

AT&T Bell Laboratories

subject: Removal of Asbestos

date: July 16, 1984

from: H. R. Fitch
IH 77143A
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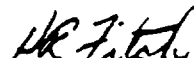
Procedure for Building Shop Personnel, Maintenance Personnel, Plant Operational Personnel, Engineers, and Contractors involved in removal of asbestos.

Attached is a copy of the operational procedures, recommended by the Industrial Hygiene and Safety Group of AT&T Bell Laboratories, to be followed when removing asbestos in the work area. These procedures supercede all previously issued memorandums or operational procedures.

Supervision is responsible for the protection of/and notifying their employees of the possible health hazard due to the exposure to asbestos fibers.

Periodically, air samples are taken from the work area and analyzed for the exposure contaminant levels. We have yet to record an exposure level anywhere near the Permissible Exposure Limits (PELs). You will be kept abreast of any changes in regard to the EPA asbestos regulations.

IH-77143A-HRF-bmc


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Att.

As stated

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Continued next page

LLA 000726

12. EMPLOYEE INFORMATION AND TRAINING

GENERAL

12.01 As part of the overall program for controlling occupational asbestos exposures, it is necessary that each Operating Telephone Company implement a program to provide training and information to each employee who is or may become exposed to asbestos. All employees will not necessarily need to receive the same training - some information is appropriate to all while other information should be tailored to the specific job situation.

12.02 A basic booklet on asbestos exposure written in layman's language is available from the U. S. Department of Health and Welfare. Operating Telephone Companies may desire to make this booklet available to their employees as part of the information and training program.

Practical Interpretation of Exposure Criteria

12.03 The exposure criteria presented elsewhere in these Guidelines, as well as that found in the OSHA Standard, tends to be misleading to those individuals not familiar with the details of asbestos fiber monitoring and analysis. In order to put these criteria into an understandable perspective, several fundamental points should be emphasized:

- (1) The analytical method for counting asbestos fibers only counts those fibers that have a length to width ratio of at least 3:1 and are at least 5 micrometers in length. This does not imply that fibers of other dimensions are either not present or that they are not harmful. It is merely a standard method of counting.
- (2) The breathing of one or two fibers, or a low level, short term exposure, does not mean ultimate asbestos-related disease. The current allowable airborne concentration for an 8 hour day is 2 fibers per cubic centimeter of air, which is 2 million fibers per cubic meter. The average worker breathes 10 cubic meters of air during 8 hours, thus, the total countable fibers allowed are approximately 20 million for the 8 hour day.
- (3) All fibers that are inhaled do not remain in the body. In fact, most inhaled fibers are either exhaled directly or removed by the lung's natural cleansing mechanism.

I. Asbestos Exposure - U. S. Department of Health and Welfare
Publication No. (NIH) 78-1594.

LLA 000727

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- (4) Asbestos fiber exposure is not confined solely to occupational situations. Samples taken of ambient air in a variety of locations indicate a general background level of countable fibers - as high as 0.02 fibers per cubic centimeter (20,000 fibers per cubic meter) of air sampled on city sidewalks.

Sources of Employee Exposure

- 12.04 All employees who may potentially be exposed to asbestos fibers in the course of their regular job assignments should be trained to recognize those situations where asbestos may be encountered and those work operations that can cause asbestos fibers to become airborne. The mere presence of asbestos does not present a health hazard. The asbestos-containing materials must be disturbed in some manner to cause fibers to become airborne, where they subsequently can be inhaled or deposited on clothing and the body for a potential exposure at a later time.
- 12.05 In addition to understanding where asbestos may be encountered and the work actions that may create airborne asbestos fibers, all employees should be instructed on procedures to follow when they suspect asbestos in a situation that is non-routine or does not conform to those operations where proper work methods have been established.

Engineering Controls and Work Practices

- 12.06 Every employee who is assigned to work in an environment that may result in exposure to airborne asbestos fibers should be thoroughly familiar with the engineering controls and work practices applicable to that particular job. Particular attention must be given to those specific control and practice functions that minimize or eliminate the generation of airborne fibers.

