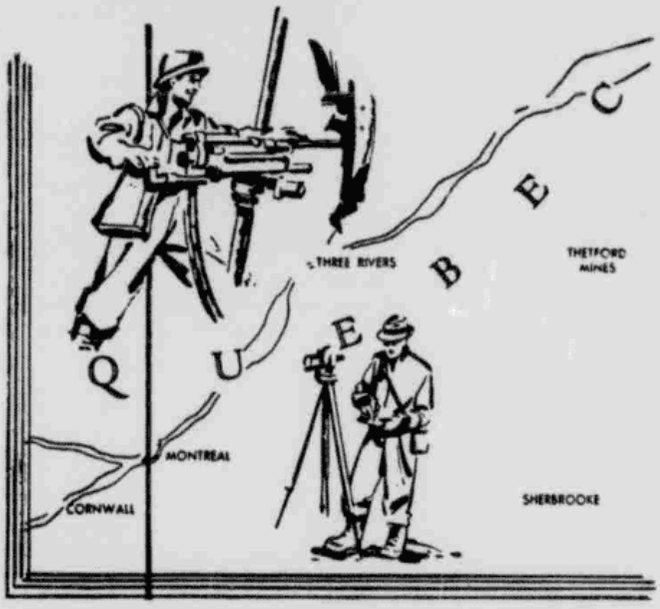
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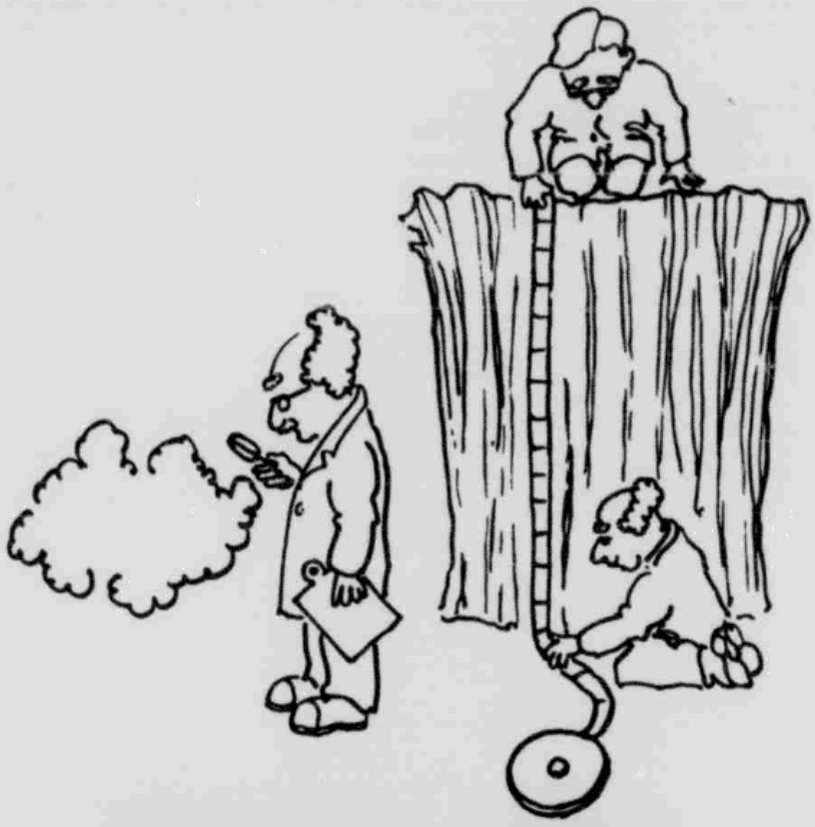
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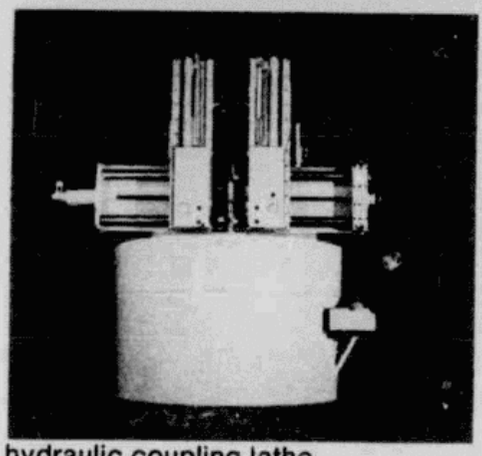
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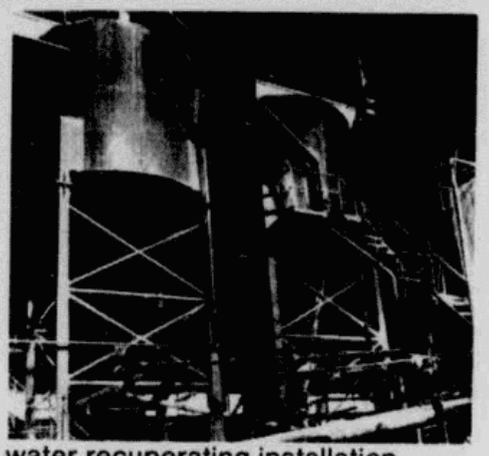
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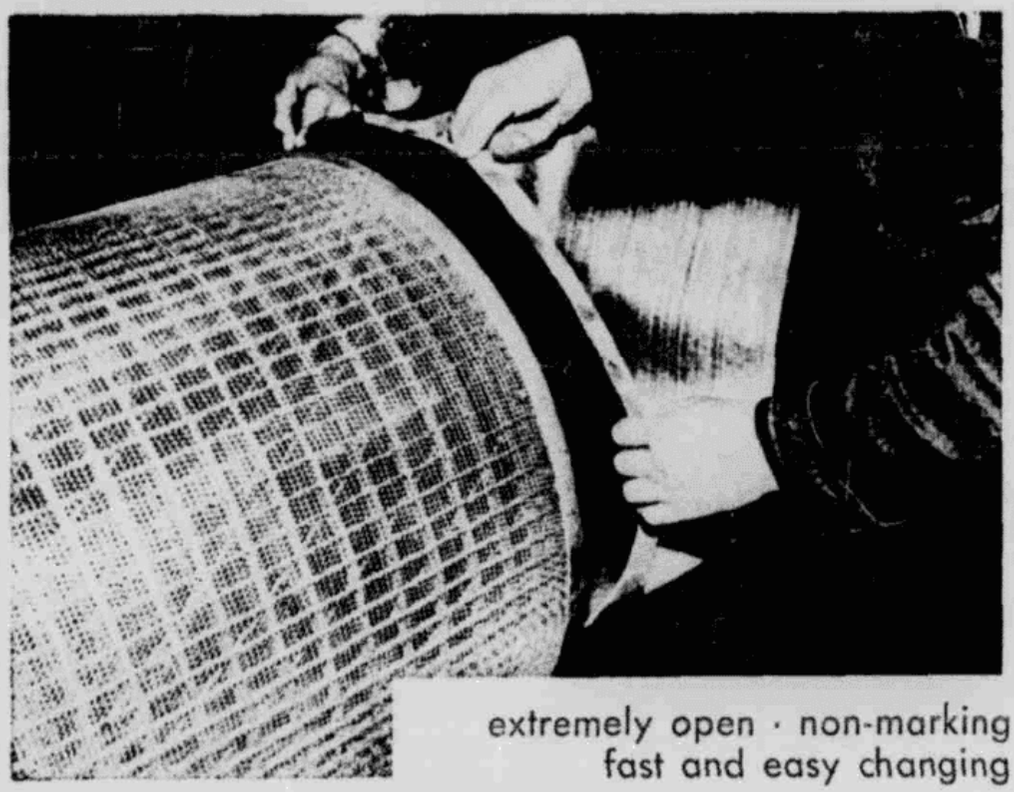
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CONTENTS

ANNUAL REVIEW—1977; PART I/ASBESTOS MINING
- GENERAL BUSINESS . . . 6
- ASBESTOS STOCK QUOTATIONS . . . 7
- HOUSING & CONSTRUCTION . . . 10
- MOTOR VEHICLE SALES . . . 10
- METRICATION . . . 11
- ENERGY . . . 12
- INTERNATIONAL ASBESTOS MINING INDUSTRY:
  - WORLD ASBESTOS PRICES . . . 14
  - CURRENT ASBESTOS PRICES . . . 15
  - A WORLD'S EYE VIEW . . . 14
  - UNITED STATES . . . 18
  - CANADA . . . 23
  - USSR . . . 31
  - SOUTH AFRICA . . . 34
  - RHODESIA & THE REST OF THE WORLD . . . 36
- RETIREMENTS & DEATHS . . . 46
- FRONT COVER ILLUSTRATIONS—1977 . . . 48
- TOPICAL INDEX/FEATURE ARTICLES—1977 . . . 50
- ADVERTISERS IN ASBESTOS—1977 . . . 52

U.S. & CANADA—IMPORTS/EXPORTS . . . 54

BIRTHDAY GREETINGS . . . 60

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Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 5 of 67
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ANNUAL REVIEW—1977

GENERAL BUSINESS

The pace of business recovery slowed during the early months of 1977 due partly to extremely severe weather conditions over much of the United States. Many industries were forced to curtail operations because of bad weather and shortages of natural gas. The new Administration, immediately after taking office, proposed a program for stimulating the economy. While Congress was considering details of the program, the economy showed such pronounced signs of strength that many observers questioned the need for any stimulus whatever. The statistics were so impressive that President Carter finally withdrew his request for a $50-per-person tax rebate and recommended other cutbacks in his proposed stimulus program.

In April the President presented his proposals for a comprehensive national energy program. The proposals met with general approval of the House committees involved but strong opposition to many of them arose in the Senate. As this is written, House-Senate conferees are trying to resolve their differences and produce a bill that will stand a reasonable chance of passage. Late in the year, the President again appeared on television in an effort to rally public support for the program and canceled a planned foreign goodwill trip in order to remain in Washington and press for adoption of his proposals. He also decided to delay presentation of a sweeping tax reform package so the legislators could concentrate their efforts on the energy bill.

Meanwhile the economy continued to improve as consumers sustained their active purchasing pattern and capital spending showed some signs of life after its long slump. Growth in Gross National Product was exceptionally strong in the first half and the third quarter growth figure of 4.7% was substantially higher than had been expected. Despite the generally improving business picture, the economy is still faced with two major problems—unemployment and inflation.

Throughout the year unemployment persisted at close to 7% of the workforce. Various public job programs had not been fully implemented and the full effect of those in operation had yet to be reflected in the statistics. Relatively weak capital spending made only a limited number of new jobs available in the construction and

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 6 of 67
Published by AsbestosClaims.Law
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ASBESTOS STOCK QUOTATIONS

Comparative Closing Prices	11/18/75	11/16/76	11/15/77
Abitibi Asbestos	C$1.00	C$.79	C$.70
Advocate Mines	C$1.40	C$2.90	C$3.75
Armstrong Cork	25	29⅝	17¾
Asarco	12¾	15⅝	14¼
Asbestos Corporation	C$21.25	C$25.00	C$37.00
Bendix	43⅜	39⅝	39¾
Bendix (pfd 3)	66	80½	78
Carlisle	10⅝	13⅞	22⅝
Cassiar Asbestos	C$6.75	C$5.00	C$8.375
CertainTeed	13¾	18⅝	25⅞
Charter Conso. (pence)	174	132	134
Colt Industries	26	47⅜	46
Colt Ind. (pfd 1.60)	17½	25¾	24½
Colt Ind. (pfd 4.25)	46¼	66¼	65½
Conwest	C$3.30	C$3.00	C$4.55
Flintkote	15¼	21¾	19⅞
Flintkote (pfd-B 2.25)	24¾	30¼	31
GAF Corporation	10⅞	11½	9⅞
GAF (pfd 1.20)	16⅛	17⅜	15⅞
Gulf & Western	21¾	16⅛	11¾
G&W (warrants)	4¼	3⅛	1/16
G&W (pfd 5.75)	66½	72¼	72
IC Industries	16⅝	18¾	25⅜
IC Ind. (pfd 3.50)	34¾	40⅜	45
Jim Walter Corporation	34⅞	38⅝	29⅜
Jim Walter (pfd 1.60)	38¼	42	32
Johns-Manville	21⅝	33	33¾
Kennecott Copper	27⅜	26½	21½
Lear Siegler	6½	11¼	16¾
Lear Siegler (pfd 2.25)	23	32½	42
Maremont	18½	16¼	21¼
McAdam Mining	C$.29	C$.40	C$.31
National Gypsum	11⅞	17⅜	16⅛
Pathfinder	C$.23	C$.32	C$.29
H. K. Porter (pfd 5.50)	65	..	74
Raybestos-Manhattan	24¾	27½	31¼
Rio Algom	C$30.50	C$27.00	C$22.75
Supradur (O.T.C.)	Bid 4½ Asked 5	Bid 4⅛ Asked 4⅝	Bid 5⅞ Asked 6⅜
Union Carbide	57½	56⅜	42⅝
Woodsreef Minerals	C$.40	C$.75	C$.77

Other closing prices on 11/15/77 were Armstrong Cork (pfd 3.75)—49, Gulf & Western (pfd 2.50)—30⅝, Gulf & Western (pfd 3.87)—57¾ and Jim Walter (pfd 1)—12½.

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 7 of 67
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heavy equipment fields and the small number of new production facilities coming on stream offered few new permanent, productive job opportunities in the private sector.

Nothing positive has been done or proposed to halt inflation which continues at an annual rate of about 6%. In truth, several actions recently taken by Congress, such as increasing the minimum wage and raising the level of farm price supports, are definitely inflationary. Proposals for changes in the Social Security tax rates and the tax provisions of the President's energy program would, if adopted, exert strong upward pressures on the general price level. It is apparent that, regardless of the many pious pronouncements on the subject, we can expect little or no action on the part of government to attack the root causes of inflation and, since most of the causes lie within the government itself, we can look forward to continuing erosion of the dollar's purchasing power.

Throughout the year stock prices, as measured by the Dow Jones Industrial Average, have steadily trended downward. Some observers believe this presages a business recession while others, studying economic statistics, dismiss this idea as ridiculous. The truth probably lies somewhere between these extremes. In pricing stocks the market is trying to evaluate the future earnings prospects of individual companies and, hence, of the nation's businesses collectively. Faced with foreign competition, increasing energy costs, uncertain future taxation and a myriad of government-mandated cost increases, profit prospects for many companies are beclouded to say the least. The recent traumatic experiences in the steel industry are not necessarily typical but they could presage similar situations in other industries. So long as investors sense the possibility of such troubles ahead, they are inclined to limit their risks regardless of statistical evidence showing underlying strength in the economy.

While many indicators presently point to continuing growth in the economy, at least through the first half of 1978, we must realize that the world of nations and the U.S. in particular is going through some profound changes, economically and politically, and past experience may not be the most reliable guide to the shape of coming events. As usual, individuals and businesses who are best prepared to cope with the unexpected, for which no precedents exist, are those most likely to succeed in the years ahead.

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ACL Doc 12704 · Page 8 of 67
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HOUSING & CONSTRUCTION

Gains in construction during 1977 exceeded predictions in all three categories, resulting in a total contract value of approximately $136-billion, a gain of almost 24% over the 1976 figure. Residential building continued to lead the way with a total value of nearly $60-billion, a 35% improvement over 1976 results. Nonresidential building gained about 11% over 1976 for a total slightly in excess of $33-billion, while nonbuilding construction totaled $43-billion, a 20% improvement over 1976 results. All figures for 1977 are preliminary, based on eight months actual and four months estimated values, as prepared by F. W. Dodge Division, McGraw-Hill Information Systems Company.

While residential construction registered the greatest improvement, nonresidential and nonbuilding contracts snapped out of their 1976 lethargy and contributed substantially to the higher total contract value achieved in 1977.

According to Dodge, residential construction probably came close to peaking this year and the 1978 volume is projected at $61.6-billion, a 3½% gain over 1977. In nonresidential building, a gain of about 15% to $38.5-billion is projected and nonbuilding contracts are expected to total $46.9-billion, a 9% increase over the 1977 figure.

In his annual forecast, from which the foregoing figures are excerpted, George A. Christie, Vice President and Chief Economist of McGraw-Hill information Systems Company, warned that certain unpredictable contingencies could result in substantial deviations from predictions. As examples, excessive credit restraint could precipitate a collapse of the housing market; a serious economic slowdown would lead business to delay or even cancel plans for commercial and industrial building; and many factors could lead to postponement of several huge electric generating projects. Barring such contingencies, total construction in the sum of $147-billion would represent an increase of about 8% over the 1977 total.

MOTOR VEHICLE SALES

Automobile sales in 1977 showed a healthy gain over the 1976 figures and contributed strongly to the general economic recovery. Unit sales in the first half of the year were about 10% ahead of 1976. Constantly rising prices on cars of all types and a growing concern about future cost and availability of fuel are

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 10 of 67
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forcing wider public acceptance of compact and intermediate size cars and U.S. manufacturers are tailoring their products to fill this demand and to meet government-mandated economy standards as they take effect over the next few years. This may result in lower industry profits since margins on the smaller cars are considerably lower than those on the larger models and no great increase in total unit volume is forecast for the coming year.

