

ADDITIONAL COPIES

For additional copies of this brochure, contact your local Johns-Manville office, or write to:

Johns-Manville
Environmental Affairs Department
P. O. Box 5108
Denver, Colorado 80217
U.S.A.

ADDITIONAL INFORMATION

For additional information on the safe handling of asbestos fiber, we suggest you write to:

U.S.A.
Asbestos Information Association/NA
1660 "L" Street, NW
Washington, D.C. 20006

CANADA
Quebec Asbestos Mining Association
5 Place Ville Marie
Montreal 113, Quebec
Canada

UNITED KINGDOM
The Asbestos Information Committee
10 Wardour Street
London, W1V 3HG
England

IN OTHER COUNTRIES, contact the asbestos industry association or government unit that deals with occupational health.



Johns-Manville

Greenwood Plaza • Denver, Colorado 80217

EA 11P-3711

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A. Kuch

PLAINTIFF'S EXHIBIT

Q-912

Recommended Safety Practices for Handling Asbestos Fiber



Johns-Manville

Recommended Safety Practices for Handling Asbestos Fiber

GENERAL PRECAUTIONS

In all stages of handling — packaging, transporting, unloading, storing, and in-plant moving — asbestos fiber bags should be handled carefully and in such a manner as to prevent damage of bags and the generation of dust.

Damaged bags should be immediately repaired, resealed or put into closed receptacles. Any spillage of asbestos fiber should be cleaned up immediately — either by vacuum equipment or, after thoroughly wetting, by sweeping — and should be deposited in suitable closed receptacles.

Consult and observe OSHA regulations governing asbestos in the workplace; EPA rules on discharge to the ambient air; and other local codes, rules or regulations controlling the handling and use of asbestos fiber.

UNLOADING

Unitized loads should be lifted intact to and from holds of ships, and off and on land transport by forklift trucks or other suitable handling equipment.

Care should be taken to avoid puncturing the asbestos fiber bags during unloading from ships, railroad cars, trucks or other modes of transportation. Hooks or other sharp instruments *should not* be used. Loose fiber accumulated during transit should be picked up by vacuum cleaner *before* unloading.

STORAGE

For storage, fiber bags should be stacked and moved *with care* to avoid breakage; protected from puncture by moving vehicles; and, if possible, *should be isolated* from traffic in the warehouse and covered to prevent dust generation. To prevent deterioration of stored bags, the principle of first-in, first-out should be followed.

HANDLING

Maximum possible enclosure and fully effective dust control systems should be provided at all stages of in-plant handling where dust is created, such as in bag opening, fiber dumping and bag disposal operations. Loose fiber should be cleaned from work areas by vacuum cleaner or after thoroughly wetting, by sweeping, and then deposited in covered receptacles.

PROTECTIVE EQUIPMENT

Wearing of respiratory equipment approved for protection against asbestos dust should be required at all stages of asbestos fiber handling where quantities of dust are generated which cannot be kept within the Threshold Limit Value by dust control equipment or other methods.

TRANSPORT

Where the use of asbestos requires the transport of loose fiber in open carts or buggies, covers should be used to prevent spilling and dust generation.

WASTE MATERIALS

Waste materials, such as collected dust and empty fiber bags, should be placed in special closed receptacles and disposed of in such a manner as to prevent the release of dust. Safety practices outlined above in the *HANDLING* and *PROTECTIVE EQUIPMENT* sections should be followed during these operations.

All dust from exhaust systems should be collected and safely disposed of, being careful not to release dust into the outside air. Particular attention should be paid to the protection of employees whose job it is to dispose of collected dust from fabric filter dust collection and similar cleaning operations.



**Johns-Manville
Sales Corporation**

Greenwood Plaza
Denver, Colorado 80217
(303) 770-1000

November 15, 1973

Mr. E. Witkowski
Quigley Company
Old Bridge, N.J. 08857

Dear Mr. Witkowski:

Johns-Manville would like to assist you in telling your employees the proper procedures to follow and precautions to take when handling asbestos fiber.

As part of the continuing services of the Asbestos Fiber Division, we will make available to J-M customers free of any charge the enclosed poster on "Recommended Safety Practices for Handling Asbestos Fiber", suitable for posting on bulletin boards and in areas where asbestos fiber is handled. We also will provide free the enclosed brochure--containing the same information--which can be distributed to supervisory personnel and employees.

If you would like to order copies of the poster or brochure, please fill out the attached order form. Your order will be filled promptly.

Yours very truly,

N.W. Hendry
General Sales Manager

ORDER FORM

Recommended Safety Practices for Handling Asbestos Fiber

DATE _____

CRD 1095

SEND THIS ORDER TO:

Johns-Manville Service Center
Attention: Bill Edmonds
1601 23rd Street
Denver, Colorado 80216

SHIP TO: (PLEASE PRINT OR TYPE)

QUANTITY:

_____ Copies of Poster (EA 9P 3710)
_____ Copies of Brochure (EA 11P 3710)

TAPHOLE LIFE
MONTHS OF OCT - NOV /74
EXCLUDING VIBRATED HOLES ON
REBUILDS OR SLAG-OUTS

OCTOBER

FCE NO

- ① 26-7-16-23 AVERAGE 18 HEATS
- ② 31-27-19-15-4-23 AVERAGE 19.5 HEATS
- ③ 17-16-23 - AVERAGE 18.2 HEATS
- ④ 13-30-18 AVERAGE 20.1 HEATS
- ⑤ 32 - AVERAGE 32
- ⑥ 23-18-15-14-26-7-9 - AVERAGE 16 HEATS
- ⑦ 27-20-30 - AVERAGE 25.9 HEATS
- ⑧ 16 - AVERAGE 16 HEATS
- ⑨ 24-14-25 - AVERAGE 21.1 HEATS

SHOP AVERAGE - OCTOBER
20.6 HEATS

NOVEMBER

- ① 14-24-16 - AVERAGE 18 HEATS
- ② 20-16-16 - AVERAGE 17.1 HEATS
- ③ 17 - AVERAGE 17 HEATS
- ④ 23-32 - AVERAGE 27.1 HEATS
- ⑤ 22-12-15-8 AVERAGE 14.1 HEATS
- ⑥ 6-19-21-20 AVERAGE 16.2 HEATS
- ⑦ 21-23-19-24 AVERAGE 21.9 HEATS
- ⑧ 25-17-48 AVERAGE 30 HEATS
- ⑨ 20-32-24 AVERAGE 25.1 HEATS

SHOP AVERAGE - NOVEMBER
20.5 HEATS

Johns-Manville



Devoted to solving in plant
environmental problems caused
by dust, vapor, fumes, noxious
gases, noise.

