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ENVIRONMENTAL PROTECTION AGENCY

PUBLIC HEARING

ON

NATIONAL EMISSIONS STANDARDS

FOR HAZARDOUS AIR POLLUTANTS

at

Room 1500

312 North Spring Street

Los Angeles, California

February 15 - 16, 1972

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MR. MCGONNELL: Thank you very much, Dr. Smith.

DR. SMITH: All right, thank you.

MR. MCGONNELL: The next witness is Mr. B.R. Williams of W.R. Grace & Company.

STATEMENT BY

MR. B.R. WILLIAMS

VICE PRESIDENT

CONSTRUCTION PRODUCTS DIVISION

W.R. GRACE & COMPANY

MR. WILLIAMS: Good morning. I am Bruce Williams, Vice President of the Construction Products Division of W.R. Grace & Company.

I would like to read our statement, and this will include some changes to the written statement that we have submitted earlier.

The purpose of W.R. Grace & Co., Construction Products Division ("Grace") in submitting this statement at this hearing of the Environmental Protection Agency ("EPA") is to request the EPA to clarify its proposed National Emissions Standards for Hazardous Air Pollutants relating to asbestos published in the December 7, 1971 issue of the Federal Register so as to clearly establish that the spray

application of plaster fireproofing containing less than 12% asbestos by weight is not a prohibited activity.

It is Grace's belief that proposed standard Section 61.22(a) prohibiting "the spraying of any product which contains asbestos on any portion of a building or structure" or "in an area directly open to the atmosphere" is in reaction to growing concern relating to asbestos emissions from spray-applied asbestos fireproofing.

Grace shares this concern, a concern which it has long held. Grace believes, however, that the proposed standard prohibiting the "spraying of any product which contains asbestos" is much broader than necessary to protect the public from the hazards said to be posed by asbestos emissions and is based on the assumption that "spray-applied asbestos fireproofing" and "the spraying of any product which contains asbestos" mean the same thing. It is therefore important to clearly differentiate between plaster fireproofing containing asbestos and spray-applied asbestos fireproofing.

SPRAY-APPLIED ASBESTOS FIREPROOFING

Spray-applied asbestos fireproofing at which in Grace's judgment the proposed standard is aimed is commonly 33% asbestos by weight. The asbestos is generally

combined with mineral wool fibers and inorganic binders. The fibrous mix is then dumped dry into a hopper which fluffs the dry material. This dry material is then blown in a dry state to the point of application where it emerges from a nozzle which may be 2-3" in diameter. At the nozzle a water spray is introduced and the dry fibrous material is blown through the spray causing the mix to be wetted and propelled to the surface to be coated.

Because of this spray method, the fact that the wetted fibers are lightweight and the spray pattern quite broad, the opportunity for emission of asbestos fiber into the atmosphere in the application of spray-applied asbestos fireproofing is high.

In addition, not only can overspray and rebound of spray-applied asbestos fireproofing become airborne in application, but overspray quickly dries out and it too can become airborne.

We have attached copies of photographs of the application.

MR. MCGONNELL: They will be included in the record as exhibits.

MR. WILLIAMS: Fine.

For about ten years Grace has been promoting

a method of fireproofing buildings with a process in which the fireproof materials are premixed in a slurry from prior to application.

This plaster fireproofing basically is composed of vermiculite, gypsum, and less than 12% asbestos by weight in each 50-lb. bag. Each bag is then placed into a hopped with about 50 quarts of water. The mix is blended into a wet plaster slurry and pumped through a hose to the point of application where it is sprayed in a tight pattern by use of air pressure from a nozzle having a 3/8" to 1/2" diameter orifice onto the surface to be fireproofed. This wet material then sets to a hard plaster having a density of 20 pounds per cubic foot. Likewise because this wet material is three times heavier than spray-applied asbestos fireproofing, any overspray or rebound does not become airborne but falls to the floor and hardens.

In this regard we would like to call attention to the "Background Information -- Proposed National Emissions Standards for Hazardous Air Pollutants" published by EPA in December, 1971 (EPA Background Information). On Page 7 it is stated that: "The proposed ban on the spray application of products that contain asbestos is based upon experience with spray-fireproofing operations wherein

efforts to control emissions by the use of containment and good housekeeping practices have repeatedly failed."

