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JOHN P. McGINLEY
Testimony on Proposed OSHA Standard
on Workplace Exposure to Asbestos

INTRODUCTION

My name is John P. McGinley and I am the Vice President of Asbestos-Cement Pipe Operations for CertainTeed Corporation and a registered professional engineer. I have complete responsibility for the manufacturing operations at CertainTeed's two A-C pipe plants, which are located at Riverside, California, and Hillsboro, Texas. My responsibilities also extend to the design and modification of new and existing process equipment for the manufacture of A-C pipe, including all associated environmental controls.

I began working in the asbestos products industry while studying mechanical engineering in college. Since graduating in 1957, I have worked in the industry in both engineering and management capacities. My first fifteen years were in the engineering field. From 1959 to 1962, I worked exclusively on industrial hygiene projects. During that time, I conducted dust level sampling in various plants and designed and installed local exhaust ventilation systems for the various manufacturing processes. For the past 11 years, I have overseen A-C pipe manufacturing operations in various management positions.

Today I would like to address several aspects of OSHA's proposed standards as they relate to the A-C pipe industry. These issues and others are covered in my written testimony, which was prepared by CertainTeed's Corporate Industrial Hygiene group and myself. Although I am commenting as a representative of CertainTeed Corporation, I believe my associates at CAPCO and JM--the other domestic manufacturers of A-C pipe -- would support my views.

THE MANUFACTURING PROCESS

A-C pipe is manufactured from a closely-controlled mixture of chrysotile and crocidolite fibers, Portland cement and silica sand. My written testimony describes the process in detail. To make acceptable quality pipe economically, both chrysotile and crocidolite asbestos are required. A-C pipe manufacturers therefore oppose any OSHA action that would effectively ban either of these forms of asbestos.

DUST CONTROL HISTORY

The earliest existing records of asbestos exposures in CertainTeed's plants are from several U.S. Public Health Service and OSHA studies conducted from 1966 to 1972. This information is collected in Table I of my written statement. Compared to workplace conditions today, those exposure levels were high. In 1972, our insurer assisted us in developing monitoring programs, and by 1974 our own plant personnel began monitoring operations with the help of NIOSH training. In 1979, a newly founded corporate industrial hygiene group began periodic monitoring of all positions in our plants on an annual basis.

Our historical monitoring results reveal gradual improvements in exposure conditions over time. An example of these gradual improvements is railcar unloading of asbestos fiber, historically one of the dustiest operations in A-C pipe production. Improvements in asbestos packaging described in my written testimony have taken place over time. The result has been that the unloading of fiber bags from railcars has gone from one of the dustiest operations to among the cleanest in A-C pipe plants.

CURRENT DUST CONTROL PRACTICES

American A-C pipe producers have worked diligently not merely to comply with the current PEL, but to attain the lowest possible fiber levels at each work station. The low dust levels that exist today in A-C pipe manufacturing have been the result of a long learning process. A-C pipe manufacturers have experimented with new hood designs, modified cutting and finishing techniques, implemented employee educational programs, and upgraded housekeeping procedures in order to offer their workers maximum protection. Based on my visits to similar manufacturing plants in other countries, I believe the dust control technology employed by the three United States A-C pipe manufacturers represents the state of the art in the industry.

The keystone of this dust control technology is effective local exhaust ventilation, which removes a high percentage of the dust generated before it can enter the workplace atmosphere. The local exhaust ventilation system reduces employee exposures on most operations to between 0.5 and 1.0 fibers/cc. In our experience additional ventilation capacity will not generate significant further reductions. We have been able to reduce fiber levels at most work stations to 0.5 fibers/cc or lower by improving hood designs at the point source of dust generation and upgrading maintenance of the local exhaust ventilation system.

The implementation of good employee work practices and meticulous housekeeping are essential to reduce exposure levels below 0.5 fibers/cc. Local exhaust will not provide effective dust control if it is not supplemented with sound housekeeping and work practices.

We at CertainTeed also supplement the engineering controls with a variety of ancillary worker protection measures. CertainTeed's workplace monitoring program provides semiannual exposure sampling of each work station by plant personnel who have completed the NIOSH course on "Sampling and Evaluation of Airborne Dust". A separate team of Corporate Health and Safety industrial hygienists also sample each station annually.

CertainTeed provides medical surveillance for all employees in pipe plants through preplacement, annual and termination physical examinations. The examinations include health questionaires, measurements of vital signs, chest x-rays, visual acuity tests, audiograms, pulmonary function tests, urinalyses, blood counts and complete blood chemistries. In addition, CertainTeed provides educational programs on the health hazards of asbestos.