- In-plant Surveys
- Detailed Drawings & Specifications
- Training of an Industrial Hygiene Staff
- Engineering Recommendations & Costs
- Turn-Key Construction
- Periodic Monitoring



Industrial Environmental Engineering Service

The very air you breathe on the job can be safer and more pleasant, thanks to the new Johns-Manville Industrial Environmental Engineering Service, and J-M offers this service to outside concerns. Johns-Manville Industrial Environmental Engineering Service is backed by well over 50 years of solving environmental control problems.

J-M's experience is world-wide, gathered from environmental problem-solving in hundreds of facilities in such diverse fields as hard rock mining, fiber glass production, consumer product manufacturing, chemical processing and other related production.

Johns-Manville is fully experienced in the handling, collection, recovery, and/or disposition of atmospheric contaminants of all types.

Over the years, Johns-Manville's experience has been tested by every type of climate, geographical location, every problem in dust control, noise abatement, odor and



A J-M specialist counting dust samples

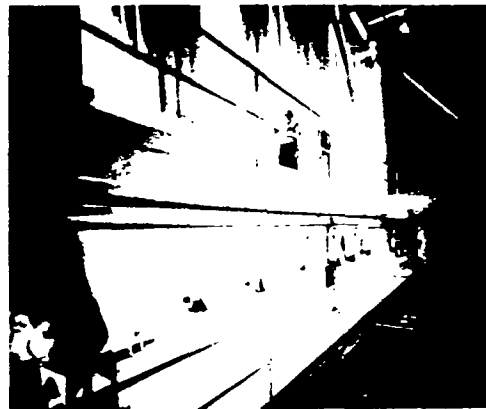
fume control. In solving them, J-M created systems that have become industry standards.

Industrial Environmental Engineering Service is a function of the J-M Environmental Control Systems Department. There is a staff of 30 specialists. 14 of them are devoted exclusively to industrial hygiene evaluations. They're backed by a team of 50 professionals: engineers, scientists and technicians. Over the past six years alone Johns-Manville has successfully completed over 1,200 pollution control systems at a cost of nearly \$32,000,000.

In addition, this staff has extensive experience in designing and constructing systems that comply with both EPA (Environmental Protection Agency) and the Occupational Safety and Health Act.



Interior view of a fan room and the world's largest bag house where 5 million cubic feet of air are moved each min-



ute to keep dust virtually at zero level in the milling operations at the Johns-Manville Jeltrey Mine, Asbestos, Canada



Part of the materials research and testing laboratory located at Newport Beach, California



Johns-Manville's new and most sophisticated laboratory for research and testing in the field of product evaluation and environmental control, Denver, Colo



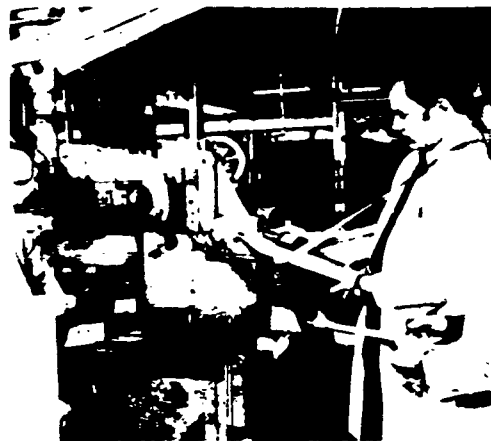
Another of the Johns-Manville research laboratories at Waterville, Ohio. It is used for testing fiber glass

Dozens of specialists on treatment of pollution are represented, and at their disposal are outstanding research facilities at Denver, Colo., Newport Beach, Calif., and Waterville, Ohio. Regional industrial hygiene centers are located in California, Illinois, and New Mexico, and Quebec Province, Canada.

4. Preparation of detailed designs and specifications for control systems.
5. Supervision of construction and installation of control equipment.
6. Industrial hygiene monitoring service.



This data processing center in Denver aids, too, in J-M's comprehensive service to clients.



In-plant noise measurement

J-M Industrial Environmental Engineering Service offers a comprehensive list of services to client companies:

1. In-plant surveys including sampling and analysis for dust, fiber, vapor, fumes, and noxious gas.
2. In-plant noise surveys including recommended corrective measures.
3. Corrective recommendations, including equipment specifications and cost.

7. Training of an industrial environmental staff for clients. Johns-Manville Industrial Environmental Engineering Services are available on a fee basis anywhere in the U.S. and at overseas locations.

For more information or consultation, call or write:
 Industrial Environmental Engineering Service,
 Environmental Control Systems Department,
 Johns-Manville, Box 5705 EES, Denver, Colo. 80217.
 Telephone (303) 770-1000. Cable: Johnmanvil.



Johns-Manville

ENVIRONMENTAL CONTROL SYSTEMS DEPARTMENT

**Greenwood Plaza, Denver, Colorado 80217
(303) 770-1000**

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EPA REGIONAL OFFICES

REGION I: (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont) John F. Kennedy Federal Building, Boston Massachusetts 02203.

REGION II: (New York, New Jersey, Puerto Rico, Virgin Islands) Federal Office Building, 26 Federal Plaza (Foley Square) New York, New York 10007.