The Motor Vehicle Manufacturers' Association of the United States, Inc., Detroit, reported sales of vehicles from U.S. and Canadian plants for the last four 12-months periods to September as follows:

MOTOR VEHICLE FACTORY SALES FROM PLANTS IN THE U.S. & CANADA

Annual Period	Passenger Cars; U.S.	Trucks & Buses; U.S.	Total United States	Total Canada
Year to 9/77	9,061,107	3,281,770	12,342,877	1,715,670
Year to 9/76	8,238,922	2,910,471	11,149,393	1,622,734
Year to 9/75	6,609,369	2,296,347	8,905,716	1,424,717
Year to 9/74	7,887,123	2,804,057	10,691,180	1,561,012

METRICATION

The U.S. took another step toward conversion to the metric measurement system when President Carter, on October 28, nominated 15 persons to membership on the U.S. Metric Board. Dr. Louis F. Polk, an internationally-recognized authority on metrology, was named Chairman of the Board which, at full strength, will consist of 17 members. The other nominees represent business, labor, government and various other interested groups. Those yet to be named will represent engineering and education interests.

The Metric Conversion Act of 1975 (Public Law 94-168) required the President to nominate a Board whose function will be to coordinate conversion to metric in the U.S. Nominees are selected from lists of qualified individuals submitted by certain specified interests and are subject to confirmation by the Senate. The Board's activities will include development of public awareness and educational programs, establishment of conversion guidelines, conducting research and making recommendations to the President and Congress concerning action for dealing with conversion problems as they arise. Until now conversion efforts have been coordinated solely through the American National Metric Council, a non-government organization funded by over 2000 companies, organizations and individuals.

In contrast to programs in some other countries, metric conversion in the U.S. is voluntary and a timetable for achieving conversion is not specified. Nonetheless, in recognition of the benefits to be gained through conversion, many of the largest U.S. corporations are taking the lead in converting to metric. Thus far, particularly in the case of multinational corporations, the costs of conversion have been somewhat less than were

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 11 of 67
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originally estimated and the internal savings and competitive advantages derived from conversion have often more than offset the costs involved.

All the states have started some type of activity to introduce metric into their educational systems. Some have gone so far as to set 1980 as a target date for the predominant use of metric in their schools. Most federal government agencies have begun to introduce the metric system into their operations and some have established timetables for conversion. While consumer products companies have possibly the least incentive, some very large companies in the consumer field are already planning for conversion. Sears, Roebuck and Company, for example, is planning to operate completely in metric by the mid-1980's.

In summary, despite the lack of a government-mandated time-table, U.S. industry is making real progress in converting to metric and, as more of the larger companies begin to achieve conversion, a "snowball" effect will occur and smaller firms will be forced to convert by the competitive pressures of the marketplace.

ENERGY

The year 1977 marked the beginning of a truly serious effort by the United States to come to grips with its energy problem. In April President Carter presented Congress with a set of proposals which, if adopted, would form a basis for the nation's first comprehensive, long-range energy policy. The proposed program would rely heavily on tax measures to promote conservation of petroleum fuels by increasing their prices, would continue price controls of some sort on natural gas and would attempt to force the use of coal as a substitute for oil and gas in certain industrial and utility power plants.

While precise details of the legislation remain to be agreed upon in Congress, some steps have already been taken to implement whatever legislation may be forthcoming. Chief of these has been the establishment of a new, cabinet-level Department to carry on and consolidate the activities of the numerous diverse agencies which have been involved in various energy-related functions.

On October 1 the new U.S. Department of Energy came into being. Under the leadership of Secretary of Energy, Dr. James R. Schlesinger, the Department will start operations with a projected annual budget of $10.4-billion and a staff expected to grow to about 20,000 employees. It will assume practically all functions of the former Federal Energy Administration, the Energy Research and Development Administration and the Federal Power Commission. It will also take over responsibility for certain energy-related functions of the Interstate Commerce Commission and of the Departments of Housing and Urban Development, Interior, Defense and Commerce.

The ultimate scope of the new Department's activities will be determined by the nature of legislation yet to be enacted. Regardless of the final shape of such legislation, centralizing all energy-related activities now in the hands of a multiplicity of separate agencies should result in increased efficiency and should provide an administrative organization well prepared to effectively implement whatever new programs may be adopted in the future.

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THE ASBESTOS MINING SCENE

WORLD ASBESTOS PRICES

Prices for asbestos crudes, fibers and shorts have been steadily on the rise since 1974, after several years of remaining rather static.

The prices for the mineral from *Quebec* producers rose an average 37% in 1974, 23% in 1975, and as of January 1, 1977, were increased 14.5% for Groups 1 and 2 and 8% for Groups 3-7. At mid-year 1977 an adjustment was announced, resulting in an average decrease in prices of 4.18%. Effective January 1, 1978, (see opposite page), the new price range indicates an average increase of 14%—with spinning grades reduced because of lessening demand and cement grades increased.

Prices for asbestos from Cassiar Asbestos Corporation Ltd., *British Columbia,* rose an average 53% in 1974, 8% in 1975, 15% on December 1, 1976, and 12.8% on July 1, 1977. Cassiar's prices are expected to be raised about 5% as of the first of 1978.

According to the U.S. Bureau of Mines, the average value of asbestos produced in the United States was $247.00 per short ton in 1977, F.O.B. mine. . . . Prices for *Arizona* asbestos were increased 9% in 1974, 16% as of January 1, 1975, 15% on April 17, 1975, and 10% the first of this year. It is probable the prices for asbestos from this State will be adjusted in early 1978 in accordance with Quebec prices. . . . Atlas Asbestos Company, Coalinga, *California,* has reported that Standard Atlas Tile Grade 7T cost $89.00 per ton, F.O.B. Coalinga, throughout 1977 and that variations in packaging, odd lot weights, etc., were priced accordingly. The company anticipates a 4% to 5% increase in early 1978. . . . *Vermont* raised its asbestos prices 16% in 1974, 45% in 1975, 13% in 1976 and 14% in 1977. A 5% increase has been reported effective January 1, 1978.

For the nine months to September 1977, the United States paid the following prices per short ton for asbestos imported from the *USSR:* $202.44 for spinning grade Chrysotile fibers, $297.92 for other Chrysotile and $194.70 for other unmanufactured crude asbestos.

For the same nine-month period, U.S. imports of asbestos from the *Republic of South Africa* cost $498.56 per short ton for Amosite, $434.52 for Crocidolite, $582.52 for Chrysotile Crudes, $694.68 for spinning grade Chrysotile fibers and $491.44 for other unmanufactured crude asbestos.

Imports of *Rhodesian* Chrysotile Crudes cost the U.S. $966.16 per short ton.

Prices for *Brazilian* asbestos were increased approximately 15% from June 1976 to August 1977, as follows (F.O.B. per ton of Chrysotile from the Cana Brava Mine, Goias State): Grade 4K—Cr$7526, 4T—$6687, 4Z—$5958, 5K—$5017, 5R—$3665, 6D—$2679, 7TF—$1059, 8S—$500. As of this writing, one Brazilian Cruzeiro is equivalent to 6½¢ in U.S. currency.

A WORLD'S EYE VIEW

The International Asbestos Mining Industry has fared rather well, despite the slump in the worldwide economy. Preliminary estimates by the U.S. Bureau of Mines* are that *world asbestos production* reached

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 14 of 67
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CURRENT ASBESTOS PRICES

ARIZONA *Per Ton of 2000 Lbs., F.O.B. Globe, Arizona*
As of July 1, 1976 *U.S. Dollars*

No. 1 Crude (Soft)	$ ..	$3000.00
No. 2 Crude (Soft)	..	1800.00
AAA	..	1300.00
Group No. 3—Nonferrous Filtering—Plastic	750.00—	840.00
Group No. 4—Nonferrous Filtering—Plastic	750.00—	840.00
Group No. 7—White Shorts	100.00—	200.00

QUEBEC *Per Ton of 2000 Lbs., F.O.B. Mine*
As of January 1, 1978 *Canadian Dollars*

No. 2—Crude		*2165.00*
No. 3—Spinning Fiber	965.00—	1501.00
No. 4—Asbestos Cement Fiber	642.00—	945.00
No. 5—Paper Fiber	323.00—	501.00
No. 6—Paper and Shingle Fiber	307.00—	311.00
No. 7—Shorts	107.00—	213.00

CASSIAR *Per ton of 2000 Lbs., F.O.B. North Vancouver, B.C.*
As of July 1, 1977 *Canadian Dollars*

	Cassiar Mine	
C-1	—No. 1 Crude	$3621.00
AAA	—Nonferrous Spinning Fiber/Canadian Group 3	2000.00
AA	—Nonferrous Spinning Fiber/Canadian Group 3	1600.00
A	—Nonferrous Spinning Fiber/Canadian Group 3	1050.00
AC	—Nonferrous Spinning Fiber/Canadian Group 3	913.00
AK	—Asbestos Cement Fiber/Canadian Group 4	770.00
AS	—Asbestos Cement Fiber/Canadian Group 4	670.00
AX	—Asbestos Cement Fiber/Canadian Group 4	580.00
AY	—Asbestos Cement Fiber/Canadian Group 5	420.00
AZ	—Asbestos Cement Fiber/Canadian Group 6	320.00
	Clinton Mine	
CP	—Asbestos Cement Fiber/Canadian Group 4	730.00
CT	—Asbestos Cement Fiber/Canadian Group 4	650.00
CY	—Asbestos Cement Fiber/Canadian Group 5	420.00
CZ	—Asbestos Cement Fiber/Canadian Group 6	320.00

VERMONT *Per Ton of 2000 Lbs., F.O.B. Morrisville, Vermont*
As of January 1, 1978 *U.S. Dollars*

Grade 4T—Fiber	$ ..	$ 501.00
Grades 5D thru 5R—Fiber	330.00—	387.00
Grade 6D—Waste	..—	239.00
Grades 7D thru 7T—Shorts	95.00—	182.00
Grade 7TF—Floats (Shorts)	..	82.00
Grade 8S—Shorts	..	62.00
Hooker No. 1—in 50-lb. woven polypropylene bags		1166.00
Hooker No. 2—in 100-lb. woven polypropylene bags		583.00

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 15 of 67
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5,507,000 short tons in 1977, 4% ahead of 1976. Production figures for prior years were 5.3-million tons in 1976, 4.5-million tons in each of the years 1975, 1974 and 1973 and 4.2-million tons in 1972. A geographical breakdown for the 1977 production estimates is:

Canada	1,602,000 short tons
Republic of South Africa	400,000 short tons
Other Market Economy Countries	600,000 short tons
Central Economy Countries	2,800,000 short tons
United States	105,000 short tons
	5,507,000 short tons

The Quebec Asbestos Mining Association gives a world production figure of 5,712,000 short tons for the year 1976, crediting the USSR with 44%, Canada with 30% and South Africa and Rhodesia with 13%. QAMA, which considers asbestos-cement materials as the segment of the industry with the strongest growth rate potential, lists the following breakdown of asbestos uses, by product category.

*Source: Robert A. Clifton, Physicist and Asbestos Specialist, Division of Nonmetallic Minerals, Bureau of Mines, U.S. Department of the Interior.

Asbestos-Cement Products	69.0%
Asbestos Paper and Felts	7.4%
Tiles	3.9%
Anti-Friction Materials	2.2%
Paints, Putties, etc.	1.6%
Fittings and Fireproof Joints	1.0%
Asbestos Textiles	.7%
Plastics	.5%
Fireproof Cement	.3%
Other	13.4%
	100.0%

Mr. Clifton has calculated that *world asbestos reserves* (identified resources) stand at 96-million tons and there are hypothetical resources of 53-million tons. He further states that the rate of growth in the use of asbestos continues high in the developing countries and that asbestos reserves could well be in danger of depletion by the year 2000 at the forecast rates of consumption if the "find" rate of new sources does not increase. He reports that 1.15-million tons per year of new capacity is expected to become available in world markets during 1973-80, including 300,000 tons of Soviet exports plus production from mines in Australia, Colombia, Greece, New Zealand, Mexico and Brazil.

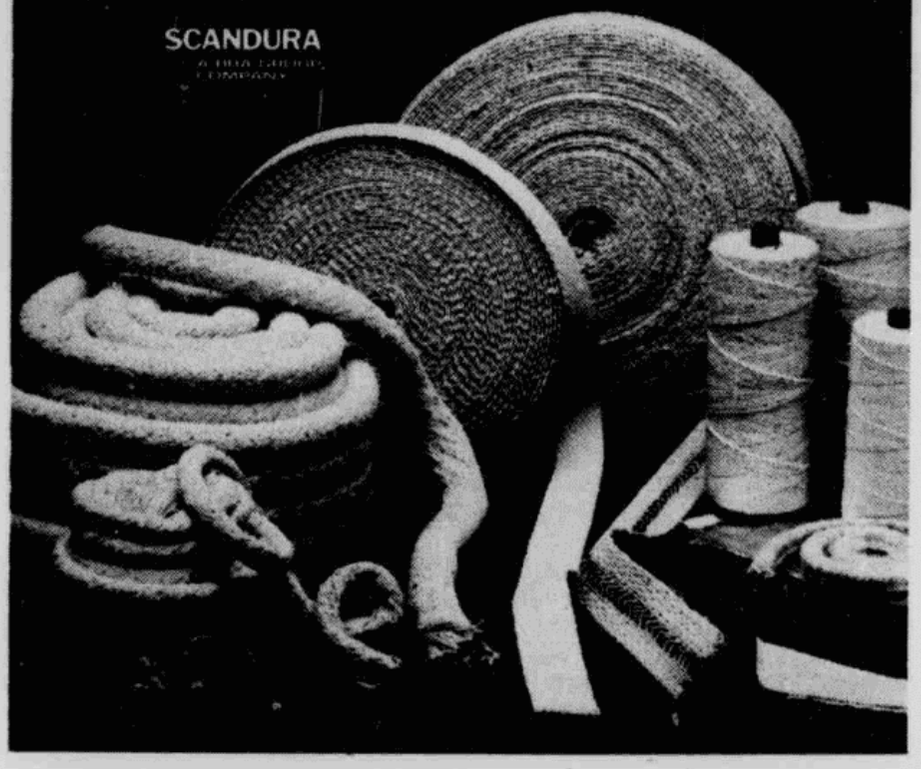
The South African Minerals Bureau reports that *consumption of asbestos* has been on the increase for the past five years or so and that a consumption total of 3.61-million metric tons per year is projected for the Western World by 1980 (2.98-million tons were consumed in 1975). Additional production capacities of about 1-million tons are required to meet the 1980 projected demand. The USSR is expected to increase present exports of 500,000 tons (mostly Chrysotile) to 625,000 tons per year by 1980.

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 16 of 67
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Another recognized authority in the Industry predicts the world will be producing 6.1-million tons by 1981 and 6.4-million tons by 1986. This same source states that supply exceeded demand by 94,000 metric tons in 1976 but predicts that *demand will exceed supply* by 49,000 tons in 1981 and by 359,000 tons in 1986.

Predictions of *annual growth rate* for the Industry are currently ranging between 1.5% and 4.5%. In trying to be both cautious and optimistic, and at the same time realistic, we predict a growth rate of about 2% per annum through 1986. The future of the Industry depends on a variety of factors including world economic conditions, political intervention, growth rate of developing countries, expansions of existing mines, discovery and exploitation of new asbestos deposits, development of alternative materials and environmental conditions.

Again quoting Mr. Clifton, the *substitution of alternative materials* is possible in many end uses, particularly in asbestos-cement products where a variety of alternative ceramic and new plastic materials are available and in paints and caulking where asbestos has a wide range of substitutes. There are several synthetic inorganic fibers available commercially and more are becoming available each year. Most efforts seem to be aimed at thermal insulation which constitutes only a small portion of the asbestos market. The most desirable characteristic of asbestos, its tensile strength, compares very favorably with such other fibers as glass, aluminum and steel. Accelerated research is necessary to find substitute fibers which will have at least some of the attractive asbestos characteristics of strength, chemical inertness, heat resistance and economy.

UNITED STATES

Asbestos ranks 12th in importance in the list of minerals and metals for which the United States relies heavily on imports. The U.S. Bureau of Mines reports the U.S. produces 17% of its asbestos needs and imports 83%, 95% of which is Chrysotile from Canada. The Republic of South Africa supplies all U.S. consumption needs of Crocidolite and Amosite.

Apparent U.S. consumption of asbestos was 683,000 short tons in 1977: down 6% from 1976 (726,322 tons), 12% over 1975 (607,637 tons), and 19% less than 1974 (845,825 tons). With U.S. usage on a slight downward trend, at least at the moment, and the USSR utilizing more asbestos domestically, it is highly probable the Soviet Union has surpassed the United States as the largest consumer of asbestos in the world. It is also interesting to note that at the end of this year the U.S. Bureau of Mines estimates U.S. consumers will have approximately 90,000 tons of asbestos in stock, which strengthens the prediction of an oversupply situation in the 1980's.

