HEALTH HAZARD EVALUATION REPORT 72-38-19
HAZARD EVALUATION SERVICES BRANCH
DIVISION OF TECHNICAL SERVICES

Establishment: Bata Shoe Company, Inc.
Belcamp, Maryland

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
CINCINNATI, OHIO 45202

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SUMMARY DETERMINATION

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 any employer or authorized representative of employees to determine whether any substance normally found in the place of employment has potentially toxic effects in such concentrations as used or found.

The National Institute for Occupational Safety and Health (NIOSH) received such a request from an authorized representative of employees regarding exposures to mercury in the manufacture of canvas, leather and rubber shoes and boots at the Bata Shoe Company in Belcamp, Maryland.

A walk-through survey on May 3, 1972 revealed no obvious source of mercury exposure. The plant was surveyed on August 10, 1972 using a mercury vapor detector. No exposures to mercury were observed at the time of the survey.

The employee who initiated this Health Hazard Evaluation Request was found to have a bonafide case of mercurialism according to the attending physician. Classical symptoms were observed as well as high levels of mercury in the blood and urine. Since no exposure was found in the plant, the employee was visited at her home. The home and outhouses were thoroughly surveyed and no mercury was detected.

The employee was questioned as to the use of Calomel, bismuth, mercurial diuretics, paints (especially marine antifouling paints), and agriculture chemicals. She doesn't eat fish, nor has she had any recent mercury amalgam fillings and she never worked in fur felt (carroting) nor explosives manufacture. The source of the mercury still remains a mystery and may never be known.

Copies of this Summary Determination as well as the Full Report of the evaluation are available from the Hazard Evaluation Services Branch, NIOSH, Cincinnati, Ohio 45202. Copies of both have been sent to:

a) Bata Shoe Company, Inc., Belcamp, Maryland
b) Authorized Representative of Employees
c) U.S. Department of Labor - Region III

For purposes of informing "affected employees", the employer will either (1) "post" the Summary Determination in a prominent place near where affected employees work or (2) provide a copy of the determination to each affected employee.

I. INTRODUCTION

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 any employer or authorized representative of employees, to determine whether any substance normally found in the place of employment has potentially toxic effects in such concentrations as used or found.

The National Institute for Occupational Safety and Health (NIOSH) received such a request from an employee of Bata Shoe Company with over sixteen years of service with the company.

II. BACKGROUND HAZARD INFORMATION

A. Standards

The federal standard applicable to this request was promulgated by the U.S. Department of Labor in the Federal Register, Vol. 36, No. 105, Part II, Table G-2:

	Acceptable Ceiling Concentration
Mercury (Z37.8 - 1971).....	0.1 mg/M3*
	8-Hour Time Weighted Average
Organo (alkyl) mercury (Z37.30 - 1969).....	0.01 mg/M3

B. Toxic Effects

Mercury, chemical formula Hg, is a metal and is liquid at ordinary temperature. It will give off toxic vapors at room temperature.

Chronic exposure may result in cumulative poisoning, predominated by nervous and psychic symptoms. Acute intoxication by inhalation occurs less frequently, but may be accompanied by stomatitis, gingivitis, salivation and diarrhea. Dermatitis has occurred from cutaneous contact with mercury fulminate, mercuric salts, and alkyl mercuric compounds.

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*Units - approximate milligrams of particulate per cubic meter of air.

III. HEALTH HAZARD EVALUATION

A. Background Information

worked sixteen years in this shoe manufacturing plant performing several operations on the production line but nearly 80% of her work consisted of fitting the backs on rubber overshoes or boots.

enjoyed good health until three years ago when she developed sore or bleeding gums and complained of anxiety and insomnia. Her gums were treated by her dentist and then her personal physician, had her attend a "sleep clinic", which proved ineffective. Later, in November 1971, Dr. sent her to a hospital where blood and urine samples were taken and high mercury levels were detected by Biochemical Procedures (a Meade Johnson and Company Laboratory, 12020 Chandler Blvd., No. Hollywood, California 91607).

Dr. suspected the patient's work place as the source of exposure and so informed Bata Shoe Company. They advised him in letter dated November 23, 1971, that there was no work-room exposure. However, they submitted samples of felt to independent laboratories for merucry analysis which were negative (0.17 ppm). This was confirmed by the Maryland State Department of Health laboratories (0.4 ppm Hg).

Mrs. claimed that two other female employees had similar complaints (insomnia), but no evidence of mercurialsim developed. It was also obvious that if the work place was the source of the mercury exposure, some forty to eighty other employees on the production line might have mercurialism. No evidence of employee intoxication by mercury was observed. Therefore, the plant was removed from suspicion.

Blood samples were taken from the other two members of the household and they were negative for mercury. Thus, it would seem that there was no mercury exposure in the house.

Mrs. was treated for mercury poisoning and responded to treatment satisfactorily. However, she was advised not to return to work until this survey was made and the plant declared to be free of mercury.

B. Initial Visit - Observational Survey

Mrs. was first visited at her home on May 2, 1972, accompanied by Supervising Sanitarian of the Harford County Department of Health. (address - 119 Hays Street, or P.O. Box 191, Bel Air, Maryland 21014). After Mrs. described her duties and her work place as well as her history of poisoning, Dr. was interviewed in his office. He described the case as classical example of mercurialism and gave the results of the biological testing as further proof of his diagnosis. He also described the treatment with chelating agents and the results.

The plant was then visited and a walk-through survey was made - first of the area where the patient worked (4th floor, Main Building), then the other four floors of this 5 - story building. The store room (stock warehouse) was also searched for mercury bearing materials but none were found.

Mr. - Personnel Manager, who accompanied the industrial hygienist on the tour then escorted him to the office of Chief Chemist Mr. knew of this case and said he too could find no source of mercury in the plant. However, a discussion of the source of felt used in the plant followed. Data from analytical work done by independent labs were produced showing no mercury content. He then called the manufacturer of the felt and, in a 3 - way conversation, the hygienist was informed that fur was not used and mercury was not present in any felt manufactured.

C. Environmental Survey

(1) The home, clothing, furniture, applicances and outhouses were surveyed using a mercury vapor detector (Bacharach Instrument Company Model MV2). No detectable mercury vapor was observed in the home environment. However, one clue was given by the sanitarian who accompanied the hygienist. The shallow well was contaminated - high bacteria count. This would indicate surface contamination which although it was now free of mercury, it could have been the source of mercury from agriculture chemical at a previous time.

(2) Bata Shoe Company was then visited and a survey of the plant for mercury was conducted by the industrial hygienist accompanied by the chief chemist and production superintendent. The entire plant which was closed for vacation was surveyed using the previously mentioned mercury vapor detector. Thus, it would appear, that if mercury were present, the closed plant would have higher mercury levels due to the lack of ventilation. However, not the slightest trace could be found.

The storeroom, a large warehouse, was surveyed. Packages of raw materials (felt, leather, canvas, etc.) were opened and surveyed. The entire production line including all machines, floor drains, solvent containers, adhesives, etc. were checked. No mercury was found at any of these locations.

D. Summary

A survey of 's home and her work place, Bata Shoe Company, revealed that they were free of mercury contamination. The source of mercury which obviously poisoned Mrs. may never be known. However, the well at her home remains a possible source of contamination.

IV. RECOMMENDATION

A new deep well should be provided as recommended by the Harford County Health Authorities.