Albany, New York
April 15, 1969

E. M. Fenner - Research

cc: N. W. Hendry - Asbestos
H. G. Donovan - Research
Chrono

BUFFALO VISITS TO DISCUSS
HEALTH HAZARDS OF ASBESTOS

Let me thank you for your time and effort in calling on Hooker Chemical and Harrison Radiator with me to discuss health aspects of asbestos fiber.

Attached is the list of personnel attending the two meetings.

I neglected to ask you for a copy of the paper "Asbestos and the General Public" and would appreciate it if you send me a copy.

J. F. Reis

JFR/pm

HARRISON RADIATOR, DIVISION OF GENERAL MOTORS CORPORATION

Dr. John Stunz - Medical Director
Bob Slate - Group Process Leader
Gary Berntsen - Process Engineer
Jim Harrer - Chief of Plant Protection
Joe Malakowski - Safety Engineer
Jerry Lindsay - Chief Chemist
Jim Mulvey - Chemist
Carl Hays - Buyer

HOOKER CHEMICAL

N. Kirchgessner - Manager of Production - Durez Plastics Div.
C. Meyers - Plant Manager - Durez Plastics
L. Rohrdans
C. Scionolfi
H. Bryzinsky
John Curry - ICD Cell Development
C. Wolosin - Mgr. of Purchasing Raw Materials
George Brairly - Niagara Plant Safety Engineer

June 17, 1970

MEMO TO FILE

cc: N. W. Hendry - Asbestos 1500
J. F. Reis - Boston

Harrison Radiator
Environmental Control Meeting
June 5, 1970

On the above date the following people, representing Johns-Manville, called at the subject company:

Dr. George Wright, St. Luke's Hospital, Cleveland
E. M. Fenner, Manager, Environmental Control, Research
N. W. Hendry, General Sales Manager, Asbestos 1500
D. Smyth, Technical Consultant to General Sales Manager, Asbestos
H. G. Donovan, Product Marketing Manager, Research
J. F. Reis, Special Representative, Boston

The following people from the Harrison Radiator Division of General Motors at Lockport, New York, were also at this meeting:

Gilbert D. Hoch, Master Mechanic
Robert Slate, Superintendent, Production Engineering
Tom O'Donnell, Safety Director
Albert N. Benoit, Manager, Plant Engineering
John Potrubacz, Production Engineering
Dr. John Stunz, Medical Director
Howard Bolton, Manufacturing Manager
B. I. Raycor, Works Manager
Carl J. Hays, Buyer
Edward A. Gailor, General Purchasing Agent

The meeting was opened by N. W. Hendry with general remarks and then turned over to Dr. Wright. Following are my notes on Dr. Wright's presentation:

1. Bound (locked in)--resin bound, latex bonded, etc.
   Unbonded--insulation, textiles

2. Size >10 microns do not reach breathing area; drop out.
   To reach breathing zone, must have low settling velocity; 1 micron size behave like a gas and follow the air mass.
   Most dust does not enter breathing zone; those that do drop out in the tubes and few get to the end.

Notes on Dr. Wright's Presentation (Continued)

3. Mucus membrane in breathing apparatus; phillia (projections on surface). These pick up dust and carry blanket (mucus blanket)-particles deposited on blanket gradually work out the particles from the surface. (Self-cleaning mechanism.) Second cleaning mechanism "macrophase". Doesn't handle all dust some does remain.

4. In 1900, men who worked in textile mills in England had short life and died from heart failure. By 1930, in was known that the physical problems were much higher here than in other trades. In 1940, the "Threshold Limit" was established. This is about the same as for chrystalline silica (all items dose related). Below 5 million particles/ft^3, no problem with chrystalline silica proven. However, this is not true of asbestos. When asbestos was originally tested on this basis, it was mixed dust; hense, must have much less in asbestos particles.

   At first, fiber counts were not made just a count of particles. In 1960-61, fiber counts were made and fiber diameter/length (1/3) to be classed as such in counting. Membrane filters were used to collect the fiber for counting. Hence, there are safe levels of inhalation in the working life on an individual.

   British set the "Threshold Limit" at 2 fibers/cc (have < 1% chance of developing fibrosis).

