



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

October 29, 1984

OFFICE OF
THE ADMINISTRATOR

Mr. Jack E. Ravan
Assistant Administrator for Water [WH-556]
U. S. Environmental Protection Agency
401 M Street, SW
Washington, D.C. 20460

Dear Mr. Ravan:

On July 24, 1984, the Environmental Health Committee (EHC) of EPA's Science Advisory Board reviewed a paper prepared by the Criteria and Standards Division in the Office of Drinking Water (ODW) and entitled "Major Issues Associated with Health Effects of Asbestos in Drinking Water (Carcinogenesis of Ingested Asbestos Fibers)." Two scientists who are experts on the subject of asbestos assisted the committee: Dr. Brooks T. Mossman from the University of Vermont and Dr. J. Corbitt McDonald from McGill University.

The scientific issues presented to the Committee for its review were carefully framed. The document with its supporting material was well-focused and reached the Committee in a timely way. Unlike the clarity with which your staff presented the key scientific issues, to date little of the relevant evidence is amenable to clear-cut scientific interpretation.

Regarding experimental animal evidence, ODW staff drew attention to a recent study from the National Toxicology Program (NTP), which has not yet been peer-reviewed or published. The NTP bioassay may contain evidence in favor of tumorigenesis by asbestos ingested by experimental animals, a result which has not been reported in other bioassays. The Committee is prepared to revisit the issues when this evidence can be more widely evaluated. It understands that ODW staff have transmitted a copy of the bioassay to EPA's Carcinogen Assessment Group for their evaluation. Otherwise, the EHC agrees with ODW's assessment that the animal toxicologic evidence should be considered negative with respect to any association between ingested asbestos fibers and gastrointestinal cancer. Thus, peer-reviewed experimental analyses of hazard does not support, at this time, an association between asbestos exposure and gastrointestinal cancer, whether by diet or by mucociliary clearance of inhaled fibers.

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In contrast, the epidemiologic record is ambiguous. As compared to the thirteen (13) studies reviewed by ODW staff, Dr. McDonald cited some thirty (30) studies, of which eighteen (18) suggest the possibility of a positive association. Some good reasons exist for the inconsistency of the evidence. These include:

- in some instances it is not clear what was the nature of the asbestiform material that was the source of the exposures.
- the studies were conducted with small populations at high exposure to a putatively low risk material.
- tumor site may be recorded ambiguously (for example, lower and upper gastrointestinal tract sites may or may not have been analyzed separately).
- the association resembles that seen with other materials that act as confounding factors rather than as causative agents.

Twelve (12) of the thirteen (13) epidemiologic studies reviewed in the ODW document reveal an apparent excess risk. The same thirteen studies were the subject of a critical review of health effects caused by asbestos ingestion that was commissioned by EPA through its Center for Environmental Epidemiology at the University of Pittsburgh.^{*} The critical review concluded that each study had methodologic weaknesses and limitations, and that no individual study or aggregation of studies could establish risk levels. While the agreement between male and female populations within the studies was low, the association of cancers of the esophagus, stomach, prostate, and pancreas with asbestos ingestion was not likely to result from chance alone.

Although a poor quality risk estimate will result from such data, the population risk will be low, and some scientists prefer to work with such a risk estimate. Ambiguity exists in the epidemiologic record, and the draft report by the National Academy of Sciences Committee on Non-Occupational Health Risks of Asbestiform Fibers,[†] found that existing data do not provide a scientific basis to determine whether or not there is an association between ingested asbestos fibers and gastrointestinal cancer.

Given the positive signal seen in some epidemiologic studies, plus well-documented evidence for the association between asbestos fiber inhalation and lung cancer, it is hard for the Committee to feel comfortable in dismissing the possibility of an increased risk of gastrointestinal cancer in humans exposed to asbestos fibers from drinking water. However, the Committee consensus is that current peer-reviewed evidence for humans and animals does not support the view that asbestos ingested in water causes organ-specific cancers.

^{*}Gary M. Marsh, "Critical Review of Epidemiologic Studies Related to Ingested Asbestos," Environmental Health Perspectives, 53 (1983), 49-56.

[†]National Academy of Sciences. Committee on Non-Occupational Health Risks of Asbestiform Fibers. Asbestiform Fibers: Non-Occupational Health Risks. National Academy Press, Washington, D.C., 1984.

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More detailed technical comments from individual EHC members have been communicated directly to Dr. Cotruvo. We greatly appreciate both the opportunity to review the paper and to acknowledge the thoughtful consideration of the Committee's time.

Sincerely,


Herschel E. Griffin, Chairman
Environmental Health Committee


Morton Nelson, Chairman
Executive Committee

cc: Alvin L. Alm [A-101]
Joseph Cotruvo [WH-350]
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