AIR SAMPLING

&

INDUSTRIAL HYGIENE SURVEY

GENUINE PARTS COMPANY
RAYLOC DIVISION
ATLANTA, GEORGIA

Survey Conducted By:
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PLACE VISITED	:	Rayloc 4200 Gordon Road Atlanta, Georgia Phone #: 404-691-3780
DATE OF TRIP	:	July 17-19, 1972
PERSONS MAKING TRIP	:	John M. Dement Patrick J. Shuler
PERSONS CONTACTED	:	Mr. Edward Kipling, Plant Manager Mr. Thomas Damiel, Production Manager
PURPOSE OF TRIP	:	To conduct an industrial hygiene survey and take asbestos and lead dust samples in the plant.

INTRODUCTION

During the week of July 17-21, 1972, an industrial hygiene survey and air sampling for asbestos and lead dusts were conducted at the Rayloc Division of the Genuine Parts Company, Atlanta, Georgia.

From the sample results and industrial hygiene survey, several conclusions can be drawn. The following paragraphs discuss plant operations and industrial hygiene practices along with conclusions and recommendations.

DESCRIPTION OF THE PLANT

The plant is located west of Atlanta and employs approximately 540 people operating on three shifts. Of these workers about 50 come into contact with brake linings or clutch facings on a routine basis. This facility was constructed by Genuine Parts Company in 1959 for the purpose of rebuilding various automotive parts. The plant is enclosed under one roof, additions having been made over the years to the original plant site.

Genuine Parts Company provides consultation to assist Rayloc and their other divisions with any safety and industrial hygiene problems. These services are also provided by Sentry, Rayloc's insurance company. The production manger is responsible for safety in the plant and is chairman of a five member safety committee which meets each month. The union, Teamsters Local 528, is also actively involved in the safety program in the plant.

The medical program consists of local physician retained as a part-time consultant, and workers trained in first aid who are always in the plant. A pre-employment physical is given which includes a chest X-ray, and blood and urine analysis. No pulmonary function tests or further physical examinations are given.

Products of the plant presently include rebuilt starters, generators, alternators, water pumps, fuel pumps, clutch pressure plates, and relined clutch discs and brake shoes. Clutch disc and brake shoe relining has been done here since the plant opened in 1959.

DESCRIPTION OF THE PROCESSES

The processes sampled were the relining of riveted and bonded brake shoes and clutch discs.

A. Brake Shoe Relining

The used brake assemblies are first sorted according to size. The old worn linings are removed next. Riveted linings are sheared off and bonded linings are burned off. Next the shoes are degreased by heat if necessary, then cleaned in a "Wheelabrator" which uses high velocity steel shot to abrade the surfaces. The shoes are then dipped in a corrosion inhibitor and straightened if needed. Next, the new linings are either riveted or are bonded to the shoe. All relined assemblies are then surface ground to provide the correct radius of curvature. The finished products are given a final inspection and packed for shipment.

B. Clutch Disc Relining

The used clutch discs are first "wheelabrated" with the old friction pad still on to insure that the thin metal torque members are not damaged. Next, the old friction surface is removed by deriveting the clutch disc with either a drill or punch press. A new pad is riveted on the disc; the whole assembly is inspected and boxed for shipment.

SURVEY PROCEDURES

The actual sampling for asbestos fibers and lead dust was confined to the brake and clutch rebuilding areas since these

were the only areas using these materials. No other potential exposures were noticed in the rest of the plant with exception to toluene in the starter rebuilding area. Personal samples were collected on workers at each of the steps in the process of relining brakes and clutches in order to determine which jobs, if any, pose potential health problems.

Samples were collected on a Millipore Type AA cellulose ester membrane filter at a calibrated flow of 1.7 liters/minute. The type of pump used was a MSA permissible personal air sampler.

Analysis for asbestos fibers was done by counting fibers greater than 5 μm in length under a phase contrast microscope at a magnification of 430x. The amount of lead was determined by chemical analysis[2] on the same filters as the asbestos concentration was evaluated.