REGION III: (Delaware, District of Columbia, Pennsylvania, Maryland, Virginia, West Virginia) Curtis Building, Sixth and Walnut Streets, Philadelphia, Pennsylvania 19106.

REGION IV: (Alabama, Florida, Georgia, Mississippi, Kentucky, North Carolina, South Carolina, Tennessee) Suite 300, 1421 Peachtree Street, Atlanta, Georgia 30309.

REGION V: (Illinois, Indiana, Minnesota, Michigan, Ohio, Wisconsin) One North Wacker Drive, Chicago, Illinois 60606.

REGION VI: (Arkansas, Louisiana, New Mexico, Oklahoma, Texas) 1600 Patterson Street, Dallas Texas 75201.

REGION VIII: (Iowa, Kansas, Missouri, Nebraska) 1735 Baltimore Street, Kansas City, Missouri 64108.

REGION IX: (Arizona, California, Hawaii, Nevada, Guam, American Samoa) 100 California Street, San Francisco, California 94111.

REGION X: (Washington, Oregon, Idaho, Alaska) 1200 Sixth Avenue, Seattle, Washington 98101.

NEW EPA AIR POLLUTION REGULATIONS FOR ASBESTOS

On April 6, 1973 the Administrator promulgated National Emission Standards for Hazardous Air Pollutants (asbestos, beryllium and mercury) in the Federal Register. Existing sources (affected sources in categories 1 and 2 below which commenced construction or modification on or before December 7, 1971, and category 3, must achieve compliance with the standards on or before July 5, 1973, or obtain a waiver of compliance for the time necessary to install controls (but in no case later than two years from the date of promulgation). New sources (affected sources in categories 4 and 5 below, and those in categories 1 and 2 below which commenced construction or modification after December 7, 1971) must be in compliance with the standards immediately.

Affected Sources of Asbestos Emissions

The following categories of stationary sources are affected by the standard for asbestos:

1. Asbestos mills
2. Manufacturing of these asbestos-containing products:
 - a. Cloth, cord, wicks, tubing, twine, rope, thread, yarn, roving, lap, or other textile materials.
 - b. Cement products
 - c. Fireproofing and insulating materials
 - d. Friction products
 - e. Paper, millboard and felt
 - f. Floor tile
 - g. Paints, coatings, caulks, adhesives, and sealants
 - h. Plastics and rubber materials
 - i. Chlorine (diaphragm process)
3. Spraying of asbestos-containing insulation or fireproofing
4. Demolition of institutional, commercial, or industrial buildings or structures (including apartment buildings having more than four dwelling units) which contain any boiler, pipe or loadsupporting structural member that is insulated or fireproofed with friable asbestos material.
5. Surfacing of roadways with asbestos tailings

Waivers of Compliance, Reporting

Requests for waivers of Compliance should be submitted in writing to EPA within 30 days following the promulgation of the standards to be assured that action will be taken on the waiver request prior to the 90th day after promulgation. Continued operation in excess of a standard after the 90th day without a waiver of compliance is a violation of the Clean Air Act of 1970, as amended.

The regulations require owners or operators of existing sources in categories 1 and 2 to report certain information to the appropriate EPA Regional Office by July 6, 1973. Forms which should be used for reporting are available from the Regional Office. In addition, owners or operators of sources in categories 3 and 4 must report certain information to the appropriate EPA Regional Office no later than 20 days prior to the initiation of each project.

Sources to be constructed or modified in categories 1 and 2 must receive EPA approval prior to construction or modification.

More detailed information, copies of the regulations, and reporting forms are available from the EPA Regional Offices (list attached).

Yes, asbestos!

If you buy safety clothing for the protection of your workers, you will find this message important. Recent public discussions of the health implications of asbestos dust have led to a number of erroneous and misleading impressions concerning hazards associated with the use of asbestos protective clothing.

The major purpose of the OSHA standards for asbestos is to protect workers from exposure to potentially hazardous dust in their work environment. A new section, 1910.93a, has been added to Title 29 of the Code of Federal Regulations limiting the permissible air-borne concentration of asbestos fibers to which any employee may be exposed. While these regulations are applicable to all users of asbestos-containing products, it is generally recognized that the problems are most prevalent at the level of the prime producer. That is why Raybestos-Manhattan has invested millions of dollars in equipment through the years to protect its own employees.

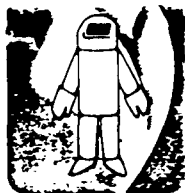
Caution labels are not required by OSHA regulations on finished products which effectively entrap asbestos fibers so that they are not released in normal use.

Raybestos-Manhattan manufactures a full line of specially treated or coated asbestos cloth which is sold to producers of protective clothing. Our trade names for these fabrics include NOVATEX, Silvabestos, Tri-Bestos, Polybestos, and Eleven Thirty-Three. Products made from these fabrics need not be labeled.

Employees must be protected against exposure to hot metals, whether from direct contact or from molten splash. In fire fighting and rescue work, and in many industrial jobs, they must be protected against high radiant heat. Under these severe conditions, there is no known material which affords the worker protection equivalent to asbestos. To anyone concerned with the safety of the American worker, the substitution of lesser fabrics could be disastrous.

When buying safety clothing, keep in mind the protective value of asbestos. Each of the specially treated or coated fabrics made by Raybestos-Manhattan is designed for the protection of your workers in hazardous occupations. Ask your supplier for gloves, mitts, or clothing made from Raybestos-Manhattan asbestos fabrics . . . there are none better.

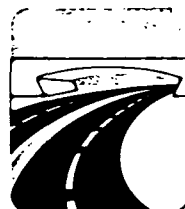
Raybestos^{RM} Manhattan
ASBESTOS TEXTILE DIVISION BRIDGEPORT, CONN. 06603



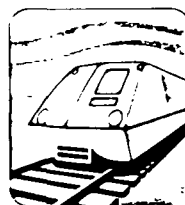
Protective Suits



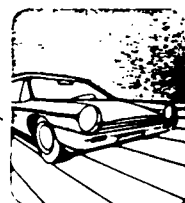
Fire-Safe Curtains



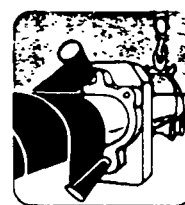
Highway Safety



High Speed Brakes



Passenger Car Safety



Pipeline Protection

Asbestos News Letter

74-2

YES, ASBESTOS!

