

PLAINTIFF'S EXHIBIT

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OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

UNITED STATES DEPARTMENT OF LABOR

NOTICE OF PROPOSED RULE MAKING

OCCUPATIONAL EXPOSURE TO ASBESTOS

29 CFR Part 1910

Fed. Reg., Vol. 40, No. 197, Oct. 9, 1975

ASBESTOS INDUSTRY RESPONSE

Extension Received
2-4-76

9 February 1976

CAPCO JEN 0003009

INTRODUCTION

On October 9, 1975, the Occupational Safety and Health Administration of the Department of Labor proposed a revision to its regulation, Occupational Exposure to Asbestos, 29 CFR Part 1910. On December 11, 1975 the Board of Directors of the

Asbestos Information Association/North America (hereinafter AIA)

has voted to sponsor an asbestos industry response to the proposal and created a task force for that purpose, naming the undersigned as Chairman. The Task Force enlisted the support of the membership of AIA/NA and invited non-member companies and trade associations to join in the endeavor. The result of that effort is this statement, made on behalf of the companies and trade associations listed as endorsing firms and organizations.

The statement was prepared in this manner:

1. Dr. Hans Weill, Professor of Medicine, Tulane University School of Medicine and medical consultant to AIA/NA, reviewed recent literature pertaining to asbestos and health, consulted with other qualified experts both in the United States and abroad, and prepared a paper, attached hereto and marked "Exhibit A," which summarizes the present state of knowledge concerning asbestos disease, giving particular attention to those papers cited in the OSHA proposed regulation.

2. Roy F. Weston, Inc., an independent consulting engineering firm of West Chester, Pennsylvania, conducted a survey of the United States asbestos industry to ascertain the technological and economic feasibility of the proposed regulation and its economic

impact. The Weston report is attached hereto and marked "Exhibit B."

3. The Standards and Technical Committee of the AIA/NA reviewed in detail the OSHA proposed regulation for the purpose of recommending to the Task Force Chairman specific changes in the regulations which appropriately might be suggested.

Summary of Findings

The Task Force has reviewed the reports of Dr. Weill and Roy F. Weston, Inc. and from those reports has drawn certain conclusions.

Medical Report

Although the volume of epidemiological data available for statistical analysis in 1976 is greater than that available in 1972, the conclusions which reasonably may be drawn from those data are not significantly different from conclusions which were, or could have been, drawn in 1972. Then, as now, qualified experts would conclude that:

1. Asbestos, when inhaled, causes fibrosis (asbestosis).
2. Asbestos, when inhaled, is associated with the development of malignant tumors of the bronchial system and lung and with mesothelioma, (in other words, asbestos is a carcinogen).

Few, in any students of the subject would disagree with the conclusion that there is a dose-response relationship between exposure to airborne asbestos and the development of asbestosis. There also is a substantial body of expert opinion

which supports the premise that there is a dose-response relationship between exposure to most, if not all, carcinogens and the development of cancer. There is no reason to believe, from the data available to us, that asbestos is an exception to this generality; although, at this time, no one definitively can say at what exposure level asbestos becomes a cancer hazard to man.

It should be emphasized that, so far as we know, no credible epidemiological studies have been published which would suggest an excess of malignant tumors among persons exposed to no more than 2 asbestos fibers per cc of air (TWA), using the prescribed membrane filter test method. This is a fact simply because there have yet been identified for study no populations the exposure experience of which, consistently has been as low as 2 fibers.

Since all populations studied to date have been exposed to substantially higher concentrations of airborne asbestos, we can conclude only that an excess of all types of asbestos disease is associated with levels of exposure significantly higher than the level currently mandated to become effective on July 1, 1976.

Feasibility/Economics Report.

For convenience, the Weston study has divided the U.S. asbestos industry into three sectors or segments:

- (a) "primary" - employers who receive, store, handle and process raw asbestos fiber,
- (b) "secondary" - employers who receive, store, handle and process products or materials containing asbestos, and
- (c) "consumers" - employers who use products or materials containing asbestos.

Our study of feasibility and economics has been severely handicapped by the short period of time within which it had to be completed. Data obtained to date are sufficient to draw supportable conclusions within the primary sector of the industry, but they are insufficient to draw supportable conclusions within the secondary or consumer sectors. And since the secondary and consumer sectors constitute an important part of the total market served by the primary sector, deficiencies in the secondary and consumer data make it impossible to draw adequate conclusions concerning the impact of the proposed regulation upon the markets for primary products.

With these serious limitations in mind, it is possible at this time to draw from the Weston report the following conclusions (qualified where indicated):

1. Of the dust counts obtained from the primary segment of the industry, less than 50% were at or below two fibers per cc (TWA) while more than 50% were above that level.

2. Using best available technology (hereinafter BAT), within three to five years, the primary sector can meet a 2 fibers per cc (TWA) standard, emergencies excepted.

3. The cost of installing BAT in the primary sector will be substantial, but we believe that it can be financed with tolerable impact upon the selling prices of the products of the primary producers.

4. Although an airborne concentration of 0.5 fiber per cc (TWA) can be achieved at some process steps; a uniform, across-the-board standard of 0.5 fiber per cc (TWA) is technically

feasible neither for the primary sector as a whole, nor for any industry category within the primary sector. (Since BAT has been widely adopted among representative primary sector manufacturers in the United States and abroad, it is a fact that a 0.5 fiber per cc (TWA) level cannot be achieved.)