An industrial hygiene survey of the plant was also conducted to try to evaluate general housekeeping and ventilation systems.

INSPECTION OF THE PLANT

Potential Health Hazards

The potential health hazards which were noticed during the survey are as follows:

1. Exposure to asbestos dust during brake and clutch relining.
2. Lead exposure from lining materials during brake and clutch relining.
3. Toluene exposure during insulation coating of various armatures.

Measurements were made of both asbestos dust and lead exposure in each of the friction operation. No measurements of solvent exposure were made.

Personal Protection

Safety glasses are required in certain areas of the plant. Approximately 40% of the plant employees wear safety glasses. Respirators are not required in production operations; however, respirators are required when cleaning or repairing the bag dust collectors. Safety shoes are not required but the company does have a program to aid in their purchase.

A noise study has been conducted in the plant recently by Sentry Insurance. Mr. Kipling indicated that the only operation near the 90 dba present standard was grinding. No hearing protection is required at the present time.

Ventilation

Local exhaust ventilation is provided on all 3 brake lining grinders and on all 5 "Wheelabrator" cleaning machines. These machines are vented to 6 "Wheelabrator" bag dust collectors.

Figure 1 shows a layout of the friction products area of the plant along with locations of the dust collectors and their respective capacities.

Velocity measurements at the entrance to the grinder hoods showed velocities ranging from 600 fpm to 1100 fpm. No ventilation is provided at the clutch deriveting operation.

Housekeeping

In general, the plant was quite well kept with sufficient room to minimize overcrowding. All floor cleaning is done with vacuum sweepers on a continual basis. Compressed air is used for cleaning but all outlets have low pressure nozzles.

Results and Discussion

The results of this survey are presented in Table 1. The present standard for asbestos was published in the Federal Register on June 7, 1972. In essence the standard is as follows:

> "The 8-hour time-weighted average airborne concentration of asbestos fibers to which any employee maybe exposed shall not exceed five fibers, longer than five micrometers, per cubic centimeter of air, as determined by the membrane filter method at 400-450x magnification (4 millimeter objective) phase contrast illumination. No employee shall

be exposed at any time to airborne asbestos fibers in excess of ten fibers, longer than five micrometers, per cubic centimeter of air."

On July 7, 1976, a new standard of 2.0 fibers greater than 5 micrometers in length per cubic centimeter of air will be effective.

None of the 45 samples exceeded the present standard for asbestos, the highest value being 4.8 fibers/ml (fibers greater than 5 micrometers in length per milliliter). There were only three samples that exceeded the future asbestos standard of 2.0 fibers/ml. All of these samples were taken on person deriveting old clutch facings by drilling out the rivets. A total of four samples were taken at this operation, the mean being 2.6 fibers/ml. Surface grinding produced the second highest average exposure, its value being 1.4 fibers/ml. All other operations had an average value at or below 1.0 fibers/ml.

Lead concentrations were very low except for the clutch deriveting and brake shoe sorting operations. The present standard for lead dust exposure is 0.15 mg/m^3. Lead results are also given in Table 1.

CONCLUSIONS AND RECOMMENDATIONS

From the sample results and the industrial hygiene survey, the following conclusions and recommendations are made:

1. There was no operation that had asbestos exposures in excess of the present standard of 5 fibers/ml. The only operation in excess of the future standard of 2.0 fibers/ml was the removal of old clutch facings by drilling. This operation also had lead exposures in excess of the present standard of 0.15 mg/m^3. Particle size estimates of the lead particles has shown that 80% of the particles were less than 3.5µ in diameter and would therefore by respirable. Due to the high lead exposures local exhaust ventilation should be added at these drills immediately.

2. Lead concentrations in the old shoe sorting operation were also above the present standard of 0.15 mg/m^3. Particle size estimates on these samples has shown that 85% of these particles were smaller than the 3.5µ respirable diameter. The high concentrations appear to be the result of brake lining wear dust clinging to old brake shoe assemblies. Our past experience has shown that most wear dust contains approximately 6% lead by weight.[3] Two possible solutions to this problem would be to either first wet or vacuum off the brake assemblies before sorting.

