Asbestos

By Robert A. Clifton [1]

Shipments of asbestos in the United States increased 4 percent to a record high in 1971. The abatement of the tight money market and easing of interest rates aided the home building industry and increased the demand for asbestos. Imports were 5 percent above 1970 levels.

The free world's largest producer, Canada, increased shipments to its largest market, the United States, but overall shipments were only 98 percent of the 1970 total.

Legislation and Government Programs.—Despite efforts to have it removed, asbestos was retained on the list of hazardous air pollutants, and the Environmental Protection Agency proposed operating techniques as standards. In 1971 the General Services Administration (GSA) reduced government inventories by disposing of 2,724 short tons of amosite, 5,875 tons of crocidolite, and 1,611 tons of chrysotile. The strategic grades of asbestos were removed by legislative act from the Rhodesian Sanctions.

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Table 1.—Salient asbestos statistics

	1967	1968	1969	1970	1971
United States:					
Production (sales)—short tons	123,189	120,690	125,936	125,314	130,882
Value—thousand	$11,102	$10,406	$10,648	$10,696	$12,174
Exports and reexports (unmanufactured) short tons	47,718	41,236	36,173	46,585	53,678
Value—thousands	$6,025	$4,679	$4,979	$6,996	$7,863
Exports and reexports of asbestos products (value)—thousands	$23,767	$24,527	$28,183	$25,391	$31,419
Imports for consumption (unmanufactured) short tons	645,112	737,909	694,558	649,402	681,367
Value—thousands	$65,743	$72,930	$76,422	$75,146	$80,090
Consumption, apparent [1]—short tons	720,583	817,363	784,321	728,131	758,571
World: Production—do	3,207,259	3,315,301	3,599,123	3,846,475	3,947,996

[1] Measured by quantity produced, plus imports, minus exports.

Table 2.—Stockpile objective and Government inventories as of December 31, 1971

(Short tons)

Mineral	Stockpile objective	Inventories			
		National	Supplemental	Defense Production Act	Total
Amosite	18,400	11,705	47,933	--	59,638
Chrysotile	13,700	6,079	6,572	242	12,893
Subspecification	--	20	1,688	242	1,950
Crocidolite	None	1,554	35,368	--	36,922

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Environmental Impact.—The inclusion of asbestos on the list of hazardous air pollutants is beginning to effect the industry. One application, sprayed insulation, has been outlawed in several cities and States, and would be banned under proposed Environmental Protection Agency (EPA) regulations. There have been no serious losses of markets yet, except for talc that contains tremolite, but new markets are extremely slow in opening up.

The manufacturer not now having asbestos among his necessary raw materials is reluctant to purchase it because of very strict inspection and regulation of the working areas by the Labor Department Office of Safety and Health Administration (OSHA), and of plant effluents by EPA.

In 1971 asbestos workers in mines and mills were protected under the Metal and Nonmetal Health and Safety Act administered by the Bureau of Mines. The Bureau's inspectors were changing over from measuring all particulate matter using a particle impingement method and reporting in million particles per cubic foot, to using a membrane filter and microscopy method, and reporting in fibers longer than 5 microns per milliliter. The acceptable Threshold Limit Value (TLV) was five fibers per milliliter greater than 5 microns.

EPA was proposing regulations that would give it jurisdiction over any possible emission source to the ambient air. This would include all activity at the mine site and mill that occurs in the open, such as drilling, blasting, loading, hauling, etc. EPA stated that there is no suitable technique available for measuring asbestos emissions in ambient air; in lieu of specific standards, EPA proposed establishment of restrictions on operating techniques.

OSHA is using the membrane filter technique to check on the working conditions of the people using asbestos in product manufacture and applications. In 1971 its TLV was five fibers per milliliter greater than 5 microns. The National Institute for Occupational Safety and Health proposed a level of two fibers per milliliter greater than 5 microns.

The Clean Air Act gives the States jurisdiction over emissions of hazardous air pollutants, provided their regulations equal or exceed those proposed by EPA.

DOMESTIC PRODUCTION

U.S. mines produced 4 percent more asbestos in 1971 than in 1970. The value increased 14 percent. Four States produced asbestos; California, with 67 percent, was the leader, followed in order by Vermont, Arizona, and North Carolina.

