Preliminary Industrial Hygiene Survey

Auto Brake Clinic
Cincinnati, Ohio

Survey Date
August 8, 1976

Survey Conducted By
Paul L. Johnson

Report Prepared By
Paul L. Johnson

Introduction and Description of Plant

The Division of Surveillance, Hazard Evaluations, and Field Studies (DSHEFS) of the National Institute for Occupational Safety and Health (NIOSH) has underway an "industrywide" study of asbestos exposures during brake maintenance and repair. Of particular interest in this study are small diameter, potentially respirable fibers emitted into the air during brake servicing operations.

On August 8, 1976 Paul L. Johnson collected airborne and brake drum dust samples at the Auto Brake Clinic located on Central Parkway, Cincinnati, Ohio. The major services at this facility are front-end alignment and brake repair. The three service stalls used at this facility for brake servicing are presently utilized by 3 employees. These employees are responsible for examination, cleaning, and repair of all brake servicing operations. During the survey the brakes on four vehicles were serviced.

Medical, Industrial Hygiene and Safety Programs

Presently the Auto Brake Clinic has no programs for medical or employee safety. According to Garrett Barns (Manager) no lost time has been attributed to accidents during the last five years.

Survey and Sampling Procedures

The major portion of this visit was devoted to collecting airborne dust samples during brake servicing operations. Seven general area, five personal air samples and three bulk brake drum dust samples were obtained during the visit. The general area and personal air samples were collected on Millipore Type AA membrane filters at a sample rate of 2.0 liters per minute. Both general area and personal samples have been analyzed by phase contrast counting methods. The concentration results have been recorded in Table I in units of fibers longer than 5 micrometers per cubic centimeter of air (fibers > 5 μm/cc of air).

Conclusions and Recommendations

Results of the air samples indicate workplace concentrations below the legal standard set by the Occupational Safety and Health Administration (OSHA). The current OSHA asbestos standard 29 CFR 1910.1001(b)(2) states: "The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed two fibers, longer than 5 micrometers, per cubic centimeter of air..." The results of the air sampling showed concentrations of 0.011 to 1.82 fibers greater than 5 μm/cc of air.

Since the potential for workers being overexposed to asbestos does exist management should set up safe work procedures and comply with all OSHA asbestos standards. A copy of the OSHA standard 29 CFR 1910.1001 and a copy of the NIOSH Recommended (Interim) Procedures for Asbestos Brake and Clutch Servicing have been included along with the survey report. The use of air cleaning of brake assemblies is not a recommended method of removing dust. In addition, OSHA regulation 29 CFR 1910.242(b) states that air pressure, if used for cleaning, shall be effectively less than 30psi when dead ended and that effective chip guarding and personal protective equipment must also be used.

The bulk brake drum dust samples collected are presently being analyzed by electron microscopy. Characterization by this method will include identification of fibers and impurities such as trace metals. High power electron microscopic techniques will include selected area electron diffraction and energy dispersive x-ray analysis. All results will be forwarded to Auto Brake Clinic upon completion.

Table I

Analysis of Dust Sampling-Auto Brake Clinic

Type Sample	Volume (liters)	Time(minutes)	Fiber Concentrations (fibers > 5 μm/cc of air)
Personal			
#1	6	3	1.82
#2	164	22	.074
#3	174	87	.049
#4	306	243	.016
General Area			
Front East	548	274	.013
North Side	546	282	.011
North Side	186	98	.019
South Side	122	61	.169
East Front	196	98	.049
South Side	142	71	.017
South Side	470	235	.008