5. The secondary and consumer sectors of the asbestos industry, are more important than the primary in that they involve a greater number of business enterprises, a greater number of employees, and a larger aggregate dollar volume of sales; and those sectors are characterized by a large number of small businesses with modest capital bases. (Conclusion tentative - data inadequate or incomplete.)

6. The secondary and consumer sectors of the industry are operating within a wide range of airborne fiber concentration levels, some well in excess of 2 fibers per cc (TWA). (Conclusion tentative - data inadequate or incomplete.)

7. Because of the job shop nature of many secondary and consumer sector businesses (a variety of products having a variety of configurations being fabricated at many different locations within the shop), a 2 fibers per cc (TWA) standard may not be technically feasible for all secondary and consumer category employers. (Conclusion tentative - data inadequate or incomplete.)

8. BAT has not yet been defined for the secondary and consumer sectors, and it may well be found to be more expensive than BAT for the primary sector. (Conclusion tentative - - data inadequate or incomplete.)

9. Because BAT in the secondary and consumer sectors may be markedly different in character from that in the primary sector, and, therefore, may be more costly; and because the cost of engineering controls typically does not ratably decrease with every reduction in the size or capacity of an installation; it is quite likely that BAT will not be economically feasible for many small and intermittent users of asbestos products within the secondary and consumer segments of the industry. (Conclusion tentative - data inadequate or incomplete.)

10. Because a uniform 0.5 fiber per cc (TWA) standard is not technically feasible for the primary sector and because, in many process steps, employers in the secondary and consumer sectors will have to use the same technology as the primary producers, or may even have to apply more difficult technologies; it is reasonable to assume that a uniform 0.5 fiber per cc (TWA) standard is not technically feasible for the secondary and consumer sectors. (Conclusion tentative - data inadequate or incomplete.)

11. The adoption of a 0.5 fiber per cc (TWA) standard and its application to the secondary and consumer segments of the industry probably would force many of these employers out of business, or at least would force them to abandon the use of products containing asbestos, with severe economic impact upon their suppliers, the primary producers. (Conclusion tentative - data inadequate and incomplete.)

12. The enforcement, without suitable exceptions, of the July 1, 1976 2 fibers per cc (TWA) standard within the secondary and consumer segments of the industry might force many of these employers out of business, or at least might force them to abandon the use of products containing asbestos, with serious economic impact upon some of their

suppliers, the primary producers. (Conclusion tentative - data inadequate or incomplete.)

13. Because the capital cost of engineering controls is high; the enforcement, without suitable exceptions, of the July 1, 1976 2 fibers per cc (TWA) standard within the secondary and consumer sectors of the industry probably would result in

a transfer of many of the functions now being performed by smaller factors within those sectors, to larger factors within the sector or to primary producers, the result being an undesirable trend toward concentration within the asbestos industry. (Conclusion tentative - data inadequate or incomplete.)

14. Since two-thirds or more of the asbestos fiber tonnage consumed in the U.S. asbestos manufacturing industry is destined for the building construction market, a reasonable and appropriate projection of the economic impact upon asbestos manufacturers of the Occupational Safety and Health Administration's regulation of the asbestos hazard cannot be made until after the proposed construction industry regulation has been published and its impact measured.

Discussion

The record shows that the proceedings which led to the adoption in 1972 of the current asbestos regulation were replete with references to the cancer hazards of asbestos. The introduction to the regulation itself makes clear the fact that the selection of

the 2 fiber per cc (TWA) exposure standard was governed primarily by a concern for the cancer hazard, and particularly by a concern for the risk of mesothelioma. It cannot today truthfully be said that the carcinogenic character of asbestos is a recent discovery, occurring after the present regulation was adopted. And it is most important to note that, since 1972 when the current 2 fibers per cc (TWA) permanent standard was promulgated, there has been no new evidence presented, concerning either asbestosis or cancer, from which it may be concluded that that mandated exposure level is not safe. There is, in fact, no medical justification for a reduction in the July 1, 1976 exposure standard.

With verification still required in the secondary and consumer segments of the industry, it now is possible to conclude:

1. That it is not technically feasible for any segment of the asbestos industry to meet a 0.5 fiber per cc (TWA) exposure level.
2. That the primary producers can, at substantial cost, within three to five years meet the 2 fibers per cc (TWA) standard.
3. That large portions of the secondary and consumer segments of the industry cannot economically (and perhaps cannot technologically) meet the 2 fibers per cc (TWA) standard without the option of using personal protection as their primary mode of compliance, particularly when they must shoulder the pass-through costs of BAT in the primary sector.

4. That the enforcement, without exceptions, within the secondary and consumer segments of the industry, of the July 1, 1976 2 fibers per cc (TWA) standard, and, a fortiori, a change in that standard to any lower level, will lead to undesirable concentration within the industry.

5. That, because the projected construction industry regulation inevitably will have a profound economic impact upon segments of the asbestos manufacturing industry, we cannot intelligently comment upon the economic impact of the proposed manufacturing regulation separate and apart from the economic impact of the projected construction regulation.

