Raymark CORPORATION

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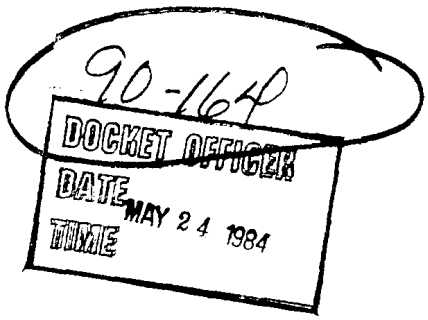

May 24, 1984

Docket Officer
Docket No. H-033C, Room S-6212
U.S. DEPARTMENT OF LABOR
Third Street and Constitution Avenue, N.W.
Washington, D.C. 20210

SUBJECT: Comments on Proposed Rule on Occupational Exposure to Asbestos

Dear Sir:

The business of Raymark Industries, Inc. is predominately the manufacture of friction materials; that is, brake linings, clutch facings and automatic transmission elements such as discs and clutch bands. Packing materials and reinforced plastics for aerospace applications are also produced. Despite ten's of millions of dollars in Raymark R & D expenditures over the past ten years, chrysotile asbestos is still required as a heat resistant reinforcement in many of these products.

Raymark's testimony will be restricted to

- o An explanation of the essential nature of our products in the civilian economy and in national defense applications
- o Comments on the latest scientific findings on the health effects of exposure to chrysotile asbestos in the manufacture of friction materials
- o Comments on substitutes for asbestos in friction materials, gasket materials and reinforced plastics
- o Recommendations.

RAYMARK PRODUCTS

Friction materials are required in brakes and clutches in virtually every piece of machinery and equipment that starts and stops - including

automobiles, buses, trucks, off-highway construction vehicles, construction equipment such as hoists, cranes and shovels, presses and machine tools for construction and industrial uses, military equipment, mining and oil well drilling equipment, marine transmissions, recreational vehicles, appliances and business machines. Raymark manufactures a broader line of such materials than any other U.S. manufacturer.

Other product lines include gasket materials for internal combustion engines, refrigeration units, high pressure steam lines in power plants and reinforced plastics for national defense applications including missiles for the U.S. Army, Navy and Air Force.

HEALTH EFFECTS IN FRICTION MATERIAL MANUFACTURING

The Occupational Safety and Health Act requires the Secretary of Labor to consider "the latest available scientific data in the field" in setting safety and health standards. There are new data, some of it as yet unpublished, relating specifically to the manufacture of friction materials in which chrysotile asbestos is an important raw material. We wish to comment on two issues we believe have not been adequately addressed in the OSHA proposed rule and notice of hearing.

These issues are:

- o The difference in risk of mesothelioma associated with exposure to various fibre types
- o The differences in risk of lung cancer and asbestosis associated with exposure in various industrial processes.

With respect to the issue of mesothelioma and fibre type, we would first like to correct, what we believe is, an inaccurate statement in a report included with the letter of May 31, 1983, to the Secretary of Labor from the International Association of Machinists and Aerospace Workers requesting an Emergency Temporary Standard for asbestos. The report "Mesothelioma Among Machinists in Railroad and Other Industries" by Dr. Thomas F. Mancuso[1] included the following statement. "In the manufacture of brake linings Mancuso (1963) identified four peritoneal mesotheliomas ..."

The operation referred to in the 1963 Mancuso paper was Raymark's Manheim, Pennsylvania facility. Some friction materials were produced at that location but it was predominately a textile plant which also produced crocidolite asbestos packings from the 1920's until the 1950's. During the war years, amosite asbestos insulation blankets and tapes were produced for naval uses. We believe the cases of mesothelioma at this plant relate directly to exposures to crocidolite and amosite fibres and not to exposure to chrysotile asbestos used in the manufacture of brake linings. This belief has been reinforced by recently published epidemiologic studies.

About eight years ago, Drs. A. D. and J. C. McDonald initiated three parallel cohort studies of Raymark asbestos factory workers to investigate the effects of mineral fibre type and industrial process on malignant mesothelioma, respiratory cancer and asbestosis. The studies covered 2,543 workers in a textile plant in South Carolina (SC)[2]; where chrysotile was the only type of raw asbestos used, 4,137 workers in a mainly textile plant in Pennsylvania (PA)[3]; which also produced friction materials and packings in which chrysotile, amosite and crocidolite were used, and 3,641 workers in a friction and gasket material plant in Connecticut (CT)[4]; in which only chrysotile was used. All cohorts covered workers employed one month or more between 1938 and 1958 and who were followed to December 31, 1975. Average dust concentrations to which the three cohorts were exposed was 1.8 (SC), 2.5 (PA) and 1.9 (CT) mpcf.

