

**U.S. Environmental Protection Agency
EPA Science Advisory Board (SAB) Staff Office
Clean Air Scientific Advisory Committee (CASAC)**

Summary Meeting Minutes of the Public CASAC Advisory Meeting

Monday, February 5, 2007 – 9:00 a.m. to 5:00 p.m. Eastern Time

**Marriott at Research Triangle Park
4700 Guardian Drive, Durham, North Carolina 27703**

**CASAC Consultation on EPA's Draft Assessment to Support the Lead
Renovation, Repair, and Painting (LRRP) Rule**

Panel Members: See CASAC Panel Roster – Appendix A

Agenda: See Meeting Agenda – Appendix B

Purpose: The purpose of this public meeting was for the CASAC Panel to conduct a consultation on EPA's *Draft Assessment to Support the Lead Renovation, Repair, and Painting (LRRP) Rule* (1st Draft LRRP Assessment, January 2007).

Attendees: Chair: Dr. Rogene Henderson

CASAC Members: Dr. Ellis Cowling
Dr. James Crapo
Dr. Douglas Crawford-Brown
Mr. Richard Poirot
Dr. Armistead (Ted) Russell
Dr. Frank Speizer

Panel Members: Dr. Joshua Cohen
Dr. Deborah Cory-Slechta (via phone)
Dr. Richard Fenske (via phone)
Dr. Bruce Fowler
Dr. Philip Goodrum
Dr. Robert Goyer
Mr. Sean Hays
Dr. Bruce Lanphear
Dr. Randy Maddalena
Dr. Frederick J. Miller
Dr. Maria Morandi
Dr. Paul Mushak
Dr. Joel Schwartz (via phone)
Dr. Ian von Lindern
Dr. Barbara Zielinska

EPA SAB Staff: Mr. Fred Butterfield, CASAC Designated Federal Officer (DFO)
Dr. Vanessa Vu, SAB Staff Office Director

Other EPA Staff: Ms. Lynn Delpire, OPPTS, OPPT
Ms. Cathy Fehrenbacher, OPPTS, OPPT
Mr. Conrad Flessner, OPPTS, OPPT
Ms. Marion Hoyer, OAR, OTAQ
Dr. Elizabeth Margosches, OPPTS, OPPT
Dr. Deirdre Murphy, OAR, OAQPS
Dr. Zachary Pekar, OAR, OAQPS
Dr. Andrea Pfahles-Hutchens, OPPTS, OPPT
Dr. Jennifer Seed, OPPTS, OPPT

Convene Meeting, Call Attendance, Introduction and Administration

Mr. Fred Butterfield, Designated Federal Officer (DFO) for the CASAC, opened the meeting and the teleconference line, called attendance, and welcomed all attendees. He noted the CASAC is a Federal Advisory Committee chartered under the Federal Advisory Committee Act (FACA) to provide advice and recommendations to the EPA Administrator. Consistent with FACA regulations, its deliberations are held as public meetings and teleconferences for which advance notice is given in the *Federal Register*. The DFO is present at all such meetings to assure compliance with FACA requirements. Mr. Butterfield noted that no transcript of this meeting's minutes will be taken but a summary of the meeting will be posted on the EPA Science Advisory Board (SAB) Web Site (<http://www.epa.gov/sab>) within 90 days after the meeting. He noted that all panelists had earlier submitted documentation with respect to possible financial conflicts-of-interest or appearances of a lack of impartiality, which was reviewed by the SAB staff prior to the teleconference meeting and found to be satisfactory.

Dr. Vanessa Vu, SAB Staff Office Director, thanked the CASAC members and Panel augmentees for their participation in the meeting. She reminded meeting participants that EPA proposed in January 2006 a draft rule for Lead Renovation, Repair, and Painting (LRRP). In support of this draft rule, the EPA Office of Pollution Prevention and Toxics (OPPT) prepared a draft Assessment Plan, which is being reviewed today by the CASAC. She acknowledged that two new CASAC members were joining the meeting today, Dr. Armistead (Ted) Russell, Georgia Institute of Technology, Atlanta, Georgia, and Dr. Douglas Crawford-Brown, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina. She also noted that two existing CASAC members would be retiring from the Committee after six years of service, Dr. Fred Miller, Consultant, Cary, North Carolina, and Dr. Barbara Zielinska, Desert Research Institute, Reno, Nevada.