In October President Carter reaffirmed the major points of the *Strategic Stockpile Policy* developed a year earlier by President Ford. Planning is based on expected requirements of U.S. defense-related industries during a three-year war. The new Administration's policy is that the overall long-range aims are to be reviewed at least annually, and quantities of individual metals and minerals will be adjusted accordingly. Currently available for sale from the asbestos stockpile are 16,125 short tons

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 18 of 67
Published by AsbestosClaims.Law
asbestosclaims.law/library/12704/18

of Amosite and 2,385 tons of Crocidolite. There is also an excess, not for sale, of 10,960 tons of Chrysotile.

Asbestos is produced in four U.S. States. In order of importance they are California (about 73%), Vermont, Arizona and North Carolina. The U.S. produced 8.6% less asbestos in 1977 than in 1976, although the value was up 9.5%, as will be noted from the table below:

1977—105,000	short	tons,	valued	at	$25,935,000;
1976—114,842	short	tons,	valued	at	$23,693,000;
1975— 98,654	short	tons,	valued	at	$14,200,000;
1974—112,533	short	tons,	valued	at	$13,800,000;
1973—150,116	short	tons,	valued	at	$16,288,000;
1972—131,663	short	tons,	valued	at	$13,409,000;
1971—130,882	short	tons,	valued	at	$12,174,000.

California, the largest producing State, is expected to have a 1977 output of asbestos 7.6% less than in 1976:

1977—77,000	short	tons,	valued	at	$19,000,000;
1976—83,302	short	tons,	valued	at	$16,951,000.

Based on the figures in the above two tables, supplied by the U.S. Bureau of Mines, production in the three remaining States was down substantially. Past records indicate that Vermont annually produces about 40,000 tons, Arizona about 3,000 tons and North Carolina about 700 tons.

About 71% of the *asbestos consumed in the U.S.* is used in the construction industry in the form of roofing and flooring products and asbestos-cement pipes and sheets. Major end uses for asbestos in the United States in 1976, according to the U.S. Bureau of Mines, were:

Roofing Products	34%
Asbestos-Cement Pipes	19%
Flooring Products	15%
Friction Materials	8%
Paper Products	4%
Asbestos-Cement Sheets	3%
Plastics	2%
Packings and Gaskets	2%
Coatings and Compounds	2%
Insulation	1%
Textiles	1%
Other	9%
	100%

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 19 of 67
Published by AsbestosClaims.Law
asbestosclaims.law/library/12704/19

In 1976 the U.S. used about 27,400 tons of Crocidolite, Amosite and Anthophyllite for the manufacture of asbestos-containing products, i.e.:

Crocidolite—20,300 tons in asbestos-cement pipe; 700 tons in plastics, 300 tons in paper and 100 tons in packings and gaskets;

Amosite—2,900 tons in asbestos-cement pipe, 200 tons in asbestos-cement sheets, 100 tons in thermal insulation, 100 tons in friction materials and 1,200 tons in other products;

Anthophyllite—1,100 tons in plastics, 300 tons in friction materials and 100 tons in asbestos-cement sheets.

Based on monthly and cumulative figures published in this Magazine, *U.S. Imports of unmanufactured asbestos* fell 1.3% in quantity but rose 12.1% in value for the year ended August 1977, compared with the prior 12-month period. As will be noted in the following table, imports of Chrysotile were down 0.8% while Crocidolite rose 42.2%, and Amosite decreased 54.5%. Comparing the latest year with the year ended August 1975, imports rose 6.4% in quantity and 26.6% in value.

U.S. IMPORTS OF UNMANUFACTURED ASBESTOS (SHORT TONS)

Year To	Chrysotile	Crocidolite	Amosite	Other	Total Quantity	Total Value
8/77	587,087	13,049	824	26,822	627,782	$148,431,168
8/76	591,667	9,174	1,809	33,308	635,958	132,375,509
8/75	558,630	11,483	5,616	14,472	590,201	117,254,264
8/74	739,231	12,436	7,644	28,362	787,673	113,294,848
8/73	726,274	10,775	7,282	6,264	750,595	91,318,202
8/72	710,526	5,594	8,332	8,912	733,364	87,712,683

For the latest year under review, all of the Crocidolite and Amosite imported into the U.S. came directly from the Republic of South Africa, except for 1 ton by way of Canada. The sources of Chrysotile Crudes were 4,283 tons from Rhodesia, 3,384 tons from South Africa, 384 tons from Canada and 144 tons from Mexico. Canada supplied 6,848 tons of Chrysotile spinning fiber with 2,190 tons from the USSR, 187 tons from South Africa and 124 tons from Rhodesia. The origins of the Chrysotile classified as "Other" were 569,288 tons from Canada, 166 tons from the USSR, 60 tons from South Africa and 29 tons from Mexico. In the "Other Crudes & Fibers" category, the U.S. imported 13,600 tons from Canada, 7,592 tons from the USSR, 4,409 tons from South Africa, 1,220 tons from Mexico and 1 ton from Sweden.

Both the quantity and value of *U.S. exports of unmanufactured asbestos* decreased from the prior year (down 19.2% and 11.2%, respectively), but comparing the figures with the year ended August 1975 the tonnage and value of exports were higher. A statistical picture of the past six years is as follows:

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 20 of 67
Published by AsbestosClaims.Law
asbestosclaims.law/library/12704/20

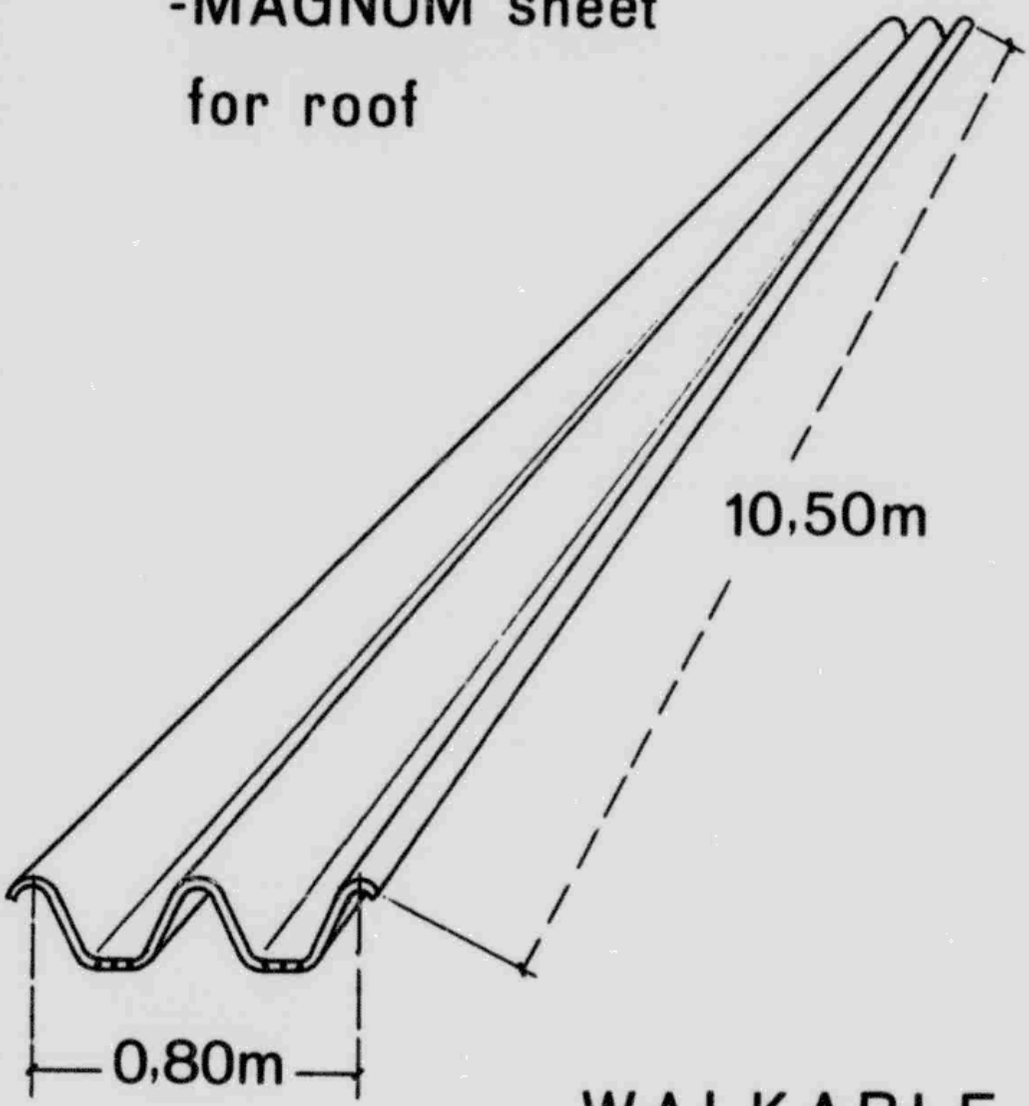
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Year To	Fibers	Waste & Refuse	Total Quantity	Total Value
8/77	17,370	19,719	37,089	$11,329,884
8/76	21,736	24,160	45,896	12,752,021
8/75	14,953	18,832	33,785	9,308,660
8/74	36,503	35,281	71,784	9,752,917
8/73	23,461	37,415	60,876	7,923,575
8/72	27,516	28,700	56,216	8,084,003

U. S. Asbestos Mines

California—Atlas Asbestos Company, near Coalinga, in Fresno County, produces Grade 7 Chrysotile, for use in the manufacture of vinyl-asbestos floor tile. . . . Calaveras Asbestos Ltd., Copperopolis, mines Grades 4-7 Chrysotile, mainly for use in asbestos-cement pipes and sheets. . . . Union Carbide Corporation, Metals Division, produces Calidria asbestos products from short-fibered Chrysotile mined in San Benito County. The UCC plant is located at King City. . . . The previously-reported unimproved asbestos-bearing property in Tuolumme County, is still available. It is said to hold 4.5-million to 9-million tons of recoverable asbestos in Grades 4-7. . . . A. Q. Adams, President of Adams Mining, Milling & Manufacturing, reports he did no asbestos mining or milling in 1977 and has transferred the rights, title and interest in his asbestos holdings in Trinity and Siskyou Counties to a California company. Mr. Adams expects to be in the business in 1978, working a more-accessible property in Trinity County.

Vermont—Vermont Asbestos Group, Inc., owns and operates a 2300-acre asbestos quarry and mill at Belvidere Mountain in Lowell. Chairman J. J. Lupien advises the current projected rate of production at the mine is 40,000 tons per year. After a mine study by Harrison Western, ore reserves are estimated in excess of 12-million tons. Directors of the worker-owned operation voted in October to poll shareholders on whether or not they are willing to sell their stock for approximately $2300 per share. One of three known potential buyers is Norman Rolband, President of Sterling Trust Company, who represents a group of private investors willing to pay $4.8-million for the stock which amounts to a gross figure of $2400 per share. There are just under 2,000 shares of stock which sold for $50 each when the company was formed in 1975. VAG President J. Hammang told shareholders he would pay about $5-million for all outstanding shares, which is around $2500 a share. Also, D. L. Pisciotta, of Utah, reportedly told the miners their stock was worth $3200 a share, which would indicate a purchase price of $6.4-million.

Arizona—Jaquays Asbestos Corporation mills low-iron Chrysotile near Globe, Gila County. The mineral is mined in the Tonto National Forest, some 30 miles away.

North Carolina—Nominal amounts of Anthophyllite are mined by Powhatan Mining Corporation at Newdale. The company's mill is located in Baltimore.

Texas—The amphibole variety of asbestos called Richterite is contained in the Diablo Asbestos Deposit near Van Horn. According to Lewter Oil Company, the deposit is suitable for strip mining.

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 22 of 67
Published by AsbestosClaims.Law
asbestosclaims.law/library/12704/22

Alaska—This time last year Doyon Ltd., Fairbanks, and Asarco Inc. had entered into a lease-partnership agreement for the possible mining of asbestos at a deposit located near Eagle, Alaska, some 60 miles west of the Clinton Mine in the Yukon Territory, operated by Cassiar Asbestos Corporation Ltd. Latest reports indicate the property is subeconomic.

CANADA

The Canadian Mining Industry ranks third highest in the world, surpassed only by the United States and the Soviet Union. A mainstay of Canada's economy, the nation's mining companies produce over 60 commodities which are shipped to nearly 100 countries. Our changing world and Canada's currently non-progressive economy were discussed in The Northern Miner's Annual Review issue by M. A. Upham, President of The Mining Association of Canada. Mr. Upham related the Association's belief that both the Federal and Provincial Governments of Canada should back off in taxation of the mining industry and implement a special five-year incentive program for new mines and related project expansions, thereby contributing substantially toward a more positive domestic economic environment.

Canada continues as the *major supplier of asbestos* in world markets, with 95% of her production exported. Quebec produces over 80% of total Canadian output. As the leading producer, Canada sets world standards for the Industry and is in position to establish prices to keep pace with rising costs.

Primary producers' shipments of asbestos (including tonnage for own use) for the year ended August 1977 were 1,700,221 short tons, 9.3% over the prior 12-month period but 10.8% less than the year ended August 1975. The value for the latest annual period was approximately $462.5-million. A breakdown by Quebec grades for the latest period, with percentage differences from the prior year, is as follows: Group 3—19,811 short tons, up 5.6%; Group 4—353,943 tons, up 13.8%; Group 5—150,866 tons, up 9.8%; Group 6—252,339 tons, up 6.1%; Group 7—589,960 tons, down 6.3%; Group 8—3 tons, down 97%. Canadian producers' shipments of asbestos for the past six years were as follows:

CANADIAN ASBESTOS PRODUCERS' SHIPMENTS (SHORT TONS)

Year To	Quebec	Other*	Total
8/77	1,366,922	333,299	1,700,221
8/76	1,260,254	294,944	1,555,198
8/75	1,544,750	360,485	1,905,235
8/74	1,568,742	297,550	1,866,292
8/73	1,483,070	322,748	1,805,818
8/72	1,366,064	328,110	1,694,174

*British Columbia, the Yukon, Newfoundland and Northern Ontario.

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 23 of 67
Published by AsbestosClaims.Law
asbestosclaims.law/library/12704/23

Exports of asbestos from Canada totaled 1,663,882 short tons, valued at $548,925,000, for the twelve months to August 1977, up 12.3% in quantity and 32.3% in value over the prior like period. Compared with the year ended August 1975, the tonnage showed an increase of 20% and the value was up a whopping 77.6%. For the past six years ended in August, the value per ton of asbestos exported, based on data issued by Statistics Canada, is calculated at $329.91 in 1977, $280.19 in 1976, $223.03 in 1975, $170.68 in 1974, $143.01 in 1973 and $142.64 in 1972. For the period January-August 1977, 36.2% of Canada's exports of asbestos were shipped to the United States, 29.5% to Western Europe, 15.8% to Asia, 8.5% to South and Central America, 4.5% to Oceania, 2.4% to Eastern Europe, 1.6% to the Middle East and 1.5% to Africa. Canadian exports by fiber grade for the past six years were as follows:

CANADIAN ASBESTOS EXPORTS (SHORT TONS)

Year To	Crude	Milled 3	Milled 4 & 5	Shorts 6-9
8/77	21	28,103	806,793	828,965
8/76	194	22,338	698,612	760,205
8/75	303	26,458	706,876	652,405
8/74	16	32,708	854,491	892,897
8/73	46	31,039	829,874	962,657
8/72	62	29,546	683,533	800,353

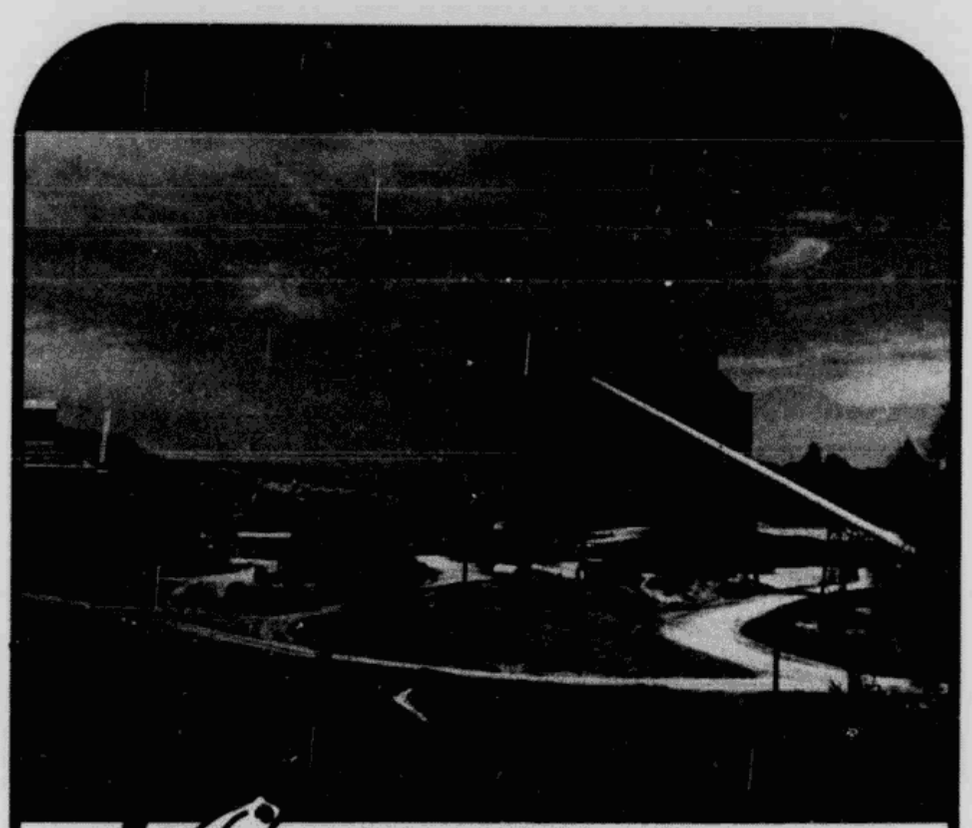
Total quantities and values of Canadian exports for the above six years are: 1977—1,663,882 short tons, valued at $548,925,000; 1976—1,481,349 tons, $415,064,000; 1975—1,386,043 tons, $309,125,000; 1974—1,780,112 tons, $303,806,000; 1973—1,823,616 tons, $260,856,000; 1972—1,513,494 tons, $215,816,000.

