Asbestos

By Oliver Bowles and F. M. Barsigian

GENERAL SUMMARY

PRODUCTION of asbestos in Canada, our principal source, surpassed all previous records by a wide margin in 1951. Nevertheless, the demand for asbestos has increased so sharply that most grades were in short supply. Demand for the shorter grades, particularly group 7, was lighter during the latter part of the year. Shortages were more acute for Rhodesian chrysotile than for Canadian.

Although domestic sales exceeded the high record of 1949 by 19 percent, they represented only 6 percent of domestic requirements. Major production is in Vermont. Arizona furnished moderate supplies of chrysotile, including some of high-quality spinning grade. Several States reported small sales of amphibole asbestos.

As in 1950, imports and apparent consumption exceeded all previous records. Imports from Canada again attained an all-time high, but imports of low-iron chrysotile from Southern Rhodesia continued to decline—a condition that has created a critical situation with respect to this type of asbestos, which is obtainable from other sources only in quite limited quantities.

Acquisition of strategic grades for the National Stockpile continued to be difficult because industrial demand, of which a large percentage was directly or indirectly for the defense program, was quite urgent. Prices of Canadian asbestos were 10 to 25 percent higher in 1951 than in 1950. Vermont prices remained at 1950 levels until October 1951, when they were advanced to figures comparable with the corresponding Canadian grades. Prices were advanced further early in 1952.

TABLE 1.—Salient statistics of the asbestos industry in the United States, 1947–51

	1947	1948	1949	1950	1951
Domestic asbestos:					
Produced short tons	25,139	37,237	42,918	41,358	51,730
Sold or used do	24,035	37,092	43,387	42,434	51,645
Value	$918,558	$1,806,261	$2,614,416	$2,925,050	$3,912,500
Imports (unmanufactured) short tons	594,839	647,881	509,366	[1] 705,458	761,873
Value	$29,821,519	$37,974,092	$33,939,582	[1] $47,284,205	$58,521,046
Exports (unmanufactured)[2] short tons	2,680	9,227	20,045	20,890	16,526
Value	$436,300	$1,804,611	$4,152,344	$4,084,384	$3,662,270
Apparent consumption [3] short tons	616,194	675,746	532,708	727,002	796,992
Exports of asbestos products [3]	$11,139,553	$9,326,705	$9,667,847	$8,147,141	$14,321,278

[1] Revised figure.
[2] 1947–50 figures revised to include material that has been imported and subsequently exported without change.
[3] 1947–50 figures revised due to change in basis of calculation. *See* footnote 2.

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PRODUCTION

As indicated in table 1, domestic production was 25 percent higher and sales 22 percent higher in 1951 than in 1950. Chrysotile was produced in Vermont and Arizona and amphibole in Georgia, North Carolina, and Oregon. So few companies have produced amphibole asbestos during recent years that separate figures cannot be published.

Alaska.—No asbestos was produced in 1951 from the Alaska deposit in the Kobuk River district, but Philip S. Hoyt, P. O. Box 83, Aguila, Ariz., reported some prospecting.

Arizona.—In 1951 chrysotile production in Arizona was somewhat higher than in the previous year. Some high-quality material suitable for the National Stockpile was recovered. The following firms and individuals were active: American Asbestos Cement Corp., P. O. Box 2033, Globe (on February 5, 1951, took over Wilson Cherry Creek mine, formerly operated by Gila Asbestos Co.); Apache Asbestos Mines, Inc., P. O. Box 983, Globe; Bear Canyon Mining Co., Globe; Dennis Brown, P. O. Box 328, Globe; Ned H. Brown, P. O. Box 1797, Clifton; Arthur Enders, P. O. Box 362, Globe; Charles Ireland, P. O. Box 374, Globe (lease ended May 1951—operation taken over by Frank Witte); D. W. Jaquays, 1219 South 19th Ave., Phoenix; Kyle Asbestos Mines of Arizona, P. O. Box 302, Globe; Metate Asbestos Corp., Globe; Phillips Asbestos Mines, Drawer 71, Globe; and Pine Top Asbestos Mines, Globe.

