

**AT&T**
Bell Laboratories

subject: Telecommunications Industrial
Hygiene Survey Kit

date: January 26, 1985

from: Charles P. Lichtenwalner
MH 77621
1F-110 X5399

MEMORANDUM FOR FILE

This note details procedures for conducting an industrial hygiene survey using the telecommunications industrial hygiene survey kit. This kit has been assembled to assist safety coordinators to respond to health or environmental complaints by performing a survey of conditions.

Directions and procedures for use of the equipment are given in the appendices to this memorandum.

- Appendix A: Equipment and Procedures for Sampling Various Substances
- Appendix B: Measuring Noise Exposure (OSHA Dose)
- Appendix C: Calibration and Use of Colorimetric Detector Tubes and Pumps
- Appendix D: Calibration and Use of Personal Sampling Pumps
- Appendix E: Wet Wipe Sampling Procedures for PCBs
- Appendix F: Parts List for Telecommunications Industrial Hygiene Survey Kit

Additional equipment that may prove useful:

1. A camera (preferably instant) to document conditions.
2. Manuals of equipment and a sampling manual such as this note and the attached exercises from the REOHH courses.
3. Appropriate detector tubes for any gases or vapors to be sampled.

LLA 001476

Memorandum for File - 2

Note that the techniques listed in Appendix A may not always be the best or most accurate methods available but they are usually adequate for screening or to assess the extent of the problem.

Charles P. Lichtenwalner

Charles P. Lichtenwalner

MH-77621-CPL-jve

Copy to:
J. L. Stuart AT&T-C

S. R. Bagels
H. R. Fitch
M. Glowatz
W. J. Schreibeis
G. M. Wilkening

LLA 001477

APPENDIX A

Equipment and Procedures for Sampling Various Substances

<u>Substance</u>	<u>Equipment</u>	<u>Notes</u>
Asbestos	MSA pump Millipore AA filter	Flow rate about 2 L/min. at least 2 hour sample. Do not use numbered filters - they are PVC.
(bulk)	Collection tubes	To avoid exposure while sampling take a wet sponge with hole cut in middle same diameter as tube. Press wet sponge against ceiling then insert tube through hole and with screwing motion pierce insulation and cut out a core of material into tube.

REDACTED

LLA 001478

Calibration and Use of Personal Sampling Pumps

The flow rate can be determined only through calibration of the sampling pump.

The common instrumentation and supplies used for aerosol sampling by filtration are described below.

A. Filter Cassette

The filter cassette is an assembly with three basic components:

- Sampling Filter
- Back Up Pad
- Filter Holder (Cassette)

The sampling filter may be one of several material types including:

- Mixed Cellulose Ester Filters (MCEF)
- Glass Fiber Filters
- Polyvinyl Chloride (PVC) Filters
- Silver Membrane Filters

They may also be of various pore sizes and diameters.

The cassette may have two or three parts or stages. The two stage cassette is used only for closed face sampling; the three stage cassette may be used either closed or open face mode.

The selection of the type of filter, the filter pore size, and the sampling mode (open or closed face) will depend on the contaminant sampled.

For sampling lead and asbestos, a mixed cellulose ester filter with a diameter of 37 mm is required. The filter is mounted in a cassette with a back up pad. Sampling must be conducted closed face for lead (2 or 3 stage cassette) and open face for asbestos (3 stage cassette only).

B. Sampling Pump

Battery operated diaphragm pumps called personal sampling pumps, are used to draw air through the filter which then traps the particles. Most personal sampling pumps will operate for up to 8 hours sampling time before needing recharging. Recharging time is usually overnight (16 hours). The pump must be capable of pulling at least 2 liters of air per minute through the filter. A rotameter (or flowmeter) on the side of most pumps can be used to determine the flow rate at which the pump is operating.

PART II Calibration of Sampling Pumps

Calibration is the process by which the flow rate corresponding to each pump rotameter setting is determined. The pump rotameter may be calibrated using primary or secondary standard. The soap bubble meter is a primary standard, and calibration using this method involves direct measurements of volume and time. Secondary standards such as precision rotameters are reference instruments which must be periodically calibrated against a primary standard.

APPENDIX F

Parts List for Telecommunications
Industrial Hygiene Survey Kit

Parts List

2100 Supplier - MSA Cost: \$513 (412)273-3000

<u>Part No.</u>	459054	MSA Tube Holder
	456226	Sampling Line Assembly
	466117	Portable Pump Assembly Model G
	456059	Battery Charger Assembly
<u>Purpose</u>	Sampling Lead, Asbestos, Metals, Sulfuric Acid Mist, Solvents, PCBs	

<u>Part No.</u>	31968	Sling Psychrometer
<u>Purpose</u>	Temperature and Relative Humidity	

3900 Supplier - Dupont Cost: \$936

<u>Part No.</u>	2639	10 Charcoal Tubes 109/100
	2641	10 Florisil Tubes 54/50
<u>Purpose</u>	Sampling for Solvents, PCBs	

<u>Part No.</u>	5300	Mark 1 Audio Dosimeter 925
<u>Purpose</u>	A-weighted Noise, OSHA Noise Dose	

350 Supplier - Gilmont Cost: \$85

<u>Part No.</u>	F2260	No. 12 Compact Shielded Rotameter
<u>Purpose</u>	Calibrate Sampling Pump	

700 Supplier - National Draeger Cost: \$150 (412)273-8383

<u>Part No.</u>	6726065	Model 31 Gas Detector Pump
<u>Purpose</u>	Sampling for variety of gases or vapors must be ordered for each substance before sampling due to limited shelf life.	

Supplier - Millipore Cost: \$10

<u>Part No.</u>	MAWP037	Six 0.8 um MCEF Filters
<u>Purpose</u>	Sampling Lead, Asbestos, Metals, sulfuric Acid Mist	

Supplier - Clayton Cost: \$50

<u>Purpose</u>	3 Pre-weighted PVC Filters Sampling for Total Dust	
----------------	---	--

LLA 001480