Although 1971 saw the entire West Coast in the economic doldrums, the California segment of the asbestos industry continued to grow. The 10 percent increase in production to 87,144 tons was led by Pacific Asbestos Corp.'s mine in Calaveras County. The largest producing County was Fresno, with Coalinga Asbestos Co. and Atlas Asbestos Corp. mines. Union Carbide Corp. had very significant production in San Benito County. The State's increased production realized a $1,444,190 increase in value.

GAF Corp.'s mine in Orleans County, Vt., showed an apparent production decrease of 5 percent without an attendant loss in value. With only Jaquays Mining Corp.'s mine in Gila County operating in 1971, Arizona production decreased 11 percent. With a new production site in Transylvania County to go with their other two in Yancey and Jackson Counties, the production in North Carolina of Powhatan Mining Co. increased 11 percent. U.S. asbestos producers and mine sites are as follows:

State and company	County	Name of mine	Type of asbestos
Arizona: Jaquays Mining Corp	Gila	Chrysotile	Chrysotile
California:			
Atlas Asbestos Corp	Fresno	Santa Cruz	Do.
Coalinga Asbestos Co	do	Coalinga	Do.
Pacific Asbestos Corp	Calaveras	Pacific Asbestos	Do.
Union Carbide Corp	San Benito	Joe No. 5	Do.
North Carolina:			
Powhatan Mining Co	Yancey	Burnsville	Anthophyllite.
Do	Jackson	Boot Hill	Do.
Do	Transylvania	Rainey Knob	Do.
Vermont: GAF Corp	Orleans	Lowell	Chrysotile.

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CONSUMPTION AND USES

There were literally thousands of direct and indirect uses for asbestos, but the major portion went to a few applications. Chief among these were asbestos cement building materials and asbestos cement pipe, which together used an estimated 70 percent of world production.[2] The domestic consumption picture differs somewhat: According to a survey done for a member of the Asbestos Information Association/North America in 1971, asbestos cement pipe and building products consumed 25 percent; floor tile, 18 percent; felts and papers, 14 percent; friction products, 10 percent; textiles, 3 percent; packing and gaskets, 3 percent; sprayed insulation, 2 percent; and miscellaneous 25 percent.

The upward trend of the building and construction industries resulted in an apparent consumption in 1971 that was 4 percent higher than that of 1970. Most of the asbestos consumed was chrysotile, which accounted for 97 percent of domestic consumption; amosite, crocidolite, and anthophyllite accounted for the remainder.

[2] Industrial Minerals (London). No. 28, January 1970, p. 12.

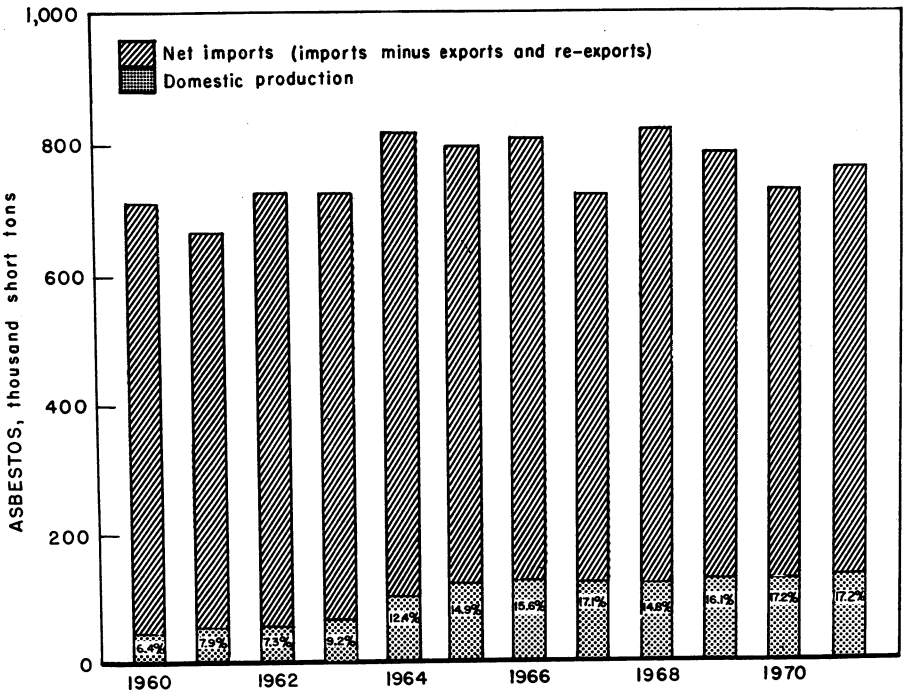


Figure 1.—Domestic consumption of asbestos.