California.—Commercial production in California was at a standstill in 1951. A small amount of tremolite was reported sold to the Powhatan Mining Co. for use as a filter medium. The owners of the property, formerly operated by the Loma Blanca Mines, Inc., reported that their mine is open to lease. Prospecting and exploration were continued in California, some of it under Defense Minerals Exploration Administration loans, but no significant discoveries have yet been made.

Georgia.—Powhatan Mining Co., Woodlawn, Baltimore 7, Md., produced amphibole from mines in Meriwether and Rabun Counties. Industrial Minerals Corp., 30 North La Salle St., Chicago 2, Ill., reported development work on tremolite in Rabun County.

Montana.—Some exploratory work was conducted near Cliff Lake, Madison County, by Madisonian Mining & Milling Co. under a DMEA loan.

North Carolina.—Powhatan Mining Co. produced amphibole in Transylvania County near Lake Toxaway. Industrial Minerals Corp., 30 North La Salle St., Chicago 2, Ill., continued development work on amphibole deposits in Macon and Yancey Counties.

Oregon.—Philip S. Hoyt, P. O. Box 83, Aguila, Ariz., reported production in Oregon of a small amount of asbestos suitable for use as filter fiber.

Vermont.—The Vermont Asbestos Mines Division of the Ruberoid Co., 500 Fifth Ave., New York 18, N. Y., the largest producer of chrysotile in the United States, continued operation on an enlarged scale and also conducted exploratory work, partly under a DMEA loan.

Wisconsin.—The DMEA has approved a small exploration loan to determine the extent of a chrysotile deposit in eastern Marinette County. Results of the work are not yet available.

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Wyoming.—The Philip Carey Manufacturing Co. was planning limited exploration of an asbestos deposit on Casper Mountain, Natrona County, under a DMEA loan.

CONSUMPTION AND USES

As indicated in table 2, apparent consumption of raw asbestos in the United States was about 10 percent higher in 1951 than that in 1950, which itself was an all-time high record. Asbestos is used in a multitude of industrial applications; therefore, its consumption in general moves in consonance with the trend of industrial production. Asbestos is also used extensively as a constituent of building materials and insulation products; therefore its consumption is particularly influenced by the volume of building construction. These trends are shown graphically in figure 1.

TABLE 2.—Apparent consumption of raw asbestos in the United States, 1942–51

Year	Short tons	Value	Year	Short tons	Value
1942	433, 949	$21, 582, 096	1947 [1]	616, 194	$30, 303, 777
1943	445, 902	23, 351, 483	1948 [1]	675, 746	37, 975, 742
1944	389, 241	18, 864, 291	1949 [1]	532, 708	32, 401, 654
1945	378, 030	15, 926, 622	1950 [1]	727, 002	46, 124, 871
1946	458, 727	17, 880, 214	1951 [1]	796, 992	58, 771, 276

[1] 1947–50 figures revised owing to change in basis of calculation. Export figures for 1947–51 used in arriving at apparent consumption include material that has been imported and subsequently exported without change (exports of "foreign" merchandise).

PRICES

Prices of Canadian asbestos, as quoted in short tons, f. o. b. mines, in the magazine Asbestos were raised substantially on January 15, 1951, to the following levels: Group 1 (Crude No. 1) $1,100–$1,500; group 2 (Crude No. 2, Crude Run-of-Mine, and Sundry), $485–$900; group 3 (Spinning Fiber), $275–$450; group 4 (Shingle Fiber), $135–$151; group 5 (Paper Fiber), $95–$119; group 6 (Waste, Stucco, or Plaster), $70; group 7 (Refuse or Shorts), $32–$63. These prices remained in effect throughout the year.

