

Charge Questions for the Approach for Developing Lead Dust Hazard Standards for Public and Commercial Buildings

Background

Section 402(c)(3) of TSCA directs EPA to revise the regulations promulgated under TSCA section 402(a), *i.e.*, the Lead-based Paint Activities Regulations, to apply to renovation or remodeling activities in target housing, public buildings constructed before 1978, and commercial buildings that create lead-based paint hazards. In 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 (USEPA, 2008a). The term “target housing” is defined in TSCA section 401 as any housing constructed before 1978, except housing for the elderly or persons with disabilities (unless any child under age 6 resides or is expected to reside in such housing) or any 0- bedroom dwelling. Under the RRP Rule, a child-occupied facility is a building, or a portion of a building, constructed prior to 1978, visited regularly by the same child, under 6 years of age, on at least two different days within any week (Sunday through Saturday period), provided that each day’s visit lasts at least 3 hours and the combined weekly visits last at least 6 hours, and the combined annual visits last at least 60 hours. The RRP Rule establishes requirements for training renovators, other renovation workers, and dust sampling technicians; for certifying renovators, dust sampling technicians, and renovation firms; for accrediting providers of renovation and dust sampling technician training; for renovation work practices; and for recordkeeping. Interested States, Territories, and Indian Tribes may apply for and receive authorization to administer and enforce all of the elements of the RRP Rule.

Shortly after the RRP Rule was published, several petitions were filed challenging the rule. These petitions were consolidated in the Circuit Court of Appeals for the District of Columbia Circuit. On August 24, 2009, EPA entered into an agreement with the environmental and children’s health advocacy groups in settlement of their petitions (USEPA, 2009a). In this agreement, EPA committed to propose several changes to the RRP Rule. EPA also agreed to commence rulemaking to address renovations in public and commercial buildings, other than child-occupied facilities, to the extent those renovations create lead-based paint hazards. For these buildings, EPA agreed, at a minimum, to do the following:

- 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.

In order to evaluate the potential risks associated with lead exposure due to renovations in public and commercial buildings, and the potential need for regulations on these activities, it is first necessary to develop the hazard standards for lead dust on window sills and floors in public and commercial buildings; these become the standards to help inform the impact of renovation activities. These standards will identify dangerous levels of lead in paint and dust, and provide benchmarks on which to base remedial actions taken to safeguard children and the public from the dangers of lead.

In June 2010, EPA issued a document entitled “Proposed Approach for Developing Lead Dust Hazard Standards for Public and Commercial Buildings” and submitted the document to the Science Advisory Board (SAB) Lead Review Panel for a consultation. The SAB Panel met July 6–7, 2010 and provided comments on the Proposed Approach to EPA on August 20, 2010.

The current document entitled “Approach for Developing Lead Dust Hazard Standards for Public and Commercial Buildings” describes the methods that EPA proposes to examine candidate hazard standards for floors and windowsills in public and commercial buildings. This document takes the SAB comments from the July, 2010 consultation into consideration in developing several candidate standards for public and commercial buildings.

Charge Question 1 - Approach Document

OPPT has developed an Approach document for developing the hazard standards for floors and windowsills in public and commercial buildings. This includes a description of the empirical and biokinetic approaches, as well as the resultant analyses used to estimate candidate lead dust hazard standards for public and commercial buildings.

1. Please comment on the clarity and transparency of the document.

Charge Question 2 - Empirical Models

The empirical approach involves the estimation of blood-lead impacts based on analyses of empirical data from the 1999–2004 National Health and Nutrition Examination Survey (NHANES). Two analyses were used. First, the regression relationships among floor and windowsill dust, other covariates, and blood-lead concentrations that Dixon et al. (2009) derived were applied to predict blood-lead levels for the various hazard standards (combinations of floor and windowsill dust loadings). The second was an independent reanalysis of the NHANES data to derive alternate models for predicting blood-lead impacts; the variations from the Dixon et al. (2009) approach included changes to the form of the dust-loading variables and application of models that are inherently linear at low lead exposures, a relationship that is supported by a wide range of biokinetic data, and regression of blood-lead values against estimated dust concentrations, rather than dust loading.

2. Please comment on the EPA reanalysis.

Charge Question 3 - Biokinetic Models

Two biokinetic models were used to estimate children's blood lead concentrations including EPA's Integrated Exposure Uptake Biokinetic Model for Lead in Children (IEUBK), and the Leggett model. Information from the exposure scenarios is used to estimate relative contributions of exposures from different sources (soil, dust, air, diet, and water) and in different microenvironments.

The Leggett model and EPA's Adult Lead Methodology were used to estimate adult blood lead levels resulting from candidate floor and windowsill hazard standards.

3. Please comment on the use of these models and the inputs to these models.

Charge Question 4 - Analyses of Variability and Uncertainty

Monte Carlo methodology was not used to evaluate the impacts of variability and uncertainty in model parameters on blood-lead estimates as insufficient data exist concerning the potential variability in many key model variables to support informative Monte Carlo modeling. Instead, point estimates of central tendency (geometric mean) blood-lead concentrations in children are derived utilizing statistical models based on empirical data and on biokinetic models of blood lead, coupled with assumptions regarding distributions of highly uncertain variables. The sensitivity of the deterministic relationships between dust lead and blood lead to changes in key variables and covariates is explored through sensitivity analyses. The modeling inputs and assumptions that most strongly affect the predicted blood-lead distributions associated with candidate lead-dust hazard standards have been identified, based on the measures of statistical uncertainty from the empirical analyses and sensitivity analyses of the biokinetic models.

4. Please comment on the characterization of variability and uncertainty.

Charge Question 5 - Choice of Model for Public and Commercial Building Hazard Standards

The document presents empirical and biokinetic models. OPPT proposes to use the NHANES QL, Empirical Model and the ALM model for the estimation of the hazard standards for floors and windowsills for children and adults, respectively.

5. Please comment on these proposed choices.