   Between 4-6 fibers/cc is considered acceptable
   Between 6-10 fibers/cc is considered unacceptable
   >10 fibers/cc man should not work.

   U. S. industrial hygienist TLV's abandoned 5 million particles/ft^3 and went to fiber counts direct. Set limit of 5/cc peak level. Time weighted average is 5. There are levels which are safe but the levels were set to protect the most vunerable as some people are more susceptible to fibrosis.

   In about 1948, investigations of death causes of people having asbestosis showed that such people had a higher rate of death from lung cancer.

   Mining & Milling Exposure

   There is no evidence that the people in this industry have a greate incidence of lung cancer; however, data on exposure is not too good

   Inspection Workers

   Inspection workers showed a higher frequency of lung cancer, especially some working with anthophyllite in Finland.

Notes on Dr. Wright's Presentation (Continued)

Bronchial cancer	ratio	8:1	)
Anthrophyllite workers	ratio	3:1	) is variable
Textile workers	ratio	.3:1	)

Mining and milling workers were again looked at by McGill (Dr. MacDonald). No excess of lung cancer was found over the average population; however, when comparing with other workers, the heaviest concentration of cancer is among this group. Least exposed workers showed less incidence to lung cancer. Study showed that present disease is a result of what happened 20-30 years ago (takes disease a long time to develop). There is very little evidence of disease in people during last 10-15 years.

In 1959 cases of Mesothelioma (disease affecting the plural lining of the chest covering the lung) were discovered in South Africa, where crocidolite is mined. Usually a very rare disease, 50 or so cases were discovered. The strange thing was that most of the mining was done 400 miles away in the Transvaal area where no cases were reported. Few cases of the disease have been discovered in amosite mining areas. Upon investigations in other areas, some cases of Mesothelioma were found in London where Blue Asbestos has been used. There has been no definite evidence that asbestos was truly the cause, however.

Bronchial cancer, related to anthrophyllite, showed no Mesothelioma. In Canada, a relation was discovered with men working in insulation industry to the disease, but none at mill or mining area. In Italy, Mesothelioma was discovered in shipyard workers but not at mines. All these are dose related and must be related to something else.

Dr. Newhouse investigated all records of workers at "Cape". He discovered that the highest exposure gave greatest chance of cancer (bronchial or Mesothelioma). Light exposure showed little evidence of cancer. Cigarette smokers are more prone to develop disease.

5. Cumulative aspects -- hard to resuspend bound fiber; fiber bound does not subdivide; higher density.

   Talc does everything that asbestos does and more talc is used in the U.S. than asbestos fiber.

The meeting was then turned over to E. M. Fenner. Following are my notes on Mr. Fenner's presentation with a question from Dr. Stunz.

1. In our environmental health control efforts, good equipment is necessary but more important is monitoring the system.

Notes on E. M. Fenner's Presentation (Continued)

2. Dust can be controlled:

   a. Change process to one that does not produced dust or one that will have adequate dust control.

   b. Monitor the system.

3. Dr. Stunz of Harrison questioned, "What is count on deflashing?" Our answer would be:

   a. Take membrane sample for fiber

   b. Take station sample for particulate

   c. Calculate T.L.V.

Following Mr. Fenner's presentation, Des Smyth presented our story on bulk handling. This could be done in either of two approaches: (1) basic bulk handling; or (2) the possibility of producing and shipping in a bag that could be used right in their mix so that no free fiber would be available to contaminate the air.

A visit to their plant was then scheduled and we observed the loading station where asbestos was loaded. The suggestion was made that since there is a positive pressure on the sieves, there would be a certain amount of asbestos blow-back, which there was. It was suggested that possibly they could use a combination vacuum and positive pressure system which Ed Fenner discussed with John Potrubacz. Also, during this visit, we observed the deflashing station where the excess flash from the molding was removed by men using a hand grinder with an air blower on it. It was indicated to me that one of the biggest objections of the men working on this job was that the glass fiber irritated their eyes. They would like to do this deflashing automatically and are considering it since they could save a considerable amount of expense and manpower if this could be effected.