Dr. Vu said that Ms. Wendy Cleland-Hamnett, Acting Principal Deputy Assistant Administrator, OPPT, would be participating in the meeting today via teleconference and providing an oversight of the draft LRRP rule.

Purpose of the Meeting and Welcome by OPPT

Dr. Rogene Henderson, CASAC and Lead Review Panel Chair, briefly stated the purpose of the meeting, which was to provide a consultation on the Agency's "Draft Assessment to Support the LRRP Rule" (1st Draft LRRP Assessment, January 2007) prepared by OPPT. Given that this is a consultative meeting, Dr. Henderson noted there will be no formal report from the CASAC with respect to the Panel's consultation on OPPT's 1st Draft LRRP Assessment. However, Fred Butterfield, the CASAC DFO, will draft a letter to the EPA Administrator for Dr. Henderson's signature to inform the Administrator that this consultation took place, and any individual review comments furnished by Panel members on this draft document will be appended to this letter. For planning purposes, OPPT expects to have a 2nd Final Draft LRRP Assessment developed for the augmented Lead Panel's peer-review in mid-Summer 2007. Dr. Henderson noted that no consensus will be necessary from the Panel for this consultative review because EPA is merely seeking advice from outside experts.

Dr. Henderson asked all Panel members to introduce themselves and identify whether they are a CASAC member, a Lead Panel member, or an augmentee to the Panel.

Ms. Cleland-Hamnett, OPPT, also thanked the CASAC and SAB staff for conducting the consultative review and was looking forward to the advice they would be providing to OPPT for this draft rule. She noted that the 1992 Residual Lead-Based Paint Hazard Reduction Act is the statutory authority under which EPA will be issuing the LRRP Rule making. The main purpose of the Act was to develop the infrastructure and standards necessary to reduce lead-based paint hazards in housing. She outlined the proposed EPA LRRP Rule requirements: that a training program is established for persons engaged in lead-based paint activities; that providers of renovation training are accredited; that work practices are established for the elimination of lead paint hazards; and that a program be established to address exposure to lead-based paint hazards for renovation and repair activities. Ms. Cleland-Hamnett concluded her remarks by stating that the EPA OPPT Dust Study will be used to prepare a revised exposure assessment. The revised assessment should be available for review in June 2007, at which time an economic analysis also will be started.

Overview of the Assessment Plan for LRRP Rule and Key Issues

Dr. Jennifer Seed, Chief, Existing Chemicals Assessment Branch, and Ms. Cathy Fehrenbacher, Chief, Exposure Assessment Branch, OPPT, provided overview presentations on the Assessment Plan and the Exposure Assessment for the LRRP Rule.

Dr. Seed stated that the Assessment Plan was being conducted to support the LRRP Rule and the results will be fed into the economic analysis for the Rule. She said this is an assessment, not a population risk assessment in support of a National Ambient Air Quality Standard. The overall goal of this assessment is to characterize the effects of lead exposure following specific renovation, repair, and painting (RRP) activities on the neurocognitive function in children. Each RRP activity will be characterized under current conditions, and under the conditions of the LRRP rule (with and without the rule). The assessment will characterize the distribution of the intelligence quotient (IQ) change in children due to lead exposure for each RRP activity. She

emphasized that the assessment is not intended to provide a characterization of IQ loss on a population basis.