All employees receive instruction in respirator protection, although respirators are mandatory only for workers who perform relatively short-duration, high exposure operations, such as maintenance and cleanup.

CertainTeed's plants are equipped with showers, lockers and lunchroom facilities. We consider our entire plant a regulated area.

Current Exposure Levels

The great majority of our dust counts are around the 0.2 fibers/cc level. However, even with the application of local exhaust ventilation and the employment of good housekeeping procedures, we occasionally register counts in excess of 0.6 fibers/cc. Most of our work stations generate very low average levels of airborne fiber, but a few difficult areas remain. For exa[illegible] have not been able to consistently operate our pipe cutting saws below 0.5 fibers/cc. We have experimented with hood designs and new methods for cutting pipe, but with limited success. It may take considerable time before improvements are realized. The pipe formation machinery also presents difficult dust control problems, and does not consistently operate below 0.5 fibers/cc.

COMPLIANCE WITH PROPOSED PELs

The variability of airborne concentrations of asbestos makes assessment of the feasibility of a PEL of 0.5 fibers/cc difficult. Monitoring of specific jobs in our plants has produced varying results from day to day and from individual to individual. We apparently experience daily changes in airborne asbestos levels at any given work stations. Yet, there is no way to visually distinguish the difference in the workplace environment between levels slightly above 0.5 fibers/cc and levels below. Only after exposure monitoring results are available several days later do we know that levels were high at a particular time. In order to accommodate these fluctuations and assure compliance with a PEL of 0.5 fibers/cc we would have to operate at an average exposure level of about 0.2 fibers/cc. Most of the fluctuations would then fall under 0.5 fibers/cc although a small portion would still exceed that level.

A-C pipe manufacturers would be unable to comply with a PEL of 0.2 fibers/cc unless all workers wore respirators.

Although over half of the sample measurements in Certain-Teed's two plants show airborne levels less than 0.1 fibers/cc, a large number indicate fiber levels above 0.2 fibers/cc at the same work stations measured on different days. Although A-C pipe plants may attain long run exposure averages of near 0.2 fibers/cc, I know of no way to eliminate the large number of readings above that level.

Data Limitations

An additional source of difficulty in assessing the feasibility of the proposed PELs is that at such low levels the current measurement techniques are imprecise and subject to great biases. Dr. Eric Chatfield has thoroughly discussed the problems inherent in measuring airborne asbestos levels, and I do not have the expertise to add to his theoretical discussion. However, I would like to address the practical difficulties that measurement problems present to asbestos manufacturers.

Our experience shows that the current NIOSH counting method is subject to considerable bias. In the course of our industrial hygiene quality control program, CertainTeed has conducted several tests to evaluate the consistency of our asbestos monitoring results. The tests included duplicate counting of the same filter by plant personnel and their corporate counterparts, duplicate counting by different personnel in our corporate lab, and a round robin test using a NIOSH Proficiency Analytical Sample (PAT) involving both Corporate and Plant personnel.

A comparison of plant versus corporate counts on the same sample reveals a bias in results. Corporate results tended to be higher than plant calculations. One factor that may account for the bias is that the corporate lab uses a brand of microscope different from those used in the plants. NIOSH has shown that differences in microscopes can produce significant biases.

An intra-laboratory comparison of readers in the corporate lab demonstrates the subjective nature of the NIOSH counting method. Corporate counters, using the same equipment and operating under the same conditions, generated consistent biases in their results.

The Round Robin Test provides further evidence of both intra and inter-laboratory sources of error in measuring asbestos. Two plant counters, two corporate counters, and one Research and Development lab counter observed three wedges from a NIOSH Proficiency Analytical Testing sample. All five counters counted the wedges in their own laboratories, in a three-day span. The results are presented in Table III of my written statement. The counts on one slide ranged from 75.41 fibers/square millimeter to 1,133.77 fibers/square millimeter. Despite such a wide spread in values, I have been told by our corporate industrial hygenists that the results were within the PAT programs's acceptable counting range of ± 3 standard deviations. The data also disclosed a high count corporate bias similar to the bias observed in the inter-lab comparison study.

If these counts represented a 240 minute exposure sample at a flow rate of 2.0 liters per minute, a sample measurement could vary from 0.13 fibers/cc to 2.02 fibers/cc. A work-place manager attempting to determine his compliance status with a given PEL would have no way of knowing which value to trust. He also would have no way of knowing where in that range OSHA compliance measurements would fall. Thus, it becomes extremely difficult to assure compliance with any given PEL.