A positive statement...to say the least. This headline which was used by Raybestos-Manhattan in the attached advertisement demonstrates one company's attitude and efforts to underline the positive facts about asbestos.

Asbestos is used in a variety of products many of which protect man from hazards and accidents. Bound in ~~these products~~ by a variety of binders or special treatments, the fibers and products present no risk to the general public. As indicated in the advertisement, caution labels are not required by OSHA regulations on finished products which effectively entrap asbestos fiber so that they are not released in normal use. Take a look at your products...and accent the positive with your customers.

FIBER HANDLING - THE KEY TO SAFE WORKING CONDITIONS

OSHA standards were designed to assure workers of safe and healthful working conditions. To assist fiber users in meeting these standards, J-M has developed and is developing packaging and fiber handling techniques to eliminate or limit dust problems.

The key to dust-free work facilities is the elimination of operations which create dust --- manual bag open-

(More)

JM Johns-Manville Asbestos Fiber Sales Greenwood Plaza - Denver, Colo 80217 - (303) 770-1000

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ing - manual car unloading - excessive handling of bags. J-M has developed packages such as the pulpable paper bag which can be dumped, unopened, into the hydropulper or similar mixer. This package limits a worker's exposure to fiber dust and has gained wide acceptance in the paper industry. It lends itself to any wet system with high intensity mixers. Polyethylene bags are being used in the floor tile and asphalt paving industries where they can be added to the mixer without being opened. The bags melt at 250 F and become a part of the mix.

The success of these packages depends on the bags being delivered to your plant in a damage-free state. To assist in accomplishing this, J-M has developed systems such as palletized units, shrink wrapping with polyethylene, and the assigned rail car.

The assigned car system utilizes rail cars assigned solely for the customers use, palletized units of bagged fiber and in-stackable dunnage to stabilize the load. There is a charge for each pallet and dunnage bag with a partial credit for pallets and full credit for dunnage bags when they are returned in the assigned cars. Experience with this system over the past year has been excellent.

One of the most promising experimental fiber handling methods now being evaluated is pelletized fiber. Pellets have been produced with Group 6 & 7 fiber at our Jeffrey Mine and experimental quantities are available on request. The pellets normally contain 10-12% moisture but can be dried to 2% moisture if necessary. The concept of pellets lends itself to bulk shipments in hopper cars, but our program will evaluate bagged pellets and also packaging in 2-ton "Super" bags. Pelletized fiber is virtually dust free and appears to be one solution to the fiber handling problem.

If any of these fiber handling innovations are of interest to you, drop us a note or contact your local J-M Asbestos Fiber Sales repre-

(More)

sentative. We will be glad to work with you on your fiber handling problems.

DO YOU MEET THE STANDARDS?

Many people hesitate to contact OSHA for free advice...and rightfully so. Once an OSHA inspector visits a work place, he is obligated to make an inspection and recommend penalties for unlawful working conditions. But there is an arm of the federal government that can and does offer free consultation and advice especially for the small company. The National Institute of Occupational Safety and Health (NIOSH) a part of the Department of Health, Education, and Welfare provides numerous services that will assist an employer in eliminating hazardous working conditions.

NIOSH has, as its major duty, the responsibility of developing and recommending standards and criteria for the Department of Labor and the Department of Interior; but NIOSH can also help you identify and solve many of your occupational safety and health problems. Three NIOSH programs of particular interest to asbestos users are the:

1. Hazard Evaluation Program
2. Industrial Hygiene Service Program, and
3. Technical Information Service.

The Hazard Evaluation Program provides an employer with on site evaluations of potentially hazardous working conditions ... and with recommended corrective procedures if possible. You can apply for this service by contacting your nearest NIOSH office (list attached) and submitting a Request for Health Hazard Evaluation form.

The Industrial Hygiene Service Program provides free advice on ventilation, fumes, and noise level. NIOSH industrial hygienists can measure levels of exposure to asbestos dust and other hazardous mate-

(More)

rials and recommended effective control measures.

The Technical Information Service can, upon request, provide answers to specific questions and can provide reference lists, reprints, and abstracts on subjects of occupational safety and health.

NIOSH also offers training programs for employers and employees. These short courses, usually 5 days in length, are taught by experienced professionals and cover occupational safety and health, occupational hazards, industrial hygiene, sampling and evaluating airborne asbestos dust, and numerous other subjects. Further information is available from NIOSH, Division of Training, 1015 Broadway, Cincinnati, Ohio 45202.

Johns-Manville, too, is interested in helping you meet the standards. Besides the J-M Industrial Environmental Engineering Control Department whose services were described in our first newsletter, J-M has also established an Environmental Affairs Department headed by Jack Solon, Vice President, Environmental Affairs. This group was established to assist both J-M and its customers on the subject of environmental and occupational health problems. The two Environmental facts papers included with our first newsletter were representative of the efforts of Jack's group. A copy of the latest paper Asbestos: No Risk to the General Public is attached. If you need information on environmental problems and with asbestos problems in particular, contact the J-M Environmental Affairs Department here in Denver. They will be glad to be of assistance.

Asbestos: No Risk to the General Public

INTRODUCTION

In a wide variety of demanding uses, people all over the world benefit each day from asbestos. This fibrous mineral is somewhat unique since its primary function is to protect human life and property in most of the 3,000 different products in which it is used today.

Growing demand for this natural mineral in our modern society has focused attention on the possible health risks to the general public. This concern has been stimulated by medical evidence connecting the excessive inhalation of asbestos dust in occupational settings to increased risks from certain human diseases. Questions have been asked about the health risks, if any, presented by asbestos in our natural atmosphere, and for more than half a century doctors and scientists have searched for the answers.

