

**The Technical Review Workgroup for Metals and Asbestos  
Lead Committee Annual Report:  
Accomplishments and Activities for Calendar Year 2013**

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## TRW Lead Committee Accomplishments of CY 2013

### Reports and Guidance Development on Lead Risk Assessment

1. **Office of Solid Waste and Emergency Response (OSWER) Desk Statement on Status of Superfund Soil Lead Policy:** Supported the development of outreach materials related to the Centers for Disease Control and Prevention (CDC) recommendations for blood lead reference value. The proposed strategy and materials are under review by Office of Superfund Remediation and Technology Innovation (OSRTI) management. Provided recommendations to OSWER stakeholders on Soil Screening Levels/Removal Management Levels for lead (residential and non-residential).
2. **Blood Lead Screening Recommendations:** Developed a recommendation for using blood lead data at Superfund Sites. The final document will be posted on the TRW website.
3. **Background Soil:** Working with United States Geological Survey (USGS) to evaluate data to make recommendations about background concentrations of lead in soil. The USGS data will be posted on the Lead TRW website.
4. **Residential Lead Sites Handbook:** Prepared updates to the risk management guidance based on feedback from user community and updated science. Polled the Regions about dust sampling practices.
5. **M<sub>SD</sub>:** Evaluated and found the existing data to be inadequate. Coordinating review of Bunker Hill M<sub>SD</sub> data with TerraGraphics (SAS code for M<sub>SD</sub> data analysis). The data is undergoing data quality review.
6. **Particle Size and Sieving Analysis:** Prepared an updated recommendation based on literature search and analysis on the particle size fraction that adheres to a child's hands. The draft recommendation went through external peer review and was updated by the TRW accordingly. Currently being reviewed by OSRTI management. The final document will be posted on the TRW website.
7. **Urban Gardening Subcommittee:** Prepared a recommendation regarding soil levels of lead that trigger best management practices. This project involves Intra- and Inter-Agency coordination, and to date, has involved guests from Agency of Toxic Substances and Disease Registry and United States Department of Agriculture, as well as academia. The draft recommendation is currently being reviewed by OSRTI management. The final document will be posted on the TRW website.
8. **Phosphate Amendment:** The manuscript went through external peer review and was submitted for publication. The TRW began developing a technical memorandum and fact sheet to follow the manuscript.

- Scheckel KG, Diamond G, Maddaloni M, Partridge C, Serda S, Miller BW, Klotzbach J, Burgess M. (2013). Amending Soils with Phosphate as Means to Mitigate Soil Lead Hazard: A Critical Review of the State of the Science.(2013) J. Environ. Toxicol. Health Part B. 16:1-44.

#### Related Publications

- Li L, Xing W, Scheckel KG, Xiang G, Ji H, Li H. (2013). Lead Retention Mechanism in a Calcareous Soil with Calcium and Phosphate Amendments. J. Hazard. Mater. 262: 250-255
- Minca KK, Basta NT, Scheckel KG. (2013). Using the Mehlich 3 soil test as an inexpensive screening tool to estimate total and bioaccessible Pb in urban soils. J. Environ. Qual. 42: 1518-1526.
- Nelson C, Gilmore T, Harrington J, Scheckel KG, Miller BW, Bradham KD. (2013). Evaluation of a Low-cost Commercially Available Extraction Device for Assessing Lead Bioaccessibility in Contaminated Soils. Environ. Sci.: Processes Impacts. 15: 573-578.

9. **ATSDR-EPA Lead Strategy & Pilot Study Subcommittee:** Coordinating with ATSDR and Regions on collaborative approach to lead sites.
10. **Integrated Exposure Uptake BioKinetic (IEUBK) Model Variable Review:** Updating exposure variables (*i.e.*, ventilation rate, dietary lead exposure, water lead concentration, water consumption, and bioavailability) in the IEUBK model based on literature review. The draft recommendation went through external peer review and was updated by the TRW accordingly. Currently being reviewed by OSRTI management. The final variables will update the IEUBK model and posted on the TRW website.
11. **IEUBK Model User Manual:** Updating the IEUBK Model User Manual including development of an online version. Discussed the age ranges used in the IEUBK model. Materials are under review by OSRTI management. The final document will be posted on the TRW website.
12. **Maternal Blood Lead Concentration:** Updating the existing maternal blood lead variable in the IEUBK model. Materials are under review by OSRTI management. The final document will be posted on the TRW website.
13. **All-Ages Lead Model (AALM):** Further developed the AALM and coordinated a beta test of the model within the TRW and ATSDR.
14. **Short-term and Acute Exposures to Lead:** Developed guidance on how to address short-term and acute exposures to lead. The final document will be posted on the TRW website.