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PRICES [3]

Quoted prices for Quebec asbestos were increased 4 to 6 percent effective July 1, 1971. The increases were not abnormal in an inflationary economy, but the price of British Columbia and Arizona asbestos remained unchanged.

Prices for Arizona chrysotile asbestos have remained unchanged since August 1, 1968. Quotations, f.o.b. Globe, were as follows:

Grade	Description	Per short ton
Group No. 1	Crude	$1,410–1,650
Group No. 2	do	700– 950
AAA		800
Group No. 3	Nonferrous filtering and spinning.	425– 700
Group No. 4	Nonferrous plastic and filtering.	400– 500
Group No. 5	Plastic and filtering	385– 425
Group No. 6	Refuse or shorts	250
Group No. 7	do	65– 90

As of July 1, 1971, Vermont chrysotile asbestos, f.o.b. Morrisville, was priced as follows:

Grade	Description	Per short ton
Group No. 4	Shingle fiber	$220.00
Group No. 5	Paper fiber	159.50–187.50
Group No. 6	Waste, stucco or plaster fiber.	116.00
Group No. 7	Shorts and floats	43.50– 97.00

Quotations for Canadian (Quebec) chrysotile, f.o.b. mine, were as follows, as of July 1, 1971:

Grade	Description	Per short ton
Group No. 1	Crude	Can $1,615
Group No. 2	do	875
Group No. 3	Spinning fiber	412– 675
Group No. 4	Shingle fiber	227– 383
Group No. 5	Paper fiber	164– 195
Group No. 6	Waste, stucco or plaster.	120
Group No. 7	Refuse or shorts	52– 100

Prices for British Columbia, Canada, chrysotile asbestos have remained unchanged since January 1, 1971. Quotations, f.o.b. Vancouver, were as follows:

Grade	Description	Per short ton
AAA	Nonferrous spinning fiber.	Can$877
AA	do	697
A	do	529
AC	Asbestos cement fiber.	380
AK	Shingle fiber	263
CP	do	248
AS	do	228
CT	do	223
AX	do	208
CY	do	147
AY	do	147

Private negotiated sales are the African asbestos producers' modus operandi. As this rules out market quotations, the following are averages, regardless of grade, of the values of South African imports calculated from U.S. Department of Commerce Data:

Type	Per short ton		
	1969	1970	1971 [1]
Amosite	$153	$160	$164
Crocidolite	189	196	212
Chrysotile	192	198	120

[1] First 6-month data on exports, Department of Mines, Johannesburg.

Figure 2, drawn from calculations on pertinent data,[4] depicts dramatically that the increased demand and greater price increases have gone to the asbestos used in cement products (groups 5, 7).

[3] Asbestos. V. 53, No. 4, October 1971, p. 44.
[4] Industrial Minerals (London). No. 28, January 1970, pp. 9–29.

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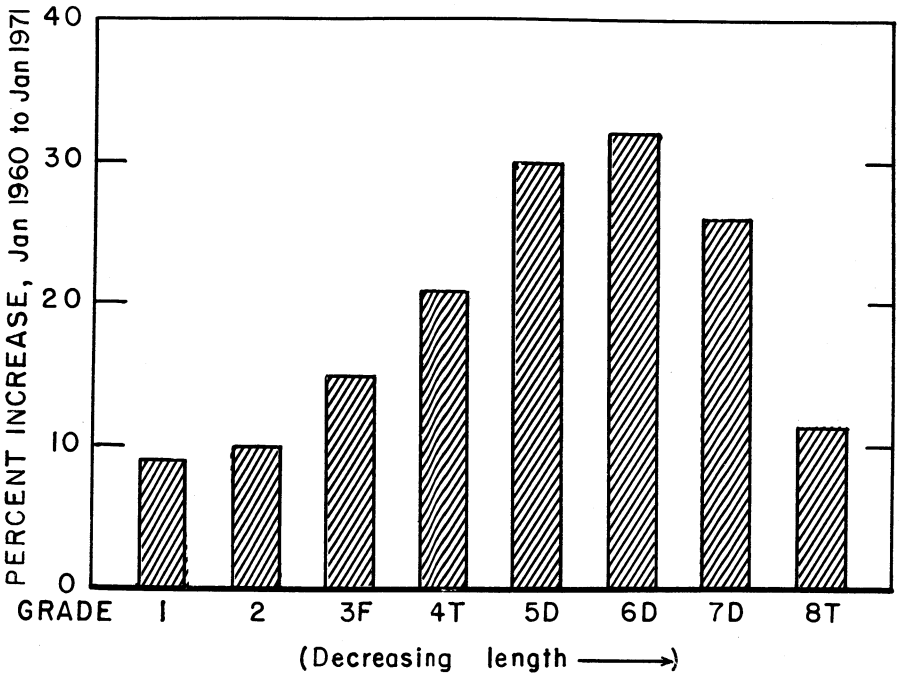


