

ASBESTOS STUDY
COMMITTEE - 1973

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FRICITION MATERIALS STANDARDS INSTITUTE, INC., E. 210 ROUTE 4, PARAMUS, N.J. 07652

December 26, 1973

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TO: ASBESTOS STUDY COMMITTEE

SUBJECT: ACTIVITY CONCERNING ASPESTOS

Mr. I. H. Weaver, Chairman of the Committee has kept me abreast on various activities in government, industry and in the press concerning asbestos. Because of the considerable amount of literature I am only forwarding articles that your Chairman specifically suggested I send to the Committee Members. These articles are:

1. "Type of Asbestos and Respiratory Cancer in the Asbestos Industry" (Types of asbestos and their carcinogenic potentials).
2. "Asbestos Health Question Perplexes Experts" (A summary of the Durham, N.C. meeting on the biological effects of ingested asbestos).

In addition, I have listed all the articles received from Mr. Weaver which are related to the asbestos problem. Should you wish a copy of any of these articles, please let me know. One item is a 16 page booklet entitled "CAUTION: ASBESTOS DUST.... I do not have extra copies of this booklet but they are available at a price from Channing L. Bete Co., Inc., 45 Federal Street, Greenfield, Mass. (or directly from NIOSH). See attached price list for this booklet.

The foregoing is to keep the Committee posted concerning literature on asbestos.

EWD:11z
Enc.

E. W. Drislane
Executive Director

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FMSI 02468

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<u>ARTICLE (SYNOPSIS)</u>	<u>SOURCE/AUTHOR</u>	<u>DATE</u>
Asbestos, Talc and Nitrites in Relation to Gastric Cancer (A summary report on talc injections into hamsters indicating no carcinogenic effects)	American Industrial Hygiene Association Journal	May 1973
The Medical Surveillance of Asbestos Workers (Exposure and Radiological Surveillance)	Lewinsohn, H.C., Royal Society of Health Journal	April 1972
Don't Drink the Water, Don't Breathe the Air (Reserve Mining's Discharge of "Tailings" into Lake Superior)	Nader, R., Harris, R., Environmental Action	September 1973
CAUTION: ASBESTOS DUST--- (A booklet)	Published by Channing L. Bete Co., Greenfield, Mass. Available from NIOSH	July 1973
A review of CAUTION: ASBESTOS DUST---	Swetonic, M., for Asbestos Information Association	July 1973
The Locus of Pathogenicity of Asbestos Dust (Pathogenicity results from polyfilamentous structure)	Gross, P., Harley, R.A. Arch Environ Health	October 1973
Asbestos: Underrated Peril (A synopsis of Fritsch & Castleman allegations - primarily asbestos in industry)	Environmental Action Bulletin	October 1973
Anti-Pollution Device Approved for Asbestos (The JM PENTAPURE Impinger)	Asbestos Magazine	October 1973
Letter, Asbestos Information Association to Department of Labor (Comment on amendment to CFR permitting immediate public disclosure of monitoring results)	Mereness, R. H., of AIA	October 1973
Criteria for Hazardous Exposure Limits (An overall survey on establishment of permissible limits for exposure to hazardous substances)	Hatch, T.F., Arch Environ Health	October 1973
The Asbestos Industry Struggles to Comply with-Tough New Standard (Industry approaches on OSHA Asbestos Standards)	Snider, R.J., Occupational Hazards	October 1973
The New Dimension in Occupational Health (A history of the asbestos standard)	Occupational Hazards	October 1973

<u>ARTICLE (SYNOPSIS)</u>	<u>SOURCE/AUTHOR</u>	<u>DATE</u>
Asbestos Dust is Linked to Disease (Asbestosis, Lung Cancer, Mesothelioma, and Gastrointestinal - brief summaries of Dr. Selikoff reports)	Occupational Hazards	October 1973
Crisis in Silver Bay (The Reserve Mining Co. court case concerning asbestos fibers in water)	TIME Magazine	October 1973
Occupational Health Factors in the United Kingdom (Diseases related to asbestos exposure)	Lewinsohn, H.C., Holmes, S.	October 1973
Data Sparse in Asbestos Scare (Reserve Mining Co. asbestos in Lake Superior - difficulty in establishing asbestos and gastro intestinal cancer link)	Medical World News	October 1973
Conference on Biological Effects of Ingested Asbestos, Durham, N.C.	Mereness, R.H., of Asbestos Information Association report	November 1973
Reserve Mining Report (Dr. Paul Gross testimony - in direct opposition to Dr. Selikoff testimony)	Special Report	November 1973
Health Effects of Ingested Asbestos Debated Inconclusively (A summary of the Durham,N.C. meeting)	Environmental Health Letter	December 1973
Type of Asbestos and Respiratory Cancer in the Asbestos Industry (Types of asbestos and their carcinogenic potentials)	Enterline, P.E., Arch Environ Health	November 1973
Asbestos Health Question Perplexes Experts (A summary of the Durham, N.C. Meeting on biological effects of ingested asbestos)	C & EN	December 1973

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FRICTION MATERIALS STANDARDS INSTITUTE, INC., E-210 ROUTE 4, PARAMUS, N.J. 07652

July 6, 1973

To: Asbestos Study Committee

Subject: Asbestos from Brake Linings as a Water Pollutant

Enclosed is an article from the New York Times datelined July 3, 1973. In addition to alleging that the automobile is a major polluter of water, the first pollutant listed is asbestos from brake linings.

This may be the sequel to the brake lining (and clutch facing) asbestos emissions tests run by the Bendix Corporation for EPA where 85% of the asbestos emissions were dropped out or deposited on the ground.

EWD/erc
Enclosure:

E. W. Drislane
Executive Director

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FMSI 02472

FRICTION MATERIALS STANDARDS INSTITUTE, INC.

N.Y. TIMES, July 3, 1973

E.P.A. Study Calls Autos Chief Polluters of Water

WASHINGTON, July 3 (UPI)—
A study carried out for the Environmental Protection Agency concludes that cars are primary polluters of water.

Biospherics, Inc., of Rockville, Md., an independent research concern, said in a report issued yesterday by the E.P.A. that pollutants spread on roads by autos befoul rivers and streams almost as much as municipal sewage.

The pollutants include asbestos from brake linings, rubber from tires, zinc from oil and tires, lead from gasoline and nitrogen and phosphorus compounds. Rainstorms carry the pollutants into waterways.

ASBESTOS AND THE FRICTION MATERIAL INDUSTRY

Mr. I. H. Weaver of Raybestos-Manhattan, Inc., who serves as Chairman of the Friction Materials Standards Institute Asbestos Study Committee addressed the Annual Membership Meeting of the Institute. Mr. Weaver's address was delivered in Vail, Colorado on Wednesday morning, June 27, 1973.

Mr. Weaver's address follows:

When Ed (Drislane) asked me to attend your annual meeting last year, I had to decline, which may have been just as well in view of the confused status of both OSHA and EPA regulations at the time. This year things are only slightly less confused, but I am glad to be able to be here anyway to attempt to fulfill my responsibilities in reporting to you as your Asbestos Study Committee Chairman. Rather than present a detailed statement covering Committee activities for the year, I should like to use my time to review some of the more controversial and confused elements of the Federal Asbestos Regulations, and give recommendations as to what I think the stance of the Friction Materials Industry should be in regard to them.

In lieu of a detailed report covering the past year's activities, I have prepared a page and a half summary of the Committee's work from June '72 thru June 1, 1973. Mr. Drislane will circulate copies of this summary to anyone who may be interested in it, and if any of you have questions or recommendations concerning our past work or future intentions, please feel free to bring them up here, or if you prefer, transmit them to Ed for our review later.

Probably the single most significant event that occurred during the past year on the subject of asbestos hazards was the meeting of the International Agency for Research on Cancer that was held at Lyon, France last October. This meeting was attended by more than a hundred and thirty medical researchers and representatives of government, industry and labor from virtually every major asbestos consuming or producing country in the world. For four days intensive sessions on asbestos were held by three different panels, each made up of ten to twenty-five of the foremost medical and scientific experts operating in the various fields of asbestos-health research. Following the meetings the committees issued a combined report on asbestos cancers. I think the following five items summarize their most important conclusions:

- (1) All major commercial types of asbestos can cause cancer.
- (2) Evidence suggests that excess lung cancer is not detectable when occupational exposure has been low. (Just what is meant by "low" was not stated.)

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Asbestos and The Friction Material Industry (cont'd)

- (3) Evidence has been greatly strengthened that all commercial types of asbestos except Anthophyllite may be responsible for mesothelioma. (Risk is greatest with Crocidolite, less with Amosite, and apparently still less with Chrysotile.)
- (4) Cigarette smoking is an important factor enhancing lung cancer risk in asbestos workers.
- (5) Surveys of occupational groups have shown a small excess risk of types of cancer other than bronchial and mesothelial, especially those of the gastro-intestinal tract.

The most important item here is the incrimination of all major types of asbestos as causal agents for carcinoma, particularly mesothelioma. Most of the other items only confirm or substantiate previous conclusions. Since most of us use substantial amounts of Chrysotile asbestos in our formulations, association of this material with mesothelioma and other types of cancer is of serious concern.

A number of individuals who attended the IRAC meetings came away with the definite impression that government recognition of asbestos hazards has been accomplished and henceforth should be taken for granted. We can now look to the next major effort being geared toward worker education regarding occupational health hazards. The Occupational Safety and Health Act requires information be given by employers to workers concerning the degree of their exposure along with instruction in ways for minimizing exposure. Therefore, it is incumbent on all employers whose workers handle or come in contact with asbestos-containing materials to provide some kind of instruction or training to educate the workers concerning potential hazards and means of avoiding them wherever possible. Accordingly, it would be prudent for all friction materials manufacturers to develop programs to assure adequate communication with their employees regarding asbestos dust hazards, and to inform them of monitoring results, good work practices, and their responsibilities in complying with OSHA regulations.

If such measures are not taken promptly and properly by management, industry will leave itself wide open for intense, and in my opinion justified, criticism by organized labor, as well as potential severe enforcement action by government, and attack by any number of social and environmental activist organizations. If we don't do this ourselves, be assured that someone else will jump on the bandwagon and do it in a way that will not be to our benefit. We can expect more and more activity by organized labor toward educating and training workers regarding health and safety problems and in pointing out to workers what their employers' responsibilities are concerning these matters.

Asbestos and The Friction Material Industry (cont'd)

Many union activists are really furious with government's failure to pursue the provisions of safety and health regulations to the letter, and there appears to be a good opportunity for industry to release reliable information concerning asbestos hazards both to their employees and to their customers before more inflammatory information of this type is aired in the media under organized labor's banner. These rules and regulations pose much more severe problems for other segments of the asbestos industry, particularly asbestos textile manufacturers, than they do for most friction material manufacturers.

