ENGINEERING REPORT
for

GENUINE PARTS COMPANY, INC.
RAYLOC - HANCOCK
100 Rayloc Drive
Hancock, Maryland 21750

Industrial Hygiene
Survey

February 28, 1989

prepared by

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OSHA's Chemical Hazard Communication Standard - 1910.1200, "Chemical Reactions," Volume XII, No. 2

Chemical Hazard Communication, U. S. Department of Labor

INTRODUCTION

During January, 1989, I was contacted by Mr. William Wright, Jr., Loss Control Engineer with The Travelers Atlanta Office, to discuss industrial hygiene air sampling requested by Rayloc Remanufacturing Division management. Mr. Wright serves as the Engineering Account Manager for Genuine Parts Company, Incorporated.

Rayloc Division management requested an industrial hygiene air sampling evaluation at selected remanufacturing locations to assess employees' potential exposure to airborne asbestos fibers during typical brake department operations.

I contacted Mr. Joe Huff, General Manager, to schedule an industrial hygiene air sampling survey at the Rayloc Remanufacturing facilities in Hancock, Maryland, Location Code 2-5-116. On February 28, I conducted an industrial hygiene air sampling survey at this location to assess employees' potential exposure to airborne asbestos fibers during typical brake department operations. Also, during this survey, I reviewed the Hazard Communication Program which has been developed and implemented.

This report documents the results of my industrial hygiene evaluation.

CONCLUSIONS

Personal samples were taken for operators while performing chopping, midas belt sorting, clutch disc drilling, debonding, and disc brake riveting operations. Eight-hour, time-weighted average (8-hour TWA) exposures to asbestos fibers, for those operators sampled, were calculated based upon the concentration of fibers identified as asbestos in each sample by transmission electron microscopy (TEM) analysis. The eight-hour TWA exposure to asbestos fibers for all operators sampled approached or exceeded the Action Level of 0.1 fibers per cubic centimeter of air.

The eight-hour TWA exposure to asbestos fibers, for the clutch disc drilling, the burn room, and the disc brake riveting operators sampled, exceeded the Permissible Exposure Level of 0.2 fibers per cubic centimeter of air as established by OSHA Standard 1900.1001.

A summary of the results is as follows:

	OPERATOR	OPERATION	8-HOUR TWA
1.	Eugene Hart	Chopper Operator	0.1763 Asbestos Fibers/Cubic Centimeter
2.	Rick Vance	Midas Belt Sorter	0.0994 Asbestos Fibers/Cubic Centimeter
3.	Darrel Miller	Clutch Disk Driller	0.4797 Asbestos Fibers/Cubic Centimeter
4.	David Golden	Burn Room Operator	0.4885 Asbestos Fibers/Cubic Centimeter
5.	Allen Wigfield	Disk Brake Riveter	0.7505 Asbestos Fibers/Cubic Centimeter

As a result of these asbestos sampling results, a formal asbestos exposure control program should be developed and implemented in accordance with OSHA Standard 1910.1001.

The development of a Chemical Hazard Communication Program has been completed and the program has been implemented. Material Safety Data Sheets (MSDS) are being compiled by department. The formal, written program includes provisions for training employees regarding chemical handling and the appropriate use of personal protective equipment, labeling containers with specific chemical content and hazard warnings, and reviewing MSDS's on a periodic basis. Currently, documented employee training is being completed on an annual basis.

RECOMMENDATIONS

88-2 (Originally submitted November 4, 1988): Reworded IMPORTANT: Asbestos Exposure Control Program: A formal asbestos exposure control program should be developed and implemented in accordance with OSHA Standard 1910.1001. This program should address the following provisions.

1. Feasible engineering controls and/or work practices should be developed and implemented to reduce and maintain employee exposure at or below the Permissible Exposure Limit. Engineering controls include isolation, local exhaust ventilation, process enclosures, dust collection systems, etc. Work practice controls include using wet methods, prohibiting the use of compressed air for cleaning activities, etc. Job rotation is not an acceptable means of employee exposure control.

