordance with OSHA asbestos standard. Attached is a report on a Sears Vacuum Cleaner that our Section prepared for General Services Division. The report also gives suggestions on disposal of the asbestos dust.

OSHA regulations require that we obtain samples from all employees who may be potentially exposed. Therefore, if you have any other asbestos exposure operations at your location, these should be evaluated. If any major increases in frequency and duration of any of the operations studied are intended, please notify this office.

Follow-up monitoring will be conducted on a six-months basis.

Charles E. Flaster
Industrial Hygienist

8005 0781

Data Sheet

Livonia Transmission Plant

Asbestos in Air Concentrations

MARCH 13, 1974

<u>Location</u>	<u>Results in Fibers Greater than 5 Microns in Length per Milliliter of Air</u>
1. OSHA Asbestos Fiber Threshold Limit Value -(TLV)8-Hr. Time-weighted exposure	5.0
2. " TLV as of July 1, 1976	2.0
3. " Ceiling Limit	10.0
4. General air sample #44 front clutch assembly operation	4.9
5. Breathing zone sample - Mr. Lopur, SS 5842, front clutch assembly loading table with clutches, # 44	14.8
6. G 50, Breathing zone sample - Mr. D. Damon, SS 8358, gasket installation - Servo Piston Assembly	7.7
7. Breathing zone sample, Mr. N. Fulton, SS 6112, unpacking rear clutch plates and putting them into metal baskets	0.6

Instrumentation: Mine Safety Appliances, Model G Pumps using Millipore Type AA membrane filters 0.8 micron pore size

Analysis: Kettering Laboratory, Department of Environmental Health, Cincinnati, Ohio

8005 0782

PRODUCED BY FORD

June 22, 1973

Mr. J. A. Keller, Supervisor
Personnel Services Section
General Services

Subject: Asbestos Fiber Emissions from Sears Model No. 758.17831 -
Shop Vacuum Cleaner

As requested, we evaluated asbestos fiber emissions from the Sears and Roebuck Model No. 758.17831 shop vacuum cleaner. This vacuum cleaner is intended to be used in lieu of compressed air clean up of asbestos laden brake lining dust on brake linings and drums.

The Sears vacuum has two vacuum motors each having its own discharge. Each discharge has a paper and a cloth type filter. The contaminant is deposited in a 45 gallon plastic drum.

Section 1910.93a of the Federal Register specifies: asbestos fiber in air determinations to comply with the provisions of the Occupational Safety and Health Act (OSHA) will be determined by 430X phase microscopy and collected at two liters per minute on a 37 mm open face Type AA, Millipore membrane filter or its equivalent. In order to conduct an isokinetic efficiency of the vacuum cleaner, it would have been necessary to deviate drastically from the prescribed sampling rate and from the open face filter media, thereby yielding sample results. It was abundant to compare the results to. Therefore, it was decided to place the vacuum cleaner in a small sealed room with no air changes taking place, and only air movement in the room would be that generated by the discharge of the vacuum cleaner. The room chosen held a volume of 800 ft³ of air. The vacuum was placed in the middle of the room and then five sampling stations were set around the room equidistant from the vacuum cleaner. The ports of the filter handling manifold was then vacuumed up over a 10 minute period.

The current OSHA Threshold Limit Value for airborne asbestos fiber is 5 fiber and 2 fiber greater than 5 microns in length per milliliter of air with a downward revision to 2 fiber and 2 fiber greater than 5 microns in length per milliliter of air scheduled for July 1, 1975. The results of all five air samples taken during the test of the vacuum cleaner were well within the 5 fiber and 2 fiber greater than 5 microns in length per milliliter of air OSHA's.

It was noted that the Sears Model 758.17831 shop vacuum is acceptable from an asbestos emission standpoint, but special precautions will be required when cleaning or cleaning the vacuum. As required dust should be kept away from the vacuum. The dust should be moved from the drum and then directly to the drum. The filters on the vacuum should be changed when they become loaded rather than attempting to clean them. The filters should be disposed of in properly sealed containers.

Henry B. Hick
Lead Analyst, Hygienist

8005 0783

PQ