U.S.P.H.S. SURVEY

CINCINNATI MUNICIPAL GARAGE
Automobile Brake Servicing Operation

SURVEY DATE:
January 28, 1972

REPORT PREPARED BY:
John M. Dement

REPORT DATE:
March 16, 1972

REPORT #:
32.11

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO.	2. NA	3. Recipient's Accession No. PB83 188045

4. Title and Subtitle
USPHS Survey, Cincinnati Municipal Garage, Automobile Brake Servicing Operation, January 28, 1972.

5. Report Date
March 16, 1972

6. NA

7. Author(s)
John Dement

8. Performing Organization Rept. No.

9. Performing Organization Name and Address
NIOSH
4676 Columbia Parkway
Cincinnati, Ohio 45226

10. Project/Task/Work Unit No.
NA

11. Contract(C) or Grant(G) No.
(C)
(G)

12. Sponsoring Organization Name and Address
NIOSH
4676 Columbia Parkway
Cincinnati, Ohio 45226

13. Type of Report & Period Covered
IW 32.11

14. NA

15. Supplementary Notes

16. Abstract (Limit: 200 words)

Air samples taken during an automobile brake servicing operation on January 28, 1972 were analyzed for the presence of airborne asbestos fiber, lead dust, and copper dust. The samples were analyzed for asbestos fiber by means of X-ray diffraction and optical microscopy. Although most brake linings contain 20%-70% asbestos by weight, very little asbestos dust was found in the samples. The present theory used to explain these findings is that most of the fiber is converted to an amorphous mineral by intense heat and fine grinding during braking.

17. Document Analysis a. Descriptors
automotive-repair, asbestos, lead, copper, dusts, lead-dust, copper-dust,

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement:
AVAILABLE TO THE PUBLIC

19. Security Class (This Report) UNCLASSIFIED

21. No. of Pages 3

20. Security Class (This Page) UNCLASSIFIED

22. Price

(See ANSI-Z39.18) *See Instructions on Reverse*

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

National Institute for Occupational Safety & Health
550 Main Street Room 7017 FOB Cincinnati, Ohio 45202

March 16, 1972

Mr. Thomas Fry
Superintendent
Cincinnati Municipal Garage
Central Parkway
Cincinnati, Ohio

Dear Mr. Fry:

Analysis of the air samples taken during an automobile brake servicing operation in your garage on January 28, 1972 has been completed. The samples were analyzed for the presence of airborne asbestos fiber, lead dust, and copper dust. Due to physical limitations, all the samples could not be analyzed for lead and copper. The sample results are given in the attached table.

The samples were analyzed for asbestos fiber by means of X-ray diffraction and optical microscopy. Although most brake linings contain 20%-70% asbestos by weight, very little asbestos dust was found in the samples. The present theory used to explain these findings is that most of the fiber is converted to an amorphous mineral by intense heat and fine grinding during braking.

An emergency temporary standard for asbestos dust took effect upon publication in the Federal Register on December 7, 1971. The standard states:

> "The 8-hour time-weighted average airborne concentration of asbestos dust to which employees are exposed shall not exceed five fibers per milliliter greater than five microns in length, as determined by the membrane filter method at 400-450X magnification (4 millimeter objective) phase contrast illumination. Concentrations above five fibers per milliliter, but not to exceed 10 fiber per milliliter, may be permitted up to a total of 15 minutes in an hour for up to five hours in an 8-hour day."

Another provision of the standard prohibits the use of compressed air for "blowing off" machines and clothing. Although none of your samples exceeded the average or peak standards, the use of compressed air is not to be condoned as a safe practice.

Lead and copper dust concentrations were determined by atomic absorption analysis. The present standards for these substances are stated in the May 29, 1971 publication of the Federal Register. These standards are 0.2 and 1.0 milligrams per cubic meter respectively for lead and copper on an 8-hour time-weighted average basis. None of your samples indicated high copper dust concentrations; however, all the samples indicated some rather high lead exposures. It must be emphasized that these concentrations represent only peak, intermediate exposures occurring during the "blow-off" operation, and must not be considered the workers average exposure.

Due to the high peak lead concentrations found during the "blow-off" operation, some other method of wheel and back-plate cleaning should be used. The preferred method would be a vacuum system. Enclosed are several articles which may be of interest in deciding upon a system.

If we can be of any further assistance, please feel free to call at 513-684-3283. Your cooperation in this project is sincerely appreciated.

Very truly yours,

John M. Dement, Assistant Sanitary Engineer
Environmental Investigations Branch
Division of Field Studies & Clinical Investigations

Enclosure

cc: Director, DFSCI
Acting Deputy Director, DFSCI
Regional Program Director, NIOSH, Region V
Ohio State Health Department
Cincinnati Health Department
Acting Chief, EIB
Plant file
Region V file
Dictator's file
Readers' file
Division File
Central files (Cincinnati)
cc: of table to Bienetrics Branch, DFSCI

National Institute for Occupational Safety & Health
Division of Field Studies & Clinical Investigations
March 16, 1972

CINCINNATI MUNICIPAL GARAGE

Cincinnati, Ohio

Automobile Brake Servicing Operation

U.S.P.H.S. SURVEY

January 28, 1972

AIR SAMPLES

OPERATION	SAMPLE #	ASBESTOS CONCENTRATION FIBERS 5 /ml	LEAD CONCENTRATION MILLIGRAMS/M^3 [1]	COPPER CONCENTRATION MILLIGRAMS/M^3 [1]
"Blowing-Off" Front Drums	1	2.0	4.7	0.26
"Blowing-Off" Front Drums	2	0.8		
General Air During "Blow-Off"	3	0.6	0.55	0.06
"Blowing-Off" Rear Drums	4	3.0	2.34	0.52
"Blowing-Off" Rear Drums	5	2.1		
Re-assembly	6	0.2		
Re-assembly	7	0.2		
General Air During Re-assembly	8	0.9		

[1] A bulk sample was taken from the brake drum. This sample contained approximately 6% lead and .05% copper by weight.