The conclusions from the meeting as indicated to us by Harrison personnel were that:

1. They would reconsider their proposal to eliminate asbestos fiber.

2. They would call on us for engineering help and we would be very happy to give it, in the event they wanted to make any further revisions in their process.

Jim Reis will keep close to this customer and report periodically on the outcome of their investigation.

H. G. Donovan
Research & Engineering

A.F.D. ASBESTOS
June 19, 1970

Memo to file

PLANT VISIT HARRISON RADIATOR - June 5/70

Personnel:

HARRISON	JOHNS-MANVILLE
Gilbert D. Koch - Master Mechanic	N.W. Hendry
Robert Slate - Sup't., Prod. Engineering	H.G. Donovan
Tom O'Donnell - Safety Director	Dr. Wright
Albert M. Benoit - Man., Plant Eng.	E. Fenner
John Protrubacz - Prod. Engineering	D.P.R. Smyth
Dr. John Stunz - Medical Director	J.F. Reis
Howard Bolton - Manufacturing Manager	
B.T. Raynor - Works Manager	
Carl J. Hays - Buyer	
Edward A. Gailor - Gen. Purchasing Agent	

PRESENTATION

Dr. Wright talked extensively and interestingly about research work concerned with lung diseases caused by dust. He pointed out that:

(1) Asbestos dust can cause asbestosis which in turn may cause cancer.

(2) If dust control is sufficiently well applied to result in an atmosphere meeting the revised standards set in both Britain and the U.S., then a man could work with asbestos all his working life and suffer no ill effects from the asbestos.

(3) All forms of dust constitute a threat to human health. Some substances like silica or talc are as harmful or more harmful than asbestos.

Ed Fenner then spoke briefly about dust control and offered to assist Harrison either with advice on redesigning present dust control installations, or with help in determining dust counts.

D. Smyth covered bulk handling in a short talk with slides. The car, the silo, and the pump were shown in brief detail and the point made that 7T15 shipment to Ford were completely trouble-free over the past six months.

A cost estimate was given for the installation of silos and pump. Alternative leasing and car-rental rates were offered as per my letter to Carl. J. Harp of June 12, 1970.

After some discussion of the alternatives Mr. Rayser summed up by saying that the new facts presented by J.M. compelled Harrison to take a new look at bulk-handling and that they would re-study the whole project.

After lunch J.M. personnel were taken on a short tour of the Harrison plant to observe dust conditions at the hand-feeding station and the flash-grinding station.

Bagged fibre is fed through a rotary air-lock into a blower system which blows the fibre through a 4" pipe to a receiving silo. Fibre is blown from this silo through a metering arrangement to the mixer. The air-lock at the hand-feeding station was leaking. Blow-back was causing excessive dust. If a properly designed air-lock were used the dust control provided should be adequate.

Dust control at the flash-grinding looked reasonably adequate.

Dr. Stunz accompanied us on the tour. As a result of discussion between Dr. Wright and Dr. Stunz a request was made that J.M. give specific help in determining dust counts at Harrison and Ed Fenner agreed to set this up.

DPRS:st

D.P.R. SMYTH

ASBESTOS FIBRE DIVISION

P.O. BOX 1500 – ASBESTOS, QUEBEC – TELEPHONE 879-5431

October 1st, 1968.

Gentlemen:

You will notice that beginning shortly each bag of chrysotile asbestos fibre shipped by this Company will carry a label reading as follows:-

CAUTION

"This bag contains chrysotile asbestos fibre. Persons exposed to this material should use adequate protective devices as inhalation of this material over long periods may be harmful."

The label is intended to remind all industrial users of asbestos that proper handling will contribute to improved conditions in work areas.

Physical protection for employees is provided through the use of safety hats, shoes, glasses, and other devices when circumstances warrant. Health protection is just as important and should include appropriate practices and equipment such as collectors, ventilators, masks, etc., to prevent inhalation of fumes and particulate matter.

As you know, in the past several years there has been increasing publicity and medical attention given to health effects of inhaling industrial dust and fumes of all kinds. Some studies have raised the question whether adequate control measures are being taken in certain industrial operations to prevent the inhalation of asbestos particles. Other studies have shown that where proper protective measures are taken, occupational health risks are minimized.