We believe, in short, that the most serious problems raised by the regulation proposed on October 9, 1975 lie in its potential impact upon the secondary and consumer segments of the industry and in the consequential effect of that impact upon the primary segment. Patterns of trade may be seriously disrupted, jobs may be lost, small businesses may be destroyed, investment values may be damaged, inferior or expensive materials may be substituted for those now in use, prices for many products may be inflated, hazards to the public now controlled by asbestos may be increased, and all for the purpose of achieving an exposure standard which would yield marginal, or perhaps no, health benefits.

Recommendations

60 Day
Extension
until April 9, 1976
2-4-76
JG

For the reasons above stated, we therefore recommend:

1. That action on the regulation proposed October 9, 1975 be deferred until the asbestos industry can complete its economic/feasibility survey of the secondary and consumer segments of the industry and until that regulation can be considered together with the projected construction industry regulation; or, if that be not possible,

2. That action on the regulation proposed October 9, 1975 be deferred until it can be considered together with the projected construction industry regulation; or, if that be not possible,

3. That the currently mandated July 1, 1976 standard and ceiling airborne fiber concentration levels (2 fibers TWA and 10 fibers) be incorporated into the proposed new regulation, with other detailed changes as indicated in the supplement attached hereto and made a part hereof, many of which are designed to relieve the small and intermittent user of asbestos and asbestos products of the burdens of the regulation.

Respectfully submitted,

Guy George Gabrielson, Jr.
Chairman, Asbestos Industry Task Force

Attachments:
Supplement
Exhibit A
Exhibit B

The following companies and trade associations have
sponsored and endorse this statement:

near 100% Support
Expressed by Vote -
2-4-76
J.B.

**Asbestos Industry Response to
Occupational Safety and
Health Administration
United States Department of Labor
on the Notice of
Proposed Rule Making for
Occupational Exposure to Asbestos**

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
UNITED STATES DEPARTMENT OF LABOR

NOTICE OF PROPOSED RULE MAKING
OCCUPATIONAL EXPOSURE TO ASBESTOS

29 CFR Part 1910
Fed. Reg., Vol. 40, No. 197, Oct. 9, 1975

ASBESTOS INDUSTRY RESPONSE

9 April, 1976

CAPCO JEN 0003022

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INTRODUCTION

On October 9, 1975 the Occupational Safety and Health Administration of the Department of Labor proposed a revision to its regulation, Occupational Exposure to Asbestos, 29 CFR Part 1910. On December 11, 1975 the Board of Directors of the Asbestos Information Association/North America (hereinafter AIA) voted to sponsor an asbestos industry response to the proposal and created a task force for that purpose, naming the undersigned as Chairman. The Task Force enlisted the support of the membership of AIA/NA and invited non-member companies and trade associations to join in the endeavor. The result of that effort is this statement, made on behalf of the companies and trade associations listed as endorsing firms and organizations.

The statement was prepared in this manner:

1. Dr. Hans Weill, Professor of Medicine, Tulane University School of Medicine and medical consultant to AIA/NA, reviewed recent literature pertaining to asbestos and health, consulted with other qualified experts both in the United States and abroad, and prepared a paper, attached hereto, which summarizes the present state of knowledge concerning asbestos disease, giving particular attention to those papers cited in the OSHA proposed regulation.

2. Roy F. Weston, Inc., an independent consulting engineering firm of West Chester, Pennsylvania, conducted a survey of the United States asbestos industry to ascertain the technological and economic feasibility of the proposed regulation and its economic impact. The Weston report is attached hereto.

3. The Standards and Technical Committee of the AIA/NA reviewed in detail the OSHA proposed regulation for the purpose of recommending to the Task Force Chairman specific changes in the regulation which appropriately might be suggested. Those specific changes are included in the Detailed Comments attached hereto.

SUMMARY OF FINDINGS

The Task Force has reviewed the work of Dr. Weill and of Roy F. Weston, Inc., and from their reports has drawn certain conclusions.

Medical Statement

Although the volume of epidemiological data available for statistical analysis in 1976 is greater than that available in 1972, the conclusions which reasonably may be drawn from those data are not significantly different from conclusions which were, or could have been, drawn in 1972. Then, as now, qualified experts would conclude that:

1. Asbestos, when inhaled, causes fibrosis (asbestosis).
2. Asbestos, when inhaled, is associated with the development of malignant tumors of the bronchial system and lung and with mesothelioma, (in other words, asbestos is a carcinogen).

Few, if any students of the subject would disagree with the conclusion that there is a dose-response relationship between exposure to airborne asbestos and the development of asbestosis. There is also a substantial body of expert opinion which supports

the premise that there is a dose-response relationship between exposure to most, if not all, carcinogens and the development of cancer. There is no reason to believe, from the data available to us, that asbestos is an exception to this generality; although, at this time, no one definitely can say at what exposure level asbestos becomes a cancer hazard to man.

Our review of the literature indicates that no credible epidemiological studies have been published which would suggest an excess of malignant tumors among persons exposed to no more than 2 asbestos fibers per cc of air (TWA), using the prescribed membrane filter test method. This is a fact simply because there have yet been identified for study no populations the exposure experience of which consistently has been as low as 2 fibers. Since all populations studied to date have been exposed to substantially higher concentrations of airborne asbestos, we can conclude only that an excess of all types of asbestos disease is associated with levels of exposure significantly higher than the level currently mandated to become effective on July 1, 1976.

