

Superfund Technical Review Workgroup (TRW) – Lead (Pb) Committee 2025 Accomplishments

The Technical Review Workgroup Lead Committee (TRW-Pb Committee) provides site consultation relevant to Pb in soil site characterization activities and human health risk assessment. The TRW-Pb Committee has made advances in the development, maintenance, support, and promotion of the best science in the field of human health risk assessment for lead (Pb).

The Charter for the Superfund TRW was updated in January 2025 to clarify roles and membership requirements, responsibilities, and operating principles.

Technical Support

One of the fundamental roles and responsibilities of the TRW-Pb Committee is to provide technical support regarding the application of Pb risk assessment tools at Superfund sites. This support is provided to EPA regional risk assessors as well as other federal, tribal, state, non-governmental and international groups. Furthermore, the TRW-Pb Committee promotes application of the best available scientific information concerning Pb risk assessment methods and practices in soil and soil-like (e.g., floodplains) media at affected sites.

The TRW-Pb Committee members are a group of experienced and highly trained professionals in Pb risk assessment and have provided expert assistance in all kinds of scenarios including complex risk assessment scenarios.

EPA announced updates to guidance for Pb in residential soil at CERCLA sites and RCRA corrective action facilities in October 2025. As per the mission of the TRW-Pb Committee, it will continue to provide technical support to regional risk assessors, remedial program managers, and others regarding the Integrated Exposure Uptake Biokinetic (IEUBK) model application and implementation of the updated guidance as it applies to human health risk assessment.

The TRW-Pb Committee facilitated a number of technical discussions during its monthly meetings in 2025, covering topics including risk-based soil Pb cleanup by depth, post-sampling backfilling of sampling holes, methods for soil sieving and sieving at different depths, and In Vitro Bioavailability sampling recommendations when revisiting/reopening a site. These discussions provided valuable technical information for risk assessors actively working on sites to advance the progress of the sites.

The TRW-Pb Committee convened a subcommittee to evaluate the default variable in the IEUBK model that is used to calculate indoor dust Pb concentration from the outdoor soil Pb concentration (the MSD). To determine whether sufficient information is available to support an update to the default MSD and to facilitate the evaluation, OSEM sent a data call to the regions for site-specific data on paired outdoor soil/indoor dust Pb concentrations. The analysis of the data is currently underway by the subcommittee.

In addition to supporting work at specific sites, the TRW-Pb Committee responded to 48 hotline (pbhelp@epa.gov) requests from other federal, state, international, and non-governmental sources. Requests were received from the following groups:

- 36 requests were from state and federal agencies;
- 2 requests were from outside the US;
- 10 requests were from other sources (public, non-governmental organizations, engineering and consulting firms, and academia); and
- 12 requests pertained to the IEUBK model, 16 requests pertained to the All Ages Lead Model (AALM), and 2 requests pertained to the Adult Lead Methodology (ALM).

As shown above, approximately 25 percent of the hotline requests pertained to the IEUBK, including installation and use, default water concentrations, maternal blood Pb levels (BLL), incorporation of bioavailability, and intermittent exposure/time-weighted averaging. Slightly less than five percent of the requests pertained to the ALM, and approximately 30 percent pertained to the AALM. The remainder of the requests were questions regarding topics ranging from evaluating short-term or intermittent exposure to target risks or risk benchmarks to use in evaluating Pb exposure, soil sieving recommendations, fish consumption, risk assessment and remediation.

Communication, Training and Outreach

In January 2025, the TRW-Pb Committee held a virtual two-day meeting. The meeting discussed topics including:

- the status of developing an indoor dust sampling vacuum method (a joint effort between the former Office of Superfund Remediation and Technology Innovation and Emergency Management, the former Office of Emergency Management, and the former Office of Research and Development), considerations for conducting indoor dust sampling for Superfund, and the relationship of the dust Pb hazard standard to Superfund site risk assessment;
- an update from the MSD subcommittee, which was charged with evaluating the MSD variable in the IEUBK model that describes the ratio of indoor dust Pb concentration to soil Pb concentration;
- the findings of the Dust Loading to Concentration Calculator Tool subcommittee; the TWA calculator tool and its use in evaluating intermittent exposures; and
- a round-robin discussion of regional risk assessors regarding the new Pb guidance.

