Science Advisory Board Consultation

Proposed Approach for Developing Lead Dust Hazard Standards for Public and Commercial Buildings

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Background

- April 2008, EPA issued the final Renovation, Repair and Painting Rule (RRP Rule) under the authority of section 402(c)(3) of TSCA to address lead-based paint hazards created by renovation, repair, and painting activities that disturb lead-based paint in target housing and child-occupied facilities
- The rule was challenged, and in August, 2009 EPA agreed to:
  - Issue a proposal to regulate renovations on the exteriors of public and commercial buildings other than child-occupied facilities by December 15, 2011 and to take final action on that proposal by July 15, 2013.
  - Consult with EPA's Science Advisory Board by September 30, 2011, on a methodology for evaluating the risk posed by renovations in the interiors of public and commercial buildings other than child-occupied facilities.
  - Eighteen months after receipt of the Science Advisory Board's report, either issue a proposal to regulate renovations on the interiors of public and commercial buildings other than child-occupied facilities or conclude that such renovations do not create lead-based paint hazards.
- As a first step, it is necessary to establish the lead dust hazard standards for public and commercial buildings

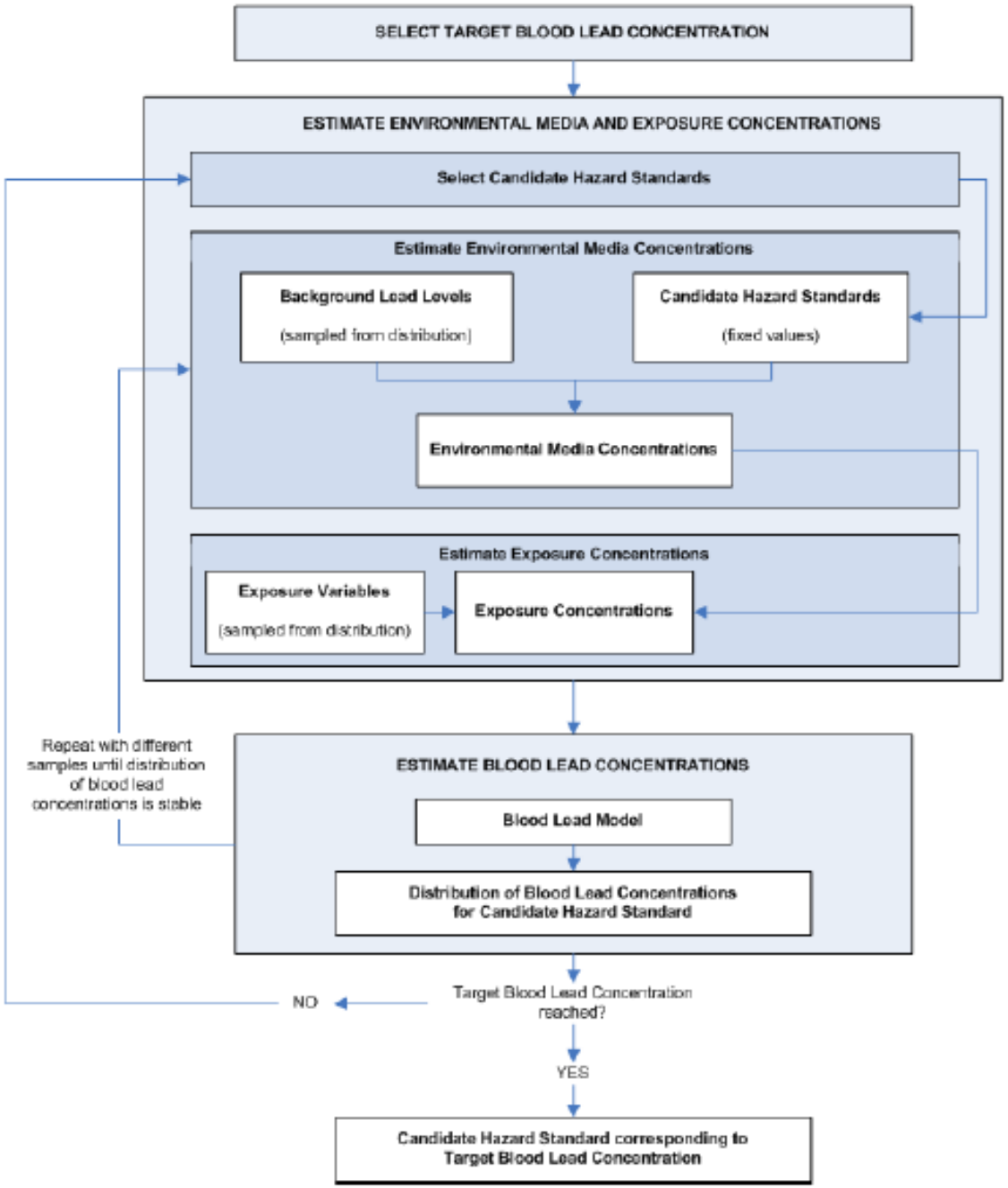
Problem Formulation
What is the Question?