I have been involved in asbestos products manufacturing for over twenty-five years and have visited dozens of plants and am aware of only a few friction materials products manufacturing operations that I consider to represent major problems in achieving conformance to either OSHA or EPA requirements, including the 2 fibre per cc threshold limit value. Since significant polarization may be expected always to exist between management and labor and between management and environmental groups concerning asbestos-health subjects, and since control or conformance to both EPA and OSHA regulations appears to be generally feasible, as far as friction materials are concerned, my recommendation to friction material manufacturers is that they proceed as rapidly as possible towards conformance with the regulations. Also I recommend avoiding inclinations to misinterpret provisions where the intent of the regulation is clear, but the wording may be subject to question. There has been considerable disregard of a number of provisions mainly in the areas of labeling, monitoring, employee education, personal protection, waste disposal, and use of warning signs by segments of asbestos products manufacturing, and I believe this applies to friction material to some extent.

One of the most obvious items has to do with industry's reluctance to accept asbestos products labeling as required by OSHA. There has been much advertising of asbestos textile products citing the benefits of treatments or coatings that purport to lock the fibre into the product in such way that it cannot become airborne during use. While these claims probably are true to varying degrees depending on the nature of the product, its use, and the way in which it is handled, I do not think this claim is at all applicable to friction materials.

I know of no way any of us can be absolutely sure that his friction products, regardless of whether they are sold as original equipment or on the replacement market, will not be subjected to additional operations or alterations in the field that could result in excessive exposure of workers or bystanders to airborne asbestos fibre. I have been appalled to learn of a number of instances where this problem has occurred, and some of these cases involved people that certainly might have been expected to know better.

Asbestos and The Friction Material Industry (cont'd)

If this kind of thing occurs in fabrication operations of major OE customers, it appears to me there can be no argument about the need for educational measures to reduce chances of unnecessary exposure during grinding, drilling or cutting operations. To those who argue that labeling or other types of warning need not apply to replacement materials because fabricators or applicators handling replacement quantities are exposed relatively intermittently, I say emphatically this just ain't necessarily so! Large volume replacement users present major potential hazards, and even small job shops can needlessly expose people to high fibre concentrations if operations are performed without controls. That these may be intermittent and of short duration does not preclude possibility for occurrence of adverse health effects in hyper-susceptible individuals, or in less sensitive individuals who may receive exceedingly high doses of short duration but who may be smokers, or who may experience effects because of synergism with other materials to which they may be exposed either at work or elsewhere.

To me, labeling all containers or packages of asbestos-containing friction material is the very least the industry can do to fulfill moral obligation to its customers, their employees, and the public and at the same time conform with minimum requirements of the Occupational Safety and Health Act. I seriously question whether mere labeling is enough to fulfill this requirement. It has been suggested by others as well as myself several times in the past that additional instructions, of a more comprehensive nature than is practical to provide on a label, be inserted inside each package where a possibility exists that the product might be used in such manner that an airborne dust problem could be created. A number of responsible asbestos products manufacturers already are following this procedure, and there is a good possibility that it may be made mandatory in future regulations.

Adoption of these measures by industry would show good faith toward compliance and should reduce possibilities of future criticism by consumer protection groups. I doubt very much that it would have any significant effect on sales or consumption of asbestos friction materials. I know of no substitute for asbestos in normal automotive friction material service, and I know of little or no noticeable effect labeling has had on other products where cautionary labeling has been used thus far.

Keep in mind that NIOSH and the OSHA Advisory Committee recommended a much more severe label than the one we are talking about. This subject was heatedly debated during the OSHA Advisory Committee deliberations, and their final recommendation called for use of the word "Danger" instead of "Caution" and specifically mentioned that breathing asbestos causes cancer. Very frankly, I was exceedingly

Asbestos and The Friction Material Industry (cont'd)

surprised when the final OSHA Standard came out in favor of considerably milder working. Now I am perplexed that Industry resists the OSHA labeling requirement as virgorously as it does.

Many other elements of the OSHA Regulations came out more favorably toward industry than the recommendations that were submitted by NIOSE and the Advisory Committee, and stiff resistance by Industry will be needed to prevent OSHA from strengthening the regulations in months to come. We can expect considerable effort to be made by anti-industry elements of the medical profession, by organized labor, and by environmental groups who want the airborne standard lowered from 2 fibres per cc to 1 fiber per cc or even less. Some individuals even speak of asbestos in terms of zero TLV, which, of course, is completely impractical and would result in virtual banning of mining and use of asbestos for anything.

Another controversial subject is fibre monitoring. This is pretty much of a disaster area because of lack of confidence in the membrane filter method for sampling and analyzing for airborne asbestos. Much of this problem is attributable to the nature of the operation, which involves considerable judgement in addition to technical competency on the part of the people performing the tests. Even when performed by practiced individuals under the best possible conditions, the method is subject to wide variations in results. Needless to say, when performed by relatively inexperienced personnel under the widely varying conditions that exist in the field and between different laboratories, results can be extremely variable. In my opinion, the method is not at all suitable for enforcement purposes, but can be used to good advantage by industry for policing its own operations and for determining where to devote control efforts with maximum advantage or potential for improvement.

In spite of its deficiencies, I think the membrane filter method will persist for quite some time, but I will not be at all surprised if future emphasis by OSHA shifts toward work practice regulations rather than monitoring to a numerical standard.

Another controversial item has been the protective clothing requirement. This has created considerable question and controversy, particularly in the textile industry where ceiling limits are difficult to control on certain operations. Different OSHA regional offices have applied different interpretations to the protective clothing requirement, and it's hard for me to see how some of them can be as liberal on interpretation as they are.

The regulation specifically calls for full body cover including gloves, hat, and foot covering, where levels exceed the ceiling

Asbestos and The Friction Material Industry (cont'd)

limit. In spite of this, certain OSHA regional offices take the position that any protective clothing, even as scanty as a short sleeves shirt and trousers, is adequate, provided this clothing is changed before the employee leaves the plant. Personally I believe this lenient interpretation provides effective protection for most exposures, and I concur that the important thing is to make sure the employee doesn't take the contaminated clothing out of the plant.

Other OSHA offices stick to the letter of the requirement, which creates a major problem on many operations where discomfort from full cover clothing can have a very significant effect on operator efficiency. This requirement is under vigorous attack by companies that are having problems with it. No doubt some judgement by the Occupational Safety and Health Review Commission or the Federal courts will be forthcoming concerning this element of the regulations, and it is to be hoped that future revisions of the rule will permit more flexibility than the existing wording does.

Waste disposal has created problems with both OSHA and EPA regulations, and some friction material manufacturers already have extensive facilities in the works to cope with these problems. Of particular interest is the pelletization of friction material waste to reduce dust to a form that avoids necessity for bagging or otherwise containerizing the material. This also reduces or eliminates generation of fugitive dust during disposal in landfills. Several manufacturers have installed extensive pelletizing systems to solve their waste disposal problems, and this approach appears to be acceptable to both EPA and OSHA as well as state environmental control agencies. Other approaches have been to utilize wet disposal methods and, of course, some manufacturers are bagging and labeling the dry waste, where wet methods or pelletizing are impractical. Where bags or other containers are used for waste disposal, they should be labeled in accordance with OSHA.

Medical examination requirements have presented problems, particularly the one of determining what constitutes "asbestos exposure". Some companies have adopted the attitude that all workers, including office and research people, even though they are not normally considered to be exposed to asbestos, should be included in the medical surveillance program. On the other hand, many seem to follow the tack that anyone exposed to one fibre per cc or less need not be included. My advice would be to check everybody where there is any doubt about actual exposure.

I could dwell at considerable length on other problems and inconsistencies of the OSHA Regulations and their various interpretations, but believe I probably have expounded on this enough for the moment. However, the one main point I want to get across is that any

Asbestos and The Friction Material Industry

comparison of the existing regulations with industry's position as stated in their input to the government prior to promulgation of the regulation, and compared with the recommendations of NIOSH and the OSHA Advisory Committee, will readily indicate that the existing OSHA standard, with the one serious exception of the two fibres per cc limit to be imposed in 1976, follows industry's position rather closely. If I appear to be defending the present OSHA Asbestos Regulations, it's only because I am very much aware of how much more strict these rules would be if the recommendations of NIOSH and the Advisory Committee had been followed. I doubt that many in the industry recognize or realize just how close they may have come to being regulated out of existence.

Future occupational safety and health legislation probably will rectify numerous inadequacies in present rules and may ameliorate some aspects of existing occupational safety and health standards. However, I seriously doubt that much relaxation if any is to be expected in regard to the Asbestos Regulations. I think the industry is going to have to mount a very determined effort to prevent these regulations from being tightened in the future.

The EPA regulations concerning ambient air control of asbestos are another matter. Although it was responsible for initially tagging asbestos as a hazardous pollutant, since doing so EPA has been much less diligent in pursuing its announced intentions toward regulation of the materials it declared hazardous. EPA first declared asbestos a hazardous air pollutant on March 31, 1971, and published proposed regulations December 7 of the same year. Hearings were held and much industry input was accepted and very deliberately reviewed by EPA before they finally issued the National Emissions Standard on April 6 of this year. This regulation was promulgated nearly a year later than called for under the requirements of the Federal Clean Air Act. For this EPA has been under considerable criticism ever since.

In addition to being late, the EPA standard is a lot less stringent than I or any other industry people, who have followed its development, expected. Nearly all the objections voiced by industry concerning the originally proposed standard were removed before they issued the final regulations. In addition, they modified some requirements to the extent that no one in industry expected, or even would have had the temerity to request, in meetings where these subjects were discussed between industry representatives and EPA.

In essence, the standard boils down to the following statement as far as emissions are concerned: There shall be no visible emissions to outside air from any asbestos mill or manufacturing operation except when a specified method of air cleaning, also part of the standards, is used before the emission escapes. In general, the air cleaning systems specified, filter asbestos emissions to the point that visible emissions, other than possible condensed water vapor, would not be produced anyway.

Asbestos and The Friction Material Industry

Other requirements concerning use of tailings for surfacing roads, the regulation of demolition activities, and controlled application of spray-on materials are of little concern to friction materials processors. Our biggest concern lies with the emission standard, which will require the tightening up of dust collection facilities and waste disposal practices wherever fugitive dust problems occur.

The biggest problem with EPA regulation I have found thus far has been non-uniform interpretation of what constitutes a visible emission. I know the EPA people who drafted the regulation intended this to mean just what it says. If it's visible under any condition whatsoever, and EPA approved air cleaning systems are not in use, the emission is in violation. Since most friction materials manufacturers already are employing baghouses that meet EPA standards for cleaning their exhaust air streams, it is unlikely that any severe impact will occur to the industry as a whole on account of the EPA regulations as they now stand. Those few manufacturers who are relying on wet dust collectors that do not meet the EPA standard may have problems. The best way to be sure of meeting EPA requirements is to sharpen up on maintenance and operation of existing baghouse filters and replace existing wet collectors with baghouse filters to eliminate visible emissions.

In summary, the OSHA and EPA Asbestos Regulations are alot more lenient than many interested and concerned parties wish. We can expect pressure to have them tightened. Friction materials manufacturers should support Asbestos Industry efforts to have them mitigated in hopes they at least aren't made more severe. In the meantime, we should conform to the regulations to protect our employees and our customers and to avoid criticism and enforcement actions.

