

PLAINTIFF'S EXHIBIT

SWB-329



Bell Laboratories

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from: G. D. Kenney

Introduction

In the early part of 1973 A.T.&T. formed a committee called the Bell System Occupational Health Working Group (OHWG). The purpose of this committee was to investigate the exposures of employees in TELCO's to various environmental insults.

This committee which consists of representatives from A.T.&T., Western Electric, Bell Labs and two operating TELCO's contracted with the Bell Labs Environmental Health & Safety Department to perform a Baseline Industrial Hygiene Study. The purpose of this study was to obtain measurements on the exposures of Bell System employees to determine baseline conditions including exposures to toxic or harmful agents.

Since the summer of 1975 measurements have been taken in eight different operating TELCO's. These measurements include: asbestos, lead, vinyl chloride, carbon monoxide, sulfuric acid mist, noise, and ionizing and non-ionizing radiation. In addition certain practices and procedures were reviewed to determine if they are being followed.

The following report summarizes the findings of these measurements and makes some recommendations based on the findings.

RESULTS AND RECOMMENDATIONS

Asbestos

Asbestos measurements were taken in central offices, business offices, and on the operation of changing and/or inspecting brakes.

The following table presents a brief summary of these results.

Asbestos

<u>Building/Area</u>	<u>Concentration f/cc</u>
CO/Equip. Frames	0.01 - 0.3
CO/Mec. Equip. Room	0.01 - 0.09
DO/Offices	0.01 - 0.2
Garages/Changing Brakes	0.04 - 0.3
Outside/Ambient	0.01 - 0.4

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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. OHWG 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.

Vinyl Chloride

Vinyl chloride measurements were taken in areas where polyvinyl chloride (PVC) insulated wire was present in large quantities, to try and determine if the PVC is leaching free vinyl chloride monomer.

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The present OSHA standard for vinyl chloride is 1 ppm. This refers to an eight hour time weighted average exposure.

The results of all the vinyl chloride measurements were none detected; i.e. the levels were below the sensitivity of the analytical method. The sensitivity of the method used is reported as 0.1 ppm.

This indicated vinyl chloride was not detected in the areas where measurements were taken.

Lead

Lead measurements were taken around equipment frames, in central offices, garages, training schools teaching lead wiping, at a field site where employees were wiping lead joints, and in a manhole where lead cable was being pulled.

The present OSHA standard for lead exposures is 200 $\mu\text{g}/\text{m}^3$. This standard refers to an eight hour time weighted average exposure.

The results for the lead exposures are listed in the following table.

Lead

<u>Exposure</u>	<u>Concentration, $\mu\text{g}/\text{m}^3$</u>
CO/Frames	None Detected
Garages	10 - 17
Plant School, Lead Wiping	6 - 540
Field Site Wiping	7 - 87
Manhole, Pulling Cable	118 - 342

From the table it is seen that the highest potentially exposed employees are outside construction craft engaged in pulling lead cable and wiping lead sleeves.

The highest concentrations found for lead were in lead wiping rooms of plant schools. In addition, employees in the room were allowed to eat, drink, and smoke raising the potential for an exposure through the ingestion of lead contaminated foodstuffs.

Blood lead measurements were taken in 42 splicers of one operating company who were classified as high risk exposures from wiping lead sleeves. On average these employees worked or wiped one lead sleeve a week. The blood lead values of these 42 workers ranged from 17 to 42 μg Pb/100 ml of blood.

In addition, measurements taken on 11 employees of a different TELCO who were actively engaged in lead wiping at the time of the blood lead tests ranged from 22 to 58 $\mu\text{g}/100$ ml.

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In the proposed lead standard the blood lead action level has been set at 60 ug/100 ml.

Review the practice of lead wiping in unventilated and poorly ventilated rooms. In addition, where employees are working with lead they should be prohibited from eating, drinking and smoking in the area and required to thoroughly wash before eating, drinking, and smoking.

Carbon Monoxide

Carbon monoxide measurements were taken in garages, offices, warehouses, and manholes. Carbon monoxide arises primarily from incomplete combustion.

The present OSHA standard for carbon monoxide is 50 ppm.

The following table presents the results for carbon monoxide.

<u>Exposures</u>	<u>Carbon Monoxide</u>	<u>Concentration (ppm)</u>
Garages		1 - 260
Warehouse		3 - 48
Offices		1 - 4
Manholes		1 - 100
Outside/Ambient		1 - 4

From the table it is evident that carbon monoxide is always present at very low concentrations, 1 to 4 ppm.

The source of carbon monoxide in the garages and warehouse is from vehicles idling in the area. At all times when these measurements were taken the garage doors were kept open in order to facilitate ventilation.