What concentration of surface lead dust can remain on the window sills and floors of public and commercial buildings such that exposure to the lead dust does not result in blood lead levels higher than a specified level in children/adults?

Proposed Approach

- Three major steps:
  - Select target blood lead concentration
    - For children, this proposed approach will set it at 1, 2.5, and 5 µg/dL
    - For adults, this proposed approach will set it at 0.3, 1, 5, 10, and 20 µg/dL
  - Estimate environmental media and exposure concentrations
  - Estimate blood lead concentrations

Figure 1-1. Overview of Approach for Developing Hazard Standards for Commercial and Public Buildings



This process would be repeated for each population (i.e., children under age 6 and adults) and target blood lead concentration.

The Floor Dust Loading for Commercial/Public Buildings is assigned a fixed value (i.e., candidate hazard standard) for each simulation. A candidate hazard standard for Window Sill Dust Loading for Commercial/Public Buildings is then estimated by an equation relating floor to window dust loading.

All other media are sampled from distributions of background

Environmental media concentrations are assumed not to vary with time.

Exposure variables are used to define where individuals spend time and how long they spend in each location, as well as ingestion rates for soil/dust, water, and diet.

Exposure concentrations are calculated based on the exposure variables and the relevant environmental media concentrations. Unlike the environmental media concentrations, which are assumed to be constant, exposure concentrations will vary across ages (for children under 6) and age ranges (for adults).

Selected Blood lead model:

- *For children under age 6, IEUBK*
- *For adults, Leggett*

Each realization (i.e., repetition of Monte Carlo sampling) of exposure variables and background lead, along with the fixed candidate hazard standard, will be used to generate exposure concentrations and then a blood lead concentration using the selected blood lead model. The resulting blood lead concentrations for all realizations will be used to generate a probability distribution of blood lead concentrations for the candidate hazard standard.

Overview of Charge Questions

1) Please comment on the reasonableness of the approach outlined in the draft Approach document.

2) Development of a response curve for the blood lead-blood pressure relationship: Please comment on this approach for developing a response curve for adults.

3) Please comment on the proposed methods for converting dust loadings to dust concentrations. Please comment on whether the empirical or mechanistic model is preferred. Are there other methods that should be explored?

Overview of Charge Questions

4) Please comment on the proposed method to relate floor dust loadings to window sill dust loadings. Please comment on the discussion of the regression's development. Please comment on how the assumptions regarding compliance with hazard standards are incorporated. Are there other methods that should be explored?

5) Please comment on the proposed methods to establish the activity patterns and microenvironments for the blood lead modeling. Are there methods other than CHAD/APEX that should be explored?

6) Please comment on the use of the IEUBK and Leggett models. Please comment on whether other models should be used.