Vermont prices, quoted in short tons f. o. b. Hyde Park or Morrisville, Vt., remained at the December 1950 level until October 1951. In June 1951, however, a new item was introduced for Vermont fibers, namely, Spinning and Filtering Fibers, which were quoted at $254.10–$274.45. In October Vermont prices were increased to the following levels: Group 3 (Spinning and Filtering), $279.50–$302; group 4 (Shingle Fiber), $135–$162; group 5 (Paper Fiber), $81.50–$115; group 6 (Waste, Stucco, or Plaster), $71.40; group 7 (Refuse or Shorts), $34–$63. These prices remained in effect for the balance of the year. Prices of all grades, both Canadian and Vermont, except Canadian Crude No. 1, were again advanced substantially in January 1952.

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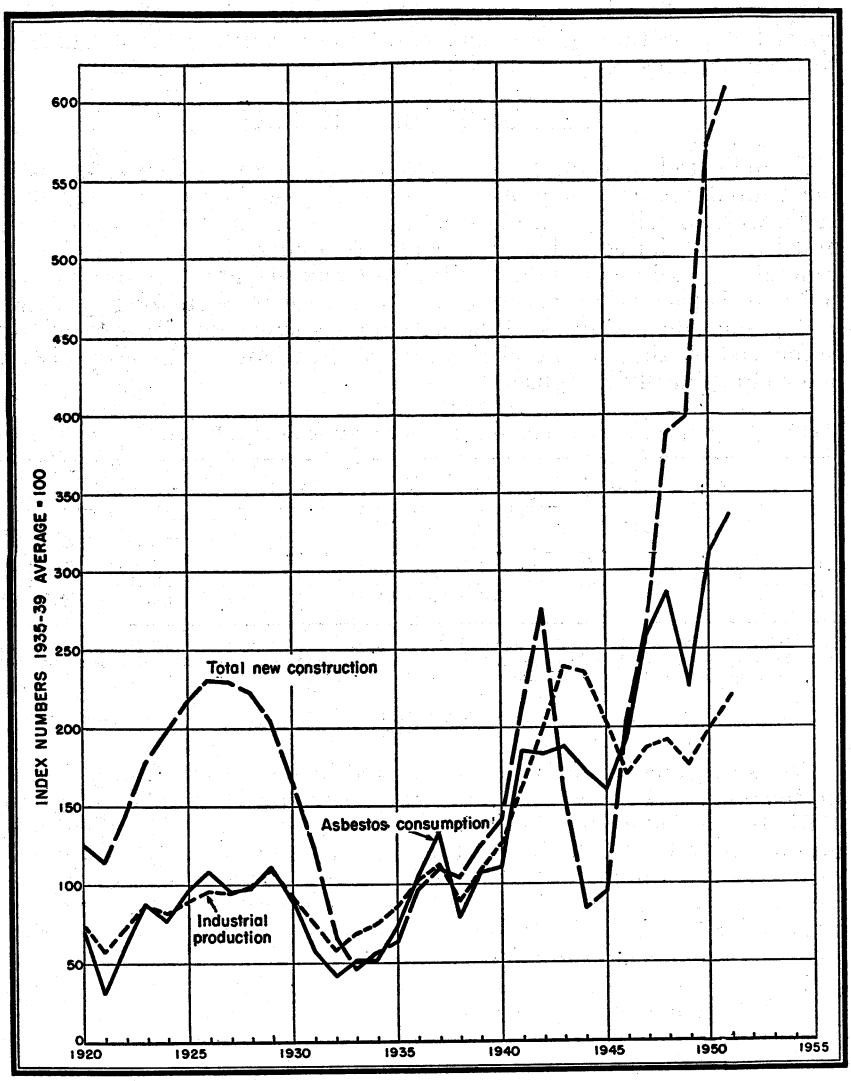


FIGURE 1.—Consumption of asbestos compared with total new construction and industrial production, 1920–51. Statistics on value of construction from Bureau of Foreign and Domestic Commerce and on industrial production from Federal Reserve Board.