Technological Feasibility and Economic Impact Study

For convenience, the Weston study has divided the U.S. asbestos industry into three sectors or segments:

- (a) "primary" - employers who receive, store, handle and process raw asbestos fiber.
- (b) "secondary" - employers who receive, store, handle and process products or materials containing asbestos, and
- (c) "consumer" - employers who use products or materials containing asbestos.

The following conclusions concerning the different segments of the asbestos industry may be drawn from the Weston report:

1. Of the fiber counts obtained from the primary segment, less than 50% are at or below 2 fibers/cc TWA, while more than 50% are above that level.

2. Fiber counts obtained from that portion of the secondary segment subject to the proposed regulation (construction excluded) frequently are above 2 fibers/cc TWA, but data from which a percentage above that level can be calculated are not available.

3. Although fiber counts are not available for the consumer segment, it is reasonable to assume that fiber levels in these workplaces are today less than 0.5 fiber/cc TWA, because they simply use but do not fabricate or otherwise alter asbestos materials.

4. Using best available technology (hereinafter BAT), within three to five years the primary sector can meet a 2 fibers/cc TWA standard, emergencies excepted.

5. Using BAT, the secondary sector also can meet the 2 fibers/cc TWA standard, emergencies excepted, although achievement of this level of control may take more time in this sector than in the primary sector.

6. The cost of installing BAT dust control in the primary and secondary sectors will be substantial, but we believe that it can be financed with tolerable impact upon the selling prices of the products of both sectors.

7. Because it already operates at low airborne fiber levels, the consumer sector need make no expenditures for engineering controls.

8. Although an airborne concentration of 0.5 fiber/cc TWA can be achieved at some process steps; a uniform, across-the-board standard of 0.5 fiber/cc TWA is technically feasible neither for the primary nor for the secondary sector. (Since BAT dust control has been widely adopted among representative manufacturers in the United States and abroad and therefore can be observed in operation; it can be stated as a fact that an 0.5 fiber/cc TWA level of control is not feasible in the primary or secondary sectors.)

9. For the industry as a whole, under the regulation as proposed, a major portion of the annual cost of compliance will be that for the industrial hygiene and medical program; and that burden will be heaviest in the secondary and consumer segments of the industry.

10. The inherent inaccuracies of the membrane filter test method raise questions concerning its suitability as an enforcement tool.

11. The extent of the environmental monitoring (dust counts) mandated by the proposed regulation will strain the capacity of qualified laboratory facilities and may not be an appropriate use of these limited resources.

12. Implementation of the proposed standard may have a severe economic impact upon the asbestos textile and friction products industries, leading to erosion of profit margins, loss of markets and, perhaps, loss of jobs.

PRIMARY RECOMMENDATION

The asbestos industry has been handicapped in its efforts to comment upon this OSHA proposal for regulation of asbestos exposures in the factory by reason of the fact that it could not simultaneously study that counterpart regulation which OSHA has said it will issue pertaining to the regulation of asbestos exposures in construction. Since approximately 70% of the asbestos fiber tonnage consumed by U.S. manufacturers is incorporated into products destined for construction, the construction industry is a major market for the output of asbestos manufacturers. It is not possible adequately to analyze the impact, upon U.S. asbestos products manufacturers, of the asbestos fiber hazard control program in toto without at least attempting to calculate the effect of the proposed construction regulation upon the markets of the manufacturing companies. It would be a Pyrrhic victory to achieve a viable manufacturing regulation, only to discover that the construction regulation thereafter so threatened or damaged the manufacturers' markets that they could not continue to operate profitably.

It, therefore, is our primary recommendation that OSHA defer action on this proposed manufacturing regulation until after the proposed construction regulation has been published and its potential impact measured. If, however, that be not possible; we invite attention to the comments upon and objections to the proposed manufacturing regulation which follow.

SECONDARY RECOMMENDATIONS

EXPOSURE STANDARD

The asbestos industry recommends the adoption of a permanent exposure standard of 2 fibers per cubic centimeter of air, time-weighted average, with a peak or ceiling limit of 10 fibers per cubic centimeter of air, using the membrane filter test method.

As a feature of its case to justify a reduction of the TWA exposure standard from 2 fibers to one-half fiber, OSHA, in the preamble to its proposed regulation, states that "In animal studies it has been found that individual variability in response to carcinogens is great * * * *" and then adds, "While some level, below which exposure to a carcinogen does not cause cancer, may conceivably exist for any one individual, other individuals in the working population may have cancer induced by doses so low as to be effectively zero." In proceeding, then, to the conclusion that exposure to a carcinogen must be reduced as close to zero as possible, the argument does acknowledge that the concepts cited are "theoretical". And theoretical they are.

