U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTER FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
CINCINNATI, OHIO 45226

HEALTH HAZARD EVALUATION DETERMINATION REPORT
HE 78-16-738

NEW YORK TELEPHONE
NEWBURG, NEW YORK

AUGUST 1980

I. SUMMARY

The National Institute for Occupational Safety and Health (NIOSH) received a request to investigate fumes generated during soldering connections at a central telephone master switchboard. Analysis of charcoal tube samples collected in the breathing zone of the (switchboard) rack attendant at the New York Telephone facility revealed no detectable contaminants. The sampling was done under conditions involving more potential exposure than would be encountered under normal working conditions.

No hazard from exposure to contaminants generated during soldering of line installations was identified.

II. INTRODUCTION

The National Institute for Occupational Safety and Health received a confidential request* to determine if exposure to potentially toxic substances during the wiring (soldering) of telephone connections occurs. The operation has been studied by the Occupational Safety and Health Administration and by New York Telephone Company. The findings of both groups agree with NIOSH's determination. Neither group detected any hazardous exposure.

*Section 20 (a) (6) of the Occupational Safety and Health Act of 1970 29 U.S.C. 669 (a)(6), authorizes the Secretary of Health, Education, and Welfare, following a written request by an employer or authorized representative of employees, to determine whether any substance in the place of employment might have potentially toxic effects as it is used or may be found.

III. BACKGROUND

When a telephone is installed, removed, or when a telephone number is changed, the appropriate connection and/or disconnection must be done at the master switchboard (commonly called a "rack"). The wires are stripped from their terminals (for disconnection) or soldered onto new terminals (for connection or change of number). Each operation takes a few seconds for an experienced attendant. At this particular switchboard, the maximum number of such operations is 20 per day. At the Newburg facility, the master switchboard is housed in a temperature and humidity controlled room 60 feet x 30 feet x 25 feet high. There are three switchboard racks, approximately 40 feet long, 18 feet high, with thousands of terminals on each. Four employees work in the room, one or two as rack attendants. Since the total time of an average daily exposure is a few minutes, the amount of lead fume which might be generated was thought to be minimal, the main concern was for the odor which occurred if the plastic wire coating was accidently burned.

IV. SAMPLING AND ANALYTICAL METHODS

Since OSHA had sampled during normal operating conditions and had been unable to detect any contaminants, it was decided to stimulate the operation for several hours making phantom connections to unused terminals, intensifying the generation of contaminants.

Breathing zone samples were collected by attaching charcoal tubes to the rack attendant's collar. A suction supply (air pumps) was connected by flexible tubing and the pump was hung on the attendant's belt. Air was drawn through the sampling tubes at approximately 200 cubic centimeters per minute for sampling periods of 45 to 60 minutes. If organic plastic decomposition products were present, they would be adsorbed onto the activated charcoal particles. The samples later were desorbed with carbon disulfide and then analyzed by NIOSH's standard gas chromatographic method. Basically, as the sample is heated, organic molecules are released at specific, known temperatures. Each compound produces a characteristic graph as it is sensed by the gas chromatograph. Although sensitivities vary according to compound, amounts as small as 0.1 milligram are easily detected.

V. RESULTS

No compounds could be detected in any of the samples. Since no contaminant could be detected in samples collected during operating conditions which simulated exposure levels many times greater that could be expected, no recommendations are made.

VI. DISTRIBUTION AND AVAILABILITY

Copies of this report are currently available upon request from NIOSH Division of Technical Services, Information Resources and Dissemination Section, 4676 Columbia Parkway, Cincinnati, Ohio 45226. After 90 days, the report will be available through the National Technical Information Service (NTIS), Springfield, Virginia 22161. Information regarding its availability from NTIS can be obtained from NIOSH's Publication Officer at the Cincinnati address. Copies of this report have been sent to:

1. New York Telephone Company
2. The requester of the Health Hazard Evaluation
3. U.S. Department of Labor, OSHA, Region II
4. U.S. Department of Health and Human Services, NIOSH, Region II
5. New York Commissioner of Health

AUTHORSHIP - ACKNOWLEDGEMENTS

Report Prepared by:

Nicholas Fannick
Industrial Hygienist
NIOSH - Region II

Originating Office:

Hazard Evaluations and
Technical Assistance Branch
Division of Surveillance, Hazard
Evaluations and Field Studies
NIOSH, Cincinnati, Ohio