

# PEER REVIEW COMMENT FORM

## UPDATED ATSDR POLICY GUIDELINE FOR DIOXINS AND DIOXIN-LIKE COMPOUNDS IN SOIL

October 2004

### GUIDE TO REVIEWERS:

The objective of peer review conducted by the Office of Science is to ensure the highest quality of science for NCEH/ATSDR policy, studies, and results of research; therefore, your comments should be provided with this goal in mind. Please note that your unaltered comments will be sent to the investigator for a response. You should receive a copy of the response to the peer review comments when they are available.

**Please comment on the three (3) major changes to the dioxin and dioxin-like revised policy:**

#### 1. Change #1

**Deletion of the 1ppb Action Level as the criteria for taking specific public actions, and retained only as a reference to the Superfund Dioxin Cleanup policy criteria.**

#### **Comments:**

This change is justified and highly important. The document has a clear and concise statement explaining why this change is needed. It is inconsistent with the approach taken by ATSDR for evaluation of other chemicals. The Action Level is often misinterpreted as an ATSDR cleanup level. The Action Level is often misinterpreted as a trigger for public health actions that should be performed when the Screening Level is exceeded. In fact, when two numbers are available in policy, then the higher number is almost always the number used in any form of decision-making. This is invidious, and the deletion of the Action Level will restore the functionality of the Screening Level and unambiguously identify 1 ppb as an EPA cleanup criterion.

## 2. Change #2

Retention of the 0.05 ppb Screening Level, the MRL-based EMEG for dioxin TEQ in soil, to be consistent with the approach for evaluating chemical contaminants in health assessments.

### *Comments:*

Retention of the Screening Level is also justified in the draft *Policy Guideline*. The derivation of the MRL for 2,3,7,8-TCDD is consistent with well-established risk assessment policies for non-cancer effects used by ATSDR, EPA and other agencies. The use of the WHO-98 TEFs to evaluate dioxin-like compounds is well accepted. ATSDR has been careful to note the TEFs that are based on calculations based on modeling and/or in vitro data in the TEF table. It is worthwhile to note that the EPA has calculated that 5 chemicals (2,3,7,8-TCDD, 1,2,3,7,8-PentaCDD, 1,2,3,6,7,8-HexaCDD, 2,3,4,7,8-PentaCDF and PCB126) account for 70-80% of the TEQ in the human body and in food. The TEFs for all of these chemicals are based on in vivo data. The exposure assumptions used to calculate the EMEG from the MRL are conservative as is appropriate for a screening number. Health assessors are instructed to modify these exposure factors (e.g. frequency of soil contact which might be lower in northern states, bioavailability which is dependent upon the characteristics of the contaminated soil) as appropriate. The discussion of cancer risk in relation to the EMEG could be expanded upon. The document uses the FDA cancer potency slope calculated from Kociba (1978) to observe that the calculated lifetime incremental cancer risk to exposures to soil at the EMEG would be in the neighborhood of 1E-6. The EPA acceptable risk range is 1E-6 to 1E-4. Potency slopes calculated from the Kociba (1978) study by EPA range from 156,000 [mg/kg/day]<sup>-1</sup> to 1,400,000 [mg/kg/day]<sup>-1</sup>. Using these slopes, the EMEG is in the risk range or within a factor of 2 of the higher end of the range. Thus, the EMEG appears to be protective for cancer using very conservative assumptions (lifetime exposure to 100 mg/day of soil). The highest cancer potency estimates are based on comparative body burden estimates. In this context, the statement in the document noting that comparative body burden estimates are frequently used as a surrogate for human exposure, and calling for additional research on low dose effects in human populations is very important.

## 3. Change #3

Indirect exposure pathways, such as local dietary sources, could make a significant contribution to the overall dioxin exposure. As a result the guideline emphasizes the need for conducting a complete exposure pathways analysis for dioxins and dioxin-like compounds in site-specific health assessments.

### *Comments:*

This is clearly true and important for health assessors to consider. Dioxin-like chemicals concentrate in lipids and accumulate in the food chain. The document correctly notes that exposures from garden produce are therefore less likely to be as intense as exposures from animal products. Because food exposures may be more important than direct exposures to

contaminated soil, exposures via the food chain need to be evaluated even when the EMEG is not exceeded. In fact, when dioxin contamination occurs in water bodies or sediments, it is possible that there could be an important exposure from eating contaminated fish even in the absence of any soil contamination.

**Additional questions and comments:**

1. Does the revised document serve as effective guidance for assessing potential public health hazards associated with dioxin contamination in soil?

Yes (  ) No (  ) Unsure (  )

**Why?:**

The document clearly identifies and discusses the scientific and policy issues related to the evaluation of dioxin-like compounds in the environment. It states the major issues of interest for health assessment, and justifies the proposed policy. The revision removes the action level of 1 ppb TEQ, thereby removing a major source of confusion. Soil concentrations above the EMEG need to be evaluated and appropriate public health actions taken as a result of health assessment.

2. Do you have any other comments regarding the revised dioxin and dioxin-like policy guideline?

ATSDR is to be commended for a forceful, well-reasoned discussion and proposed policy to protect public health.