

**Summary Minutes of the  
U.S. Environmental Protection Agency (EPA)  
Science Advisory Board (SAB)  
Lead Review Panel  
Public Meeting of July 6-7, 2010**

Date and Time: Tuesday, July 6, 2010, 9:00 AM – 5:15 PM ET; Wednesday, July 7, 2010, 9:00 AM – 12:00 PM

Location: The St. Regis Hotel Washington, D.C., 923 16th Street, N.W., Washington, DC 20006

Purpose: The purpose of the meeting was to provide consultative advice on two EPA documents: (1) *Proposed Approach for Developing Lead Dust Hazard Standards for Residences*, and (2) *Proposed Approach for Developing Lead Dust Hazard Standards for Commercial and Public Buildings*.

Participants: Lead Review Panel (for full roster, see Attachment A)

Dr. Timothy Buckley, Chair

Dr. Richard Canfield

Dr. Scott Clark

Dr. Kim Dietrich

Dr. Philip E. Goodrum

Dr. Sean Hays\*

Dr. Andrew Hunt

Dr. David E. Jacobs

Dr. Michael A. Jayjock

Dr. Michael Kosnett

Dr. Bruce Lanphear

Dr. Thomas Louis

Dr. Howard Mielke

Dr. Joel Pounds

Dr. Ian von Lindern

Mr. Aaron Yeow, Designated Federal Officer (DFO)

Dr. Vanessa Vu, Director, EPA Science Advisory Board Staff Office

Dr. Maria Doa, EPA Office of Pollution Prevention and Toxics (OPPT)

Ms. Cathy Fehrenbacher, EPA OPPT

Dr. Jennifer Seed, EPA OPPT

Other Attendees (See Attachment B)

\*Participated via teleconference

**Tuesday, July 6, 2010**

## **Opening Remarks**

Mr. Aaron Yeow, the DFO for the SAB Lead Review Panel, opened the meeting. He noted that as required under the Federal Advisory Committee Act (FACA), the Committee's deliberations are held in public with advanced notice given in the Federal Register<sup>1</sup>, and the meeting minutes will be made publicly available after the meeting. He noted that the Panel received no requests from the public to present oral comments and received no written comments from the public. He also noted that the Panel members are all subject to federal ethics regulations and conflict-of-interest laws that pertain to them. He then turned the meeting over to Dr. Vanessa Vu, the Director of the SAB Staff Office and then to Dr. Timothy Buckley, Chair of the SAB Lead Review Panel.

Dr. Vanessa Vu welcomed everyone to the public meeting of the SAB Lead Review Panel. She thanked the members of the Panel for their participation in this meeting and for their public service. She stated that she is looking forward to the discussions and deliberations over the next few days. She then turned the meeting over to Dr. Timothy Buckley.

Dr. Timothy Buckley, Chair of the SAB Lead Review Panel, welcomed everyone and indicated that the purpose of the meeting was to provide consultative advice on the Agency's technical documents, *Proposed Approach for Developing Lead Dust Standards for Residences*<sup>2</sup> and *Proposed Approach for Developing Lead Dust Standards for Commercial and Public Buildings*<sup>3</sup>. He reviewed the Agenda for the meeting<sup>4</sup>, and had the members of the Panel introduce themselves. He then introduced Dr. Maria Doa from EPA's Office of Pollution Prevention and Toxics (OPPT) for her opening remarks.

Dr. Maria Doa, Director of the National Program Chemicals Division, OPPT, provided a regulatory overview<sup>5</sup> of the Agency's residential lead dust hazard standards, lead dust hazard standards for public and commercial buildings, and renovations on public and commercial buildings.

## **Proposed Approach for Developing Lead Dust Standards for Residences**

Ms. Cathy Fehrenbacher, OPPT, provided a technical overview<sup>6</sup> of the document, *Proposed Approach for Developing Lead Dust Hazard Standards for Residences*.

With no public comments, Dr. Buckley proceeded with asking certain panel members to lead the discussion of responding to the charge to the Panel<sup>7</sup> for this document.

### *Charge Question 1 – Overall Approach and Other Comments*

The Panel agreed that IQ was the appropriate health endpoint for children. Several Panel members recommended using the lower range of blood lead levels (1 or 2.5 µg/dL) outlined in the document. Several Panel members recommended focusing on children aged 1-3 years because they have the greatest exposure. There was considerable discussion regarding the use of

mechanistic models versus the use of epidemiological data. Several members pointed out that using the epidemiological data would avoid the introduction of large amounts of uncertainty from the modeling approach. The Panel generally thought that at a minimum, a hybrid of both approaches should be used.

#### *Charge Question 2 – Conversion of Dust Loadings to Dust Concentrations*

Several members commented that performing this conversion introduces much uncertainty and could be avoided if the approach relied on epidemiological data to relate lead dust levels to blood lead levels. Several members commented that if EPA did continue with the proposed approach of using the Integrated Exposure and Uptake Biokinetic (IEUBK) model and therefore had to perform this conversion, that they preferred the empirical regression approach over the mechanistic dust model.

