



COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

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**July 13, 2004**

W.R. Grace & Co.- Conn.  
62 Whittemore Avenue  
Cambridge, MA 02135

RE: Cambridge - W. R. Grace  
62 Whittemore Avenue  
RTNs 3-00277 & 3-17014

Attention: Mr. Robert F. Jenkins, V.P Manufacturing

**Comments On The Asbestos  
Risk characterization**  
M.G.L. Chapter 21E & 310  
CMR 40.0000

Dear Mr. Jenkins:

The Department is in receipt of a Phase II Report For Asbestos & Asbestos Risk Characterization for 62 Whittemore Ave., Cambridge, W.R. Grace & Co-Conn., dated January 2004. The Phase II Report was prepared by Haley & Aldrich, and the risk characterization was prepared by Cambridge Environmental, Inc. The Department conducted a technical review of this report, albeit the risk characterization for asbestos was the primary focus of this technical review. The Department's Office of Research and Standards also conducted a review which is documented in a June 3, 2004 Memorandum (copy enclosed). This letter summarizes the asbestos risk characterization and provides comments.

***Site Investigation***

The W.R. Grace facility was the location of the manufacture, research and development of several products containing asbestos. Information in the Department's files include copies of patents received by the W.R. Grace, Cambridge, MA facility for the manufacture of several products made with, or potentially made with, asbestos fibers. These products include polyurethane foam sheets, container sealing resins, gasket forming compositions, and flowed-in polyurethane gaskets for pail and drum covers. The Phase II Report attributes the presence of asbestos at the site primarily to the demolition of buildings. The Phase II Comprehensive Site Assessment included a site-wide soil evaluation for the presence of asbestos. Prior to beginning this assessment, involved parties, including representatives for W.R. Grace, MADEP, City of Cambridge and Alewife Neighbors Group met and discussed feasible approaches to site evaluation and risk characterization. This preliminary meeting played some part in the ultimate design of the site sampling plan and selection of analytical methods.

This information is available in alternate format. Call Donald M. Gomes, ADA Coordinator at 617-556-1057. TDD Service - 1-800-298-2207.

DEP on the World Wide Web: <http://www.mass.gov/dep>



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Asbestos was measured in groundwater, soil and surface water samples. The risk characterization states that the asbestos in groundwater does not present a complete exposure pathway, even within the nearby MBTA tunnel, and, the asbestos in surface water is present at levels below the Massachusetts Maximum Contaminant Level for asbestos (7 million fibers per liter). Soil sampling is summarized below.

- Surface soil analyzed in 1998 included 294 samples and 13 contained asbestos. Of these soil samples, 276 were analyzed by Polarized Light Microscopy (PLM, 2.9% contained asbestos) and 18 were analyzed by Transmission Electron Microscopy (TEM, 27.7% contained asbestos).
- Subsurface soil analyzed in 1998 included 488 samples and 18% contained asbestos. Of these soil samples, 457 were analyzed by PLM (15% contained asbestos) and 31 were analyzed by TEM (39% contained asbestos).
- In the Summer of 2000, EPA conducted surface soil sampling (0-3") across the site at selected locations. Thirty-nine soil samples were collected and analyzed by PLM and 10 contained chrysotile asbestos at less than 1%. Twenty-eight surface soils were analyzed by TEM and 27 contained chrysotile asbestos at 0.0003% to 0.02% (WRG-05) by weight. The average TEM result for surface soil was approximately 0.004%.
- Additional sampling was conducted in 2003 at selected localized areas where sample results were as high as 18%. Multiple composite samples were collected in these areas (AB-3, AB2-4, AB2-15, AB2-38) and the average concentrations were ~ 1% to 2%. These results were used to support a determination that hotspots are not present. This determination appears consistent with the Department's interpretation of the hotspot definition.

### ***Exposure Point Concentration***

The average concentration of all the PLM data is 0.4%. The average concentration of all the TEM data is also 0.4%. Based on these averages, it was determined that asbestos does not exceed the MCP default Upper Concentration Limit (UCL) of 1%. For calculating the EPC, for PLM data, trace levels were assumed to be 0.5%, and ND was assumed to be 0.1%. These are reasonable assumptions.