Although some health scientists speculate that variations in man's susceptibility to cancer-causing agents may be great and that, therefore, the level of tolerance of some individuals to these substances may be virtually zero (the "one-hit" hypothesis); other health scientists argue that the range of variations in the individual susceptibility of man is small and has been found to be far less significant in the etiology of cancer than the level, duration or

frequency of exposure to carcinogens. They point to the great number of carcinogens and suspected carcinogens in the environment (many of them occurring naturally), their ubiquitousness, the fact that some of them actually are essential to life and that some even are produced in the body itself; and they then conclude that the human organism must be able to tolerate finite levels of these substances. This second group of experts asserts that acceptance of the "one-hit" or zero tolerance hypothesis is tantamount to placing an infinite value on the elimination of the last vestige of controllable environmental cancer risk, while placing no value whatever on the possible benefits to be obtained from the presence or use of many carcinogens and suspected carcinogens. The asbestos industry maintains that it is better public policy responsibly to postulate a tolerance level for suspected or acknowledged environmental carcinogens, pending definite knowledge of a true level of tolerance, and to legislate to that level, than it is to pay the geometrically escalating cost of attempting to approach zero exposure. This is particularly true of a useful substance like asbestos, a substance which itself contributes much to health and safety. At some point in the increasingly difficult and expensive process of lowering the levels of asbestos fiber in the general or factory environment, the reduced risk of tolerating the smaller remaining quantities of asbestos fiber in the air becomes less than the increasing risk of losing asbestos and asbestos products to those uses pertinent to health and safety for which they are so well suited. In seeking to control exposures to environmental carcinogens, the proper point of departure for

regulatory policy ought to be a reasonably safe estimate, based upon the best available evidence, of the levels of the substances which man can tolerate and not the adoption of an unsubstantiated theory like the "one-hit" or zero tolerance hypothesis.

The record shows that the proceedings which led to the adoption in 1972 of the current asbestos regulation were replete with references to the cancer hazards of asbestos. In fact, the standard then established was chosen in significant measure out of consideration for the risk of mesothelioma. The preamble states, "* * *because it appears that levels of exposure which may be safe with regard to asbestosis are not safe with regard to mesothelioma; * * *the conflict in the medical evidence is resolved in favor of the health of employees. As of July 1, 1976, TWA concentrations of asbestos fibers larger than 5 micrometers will not be allowed to exceed two fibers/cc * * *." It cannot now be said that the carcinogenic character of asbestos is a recent discovery, occurring after the present regulation was promulgated. Clearly the 1972 regulation was adopted to protect employees both from asbestosis and from cancers of all types. The permanent standard mandated for that purpose was developed on the basis of medical knowledge then available and was set at 2 fibers per cc TWA, with a 10 fiber ceiling. The issue which we now face, then, becomes: Has any new evidence been adduced since 1972 which would require a change in the standard? We have found no such evidence.

Our review of the medical literature discloses a proliferation of studies concerning the health effects of asbestos. In general, they tend to confirm that which we knew in 1972: that exposure

to airborne asbestos may cause fibrosis and is associated with the appearance of an excess of certain cancers.

Proceeding from a general knowledge of the environment in which a particular cohort worked or lived, it is assumed in some of the studies that the exposure of the population examined was low; but "low" typically is not defined, and no data is offered to support the assumption. Where efforts subsequently have been made to determine the level of exposure, indications always are that the exposure was not "low"; it was at least several times the 1972 mandated permanent standard of 2 fibers/cc TWA.

Our medical statement attached hereto discusses this issue in greater detail. Dr. Weill's findings are not surprising to those with long experience in the asbestos industry. It is probable that there are no cohorts, of a size which properly may be studied, which have had an average exposure as low as 2 fibers/cc., even assuming that dust count information is available. Past occupational exposures have been high, often very high compared with present conditions in the workplace. And even neighborhood and domestic exposures frequently were greater than 2 fibers/cc. With no populations in the 2 fibers/cc. range to study, there is no data from which one now may conclude that a 2 fiber standard fails to provide a safe environment for a working lifetime.

If a permanent standard of 2 fibers/cc. TWA was reasonable and appropriate in 1972, and we believe that it was; it remains reasonable and appropriate today. The fact is that no new evidence has been developed which will support or justify a change in that standard.

Our survey of the asbestos industry indicates that an exposure

standard of 2 fibers/cc. TWA., with a ceiling of 10 fibers/cc., is feasible technically and economically.

At this time, the industry has not achieved a 2 fiber level at all processing steps; but the consensus of informed opinion within the industry is that control to that standard can be achieved by the application of BAT, BAT being an optimum combination of known engineering techniques and carefully enforced work practices. With BAT in effect throughout the industry, there may be a few process steps which intermittently will exceed the 2 fiber level, but these incidents simply will have to be handled as emergencies. The 2 fiber level can be achieved in three to five years, although some portions of the secondary segment of the industry may require a somewhat longer period of time to attain a 2 fiber level of proficiency. Of course, during the three to five year period required to effect BAT, a constantly declining number of work stations will be operating over the 2 fiber level for decreasing percentages of the time.

The cost of installing BAT will not be insubstantial, but indications are that, for the larger part of the industry, the annual cost of achieving the 2 fiber level can be added to the cost of products sold without significant adverse impact upon market position. Exceptions to this generality may be the asbestos textile and friction products industries, as well as certain portions of the secondary industry segment; since, in these areas, aggressive foreign competition may deprive domestic producers of opportunities for price relief or may extend the already marked penetration of foreign

goods into the U.S. market. Imposition of the 2 fiber standard upon these domestic manufacturers will create a real economic burden, a burden which may have unfortunate consequences in the erosion of investment values and loss of jobs. It is worthy of note, at this juncture, that the risk of economic damage to all factors in the industry, which may result from the cost of installing BAT, may be lessened by lightening other compliance cost burdens (i.e., in the areas of industrial hygiene and medical examinations).