According to the Department of Energy, Mines and Resources, Ottawa (MR155, Mineral Policy Series, Asbestos), Canadian asbestos producers will be meeting an *estimated demand by the year 2000* of over 3.5-million metric tons, assuming, of course, that Canada maintains her current share of world markets. The Department also estimates that producers' current ore reserves of asbestos total 1.122-billion metric tons and producers' prospective reserves are 260-million tons. This indicates possible ore reserves of 1.382-billion tons, or 48-million tons of recoverable fiber.

Quebec Asbestos Mining Industry

The Quebec Asbestos Mining Association reports that *Quebec still leads the Canadian Provinces as an asbestos producer,* with 81% of deliveries originating from eight mines (six open-pit and two underground) located in the Eastern Townships. Some 6500 workers produce 150 types or mixtures of fibers for sale to over 80 countries. Asbestos Corporation Ltd. is Quebec's largest independent producer and Canadian Johns-Manville Co. Ltd. is the biggest captive producer. Demand is softening for Grades 3-7 and, as a result, the Quebec mines are reducing their work weeks from 6 days to 5 days. The softening in demand appears to be due primarily to poor world economic conditions, and to a lesser degree,

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 24 of 67
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to the impact of environmental problems. For the first time in several years, Quebec mines have inventories of their products, especially of the spinning grades.

On October 21, Quebec Premier Rene Levesque confirmed that the *Provincial Government* would take all necessary steps to become the *majority owner of Asbestos Corporation Ltd.* and if unable to do so would have to make a political decision on how it could attain control. General Dynamics Corporation, which owns 54.6% of Asbestos Corporation, terms Asbestos Corporation "a valued member of the General Dynamics family" and has no desire to sell its interest. So that General Dynamics will have specific numbers which can be attested to in court, if necessary, it has hired SNC Inc., the Montreal engineering and design firm, to evaluate the physical assets of Asbestos Corporation. Also engaged were David S. Robertson & Associates, a geological and mining engineering firm in Toronto, to evaluate reserves and the cost of exploiting them, and Arthur D. Little Co., Cambridge, Massachusetts, to assess the world asbestos market and the potential of the General Dynamics unit. The investment banking firm of Lazard Freres & Co. will supervise the assessment. Representing the Government of Quebec is the investment banking firm of Kidder, Peabody & Co.

During a recent speech to asbestos workers in Thetford Mines, Premier Levesque explained that the *new Parti Quebecois aims* to increase the amount of raw asbestos used in the manufacturing industry in the Province from the present 3% to at least 20% of the output of Quebec asbestos mines, to have adequate French-Canadian representation at all levels of the industry and to improve health and safety conditions at the mines and mills. The Premier believes the basis for growth is the continuing demand from Free World countries, especially the Third World developing countries where asbestos-cement products are finding an ever-increasing usage. It is difficult to understand how it would be more economical for these developing countries to purchase ready-made asbestos-cement products and pay shipping costs from Canada than to purchase the necessary raw materials and produce their own finished products, locally.

Another move by the *Provincial Government to intervene in the Quebec asbestos industry* was the introduction of Bill 70 in late November in the Quebec National Assembly. The bill would create the Societe Nationale de l'Amiante (a Crown corporation) with an authorized capital of $250-million. Its purpose would be research, development and production of asbestos deposits, including the marketing of the production and all activity of an industrial, manufacturing or commercial nature relating directly or indirectly to the transformation of asbestos fiber.

Canadian Asbestos Mines

Space limitations prevent giving full details on each and every asbestos mining operation in Canada. The ensuing information covers the most important happenings of the past year. Past Review Issues of ASBESTOS give more complete background material on the Canadian Asbestos Mining Industry.

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 26 of 67
Published by AsbestosClaims.Law
asbestosclaims.law/library/12704/26

Abitibi Asbestos Mining Co. Ltd.—By mutual consent, Abitibi and Lake Asbestos of Quebec Ltd., a subsidiary of Asarco Inc., have suspended discussions concerning the possible development of the Abitibi property at Amos, Quebec. The talks were halted pending clarification of the new Quebec Government's plans concerning the asbestos industry in the Province. Reportedly, Brinco Ltd., which owns about 60% of Abitibi, has not lost interest in the property.

Advocate Mines Ltd.—In its Statement of Earnings for the nine months ended September 30, 1977, Advocate Mines reported a net earnings figure of $2.5-million, 24% less than in the same period a year earlier. Other vital statistics, with percentage changes from the corresponding period in 1976, are: 1.5-million metric tons of ore were crushed (up 1.4%); 58,191 tons of fiber were produced (down 2.9%) valued at $26-million (up 4%); 43,611 tons of fiber were shipped (down 35%); percentage recovery from ore crushed was 3.96% vs. 4.13% and waste-to-ore ratio was 4.60:1 vs. 4.08:1. Advocate operates under a 1958 financing agreement between Canadian Johns-Manville Co. Ltd. (Mine Manager), Amet Corporation, Inc., and Compagnie Financiere Eternit S.A.

Asbestos Corporation Ltd.—This mining company owns the underground King-Beaver Mine, the open-pit British Canadian 1 and 2 Mines and the Normandie Mine, whose ore reserves are now exhausted. Asbestos Corporation's annual production capacity at these Thetford facilities is 230,000 tons. Employment amounts to 2210 people. About $30-million is to be spent over the next few years to improve working conditions at the company's plants in Quebec. The company also mines ore at Asbestos Hill, New Quebec, the concentrate from which is shipped to the processing plant at Nordenham, West Germany. This operation employs 140 people and is capable of producing 100,000 tons per annum. Consolidated net earnings for the nine months to October 1, 1977, amounted to $15-million or $5.32 per share, compared with $16.6-million or $5.85 per share in the same period a year ago. Asbestos Corporation is 54.6% owned by General Dynamics Corporation, St. Louis, Missouri.

Bell Asbestos Mines Ltd.—The Bell Mine, which is now an underground facility, has been operating in Thetford Mines since 1877. Production capacity is 60,000 tons a year, mainly of Grades 3-6. Employment is 485 people. Bell Asbestos Mines, a subsidiary of Turner & Newall Ltd., England, is investing an additional $3.7-million in its facilities to increase fiber production by 28%. This follows the successful completion of a $10-million mill modernization program and the installation of a $1.7-million unit to improve tailings disposal facilities.

Canadian Johns-Manville Co. Ltd.—C.J-M is the largest asbestos-producing company in Quebec, employing 2695 people at its mining and manufacturing facilities. The Jeffrey Mine is the largest open-pit asbestos deposit in the western world, producing Grades 4, 6 and 7. Johns-Manville Corporation, the parent company, has decided to proceed with its previously-announced $77-million, five-year plan to develop its facilities at Asbestos, Quebec. Essentially the objective is to ensure, over the next quarter century, optimal annual asbestos production of 700,000 short tons at the Jeffrey Mine. The program, which had been announced last year, was under reconsideration due to the uncertainty caused by Premier

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 27 of 67
Published by AsbestosClaims.Law
asbestosclaims.law/library/12704/27

Levesque's proposed actions involving the Quebec asbestos industry. . . . The Quebec Department of Natural Resources is undertaking a pilot project to recover nickel-bearing ore from asbestos tailings. The project is being done in cooperation with Canadian Johns-Manville and the Provincial Mineral Research Center.

Carey-Canadian Mines Ltd.—This wholly-owned subsidiary of Jim Walter Corporation produces short-fibered Chrysotile, particularly Grade 7, at its mine and mill at East Broughton, Quebec. The company employs 550 people and its annual production capacity is 230,000 tons. Improvement in its open-pit operation and a $3-million air purification program have just been completed.

Cassiar Asbestos Corporation Ltd.—Chrysotile is produced at the Cassiar Mine, McDame Mountain, British Columbia, and the Clinton Mine in the Yukon Territory. The Clinton facility will be phased out late next year when ore reserves will have been depleted. The Cassiar operation has a life span of some 20 years and should yield about 100,000 tons of fiber this year. Minable ore reserves at the beginning of 1977 were 18-million tons. A new changehouse was opened in May and commissioning of a new air system for the mill will take place during the first quarter of 1978. Exploration diamond drilling has been resumed at Kutcho Creek, northern British Columbia. Fiberized serpentine has been encountered in five of the six holes thus far completed. . . . President P. Steen recently announced that Cassiar has established its own Marketing Department. Mr. Steen says: "While we have maintained a close contact with the market since we started operations over 25 years ago, we had assigned the function of Sales Representative to Bell Asbestos Mines Ltd., and they have done well for us in the past." J. D. Gillis, the new Manager Marketing, reports the marketing changeover reflects an overall corporate determination to meet the challenges of the 70's and 80's. He further said that "Cassiar has set its sights to meet the highest standards of fiber quality and transportation as well as establish a close working relationship with customers and agents throughout the world." Manager Sales is J. W. Oughtred who has a good knowledge of asbestos and its uses and is experienced in fiber sales.

Consolidated Midvale Exploration Ltd.—This company still retains five unpatented asbestos prospect claims in Seign St-Joseph, Par St-Frederic, District of Beauce, Quebec. According to Corporate Secretary J. T. Tokarsky, no further work has been done on the claims since 1975 and none is contemplated in the near future.

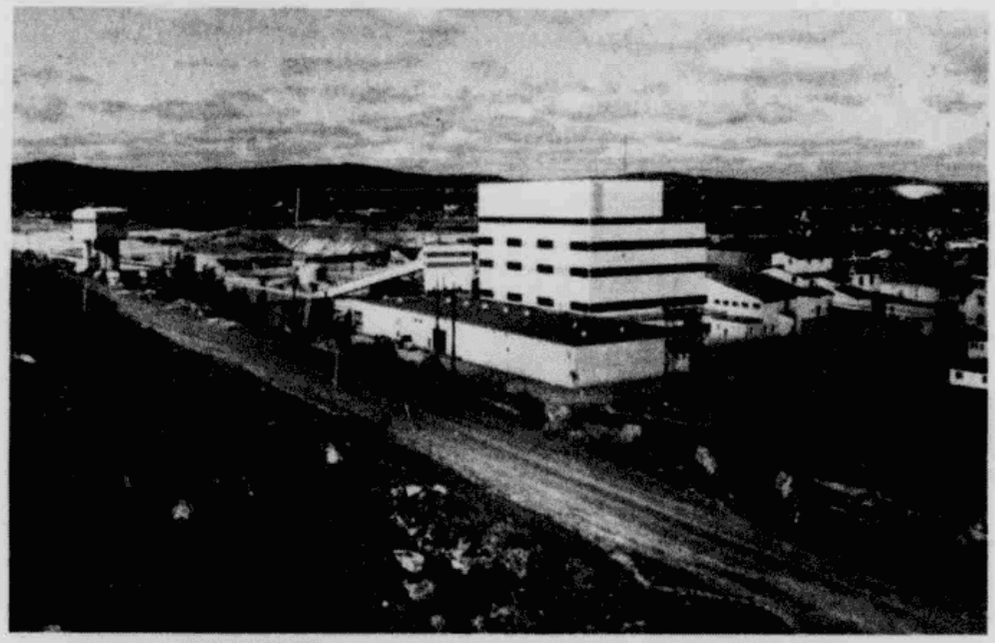
Great Northern Pulp & Paper Group Ltd.—President T. D. Howes reports that Geologist J. Koski has spent the summer studying the Daffodil asbestos property in Deloro Township, Cochrane District, Ontario. Although the company is awaiting the geological report, it has said that the extension of several of the fiber-bearing zones both to the North and South have been traced out, which it feels greatly enhances the potential of the property. Mr. Howes, who hopes to soon have an announcement regarding financing, feels the present unsettled conditions in Quebec as they relate to the Asbestos Industry makes the Daffodil deposit, being in Ontario, of particular interest.

Hedman Mines Ltd.—This company, owned by Gulf & Western Industries, Inc., operates a Chrysotile open-pit mine and mill near Matheson, Ontario. Shipments of 16,009 tons of Hedman cationic fiber were reported

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 28 of 67
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for the year ended July 31, 1976. President J. J. Mangan reports that proven ore reserves to 300 feet vertical total 10.3-million tons, sufficient to yield over 5-million tons of fiber and that much greater tonnage persists to 740 feet vertical and beyond.

Hollinger Mines Ltd.—This mining firm has done some diamond drilling at its asbestos discovery on the Newton Township property of its Rundle Gold Mines, located in the Horwood Lake-Rush Lake area, near Timmins, Ontario. Of real significance are the comments issued by President A. L. Fairley, Jr., that it is becoming increasingly apparent that tax policies at Federal and Provincial levels are exercising an inhibiting effect on the high-risk investments necessary to find new mineral orebodies in Canada to replace present orebodies as they are exhausted. He said that unless action is taken now to reverse the effects of present policies, the early 1980's will witness the beginning of a decline in mineral production, direct and indirect tax revenues, employment and export earnings from the mining industry.

Lake Asbestos of Quebec Ltd.—This wholly-owned subsidiary of Asarco Inc. is an important producer of Chrysotile Grades 4-6 at its mining operation at Black Lake and at the National Mines Division, Thetford Mines. Employment totals 1050 and annual production capacity is 260,000 tons. $6-million is being spent to improve the workplace environment at Black Lake and to modernize and initiate an air purification program at National.

Lynx-Canada Explorations Ltd.—Chairman T. P. Matthews reports that Lynx-Canada continues to hold the original asbestos prospect in Deloro Township, south of Timmins, Ontario. The company did not negotiate any exploration agreements on these claims in 1977 but hopes to do so in 1978.

McAdam Mining Corporation Ltd.—Like most Quebec asbestos producers, McAdam Mining is awaiting more specific data from the Provincial Government concerning its asbestos policy. The company has a joint option agreement with Rio Tinto Canadian Explorations Ltd. toward possible development of its Chrysotile property at Roberge Lake, McCorkill Township, near Chibougamau, Quebec. The project is in the advance feasibility stage with bulk samples having been processed by the Quebec Department of Natural Resources. Just five miles away, at McKenzie Bay, Roy Township, McAdam and Campbell Chibougamau Mines Ltd. are jointly exploring a 96-claim, asbestos-bearing property held by Campbell. Preliminary work was done in 1976 and a 10,000-foot drilling program was planned in 1977.

Pathfinder Resources Ltd.—Based on recommendations from Watts, Griffis and McOuat Ltd., Pathfinder is planning several moves toward reaching a production decision regarding its Lili asbestos property, a 750-acre site in Cleveland Township, Richmond County, Quebec. The property is about 5 miles southwest of the town of Asbestos and is an extension of the Thetford Mines complex. Chrysotile Grades 4-7 are present and a 100,000-tons-per-year-plus operation is envisioned. President T. T. Sahaidak reports that further drilling and blasting to obtain rock and fiber samples for study are to be undertaken.

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 30 of 67
Published by AsbestosClaims.Law
asbestosclaims.law/library/12704/30

United Asbestos Inc.—Early this year United Asbestos was placed in default by bondholders and its bank and, consequently, the asbestos mine at Midlothian, Ontario, ceased operating. The Mercantile Bank of Canada Ltd. is a major bondholder along with Kanematsu-Gosho (Canada) Ltd., United's distributor in Japan. Last month secured and unsecured creditors approved an amended proposal under the Bankruptcy Act which provides for payment in full to all creditors of the company out of annual proceeds of the joint venture with Lake Asbestos of Quebec Ltd. at Black Lake. President P. M. Malouf said the proposal is subject to ratification by the Quebec Superior Court. He also estimated proceeds from the joint venture at C$9-million.

Meanwhile, Woodsreef Minerals Ltd. and Labrador Mining and Exploration Company, an associate of Hollinger Mines Ltd., are jointly studying the possibility of acquiring the inactive operation. Laboratory and other tests are currently underway at the Woodsreef asbestos facility in Barraba, Australia.

