

# Health Consultation

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ROEBLING STEEL COMPANY

ROEBLING, BURLINGTON COUNTY, NEW JERSEY

CERCLIS NO. NJD073732257

JUNE 24, 1999

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**

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**Prepared by:**

**Exposure Investigation and Consultation Branch  
Division of Health Assessment and Consultation  
Agency for Toxic Substances and Disease Registry**

## Background and Statement of Issues

The U. S. Environmental Protection Agency (EPA) Region II requested the Agency for Toxic Substances and Disease Registry (ATSDR) to review proposed clean-up levels for contact surfaces (walls) inside of buildings at Roebling Steel Site and comment on whether these clean-up levels are protective of public health. Specifically, EPA has proposed to remediate building walls contaminated with lead (Pb), polychlorinated biphenyls (PCBs), arsenic (As), and polycyclic aromatic hydrocarbons (PAHs), down to one milligram Pb per square meter ( $1 \text{ mg Pb/m}^2$ ), [**0.01 mg Pb/100 square centimeter ( $\text{cm}^2$ )**];  $0.19 \text{ mg PCBs/m}^2$  (**0.0019 mg PCBs/100  $\text{cm}^2$** ),  $0.220 \text{ mg As/m}^2$  (**0.0022 mg As/100  $\text{cm}^2$** ), and  $0.050 \text{ mg PAHs/m}^2$  (**0.00050 mg PAHs/100  $\text{cm}^2$** ), respectively.

The Roebling Steel Site is a former steel and wire cable company that occupies 200 acres in Florence Township, New Jersey, and lies next to the Delaware River. The operations at the site ceased in the 1980s. During its operation the company stored raw materials and waste products in several on-site locations. The site contains about 70 unoccupied buildings. The on-site buildings contain contaminated process dust and exposed asbestos [1].

## Discussion

The Housing and Urban Development (HUD) has recommended a clean-up level for lead on indoor walls for residential property to be  $1 \text{ mg Pb/100 cm}^2$  [2]. EPA's proposed clean-up level for lead at this site is  $1 \text{ mg Pb/m}^2$  (**0.01 mg Pb/100  $\text{cm}^2$** ), which is 100 times lower than HUD's clean-up criterion of  $1 \text{ mg Pb/100 cm}^2$ .

Furthermore, EPA has developed a PCBs spill clean-up policy for contact surfaces under the Toxic Substances Control Act (TSCA) that is conservative and protective of public health. The TSCA recommended clean-up level is  $0.010 \text{ mg PCBs/100 cm}^2$  for high contact surfaces. High contact industrial settings are defined as surfaces such as machines and control panels, which are repeatedly touched for prolonged periods of time. Based on risk posed by PCBs on indoor surfaces, the dermal exposure route is of greatest concern [5]. An estimated cancer risk of  $1 \times 10^{-5}$  is posed by  $0.010 \text{ mg PCBs/100 cm}^2$  on indoor surfaces of high contact potential [5]. This concentration of PCBs on indoor walls or surfaces corresponds to  $1 \text{ mg PCBs/m}^2$ . At this site, EPA has proposed to clean-up the PCBs on the building walls down to  $0.19 \text{ mg PCBs/m}^2$  (**0.0019 mg PCBs/100  $\text{cm}^2$** ). Therefore, the proposed clean-up level for PCBs is 5 times lower than TSCA's recommended value and should be protective of human health.

A human study of workers who were exposed to contact surfaces containing PCBs was conducted by Christiani et al. in 1986 [6]. This study revealed that employees who worked in areas with surfaces contaminated with PCBs at  $0.161 \text{ mg PCBs/100 cm}^2$  had serum PCBs levels ranging from 3.1 parts per billion (ppb) to 65 ppb with a mean concentration of 15.3 ppb [6]. The average background blood serum concentration among the general population was 5 ppb to 7.7 ppb [7]. The average concentration of serum PCBs levels for people who eat fish is much higher [7]. Although many studies have attempted to show a positive correlation of serum PCBs levels

with liver enzymes in PCBs exposed workers, no studies have been conclusive [7]. Furthermore, Christiani et al. did not show chloracne or other symptomatic responses to PCBs toxicity, nor a relationship between exposure to PCBs and liver enzyme levels in workers [6].

At this site, EPA has proposed to clean-up arsenic down to 0.220 mg As/m<sup>2</sup> (0.00220 mg As/100 cm<sup>2</sup>) on contact surfaces. Arsenic, having a trivalence or three positive charges, is not easily absorbed across the skin barrier. It is also unlikely that adults who occupy these buildings would acquire significant exposure through daily ingestion from hand to mouth activities to exceed 3 x 10<sup>-4</sup> milligrams As/kilogram body weight/day (3 x 10<sup>-4</sup> mg As/kg BW/d), EPA's Reference Dose (RFD) for ingestion of arsenic. An RFD is an estimate of daily exposure to a chemical that is unlikely to cause non-cancerous adverse health effects over a specified duration. Furthermore, arsenic will not volatilize sufficiently into ambient air to reach concentrations that would pose a health threat from inhalation exposure.

EPA has proposed to clean-up PAHs down to 0.05 mg/m<sup>2</sup>. Assuming that an adult who weighs 70 kilograms ingests 100% of the PAHs remaining on the buildings walls, the estimated exposure dose would be about 7 x 10<sup>-4</sup> mg PAHs/kg BW/d, and no adverse health effects have been observed in humans or animals at this dose [9]. Therefore, a residual concentration of PAHs at 0.050 mg PAHs/m<sup>2</sup> (0.00050 mg PAHs/100 cm<sup>2</sup>) on contact surfaces such as a wall would be protective of public health.

### Conclusions

ATSDR concurs with EPA's proposed clean-up levels.

### Recommendations

None

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Robert L. Williams, Ph.D.      Date

Raymond E. Grissom      6-17-99  
Concurrence: Raymond E. Grissom, Ph.D.      Date

## References

1. Fact Sheet for Roebling Steel Site, Region II EPA ID# NJD 982281115, February 1999.
2. Lead Poisoning Exposure, Abatement, Regulation, edited by Joseph J. Breen and Cindy R. Stroup, Lewis Publishing 1995.
3. ATSDR's Toxicological Profile for Lead (Update), U.S. Public Health Service, Atlanta, Georgia, 1998.
4. Centers for Disease Control and Prevention. Preventing Lead Poisoning in Young Children 1991.
5. Polychlorinated Biphenyls Spill Clean-up Policy, 40 CFR Part 761, U.S. EPA April 2, 1987.
6. Persistently Elevated Polychlorinated Biphenyl Levels from Residual Contamination of Workplace Surfaces. David C. Christiani et. al., American Journal of Industrial Medicine, 10:143-151, 1986.
7. ATSDR's Toxicological Profile for PCBs, Update February 20, 1996.
8. ATSDR's Toxicological Profile for Arsenic Update, February 22, 1999.
9. ATSDR's Toxicological Profile for PAHs, Update August 1995.