It is our belief that the above statement refers to spray-applied asbestos fireproofing. The reason for our belief is that the rebound and overspray from plaster fireproofing lend themselves to good housekeeping methods because the hardened overspray can simply be gathered into a pile for proper disposal.

ASBESTOS FIBER EMISSIONS
FROM PLASTER FIREPROOFING

On the same day that EPA published its proposed National Emissions Standards for Hazardous Air Pollutants, there appeared in the Federal Register an emergency standard for exposure to asbestos dust published by the Department of Labor pursuant to the Occupational Safety and Health Act of 1970 ("OSHA"). This standard which is Section 1910.93a states in part: "The 8-hour time-weighted average airborne concentration of asbestos dust to which employees are exposed shall not exceed 5 fibers per milliliter greater than 5 microns in length, as determined by the membrance filter method at 400-450 X magnification (4 millimeter objective) phase contrast illumination." In order to determine concentrations of airborne asbestos fibers

during and after the application of plaster fireproofing in the fireproofing of structural steel, observations were made at three construction sites in the San Francisco, California area on May 26, May 28, and June 4, 1970. Consideration was given to the actual and potential exposure of (a) workmen carrying out the spray operation, (b) workers in allied trades nearby, and (c) the general public. These observations were made by the highly respected Tabershaw-Cooper Associates and a report of their air sampling findings appears as Exhibit D to our submission. Substantially the same methods of asbestos fiber detection recommended by Section 1910.93a of the OSHA emergency standard for exposure to asbestos dust quoted above were employed.

The Tabershaw-Cooper observations indicated that the occupational exposures to workmen who were operating the spray nozzles applying plaster fireproofing were not above the recommended threshold limit values for asbestos published in Section 1910.93a. In fact, of the numerous samples taken, only one sample higher than this level was found. Concentrations dropped off rapidly in the adjacent areas. Tabershaw-Cooper reported that expressed uniformly as fibers per liter, exposures of spray crews in all except the one case mentioned above were well below the threshold limit values; workers in

adjacent areas of the same buildings were exposed to concentrations from 1/10 to 1/5000 of this value; individuals on other floors of the buildings and in the building vicinities had transitory exposures ranging from 1/100 to 1/5000 of the threshold limit value, ambient air levels in the Bay Area were from 1/500 to less than 1/5000 of this value.

In addition, Grace itself has taken similar asbestos fiber detection observations at construction sites where plaster fireproofing was being applied. These observations were taken during July and September 1970 at Omaha, Nebraska; Bethpage, New York; and here in Los Angeles, California, using the same recommended membrance filter method. Samples from these locations were analyzed for Grace by Werby Laboratories Inc. of Boston, Massachusetts. The results are also part of our submission.

A review of these results clearly shows that in all cases the fiber counts were considerably below the threshold limit values for asbestos established pursuant to OSHA. We would like to further point out that the fiber count data in the Werby analysis consists of all fibers and is not limited to asbestos alone.

In your proposed "National Emission Standards for Asbestos," Section 61.22(e)(3), it is stated that fibers

may be emitted to outside air if a fabric filter of the type described in Section 61.23(d) is in use. We have been advised that this filter would limit fibers emissions to the atmosphere to approximately 0.5 to 1.5 fibers greater than 5 microns in length per milliliter of air sampled. You will note that in both the Tabershaw-Cooper and the Werby findings set out in Exhibits D and E of our submission, all observations corresponding to outside air sampling are below the fabric filter standards and this in cases where no filters were in use.

As to the question of whether or not there are fiber emissions of asbestos from plaster fireproofing after it has been put in place, we would like to refer you to an analysis of air samples taken by Tabershaw-Cooper Associates at the request of the Bechtel Corp. in San Francisco in September, 1970, in which it concluded:

"The conclusion of the above test program was that the maximum concentrations of asbestos fibers found in the sampling locations were approximately 2 1/2 fibers per liter. As a comparison reference, the normal atmospheric concentration of fibers in the Bay Area varies from 0 to 10 fibers per liter.

"Based upon the enclosed report the concentrations

of asbestos fibers in your building are on the low side of the normal ambient concentrations found throughout the Bay Area."

This report is also an exhibit in our submission.

As to durability of plaster fireproofing, you will note in a test performed by the Boyle Engineering Laboratory for us in April, 1964, plaster fireproofing was exposed to a high velocity air stream (over 100 miles per hour) for 87 consecutive hours and no erosion occurred. This test report is also part our submission.