2. Personal protective equipment must be provided and used by employees until engineering controls or work practice controls can be effectively implemented. Personal protective equipment required should include:

   a. Approved, cartridge-type respirators should be provided for and used by employees. Also, with a formal respiratory protection program in accordance with OSHA Standard 1910.134 should be implemented immediately.

   b. Special clothing including coveralls, head coverings, gloves, and foot coverings should be provided and used by employees immediately.

3. Warning signs should be provided and displayed in each area where airborne asbestos fiber concentrations are in excess of the Permissible Exposure Limit.

4. Affected employees should be notified in writing regarding the sampling results within 15 working days after receipt of these sampling results. This written notification should contain corrective action being taken by the employer to reduce employee exposure to at or below the Permissible Exposure Level wherever sampling results indicate that the Permissible Exposure Limit has been exceeded.

5. A medical surveillance program should be implemented for all employees who are or will be exposed to airborne concentrations of asbestos fibers at or above the Action Level. Before an employee is assigned to an occupation where exposed to airborne concentration of asbestos, a preplacement medical examination should be provided. This examination should include, at a minimum, a medical and work history, a complete physical examination of all systems with emphasis on the respiratory system, cardiovascular system, and digestive tract, completion of the respiratory disease standardized questionnaire, a chest roentgenogram, pulmonary function tests to include forced vital capacity and forced expiratory volume at one second, and any additional tests deemed appropriate by the examining physician. Follow-up medical examinations should be provided on an annual basis.

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6. Clean change rooms with shower facilities and isolated lockers should be provided for employees who work in areas where airborne asbestos fibers are present at or above the Permissible Exposure Limit. Also, laundering service for contaminated clothing should be made available to all employees who work in these regulated areas.

7. A training program for all employees who are exposed to airborne concentrations of asbestos at or above the Action Level should be developed and implemented. This training program should include provisions for discussing the health effects associated with asbestos exposure, the relationship between smoking and exposure to asbestos, the quantity and location of asbestos, the specific nature of operations which could result in exposure to asbestos, engineering controls and work practices associated with employee's job assignment, proper use of personal protective equipment, the medical surveillance program, and the provisions of OSHA Standard 1910.1001. This training program should be repeated annually. Records should be maintained on file to document all training activities.

8. Resampling to evaluate employee exposure to asbestos should be conducted at least semiannually. Also, resampling is suggested to ensure that any engineering controls implemented are effective in reducing employee exposure to asbestos.

These are minimum requirements of the OSHA Asbestos Standard. To ensure compliance with this legal standard, a copy of OSHA Standard 1910.1001 has been provided in Exhibit 4 of the Appendix to assist you with compliance.

TECHNICAL DISCUSSION

I. Air Sampling

Air sampling was conducted in the brake department during typical brake remanufacturing operation. A personal sampling strategy was used during this industrial hygiene evaluation.

During personal sampling, both the pump and collecting medium are attached directly to the workers to sample the air to which they are exposed during the typical workday. This is the preferred method since it takes into consideration those times during the workday when employees are away from the areas of actual exposure.

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The sampling apparatus consisted of battery powered air sampling pumps which draw air through a collecting medium at a predetermined flow rate. The flow rate was monitored by means of a rotameter calibrated prior to use against a primary standard mass flow meter. An open-faced, 25mm millipore filter was used to collect airborne fibers.

Details of sampling locations and sampling equipment are given in the four Industrial Hygiene Survey Data Sheets contained in Exhibit 1 of the Appendix. Also provided in Exhibit 2 of the Appendix are two Industrial Hygiene Analysis Reports/Extension Sheets which present analytical data and test results.

The analytical method used by The Travelers Laboratory to determine fiber concentration was phase contrast microscopy. This method is consistent with NIOSH 7400 Standards. The NIOSH 7400 method does not distinguish between fiber types present. This method requires that all fibers meeting the set criteria be counted. However, due to the presence of airborne particulates in the work place, some samples taken were overloaded with particulate matter. Fibers were observed on these filters but an accurate fiber count could not be performed. Thus, employees' eight-hour TWA exposure was not calculated using the total fiber count.