Your Asbestos Study Committee will continue to follow the interpretation of existing regulations, the trend of proposed changes, and the development of new medical and scientific study material that may affect future regulation of asbestos products. We welcome your questions and any imput you may be able to make concerning our activities.

MEMO

from the desk of
I.H. WEAVER

6-19-73

The attached states the EPA Asbestos
Emission Standard more succinctly than
any wording I have seen thus far. I
suggest you use this wording if need for any
further explanation arises. note that
"visible emission" are permitted if
specified air cleaning methods are employed.

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EPA Sets Final Emission Standards For Asbestos, Beryllium, Mercury

National emission standards for the first three air pollutants to be designated as hazardous to health under the 1970 Clean Air Act Amendments—*asbestos*, *beryllium*, and *mercury*—were set by Environmental Protection Agency Administrator William D. Ruckelshaus on March 30. The Act defines hazardous air pollutants as those which "may cause, or contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness." The EPA action complied with order issued January 29 by U. S. District Court in Washington, D.C., in suit brought by the Environmental Defense Fund, Inc., and Ralph Nader's Health Research Group last December. The suit charged that EPA had illegally delayed issuance of the standards for more than six months, and the court ordered EPA to promulgate the standards within 60 days.

Many studies have shown a link between occupational exposure to asbestos and a higher-than-expected incidence of bronchial cancer, Ruckelshaus said. Asbestos also has been identified as a causal factor in development of cancers of the membranes lining the chest and abdomen.

The proven effects of beryllium on health include both acute and chronic lethal inhalation effects as well as skin and eye effects. The Beryllium Case Register at Massachusetts General Hospital in Boston now contains over 820 proven cases of beryllium-related diseases, mostly from occupational exposure.

Exposure to metallic mercury vapors may cause central nervous system injury and kidney damage, Ruckelshaus noted. Laboratory data from animal tests indicate a risk of accumulation of mercury in body systems that could result in brain damage, while prolonged exposure involves a definite risk of mercury intoxication, he said.

A summary of specific regulations for each of the pollutants follows.

Asbestos Standards

The asbestos standards are:

- There shall be no visible emissions to the outside air from any asbestos mill except when a specified method of air cleaning, also part of these standards, is used before the emissions escape to the outside air. In general, these air-cleaning systems filter asbestos emissions to the point that visible emissions would not be produced anyway.

- The surfacing of roadways with asbestos tailings is prohibited, except for temporary roadways in an area of asbestos ore deposits.

- There shall be no visible emissions to the outside air, unless the specified air-cleaning methods are used, from any operation which manufactures: cloth, cord, wicks, tubing, tape, twine, rope, thread, yarn, roving, lap, other textile products, cement products, fireproofing and insulating materials, friction products, paper, millboard, felt, floor tile, paints, coatings, caulks, adhesives, sealants, plastics and rubber materials, and chlorine.

- The regulations covering demolition of buildings are: (1) asbestos materials used to insulate or fireproof any boiler, pipe, or structural member shall be wetted and removed from any building before the wrecking begins. The asbestos debris shall be wetted at all stages of demolition and related handling operations. (2) No pipe or structural member covered with asbestos insulating or fireproofing material shall be dropped or thrown from any building but shall be carefully lowered to ground level. (3) No asbestos debris shall be dropped or thrown to the ground or from one floor to another. For buildings, 50 feet or greater in height, asbestos debris shall be lowered to the ground via dust-tight chutes or containers.

- Certain demolition operations are exempt from the regulations, except for the wetting of asbestos debris, if a building has been declared to be structurally unsound and in danger of imminent collapse.

- There shall be no visible emissions from the spray-on application of materials containing more than one percent asbestos, on a dry weight basis, used to insulate or fireproof equipment and machinery. Spray-on materials used to insulate or fireproof buildings, structures, pipes, and conduits must contain less than one percent asbestos dry-weight basis.

Beryllium Standards

The beryllium standards apply to extraction plants, ceramic plants, foundries, incinerators, and propellant plants which process beryllium ore, beryllium, beryllium oxide, beryllium alloys, beryllium-containing waste, and machine shops which process beryllium, beryllium oxides, or any alloy when such alloy contains more than 25 percent beryllium by weight.

The beryllium standards are:

- Emissions from stationary sources shall not exceed 10 grams of beryllium over a 24-hour period. As a substitute for this standard, an owner or operator may request approval from the EPA Administrator to meet an ambient concentration limit on beryllium in the vicinity of the stationary source of 0.01 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

- The burning of beryllium and/or beryllium containing waste is prohibited except in incinerators. Incinerator emissions must comply with the above 24-hour standard.

Beryllium emission standards for rocket-motor firings at test sites are:

- Emissions to the atmosphere from rocket motor test sites shall not cause time-weighted atmospheric concentrations of beryllium to exceed 75 microgram minutes per cubic meter of air within the limits of 10 to 60 minutes, accumulated during any 2 consecutive weeks, in any area in which an effect adverse to public health could occur.

- If combustion products from the firing of beryllium propellant are collected in a closed tank, emissions from the tank shall not exceed 2 grams per hour and a maximum of 10 grams per day.

Mercury Standard

The mercury standard applies to stationary sources which process mercury ore to recover mercury and to those which use mercury chlor-alkali cells to produce chlorine gas and alkali metal hydroxide.

The mercury standard is: Emissions shall not exceed 2300 grams of mercury per 24-hour period.

'Complex Source' Air Pollution Rules To Be Established by June 11

Regulations requiring states to review, prior to construction, the air quality impact of "complex sources" such as shopping centers, sport complexes, highways, and similar facilities,

will be issued by the Environmental Protection Agency by June 11. Rules will require states to determine whether activities associated with such sources, including newly generated auto traffic,

BULLETIN

N O. 478

June 14, 1973

Subject: ASBESTOS STUDY COMMITTEE ACTIVITIES

At the June 1, 1973 meeting of the Asbestos Study Committee, it was recommended that the following information be distributed to the Membership.

1. OSHA Labeling Requirements
2. In-plant CAUTION Sign (W. H. Brady Co.)
3. EPA Emissions Standards - A Discussion

OSHA Labeling Requirements

Attached is Exhibit I, a display of four different OSHA CAUTION labels. One is with a gummed backing to attach to packaging. Another is in the form of a tag. Others are imprinted on the cartons or boxes when purchased from the box manufacturer.

The Committee adopted a resolution at an earlier meeting which essentially recommended that Members obey the law. That resolution stated:

That (1) where asbestos containing materials do not have their asbestos fiber completely locked in, or (2) where subsequent operations may be performed on asbestos containing materials, the hazardous labeling practice be adhered to in accordance with the Label Specifications in the OSHA Standards for Exposure to Asbestos Dust.

The Committee has decided to make no recommendations on style, minimum dimensions, etc. It recommends that the manufacturer comply with the requirements of the act, demonstrating "good faith" in their observation of the requirements. In other words, printing a miniature CAUTION label on the bottom of a large box would not be demonstrating "good faith." According to the Standards the labels "shall be printed in letters of sufficient size and contrast as to be readily visible and legible."

In-plant CAUTION sign (W.H.Brady Co.)

Enclosed also is a copy of a letter from the W.H.Brady Co., Milwaukee, Wisconsin, to which we've added a CAUTION sign as manufactured by the Brady Co. This sign conforms to the requirements of the OSHA Standards. Several Committee members feel the cost of these signs is attractive.

See Exhibit II.

D-6
(8)

EPA Emissions Standards - A Discussion

At this recent Committee meeting, the new EPA Emissions Standards were discussed. As there were several different interpretations by Members and Regional EPA personnel, a digest of the minutes of the meeting are enclosed.

It will be noted that there are different interpretations concerning several items: (1) "new source" versus "existing source," (2) whether to quantify machines under "Process Description," and (3) whether "Amount of Pollutant" - if given total into each Process - will then be construed as being 5 to 10 times the total asbestos entered into the process.

See Exhibit III.

EWD/erc
Enclosures:

E. W. Drislane
Executive Director

To: Active Members
Regional Members

FRICTION MATERIALS STANDARDS INSTITUTE, INC.

CAUTION

**Contains Asbestos Fibres
Avoid Creating Dust
Breathing Asbestos Dust May
Cause Serious Bodily Harm**

CAUTION

**CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
BREATHING ASBESTOS DUST MAY CAUSE
SERIOUS BODILY HARM**

CAUTION

Contains Asbestos Fibers

Avoid Creating Dust

**Breathing Asbestos Dust
may cause serious Bodily Harm**

CAUTION

**Contains Asbestos Fibers
Avoid Creating Dust
Breathing Asbestos Dust May
Cause Serious Bodily Harm**

REPRESENTATIVE OSHA CAUTION LABELS - ASBESTOS PRODUCTS

EXHIBIT I

FMSI 02486

Attention: Plant Engineer

Dear Sir:

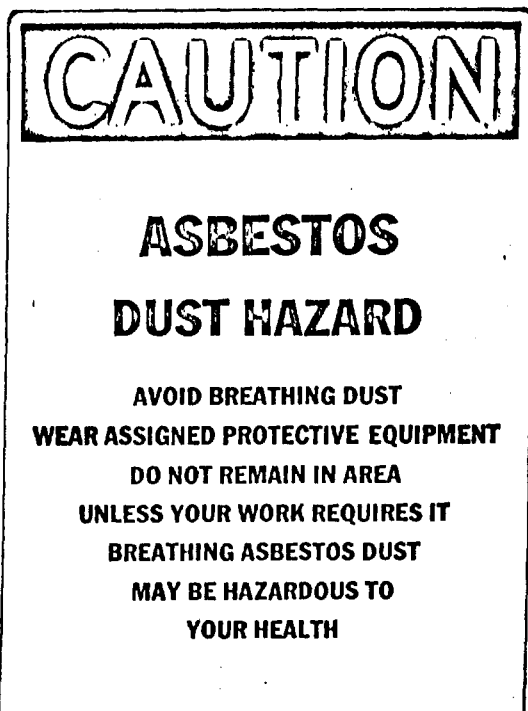
As a supplier of asbestos materials to industry and commerce we thought you'd like to know Brady has asbestos hazard signs in stock, ready for immediate shipment. The sign complies in color, and size and wording with OSHA 1910.93a(g). A reproduction of the sign is attached.

Stock #CAU-PP-11-5 signs are made of non-corrosive, non-conductive Brady B-450 linear polyethylene. The contrasting color black and yellow signs can be used indoors or outdoors and have built-in ultraviolet light inhibitor for long life. They are mechanically mounted with fasteners.

These 14"x20" tough, durable signs are priced at \$3.99 ea. (10-40 quantity) and \$3.79 each in 50-99 quantities, F.O.B. Milwaukee, Wisc. or from any Brady Distributor listed on the enclosed sheet.

A copy of our latest catalog MS-520 is also enclosed for your review of OSHA marking requirements.

We look forward to receiving orders for your OSHA marking needs.



Yours truly,

W. H. BRADY CO.

P. G. Gengler
Sales Manager
Industrial Products Division

MAILED BY FILE

EXHIBIT II

FMSI 02487

EPA EMISSIONS STANDARDS FOR ASBESTOS - A DISCUSSION

The following comments are digested from a June 1973 discussion of an Asbestos Study Committee meeting at the Institute. These comments may be of some interest to those filing the EPA Source Reports.

While the new EPA emissions standards appear to be reasonable, there is some difficulty in interpretation. For example, the standards are not simply "No visible emissions," but (1) there could be no visible emissions even if they do not meet the air cleaning requirements, or (2) one could even have visible emissions if they were using a collector with the specifications recommended by the EPA. In other words, if you have the EPA's recommended collector you could possibly have visible emissions and still be complying with the EPA requirements. It goes without saying, that interpretation of the requirements by individuals in the different EPA regions may vary quite a bit.

The EPA is saying in their Standards that the wet collector is not as efficient as the dry-bag collector. If an EPA Enforcement Officer sees a vapor from the stack where a wet collector is used, the source best be able to prove there is no asbestos being discharged. In other words, it can be inferred that if a source has wet collectors they may more likely be cited for visible emissions.

While it is apparent that the EPA's emissions standards promote the dry collection of asbestos in bags, many problems have been indicated with these collectors. One of the problems was repeated fires in the collection system. Another member stated that he too had this problem until cigarette smoking was banned in the factory. Since discontinuing smoking in the factory, he claims they have not had more than one or two fires in the last 25 years. Another member said that may be, but they have had the No Smoking rule for many years and they still have fires. This party blames the fires on the incentive program where the workers receive a bonus for exceeding certain work standards. This promotes the taking of heavier cuts with grinding wheels and creates sparks which apparently promote the fires in the system. The operation that has not had any fires for the past 25 years does not have an incentive system and does not permit smoking in the work place. Where the wet collectors are now in use, apparently the EPA is permitting their use as complying with the requirements.

At this point, the disposal of the materials picked up by the collectors was brought up. One member sent the dust to a pelletizing machine. In this process they add 5%-10% cement to the pelletizer. A volumereduction in the order of 3 to 1 was developed. The pellets are taken by truck and dumped as land fill. While the pellets could be broken down into a powder, if they receive reasonable handling they can be readily moved from the pelletizing machine to the land fill operation. It is this member's intention to install a vacuum system from the collecting areas to go to a central pelletizing machine. One member described his handling of dust from (1) a central collector, to (2) a screw conveyor, to (3) a truck, and to (4) the land fill. The workers in this case use respirators.

The pelletizing operation not only reduces the transportation cost by three times but eliminates the need for the watering truck and an individual to wet down the land fill. However, the costs of this pelletizing equipment are substantial. A manufacturer of pelletizing equipment is Ferro Tech Inc., 1231 Banksville Road, Pittsburgh, Pa. 15216.

EXHIBIT III

FMSI 02488

Several members mentioned that in dealing with the EPA Regional Offices they were having difficulties deciding what was a "new source" and what was an "existing source." Also, where one manufacturer adds one machine to an existing collection system he may not be in compliance without getting a Waiver of Compliance. Apparently the EPA will not give a Waiver of Compliance that will take more than 12 months to complete. An applicant must give the steps to be taken and the schedule to be met. When each date arrives, the applicant must advise EPA concerning completion of that stage of the schedule.

One member felt that we should review the EPA source report form to get a better understanding of what they were calling for. Page one of the report would be used for each factory. As there would most likely be several points of emission, page 2 would be completed for each stack or collector that emits asbestos.

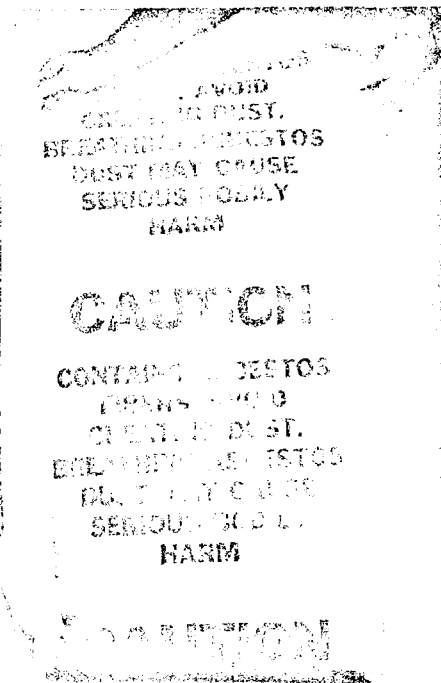
If a manufacturer wished to make an addition or modification in his plant with equipment that might put asbestos into the atmosphere, he must file with the EPA. On page 1 of the report he would cross off the words "Source Report" and type in either "Application to Construct a New Source," or "Application to Modify Existing Source." In reviewing page 2 of the report under "Process Description," some questions came up as to how to complete this section. One member who had worked on this report with the EPA said you should enter here the type of machinery used without quantifying. Another member indicated that the EPA insisted that he list the type of equipment and the numbers of each piece of equipment. If the EPA specifically said to list the numbers and types of equipment in this section it was suggested that they would have said so on page 2 of the report. The question of putting down the numbers and types of equipment could become very cumbersome where a manufacturer wished to move a grinding machine from a location with one collector to another location where it would be hooked into another collector. The member who filed with the EPA worked on reports in 2 different jurisdictions: New York and Tennessee. He indicated that at neither location did he enter the number of pieces of equipment on this form. (Since the meeting he called to advise that the application filed in Tennessee without quantities was accepted by the EPA. His application in New York State had not been either accepted or rejected as of June 4, 1973.) It would appear that Regional Offices are not in agreement as regards quantification of the equipment under the "Process Description."

The question came up concerning interpretation of question 3, the "Amount of Pollutant." In many factories a set of dry mix brake blocks could emit into a collection system at the mixer, at the briquette press, at the cut-off wheels, at grinding, at drilling, and at inspection and boxing. The problem is that this is the same original asbestos which entered the process and might be counted 6-8 times. So, in effect, a factory taking in one million pounds of asbestos might list one million pounds of asbestos going into 8 different collection systems. This, in turn, would make it appear that eight million pounds of asbestos is going into the operation. From the wording of the form, it would appear that this is exactly what the EPA wants. However, another member was told that this is not what the EPA wants. He suggests that if a factory takes in one million pounds of asbestos into the process that it should not report in total more than one million pounds of asbestos. If he had 10 different emission points, he would divide the one million pounds of asbestos by 10 to give the "amount of pollutant." Again, there apparently has been a difference in interpretation from different Regional Offices of the EPA.

On page 3 of the report, under "Waiver of Compliance," it was stated that Sections 2a and 2b did not have to be completed unless EPA specifically requests this information.

3/75

SIMPLIFY LABELING OF ASBESTOS PRODUCTS AND ASBESTOS WASTE MATERIALS



- No extra labels to buy or put on.
- No tags to come off.
- No labels to come unglued.
- OSHA specified wording printed directly on bag.
- Continuously and conspicuously displayed.
- Yellow lettering on a green background.
- Available in two sizes and two thicknesses.
- Ideal for waste such as stripped insulation, scraps, etc.

Strong, durable polyethelene bags are available in two sizes, 30"x48" and 30"x37", and two thicknesses, 0.002 and 0.004 inches. These bags were conceived as a workable solution to labeling asbestos waste according to OSHA 1910.93a. You will discover they have many other uses such as consolidating storage space for preformed asbestos insulation when removed from shipping boxes, and transporting soiled coveralls to laundry facilities once used in asbestos work.

Order today from:

LOSS CONTROL PRODUCTS OF HOUSTON

P. O. Box 52742

HOUSTON, TEXAS 77052

FMSI 02490

CURRENT PRICE LIST AS OF AUG. 15, 1974**

POLYETHYLENE BAGS WITH ASBESTOS WARNING LABEL

Flat Bags, Bottom Weld

Total Quantity
per Order

Cost per Case(200)/Cost per 1000

	.004" thickness		.002" thickness	
	<u>30" x 48"</u>	<u>30" x 37"</u>	<u>30" x 48"</u>	<u>30" x 37"</u>
1,000	53.60/268.00	42.00/210.00	29.00/145.00	23.50/117.50
2,500	52.90/264.50	41.68/208.40	28.50/142.50	22.75/113.75
5,000	52.00/260.00	41.00/205.00	28.00/140.00	22.35/111.75
10,000	51.90/259.50	40.80/204.00	27.75/138.75	22.15/110.75

Minimum Order -- 1 case of 200 bags

Prices F.O.B. Houston, Texas

7 inch twist ties -- \$1.50 per 1000

**Due to supply difficulties and pricing changes of raw materials caused by the fuel shortage, prices are subject to change without notice. Current prices are available upon request.

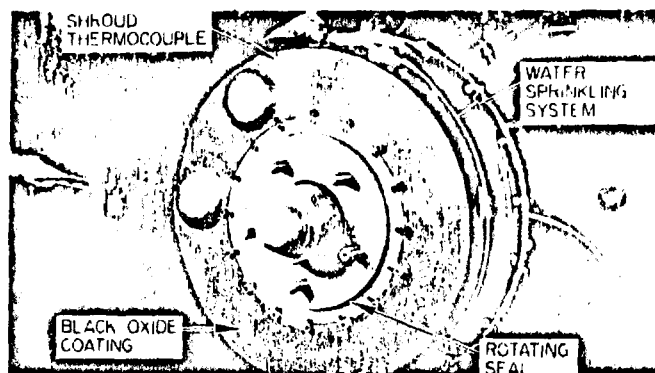
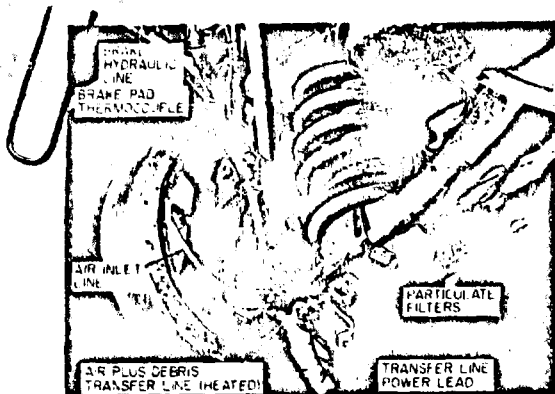
LOSS CONTROL PRODUCTS OF HOUSTON

P. O. Box 52742

Houston, Texas 77052

Samples sent upon request

FMSI 02491



1. Disc brake emissions collector (left) from back, showing instrumentation; (right) showing thermal control aids.

HOW MUCH ASBESTOS DO VEHICLES EMIT?

Most of asbestos emitted from vehicle brakes and clutches is converted to other products, with only 3.2% of total asbestos emitted entering the atmosphere, according to Bendix researchers.