AVAILABLE SUBSTITUTES

In the EPA Background Information it is stated that asbestos-free substitute materials are available for sprayed asbestos fireproofing for a cost no higher than 15% of asbestos-containing fireproofing materials. Grace does not deny that such materials are available. In fact, Grace itself manufactures and sells substitute materials. However, Grace wishes to point out to you that at least as of this date none of the nonasbestos fireproofing materials approved by Underwriters' Laboratories, Inc. have achieved full equivalency with the asbestos-containing materials previously approved by UL.

The area where full equivalency has not been obtained is in the ability of nonasbestos-containing fireproofing materials of the type here under discussion to remain in place during fire exposure as long as the asbestos-containing materials. The bonding ability is an essential parameter of these types of fireproofing products. In our judgment, the ability of asbestos-containing materials to bond to the structure for a longer period of time than nonasbestos-containing materials gives asbestos-containing materials a certain margin of safety which even if only once required would be worth their use.

At this time we and others are in the process of experimenting with, and researching for, substitutes which will be fully equivalent to asbestos-containing fireproof materials, but having even less asbestos emissions, and, in some cases, no asbestos emissions. Grace's efforts will continue until such time as fully equivalent nonasbestos containing substitute materials are developed.

GENERAL OBSERVATION

Earlier in this statement Grace alluded to the broad scope of the proposed National Emission Standards and in this connection Grace would like at this time to make a general observation.

The aid of the proposed standards as they concern asbestos is to control the level of asbestos emissions. Emission limits are specified to the numerous uses and applications of asbestos. We feel that the EPA activities in this are appropriate. However, we feel strongly that the absolute prohibition of spray application of "any product which contains asbestos" is arbitrarily severe and inconsistent with the objectives of EPA. This is because the proposed regulations would prohibit material otherwise acceptable, simply because they contain asbestos, even though the use of the material would result in airborne asbestos far below the level acceptable for other products formulated with asbestos.

Moreover, by specifying "asbestos" instead of "commercial asbestos" the regulation could even be interpreted as prohibiting the spraying of materials containing minute traces or spray amounts of asbestos.

We feel that it is not the intention of EPA to establish a standard so arbitrarily severe. We believe that the regulation was written in its proposed form because of the failure to differentiate between spray applied asbestos fireproofing and plaster fireproofing.

Grace recognizes and approves of the general

desire to limit asbestos fibers in the ambient air. This desire should be weighed in each instance against the benefit to be gained by prohibiting a specific activity. In our judgment the benefit to be gained by prohibiting the use of plaster fireproofing is not commensurate with the continued benefits to the public in having a plaster fireproofing containing asbestos available for use. Especially is this so in a context where there is no data that defines the excess risk, if any, to the public from exposure to asbestos fibers in ambient air and where asbestos fiber emissions attributable to the use of plaster fireproofing are in our judgment less than the point of references presently established by EPA and OSHA.

Accordingly, Grace hereby proposes the following modification to Subpart B-National Emission Standards for Asbestos:

A new subparagraph (n) shall be added to Section 61.21 as follows:

"(n) 'Plaster fireproofing' means any direct-to-steel fireproofing product containing less than 1% asbestos by weight which is mixed, pumped and spray-applied in slurry form and which after application hardens into a plaster with a density of 18 lbs. per cubic foot or more."

Sections 61.22(e)(1) and 61.22(e)(2) shall be modified by deleting the phrase:

"The spraying of any product which contains asbestos," and inserting in lieu thereof in each case, "The spraying of any product, except plaster fireproofing, which contains commercial asbestos."

Section 61.22(e)(3) shall be modified by deleting the phrase:

"Emissions of particulate matters from spraying of any product which contains asbestos," and inserting in lieu thereof the phrase, "Emissions of particulate matter from spraying of any product, except plaster fireproofing, which contains commercial asbestos."

We thank you for the opportunity you have given us to make our views known, and if there is any other data or information we could submit, we would be glad to do so.

I do have two typewritten revisions to the submission that I will leave.

MR. MEGONNELL: Fine.

(Then Grace Exhibits A through G were submitted for the record and will be contained in the files of the Environmental Protection

from asbestos fiber.

MR. MEGONNELL: I was under the impression it was the opposite. They were concerned about the small fibers. I don't personally know, but maybe we will have somebody on that we can ask these questions of.