15. **Development of Frequently Asked Questions: Soil Holding Times, Acute Inhalation Exposures:** Developed FAQ on holding times associated with soil and dust samples. The final soil holding FAQ was posted on the TRW website.
16. **TRW Lead Committee Webpage Update:** Updated the TRW Lead Committee webpage.
17. **Lead Sampling Plan for In Vitro Bioavailability (IVBA) Assay:** Convened a joint TRW Lead-Bioavailability Subcommittee working group to develop soil sampling plan for collecting samples for the IVBA assay. Provided recommendations to OSWER stakeholders on using IVBA information at lead sites as part of site characterization and screening.
18. **Arsenic Relative Bioavailability (RBA) Recommendations:** Implemented changes to the RSL document and website.
19. **Soil Ingestion Rate:** Continued discussion on updating the recommended soil ingestion rate.

### **Communication, Training, and Outreach**

1. **Hotline:** Responded to 68 requests for assistance in CY 2013. Of these calls, approximately 70% requests were from state and federal agencies, with the remainder from other sources (public, non-governmental organizations, and engineering and consulting firms). Four requests were from outside the U.S. (China, Poland, Australia and Canada). Approximately 60% of the requests concerned the IEUBK model, the All Ages Lead Model, or the Adult Lead Methodology. Of the remainder, the majority of the requests pertained to gardening, exposure, screening levels/policy, or guidance-related questions.
2. **Presentations/Training:** Supported development of a TRW Lead Committee training video and IEUBK Model Training. Participated in Clu-In webinars; and SOT conference in San Antonio, TX. Participated in an information exchange and provided training on the IEUBK model with China (in conjunction with the Natural Resource Defense Council) in June.
  - a) Ballew M, Brown J, Burgess M, Follansbee M, Stifelman M, Thayer B. (2013). Estimation of dietary lead exposure for US children using a new method: implications for the Integrated Exposure Uptake Biokinetic Model for Lead in Children (Abstract 1251). Presented at the 52nd Society of Toxicology conference, March 10-14, 2013. San Antonio, TX.
  - b) Brown J, Burgess M, Stifelman M, Follansbee MH, Thayer B, Flavin N. (2013). Using energy data for estimating ventilation rates for the Integrated Exposure Uptake Biokinetic Model for Lead in Children (Abstract 1252). Presented at the 52nd Society of Toxicology conference, March 10-14, 2013. San Antonio, TX.