Dr. Seed outlined the general approach for the Assessment Plan. This included: estimating lead concentrations from specific renovation activities; converting the dust lead loading to dust lead concentrations; estimating blood lead levels; and estimating IQ change. She said there were four main issues within the plan for which OPPT would like advice from the CASAC Panel. These issues include: (1) the draft Hazard Assessment, which was taken from the Air Quality Criteria Document (AQCD); (2) the Exposure Assessment, which includes the duration of lead exposure, a major issue, as well as cleaning efficiency considerations, which have a major impact on the exposure assessment; (3) blood lead modeling; and (4) the characterization of changes in children's IQ. The assessment will estimate blood lead level metrics for the specific RRP activities with and without the requirements for the LRRP, and will, to the extent possible, include characterization of uncertainty in these estimates. Blood lead modeling is a major issue. OPPT is considering the use of three models to estimate blood lead levels in children: the Integrated Exposure Uptake Biokinetic (IEUBK) model (EPA, 1994), the Leggett model (Leggett et al., 1993), and an empirical model (Lanphear et al., 1998). Dr. Seed said application of the Lanphear model, if undertaken, will not be parallel to applying the IEUBK or Leggett models. Several CASAC members questioned why OPPT could not use all three models in their analysis.

Ms. Fehrenbacher, OPPT, provided a more detailed overview of the draft exposure assessment and a review of the charge questions to the CASAC Lead Panel. The exposure assessment covers six major issues: (1) a range of RRP activities; (2) exposure to children under 6 years of age; (3) residences and child-occupied facilities; (4) an exposure-scenario approach; (5) four types of controls (*e.g.*, no plastic sheeting, basic cleaning; no plastic sheeting, full rule cleaning; plastic sheeting, basic cleaning; and plastic sheeting, full rule cleaning [full rule implementation controls]); and (6) various exposure sources (*e.g.*, indoor dust, outdoor dust, and all other sources).

For the "Environmental Monitoring Studies: Summary of Settled Dust-Lead Loadings from Three Studies" charge question, she noted that the handout shows data from three studies side-by-side organized by RRP job. A handout summarized the settled dust-lead loadings from these three studies. The Environmental Field Sampling Study (EFSS) (EPA, 1997), data are post-job, dust lead concentrations (average). The Lead-Safe Work Practices Survey Project (LSWPS) data are pre-job and post-job dust lead concentrations (range and geometric mean), and percent increases in geometric mean. The OPPT Dust Study is currently in progress. The OPPT data are post-job, dust lead concentrations (geometric mean) for the proposed rule, baseline, plastic/baseline cleaning, and no plastic/proposed rule cleaning. Ms. Fehrenbacher noted that OPPT expects the dust-lead concentrations to be higher from EFSS and LSWPS than from OPPT, and OPPT expects the OPPT dust-lead concentrations to be highest for baseline and lowest for the proposed rule. OPPT wants CASAC comments on the usefulness of these three studies in the context of this particular exposure assessment.

The main emphasis of the "General Approach for Sensitivity Analysis" charge question is to examine the impact of uncertainty on exposures. As noted earlier, Ms. Fehrenbacher said that

cleaning efficiency is one of the most important variables in determining dust levels over time. The OPPT approach uses both elasticity and sensitivity scores to evaluate the impact of changes in assumptions to likely exposures. OPPT wants CASAC comments on whether the appropriate variables have been evaluated in the sensitivity analysis as well as their plan to use both elasticity and sensitivity scores to evaluate impacts.

The "Cleaning Efficiency Considerations" charge question focuses on two floor types, hard surface and carpet. A constant value approach was used in the exposure assessment for both the hard surface and carpet flooring. Hard surface flooring cleaning data from four studies with added lead dust found that efficiency is a function of baseline lead loading, cleaning technique (*i.e.*, broom or vacuum), and floor condition. Hard surface flooring cleaning data from three studies with *in situ* (settled) lead dust found that baseline loading is less important than efficiency. For hard surface cleaning, OPPT proposes to use data from the EFSS baseline-dust ranges be matched to the results of the Dust Study for the four test controls. For carpet flooring, OPPT reviewed data from two studies with added-then-embedded dust plus data from three studies with *in situ* embedded dust. They found that differences in cleaning equipment and carpet type were apparently most important for efficiency. There were no studies of dust from renovation activities. The data suggested lead dust loading in carpet can increase over time because there is a "reservoir" of embedded dust in the carpet. OPPT wants CASAC comments on the proposed approach for establishing cleaning efficiency in the exposure assessment.

