



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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March 8, 2004

Dear Science Advisory Board Members:

RE: Additional Materials to Support Science Advisory Board (SAB)
Review of the Ecology Working Definition of Moderate Levels of Lead in Soils

The Science Advisory Board began its review of Ecology's working definition of moderate levels of lead in soils at its' January 12 meeting. At that meeting, the SAB developed a three step process for conducting this review and identified additional information materials to support that review. The purposes of this memorandum are to (1) summarize our understanding of the results of those discussions and (2) transmit additional information materials requested by the Board.

Review Questions

Prior to the January 12 meeting, Ecology distributed a list of review questions and posed the following two-part question: *Does the list of Ecology questions address issues that you believe are relevant to defining moderate levels of lead-contaminated soils? Are there other questions that you believe the Department should be considering when evaluating this issue?* In general, the Board appeared to agree that the list of questions captures the range of relevant issues associated with the review of Ecology's working definition of lead-contaminated soils. However, the Board concluded that the questions should be organized into different groups in order to support a more systematic review of the various issues associated with the working definition. Specifically, the Board recommended that the discussions be organized into three parts: (1) questions and issues associated with characterizing exposure to lead-contaminated soils; (2) issues and questions associated with the human health impacts associated with exposure to lead contaminated soils; and, (3) issues and questions related to whether other considerations (e.g., soil-to-ground water pathway, ecological impacts, etc.) would significantly modify conclusions based on consideration of exposure to children and infants. **Attachment A** includes an updated list of questions organized around these three issue areas. To facilitate your review of the various questions, we have identified the relevant sections in the draft discussion materials and/or additional information materials being provided with this memorandum.

Additional Information Materials

At the January 12 meeting, Ecology posed the following two-part question: *Do the discussion materials provide you with a sufficient amount of information to discuss the working definition of lead-contaminated soils? If not, what additional information would you find useful?* The Board identified several additional information materials that would be useful in reviewing the working definition for lead. Ecology has compiled additional materials that are included as a series of attachments to this memorandum. These include:



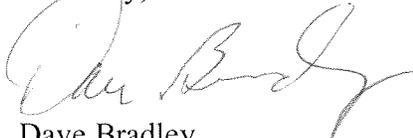
- **Distribution of Elevated Soil Lead Concentrations (Attachment B):** The Board requested additional information on the nature and extent of lead soil contamination in Washington. In response to that request, we have included several maps and information summaries prepared to support the Task Force discussions.
- **Blood Lead Testing in Washington (Attachment C):** The Board requested additional information on blood lead testing in Washington. In response to that request, we have included the most recent summary of the blood testing results prepared by the Department of Health (March 2003) and a summary of testing results (by county) prepared for the Task Force discussions in May 2003.
- **CDC Review of Blood Lead Guidelines (Attachment D):** The Board requested additional information on the health effects associated with blood lead concentrations below 10 ug/dL. In response to that request, we have included materials from the October 2003 meeting of the CDCP Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP). These include, (1) a summary of the evidence of health effects at blood lead concentrations below 10 ug/dL prepared for the committee's review; and, (2) the minutes from the ACCLPP's October 2003 meeting which include summarize the discussion of the draft evaluation. The ACCLPP is scheduled to meet on March 9-10, 2004 and additional information may be available prior to the SAB meeting on March 18.
- **Exposure Parameters (Attachment E):** We have included additional information on the various exposure parameters used to characterize exposure to lead-contaminated soils. This supplements that information contained in the draft discussion materials.
- **Ecological Impacts (Attachment F):** Additional information on ecological impacts associated with lead-contaminated soils. EPA has prepared soil screening levels for lead that are based on ecological effects.

Review Process

At the January 12 meeting, Ecology posed the following two-part question regarding the type of process the Board would like to use to review the working definition: *What type of process does the SAB want to use when reviewing this issue? Does the SAB want to consider forming a subcommittee to assist in the review of this issue?* The Board concluded that a subcommittee was not required at this time. As discussed above, the Board agreed that a phased discussion (described above) was a workable approach for conducting its' review.

We look forward to continuing discussions on this issue at the March 18, 2004, SAB meeting. If you have questions prior to the meeting, please contact either Dave Bradley (360/407-6907) or Dawn Hooper (360/407-7182).

Sincerely,



Dave Bradley
Toxics Cleanup Program

Attachments

Attachment A

Lead-Contaminated Soils

**Questions for the MTCA Science Advisory Board
(Modified Based on 1/12/04 Meeting Discussion)**

Lead-Contaminated Soils
Questions for the MTCA Science Advisory Board
(Modified Based on Discussions at the January 12, 2004 Meeting)

Issue Category #1: Questions Associated with Characterizing Exposure to Lead-Contaminated Soils