Although hundreds of different animal, vegetable and mineral fibers are present in community air and their effects on human health are under scrutiny, many of the answers on asbestos already are documented. *To the extent that any asbestos fibers are present in our natural atmosphere, scientific evidence has not shown any health hazard for the general public.*

Strong support for the conclusion that asbestos poses no risk to the general public came in a report from the 33-member *Advisory Committee on Asbestos Cancers of the International Agency for Research on Cancer*, which is a division of the World Health Organization. Following a 1972 conference on the Biological Effects of Asbestos, this committee noted that *there is no evidence, either from experience or from scientific research, that anyone in the general public has ever contracted any asbestos-related disease from exposure to the minute amounts of asbestos found in community air.* The Committee also pointed out that these amounts in commu-

nity air were many times lower than the level considered safe in an occupational environment.

Understanding how asbestos can be hazardous to those who work with it and yet not pose any danger to the general public requires a knowledge of how and why asbestos is used, and of the scientific research that has been conducted with regard to people with occupational exposures in contrast to the general public.

ANCIENT USES OF ASBESTOS

The peculiar properties of asbestos have fascinated people since the mineral was discovered. Deriving its name from the Greek word meaning "unquenched" or "incombustible," asbestos in its raw state is as dense and compact as the rock which encases it. Yet, it can be separated into light, siliceous fibers resistant to fire and to extremely high temperatures, and able to withstand great tension without breaking. Asbestos fibers can be woven into non-combustible fabrics for fireproof curtains for theaters or protective garments for firefighters, or they can be added to other materials to produce floor tiles and ceiling tile, roofing shingles, siding, asbestos cement pipe and many other useful products.

Archeologists in Finland have unearthed objects which indicate the earliest known use of asbestos goes back some 45 centuries when the mineral was used to hold together pieces of pottery before the clay was baked.

According to legend, the Emperor Charlemagne owned a "magic" asbestos tablecloth which his stewards cleaned after royal banquets by throwing it into the fire and then retrieving it intact. History also records that Marco Polo found asbestos cloth on his journey to Asia.

PROVIDES SAFETY AND DURABILITY

In the twentieth century, asbestos has become



increasingly essential material in our improved way of life and expanding industrial economy. It has many vital functions in construction, transportation and industrial processes. It provides built-in protection against fire and deterioration in scores of common products in daily use. Through the years it has saved countless lives and billions of dollars in property damage by preventing or checking the spread of fire. Electrical installations are safer because of asbestos insulation materials. When used in packings and gaskets, asbestos promotes the efficient operation of industrial machines and pumps.

In transportation, the brakes on cars, trucks, buses and trains protect lives because asbestos enables them to resist extreme heat and friction.

OCCUPATIONAL RISKS AND CONTROLS

To meet the increasing demand for this valuable fiber, a worldwide asbestos mining and processing industry came into being.

As in many other mineral and materials industries, it became necessary to protect employees against occupational health hazards. It was found that some workers exposed to excessive asbestos dust over a period of years developed a nonmalignant lung disease called asbestosis. As with many similar conditions, asbestosis is time-and-dose-related—that is, it develops only after inhalation of excessive concentrations of asbestos dust over a long period of time.

Some medical studies have reported an association between the disease asbestosis and an increased risk of a certain type of lung cancer (bronchogenic). These studies have shown that bronchogenic cancer, with but one recorded exception, has occurred only in asbestos workers who smoked cigarettes during the time they experienced heavy and prolonged dust exposure. However, even though the number of such cases among workers heavily exposed to asbestos fiber is only a small fraction of the total employed, the industry considers the problem serious.

Bronchogenic cancer is the subject of considerable scientific research through statistical, clinical and pathological studies of exposed workers; through experimental studies with laboratory animals; and through studies of the physical and chemical nature of asbestos and associated minerals.

Health research also has indicated an association between asbestos exposure and mesothelioma, a rare cancer of the lining of the chest or abdominal cavities. This disease has a latent period that ranges from 30 to 45 years after initial exposure. Although widespread research is being conducted into the mesothelioma problem, the studies are complicated by a number of factors including the rarity of the disease and the fact that diagnosis still is considered a problem among medical experts. It appears that a variety of asbestos called crocidolite is more likely to cause mesothelioma than any of the other six varieties, including chrysotile asbestos, which accounts for about 95% of the world's production. Additionally, studies also indicate there are other causes of mesothelioma besides asbestos.

In recent years, the asbestos industry has invested millions of dollars in equipment and techniques to prevent the inhalation of asbestos dust by workers in the mining and milling of asbestos and in the manufacture of asbestos-containing products. A program of education and training is conducted for asbestos fabricators and applicators to provide them with a thorough understanding of potential risks and to encourage general adherence to sound industrial hygiene practices.

Studies in asbestos-using industries in England and the United States indicate that where dust control measures have been taken, the risk of lung disease among the workers has been greatly reduced.

STUDIES SHOW NO RISK TO PUBLIC

Because of the occupational health hazards associated with asbestos, some people who are concerned about general air pollution have raised the question of whether there is asbestos dust in the air in sufficient quantities to constitute a health risk to the general public.

Studies of asbestos exposure and human health have produced no evidence of any health hazard to the general public from the use of finished asbestos products. Asbestosis does *not* occur among the general population; it occurs only among those with heavy occupational exposure. There is no evidence that anyone has ever contracted any disease from exposure to the wearing or weathering of brake linings, floor tile, roofing, or other products containing asbestos.