To determine actual asbestos content of the air sample, additional analysis by transmission electron microscopy (TEM) was required. Transmission electron microscopy allows for identification of the type of fibers and the determination of quantity present. These samples were sent to an outside laboratory, Electron-Microscopy Service Laboratories, Incorporated, for TEM analysis. Results of this TEM analysis are provided in Exhibit 3 of the Appendix. The OSHA hygienic standard for asbestos exposure provides for a Permissible Exposure Limit (PEL) of 0.2 fibers per cubic centimeter of air and an Action Level of 0.1 fibers per cubic centimeter of air calculated as an eight-hour, time-weighted average.

The type of asbestos fibers present in each sample was determined to be chrysotile. Chrysotile is a common form of asbestos used in automotive brake shoes.

An eight-hour, time-weighted average concentration permits excursions above the hygienic standard provided they are compensated for by equal excursions below the hygienic standard during the workday. When analyzing the results obtained for these personal samples, eight-hour, time-weighted averages were calculated and compared to the applicable OSHA hygienic standard. The concentration of asbestos fibers greater than five microns in length in each sample was used to calculate the eight-hour, time-weighted average exposure for each employee sampled.

Limitations of the sampling performed should be noted. Samples taken during this survey are considered representative of the worker's exposure to the specific contaminants measured on the day of the sampling. Results may not adequately reflect exposures on other days, when changes in operations, production levels, atmospheric conditions, or other conditions might affect the airborne contaminants concentrations and exposure times.

The following is a synopsis of the air sampling results by department:

A. Chopper

In the chopping operation, the friction material bonded to the brake shoe is removed by a mechanical chopping operation using a special machine. This friction material contains asbestos fibers. This chopping machine is provided with a local exhaust ventilation duct which is located near the point of operation. However, tests results indicate that this ventilation arrangement is not adequate in removing asbestos fibers at their source.

B. Midas Belt Sorting

Incoming, used brake shoes are sorted on a table by type and model. Approximately 12,000 shoes per day are sorted. Shoes are sorted on this table and then deposited into barrels for further processing at various other stations. No local exhaust ventilation is provided for this area.

C. Clutch Disc Drilling

In this operation, holes are being drilled into the facings on the clutch disc. A mechanical drill press is used for these drilling operations. Two drill presses are operated simultaneously. A local exhaust ventilation duct is provided in the vicinity of the point of operation for these machines. Sample results indicated that this ventilation system is ineffective in removing asbestos fibers at their source.

D. Burn Room

The presorted, incoming brake parts are dumped onto a table within the burn room. These parts are placed into a burn barrel which has been previously punctured with holes. These barrels are placed in an open flame where the brake shoe lining is

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debonded. After the burning process, the brake shoes are separated from the lining and the shoes are placed back in the original barrel for further processing. A local exhaust ventilation system has been provided for the dump table within the burn room. However, this exhaust vent is positioned above the table and draws asbestos fibers through the operator's breathing zone prior to removal from the work place. This local exhaust ventilation system is inappropriately designed.

E. Disc Brake Riveting

In this department, new pucks are riveted onto disk plates. Mechanical rivet presses are used to install these pucks. No local exhaust ventilation is provided in the vicinity of these operations.

II. Hazard Communication Program

A list of chemicals used within operations has been compiled by department. Material Safety Data Sheets have been obtained for all of these chemicals and have been compiled within a notebook. This chemical list and the Material Safety Data Sheets are readily available for employees to review at their convenience. These Material Safety Data Sheets are periodically reviewed and updated to ensure they are current.

A formal, written Hazard Communication Program has been developed and implemented for this location. This written program includes provisions for container labeling with chemical contents and hazard warnings, employee training regarding interpretation of MSDS's, proper chemical handling procedures, proper use of personal protective equipment, and the periodic review of MSDS's.

