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STATEMENT OF

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DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

BEFORE THE
SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS
HOUSE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE

MARCH 12, 1980

I am pleased to appear today to review the status of a NIOSH investigation of worker exposure to polychlorinated biphenyls (PCBs) at selected General Services Administration facilities in the metropolitan Washington area. I am accompanied by Mr. Clifford L. Moseley, a NIOSH industrial hygienist who has been in charge of our investigation.

As this committee is well aware, PCBs are extremely stable as well as toxic chemical compounds. Because of their chemical stability they tend to accumulate and remain for long periods in the body even after short or intermittent exposures. Today they are used primarily as high-temperature coolants and lubricants in capacitors and transformers. Although most individual PCBs are solids at room temperature, mixtures of PCBs vary in consistency from mobile oils to viscous liquids or sticky resins.

Because PCBs have been shown to cause tumors in animals, NIOSH considers them to be suspect human carcinogens for which there is no known safe level of exposure. They are known to cause skin and eye disease, liver damage, impotence and birth defects in humans. In 1977, NIOSH recommended that no worker be exposed to PCBs at a concentration greater than 1.0 microgram total PCBs per cubic meter of air (determined as a time-weighted average concentration for up to a 10-hour workday, 40-hour workweek).

On November 1, 1979, GSA requested that NIOSH evaluate the health of GSA employees working with transformer fluids containing PCBs in the National Capital Region. NIOSH was asked to review work practices, recommend appropriate PCB handling procedures, and measure airborne levels of PCBs and certain other chemicals. GSA requested NIOSH assistance after an internal

audit had revealed that PCB material was being improperly stored at GSA's Switch Gear Shop and 43 employees reported various health problems, including sterility, headaches, nausea, skin rashes, and loss of appetite.

Upon meeting with GSA officials, NIOSH learned that approximately 1100 PCB-containing transformers were maintained by the shop's current workforce of 43 electricians. Nearly the entire current workforce, ranging in age from 25 to 60 years, has been employed in transformer maintenance for at least 3 years. An additional 26 former workers were employed in this area during the 8 years GSA has been servicing transformers.

In November, GSA also contracted with a private consulting firm to inspect all 1100 transformers in the Region and set priorities for servicing faulty transformers. NIOSH agreed to assess levels of airborne PCBs and other contaminants before, during, and after clean-up or repair operations at a number of sites. After meeting with representatives from the Environmental Protection Agency, GSA, the employees' union, and the GSA contractor, NIOSH chose four locations for immediate study. These were the GSA National Capital Region building, the Internal Revenue Service building, the Commerce Department building in Washington, D.C., and the Naval Intelligence Center in Suitland, Maryland. In each location, NIOSH conducted area air sampling in and around each transformer vault before any clean-up or servicing. During servicing, both area and workers' personal breathing zone air samples were collected and analyzed to determine the levels of PCBs to which electricians were exposed. Once clean-up operations have been completed, NIOSH will again collect and analyze air samples to determine the presence of airborne PCBs.

Chemical analysis of the bulk transformer cooling fluid used by GSA indicated the presence of Aroclors 1254 and 1260 (PCBs), 1,1,1-trichloroethane, xylene, toluene, chlorinated benzenes, and a variety of alkanes or alkenes. These substances have been associated with a number of toxic effects, including neurologic effects, blood disorders, and liver damage. Our laboratories have analyzed the air samples and we are evaluating the results now.

In GSA-contracted inspections of 822 transformers in the National Capital Region, 494 transformers were found to be leaking. Twenty of these required immediate action to prevent any further leakage. GSA had estimated that each electrician normally spends an average of 2 hours of every 40-hour work week working with transformer fluid. It is clear that GSA employees will be required to work with the transformer fluid for more than 2 hours a week during clean-up, repair and maintenance operations and every precaution must be taken to prevent further employee exposure.