Personal Hygiene and Protective Clothing

- 12.07 Good personal hygiene habits should be practiced whenever employees may work in the vicinity of asbestos and asbestos-containing materials whether or not there is an actual exposure situation.
- 12.08 If employees will be assigned to tasks where the permissible exposure level (PEL) may be exceeded, protective clothing, respiratory protection, and adherence to good personal hygiene measures become mandatory. Appropriate hygiene practices include the following:
- (1) Prohibition of eating, drinking, and smoking in the exposure area.

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The present OSHA standard for asbestos is 2 fibers per cubic centimeter greater than 5 micrometers in length (2f/cc).

Before discussing the results further a brief discourse on the method of analysis for asbestos fibers might be appropriate. The present method of analysis calls for the fibers to be counted using a phase contrast microscope. The standard calls for any particle having an aspect ratio (the length of the fiber over the width of the fiber) of 3 to 1 or greater and a length greater than five micrometers to be counted. This procedure does not positively identify the fiber as an asbestos fiber.

From the table it can be seen that the asbestos levels measured are well below the present OSHA standard of 2 fibers/cc. Most of the exposure levels are of the same magnitude as the ambient levels.

The only exposure listed in this table that has been reported elsewhere in the scientific literature is on changing brakes. One report gives values much higher than the OSHA standard, another report gives values close to those reported here. Further measurements on these exposures are being planned.

In general the exposures of Bell employees to asbestos is the same as they would experience from an ambient exposure. Although the exposures are low the provisions for medical examinations in the present standard may present problems. As the standard now reads any exposure to asbestos fibers triggers the requirement of medical exams (note the key word "any"). Strictly interpreted this could mean all Bell System employees should undergo medical exams. The A.T.&T. OHSWG has taken steps to clarify this matter with OSHA.

In addition, to air samples for asbestos fibers analysis of certain insulating materials used on boilers, steam pipes and ventilation ducts were performed. The results of these analyses showed that some materials contained as much as 55% asbestos.

Potential exposures may exist for certain employee groups, such as, brake mechanics, maintenance men working on insulating materials, and plant personnel pulling cable through transite duct. A program is underway to identify these exposures.

Each company should examine various supplies to determine if they contain asbestos. If possible these supplies should be discarded using proper procedures. If they cannot be discarded they must be packaged and labelled in the proper manner.

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These numbers were taken from Tables G-1 and G-2 of the OSHS as well as from other appropriate sections.

Procedures

Measurements of the air in both the Belfast and Belmont C.O.'s were taken using several different instruments and techniques.

Particulates specifically

asbestos were collected using 37mm filters and Mine Safety Appliance Model G pumps. The filters used were Millipore 37mm, 0.8µm pore size cellulose ester membrane filters. The Model G pumps were calibrated both before and after the survey using the soap bubble flowmeter technique.

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The samples for asbestos were collected with the filters being 'open face' and at a flow rate of 1.6 liters per minute.

Upon completion of sampling the filters were sealed and transported to Bell Labs where they were mailed to Kettering Laboratory for analysis.

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Results

The results from the asbestos samples are listed in Table III. These results are given in fibers per cubic centimeter (F/cc) greater than 5 micrometers (μm) in length.

The only chemical found in either office in any quantity was B cleaning fluid. However, in both cases only a few quarts were present and these were in the standard tin can stored in a closed metal cabinet located at least ten feet from the table itself. It would seem that contamination from this chemical would be extremely remote.

From the results of the sampling it is seen that the equipment or batteries present in the room do not generate the specific contaminants which were measured for, into the general atmosphere of the room. As a result contamination from the equipment or batteries seems extremely remote.

It should be noted that fibers were collected on the filters set up for asbestos analysis. However, due to the impreciseness of this method of analysis it is questionable as to whether these fibers are of the asbestosform type or not. In addition, concentrations of fibers as high as those seen in this report have been measured in ambient air samples taken in various locations in New Jersey. Also, the levels counted are well below the present OSHA standards.

Recommendations

As a result of this survey the possibility of contamination of food by toxic chemicals through the processes of eating and storing the food in these offices