FOREIGN TRADE [1]

Imports.—The United States is the largest consumer of asbestos in the world but produces only a small percentage (6 percent in 1951) of its requirements. Accordingly, foreign supplies are essential to

[1] Figures on imports and exports compiled by M. B. Price and E. D. Page, of the Bureau of Mines, from records of the U. S. Department of Commerce.

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the asbestos-products industries. In 1951 imports were 8 percent higher than in 1950. About 95 percent of the total imports originated in Canada, 3 percent in the Union of South Africa, and 1 percent in Southern Rhodesia. On a value basis the African percentages are much higher.

TABLE 3.—Asbestos (unmanufactured) imported for consumption in the United States, 1947–51, by country and class

[U. S. Department of Commerce]

Country	Crude (including blue fiber)		Mill fibers		Short fibers		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1947	35,951	$4,810,852	162,405	$13,957,307	396,483	$11,053,360	594,839	$29,821,519
1948	38,088	5,420,600	176,908	18,028,161	432,885	14,525,331	647,881	37,974,092
1949	39,272	6,741,789	127,504	14,476,260	342,590	12,721,533	509,366	33,939,582
1950								
Australia	273	60,882					273	60,882
Bolivia	[1] 104	[1] 26,119					[1] 104	[1] 26,119
Canada	[1] 1,764	[1] 424,879	[1] 177,228	[1] 21,068,673	[1] 499,704	[1] 20,044,814	[1] 678,696	[1] 41,538,366
Finland	1	135					1	135
Italy	5	2,227	14	12,184			19	14,411
Portugal	40	3,137					40	3,137
Southern British Africa	[1] 1,522	[1] 342,953					[1] 1,522	[1] 342,953
Southern Rhodesia	[1] 8,908	[1] 2,731,929	556	286,825			[1] 9,464	[1] 3,018,754
Union of South Africa [2]	[1] 14,760	[1] 2,196,246	147	12,302			[1] 14,907	[1] 2,208,548
U. S. S. R.	426	69,180					426	69,180
United Kingdom	(3)	(3)	[1] 6	[1] 1,720			[1] 6	1,720
Total	[1] 27,803	[1] 5,857,687	[1] 177,951	[1] 21,381,704	[1] 499,704	[1] 20,044,814	[1] 705,458	[1] 47,284,205
1951								
Australia	311	76,225					311	76,225
Bolivia [4]	324	121,085					324	121,085
British East Africa	160	35,409					160	35,409
Canada	736	362,075	224,770	28,780,021	501,264	23,052,818	726,770	52,194,914
France [5]			11	1,632			11	1,632
Italy	1	3,074	22	20,554			23	23,628
Southern British Africa	712	162,891					712	162,891
Southern Rhodesia	7,700	2,237,654	25	6,344			7,725	2,243,998
Union of South Africa [2]	23,448	3,448,373	109	18,299	26	5,428	23,583	3,472,100
U. S. S. R.	1,897	171,354	330	16,500	10	175	2,237	188,029
Yugoslavia			17	1,135			17	1,135
Total	35,289	6,618,140	225,284	28,844,485	501,300	23,058,421	761,873	58,521,046

[1] Revised figure.
[2] Includes 10 tons ($2,715) of blue (crocidolite) crudes in 1950 and 512 tons ($52,065) of amosite crudes in 1951, credited by the U. S. Department of Commerce to Mozambique; 100 tons ($9,400) amosite crudes credited to French West Africa; 140 tons ($34,115) credited to Southern Rhodesia; and 6 tons ($2,002) blue (crocidolite) crudes credited to United Kingdom. Since Mozambique is not an asbestos producer and the Union of South Africa is the only producer of amosite, appropriate adjustments have been made by the Bureau of Mines.
[3] Revised to none.
[4] Includes 28 tons ($12,545) of blue (crocidolite) crudes credited by the U. S. Department of Commerce to Chile.
[5] Classified by U. S. Department of Commerce as amosite crude; reclassified by Bureau of Mines as mill fibers.