A comprehensive investigation of gas and particulate emissions from automotive brakes and clutches during actual vehicle operation shows that, on the average, more than 99.7% of the asbestos emitted is converted to other products. The contribution to the atmosphere is estimated to be 5060 lb per year for the whole country -- or 3.2% of the total asbestos emitted.

These figures were obtained with a medium-weight (1850-lb test weight), high-volume passenger car with a 3-speed manual transmission, ventilated cast-iron disc brakes in front, cast-iron drum brakes in the rear, and a dry clutch. A front disc brake collector (Fig. 1) and a rear drum brake collector (Fig. 2) installed on the right side of the vehicle collected the wear debris and separated it into three fractions:

- Sump samples, including the wear debris on lining surfaces, in rivet holes, and on the brake drum.

- Surface samples, including wear debris on brake and collector shroud surfaces.

- Airborne samples, collected on membrane filters.

The clutch was sealed by closing the remaining few holes in its casing. The left wheel brakes were kept in their normal configuration. They were used to monitor the operation of the shrouded brakes. Wear debris was taken from the left brakes as well as from those on the right. The amounts of debris formed and the compositions were used to demonstrate that the brake shrouding did not significantly affect operation of the right-hand brakes.

How the tests were run

Three vehicle tests were run: the first with original equipment friction materials; the second simulating a partial reline -- fronts only were relined, with the rears retained as is to give a replicate test, and an indi-

cation of emissions trends for friction materials with continued use. The third vehicle test simulated a complete brake reline, including turned discs and drums.

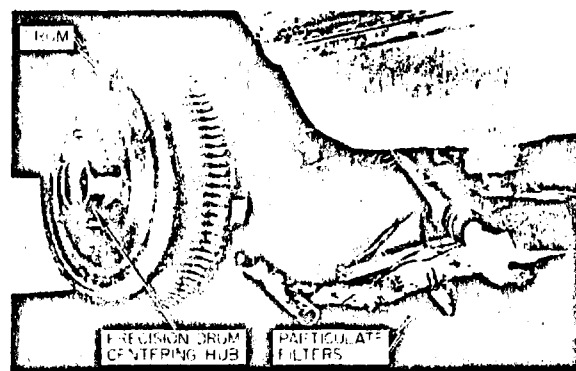
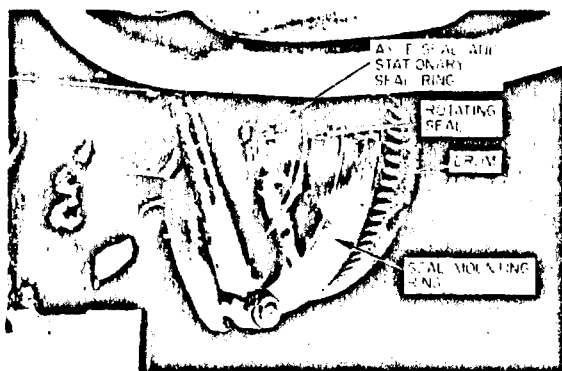
All friction materials contained asbestos, and were representative of those supplied by the industry. Materials from Abex, Bendix, Raybestos-Manhattan, Thiokol, and Worldbestos were used for original equipment and aftermarket disc pads and drum linings, selected in part because of their high-volume usage.

Collecting the emissions

Fig. 3 shows a cross-sectional view of the disc brake emissions collector. The rubbing seal is located at the hat or hub section of the rotor. The seal is a spring-loaded, graphite-filled Teflon seal of commercial manufacture. The main portion of the shroud was coated with black oxide. A water cooling system was added, and an open "mag" wheel was used to aid in cooling the enclosed brake.

A cross-sectional view of the drum brake emissions collector is shown in Fig. 4, along with details of the rubbing seal, which is the same type as that on the disc brake emissions collector. The axle hub used to align the drum was modified with a piece

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(2)



2. Assembled rear drum brake emissions collector (left) shown from inboard; (right) shown from outboard.

that was concentric to the axle bearings within 0.001 in. (0.0025 cm). A tapered lead facilitated drum mounting. Close tolerances were necessary on the concentricities to obtain reasonable seal life.

Seven test vehicle driving schedules were used. Each was followed by a measurement procedure that included taking emissions samples, measuring wear, inspecting systems, and replacing worn parts, if necessary.

First, three low-temperature tests were run: Burnish, Afterburnish Baseline, and Detroit Traffic. These were followed by the high-temperature tests — 10-stop Fade, Afterfade Baseline, 15-stop Fade, and Final Baseline.

Measuring asbestos content

Each of the samples was analyzed for asbestos content by optical and electron microscopy.

For vehicle test 1, asbestos content of brake emissions ranged from 1.65% down to 0.5%. Of the 47 analyses reported, only two were above 1.00%. For test 1, the overall average was 0.38%.

For test 2, the asbestos content ranged from 1.12% down to 0.03%. Of the 13 analyses reported, only one was above 1.09%, and only three were between 0.50 and 0.96%; all others were less than 0.50%. The overall average was 0.25%.

For vehicle test 3, the range of asbestos content in brake emissions varied from 0.51% down to 0.003%. Of the analyses reported, three were between 0.20 and 0.51%; all others were less than 0.20%. The overall average was 0.07%.

For all three vehicle tests, the over-

all average of asbestos content in the brake emissions was 0.23%.

As a check on Bendix results, independent asbestos analyses were also made, which gave slightly different results. For example, Battelle Columbus Laboratories, which analyzed 24 samples generated during the program, obtained an average of 0.171%, which is 69% of the Bendix average of 0.24% for the same 24 analyses.

The explanation for the higher Bendix values is as follows: all larger fibers (bundles of fibrils) found were assumed to be cylinders of projected diameter and length, and a fiber with an elliptical cross-section was actually smaller in volume than reported. In addition, all fibers were assumed to be 100% asbestos (partially degraded asbestos or olivine fibers were weak and mechanically reduced to nonfibrous material by the other analytical technique used, hence, only the remaining asbestos fibrils were counted).

To compare emissions properly, it was necessary to calculate the asbestos emissions factors for each sample in micrograms/mile. Values of these factors were obtained by multiplying the weights of brake debris generated by the appropriate asbestos percents, then dividing by miles per test schedule. Thus, either a high asbestos content or a large sample gave a high factor.

The trends in asbestos emissions can be summarized as follows:

- Asbestos emissions are higher for new friction surfaces and decrease with use.
- The drum brake produces more asbestos emissions than the disc brake

initially, but the difference decreases as the friction materials continue in use.

- Heavy (abusive) duty do not necessarily give a higher per cent asbestos; the large amount of debris produced, however, give a significant rise in asbestos emissions.
- Asbestos emissions from brakes decrease from fade or heavy-duty stops (highest) to burnish to moderate braking (lowest).

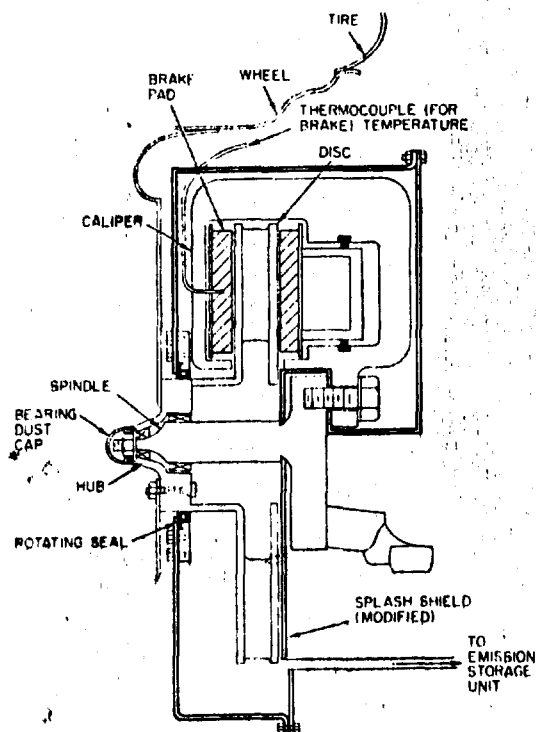
- For the disc pads only, there is an increase in asbestos emissions with increased asbestos content in the friction material. (There was no such trend for the drum brake materials.)
- Both front disc pads and drum linings of vehicle test 3 had wear rates comparable to those found in the other two vehicle tests, yet the asbestos emissions were significantly lower. (Both pads and secondary linings contained brass chips, which may have been in part responsible for the more complete conversion of the asbestos in brake emissions.)

- For both disc and drum brakes, the surfaces sample was the largest of the three (about 92%), the sump sample was next (about 7%), and the airborne sample was smallest (about 1%).

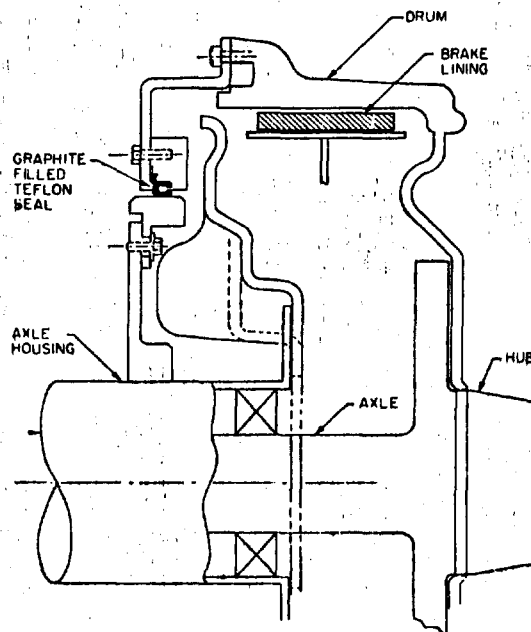
How asbestos emissions add up

An estimate of the total emissions from brakes and clutches is given in Table 1.

Values for the number of vehicles in use are based on estimates from the National Highway Traffic Safety Administration, the Federal Highway Administration, and other sources.



3. Disc brake shroud shown schematically.



4. Drum brake shroud shown schematically.

Total asbestos emissions per year were calculated by multiplying the weight of emissions per vehicle-mile by the number of miles the vehicle was driven per year and the number of vehicles in use.

For example, for passenger cars, the following estimates were used:

- Total asbestos emissions per vehicle: 28.51 $\mu\text{g}/\text{mile}$, which was obtained by averaging the values from the three vehicle tests.
- Average annual mileage for passenger cars was estimated at 9978 miles.
- Number of passenger vehicles: 96,100,000.

Substituting these values in the

equation gives:

$$\frac{28.51 \mu\text{g}}{\text{vehicle-mile}} \times \frac{10^6 \text{g}}{\mu\text{g}} \times 9.978 \times 10^3 \frac{\text{miles}}{\text{year}} \times \frac{1}{454 \text{g}} \times 96.4 \times 10^6 \text{ vehicles} \\ = 60,400 \text{ lb per year}$$

The asbestos from the test vehicle friction materials was calculated to end up as follows: 81.9% deposited on the ground, 14.1% retained in the brake and/or disposed of during service, and 3.7% emitted to the atmosphere. These percentages were used to determine the distribution of emissions for passenger cars.

