PLAINTIFF'S EXHIBIT
SWB-153

Bell Laboratories

Subject: Asbestos Sampling in a Leased Chesapeake and Potomac Office Building Located at 501 E. Cary Street Richmond, Virginia Case 48106-3

Date: January 17, 1978

From: Vicki Cohen

MEMORANDUM FOR RECORD

Introduction

An environmental survey of a leased C&P Telephone Company of Virginia office building was performed where sprayed fire retardent material had flaked onto floors and workbenches. A complaint by an employee was investigated by Mr. Richard Hite, Personnel Supervisor of Safety for C&P Telephone Company. He contacted Mr. J. M. Degen, Supervisor of Safety at AT&T, and sent a bulk sample for analysis. This sample contained 40% chrysotile asbestos as well as 10% α quartz. (Analysis performed by ES Laboratories, Marlton, New Jersey). A report of these analyses was sent to Mr. Hite on Nov. 1, 1977.

Summary

To access a possible health hazard due to airborne asbestos fibers, environmental measurements were performed on November 30, 1977. Fiber concentrations were well below the current OSHA Standard of 2 fibers per cubic centimeter longer than 5 micrometers.

No asbestos was detected in any of the air samples analyzed by transmission electron microscopy. The lower limit of detection of these analysis was less than 0.0002 fibers per cubic centimeter.

Standards

The present standard for asbestos promulgated by OSHA is two fibers per cubic centimeter greater than five micrometers (μm) in length. This two fiber limit refers to an eight hour time weighted average permissible exposure limit and includes a ten fiber per cubic centimeter ceiling concentration which is not to be exceeded.

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The recommended standard proposed by NIOSH is 0.1 fibers per cubic centimeter greater than five μm in length as an eight hour time weighted average permissible exposure limit and a 0.5 fiber per cubic centimeter ceiling concentration.

Sampling Techniques

Samples were collected on 37mm open faced Millipore® cellulose ester and Nucleopore® polycarbonate filters with a 0.8 μm nominal pore size diameter. Air was pulled through the filters with portable, battery powered Mine Safety Appliance and Bendix Corporation pumps at 2.0 liters per minute.

The pumps were calibrated with the soap bubble flow-meter technique. Analysis for asbestos using phase contrast microscopy as recommended by NIOSH was performed at Bell Laboratories by C. P. Lichtenwalner. Transmission electron microscopic analysis was performed on the samples collected on Nucleopore® polycarbonate filters by McCrone Associates, Chicago, Illinois. This procedure provides analytical identification of the various mineral phases present as well as better fiber (< 1.0 μm in diameter) resolution.

In addition two air samples were collected on silver membrane filters for free silica X-ray diffraction analysis by Kemron Environmental Services, Famington Hills, Michigan.

Discussion & Results

Table I shows the fiber concentrations measured in various locations of the building. Samples were collected on each floor. Fire retardent material sprayed on the ceilings was exposed on the A and B sublevel garages, in the radio repair room, and on stair wells, and closets. In other areas of the building false ceilings were installed which prevented direct exposure to the fire retardent material. The results obtained by phase contrast microscopy indicate very low fiber concentrations in all locations. These results are well within the current OSHA Standard.

The transmission electron microscopic results are found in Table II. There were no asbestos fibers detected in these analyses. The lower limit of detection for sample NO1 was 0.00013 fibers per cubic centimeter and for sample NO2 was 0.00018 fibers per cubic centimeter.

No free silica was detected in the X-ray diffraction analysis (Table III).

Although the levels measured were within current standards, the potential for an occupational exposure to asbestos in this building is not precluded. Because the material is flaking onto

the floors where it is exposed, the possibility of fibers being dispersed exists. To avoid potential airborne exposures the following are recommended:

1) Avoid further flaking of the fire retardent material from ceilings by preventing any mechanical manipulation of the ceiling. For example, the radio antennas of vehicles which brush against the ceilings in the garages should be lowered.

2) Housekeeping procedures using wet cleaning methods should be instigated to remove any fallen material from the floors to prevent airborne dissemination.

3) If an excessive amount of the material begins to fall, further controls should be implemented, such as installation of a protective ceiling or an impervious coating.

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Industrial Hygienist

MH-7885-VRC-cm

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Table I

Asbestos samples analyzed by phase contrast microscopy collected in leased C&P Co. office building on 501 East Cary Street, Richmond, Virginia, November 30, 1977.

Sample	Duration (minutes)	Volume (liters)	Description	Fiber Concentration in fibers per cubic centimeter
A03	375	750	B level-garage General Air Sample Exposed ceiling	0.008
A04	373	746	A level-office, General air sample insulation covered by false ceiling	0.002
A08	127	254	1st Floor-Test Center General air sample, insulation covered by false ceiling	0.023
A06	356	712	2nd Floor-office Room 233 General air sample, insulation covered by false ceiling	0.007
A07	337	472	3rd Floor-Business Service office, General air sample, insulation covered by false ceiling	0.027
OSHA STANDARD				2

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Table II

Asbestos samples analyzed by transmission electron microscopy collected in leased C&P Co. office building on 501 East Cary Street, Richmond, Virginia, November 30, 1977.

Sample	Duration (minutes)	Volume (liters)	Description	Fiber Concentration in fibers per cubic centimeter
001	430	860	B Level-radio repair room exposed ceiling	ND*
002	316	632	Penthouse-cold air return room	ND*

* none detected

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Table III

Samples collected for free silica analysis by X-ray diffraction in leased C&P Co. office building on 501 East Cary Street, Richmond, Virginia, November 30, 1977.

Sample	Duration (minutes)	Volume (liters)	Description	% quartz
S03	424	848	B Level-radio repair room work bench exposed ceiling	ND*

* ND - none detected

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CHEMICAL ANALYSES

CUSTOMER: BELL TELEPHONE LABORATORIES, INC. DATE: 10/28/77

REPORT NO.:1694 Bell Report #84995 P.O. NO.:270193 INVOICE NO.: 3666

REPORTED AS: Mineral Phases Present (Crystalline phases)

			"Flaking Insulation"			
Chrysotile (asbestos)			40%			
Calcite			35%			
αQuartz			10%			
Brucite			5%			
Anhydrite syn			5%			

ANALYST: George A. Brown
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