Asbestos

By Robert A. Clifton [1]

The production (shipments) of asbestos in the United States decreased less than 1 percent from the record high of 1969. The continuation of the tight money market and high interest rates further depressed the home building industry and lessened the demand for asbestos. In 1970 imports were 93 percent of the 1969 level.

The free world's largest producer, Canada, shipped 7 percent less in quantity to its largest market, the United States, but total shipments for the year were over 5 percent more than in 1969.

Legislation and Government Programs.—The Clean Air Act of 1970 required Health, Education and Welfare to publish lists of hazardous air pollutants. Asbestos was among the three substances named on the first list. In 1970 the General Services Administration (GSA) reduced the government inventories by disposing of 1,326 short tons of amosite, 2,802 tons of crocidolite, and 654 tons of chrysotile.

[1] Chemist, Division of Nonmetallic Minerals.

Table 1.—Salient asbestos statistics

	1966	1967	1968	1969	1970
United States:					
Production (sales)—short tons	125,928	123,189	120,690	125,936	125,314
Value—thousands	$11,056	$11,102	$10,406	$10,648	$10,696
Exports and reexports (unmanufactured) short tons	46,996	47,718	41,236	36,173	46,585
Value—thousands	$5,763	$6,025	$4,679	$4,979	$6,996
Exports and reexports of asbestos products (value)—thousands	$21,963	$23,767	$24,527	$28,183	$25,391
Imports for consumption (unmanufactured) short tons	726,459	645,112	737,909	694,558	649,402
Value—thousands	$73,100	$65,743	$72,930	$76,422	$75,146
Consumption, apparent [1]—short tons	805,391	720,583	817,363	784,321	728,131
World: Production—do	3,275,262	3,207,259	3,315,303	3,640,017	3,826,238

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

Table 2.—Stockpile objective and Government inventories as of December 31, 1970

(Short tons)

Mineral	Stockpile objective	Inventories			
		National	Supplemental	Defense Production Act	Total
Amosite	40,000	11,705	50,657	---	62,362
Chrysotile	13,700	6,174	7,378	502	14,054
Subspecification	---	115	2,494	502	3,111
Crocidolite	---	1,565	41,232	---	42,797

Minerals Yearbook: Asbestos Chapters, 1970
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DOMESTIC PRODUCTION

United States mines produced nearly as much asbestos in 1970 as in 1969. The value increased slightly. Only four states produced asbestos. California, with 63 percent, was the leader followed in order by Vermont, Arizona, and North Carolina.

California production increased 4 percent in 1970 to 78,966 short tons, and the value increased by $375,740. Quantity and value of the Vermont production decreased by 9 percent. Arizona production increased slightly, and that in North Carolina increased by 6 percent. The largely short fiber domestic production met 17 percent of the U.S. requirements. U.S. asbestos producers and mine sites are as follows:

State and company	County	Name of mine	Type of asbestos
Arizona:			
Asbestos Manufacturing Co	Gila	Phillips	Chrysotile.
Jaquays Mining Corp	----do	Chrysotile	Do.
Metate Asbestos Corp	----do	Lucky Seven	Do.
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.
Vermont:			
GAF	Orleans	Lowell	Chrysotile.

CONSUMPTION AND USES

There are literally thousands of direct and indirect uses for asbestos, but the major portion goes to only a few applications. Chief among these are asbestos cement building materials and asbestos cement pipe, which uses an estimated 70 percent of the world's production.[2] The next largest using domestic industry was floor tile where 1970 consumption was an estimated 10 percent of the total U.S. production. Other products using significant amounts of asbestos were brake linings, gaskets, clutch facings, plastics, roofing compounds, electrical and heat insulations, and textiles.

The continued slow down in the building and construction industries resulted in an apparent consumption in 1970 that was only 93 percent of that in 1969. Most of the asbestos consumed was chrysotile, which accounted for more than 96 percent of the domestic consumption. Amosite, crocidolite, and anthophyllite accounted for the remainder.

PRICES [3]

Quoted prices for Quebec and Vermont asbestos were increased approximately 3 percent effective January 1, 1970. The increases were not abnormal in an inflationary economy, but the price of British Columbia and Arizona asbestos remained unchanged.

