# U.S. Environmental Protection Agency, Risk Assessment Forum

## Draft Recommended Toxicity Equivalency Factors (TEFs) for Human Health Risk Assessments of Dioxin and Dioxin-Like Compounds

## Peer Review Charge
## October 22, 2009

The following background and questions are provided to help guide the peer review of the draft EPA "Recommended Toxicity Equivalency Factors (TEFs) for Human Health Risk Assessments of Dioxin and Dioxin-Like Compounds." The focus of the peer review discussions will be on technical issues. Regulatory policy issues and specific program management concerns will not be addressed through this review.

**Background**

Risk assessments of dioxins and dioxin-like compounds (DLCs) have relied on the dioxin toxicity equivalency factor (TEFs) approach. Various stakeholders, inside and outside the Agency, have called for a more comprehensive characterization of risks; therefore, EPA's Risk Assessment Forum (RAF) identified a need to examine the recommended approach for application of the TEF methodology in human health risk assessments. An RAF Technical Panel has developed the draft guidance document, "Recommended Toxicity Equivalency Factors for Human Health Risk Assessments of Dioxin and Dioxin-Like Compounds" that recommends use of the consensus mammalian TEFs developed by the World Health Organization (WHO, 2005; published in Van den berg et al., 2006) for use in human health risk assessment. The following set of charge questions is to be addressed during the external scientific peer review of this document.

**Charge Questions**

The following questions are provided to help guide the peer review and associated discussions during the external peer review.

**History and Background**

Please comment on whether the TEF methodology is accurately explained and referenced in the document?

Is the history of the mammalian TEFs and the process used to develop them by the World Health Organization accurately described and in sufficient detail? Are the WHO (2005) mammalian TEF values and their derivation accurately reported?

**Risk Characterization**

Is the development of the Relative Potency (REP) database presented in Haws et al. (2006) accurately described and in sufficient detail? If not, please provide recommendations for enhancing this description.

Is the uncertainty analysis approach described by EPA reasonable?

Are there alternative ways to approach uncertainty analysis for the TEFs that you could recommend?

**EPA Recommendations**

Please comment on the recommendation that these TEFs should be used for all cancer and non-cancer effects that are mediated through AHR binding by the DLCs.

Please comment on the recommendation that the TEFs are most appropriate for exposures to dioxin-like compounds via the oral exposure route.

Please comment on the recommendation that the TEFs may be applied to other exposure routes, (i.e., dermal or inhalation) as an interim estimate.

Please comment on the recommendation that, if considered in an assessment, the fractional contribution of dermal and inhalation route exposures to the predicted toxicity equivalence (TEQ) should be identified as part of the risk characterization.

Is there a currently available approach for calculating the cumulative exposures to DLCs that is more appropriate than the WHO TEF methodology being proposed by EPA?