Exports.—Exports of unmanufactured asbestos were somewhat smaller in 1951 than in 1950. Because of current shortages of spinning fibers some measure of export control was deemed necessary, and export licenses were required beginning late in 1951. As indicated in table 4, the value of asbestos products exported increased sharply.

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TABLE 4.—Asbestos and asbestos products exported from the United States, 1947–51 [1]

[U. S. Department of Commerce]

Year	Unmanufactured asbestos				Asbestos products	
	Domestic [2]		Foreign [3]		Domestic [2]	Foreign [3]
	Short tons	Value	Short tons	Value	Value	Value
1947	2,036	$308,414	644	$127,886	$11,135,113	$4,440
1948	6,530	1,173,259	2,697	631,352	9,321,351	5,354
1949	17,621	3,618,703	2,424	533,641	9,666,560	1,287
1950	[4] 18,980	[4] 3,646,828	1,910	437,556	[4] 8,097,192	49,949
1951	14,298	3,216,810	2,228	445,460	14,320,389	889

[1] These data cover exports of both "domestic" and "foreign" merchandise (for definition, *see* footnotes 2 and 3); similar tables in Asbestos chapters for earlier years covered exports of domestic merchandise only, as defined in footnote 2.
[2] Material of domestic origin, or foreign material that has been milled, blended or otherwise processed in the United States.
[3] Material that has been imported and subsequently exported without change.
[4] Revised figure.

TABLE 5.—Asbestos and asbestos products exported from the United States, 1950–51, by kinds [1]

[U. S. Department of Commerce]

Product	1950		1951	
	Quantity	Value	Quantity	Value
Unmanufactured asbestos:				
Crude and spinning fibers—short tons	6,255	$1,682,403	1,306	$479,228
Nonspinning fibers—do	[2] 11,157	[2] 1,830,857	11,449	2,567,289
Waste and refuse—do	1,568	133,568	1,543	170,293
Total unmanufactured—do	[2] 18,980	[2] 3,646,828	14,298	3,216,810
Asbestos products:				
Brake blocks—do	219	[2] 396,654	363	680,989
Brake lining:				
Molded and semimolded—do	1,751	[2] 2,685,709	3,472	6,017,473
Not molded—linear feet	[2] 511,381	[2] 336,201	1,034,930	661,474
Clutch facing—number	[2] 1,051,005	[2] 570,381	1,452,270	935,913
Construction materials—short tons	12,925	1,755,149	14,757	2,526,784
Pipe covering and cement—do	1,143	205,185	2,026	453,367
Textiles, yarn, and packing—do	1,215	1,814,105	1,176	2,391,982
Manufactures, n. e. s	(3)	333,808	(3)	652,407
Total		[2] 8,097,192		14,320,389

[1] Excludes material that has been imported and subsequently exported without change.
[2] Revised figure.
[3] Quantity not recorded.

TECHNOLOGY

Further progress has been made in reducing the iron content of Canadian chrysotile to make it a suitable substitute for the low-iron chrysotile obtained in decreasing quantities from Southern Rhodesia. Certain grades of low-iron Quinterra paper, made of purified Canadian short-fiber asbestos by the Johns-Manville Corp., are now on the market for wrapping wire and other insulation purposes. Raybestos-Manhattan, Inc., is continuing research on low-iron Novabestos paper; a high-quality paper of this type is now made of combined

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fiberglass and asbestos. Experiments by the Naval Research Laboratory on deironing asbestos with a Vortrap, to which reference was made in the Asbestos chapter for 1950, were continued, but no definite results were announced.

Progress is reported on fiberglass research, particularly on high-silica fibers that will give better service than soda-lime-glass fibers, as substitutes for asbestos. To make such fibers in submicron sizes is difficult, but progress has been achieved.

