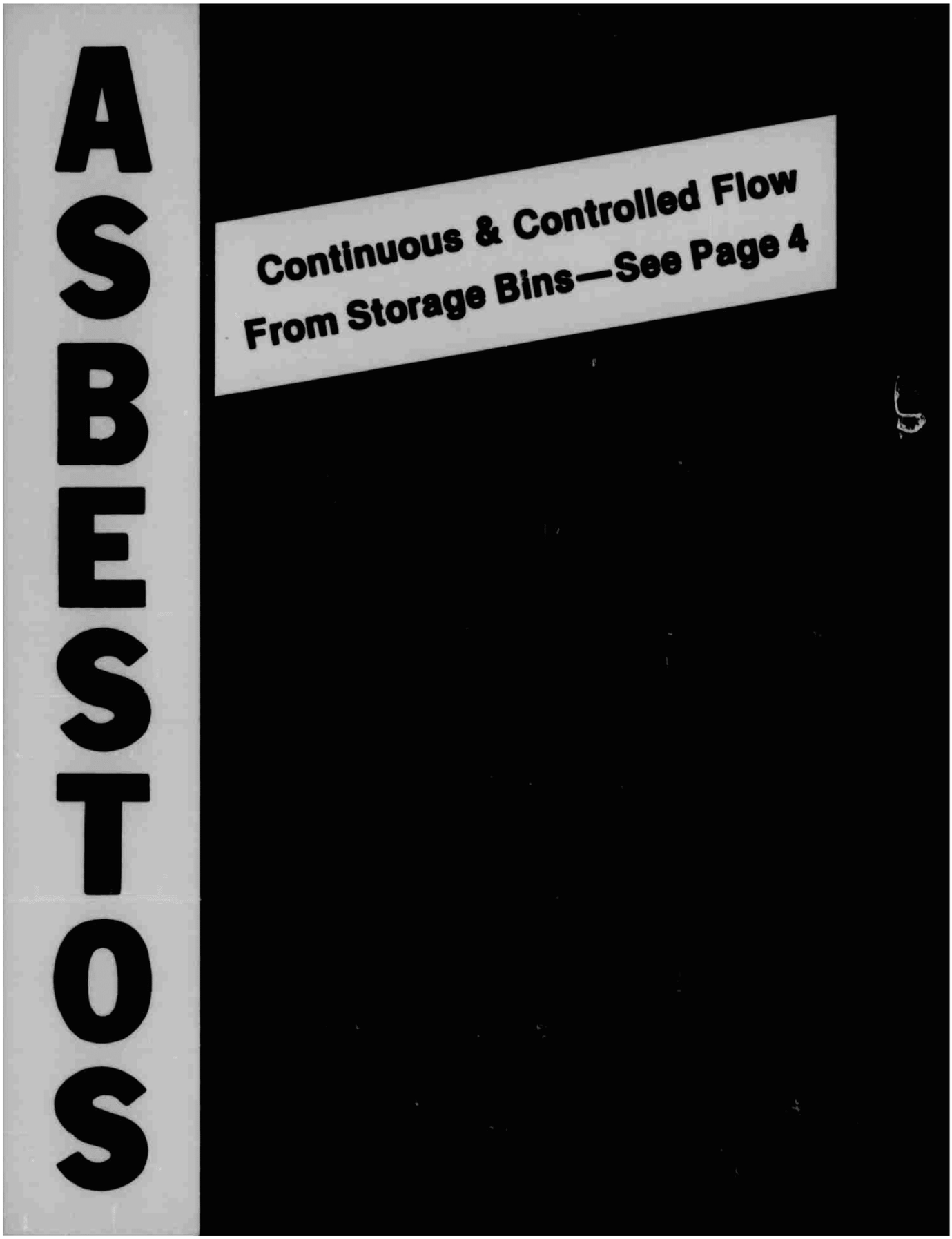


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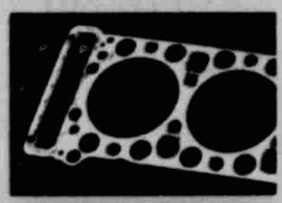
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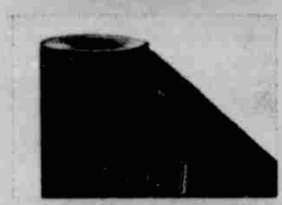
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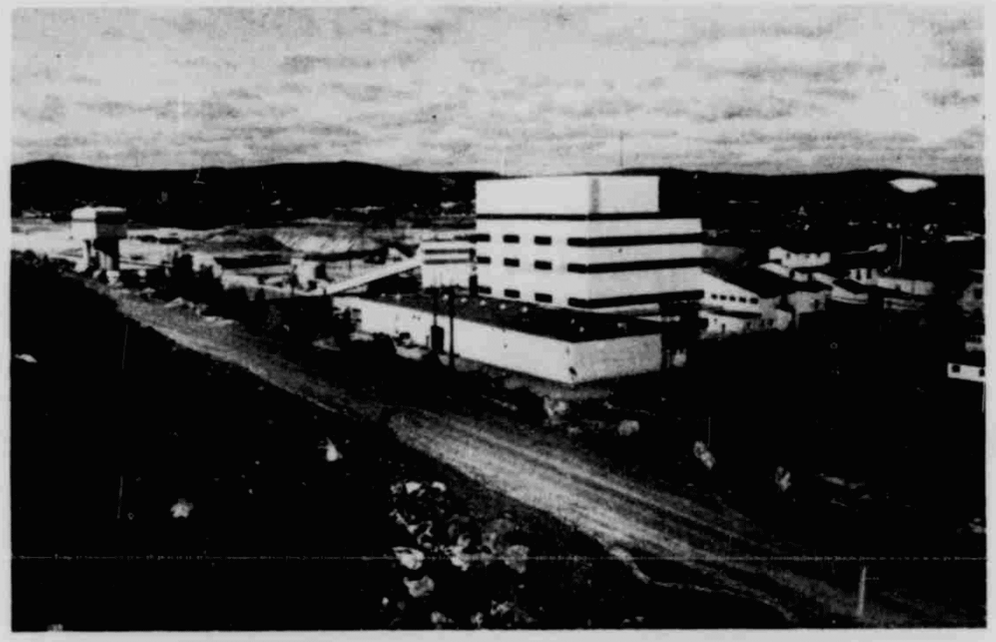
Because of its thermal resistance, reinforcing properties, and contribution to frictional properties, asbestos plays a major role in truck and automotive brake linings. In this application, the fibers are locked-in with phenolic resin binders.

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ASBESTOS

VOLUME 62 APRIL 1981 NUMBER 10

FOUNDED JULY 1919 AND PUBLISHED MONTHLY SINCE THAT DATE

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PUBLISHER: D & B Enterprises, Inc.
EDITOR: Doris M. Fagan

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SUBSCRIPTION RATES: United States—$9.00 per year; All Other Countries—$10.00 per year; Single Copies—$2.50 each. Payments with orders in U.S. Funds on a U.S. Bank to: ASBESTOS, 131 North York Road, P.O. Box 471, Willow Grove, Pennsylvania 19090. Telephone—215-659-0134. POSTMASTER: Send address changes to ASBESTOS, P.O. Box 471, Willow Grove, PA 19090.

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Achieving Continuous and Controlled Flow Of Asbestos Ore or Fibers from Storage Bins

By: George Dumbaugh*

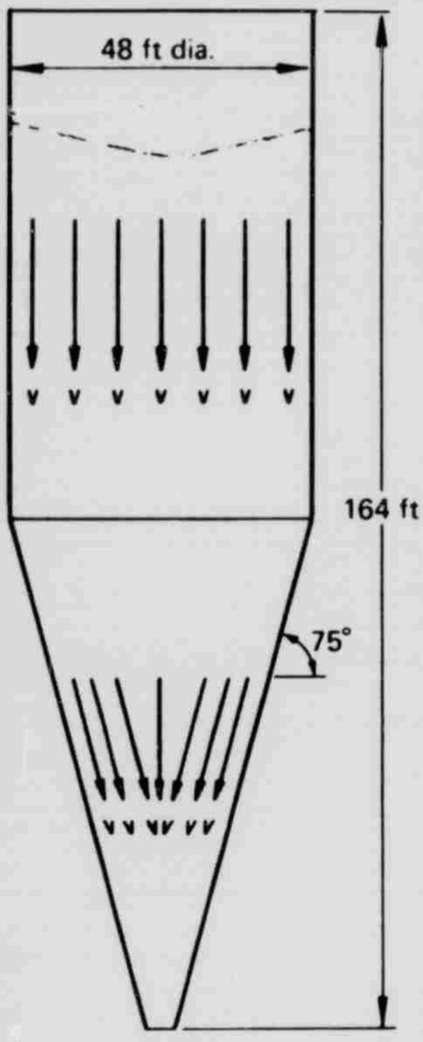
Storing and retrieving, in desired quantities and feed rates, various types of asbestos ores or fibers can present frustrating engineering problems.

Following World War II, process engineers gradually automated handling functions until the entire downstream process ran smoothly. But upstream storage bins would often fail to consistently give up the stored asbestos material, which would either "rathole," "core," or "bridge" or even "flood" out of the bin instantly and thus interrupt or completely halt processing.

To solve these problems, bins of various geometric designs were fabricated to enhance the effect of gravity as the withdrawal force. Some engineers also tried forcing flow from the bins with rotating augers, rotary tables, inflatable pads, etc. None of these approaches met with any great success.

The only relatively successful "static geometric" bin design resulted from research at the University of Utah by A. W. Jenicke and J. R. Johanson, of Billerica, Massachusetts. Later, H. Colijn, of Pittsburgh, Pennsylvania, and others added design refinements *(See Figure 1).*

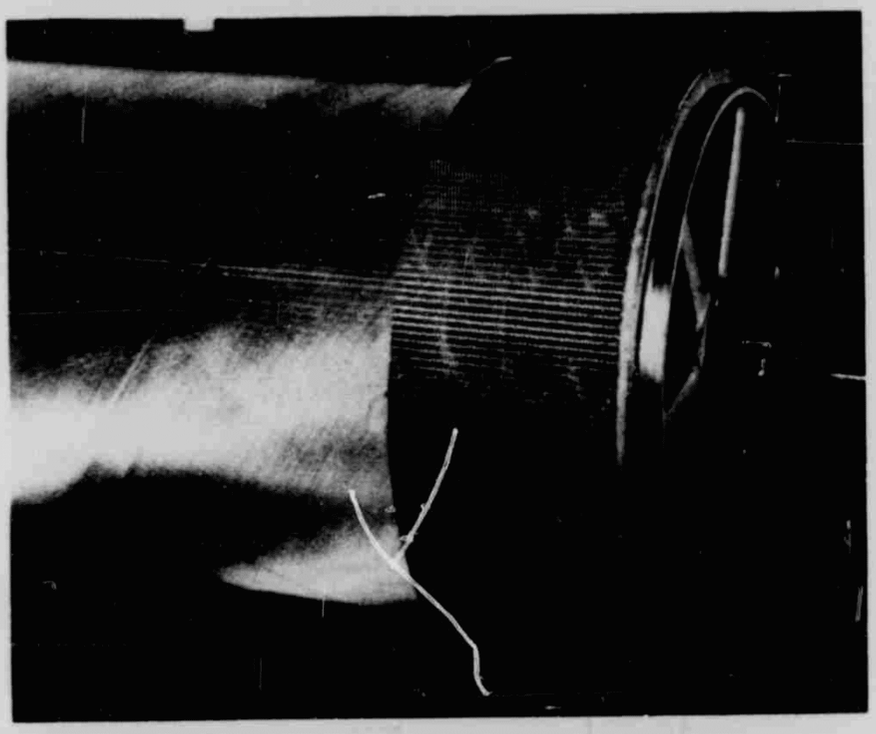
—Figure 1—



Even this design has several drawbacks. First, precise material characteristics must be established. The design requires excessive headroom because of steep conical side wall slopes and withdrawal is completely dependent on gravity—if a "set" occurs, gravity cannot overcome it. Furthermore, if the material characteristics vary from those on which the design is

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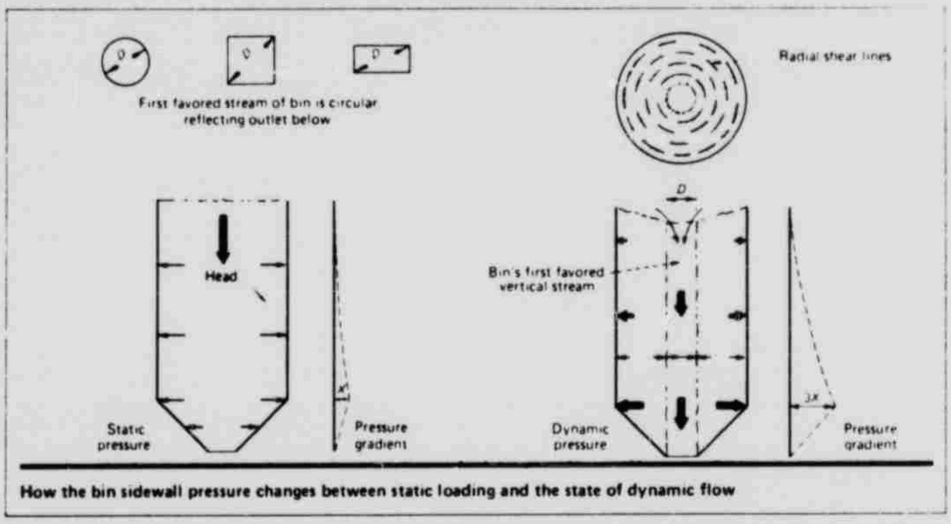
based, poor flow can result. However, if everything is just right, continuous flow on demand can be obtained.

