MEMORANDUM

DATE: September 2, 1994

SUBJECT: Review of Remedial Investigation Report Prepared by ICF Kaiser (Yeoman Creek Landfill/Waukegan, IL)

FROM: Joan S. Dollarhide
Director
Superfund Health Risk Technical Support Center
Chemical Mixtures Assessment Branch

TO: Rich Bofce
U.S. EPA
Region V

This memorandum is in response to your request for review of comments made by ICF Kaiser regarding PCBs and documentation of the oral slope factor of 1.9 (mg/kg/day)^{-1} for vinyl chloride listed on the Health Effects Assessment Summary Tables (HEAST) (U.S. EPA, 1994a) for use at the Yeoman Creek Landfill site, Waukegan, IL.

PCBs

ICF Kaiser questioned the use of the Norback and Weltman (1985) study for calculation of the oral slope factor for PCBs that is available on the Integrated Risk Information System (IRIS) (U.S. EPA, 1994b). We have addressed this issue in our memorandum of April 26, 1994 to you (Risk Assessment Issue Paper for: Review of PRP Discussion of PCBs Slope Factor for the Yeoman Creek and Edwards Field Landfill).

In addition, ICF Kaiser proposed oral slope factors for several individual PCB congeners, including Aroclor-1260 and -1254 and Clophen A60 and A30. Although RfD values have been calculated for individual Aroclors by the RfD/RfC Work Group, the Carcinogen Risk Assessment Verification Endeavor (CRAVE) Work Group has chosen to develop a single oral slope factor for PCBs mixture. CRAVE has concluded that there are problems with determining differential exposure to specific mixtures due to the number of compounds present, and that the use of individual estimates could be difficult to justify based on the analytical problems (U.S. EPA, 1989).

Thus, I recommend that the oral slope factor for PCBs mixture that is provided on IRIS be used for quantitative assessment (U.S. EPA, 1994b).
VINYL CHLORIDE

An oral slope factor of 1.9 (mg/kg/day)$^{-1}$ as listed in the HEAST (U.S. EPA, 1994a) appears to be based on the combined incidence of liver neoplastic nodules and angiosarcomas in female rats from the Feron et al. (1981) study. ICF Kaiser calculated an oral slope factor of 0.42 (mg/kg/day)$^{-1}$ based on the incidence of hepatocellular carcinomas using the same study and sex of the animal. According to the Health Effects Assessment for Vinyl Chloride (U.S. EPA, 1984), the incidence of hepatocellular carcinomas was already included in the development of the oral slope factor because "...it was assumed that rats having hepatocellular carcinomas also bore neoplastic nodules, since neoplastic nodules are considered to be preneoplastic forerunners of hepatocellular carcinomas."

It should be noted that in the search for documentation of the value, a possible inconsistency has been found. The oral slope factor for vinyl chloride is referenced to several sources on the HEAST (U.S. EPA, 1994a): Feron et al. study (1981); Health Effects Assessment for Vinyl Chloride (HEA) (U.S. EPA, 1984); Drinking Water Criteria Document for Vinyl Chloride (DWCD) (U.S. EPA, 1985); and CRAVE Work Group notes (U.S. EPA, 1990). The citation that supports the value on the HEAST is the CRAVE Work Group notes, but not the documents. The HEA and DWCD both derive an oral slope factor of 2.3 (mg/kg/day)$^{-1}$ for total liver and lung tumors; however, both documents also calculate an oral slope factor of 1.9 (mg/kg/day)$^{-1}$ based on total liver tumors only.

Please note that the Agency is aware that this number does not incorporate considerable information that is now available. The Office of Health and Environmental Assessment's position is that this estimate does not reflect state-of-the-art science for vinyl chloride. EPA now has individual animal data, not available when the oral unit risk estimate was calculated, that may influence this number. Additional information that may be factored into a revised quantitative risk assessment includes data on increased sensitivity observed in young animals and data on metabolism/pharmacokinetics.

We will forward our review of beryllium comments upon its completion.

Please feel free to contact the Superfund Health Risk Technical Support Center at (513) 569-7300 if you need additional assistance.

cc: J. Konz (5204G)
    E. Moran (Region V)
References:


