Raybestos RM Manhattan

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Environment Committee
Room 400
State Capitol Building
Hartford, Connecticut 06115

Gentlemen:

Raybestos-Manhattan, Inc., headquartered in Trumbull, Connecticut is a multinational manufacturer of friction materials, engineered textiles, packing and sealing products, rivets and rivet setting machines. The firm operates under a concept of separate and autonomous business organizations each with its own physical facilities and management structure.

Raybestos Friction Materials Company, one of the three manufacturing divisions of the corporation, has a plant at Stratford, Connecticut employing approximately 1,500 people.

Raybestos-Manhattan has used asbestos fiber in its manufacturing operations in Connecticut since the early 1900's. In the 1930's the U. S. asbestos products industry first became aware of potential adverse health effects among persons exposed to large amounts of airborne respirable asbestos fiber. The only disease known to be associated with exposure to asbestos, at that time, was asbestosis. Concern about the reported effects of asbestos and a desire by the management to

prevent asbestosis led the company to support basic research at the Saranac Laboratory of the Edward L. Trudeau Foundation, in New York, beginning in 1936. The results of this research were published in final form in 1951.[1]

In recent years it has become apparent that several types of cancer may be caused or potentiated in persons occupationally exposed to asbestos. The major cancers which have been thus associated are lung cancer and diffuse malignant mesothelioma of the pleura or peritoneum. In addition, an excess of deaths due to cancers of the gastro-intestinal tract have been reported in some studies and an association between asbestos exposure and laryngeal cancer has been demonstrated.

Thus far, the only positive evidence of non-occupational asbestos exposure causing disease is related to a small number of cases of malignant mesothelioma in persons living in the neighborhood of asbestos factories and another very small group of cases who were exposed by domestic sources of contact with the clothing of relatives, friends or lodgers who were asbestos workers. These exposures took place 20-50 years ago when dust controls at the plants involved were inadequate by modern standa:

Mesothelioma is possibly related to prior occupational asbestos exposure in 70% to 90% of cases, and rates of occurrence of this disease have remained very low in comparison with lung cancer. In Connecticut, during the 7 years 1970-1976, there was an annual average of 7.85 male cases of mesothelioma of all types - See Table 1. During the same 7 years, male lung cancers averaged 1,024 per year.[2]

There is evidence in the published literature which strongly suggests that the biological effects of asbestos are related to the mineralogical variety of fiber present in the dust cloud. Crocidolite asbestos from certain regions appears to be

the most likely to produce mesothelioma, whereas chrysotile is least likely to do so and amosite (cummingtonite-grunerite series) holds a doubtful intermediary position.[3] Raybestos-Manhattan's friction products do not contain either crocidolite or amosite asbestos.

In 1978 the suspicion that other materials could be partly responsible for mesothelioma cases without known exposure to asbestos, was apparently verified by the finding in Turkey that asbestos related diseases, mainly calcified pleural plaques, chronic fibrosing pleuritis and malignant pleural mesothelioma are endemic in some villages without asbestos deposits.[4-5] In one village, where 11 mesothelioma deaths occurred in 1974, there are no deposits of asbestos in the area nor has there been any processing of such material brought in from elsewhere.** Research has shown many fibers in the respirable size range in rock samples, samples from streets and fields of the village, but not from control villages 4 and 7 km further up the valley. These fibers were shown to be erionite type zeolite. Thus, it would seem that fiber-shape and size is important in the eitology of malignant mesothelioma and fibrous minerals from sources other than asbestos mining or processing may be implicated in the epidemiology of this disease.

The adverse health impact associated with high levels of occupational exposure to asbestos has led to concern that much lower ambient urban and community exposures to asbestos may result in some non-occupationally exposed individuals developing disease associated with asbestos, principally mesothelioma. This concern has led the Department of Environmental Protection in the State of Connecticut to propose an ambient air quality standard for asbestos. The proposed ambient air quality standard is 30 ng/m^3 or 30,000 total asbestos fibers (determined by electron microscopy) per cubic meter of air, 30-day average, and a compatible mass emission

standard of 24 grams per day.

The proportion of cancer deaths (all sites) of the residents in the neighborhood of an asbestos plant in Paterson, New Jersey was 9.2% compared with the residents of the control population (from another region) which was 9.4%.[6] Lung cancer occurred in 2.3% of the "target population" and 2.6% of the control population. No deaths from peritoneal mesothelioma and just one death from pleural mesothelioma occurred during the 15 year period studied. This one death was that of an electrician in the "target population" who died of pleural mesothelioma in 1966. Occupational exposure in this case cannot be ruled out, but it is the only finding which gives even a hint that the slight asbestos exposure of the "target population"might perhaps have resulted in a fatality. The author states that "What detracts from such a conclusion is the fact that the one mesothelioma occurred in the first of the three 5 year time periods rather than in the last of the three time periods. Based upon evidence from studies of people with occupational exposure to asbestos dust, we would have expected that the mesothelioma death would have occurred in the last rather than the first 5 year time period - but this is only speculation."

In a study from Liverpool, England, by Whitwell et al[7], the asbestos-fiber content of the lungs from 100 pleural mesothelioma patients, 100 control patients (who had died from conditions other than industrial lung disease or lung cancer), and 100 lung cancer patients who did not have industrial lung disease, was analyzed. This study suggests a definite dose relationship between the number of asbestos fibers seen in the patients' lungs and the presence of asbestos induced mesotheliomas.

95% of the patients with asbestos-induced mesotheliomas had over 50,000 asbestos fibers per gram of dried lung in the base of a lower lobe, whereas only 15% of the control series had as much asbestos. The risk of asbestos-induced mesothelioma to the general public, according to these authors, is probably confined to the top 15% referred to above, which include no women and only men working in jobs with a definite occupational hazard from inhaled asbestos. The authors discuss the various factors to be taken into consideration in attempting to quantify a public health risk from asbestos exposure due to environmental pollution and conclude as follows: "Our investigations into asbestos levels in the lungs of lung cancer patients in the general population provides some assurance that urban asbestos pollution does not contribute to the present high incidence of cigarette-induced lung cancer." No similar studies have been undertaken in Connecticut. Before any conclusion can be drawn with regard to the public health risk due to asbestos in the ambient air, an attempt must be made to analyze all the available epidemiologic and medical data very thoroughly.

Insufficient medical data appear to exist which allow the quantification of a public health risk from ambient air exposure to asbestos liberated from any source. The evidence reviewed above indicates that no such risk has been proven.

Lung cancer in Connecticut is attributable primarily to tobacco smoking, principally cigarette smoking. However, exposure to asbestos and cigarette (or perhaps other tobacco) smoke at the same time greatly increases the likelihood that lung cancer will develop. The vast numbers of cigarette smokers and the high disease and death toll from lung cancer forces attention to the contribution that asbestos may make to increased lung cancer among smokers, who, when also exposed to asbestos, have been shown to have a 90 fold excess lung cancer risk compared to non-smoking,

non-asbestos exposed workers. This information is derived from a study of insulation workers in the United States and it is known that this is one of the high exposure occupational groups.[8]

The evolution of the foregoing medical facts led Raybestos-Manhattan to develop several policies. We instituted controls over employee exposure. These began in the 1930's when we first learned about asbestosis and became progressively more strict as we learned in later years about other adverse health effects of this material.

We have supported research at McGill University, Montreal, into the release of fibers from asbestos fabrics and garments[9] and we have also supported studies on fibrous dusts conducted by the Industrial Health Foundation. In 1947 we participated in an industry study to determine the nature and magnitude of asbestos health problems in asbestos textile manufacturing operations. This study was carried out by the Industrial Health Foundation.

We have offered assistance and support to NIOSH in connection with studies on industrial vacuum cleaners for asbestos containing materials, to NIOSH and Dr. I. J. Selikoff of Mt. Sinai Hospital in studies of brake service mechanics exposed to asbestos dust, to the Asbestos Information Association of North America on airborne asbestos monitoring studies, and we have afforded every possible collaboration to EPA consultants engaged in the evaluation and development of dust collection equipment for use in asbestos processing. It has always been company policy to cooperate with government agencies and academic institutions carrying out research in the field of asbestos and health. At the present time we are actively collaborating with, and assisting John Dement of NIOSH in an epidemiological and environmental study of our Charleston plant. We are also helping Professor

Alison McDonald, formerly of McGill University, Montreal, and now Professor of Epidemiology, St. Mary's Hospital Medical School, London, England, with epidemiological studies at our plants in Connecticut, Pennsylvania and South Carolina. This company is currently supporting a study by Professor Graham Gibbs of McGill University, Montreal who is attempting to quantify the ambient air levels of asbestos in the proximity of waste dumps, an asbestos plant, and other areas selected in collaboration with the State of Connecticut Department of Environmental Protection.

We are seeking non-asbestos containing materials with the necessary qualities of tensile strength and resistance to wear and heat as substitutes for asbestos in our products. R/M would prefer to use no asbestos if suitable substitutes were available. We are actively developing and researching new products and methods to reduce the use of asbestos and reduce the generation of free fibers from those products where no substitute is yet available. Suitability includes health considerations, and the potential health effects of proposed substitutes can be determined only after lengthy and costly studies. In the meantime, it is our policy to minimize asbestos exposure to employees and other persons within our manufacturing operations, to users and potential users of our products and to the general public who might be exposed to asbestos-containing emissions from our operations.

The foregoing policy is compatible with the intent of the Connecticut DEP to control discharges of asbestos into ambient air around our plants in this State. We support the concept that an asbestos standard should be explored. We plan to continue support of research that could contribute to the development of a practicable standard. We wish to cooperate, under corporate policy guidelines, with all groups: management, labor, academic institutions, government and the public, who are concerned about the asbestos problem and R/M's business activities.

Occupational exposure as distinct from community exposure to asbestos has been associated with asbestosis, pleural calcification, pleural plaques, lung cancer

and pleural and peritoneal mesotheliomas in humans. The federal government, recognizing the adverse health effects associated with occupational exposure to asbestos, has promulgated an occupational standard for asbestos in compliance with the provisions of the Occupational Safety and Health Act of 1970 (OSHA).

Within the corporate policy context, some fundamental concepts must be understood. R/M is in the business of manufacturing certain products for which there is a market. Our products must be offered in competition with others and we can remain in business only if our products can be sold at prices that allow us to invest profits into improving our methods, and thereby remaining competitive. It is our belief that the proposed ambient air asbestos standard would add large amounts to our costs without any assurance that this would benefit the public health. These factors and the following considerations lead us to recommend a course of action which we feel would lead to a sound policy to protect the community.

There are no reports in the literature, to the best of our knowledge, which indicate that presently available sampling and measuring methods for ambient levels of airborne asbestos, are sufficiently accurate for regulatory purposes. Samudra et al[10] state that "The various laboratories performing the characterization of asbestos in air samples have reasonable intralaboratory agreement; but, interlaboratory agreement is totally unacceptable. This wide variability in results... makes the technique unacceptable in a court-of-law ..." In their paper, after reviewing all the difficulties in using electron microscope methods, Samudra et al recommend a number of areas in which improvement and further research are needed to obtain a valid method for characterizing airborne asbestos. Because of current limitations of ambient air asbestos measurement technology, we believe that the promulgation of a numerical standard would be premature at the present time, and that any such standard would, indeed, be unenforceable.

