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2019 Minerals Yearbook

ASBESTOS [ADVANCE RELEASE]

U.S. Department of the Interior
U.S. Geological Survey

September 2023

Published by AsbestosClaims.Law
asbestosclaims.law/library/11053/1

Asbestos

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The last company that mined asbestos in the United States ceased operations in 2002; since then, domestic consumers have been wholly dependent on imports to meet manufacturing needs. In 2019, estimated U.S. consumption of asbestos fiber (mineral or unmanufactured asbestos, not including asbestos in manufactured products) decreased to 450 metric tons (t) from 500 t (revised) in 2018. Asbestos fiber consumption in the United States was an estimated 1,000 t (about 0.1% of peak consumption in 1973) or less in each year since 2014. Global production of asbestos fiber was an estimated 1.17 million metric tons (Mt) in 2019, 3% less than 1.2 Mt (revised) in 2018 (table 1).

Asbestos, an industry term rather than a mineralogical term, is the generic name applied to a subset of silicate minerals that consist of bundles of separable fibers with high length-to-width ratios (exact definitions vary by Federal agency). The six asbestos types with a history of use in commercial products are the amphibole minerals actinolite, amosite, anthophyllite, crocidolite, and tremolite, as well as chrysotile, the asbestiform variety of serpentine. Chrysotile accounted for more than 93%, by weight, of global asbestos production from 1900 to 2000, followed by crocidolite, amosite, and anthophyllite, and has been the only type of asbestos with significant commercial use in the 21st century. Actinolite and tremolite were never widely produced or used. Other forms of amphibole asbestos occur in nature but have no commercial applications (Virta, 2006, p. 195, 197).

U.S. consumption of asbestos was minimal during the late 1800s, when primary uses were in fireproof garments, insulation and packing for steam locomotive and other boiler systems, and paper and millboard for fireproofing and heat insulation (Bowles, 1937, p. 8–10). Expansion of the automotive and construction industries during the early 20th century provided ready markets for asbestos, and demand grew rapidly for asbestos-containing items such as brake shoes and clutches, cement, flooring, packings and gaskets, and thermal and electrical insulation. Apparent consumption of asbestos in the United States increased from an estimated 20,400 t in 1900 to 153,000 t in 1920 and to 660,000 t in 1950 (fig. 1). Consumption continued to increase with the expansion of the U.S. economy following World War II and reached an alltime high of 803,000 t in 1973 (Virta, 2003, p. 3, 28–30). Asbestos was widely used in a variety of products because it is relatively inexpensive; resists corrosion, fire, and wear; has high mechanical strength; serves as a thermal and electrical insulator; and is flexible enough to be spun and woven. The United States dominated global consumption of asbestos for most of the 20th century, accounting for as much as 83% of the worldwide total in 1920 and averaging 48% from 1920 through 1960. The Soviet Union surpassed the United States as the leading global asbestos consumer in 1970, and the United States remained one of the top five worldwide consumers until the late 1980s (Virta, 2003, p. 36–56).

Domestic and overseas markets for asbestos began to contract during the early 1970s, when the first of numerous bans on asbestos products in the United States and abroad went into effect in response to health and liability issues associated with asbestos use (fig. 1). By 2000, domestic consumption decreased to 14,600 t, similar to late-19th-century levels (Virta, 2003, p. 30). By this time, most U.S. manufacturers had halted production of asbestos-containing products, begun using asbestos substitutes, and (or) replaced asbestos-containing products with items that did not contain asbestos.

Legislation and Government Programs

In 2019, the U.S. Environmental Protection Agency (EPA) issued a Significant New Use Rule (SNUR) under section 5 of the Toxic Substances Control Act of 1976. The regulation, which went into effect on June 24, prohibited the restarting of discontinued uses of asbestos without the EPA having an opportunity to evaluate each intended use for potential risks to human health and the environment and take any necessary regulatory action, which could include a ban. The SNUR required manufacturers to request approval before importing, manufacturing, or processing asbestos for adhesives, arc chutes, beater-addition gaskets, building materials (insulation, plastics, textured paints, and so on), cement products, coatings, extruded sealant tape and other tape, filler for acetylene cylinders, friction materials (except brake blocks used in oil drilling equipment and vehicle brakes and linings), high-grade electrical paper, millboard, missile liner, packings, pipeline wrap, reinforced plastics, roofing felt, sealants, separators in fuel cells and batteries, vinyl-asbestos floor tile, woven products, and any other applications that were not in use in the United States as of the SNUR effective date (U.S. Environmental Protection Agency, 2019, p. 17345–17348).

Consumption

Estimated domestic consumption of unmanufactured asbestos fiber decreased to 450 t in 2019 from 500 t (revised) in 2018. Consumption was estimated as a 5-year rolling average of imports for consumption to account for year-to-year fluctuations in asbestos imports owing to cycles of companies drawing down and replenishing stockpiles, as well as a lack of available information regarding the quantity of industry stockpiles. Calculated in this manner, asbestos consumption in the United States was 1,000 t (about 0.1% of peak consumption in 1973) or less in each year since 2014 (table 1). The chloralkali industry, which used asbestos to manufacture nonreactive semipermeable diaphragms that separate chlorine generated in electrolytic cells from the starting brine, accounted for all domestic consumption of asbestos fiber in 2019 (table 2). The proportion of asbestos accounted for by the chloralkali industry

increased over the previous 10 years, rising from an estimated 35% of consumption in 2010 to 100% in 2016 through 2019 as other end uses ceased (Virta, 2011; Flanagan, 2020).