/ continued

"5"

Medical research on health questions relating to asbestos is being sponsored by Johns-Manville, the Quebec Asbestos Mining Association, and several other organizations. Such research will lead to a better understanding and control of health hazards associated with inhalation of asbestos particles.

Until more concrete information is available from the abovementioned research, we have concluded that it is in the best interest of all concerned that we place the above label on bags containing asbestos to encourage careful handling of the fibre.

If you have any questions, we would be pleased to hear from you.

Yours very truly,

N. W. HENDRY,
General Sales Manager.

NWH / oh

Research & Engineering Center
September 8, 1970

AGG. FIBRE DIVN.

MEMO FOR FILE:

VISIT TO INLAND DIVISION OF GENERAL MOTORS - AUGUST 31, 1970
Brake Lining Decomposition Products

Dr. Merle Gibson, Medical Director of the Inland Division of General Motors, commented during the J-M Research Center session of the Asbestosis Course held June 15 through 18, 1970, at Mt. Sinai Hospital, that results of work at Inland did not agree with the data presented by Jerry Lynch on the decomposition of brake lining materials. He agreed to set up a meeting with Dr. George Rappaport, head of the Chemical Laboratory at Inland's Dayton laboratory, to review both Inland and J-M research on this project.

After several brush-offs, I was able to arrange a meeting with Dr. Gibson and Dr. Rappaport on August 31. Also present during part of the meeting were Mr. G. W. Beck, Chief Engineer for Inland, and Mr. J. (Joe) H. Overwein, Assistant Chief Engineer.

Summary

Dr. Rappaport doubted the validity of the general data presented by Jerry Lynch on the breakdown of brake linings. After reviewing J-M's data and discussing peripheral information, he is convinced of the validity of our data showing less than 1 per cent chrysotile content. He suggested, as a final test, that the biological effect of the brake lining decomposition products be determined by animal tests. These may be sponsored by General Motors with Dr. Selikoff. Dr. Gibson still believes asbestos to be the main cause of lung cancer, and objects to any additional input to the atmosphere no matter how slight. I doubt if he can be convinced otherwise.

Discussion

Dr. Rappaport was quite frank in his discussion, especially when Dr. Gibson was not present. Inland has done no significant work on capturing and analyzing reaction products from brake wear. They were planning to begin a project in the near future.

Dr. Rappaport had been asked to comment on the validity of Jerry Lynch's results. He reacted unfavorably to the paper and did not accept any conclusions because the paper:

1. presented only approximate fiber concentrations;

2. gave no detailed experimental techniques;

3. did not define the technique for "quantification" of fiber content; and,

4. did not define the effectiveness of collecting all decomposition products.

He was also concerned about whether the decomposition products, whatever they might be, were in themselves carcinogenic.

The following J-M reference material was used as a basis for discussing our work and answering Dr. Rappaport's questions.

1. Research Report 456-2506 (December 19, 1966) - STUDY OF WEAR DUST FROM BRAKE LINING, written by D. Sinclair.

2. Research Report 456-T-94 (June 13, 1968) - WEAR PRODUCTS FROM BRAKE LINING, written by S. W. Wegrzyn.

3. Research Memo M456-386 (November 8, 1967) - COLLECTION OF WEAR DUST FROM AUTOMOTIVE BRAKE ASSEMBLY DURING INERTIA DYNAMOMETER TEST, written by W. R. Randolph.

4. Research Report 404-67 (August 3, 1970) - METHOD FOR THE QUANTITATIVE DETERMINATION OF CHRYSOTILE FIBER IN SAMPLES FROM VARIOUS SOURCES, written by A. F. Burns, K. L. Jaunarajs, and G. P. Reimschussel.

The discussion included:

1. A review of test apparatus and techniques, with special reference to the millipore system of collecting samples, and its known efficiency in collecting all particulate decomposition products.

2. The techniques for quantifying fiber, including the previous point count method and the more recent radioactive tracer method.

3. The quantitative test data showing that 50 to 80 per cent of the wear products were collected as either airborne or "in the box" samples.

4. Analytical data on both the airborne material and the composite material illustrating the collection of all residual products from decomposition of asbestos (equal MgO and SiO_2 contents).