Claims have been made that the Aerofall mill has advantages over standard equipment, both in percentage of recovery and in grade of the fiber produced. This mill reduces the fiber-bearing rock by abrasion and impact in a single stage. Reduction is accompanied by air classification. Details of the mill and results of tests have been published.[2] It has been reported that an Aerofall mill is or will be installed in the Beaver mill of the Asbestos Corp. in Quebec and two such machines in the Rhodesian Monteleo mill, 15 miles south of Shabani, Southern Rhodesia.

The physical and chemical properties of the various types of asbestos have been described in some detail by Badollet.[3] The data presented comprise information assembled by search of the literature, supplemented by experimental work.

WORLD REVIEW

Official statistics of world production for 1951 are far from complete, but estimates for unreported countries are included in the total shown in table 6. New figures or improved estimates have necessitated substantial revisions in the totals listed for 1946–50. The total output of all producing countries gained substantially in 1950 and 1951.

CANADA

Canadian asbestos shipments in 1951 attained an all-time record of 973,198 short tons, valued at $81,584,345, compared with 875,344 short tons, valued at $65,854,568, in 1950—a gain of 11 percent in quantity and 24 percent in value. The following companies were operating in the Quebec area in 1951: Asbestos Corp., Ltd.; Johnson's Co.; Bell Asbestos Mines; Canadian Johns-Manville Corp.; Nicolet Asbestos Mines, Ltd.; Quebec Asbestos Corp.; and Flintkote Mines, Ltd. Further expansion in production is in prospect. The Jeffrey mill of Canadian Johns-Manville Corp. is being modernized. Asbestos Corp., Ltd., is planning extensive mill construction at the Vimy Ridge deposit, where large reserves of asbestos-bearing rock have been proved by diamond drilling. The new mill of Johnson's Co. at Black Lake was being constructed in 1951. United Asbestos Corp., Ltd., is taking steps to develop its promising deposit under Black Lake. Expanding uses for the shorter grades of Canadian asbestos are described by Rukeyser.[4]

[2] Weston, D., The Aerofall Mill in the Milling of Industrial Minerals: Canadian Min. and Met. Bull. vol. 43, No. 464, December 1950, pp. 668–674.
[3] Badollet, M. S., Asbestos, a Mineral of Unparalleled Properties: Canadian Min. and Met. Bull., vol. 54, No. 468, April 1951, pp. 237–246.
[4] Rukeyser, W. A., New Uses for Low-Priced Fibers Vital to Canadian Asbestos: Eng. and Min. Jour., vol. 151, No. 3, March 1950, pp. 76–80.

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TABLE 6.—World production of asbestos, 1946–51, by countries, in metric tons [1]

[Compiled by Helen L. Hunt]

Country [1]	1946	1947	1948	1949	1950	1951
Australia:						
New South Wales	241	290	330	284	[2] 380	[3] 400
South Australia	8	40	41	17	13	[3] 10
Western Australia	380	1,069	977	1,318	[2] 1,250	[3] 1,300
Bolivia (exports)		141	147	182	166	316
Brazil	1,214	2,631	1,304	1,415	(4)	(4)
Canada (sales)[5]	506,371	600,391	650,239	521,543	794,095	882,866
Chile	280	(4)	150	291	172	(4)
Cyprus	4,142	6,795	8,106	12,556	14,989	[6] 15,330
Egypt	65	1,015	1,625	117	260	1,247
Finland [7]	5,781	6,351	10,818	8,395	10,949	(4)
France	575	934	[2] 1,309	[2] 1,090	6,080	(4)
French Morocco	446	825	399	402	511	604
Greece	4	40	(4)	9	30	(4)
India	312	[2] 163	28	148	211	(4)
Italy	8,814	10,719	13,044	[2] 15,877	21,433	22,651
Japan	3,997	4,249	4,809	5,456	[2] 4,848	6,139
Kenya	165	582	510	716	229	396
Madagascar	1	(8)	(8)	2	1	(4)
New Zealand					42	(4)
Portugal	12	91	414	101	271	(4)
Southern Rhodesia	50,686	49,073	62,502	72,246	64,888	70,454
Spain			35	40	41	(4)
Swaziland	29,155	25,360	29,421	30,814	29,635	31,719
Switzerland	40					
Turkey	55	36	203	170	245	(4)
Union of South Africa	18,348	27,344	41,490	64,334	79,300	97,402
United States (sold or used by producers)	12,769	21,804	33,649	39,360	38,495	46,851
Venezuela	65	240	192	192	190	260
Total (estimate)	[2] 750,000	[2] 900,000	[2]1,025,000	[2] 975,000	[2]1,300,000	1,400,000