- When developing responses to elevated levels of lead in soils, Ecology's primary concern has been lead exposure that occurs as a result of incidental ingestion of soil and dust.
 - Several members of the Task Force and the general public questioned whether incidental ingestion of soil and dust was an important exposure pathway for young children. Is there sufficient scientific information to conclude that incidental ingestion of soil and dust represents an important exposure pathway for young children and adults? *(Discussion materials relevant to this issue include Sections 3 of January 2004 Discussion Materials and Attachment E)*
 - Is the conclusion "dermal contact with lead-contaminated soils does not represent a significant contributor to overall lead exposure" consistent with current scientific information? If not, what approach should Ecology use to evaluate potential lead exposure resulting from dermal contact with lead-contaminated soils? *(Discussion materials relevant to this issue include Sections 1 and 3 of January 2004 Discussion Materials and Attachment E)*
 - Is the conclusion "inhalation of wind-blown dust does not represent a significant contributor to overall lead exposure" consistent with current scientific information? If not, what approach(es) should Ecology use to estimate potential exposure levels? Are there situations where inhalation of wind-blown dust is a particular concern? *(Discussion materials relevant to this issue include Section 3 of the January 2004 Discussion Materials and Attachment E)*
 - In evaluating lead-contaminated soils, we have assumed that lead concentrations resulting from the uptake of lead into homegrown fruits and vegetables are not significantly different than the lead concentrations present in the national food supply. Is this assumption consistent with current scientific information? *(Discussion materials relevant to this issue include Section 3 of the January 2004 Discussion Materials and Attachment E)*
- In developing the working definition, Ecology used two EPA models (the Integrated Exposure Uptake Biokinetic (IEUBK) and the Adult Lead Model (ALM)) to evaluate health risks posed by lead contaminated soils.
 - Is Ecology's use of the IEUBK model to predict child blood lead concentrations associated lead-contaminated soils consistent with available scientific information? *(At the January 12th meeting, the Board agreed that the IEUBK model is appropriate for use in estimating blood lead levels in children that might result due to exposure to lead contaminated soils.)*
 - Is Ecology's use of the ALM to predict fetal blood lead concentrations associated lead-contaminated soils consistent with available scientific information? *(Discussion*

materials relevant to this issue are found in Section 4 of the January 2004 Discussion Materials)

- Are there other models and/or approaches that the SAB believes Ecology should consider when attempting to predict child or fetal blood lead concentrations resulting from exposure to lead-contaminated soils?
- Are the exposure parameters and assumptions used in the evaluation consistent with current scientific information? *(Discussion materials relevant to this issue include Sections 3 and 4 of the January 2004 Discussion Materials, the technical memorandum prepared by Landau Associates that was distributed prior to the January meeting and Attachment E)*
- Is the approach used to evaluate uncertainty and variability consistent with current scientific information? Does the approach appropriately identify important sources of uncertainty and variability? Does the SAB believe there is sufficient information on the distribution of various input parameters to allow the preparation of a meaningful probabilistic risk assessment? *(Discussion materials relevant to this issue include Sections 3 and 4 of the January 2004 Discussion Materials)*

Issue Category #2: Questions Related to the Human Health Risks Associated With Lead-Contaminated Soils *(Discussion materials relevant to this issue include Section 2 of the January 2004 Discussion Materials and Attachment D)*

- In developing the working definition, Ecology used the blood lead screening guidelines developed by the Centers for Disease Control and Prevention (CDCP) to identify risk management goals.
 - The CDCP guidelines are primarily based on adverse impacts on the central nervous system for young children. In preparing this evaluation, Ecology made the assumption that responses based on this health endpoint will be protective of other health impacts/toxicological endpoints. Does the Board believe this assumption is consistent with current scientific information?
 - In preparing this evaluation, Ecology characterized health risks in terms of the probability that blood lead concentrations would exceed CDCP guideline values. Based on current scientific information, what other methods are available for characterizing the health risks (either on an individual or population basis) associated with exposure to lead-contaminated soils?
 - Based on current scientific information, does the SAB believe that the CDCP guidelines provide a risk management goal that is comparable (in terms of the level of protection) to the risk management goals under the Model Toxics Control Act for other hazardous substances?

Issue Category #3: Questions Related to Other Exposure Pathways and/or Toxicological Endpoints **(To be discussed at the May 2004 Science Advisory Board Meeting)**

- Is the assumption that “soils with lead concentrations less than 1000 mg/kg do not pose a significant threat to ground water” consistent with current scientific information?

(Discussion materials relevant to this issue will be provided prior to the May 2004 Science Advisory Board Meeting)

- Are there circumstances (e.g., potential for colloidal transport, etc.) where the Science Advisory Board believes Ecology should take additional steps to evaluate and address potential ground water impacts?
- The working definition for moderate levels of lead-contaminated soils is based on human health considerations. Are there circumstances (e.g., particular land uses, regions, habitats) where the SAB believes additional steps to evaluate and address ecological impacts should be taken? *(Discussion materials relevant to this issue include the technical memorandum prepared by Landau Associates that was distributed prior to the January meeting, Attachment F and other materials that will be provided prior to the May 2004 Science Advisory Board meeting)*

Information Collection

- Given the evaluation results, where does the SAB recommend that Ecology focus additional information collection efforts?