In July 2025, the TRW-Pb Committee hosted a two-day training on CLU-IN to assist Superfund and RCRA Corrective Action risk assessors in the use of the IEUBK, the ALM, and the AALM in Pb human health risk assessment. The first day provided an overview of all three models and their uses in Pb risk assessment, followed by hands-on IEUBK exercises, including running the model, deriving preliminary remediation goals (PRGs), and using site-specific bioavailability information. The second day provided technically-driven instruction on using batch mode and evaluating intermittent exposure in the IEUBK model, an exercise using the ALM, and a demonstration of the AALM. There were 451 registrants/353 participants for the first day and 450 registrants/267 participants for the second day, representing state/local government, EPA, consulting/engineering firms, other federal agencies, tribal governments, and academia; participants represented 38 states and eight countries. Since the training sessions, there have been 313 online replays of the Day 1 training and 265 online replays of the Day 2 training.

Presentation materials and links to resources are available online: https://www.clu-in.org/conf/tio/TRW-LeadRisk_072325/
https://www.clu-in.org/conf/tio/TRW-LeadRisk_072425/.

In 2025, the TRW also updated the IEUBK to make it compliant with Section 508 of the Rehabilitation Act of 1973. This act requires agencies to provide individuals with disabilities equal access to Information and Communication Technology (ICT) comparable to those who do not have disabilities. The final version of the 508 compliant IEUBK should be released in 2026. In addition, the model output options were made compatible with Microsoft Office applications.

The TRW-Pb Committee prepared materials for an in-person joint meeting with the TRW-BAC to be held in the fall/winter of 2026.

Technical Guidance Documents (Completed and Active Projects)

The TRW-Pb Committee published three technical “short sheets” related to data inputs in the IEUBK model:

- *How do I use Bioavailability Data from EPA Method 1340 in the IEUBK model?* Available online here: <https://semspub.epa.gov/work/HQ/100003665.pdf>
This document was jointly developed by the TRW-Pb Committee and the TRW-BAC to walk a user through using site-specific *in vitro* data from SW-846 Method 1340 for soil and dust in the IEUBK model. It complements a memorandum from the TRW-BAC released in February 2025 entitled, *Mouse Model for Measuring In Vivo Lead Oral Relative Bioavailability* (<https://semspub.epa.gov/src/document/HQ/100003625>).
- *Why does the Integrated Exposure Uptake Biokinetic (IEUBK) Model use Central Tendency Exposure (CTE) Input Parameters?* Available online here: <https://semspub.epa.gov/work/HQ/100003670.pdf>
This document describes the basis for using central tendency exposure estimates as default inputs to the IEUBK model.
- *What is the Interindividual Geometric Standard Deviation (GSDi) Used in the Integrated Exposure Uptake Biokinetic (IEUBK) Model?* Available online here: <https://semspub.epa.gov/work/HQ/100003671.pdf>
This document describes and defines the GSDi, which is intended to represent biological and behavioral variability, as well as measurement variability from repeat sampling and sampling location, for use in the IEUBK model.

The TRW-Pb Committee continues its ongoing support to provide site information and end-user testing of the AALM. The AALM tool is an outgrowth of the IEUBK. It can evaluate Pb exposure from birth to 90 years of age and allows for the assessment of intermittent exposures as short as one day, a limitation of both the IEUBK and ALM. Version 3.1 of the AALM, which includes a new respiratory module for estimating blood Pb concentrations and body burden of Pb associated with a wide variety of inhalation exposure scenarios, was released in August 2025 and is available here: <https://www.epa.gov/land-research/all-ages-lead-model-aalm>.