5. Pictures of airborne and total composite samples.

6. Discussion of amorphous material vs fosterite in the decomposition products, with different severity of wear as evidenced by average drum temperatures of 175, 330 and 550F, respectively.

7. Actual detailed "chrysotile" contents in the various samples and their relationship to the chrysotile content in the original product.

We also discussed certain subjects which Dr. Rappaport indicated he was particularly interested in. These included:

1. "Asbestos" bodies vs ferruginous bodies.

2. Factors influencing respirability of fibers, including - Timbrell's work and recent Battelle work on retention of extremely fine particulate matter.

3. The proposed programs on the effect of fiber diameter, fiber length, and aspect ratio, including J-M programs, Webster's work, and others. Dr. Rappaport was particularly concerned with the effect of particle size and fiber diameter of the decomposition products, and its relation to respirability.

4. Extraction of minerals from lung tissue, including low temperature ashing, and hydroxide of Hyamine treatment.

After a full morning's discussion, Dr. Rappaport indicated to Messrs. Beck, Overwein, and Dr. Gibson that he was satisfied the decomposition products, in fact, contained only very small quantities of chrysotile. He suggested the desirability of conducting tests to show that these decomposition products were not biologically harmful and calculating the actual "net input" of chrysotile to the ambient air from the decomposition of brake linings based on our data and known brake lining statistics.

(We have already recognized the complexity of such an undertaking in our calculations on the fiber contributed by decomposition of asphalt asbestos paving. For example, how much fiber is removed per day from the atmosphere by fall-out, rain, wind, migration, etc., as compared to the input from any source of contamination.)

General Motors, through Dr. Gibson, is seriously considering funding work at Mt. Sinai, but no specific program has apparently been defined. Inland personnel were invited to visit us at the Research Center at any time to discuss the problem and any of their suggested programs. I will send Dr. Rappaport those portions of the above-mentioned Research reports which can be released without disclosing proprietary information.

Dr. Gibson is still a firm believer that asbestos is the major, positive cause for lung cancer. I think he is overpowered by the Selikoff mystic and that it is worthless to try to convince him otherwise then by direct statements from Dr. Selikoff. However, the others present at the meeting could probably be convinced that no problem exists by a few animal experiments with calcined asbestos, calcined serpentine, and brake lining wear material.

S. Speil

SS/rs

cc:
J. R. M. Hutcheson, Asbestos Plant
H. M. Jackson, DH
F. L. Pundsack
L. R. Blair
Att: J. Dec
E. M. Fenner
H. G. Donovan
J. P. Leineweber
W. C. Streib

Johns-Manville

Environmental Control Systems Division

Box 159
Manville, N. J 08835
(201) 722-9000

bcc: H. W. Hendry - Asbestos 1500
H. G. Donovan
A. Boisclair

June 30, 1971

Mr. Carl L. Welshman
Senior Buyer
Rogers Corporation
Rogers, Connecticut 06263

Dear Mr. Welshman:

Your letter of May 18, 1971 to our Mr. Anthony Boisclair has been referred to me for reply.

Presently, there are no standards applying specifically to airborne emissions of asbestos fiber other than those that apply to discharge of particulate matter in general. The office of Air Pollution Control in the Environmental Protection Agency of the Federal Government presently is working on emission standards for asbestos-using manufacturing plants. It is expected that these standards will be published late September 1971. It is highly probable that in order to conform to these standards, process emissions of asbestos fiber to atmosphere will require high efficiency fabric bag filter-type dust collectors for control.

Relative to in-plant working conditions, the new Occupational Safety and Health Bill will require that the airborne levels of asbestos fiber be below the established Threshold Limit Value. Threshold Limit Values refer to airborne concentrations of substances and represent conditions under which it is believed that nearly all workers may be repeatedly exposed, day after day, without adverse effect.

The present Threshold Limit Value for asbestos fiber has been established under the Walsh-Healey Public Contracts Act at 12 fibers per milliliter greater than 5 microns in length, or 2 million particles per cubic foot, depending upon the measurement technique used. It is expected that shortly the Federal Government will reduce the Threshold Limit Value to 5 fibers per milliliter and will delete any reference to particulate count.