Measurement imprecision severely limits the usefulness of sampling data in planning new dust control strategies. Inter-day variations in sampling results hinder the ability of manufacturers to pinpoint problem areas in their plants. Frequently, samples taken on one day may indicate high airborne fiber levels at a certain workstation, but samples taken the following day will show low levels at the same station. Thus, plant managers have great difficulty obtaining an accurate picture of exposure patterns in their plants. Consequently, continued efforts to achieve improvements over the low levels that our plants have already achieved are somewhat hindered.

CONCLUSIONS

The Regulatory Analysis of the Proposed OSHA Standard on Asbestos, prepared for OSHA by the Research Triangle

Institute (RTI) and released in May of 1984 acknowledged that it would not be possible to achieve 0.5 fibers/cc at all times even in the best run A-C pipe plants. Certain operations such as bag house cleaning and maintenance will generate concentrations in excess of 0.5 fibers/cc. The RTI study concluded that where engineering controls and housekeeping techniques are already utilized to the limit of their effectiveness, further controls would achieve only marginal improvements.

These basic conclusions of the RTI report are correct. However, RTI's further suggestions of specific controls to generate reductions in some plants are misguided and poorly substantiated.

RTI's first suggestion advocates enclosed fiber introduction or, alternatively, automatic bag openers to introduce asbestos fiber into the manufacturing process. Our experience in A-C pipe production has been that either an automated debagger or a well run manual bag opening station can achieve equivalent low exposures around 0.1 f/cc on average. RTI's industry survey indicated an exposure range for the introduction and mixing stage, which presumably includes plants with manual bag openers, at 0.07 to 0.20 fibers/cc. At such low levels, even if further reductions were possible, they would probably be nondetectible.

RTI also suggests wetting of fibers at an earlier stage in the production process. In current production methods, asbestos fiber is dry mixed with cement and silica sand before water is added. The current dry operation is not a manned workstation; it is completely enclosed and automated. Airborne dust concentrations are low -- generally less than 0.3 fibers/cc. Radical redesign of this operation would be costly and would make little sense. Operating wet often creates more exposure problems than it solves. The wet substance spills on the floor and dries, creating housekeeping headaches. In the manufacture of A-C pipe, Certain-Teed has found that wet processes are incompatible with local exhaust ventilation because the moist cement particles clogs the ducting, impairing the efficiency of the exhaust system.

A third suggestion by RTI is for manufacturers to receive asbestos fibers in an uncompressed state in order to reduce the need for willowing during production. While this suggestion seems attractive on its face, it too would create more problems than it would solve. Uncompressed fiber would be very difficult to handle, and it would increase the danger of asbestos exposure from torn bags.

RTI factored the use of respirators into its cost calculations for compliance in model plants. Consistent with the study's basic conclusion that no significant additional reductions in air concentrations are achieveable in A-C pipe plants through engineering controls, RTI's cost figures for compliance with proposed PELs include only the addition of respirators. At a PEL of 0.5 fibers/cc, RTI estimates 10% of the workforce in A-C pipe plants will require respirators; at a PEL of 0.2 fibers/cc, 50% and at 0.1 fibers/cc, 100%.

These estimates fail to consider the variability and measurement problems of asbestos. Plant managers are incapable of assuring continued airborne asbestos concentrations of less than 0.2 fibers/cc at any workstation. Atmosphere changes could easily drive daily readings above 0.2 fibers/cc. Measurement imprecisions would also generate readings above the 0.2 fibers/cc level, even at stations where the long term average is below that. Plant managers would not be able to determine at which areas of the plant airborne levels exceeded 0.2 fibers/ cc; therefore, to assure compliance they would need to require respirators for all workers.

The variability of asbestos concentrations and the imprecision of measurement techniques place asbestos manufacturers in a difficult position. Plant operators have no method of determining with an acceptable degree of certainty the airborne levels of asbestos concentration at any time. Consequently, compliance with a PEL as low as 0.2 fibers/cc becomes a guessing game. Unless manufacturers choose respirators, they may be subject to compliance violations if OSHA samples generate high readings, even if such readings are attributable to unusual variations or measurement error.

Members of the A-C pipe industry have already invested considerable time and money to install the best available engineering controls. A-C Pipe manufacturers in the U.S. have combined effective dust control engineering with sound housekeeping and a variety of educational, medical and monitoring programs in order to reduce exposures to the lowest possible level. As Dr. Bragg indicated in his feasibility report, asbestos control research has focussed with considerable success on optimizing current technologies. In the A-C pipe industry, where the best available controls have already been implemented, further improvements are likely to be minimal.