UNION OF SOVIET SOCIALIST REPUBLIC

Unofficial figures from a variety of sources indicate that the USSR has surpassed Canada for the third consecutive year as the *leading world producer of asbestos*. Estimated output for 1977 is 2.4-million metric tons compared with a similar quantity in 1976 and 1.4-million tons in each of the years 1974 and 1973. One industry expert predicts the Soviet Union will reach a production total of 3.2-million tons by 1981 and 3.5-million tons by 1986. As the following table will show, the Uralasbest Combine at Asbest, near Sverdiovsk, in the Ural Mountains, is the largest asbestos mine in Russia, having produced approximately 73% of the country's total output in 1976.

ESTIMATES & PROJECTIONS OF USSR ASBESTOS PRODUCTION

	1975	1976	1981	1986
Uralasbest Combine	1,250,000	1,990,000	1,990,000	1,990,000
Dzhetygara Combine	360,000	650,000	760,000	760,000
Tuvaasbest Combine	205,000	100,000	225,000	225,000
Kiembay Combine	. .	. .	250,000	500,000
	1,815,000	2,740,000	3,225,000	3,475,000

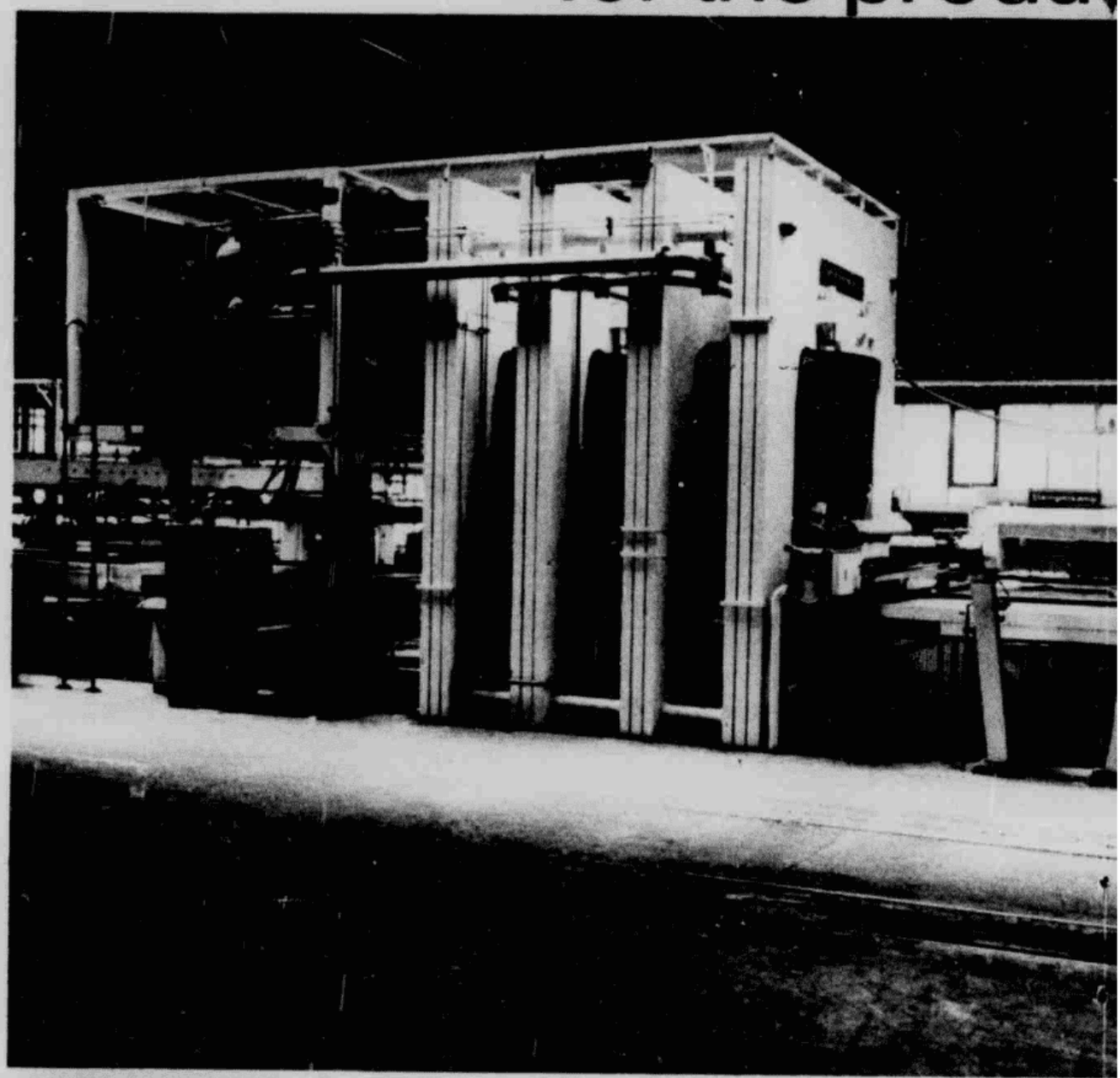
The *Dzhetygara Combine* at Kustanay Oblast', Kazakhstan, is the second largest producer in the USSR, followed by the Tuvaasbest Combine at Ak-Dovurak, near Krasnoyarsk in the Tuva Autonomus Republic in South Central Siberia. The Soviet asbestos mining industry is producing Chrysotile Grades 3-7 and is continuing to expand capacity at all of its facilities.

The *Kiembay asbestos deposit* at Orenburg Oblast', on the eastern slopes of the southern Urals is now being developed. It is to be the second of ten joint investment projects approved under Comecon's Comprehensive Program. The complex is to be built in two stages, the first to be completed by 1979. Full production is to be reached by 1982 at which time its output will be shared among the Comecon members in proportion to

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 31 of 67
Published by AsbestosClaims.Law
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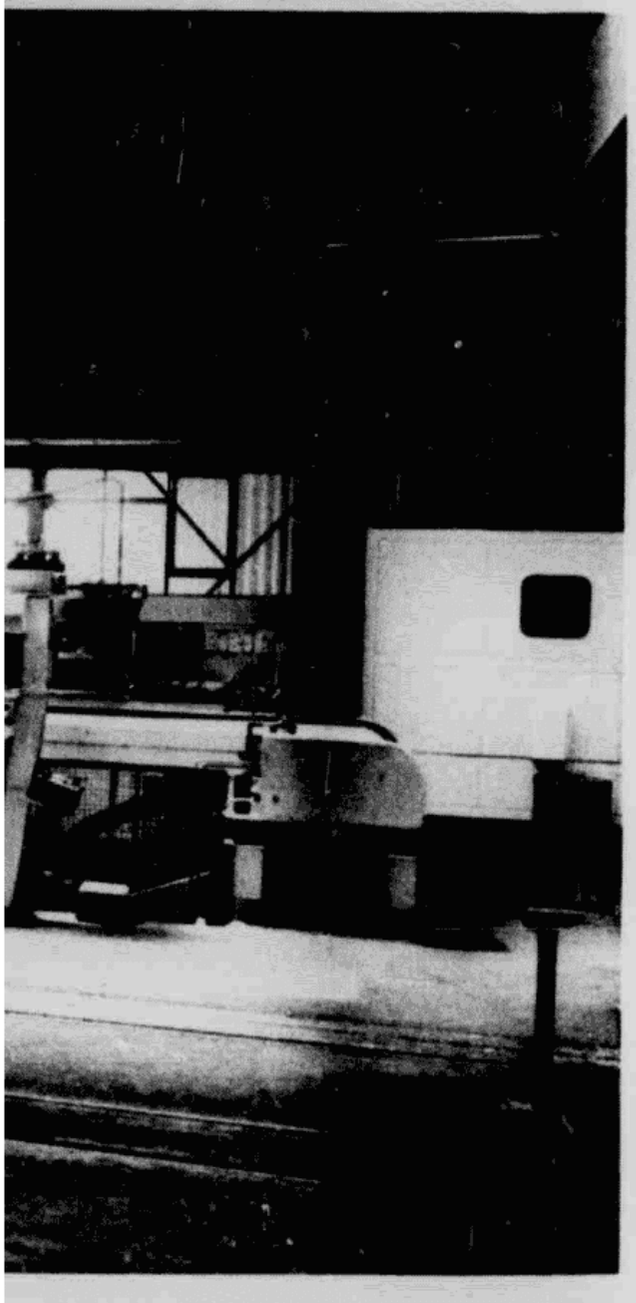
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their construction contribution. According to the Mining Journal, in order of their contribution, the Comecon countries involved are Poland, Bulgaria and East Germany (equal shares), Romania, Czechoslovakia and Hungary.

In addition to current expansions, the *Molodezhyy asbestos deposit* was designated in 1974 for development when the western section of the Baykal-Amur Railway is built. Also a study of the *Sayan asbestos deposit*, situated on the border of Krasnoyarsk Kray and Tuva ASSR, resulted in an estimated reserve of 6-million tons. A combine is to be built there, capable of producing 200,000 tons of asbestos per year. Development is also planned at the *Molodezhnoye and Il 'chirsk deposits* in Buryat.

Because its domestic demand for asbestos has been high, the *impact of Russian production on the Free World* has not been felt in the past to any great degree. However, the Soviets are making a strong competitive bid to replace Canadian supplies in Eastern Europe and in the United States. As the USSR begins to make inroads in world markets it could quite conceivably become a leading supplier of asbestos and as such have a great effect on future prices. Our records show that the USSR probably exported 550,000 metric tons of asbestos in 1976 and is projected to export 700,000 tons in 1981 and 850,000 tons in 1986.

REPUBLIC OF SOUTH AFRICA

The Republic of South Africa continues as the world's third largest producer of asbestos and the main supplier of Amosite and Crocidolite (Blue). All of the South African Asbestos mines are located in the Cape Province and the Transvaal. As will be noted from the following statistical table, *South African asbestos production* for the year ended March 1977 was 9.7% higher than the like period in 1976 and 11.6% ahead of the twelve months to March 1975. Output of Cape Blue was ahead of 1976 by 17.4% and over 1975 by 17.6%; Chrysotile rose 12.4% over 1976 and 29.8% over 1975; Amosite was down 8% from 1976 and down 16.6% from 1975; and Tremolite/Anthophyllite decreased 7% from 1976 but increased a significant 124.4% over 1975.

SOUTH AFRICAN ASBESTOS PRODUCTION (METRIC TONS)

Variety	Year To March 1977	Year To March 1976	Year To March 1975	Year To March 1974	Year To March 1973
Cape Blue	189,241	161,139	160,854	149,521	157,499
Chrysotile	113,834	101,241	87,697	72,087	62,735
Amosite	78,244	85,017	93,829	102,419	102,854
Tremolite	1,726	1,855	769	640	25
Transvaal Blue	. .	. .	. .	1,597	3,733
	383,045	349,252	343,149	362,264	326,846

Exports of asbestos from South Africa continue to increase. During the past six years ending March the values were: R123,868,019 in 1977, R88,589,641 in 1976, R58,068,842 in 1975, R51,474,972 in 1974, R44,641,131 in 1973 and R35,153,095 in 1972. According to Standard

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Bank Review the value of South Africa's exports of asbestos for the first six months of 1977 increased about 20% over that for the same period in 1976. Comparing the calendar years 1976 vs. 1975, the Republic exported 26.9% more asbestos in the later year, valued 28.9% higher.

SOUTH AFRICAN EXPORTS OF ASBESTOS

Variety	Year 1976		Year 1975	
	Metric Tons	Value	Metric Tons	Value
Cape Blue	380,849	R 74,265,526	257,273	R 50,168,317
Chrysotile	154,268	14,346,944	112,415	10,454,554
Amosite	154,562	23,184,299	173,165	25,974,773
Tremolite	818	120,990	1,406	208,036
	690,497	R111,917,759	544,259	R 86,805,680

South African Asbestos Mines

Cape Industries Ltd. produces Amosite asbestos at the *Penge and Kromellenboog Mines* and Cape Blue asbestos at the *Pomfret and Koegas Mines* and in the Postmasburg area. Annual capacity at Penge is an estimated 100,000 tons per year. Production at the Pomfret and Koegas operations is a combined 55,000 tons annually.

The Federale Mynbou/General Mining Group is one of the largest mining organizations in the Republic. The Group manages *Griqualand Exploration and Finance Co. Ltd. (Gefco)* and renders administrative, secretarial and technical services to *Msauli Asbes Ltd.* Gefco produces over 30% and markets nearly half of the total world ouput of Blue (Crocidolite) asbestos. In the Kuruman area of the Northwestern Cape Province it operates ten mines, six sorting plants and four main milling complexes. Gefco fiber is sold on world markets through wholly-owned subsidiaries, i.e., *Central Asbestos Co. Ltd., Central Asbestos (South Africa) (Pty) Ltd., Putten's Asbestos Corporation of South Africa (Pty) Ltd.* and the management company. Production of Blue asbestos in 1976 reached 57,483 tons, 18% higher than in 1975. An expansion program is underway at Gefco's four major plants, the result of which will be higher efficiency, substantially better utilization of ore reserves and increased tonnages. Exploration continues on a large optioned area, mostly in the Bophuthatswana homeland. . . . *Msauli Asbes* mines Chrysotile in the Barberton District, Eastern Transvasal. Output of Grades 4-7 totaled 83,936 tons in 1976, 14% over 1975. A development program is proceeding to further improve flexibility and increase the milling rate. Plans for 1977 were to complete the pressure packing and unitizing facilities, to continue the shaft-sinking program and to provide fiber grading facilities for tailings disposal and dust suppression equipment. Surface and underground drilling in 1977 was to be directed to detailed delineation and evaluation of presently-known orebodies.

Eternit—Asbestos Investments (Pty) Ltd. produces an estimated 60,000 tons per annum of Crocidolite in the Northern Cape Province via two subsidiaries. *Kuruman Cape Blue Asbestos (Pty) Ltd.* operates two

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 35 of 67
Published by AsbestosClaims.Law
asbestosclaims.law/library/12704/35

mills at Whitebank, a mine and mill at Klipfontein and the Langley Mine in the Vryburg District. The final product is bagged and shipped to *Danielskuil Cape Blue Asbestos (Pty) Ltd.* at Ouplaas.

Dublin Consolidated Asbestos Mines (Pty) Ltd., a principal subsidiary of *Turner & Newall Ltd.*, mines Amosite near Pietersburg, in the Northern Transvaal. A portion of these rights are tributed to *S. A. Kirton (Pty) Ltd.* Dublin also owns the *Amianthus Mine* in the Nelspruit District, Eastern Transvaal, tributed to *Kaapsehoop Asbestos (Pty) Ltd.*

Valley Asbestos Mines (Pty) Ltd. markets an estimated 10,000 metric tons of Crocidolite a year from combined operations in the Postmasburg District, Cape Province, of *Groenwater Asbestos Mining Co. (Pty) Ltd., Postmasburg Cape Blue Asbestos (Pty) Ltd. and Rooipoort Blue Asbestos (Pty) Ltd.*

Consolidated African Mines Ltd. has the capacity to produce some 8,000 tons of Grades 4-7 in the Barberton District of the Transvaal. Consolidated's principal sales agent is *Commonwealth & Overseas Asbestos Corporation (Pty) Ltd.*

RHODESIA

Official statistics on the Rhodesian asbestos industry are still unobtainable because of the Unilateral Declaration of Independence which has been in effect since November 1965. It is believed, however, that *Rhodesia remains the fourth largest asbestos producer in the world,* mostly of Chrysotile. We estimate that the country has an annual output of somewhere between 250,000 and 350,000 tons of fiber per year. *Turner & Newall Ltd.* has interests in one of the major mining firms in Rhodesia, but it has been cut off from that operation since shortly after the UDI. . . . Annual production is to be increased at the *Kudu Asbestos Mine* from about 50,000 tons to 250,000 tons. The new mill was to be operational by mid-1977. . . . An accidental discovery of a *new asbestos orebody* at a mine near Gwanda came about during shaft-sinking operations in the new section of the existing facility. The mine owner anticipates that ore reserves between the old and new properties give the mine a life of six years at a milling rate of 120,000 metric tons per month. . . . According to Mining In Rhodesia, there are six mining companies operating in the country. *Pangani Asbestos Mines (Pvt) Ltd.*, Filabusi, runs the Pangani Mine at Winnifred, Bulawayo, the Vanguard Mine at Clifton, Gwelo, the Boss Mine at Tokwedale, Victoria; and a Central Fiber Plant at Oreti Siding, Gwelo. *Rhodesian & General Asbestos Corporation (Pvt) Ltd.*, Shabani, operates the Shabani Mine at Shabani Township, Gwelo, and holds mining leases at Crown Land in Victoria. *Kudu Mine (Pvt) Ltd.*, Bulawayo, has the Kudu Mine at Essexvale Estate and the Wynnes/Wynnes South Mine at Drumbulchan, both in Bulawayo. In addition, *A. D. Theron and Sons (Pvt) Ltd.*, Gwanda, runs the Thornwood Mine at Thornwood Block, Bulawayo; *D.S.O. Asbestos (Pvt) Ltd.*, Mashaba, runs the D.S.O. Mine at Crown Land, Victoria; and the *Elenem Syndicate,* Bulawayo, has the Sihande Mine in Gwelo.

