

ILLINOIS POLLUTION CONTROL BOARD  
September 26, 1972

JOHNS-MANVILLE PRODUCTS CORPORATION )  
(WAUKEGAN PLANT) )  
 ) #72-272  
 )  
v. )  
 )  
ENVIRONMENTAL PROTECTION AGENCY )

OPINION AND ORDER OF THE BOARD (BY SAMUEL T. LAWTON, JR.)

Petition was filed by Johns-Manville Products Corporation requesting variances from Rules 651(a) and 652 of the recently adopted Asbestos Regulations (Chapter 2, Part VI, Air Pollution, Asbestos and Spray Insulation and Fireproofing), with respect to eight emission sources at its Waukegan Plant, in order to enable installation of equipment or changes in fabrication which will bring all operations into compliance on or before April 30, 1973. The Environmental Protection Agency has filed a recommendation proposing allowance of the variances requested, subject to certain terms and conditions which have been agreed to by petitioner. Because of the absence of objection filed by the public and the indication of approval of the program by contiguous neighbors, hearing originally scheduled on the petition was cancelled by our order of September 12, 1972. We grant the variances as requested by the Company subject to the conditions proposed by the Environmental Protection Agency.

Johns-Manville Products Corporation operates its plant on a 346-acre parcel bordering Lake Michigan on the north end of a four-mile industrial zone in the City of Waukegan. The plant is a combined operation composed of three separate divisions: the Residential Products Division, the Pipe Division and the Industrial Products Division. Each is engaged in the manufacture of a wide variety of different products using different raw materials with varying degrees of asbestos usage. Total asbestos is presently estimated to be 45 tons annually and serves as a raw material of products with total sales value of \$57,000,000 in 1971.

Asbestos fiber is received in box cars and bagged in compressed form in amounts of approximately 100 pounds per bag. Bags are palletized 10 bags high, 50 per pallet, to form a solid, block-type load in order to avoid shifting or breaking in transit. The petitioner represents that all potential emission sources of asbestos have been subject to positive control over a considerable period of time.

Many control devices are those that were provided with the original installation of production equipment. Others represent second or third generation replacements of the original control system. Some equipment for control of asbestos emission has been in use at the plant for 45 years. Of a total of 24 emission sources in the plant, 16 are represented to be in compliance at the present time, and eight emission sources remain to be brought into compliance, which are the subjects of the present variance requests.

It is estimated that the Plant exhausts in the range of 540,000 scfm of air from source operations that use asbestos. About 75%, or 405,000 scfm of this volume, is routed through fabric filters that are incorporated into 18 separate exhaust air handling systems throughout the Plant. 125,000 scfm of air is ducted through wet collection devices. The remaining 10,000 scfm presently is connected to cyclones or control devices of similar efficiency. Cost of existing control equipment associated with asbestos source operations, at present-day values, is estimated to be approximately \$2,000,000. (Pet. 3)

The petition goes into considerable detail in describing the present methods of existing air pollution control and abatement equipment in operation, the inspection procedure and surveillance schedule to determine proper performance of each control device, the testing methods to ascertain periodic fiber counts at emission points and the correlation of results recorded.

Emissions of asbestos fiber into the ambient air are measured, where conditions permit, using air sampling pumps and membrane filters. The asbestos concentration is evaluated using 20 fields per sample, counted at random using phase contrast microscopy at 430 x magnification and counting only fibers that are 5 microns or greater in length, with a length-to-breadth ratio of 3 to 1 or greater.

Supervisory authority is provided for all process operations at the plant. Instruction in the potential hazards of exposure to asbestos and handling procedures have been formulated and received by each employee. A system of asbestos removal from clothing is provided. Waste products containing asbestos fiber are collected daily and transported in enclosed dump trucks for disposal within the plant property.

The Residential Products Division manufactures asbestos cement sheet products, roofing roll goods and roofing shingles made from organic and asbestos felts manufactured at the plant, and roofing cement. 500 people are employed in this Division. Asbestos is the base material for the asbestos cement sheet products line due to its high heat-resistant qualities and general resistance to caustic chemicals and elements of nature. Asbestos is used in the base felt

in some roofing products, primarily rolled roofing for "built-up" type roofs, providing resistance to rotting and the spread of fire. Asbestos is also a key ingredient in roofing cement products serving as a binder and stabilizer.