These studies showed one case of mesothelioma at the chrysotile textile plant and 14 cases at the mainly textile plant with mixed chrysotile, crocidolite and amosite exposure. At the chrysotile friction and gasket material plant the authors noted

> "No case of mesothelioma was found, consistent with a much lower risk of this tumor with chrysotile than with amphiboles."

A similar view was expressed by Acheson and Gardner in their June 1983 update[5] of "The Ill Effects of Asbestos Upon Health". In this update they reported:

> "Subsequent evidence has supported our previous view that peritoneal mesothelioma for practical purposes, never, and pleural mesothelioma rarely, has occurred in man in relation to chrysotile alone."

The differences in risk of mesothelioma have also been recognized by The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario.[6] The Commission recommended

> "The Government of Ontario should adopt regulations that would prohibit the use of crocidolite asbestos in Ontario workplaces without the approval of the Ministry of Labor"

and

> "The Government of Ontario should adopt a regulation which prohibits the use of amosite in Ontario manufacturing unless and until it is demonstrated to the satisfaction of the Ministry of Labour that there is a measurement technology, that will satisfactorily detect low amosite concentrations so that a 0.1 fibre control limit can be enforced with a reasonable degree of confidence.

The differences in risk of lung cancer and asbestosis associated with exposure in various industrial processes have only recently been recognized.

These differences were demonstrated in the three parallel cohort studies of Raymark factory workers by McDonald et al[2,3,4]. Deaths ascribed to asbestosis occurred at both textile plants [3,4]. In the chrysotile asbestos friction and gasket products plant[2] there were none. (Note: Raymark's gasket materials have been produced in this plant since its inception in 1916)

In both textile plants there was an excess of deaths from respiratory cancer. With respect to the friction and gasket products plant, the authors commented

> "... the negative findings for respiratory cancer in chrysotile friction products manufacture suggest that the risk is too small even after 20 or more years exposure to be detectable in epidemiologic studies. It should be noted that the exposures of the friction plant employees studied were at least ten times greater than they are today".[7]

It is important to note that the South Carolina textile cohort, where the risk of respiratory cancer was highest, was exposed to average dust concentrations of 1.8 mpcf while the average dust concentrations for the Connecticut friction material cohort was 1.9 mpcf.

The differences in lung cancer risk from highest to lowest, in various industrial groups, textile manufacturing, insulation work, asbestos cement products manufacturing, chrysotile production and friction products manufacturing are reviewed in a paper presented by McDonald at the Third International Symposium on Epidemiology in Occupational Health, Singapore, September 27, 1983.[8] The author commented

> "the sharpest contrast is between the chrysotile only textile factory and chrysotile production. Even less risk than in production is seen in the two friction plants, where it is doubtful whether there was any significant lung cancer excess".

In a mortality study, published in 1983, of 13,460 workers of a British factory producing friction materials, Berry and Newhouse[9] concluded

> "The experience at this factory over a 40-year period showed that chrysotile asbestos was processed with no detectable excess mortality."

The Acheson-Gardner up-date[5] also addressed the risk differential stating

> "... the range in the slopes of the dose-response relationships for lung cancer and chrysotile exposure has widened since our report of 1979. At one extreme the risk associated with the manufacture of textiles in South

Carolina may have been greater than has been previously reported in relation to any other chrysotile application, while at the other extreme the presence of any increased risk with increasing exposure in a large cohort of men who manufactured brake linings is questionable."

The Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario[10] has also clearly recognized the lung cancer risk differential in its recommendations.

"The Commission reaches a conclusion that breaks new ground when it states that the type of industrial process in which any given type of asbestos is used also influences the dimensions of the fibres released into the air, and thus the hazard faced by workers. The manufacture of asbestos brake linings, which involves drilling and grinding of chrysotile asbestos is much less likely to generate fibres of hazardous dimensions than textile manufacturing, which involves spinning and weaving. The health experience in textile plants has been so adverse that the Commission recommends that textile spinning and weaving be prohibited in Ontario."