[1] In addition to countries listed, asbestos is produced in Argentina, Bulgaria, China, Czechoslovakia, Indochina, Korea, Tasmania, and U. S. S. R. Estimates by authors of the chapter are included in total.
[2] Revised figure.
[3] Estimate.
[4] Data not available; estimate by authors of the chapter included in total.
[5] Exclusive of sand, gravel, and stone (waste rock only), production of which is reported as follows: 1946, 5,749 tons; 1947, 8,718 tons; 1948, 40,066 tons; 1949, 32,015 tons; 1950, 43,551 tons; 1951, 30,628 tons.
[6] Exports.
[7] Includes asbestos flour.
[8] Less than 0.5 ton.

The Munro mine of Canadian Johns-Manville Corp. in Cochrane district, Ontario, which began production in April 1950, is producing substantial quantities of chrysotile of nonspinning grades. A detailed discussion of the geology and early stages of development of the

TABLE 7.—Sales of asbestos in Canada, 1950–51, by grade

[Dominion Bureau of Statistics]

	1950			1951		
	Short tons	Value		Short tons	Value	
		Total	Average per ton		Total	Average per ton
Grade:						
Crudes	904	$587,569	$649.97	748	$568,725	$760.33
Fibers	305,194	41,002,785	134.35	333,001	49,399,632	148.35
Shorts	569,246	24,264,214	42.63	639,449	31,615,988	49.44
Total	875,344	65,854,568	75.23	973,198	81,584,345	83.83
Rock mined	12,210,780			12,623,529		
Rock milled	8,635,036			10,219,658		

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Munro deposit has been published.[5] Little progress is reported by Teegana Mines, Ltd., in developing its property near South Porcupine in Deloro Township, Ontario.

There is increasing interest in the McDame Creek asbestos deposit in northern British Columbia, now being developed by Conwest-Exploration Co., Ltd. The fiber is said to be high-quality spinning-grade chrysotile. Production is expected in 1953.

SOUTHERN AFRICA

Southern Rhodesia.—As indicated in table 8, asbestos production in Southern Rhodesia in 1951 was considerably higher than in 1950. Principal production is from the Shabani mines and from operations in the Mashaba and Filabusi districts, controlled by Turner & Newall, Ltd., of Manchester, England. In 1951 a new company was planning mining and milling operations on a deposit 15 miles from Shabani. It is named Rhodesia Monteleo Asbestos, Ltd., a subsidiary of African & European Investment Co., Ltd., of Johannesburg. Several other mines and prospects have been recorded, but their output has been quite small.

TABLE 8.—Asbestos produced in Southern Rhodesia, 1946–51

Year	Short tons	Value	Year	Short tons	Value
1946	55,872	£1,676,503	1949	79,638	£3,986,703
1947	54,094	1,738,484	1950	71,527	4,615,490
1948	68,897	2,604,623	1951	77,663	5,452,108

Union of South Africa.—Output of asbestos in the Union continued the remarkable gains that have characterized recent years. Production in 1951 was 23 percent greater than in 1950. Amosite production (*see* table 10) continued its upward trend, 1951 output exceeding that of 1950 by 28 percent. Current production, however, includes a larger proportion of the shorter grades than formerly. Production of Transvaal crocidolite (blue asbestos) was about the same as in 1950, but the output of Cape blue advanced 19 percent. Production of chrysotile increased 36 percent. Kinlock Asbestos (Pty.), Ltd., is a substantial producer. The Doyershock Asbestos Mine (Pty.), Ltd., adjoining the Kinlock property, produces a moderate tonnage. The Munnick-Myburgh mine, which has been inactive for some years, has been reopened by African & European Investment Co., Ltd. A new mill having a capacity of 8,000 tons of rock a month has been completed.

