

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY



REGION 4

61 Forsyth Street
Atlanta, Georgia 30303

INTERIM FINAL

MEMORANDUM

DATE: July 21, 2005

Subject: Revised Mercury Removal Action Levels at ERRB Sites

To: Matt Taylor, Chief
Emergency Response Section
Emergency Response and Removal Branch

From: Glenn Adams, OSC
Emergency Response and Removal Branch

Kevin Koporec, Toxicologist
Technical Support Section

This memo is written to revise the September 20, 2001 EPA R-4 Draft Final Guidance (ER Mercury Response Information) document. This memo is to provide explanation, and available references, for the recommended removal action levels (RALs) and the cleanup levels for mercury provided in the above mentioned guidance document and replaces the September 5, 2001 memorandum Mercury Removal Action Levels at ERRB Sites from Glenn Adams to Karen Knight.

The following RALs and cleanup levels were updated based on current toxicological information, Agency for Toxic Substances and Disease Registry (ATSDR) recommendations, and on the technical practicabilities involved in cleanup of elemental (metallic) mercury releases and inorganic mercury in soils.

Recommendations for Removal Action Levels (RALs) and for cleanup levels for mercury are provided below with a short discussion on how they were developed. As a reminder, RALs are the concentrations which, when exceeded, that trigger the need for action at ERRB sites, while the cleanup levels are the concentrations which should be achieved once an emergency response action or time-critical removal action is initiated.

The following issues should be noted: (1) these recommendations assume that the all visible metallic mercury has already been removed or is not present; and (2) if young children (less than 6 years old) or a pregnant woman are potentially exposed, an EPA toxicologist or ATSDR's Duty Officer (404-498-0120) should be consulted for further assistance.

Air RALs and Cleanup Levels (elemental mercury)

Residential: Cleanup Level of 1.0 ug/m³ and RAL of 1.0 ug/m³

The residential cleanup level in air of 1.0 ug/m³ is based on the ATSDR (Agency for Toxic Substances and Disease Registry) document titled, Suggested Action Levels for Indoor Mercury Vapors in Homes or Businesses with Indoor Gas Regulators.¹ This guidance document is attached to this memo for further information.

School: Cleanup Level of 1.0 ug/m³ and RAL of 3.0 ug/m³

The school cleanup level of 1.0 ug/m³ in air is based on the IRIS² reference concentration (RfC) of 0.3 ug/m³ adjusted assuming an exposure duration of 8 hours per day and a Hazard Quotient (HQ) of 1. The RAL of 3.0 ug/m³ is based on a HQ of 3, which reflects the upper-end of the uncertainty range for noncarcinogenic reference values that is used for risk management recommendations in Region 4.

Commercial/Industrial: Cleanup Level of 3 ug/m³ and RAL of 25 ug/m³

The commercial/industrial cleanup level in air of 3 ug/m³ and the RAL 25 ug/m³ were both based on the previously referenced ATSDR document. This guidance does not specifically address malls and stores, but typically the Commercial/Industrial levels would be appropriate for this type of situation. The only exception would be if there were children and/or pregnant women that would potentially be exposed for extended periods of time (i.e., 6-8 hrs/day). In that case the residential and/or school levels may be more appropriate.

Personal items: Cleanup Levels of 1 - 10 ug/m³ (case specific)

The value for personal items is based on the above referenced ATSDR document. It should be noted that if large items (e.g., couch, chair, mattress, etc.) are involved, the cumulative effect of bringing those items back inside a building may cause the air in the living space (i.e., living

¹The ATSDR document (Suggested Action Levels for Indoor Mercury Vapors in Homes or Businesses with Indoor Gas Regulators) is not dated, but Dr. John Risher of ATSDR was contacted to ensure that it is still ATSDR's current guidance. The document was produced on 4 December 2000 and was attached to letters to EPA Region 5 and the Michigan Department of Health.

²EPA's Integrated Risk Information System (www.epa.gov/iris)

room) to exceed the cleanup level. During an emergency response, an EPA toxicologist or ATSDR's Duty Officer (404-498-0120) should be consulted for further assistance.

Vehicles - Buses and private owned vehicles: Cleanup Levels of 1 - 10 ug/m³ (case specific)

For buses and privately owned vehicles (e.g., cars, mini-vans, etc.) the levels are based on discussions with ATSDR and the technical practicability of cleanup of vehicles. During an emergency response, an EPA toxicologist or ATSDR's Duty Officer (404-498-0120) should be consulted for further assistance.

Soil RALs and Cleanup Levels (inorganic mercury)

Residential - Cleanup Level of 23 mg/kg and RAL of 70 mg/kg

The residential cleanup level in soil of 23 mg/kg is calculated from the IRIS reference dose (RfD) of 3×10^{-4} mg/kg/day for mercuric chloride, the same residential exposure assumptions used in the EPA Region 9 PRG table³, and is based on a HQ level of 1.0. The RAL (70 mg/kg) was calculated from this same RfD and exposure assumptions but using a HQ level of 3 (see School RAL above).

Industrial/Commercial - Cleanup level of 310 mg/kg and RAL of 930 mg/kg

The commercial/industrial cleanup level in soil of 310 mg/kg is calculated from the IRIS RfD of 3×10^{-4} mg/kg/day for mercuric chloride, the same industrial exposure assumptions used in the Region 9 PRG table, and is based on a HQ level of 1.0. The RAL (930 mg/kg) was calculated from this same RfD and exposure assumptions but using a HQ level of 3 (see School RAL above).

Please contact us at (404)562-8771 (Glenn) or (404)562-8644 (Kevin) if you have any questions or need further assistance.

Attachment

cc: Scott Sudweeks, TSS
Shane Hitchcock, ERRB
Jim McGuire, ERRB
Anita Davis, ERRB

Mercury-RALsrev072105.wpd

³Preliminary Remediation Goals, EPA Region 9, Updated October 2004.
[<http://www.epa.gov/region09/waste/sfund/prg/index.html>]