



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D C 20460

July 19, 1988

OFFICE OF
THE ADMINISTRATOR
SAB-EHC-88-038

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 BARIUM 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 Barium dated December 1987. The review was conducted January 14-15, 1988 at the St. James Hotel in Washington, D.C.

EPA's Office of Drinking Water (ODW) concluded in the document that the 4.7 mg/L value recommended as a drinking water standard by the National Academy of Sciences (NAS) in 1982 is an appropriate value upon which to base both a Drinking Water Equivalent Level (DWEL) and Reference Dose (RfD) for barium. ODW asked the Subcommittee if they thought that the choice of this value was supported by the weight of scientific evidence.

The Subcommittee concluded that any value for the drinking water standard in the range of 1 to 5 mg/L was consistent with the scientific evidence. Since it is unclear in the text of the criteria document how the NAS derived its value (although it appears to come from a 1958 data base used to derive an air standard for barium) the Subcommittee recommends that ODW use its own data base to develop a standard. The studies that need to be included in this development primarily involve hypertension in humans (Wones et al and Brenniman et al). Based on these studies, we recommend that the USEPA consider a NOEL value of 10 mg/L. A DWEL of 5 mg/L would follow from this choice if an uncertainty margin of 2 is used. There is no scientific basis for selecting any particular value between 1 and 5 (derived by using uncertainty factors of 10 and 2 respectively). However, the 4.7 value used by ODW gives a false impression of precision. The Subcommittee recommends that only one significant figure be used.

The Subcommittee recommends the addition of a diagram showing sources and the proportion of intake of barium from food,

water and air. In addition, we recommend an illustration of barium toxicokinetics, including metabolism and excretion (as was included in the Criteria Document for Copper).

A list of more specific detailed comments has already been sent to the program offices.

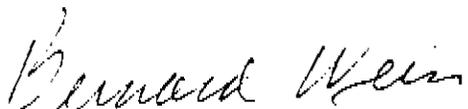
Sincerely,



Norton Nelson, Chairman
Executive Committee



Richard A. Griesemer, Chairman
Environmental Health Committee



Bernard Weiss
Chairman, Metals Subcommittee

U.S. Environmental Protection Agency
Science Advisory Board
Environmental Health Committee
Metals Subcommittee

Dr. Bernard Weiss [Chair], Professor, Division of Toxicology, P.O. Box 888, University of Rochester, School of Medicine, Rochester, NY 14642 (716) 275-3791

Dr. Ronald Wyzga [Vice-chair], Electric Power Research Institute, 3412 Hillview Avenue, P.O. Box 1041, Palo Alto, California 94303 (415) 855-2577

Dr. Thomas Clarkson, Professor and Head, Division of Toxicology, University of Rochester, School of Medicine, Post Office Box 888, Rochester, New York 14642 (716) 275-3911

Dr. Gary Diamond, Assistant Professor of Pharmacology, University of Rochester School of Medicine, Rochester, New York 14642 (716) 275-5250

Dr. Phil Enterline [ENVIRONMENTAL HEALTH COMMITTEE], Department of Biostatistics, Graduate School of Public Health, University of Pittsburgh, 130 Desoto Street, Pittsburgh, PA 15261 (412) 624-3032

Dr. Robert Goyer, Department of Pathology, Health Sciences Centre, University of Western Ontario, London, Ontario, Canada N6A5C1

Dr. Marvin Kushner, Dean, School of Medicine, Health Science Center, Level 4, State University of New York, Stony Brook, New York 11794 (516) 444-2080

Dr. Brooke T. Mossman, Department of Pathology, The University of Vermont, Medical Alumni Building, Burlington, Vermont 05405-0068 (802) 656-2210

Dr. Gunter Oberdoerster, Associate Professor, Radiation Biology and Biophysics Division, University of Rochester, School of Medicine, 400 Elmwood Avenue, Rochester, N.Y. 14642 (716) 275-3804

Dr. F. William Sunderman, Professor of Laboratory Medicine and Pharmacology and Head, Department of Laboratory Medicine, University of Connecticut Health Center, Room C 2021, Farmington, Connecticut 06032 (203) 674-2328

Executive Secretary

Dr. Richard Cothorn, Executive Secretary, Environmental Health Committee, Science Advisory Board [A-101F], U.S. Environmental Protection Agency, Washington, D.C. 20460 (202) 382-2552