#### *Charge Question 3 – Relation of Sill Dust to Floor Dust*

The Panel members commented on the amount of variability in the relationship between sill dust and floor dust used in the approach and that the correlation coefficient for the relationship was quite weak. Several members suggested using the National Health and Nutrition Examination Survey (NHANES) data to derive this relationship as it is a stronger dataset (Dixon et al., 2009; Gaitens et al., 2009)

#### References:

Dixon SL, Gaitens JM, Jacobs DE, Strauss W, Nagaraja J, Pivetz T, Wilson JW, Ashley PJ. 2009. Exposure of U.S. children to residential dust lead, 1994-2004: II. The contribution of lead-contaminated dust to children's blood lead levels. *Environmental Health Perspectives*, 117:468-474.

Gaitens JM, Dixon SL, Jacobs DE, Nagaraja J, Strauss W, Wilson JW, Ashley PJ. 2009, U.S. Children's Exposure to Residential Dust Lead, 1999-2004: I. Housing and Demographic Factors Associated with Lead-contaminated Dust, *Environmental Health Perspectives*, 117:461-467.

#### *Charge Question 4 – Activity Patterns and Microenvironments*

One Panel member commented that this approach to activity patterns and microenvironments was logical if EPA was going forward with mechanistic modeling. Several members questioned parameters in the Consolidated Human Activity Database (CHAD) database that did not seem correct such as data for child-occupied facilities, a median of 0, Tables 3-1 and 3-2, data on time spent outdoors for children ages 3-11.

#### *Charge Question 5 – Blood Lead Modeling*

Several members stated that when empirical data are available, it is better to use the data as opposed to modeling. Other members recognized the value in modeling and in the use of the IEUBK model, but encouraged examining the empirical data simultaneously as a means for validation. One member commented that the Monte-Carlo simulations in the approach should

only be used for sensitivity analyses and should not be used in the prediction of blood lead levels.

## **Proposed Approach for Developing Lead Dust Standards for Commercial and Public Buildings**

Dr. Jennifer Seed provided a technical overview<sup>8</sup> of EPA's *Proposed Approach for Developing Lead Dust Standards for Commercial and Public Buildings*. There were no public comments and the Panel proceeded to discuss the charge questions<sup>9</sup> for this document.

*Charge Questions 1 and 2 – Overall Approach and Other Comments; Development of a Response Curve for the Blood Lead – Blood Pressure Relationship*

Several Panel members commented that blood pressure was the appropriate health endpoint to protect against for adults. Other members stated that a pregnant woman was the most sensitive adult receptor and therefore maternal blood lead levels are the appropriate endpoint to protect against. Several members commented about the lack of empirical data relating dust lead levels and adult blood lead levels and therefore mechanistic modeling would have to be used.

The panel recessed for the day at 5:15 pm ET.

### **Wednesday, July 7, 2010**

The Panel was reconvened at 9:00 am ET and the Panel proceeded to discuss their responses to the remaining charge questions.

*Charge Question 3 – Conversion of Dust Loadings to Dust Concentrations; Charge Question 4 – Relation of Sill Dust to Floor Dust; Charge Question 5 – Activity Patterns and Microenvironments*

Several members commented that there are not much data on public and commercial buildings, and thus the approach has to rely on mechanistic modeling. Some members indicated that the empirical regression relating dust loading to dust concentrations used in the residential approach was not appropriate for public and commercial buildings and thus the mechanistic dust model would have to be used, but would have to be modified to account for different cleaning patterns, traffic patterns, etc. There were some comments regarding how useful a sill dust standard is for public and commercial buildings when a more appropriate adult exposure surface would be table tops. Members also questioned exposure parameters in the CHAD database that didn't seem correct.

*Charge Question 6 – Blood Lead Modeling*

Most of the Panel members agreed that the Leggett model seemed the most appropriate for modeling adult blood lead levels. One member voiced support for using the O'Flaherty model. Members would have preferred to use EPA's All Ages Lead Model (AALM), however that model is still under development and is not ready for use. Another member recommended

exploring the use of a slope factor approach, such as used by EPA's Superfund Program (Adult Lead Methodology).

Dr. Buckley provided a summary of key points and discussed next steps and action items.

With the business concluded, the Designated Federal Officer adjourned the meeting at 12:00 PM ET.