Because PCBs have been well documented as toxic substances with no known safe level of exposure, NIOSH immediately made recommendations to GSA to protect their employees. Long-term solutions to PCB exposure require substituting less toxic materials whenever possible; when substitution is not possible, engineering controls should be installed that will maintain PCBs in enclosed systems. As an interim measure NIOSH recommended that GSA take specific steps to protect their employees from exposure during the current clean-up and repair operations. Workers in PCB areas should use supplied-air respirators with full facepiece masks and wear impervious overalls, gloves, and shoe covers. PCB contaminated areas, clothing, and materials should be kept

separate from clean areas. Workers should wash up immediately after working with PCB fluids and shower at the end of each day. Smoking and eating should be prohibited when working with PCBs. All work clothing which has come in contact with PCBs should be removed and disposed of properly.

NIOSH has contracted with the Johns Hopkins Center for Occupational and Environmental Health to conduct medical examinations of the GSA employees. The health of the 43 present electricians and 26 former ones will be compared with a control group of unexposed GSA employees. A limited number of the 43 electricians have already been examined. The purpose of this initial screening was to gather information to assist in the development of a medical protocol and a questionnaire. The protocol is expected to be approved by NIOSH this week and medical examinations will begin as soon as they can be scheduled.

The workers will be given complete medical examinations including special tests to determine if they suffer from infertility, liver damage, nerve damage, or impairment of lung function. The results of these examinations will be compared with the workers' body burden of PCBs, which will be determined by analyzing blood and tissue fat. The purpose of the medical evaluation is to determine if present and former employees exposed to PCBs have any health effects that can be related to PCB exposure and to determine if there is a relationship between the amount of PCB exposure and the health consequences.

The NIOSH investigation of GSA workers exposed to PCBs was one of 23 requests we received for technical assistance from other Federal agencies last year. Under the Occupational Safety and Health Act of 1970, the head of each Federal agency is responsible for establishing and maintaining an effective occupational safety and health program. Until the President signed a new Federal Executive Order to take effect this July, NIOSH could conduct investigations at Federal facilities only at the invitation of the agency. Now NIOSH will have right of entry into Federal workplaces and be able to respond to requests for assistance from employees who believe they have been exposed to health hazards on the job.

Mr. Chairman, I welcome any questions you may have.

50272-101

| REPORT DOCUMENTATION PAGE | 1. REPORT NO. | 2. | PB90-194432 |
|---|---|---|---|

4. Title and Subtitle: NIOSH Testimony on Polychlorinated Biphenyls by A. Robbins, March 12, 1980

5. Report Date: 80/03/12

6.

7. Author(s): NIOSH

8. Performing Organization Rept. No.

9. Performing Organization Name and Address: NIOSH

10. Project/Task/Work Unit No.

11. Contract (C) or Grant(G) No.
(C)
(G)

12. Sponsoring Organization Name and Address

13. Type of Report & Period Covered

14.

15. Supplementary Notes

16. Abstract (Limit: 200 words) This testimony concerned the efforts of NIOSH in a study of worker exposure to polychlorinated-biphenyls (1336363) (PCBs) at selected General Services Administration (GSA) facilities in the area of metropolitan Washington. The GSA employees being studied were exposed to transformer fluids containing PCBs in the National Capital Region. NIOSH was to review work practices, recommend appropriate PCB handling procedures, and measure airborne levels of PCBs and certain other chemicals. An internal audit at the site had revealed that the PCB material was being improperly stored at the Switch Gear Shop; 43 employees reported various health problems such as sterility, headaches, nausea, skin rashes and loss of appetite. Nearly this entire workforce had been employed in transformer maintenance for at least 3 years. The health of these 43 workers will be compared with a comparison group of unexposed GSA employees. The workers will be given complete medical examinations, including special tests to determine if they suffer from infertility, liver damage, nerve damage, or impairment of lung function. This study was one of 23 requests received by NIOSH for technical assistance from other Federal agencies during the preceding year.

17. Document Analysis a. Descriptors

b. Identifiers/Open-Ended Terms: NIOSH-Publication, NIOSH-Author, NIOSH-Testimony, Robbins-A, Reproductive-system-disorders, Nervous-system-disorders, Occupational-exposure, Electrical-equipment, Toxic-effects

c. COSATI Field/Group

| 18. Availability Statement | 19. Security Class (This Report) | 21. No. of Pages |
|---|---|---|
| | 22. Security Class (This Page) | 22. Price |

(See ANSI-Z39.18) *See Instructions on Reverse*

**OPTIONAL FORM 272(4-77)**
(Formerly NTIS-35)
Department of Commerce