The "Conversion of Dust Loadings to Dust Concentrations" issue, charge question # 6, is based on an ICF (2006) analysis of a data set developed as part of the U.S. Department of Housing and Urban Development (HUD) 1997 National Survey. This analysis was used because it uses the largest; most nationally representative source completed to date of both house dust loading and concentration data taken simultaneously from the same households. A regression analysis was conducted relating lead loading and lead dust concentrations in the exposure assessment. OPPT is interested in CASAC comments on the adequacy of the method used to convert the dust loadings to dust concentrations.

Public Comment Period

Dr. Andrew J. Holliday, Regulatory Counsel, National Association of Homes Builders (NAHB), provided the only public comment. Overall, Dr. Holliday said that the CASAC meeting was irregular as to time, notice, and composition. The meeting announcement only appeared in the *Federal Register* on January 17, 2007, and the draft assessment was only available to the public on January 23, just 13 days before this meeting. NAHB also is puzzled about the composition of the committee. The CASAC are obviously respected members of the health care community, but the studies are about remodeling. The credentials of the committee do not indicate any more than lay expertise on the subject of remodeling activities. NAHB provided written comments for the docket record on the eight "Charge Questions" presented by OPPT to the CASAC Lead Panel.

Summary of the CASAC Lead Panel Comments on the Draft Assessment in Support of the LRRP Rule

Issue 1. Draft Assessment Plan

Panel members were generally supportive of the approach outlined in the draft assessment but found it difficult to follow. One member noted that it looked like a three-step process: (1) find the environmental impact of a “renovation;” (2) convert that to a change in blood lead; and (3) convert that into an IQ decrement. Another member suggested that it is a six step process. Another member said the requirements may not be broad enough to protect a large and vulnerable population of children. As defined, the rule and assessment do not apply to families who own their homes and intend to become pregnant. These are the parents who buy a starter home and plan to become pregnant later. He said he receives 10 to 20 calls a year from new parents who inadvertently poison their child by renovating their housing unit before the birth.

Another member said the assessment is difficult to read because the terminology is confusing. Furthermore, he said that much of the preliminary draft materials are contingent on material still in preparation (such as the OPPT Dust Study) or will be subject to modification after more material is obtained. In addition, he said the principal elements describing activities toward RRP work appear quite deficient compared to the real world of renovation, repair, or painting. Another member noted that the focus on children in the first six years of life is correct but the plan examines exposure over the six-year period without any information on differential effects during windows of development. Another member said that the a major deficit with the assessment is that the various “activity” scenarios being described and quantified are presented as individual events rather than the more realistic multiple activities occurring simultaneously. He felt activity scenarios needed to be clarified (*i.e.*, single versus multiple events) in residences with lead paint hazard history. Several members said the targeted population exposure was too limited and a secondary sub-population of renovation workers' children should be included in the plan and rule.

Issue 2. Draft Hazard Assessment

CASAC members had mixed reactions to the transparency and completeness of the draft Hazard Assessment. One member noted that it was clearly written, logically argued, and fully “transparent” in the sense that the major points of emphasis are accurately documented through transcription and citation to the recent literature. Another member suggested that the document would benefit from some revisions to improve its clarity and usefulness. She thought that the assessment should be a self-contained document that succinctly presents the pertinent scientific findings from the Lead AQCD, rather than merely referring to the more lengthy descriptions of these findings in the AQCD. Also, she noted that the potential pathways of exposure for children vary significantly by age but the document does not explain if and how this is taken into consideration in the assessment. Another member said there should be a review of the epidemiologic research linking renovation and remodeling with lead poisoning. There are numerous studies available from which this data could be drawn.