An industrial hygiene survey using proper measurement techniques is necessary to determine if the various workplaces in your concern comply with standards. If you do not have the capabilities of performing the survey yourself, our Industrial Hygiene Engineering Services Department would be very glad to perform this survey for you. I enclose a brochure describing the activities of this group.

Please do not hesitate to contact me if you have any questions.

Very truly yours,

Edmund M. Fenner

Edmund M. Fenner, Director
Environmental Control

EMF/ems

Enc.

DHQ - Asbestos Fiber Sales
August 15, 1972

N. W. Hendry

cc: W. L. Vanderbeek
J. R. Hutchenson
F. J. Solon, Jr.
H. B. Moreno
C. L. Stake
E. M. Fenner
H. Jackson

BENDIX CORPORATION
SOUTHFIELD, MICHIGAN
ASBESTOS HEALTH SEMINAR 8/8/72

A seminar on Asbestos Health was held at the Executive Offices of the subject company on the above date. The format is attached, as is the list of Bendix attendees. This presentation can form the basis for future J-M presentations on A/H as well as for the A.I.A. regional seminars now being planned.

Our presentation was very well received, and from the Chief Operating Officer on down, all Bendix personnel expressed their appreciation and acknowledged that the information presented is of considerable help to them.

During our visit we had an opportunity to hold meetings with B.B. Burton, J. Armstrong, H. Stolar and C. Menz. These occurred at dinner, breakfast, and lunch as well as immediately before and after the seminar.

Questions were as follows:

1. Cost per employee to meet OSHA TVL Requirements

   a) of 5 fiber/cc (Arthur D. Little Study estimate $1,600/employee

   b) of 2 fibers/cc (estimate $2,800/employee)

2. Accuracy of Tests for fiber content in air
   (our answer ± 20-25% at TLV of 5)

3. How is brake lining dust disposed of
   (Resulted in general discussion covering pelletizing, land fill, etc.).

4. Questions by Heitman to Dr. Wright during presentation were answered by Wright's total presentation. An example was risk on grinding linings in garages.

Answer: Do not flow dust off brakes. Use vacuum.

5. Any time limit an employee can be on a job that is hazardous and do we rotate people on such jobs.

   Answer: No, we correct the problem so that the hazard is controlled.

6. Can technological approach work in controlling problems?

   Answer: We do the following

   a. reduce forming and finishing by technical changes.

   b. educate personnel to reduce costs and work better

   c. work towards least expensive solution. Ex use of wet or damp resin mix.

7. Have we been cited by OSHA.

   Answer: Yes

8. How do we handle OSHA Requirement to notify individual employees of stations that are hazardous?

   Answer: (1) Post on bulletin board results of station surveys that are over limit, (2) advise what is being done to correct.

9. Any value in taking your own dust counts side by side with OSHA Inspector?

   Answer: We try to take simultaneous samples.

10. Does #9 help in getting more cooperation from OSHA?

    Answer: We really can't tell any difference. Bendix has tried this and where it was done no citations so far from OSHA.

11. General questions on air samplers and pumps.

    a. How many do we have

       Answer: 100

    b. Cost

       Answer: $150/pump (note we do have some Bendix pumps)

               $ 50/charger

12. How do you secure Industrial hygenists, what type of man and how much training.

    Answer: (1) Secure man with 2 yr. college or college grad. (4 yrs.). Train in house. Takes 6 months for man to become fully operative.

13. How many do you have.

    Answer: 20 full time

14. If glass fiber lodges in lung, what damage.

    Answer:

    a. glass has almost no effect vs. asbestos

    b. However, there is some evidence that very thin glass (micro-fibers) can cause a problem. Still under investigation.

    c. some coatings have been found to render glass inert in the lung.

    d. if we could determine the method of coating particles or fiber similar to the natural method in the lung (by iron & protein) problem would be solved. Work going on in an attempt to do this. PVNP (Polyvinyl N Pyridene) works on some silicates and quartz). On quartz PVNP destroys free bond present on quartz surface.

15. With advent of OSHA have we found any marked increase in compensation claims.

    Answer: No great increase

16. How do you comply with requirements on including employees in Environmental Control Committees.

    Answer: We've done this for years in our employee safety committees - just changed the group's name. This is an excellent employee communication media.