Engineers believed the introduction of bin activators would solve the withdrawal problems encountered with any bin. However, the bin activator uncovered engineering relationships that were not known or well understood previously. For example, the first bin activators installed by the asbestos mining and processing industries were, in many instances, bitter disappointments. They did not withdraw concentrically and continuously as material was needed. Obviously, something was missing in those original systems. This article will describe how the basic faults were eventually observed and how bin activators, properly applied, now offer solutions to practically any withdrawal problems.

The Pressure Profile

Bulk solids such as asbestos ore or fibers in a storage bin create certain static pressures against the side wall and bottom cone *(Figure 2)*. When the bin outlet is opened and if, by chance, gravity causes vertical flow to begin, the pressure against the bin side walls can increase as much as three times, while the load on the cone decreases. The change in the bulk-solid load, from a static to a dynamic flow condition, is the result of the bin inherently establishing its "first favored flow stream." The size of this stream is the diameter or diagonal of the bin outlet projected upward in a circle through the entire height of the stored material. Material lying outside the "first favored flow stream" is pushed back because the stream is always supplied by the top layer of ore or

—Figure 2—



How the bin sidewall pressure changes between static loading and the state of dynamic flow

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fibers, creating the observed pressure changes. In most storage bins, withdrawal ceases once the "first favored stream" has flowed. This is called "funnel flow" or "rathole." The only way to induce additional flow is to add some outside force to the pull of gravity.

The "Classification Phenomenon"

Aggravating the dynamic pressure problem is the "classification phenomenon." This occurs when the bin-stored ore or fibers consist of a mixture of large pieces and smaller pieces or fines, which is the normal situation. Even the slightest difference in the size of the particles can lead to the "classification phenomenon" or segregation according to particle size. Regardless of how the storage bin is filled, it is almost impossible to prevent classification—the larger particles will migrate to the outboard sides while the fines will tend to congregate in the center. Thus, when bins depend on gravity as the sole withdrawal force, the "first favored flow stream" consists mostly of the smaller or finer particles alone, instead of a uniform mix of all sizes.

The Bin Activator

The modern bin activator provides the most economical solution to asbestos ore and fiber storage-withdrawal problems. The bin activator is powered by a vibratory exciter that consumes very little power but develops substantial forces. The exciter produces vibratory action by employing an AC squirrel-cage motor with a double extended shaft rotating eccentric weights. Single exciter units produce enough vibration to effect withdrawal of most bin-stored ore and fiber. If the material proves extremely difficult to move, two exciters may be used. They are known as super-performance units.

Uniform Withdrawal

Bin activators give immediate response, re-mix large and small particles, and effect total concentric withdrawal on demand *(Figure 3; See Front Cover).* The circular inlet of a bin activator and a bin stream deflector, located above the activator inlet, couple to establish the storage bin's "first favored annular flow stream." The slope and design of the Kinergy bin activator causes total concentric withdrawal of all bulk solids from storage. The bin activator's stream deflector acts as both a "block" and "re-mixer." It permits the proper amount of small particles to enter the "first favored annular flow stream" and re-mix with the peripherally located larger particles.

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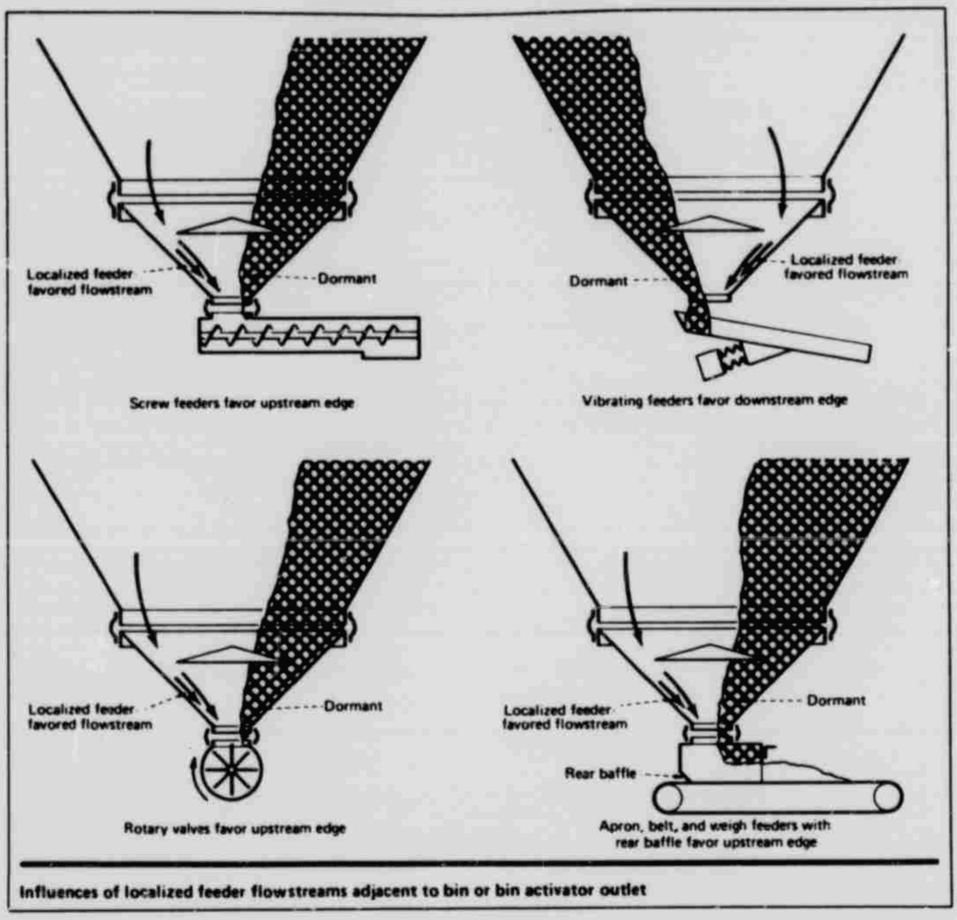
The vibratory action, which starts the flow and sustains it, is imparted at a "penetrating" stroke and frequency selected to provide adequate particle-to-particle unlocking action. Each Kinergy bin activator is individually "tuned" for each specific type and size of asbestos ore or fibers requiring controlled withdrawal from storage.

Activators do not require any special flow inducing surfaces in the bin and a 60-degree slope is adequate for the bin's conical section. Activators also increase the bin's first favored vertical stream to an annular flow equal to the activator's inlet diameter but they cannot always be arbitrarily operated, particularly with feeders at their outlets.

Effect of Feeders and Conveyors

When a bin activator discharges asbestos ore or fibers directly into some type of container (called an "open drop" situation), con-

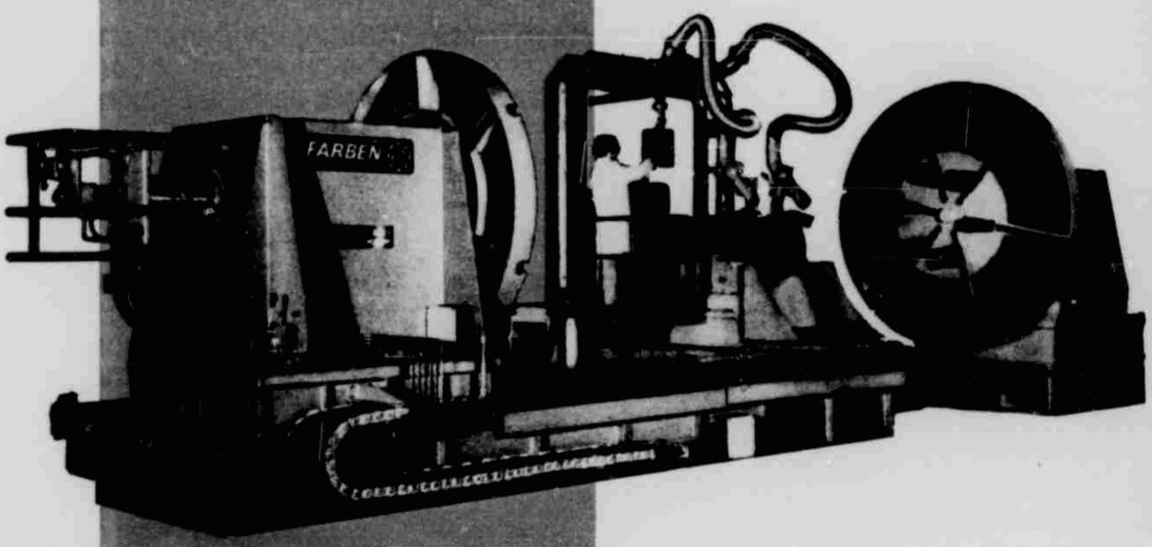
—Figure 4—



Influences of localized feeder flowstreams adjacent to bin or bin activator outlet

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tinuous operation of the activator is usually satisfactory. Loading rail car containers is an example. However, when a feeding or conveying device is introduced at the activator's outlet, the advantage and economy of total concentric withdrawal can be lost. This happens because all feeders create a "localized favored flow stream" at the activator's outlet or at the feeder's inlet *(Figure 4)*. When a bin activator in conjunction with a feeder is operated continuously, it will initially withdraw concentrically from the storage bin above. However, because of the "localized favored flow stream" created by the feeder, concentric withdrawal diminishes as flow continues. Eventually, with continuous running of the bin activator, dormant ore or fibers will actually "back up" from the activator outlet, around the bin stream deflector—up to the full height of the material stored in the bin.

The result of such flow can be a "core" straight up the bin and equal to the inlet diameter of the activator or a small funnel core can occur. In some cases a bridge of ore or fibers can "set" in the storage bin above the activator.

The "Cycling" Solution

The failures of early bin activators can be traced to a lack of understanding the effect caused by a localized feeder creating a favored flow stream at the bin activator's outlet. Also, the continuous vibration led to particle back-up from dormant (non-flowing) layers. As a result, coring, ratholing and bridging developed above the activator itself and total concentric withdrawal ceased. The modern bin activator solves this problem by operating on a predetermined cycle.

"Cycling" means that the exciter motor is "on" for a few seconds and "off" for a few seconds. The duration of each cycle is determined by the size and type asbestos ore or fibers stored, the design of the storage bin and the withdrawal flow rate required. Cycling is accomplished with a timer or starve switch. Each time the bin activator cycles "on," it will induce sloughing from the top layer of the stored material.

Field "tuning" at start-up is done by increasing or decreasing the eccentric weights on the ends of the exciter motor shafts and increasing or decreasing the duration of the on-off cycle. Even when the bin activator is on an "off" cycle, continuous flow still occurs. The cycling period allows the activator to be in tune with the "natural vertical flow pattern" of the storage bin and its contents, even with a pesky feeder-favored flow stream at its outlet.

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Typical Applications

To properly apply a bin activator, the following must be known: the diameter of the storage bin or silo, the vertical sidewall height of the storage bin and the conical slope of the storage bin sides. Other data required include: the angle of repose of the stored material (approximated by drawing a finger through a mound of the material); mesh sizing of particle; moisture content; discharge rate; and "set" or fusion characteristics (approximated by squeezing solids in a closed fist—if lump results, "set" exists). Adhesive and cohesive characteristics and mechanical interlocking tendencies must also be known.

New Bins—If a new storage bin or silo is being designed, the following criteria will be helpful:

The bin should preferably be circular in cross-section. This does not mean square or rectangular bins cannot be successfully utilized. However, the lagging vertical flow in their corners should be recognized.

The vertical wall height should be limited to two diameters or two diagonals.

The conical section of the bin should preferably have a 60-degree slope and a single concentric outlet.

After these three criteria are met, a "trial" diameter of the bin can be quickly established by dividing the total required volume in cubic feet by the constant 1.78. This will give the cube of the required bin diameter which can then be readily calculated.