### ***Risk Characterization***

The current use of the property includes the commercial operations of the W.R. Grace Construction Products Division and One Alewife Center, an office building. The groundwater at the site is category GW-2. The soil is category S-1 based on the possibility that a retail facility could be installed at the site and the frequency of visits by children might increase. The risk characterization describes Future Foreseeable Use as commercial and does not include residential use.

Current and future receptors include nearby residents, adult construction workers, adult office workers, trespassers, pedestrians, children visiting the site, and utility workers.

Incidental ingestion of soil containing asbestos was not found to cause significant risk.

### Air Exposures

The average annual ambient dust measurements were as high as  $49 \text{ ug/m}^3$ . The risk characterization opines that the portion of the dust in air likely to be from the site is  $6.9 \text{ ug/m}^3$ .

For current non-excavation exposures, the risk characterization uses ambient air sampling data which indicated that 20 air samples were not found to contain asbestos at a detection limit of 0.0002 fibers per cubic centimeter air, a level which does not exceed the MADEP cancer or non-cancer risk limits.

Future long term non-excavation exposure to nearby residential receptors was modeled for asbestos exposure by windblown dust. Assumptions include  $6.9 \text{ ug/m}^3$  dust from the site, and continuous lifetime exposure. This scenario estimates a cancer risk for windblown dust ( $2 \times 10^{-4}$ ), but assumes that asbestos contaminated soil at depth is brought to the ground surface.

Current and future utility workers were evaluated using DEP's default dust during excavation value of  $60 \text{ ug/m}^3$ , and assuming the utility worker is at the site 1 day per year for 40 years. This inhalation and incidental ingestion exposure scenario did not result in an estimation of significant risk.

For future construction scenarios, it was assumed that the average dust concentration would be  $112 \text{ ug/m}^3$  ( $60 \text{ ug/m}^3$  of this dust is assumed to be PM10) for a 2 year construction project. This exposure scenario estimates a significant risk for the construction worker ( $\text{ELCR} = 9 \times 10^{-5}$ ).

For inhalation of windblown dust by nearby residents during construction work, it was assumed that the average dust concentration would be  $0.146 \text{ ug/m}^3$  for the 2 year construction period. This ambient dust level estimate is significantly less than MADEP's default values for construction and may not be sufficiently conservative for the nearest residential receptors.

No significant risk to safety was estimated using the OSHA PEL as an assumed safety standard for lack of a specifically mandated safety benchmark.

The characterization of the risk to the environment included a Stage I Environmental Screening. The results of the screening indicated that there are not significant concentrations of asbestos in surface soil and there is no complete exposure pathway for mammals, birds or invertebrates to inhale asbestos at significant concentrations.

### **Human Health Risk Characterization, Results Summary**

<i>Current Use</i>	<i>ELCR</i>
Nearby Resident	$8 \times 10^{-7}$

Utility Worker 2x10E-6

<u>Future Use</u>	<u>ELCR</u>
Nearby Resident	2x10E-4
Utility Worker	2x10E-6
Construction Worker	9x10E-5

### Comments

1. The risk characterization opines that the portion of the dust in air likely to be from the site is 14%. However, for the purpose of estimating future potential dust exposures, the Department recommends the use of the 60 ug/m<sup>3</sup> published default level for PM10 during excavation activities (Guidance for Disposal site Risk Characterization in Support of the Massachusetts Contingency Plan, 1995). Downwind dust concentrations should be evaluated using the Department's default PM10 dust values as the initial site concentrations at the site boundaries.
2. For inhalation of windblown dust by nearby residents during construction work, it was assumed that the average dust concentration would be 0.146 ug/m<sup>3</sup>, at the residents, for the 2 year construction period (Section 5.2.2.2). This ambient dust level estimate is significantly less than the Department's default value for excavation and does not appear to be sufficiently conservative for the nearest residents. Some residents are adjacent to the site and excavation work could occur at the property boundaries. For the nearest residences there is likely to be little dust dilution. The Department's recommended default excavation PM10 dust level of 60 ug/m<sup>3</sup> should be used for nearby residents.
3. The risk characterization does not include residential use as a future foreseeable use. Pursuant to 310 CMR 40.1005(2)(a)(2), not including future residential use in the risk characterization is a use limiting assumption which, in addition to the significant risk findings for the nearby resident and the construction worker, also forms a basis of the need for a Notice of Activity and Use Limitation.
4. For modeling exposure to asbestos in air originating from site soils, the Department's Office of Research and Standards recommends the Interim Superfund Method for the Determination of Releasable Asbestos in Soils and Bulk Materials (Berman & Kolk, 1995) for measuring asbestos concentrations in soil fines. The data from this analysis can then be used to model future asbestos in air concentrations.
5. The risk characterization implies that the asbestos found at the site is in part due to automobile and truck brake use on nearby roads. The Department notes that ATSDR has published a document indicating that background levels of asbestos in soil from vehicle brakes is a possibility but cited no specific studies or information to validate such a claim. The Department is not aware of any supporting information to the claim that there are background levels of asbestos in soil from vehicle brakes.