3. There was a detectable toluene odor in the area of the armature dip tank. Although this odor was present, it is highly possible that toluene concentrations are well below the present standard of 100 ppm (the odor threshold for toluene is only 2.1 ppm). In any event, toluene concentrations should be determined for this area and local exhaust ventilation installed if levels are found excessive (>100 ppm).

4. Due to the elevated lead exposures found in the brake shoe sorting operation and clutch deriveting operation, blood lead levels should be determined for workers in these areas. A program of periodic blood lead checks should be established.

REFERENCES

1. Edwards, G.H. and J.R. Lynch, "The Method Used by the U.S. Public Health Service for Enumeration of Asbestos Dust on Membrane Filters", Am. Occup. Hyg., 11:1-6 (1968).

2. Keenan, Robert G., etal., "The 'U.S.P.H.S.' Method for Determining Lead in Air and in Biological Materials", Am. Ind. Hyg. Assoc. Journal, 24:481-491 (1963).

3. Interoffice Report on Garage Lead Exposures, March 16, 1972.

FIGURE 1: FRICTION PRODUCT LAYOUT WITH COLLECTORS

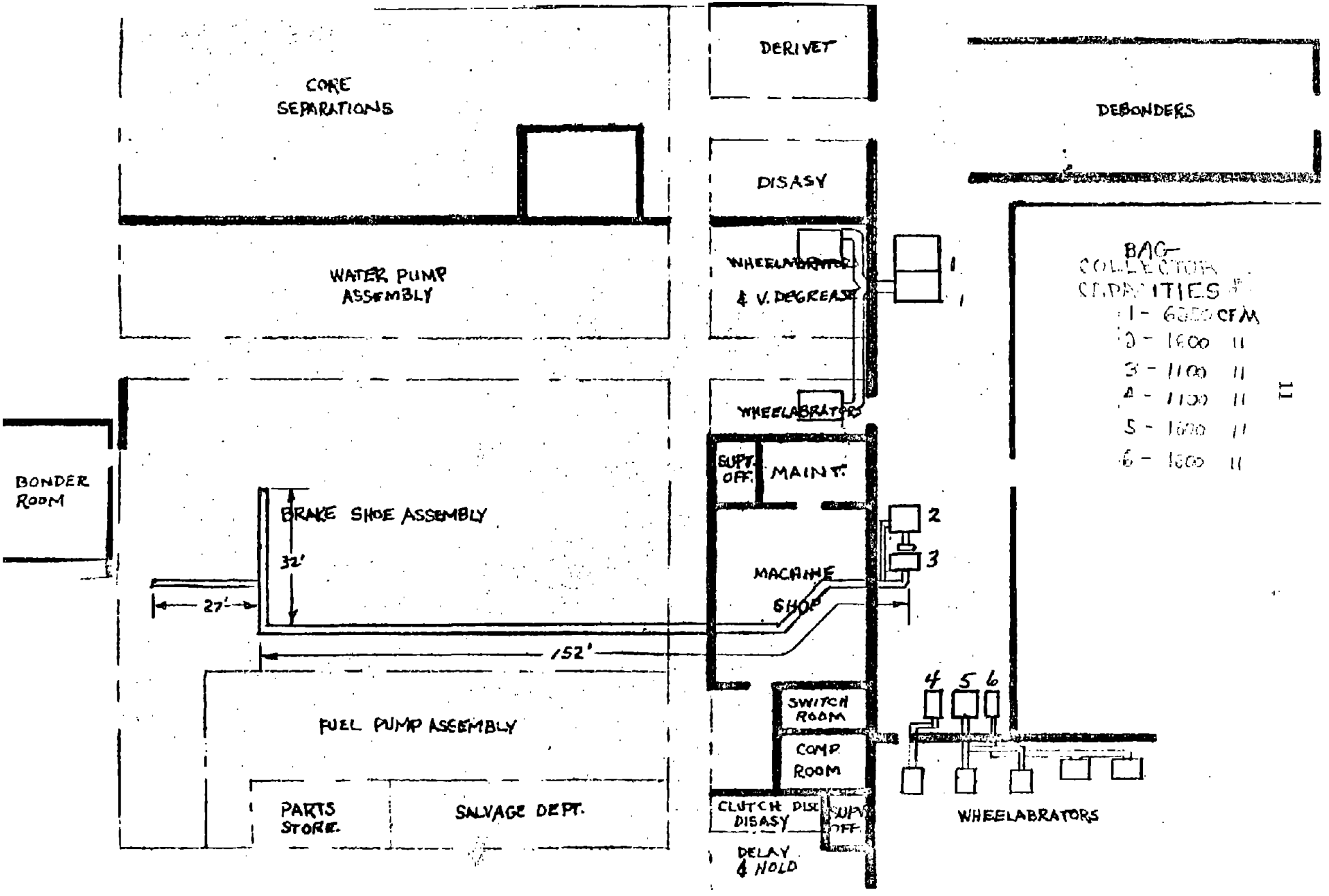

TABLE 1

RESULTS OF SURVEY

AT

RAYLOC

Atlanta, Georgia

July 17-19, 1972

JOB	SAMPLE #	CONCENTRATIONS *ASBESTOS FIBERS* *Fibers >5μm in length per ml*	*LEAD* *mg/m³*
Brake Shoe Section			
Sort old brake shoes	44	1.0	0.32
Sort old brake shoes	45	0.2	0.21
Deriviter, brake shoes	37	1.0	0.08
Load old bonded shoes in oven that removes lining	38	0.4	0.05
