CAMBRIDGE

PERSONAL AND CONFIDENTIAL

TO: F. E. Bona/New York

DATE: July 28, 1978

FROM: H. A. Eschenbach

SUBJECT: KLCB Radio
Asbestos Inquiries

CC: E. S. Wood
J. M. Wolter
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Attached are the answers to the initial questions from Jeff Yetter at KLCB Radio in Libby. Please let me know if he contacts you since I understand that he had not done so by July 28, 1978.

H. A. Eschenbach

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Attachment

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Preface

In any discussion of health problems with respect to mineral exposures, it is necessary to define certain of the technical terms in order to better understand the situation.

Asbestos is defined by the Occupational Safety & Health Administration (OSHA) to include six fibrous minerals. Chrysotile, commonly called commercial asbestos, has been and is the predominant form of asbestos used in the world. The other forms of asbestos are amosite, crocidolite, anthophyllite, actinolite, and tremolite. Tremolite is not sold commercially but is a common contaminant of many other minerals including talc.

Vermiculite is a mineral which is considered to be "inert" from a health viewpoint. This means that vermiculite has no known toxic properties as such, although as is the case with any airborne material, it is wise to limit exposure to heavy concentrations. The health standards that apply to vermiculite are the same as those for starch, cellulose (paper) and cement.

1. A general review of the history of the operation with emphasis on the asbestos concentrations (air pollution).

The mineral deposit called Vermiculite Mountain has tremolite and other minor mineral constituents associated with the vermiculite. It was discovered during World War I when prospecting for strategic materials was at a high point. Initially though to be purely a mineralogical curiosity, it was not until the mid 1920's when its potential as an insulating material was recognized. Several midwestern companies including Fischer Brothers of automotive body fame and Armor Meat Packing became involved in early mining efforts.

Mining was a summer activity until 1930. Two organizations, the Universal Insulation Company and The Zonolite Company survived until 1939 when they merged to become the Universal Zonolite Insulation Company with headquarters in Chicago. The name was shortened later to Zonolite. In 1963, Zonolite merged with what is now the Construction Products Division of W. R. Grace & Co.

2. When was it recognized that an asbestos problem existed at the Libby operation?

In the late 1950's, the Zonolite management began to realize that a "dust" problem existed at Libby. While it was known that the tremolite form of asbestos was present, because of the primitive state of the science of industrial hygiene, and the universal lack of knowledge about the potential health hazards of tremolite and how to measure them, the Libby problem was though to be a "dust" problem similar to that of other mining operations.

In 1967, the United States Environmental Protection Agency (EPA) and the Montana Department of Environmental Control determined that there were excessive dust emissions from the Libby operations and began action to require reduction of those emissions. Their actions, however, were based upon general dust emissions rather than asbestos. In 1968, there was a worldwide explosion of interest in the health hazards associated with exposure to asbestos. Research projects on chrysotile, which represents 95% of the asbestos used commercially, were started everywhere. It was generally believed that tremolite was far less hazardous than chrysotile and some of the other forms of asbestos, but since knowledge of the health

aspects of tremolite was limited, precautionary action seemed prudent. At that time, the United States Public Health and the Montana Department of Public Health expressed concern about the tremolite at Libby, and Grace took the first steps to reduce both emissions and fiber levels and began searching for ways to effect significant reductions.

3. Who recognized the problem first - local management, corporate management, or was it a governmental agency?

It is difficult to determine who first recognized the problem. Obviously, the Montana pollution control agency's order to reduce emissions in 1967 caused Grace personnel at all levels to further evaluate the problem. In 1968, reports published in scientific journals by doctors, epidemiologists, and industrial hygienists, which indicated that the health hazrds associated with asbestos were more serious than previously believed, were beginning to appear almost daily. This caused an acceleration of activity by the Bureau of Mines through its industrial hygiene service agency, the U.S. Public Health Service, Grace Management in Cambridge, and local management. In summary, it was known for years that there was tremolite asbestos at Libby. However, the knowledge that working with tremolite asbestos could be the source of a health problem probably dates from this 1967-68 period and was recognized by several parties at approximately the same time. The problem then was to determine what to do and how to do it.