In the Asbestos Cement Sheet Department, dry raw materials are blended into a wet slurry formed into sheets and then cured and pressed. Sawing and trimming operations follow. Emission of asbestos from this source is generated by the mixing and conveying of asbestos fiber with other ingredients used in asbestos cement board as well as the various finishing operations such as saw-cutting and sanding of the board.

Three Parsons fabric bag houses are used to control emissions from this source and this operation appears to be in compliance with the Regulations.

In the Roofing Cement Department, emissions of asbestos occur as the result of an air exhaust system at the asbestos fiber bag opening and fluffing station, over the roofing cement mixer. An air exhaust system reduces exposure of employees at this source. Petitioner represents that it is unable to determine whether concentrations from this operation exceed the maximum two fibers per cubic centimeters of air as provided in the Regulations.

Asbestos emissions may occur from the asbestos paper machine where the finished roll of asbestos roofing felt is trimmed. However, since most asbestos fiber involved in this operation is bonded in felt ribbons, little discharge takes place into the atmosphere. While petitioner does not believe this source to be in violation, because of the present inability to measure emissions at this source, a variance is requested with respect to this operation.

Emissions of asbestos may also occur from the fiber-glass shingle coating operation and while this is a relatively minor operation, since the petitioner is unable to determine whether concentrations of asbestos fibers are discharging into the ambient air in excess of 2 fibers per centimeter, variance is sought covering this operation.

With respect to the three departments of the Residential Products Division requiring variance, namely, the Roofing Cement Department, the Asbestos Paper Machine and the Fiberglass Shingles operation, the following program for control is proposed. For the Roofing Cement Department, a new Parsons Collector will be installed. The bag opening station has been modified and a Hoffman Central vacuum system pick-up point has been provided.

In order to properly control asbestos emissions from the Roofing Cement Department and the asbestos paper machine and to assure compliance with Rules 651(a) and 652, a Parsons fabric filter house will be installed at each location. Purchase orders have been placed for these units and if the schedule outlined in the petition has been followed, the units should presently be operational. Expenditures totalling \$27,400 are anticipated for these facilities.

With respect to the Fiberglass Shingles Operation, petitioner proposes a substitute for asbestos in the fabrication, precluding the need of a variance at this source.

Petitioner represents that the installation of the two Parsons Fabric Filter Bag Houses and the change of formulation in fiberglass shingles will assure that all asbestos emission sources in the Residential Products Division of the plant will conform to Regulation by July 15, 1972, which if presently in effect, would make moot the request for variances as to the Residential Products Division.

The Pipe Division is engaged in the manufacturing and marketing of asbestos-cement pipe. Pipe manufactured by this Division is either ten or thirteen feet in length with an inside diameter ranging from two to thirty-six inches. Pipe manufactured by this division is used principally by municipalities, building contractors, school systems, subdivision developers, communication systems, public gas and electric systems, water systems, sewer lines, sewage disposal systems, storm drain systems disposal of industrial waste water and telephone and electrical conduit systems. Raw materials used are silica, portland cement and asbestos. Asbestos is an essential ingredient because it is relatively unaffected when buried underground, does not disintegrate or rust and is highly resistant to acids and mold. Asbestos used as a raw material in this Division is processed in the Fibre Willow area. Most emissions from this source appear to be in compliance with the Regulations. One emission source in the Pipe Division which is not in compliance with the Regulations is the Bayard Chip Collector Cyclone which removes dust and chips from the piping after machining, drilling and sawing.

A second emission source in the Pipe Division is the Pangborn-Parsons-Rees Bag House which petitioner believes may exceed the two-fiber per cubic centimeter limit. Variance is sought with respect to emission from the Pangborn-Parsons-Rees Bag Collector and the Bayard Chip Collector. The Pangborn-Parsons-Rees Bag House Collector will be replaced with a new 1200 Bag Parsons Bag House. Location of this new Bag House will require a shifting of machines and some remodeling of the facilities. It is contemplated that the new bag

house will be operative by November 30, 1972. It is also proposed that the Bayard Chip Collector Cyclone will be connected to the new Bag House after October 7, 1972.