I discussed the possibility of our securing business at the Cleveland Plant with Harry Stolar and Charlie Menz. They were encouraging and I will pursue it through our contacts.

I talked with Bob Burton on August 13 and discussed it with him. He said there was some discussion at the top level on this. I expect our visit will pay dividends. Will keep you informed.

H. G. Donovan

Attachments:

1. Attendees From the Bendix Corporation
2. Agenda
3. Health Aspects of Exposure by Inhalation of Asbestos Fiber

ATTENDEES FROM THE
BENDIX CORPORATION

Charles E. Heitman (Charlie)	Vice Chairman and Chief Operating Officer
W. L. Miron (Bill)	President, Automotive Group
Hank Bobel	Staff Assistant
H. O. Stolar	Director of Management Advisory Staff
A. C. Joines (Al)	Senior Staff Executive to Chief Operating Officer
Neil Saunders	Director of Cost Reduction and Mfg. Engineering (Corp.)
R. B. Hungate (Bob)	Vice President and Group Executive
C. Menz (Charlie)	General Manager, Friction Materials Division
R. B. Burton (Bob)	Staff Assistant for the Vice President, Manufacturing, On Environmental Control
J. W. Armstrong (Jim)	Corporate Manager for Safety and Health
H. Kaplan	Vice President, Public Relations
Joe Tierney	Director Public Relations
Aubry Raymond	Legal Staff

AGENDA
ENVIRONMENTAL HEALTH PRESENTATION
TO BENDIX CORPORATION EXECUTIVES
SOUTHFIELD, MICHIGAN - AUGUST 8, 1972

I.	INTRODUCTIONS	H. G. DONOVAN Product Marketing Manager Asbestos Fibre Division
	A. Introduction of Johns-Manville personnel	
II.	MEDICAL ASPECTS OF ASBESTOS/HEALTH	GEORGE W. WRIGHT, M.D. Director of Medical Research St. Luke's Hospital Cleveland, Ohio Medical Consultant to J-M.
III.	OSHA REGULATIONS	H. M. JACKSON Director of Employee Relations E. M. FENNER Director of Environmental Control
IV.	CUSTOMER RELATIONS	W. L. VAN DERBEEK Vice President, Mining and Canadian Products Divisions
V.	IMPACT OF OSHA REGULATIONS ON ASBESTOS MANUFACTURING USE	H. B. MORENO Vice President, Industrial Products C. L. STAKE Production Manager, Industrial Divisions
VI.	PUBLIC RELATIONS ASPECTS OF ASBESTOS/HEALTH	F. J. SOLON, JR. Vice President Corporate Relations
VII.	Q & A	

Health Aspects of Exposure by Inhalation of Asbestos Fiber

G. W. Wright, M.D.

1. Biological effect in humans and experimental animals.

2. Is the biological experience the same in all types of commercial operations:

   Mining and Milling

   Canada - Italy - Russia - South Africa

   Textiles - Asbestos Cement - Building Materials - Friction Materials
   Insulation trades

3. Reasons for variations observed in "2" (above)

   - Kinds of fiber:

     Chemistry - geometry and size (short / thick; long \ thin)

     Dose:

     Generated - Inhaled - Destroyed - Retained

     Location of fibers:

     Bronchi - Alveoli - Pleura

     Co-Factors:
     Cigarettes - Trace Metal - Other

4. Risk to employees in BL manufacturing

   Chrysotile - size of fiber - dose (McDonald / Enterline) data - OSHA

5. Risk to Public from BL use
   General Public
   Garages
   Fate of Fiber
   Animal Experiments

Johns-Manville Corporation

22 East 40th Street
New York, N.Y. 10016

Executive Offices

June 28, 1971

Mr. Samuel G. Warr, Buyer
U. S. Steel Corp.
600 Grant Street
Pittsburgh, Penna. 15230

Dear Mr. Warr:

Recently you requested toxicological information concerning Johns-Manville Chrysotile Asbestos Fibre.

It is a pleasure to provide you with this information.

Asbestos is the name given a family of mineral fibers comprised of three major types -- chrysotile, crocidolite and amosite - each of which differs from the other; physically and chemically. Studies of the relationship between asbestos and health are complicated by this diversity.