The most recent conclusions concerning the health effects of exposure to asbestos will be the report of the Expert Committee Advising the Department of Health and Welfare (Canada) concerning Occupational Standards for Asbestos. The Committee, chaired by Dr. Norton Nelson, met in Ottawa from March 26 to 28, 1984. Other committee members were Eric Chatfield, J. C. McDonald, Julian Peto, Christopher Wagner and Hans Weill. The committee was asked to respond to specific questions including the variations in risk associated with exposure to various fibre types and different industries. We understand the secretary of the Committee has been in contact with both Dr. Leonard Vance and Mr. John Martonik of OSHA. We urge OSHA to give full consideration to this report, expected to be available in June 1984, in developing final regulations for occupational exposure to asbestos.

In discussing the risk differential between friction material and textile manufacturing, it is important to recognize that although production volume has greatly decreased, some friction materials and reinforced plastics are still based on textile products. This matter is addressed in our recommendations below.

SUBSTITUTES FOR ASBESTOS IN FRICTION MATERIALS, GASKET MATERIALS AND REINFORCED PLASTICS

As noted previously, Raymark produces a wider range of friction materials than other U.S. manufacturers. Over 300 formulations are offered to satisfy widely differing performance characteristics essential to the safe

operation of various types of vehicles and equipment. Because of differing performance requirements, it has not been possible to identify a single fibrous reinforcement that would be a satisfactory replacement for asbestos in all friction material applications. Non-asbestos friction materials must be developed on an application by application basis using whatever fibrous reinforcements are capable of producing the needed performance characteristics.

The time required to develop new, non-asbestos friction materials for specific applications will vary with the experience and skills of the product development engineers. Testing of new products is a time consuming process. In the present state of the art of friction material technology, there are no chemical or physical property tests which can be made which will fully characterize friction material's two most important characteristics: its coefficient of friction under various operating conditions and its durability. When possible, Raymark's new products are tested on brakes or clutches on the actual vehicle or equipment where the material is to be used. When this is not possible dynamometer test procedures are utilized where the materials can be subjected to simulated operating conditions and a complete determination of its frictional properties can be made.

After Raymark's testing procedures have been completed and documented, the new materials can be submitted to customers for their testing and evaluation. Reliable performance of friction materials is essential to the safe operation of the vehicles, equipment and machinery produced by Raymark's customers. Time required for testing under operation conditions, by Raymark's customers, will vary according to the complexity of the equipment and the quality of performance required. If extensive field test are required by the customer a testing period of 24 to 36 months or more is not unusual.

In most vehicles, equipment and machinery applications, the cost of friction materials is a minor factor. Reliability of performance is essential for safe operation. Brake or clutch failure in a high rise construction crane or a 80,000 lb. highway truck trailer could be disastrous. Untested or inadequately tested new products cannot be tolerated.

Development of non-asbestos substitutes for Raymark's gasket materials is especially difficult. The high strength and heat resistance of chrysotile asbestos fibres are essential characteristics in preventing leakage in gasoline and diesel engines, refrigerating units and high pressure steam lines.

Raymark's chrysotile asbestos-reinforced plastics are essential in a variety of aerospace and national defense applications. The high strength, heat resistance, low density and dimensional stability of chrysotile asbestos fibre are essential in Raymark materials used for missile nose cones, rocket nozzle insulation liners, heat shields and barriers and many other aerospace applications. Asbestos substitutes have not yet been accepted for many of these applications.

RECOMMENDATIONS

Raymark's recommendations are restricted to specific issues where the company has special knowledge and expertise.

The recommendations are

1. The use of crocidolite and amosite asbestos be prohibited in manufacturing.

2. The permissible exposure limit for chrysotile asbestos textile spinning and weaving be reduced to 0.1 fibres (5 micrometers or longer) per cubic centimeter of air as an eight hour time weighted average.

3. The permissible exposure limit for the use of chrysotile asbestos in manufacturing, other than asbestos textile spinning and weaving, be reduced to 1.0 fibres (5 micrometers or longer) per cubic centimeter of air from the date of publication of the new standard and to 0.5 fpcc in four years.

4. Employers may use any feasible combination of engineering controls, work practices and personal protective equipment and devices to achieve permissible exposure limits.

John H. Marsh
Director, Environmental
and Government Affairs

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