Existing Bins—For existing storage bins or silos, the diameter or diagonal of the existing bin will be the primary sizing factor, coupled with existing sidewall slopes and vertical wall heights.

Bin Activator Size Selection—All bin activators are sized to achieve total bin withdrawal, not some desired discharge rate. Therefore, the physical dimensions of the storage bin combined with the general flow characteristics of the stored material to be withdrawn will govern the bin activator's selection.

Since the inlet diameter of the bin activator establishes the first favored vertical stream, it is obvious that when the inlet diameter of the activator is equal to the bin diameter, the activator commands the bin's entire contents. For practical reasons, this is *not* the usual application.

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Storage and Withdrawal Problems

All bulk solids, including various grades of asbestos ores and fibers, have three classifications which describe their inherent behavior during storage and withdrawal. The classifications are: Flake, Floodable and General.

Flake--This class includes low density materials, always compressible, with high mechanical interlocking capability. In the asbestos mining and processing industry, flake materials are asbestos fibers in lengths in excess of ⅛-inch.

Problem: Bridging and Plugging.

Solution: A bin activator is recommended. Size of the activator should equal the diameter of the bin through 10-foot diameter. For larger storage bins 12-foot or 15-foot diameter activators are recommended.

Floodable—This group is usually defined as having low to high density, easily aerated with low mesh (– 200) and low moisture (– 2%). Examples: Ground asbestos ore (– 200 mesh) and asbestos dust.

Problem: Coring, Flooding and/or Gushing.

Solution: A bin activator is recommended. The bin activator should have an inlet diameter at least 0.67 times the diameter of the storage bin, up through the application of a 12-foot activator. (Activated bins or bin activators equal in diameter to the storage bins are preferred when practical. *Note:* In an "open drop" situation, "cycling" is usually not necessary. However, when a feeder is introduced at the activator outlet, "cycling" is required.

General—This class includes asbestos fibers less than ⅛-inch in length, or, at any point in process where the ore is larger than 200 mesh. Examples include secondary and tertiary crushed asbestos ore.

Problem: Bridging, Coring and Ratholing.

Solution: A bin activator is recommended. The activator can be one-half the bin diameter (up to a 12-foot inlet activator), provided a conical slope of 60 degrees and a wall height of two diameters is not exceeded. When these slope and height limits are exceeded, the inlet diameter of the activator should be increased.

Type of Bin Activator—The standard bin activator (single exciter) is, without question, the workhorse for the asbestos industry. The super performance (two exciter) activator is applied only when extremely difficult flow characteristics, due to cohesion, exist.

Activated Bins—These units are complete vibrating bins, and they are very desirable under certain conditions. They have the advantage of commanding their entire contents. Activated bins are supplied in both small and large sizes in process storage—from 7 cubic foot to 3000 cubic foot as standard designs.

Conclusion

When asbestos ore or fibers have flow properties that are not clearly defined, or are expected to be subject to process unbalances, or changing characteristics, or when fusion of the particles

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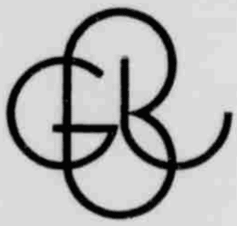
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due to time in storage is anticipated, or reasonably uniform particle size distribution is to be maintained, or headroom is a consideration, the bin activator with its induced vertical flow capability is the recommended engineering choice.

The bin activator initiates the vertical flow by the input of a relatively high external force from the exciter. The concentric, uniform withdrawal and mesh segregation re-mix of the stored bulk solid is accomplished by the concentric inlet shape and the bin stream deflector of the activator. Avoidance of undue segregation will be determined by how the activator is cycled in many applications.

The modern bin activator offers the best solution to most storage-withdrawal problems for several reasons: 1) little maintenance is required; 2) a very small amount of energy is consumed; 3) initial cost is quite low; 4) no outside "agents" need be introduced to maintain mass vertical flow; 5) units can be designed to be dustproof and explosion proof; 6) design, construction and installation can be accomplished in very short time.



About the Author

George Dumbaugh, author of the above article, is President of *Kinergy Corporation*, 4821 Jennings Lane, Louisville, Kentucky 40218 (Telephone: 502-964-5901), makers of bin activators. Mr. Dumbaugh was formerly President of Vibranetics, Inc. He has long worked on induced vertical flow from storage bins and piles and on vibratory-drive systems, and is named in at least 25 U.S. patents and more than 100 foreign patents. He received a B.S. in mechanical engineering from the University of Mississippi and is a licensed professional engineer.

Next Issue

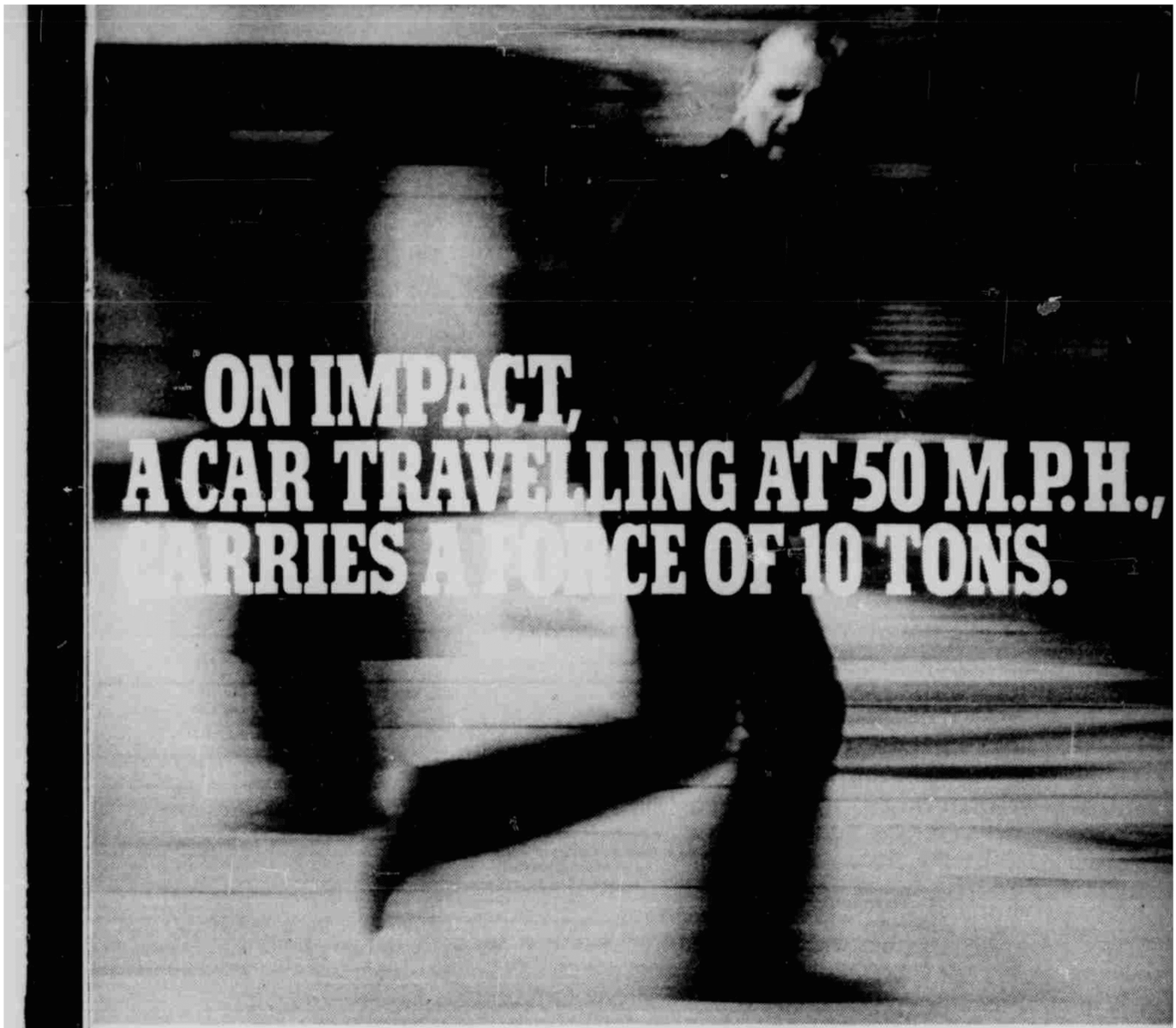
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Asbestos. We couldn't live the way we do without it.

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When life depends on it, you use asbestos.

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Sun Life Building,
Montréal, Québec H3B 2X6,
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Represented by:
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Sao Paulo S.P. 01452, **BRAZIL.**
Other representatives world-wide.

An Asbestos Mines Up-Date

Quebec Court Upholds Expropriation Law

On March 5, 1981, the *Quebec Court of Appeals* found that the province's asbestos industry expropriation law, Bill 121, is constitutional, supporting a lower court finding that the expropriation law is fully within the powers of Quebec. The unanimous decision by the five-member panel also removes an injunction obtained by *Asbestos Corporation Ltd., (ACL)* barring expropriation and nationalization. In filing a dissenting opinion, however, Presiding Judge Justice Turgeon said the decision to lift the injunction should not have been taken because the court had only been asked to consider the company's appeal of the Superior Court decision.

ACL, which is 54.6% owned by *General Dynamics Corporation (GDC),* appealed the ruling to the *Supreme Court of Canada,* believing the expropriation legislation to be discriminatory, unconstitutional and beyond the legislative powers of the National Assembly of Quebec. On March 16, 1981, the Supreme Court refused to hear the appeal and rejected the company's application for an injunction blocking expropriation, reportedly eliminating ACL's final hope of avoiding expropriation.

Meanwhile, the Quebec Minister of Energy and Resources, Yves Berube, has asked the *Societe Nationale de l'Amiante (SNA)* to begin discussions with ACL and GDC to arrange an orderly transfer of the Quebec assets of ACL. Mr. Berube said the government would re-examine its evaluation of ACL's worth because nearly three years have passed since it reached a valuation of $42.00 a share. GDC had been asking $100.00. Just two weeks ago, in response to a letter from Quebec's Finance Minister, Jacques Parizeau, GDC agreed to negotiate with the provincial government over the sale of ACL.

ACL reported a 1980 net income of $2.5-million or 89¢ per share compared with $17.6-million or $6.22 per share a year ago. Revenue from sales was $114.4-million in 1980 against $171.8-million in 1979. According to M. E. Taschereau, ACL President and Chief Executive Officer, the greatest impact was due to a three-month strike at ACL's operations at Thetford Mines, Quebec, although other problems also helped to reduce sales and earnings. At the moment there is reduced buyer demand due to worldwide unsettled economic conditions. The strong financial position of Asbestos Corporation Ltd. and its extensive ore reserves of excellent quality fiber, as well as its technical expertise, place the company in an excellent position for the future, reports Mr. Taschereau.

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Bell Asbestos Anniversary Booklet

Bell Asbestos Mines Ltd., Thetford Mines, Quebec, recently issued a comprehensive and beautifully illustrated, color booklet to commemorate its 100 years of operation. From the literature it is learned that *Asbestos Packing Company*, Boston, Massachusetts, acquired the asbestos-bearing property in 1878 and sold it in 1888 to *Bell's Asbestos Company*, London, England. Ownership changed in 1906 when the mine was purchased by the *Keasbey & Mattison Company*, Ambler, Pennsylvania. In 1934, *Turner & Newall Ltd.*, Manchester, England, bought K&M, thereby obtaining possession of the Bell Mine. Bell Asbestos Mines Ltd. was formed by T&N in 1936. On May 19, 1980, Bell was sold, by mutual agreement, to the *Societe Nationale de l'Amiante (SNA)*, a Quebec government agency. The booklet briefly describes the location and geology of the Bell Mine; the mine and mill operation; fiber products and their applications; quality control; organizational structure; and Bell's environmental and safety concern. The now totally underground mine has a productive capacity of approximately 4,100 metric tonnes of ore per day, with a 3-shift operating schedule. Under present conditions ore reserves are estimated to have a life of 25 years at an annual product output of 72,500 tonnes of fiber.