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

[3] Asbestos. V. 51, No. 8, February 1970, p. 54.

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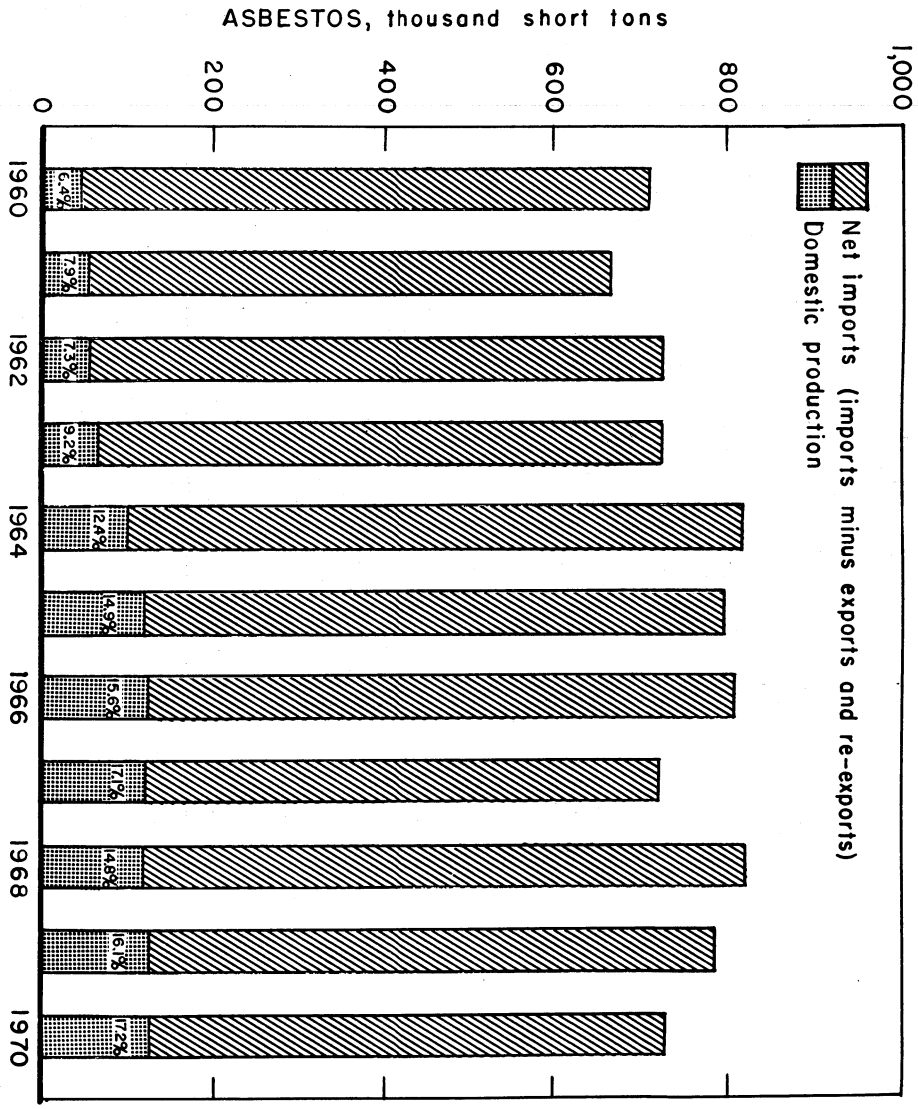


Figure 1.—Domestic consumption of asbestos.