Our study of the asbestos industry indicates that an exposure standard of 0.5 fiber/cc TWA, with a ceiling of 5 fibers/cc is not feasible technically.

Although it is possible to speculate about the merits of suggested advanced technologies and the exposure reduction benefits which might flow from their implementation; it is sound neither in the engineering nor in the legal sense to define "feasibility" in terms of concepts, procedures or equipment which are untried or have not been shown to work effectively under actual production circumstances. To define "feasible" in terms of developmental machines, manufacturing processes or work practices is contradictory and renders the term meaningless. "Feasibility" must describe proven concepts and, therefore, equates with BAT.

A thorough review of BAT as it is in use throughout the world makes clear that it is not possible technically to achieve a 0.5 fiber/cc TWA exposure level either in the primary or in the secondary sector of the asbestos industry. Application of the best proven technologies will reduce exposure at many process steps to 0.5 fibers/cc TWA, but

there will remain many process steps which operate regularly at 1 fiber/cc TWA or higher. For the present, it is necessary to assert as fact that a 0.5 fibers/cc TWA standard is not feasible.

It is the opinion of the asbestos industry that the selection of an appropriate exposure standard must be influenced by the limitations of the exposure measuring technique to be employed.

Extensive experience with the membrane filter test method, particularly since the 1972 asbestos regulation was adopted, has demonstrated its weakness. As the levels of airborne fibers to be measured decrease, a reasonable degree of statistical accuracy (i.e. $\pm 10\%$) can be maintained only by extending the sampling time or increasing the number of microscopic fields to be counted, or both. Of course, these modifications of the testing procedure increase the time required for its accomplishment and increase its cost. At low fiber concentrations the test becomes cumbersome and impractical to use for routine environmental monitoring. In addition, if sampling time is extended in the kind of mixed dust environment which frequently is encountered in industrial situations, the filter may be blinded by non-asbestos particles so that the asbestos fibers cannot be counted. Because of these problems, it is our view that to mandate the use of the membrane filter test method as an enforcement tool at a fiber concentration less than 2 fibers/cc TWA would be inequitable and questionable as a matter of due process.

Finally, the effects of past government action must be considered. Since June of 1972 the asbestos industry has proceeded in good faith with capital expenditures, work practice changes and employee training in the belief that the permanent exposure standard was to be 2 fibers/cc TWA. If the standard had been set at a lower level in 1972, some employers might have abandoned portions of their businesses and elected not to take costly steps toward compliance. Industry has acted in reliance upon the promulgation of the 2 fiber standard. Of course, we recognize that government must be free to shift position in light of changing circumstances, but the change of circumstances must be valid and significant. Since there is no new evidence to indicate that the 2 fiber/cc TWA standard adopted in 1972 does not adequately protect the health of the working population, it would be grossly inequitable and a denial of due process to lower the standard at this time. The successful conduct of business requires a reasonably predictable political and economic environment; good government practices consistency and avoids abrupt changes in policy unless absolutely necessary.

REGULATED AREAS AND HYGIENE FACILITIES

The OSHA draft appears to contemplate access to a regulated area only through shower-locker facilities, as well as the confinement of regulated area employees within the areas to which they are assigned. Neither concept is feasible.

Materials and finished product must move into and out of regulated areas, and employees in most cases must move where materials and product move. In the normal course of factory operations, regulated area employees occasionally must leave their areas for brief periods of time; and non-regulated area employees (i.e., maintenance, engineering and supervisory personnel) must enter regulated areas. Regulated area employees cannot practically be required to change their clothing whenever they leave the regulated area and, indeed, there is no need for such a change of clothing. It is highly unlikely that contaminated work clothing worn into a non-regulated area ever would create airborne concentrations of asbestos fibers in excess of any proposed exposure limit, even 0.5 fiber/cc. TWA. Access to regulated areas properly should be limited to those persons who have a legitimate function to perform there; and those individuals should be provided with personal protection, if indicated by conditions in the area where they will work and the kind of activity which they are to perform. Regulated area employees should remove contaminated work clothing at the end of the day and, of course, should not wear such clothing home.

The asbestos industry recommendations are designed to make the regulated area concept practical to administer and effective in restricting airborne asbestos contamination, in excess of the exposure limits, to those defined workplaces where appropriate personal protection can be provided. We suggest the elimination of the requirement for a roster of persons entering a regulated area, because such a record would have no value in support of employee health programs

or epidemiological studies and is an unreasonable and cumbersome mechanism to use simply as a reminder to factory personnel to exclude from regulated areas those persons who have no need to enter.

MONITORING

The proposed standard requires extensive initial monitoring for airborne asbestos in a great many workplaces where it would be obvious to any informed person that there is no possibility that fiber concentrations could exceed either mandated exposure limit; and requires, in addition, frequent subsequent monitoring even in situations in which there is no reason to believe that there has been a change in exposure levels. These sweeping requirements for the performance of the membrane filter test would burden the industry with unnecessary expense, divert limited laboratory resources from other more useful pursuits, and interfere with the accomplishment of more important objectives under the Occupational Safety and Health Act (i.e., actually lowering the level of airborne asbestos in the factory environment). The industry recommends limitations upon the requirements for monitoring, limitations which, however, preserve the three essential functions of the procedure: providing data for future epidemiological surveys, motivating the employer continually to improve dust conditions in his plant, and assisting the compliance officer in the enforcement of the regulation.