Truck brakes usually are heavier than passenger-car brakes and tend

to operate at higher temperatures. In addition, the clutch is used more often. When these differences are taken into account, total asbestos emissions per light truck are calculated at 87.51 $\mu\text{g}/\text{mile}$.

Distribution factors had to be modified because the truck drum brake is more open than the car drum brake and, in many instances, has no splash shields. It was estimated, therefore, that only about 25% as much debris remains in a truck drum brake as in a passenger-car drum brake. The distribution of emissions for trucks, was, therefore, calculated to be: 87.9% road dropout, 2.9% airborne, and 9.2% retained in the brakes.

(This work was performed with the support of the Environmental Protection Agency, through contract No. 68-01-0020.)

Michael G. Jacko, physical chemist, Bendix Research Laboratories; Robert T. DuCharme, supervisor, Brake Engineering Laboratory, Automotive Control Systems Group, Bendix Corp.; and Joseph H. Somers, Office of Air & Water Programs, Environmental Protection Agency. Based on SAE paper No. 730548, "Brake and Clutch Emissions Generated during Vehicle Operations," presented at the SAE Automobile Engineering Meeting, May 1973, Detroit.

Table 1 Summary of All Brake and Clutch Emissions (lb per year)

	Number of Vehicles	Total Asbestos Emissions	Distribution		
			Dropout	Airborne	Brake Retention
Passenger Cars	96,400,000	60,400	49,470	2,230	8,700
Light Trucks	17,100,000	32,300	28,420	940	2,940
Medium Trucks and Buses	2,600,000	16,300	14,330	470	1,500
Heavy Trucks	1,200,000	32,800	28,920	850	3,030
Miscellaneous*	6,815,000	16,300	14,330	470	1,500
Totals		158,200	135,470	5,060	17,670
% of Total			(85.6)	(3.2)	(11.2)

*Estimated equal to medium trucks as weights of friction material used for both categories are almost equal. Includes motorcycles, trailers, and the like.

FRICITION MATERIALS STANDARDS INSTITUTE, INC., E-210 ROUTE 4, PARAMUS, N.J. #07652

BULLETIN

No. 471

March 9, 1973

To: Delegates and Alternates

Subject: Recommendation of Asbestos Study Committee

This Bulletin concerns Asbestos and related subjects (primarily in-plant problems). Please route this to those responsible for this work.

Labeling Practices

The Asbestos Study Committee, after considerable discussion and debate, and careful selection of the wording, unanimously passed the following resolution at the February 16, 1973 meeting:

RESOLVED: That (1) where asbestos containing materials do not have their asbestos fiber completely locked in, or (2) where subsequent operations may be performed on asbestos containing materials, the hazardous labeling practice be adhered to in accordance with the Label Specifications in the OSHA Standards for Exposure to Asbestos Dust.

In essence, the Committee is saying that the members should comply with the OSHA regulations. At the next meeting, the Committee plans to make a recommendation on the size and style of the label.

Enclosed are the final results of the survey which was made of the membership concerning labeling by members. We received 15 replies from an original canvass of 25 members.

Automatic Bag Opening Machinery

In earlier bulletins we have advised the membership of the availability of asbestos bag opening machinery. Among those listed earlier were:

Fairmount Engineering, Hackettstown, N. J.
Stuart Glópat Corporation, Zanesville, Ohio
Fourier Steel Works, Quebec, Canada
Vanco Machine Company, Van Wert, Ohio

Another firm which has capabilities in the asbestos bag opening field is:

Taunton Engineering Company, Inc.
700 West Water Street
Taunton, Mass. #02780

Laboratories for Sampling and/or Counting Airborne Asbestos Fibers

A list of laboratories who will do sampling and/or counting of airborne asbestos

D-8
(4)

March 9, 1973

Medical Examinations for OSHA Asbestos Regulations

In the OSHA Standard for Exposure to Asbestos Dust, medical examination requirements are spelled out for workers who may be exposed to airborne asbestos fibers. Most firms with members on the Committee have already instituted the required medical examinations.

There is an interesting service available from International Compumedics Corporation (ICM) where they offer to do the examinations, maintain records, etc., on what appears to be a reasonable fee basis. Please refer to their letter to the Institute of February 6, 1973. The costs indicated were for a contract with the Institute - something that was not requested and which the Institute could not directly sponsor. Any work would have to be on an individual manufacturer basis. The contact is:

Mr. Don Iverson
International Compumedics Corporation
14 Washington Road
Princeton Junction, N. J. 08550

Incidentally, we are in no position to judge the quality of ICM's work. One member plans to use their services.

At the meeting one member mentioned that they have received the cooperation of the local TB and Respiratory Disease Association. The Association brings in their mobile unit and runs the X-ray and pulmonary function examinations. From this point the Company Physician conducts the balance of the exam.

EWD/erc
Enclosure:

E. W. Drislane
Executive Director

Final Results - Institute Labeling Survey
Laboratories - Sampling/Counting Airborne Asbestos Fibers
International Compumedics Corporation

FRICTION MATERIALS STANDARDS INSTITUTE, INC., E-210 ROUTE 4, PARAMUS, N.J. #07652

March 8, 1973

To: Members of Asbestos Study Committee

Subject: General Information

Based on discussions at the February 16, 1973 meeting, and suggestions from your Chairman, the following topics are covered.

Labeling Practices

Samples of the Asbestos Caution signs used by asbestos and friction manufacturers are attached. One label is not per OSHA standards. This information is sent to the Committee for review so that they will be in a position to propose label specifications at the next meeting.

Enclosed also are the results of the labeling survey made of Institute members. Of 25 requests, there were 15 replies.

Laboratories for Sampling and/or Counting Airborne Asbestos Fibers

A list of laboratories and the contact (if available) for sampling and/or counting airborne asbestos fibers was prepared by the Chairman. This is distributed to the Committee for their information. Similar data will be sent to the Membership.

British Conference on exposure to asbestos during brake and clutch maintenance (1969)

Your Chairman has forwarded papers presented at a British Conference on exposure to asbestos during brake and clutch maintenance, for distribution to the Committee. The papers are:

- Asbestosis and Asbestosis
- Hygiene Standards for Asbestos
- Technical** Implementation of the New Asbestos Regulations
- Control of the Use of Asbestos-Containing Friction Materials
- Exposure to Asbestos During Brake Maintenance
- Removing Dusts from Brake Assemblies During Vehicle Servicing - Alternate Cleaning Methods
- Possible Alternatives to Asbestos as a Friction Material

Work-shop on effect of Government Safety and Health Regulations and Suggestions for Compliance

The Committee resolved at the February meeting that it is interested in a work-shop on the above. Such a work-shop would be geared toward those at administrative levels actually responsible for compliance with regulations: Factory Management, Plant Engineering, Environmental Services, Administration, etc. This would cover items on control of asbestos, general pollution control, waste disposal and would concern equipment and techniques.

The Institute would be happy to sponsor such a one day work-shop, preferably in the Paramus area but possibly at other locations. It is recommended that the Committee bring suggestions for a specific agenda. The Johns-Manville Corporation (through Bill Reitze) would like to give a presentation on their HEAF (High Energy Air Filter) pollution control equipment. It would be up to the Committee to decide whether to invite Johns-Manville - no longer an Institute member.

FMSI 02497

March 8, 1973

Heat Stress Measurements

NIOSH recommendations for a standard for work in hot environments along with some specifics on equipment and testing are enclosed. These had been distributed earlier to those Committee members who had attended the February 16th meeting. This subject was not discussed at the meeting.

Statistical Evaluation of the Membrane Filter Method

At the February meeting those who attended received copies of the Conclusions and Recommendations from a private study (By LFE Corporation for the Asbestos Information Association/NA) on the precision and accuracy of the membrane filter method for measuring airborne concentrations of asbestos fiber. Copies are distributed for those not present. (Major heading "Conclusions and Discussion" with pages 43-46 of the report.)

International Compumedics Corporation (ICM)

Enclosed is a copy of a letter received from Mr. Don Iverson of ICM. This was discussed at the Committee meeting and is sent to insure that those not present are informed.

EWD/erc
Enclosure:

E. W. Drislane
Executive Director

Sample Industry Labels
Final Results - Institute Labeling Survey
Laboratories - Sampling/Counting Airborne Asbestos Fibers
British Conference papers (March 1969)
Heat Stress Paper
Statistical Evaluation of Membrane Filter Method
International Compumedics Corporation

MAREMONT CORPORATION

GRIZZLY/LELAND DIVISION

700 WEST CAROLINE ST. - PAULDING, OHIO 45879 - TELEPHONE (419) 399-3015

February 19, 1973

I. H. Weaver
Raybestos Manhattan
123 E. Stiegel Street
Manheim, Pennsylvania 17545

Dear Mr. Weaver:

It was a pleasure to meet you at the FMSI Asbestos Meeting on February 16, 1973.

Enclosed are samples of the Caution Label that we are now using. The larger label imprinted on the carton by the carton manufacturer is much less conspicuous to the customer.

I will look forward to seeing you again at a future meeting in Paramus.

Sincerely,

MAREMONT CORPORATION

Ralph C. Wyatt

Ralph C. Wyatt
Administration Manager

RCW:et
Encl.

CAUTION
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
BREATHING ASBESTOS DUST MAY
CAUSE SERIOUS BODILY HARM

CAUTION
Contains Asbestos Fibers
Avoid Breathing Dust
Breathing Asbestos Dust May
Cause Serious Bodily Harm

D-9
(2)

FMSI 02499

I. H. WEAVER ■
CORPORATE DIRECTOR
ENVIRONMENTAL CONTROL

123 E. STIEGEL STREET, MANHEIM, PENN. 17545

Raybestos ~~R/M~~ Manhattan

February 19, 1973

Mr. E. W. Drislane
Friction Materials Standards Institute, Inc
E. 210 Route #4
Paramus, N. J. 07652

Dear Ed: Subject: Asbestos Caution Labels

Attached is copy I promised to send showing various Caution labels that are currently in use. I have not sent additional copies of this to the committee members and will appreciate it if you will take care of this.

The one I prefer is the Cassiar Mines label in the left center of the attached sheet. This is the one R/M is using on most of their textile products containing non-locked-in fibre. We still use the label marked R/M shown to the right of the Cassiar label for some special cases where rubber stamping is preferable to an adhesive coated printed label.

I have forwarded sufficient copies for you to circulate to the other members. I am up-dating my tabulation of laboratories and consultants for asbestos monitoring and will try to get a copy of this to you in the mail tomorrow.

Sincerely,

KE

I. H. Weaver

w

FMSI 02500

ASBESTOS STUDY COMMITTEE - LABELING SURVEY

FEB 16 1973

(25 Requests 15 replies, all questions not answered)

<u>Question</u>	<u>Yes</u>	<u>No</u>	<u>Undecided</u>	<u>Not Applicable</u>	<u>Comment</u>
1.1 Now label replacement shipments	1	13			
1.2 Now label O.E.M. shipments	2	11		2	D
2.1 Plan to label re- placement shipments?	5	5	4		A,B
2.2 Plan to label O.E.M. shipments?	6	3	4	2	
3.1 Interpret OSHA to require labeling where subsequent machining is expected?	10	4	1		C

A. Member replying YES, states: "If such practice is required and/or adopted by FMSI."

B. Member replying NO, states: "Our material has been treated with a binder - therefore no raw asbestos is present."

C. Member replying YES, states: "We will label if it is determined that our bonding or binding material does not meet the standard."