Issue 3. Environmental Monitoring Studies

There are two existing studies (EFSS and LSWPS) and one ongoing study (OPPT Dust), which contain environmental monitoring data on dust levels in buildings during RRP activities. CASAC members noted that the EFSS and LSWPS differ in terms of design, worker, skills and training, and safety practices, so the results are difficult to compare. The EFSS is adequate to examine the extent of lead contamination from repair and renovation, but it is too limited with regard to the types of renovations. A more complete review of the existing epidemiologic literature needs to be included with a description of the extent of contamination that can result. One of the limitations of the LSPWS is that the construction data in the study is old and this raised uncertainty about whether the site preparation included cleaning. It also was unclear in the study about the differences between the EPA/HUD LSWP and Modified LSWP. Finally, it was noted that in the LSPWS no measurements were taken pre-cleaning and post-RRP activity. While the design and proposed analysis of the OPPT Dust Study appeared to be correct, the study was currently in progress and several members were critical about the lack of available results and its current usefulness in the exposure assessment. One member questioned the term "exposure scenario" to describe activity-specific studies. He felt these studies do not characterize "exposure;" they characterize air and surface lead levels related to specific RRP and control activities. He suggested that EPA use the term "RRP scenarios" for these studies to avoid confusion.

Issue 4. Sensitivity Analysis in the Exposure Assessment

In the draft exposure assessment, sensitivity analysis techniques are being used to examine the impact of sources of uncertainty on exposures. Assumptions had to be made for a variety of parameters to apply these techniques. Several members said more effort needed to be made to clearly distinguish between uncertainty and variability. Although the analysis stated that it addressed both uncertainty and variability, it did not sufficiently clarify how each is handled. Members said that there will be a range of exposures resulting from RRP activities; thus, variability may be extremely large, as well as uncertainty. More information was needed on how their ranges were selected. A plan should be presented to estimate ranges and uncertainties and, in so doing, separate variability. This would allow concurrent assessment of uncertainty and variability

Another member suggested that EPA conduct the exposure assessment in a probabilistic framework. If the exposure assessment is viewed in a probabilistic framework, rather than the proposed use of estimating the geometric mean of a lognormal distribution, than a better criterion for evaluating the dust studies would be available. This would allow the data to be used to specify probability distributions that characterize variability or uncertainty.

Issue 5. Cleaning Efficiency in the Exposure Assessment

Members agreed that cleaning efficiency is one of the most important variables in determining dust levels over time. However, members questioned whether the cleaning efficiency presented was sufficiently rigorous to prevent lead exposures to children. They suggested that the proposed cleaning scheme and cleaning verification include a wipe-based clearance test as a baseline for starting any of the activities envisioned. They cautioned against the use of cleaning

verification cards because it would be difficult to compare cards with white wipes for white lead paint dusts.

One member noted that cleaning efficiency also is dependent on conditions (*e.g.*, house cracks that retain lead-contaminated dust). He recommended that EPA examine an existing study that has data on 170 housing units before lead controls and after clean-up. This study also examined how many times floors need to be cleaned to get dust lead loading values below 5 $\mu\text{g}/\text{ft}^2$. Another member commented that changing cleaning efficiency over time is an important factor in the assessment. Does efficiency drop because the lead that is there is more difficult to pick up or is it simply that the lead dust is replaced by clean dust (*i.e.*, for a given cleaning, a constant amount of dust is picked up but the fraction of lead removed with the dust is reduced by dilution over time)?

Issue 6. Conversion of Dust Loadings to Dust Concentrations

In the draft exposure assessment, a log-linear regression is used to represent the relationship between dust loading (the independent variable) and house dust lead concentrations (the dependent variable). In reviewing the data, one member found that constant variance was not present across the range of dust loading data. This indicated that weighted regression techniques should be used. It was unclear if they were used. It was suggested that weighting could be done using the variance of subintervals or the reciprocal of the number of observations within an interval. Another member asked if the OPPT compared their proposed approach of converting dust loading to dust concentration with that used by the EPA Office of Research and Development, National Center for Environment Assessment (NCEA). In their development of the All-Ages Lead Model (AALM), a conversion factor was used to convert from dust lead loading to concentrations. He suggested that OPPT review the AALM manual for a description of this part of the Leggett retrofitted exposure module. He also asked if OPPT considered the difficulty of lead removal from carpets in their calculations.