Cassiar Held 100% By Brinco

Brinco Ltd., Toronto, Ontario, has now acquired all of the outstanding shares of *Cassiar Resources* and has turned the holding over to its wholly-owned subsidiary, *Brinco Mining Ltd.* A corporate reorganization is now under way to consolidate the businesses and assets of Cassiar with those of Brinco Mining. Future business activities will be conducted by the *Cassiar Resources Division of Brinco Mining Ltd.*

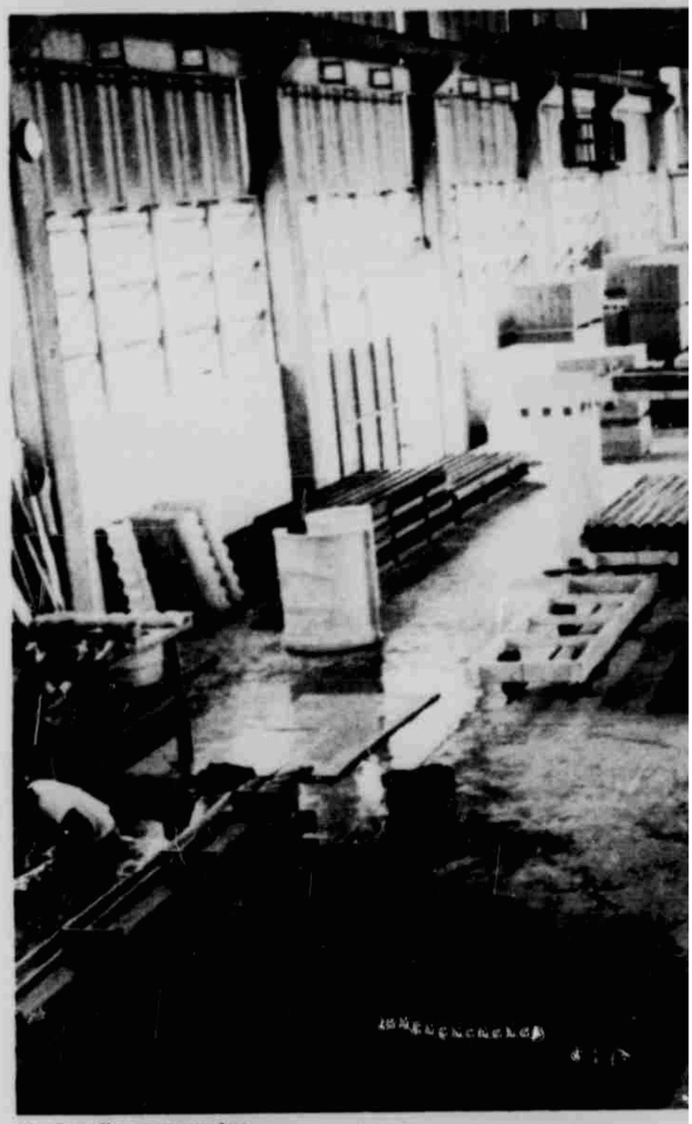
Woodsreef Reports Increased Output & Revenue

For the year to December 31, 1980, *the Barraba Mine of Woodsreef Mines Ltd.*, New South Wales, Australia, produced 83,466 metric tonnes of asbestos fiber, 14% ahead of 1979. Fiber shipments rose 15% to 92,330 tonnes and revenue from invoiced sales increased 27% to A$30,443,000. Negotiations are continuing for the financial restructuring of WML's subsidiary, *Chrysotile Corporation of Australia Pty. Ltd.* Effective January 1, 1981, the Barraba facility was reduced from a 6-day to a 5-day week operation, following visits to all major overseas customers to assess their requirements for 1981.

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Complete plants for the production of asbestos cement pipes and asbestos cement sheets

WEH



Hydraulic corrugator

WEHRHAHN know-how, technology and crew-training efforts give you punctual commissioning.

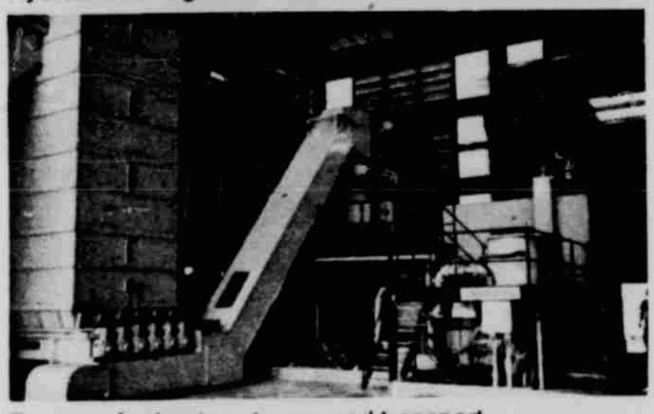
WEHRHAHN also untertake complete redesign, modification, and modernisation of existing plants of any make.

WEHRHAHN can get you on stream in time within the budget

You've everything to gain with

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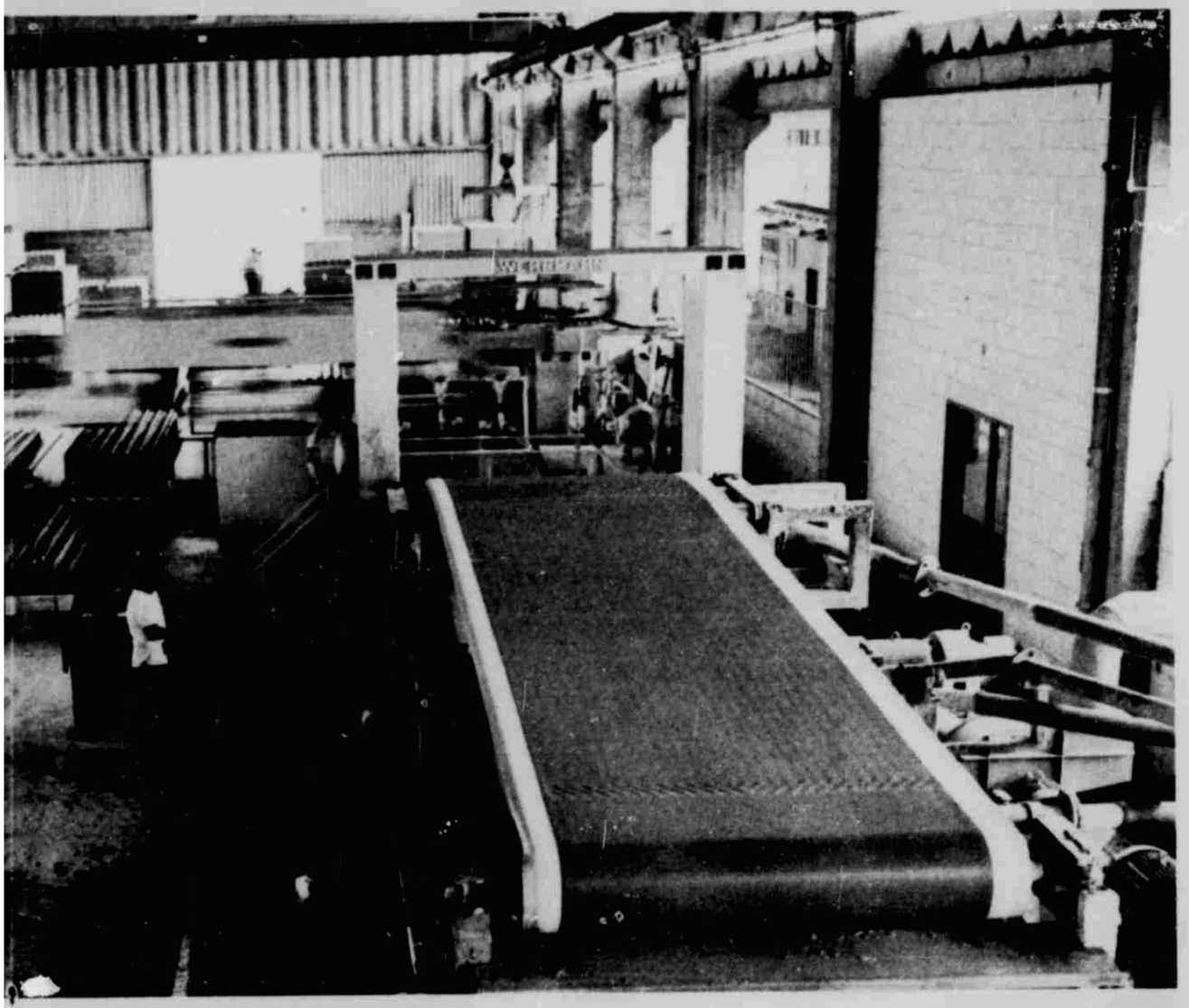
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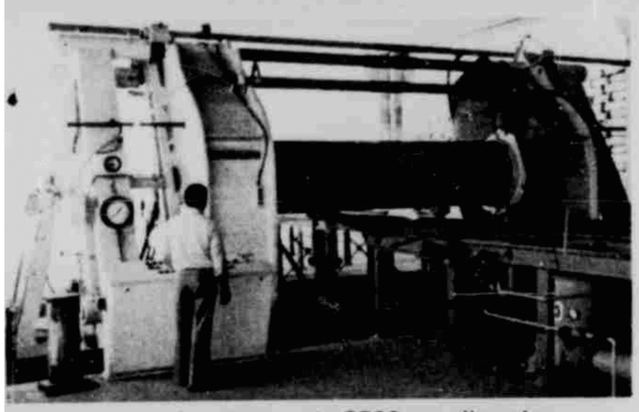


Dustproof asbestos storage and transport

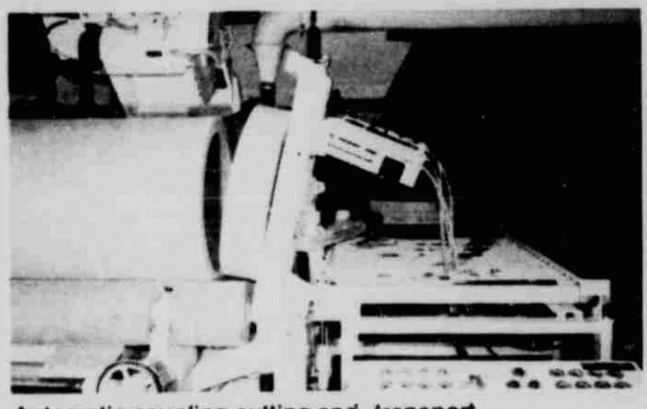
... the international professionals

HRHAHN





Pipe test press for pipes up to 2500 mm diameter



Automatic coupling cutting and -transport

; for asbestos-cement machinery!

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The Market Place

Roofing/Siding Market Study

The market for residential roofing products will grow 2% annually over the current decade while siding materials remain flat, forecasts Frost & Sullivan, Inc. Both markets will be adversely affected by anticipated decrease in average annual housing starts, along with current trends to smaller dwellings and common wall homes. For relief, reliance will be on a projected upswing in residential renovation. *Asphalt roofing shingles* will remain dominant but will decline in its market share as other products advance at faster paces. *Tile sales* are expected to rise at 5.5% annual increments, yearly growth in *wood shingles* is put at 5% and sales of *built-up roofing* will escalate 4% per year. Sales of *aluminum siding* are anticipated to drop from 40% to 30% by 1990 but *vinyl siding* should increase 5.5% annually through 1985 and then level off to 1% per year. *Hardboard/plywood* is seen increasing 2.5% annually; *wood shingles/shakes* are expected to build upon their modest base with 6% annual gains, benefiting from developments in fire retardants and finishes; *wood planking* will see its share dwindle further as annual sales slip 5%; and *asbestos-cement or mineral siding* should be phased out by 1985, save for occasional repairs.

Asbestos Fiber Markets

Unofficial figures show *Canadian shipments of asbestos* for the *Year 1980* were 1,206,944 metric tonnes versus 1,411,045 tons in 1979, a decrease of 14%. Part of the downtrend was due to work stoppages at several Quebec producers in the first quarter of the year. *Demand for Group 7 fibers from the United States* continues good due to a pickup in friction materials and asphalt coating markets. This demand should continue to increase as the U.S. economy strengthens. The *International Market* still shows some weakness in demand as overseas companies, particularly in Europe, reduce inventories. These markets are primarily for asbestos cement applications.

Motor Vehicle Factory Sales

For the *Year 1980*, motor vehicle factory sales from plants in the *United States* totaled 8,067,123, 29.6% below the 11,455,932 reported for 1979. Breakdown for the latest year was: 6,399,840 passenger cars (down 24%) and 1,667,283 trucks and buses (down 45%). . . . Factory sales from plants in *Canada* reached 1,353,092 motor vehicles in 1980, 16% less than the 1,606,249 sold a year earlier. [Motor Vehicle Manufacturers Association of the United States, Inc.]

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SPECIAL FOR THE BEST PIPE MACHINE PERFORMANCE & PROFIT.

ALBANY CANADA's 100% synthetic compaction-resistant AC felts are specially designed, needled and chemically treated. They maintain size for longer, trouble-free runs so you can make more.