Brake linings in particular were the subject of a 1968 United States Public Health Service report. Jeremiah Lynch of the National Center for Urban and Industrial Health, U.S. Public Health Service, conducted the tests.¹ He concluded that any asbestos that might come from brake lining wear was "an inconsequential health factor in urban air pollution." The study provided scientific evidence refuting unsupported speculation that the wear of brake linings might be releasing many asbestos fibers into the air:

"Except in all but the most extreme driving conditions, only a very small fraction of the 30 to 50% asbestos present in brake linings escapes into the atmosphere as free fiber... the remainder is converted into some other mineral as a result of the extreme temperatures generated at small spots on the lining surface. Thus, although urban air contains a few free fibers as a result of brake lining wear, they represent a very small proportion of the total asbestos used in the manufacture of brakes. Many sources of the respirable fibers not associated with asbestos products have been identified, and the free fibers from brake lining wear appear to be an inconsequential health factor in urban air pollution."

Other medical and scientific reports show that the occupational health risks from asbestos dust exposure do not extend to the public.

In 1967, P. E. Enterline, Ph.D., and M. A. Kendrick, Ph.D., reported on the reduction of asbestosis

among workers in asbestos fabricating industries where protective measures have been taken.² They pointed out that the small amount of asbestos to which people in general may be exposed is of "little importance":

"...if very low-level exposures of populations to asbestos dust play any part in the pathogenesis (development) of disease it must be very small indeed....Asbestos dust at levels to which general populations are exposed probably is of little importance in the etiology (causation) of disease."

"ASBESTOS BODIES" STUDIED

In the mid-1960's the question of public exposure was discussed in studies which reported finding so-called "asbestos bodies" in the autopsied lungs of some city dwellers who were not known to have been exposed directly to asbestos dust. The studies emphasized that these so-called "asbestos bodies" had no relation with either the cause of death or with any history or symptoms of pulmonary disease.

The authors of one such study, Drs. J. G. Thomson and W. M. Graves, noted that it would have taken a tremendous increase in the number of "asbestos bodies" found in the autopsied lungs to constitute even a minimal case of asbestosis.³ They said in their 1966 report:

"It should be stressed that in spite of frequent asbestos bodies in the lung bases, none of this group had pulmonary disability and all died from other causes...to convert the scanty or very scanty bodies which we have demonstrated to be present in so many urban dwellers to the frequency present in a minimal basal asbestosis would require an increase by hundredfolds and to get a more diffuse classical asbestosis with pulmonary disability the multiplying factor might well be in many millions."

In a similar study the same year, Drs. Lily Anjilvel and W. M. Thurlbeck noted that there is no risk of cancer to the general population from asbestos exposure.⁴ These researchers said:

"In our series there seemed to be no particular association between malignancy and the presence of asbestos bodies....asbestos bodies are not more common in patients with malignant disease in the autopsy populations we have studied, and thus casual exposure to asbestos is not an important cause of malignancy in the general population."

Other studies have raised the question of the real identity of these so-called "asbestos bodies." The term has for years been applied loosely to describe a tiny body of tissue in the lung containing a core of some inhaled particle—*asbestos, talc, man-made fiber, or certain other common substances.* The term "asbestos body" is misleading if the core substance has not been positively identified. Thus, it is not necessarily so that the finding of such "bodies" in city dwellers' lungs means that these people inhaled asbestos.

Because the cores of such "bodies" do not always contain asbestos, and because the overgrowth tissue contains some identifiable iron, Dr. Paul Gross, who has studied the problem extensively, has suggested that a more accurate name would be "ferruginous (iron-like) bodies."⁵ Other specialists have now begun to refer to "ferruginous bodies" in their papers.

Dr. J. M. G. Davis, in 1967, deplored the "current furor over asbestos bodies—which recently appeared in the professional literature and was widely reported in the news media with varying degrees of sensationalism."⁶ He commented specifically:

"...the basic assumption that asbestos-like bodies can only be produced from asbestos has proved incorrect and this casts considerable doubt on the theory that has been the chief basis of the asbestos 'scare.'"

OTHER CAUSES OF FIBROUS "BODIES"

Much research work is going on to develop ways of identifying the particles that may be the core of these "bodies." It has been shown that a number of

substances can cause "bodies" in both humans and experimental animals.

L. J. Cralley and associates in the U.S. Public Health Service have discussed the great number of substances which might produce "bodies" in human lungs.⁷ Publishing in 1968, they said:

"On the premise that the fibrous bodies observed in the lungs of persons at autopsy are all 'asbestos bodies' and that coated fibrous bodies are a specific reaction to asbestos fibers, some investigators have concluded that asbestos fibers are significant air contaminants....Respirable fibers may be mineral, vegetable or animal in origin and may come from both natural and synthetic sources. There are well over a hundred different natural minerals with some degree of fibrous structure.... Respirable fibers of vegetable origin may be from both live and dead plant tissues....Animal fibrous materials include animal hair and scale, insect hair....Synthetic fibers include the newer ceramic fibers...as well as a wide range of established and emerging organic types used in textiles, fillers, containers, filaments, structural materials, etc."

Whatever their origin, the "bodies" that have been reported have not been connected with any disease, or with the cause of death, in the subjects studied. Even if some asbestos is among the variety of fibers in the air breathed by the public there is no evidence that it has any health significance.

SUMMARY

People throughout the world benefit from the many uses of asbestos—in schools, houses, theaters, ships, aircraft, offices and other public facilities, furnaces, boilers, firefighting equipment and in a myriad of everyday products.

With the twentieth century growth in the use of asbestos has come recognition of the need to cope with occupational hazards associated with excessive inhalation of asbestos dust. Much progress has

been and is being made in protecting workers who handle asbestos fibers in mines, mills, factories and in some building and insulation trades.

Medical scientists studying the occupational health hazards of asbestos see no evidence that asbestos poses any risk to the general public. There is no evidence that asbestos dust is present in the general air in amounts of any significance to human health.

PERSPECTIVE

It is important to view in its proper perspective the expressed concern of some people that asbestos in the ambient air is a health risk to the general public.

Asbestos is by no means alone in being investigated as a possible health hazard. Literally hundreds of substances—as common and everyday as fuel oil, charcoal-broiled steaks, iron rust and egg yolks—are known or suspected of being cancer-causing agents under certain experimental conditions.

