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Borg-Warner Corporation
200 SOUTH MICHIGAN AVENUE CHICAGO, ILLINOIS 60604

December 5, 1975

Docket Officer
Docket H-33
U.S. Department of Labor
Room N - 3620
200 Constitution Avenue, N.W.
Washington, D.C. 20210

RE: Proposed Standard for Occupational Exposure to Asbestos

Dear Sir:

Pursuant to 20 CFR 1911.11(b), we wish to file the following written comments concerning the proposed standard for Occupational Exposure to Asbestos.

1. Section 1910.1001(e)(3) - Method of Measurement

In the original criteria document concerning asbestos entitled Occupational Exposure to Asbestos issued by the National Institute for Occupational Safety and Health, it was recognized that only the biologically appropriate attribute of the air sample should be measured. Medical evidence has pointed to the asbestos fiber as a problem area in the search for a cause of the various types of cancers associated with asbestos use. Because of this evidence the present regulation (29 CFR Part 1910) restricts the number of asbestos fibers that are allowed in the work place.

The term "asbestos fiber" was defined so as to provide a standard whereby the biologically significant fibers can be identified and distinguished from other non-asbestos

Plaintiff's Exhibit
S-BW-78

EXHIBIT
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particles present in the work place atmosphere. The asbestos fiber was defined in the present regulation as an asbestos fiber longer than 5 micrometers. Further interpretation of this definition added a requirement that the particle being examined have an aspect ratio of at least 3 times as long as it is wide to be considered an asbestos fiber. The proposed regulation incorporates the above standards and adds a maximum diameter requirement of 5 micrometers.

When the particles which have been captured on the filter during the air sampling process are examined under a microscope according to the prescribed membrane filter method, the analyst has only the definition of an asbestos fiber to work with as a standard to distinguished asbestos fibers from unregulated particles. Both the present definition of asbestos fiber and that proposed are inadequate to distinguish between asbestos fibers and other particles. All particles which have an aspect ratio of 3-1 or more are not necessarily asbestos fibers. The overbroad definition results in analysts counting particles that are not asbestos fibers as asbestos fibers (see Secretary of Labor vs. Borg-Warner, OSHRC, Docket No. 10757, where R. Zummualde, a N.I.O.S.H. expert testified that a talc particle would be counted as an asbestos fiber). Second, the overbroad definition results in analysts not being able to arrive at the same results upon subsequent or repeated analysis of the same sample. Third, many qualified analysts introduce their own additional standards in an attempt to avoid

counting particles which are not asbestos but have an aspect ratio of 3-1 or greater. The net result is a method of analysis that has been described by NIOSH experts as subjective. The subjective variance encountered when counting a single sample is on the order of plus or minus 25 percent.

As the concentration of particles per unit volume decreases the effect of the subjectivity in the analytical counting process increases. At a threshhold limit value of 0.5 fibers per cubic centimeter it is quite possible that an analyst choosing to count a single fiber or not as asbestos could make the difference between compliance or violation. This problem is particularly significant when ceiling concentrations are being tested, due to the short testing time periods.

In order to reduce the possibility that a violation might be found due to the subjectivity of the analytical process and statistical error, several changes must be made.

A. The definition of the terms asbestos should include in addition to the proposed standards the requirement that a particle must exhibit obvious curvature to be considered an asbestos fiber.

B. The term asbestos includes all products containing any of the designated minerals as proposed. A limit of 5 percent asbestos should be allowed in products before the requirements of the proposed rule are applied. This accounts for the situation where a user of a product does not know of the trace asbestos content.

C. Strict adherence to the sampling and analytical techniques specified must be made a requirement as a matter of regulation in order to assure an accurate and reliable sample for compliance or enforcement purposes.

D. When sampling for ceiling concentrations, at least one fifteen minute sample must be taken to assure a sample that has a sufficient number of particles for a valid statistical analysis.

E. When sampling for ceiling concentrations, the result must be the average of at least five samples if any samples are taken for less than 15 minutes.

F. When determining a time weighted average concentration, variability in the work process must be taken into consideration.

2. Section 1910.1001(j) - Medical Surveillance

The standard does not include a level at which medical examinations should be instituted. A specific level should be designated as the point at which medical examinations should be provided.

Monitoring of the atmosphere in many cities indicate that there are always some asbestos fibers in the atmosphere. Unless a specific action level is designated, the medical surveillance provisions of this section would require the medical examination procedures outlined in this section to be provided to everyone. An article in the December 1975 issue of Professional Safety indicates that in a Yale University Library there is a

measureable concentration of asbestos fibers in the air. We suggest that an action level for implementation of the medical examination requirement be approximately 50 percent of the permissible exposure limit.

