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Chemical Name (300 per name)	25 CAS No. (10)
VERMICULITE	999999994
TREMOLITE ASBESTOS	77536-68-6

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GRACE

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U.S. Environmental Protection Agency
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BY HAND

8EHQ-0383-0473
88-8300477

Dear Sir:

This information is being submitted to provide technical compliance with EPA's Statement of Interpretation for Section 8(e) of the Toxic Substances Control Act, even though the information does not, in our judgment, scientifically demonstrate that our products as currently manufactured and distributed in commerce create a substantial risk. The information contained herein reflects past workplace conditions at our Libby, Montana mine and mill, conditions which do not exist in today's workplace environment and have not existed since at least 1976.

W. R. Grace & Co. (Grace) mines and mills vermiculite in Libby, Montana. Mining and milling at Libby began in the 1930's. Grace purchased the operation in 1963. Presently, Grace employs 170 people at Libby.

The Libby vermiculite deposit contains tremolite, an asbestiform material as a contaminant. This fact has long been known to regulatory agencies and our employees. Our ore beneficiation process, which has been viewed by EPA representatives, is designed to significantly reduce this contaminant.

Dust exposure levels at the Libby mine and mill were very high in the years prior to 1963. After the acquisition by Grace conditions gradually improved. In September 1974 a new wet milling facility was placed into operation followed by further major process and operational improvements in the mill, mine and other areas which improved working conditions significantly. Lack of technology applicable to vermiculite milling required time-consuming research to overcome unique technical problems in the design of this new mill. Since the 1974/1975 period, exposures have been dramatically lowered and at present average less than 0.2 fibers/cc (0.01-0.9 fibers/cc range). (The U.S. Bureau of Mines measured a range of 13-71 fibers/cc during a 1971 survey of the facility and it is likely that prior to 1970 fiber levels exceeded those amounts.)

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A medical surveillance program has been evolving at Libby since 1959 when chest X-rays were first completed on all employees. Chest X-rays have been repeated annually since 1964. In the period 1974/1975, annual pulmonary function testing was added and in 1978 health status questionnaires became part of the program. Results of the testing are available to employees and/or to their physicians.

The Libby employee population has a history of both a large number of smokers (about 75%) and relatively heavy individual smoking histories (most employees smoked a pack or more per day.) Based upon the recognition that smoking and asbestos fiber exposure can increase the incidence of disease, Grace, in 1978, banned smoking at all Company facilities in Libby. Programs have been organized to help employees stop smoking, and the smoking population has been reduced to 25% of the staff. All new hires are required to be nonsmokers.

The National Institute of Occupational Safety and Health (NIOSH), acting at the request of the Mine Safety and Health Administration (MSHA), began a study in March 1982 of the effects of tremolite exposure upon present and past employees at Libby. This is a cooperative effort and we have made our data available to NIOSH. Grace has also developed estimates of historical individual worker exposure levels. We have recently begun compiling other employee data with these estimates of exposure levels. NIOSH is also developing their own exposure estimates so that each of us may use the other's estimates for cross-comparison purposes which, we hope, will provide a more precise final product.

As a result of our data collection and evaluation we have developed some preliminary data relating to the effects of tremolite exposure at Libby. At this time we are unable to make any final judgment as to whether these data on the effects of tremolite exposure are consistent with reports in the scientific literature. We do believe, however, that it corroborates written scientific opinion on the effects of exposure to asbestiform material and that it is within the realm of expectation for a mining and milling population having exposures at the levels which prevailed at Libby in the past. In some respects the data are similar to what has been reported in studies of talc mining and milling operations in which the talc contained tremolite and other forms of asbestos.

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Despite the uncertainty as to the meaning of the data, we have nonetheless decided to submit this information because of (1) the expressed interest of EPA, NIOSH, OSHA and MSHA in determining whether the various asbestiform materials induce different medical effects, and (2) ongoing agency investigations as to whether current asbestos exposure standards are adequate.

Our preliminary information indicates that of 109 known deaths of former Libby employees, the cause of death for 16 was listed in death certificates or insurance claim forms as lung cancer, and for two others the cause was listed as mesothelioma. At this time we do not have sufficient medical information or sufficient occupational and personal history data in these cases to make a judgment as to the cause of these illnesses. In addition, based upon our individual exposure estimates, it appears that certain of our employees whose work history predates the new mill and who have a cumulative exposure of less than 100 fiber years show signs of asbestos-related disease. All of these employees had exposure levels of more than 2.0 fibers per cc for varying periods of time prior to the new mill.

There are several methodological problems which have prevented us from making any preliminary judgments based on this data. The first is that the information involves past workplace conditions. These conditions do not exist in today's workplace environment. For instance, all of the employees who show signs of asbestos-related disease were employed prior to 1976 when fiber levels were significantly higher than they are today. In contrast, our preliminary data shows none of the current employees hired since 1975 have asbestos-related disease. Also, there are those who question the validity of using cumulative exposures (averaging periods of significantly high exposure with later low exposure periods) and the fiber year concept as a proper basis for evaluating the effects of asbestiform material exposure. In addition, as indicated above, the very high percentage of smokers and former smokers among our employees makes it difficult to draw conclusions.

Because of the difficulty in interpreting this information, we have had a preliminary discussion with and plan to retain Drs. J. C. McDonald and A. D. McDonald of McGill University, Montreal, Canada to undertake a thorough analysis of the Libby data. We hope that this will enable us to reach a scientifically sound conclusion based upon our historical data. We will also continue to cooperate with NIOSH in their study.

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Finally, we wish to emphasize that we have no reason to believe there is any risk associated with the current uses of Libby vermiculite-containing products.

Very truly yours,

H. A. Eschenbach
Director of Health, Safety and Toxicology

HAE/MS

cc: Robert Wheeler and Harlan Amandus, NIOSH

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