Figure 2.—Price increase by grade.

FOREIGN TRADE

The value of exports of asbestos products manufactured in the United States increased 24 percent over the value of those exported in 1970. Five of the nearly 100 countries buying these products accounted for better than half of the foreign sales. They are Canada (35 percent), West Germany (9 percent), United Kingdom (4 percent), Venezuela (3 percent), and Australia (3 percent).

In 1971 the United States imported 83 percent of its asbestos needs. This equaled the 1970 percentage, in spite of increased demand. Canada provided 95 percent of the imports, the Republic of South Africa provided 4 percent, and seven other countries, the remainder. Chrysotile, with 96 percent, dominated the imported types. There was a 7-percent increase in the dollar value of imported fibers. The Rhodesian values in table 4 do not reflect the recent lifting of the 1967 embargo, but were deliveries resulting from pre-1967 sales.

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Table 3.—U.S. exports and reexports of asbestos and asbestos products

Product	1970 Quantity	1970 Value (thousands)	1971 Quantity	1971 Value (thousands)
EXPORTS				
Unmanufactured:				
Crude and spinning fibers—short tons	4,300	$930	6,830	$1,376
Nonspinning fibers—do	12,477	1,961	21,257	3,453
Waste and refuse—do	21,458	2,449	24,115	2,742
Total—do	38,235	5,340	52,202	7,571
Products:				
Gaskets and packing—do	2,546	6,964	2,299	7,698
Brake linings—do	3,787	5,576	5,253	7,174
Clutch facings, including linings—number	2,557,694	1,926	1,920,176	1,572
Textiles and yarn—short tons	3,733	2,368	6,673	3,397
Shingles and clapboard—do	8,356	1,659	12,696	2,580
Articles of asbestos cement—do	3,440	1,202	9,603	3,080
Manufactures, n.e.c	NA	5,605	NA	5,897
Total	--	25,300	--	31,398
REEXPORTS				
Unmanufactured:				
Crude and spinning fibers—short tons	7,441	1,511	1,141	229
Nonspinning fibers—do	799	138	335	63
Waste and refuse—do	110	7	--	--
Total—do	8,350	1,656	1,476	292
Products:				
Gaskets and packing—do	15	21	1	5
Brake linings—do	6	8	6	10
Clutch facings, including linings—number	5,196	5	422	1
Textiles and yarn—short tons	43	19	--	--
Shingles and clapboard—do	42	13	--	--
Articles of asbestos cement—do	76	22	--	--
Manufactures, n.e.c	NA	3	NA	5
Total	--	91	--	21

NA Not available.

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Table 4.—U.S. imports for consumption of asbestos (unmanufactured), by classes and countries