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 36 of 67
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Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 37 of 67
Published by AsbestosClaims.Law
asbestosclaims.law/library/12704/37

AUSTRALIA

Chrysotile Corporation of Australia Pty. Ltd., a subsidiary of *Woodsreef Mines Ltd.*, has been steadily increasing asbestos production since the start of operations in February 1972 at the Woodsreef Mine at Barraba, New South Wales. Total output from February 1972 through June 1977 amounted to 245,167.5 metric tons, as follows:

February to June 1972—	3,338	metric tons
Year to June 1973—	31,826	metric tons
Year to June 1974—	41,242	metric tons
Year to June 1975—	41,699	metric tons
Year to June 1976—	61,151	metric tons
Year to June 1977—	65,911.5	metric tons
	245,167.5	metric tons

Exports of asbestos from Australia reached 28,011 metric tons, valued at A$10,384,430 for the year ended June 1977. This compares with the two prior like periods of 38,139 tons, valued at $11,793,186, to June 1976 and 15,940 tons, valued at $3,728,676, to June 1975.

As of July 31, 1977, Woodsreef Mines Ltd. had unsold fiber stocks on hand with a book value of $376,467. As a contingency the fiber was carried at $122,000 less than its commercial value. A build-up in stocks of unsold fiber was anticipated during the last half of 1977; therefore, any unsold fiber was to be offered together with the forecast production for 1978 during the traditional marketing period in October and November 1977. Fiber stocks as of October 31, 1977, totaled 21,027 metric tons. . . . In the course of drilling at Barraba, a second unrelated zone carrying economic fiber was intersected. This zone will require further exploration. . . . The second stage diamond drilling program at Baryulgil was completed in March and a new exploration program consisting of percussion drilling and surface trenching was to commence in September. Exploration at Baryulgil has been temporarily deferred pending further study of new improved asbestos milling techniques currently being developed by Woodsreef. If successful, these new techniques would lead to increased recovery at Barraba and at any future mine at Baryulgil. . . . An exploration license area near Manila, N.S.W., 25 kilometers south of Barraba, is under investigation with the initial features considered significant in the localization of Chrysotile asbestos.

BOLIVIA

A semi-mechanized project was begun in 1975 at Cochabamba toward standardization and classification of fiber grades. Projections are that the facility should be producing 10,000 tons annually by next year.

BRAZIL

S.A. Mineracao de Amianto operates a Chrysotile asbestos mine at Cana Brava, 160 miles northwest of Brasilia, which accounts for some

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 38 of 67
Published by AsbestosClaims.Law
asbestosclaims.law/library/12704/38

95% of total Brazilian asbestos production. SAMA is controlled by *S.A. Tubos Brasilit* which, in turn, is owned by *Saint-Gobain-Pont-A-Mousson* and the *Eternit Group*. Reserves are estimated at 50-million tons of rock or 3.5-million tons of fiber. Annual production reached 95,000 metric tons valued at US$29,826,000 in 1976. Plans call for yearly output of 115,000 tons by 1979 and about 125,000 tons by 1980.

PEOPLES REPUBLIC OF CHINA

The Peoples Republic of China ranks 5th as a world producer of asbestos, mostly Chrysotile. Annual production has increased to an estimated 160,000 tons per year, principally from the *Shihmien (Asbestos) Mine* in the Szechwan Province. Reserves are calculated at 28-million metric tons and the product is said to qualify as a top-grade textile fiber. Reportedly there are eleven other asbestos mining operations in the PRC. According to the Engineering/Mining Journal, the PRC produces 4% of the world's asbestos, is producing a surplus of fiber, demand is rising and reserve potential is considerable.

COLOMBIA

L. A. Serna, President of *Minera Las Brisas S.A.*, Bogota, advises that engineering plans for the Chrysotile processing plant at Antioquia, near Campamentos, are about completed. Fiber production of 20,000 metric tons per year (including 2000 tons of the shorter Grades) should be reached by 1980. The project, which is currently valued at $24-million, involves foreign investors from Switzerland and the Republic of South Africa. *Eternit*, a Colombian asbestos-cement products manufacturer, is participating in the project. Reserves at Campamentos have been estimated at 8.4-million tons, capable of yielding some 400,000 tons of fiber. Colombia imported nearly 17,000 tons of asbestos in 1975.

CYPRUS

After several years of a rather steady level of production, output of asbestos in Cyprus for the year ended June 1977 rose 42.2% in quantity and 85% in value over the preceding like period. A six-year production picture is as follows:

Year to June 1977—45,135 short tons, valued at £4,955,921;
Year to June 1976—31,744 short tons, valued at £2,679,465;
Year to June 1975—33,582 short tons, valued at £2,360,880;
Year to June 1974—30,275 short tons, valued at £1,849,900;
Year to June 1973—29,402 short tons, valued at £1,725,120;
Year to June 1972—30,988 short tons, valued at £1,871,500.

Exports of asbestos from Cyprus for the calendar year 1976 rose 15.7% in tonnage and 55.4% in value over 1975, although a decrease was recorded from the year 1974, i.e.: 32,318 tons valued at £3,306,296 in 1976; 27,930 tons valued at £2,127,054 in 1975; 36,579 tons valued at

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 39 of 67
Published by AsbestosClaims.Law
asbestosclaims.law/library/12704/39

£2,085,035 in 1974; and 31,480 tons valued at £1,694,383 in 1973.

Cyprus Asbestos Mines Ltd. is the only producer of asbestos on the Island of Cyprus. At the Amiandos Mine in 1976, 5.6-million tons of rock were quarried compared with 4.8-million tons in 1975. One mill was in operation which treated 2.6-million tons of ore and produced 19,115 tons of fiber of long grades and 18,935 tons of short grades, totalling 38,050 tons. The company's daily employment averages 441 people, 16 of which are women.

GREECE

The *Hellenic Industrial Development Bank* is to establish a joint stock company to exploit the asbestos reserves and develop a processing plant at the Zidani asbestos property near Kozani. Envisaged is a 100,000-metric-tons-per-year production capacity which could earn for Greece an annual estimated $30-million in foreign exchange over a 20-year period. Reportedly the Government is seeking a partner for this venture.

ITALY

The Italian mining industry generally improved in 1976, after a decline in the prior year. Production of nonmetallic minerals increased 6% over 1975. Most of the asbestos produced in Italy is from the Balangero Mine, operated by *Amiantifera Di Balangero S.p.A.*, Milano. According to calculations of the U.S. Bureau of Mines, Italian output of asbestos was 164,788 metric tons, in 1976, 146,980 tons in 1975, 148,099 tons in 1974, 150,256 tons in 1973, 131,272 tons in 1972 and 119,568 tons in 1971. Amiantifera reports the following production figures: 147,968 metric tons in 1974, 150,150 tons in 1973, 130,937 tons in 1972 and 118,658 tons in 1971.

JAPAN

Chrysotile asbestos production in Japan was 4612 tons in 1975 vs. 5130 tons in 1974, 8255 tons in 1973, 9639 tons in 1972, 8830 tons in 1971 and 8130 tons in 1970, according to statistics published by Industrial Minerals. The U.S. Bureau of Mines gives total asbestos production in Japan as 5000 short tons in each of the years 1975 and 1974, 9000 tons in 1973, 14,000 tons in 1972 and 18,000 tons in 1971. Amosite has not been mined in Japan since 1972 when an output of 4788 tons was recorded against 266 tons in 1971 and 5014 tons in 1970.

MEXICO

Starting next year, *Concepcion Papalo* is to begin producing annually about 60,000 short tons of Chrysotile fiber, Grades 4-6, at its mine and mill in the Quicatlan District near Oaxaca. . . . Presumably *Sr. J. A. Rogue* still holds mining rights to the cross-fiber, Chrysotile property at Canon del Novillo, near Ciudad Victoria in the State of Tamaulipas.

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 40 of 67
Published by AsbestosClaims.Law
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Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 41 of 67
Published by AsbestosClaims.Law
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NEW ZEALAND

The following information was submitted by *Kennecott Copper Corporation*, as approved by *Lime and Marble Ltd.*, concerning the Pyke asbestos prospects in New Zealand. "Detailed surface geologic work continued and four core drill holes totaling 2037 feet were completed during the 1976-77 summer field season. Significant intercepts of Quebec Standard Groups 3 and 4 Chrysotile fiber were recorded. Further drilling is required to delineate and evaluate this cluster of deposits which occurs in an ultramafic belt within 12 miles of Big Bay on the West Coast of the South Island. Lime and Marble Ltd., of Nelson, New Zealand, which controls the property, is seeking a farm-in partner for further exploration and development. Kennecott Explorations (Australia) Ltd. has the right to a 20% participating interest in any commercial development."

SULTANATE OF OMAN

It has been reported by the U.S. Department of State that the Government of the Sultanate of Oman is seeking to develop mineral deposits in the northern part of the country. It appears that asbestos is present in commercially-producible quantities and if exploited could be used by local industry.

REPUBLIC OF THE PHILIPPINES

Records of the Department of Natural Resources, Bureau of Mines, Manila, show there have been no asbestos mines operating in the Philippines since 1971, although asbestos deposits do abound throughout the Republic. Several mining companies have asbestos reserves but, as yet, have not extracted the ore.

DEMOCRATIC REPUBLIC OF SUDAN

Test drilling has been undertaken to establish the extent and quality of asbestos deposits in the Ingessana Hills region, under an agreement between *Johns-Manville Corporation, the Gulf International Group of Kuwait and the Government of the Democratic Republic of Sudan.* A three-year, $3.6-million feasibility study is planned to determine the viability of constructing a plant to produce 100,000 metric tons of fiber per year for at least 20 years. The entire project is currently valued at $115-million. . . . *The Sudanese Government*, Southern Region, has retained a team of four British geologists to undertake mineral surveys in a 30,000-square-kilom-

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ACL Doc 12704 · Page 42 of 67
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eter-area in Southern Sudan. Under the £370,000 contract the group will search for a variety of minerals, including asbestos.

SWAZILAND

The asbestos reserves of Swaziland are currently being mined by *Havelock Asbestos Mines (Swaziland) Ltd.*, which is 60% owned by *Turner & Newall Ltd.* and 40% by the Swazi Nation. It has been reported these reserves will be exhausted by 1988 unless negotiations to acquire adjacent orebodies are successful. At least some of the adjacent mineral rights are held by *Lonrho Ltd.* During its latest fiscal year Havelock produced 38,600 metric tons of four standard grades of Chrysotile, 54% of which was shipped to the United Kingdom. The short-fiber recovery unit at the Havelock mill has been enlarged and modernized and an incline shaft is to be sunk to extract the remainder of the ore at the now completely-underground operation.

TAIWAN

Seven small asbestos mines operate in Taiwan, primarily producing the Actinolite variety, all for domestic use in the manufacture of plastics and as fillers and heat insulating compounds. Asbestos output in Taiwan totaled 2491 metric tons in 1976, 1737 tons in 1975, 2957 tons in 1974 and 5308 tons in 1973.

TURKEY

Adana Atermit and *Amyant Sanayii A.S.* operate two of the largest of six asbestos mining operations in Turkey. The Turkish asbestos mining industry has been expanded as a result of the recent purchase of a R1-million asbestos mill from *Asbestos Grading Equipment Company S.A. (Pty) Ltd.*, Johannesburg, Republic of South Africa. The plant includes mills, screens and cleaning equipment and will be used to process Chrysotile for local Turkish use, considerably reducing that country's dependence on asbestos imports.

YUGOSLAVIA

Mining Engineering has reported that after successful testing of ore from the *Stragari Asbest Mine* at Stragari, Serbia, a 15,000-tons-per-year mill has been planned. Yugoslavian asbestos reserves are said to amount to over 21-million metric tons of ore.

THIS REVIEW OF THE YEAR 1977 WILL BE CONCLUDED IN THE NEXT ISSUE AND WILL BE CONCERNED WITH THE ASBESTOS PRODUCTS MANUFACTURING INDUSTRY AND INDUSTRIAL HEALTH AND SAFETY ISSUES.

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 44 of 67
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Other representatives world-wide.

RETIREMENTS

Gaylord F. A. Brink—Vice President-Research and Environment, Asbestos Corporation Ltd., August 1, 1977.

Alex A. Cross—Group Environmental Consultant, Cape Industries Ltd.; Founding Member, U.K. Asbestos Information Committee and Chairman of its Environmental Control Committee; now Director General, International Asbestos Information Conference; retired from CIL June 30, 1977.

Dr. S. Holmes—Secretary, Asbestosis Research Council, United Kingdom, late 1977.

George Miller—Involved with export documentation for the worldwide marketing operation of Cape Asbestos Fibres Ltd., mid-1977.

William W. Oughtred—President and Chief Executive Officer, Asbestos Corporation Ltd., November 17, 1976.

Joseph R. Ralphs—Secretary and Treasurer, Atlas Asbestos Company Ltd., February 28, 1977.

Walter S. Scott—a Director and General Manager, Cape Asbestos Fibres Ltd., mid-1977.

F. Perry Wilson—Chairman and Chief Executive Officer, Union Carbide Corporation, December 31, 1976.

A. D. Woodford—a Director, James Hardie Asbestos Ltd. and Hardie-Ferodo Pty. Ltd., July 2, 1977.

DEATHS

Leslie Raymond Addison—February 6, 1977; was General Manager at the Penge Mine, Cape Abestos South Africa (Pty) Ltd.

Dr. Arthur Benson Cummins—March 10, 1977, age 81; following retirement in 1960 as Research Manager for Johns-Manville Corporation, he served as Senior Technical Consultant for the Quebec Asbestos Mining Association and as U.S. Department of State Consultant for the Federal People's Republic of Yugoslavia.

William L. Stribling, III—October 8, 1977, age 50; had been a Vice President and Group Executive for Jim Walter Corporation and Chairman of Carey-Canadian Mines Ltd.

Louis Ware—May 8, 1977, age 82; retired Chairman of the Board of International Minerals & Chemical Corporation.

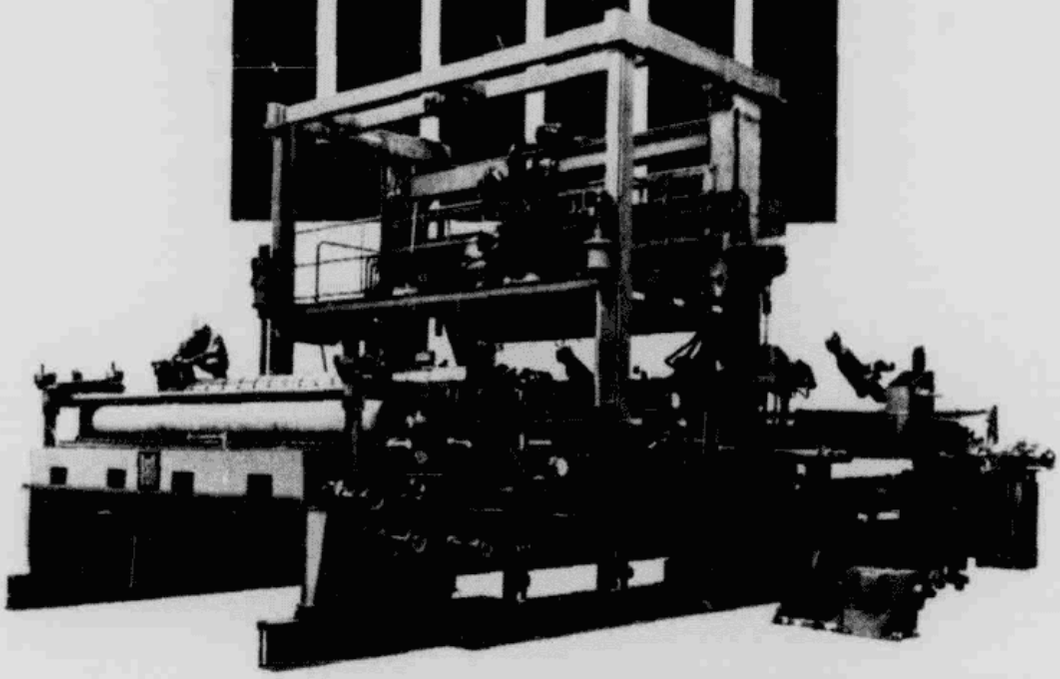
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CASSIAR ASBESTOS CORPORATION LTD.; page 55

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FRONT COVER ILLUSTRATIONS—1977

February—Fiber pads after wet filtration of Chrysotile spinning grades 1 and 5; supplied by D. H. Laubscher, B.Sc. (Eng), Ph.D., author of accompanying article titled "Chrysotile Asbestos Fiber Pads—A Wet Dispersion Process."

March—Advanced handling gear of Star Shipping A.S. permitting the simultaneous loading of twelve tons of bagged asbestos aboard the M/S Star Heranger at Trois Rivieres, Quebec; shipment was unitized via Marino Uni-Tie® slings, a product of Marino Systems, Inc.