Issue 7. Blood Lead Modeling

Three models are being considered to estimate blood lead levels in children, the IEUBK model, the Leggett model, and the Lanphear empirical model. Members agreed that both the biokinetic models (IEUBK and Leggett) and the empirical model should be used. They said that EPA should describe the estimated blood lead levels using the empirical model and compare those estimates to blood lead levels from the other two models. One member presented a series of slides on empirical model data results. These slides portrayed the risk of Attention Deficit Hyperactivity Disorder (ADHD) by blood levels in U.S. children. Data were drawn from the 1999-2002 National Health and Nutrition Examination Survey (NHANES) as well as independent research. Based on two studies among 400 children, it was found that using the EPA residential standard for lead-contaminated house dust from floors (40 $\mu\text{g}/\text{ft}^2$) failed to capture nearly 90 percent of the elevated children's blood levels (greater than 10 $\mu\text{g}/\text{dL}$).

Issue 8. Characterization of Changes in Children's IQ

Members agreed that the focus on children as the population at risk and loss of IQ points associated with various blood lead concentrations was the most appropriate and protective approach for dealing with health effects associated with lead exposures. Further, they said that

among children and some adults there is no safe level for lead exposure. Their recommendation regarding data extrapolation from the Lanphear study at very low lead dose levels is to use a linear dose-response model. A second related scientific issue raised by members was the value of evaluating aminolevulinic acid dehydratase (ALAD) polymorphisms in exposed populations as genetic factors, which will both influence blood lead concentrations for a given exposure levels and internal lead bioavailability to sensitive biochemical systems. A copy of a meta-analysis study by Scinicariello et al., 2007, in *Environmental Health Perspectives* was distributed for review. Members said that inclusion of these types of genetic evaluations in studies of children with low blood lead concentration may provide data of value in interpreting changes in IQ and help to define those at special risk.

Summary, Wrap-up, Next Steps and Closing Remarks

The Panel Chair asked each of the lead-discussant groups for the charge questions to work within their groups to prepare a prioritized list of issues for inclusion in the corresponding section of the Panel's letter to the EPA Administrator. These prioritized issues should be based on a synthesis of individual comments, written comments from other Panel members, and the Panel's deliberative discussions from the public meeting. In addition, the Chair asked members to provide any additional or revised written individual review comments to the lead discussants for the applicable charge questions, as well as to the Chair and DFO. These individual Panel member review comments will be included in the appendix of the letter to the EPA Administrator. The Chair asked to have all of these materials sent to herself and the DFO no later than Monday, February 12, 2007.

The DFO adjourned the meeting at approximately 5:15 p.m.

[Update: The CASAC's final letter/report (EPA-CASAC-07-004, dated April 3, 2007) from the CASAC Panel's February 5, 2007 consultation on EPA-OPPT's 1st Draft LRRP Assessment was transmitted to the EPA Administrator on April 9, 2007, and was posted the next day on the SAB Web site at the following URL: <http://www.epa.gov/sab/pdf/casac-07-004.pdf>.]

Respectfully Submitted:

Certified as True:

/s/

/s/

Fred A. Butterfield, III

Rogene Henderson, Ph.D.

Fred A. Butterfield, III
CASAC DFO

Rogene Henderson, Ph.D.
CASAC Chair

Date: April 17, 2007

Appendix A – Roster of the Panel for Review of the 1st Draft LRRP Assessment

**U.S. Environmental Protection Agency
Science Advisory Board (SAB) Staff Office
Clean Air Scientific Advisory Committee (CASAC)
CASAC Panel for Review of EPA's Draft
Lead Renovation, Repair, and Painting (LRRP) Assessment**

CHAIR

Dr. Rogene Henderson*, Scientist Emeritus, Lovelace Respiratory Research Institute, Albuquerque, NM

MEMBERS

Dr. Joshua Cohen**, Research Associate Professor of Medicine, Tufts University School of Medicine, Institute for Clinical Research and Health Policy Studies, Center for the Evaluation of Value and Risk, Tufts New England Medical Center, Boston, MA

Dr. Deborah Cory-Slechta**, Director, University of Medicine and Dentistry of New Jersey and Rutgers State University, Piscataway, NJ

Dr. Ellis Cowling*, University Distinguished Professor-at-Large, North Carolina State University, Colleges of Natural Resources and Agriculture and Life Sciences, North Carolina State University, Raleigh, NC