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DIVISION OF ALBANY FELT CO. OF CANADA LTD.
Cowansville, Quebec, Canada J2K 1S9
(514) 263-2880

Imports Into the United States

From: U.S. Bureau of the Census

UNMANUFACTURED ASBESTOS:			**DECEMBER 1980**
Amosite, South Africa	s.tons	40	$ 20,855
Crocidolite, South Africa	s.tons	20	11,414
Chrysotile Crudes, Canada	s.tons	20	4,688
Netherlands	s.tons	10	2,338
Chrysotile Spinning Fibers, Canada	s.tons	465	374,697
Chrysotile, Other, Canada	s.tons	24,369	5,445,316
Germany, Fed. Rep.	s.tons	23	2,475
Singapore	s.tons	22	4,535
Other Crudes & Fibers, Canada	s.tons	979	289,304
South Africa	s.tons	39	33,785
Zimbabwe	s.tons	117	113,609
		26,104	$ 6,303,016
MANUFACTURED ASBESTOS PRODUCTS:			
Asbestos yarn, cloth, tape, etc.	Lb	573,030	$ 1,066,502
A-C pipes, tubes & fittings	Lb	1,160,628	169,155
Other asbestos-cement articles	Lb	6,996,093	1,290,470
Other asbestos articles			451,634
			$ 2,977,761
UNMANUFACTURED ASBESTOS:			**YEAR 1980**
Amosite, Canada	s.tons	54	$ 302,318
South Africa	s.tons	347	284,117
Crocidolite, Canada	s.tons	57	11,672
South Africa	s.tons	8,317	5,200,788
Chrysotile Crudes, Canada	s.tons	142	20,448
Netherlands	s.tons	10	2,338
Zimbabwe	s.tons	22	29,592
Chrysotile Spinning Fibers, Canada	s.tons	5,979	4,571,463
South Africa	s.tons	397	338,294
Sweden	s.tons	23	2,520
Zimbabwe	s.tons	602	575,008
Chrysotile, Other, Brazil	s.tons	64	11,959
Canada	s.tons	328,251	74,794,516
Germany, Fed. Rep.	s.tons	44	4,843
Mexico	s.tons	34	1,574
Singapore	s.tons	22	4,535
South Africa	s.tons	758	432,262
Sweden	s.tons	46	5,040
Yemen	s.tons	46	12,454
Zimbabwe	s.tons	159	138,427
Other Crudes & Fibers, Canada	s.tons	13,340	3,575,979
Germany, Fed. Rep.	s.tons	22	28,607
India	s.tons	46	13,890
Japan	s.tons	29	9,212
Mexico	s.tons	2	3,500
South Africa	s.tons	1,491	947,050

U.S. IMPORTS—CONTINUED

United Kingdom	s.tons	1	2,512
Zimbabwe	s.tons	475	484,347
		360,780	$91,809,265

MANUFACTURED ASBESTOS PRODUCTS:

Asbestos yarn, cloth, tape, etc.	Lb	7,471,409	$12,608,742
A-C pipes, tubes & fittings	Lb	11,131,121	1,622,212
Other asbestos-cement articles	Lb	66,164,949	12,423,102
Other asbestos articles		..	5,828,891
			$32,482,947

Year 1979: U.S. imports of unmanufactured asbestos totaled 565,581 short tons, valued at $135,210,249; imports of manufactured asbestos products were valued at $32,813,500.

Exports From the United States

From: U.S. Bureau of the Census

UNMANUFACTURED ASBESTOS: **DECEMBER 1980**

Asbestos crudes, fibers & stucco	s.tons	2,868	$ 1,107,640
Asbestos sand & refuse	s.tons	778	172,450
		3,646	$ 1,280,090

MANUFACTURED ASBESTOS PRODUCTS:

Asbestos yarn, cloth, tape, etc.	Lb	385,882	$ 755,262
Asbestos-Cement shingles & clapboard	Lb	413,306	91,293
Other asbestos-cement articles	Lb	4,601,187	1,467,611
Asbestos gaskets	Lb	57,630	189,471
Asbestos packings & seals	Lb	461,062	1,303,280
Asbestos insulation		..	284,371
Brake linings & disc brake pads		..	5,465,419
Clutch facings & linings		..	592,280
Other asbestos articles		..	1,981,159
			$12,130,146

UNMANUFACTURED ASBESTOS: **YEAR 1980**

Asbestos crudes, fibers & stucco	s.tons	40,148	$ 17,043,607
Asbestos sand & refuse	s.tons	12,998	3,692,779
		53,146	$ 20,736,386

MANUFACTURED ASBESTOS PRODUCTS:

Asbestos yarn, cloth, tape, etc.	Lb	5,941,039	$ 8,609,728
Asbestos-Cement shingles & clapboard	Lb	9,998,571	2,560,287
Other asbestos-cement articles	Lb	36,698,219	14,235,574
Asbestos gaskets	Lb	965,764	3,541,867
Asbestos packings & seals	Lb	4,669,801	15,661,495
Asbestos insulation		..	6,150,696
Brake linings & disc brake pads		..	55,470,620
Clutch facings & linings		..	9,625,642
Other asbestos articles		..	25,442,287
			$141,298,196

Year 1979: U.S. exports of unmanufactured asbestos reached 47,003 short tons, valued at $16,775,771; exports of manufactured asbestos products were valued at $134,611,484.

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Exports From Canada

From: Statistics Canada

DECEMBER 1980

UNMANUFACTURED ASBESTOS:		***Milled Gp 3***	***Milled Gp 4&5***	***Shorts Gp 6-9***
Western Europe	s.tons	250	37,146	6,463
Eastern Europe	s.tons	..	238	..
Middle East	s.tons	..	858	184
Africa	s.tons	..	1,831	398
Asia	s.tons	128	6,706	6,970
Oceania	s.tons	..	1,986	140
South/Central America & Antilles	s.tons	..	7,683	3,150
United States	s.tons	213	3,469	18,409
		591	59,917	35,714

The total amount of unmanufactured asbestos exported in *December 1980* was 96,222 short tons (87,281 metric tonnes), valued at C$49,670,000.

MANUFACTURED ASBESTOS PRODUCTS:

Asbestos cloth, dryer felts & sheets	C$	599,000
Asbestos brake linings & facings		369,000
Asbestos-Cement building materials		2,523,000
Other basic asbestos products		1,306,000
	C$	4,797,000

YEAR 1980

UNMANUFACTURED ASBESTOS:		***Milled Gp 3***	***Milled Gp 4&5***	***Shorts Gp 6-9***
Western Europe	s.tons	5,508	333,614	131,625
Eastern Europe	s.tons	1,830	19,239	1,977
Middle East	s.tons	100	11,732	1,272
Africa	s.tons	21	32,940	16,315
Asia	s.tons	3,418	135,332	127,177
Oceania	s.tons	7	20,295	1,259
South/Central America & Antilles	s.tons	1,287	83,582	48,680
United States	s.tons	4,004	64,567	288,636
		16,175	701,301	616,941

The total amount of unmanufactured asbestos exported in the *Year 1980* was 1,334,417 short tons (1,210,553 metric tonnes), valued at C$626,502,000.

MANUFACTURED ASBESTOS PRODUCTS:

Asbestos cloth, dryer felts & sheets	C$	4,744,000
Asbestos brake linings & facings		3,235,000
Asbestos-Cement building materials		18,536,000
Other basic asbestos products		13,240,000
		C$39,755,000

Year 1979: Canadian exports of unmanufactured asbestos totaled 1,610,523 short tons (1,461,036 metric tonnes), valued at C$652,596,000; exports of manufactured asbestos products were valued at C$36,676,000.

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Other Production/Import/Export Statistics

AUSTRALIAN IMPORTS & EXPORTS—For the *Six Months To December 1980,* Australia *imported* 14,571 metric tonnes of asbestos valued at A$7,804,743, up 1,728 tonnes and $1.4-million over the same period a year earlier. Breakdown by variety of asbestos for the latest six months (with comparative year-prior figures in parentheses) is: Chrysotile—12,489 tonnes valued at $6,784,571 (9,023 tonnes; $4.6-million); Amosite—1,357 tonnes valued at $612,518 (2,940 tonnes; $1.4-million); Other—725 tonnes valued at $407,654 (880 tonnes; $0.4-million). . . . *Exports* of all types of asbestos for the latest six months totaled 26,974 tonnes valued at $10,528,761 vs. 31,929 tonnes valued at $9.3-million a year earlier [Australian Bureau of Statistics]

CANADIAN PRODUCT IMPORTS—Canada imported C$18,792,000 worth of asbestos-containing products during *January-September 1980* against $21.4-million in the like 1979 period, $19.9-million in 1978 and $16.3-million in 1977. Breakdown by product category for the latest nine months is: vinyl-asbestos floor and wall tile—$140,000 (88,715 square yards; 74,177 metric tonnes); asbestos cloth, dryer felts and sheets—$1,881,000; asbestos packing—$2,400,000; (1,026,988 pounds); asbestos brake linings—$5,522,000; asbestos clutch facings—$1,349,000; asbestos-cement shingles and siding—$55,000; asbestos-cement boards and sheets—$601,000; other asbestos building materials—$2,448,000; other basic asbestos products—$4,396,000. [Statistics Canada]

FELT SHIPMENTS FROM CANADA—Canadian domestic shipments of *wet felts and jackets* for the *First Nine Months of 1980* totaled 471,251 kilograms valued at C$22,425,662, including 1,835 kg valued at $35,659 to manufacturers of asbestos-cement pipes and/or sheets. Foreign shipments reached 270,465 kg valued at $14,588,517, including 35,866 kg valued at $892,542 to asbestos-cement pipe and/or sheet makers. . . . Total Canadian shipments of *dryer felts and fabrics* amounted to 396,044 square meters valued at $18,576,473. . . . Shipments of *plastic forming and paper machine fabrics* totaled 204,303 m² valued at $20,799,797. . . . Total shipments of *pulp machine fabrics* in the latest nine months reached 8,550 m² valued at $698,174. [Statistics Canada]

CYPRUS FIBER PRODUCTION—Production of asbestos in Cyprus in the *Year 1980* reached 38,069 short tons valued at £5,875,600, down 3.1% in quantity but up 13.8% in value compared with the year 1979. Past annual outputs were 39,289 tons valued at £5.2-million in 1979, 37,874 tons valued at £4.9-million in 1978, 40,595 tons valued at £5.2-million in 1977, 38,075 tons valued at £3.8-million in 1976 and 27,930 tons valued at £2.1-million in 1975. [Cyprus Mines Department]

SOUTH AFRICAN PRODUCTION & EXPORTS—Asbestos *production* in the *First Nine Months of 1980* totaled 199,544 metric tonnes, up 20,833 tons over the comparable 1979 period. Breakdown for the latest nine months is 81,338 tonnes of Cape Crocidolite, down 3.9%; 80,049 tonnes of Chrysotile, up 21.6%; 38,157 tonnes of Amosite, up 35.2%. . . . *Exports* from *January-September 1980* were valued at R64,177,250 against R74,763,823 to September 1980. By variety of asbestos, values for the latest months are: Cape Crocidolite—R35,960,638, down 28.1%; Amosite—R14,886,716, up 16.7%; Chrysotile—R13,329,896, up 10.8%. [South African Minerals Bureau]

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Current Asbestos Prices

QUOTED FROM COMPANY PRICE LISTS

QUEBEC

PER TON OF 2000 LBS., F.O.B. MINE

AS OF JANUARY 1, 1981

CANADIAN DOLLARS

Grades 3Z to 3F spinning fiber	$ 1202 to $ 1995
Grades 4T to 4A asbestos cement fiber	850 1256
Grades 5Z to 5D paper fiber	497 687
Grade 6D paper and shingle fiber	408 426
Grades 7TS to 7D shorts	125 253
Paperbestos No. 1 to 5 H.D. Blocks	237 782

CASSIAR RESOURCES

PER TON OF 2000 LBS., F.O.B. NORTH VANCOUVER, B.C.

AS OF JANUARY 1, 1981

CANADIAN DOLLARS

AAA	nonferrous spinning fiber; Canadian Group 3	$ 2000
AA	nonferrous spinning fiber; Canadian Group 3	1600
A	nonferrous spinning fiber; Canadian Group 3	1265
AC	nonferrous spinning fiber; Canadian Group 3	1155
AK	asbestos cement fiber; Canadian Group 4	1075
AS	asbestos cement fiber; Canadian Group 4	1000
AX	asbestos cement fiber; Canadian Group 4	930
AY	asbestos cement fiber; Canadian Group 5	660
AZ	asbestos cement fiber; Canadian Group 6	430

Specialty Grades AK100, AS100, AX100 and AY120 are increased an additional $25.00 per ton above list price of base grade.

