

Health Consultation

(EXPOSURE INVESTIGATION)

J & J SIGNS

TAMPA, HILLSBOROUGH COUNTY, FLORIDA

MARCH 20, 2000

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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HEALTH CONSULTATION
(EXPOSURE INVESTIGATION)

J & J SIGNS

TAMPA, HILLSBOROUGH COUNTY, TAMPA, FLORIDA

Prepared by:

Florida Department of Health
Bureau of Environmental Toxicology
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

Objective

The United States Environmental Protection Agency (EPA) asked the Florida Department of Health (FDOH) to evaluate exposure to metallic liquid mercury in individuals occupying the J & J Signs building, located at 9307 North 14th Street in Tampa, Florida, from January 1999 to May 1999. The FDOH, in conjunction with the Hillsborough County Health Department (HCHD), conducted urine testing for mercury for one employee of J & J Signs. Urine mercury testing was also offered to employees who recently worked at the business and family who visited the site. Family members chose to have testing done through their personal physicians.

An exposure investigation will determine if there is an excess level of mercury in the urine of the J & J Signs employee. If so, we can refer him to his physician and educate him on the health effects of mercury. This individual is representative of the possible exposure to contamination in the building. FDOH conducted this investigation to determine the extent of exposure to mercury in individuals associated with J & J Signs and to determine if a plan of action was needed for controlling the exposure. The results are applicable only to the participant of this investigation, not to the general population.

Rationale

Environmental mercury contamination poses a hazard to human health. Exposure to high levels of metallic mercury can permanently damage the brain, kidneys, and developing fetus. Effects on brain functioning may result in irritability, shyness, tremors, changes in vision or hearing and memory problems. Short-term exposure to high levels of metallic mercury vapors may also cause lung damage, nausea, vomiting, diarrhea, increases in blood pressure or heart rate, shin rashes, and eye irritation. FDOH proceeded with this investigation to identify if an individual has elevated blood mercury levels in his urine, so that appropriate corrective action could be taken, if warranted. A urine mercury measurement is reliable, simple, and provides rapid identification of individuals with elevated mercury levels. (1)

Background

The J & J Signs facility stopped producing signs in January 1999. Employees in the building were a receptionist, the co-owner (now deceased) and the owner. According to the owner, family members visited the site in the last few months and over the years for short periods of time only. A friend and former employee lived in the building from January 1999 to June 1999.

In April 1999, the Florida Department of Environmental Protection (FDEP) and EPA were informed of poor waste management practices at the J & J Signs facility. On April 23, 1999, an EPA Emergency Response On-Scene Coordinator visited the site and determined that mercury air concentrations were 0.387 mg/cubic meter in the work area and 0.19 mg/cubic meter in the downstairs area of the building. The building is not air conditioned. The Agency for Toxic Substances and Disease Registry (ATSDR) chronic inhalation minimal risk level (MRL) is 0.0002

mg/cu meter. A MRL for air concentrations is an estimate of daily exposure of a human being to a chemical that is likely to be without an appreciable risk of deleterious effects (noncarcinogenic) over a specified duration of exposure. MRLs are based on human and animal studies and are reported for acute (≤ 14 days), intermediate (15-364 days), and chronic (≥ 365 days) (1). MRLs are published in ATSDR Toxicological Profiles for specific chemicals. FDEP contacted EPA and EPA contacted FDOH regarding the mercury situation. The on-scene coordinator with EPA asked FDOH if they concurred that these levels were high enough to be a public health threat. The FDOH and ATSDR determined the mercury air concentrations in the building were a health threat. In April 1999, EPA also tested the soils outside the building, and conducted wipe and debris sampling inside the building. The estimated maximum daily dose for these samples is about 10 times less than ATSDR's chronic MRL. Therefore, no adverse health effects are likely from exposure to mercury in these media. Also during the April visit, the FDEP saw beads of liquid metallic mercury in areas on the floor in the upstairs work area. Downstairs, there is an eating area and drums with debris covered with a grey tinge. FDEP found the highest mercury vapor level reading was taken above a trash drum. The drum was filled with trash and debris that a J&J Sign employee had swept-up from the floor. The EPA informed the owner that occupying the building posed a human health risk and that the owner and security guard must vacate the building immediately. The owner refused to vacate the building. The EPA took necessary steps to have the owner leave so that EPA could decontaminate the building.