Load old bonded shoes in oven that removes lining	39	0.6	0.07
Wheelabrator, brake shoes	26	0.7	0.12
Wheelabrator, brake shoes	27	0.7	0.11
Wheelabrator, brake shoes	35	0.4	0.08
Wheelabrator, brake shoes	36	0.4	0.06
Apply adhesive to linings	40	0.3	0.07
Apply adhesive to linings	41	0.3	0.10
Riviter helper	13	0.5	0.10
Riviter helper	12	0.5	0.08
Riviter	15	0.5	0.06
Riviter	14	0.7	0.12
Riviter	22	0.2	0.05
Riviter	21	0.3	0.05
Riviter	20	0.6	0.05
Riviter	11	0.9	0.08
Riviter	24	0.6	0.17
Riviter	16	0.5	0.06
Inspector, after rivit	7	1.0	0.05
Bonder	17	1.4	0.06
Bonder	18	1.2	0.04
Bonder	19	1.0	0.03
Bonder	25	0.3	0.14
Bonder	23	0.7	0.16

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Atlanta, Georgia
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JOB	SAMPLE #	CONCENTRATIONS ASBESTOS FIBERS Fibers >5μm in length per ml	LEAD mg/m³
Surface Grinder	03	1.5	0.10
Surface Grinder	04	1.0	0.05
Surface Grinder	01	1.6	0.09
Inspector, by grinder	02	0.8	0.06
Inspector, by grinder	05	0.9	0.09
Inspector, by grinder	06	0.8	0.07
Inspector, final product	09	0.8	0.08
Packer	08	0.9	0.09
Packer	10	1.1	0.07
Clutch Facing Section			
Wheelabrator, clutch facings	28	0.6	0.19
Derivit clutch facings (punch press)	34	0.9	0.06
Derivit clutch facings (drilling)	42	2.8	0.30
Derivit clutch facings (drilling)	43	4.8	0.25
Derivit clutch facings (drilling)	33	2.0	0.70
Derivit clutch facings (drilling)	32	0.6	0.21
Riviter, clutch facings	30	0.4	0.07
Riviter, clutch facings	29	0.3	0.04
Packer clutch facings	31	0.2	0.07