VERMONT

PER TON OF 2000 LBS.,F.O.B. MORRISVILLE, VERMONT

AS OF JANUARY 1, 1981

U.S. DOLLARS

Grade 3Z fiber	$ 1135
Grades 4T to 4D fiber	$ 754 to 833
Grades 5R to 5K fiber	495 to 584
Grade 6D waste	363
Grades 7R to 7D shorts	113 to 215
Hooker No. 1	1520
Hooker No. 2	880

CALIDRIA ASBESTOS

PER TON OF 2000 LBS. F.O.B. KING CITY, CALIFORNIA

AS OF JANUARY 1, 1981

U.S. DOLLARS

SG-103 pellets in bags; vinyl-asbestos floor tile	$ 136
SG-104 pellets in bulk; vinyl-asbestos floor tile	116
SG-130 open fiber in bags; general	194
SG-200 pellets in bags; rubber	176
SG-210 open fiber in bags; general	250
HPP pellets in bags; rubber reinforcement	224

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CALIDRIA ASBESTOS PRICES—CONTINUED

HPO open fiber in bags; asphalt	250
RG-110 open fiber in bags; roofing	270
RG-144 open fiber in bags; resin viscosity control	700
RG-244 open fiber in bags; resin viscosity control	3300

ARIZONA

PER TON OF 2000 LBS., F.O.B. GLOBE, ARIZONA

AS OF JANUARY 1, 1981

U.S. DOLLARS

No.1 crude (soft)	$ 3000
AAA	2000
Grade 3Z nonferrous filtering-plastic	$ 1350 to 1400
Grade 4T nonferrous filtering-plastic	700 1350
Group 7 white shorts	50 200

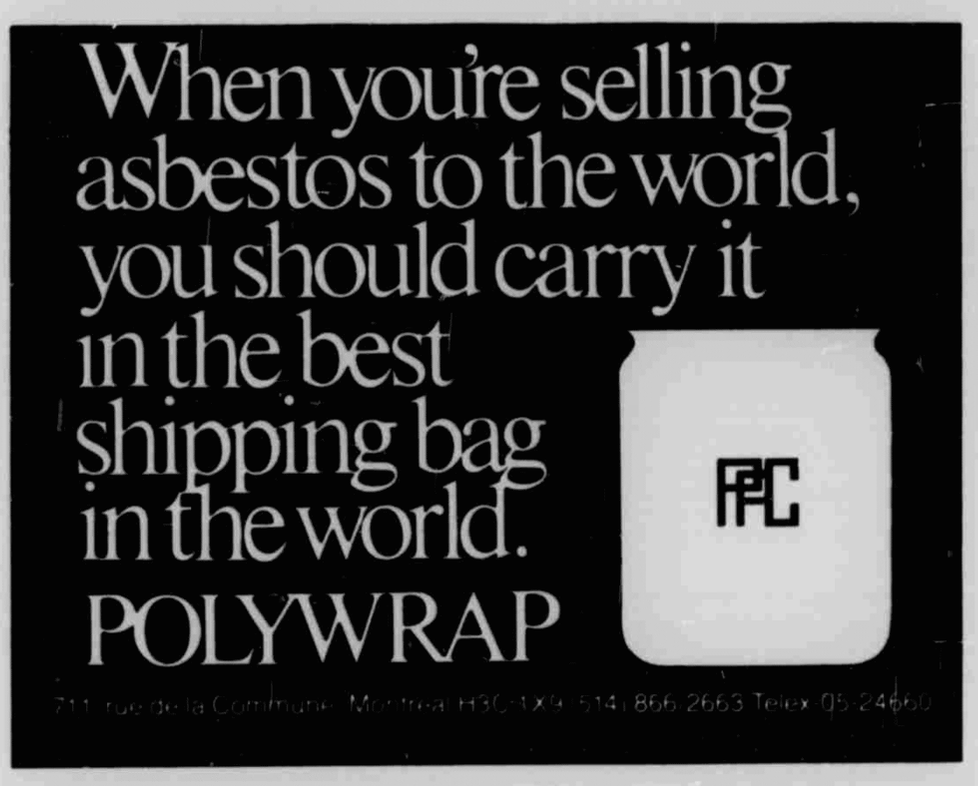
BRAZIL

PER TON OF 2000 LBS., F.O.B. MINE

AS OF SEPTEMBER 1980

BRAZILIAN CRUZEIRO $

Grades 4Z to 4K asbestos cement fiber	$20504 to $23011
Grades 5R to 5D asbestos cement fiber	9216 to 17272
Grade 7TF asbestos cement shorts	3641
Grade 8S shorts	1722



Company Annual Reports, 1980

CertainTeed Corporation

Net sales for CertainTeed Corporation reached $868,227,000 for the year ended December 31, 1980, a 5.2% decrease from 1979. Net income amounted to $273,000 in 1980 compared with $22,248,000 the prior year. Of the total net sales in 1980, building materials contributed $342.4-million, down 15% from 1979; fiber glass products were responsible for $289.1-million, up 11%; and net sales of piping products dropped 9.5% to $249.3-million. Total operating profit, at $27.3-million, was composed of 47.2% from building materials, 44.7% from piping products and 8.1% from fiber glass products.

Unprecedented high interest rates led to a significant decline in new residential construction and reduced expenditures for remodeling, particularly in the areas of roofing and vinyl siding. Overall unit volume of piping products declined about 15% in 1980, with a somewhat greater decline in asbestos-cement pipe and less in polyvinyl chloride (PVC) pipe, attributed generally to the slowdown in new construction activity and cutback in federal funds for water and sewer projects. CertainTeed reports that while coping with the current volatile national economic situation, it has positioned itself to capitalize on the growth opportunities forecast when the turnaround in business activity occurs.

GAF Corporation

For the year to December 31, 1980, GAF Corporation sales from continuing chemicals and building materials businesses were $677.2-million compared with $683.7-million in 1979. A loss of $233.5-million or $17.57 per share primary was experienced in 1980 against earnings of $28.2-million or $1.83 per share primary the prior year. Results in 1980 included a provision of $244.2-million, after taxes, to cover the estimated costs of discontinuing several businesses. The economic recession and high interest rates in 1980 depressed demand for building materials and held chemical sales to an 8% increase over 1979 levels.

Domestic flooring operations were marginally profitable in 1979 and 1980. Internationally, the plant at Mullingar, Ireland, was not profitable, causing an overall loss for GAF's flooring operations. Sales and profits of paper and millboard slipped from 1979 because of the general business declines in the building and auto industry markets, although the segment was still solidly profitable.

During 1980 GAF completed two major capital projects: a specialty chemicals plant at Seadrift, Texas, to produce butynediol, and a roofing plant at Fontana, California. Also of significance was the successful operation of the new glass mat manufacturing facility at Chester, South Carolina, and work on two major expansions, i.e., roofing shingle capacity at Dallas, Texas, and granule capacity at Annapolis, Missouri.

GAF is involved in a number of joint programs which are partly funded by various government agencies. In one, the company is working with the U.S. Department of Energy to reduce the asphalt needed to produce roofing shingles without affecting the quality of the shingles.

On December 29, 1980, the Board of Directors approved a major

restructuring of the company whereby it was determined to discontinue several major businesses and concentrate efforts and capital on the largest businesses—building materials and specialty chemicals.

Asbestos Stock Quotations

CLOSE: MARCH 17, 1981

Abitibi Asbestos	93¢*	G&W (pfd 5.75)	57
Advocate Mines	1½*	IC Industries	31⅜
Armstrong World Ind.	17	IC Ind. (pfd 3.50)	46⅜
Armstrong (pfd 3.75)	29	Johns-Manville	23⅜
Asarco	41½	J-M (pfd 5.40)	44¼
Asbestos Corporation	34*	Kennecott	53⅛
Bendix	62	Lear Siegler	35⅞
Bendix (pfd)	50⅝	Lear Siegler (pfd 2.25)	87½
Brinco	11*	McAdam Mining	85*
Carlisle	88⅜	National Gypsum	22⅝
CertainTeed	14⅞	Pathfinder	45¢*
Charter Conso.	Pence 230	Porter, H.K. (pfd 5.50)	77
Colt Industries	53⅝	Raybestos-Manhattan	22¾
Colt (pfd 1.60)	42	Rio Algom	36*
Colt (pfd 4.25)	113	Rio Algom (pfd 5.80)	54*
GAF Corporation	13¼	Rio Algom (pfd 8.5%)	4½*
GAF (pfd 1.20)	16¼	St. Gobain	French Francs 140.60
General Mining	17¾	Supradur	Bid 6½; Asked 7
Genstar	34	Union Carbide	58⅜
Genstar (pfd 1.68)	30½	Walter, Jim	26⅞
Gulf & Western	16¼	Walter, Jim (pfd 1)	8¼
G&W (pfd 2.50)	40⅛	Walter, Jim (pfd 1.60)	28¼
G&W (pfd 3.87)	97¼	Transpacific Asbestos	52¢*

*Canadian Dollars

Oliver S. North—Deceased

Oliver Sherman North, age 63, a retired government mineral specialist who compiled technical works on mining and food patents, died February 28, 1981, after a stroke.

Mr. North began his career in Washington, D.C., in 1951, with the U.S. Bureau of Mines and later transferred to the International Trade Commission. He retired in 1972.

A native of Vale, Oregon, he earned a degree in mining at the University of Missouri and served in the U.S. Navy during World War II.

Mr. North was the supplier of the patent abstracts which appeared in ASBESTOS for several years and was the author of the annual catalog of Mineral Exploration, Mining and Processing Patents.

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People On The Move

BENDIX CORPORATION—*Alonzo L. McDonald, Jr.*, former White House Staff Director during the Carter Administration, was elected President of Bendix Corporation, effective immediately, and Vice-Chairman of the Board, effective June 1, it was announced by *William M. Agee*, Chairman and Chief Executive Officer. Mr. McDonald replaces *William P. Panny*, who was ousted as President last September after a dispute with Mr. Agee.

CAPE INDUSTRIES LTD.—Recent subsidiary board changes announced by Cape Industries Ltd. include: *M. L. Boden*, Operations Director-Environmental Services, Spray Division, Cape Contracts; *H. G. Fredrikse*, Operations Director, and *A. Atkinson*, Non-Executive Director, Cape Contracts; *D. E. Mills*, Finance Director and Company Secretary, Cape Distribution; *C. A. Paull*, Finance Director and Company Secretary, Cape Friction International; and *P. G. O'Connor*, Finance Director, Cape Insulation (Ireland). Also, *David Train* was appointed Manufacturing Director of Don International. He joined Cape in 1979 as Managing Director of Lubefriction Ltd.

GAF CORPORATION—*Richard Fleming* resigned as President and Chief Operating Officer of GAF Corporation. He arrived at GAF only last summer from Air Products Inc. *Jay R. Olson*, formerly GAF Executive Vice President, was appointed to fill both vacancies. His position as Chief Financial Officer has been taken by *Robert E. Miller. Donald W. LaPalme* was elected Vice President-Manufacturing, Building Materials Group, succeeding *Leo J. Faneuf*, who has taken charge of special engineering projects.

JOHNS-MANVILLE CANADA INC.—*Alton R. Morrill* has been appointed Supervisor-Industrial Engineering, Jeffrey Mine. He has been an employee of J-M Canada since 1955 and had been Superintendent of the Asbestos Plant. Other appointments include *J. F. Lavallee*—Mill Superintendent; *F. J. Lapalme*—Senior Financial Analyst, Controller's Office; *T. J. Ruddy*—Senior Financial Analyst, Controller's Office; *C. Lafontaine*—Assistant Superintendent, responsible for Mill 5 production and shipping; *J. C. Hamilton*— Controller; *J. M. Fortier*—Open Pit Superintendent, Jeffrey Mine; *L. P. Hodgson*—Assistant Production Engineer, Asbestos Fibre Division; and *F. Charest*—Asbestos Plant Superintendent.

SOCIETE QUEBECOISE D'EXPLORATION MINIERE—The following two gentlemen recently joined the Board or Soquem: *Walter Belanger*, President of Beton Provincial and of other companies within the Beton group, and *Pierre Garceau*, Director General of Caisse d'Entraide Economique de Chauveau.