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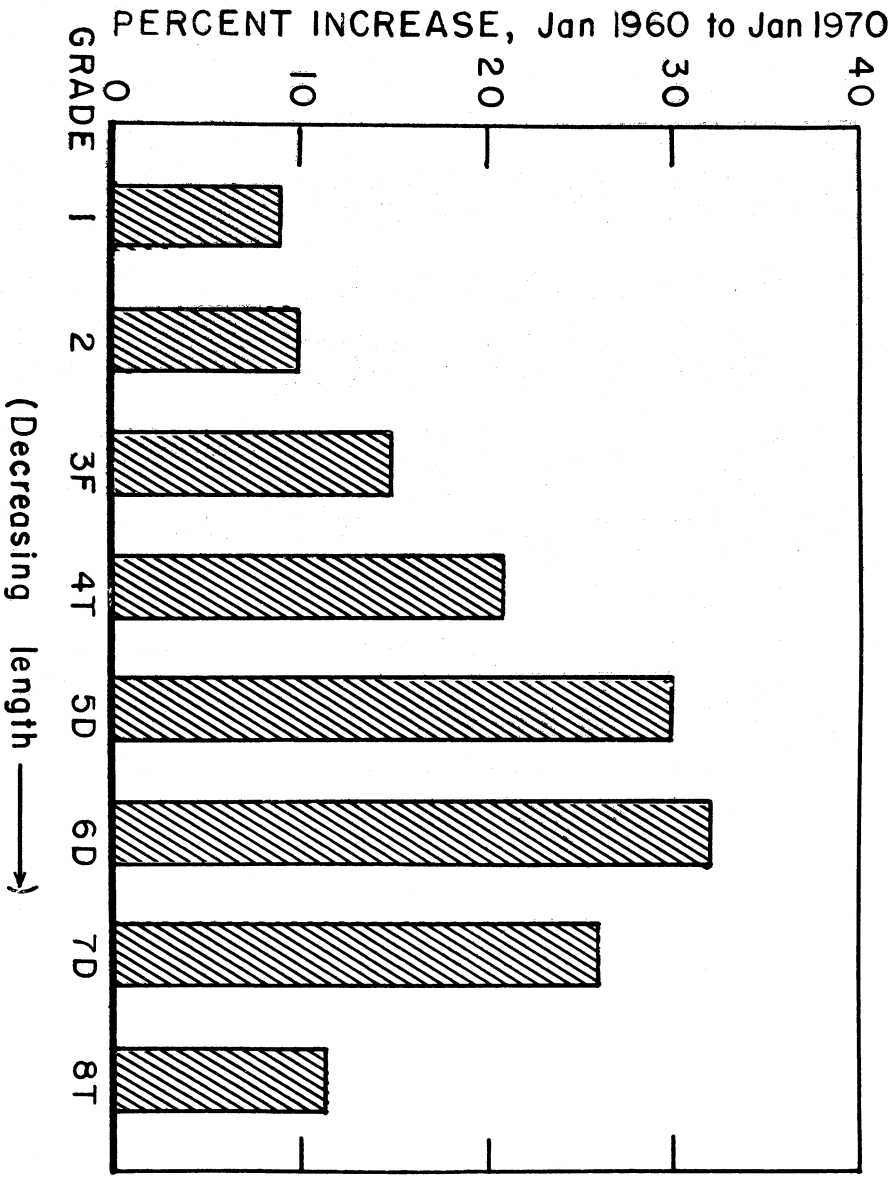


Figure 2.—Price increase by grade.

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

Grade	Description	Per short ton
Group No. 3	Spinning and filtering	$366.50–393.50
Group No. 4	Shingle fiber	201.00–341.00
Group No. 5	Paper fiber	145.00–170.00
Group No. 6	Waste, stucco or plaster fiber	105.00
Group No. 7	Shorts and floats	48.00– 87.50

Quotations for Canadian (Quebec) chrysotile, f.o.b. mine, were as follows, as of January 1, 1970:

Grade	Description	Per short ton
Group No. 1	Crude	Can$1,525
Group No. 2	----do	825
Group No. 3	Spinning fiber	397–650
Group No. 4	Shingle fiber	218–369
Group No. 5	Paper fiber	157–184
Group No. 6	Waste, stucco or plaster	114
Group No. 7	Refuse or shorts	48– 95

Prices for British Columbia, Canada, chrysotile asbestos have remained unchanged since January 1, 1969. Quotations, f.o.b. Vancouver, were as follows:

Grade	Description	Per short ton
AAA	Nonferrous spinning fiber	Can$845
AA	----do	673
A	----do	508
AC	Asbestos cement fiber	363
AK	Shingle fiber	249
CP	----do	234
AS	----do	217
CT	----do	211
AX	----do	193
CY	----do	136
AY	----do	136

Private negotiated sales are the African asbestos producers' modus operandi. Because 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		
	1968	1969	1970
Amosite	$149	$153	$160
Crocidolite	193	189	196
Chrysotile	194	192	198

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

[4] Industrial Minerals (London). No. 28, January 1970, pp. 9–29.