The reasons for the high values of carbon monoxide in the manholes was improper positioning of the ventilators. In certain circumstances the ventilators were positioned very close to nearby traffic and as a result pulled in the exhaust gases from these vehicles. In other cases it was noted that the ventilator intakes were located downwind of the exhaust from the propane or gasoline powered motor driving the ventilator, thereby pulling in the exhaust gases from these engines.

Investigate the practices of allowing vehicles to idle in garages for long periods of time. Review practices concerning the placement of ventilators near traffic and for those powered by propane or gasoline engines the correct placement of the exhaust with respect to wind direction and intake of the blower.

Sulfuric Acid Mist

The primary source of sulfuric acid mist in the Bell System is from the overcharging of lead-acid batteries.

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Measurements were taken in the power rooms of central offices to estimate the levels of sulfuric acid mist under normal conditions. The levels of mist in these rooms ranged from none detectable to 0.07 mg/m³.

The present OSHA standard for sulfuric acid mist is 1 mg/m³.

Noise

The results of recent noise level measurements indicate that with a few exceptions the levels are low enough to preclude concern for incidents of noise induced hearing loss. The exceptions are noise levels developed by auxiliary power sources, in power rooms, and around computers.

The following table summarizes the results of the noise measurements.

<u>Area</u>	<u>Noise</u>	<u>Level dB(A)</u>
CO/Crossbar Aisle		60 - 80
CO/Diesel and Turbine		90 - 108
Acct'g. Office/Computer		60 - 92
CO/Air Cond. Compressor		75 - 86
CO/Motor Generator & Rectifiers		70 - 90

The highest levels were measured in the auxiliary power rooms when the diesel or turbine was operating. The exposure pattern to these levels is very infrequent and of relatively short duration. The exposures noted in the buildings where measurements were taken was on the order of 1 to 2 hours per month. In addition, the employees exposed wore ear defenders the entire time they were exposed.

The three areas of computers, air conditioning compressors, and motor generators and rectifiers, have levels that could be classed as conditional or borderline.

Audiometric measurements were taken on over 600 employees engaged in all types of jobs in the Bell System. Of these measurements 22% had some hearing loss at 3 or 4 KHz (loss > 26 dB), 3% had a severe loss (loss at 0.5, 1, and 2 KHz > 26 dB) and 2% of the employees showed auditory pathology requiring referral to a physician.

Although the noise levels are generally below the OSHA limits, under certain situations practices should be instituted to ascertain the employee is not overexposed.

Where possible the levels around Mohawk printers should be reduced. In addition, hearing protectors must be available at or near the power room and worn when the emergency power equipment is tested.

Nonionizing Radiation

Nonionizing radiation measurements were taken in a number of central offices where microwave transmission and receiving equipment was used.

Measurements were taken in the radio rooms and on the rooftops around the antennas.

In all cases the levels measured were well below the present OSHA standard of 10 mW/cm^2 . The levels measured averaged less than 0.1 mW/cm^2 .

Ionizing Radiation

Possible sources for exposure to ionizing radiation are from cathode ray tubes that are out of adjustment, from Pyroalarm detector heads, and from certain cold cathode translator tubes.

The present Bell System standard concerning exposures to ionizing radiation is to allow no exposure above background or ambient.

Possible problems with ionizing radiation were:

- 1.) In some central offices large quantities of 430A cold cathode tubes were still being used.
- 2.) When cleaning Pyroalarm heads a possibility of contaminating an open cut with radioactive material exists.

Of the cathode ray tubes monitored none were emitting any ionizing radiation.

Review the use of 430A cold cathode translator tubes and replace with 430C tubes following the proper procedures. Review the washing and cleaning of the Pyroalarm detector heads to ascertain they are being handled in a safe manner.

Manholes

Measurements were made in manholes where employees were performing operations under normal conditions and in manholes where exposures to foreign toxic vapors or gas were present.

Generally under normal conditions little hazard was noted in these manholes. The major problem noted in work around manholes was that the employees were not following practices established by the Bell System concerning purging and ventilation of the manhole and that the ventilators and combustible gas meters used were generally inoperative or faulty.

However, it should be noted that measurements taken in manholes where foreign gases and vapors such as hydrogen sulfide and gasoline vapors were entering the manhole, problems were encountered in trying to control the vapors at a safe level.

Further studies are needed to try and determine the effectiveness of ventilation under these circumstances.

Of thirty six combustible gas meters checked during this study 26 had some fault with them. The most common fault noted was bad batteries.

Problems noted with the ventilators were very difficult to start, missing mufflers, and heaters not working. Most of the ventilators studied during this work were MOPECO's powered by propane engines.