Employee training sessions are conducted annually. These training sessions are documented and documentation is maintained on file. Employee training is vital in the success of an effective communication program.

Two publications have been enclosed with this report to assist you with compliance regarding OSHA's Chemical Hazard Communication Standard. These publications include:

OSHA's Chemical Hazard Communication Standard - 1910.1200, "Chemical Reactions", Volume XII, No. 2.

Chemical Hazard Communication, U. S. Department of Labor

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INDUSTRIAL HYGIENE SURVEY DATA SHEET (See instructions on reverse side)

THE TRAVELERS INSURANCE COMPANIES
HARTFORD, CONNECTICUT 06183

(Location 2-5-116)

CUSTOMER	LOCATION	SURVEY DATE
GENUINE PARTS CO., INC. - RAYLOC	100 Rayloc Dr. Hancock, Maryland 21750	February 28, 1989

POLICY NUMBER/CLAIM NUMBER	BUSINESS UNIT
UB 168 T 3075	☒ SAM/CAD ☐ CAM ☐ FIELD (AMO.) ☐ CLAIM ☐ CSSC ☐ OTHER (EXPLAIN)

INSTRUMENTATION

INSTRUMENT	MANUFACTURER	MODEL
HI FLOW SAMPLER	GILIAN	HFS-113

SERIAL NUMBER	TIC NUMBER	REASON FOR SAMPLING – INCLUDE PROCESS OR OPERATION DESCRIPTION & CONTROLS
1017	3/81	Division management's request to assess employee's potential exposure to asbestos fibers in the
1994	25/82	Brake Shoe Department during typical brake rebuild operations such as chopping, midas belt sorting,
	68/83	clutch disc drilling, burning, and disc brake riveting. Remanufacturing of automotive parts.
10459	181/85	
5879	101/84	

COLLECTION (SAMPLING) MEDIA	ANALYSIS REQUIRED
MILIPORE FILTERS (OPEN FACED)	ASBESTOS FIBERS (Including TEMS Analysis)

SAMPLE DATA

TIC INST NO.	SAMPLE NUMBER	SAMPLING LOCATION (INCLUDE EMPLOYEE'S NAME)	COLLECTION TIME Start	COLLECTION TIME End	COLLECTION DURATION (MINS)	FLOW RATE (LPM)	SAMPLER POSITION	NUMBER OF PERSONS IN AREA	EXPOSURE TIME (MINS)	SHIFT DURATION (MINS)	COMMENTS
3/81	MP 431F	Eugene Hart	0742	1151	249	2.0	PS	2	450	510	Local exhaust ventilation
		Chopper Operator									
3/81	433F	Eugene Hart	1244	1410	86	2.0	PS	2	450	510	Local exhaust ventilation
		Chopper Operator									
3/81	219F	Eugene Hart	1410	1555	105	2.0	PS	2	450	510	Local exhaust ventilation
		Chopper Operator									
25/82	434F	Rick Vance	0754	1149	235	2.0	PS	8	480	540	General ventilation
		Midal Belt Sorter									

OFFICE	ENGINEER	SIGNATURE	DATE SIGNED
Baltimore	J. E. David, III	Joseph E. David III	5-19-89

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INDUSTRI. HYGIENE SURVEY DATA SHEET (See instructions on reverse side)

THE TRAVELERS INSURANCE COMPANIES
HARTFORD, CONNECTICUT 06183

(Location 2-5-116)

CUSTOMER	LOCATION	SURVEY DATE
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10459	181/85	
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25/82	428F	Rick Vance	1240	1411	91	2.0	PS	8	480	540	General ventilation
		Midas Belt Sorter									
25/82	220F	Rick Vance	1411	1557	106	2.0	PS	8	480	510	General ventilation
		Midas Belt Sorter									
68/83	426F	Darrel Miller	0744	1147	243	2.0	PS	2	450	510	Local exhaust ventilation
		Clutch Disc Driller									
68/83	425F	Darrel Miller	1237	1408	91	2.0	PS	2	450	510	Local exhaust ventilation
		Clutch Disc Driller									

OFFICE	ENGINEER	SIGNATURE	DATE SIGNED
Baltimore	J. E. David, III	Joseph E. David, III	5-19-89

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INDUSTRIA HYGIENE SURVEY DATA SHEET (See instructions on reverse s...)