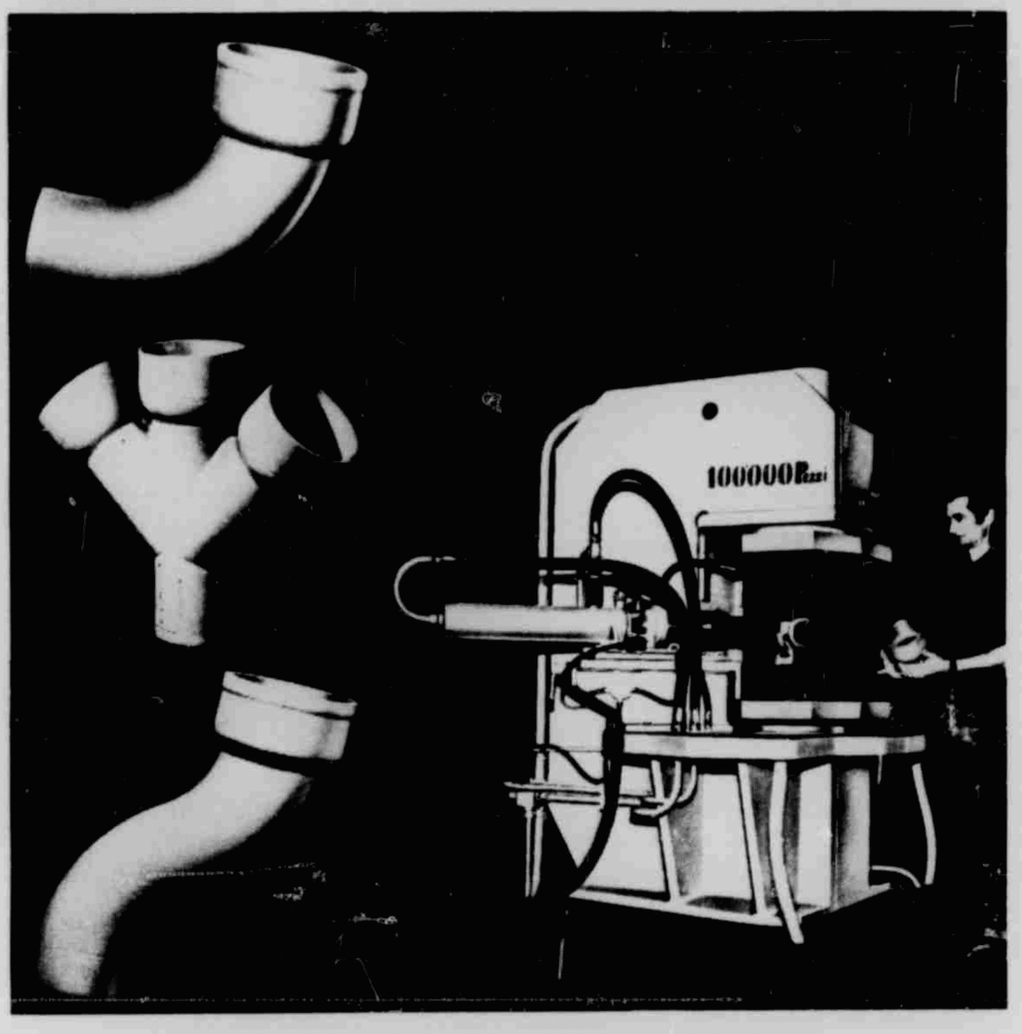
SOUTHERN TEXTILE CORPORATION—*William C. Isaacson* was named West Coast Sales Representative for the GARDIAN line of industrial textiles. At one time he had been with the Chicago White Sox and the Dodger organization as a player. *William K. Crane* has joined Southern's Customer Service Department as a Sales Service Representative.

TURNER & NEWALL LTD.—*C. J. Sinclair* was appointed President and Chief Executive Officer of Nuturn Corporation, following the resignation of *R. C. Rogers*. Mr. Sinclair had been Deputy Chairman and Managing Director of Newalls Insulation.

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Birthday Greetings to . . .

John D. Zacharias, President, Atlas Turner Inc., Montreal, Quebec, Canada, May 15.

W. Vermeer, Jr., Managing Director, Vermeer Agenturen B.V., Haarlem, Holland, May 16.

J. R. M. Hutcheson, Chairman of the Board, Johns-Manville Canada Inc., Asbestos, Quebec, Canada, May 17.

Alfred E. Netter, Vice President & Assistant Secretary, Supradur Manufacturing Corporation, New York City, May 17.

W. J. Clough, a Director & General Manager, Sealing Materials Division, TBA Industrial Products Ltd., Rochdale, England, May 18.

Kurt Schwarz, Senior Vice President, Supradur Manufacturing Corporation, Wind Gap, Pennsylvania, May 19.

M. L. Trepanier, Manager of Engineering, Asbestos Corporation Ltd., Thetford Mines, Quebec, Canada, May 19.

Arbrey P. Carrigan, Purchasing Agent, Southern Textile Corporation, Charlotte, North Carolina, May 20.

S. E. Cohen, a Director, James Hardie Industries Ltd., Sydney, New South Wales, Australia, May 21.

William T. Colborn, Vice President, Pacor Inc., Philadelphia, Pennsylvania, May 21.

H. M. S. Tanner, Managing Director, Transvaal Consolidated Land and Exploration Co. Ltd., Johannesburg, Republic of South Africa, May 21.

Reginald Sykes, Secretary, Asbestosis Research Council, Rochdale, England, May 23.

Anthony T. Kana, Vice President-Finance & Administration & Secretary, Cassiar Resources Division, Brinco Mining Ltd., Vancouver, British Columbia, Canada, May 24.

J. M. Atkinson, Deputy Chairman, Havelock Asbestos Mines (Swaziland) Ltd., Havelock, Swaziland, May 25.

Olaf Mohn, Export Sales Manager, Carey Canada Inc., East Broughton Station, Quebec, Canada, May 29.

Lionel C. Piuze, Vice President-Operations & a Director, Lac d'Amiante du Quebec Ltee, Black Lake, Quebec, Canada, May 30.

Harold F. X. Plate, Marketing Manager, Lac d'Amiante du Quebec Ltee, New York City, June 3.

A. H. Wailes, a Director & General Manager, TAP Building Products Ltd., Lusaka, Zambia, June 5.

D. R. Budinski, Chief Geologist, Cassiar Resources Division, Brinco Mining Ltd., Vancouver, British Columbia, Canada, June 9.

Ernest C. Bratt, President, Southern Textile Corporation, Charlotte, North Carolina, June 12.

Alan Nelson, Corporate General Manager-Planning, Turner & Newall Ltd., Manchester, England, June 12.

A. H. Bagenstose, Vice President-Marketing & Sales & a Director, Carey Canada Inc., East Broughton Station, Quebec, Canada, June 14.

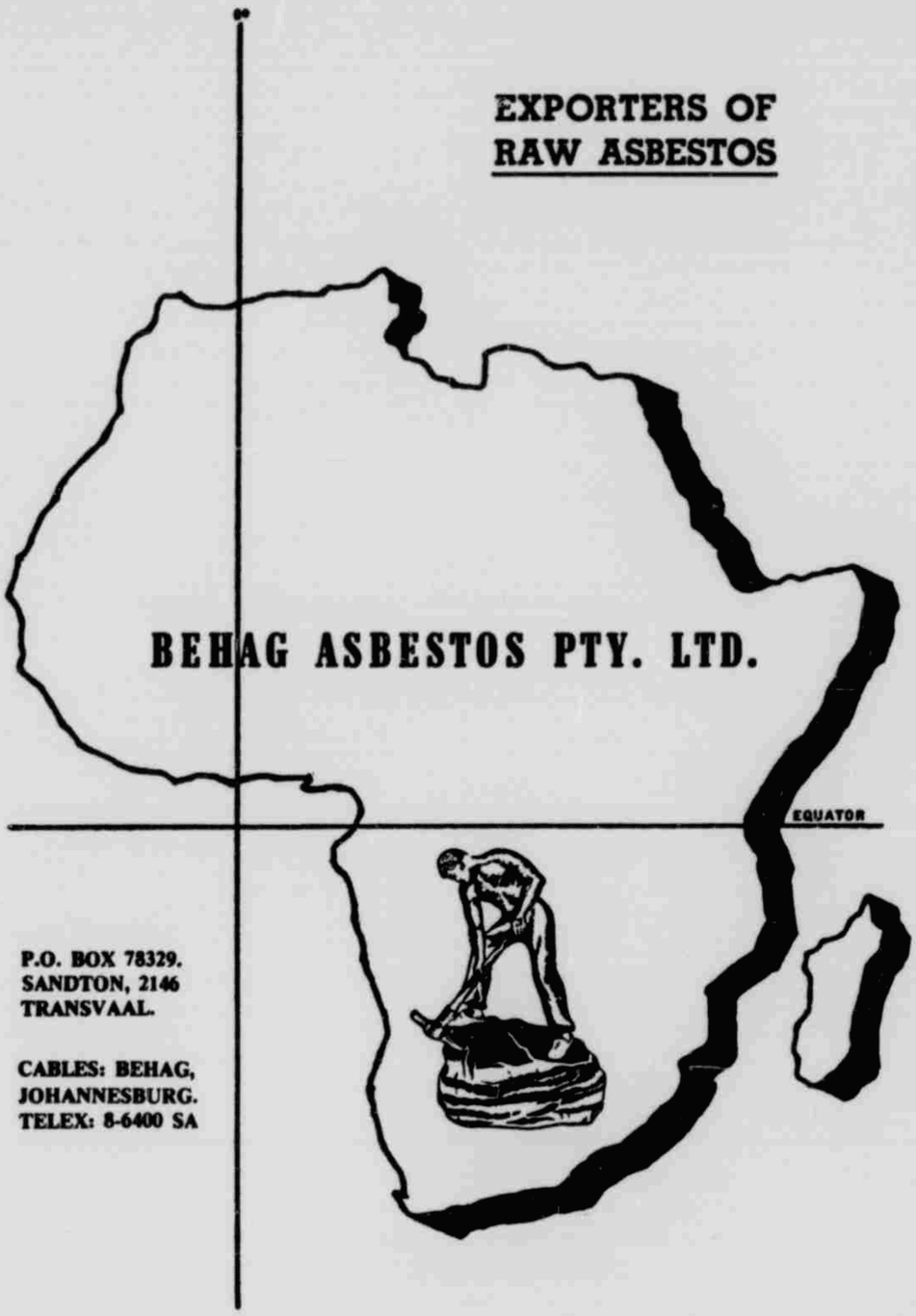
A. C. Caron, Assistant Manager of Engineering, Cassiar Resources Division, Brinco Mining Ltd., Vancouver, British Columbia, Canada, June 14.

John J. Finnegan, President, Nicolet Inc., Ambler, Pennsylvania, June 14.

G. R. Smith, Special Duties, Bell Asbestos Mines Ltd., Thetford Mines, Quebec, Canada, June 14.

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DOUBLE STANDARDS: ASBESTOS IN INDIA—Two-page article by Barry Castleman, Environmental Consultant, which appeared in "New Scientist"; presents an investigation of two asbestos factories in India; the author closes the article by stating: "The life-saving medical and engineering technology that should be exported along with dangerous technologies is often left behind. It is time for responsible members of the business world to step forward and make a commitment not to profit by such abuses." [$1.00; photocopy available from ASBESTOS]

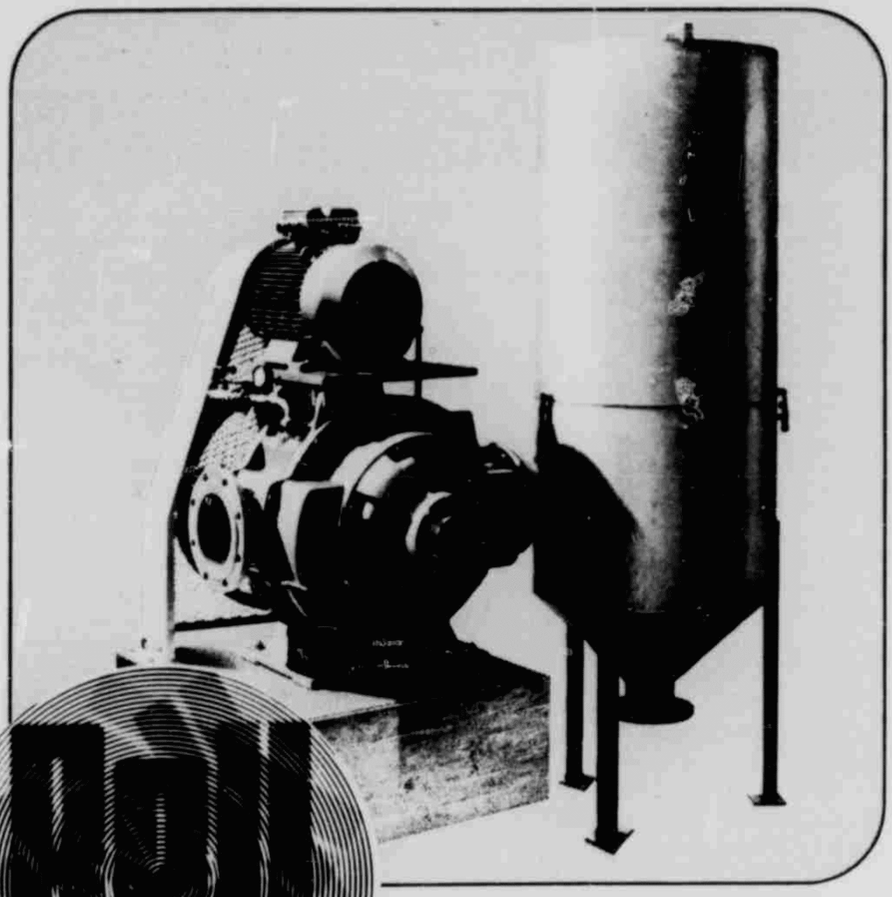
CONTROLLING AIRBORNE PARTICLES—Report from the Committee on Particulate Control Technology, National Research Council; takes a critical look at our ability to measure particles in the air and current knowledge about existing ambient air quality, sources of manmade atmospheric particles and predicted changes in patterns of emission, existing control technologies and the need for additional research and development and current understanding of the quantitative relationships between emissions and air quality. [$8.00; 114 pages; order from the National Academy of Sciences, Office of Publications, 2101 Constitution Avenue, Washington, D.C. 20418]