Dr. James D. Crapo [M.D.]*, Professor, Department of Medicine, National Jewish Medical and Research Center, Denver, CO

Dr. Douglas Crawford-Brown*, Director, Carolina Environmental Program; Professor, Environmental Sciences and Engineering; and Professor, Public Policy, Department of Environmental Sciences and Engineering, University of North Carolina at Chapel Hill, Chapel Hill, NC

Dr. Richard Fenske†, Professor, Department of Environmental and Occupational Health Sciences, School of Public Health and Community Medicine, University of Washington, Seattle, WA

Dr. Bruce Fowler**, Assistant Director for Science, Division of Toxicology and Environmental Medicine, Office of the Director, Agency for Toxic Substances and Disease Registry, U.S. Centers for Disease Control and Prevention (ATSDR/CDC), Chamblee, GA

Dr. Philip Goodrum†, Senior Scientist I/Manager, ARCADIS BBL, ARCADIS of New York, Inc., Syracuse, NY

Dr. Robert Goyer [M.D.]**, Emeritus Professor of Pathology, Faculty of Medicine, University of Western Ontario (Canada), Chapel Hill, NC

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

Dr. Bruce Lanphear [M.D.]**, Sloan Professor of Children's Environmental Health, and the Director of the Cincinnati Children's Environmental Health Center at Cincinnati Children's Hospital Medical Center and the University of Cincinnati, Cincinnati, OH

Dr. Randy Maddalena†, Scientist, Environmental Energy Technologies Division, Indoor Environment Department, Lawrence Berkeley National Laboratory, Berkeley, CA

Dr. Frederick J. Miller**, Consultant, Cary, NC

Dr. Maria Morandi†, Assistant Professor of Environmental Science & Occupational Health, Department of Environmental Sciences, School of Public Health, University of Texas – Houston Health Science Center, Houston, TX

Dr. Paul Mushak**, Principal, PB Associates, and Visiting Professor, Albert Einstein College of Medicine (New York, NY), Durham, NC

Mr. Richard L. Poirot*, Environmental Analyst, Air Pollution Control Division, Department of Environmental Conservation, Vermont Agency of Natural Resources, Waterbury, VT

Dr. Michael Rabinowitz**, Geochemist, Marine Biological Laboratory, Woods Hole, MA

Dr. Armistead (Ted) Russell*, Georgia Power Distinguished Professor of Environmental Engineering, Environmental Engineering Group, School of Civil and Environmental Engineering, Georgia Institute of Technology, Atlanta, GA

Dr. Joel Schwartz**, Professor, Environmental Health, Harvard University School of Public Health, Boston, MA

Dr. Frank Speizer [M.D.]*, Edward Kass Professor of Medicine, Channing Laboratory, Harvard Medical School, Boston, MA

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

Dr. Barbara Zielinska**, Research Professor, Division of Atmospheric Science, Desert Research Institute, Reno, NV

SCIENCE ADVISORY BOARD STAFF

Mr. Fred Butterfield, CASAC Designated Federal Officer, 1200 Pennsylvania Avenue, N.W., Washington, DC, 20460, Phone: 202-343-9994, Fax: 202-233-0643 (butterfield.fred@epa.gov)

* Members of the statutory Clean Air Scientific Advisory Committee (CASAC) appointed by the EPA Administrator

** Members of the CASAC Lead Review Panel

† Members of the Science Advisory Board (SAB) or SAB panel

Appendix B – Meeting Agenda

U.S. Environmental Protection Agency
EPA Science Advisory Board (SAB) Staff Office
Clean Air Scientific Advisory Committee (CASAC)

Public Advisory Meeting

Monday, February 5, 2007 – 9:00 a.m. to 5:00 p.m. Eastern Time

Marriott at Research Triangle Park, 4700 Guardian Drive, Durham, NC 27703

Consultation on EPA's Draft Assessment to Support the Lead Renovation, Repair, and Painting (LRRP) Rule