6. General guidelines recommended by the Department for asbestos measurements include the following:

- Polarized Light Microscopy by EPA Region One Sediment Screening Method is acceptable for screening and assessing levels of asbestos in soil, but it may not be sufficiently accurate for estimating potential asbestos in respirable dust from contaminated soil.
- For estimating asbestos concentrations in air, the use of the "Superfund Method For The Determination Of Releasable Asbestos", with soil to air modeling, is acceptable.
- Other methods for the determination of potential asbestos concentrations in air can be proposed and will be considered by the Department on a case-by case basis. A possible alternative could include the screening of bulk soil samples to approximately respirable sized particles, and analysis of the screened portion of the bulk sample for asbestos. This soil data could then be used for air modeling.
- The use of equations which incorporate predicted ratios of PLM measurements, to Elutriator measurements, for determining asbestos concentrations in respirable dust, must be evaluated on a case-by-case basis.

These comments are intended to provide an understanding of the Department's interpretation of 310 CMR 40.0000, the Massachusetts Contingency Plan, and related policy and guidance, and to facilitate the resolution of asbestos related issues at the site.

If you have any questions or concerns regarding this matter, please do not hesitate to call Jack Miano, at the Bureau of Waste Site Cleanup in the Northeast Region, at (978) 661-7734.

Sincerely,

This electronic copy is being provided as a cost-saving measure. A signed final version of this document is available for review at the Department.

*e-signature*  
*Jack Miano Patricia M. Donahue*

Jack Miano, Environmental Engineer  
Patricia M. Donahue, Chief, Compliance Branch  
Bureau of Waste Site Cleanup

cc: DEP/Boston/NERO, Data Entry (PHASII/TSAUD)  
Cambridge Main Library, 449 Broadway, Cambridge, MA 02139, Attention Reference Librarian, W.R. Grace Site  
North Cambridge Library, 60 Rindge Ave., Cambridge, MA 02140, Attention Reference Librarian, W.R. Grace Site

ecc:

City of Cambridge, Mayors Office, Email: [mayor@CambridgeMA.GOV](mailto:mayor@CambridgeMA.GOV)  
Alewife Neighbors, Inc., Attention: Mike Nakagawa,  
Email to: [www.AlewifeNeighbors.org](http://www.AlewifeNeighbors.org)  
Sam Lipson, Director, Cambridge Public Health Department, Environmental Health Unit,  
Email to: [slipson@challiance.org](mailto:slipson@challiance.org)  
City of Cambridge, Community Development Department, John Bolduc,  
Email to: [jbolduc@cambridgema.gov](mailto:jbolduc@cambridgema.gov)  
Haley & Aldrich, Inc., Attention: William Beck, Email to: [WWB@HaleyAldrich.com](mailto:WWB@HaleyAldrich.com)  
Representative Alice Wolf, State House, Email to: [Rep.AliceWolf@house.state.ma.us](mailto:Rep.AliceWolf@house.state.ma.us)  
Representative James J. Marzilli, State House, Room 443,  
Email to: [Rep.JamesMarzilli@hou.state.ma.us](mailto:Rep.JamesMarzilli@hou.state.ma.us)  
Representative Anne M. Paulsen, State House, Room 22,  
E-Mail to: [Rep.AnnePaulsen@hou.state.ma.us](mailto:Rep.AnnePaulsen@hou.state.ma.us)