



UNIVERSITY OF MARYLAND

OFFICE OF THE VICE PRESIDENT
FOR ADMINISTRATIVE AFFAIRS

03-26-10A07:04 RCVD

1132 Main Administration Building
College Park, Maryland 20742-5035
301.405.1105 TEL 301.314.9659 FAX
www.adminaffairs.umd.edu

March 22, 2010

John Howard, MD
Director, National Institute for Occupational Safety and Health
395 E Street SW
Suite 9200
Washington, DC 20201

NIOSH Mailstop: C-34
Robert A. Taft Lab.
4676 Columbia Parkway
Cincinnati, Ohio 45226

Dear Dr. Howard:

As you may know, I have been involved to some degree in the development of the NIOSH Roadmap, first as a reviewer of the first public version, and later as a consultant to the NRC panel that reviewed a later draft. Many questions raised by the Roadmap and the studies it recommends are important and will go a long way toward understanding the carcinogenic potential of durable elongated mineral particles.

However, I write to raise one issue and to advocate for one additional approach. There are a number of epidemiological studies that have been conducted on cohorts exposed to asbestos either in asbestos mines or in other occupational locations where exposures are constrained to particular asbestos sources. Regrettably, because of the lack of detail on the characteristics of the exposure, we have only a general index of exposure with which to interpret the epidemiological studies. This index is not uniform across exposures, recording a higher proportion of the total particulate exposure in some cases than in others. This index of dose is inadequate due to 1) differences in the sensitivity of the method to mineralogical differences, 2) differences in degrees of "fiberization" of the asbestos in use, and 3) differences in the number of particles that are counted in the index but are not asbestos. The consequence of a lack of information on the actual characteristics of the exposure means that potency factors for size, shape, mineral identity and surface properties remain poorly known even though the adverse health outcomes to people are clear.

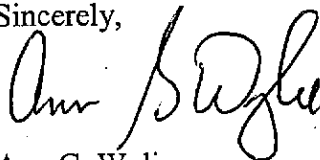
The distribution of particle sizes of the exposures to those individuals in the cohorts can and should be recreated. If the characteristics of the exposures are known, data from the epidemiological studies can be grouped and potency factors isolated. Generation of airborne dusts from materials collected at the mine sites today is possible. Everything I know about the way materials fragment tells me that modern dusts can be representative of past exposures.

Wayne Berman has demonstrated the validity of this approach for one case as described in his most recent paper (Berman 2010). I have reproduced the first part of his abstract below:

Results of a meta-analysis indicate that the variation in potency factors observed across published epidemiology studies can be substantially reconciled (especially for mesothelioma) by considering the effects of fiber size and mineral type, but that better characterization of historical exposures is needed before improved exposure metrics potentially capable of fully reconciling the disparate potency factors can be evaluated. Therefore, an approach for better characterizing historical exposures, the Modified Elutriator Method (MEM), was evaluated to determine the degree that dusts elutriated using this method adequately mimic dusts generated by processing in a factory. To evaluate this approach, elutriated dusts from Grade 3 milled fiber (the predominant feedstock used at a South Carolina [SC] textile factory) were compared to factory dust collected at the same facility. Elutriated dusts from chrysotile ore were also compared to dusts collected in Quebec mines and mills. Results indicate that despite the substantial variation within each sample set, elutriated dusts from Grade 3 fiber compare favorably to textile dusts and elutriated ore dusts compare to dusts from mines and mills.

I would argue that additional work to demonstrate the reliability of the approach in other environments is needed, but it should be evaluated and applied as appropriate. I consider it a most promising direction for research and urge you to include it in the Roadmap.

Sincerely,



Ann G. Wylie
Vice President for Administrative Affairs
Professor of Geology

References

Berman, D. Wayne (2010) Comparing Milled fibers, Quebec Ore and Textile Factory Dust: Has another piece of the Asbestos Puzzle fallen in to place. *Critical Reviews in Toxicology* 40(20) 151-188.