UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

July 19,1988

OFFICE OF
THE ADMINISTRATOR
SAB-EHC-88-034

Honorable Lee M. Thomas
Administrator
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

Subject: Science Advisory Board's review of the MERCURY health criteria document

Dear Mr. Thomas:

The Metals Subcommittee of the Science Advisory Board's Environmental Health Committee has completed its review of the Drinking Water Health Criteria Document for Mercury dated February 1987. The review was conducted January 14-15, 1988, at the St. James Hotel in Washington, D.C.

The Subcommittee recommended that: the document focus clearly on inorganic rather than organic mercury, the exposure section be made more realistic, a rationale be given for the choice of end-point used to develop the standard and the existing analysis be extended.

The Subcommittee concludes that the report adequately summarizes the available information on the health effects of inorganic mercury. However, the report is confusing. It states, correctly, that almost all mercury in drinking water is the inorganic form, and contains calculations for a Drinking Water Equivalent Level (DWEL) for inorganic mercury. Much of the report, however, concerns organic mercury. The extensive attention given methylmercury and other alkyl mercurials is unwarranted. The subcommittee recommends that this material either be deleted, placed in an Appendix or used to calculate a DWEL for organic mercury. If this material is deleted, the title of the document should indicate that it considers only inorganic mercury.

The estimates of mercury intake from drinking water are probably too high and may reflect the use of the analytical detection limit as a substitute for actual mercury concentrations. Also, some of the reported values of mercury in drinking water are suspiciously high. The Subcommittee

recommends that these numbers be validated. In addition, it recommends that the exposure section be expanded to consider mercury dental amalgams, which may be a much more important human source of inorganic mercury exposure than drinking water. Certainly this source needs to be considered in developing the Maximum Contaminant Level Goal.

The calculation of the DWEL in the document correctly includes the differences in absorption between subcutaneously-injected and orally-ingested mercury. It is stated without justification in the document that auto-immune irregularities are a more sensitive endpoint that proteinuria for establishing a DWEL for inorganic mercury. The Subcommittee recommends that the Agency provide the rationale for this choice of endpoint.

Three animal studies are used in the derivation of the DWEL. The most important is that of Druet et al which used several dose groups. The other two studies used only one exposed group at relatively high levels of exposure. All three studies had very small numbers of animals in the exposed groups. The Subcommittee concludes that the calculation of the DWEL from the animal studies is correct given the current EPA guidelines. The Subcommittee recommends, however, that additional methods to assess the risks of systemic toxicants be applied to the animal data. The addition of more analyses will give a better sense of the robustness of the DWEL estimates, as well as help to highlight the differences between alternative methods.

The Subcommittee noted that calculations of a NOAEL for inorganic mercury based upon human exposure to mercury vapor were presented at the Workshop in Cincinnati. Additional calculations were derived from kidney NOAELs in both humans and animals. We recommend that these calculations be included in the final document. It would help confirm the use of short-term animal and subcutaneous injection data in deriving the DWEL.

Additional specific comments have been forwarded to the program offices.

Sincerely,

Norton Nelson, Chairman
Executive Committee

Richard A. Griesemer, Chairman
Environmental Health Committee

Bernard Weiss, Chairman
Metals Subcommittee

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