METHODS OF COMPLIANCE

The OSHA proposal establishes the order in which methods of compliance must be utilized: first, engineering controls; second, work practices; and third, personal protection. The rationale for this ordering of the three basic modes of compliance undoubtedly is that machinery is not subject to the human failings which may reduce the effectiveness of work practice controls; and personal protection may be even less effective, because employees might be motivated to circumvent the protection afforded by respirators in quest of greater personal comfort or convenience. This approach by OSHA to the compliance problem is logical, but we doubt that it is practical to implement.

Our survey of the asbestos industry indicates that work practices in most cases are inseparably linked to engineering controls. The best engineered dust control system must be understood by the people using it, properly operated, and properly maintained. Carefully designed work practice steps must be prepared and taught for use when engineering controls fail. And the best engineering control system can be overwhelmed by poor work practices, even when the engineering controls are functioning. Moreover, excessive emphasis on engineering controls may have the effect of appearing to relieve the individual employee of responsibility for effective dust control; while, in the final analysis, it is our employees who make the entire dust control program work. We believe that work practices should be elevated to a status and significance at least co-equal with engineering controls.

Whereas, for large and continuous users of asbestos fibers and asbestos products, engineering controls may be the logical point of departure for compliance efforts, the same may not be true for small and intermittent users. The secondary and consumer sectors of the industry are characterized by a great number of such employers. Typically they have small capital bases and are job-shop operations with dust generating activities likely to be conducted in many different and shifting areas of the shops. Engineering controls are expensive and their cost does not decline arithmetically as their size is reduced. These devices are relatively more costly for small and intermittent operators, more difficult to finance on limited capital, and more difficult to justify on the basis of the small value of asbestos materials which are to be processed. In addition, the varied and migrant character of the asbestos work likely to be performed in the shops often make the application of engineering controls less effective than in larger, production-line type operations.

Our analysis of the asbestos industry also indicates that, if relief is not granted to small and intermittent users of asbestos and asbestos products in this and in other areas which may impose upon them heavy economic burdens; they may be obliged to abandon their businesses, transfer some of the functions which they perform to their suppliers, or merge into larger units; and any of these alternatives will have the effect of reducing competition within the industry. In light of our national commitment to an open, competitive marketplace, any government regulatory action which tends toward industry concentration should be avoided, if possible.

For these reasons, the asbestos industry recommends a different treatment of small and intermittent users of asbestos in those provisions of the regulation concerning selection of methods of compliance. This class of employer should be able, within specified limitations, to use personal protection as their primary mode of compliance, provided they are especially careful to train their employees in the need for proper use of that protection.

MEDICAL SURVEILLANCE

The OSHA proposal, and the current regulation as well, if strictly enforced, would require medical examinations for virtually all industrial, and a large percentage of all commercial and service employees in the U.S. Since asbestos materials probably are present in every, or almost every, workplace and may under some conceivable circumstance release an asbestos fiber or fibers, there will be few workplaces where "employees (may not be) exposed to airborne concentrations of asbestos fibers". It is probable that OSHA did not intend that medical examinations be given to so many people, including large numbers of persons whose chances of exposure to harmful levels of airborne asbestos are nil. Nevertheless, the proposal is very broadly written.

Our survey of the asbestos industry indicates that combined industrial hygiene and medical costs are the most burdensome portion, financially, of the entire proposal. Wherever they can be reduced, without a negative impact upon the important objectives of the regulation, they should be so reduced. This will mitigate the inflationary impact of the entire asbestos hazard control program and avoid disruption of

the industry. In addition, a logical ordering of national health priorities would seem to require that scarce medical resources be devoted to the examination of persons rationally believed to be in danger of damage to their health. And finally, X-ray exposure itself may be harmful, so the procedure should be used only on persons who reasonably might expect to benefit from it. The asbestos industry recommends, therefore, that physical examinations be required only for persons regularly exposed to airborne asbestos fibers in excess of the prescribed standards.

It also seems to be widely accepted that the long latency period of all asbestos disease makes it highly unlikely that any symptom of disease will appear within 10 years following initial exposure. The appearance of clinical evidence of disease within the first 10 years may be even less likely in the future, if, as some experts believe, the latency period of the disease is extended as dosage (the level of airborne fibers) is reduced. For this reason, the industry recommends that employees regularly exposed to airborne concentrations of asbestos fiber in excess of the prescribed limits be given a medical examination at the end of 5 and at the end of 10 years following initial exposure, and annually thereafter.

The elimination, from the medical examination procedure, of sputum cytology, also is recommended; because the test is very difficult to conduct, there are few cytologists qualified to make the test and interpret its results, and its relevance and value as a diagnostic tool has yet to be demonstrated. We also recommend that the examining or supervising physician give a written summary

report of findings instead of an "opinion", because a doctor's understandable fear of exposure to possible malpractice liability well might distort any opinion which he would be willing to give.

RECORDS RETENTION

The retention of certain records generated under the regulation has obvious value. Retained records have utility, for a limited period of time, in the diagnosis and treatment of individuals who may have suffered health impairment as a result of exposure to airborne asbestos fibers. Retained records may be useful over a longer period of time as a data base for future epidemiological surveys. But records retention poses some problems.