TOXIC AND HAZARDOUS WASTE DISPOSAL—Edited by R. B. Pojasek; discusses a number of disposal options available to the generators of hazardous wastes; covers land disposal risk minimization, handling emergencies, identification and disposal, secure landfill, solidification/fixation processes, leachate testing, land reclamation, fixation of heavy metals, use of plastic solidification agents, disposal by incineration, ocean incineration, disposal by molten salt combustion, composting, seabed and deepwell disposal and soil incorporation (landfarming). [$39.95; 313 pages; The Butterworth Group; may be ordered through ASBESTOS]

WHAT'S HAPPENING IN PRODUCTS LIABILITY? SOME RECENT STUDIES IN THE FIELD—Presents papers on the following topics: no-fault approach to products liability, attorney-client privilege/attorney work product, federal and state workers' compensation laws, state legislation, comparative fault among co-defendants (cross-claims, indemnification and settlement), the products liability management function at the business unit level and ways to minimize product liability losses. [$4.00; 74 pages; order from the Machinery and Allied Products Institute, 1200 18th Street N.W., Washington, D.C. 20036]

DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS REPORT—Lists, examines and analyzes industrial substances; reports on their toxicity, flammability and explosive properties; advises if carcinogens, terotogens, mutagens or neoplastigens; reports counter measures, dangerous reactions and disposal methods. [$96.00 per year in the United States; $120.00 to all other countries; includes six reports per year; initial report is 56 pages; may be ordered through ASBESTOS]

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Calendar of Events

FIBROUS COMPOSITE STRUCTURES—Course 397 to be held at The George Washington University, Washington, D.C., *May 5-8.*

DIAMOND CORE DRILLING & SOIL SAMPLING—Operator's Training Course of The Acker Drill Co., Scranton, Pennsylvania, *May 11-15, October 12-16.*

POWDER & BULK SOLIDS—Conference and Exhibition, Rosemont, suburban Chicago, Illinois, *May 12-14.*

INDUSTRIAL WASTE—36th Annual Purdue Conference, Purdue University, West Lafayette, Indiana, *May 12-14.*

HAZARDOUS WASTE REGULATIONS UPDATE & SUPERFUND—Seminar sponsored by Legal Times and Fordham University, *May 13-14* at Chicago, Illinois, *May 28-29* at Houston, Texas.

PROTECTING TRADE SECRETS—Program of Practising Law Institute, *May 14-15* at New York City, *May 28-29* at San Francisco, California.

PRODUCT LIABILITY UPDATE—Program of Practising Law Institute, *May 15-16* at New York City, *June 5-6* at Chicago, Illinois, *June 26-27* at Los Angeles, California.

SMALL MINE ECONOMICS & EXPANSION—1st International Symposium sponsored by World Mining/World Coal, Taxco, Mexico, *May 17-21.*

CLEAN AIR ACT—Seminar of Government Institutes, Inc., Washington, D.C., *May 18-19.*

FUNDAMENTALS OF ROCK MECHANICS—Course of The Pennsylvania State University, University Park, Pennsylvania, *May 18-20.*

MINE VENTILATION ANALYSIS—Course of The Pennsylvania State University, University Park, Pennsylvania, *May 18-20.*

INDUSTRIAL FIRE SCHOOL—Basic first-aid fire training course of The Ansul Company, Marinette, Wisconsin, *May 19-21, July 28-30, August 11-13, September 9-11, October 27-29.*

ENERGY MANAGEMENT IN INDUSTRY—Congress and Exhibition held in conjunction with the Federal German Ministry of Research and Technology, Essen, Germany, *May 19-22.*

AMERICAN INDUSTRIAL HYGIENE ASSOCIATION—Annual Conference, Portland, Oregon, *May 24-29.*

AMERICAN SOCIETY FOR QUALITY CONTROL—35th Annual Quality Congress and Exposition, San Francisco, California, *May 26-29.*

LASER 81 OPTO—ELEKTRONIK—5th International Congress and International Trade Fair, Munich, Germany, *June 1-4.*

WAVE LENGTH & ENERGY DISPERSIVE X-RAY SPECTROMETRY—Short Course with practical applications, State University of New York, Albany, New York, *June 1-5* and *June 8-12.*

U.S. DEPARTMENT OF COMMERCE CONSUMER GOODS TRADE MISSION TO HONG KONG, TAIWAN & SINGAPORE—Best prospects include sales of vinyl asbestos tile coverings, *June 1-9.*

LASERS & ELECTRO—OPTICS (CLEO '81)—Conference sponsored by the Quantum Electronics and Applications Society of the Institute of Electrical and Electronics Engineers and the Optical Society of America, Washington, D.C., *June 10-12.*

BERGBAU 81—International Mining Exhibition and Congress, Dusseldorf, West Germany, *June 11-17.*

ICAM 81—International Conference on Applied Mineralogy in the Mineral Industry, Johannesburg, Republic of South Africa, *June 23-26.*

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Remember When?

(April 1931 ASBESTOS)

An Act was passed by the U.S. Congress and approved by the President directing the Secretary of War to purchase articles made in the United States, whenever possible, even though the products were costlier.

Concern was expressed by many Industry leaders over Russia's plans to increase exports of asbestos fiber and products and at prices lower than those from other countries. If these efforts materialized it was believed that a negative impact would surely be felt around the world.

Two new asbestos materials announced in 1931 were the Salem Shingle from Johns-Manville Corporation and a Flexible Molded Brake Lining from Multibestos Company.

C. V. Smith, formerly Chief Engineer for Asbestos Corporation Ltd., had been engaged by Amtorg Trading Corporation to serve as Consulting Engineer and assist in developing the asbestos properties of the Uralasbest, at Bejnovo Mines, Sverdlovsk, USSR.

Owing to the depression in England and generally unsettled conditions in Australia, the Australian & General Asbestos Company was having difficulty raising capital to provide for the monthly production of some 300 tons of asbestos fiber.

Oy, Kimmos A.B. was organized in Helsingfors, Finland, as a manufacturer of asbestos wall and floor tiles.

(May 1931 ASBESTOS)

This issue contained a profile on Edward Slade who, in 1902, with others, organized American Asbestos Corporation to mine asbestos in Thetford Mines and Black Lake, Quebec. Ensuing joint efforts led to the formation, in 1907 of the British-Canadian Asbestos Corporation, a firm which later was instrumental in organizing Amalgamated Asbestos Corporation which, in turn, formed the nucleus of what was to become Asbestos Corporation Ltd. Mr. Slade also originated the idea of brake linings made of asbestos-metallic cloth and formed the Asbestos Spinning & Weaving Corporation and Slade Products, Inc. (later known as Slade Asbestos Corporation and the Marshall Asbestos Corporation).

DeWalt Products Corporation, Lancaster, Pennsylvania, introduced its Model O Long Arm Stone Cutter for cutting a-c boards and ebony asbestos.

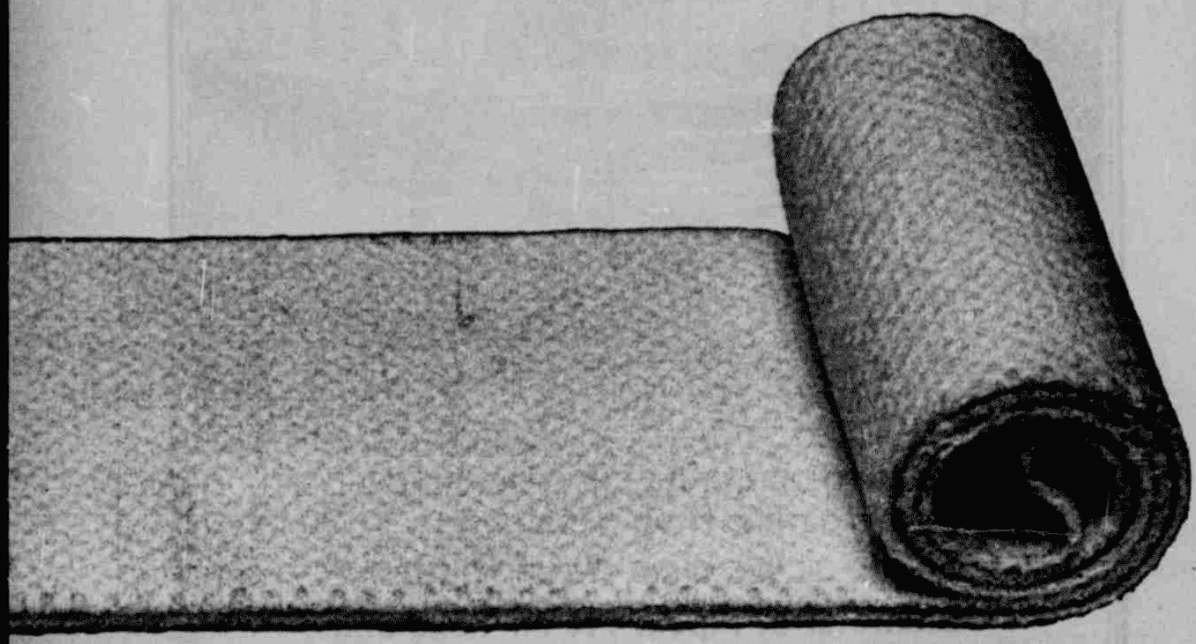
Universal Asbestos Manufacturing was registered as a private company in Rickmansworth, England, to acquire the majority of the issued share capital of Richardson Building Supplies and to carry on the business of spinning and manufacturing asbestos goods.

Following the retirement of Alvin M. Ehret, Sr., as President of Ehret Magnesia Mfg. Co., Valley Forge, Pennsylvania, Alvin M. Ehret, Jr., was elected President and John P. DuBois and H. E. Howell, Vice Presidents.

Effective May 1931 the Twin City Pipe Covering Company, St. Paul, Minnesota, changed its corporate name to G. A. McArthur Company.

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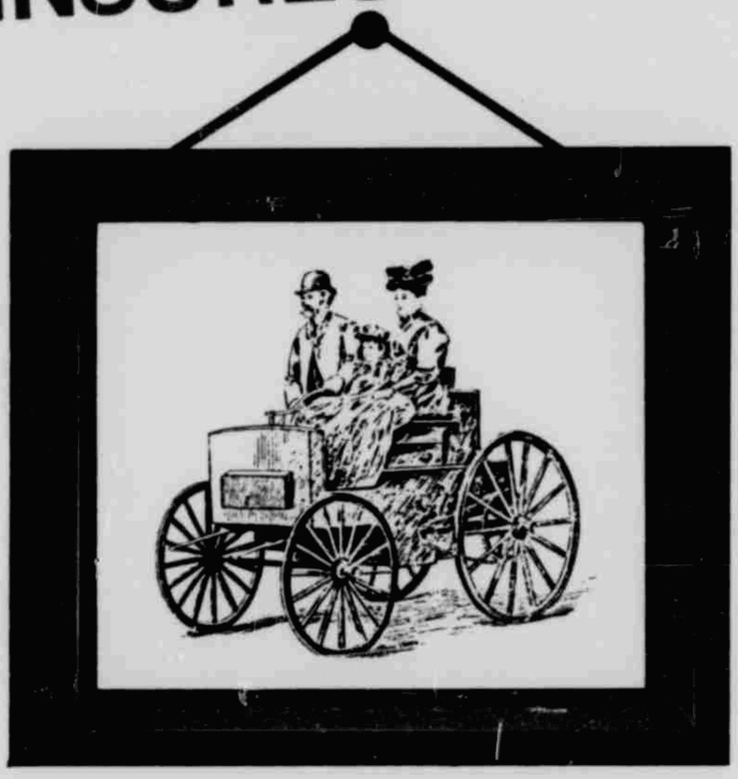
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