PLAINTIFF'S EXHIBIT
SWB-15

Bell Laboratories

subject: Industrial Hygiene Evaluation of Asbestos Exposure to New York Telephone Employees at the Flatiron Building, 175 Fifth Avenue, New York City
Case: 48087-1

date: July 20, 1977

from: R. Deitchman

MEMORANDUM FOR RECORD

In early June 1977, a construction work crew from New York Telephone began cable dropping operations in the twenty story Flatiron Building at 175 Fifth Avenue in New York City. This project required placement of a new cable from the twentieth floor to the basement in a small vertical utility closet. The utility closet contained heating and water pipes that were lined with asbestos lagging that was flaking very badly. Because of the likelihood of asbestos exposure and the need for evaluation, work was suspended after the cable was dropped to the fifth floor. Sampling for asbestos exposure during work operations from the fifth floor to the basement was requested by Dr. C. Steinmetz of New York Telephone and was performed by Mr. R. Deitchman of the Bell Laboratories Environmental Health and Safety Group. Workers were provided with respirtory protection and protective clothing during this sampling period.

Summary

Results of sampling for asbestos exposure of the New York Telephone construction crew during cable dropping operations at the Flatiron Building revealed high concentrations of fibers during the intense morning work practices while low exposures were recorded in the afternoon cable securing operations. Though Occupational Safety and Health Administration (OSHA' standards are not violated, the levels are sufficient to require "action level" measures. Appendix I contains relevent sections of 1910.1001 of the Code of Federal Regulations (OSHA regulations on Asbestos). The important parts that form the basis for may recommendations are:

1. Allowable exposure on an 8-hour time-weighted average basis is 2 fibers per cubic centimeter with a maximum allowable ceiling concentration of 10 fibers per cubic centimeter. These values were not exceeded at the Flatiron Building.

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2. Respiratory equipment may be required if section (C) (2) (iii) is deemed to apply. This would require a respirator program including medical examination, training, a written manual, and respirator fit-testing.

3. Special clothing and change rooms may be necessary.

4. The employees affected by these measurements must be told the results and the corrective actions, if any, that will be taken.

5. Medical examinations of these employees and access to their records are required under OSHA regulations.

Sampling Procedure

The asbestos samples were collected using the procedures outlined both by the National Institute of Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA). Basically the procedure involves collection of the fibers on a small filter attached to a pump, with later analysis using phase contrast microscopy. Also, filter samples were collected on additional filters to be analyzed by scanning electron microscopy.

Air was pulled through the filters using battery powered sampling pumps manufactured by MSA at 2.0 l/min. The pumps were calibrated using the soap bubble flowmeter technique.

The phase contrast microscopy was performed by Mr. C. P. Lichtenwalner of the Bell Laboratories Enivronmental Health and Safety Group. Scanning electron microscopy was performed by EMV Associates, Rockville, Maryland.

Results

Table I presents the results of sampling on June 21, 1977 at the Flatiron Building. Section A shows the morning sampling concentrations when work was most intensely performed within the confined space of the utility closet. The method of counting (phase contrast microscopy) is less accurate than scanning electron microscopy used to analyze the afternoon samples as shown in Section B. The afternoon work consisted of securing the cable in the utility closet and would not produce high airborne concentrations of asbestos that are generated when the cable dropping operation contacts with the

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flaky asbestos-lagged pipes. It should also be noted that the scannning electron microscopy with energy dispersive X-ray analysis is specific for asbestos. In this case, EMV Associates reported numerous particles with a fibrous appearance that were most probably gypsum, not asbestos. This may account for some the high concentrations in the morning sampling since phase contrast microscopy can not differentiate their fibers.

Ray Deitchman

R. Deitchman

Att(s).

Table I
Appendix I

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Table I. Asbestos Measurements at Flatiron Building, New York City
21 June 1977

A. Samples collected in the morning and analyzed by phase contrast microscopy.

Location	Sample Duration (minutes)	Concentration (fibers/cc)
Personal Sample - Dennis McMahon	92	3.75
Personal Sample - William Maynard	93	0.54
Personal Sample - Oscar Ramasao	94	5.32

B. Samples collected in the afternoon and analyzed by scanning electron microscopy.

Location	Sample Duration (minutes)	Concentration (fibers/cc)
Personal Sample - Dennis McMahon	49	0.02
Basement in Utility Closet	126	0.03
Personal Sample - Oscar Ramasao	78	0.12
Area Sample - Sub-Basement	135	<0.01

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APPENDIX I

The following sections of OSHA regulation 1910.1001 CFR have relevance to these types of exposures to asbestos:

(a) Definitions. For the purpose of this section,

1. "Asbestos" includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

2. "Asbestos fibers" means asbestos fibers longer than 5 micrometers.

(b) Permissible exposure to airborne concentrations of asbestos fibers.

2. Standard effective July 1, 1976. The 8-hour time-weighted average air-borne 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.

3. Ceiling concentration. No employee shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers, longer than 5 micrometers, per cubic centimeter of air.

(c) Methods of compliance

1. Engineering methods.

(i) Engineering controls. Engineering controls, such as, but not limited to, isolation, enclosure, exhaust ventilation, and dust collection, shall be used to meet the exposure limits prescribed in paragraph (b) of this section.

2. Work practices.

(i) Wet methods. Insofar as practicable, asbestos shall be handled, mixed applied, removed, cut, scored, or otherwise worked in a wet state sufficient to prevent the emission of airborne fibers in excess of the exposure limits prescribed in paragraph (b) of this section, unless the usefulness of the product would be diminished thereby.