Chrysotile is a white magnesium silicate, which can be attacked by acids, has a positive electrical charge and is flexible and not easily pulverized. Crocidolite is a blue ferrous sodium silicate, is acid-resistant, has a negative electrical charge, and is less flexible than chrysotile. Amosite is a brown ferrous magnesium silicate, has a negative electrical charge and is brittle and easily pulverized.

In the United States, chrysotile, amosite and crocidolite asbestos are all used. Chrysotile is by far the most common, is primarily mined in Canada and the U.S., and accounts for about 90% of the asbestos consumed in this country.

For workers who handle asbestos fibres in mines, mills, factories, and some building and insulation trades, the industry shares with doctors, Public Health officials, and others involved in industrial medicine, a concern about possible health effects from excessive on-the-job exposure to asbestos dust. We have long recognized the risk of a particular lung disease called "Asbestosis" among some workers. This non-malignant disease is brought on after inhalation of excessive concentrations of asbestos dust over a period of many years. Asbestosis is one of the lung diseases called "Pneumoconiosis".

Recent medical studies have indicated that the disease "Asbestosis" and other pulmonary diseases claimed to be associated with Asbestosis, are dose and time related. The occupational use of asbestos fibre, therefore, can achieve the same degree of safety as the use of any other potentially toxic material, providing adequate control measures are taken.

The current threshold limit value (TLV) for asbestos dust as stated in the Federal Occupational Health and Safety Act, Federal Register, Saturday, May 29, 1971, Volume 36, No. 105, Part II, Page 10506, is 12 fibres per milliliter of air greater than 5 microns in length as determined by the membrane filter method at 430X Phase Contrast Magnification, or 2 million particles per cubic foot of air as determined by the impinger method of sampling.

To control asbestos dust to within the prescribed threshold limit value, we recommend that operations which present a source of dust should be equipped with mechanical ventilation exhausting into a collector; utilize wet processes where possible; maintain good housekeeping throughout the work area, including removing scrap material from floor and other horizontal surfaces. Scrap should be disposed of in closed containers.

A program of industrial hygiene environmental monitoring is highly desirable to determine that threshold limit values are not being exceeded.

If dust concentrations cannot be controlled to within the threshold limit value, U. S. Bureau of Mines approved types of respirators for pneumoconiosis producing dusts should be worn.

I am attaching the following medical references that substantiate dose and time relationship of exposure, as related to the development of disease:

1. "Mortality in the Chrysotile Asbestos Mines and Mills of Quebec"
   J. Corbett McDonald, M.D.
   Archives of Environmental Health, Volume 22, June 1971

2. "A Study of Mortality of Workers in an Asbestos Factory"
   M. L. Newhouse, M.D.
   British Journal of Industrial Medicine, 1969, 26, 294-301

3. "Identification and Control of Asbestos Exposures"
   L. J. Cralley, Ph.D., U. S. Public Health Service
   American Industrial Hygiene Journal, February 1971

4. "Asbestos and Health in 1969"
   C. W. Wright, M.D.
   American Review of Respiratory Diseases
   Volume 100 - No. 4 - October 1969.

5. "Epidemiology of Asbestos Cancers"
   Drs. Wagner, Gilson, Berry & Timbrell
   British Medical Journal - January, 1971

Also for your further information I am enclosing the following papers and booklets:

1. Asbestos and Human Health.
2. Asbestos - A Family of Minerals.
3. Asbestos and the General Public.
4. Recommended Safety Practices for Handling Asbestos Fibre.
5. Recommended Health Safety Practices for Handling and Applying Thermal Insulation Products Containing Asbestos.
6. Recommended Practices for Fabricating, Handling and Applying Asbestos Cement Products in the Building & Construction Industries.
7. Recommended Health Safety Practices for Handling and Fabricating Asbestos Textile Products.
8. Why Asbestos?

If you require any additional information, or I can be of further assistance, please contact me.

Very truly yours,

C. L. Sheckler
Manager, Accident Prevention
and Health Administration

CLS:mw

cc: J.R.M. Hutcheson - AFD Asbestos
N. W. Hendry - AFD Asbestos
H. G. Donovan - Research