THE TRAVELERS INSURANCE COMPANIES
HARTFORD, CONNECTICUT 06183

(Location 2-5-116)

CUSTOMER	LOCATION	SURVEY DATE
GENUINE PARTS CO., INC. - RAYLOC	100 Rayloc Dr. Hancock, Maryland 21750	February 28, 1989

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1994	25/82	Brake Shoe Department during typical brake rebuild operations such as chopping, midas belt sorting,
[illegible]	68/83	clutch disc drilling, burning, and disc brake riveting. Remanufacturing of automotive parts.
10459	181/85	
5879	101/84	

COLLECTION (SAMPLING) MEDIA	ANALYSIS REQUIRED
MILIPORE FILTERS (OPEN FACED)	ASBESTOS FIBERS (Including TEMS Analysis)

SAMPLE DATA

TIC INST NO.	SAMPLE NUMBER	SAMPLING LOCATION (INCLUDE EMPLOYEE'S NAME)	COLLECTION TIME Start	COLLECTION TIME End	COLLECTION DURATION (MINS)	FLOW RATE (LPM)	SAMPLER POSITION	NUMBER OF PERSONS IN AREA	EXPOSURE TIME (MINS)	SHIFT DURATION (MINS)	COMMENTS
68/83	MP 224F	Darrel Miller	1408	1550	102	2.0	PS	2	450	510	Local exhaust ventilation
		Clutch Disc Driller									
181/85	427F	David Golder	0741	1155	254	2.0	PS	2	450	510	General ventilation
		Burn Room Operator									
181/85	429F	David Golden	1241	1405	84	2.0	PS	2	450	510	General ventilation
		Burn Room Operator									
181/85	217F	David Golden	1405	1549	104	2.0	PS	2	450	510	General ventilation
		Burn Room Operator									

OFFICE	ENGINEER	SIGNATURE	DATE SIGNED
Baltimore	J. E. David, III	Joseph E. David III	5-19-89

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INDUSTRI. . HYGIENE SURVEY DATA SHEET (See instructions on reverse side)

THE TRAVELERS INSURANCE COMPANIES
HARTFORD, CONNECTICUT 06183

(Location 2-5-116)

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10459	181/85	
5879	101/84	

COLLECTION (SAMPLING) MEDIA	ANALYSIS REQUIRED
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SAMPLE DATA

TIC INST NO.	SAMPLE NUMBER	SAMPLING LOCATION (INCLUDE EMPLOYEE'S NAME)	COLLECTION TIME Start	COLLECTION TIME End	COLLECTION DURATION (MINS)	FLOW RATE (LPM)	SAMPLER POSITION	NUMBER OF PERSONS IN AREA	EXPOSURE TIME (MINS)	SHIFT DURATION (MINS)	COMMENTS
101/84	436F	Allen Wigfield	0751	1144	233	2.0	PS	6	450	510	General ventilation
		Disc Brake Riveter									
101/84	430F	Allen Wigfield	1247	1416	89	2.0	PS	6	450	510	General ventilation
		Disc Brake Riveter									
101/84	223F	Allen Wigfield	1416	1552	96	2.0	PS	6	450	510	General ventilation
		Disc Brake Riveter									
MP	435F	Control blank									MP 400F Series filters
MP	222F	Control blank									MP 200F Series filters

OFFICE	ENGINEER	SIGNATURE	DATE SIGNED
Baltimore	J. E. David, III	Joseph E. David, III	5-19-89

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INDUSTRIAL HYGIENE ANALYSIS REPORT