3. Feasibility of Attaining the Permissible Exposure of 0.5 Fibers per c.c. of Air

Our experience at this time indicates that we will find it extremely difficult, if not technically impossible, to maintain an airborne concentration of asbestos fibers below 0.5 fibers per c.c. of air when performing various machining operations on friction plates containing asbestos. Although in some operations we have been able to maintain the level below 0.5 fibers per c.c. of air, periodically we do record levels above 0.5 fibers per c.c. of air.

At the present time we have in operation the most advanced exhaust systems available. We have found it extremely difficult to maintain the 0.5 fiber level. Part of the problem, of course, is due to the fact that clutch plates and other asbestos containing disks are made up of various materials which are not identifiable under the measurement technique provided in the standard. It is our opinion that many times the counts include minerals or metals that are not asbestos, but because accurate identification of these particles is not possible under phase contrast illumination, we cannot be sure.

4. Economic Impact

We have conducted a study of only four locations who make gaskets containing asbestos and apply various machining and

fastening methods in the manufacturing of asbestos containing clutch plates and other friction devices.

If we can successfully design, operate and maintain an exhaust system to control emissions from various operations to 0.5 asbestos fibers per c.c. of air or less, we estimate that our costs will increase approximately 1 million dollars for these improved exhaust systems and an annual additional maintenance cost of approximately 350 thousand dollars per year.

If we are not able to maintain the 0.5 fibers per c.c. of air limit, the capital cost for isolated working areas, change rooms, showers, additional monitoring, etc. will be approximately 4 million dollars. The annual operating cost increase for these four locations will be approximately 2.5 million dollars.

In conclusion we recommend the following:

A. Section 1910.1001(e)(3) - Method of Measurement, be changed as recommended in the foregoing statement.

B. Section 1910.1001(j) - Medical Surveillance, be instituted at one-half the permissible exposure level.

C. Section 1910.1001(c) - Permissible Exposure, be retained at two fibers per cubic centimeter of air and the ceiling concentration at five fibers per cubic centimeter of air until substantial evidence is available to indicate revision of the exposure level is necessary.

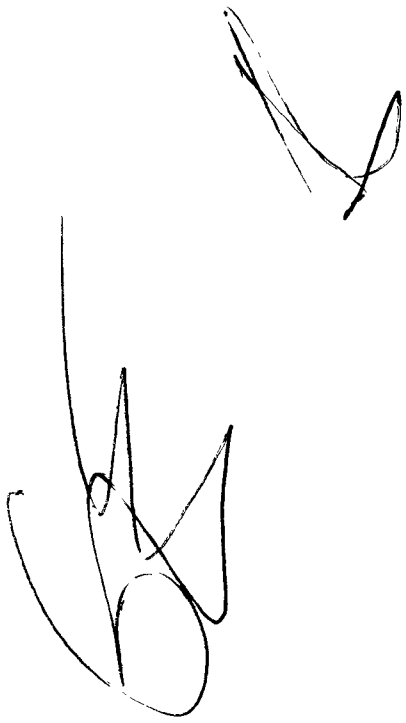
D. Section 1910.1001(f)(g)(h)(i) - These sections should be followed only if the two fibers per cubic centimeter of air level cannot be attained.

Very truly yours,

William L. Stiens

William L. Stiens, C.S.P.
Manager - Loss Control

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impact and drop ball impact data of Example I were comparable with Example II. Table II demonstrates that at higher temperatures the composition of Example II exhibits less overall change in dimension than the composition of Example I. Therefore, the filler combination of the instant invention provides a phenolic molding composition of comparable and better properties than a composition containing asbestos.

Example II was repeated using varying amounts of the aluminum silicate, talc and cellulose fibers. The results obtained were similar to those set forth in Tables I and II.

Obviously, other modifications and variations of the present invention are possible in the light of the above teachings. It is, therefore, to be understood that changes may be made in the particular embodiments described which are within the full intended scope of the invention as defined by the appended claims.

What is claimed is:

1. An asbestos-free, heat-resistant thermosettable phenol-aldehyde molding composition consisting essentially of in admixture, a phenol-aldehyde resin and a filler combination of aluminum silicate, talc and cellulose fibers; said filler combination present in an amount of from about 15 to about 50 weight percent based on the weight of the molding composition.

2. The composition as defined in claim **2** wherein the aluminum silicate is present in an amount of from about 5 to about 20 weight percent based on the weight of the molding composition.

3. The composition as defined in claim **1** wherein the talc is present in an amount of from about 5 to about 20 weight percent based on the weight of the molding composition.

4. The composition as defined in claim **1** wherein the cellulose fibers are present in an amount of from about 5 to about 10 weight percent based on the weight of the molding composition.

5. The composition as defined in claim **1** which contains lime.

6. The composition as defined in claim **1** which contains coal.

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