Therefore, since liquid mercury is present in the building, it could be a source of exposure to an individual by ingestion, dermal absorption, or inhalation of mercury-contaminated dust, liquid or vapors.

Methods

Individuals Tested

There are three individuals who have spent long periods of time in the J & J Signs building from January to May 1999. One of these individuals participated in urine testing. We were unable to contact the other two individuals. Prior to testing, the participant signed an informed consent/assent form. Other family members of these individuals who have only visited the site for short periods visited their family doctors for testing.

Test Procedures

Biological Sampling

On June 2, 1999, the HCHD collected an early morning urine sample from the participant at the Sulfur Springs Health Clinic in Tampa, Florida. A trained senior nurse assisted with the paperwork, handling, storage and transport of the sample. Due to an insufficient amount of urine, the National Medical Services in Pennsylvania was unable to analyze the sample. On June 7, 1999, HCHD collected another urine sample from the owner. This time the National Medical Services analyzed the sample.

Reporting Results

The FDOH interpreted the test results and provided them to the owner. FDOH also gave the participant mercury information from the ATSDR Toxicological Profiles, the ATSDR Case Studies in Environmental Medicine for Mercury and an ATSDR fact sheet on mercury.

Results

Biological Sampling

Mean total mercury urine levels for the general population are 4-5 micrograms per liter ($\mu\text{g/L}$). The participant's total mercury level was below detection limits. The participant's creatinine level was 371 mg/L. The normal range in adults is 300-3400 mg/L.

Discussion

Biological Sampling

The ATSDR Toxicological Profile for Mercury recommends that urine mercury levels in adults should not exceed 5 $\mu\text{g/L}$ (1). The participant's urine sample did not exceed this recommended guideline. Therefore, the participant in this investigation was not exposed to mercury at a level of health concern even though the participant worked directly with liquid metallic mercury and had dermal contact with it.

Child Health Initiative

ATSDR recognizes that infants and children may be more vulnerable to exposures than adults when faced with contamination of air, water, soil, or food [1]. This vulnerability is a result of the following factors:

Children are more likely to play outdoors and bring food into contaminated areas.

Children are shorter and their breathing zone is closer to the ground, resulting in a greater likelihood to breathe dust, soil, and heavy vapors.

Children are smaller and receive higher doses of chemical exposure per body weight.

Children's developing body systems are more vulnerable to toxic exposures, especially during critical growth stages in which permanent damage may be incurred.

Information concerning children's activities including access to the J & J building is limited. In addition, the building has been remediated resulting in removal of the source of contamination.

Conclusions

This site presents a no apparent health hazard since the participant in this investigation did not have a urine mercury concentration that exceeded a level of health concern.

Recommendations/Public Health Action Plan

- (1) EPA/FDP should continue air monitoring of mercury in the J & J Signs building as needed.
- (2) FDOH will continue to provide mercury information to the employees of J & J Signs as requested.

References

- (1) Toxicological Profile for Mercury, Agency for Toxic Substances and Disease Registry; March, 1999.

Preparer of the Report

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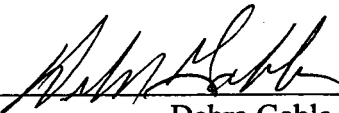
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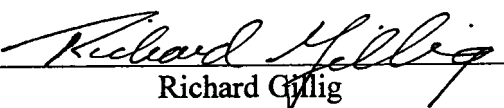
CERTIFICATION

The J & J Signs Health Consultation was prepared by the Florida Department of Health, Bureau of Environmental Toxicology, under a cooperative agreement with the Agency for Toxic Substances and Disease Registry. It is in accordance with approved methodology and procedures existing at the time the health consultation was begun.



Debra Gable
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The Division of Health Assessment and Consultation, ATSDR, has reviewed this health consultation, and concurs with its findings.



Richard Gillig
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