FOREIGN TRADE

Exports of asbestos products manufactured in the United States declined by 10 percent from the values of those exported in 1969. Five of the nearly one hundred countries buying these products accounted for more than half of the foreign sales. They were Canada (33 percent), West Germany (8 percent), United Kingdom (5 percent), Venezuela (4 percent), and Australia (3 percent).

In 1970 the United States imported 83 percent of its asbestos needs. This was a statistical improvement in U.S. self-sufficiency over the 84 percent of 1969, but only because of lessened demand. Canada provided more than 94 percent of the imports; the Republic of South Africa, a little over 4 percent; and 12 other countries, the remainder. Chrysotile, with more than 96 percent, dominated the imported types. There was a slight decrease in the value of the imported fibers. The Rhodesian values in table 4 do not indicate a 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	1969 Quantity	1969 Value (thousands)	1970 Quantity	1970 Value (thousands)
EXPORTS				
Unmanufactured:				
Crude and spinning fibers—short tons	1,419	$314	4,300	$930
Nonspinning fibers—do	14,407	2,274	12,477	1,961
Waste and refuse—do	18,696	2,038	21,458	2,449
Total—do	34,522	4,626	38,235	5,340
Products:				
Gaskets and packing—do	2,519	6,917	2,546	6,964
Brake linings—do	4,519	6,804	3,787	5,576
Clutch facings, including linings—number	3,749,035	2,966	2,557,694	1,926
Textiles and yarn—short tons	4,402	2,420	3,733	2,368
Shingles and clapboard—do	8,606	1,599	8,356	1,659
Articles of asbestos cement—do	5,120	1,779	3,440	1,202
Manufactures, n.e.c	NA	5,673	NA	5,605
Total	-----	28,158	-----	25,300
REEXPORTS				
Unmanufactured:				
Crude and spinning fibers—short tons	589	122	7,441	1,511
Nonspinning fibers—do	1,062	231	799	138
Waste and refuse—do	-----	-----	110	7
Total—do	1,651	353	8,350	1,656
Products:				
Gaskets and packing—do	3	4	15	21
Brake linings—do	-----	-----	6	8
Clutch facings, including linings—number	2,281	2	5,196	5
Textiles and yarn—short tons	-----	-----	43	19
Shingles and clapboard—do	72	14	42	13
Articles of asbestos cement—do	-----	-----	76	22
Manufactures, n.e.c	NA	5	NA	3
Total	-----	25	-----	91

NA Not available.

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

Year and country	Crude (including blue fiber) Short tons	Crude (including blue fiber) Value (thousands)	Textile fiber Short tons	Textile fiber Value (thousands)	All other Short tons	All other Value (thousands)	Total Short tons	Total Value (thousands)
1969								
Angola	-----	-----	-----	-----	62	$5	62	$5
Canada	2,851	$393	15,974	$5,928	636,606	64,438	655,431	70,759
Finland	1,277	61	-----	-----	4,958	280	6,235	341
France	30	4	-----	-----	-----	-----	30	4
Italy	1	(1)	-----	-----	1	2	2	2
Malta and Gozo	-----	-----	-----	-----	1	2	1	2
Mozambique	55	8	-----	-----	217	18	272	26
Portugal	20	1	-----	-----	395	35	415	36
South Africa, Republic of	28,026	4,774	-----	-----	1,664	321	29,690	5,095
Southern Africa, n.e.c	245	48	-----	-----	-----	-----	245	48
United Kingdom	31	5	-----	-----	265	11	296	16
Yugoslavia	280	9	-----	-----	1,599	79	1,879	88
Total	32,816	5,303	15,974	5,928	645,768	65,191	694,558	76,422
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

[1] Less than ½ unit.