During the period of the variance to November 30, 1972 the Pangborn-Parsons-Rees Bag Collector will be in compliance with Rule 651(a), approximately 90-95% of the time. The Bayard Chip Collector will be kept under constant surveillance to minimize emission of particulates and it is anticipated that no visible emissions will be present in the ambient air approximately 90-95% of the time during the variance period. The cost of replacement of the Pangborn-Parsons-Rees Bag Collector and the connection of the exhaust of the Bayard Chip Collector at the new bag house is estimated at \$135,000 plus an additional \$23,000 to cover the need for replaced equipment and new piping. Additional installations have been made which relate to facilities that are not the subject of the variance, namely, the Parsons Wet End Bag House and the Wheelabrator Coupling Aisle Bag House at a total expenditure of \$164,000, and the installation of a new fiber bag opener and replacement of duct work at the wet end and willow area at an estimated \$78,000 expenditure which will minimize asbestos fiber emissions during fiber handling operations.

The Industrial Products Division uses asbestos as a raw material in its manufacture of packing and friction materials, semi-rigid asbestos millboard, and high temperature molded superex insulation. The Packing and Frictions Material Department manufactures a line of asbestos-based products, including clutch facings, brake linings and brake blocks for automotive, truck, railroad and industrial applications and friction products for power transmissions and braking applications. The Millboard Department manufactures semi-rigid asbestos millboard products used in high temperature heat production applications and asbestos gasket material. The Superex Department manufactures high temperature molded blocks used for industrial insulation. 825 people are employed in this division. Asbestos is used in packing and friction materials because of its superior heat resistant qualities and frictional characteristics. It is used in millboard because of its heat-resistant qualities and tensile strength imparted by its fibrous nature. Superex insulation utilizes asbestos fiber for all of the foregoing reasons as well as the bonding benefits the fiber presents and the minimizing of overall material density. Eleven separate fabric filter collection systems and three wet scrubbers are utilized in the Industrial Products Division for control of asbestos emissions.

Of sixteen emission sources in the Industrial Products Division, all but three are in compliance with the regulations. Emissions in the Packing and Friction Materials Department result from the mixing, molding and finishing operations. Dry and Wet mixing operations are controlled by dry bag collectors and appear to be consistent

with current Regulations. Molding, handling and finishing of dry mixed and molded materials do produce some emission of asbestos fibers into the ambient air. The exhaust from three weigh booths produce emission in excess of Regulations for which a collection program is proposed. Likewise, the finishing of molded friction materials through the use of grinders, saws, drills, sanders and other machine equipment produce emissions discharged into five separate cylindrical water spray scrubbers, which at the present time emit asbestos fiber in excess of two fibers per cubic centimeter as provided by the Regulation.

The Millboard Department processes asbestos in a beater room which produces emissions of asbestos in excess of Regulation limits. A slurry is wet-formed in the beater operation and cut into rectangular sheets, dried and then trimmed and packaged in other parts of the plant. Loading of asbestos into the beater process may cause emissions before the slurry is formed. A Roto-clone Wet Scrubber-type fan is used to remove dust that may escape before thorough wetting occurs. This operation produces emissions that in all probability exceed the Regulatory limits.

Asbestos raw material is handled in the mixing-molding room of the Superex Department where emissions of asbestos fiber into the ambient air occur. Here again, the mixing operation to produce a slurry creates the emissions noted. Emissions are discharged initially into a duct leading to a wet Ducon scrubber. However, some visual emissions have been observed and this portion of the operation is subject to further correction.

