Aeolus, Inc.
751 Taft St., Albany, California 94706
Telephone: (510)-524-7855 Fax: (510)-524-7854 bermanw@comcast.net

ASSESSING THE IMPACT OF ASBESTOS ON DEVELOPMENT: MAKING RESPONSIBLE DECISIONS

D. Wayne Berman, Ph.D.
President

May 15, 2002

What happens when you find asbestos at a site being considered for development? How do you assess the potential hazard and the cost consequences of such a discovery?

Coworkers and I have spent the last 15 years developing an improved set of methods for measuring asbestos in various environmental media, which are unique because they can be used to support quantitative asbestos risk assessment. These methods[1-4] have been published as U.S. Environmental Protection Agency (EPA) interim methods and have been employed successfully at various sites around the country.

The soil/bulk method[3,4] is particularly useful because it has been shown to provide results that can be combined with properly adapted emission and dispersion models to predict airborne asbestos concentrations that may be produced by the release of asbestos[5]. Such procedures can be applied to any of a broad range of activities that might disturb asbestos-containing soils or other bulk materials. In contrast, traditional methods (based on polarized light microscopy) have been shown to be unreliable as predictors of asbestos exposure.[5,6]

We have also developed a companion protocol for conducting asbestos-related risks (based on appropriate measurements) that is supported by a comprehensive review and reconciliation of the literature and supplemented with additional studies.[7] The protocol defines a new exposure index (size range of structures to be included in the determination of exposure) that appears to better represent biologically active structures (and, therefore, better predict risk) than the set of structures included in traditional analyses of asbestos.

To assess risk using the protocol, asbestos exposure must be determined in terms of the defined exposure index and exposure estimates are combined with a properly matched set of dose-response factors using procedures that are unambiguous and quantitative. In contrast, the traditional approach for assessing asbestos risks in current use lacks such specificity, which leads to unavoidable ambiguity and thus limits its utility.

Although the protocol represents neither EPA policy nor current practice, it is now being scheduled for formal EPA peer review. Moreover, the methods and protocol are being applied at a variety of government and private sites with good success and some of the resulting risk assessments are now publicly available.

With these new procedures, it is now possible to perform quantitative risk assessment at asbestos sites. This means that it is now possible to distinguish asbestos-containing sites that pose a real threat to human health (so that they need to be managed) from those that do not. It is also possible to distinguish potentially problematic activities that may release asbestos from soils and rocks at unacceptable rates (so that they need to be managed) from activities that are inherently safe. Thus, use of these new procedures will allow effective focusing of asbestos-management requirements for any kind of site where asbestos (either naturally occurring or in asbestos-containing debris) is present and where activities are conducted that might promote its release.

Among other things, the new procedures, when incorporated into a properly designed study, can be applied to asbestos-related issues that may affect the attractiveness of certain development projects. In such instances, the new methods can reliably and cost-effectively support responsible decisions concerning:

- whether asbestos is present at concentrations that might pose a concern;
- (if present), whether it poses and unacceptable hazard; or
- (if it poses and unacceptable hazard), what magnitude of remediation or type of management (and the associated costs) might be required to mitigate or control the hazard.

In contrast, traditional methods and procedures may not provide the reliable data needed for supporting such judgements.

REFERENCES

1. Berman DW and Chatfield EJ (1990a). *Interim Superfund Method for the Determination of Asbestos in Air. Part 1: Method.* EPA 540/2-90/005a

2. Berman DW and Chatfield EJ (1990b). *Interim Superfund Method for the Determination of Asbestos in Air. Part 2: Technical Background Document.* EPA 540/2-90/005b.

3. Berman, DW and Kolk AJ (1997). *Interim Superfund Method for the Determination of Releasable Asbestos in Soils and Bulk Materials.* EPA 540-R-97-028.

4. Berman, D.W. and Kolk, A.J. (2000). *Draft: Modified Elutriator Method for the Determination of Asbestos in Soils and Bulk Materials, Revision 1.* Submitted to the U.S. Environmental Protection Agency, Region 8, May 23.

5. Berman, D.W. (2000). "Asbestos Measurement in Soils and Bulk Materials: Sensitivity, Precision, and Interpretation -- You *Can* Have It All." in *Advances in Environmental Measurement Methods for Asbestos, ASTM STP 1342,* M.E. Beard, H.L. Rook, Eds., American Society for Testing and Materials. Pp. 70-89.

6. Berman, D.W. (2002). "Polarized Light Microscopy: What Does it Mean for Asbestos?" AIHA Journal. Submitted.

7. Berman, D.W. and Crump, K.S. (2001). *Technical Support Document for a Protocol to Assess Asbestos-Related Risk.* Prepared for: Mark Raney, Volpe Center, U.S. Department of Transportation, 55 Broadway, Kendall Square, Cambridge, Massachusetts 02142 and Chris Weis and Paul Peronard, U.S. Environmental Protection Agency, Region 8, Denver, Colorado. Under EPA Review.