Submitted by Mike Johnson on 2/22/99 regarding Volume V, Chapter 1.

Response to reviewer's comments re: MTBE report on exposure
For each agency, the comment is either summarized or quoted from the review and the responses are provided immediately below the comment.

US Geological Survey

Comment

The exposure analysis was performed assuming the concentration of MTBE in tap water is the same as MTBE in the drinking water supply. The reviewer stated that the analysis would be more accurate if tap water could be collected and analyzed for MTBE to provide actual distributions for the exposure analysis.

Response

1. Given the time frame for completion of the project, and the budget provided, sampling was not possible.
2. The intent of the analysis was to provide a location-nonspecific exposure to MTBE in drinking water supply, and the analysis was performed for a range of possible concentrations of MTBE at the tap. These calculations were not meant to represent actual exposure for a specific target population. Table 2 (contained in the addendum to Volume V) provides the potential exposure, relative to the *de minimis* cancer risk, for concentrations of MTBE at the tap ranging from 1 ppb to 30 ppb. Further studies need to be performed to determine the relationship between the concentration of MTBE in the actual drinking water supply (surface or groundwater) and the concentration of MTBE delivered to the tap.
3. Given that studies are lacking to establish a relationship between concentration of MTBE in a drinking water supply and the concentration of MTBE at the tap, the most conservative assumption is that the concentrations are the same.

Lovelace Respiratory Research Institute

Comment

"the document seems somewhat biased toward evaluating the risk to humans exposed to MTBE chiefly through contact with contaminated drinking water without parallel treatment of the potential health effects/risk contributed by MTBE in outdoor ambient air." "Sections 6.2.2 focuses only on the risk from contaminated water."

Response

Given the time frame for completion of the project, a full media exposure analysis was not possible. Due to the chemical properties of MTBE and the relative partitioning of MTBE between tap water, indoor air, outdoor air, and the lungs, it may not be appropriate to simply combine the potential exposures from ambient air and drinking water into a single exposure. A full exposure analysis would need to be performed. Lack of a full exposure analysis does not constitute an inconsistency in the analysis.

Comment

"While a great deal of effort is made to determine a concentration of MTBE in water that will provide a one in a million risk for cancer, no discussion of the uncertainties in the value of 10.1 ug MTBE/L water is provided."

Response

1. The analysis that generated the 10.1 µg/L cancer concentration was was performed to determine if the 14 ppb concentration arrived at in the Office of Environmental Health Hazard Assessment (OEHHA) Public Health Goal Draft Document was particularly dependent on the assumptions used in that analysis. A major assumption of the OEHHA analysis was that all exposure pathways could be accounted for by increasing the amount of drinking water consumed by 50%. The results presented in the current report used a different set of assumptions that explicitly incorporated the different exposure pathways. Also, the two analyses used different values for the Henry's Law coefficients. Our results differed from OEHHA's results by only a small amount indicating that the results of each analysis are robust to the assumptions. Also, the OEHHA document indicated that using different values of the Henry's Law coefficient in their analysis, their value could be between 10 and 18 ppb. Given the general level of agreement, a discussion of the uncertainties associated with the 10.1 µg/L value was not necessary.
2. The probabilistic exposure analysis explicitly incorporates uncertainty into the analysis by using distributions in a Monte Carlo analysis. The distributions are provided in Table 1 of the addendum to Volume 5, and a discussion of the results of the Monte Carlo analyses are included in the report.