4. Who solved the problem? Those people working back "east" or local people?

It was not simply a matter of solving "a problem" but rather taking hundreds of steps to do so. Of these steps, some required costly changes in equipment

which involved approval of funds at Grace headquarters in New York, planning by CPD management and designing by engineering in Cambridge, and implementation by Libby management, engineering and maintenance. Other changes were devised and instituted locally. Such projects as air monitoring programs resulted from the efforts of the Bureau of Mines, the Montana Industrial Hygiene Department, the Grace Health and Safety Department, as well as workers in Libby. In short, there was no easy solution instituted by one person, but rather a series of steps on the part of many people.

5. How long did it take to solve the problem?

Evaluation of potential solutions began in 1968. While some of the less complex problems were solved at that time, it was realized by 1969 that nothing short of a new mill and screen plant could solve the environmental problems on a long-term basis.

By early 1971, these facilities had been designed and financial approval obtained from the parent organization. In pressing to accelerate the implementation of solutions which seemed to work in the laboratory, uproven technology was introduced into the mill design which was not pilot-plant tested. This led to start-up difficulties and the need for extensive redesign and delays. After two startup attempts in 1973 and 1974, the mill became fully operational in 1976. During this time many other problems were eliminated and the workers protected by dust masks or other protective equipment. While the major problems were solved by the new mill in 1976, changes and improvements continue to be made as technology improves.

6. What actually was done to solve the asbestos problem?

It is difficult to list all the things done to solve the problem. The approach basically was to reduce asbestos exposures to the lowest levels possible by engineering, work practices, and personal protective equipment while educating employees with respect to the hazards. A few of the major steps are:

a. Develop a wet process for separating vermiculite from impurities.
b. Design and construction of a new mill using the wet process.
c. Design and construction of a new screen plant for sizing ore concentrate.
d. Design and install air scrubbing systems at points where dry material is handled. Some of these are:
   (1) Head end of skip haul system.
   (2) Screen plant.
   (3) Inventory loading.
   (4) Inventory storage.
e. Enclose cabs of all mobile equipment and install air conditioning and filtering systems.
f. Install water injection systems on drilling.
g. Establish an air sampling program on a continuing basis in all operations.
h. Increase employee awareness of the tremolite problem.

7. Where exactly is Grace today in Libby in regard to controlling its asbestos air pollution?

At this point, with the exception of a very few jobs where technology does not exist to reduce exposures and where protective dust masks are still

required, employee exposures are substantially below the current goverment safety standards. This has been confirmed by safety audits conducted by MSHA in October 1975, June 1976 and July 1977. Work is continuing to achieve even lower levels. Routine monitoring of employee exposures are conducted in compliance with government safety standards.

8. Roughly how many dollars have been spent in solving this air pollution problem?

Approximately $15,000,000 has been spent on new or improved facilities. However, the question is not solely one of money. The philosophy has been that effective answers must be found. In short, if vermiculite cannot be mined safely then it should not be mined at all. We obviously believe that we are mining it safely today.

9. Is W. R. Grace now finished with the correction of the problem? If not, what remains to be done?

The major tasks have been completed, but we will continue to work on the problem until we are convinced that nothing more can be done and that we are providing the safest and healthiest workplace possible. In this regard, several studies have shown that smokers are much more seriously affected by asbestos exposure than non-smokers. For this reason, we have encouraged our employees to stop smoking. A non-smoking rule is being considered during working hours on company property. Such a rule is now in effect for management and supervisory personnel. We realize that some employees may choose to continue smoking during off-duty hours, but we hope they will think seriously about preserving their health and stop totally.

10. What is Grace's country-wide asbestos pollution problem?

As in Libby, facilities throughout the United States comply with all present asbestos safety standards, and in most cases, with more stringent standards being proposed for the future.

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