In summary, the following facilities of the Industrial Products Division require additional controls to achieve compliance: the manifold Ducon wet scrubber system and weigh booth stacks in the Packing and Friction materials departments, the Roto Clone wet scrubber in the Millboard Department and the Ducon wet scrubber in the Superex Department. In order to bring the dry mixed material asbestos fiber emissions of the Packing and Friction Materials Department into compliance, petitioner has engaged in a product re-formulation program to produce a damp mix formula reducing emission of asbestos fiber. Petitioner anticipates that by February 28, 1973, a successful damp mix formula will be developed bringing emissions from the weigh booth operation into compliance. An anticipated \$200,000 will be spent on this program. To bring emissions in the Molded Friction Materials Department into compliance, the five wet Ducon scrubbers will be replaced with a new dry bag collector program utilizing high efficiency cyclones and baghouse collectors in series. An expenditure of \$390,000 is programmed for this installation. It is anticipated that by April 30, 1973, this facility will be operational and in compliance with appropriate Regulations.

To bring the Millboard operations into compliance, operational changes will be instituted to minimize the asbestos emission during the beater mixing operation. Ingredients will be added to the beaters in their paper containers, eliminating dust. This change will require extensive modification in existing mixing equipment which the petitioner anticipates will be achieved by April 30, 1973. An expenditure of \$59,000 is allocated for this program.

To bring the Superex Department into compliance with the Regulations, petitioner anticipates the use of a replacement ingredient for asbestos for which experimentation is presently under way. Field testing of the revised Superex blocks is necessary for evaluation of the new product. Petitioner anticipates that this reformulation and experimentation will be achieved by December 31, 1972.

In summary, the following variances are requested for the particular facilities of petitioner's operation to the dates specified.

Division and Source of Emission and Abatement Procedure to be installed	Variance Requested To
1) Residential Products Division Source of emissions - Asbestos paper machine Abatement procedure - Parsons Fabric Filter House	July 15, 1972
2) Pipe Division Source of emissions - Pipe machine room Abatement procedure - Parsons Bag House	November 30, 1972
3) Industrial Products Division	
(a) Packing and Frictions Material Dept.	
(i) Source of emissions - weigh booth stack Abatement procedure - Change in Product Formulation	February 28, 1973
(ii) Source of emissions - Product manufacturing and finishing machinery Abatement procedure - Cyclones and dry bag collectors in series	April 30, 1973
(b) Millboard Department Source of emissions - Beater Fill Station Abatement procedure - Modification of Beater Loading Procedure	April 30, 1973
(c) Superex Department Source of emission - Superex Formulating Station Abatement Procedure - Change in Product Formulation eliminating Asbestos	December 31, 1972

The recommendation of the Agency proposes the granting of the variances as requested, subject to the terms and conditions hereafter noted. In touring the plant, Agency representatives observed spillage from multi-ply craft bags containing raw asbestos. Portable and mobile vacuums were used to clean up the spills. The Agency states that overall housekeeping was found to be efficient throughout the entire plant. Some odors were detected within the plant resulting from solvents and chemicals, but none were detected outside. No visible emissions were observed within the plant or emanating from the plant. No objection has been filed with the Agency to the granting of the variances. Interviews with six residents nearest the plant disclosed no objection to the variance application.

The Agency recommends that the variances be granted subject to the following terms and conditions, all of which have been agreed to on oral representation by counsel for petitioner before this Board.

- "1. All necessary permits shall be obtained, including permits for modified beaters in the Millboard Department of the Industrial Products Division.
2. Monthly reports shall be submitted to the Agency in writing, outlining the progress made in achieving compliance.
3. Where compliance is to be achieved by the installation of air pollution control equipment, within 30 days of the completed installation of such equipment, petitioner shall submit to the Agency for its approval results of stack tests performed on such equipment. Testing shall be done in accordance with Rule 651 by an independent testing organization acceptable to the Agency, and the Agency shall be notified 7 days in advance of testing so that Agency personnel may witness the tests.
4. Within 30 days of the Board's Order in this case, Petitioner shall submit to the Agency in writing: (1) a procedure to prevent bag breakage and (2) a procedure outlining spillage clean up operations.
5. Petitioner shall obtain a bond in a form acceptable to the Agency in an amount necessary to ensure compliance with the Order entered by the Board in this case."