- c) Follansbee MH. (2013) Peer review meeting report on the adaptation of the IEUBK Model to China. Prepared for Natural Resources Defense Council. Delivered presentation June 25-26. Final report delivered July 3, 2013.
  - d) Maddaloni M, Stifelman M, Burgess M, Partridge C, Everett S, Follansbee MH. (2013). EPA's development of default exposure factors: Updates to the IEUBK model. Presented at the 29th Annual International Conference on Soils, Sediments, Water and Energy, October 21-24, 2013. Amherst, Massachusetts. Association for Environmental Health & Sciences Foundation, Inc.
  - e) Scheckel KG, Miller, BW, Li L. (2013). Challenges of Pb immobilization and risk assessment. 246th ACS National Meeting, Indianapolis, IN. (N)
  - f) Cheng Z, Maddaloni M, Scheckel KG. (2013). Lead stabilization and arsenic mobilization by phosphate and alternative amendments: Implications on urban soil remediation and urban agriculture. 246th ACS National Meeting, Indianapolis, IN, 2013. (N)
  - g) Basta NT, Minca KK, Scheckel KG, Moser ME. (2013). Are phosphorus in situ Pb stabilization treatments equal? 246<sup>th</sup> ACS National Meeting, Indianapolis, IN, 2013. (N)
  - h) Schadt CW, Sullivan-Guest TS, Scheckel KG, Jardine PM, Basta NT. (2013). Understanding microbial communities, lead availability, and their potential Interactions at an abandoned firing range in Oak Ridge, TN. 246<sup>th</sup> ACS National Meeting, Indianapolis, IN, 2013. (N)
  - i) Miller BW, Scheckel KG, Bradham KD, Thomas DJ. (2013). Bioavailable and bioaccessible pools of soil bound metal(loid)s: Results from in vitro extraction, X-ray absorption spectroscopy, and in-vivo feeding studies. International Union on Pure and Applied Chemistry, Istanbul, Turkey. (I)
  - j) Scheckel KG, Miller BW, Bradham KD, Thomas DJ. (2013). Role of Phosphate Amendments on Pb and As Bioavailability. 12<sup>th</sup> International Conference on the Biogeochemistry of Trace Elements, Athens, GA. (I)
  - k) Chaney RL, Zia MH, Codling EE, Scheckel KG. (2013). Bioaccessibility Estimates for Soil Pb Should Correlate with Human Bioavailability of Treated Soils. 12<sup>th</sup> International Conference on the Biogeochemistry of Trace Elements, Athens, GA. (I)
  - l) Nelson CM, Gilmore TM, Harrington JM, Scheckel KG, Miller BW, Bradham KD. (2013). Evaluation of a Low-cost Commercially Available Extraction Device for Assessing Lead Bioaccessibility in Contaminated Soils. 12<sup>th</sup> International Conference on the Biogeochemistry of Trace Elements, Athens, GA. (I)
3. **Website:** Updated self-guided training slides on lead risk assessment available via the internet; added TRW Lead Committee Annual Reports (2012) and updated responses to frequent questions (compiled from inquiries made to the TRW Lead Committee hotline). Added the USGS Background Soil Lead Study (Smith et al., 2013) including an interactive map and links to state-specific results (*i.e.*, maps, data tables).

4. **Lead Committee Annual Meeting:** Held October 28 – October 30, 2013 at the Gulf Breeze Research Laboratory in Gulf Breeze, FL. Members of the Lead Committee met to work on projects and plan activities for 2014.

### **Coordination with Regions, EPA Program Offices, and Other Federal Agencies**

**Region 2 & ORD:** Supported Regional Applied Research Efforts (RARE) grants on addressing lead and arsenic in urban soils.

**Region 3:** Provided site consultation for a site in Philadelphia (J.T. Lewis) on sampling and analysis procedures.

**Region 8:** Responded to a Criminal Investigation Division request to model worker exposure from welding on a bridge coated in lead-based paint. Provided comments on the Revised Proposed Plan for the Anaconda, and supported efforts for a potential lead site in Pueblo, CO.

**Region 9:** Provided site consultation for Eureka, NV site (removal site not listed on NPL).

**Region 10:** Provided technical support for addressing concerns with sampling procedures of lead shot.

**US Geological Survey (USGS):** Coordinated the application of USGS background soil lead study on the TRW webpage.

**Agency for Toxic Substances and Disease Registry (ATSDR):** Coordinated with ATSDR to align the response to the CDC blood lead reference value. Participated in discussions regarding the Residential Lead Sites Handbook. Coordinated an EPA-ATSDR beta test of the most recent version of the AALM.

**Montana Department of Environmental Quality:** Provided technical assistance on potential lead exposure found in indoor firing ranges.

### **Coordination with Other Nongovernment Groups**

**TerraGraphics:** The Committee is working with TerraGraphics to coordinate a site specific assessment of lead concentration in soil and dust data from Bunker Hill/Coeur d'Alene Basin.

**Natural Resources Defense Council (NRDC):** Participated in an information exchange and provided training on the IEUBK model with Chinese delegates (in conjunction with the NRDC) in June.

**Children's Health Protection Advisory Committee (CHPAC):** Supported collaborative efforts to update the Lead Strategy.

**Global Alliance on Health and Pollution (GAHP):** Provided technical support to discussion of remedial technologies.

**American Water Works Association (AWWA):** Received request for the release date of the IEUBK model update memos.