To forego the many benefits of these and other products of modern technology—simply on the basis of suspicions that are unsupported by medical evidence—would be a great and unwarranted disservice to the American public.

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ENVIRONMENTAL FACTS/Asbestos

For further information on this subject please contact
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EA AP 1711

Printed in USA

**What Every
Employee
Should
Know
about ...
ASBESTOS**

**AND WHAT YOU
SHOULD TELL OTHERS**



FRANKLY SPEAKING

You are important to the company. And you certainly are important to your family and loved ones. It makes good sense for the company to do everything possible to protect you in your working environment . . . and for you to take every precaution to avoid possible hazards to your health.

If you work in the handling or fabrication of asbestos and asbestos-containing products (or if you know someone who does), you should be aware of:

1. What the hazards can be.
2. What obligations your employer has to protect you.
3. What you can do as an individual to protect your own health and that of your fellow employees.

2



THESE ARE THE FACTS

The inhalation of excessive quantities of free asbestos fibers over prolonged periods of time can increase the risk of developing certain diseases of the lungs within 20 or 30 years. The three diseases associated with inhalation of asbestos fiber are: asbestosis — a non-malignant fibrotic lung condition; bronchogenic (lung) cancer, and mesothelioma—a rare cancer of the lining of the chest or abdominal cavities.

Reduction of asbestos dust exposure is at present the only known method of preventing disease among asbestos industry workmen. Experience has shown that when dust levels are low, risk to employees and the incidence of asbestos-related disease drop sharply.

NOW... ABOUT SMOKING...



It has been established that cigarette smoking *greatly* increases the risk of developing bronchogenic cancer among persons encountering heavy asbestos exposure. On the other hand, the asbestos industry workmen who do not smoke cigarettes — and who never have smoked regularly — show no greater incidence of bronchogenic cancer than the average man-on-the-street who does not smoke.

3

STILL SOME UNKNOWN

Many differing opinions exist within the medical profession about precautions against, the causes of and treatments for lung disease. Meanwhile, each of us should be aware of the known facts and profit from them.

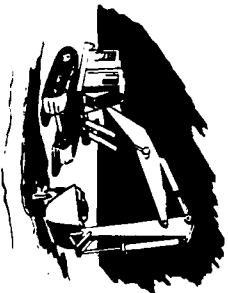


IF YOU WORK IN A PLANT OR MINE

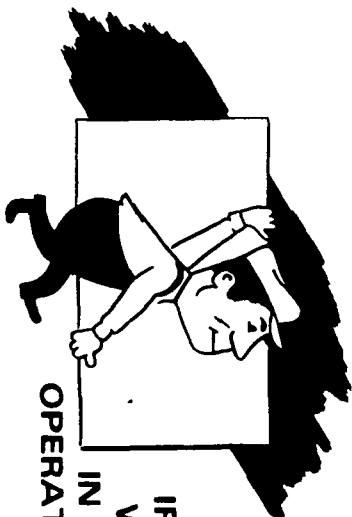
Employees who work in the mining or milling of asbestos fibers will be exposed to a certain quantity of airborne asbestos fiber. Or, if they work in the manufacturing of asbestos-containing products, they will encounter



some exposure. But when mines and factories are properly controlled, the asbestos content of the air will be low and within safe levels, and will present no hazard to the employee.



4



IF YOU WORK IN FIELD OPERATIONS

The installation or use of most finished asbestos-containing products will not produce dust levels high enough to be a hazard to workers. Studies show that in more than 90% of the asbestos-containing products produced in the United States, the asbestos fibers are safely "locked into" the product by means of cement, plastic, or other binders. Consequently, the fibers are not easily released into the air during normal handling and application.

Some asbestos-containing products, however, such as unsaturated textiles and certain asbestos insulations, can release potentially hazardous amounts of asbestos during handling or fabrication. Similarly, the tear-out or removal of old asbestos-containing insulations can release fibers. Such products must be handled with caution, by approved methods of dust suppression and control.

5



REGULATIONS TO PROTECT YOU



To ensure the safety of all, occupational standards for exposure to asbestos dust were published in June 1971 by the Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor. These standards have been designed to protect you from exposure to potentially hazardous amounts of asbestos dust and are being carefully observed by the company.

Stated simply, here are the main OSHA regulations of interest to employees:

1. A Safe Workplace

Your employer is required to maintain a healthy workplace by making sure that no employee is exposed to concentrations of airborne asbestos fiber in excess of established Federal limits.

2. In Case of Risk

If exposure limits are exceeded, the employee will be notified by his employer, and will be informed of the corrective measures being undertaken to reduce his exposure to a safe level.

3. Corrective Action

Engineering controls and the institution of safe work practices will be the approved methods of correction.

4. In the Meantime

While corrective measures are being instituted, the employee will be protected by other means, which may include the wearing of an approved respirator provided by his employer, or by shift rotation.



5. Temporary Measures

The use of respirators or shift rotation to achieve control is permitted only (a) during the time necessary to install engineering controls or to institute safe work practices, (b) in situations where such controls or practices are not technically feasible, or (c) in emergencies.

6. And Only If You Pass the Medical

No employee will be assigned to a task requiring the use of a respirator if his most recent yearly medical examination indicates that he would be unable to function properly while wearing one, or if the wearing of the respirator would create a hazard to the employee's health or safety, or to that of another workman on the job.

7. Special Protection When Needed

Special protective clothing, change rooms, and separate clothes lockers will be provided for employees in situations where exposure standards are exceeded.

8. Checking the Air

Monitoring of workplace air will be conducted by the employer to assure that the standards are being met. Employees may have access to the results of the monitoring of their immediate job areas.



WHAT ELSE

CAN YOU DO



Industrial safety and health can never be the responsibility of only one person. Both the employer and the employee must work together to provide a safe and healthful environment.

9. Signs to Guide You

Warning signs will be posted in work areas where the dust level is in excess of the standard.

10. Warnings on Products, Too

Caution labels will be placed on asbestos-containing products that may release free asbestos fiber in excess of the standard during handling, application, fabrication, or disposal.