June—Special pipe in use at the Biedermannsdorf plant of Eternitwerke Ludwig Hatschek, Vocklabruck, Austria; these walk-through tunnels have inside diameters of 2150 mm and wall thicknesses of 80 mm and are used in areas where ground water is a problem; it is possible inside the tunnels to install pipes for drinking water, sewage and steam heat as well as trays for electrical cables; the tunnels are made exclusively with TUBOFEZ™ Felts from Fezfabriken GmbH, Vienna, Austria.

September—Beams insulated with asbestos before and after Decadex Firecheck was applied; total encapsulation of the beams is an acceptable alternative to complete stripping of the insulation; the liquid membrane was researched and developed by Liquid Plastics Ltd., of Preston, England, and its North American Licensee, Pentagon Plastics USA Ltd., of Springfield, Virginia.

October—Part of the Fiber Laboratory at the Riries Asbestos Mine and the Mill Control Panel at the Elcor Asbestos Mine; both facilities are operations of Griqualand Exploration and Finance Co., Ltd., a public company managed by the Federale Mynbou/General Mining Group, Johannesburg, Republic of South Africa.

Still Available . . . .

ASBESTOS/A REMARKABLE MINERAL FIBER—Reference book on asbestos by Marion S. Badollet; presents technical information on asbestos minerals and data on the chemical, physical and optical properties of Chrysotile, Riebeckite, Anthophyllite and Tremolite; contains electron micrographs, thermal analyses and X-ray diffraction patterns. [80 pages; $20.00 per copy; advance payment required; order from ASBESTOS Magazine]

CHRYSOTILE ASBESTOS TEST MANUAL, 3RD EDITION—Prepared jointly by the Asbestos Textile Institute, Inc., and the Quebec Asbestos Mining Association; provides 34 standard methods for testing the physical and chemical properties of Chrysotile asbestos fiber. [$18.95 to the U.S., Canada and Mexico; $21.95 to all other countries; place orders with ASBESTOS Magazine]

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ACL Doc 12704 · Page 48 of 67
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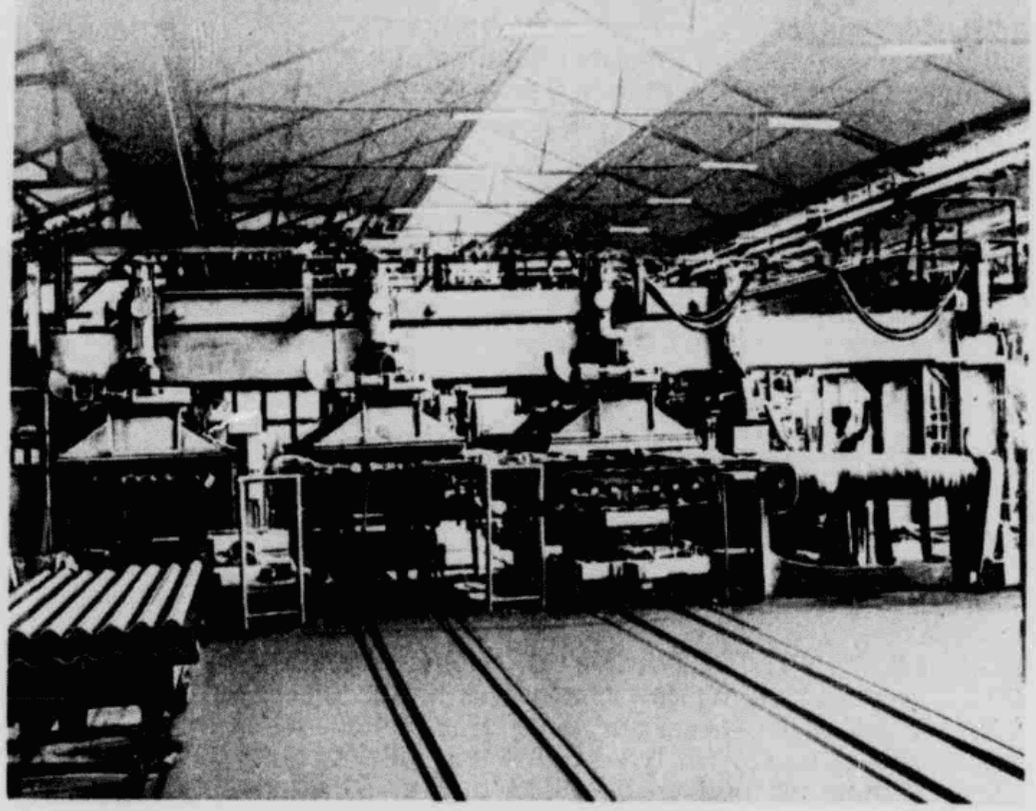
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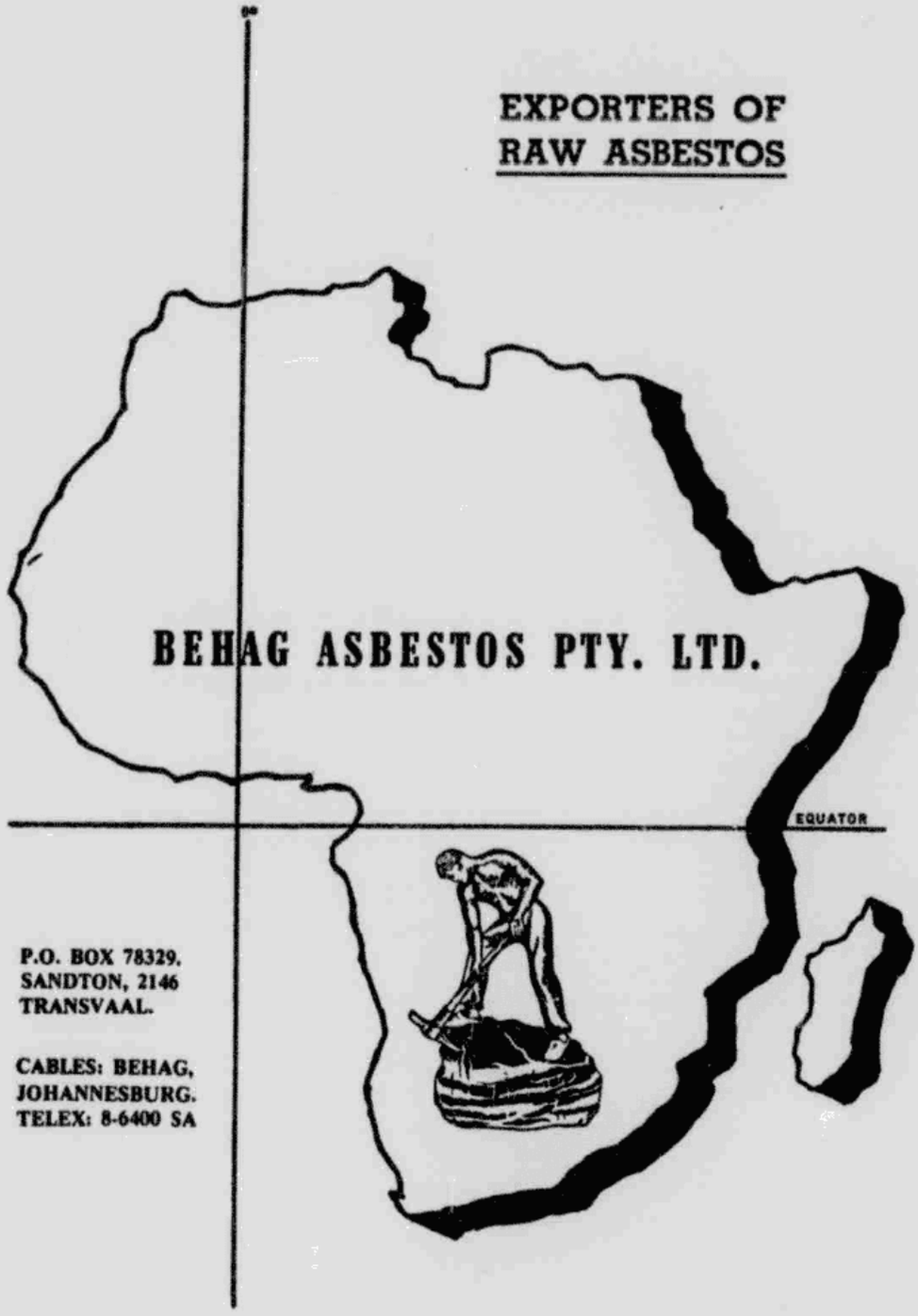
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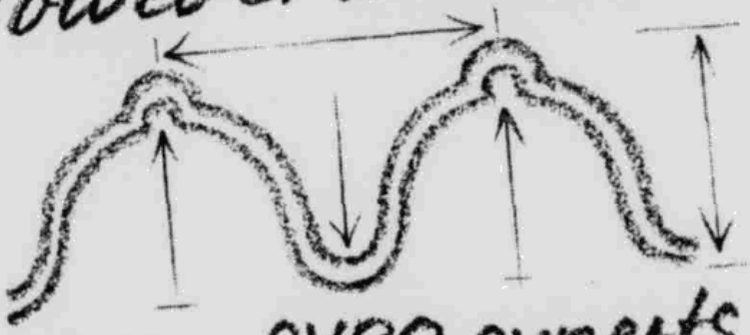
Next Issue: Greetings From Industry Leaders.

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ACL Doc 12704 · Page 51 of 67
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Reminder

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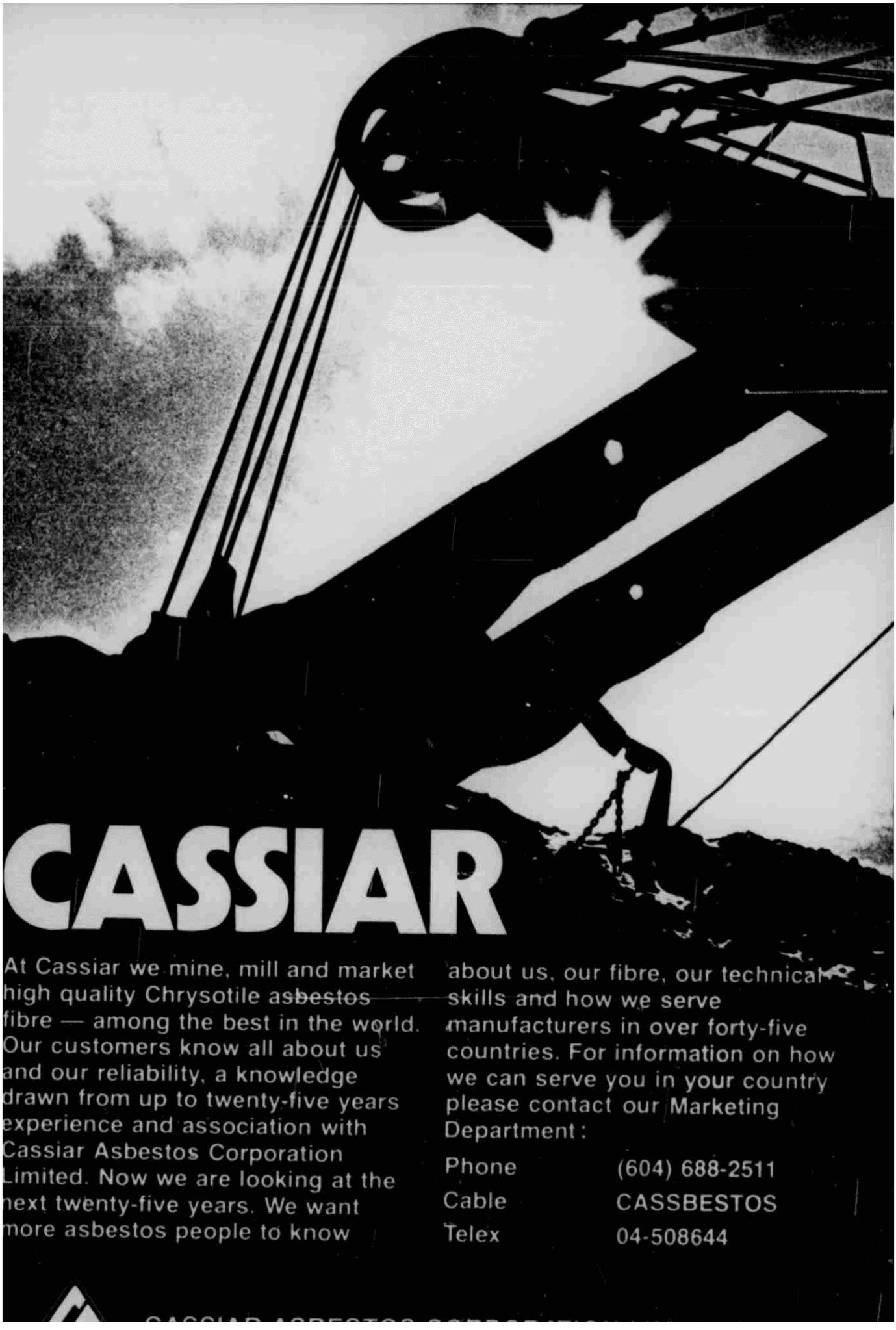
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IMPORTS INTO THE UNITED STATES

From: U.S. Bureau of the Census

UNMANUFACTURED ASBESTOS:		AUGUST 1977	
Amosite, Republic of South Africa	s.tons	69	$ 33,966
Crocidolite (Blue), South Africa	s.tons	1,450	648,538
Chrysotile Crudes, South Africa	s.tons	461	275,998
Chrysotile Spinning Fibers, Canada	s.tons	354	402,129
South Africa	s.tons	69	43,152
Chrysotile, Other, Canada	s.tons	53,425	12,128,022
South Africa	s.tons	13	14,282
USSR	s.tons	23	6,798
Other Crudes & Fibers, Canada	s.tons	797	98,923
South Africa	s.tons	13	13,687
		56,674	$13,665,495
MANUFACTURED ASBESTOS PRODUCTS:			
Asbestos yarn, cloth, tape, etc.	Lb	1,193,445	$ 1,770,166
A-C pipes, tubes & fittings	Lb	2,518,581	318,291
Other asbestos-cement articles	Lb	17,944,664	2,360,393
Other asbestos articles		..	398,008
			$ 4,846,858
UNMANUFACTURED ASBESTOS:		**JANUARY-AUGUST 1977**	
Amosite, Canada	s.tons	1	$ 570
South Africa	s.tons	473	235,820
Crocidolite (Blue), South Africa	s.tons	9,126	3,797,247
Chrysotile Crudes, Canada	s.tons	134	65,576
Rhodesia	s.tons	2,451	2,368,050
South Africa	s.tons	2,387	1,390,474
Chrysotile Spinning Fibers, Canada	s.tons	4,733	4,487,398
South Africa	s.tons	126	81,346
USSR	s.tons	2,190	443,348
Chrysotile, Other, Canada	s.tons	370,360	84,110,972
Mexico	s.tons	14	3,215
South Africa	s.tons	33	28,167
USSR	s.tons	166	49,454
Other Crudes & Fibers, Canada	s.tons	8,007	1,252,939
Mexico	s.tons	220	133,000
South Africa	s.tons	1,639	805,472
Sweden	s.tons	1	495
USSR	s.tons	3,802	674,707
		405,863	$99,928,250
MANUFACTURED ASBESTOS PRODUCTS:			
Asbestos yarn, cloth, tape, etc.	Lb	7,666,978	$10,934,602
A-C pipes, tubes & fittings	Lb	12,820,398	1,375,670
Other asbestos-cement articles	Lb	38,362,376	6,122,058
Other asbestos articles		..	3,997,593
			$22,429,923

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ACL Doc 12704 · Page 53 of 67
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EXPORTS FROM THE UNITED STATES

From: U.S. Bureau of the Census

UNMANUFACTURED ASBESTOS:		AUGUST 1977	
Fibers not further processed than beaten, washed or graded to length	s.tons	2,036	$ 795,532
Waste and refuse	s.tons	1,659	316,274
		3,695	$ 1,111,806
MANUFACTURED ASBESTOS PRODUCTS:			
A-C shingles & clapboard	Lb	856,000	$ 154,417
Other a-c fiber-cement articles	Lb	5,251,187	1,989,823
Gaskets	Lb	48,391	164,477
Packing	Lb	510,574	1,121,000
Heat or sound insulation		..	638,367
Textiles & yarns	Lb	961,424	663,177
Protective clothing		..	76,053
Mfrs. other than friction materials		..	1,051,091
Clutch facings & linings for auto. use	No	71,100	231,918
Other clutch facings & linings	No	14,503	17,366
Brake linings for automotive use	Lb	720,626	719,128
Other brake linings	Lb	351,460	354,098
			$ 7,180,915