In its petition, the petitioner goes into a detailed analysis of the consequences which would result from a denial of the variances sought, premised on the abandonment of operation because of non-compliance to April 30, 1973, when compliance would be achieved. The petitioner's allegations of hardship detail the substantial unemployment which would ensue from a plant shut-down and the deprivation of petitioner's products to the many customers, both public and private, presently dependent on them. No useful purpose would be served in this opinion by an exhaustive discussion of the many hardships that would be imposed on the company, its employees and its customers if the variances were denied. Petitioner has taken extensive measures, both before and after the adoption of the Asbestos Regulations to bring its operation into compliance. The regulations are new and the proposed schedule of compliance appears reasonable in consideration of the size of the operation, the proliferation of emission sources and the results to be achieved. The programs proposed for the facilities not presently in compliance appear well-considered and not demanding of inordinate time for accomplishment. We believe that the hardship imposed on the company and others if the variances were denied to greatly exceed the burdens resulting to the community in permitting petitioner to continue its present emissions until April 30, 1973, as the outside date, pending implementation of its compliance and abatement program. We grant the variances for the periods proposed in the petition, subject to the terms and conditions suggested by the Agency, as set forth in our Order.

This Opinion constitutes the findings of fact and conclusions of law of the Board.

IT IS THE ORDER of the Pollution Control Board that petitioner, Johns-Manville Products Corporation, be allowed to emit asbestos fibers into the ambient air in excess of the limits provided in Rules 651(a) and 652 of the Asbestos Regulations (Chapter 2, Part VI, Air Pollution, Asbestos and Spray Insulation and Fireproofing) from the following listed facilities, for the periods of time specified, to enable installation of abatement procedures as indicated, subject to the terms and conditions hereinafter set forth.

Division and Source of Emission and Abatement Procedure to be Installed	Variance requested to
1) Residential Products Division Source of emissions - Asbestos paper machine Abatement procedure - Parsons Fabric Filter House	July 15, 1972
2) Pipe Division Source of emissions - Pipe machine room Abatement procedure - Parsons Bag House	November 30, 1972

- 3) Industrial Products Division
    - (a) Packing and Frictions Material Dept.
      - (i) Source of emissions - weigh booth stack  
Abatement procedure - Change in Product Formulation February 28, 1973
      - (ii) Source of emissions - Product manufacturing and finishing machinery  
Abatement procedure - Cyclones and dry bag collectors in series April 30, 1973
    - (b) Millboard Department  
Source of emissions - Beater Fill Station  
Abatement procedure - Modification of Beater Loading Procedure April 30, 1973
    - (c) Superex Department  
Source of emission - Superex Formulating Station  
Abatement Procedure - Change in Product Formulation Eliminating Asbestos December 31, 1972
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1. All necessary permits shall be obtained, including permits for modified beaters in the Millboard Department of the Industrial Products Division.
2. Monthly reports shall be submitted to the Agency in writing outlining the progress made in achieving compliance.
3. Where compliance is to be achieved by the installation of air pollution control equipment, within 30 days of the completed installation of such equipment. Petitioner shall submit to the Agency for its approval results of stack tests performed on such equipment. Testing shall be done in accordance with Rule 651 by an independent testing organization acceptable to the Agency, and the Agency shall be notified 7 days in advance of testing so that Agency personnel may witness the tests.
4. Within 30 days of the Board's Order in this case, Petitioner shall submit to the Agency in writing:
  - (1) a procedure to prevent bag breakage, and
  - (2) a procedure outlining spillage clean-up operations.

5. During the period of this variance, Petitioner shall keep all presently operating abatement equipment and devices in working order and shall continue all asbestos control practices presently being pursued so as not to increase the intensity or frequency of asbestos emissions over those which presently exist at the plant.
6. Petitioner shall post a bond in the amount of \$100,000 in a form acceptable to the Environmental Protection Agency, to ensure compliance with the Order entered by the Board in this case. The bond shall be mailed to: Fiscal Services Division, Illinois Environmental Protection Agency, 2200 Churchill Drive, Springfield, Illinois 62706.

I, Christan Moffett, Clerk of the Illinois Pollution Control Board, certify that the above Opinion and Order was adopted on the 26<sup>th</sup> day of September, 1972, by a vote of 5 to 0.

Christan Moffett