11. Annual Checkups

The employer, at no cost to the employee, will provide yearly medical examinations for employees exposed to concentrations of asbestos dust. Pre-employment and termination medical exams are also required.

12. With Results Available

At the employee's request, his medical exam records can be made available to his own family physician.



For safety in specialized areas, detailed work practices must be instituted to assure compliance with government regulations. As an employee, it is your duty to follow these work practices at all times. Never take shortcuts that may endanger your health and that of others on the job.



If you see a possible hazard that your employer may have overlooked, bring it to his attention.



If you can suggest more efficient and safer work methods, do so.

A healthful environment for employees requires the team effort of industry and labor working together to solve their mutual problems.

BUT, MOST IMPORTANT . . .



Another word about smoking. First, an assurance. If you don't smoke cigarettes, and if you have never smoked regularly — even if you have been exposed to excessive quantities of asbestos for a prolonged period of time — statistics show you have no greater chance of getting bronchogenic cancer than the average person not occupationally exposed to asbestos who does not smoke.

But, on the advice of medical specialists: If you work with asbestos and you *do* smoke cigarettes, quit smoking! If you work with asbestos and do not smoke, don't start!

The company needs you and your specialized talents, and your families need you — *guard your health.*

REMINDERS..

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- Asbestos fibers may be hazardous to your health if inhaled in excessive quantities over a long period of time.
- Every precaution should be taken by both employers and employees to keep dust levels low and to avoid unnecessary exposure.
- The asbestos industry is working hard to control exposure and to alert every person to important safety precautions. Regulations to protect American workers against heavy concentrations of asbestos dust should be strictly followed by all.
- The vast majority of the thousands of finished asbestos products are not hazardous when handled or used, but individuals who are engaged in their manufacture or handling should be aware of possible dangers. Avoid carelessness by yourself or others.
- *Remember* — the use of asbestos can be traced back as far as the ancient Greeks and Romans. Today the manufacture of asbestos products has become an important industry of our nation. By maintaining high safety standards, you can contribute not only to the economical well-being of you and your fellow workers, but — most important — to your own personal health and safety.

This booklet is prepared in the interest of better safety practices for the protection of men and women working in areas involving asbestos materials, as well as for those who can inform others with a need to know. For further information, contact:

For Johns-Manville Employees:
William B. Reetz
Manager, Accident Prevention
Industrial Health
Johns-Manville
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For Johns-Manville Customers:
Asbestos Fiber Sales
Johns-Manville
Greenwood Plaza
Denver, CO 80217



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EA-13L-3711

Litho in U.S.A.

Recommended Safety Practices for Handling Asbestos Fiber

GENERAL PRECAUTIONS

In all stages of handling — packaging, transporting, unloading, storing, and in-plant moving — asbestos fiber bags should be handled carefully and in such a manner as to prevent damage of bags and the generation of dust.

Damaged bags should be immediately repaired, resealed or put into closed receptacles. Any spillage of asbestos fiber should be cleaned up immediately — either by vacuum equipment or, after thoroughly wetting, by sweeping — and should be deposited in suitable closed receptacles.

Consult and observe OSHA regulations governing asbestos in the workplace EPA rules on discharge to the ambient air; and other local codes, rules or regulations controlling the handling and use of asbestos fiber.

UNLOADING

Unitized loads should be lifted intact to and from holds of ships, and off and on land transport by forklift trucks or other suitable handling equipment.

Care should be taken to avoid puncturing the asbestos fiber bags during unloading from ships, railroad cars, trucks or other modes of transportation. Hooks or other sharp instruments should not be used. Loose fiber accumulated during transit should be picked up by vacuum cleaner before unloading.

STORAGE

For storage, fiber bags should be stacked and moved with care to avoid breakage; protected from puncture by moving vehicles; and, if possible, should be isolated from traffic in the warehouse and covered to prevent dust generation. To prevent deterioration of stored bags, the principle of first-in, first-out should be followed.

HANDLING

Maximum possible enclosure and fully effective dust control systems should be provided at all stages of in-plant handling where dust is created, such as in bag opening, fiber dumping and bag disposal operations. Loose fiber should be cleaned from work areas by vacuum cleaner, or after thoroughly wetting, by sweeping, and then deposited in covered receptacles.

PROTECTIVE EQUIPMENT

Wearing of respiratory equipment approved for protection against asbestos dust should be required at all stages of asbestos fiber handling where quantities of dust are generated which cannot be kept within the Threshold Limit Value by dust control equipment or other methods.

TRANSPORT

Where the use of asbestos requires the transport of loose fiber in open carts or buggies, covers should be used to prevent spilling and dust generation.

WASTE MATERIALS

Waste materials, such as collected dust and empty fiber bags, should be placed in special closed receptacles and disposed of in such a manner as to prevent the release of dust. Safety practices outlined above in the HANDLING and PROTECTIVE EQUIPMENT sections should be followed during these operations.

All dust from exhaust systems should be collected and safely disposed of, being careful not to release dust into the outside air. Particular attention should be paid to the protection of employees whose job it is to dispose of collected dust from fabric filter dust collection and similar cleaning operations.



Prepared by the Environmental Affairs Department,
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ADDITIONAL COPIES:

For additional copies of this card, contact your local Johns-Manville office, or write to:

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Environmental Affairs Department
P.O. Box 5168
Denver, Colorado 80217
U.S.A.

ADDITIONAL INFORMATION:

For additional information on the safe handling of asbestos fiber, see suggested list below:

U.S.A.

Asbestos Information Association/IAA
1001 "L" Street, NW
Washington, D.C. 20004

CANADA

Canadian Asbestos Mining Association
2 Place Ville Marie
Montreal 110, Quebec, Canada
MW7189 82260003
The Asbestos Information Committee
18 Waterloo Road
London, W1V 3NE, England

IN OTHER COUNTRIES, contact the asbestos industry association or government unit that deals with occupational health.