Storing records for long periods of time entails a cost, though usually not a large one. It is, however, a considerable administrative burden; and, because it generally is not regarded as of urgent importance, the problems of storage may be neglected and the records preserved in a careless or haphazard fashion. OSHA has proposed that certain records be retained by employers for 40 years or for 20 years beyond the death or retirement of the employee to which they apply, whichever period of time may be the longer. It would not be surprising to find that many of these records, after the passage of time, are in poor order and in degraded condition. X-rays, in particular, will deteriorate if not properly developed and stored under appropriate, controlled circumstances. Large portions of the files may be in such bad shape as to be of no subsequent use, if left in the hands of private businesses.

In addition, a significant portion of the files which the proposed regulation seeks to preserve, even if in good condition, probably never would be called into use, primarily because most of the employee groups covered would not be suitable for epidemiological studies (some of the cohorts would be too small to provide reliable statistics; the exposure history of others would be ill-defined, the records or the employees themselves might be inconveniently located for the prospective researcher, etc.). It would seem more logical for the government, or private researchers acting through the government, to identify cohorts suitable for study and then to order the transfer of the pertinent records to a central repository where they may be properly indexed and stored. Because the most recent five years of records should suffice for individual employee diagnosis and treatment, we have proposed that employers be permitted to destroy records after 5 years, if they have not, by then, been ordered to transmit them to the government.

CONCLUSION

The asbestos industry can design, select and maintain equipment and programs which will achieve an exposure level of 2 asbestos fibers per cubic centimeter of air TWA, with a ceiling limit of 10 fibers per cubic centimeter. A standard of 0.5 fiber per cubic centimeter TWA, with a ceiling limit of 5 fibers per cubic centimeter is not feasible. Since there is no credible medical evidence to indicate that the 2 fiber standard will not be adequate to protect the health of employees

during a working lifetime, there is no present justification for a lowering of the 2 fiber standard. We urge its retention.

With the additional changes recommended above and recorded in greater detail in the comments which follow, the proposed regulation, while costly, can be implemented by the asbestos industry.

Respectfully submitted,


GUY GEORGE GABRIELSON, JR.
CHAIRMAN, ASBESTOS INDUSTRY
TASK FORCE

The following companies and trade associations have endorsed this statement:

A-Best Products Company	Lipe-Clutch Products Corp.
Abex Corporation	Lukens Chemical Corp.
Aeroquip Corp/Gustin-Bacon Div.	Mannington Mills, Inc.
Alsop Engineering	Maremont Corp.
Amatex Corp.	Markham Corp.
American Biltrite Inc. (AMTICO)	Milchem, Inc.
American Public Transit Asn.	Molded Materials Company
American Trucking Asn.	Monsey Products Co.
Asbestos/Cement Pipe Producers Asn.	Munters Corp.
Asbestos Textile Institute	National Asn. of Cement Board
Atlas Asbestos Co. (California)	Fabricators
Auto-Friction Corp.	National Asn. Friction Materials
Automotive Parts Rebuilders Asn.	National Asn. Plastics Distributors
Baltimore Air Coil Co.	National Electrical Manufacturers
Beaver Industries, Inc.	Asn. (Laminating Division)
Bird & Son, Inc.	National Friction Products Corp.
Borg-Warner Corp. (Borg & Beck Div.)	National Gypsum Company
Breiner Co.	National Insulation Contractors Asn.
Brown Insulating Systems	Nicolet, Inc.
Brunswick Fabricators, Inc.	Norplex Div. (U.O.P.)
Cellulo Co.	North American Asbestos Corp.
Cement Asbestos Products Corp.	PPG Industries (Chemical Div.)
Certain-teed Products Corp.	Palmer Asphalt Co.
Chemical Sealing Corp.	Plastics Engineering Co.
Congoleum Industries, Inc.	Quality Gasket & Mfg. Co.
David Fabricators of N. Y., Inc.	Raybestos-Manhattan, Inc.
Fluid Sealing Asn.	Resilient Floor Covering Institute
Foseco-Minsep, Inc.	Resinoid Corp.
Friction Materials Standards Institute	Rostone Engineering Corp.
GAF Corp.	Royal Industries
Garlock, Inc.	Shipbuilders Council of America
Gatke Corp.	Southern Asbestos Co.
General Dynamics Corp.	Stanhope Products Co.
Gibson-Homans Inc.	Supradur Manufacturing Corp.
Grant Wilson, Inc.	Synthane-Taylor Corp.
Gulf States Asphalt Co.	Thiokol Corp.
Gypsum Drywall Contractors Intern'l	Tremco, Inc.
Haveg Industries, Inc.	Trumbull Asphalt Co.
Hollingsworth & Vose Co.	Union Carbide Corp.
Industrial Safety Equipment Asn.	Uvalde Rock Asphalt Co.
International Fiber Inc.	Vermont Asbestos Group
Jim-Walter Research Corp.	Wagner Electric Corp.
Johns-Manville Corp.	Western Slate Co.
Karnak Chemical Corp.	Wisconsin Gasket & Manufacturing Co.
Kentile Floors Inc.	
Lamons Metal Gasket Co.	
Latex Fiber Industries	