The current heavy demand for short fibers has created interest in recovery of shorts in South Africa. The long distance of the African mines from markets makes it imperative that every possible economy be practiced if any profit is to be made from shorts.

Sinclair has described crocidolite mining.[6]

[5] Hendry, N. W., Chrysotile Asbestos in Munro and Beatty Townships, Ontario: Canadian Min. and Met. Bull., vol. 44, No. 465, January 1951, pp. 29–36.

[6] Sinclair, W. E., The Present Status of Crocidolite Asbestos: Asbestos, vol. 32, No. 11, May 1951, pp. 4–12, Production of Crocidolite or Blue Asbestos in South Africa: Asbestos, vol. 33, No. 1, July 1951, pp. 4–10; vol. 33, No. 2, August 1951, pp. 4–12.

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TABLE 9.—Asbestos produced in and exported from the Union of South Africa, 1947–51 [1]

Year	Production (short tons)			Exports	
	Transvaal	Cape Province	Total	Short tons	Value
1947	21,959	8,183	30,142	33,237	£927,371
1948	37,434	8,301	45,735	38,550	1,138,792
1949	58,918	11,999	70,917	63,428	2,600,323
1950	[2] 72,203	15,211	[2] 87,414	[2] 70,609	[2] 3,475,200
1951	89,290	18,078	107,368	89,735	5,056,143

[1] Data from Union of South Africa, Department of Mines, quarterly reports.
[2] Revised figure.

TABLE 10.—Asbestos produced in the Union of South Africa, 1947–51, by variety and source, in short tons [1]

Variety and source	1947	1948	1949	1950	1951
Amosite (Transvaal)	18,780	30,372	41,974	[2] 42,393	54,053
Chrysotile (Transvaal)	2,253	4,441	7,609	[2] 14,334	19,509
Blue (Transvaal)	896	2,608	9,181	[2] 15,387	15,581
Blue (Cape)	8,183	8,301	11,999	15,211	18,078
Anthophyllite (Transvaal)	30	13	154	89	147
Total	30,142	45,735	70,917	[2] 87,414	107,368

[1] Data from Union of South Africa, Department of Mines, quarterly reports.
[2] Revised figure.

Swaziland.—The Havelock mine close to the Transvaal border has become an important producer. Output in 1951 reached an all-time high. It is reported that a new mine adjacent to the Havelock is being worked by Msuali Asbestos Co., also known as African Chrysotile Co.

OTHER COUNTRIES

Bolivia.—The Province of Chapare has the distinction of possessing the only known commercial deposit of crocidolite (blue asbestos) in the Western Hemisphere. The material is in demand for air filters, and the small imports are purchased mainly for the National Stockpile.

Brazil.—Deposits of chrysotile asbestos are worked in a small way at Djalma Dutra, State of Bahia, and near Nova Lima, State of Minas Gerais.

Colombia.—Active measures are being taken to develop chrysotile asbestos deposits at or near Yarumal, State of Antioquia. An official of Emergency Procurement Service has examined a deposit at Neira, near Manizales, State of Caldes. Samples submitted to the Bureau of Mines were found to consist in part of chrysotile and in part of nemalite, which is fibrous brucite ($Mg(OH)_2$). Possible utilization of the latter fibers is now under investigation. All of the chrysotile is of the slip-fiber type.

Morocco.—A deposit of high-quality chrysotile has been worked to some extent at N'Cob, about 185 miles by road from Marrakech.

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