United States Environmental Protection Agency
Region VIII

Draft Comment Response
Technical Memorandum No. 9 - Toxicity Constants
Operable Unit 1
October 1992

GENERAL COMMENTS:

As stated in EPA's comments on Technical Memorandum No. 8, the Toxicity Equivalency Factor (TEF) approach for PAHs is not approved national policy. For this reason, risk estimates with PAHs should include calculations using the standard EPA method of equating all PAHs equivalent to benzo(a)pyrene in toxicity, as well as calculations based on the TEF approach.

Technical Memorandum No. 9 presents toxicity constants for COCs identified in Technical Memorandum No. 8. However, the results presented in Technical Memorandum No. 8 to select COCs were flawed by the use of incorrect statistical tests, incorrect toxicity values, and the omission of background data. Therefore, the list of COCs presented in Technical Memorandum No. 9 may not be complete or accurate. Until the errors in Technical Memorandum No. 8 are resolved, all chemicals identified at OU1 should remain in the baseline risk assessment. These chemicals include chrysene, dibenzofuran, and indeno(1,2,3-cd)pyrene.

Toxicity constants for dermal exposure have not been presented in this document. These values should be calculated according to guidelines in Appendix A of Risk Assessment Guidance for Superfund (RAGS), Volume 1, Human Health Evaluation Method, Part A (EPA 1989).

Toxicity constants for several chemicals are missing. The risk assessor should consult EPA Region 8 and the EPA Office of Health and Environmental Assessment (OHEA) for guidance regarding values not listed in the Integrated Risk Information System (IRIS) (EPA 1992a) or in the Health Effects Assessment Summary Tables (HEAST) (EPA 1992b).

Response: The TEF approach adopted by EPA Region IV is used by a number of regions, including EPA Region VIII (see Attachment). Region VIII has been consulted regarding information not available on IRIS. This information (where available) was included in the October 1992 Draft PHE.

Where appropriate, RAGS methods for adjustment from administered to absorbed dose will be used. While it may be inappropriate to use oral slope factors to quantify risks associated with dermal contact with carcinogens which cause skin cancer through direct action at the point of contact, dermal absorption was not identified as a dominant pathway of exposure. Therefore, where no additional information exists regarding the ratio of administered to absorbed dose, oral slope factors were used.

SPECIFIC COMMENTS:

1. *Page 6, Table 2-1. Several chemicals are missing reference dose (RfD) and reference concentration (RfC) values. The following values can be found in HEAST Tables 1 and 2.*

   The chronic oral RfD for 1,1,1-trichloroethane is 9.0×10^{-2} with an uncertainty factor of 1,000. The RfC for this chemical is 1.0×10^{0} with an uncertainty factor of 1,000. The RfD for 1,2-cis-dichloroethene is 1.0×10^{-2} with an uncertainty factor of 3,000. The RfC for trichlorofluoromethane is 7.0×10^{-1} with an uncertainty factor of 10,000. The RfC for dichlorodifluoromethane is 2.0×10^{-1} with an uncertainty factor of 10,000.

   Response: Region VIII has been consulted regarding information not available on IRIS. This information (where available) was included in the October 1992 Draft PHE.

2. *Page 8, Section 2.2.1. The document states that cancer risks from exposure to multiple carcinogens across all exposure pathways will be summed. Although this approach is acceptable according to RAGS, several limitations to this approach must be considered. These include that probability distributions are not strictly additive and that the action of two different carcinogens might not be independent. Additionally, substances with different weights of evidence of carcinogenicity will be treated as if they had equal weights. These limitations should be acknowledged and suggestions in RAGS should be followed.*

   Response: Comment noted. Cancer risks were presented separately for each contaminant and pathway, along with sums.

3. *Page 9, Table 2-2. The oral slope factor for tricholoroethene appears in a previous version of HEAST (EPA 1991). Also found in this version of HEAST is the oral slope factor for tetrachloroethene (5.1×10^{-2}) and the inhalation slope factor for trichloroethene (1.7×10^{-2}), both of which should be included in table 2-2.*

   The equation for converting unit risks to inhalation slope factors is not presented or referenced. It should be presented in the text or in the table legend.

   Response: Region VIII has been consulted regarding information not available on IRIS. This information (where available) was included in the October 1992 Draft PHE. EPA comments were received too late

for inclusion of the equation for converting unit risks to inhalation slope factors in the October 1992 Draft PHE. This item will be addressed in the Final PHE. Please see the response to EPA Comment 10 for Technical Memorandum No. 8.

References

Gilbert, R. O., 1987. *Statistical Methods for Environmental Pollution Monitoring.* DE-AC06-76RLO1830.

Walpole, R. E., R. H. Myers. *Probability and Statistics for Engineers and Scientists.*

Cowherd, C., G. Muleski, P. Englehart, and D. Gillette, 1984. *Rapid Assessment of Exposure to Particulate Emissions From Surface Contamination Sites.* EPA/600/8-85-002.

Tistinic, Tom, 1984. Memorandum: Fugitive Particulate Emissions, Colorado Department of Health, July 2, 1984.