D. Member replying YES, states "We imprint cartons 1/4" letters, two sides of carton. We do not imprint cartons for OEM service outlets where linings are completely drilled and taperground requiring no subsequent operations on the linings."

D-10

ICM

INTERNATIONAL
COMPUMEDICS
CORPORATION

14 WASHINGTON ROAD
PRINCETON JUNCTION, N. J. 08550
609-799-2290-1

CH-436-73

February 6, 1973

Mr. Drislane
Friction Materials Standards Institute
East 210 Route #4
Paramus, N. J. 07652

Dear Mr. Drislane:

Please accept this as our proposal to establish a medical examination program using mobile health clinics. This program will provide your participants with a medical examination to meet the requirements of the asbestos standard enacted by the Department of Labor.

This program is offered to your company at an average cost of \$18.00 per examination, providing full utilization of the mobile clinics. Each mobile clinic can test 96 participants in an eight hour day. We will provide the asbestos standard medical examination at a rate of \$20.00 per examination for the first 48 exams per day, and \$16.00 per examination for any additional examinations done during that day.

We will develop, implement and operate the total program, including medical record keeping. We only require the names, addresses and telephone numbers of the sites and the employees to be tested. Through the use of computerized scheduling techniques, we will cover the 48 states with one or more clinics as required. Our costs per examination will include the full price of the program, including administration, record keeping, etc. Depending on your demographic requirements, a travel fee may be required. The mobile clinic will operate eight hours per day and can be moved once during that day. We would like to limit this move to thirty minutes travel time in order to meet decent utilization and use the computer scheduling techniques effectively.

We will provide a medical questionnaire to meet the asbestos standard, give the pulmonary function tests and perform a 14" x 17" chest X-ray. Our company physicians and radiologists will submit their Curriculum Vitae for your approval. We will provide a \$500,000 malpractice and "errors and omissions" insurance policy to the company for this program.

We will maintain a central data base of medical records on each participant tested, and will submit this information to whomever it is required, employer, employee, union or government agency. In addition, we will provide each participant with an identification card, showing the date of the last examination.

D-11
(2)

FMSI 02502

CH-436-73

Mr. Drislane

- 2 -

February 6, 1973

Each mobile unit will be staffed with a minimum of two paramedical personnel, headed by a licensed X-ray technician. The equipment will include a 14" x 17" chest X-ray, spirometer to perform pulmonary function tests, dressing rooms and a reception area. Medical questionnaires will be sent in advance to the participants for completion before coming to the medical van for testing. Full administration of this program will be maintained out of our Princeton Junction, New Jersey office. All medical histories, including X-rays and results of the pulmonary function tests will be mailed on a daily basis to Princeton Junction in order to provide for the orderly processing of the results and to establish a central medical records database. Formal progress reports will be presented to your company by ICM.

Our enclosure outlines the type of unit we are planning to use for this program.

We look forward to working closely with your company and the Department of Labor to provide a quality service to fulfill the asbestos standard in the area of medical examinations and medical record keeping for the asbestos standard. We ask for your criticisms in order to better serve all parties.

We look forward to meeting with you in the near future to discuss implementation of this program.

Very truly yours,



Don Iverson
President

EI/rab

Enc.

ICM INTERNATIONAL
COMPUTEDICS
CORPORATION

FMSI 02503

FRICION MATERIALS STANDARDS INSTITUTE, INC., E.210 ROUTE 4, PARAMUS, N.J. 07652

BULLETIN

NO. 469

January 26, 1973

Asbestos Study Committee

TO: ACTIVE MEMBERS

SUBJECT: ADDITIONAL BACKGROUND ON ASBESTOS

There has been considerable activity in the asbestos field over the past several months. It is suggested that this bulletin be forwarded to those in your organization most concerned with asbestos in the work place.

1. ASBESTOS STUDY COMMITTEE

Members of the Committee have been advised that a Committee meeting is planned for February 16, 1973. Among items to be discussed are labelling practices for brake linings and the EPA asbestos emissions standards.

2. ASBESTOS BAG OPENING MACHINERY

In Bulletin #459 the membership was advised that there was a machine for opening asbestos bags available from Fairmount Engineering. Mr. Weaver, Chairman of the Committee recommended that the membership be advised of others in this field. Among those listed are:

Stuart Glapat Corp., 1639 Moxahala Ave.
Zanesville, Ohio 43701
Fournier Steel Works, Box 460 - Black Lake
Quebec, Canada
Vanco Machine Co., Inc., 1059 West Main St.
Van Wert, Ohio 45891

3. EPA ASBESTOS EMISSIONS STANDARDS

We expect the EPA Standards for asbestos emissions to be published in the Federal Register about February 15, 1973. When these are published, we plan to send copies to the membership.

4. NEW YORK TIMES MAGAZINE ARTICLE "ASBESTOS, THE SAVER OF LIVES, HAS A DEADLY SIDE"

There was a feature article published in the New York Times magazine section on Sunday, January 21, 1973. The article emphasized medical histories of asbestos workers as concerns lung cancer, mesothelioma and asbestosis. The article relied heavily on data supplied by Dr. Selikoff of Mt. Sinai Hospital. One conclusion reached by the author (and of course by Dr. Selikoff) was that the 5 fibers/cc (TWA) concentration of asbestos fibers in the work place was too lenient. This is the standard that will be reduced to 2 fibers/cc on July 1, 1976. The Institute will provide a copy of this article to any member requesting one.

E. W. Drislane
Executive Director

D-12

FMSI 02504

REPORTS FOR JUNE 1973 MEETING

1. President's Report
2. Membership Committee Report
3. Treasurer's Report
 - 3.1 Balance Sheet - Projected to June 30, 1973
 - 3.2 Income Statement - Projected for the 1972-73 fiscal year
 - 3.3 Retirement Fund for H. G. Duschek
 - 3.4 Twelve Year Financial Highlights
4. Investment Advisory Committee Report
5. Budget Committee Report
6. Fee Formula Committee Report
7. Legislative Activity Committee Report
8. Public Relations Committee Report
9. Institute Development Committee Report
10. Historical Sales Program
11. Hydraulic Parts Manufacturing
12. Data Book & Technical Committee Report
 - 12.1 Imported Cars - Cataloging
13. Brake Performance Study Committee Report
14. Asbestos Study Committee Report
 - 14.1 Address by I. Weaver to Membership
15. Annual Meeting Committee Report

Report - same as D4

ASBESTOS STUDY COMMITTEE REPORT

Mr. I. H. Weaver, Chairman of the Asbestos Study Committee delivered a written report on the Committee's activities during 1972-73. This was a listing, by date, of the activities of the Committee.

In addition, Mr. Weaver, delivered a prepared address to the Membership.

Mr. Weaver's report on the Committee's activities follows.

6/20/72

Circulated tabulation by AIA/NA comparing items in the OSHA standard against industry's position and recommendations of NIOSH and OSHA Advisory Committee on Asbestos Dusts (ACAD).

7/11/72

Circulated bulletin regarding the equipment and training for monitoring of airborne asbestos fibre in the work place.

8/17/72

Committee meeting at Paramus reviewed interpretations of OSHA regulations, labeling practices, airborne asbestos sampling and fibre counting, Bendix automotive emissions study for EPA, status of EPA regulations, consideration of substitutes for asbestos, waste disposal, other hazardous materials, and alternate methods for monitoring for airborne asbestos fibres.

9/18/72

Circulated lists of information EPA expected asbestos products manufacturers to provide their regional offices within 30 days after promulgation of emission standards for asbestos.

10/10/72

Circulated New York Times article quoting Dr. Selikoff and referring to automotive emissions of asbestos.

10/20/72

Circulated notice of issue of revised rules and regulations for OSHA standards and availability of up-dated standards from U. S. Government Printing Office.

11/6/72

Circulated survey of labeling practices and interpretations of OSHA labeling regulations.

12/7/72

Circulated information concerning Michigan Department of Labor requirements for labeling of hazardous substances.

Report of Asbestos Study Committee (cont'd)

1/11/73

Circulated report of IRAC Advisory Committee on Asbestos Cancers resulting from their meeting at Lyon, France, October 1972.

1/26/73

Circulated information on asbestos bag opening equipment and an assortment of articles concerning asbestos/health matters.

2/16/73

Committee meeting at Paramus covered labeling practices, New York Times magazine article on asbestos/health problems, medical examination requirements of OSHA, proposed institute seminar on safety and health, EPA emissions standards, report of IRAC Advisory Committee on Asbestos Cancers, EPA study of automotive emissions, statistical evaluation of membrane filter monitoring method, and NIOSH criteria for heat stress.

3/8/73

Circulated results of labeling practices survey, list of laboratories or consulting services offering to perform sampling and/or counting of airborne asbestos fibres, 7 British papers concerning exposure to asbestos during brake and clutch maintenance, NIOSH heat stress recommendations, copies of conclusions and recommendations from LFE study of the membrane filter monitoring method, and copy of proposal from International Compumedics Corp. concerning their medical examination and computerized record keeping services.

3/26/73

Circulated notice concerning proposed new OSHA Asbestos Advisory Committee and an article from Plastics Technology magazine concerning press treatment of the asbestos situation.

4/17/73

Circulated EPA emission standards, new information from OSHA regarding asbestos, and notice of availability of standard asbestos hazard signs from commercial source.

5/7/73

Circulated information from EPA on emission standards, source reporting forms, and EPA Publication AP-117, CONTROL TECHNIQUES FOR ASBESTOS POLLUTANTS.

6/1/73

Committee meeting at Paramus covered labeling, EPA emission standards, proposed institute seminar on safety and health, results of brake and clutch emissions study by Bendix for EPA, and OSHA inspection experiences.

ASBESTOS AND THE FRICTION MATERIAL INDUSTRY

Mr. I. H. Weaver of Raybestos-Manhattan, Inc., who serves as Chairman of the Friction Materials Standards Institute Asbestos Study Committee addressed the Annual Membership Meeting of the Institute. Mr. Weaver's address was delivered in Vail, Colorado on Wednesday morning, June 27, 1973.

Mr. Weaver's address follows:

When Ed (Drislane) asked me to attend your annual meeting last year, I had to decline, which may have been just as well in view of the confused status of both OSHA and EPA regulations at the time. This year things are only slightly less confused, but I am glad to be able to be here anyway to attempt to fulfill my responsibilities in reporting to you as your Asbestos Study Committee Chairman. Rather than present a detailed statement covering Committee activities for the year, I should like to use my time to review some of the more controversial and confused elements of the Federal Asbestos Regulations, and give recommendations as to what I think the stance of the Friction Materials Industry should be in regard to them.