CHEMICAL AND ENVIRONMENTAL SERVICES UNIT

ANALYSIS NO.	CUSTOMER	ADDRESS
890185 (15-13)	Genuine Parts Co., Inc.	Rayloc, Hancock, MD

SAMPLE SENT BY	DATE RECEIVED	DATE REPORTED	ANALYST
J. E. David	3/9/89	3/28/89	TSS/JGC

MATERIAL ANALYZED: MP Filters

SURVEY DATE: 2/28/89

SAMPLE NUMBER	LOCATION (OR EMPLOYEE)	TEST RESULTS	TIME-WEIGHTED AVERAGE	HYGIENIC STANDARDS
431F	Eugene Hart-chopper operator	Total Fibers Present*		Asbestos OSHA PEL 0.2fibers/cc Action Level 0.1 fibers/cc
433F	Eugene Hart-chopper operator	Total Fibers 0.063 fibers/cc		
219F	Eugene Hart-chopper operator	Total Fibers 0.061 fibers/cc		
434F	Rick Vance-Midas belt sorter	Total Fibers Present*		
428F	Rick Vance-Midas belt sorter	Total Fibers 0.053 fibers/cc		
220F	Rick Vance-Midas belt sorter	Total Fibers 0.041 fibers/cc		

ANALYTICAL METHODS

Phase Contrast Microscopy/ NIOSH 7400

SPECIAL NOTES *Samples were overloaded with particulates. Fibers were observed but an accurate fiber count could not be performed.

Transmission Electron Microscopy (TEMS) is recommended to identify the type(s) of fiber(s) and the determine the quantity present.

NIOSH 7400 method does not distinguish between the fiber types present. This method requires that all fibers meeting the set criteria be counted.

DEFINITION OF TERMS

- N.D.L.T. – "none detected reported as a less than value" is the limit of sensitivity of the sampling methodology.
- Time-Weighted Average (TWA) – The employee's exposure averaged over 8 hours per day or 40 hours per week using this equation:

$$\text{TWA equivalent} = \frac{(C_1)(T_1) + (C_2)(T_2) + \ldots (C_n)(T_n)}{8 \text{ hrs. or } 40}$$

where C = concentration measured.
T = duration, in hours, of exposure at concentration C.

The TWA evaluations of this report are based on the exposure time given on the corresponding "Industrial Hygiene Survey Data Sheet."

- Ceiling limit (designated by a "C" in front of the Hygienic Standard) – This is a maximum allowable concentration which should never be exceeded.

  Short Term exposure limit (TLV) – This limit defines the maximum concentration of an air contaminant to which an employee can be exposed for a short period of time.
- Hygienic standard is the applicable allowable level in air, such as the TLV or PEL (permissible exposure limit), and unless otherwise specified is the current ACGIH – threshold limit value (TLV)

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HARTFORD, CONNECTICUT

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CHEMICAL AND ENVIRONMENTAL SERVICES UNIT

INDUSTRIAL HYGIENE ANALYSIS REPORT EXTENSION SHEET

ANALYSIS NO.	CUSTOMER	ADDRESS
890185	Genuine Parts Co., Inc.	Raylock, Hancock, MD

SAMPLE NUMBER	LOCATION (or employee)	TEST RESULTS	TIME-WEIGHTED AVERAGE	HYGIENIC STANDARD
426F	Darrel Miller-clutch disc driller	Total Fibers Present*		
425F	Darrel Miller-clutch disc driller	Total Fibers 0.422 fibers/cc		
224F	Darrel Miller-clutch disc driller	Total Fibers Present*		
427F	David Golden-burn room operator	Total Fibers Present*		
429F	David Golden-burn room operator	Total Fibers 0.304 fibers/cc		
217F	David Golden-burn room operator	Total Fibers Present*		
436F	Allen Wigfield-disc brake riveter	Total Fibers 0.125 fibers/cc		
430F	Allen Wigfield-disc brake riveter	Total Fibers 0.454 fibers/cc		
223F	Allen Wigfield-disc brake riveter	Total Fibers 0.370 fibers/cc		

SPECIAL NOTES

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