Letter Health Consultation

Health Impact of December 23, 1999, Emissions Release Incident at the
Stericycle, Inc. Facility, Lone Butte Industrial Park,
Gila River Indian Community

Chandler, Arizona

Prepared by the
Gila River Indian Community

September 3, 2009

Prepared under a Cooperative Agreement with the
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

A health consultation is a verbal or written response from ATSDR or ATSDR's Cooperative Agreement Partners 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 or ATSDR's Cooperative Agreement Partner which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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LETTER HEALTH CONSULTATION

Health Impact of December 23, 1999, Emissions Release Incident at the Stericycle, Inc. Facility, Lone Butte Industrial Park, Gila River Indian Community

Chandler, Arizona

Prepared By:

Gila River Indian Community
Office of Occupational Safety and Health
Under a Cooperative Agreement with the
U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry

August 4, 2009

Mr. Daniel Blair
Gila River Indian Community
Department of Environmental Quality
P.O. Box 97
35 Pima St.
Sacaton, AZ 85247

Ref: Health Impact of December 23, 1999 Emissions Release Incident at the Stericycle, Inc. Facility, Lone Butte Industrial Park, Gila River Indian Community

Mr. Blair:

At your request, the Office of Occupational Safety and Health conducted a review of the December 23, 1999 emissions release incident at the Stericycle, Inc. facility located at the Lone Butte Industrial Park, Gila River Indian Community. In response to your question regarding what the possible health implication may be from this incident, I have prepared this Letter Health Consultation under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR) which outlines a health-based interpretation of environmental data and reports reviewed by my office. This letter will provide you with important information that can be used to answer health-based questions you may receive from members of the Gila River Indian Community.

Background and Statement of the Issue

Based on information reviewed by my office, on December 23, 1999 the medical waste incinerator utilized by the Stericycle facility entered into a bypass mode due to a loss of water at the Lone Butte Industrial Park. While in bypass mode, the pollution control equipment was circumvented causing exhaust gases to exit directly from the incinerator into the atmosphere causing what was reported as a "large black plume of smoke". According to reports, the incinerator bypass mode lasted approximately four hours.[1] This incident then prompted your department to question if exposure to the plume of black smoke posed any health risk to workers at the site.

Discussion

Because air-borne mercury was identified as the contaminant of concern for this incident, our office consulted with toxicologists from the U.S. Environmental Protection Agency (EPA), Region 9 to evaluate emissions testing data pertaining to medical waste incinerator operations at the Stericycle facility located at the Lone Butte Industrial Park. As a result, the EPA reported that incinerator emissions tests performed at the Stericycle facility in 1999 showed mercury emissions occurring at a concentration of 3347 micrograms mercury per dry standard cubic meter (µg/DSCM, $\mu g/m^3$) and an emission rate (exit velocity) of 14,900 cubic feet per min (acfm). Based on these data and additional information about the incinerator, its surroundings and air dispersion modeling, the EPA predicted a maximum ground-level airborne mercury concentration of $1.25 \mu g/m^3$ (See Appendix 1).[2]

Given this airborne mercury calculation from the EPA, it is important to note that there is no current enforceable Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) for airborne mercury. However, the American Conference of Governmental Industrial Hygienist (ACGIH) recommends a Threshold Limit Value (TLV) of $25 \mu g/m^3$ averaged over an eight-hour workday for airborne mercury exposure. Therefore the predicted maximum ground-level airborne mercury concentration of 1.25 $\mu g/m^3$ calculated by the EPA is less than the recommended TLV for an eight-hour workday recommended by ACGIH.[3] Although the December 23, 1999 incident was limited to workers at the site, an exposure pathway analysis was conducted to evaluate if residents of the Gila River Indian Community living near the Lone Butte Industrial Park were exposed to airborne mercury due to this incident.