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

(Short tons)

Grade	1969		1970		
	Canada	Republic of South Africa	Canada	Southern Rhodesia	Republic of South Africa
Chrysotile					
Crudes	2,851	2,850	80	---	591
Spinning fibers	15,974	---	15,398	---	85
All other	636,606	1,664	597,832	200	2,855
Crocidolite (blue)	---	10,558	---	---	8,936
Amosite	---	14,618	---	---	14,261
Total	655,431	29,690	613,310	200	26,728

WORLD REVIEW

Two trade journals [5] forecast a possible worldwide asbestos shortage by 1974, and a third [6] says that the new capacity being readied will just meet increased demand in the Western world during the next 2 years.

Accelerated exploration, development and modernization of asbestos properties throughout the world attest that the exporting countries foresee greater markets and that many importing countries hope to become self-sufficient.

[5] Mining Journal. V. 274, No. 2025, Apr. 10, 1970, p. 309.
Engineering Mining Journal. V. 171, No. 5, May 1970, p. 11.
[6] Chemical Week. V. 106, No. 24, June 17, 1963, p. 113.

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

(Short tons)

Country	1968	1969	1970 [p]
North America:			
Canada (sales)	1,509,699	1,576,876	1,663,355
United States (sold or used by producers)	120,690	125,936	125,314
Latin America:			
Argentina	381	359	[e] 350
Bolivia	1	-----	-----
Brazil	4,806	9,981	14,330
Europe:			
Bulgaria	[r] 2,300	3,100	[e] 3,900
Finland [2]	14,484	15,487	15,019
France	551	[e] 550	[e] 550
Italy	114,020	124,039	130,747
Portugal	[r] 94	224	200
U.S.S.R. [e]	900,000	1,100,000	1,150,000
Yugoslavia	11,456	12,634	13,342
Africa:			
Mozambique	132	868	NA
Rhodesia, Southern [e]	95,000	88,000	88,000
South Africa, Republic of	260,531	284,588	316,822
Swaziland	42,946	43,086	[e] 43,100
United Arab Republic	2,868	-----	-----
Asia:			
China, mainland [e]	170,000	180,000	190,000
Cyprus	21,293	23,927	28,253
India	9,992	10,734	10,840
Japan	24,251	23,148	23,576
Korea, Republic of (South)	3,650	6,515	1,513
Philippines	35	49	1,337
Taiwan	1,323	3,396	3,133
Turkey	[r] 3,905	5,698	1,857
Oceania: Australia	895	822	[e] 700
Total	3,315,303	3,640,017	3,826,238

[e] Estimate. [p] Preliminary. [r] Revised. NA Not available.
[1] In addition to the countries listed, Czechoslovakia, North Korea, and Romania also produce asbestos, but information is insufficient to make reliable estimates of output levels.
[2] Includes asbestos flour.

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Australia.—Plant construction, mine preparation, and personnel recruitment are all well underway at the new Pacific Asbestos site at Barraba. Full operation at a rate of 70,000 tons per year of chrysotile fibers should be accomplished this year. An anticipated 100,000 tons per year should come by the end of 2 years' operation. There are 27 million tons of proven ore reserves with a potential of 90 million tons within the lease boundaries.[7]

Hammersley Iron Pty. Ltd. is investigating the feasibility of reactivating the crocidolite property at Wittenoom.

Bolivia.—Under a United Nations Development Program, the Bolivian crocidolite mines will become steadily rather than sporadically operated. Pilot plant studies have been promising, and an experimental plant with the capacity to produce 1,500 tons per year of fiber is being erected at Cochabamba.

Canada.—Sales by Canadian producers increased by 5 percent from 1969 to 1,663,355 short tons. A similar increase this year would come near to accomplishing a national goal of 1.77 million tons annually by 1971.

The Asbestos Corp. Ltd. has a unique solution to some of the problems attendant to having a mine within 300 miles of the arctic circle. The mine, Asbestos Hill on the Ungava peninsula, has 20 million tons of proven ore reserves, but has been shut down for 3 years because of high milling costs. The solution is to mine just 7 months a year, do only partial milling and drying at mine-site, and complete the processing at a new plant under construction at Nordenham, West Germany.