Year and country	Crude (including blue fiber)		Textile fiber		All other		Total	
	Short tons	Value (thousands)	Short tons	Value (thousands)	Short tons	Value (thousands)	Short tons	Value (thousands)
1970								
Canada	80	$4	15,398	$5,657	597,832	$64,104	613,310	$69,765
Finland	--	--	--	--	4,141	276	4,141	276
Germany, West	--	--	--	--	65	11	65	11
India	--	--	--	--	5	(1)	5	(1)
Italy	--	--	2	3	2	1	4	4
Mexico	--	--	--	--	100	20	100	20
Mozambique	--	--	--	--	70	8	70	8
Norway	--	--	--	--	132	10	132	10
Portugal	--	--	--	--	231	16	231	16
Rhodesia, Southern	--	--	--	--	200	101	200	101
South Africa, Republic of	23,788	4,158	85	18	2,855	568	26,728	4,744
Southern Africa, n.e.c.	110	22	--	--	--	--	110	22
United Kingdom	90	19	211	36	5	1	306	56
Yugoslavia	--	--	1,488	43	2,512	70	4,000	113
Total	24,068	4,203	17,184	5,757	608,150	65,186	649,402	75,146
1971								
Canada	240	96	11,620	5,306	636,782	69,577	648,642	74,979
Finland	--	--	--	--	4,182	342	4,182	342
Italy	2	4	--	--	--	--	2	4
Mexico	--	--	18	8	40	3	58	11
Mozambique	203	43	--	--	157	31	360	74
South Africa, Republic of	23,188	4,104	1	(1)	1,822	399	25,011	4,503
Swaziland [2]	160	46	--	--	230	59	390	105
United Kingdom	--	--	--	--	109	3	109	3
Yugoslavia	--	--	--	--	2,613	69	2,613	69
Total	23,793	4,293	11,639	5,314	645,935	70,483	681,367	80,090

[1] Less than ½ unit.
[2] Effective Jan. 1, 1971, formerly Southern Africa, n.e.c.

Table 5.—U.S. imports for consumption of asbestos from specified countries, by grades

(Short tons)

Grade	1970			1971	
	Canada	Southern Rhodesia	Republic of South Africa	Canada	Republic of South Africa
Chrysotile:					
Crudes	80	--	591	188	1,655
Spinning fibers	15,398	--	85	11,620	1
All other	597,832	200	2,855	636,782	1,822
Crocidolite (blue)	--	--	8,936	52	6,953
Amosite	--	--	14,261	--	14,580
Total	613,310	200	26,728	648,642	25,011

WORLD REVIEW

World consumption, viewed on an annual basis, can be misleading. Temporary factors, such as a world monetary realinement or the impending expansion of the European Common Market, can give data that are in apparent disagreement with well-established trends. The past year is a perfect example of this. The world's largest producer and exporter, Canada, had a 2-percent decline in shipments at a time when world demand and capacity were nearing equality. Worldwide demand, however, should continue to rise until limited by production capacity.

Analysis of the world production over the last 20 years shows an average annual growth rate of a little over 2 percent. Projecting this rate to the year 2000 would call for a cumulative production of 163 million tons, or approximately half of the

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known reserves. An average growth rate of 6 percent (it is now about 5 percent) would exhaust the known reserves by the year 2000.

The asbestos industry is at or very near the point where supply and demand are equal. Any significant increase in demand will reveal shortages that may be only apparent because supply distribution across the ideological political boundaries or United Nations embargo lines is still difficult.

It seems evident that, in spite of a large increase in exploration, the opening of several new major mines, and the renovation of others, there will be at least a few years in the seventies when demand will exceed supply. The effect of such a situation on asbestos prices should be interesting because the only real fluctuations in the remarkably stable asbestos prices have been those occasioned by inflationary trends in the general economy.

Australia.—Chrysotile Corp. of Australia Pty. Ltd., Woodsreef Mines Ltd. subsidiary, prepared for its December 17 commissioning date. A 5-year, 200,000-ton contract with a Japanese firm was obtained.

Active exploration of chrysotile deposits at Beaconsfield and Noddy Creek, Tasmania, as well as at Marlborough, Queensland, was underway.

Brazil.—The Government, through Metas e Bases (Goals and Bases Program), was investing $9.2 million in a priority asbestos mining project. The goal is a 1973 annual production of 24,800 tons of asbestos. Mineração de Amianto S.A. was increasing production at its Cana Brava deposit, Uruaçu, Goiás. The company has indicated that its production may reach 30,000 short tons per year by 1972.

Canada.—Despite the first decrease in production since 1967 (2 percent), to 1,634,662 short tons, the Canadian asbestos industry gave every indication of vitality and confidence in an expanding market. Some of the areas of exploration, development and/or expansion are as follows:

(1) Abitibi Asbestos Mining Co. Ltd. has determined that its Amos, Quebec, property has sufficient reserves to operate

Table 6.—Asbestos: World production, by country [1]

(Short tons)