In lieu of a detailed report covering the past year's activities, I have prepared a page and a half summary of the Committee's work from June '72 thru June 1, 1973. Mr. Drislane will circulate copies of this summary to anyone who may be interested in it, and if any of you have questions or recommendations concerning our past work or future intentions, please feel free to bring them up here, or if you prefer, transmit them to Ed for our review later.

Probably the single most significant event that occurred during the past year on the subject of asbestos hazards was the meeting of the International Agency for Research on Cancer that was held at Lyon, France last October. This meeting was attended by more than a hundred and thirty medical researchers and representatives of government, industry and labor from virtually every major asbestos consuming or producing country in the world. For four days intensive sessions on asbestos were held by three different panels, each made up of ten to twenty-five of the foremost medical and scientific experts operating in the various fields of asbestos-health research. Following the meetings the committees issued a combined report on asbestos cancers. I think the following five items summarize their most important conclusions:

- (1) All major commercial types of asbestos can cause cancer.
- (2) Evidence suggests that excess lung cancer is not detectable when occupational exposure has been low. (Just what is meant by "low" was not stated.)

Asbestos and The Friction Material Industry (cont'd)

Many union activists are really furious with government's failure to pursue the provisions of safety and health regulations to the letter, and there appears to be a good opportunity for industry to release reliable information concerning asbestos hazards both to their employees and to their customers before more inflammatory information of this type is aired in the media under organized labor's banner. These rules and regulations pose much more severe problems for other segments of the asbestos industry, particularly asbestos textile manufacturers, than they do for most friction material manufacturers.

I have been involved in asbestos products manufacturing for over twenty-five years and have visited dozens of plants and am aware of only a few friction materials products manufacturing operations that I consider to represent major problems in achieving conformance to either OSHA or EPA requirements, including the 2 fibre per cc threshold limit value. Since significant polarization may be expected always to exist between management and labor and between management and environmental groups concerning asbestos-health subjects, and since control or conformance to both EPA and OSHA regulations appears to be generally feasible, as far as friction materials are concerned, my recommendation to friction material manufacturers is that they proceed as rapidly as possible towards conformance with the regulations. Also I recommend avoiding inclinations to misinterpret provisions where the intent of the regulation is clear, but the wording may be subject to question. There has been considerable disregard of a number of provisions mainly in the areas of labeling, monitoring, employee education, personal protection, waste disposal, and use of warning signs by segments of asbestos products manufacturing, and I believe this applies to friction material to some extent.

One of the most obvious items has to do with industry's reluctance to accept asbestos products labeling as required by OSHA. There has been much advertising of asbestos textile products citing the benefits of treatments or coatings that purport to lock the fibre into the product in such way that it cannot become airborne during use. While these claims probably are true to varying degrees depending on the nature of the product, its use, and the way in which it is handled, I do not think this claim is at all applicable to friction materials.

I know of no way any of us can be absolutely sure that his friction products, regardless of whether they are sold as original equipment or on the replacement market, will not be subjected to additional operations or alterations in the field that could result in excessive exposure of workers or bystanders to airborne asbestos fibre. I have been appalled to learn of a number of instances where this problem has occurred, and some of these cases involved people that certainly might have been expected to know better.

Asbestos and The Friction Material Industry (cont'd)

If this kind of thing occurs in fabrication operations of major OE customers, it appears to me there can be no argument about the need for educational measures to reduce chances of unnecessary exposure during grinding, drilling or cutting operations. To those who argue that labeling or other types of warning need not apply to replacement materials because fabricators or appliers handling replacement quantities are exposed relatively intermittently, I say emphatically this just ain't necessarily so! Large volume replacement users present major potential hazards, and even small job shops can needlessly expose people to high fibre concentrations if operations are performed without controls. That these may be intermittent and of short duration does not preclude possibility for occurrence of adverse health effects in hyper-susceptible individuals, or in less sensitive individuals who may receive exceedingly high doses of short duration but who may be smokers, or who may experience effects because of synergism with other materials to which they may be exposed either at work or elsewhere.

To me, labeling all containers or packages of asbestos-containing friction material is the very least the industry can do to fulfill moral obligation to its customers, their employees, and the public and at the same time conform with minimum requirements of the Occupational Safety and Health Act. I seriously question whether mere labeling is enough to fulfill this requirement. It has been suggested by others as well as myself several times in the past that additional instructions, of a more comprehensive nature than is practical to provide on a label, be inserted inside each package where a possibility exists that the product might be used in such manner that an airborne dust problem could be created. A number of responsible asbestos products manufacturers already are following this procedure, and there is a good possibility that it may be made mandatory in future regulations.

Adoption of these measures by industry would show good faith toward compliance and should reduce possibilities of future criticism by consumer protection groups. I doubt very much that it would have any significant effect on sales or consumption of asbestos friction materials. I know of no substitute for asbestos in normal automotive friction material service, and I know of little or no noticeable effect labeling has had on other products where cautionary labeling has been used thus far.

Keep in mind that NIOSH and the OSHA Advisory Committee recommended a much more severe label than the one we are talking about. This subject was heatedly debated during the OSHA Advisory Committee deliberations, and their final recommendation called for use of the word "Danger" instead of "Caution" and specifically mentioned that breathing asbestos causes cancer. Very frankly, I was exceedingly

Asbestos and The Friction Material Industry (cont'd)

surprised when the final OSHA Standard came out in favor of considerably milder working. Now I am perplexed that Industry resists the OSHA labeling requirement as virgorously as it does.

Many other elements of the OSHA Regulations came out more favorably toward industry than the recommendations that were submitted by NIOSE and the Advisory Committee, and stiff resistance by Industry will be needed to prevent OSHA from strengthening the regulations in months to come. We can expect considerable effort to be made by anti-industry elements of the medical profession, by organized labor, and by environmental groups who want the airborne standard lowered from 2 fibres per cc to 1 fiber per cc or even less. Some individuals even speak of asbestos in terms of zero TLV, which, of course, is completely impractical and would result in virtual banning of mining and use of asbestos for anything.

Another controversial subject is fibre monitoring. This is pretty much of a disaster area because of lack of confidence in the membrane filter method for sampling and analyzing for airborne asbestos. Much of this problem is attributable to the nature of the operation, which involves considerable judgement in addition to technical competency on the part of the people performing the tests. Even when performed by practiced individuals under the best possible conditions, the method is subject to wide variations in results. Needless to say, when performed by relatively inexperienced personnel under the widely varying conditions that exist in the field and between different laboratories, results can be extremely variable. In my opinion, the method is not at all suitable for enforcement purposes, but can be used to good advantage by industry for policing its own operations and for determining where to devote control efforts with maximum advantage or potential for improvement.

In spite of its deficiencies, I think the membrane filter method will persist for quite some time, but I will not be at all surprised if future emphasis by OSHA shifts toward work practice regulations rather than monitoring to a numerical standard.

Another controversial item has been the protective clothing requirement. This has created considerable question and controversy, particularly in the textile industry where ceiling limits are difficult to control on certain operations. Different OSHA regional offices have applied different interpretations to the protective clothing requirement, and it's hard for me to see how some of them can be as liberal on interpretation as they are.

The regulation specifically calls for full body cover including gloves, hat, and foot covering, where levels exceed the ceiling

Asbestos and The Friction Material Industry

comparison of the existing regulations with industry's position as stated in their input to the government prior to promulgation of the regulation, and compared with the recommendations of NIOSH and the OSHA Advisory Committee, will readily indicate that the existing OSHA standard, with the one serious exception of the two fibres per cc limit to be imposed in 1976, follows industry's position rather closely. If I appear to be defending the present OSHA Asbestos Regulations, it's only because I am very much aware of how much more strict these rules would be if the recommendations of NIOSH and the Advisory Committee had been followed. I doubt that many in the industry recognize or realize just how close they may have come to being regulated out of existence.

Future occupational safety and health legislation probably will rectify numerous inadequacies in present rules and may ameliorate some aspects of existing occupational safety and health standards. However, I seriously doubt that much relaxation if any is to be expected in regard to the Asbestos Regulations. I think the industry is going to have to mount a very determined effort to prevent these regulations from being tightened in the future.

The EPA regulations concerning ambient air control of asbestos are another matter. Although it was responsible for initially tagging asbestos as a hazardous pollutant, since doing so EPA has been much less diligent in pursuing its announced intentions toward regulation of the materials it declared hazardous. EPA first declared asbestos a hazardous air pollutant on March 31, 1971, and published proposed regulations December 7 of the same year. Hearings were held and much industry input was accepted and very deliberately reviewed by EPA before they finally issued the National Emissions Standard on April of this year. This regulation was promulgated nearly a year later than called for under the requirements of the Federal Clean Air Act. For this EPA has been under considerable criticism ever since.

In addition to being late, the EPA standard is a lot less stringent than I or any other industry people, who have followed its development, expected. Nearly all the objections voiced by industry concerning the originally proposed standard were removed before they issued the final regulations. In addition, they modified some requirements to the extent that no one in industry expected, or even would have had the temerity to request, in meetings where these subjects were discussed between industry representatives and EPA.

In essence, the standard boils down to the following statement as far as emissions are concerned: There shall be no visible emissions to outside air from any asbestos mill or manufacturing operation except when a specified method of air cleaning, also part of the standards is used before the emission escapes. In general, the air cleaning systems specified, filter asbestos emissions to the point that visible emissions, other than possible condensed water vapor, would not be produced anyway.

Asbestos and The Friction Material Industry

Other requirements concerning use of tailings for surfacing roads, the regulation of demolition activities, and controlled application of spray-on materials are of little concern to friction materials processors. Our biggest concern lies with the emission standard, which will require the tightening up of dust collection facilities and waste disposal practices wherever fugitive dust problems occur.

The biggest problem with EPA regulation I have found thus far has been non-uniform interpretation of what constitutes a visible emission. I know the EPA people who drafted the regulation intended this to mean just what it says. If it's visible under any condition whatsoever, and EPA approved air cleaning systems are not in use, the emission is in violation. Since most friction materials manufacturers already are employing baghouses that meet EPA standards for cleaning their exhaust air streams, it is unlikely that any severe impact will occur to the industry as a whole on account of the EPA regulations as they now stand. Those few manufacturers who are relying on wet dust collectors that do not meet the EPA standard may have problems. The best way to be sure of meeting EPA requirements is to sharpen up on maintenance and operation of existing baghouse filters and replace existing wet collectors with baghouse filters to eliminate visible emissions.

In summary, the OSHA and EPA Asbestos Regulations are alot more lenient than many interested and concerned parties wish. We can expect pressure to have them tightened. Friction materials manufacturers should support Asbestos Industry efforts to have them mitigated in hopes they at least aren't made more severe. In the meantime, we should conform to the regulations to protect our employees and our customers and to avoid criticism and enforcement actions.

Your Asbestos Study Committee will continue to follow the interpretation of existing regulations, the trend of proposed changes, and the development of new medical and scientific study material that may affect future regulation of asbestos products. We welcome your questions and any input you may be able to make concerning our activities.