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(iii) Spraying, demolition, or removal. Employees engaged in the spraying of asbestos, the removal, or demolition of pipes, structures, or equipment covered or insulated with asbestos, and in the removal or demolition of asbestos insulation or coverings shall be provided with respiratory equipment in accordance with paragraph (d) (2) (iii) of this section and with special clothing in accordance with paragraph (d) (3) of this section.

(d) Personal protective equipment.

1. Compliance with the exposure limits prescribed by paragraph (b) of this section may not be achieved by the use of respirators or shift rotation of employees, except:

(i) During the time period necessary to install the engineering controls and to institute the work practices required by paragraph (c) of this section;

(ii) In work situations in which the methods prescribed in paragraph (c) of this section are either technically not feasible or feasible to an extent insufficient to reduce the airborne concentrations of asbestos fibers below the limits prescribed by paragraph (b) of this secton; or

(iii) In emergencies.

(iv) Where both respirators and personnel rotation are allowed by subdivisions (i), (ii), or (iii) of this subparagraph, and both are practicable, personnel rotation shall be preferred and used.

2. Where a respirator is permitted by subparagraph (1) of this paragraph, it shall be selected from among those approved by the Bureau of Mines, Department of the Interior, or the National Institute for Occupational Safety and Health, Department of Health. Education and Welfare, under the provisions of 30 CFR Part 11 (37 F.R. 6244, Mar. 25, 1972), and shall be used in accordance with subdivisions (i), 'ii), (iii), and (iv) of this subparagraph.

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(i) Air purifying respirators. A reusable or single use air purifying respirator, or a respirator described in subdivision (ii) or (iii) of this subparagraph, shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed no more than 10 times those limits.

(iv) Establishment of a respirator program.

(a) The employer shall establish a respirator program in accordance with the requirements of the American National Standards Practices for Respiratory Protection, ANSI Z88.2-1969, which is incorporated by reference herein.

(c) No employee shall be assigned to tasks requiring the use of respirators if, based upon his most recent examination, an examining physician determines that the employee will be unable to function normally wearing a respirator, or that the safety or health of the employee or other employees will be impaired by his use of a respirator. Such employee shall be rotated to another job or given the opportunity to transfer to a different position whose duties he is able to perform with the same employer, in the same geographical area and with the same seniority, status, and rate of pay he had just prior to such transfer, if such a different position is available.

3. Special clothing: The employer shall provide, and require the use of, special clothing, such as coveralls or similar whole body clothing, head coverings, gloves, and foot coverings for any employee exposed to airborne concentrations of asbestos fibers, whichexceed the ceiling level prescribed in paragraph (b) of this section.

4. Change rooms.

(i) At any fixed place of employment exposed to airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section, the

employer shall provide change rooms for employees working regularly at the place.

(ii) Clothers lockers: The employer shall provide two separate lockers or containers for each employee, so separated or isolated as to prevent contamination of the employee's street clothes from his work clothes.

(iii) Laundering: (a) Laundering of asbestos contaminated clothing shall be done so as to prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section.

b. Any employer who gives asbestos contaminated clothing to another person for laundering shall inform such person of the requirement in (a) of this subdivision to effectively prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section.

c. Contaminated clothing shall be transported in sealed impermeable bags, or other closed, impermeable containers.

(4) Employee observation of monitoring. Affected employees, or their representatives, shall be given a reasonable opportunity to observe any monitoring required by this paragraph and shall have access to the records thereof.

(i) Recordkeeping

1. Exposure records. Every employer shall maintain records of any personal or environmental monitoring required by this section. Records shall be maintained for a period of at least 3 years and shall be made available upon request to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of the National Institute for Occupation Safety and Health, and to authorized representatives of either.

2. Employee access. Every employee and former employee shall have reasonable access to any record required to be maintained by subparagraph (1) of this paragraph, which indicates the employee's own exposure to asbestos fibers.

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3. Employee notification. Any employee found to have exposed at any time to airborne concentrations of asbestos fibers in excess of the limits prescribed in paragraph (b) of this section shall be notified in writing of the exposure as soon as practicable but not later than 5 days of the finding. The employee shall also be timely notified of the corrective action being taken.

j. Medical examinations

1. General. The employer shall provide or make available at his cost, medical examinations relative to exposure to asbestos required by this paragraph.

2. Preplacement. The employer shall provide or make available to each of his employees, within 30 calendar days following his first employment in an occupation exposed to airborne concentrations of asbestos fibers, a comprehensive medical examination, which shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of a respiratory disease and pulmonary function tests to include expiratory volume at 1 second (FEV i.e.).

3. Annual examinations. On or before January 31, 1973, and at least annually thereafter, every employer shall provide, or make available, comprehensive medical examinations to each of his employees engaged in occupations exposed to airborne concentrations of asbestos fibers. Such annual examination shall include, as a minimum, a chest roentgenogram (posterioranterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV i.o).

4. Termination of employment. The employer shall provide, or make available, within 30 calendar days before or after the termination of employment of any employee engaged in an occupation exposed to airborne concentrations of asbestos fibers, a

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comprehensive medical examination which shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV 1.0).

5. Recent examinations. No medical examination is required of any employee, if adequate records show that the employee has been examined in accordance with this paragraph within the past 1-year period.

6. Medical records (i) Maintenance. Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be retained by employers for at least 20 years.

   (ii) Access. The contents of the records of the medical examinations required by this paragraph shall be made available for inspection and copying, to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of NIOSH, to authorized physicians and medical consultants of either of them, and upon the request of an employee or former employee, to his physician. Any physician who conducts a medical examination required by this paragraph, shall furnish to the employer of the examined employee all the information specifically recovered by this paragraph and any other medical information related to occupational exposure to asbestos fibers.

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