Bell Laboratories

subject: Asbestos Exposures for Pulling Cable. Case: 48106-3

date: November 3, 1976

from: G. D. Kenney

MEMORANDUM FOR FILE

Summary

Measurements for asbestos fibers were taken at the operation of pulling cable through transite duct. The levels found for the personal samples range from 0.01 to 0.08 fibers/cubic centimeter of air, longer than five micrometers. These levels are below the current OSHA standard for asbestos fibers of 2 fibers/cc.

Introduction

On September 8 thru 10, measurements were taken on the operation of pulling cable through transite duct in the Kansas City, Kansas area. The reason for the measurements was to determine if asbestos fibers are released, when cable is pulled through transite duct. The primary contact during this trip was Mr. Gene Regan of Southwestern Bell.

Procedures

The measurements were taken by pulling air through a small filter by means of a battery powered vacuum pump. The pumps used were Mine Safety Appliance (MSA) model G sampling pumps. The flow rate of these pumps was calibrated using the soap bubble flowmeter technique, and was set at 1.8 liters per minute (l/m).

The filters used were 37 millimeter cellulose ester membrane filters having a nominal pore diameter of 0.8 micrometers. These filters were mounted in a three piece cassette, with the top piece of the cassette removed i.e. open face.

Analysis of the samples was performed by an independent industrial hygiene consulting laboratory that used the procedure of counting the fibers with a phase contrast microscope.

Both personal and general air type samples were collected. A personal sample is one where the pump and filter are worn by the employee, the filter being placed as close to the man's breathing zone as possible. General air samples are those where the filter and pump are placed in an area where people can be working.

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Measurements

The cable being pulled was 1200 pair, 22 gauge single sheath PIC which has an outside diameter of about 3.2 inches. The cable was being pulled without using lubricant.

The duct runs which were transite and have an inside diameter of 4 inches, were brand new and in a dry state when the cable was being pulled.

The crew pulling the cable consisted of four Bell employees and one outside contractor employee. The men were split into a team of three and another of two. The team of three, two Bell employees and the contractor, were responsible for pulling the winch line through the duct, attaching the winch to the end of the telephone cable and feeding the cable into the duct (feed manhole). The other team pulled the telephone cable to them by use of the winch line (receiver manhole).

Each team had one man who did most of the work in the manhole (hole man) and one who worked around the trucks and cable reels (top man).

The employee responsible for working in the manhole at the receive end might spend about one half hour per pull of cable in the manhole. These crews were pulling about five or six sections of cable a day. The employee working in the manhole at the feed end may spend from 30 to 45 minutes in the manhole per pull.

Results

The results of the measurements are listed in Table 1 along with the sample duration, and date that the samples were taken.

The levels for the personal samples range from a low of 0.01 to a high of 0.09 fibers/cc. The lowest values of 0.01 and 0.02 fibers/cc on the personal samples were taken on the employees working at the feed manhole. The highest values for the personal samples, 0.06 and 0.08 were taken on the employee working in the receive manhole.

The general air samples taken in the receive manhole had results of 0.06, 0.06, and 0.03 fibers/cc. These results are somewhat elevated when compared to the ambient level of 0.01 fiber/cc.

The personal samples at the feed manhole were not particularly elevated. General air samples were not taken in the feed manholes.

Although the values are low, the results of these samples indicate an exposure may occur for employees pulling cable through transite duct.

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