Meeting Agenda

Monday, February 5, 2007

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| 9:00 a.m. | Convene Meeting; Call Attendance; Introductions and Administration; and Overview of Meeting Agenda | Mr. Fred Butterfield, CASAC Designated Federal Officer (DFO) |
| 9:10 a.m. | Welcome & Opening Remarks from EPA Science Advisory Board (SAB) Staff Office | Dr. Vanessa Vu, Staff Director |
| 9:15 a.m. | Purpose of Meeting | Dr. Rogene Henderson, Chair |
| 9:20 a.m. | Welcome from EPA's Office of Pesticides, Pollution and Toxic Substances (OPPTS) | Ms. Wendy Cleland-Hamnett, Acting Principal Deputy Asst. Administrator, OPPTS |
| | Summary Presentation on 1st Draft Assessment to Support the Lead Renovation, Repair, and Painting (LRRP) Rule | Dr. Jennifer Seed, Office of Pollution Prevention and Toxics (OPPT) Ms. Cathy Fehrenbacher, OPPT |
| 10:00 a.m. | Formal Public Comment Period | Mr. Butterfield (Facilitator) |
| 10:15 a.m. | Break* | |
| 10:30 a.m. | CASAC Panel Discussion in Response to 1st Draft LRRP Assessment Issue/Charge Question 1, <i>Draft Assessment Plan</i> | Dr. Henderson, Panel Members (Drs. James Crapo, Ellis Cowling, Douglas Crawford- Brown & Robert Goyer) |
| 11:00 a.m. | Panel Discussion on 1st Draft LRRP Assessment Issue/Charge Question 2, <i>Draft Hazard Assessment</i> | Dr. Henderson, Panel Members (Mr. Rich Poirot, and Drs. Bruce Lanphear, Deborah Cory-Slechta & Joel Schwartz) |

Monday, February 5, 2007 (continued)

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| 11:30 a.m. | Panel Discussion on 1st Draft LRRP Assessment Issue/Charge Question 3, <i>Environmental Monitoring Studies</i> | Dr. Henderson, Panel Members (Drs. Maria Morandi, Richard Fenske, Philip Goodrum & Randy Maddalena) |
| 12:00 p.m. | Lunch | |
| 1:00 p.m. | Continue Panel Discussion on 1st Draft LRRP Assessment Issue/Charge Question 3, <i>Environmental Monitoring Studies</i> | Dr. Henderson, Panel Members (Drs. Maria Morandi, Richard Fenske, Philip Goodrum & Randy Maddalena) |
| 1:30 p.m. | Panel Discussion on 1st Draft LRRP Assessment Issue/Charge Question 4, <i>General Approach for the Sensitivity Analysis in the Exposure Assessment</i> | Dr. Henderson, Panel Members (Drs. Frank Speizer & Ted Russell) |
| 2:15 p.m. | Panel Discussion on 1st Draft LRRP Assessment Issue/Charge Question 5, <i>Cleaning Efficiency Considerations in the Exposure Assessment</i> | Dr. Henderson, Panel Members (Drs. Paul Mushak & Ian von Lindern) |
| 3:00 p.m. | Break* | |
| 3:15 p.m. | Panel Discussion on 1st Draft LRRP Assessment Issue/Charge Question 6, <i>Conversion of Dust Loadings to Dust Concentrations</i> | Dr. Henderson, Panel Members (Dr. Fred Miller & Mr. Sean Hays) |
| 3:45 p.m. | Panel Discussion on 1st Draft LRRP Assessment Issue/Charge Question 7, <i>Blood Lead Modeling</i> | Dr. Henderson, Panel Members (Drs. Barbara Zielinska, Joshua Cohen & Bruce Lanphear) |
| 4:15 p.m. | Panel Discussion on 1st Draft LRRP Assessment Issue/Charge Question 8, <i>Characterization of Changes in Children's IQ</i> | Dr. Henderson, Panel Members (Drs. Deborah Cory-Slechta & Bruce Fowler) |
| 4:45 p.m. | Summary, Wrap-Up, Next Steps and Closing Remarks | Dr. Henderson |
| 5:00 p.m. | Adjourn Meeting | Mr. Butterfield |

Note:

*Periodic breaks will be taken as necessary and at the call of the Chair.