Respectfully Submitted:

Certified as True:

/SIGNED/  
Mr. Aaron Yeow  
Designated Federal Officer  
EPA SAB Staff Office

/SIGNED/  
Dr. Timothy Buckley  
Chair  
SAB Lead Review Panel

## Materials Cited

The following meeting materials are available on the SAB website: <http://www.epa.gov/sab>, at the [July 6-7, 2010 SAB Lead Review Panel Meeting page](#):

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<sup>1</sup> Federal Register Notice Announcing the Meeting

<sup>2</sup> PDF for Proposed Approach for Developing Lead Dust Hazard Standards for Residences

<sup>3</sup> PDF for Proposed Approach for Developing Lead Dust Hazard Standards for Commercial and Public Buildings

<sup>4</sup> Agenda for July 6-7, 2010 Public Meeting

<sup>5</sup> Presentation by Dr. Maria Doa - Regulatory Overview

<sup>6</sup> Presentation by Ms. Cathy Fehrenbacher - Proposed Approach for Developing Lead Dust Hazard Standards for Residences

<sup>7</sup> Charge Questions for Proposed Approach for Developing Lead Dust Hazard Standards for Residences

<sup>8</sup> Presentation by Dr. Jennifer Seed - Proposed Approach for Developing Lead Dust Hazard Standards for Public and Commercial Buildings

<sup>9</sup> Charge Questions for Proposed Approach for Developing Lead Dust Hazard Standards for Public and Commercial Buildings

## ATTACHMENT A - ROSTER

### U.S. Environmental Protection Agency Science Advisory Board Lead Review Panel

#### CHAIR

**Dr. Timothy Buckley**, Associate Professor and Chair, Division of Environmental Health Sciences, College of Public Health, The Ohio State University, Columbus, OH

#### MEMBERS

**Dr. Richard Canfield**, Senior Research Associate, Division of Nutritional Sciences, Cornell University, Ithaca, NY

**Dr. Jack Caravanos\***, Associate Professor, Environmental & Occupational Health Sciences, School of Health Sciences, Hunter College of the City University of New York, New York, NY

**Dr. Scott Clark**, Professor, Environmental Health, College of Medicine, University of Cincinnati, Cincinnati, OH

**Dr. Kim Dietrich**, Professor, Department of Environmental Health, College of Medicine, University of Cincinnati, Cincinnati, OH

**Dr. Philip E. Goodrum**, Principal Scientist /Statistician, ARCADIS BBL, ARCADIS of New York, Inc., Syracuse, NY

**Dr. Sean Hays**, President, Summit Toxicology, Allenspark, CO

**Dr. Andrew Hunt**, Assistant Professor, Department of Earth and Environmental Sciences, University of Texas at Arlington, Arlington, TX

**Dr David E. Jacobs**, Adjunct Associate Professor, School of Public Health, Division of Occupational and Environmental Health MC922, University of Illinois at Chicago, Chicago, IL

**Dr. Michael A. Jayjock**, Senior Analyst, The LifeLine Group, Langhorne, PA

**Dr. Michael Kosnett**, Associate Clinical Professor, Division of Clinical Pharmacology and Toxicology, Department of Medicine, University of Colorado Health Sciences Center, Denver, CO

**Dr. Bruce Lanphear**, Professor, Children's Environmental Health, Faculty of Health Sciences, Simon Fraser University, Vancouver, BC, Canada

**Dr. Thomas Louis**, Professor, Department of Biostatistics, Johns Hopkins University  
Bloomberg School of Public Health, Baltimore, MD

**Dr. Howard Mielke**, Research Professor, Department of Chemistry and Center for  
Bioenvironmental Research, Tulane University, New Orleans, LA

**Dr. Joel Pounds**, Scientist, Cell Biology & Biochemistry, Biological Sciences Division, Battelle -  
Pacific Northwest National Laboratory, Richland, WA

**Dr. Michael Rabinowitz\***, Geochemist, Clinical Instructor in Neurology, Harvard University,  
Newport, RI

**Dr. Ian von Lindern**, President, TerraGraphics Environmental Engineering, Inc., Moscow, ID

**Dr. Michael Weitzman\***, Professor, Pediatrics; Psychiatry, New York University School of  
Medicine, New York, NY

**SCIENCE ADVISORY BOARD STAFF**

**Mr. Aaron Yeow**, Designated Federal Officer, United States Environmental Protection Agency,  
Washington DC

\* Unable to attend the July 6-7, 2010 meeting.

**ATTACHMENT B – Other Attendees  
SAB Lead Review Panel Public Meeting**

**July 6, 2010**

<b>Name</b>	<b>Affiliation</b>
Bevington, Charles	EPA
Boreiko, Craig	International Lead Zinc Research Organization (ILZRO)
Delpire, Lynn	EPA
DiCosmo, Bridget	Media – Risk Policy Report
Henning, Cara	ICF
Henry, Tala	EPA
Howard, Angela	EPA
Kurtz, Katharine*	Department of Defense, Navy and Marine Corps Public Health Center (NMCPHC)
Lee, Mark	ICF
Margosches, Elizabeth	EPA
Mendez, Bill	ICF
Mosby, Jaqueline	EPA
Pfahles-Hutchens, Andrea	EPA
Putzrath, Resha	DOD, NMCPHC

**July 7, 2010**

<b>Name</b>	<b>Affiliation</b>
Bevington, Charles	EPA
DiCosmo, Bridget	Media – Risk Policy Report
Henning, Cara	ICF
Howard, Angela	EPA
Kurtz, Katharine*	DOD, NMCPHC
Lee, Mark	ICF
Margosches, Elizabeth	EPA
Wadegli (sp?), Christina	EPA

\*Participated via teleconference