There are a least five new chrysotile deposits under active exploration or development planning in Canada:

(1) Abitibi Asbestos Mining Ltd. is planning a Can$57 to $87 million financing program to develop its property near Amos, Quebec, where drilling indicates reserves of 105 million short tons.

(2) McAdams Mining Corporation is making plans for developing its property at Chibougamou in northwest Quebec.

(3) Ascope Exploration Ltd. is exploring its find at Val d'Or, Quebec, adjacent to the Abitibi property.

(4) Cassiar Asbestos Corp. Ltd. and Kutchko Creek Asbestos Co. are exploring their joint property at Kutchko Creek southeast of Cassiar in British Columbia.

(5) Golden Gate Exploration Co. is examining the Rex property at Haines Junction, Yukon.

Colombia.—Nicolet Industries has a 70-percent share of the chrysotile mine near Medellin now under development. The production is scheduled to reach 40,000 to 70,000 tons annually starting in 1972.

South Africa, Republic of.—The Republic of South Africa remained solidly in third place among world producers with an 11 percent increase in production to 316,822 short tons per year.

U.S.S.R.—The U.S.S.R. remained second only to Canada in production and exports of asbestos fibers and shares title of the No. 1 consumer with the United States.

Data from the Soviet Ministry of Foreign Trade for the 3-year period 1966–68 show a considerable export market; about two-thirds of its customers are in the West. The data show a lessening of the annual increase of exports from 11 to 10 percent, and a projection of the data suggests that asbestos exports will be near 400,000 short tons in 1970. This is about one-third of the estimated 1.2 million short tons of production.

[7] Northern Miner (Toronto). V. 10, No. 8, May 14, 1970, p. 10.

Table 7.—Canada: Shipments [1] of asbestos, by grades
(Short tons)

Grade	1966	1967	1968	1969	1970
Quebec milled group:					
3 (spinning) [2]	28,716	25,391	32,248	29,291	24,648
4 (shingle)	371,837	336,568	335,807	326,146	341,723
5 (paper)	190,278	185,450	193,446	204,208	223,535
6 (stucco)	229,426	244,021	255,648	242,126	261,564
7 (refuse)	512,030	490,087	542,124	539,413	515,872
8 (sand)	8,706	7,149	3,037	2,023	1,793
Newfoundland, Ontario, and British Columbia	138,288	154,345	147,389	233,669	294,220
Total	1,479,281	1,443,011	1,509,699	1,576,876	1,663,355

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

Source: Dominion Bureau of Statistics.

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TECHNOLOGY

The technological event that has possibilities of having the greatest impact on the asbestos industry happened in the glass industry and wasn't announced until early in 1971.[8] Great Britain's Fiberglass, Ltd., in association with British National Research and Development Corp. and the British Building Research Station have developed a glass fiber that resists alkali.

The fibers, still available only in very limited quantities, would, if company expectations are met, become a replacement for asbestos in reinforcing portland cement. They even visualize lengths of up to 4 inches eventually replacing the steel now used for reinforcement.

Until much more information on costs and applicability is available, judgment will have to be reserved on the glass fibers' effect on the asbestos industry. If, however, there is even limited success in the construction industry, the glass fibers may help alleviate the potential mid 1970's asbestos shortage.

Monsanto has developed a new, low cost, general purpose, reflective coating to cover metal, wood, or concrete with a handsome aluminum-impregnated protective coating good for 15 to 20 years. The coating is six to eight times the thickness of ordinary paint and contains asphalt and long fibered asbestos as well as the aluminum.

The asbestos industry has begun to answer some of the widely distributed statements about the health hazards posed to the general public by the manufacture and use of asbestos and asbestos-based products.[9] Eight leading asbestos products manufacturers in the United States have organized the Asbestos Information Association/North America (AIA/NA). The basic objectives of AIA/NA are to (1) provide an authoritative channel of communication, (2) publicly rebut irresponsible and uninformed criticism, and (3) disseminate information on the uses of asbestos in our modern technological society.

[8] Chemical Week. V. 108, No. 3, Jan. 20, 1971, p. 10.
[9] Asbestos. V. 52, No. 10, April 1971, pp. 2–3.

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