In developing an ambient air quality standard for any pollutant there is a preferred sequence of steps which should be taken to permit the establishment of a standard to protect the public health and welfare. The basic steps involve the preparation of an air quality criteria document, development of air quality standards, and development of standards for measurement and testing of the ambient air and air pollution effects. The air quality criteria should accurately reflect the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public health or welfare that may be expected from the presence of the considered pollutant in the ambient air.

This task requires the simultaneous application of the skills and insights of a number of disciplines including medicine, epidemiology, industrial hygiene, engineering, physics, mineralogy, toxicology and pathology. An appropriately constituted review body could provide the latest scientific information on the physical and chemical characteristics of the pollutant, existing levels of the pollutant, sources of the pollutant and it should also examine the available epidemiological evidence relating to any possible adverse health effects. The criteria document must also consider the recommended methods of measurement, especially important in the case of asbestos.

The Commissioner of D.E.P. should not develop or promulgate regulations relating to control of asbestos in ambient air until the suggested review body has produced a final criteria document. For a State to adopt ambient air quality standards more stringent than those adopted by federal authorities is a serious step which should be based on solid evidence, consensus of scientific opinion and consideration of the economic consequences of unilaterally increasing the regulatory burden on Connecticut industry when similar industries in other states do not bear this same burden.

The British Health and Safety Commission published the final report of its asbestos advisory committee in 1979. The report represents the outcome of a three-year study and is an excellent review of the asbestos problem. We should like to quote one or two passages from this report which are of particular interest in the matter of setting an ambient air standard for asbestos:

"Vol. I. Pages 57 and 58:

(4) The significance of minor clinical and radiological changes is in so much doubt that extrapolation from industrial experience in respect of asbestosis to the general population is not possible. But despite the high proportion of individuals, especially in urban areas, with asbestos fibres in their lungs, there has been no general reporting of asbestosis in the general public. This suggests that there may be a threshold level here below which asbestosis is not detectable.

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109 We conclude that the presence of chrysotile containing small quantities of amphiboles is unlikely to have produced any material increase in the risk of lung cancer in the general population or any appreciable number of cases of mesothelioma. The same is certainly true of asbestosis. Pleural changes similar to those associated with occupational exposure occur in circumstances where occupationally related exposure is unlikely. The relationship of these to environmental asbestos or other minerals is not proven. Cases of pleural thickening and calcification have been reported in those presumed to have been exposed to asbestos

dust non-occupationally in the neighbourhood of mines and factories.

110 As far as the amphiboles crocidolite and amosite and mixtures rich in them are concerned, the position is less certain because of the lack of quantitative data about the relationship of response to dose. Such data as exist suggest that the risk of lung cancer associated with amphiboles may be greater than for chrysotile. An excess lung cancer risk cannot be completely excluded, at present, in those who have been exposed only to amphiboles in buildings. But the number of cases, if any, is probably very small.

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132 The possible risk to the general public also has to be taken into account in making a decision about a hygiene standard. In Table 22, using the same studies as in Table 21, we have calculated the excess number of lung cancer deaths which would occur if a million persons were exposed continuously 8 hours a day 5 days a week for 50 years to the highest recorded concentration of asbestos in the ambient air out of doors (10 nanograms per m^3) or to the median, or highest levels recorded by Byrom and others in their survey of buildings (Table 19). It can be seen that unless contaminated buildings are very much commoner than seems likely no appreciable mortality from lung cancer can be associated with any degree of contamination by chrysotile

likely to be encountered in the U.K. in the ambient air or in buildings not under active construction or repair. However we emphasize once more the need for further information about asbestos levels in buildings."

As we stated at the public hearing in Stamford on January 9, 1979, Raybestos-Manhattan, Inc., wishes to reaffirm its desire to collaborate with the D.E.P. in its efforts to establish practicable regulations for the control of asbestos in ambient air, and we respectfully tender the above comments and recommendations for your consideration.

Very truly yours,

H. C. Lewinsohn

Hilton C. Lewinsohn
Corporate Medical Director