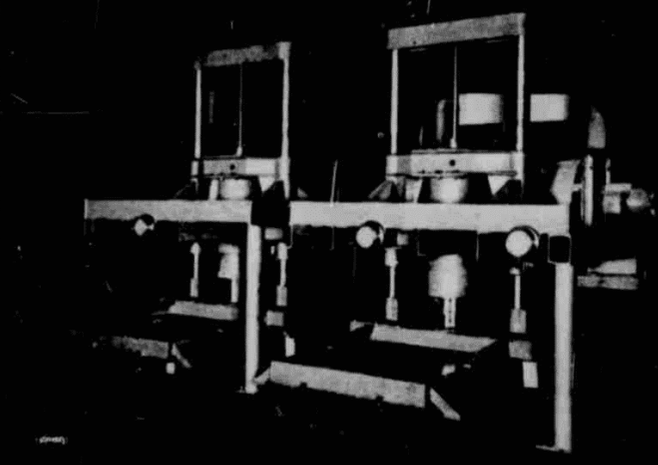
UNMANUFACTURED ASBESTOS:		JANUARY-AUGUST 1977	
Fibers not further processed than beaten, washed or graded to length	s.tons	11,662	$5,023,270
Waste and refuse	s.tons	13,723	2,996,279
		25,385	$ 8,019,549
MANUFACTURED ASBESTOS PRODUCTS:			
A-C shingles & clapboard	Lb	5,834,636	$ 1,000,495
Other a-c fiber-cement articles	Lb	36,597,145	9,796,104
Gaskets	Lb	623,052	1,401,912
Packing	Lb	3,628,957	8,337,690
Heat or sound insulation		..	3,398,443
Textiles & yarns	Lb	13,433,801	7,792,567
Protective clothing		..	842,859
Mfrs. other than friction materials		..	11,256,032
Clutch facings & linings for auto. use	No	379,374	970,238
Other clutch facings & linings	No	210,483	238,779
Brake linings for automotive use	Lb	7,034,884	6,534,646
Other brake linings	Lb	1,585,917	2,099,688
			$53,669,453

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ACL Doc 12704 · Page 55 of 67
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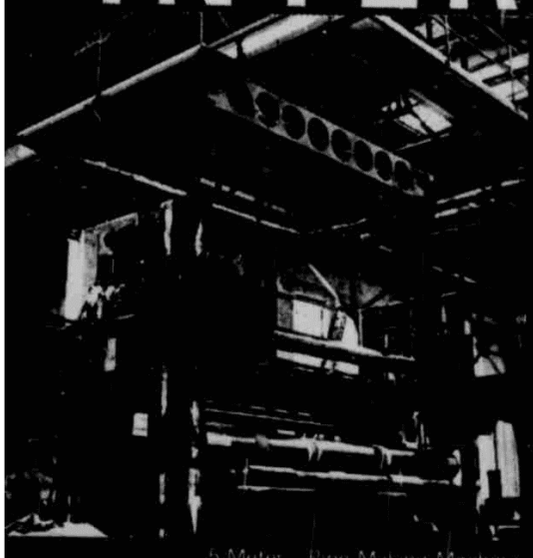
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EXPORTS FROM CANADA

From: Statistics Canada

AUGUST 1977

Short Tons

UNMANUFACTURED ASBESTOS:	Crude	Milled Gp 3	Milled Gp 4&5	Shorts Gp 6-9
Western Europe	..	816	18,518	14,137
Eastern Europe	..	196	400	540
Middle East	..	..	431	138
Africa	..	..	1,403	660
Asia	..	213	7,029	11,893
Oceania	..	..	3,749	534
So. & Cen. America & Antilles	..	78	9,299	3,935
United States	..	628	9,903	42,299
	..	1,931	50,732	74,136

The total amount of unmanufactured asbestos exported in *August 1977* was 126,799 short tons, valued at $42,441,000.

MANUFACTURED ASBESTOS PRODUCTS:

Asbestos cloth, dryer felts & sheets	$ 79,000
Asbestos brake linings & facings	206,000
Asbestos-Cement building materials	1,321,000
Other basic asbestos products	484,000
	$ 2,090,000

JANUARY-AUGUST 1977

UNMANUFACTURED ASBESTOS:	Crude	Milled Gp 3	Milled Gp 4&5	Shorts Gp-6-9
Western Europe	..	7,331	186,288	119,269
Eastern Europe	..	1,761	20,439	3,822
Middle East	..	198	14,101	2,229
Africa	..	..	11,579	4,610
Asia	..	2,064	72,455	93,065
Oceania	..	5	41,514	6,792
So. & Cen. America & Antilles	..	1,003	65,330	24,119
United States	..	5,679	91,208	287,346
	..	18,041	502,914	541,252

The total amount of unmanufactured asbestos exported in *January-August 1977* was 1,062,207 short tons, valued at $365,952,000.

MANUFACTURED ASBESTOS PRODUCTS:

Asbestos cloth, dryer felts & sheets	$ 721,000
Asbestos brake linings & facings	2,084,000
Asbestos-Cement building materials	8,337,000
Other basic asbestos products	3,397,000
	$14,539,000

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 57 of 67
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ASBESTOS PROPOSITION

ESTATE LATE EBEL HERO EBELS

1. The Executors Dative in the Estate late Ebel Hero Ebels invite tenders for the acquisition of the interests which the late Ebel Hero Ebels held as Lessee in terms of a Mining Lease granted to him by the Minister of Mines for the Republic of South Africa to mine asbestos on certain portions of portion 1 and the remaining extent of the Farm Marthavale and the Farm Mac Mac, all situate in the Administrative District of Kuruman, Mining District of Barkly West, Province of the Cape of Good Hope, together in extent 135,1916 hectares.
2. The Executors Dative will make available to bona fide interested parties such information as they have concerning this proposition on written applications meeting their approval.
3. The successful tender will be subject to confirmation by the Master of the Supreme Court, the Minister of Mines for the Republic of South Africa and the Executors Dative in the Estate late Ebel Hero Ebels. The highest tender need not necessarily be accepted.
4. Secret tenders marked "Estate late Ebel Hero Ebels, No. 13640/76 — Tender for Acquisition of Rights in terms of Mining Lease No. 4/75" must be lodged, in duplicate, with the Master of the Supreme Court, Room 236, General Pieter Joubert Building, Visagie Street, Pretoria, by not later than noon on the 16th day of January 1978.
5. Enquiries may be directed to Moss Cohen & Partners (reference Mr. D. G. Cohen), P.O. Box 659, Johannesburg 2000, South Africa, telephone number 834-5131, telegraphic address "Legislate", telex 8-4233 SA.

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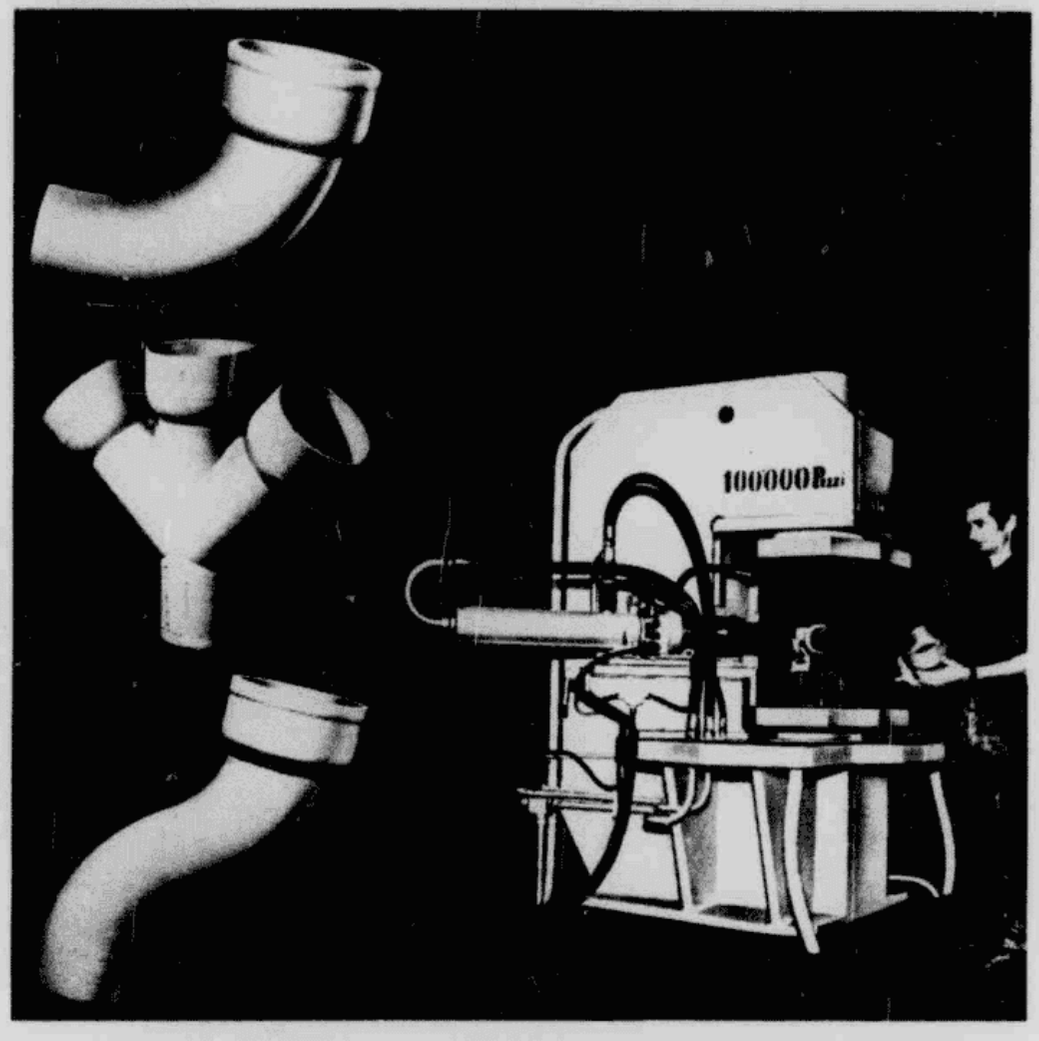
BIRTHDAY GREETINGS to . . .

Michael L. Scott, General Manager, Atlas Textile Company, North Wales, Pennsylvania, January 15.
A. E. Hepper, a Director, Cape Industries Ltd., London, England, January 16.
James J. Tracy, Vice President & Treasurer, Johns-Manville Corporation, Denver, Colorado, January 17.
Robert H. Mereness, Executive Director, Asbestos Information Association/North America, Arlington, Virginia, January 18.
Charles E. Stiefken, Section Head, Asbestos Laboratory, Asarco Inc., South Plainfield, New Jersey, January 20.
T. M. McKain, Managing Director, Cape Boards & Panels Ltd., Uxbridge, Middlesex, England, January 21.
J. B. Heron, Joint Managing Director, TBA Industrial Products Ltd., Spotland, Rochdale, Lancashire, England, January 22.
Marion W. Oliver, Vice President-Engineering & Materials, Raybestos Manhattan Industrial Products Company, North Charleston, South Carolina, January 23.
R. O. Banks, Company Secretary, James Hardie Asbestos Ltd., Sydney, New South Wales, Australia, January 25.
Herbert S. Hirshfeld, Manager, Standard Insulation Company, New York City, January 27.
J. Eugene Connor, National Sales Manager (U.S. & Canada), Asbestos Fibre Division, Johns-Manville Sales Corporation, Denver, Colorado, January 28.
Malcolm E. Schumann, Jr., Plant Manager, RM Friction Materials Company, Raybestos-Manhattan, Inc., Manheim, Pennsylvania, January 28.
James M. Fletcher, General Manager, Mining Division, Johns-Manville Corporation, Denver, Colorado, January 29.
Nelson Bain, Vice President-Marketing, Atlas Asbestos Company, Montreal, Quebec, February 1.
Gabriel Ferrucci, President, Raybestos Manhattan Industrial Products Company, North Charleston, South Carolina, February 1.
John W. Oughtred, Sales Manager, Cassiar Asbestos Corporation Ltd., Vancouver, British Columbia, February 2.
W. H. Bartlett, Product Group Manager, Industrial Products Division, Johns-Manville Corporation, Denver, Colorado, February 4.
F. E. Mills, Chief Executive, Plastics & Industrial Materials Division, Turner & Newall Ltd., Manchester, England, February 4.
R. H. Dent, Chairman, Cape Industries Ltd., London, England, February 9.
C. Fred Workman, President, Norristown Division, a Corporate Vice President and a Director, Nicolet Inc., Ambler, Pa., February 9.
Ronald R. Moalli, President-R/M International and a Corporate Vice-President, Raybestos-Manhattan, Inc., Trumbull, Conn., February 10.
Ronald A. Wells, Managing Director, Alternative Materials & Fibres Unit, Turner & Newall Ltd., Manchester, England, February 11.
S. Gibbs, Deputy Chairman, Turner & Newall Ltd., Manchester, England, February 12.
James D. Moran, Chairman and Chief Executive Officer, The Flintkote Company, White Plains, New York, February 12.

Asbestos Magazine, 1977, December 1977
ACL Doc 12704 · Page 59 of 67
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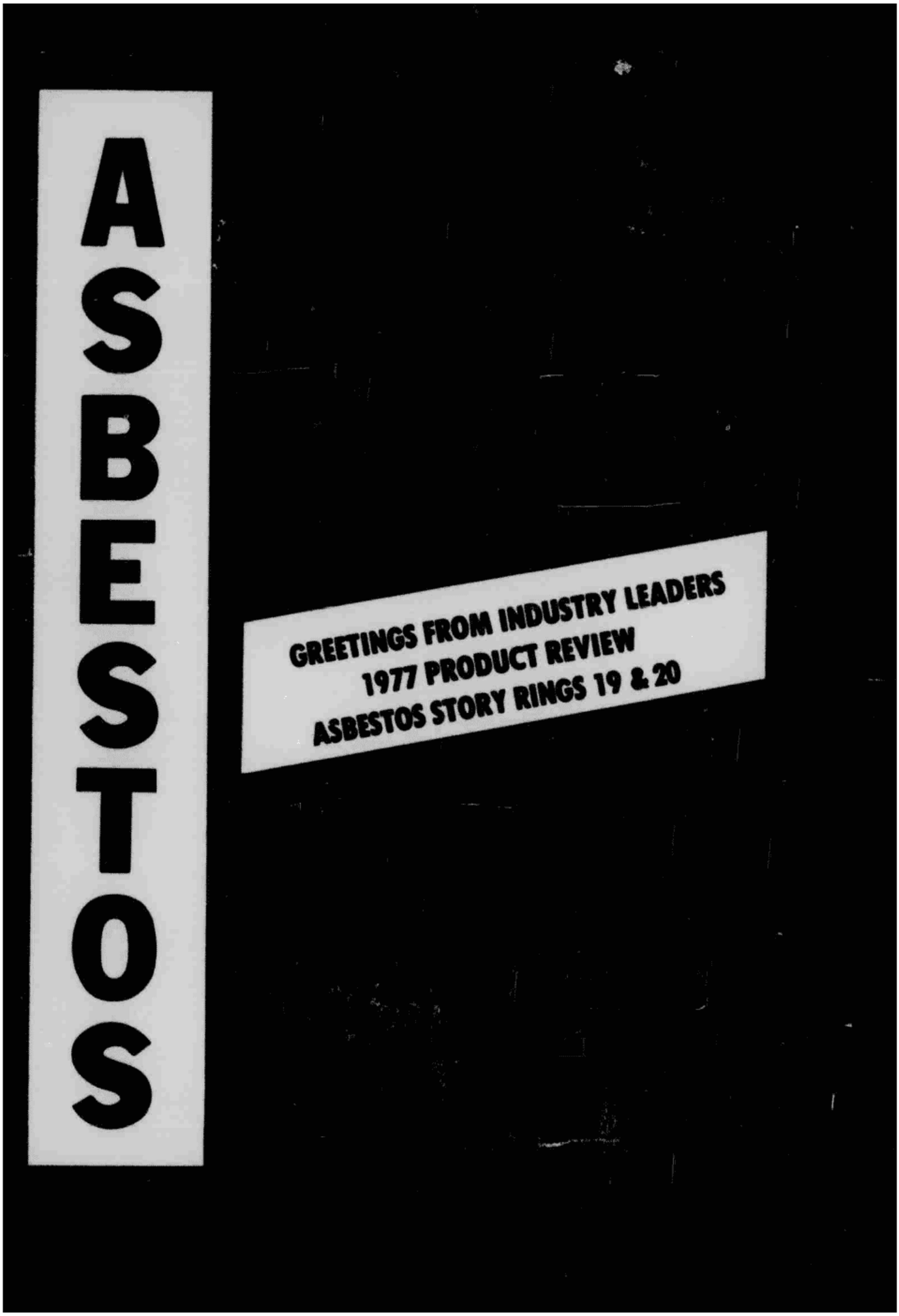
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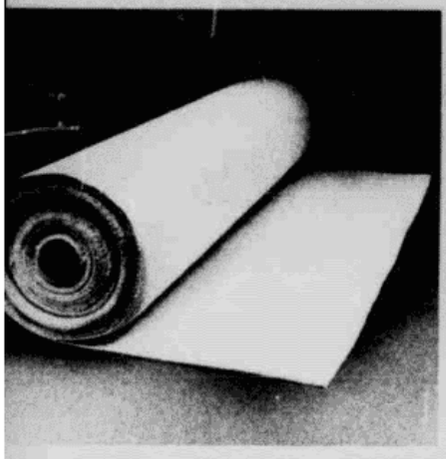
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