The TRW-Pb Committee revised and published a Time-Weighted Average Risk Calculation Tool to accompany the document *Assessing Intermittent or Variable Exposure at Lead Sites*

(<https://www.epa.gov/superfund/lead-superfund-sites-guidance#leadsites>), which provides technical guidance regarding the evaluation of non-continuous exposure to communities. The calculation tool, finalized in April 2025, illustrates the impact of residential soil Pb concentration on risk predictions over a range of potential site concentrations for intermittent exposures, and calculates the relative contribution of site and residential soil Pb intake for various combinations of site and residential soil Pb concentrations. The calculation tool was revised to:

- Increase the allowable upper bound site soil Pb concentration from 800 to 2,000 mg/kg;
- Add a disclaimer concerning predicted geometric mean (GM) blood lead (PbB) is > 30 µg/dL; and
- Add detail concerning the minimum exposure frequency and duration in the calculator.

The TRW-Pb Committee drafted *Area-Wide Average Approach to Implementing Cleanup Goals at Lead Sites*. The document describes sampling and remediation strategies in support of risk assessment and risk management when applying the risk-based cleanup goal for an exposure area. The area-wide averaging (AWA) approach to remediation provides the option to risk managers to address Pb contamination such that the average (for Pb; an upper confidence limit on the average is typically used for other contaminants) concentration of contaminants in an exposure unit remaining after remediation is at or below the cleanup goal, whereas a not-to-exceed (NTE) approach typically remediates all decision units within an exposure unit with soil concentrations exceeding the cleanup goal. The document describes the data needs and pros and cons of several alternative approaches that risk managers may consider in addition to NTE cleanup. The TRW-Pb Committee intends to develop an Excel calculator tool for users to accompany the final document. The document and calculator tool is intended to be released in 2026.

In response to questions from Agency for Toxic Substances and Disease Registry (ATSDR) staff, the TRW-Pb Committee drafted revisions to *Technical Review Workgroup Recommendations Regarding Gardening and Reducing Exposure to Lead-Contaminated Soils* to:

- update best practices, crops/plants identified and building on two years of intern work on urban gardening research and lessons learned since 2014;
- align with the 2025 residential Pb guidance with regards to children who may be directly exposed to Pb-contaminated soil and plants while gardening, and promoting risk-mitigating actions; and
- update the literature cited in the document.

The final updated document is slated to be released in 2026.

The TRW-Pb Committee finalized a fact sheet for internal distribution only within EPA entitled, *“Relative Contribution of Various Media to Lead Uptake.”* The fact sheet explores the relationship between Pb uptake and key media sources (diet, soil, and dust) as soil Pb concentrations changes using the IEUBKv2 to simulate likely trends. The results do not demonstrate actual PbB levels or site-specific exposure parameters at a Superfund site.

The TRW-Pb Committee prepared a memorandum entitled, *“Response to Comments Concerning Appropriate Inputs to the Integrated Exposure Uptake Biokinetic (IEUBK) Model for Lead in Children”* for Regions 8 and 10 in response to their request for consultation. The TRW-Pb Committee reviewed

comments to IEUBK model inputs at sites in Regions 8 and 10, and wrote the memorandum to provide a unified response to comments concerning:

- 1) the default age-specific soil-dust ingestion rates (IR_{sd}) in the IEUBK model (Version 2.0);
- 2) the default age-specific dietary Pb intakes in the IEUBK model (Version 2.0), and
- 3) using a site-specific value from another site for the mass transfer of outdoor soil to indoor dust (M_{SD}) variable value in the multi-source analysis feature of the IEUBK model to derive an indoor dust Pb concentration based on outdoor soil Pb concentration.

The TRW-Pb Committee initiated work on an FAQ for regional risk assessors called, *“Alternate Diet Intake or Alternate Source for Gardening Exposure Scenario.”* The FAQ describes and illustrates how to input data from home grown food (e.g., fruits, vegetables and game) for site-specific risk assessments.

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