Institute positive control procedures to insure the entrance and work in manholes is being performed in a safe manner. In addition, strict procedures should be established for the periodic testing and repair or replacement of ventilators and combustible gas meters.

Miscellaneous

Some miscellaneous problems seen during the course of this study are:

1. Painting and use of solvents in unventilated or poorly ventilated rooms.
2. Emergency equipment for handling acid spills around batteries not available.
3. Use of non-NIOSH approved respirators by employees.

Ascertain where respirators are used or recommended that they are NIOSH certified respirators. In addition, establish a program for the use and care of respirators that meets the minimal requirements as established by OSHA.

Where solvents and/or painting is regularly performed ascertain that the rooms are adequately ventilated.

SUMMARY

Since the inception of this study measurements have been taken in a number of operating companies under varying conditions. The measurements reflect conditions varying from normal conditions to times when a hazard to health does exist.

The results of this study indicate that Bell System TELCO employees can be exposed to various environmental insults.

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Henry Hill - Sept. 82

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UNION-MANAGEMENT SAFETY MEETING

August 23, 1979

Union

Stanley Hubbard
Ken Wiley
Wiladene Bartels

Management

Beverly Bellville
Ralph Eberhardt
Bill Sorrell
Dave Metz

1. D-Encapsulant AT-8735 - The original case evolved in St. Louis. There are now others with skin irritations. The Union sent this compound to their OSHA expert in the Washington office. He had it analyzed at two universities. The main ingredient was found to be isocyanates. A three-gallon can is used in the mixing process. When mixed, the fluid is poured into holes provided in the bolt on sleeve. (See Attachment 1) The Washington office sent a letter to all local presidents in the United States warning them of the danger in using this compound and asking them to fill out a form which is included. After all forms are received back, the CWA intends to go to OSHA on a national basis.

The Company provides small throwaway gloves when using this compound. They are inadequate since they don't cover the forearm.

There are also dangers in inhaling the fumes when the compound is mixed. It must be mixed at a 35° temperature. This means they must mix it in the cab of the truck with the heater on in cold weather.

Management reported that this compound has been in use since the 50's. If poured properly, it should not spill on the body. Many employees do not use gloves. The Bell Labs report was distributed (See Attachment 2). There will be a few people who suffer a reaction. In these cases they should be placed on other jobs.

Mr. Wiley advised that Texas Management says they are no longer using this compound. A check on this indicated there is some confusion as to whether it is being used. Management will refer the Union's technical analysis to Bell Labs for further study.

2. Lead Standard Training Program - The Department of Labor and OSHA conducted a program in St. Louis on August 9, 1979, with the CWA in attendance. The Union does not feel there is a lead problem associated with Telco work. Some employees, however, are concerned.

Lead standards will be implemented on a five-year transitional basis. The measurement is the amount of lead present in the blood.

Management indicated that the Bell System is currently making extensive tests to determine if there is a problem in the Bell System. To date, tests indicate we do not have a problem. An encapsulant will be introduced shortly to minimize the dissipation of lead particles in the air when a carding brush is used on lead cable. Southwestern has used nonlead cables for a number of years. The only contact today would be the repair and wrecking of lead cables. Southwestern Bell has conducted one test which proved negative.

Mr. Hubbard asked that the Company conduct more tests and make the results known to the employee body. He also suggested that the Company make tests when requested by an employee. This is required by law.

Management agreed to check on the feasibility of conducting further tests.

3. Employee Protection and Safety - The kidnap/rape case in St. Louis and murder in Corpus Christi were discussed. The Union said the Company in the St. Louis case was quoted as saying, "We can't do anything about this since it may create a precedent." The St. Louis employee has suffered several days of lost pay because of meetings with the police, doctors visits, court time, etc. This is presently in the grievance procedure. Protection around Company buildings and in parking areas is a real problem. The Union suggested special training to acquaint employees with precautionary measures.

Management reported that such training is already in the process of being developed. The Company is concerned with employee safety and has taken measures to protect employees as much as possible. Violence is prevalent everywhere today. Our security organization, which is made up primarily of former law enforcement officers, is deeply involved in this problem.

Ken Wiley discussed the recent San Antonio parking problem. He advised that the Company hired eight to ten security guards to insure that employees parked on a "first come-first serve" basis at the 4119 Broadway building. We will not, however, hire guards when employees ask for protection.

4. Fiberglass-Asbestos Hazards in Attics - The Union reported on a case in downtown Lawton, Oklahoma, involving a new shopping mall. Employees are being forced to work in attics that are improperly ventilated, do not have walkways, and are dangerous because of the insulation. This contradicts the Company policy expressed in a previous 1977 safety meeting.

Management agreed to review the Lawton situation and advise.