Exposure Pathway Analysis

An exposure pathway consists of five elements. These elements are: 1. A source of contamination; 2. Transportation through an environmental medium, such as air or groundwater; 3. Point of exposure; 4. A route for the contaminant to enter the body; and 5. A receptor population. For a person to be exposed to a contaminant, the exposure pathway must contain *all* five elements listed above. In some cases a potential exposure pathway might exist. Potential pathways indicate that exposure to a contaminant could have occurred, could be occurring or could occur in the future. Potential exposure pathways refer to those pathways where; 1. There is not enough information available to determine whether the environmental medium is contaminated; and 2. An environmental medium has been documented as contaminated, but is unknown whether people have been, or may be, exposed to the medium or may be exposed in the future.

The Lone Butte Industrial Park is predominately a heavy industry park located within GRIC District 4. According to information received from the District 4 Service Center and geographical research conducted by my office, no GRIC residents live within a one-mile radius of the Lone Butte Industrial Park.[4] In addition, it is important to note that given the distance from the Stericycle facility to any residential area and the four-hour duration of the incident; the predicted ground-level mercury concentration of 1.25 $\mu g/m^3$ would have likely

dissipated over the expanse of area between the two points. Therefore the exposure pathway is incomplete.

Conclusion

The Office of Occupational Safety and Health (OSH) and ATSDR conclude that airborne mercury inhalation as a result of the December 23, 1999 incident at Stericycle, Inc. will not harm people's health. This conclusion is based on the EPA predicted maximum ground-level airborne mercury concentration of 1.25µg/m^3, distance from the Stericycle facility to any residential area, and the four-hour duration of the incident.

Recommended Actions

No further action needed.

For More Information

If you have any questions, please feel free to contact me at (520) 562-5124, or you may call ATSDR at 1-800-CDC-INFO and ask for information on Stericycle, Inc., Lone Butte Industrial Park, Gila River Indian Community.

Thank you.

Sincerely,

Manuel M. Fontes, RS
Environmental Health Assessor
Gila River Indian Community
Office of Occupational Safety and Health

cc: Randal Lange, Principle Investigator, Gila River Indian Community, Office of Occupational Safety and Health

Encl:

References

Appendix 1: Maximum Airborne Mercury (Hg) Concentration for Stericycle, Inc., Lone Butte Industrial Park, Gila River Indian Community

References

[1] Daniel Blair, Memo to Governor Donald R. Antone Sr., Gila River Indian Community, Sacaton, AZ. Ref: Update on Stericycle Inc. (Medical Waste Incinerator) at Lone Butte Industrial Park. Gila River Indian Community, Department of Environmental Quality, 9 March 2000.

[2] Gerald F.S. Hiatt, Letter to Eleanor Vargas, ATSDR Program, Gila River Indian Community, Office of Occupational Safety and Health. Ref: Stericycle Incinerator, Lone Butte Industrial Park, Gila River Indian Community Mercury Emissions – Risk Based Screening Assessment. United States Environmental Protection Agency, Region 9, 14 September 2005.

[3] Gerald F.S. Hiatt, Letter to Eleanor Vargas, ATSDR Program, Gila River Indian Community, 14 September 2005.

[4] District 4 Service Center, Personal Communication, November 2008.

Appendix 1

Maximum Airborne Mercury (Hg) Concentration for Stericycle, Inc., Lone Butte Industrial Park, Gila River Indian Community

U.S. EPA, Region 9 Calculation

Estimated emission rate:

= 3347 µg/m^3 x 0.000001 g/µg x 14900 ft^3/min x 1/60 min/sec x 0.02832 m^3/ft^3

= 0.0235 g/sec

Predicted maximum mercury concentration at ground-level:

= 0.0235 g/sec x 53.23 µg/m^3 per g/sec

= 1.25 µg/m^3

Certification

This Stericycle Inc. letter health consultation was prepared by the Gila River Indian Community under a cooperative agreement with the federal Agency for Toxic Substances and Disease Registry (ATSDR). It was completed in accordance with approved methodologies and procedures existing at the time the health consultation was initiated. Editorial review was completed by the Cooperative Agreement partner.

Charisse J. Walcott
Technical Project Officer, CAT, CAPEB, DHAC

The Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this health consultation and concurs with its findings.

Alan Yarbrough
Team Lead, CAT, CAPEB, DHAC, ATSDR