Country	1969	1970	1971 p
North America:			
Canada (sales)	r 1,576,876	1,661,644	1,634,662
United States (sold or used by producers)	125,936	125,314	130,882
South America:			
Argentina	359	39	e 40
Brazil e	r 14,000	18,000	22,000
Europe:			
Bulgaria	3,100	3,307	e 3,300
Finland [2]	r 15,487	15,019	e 15,000
France e	550	550	550
Italy	124,039	130,644	131,692
Portugal	224	223	e 220
U.S.S.R. e	r 1,060,000	1,175,000	1,270,000
Yugoslavia	12,634	13,342	17,011
Africa:			
Mozambique	868	251	e 250
Rhodesia, Southern e	88,000	88,000	88,000
South Africa, Republic of	284,588	316,822	351,963
Swaziland	r 43,077	36,439	39,114
United Arab Republic	--	[3] 495	e 500
Asia:			
China, People's Republic of e	r 175,000	190,000	175,000
Cyprus	23,927	28,247	[4] 24,925
India	10,734	10,840	12,122
Japan	r 23,141	23,451	e 24,000
Korea, Republic of	6,515	1,513	--
Philippines	r 50	1,337	e 1,300
Taiwan	3,396	3,133	2,565
Turkey	5,698	1,857	e 1,900
Oceania: Australia	r 924	1,008	e 1,000
Total	r 3,599,123	3,846,475	3,947,996

e Estimate. p Preliminary. r Revised.

[1] In addition to the countries listed, Czechoslovakia, North Korea, and Romania also produce asbestos, but available information is inadequate to make reliable estimates of output levels.

[2] Includes asbestos flour.

[3] Includes vermiculite.

[4] Exports.

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for 25 years at a 130-ton-per-day ore rate. Methods of financing production have yet to be ascertained.

(2) Abitibi was also engaged in diamond drilling at an optioned asbestos property near Timmins, Ontario.

(3) Allied Mining Corp. Ltd. optioned the Asbestos Lloyd Mines Ltd. claims in Midlothian Township, Ontario, and added others to cover a deposit of an indicated 120 million tons of 9-percent ore. An operation of 150,000 to 200,000 tons per year is envisioned.

(4) Asbestos Corp. Ltd. was preparing their Ungava Peninsula property for full production in 1972. They anticipate shipping 300,000 tons per year of ore to West Germany to produce 100,000 tons per year of fibers. Since completion of the $2.5 million shaft at the Penhale Mine, Quebec, more than 2,000 feet of laterals have been dug for ore body confirmation. The world's largest underground asbestos mine could result, having an 8,200-ton-per-day production rate.

(5) The Garrison Township, Ontario, deposit of Canadian Johns–Manville Co., Ltd. is now of proven commercial potential, but is on standby status pending need. The $75 million relocation and reconstruction project at the Jeffrey mine continued; completion is expected in 1973.

Colombia.—The asbestos deposit at Campomento has proven reserves of 280,000 tons of ore and probably another 420,000 tons. Nicolet Industries was building a mill and expects to be in production in 1973 at a possible 60,000 tons of fiber per year rate.

Greece.—Cerro Corp. says that preliminary reports indicate marketable fibers can be produced from the 50-million-ton Zindanion deposit. A 1975 operation of 50,000 tons per year of fiber is proposed.

India.—Johns–Manville Corporation is assisting an Indian company toward development of two deposits.

Mexico.—The Ciudad Victoria deposit soon to be brought into production by the government-owned Compañía Nacional de Asbestos, S.A. has an outlined ore body of 6 million tons with 10 percent recoverable fibers.

Tests continued at the Oxaca deposit, partially owned by Freeport Minerals Co. The drilling work so far has shown better than 80 million tons of ore of medium and short fibers.

Table 7.—Canada: Shipments [1] of asbestos, by grades

(Short tons)

Grade	1967	1968	1969	1970	1971
Quebec milled group:					
3 (spinning) [2]	25,391	32,248	29,291	24,648	21,272
4 (shingle)	336,568	335,807	326,146	r 340,112	320,052
5 (paper)	185,450	193,446	204,208	223,535	199,569
6 (stucco)	244,021	255,648	242,126	261,564	234,720
7 (refuse)	490,087	542,124	539,413	515,872	565,162
8 (sand)	7,149	3,037	2,023	1,793	1,545
Newfoundland, Ontario, and British Columbia	154,345	147,389	233,669	294,120	292,342
Total	1,443,011	1,509,699	1,576,876	r 1,661,644	1,634,662

r Revised.
[1] Includes tonnage for own use.
[2] Includes crude No. 1, No. 2, and other.

Source: Dominion Bureau of Statistics.

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