I think there was an industrial hygiene sampling with regard to the five microns where you can see them with an optical microscope as opposed to an electron microscope that must be used for very, very small particles.

MR. WILLIAMS: I am certainly not an expert, but it was my understanding that was considered more hazardous for longer length.

MR. MEGONNELL: Maybe we will be fortunate enough to get it.

MR. SLAUGHTER: May I ask, I would like to know if you have any idea of the relationship between the actual numbers of fibers that were in that air and the number of fibers greater than five microns in length that you mentioned.

MR. WILLIAMS: In the tests which we have?

MR. SLAUGHTER: In all these tests that you are discussing, do you have any idea how many fibers were really in the air in comparison to that number of five

microns in length or greater?

MR. MARIO FABARICO: If I may?

MR. MCGONNELL: Identify yourself for the record.

MR. FABARICO: My name is Mario Fabarico. I am attorney for W.R. Grace.

We do have data in there which indicates total fibers and then it is broken out into fibers greater than five microns in length.

In one case, the Tabershaw-Cooper data identifies them as asbestos fibers. In the Warby Lab data they are just identified as gross fibers.

MR. SLAUGHTER: So on the total fibers can you tell me how they determine the total number of fibers?

MR. FABARICO: Well, my understanding is that they used the techniques which were approved for determining that kind of thing. They used a millipour filter, as I understand it. Then I forget if it was 37 or 47 millimeters in diameter, but it was a millipour filter, and after they collected the air sampling they took a pie-shaped cut of it and analyzed it according to what I understand to be approved techniques.

MR. SLAUGHTER: With an optical microscope?

MR. FABARICO: With an optical microscope,

but 430 power, as I understand it, and it was a so-called phase contrast illumination.

MR. SLAUGHTER: There is a lot of published data that indicates often as many as one hundred times more fibers in a particular sample than there are fibers five microns or greater in length. They are only measuring these fibers they can see with the optical microscope.

MR. WILLIAMS: In the Werby, total fibers per cc, and one test was 2.0. Fibers greater than five microns per cc was 1.1. Another one was 1.9, and .7, 1.4, .8, so that it is an extreme.

MR. SLAUGHTER: But these are only those they can see with an optical microscope. You can't detect the smaller particles with an optical microscope. That is enough on that one.

MR. FAGARICO: Yes, you are correct on that.

MR. SLAUGHTER: I do have a couple of more questions right on that same page.

On page 7, could you tell me who advised you that a fabric filter would limit fibers' emissions to the atmosphere to approximately 0.5 to 1.5 fibers greater than five microns in length? I would like to have that data, because I have been searching desperately.

MR. FABARICO: We searched too, but we called our safety people and I guess they called somebody in Washington, and I understand someone finally talked to a Mr. Crowder at Durham, North Carolina (laughter), and this was filtered back.

Now, maybe that is not what Mr. Crowder might have said, but that was filtered back.

MR. MCCONNELL: Even if it is what he said, I would suspect he has no basis in fact.

MR. SLAUGHTER: It is the best data that is available, but we would like to find better data and we were hoping that you had found another source.

MR. FABARICO: No. We tried it at the source.

(Laughter.)

MR. SLAUGHTER: Also, with reference to that same paragraph, my question is what fabric filter standard were you referring to?

MR. FABARICO: The ones in Subsection (d).

MR. SLAUGHTER: Permeability and --

MR. FABARICO: Right.

MR. SLAUGHTER: All right. Thank you.

MR. MCCONNELL: Thank you very much.

I just want to comment, without criticizing

anybody's work, I can point to several questions in some of these laboratory reports, like the total flow through the filter was uncertain, and back here, 'filter flows were assumed.' Nevertheless, they go on and calculate fibers per cc.

It is suspect, I would say, but they are probably in the right ball park.

MR. FABARICO: Well, it is the best data we have.

MR. MEGONNELL: Thank you very much.

MR. WILLIAMS: You are very welcome. Thank you.

MR. MEGONNELL: At this time, we will have a ten minute break.

(After a short recess.)

MR. MEGONNELL: The next witness is Mr. Robert J. Tucker, Pacific Asbestos Corporation.

STATEMENT BY

MR. ROBERT J. TUCKER

PACIFIC ASBESTOS CORPORATION

MR. TUCKER: May I make some prefatory remarks before I get into the paper?

MR. MEGONNELL: Surely.