Many industrial applications of asbestos in the United States have ended since the first domestic ban on asbestos-containing products was implemented in 1973. In 2000, U.S. asbestos was principally sold for roofing products (62% of the market), gaskets (21%), and friction products (12%), whereas near peak consumption in 1972, the major uses were vinyl-asbestos tile and sheet flooring (31%), asbestos-cement pipe (27%), roofing (10%), packings and gaskets (9%), friction products (brakes and clutches) (8%), and insulation (6%) (Clifton, 1975; Virta, 2002).

Prices

In 2019, the average U.S. customs unit value for all grades of imported unmanufactured asbestos decreased by 6% to $1,570 per metric ton from $1,670 per metric ton in 2018. Unit values of individual fiber grades were $1,310 per metric ton for grade 3 and $2,160 per metric ton for grades 4 and 5 (table 5). The length of asbestos fibers decreases from grade 1 through grade 7 (Virta, 2006, p. 9).

Foreign Trade

The United States imported 172 t of asbestos valued at $270,000 in 2019, down from 681 t valued at $1.13 million in 2018. Additional imports (5 t) were reported by the U.S. Census Bureau in 2018, but information from a commercial trade database suggested that these shipments were misclassified. All asbestos imports consisted of chrysotile and originated from Russia in 2019 (table 5). The United States also imported a small, but unknown, quantity of asbestos within manufactured products; the total value of these items was reported as $7.26 million, a decrease of 36% from $11.4 million in 2018 (tables 1, 6). However, a significant quantity of nonasbestos products was likely imported under the Harmonized Tariff Schedule of the United States codes for asbestos-containing articles, based on information from industry sources and reported imports from countries that had banned asbestos. Known applications of asbestos in imported manufactured products were gaskets used to create a chemical containment seal in the production of titanium dioxide and brake blocks for use in the oil industry. Other potential uses suggested by bill of lading data in a commercial trade database and (or) company safety data sheets included automotive brake linings and other friction materials, cement products, knitted fabrics, other gaskets and packing, tile, and wallpaper, but the available information was insufficient for definitive confirmation (U.S. Environmental Protection Agency, 2018, p. 21–26).

Reported exports of unmanufactured asbestos fiber totaled 2 t with a free alongside ship value of $9,000 in 2019 and 235 t valued at $63,000 in 2018 (table 4). However, these shipments were likely improperly classified, reexports, or waste material because asbestos had not been mined domestically since 2002. The United States exported a reported $25.0 million of manufactured asbestos products in 2019, a decrease of 10% from $27.7 million in 2018 (table 3), but many of these shipments also were likely misclassified. Many reported export destinations had banned the use of asbestos and asbestos products, and little or no asbestos articles, such as asbestos board, asbestos friction components, asbestos gaskets and packings, asbestos insulating paper, and asbestos-cement products had been produced in the United States for many years. Shipments reported under these categories may have been reexports and (or) exports of products that were similar but did not contain asbestos (table 4).

World Review

Estimates of global asbestos fiber consumption are presented in table 7. Consumption for each country was calculated as production plus imports minus exports; data regarding changes in industry and Government stocks were not available and thus were not considered. Owing to data limitations, the consumption estimates are best used for identifying trends in asbestos consumption over time rather than absolute consumption for a particular country in a given year.

In 2019, world consumption of asbestos fiber was an estimated 1.19 Mt, essentially unchanged from that in 2018. Over the 5-year period from 2015 through 2019, decreases in consumption of more than 10,000 t took place in Brazil, China, Mexico, and Vietnam, whereas consumption in Bangladesh, Kazakhstan, Russia, Tajikistan, and Uzbekistan increased by more than 10,000 t. India was the leading consumer of asbestos in 2019, followed by China, Russia, Indonesia, Uzbekistan, Sri Lanka, Thailand, Kazakhstan, Vietnam, and Bangladesh, in descending order of consumption; these 10 countries collectively accounted for 95% of the estimated worldwide consumption of asbestos fiber (table 7). Global asbestos end uses included brake pads and linings, cement pipe, construction materials, floor and ceiling tiles, and roofing sheets.

World production of asbestos fiber in 2019 was an estimated 1.17 Mt, a decrease of 3% from 1.20 Mt (revised) in 2018. Russia was the leading producer and accounted for an estimated 68% of global output, followed by Kazakhstan, China, Brazil, and Zimbabwe (table 8).

Brazil.—The Supreme Federal Court of Brazil (STF) enacted a comprehensive national ban on asbestos in November 2017, extending a prohibition that was limited to the State of Rio de Janeiro to the entire country. Eternit S.A., the only asbestos producer in Brazil, disputed the national nature of the ban and considered asbestos to be legal in those States without explicit laws that disallowed its mining and use. A judicial injunction allowed the company to continue operating its mine in the State of Goias until February 2019, when production ceased. In April, Eternit petitioned the STF to allow asbestos ore stockpiles to be processed for sale to foreign markets. In July, the State of Goias passed a law that authorized the extraction and processing of asbestos in the State for export purposes, generating immediate legal challenges (Eternit S.A., 2018, p. 11; 2019; 2020; Migalhas, 2019). By yearend 2019, the STF had not issued a ruling on the constitutionality of the Goias law, and Eternit had not restarted operations.

Colombia.—The Government of Colombia enacted legislation to prohibit the mining, export, production, sale, and use of asbestos beginning in 2021. Domestic companies that used

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asbestos to manufacture products would be exempt from the ban for 5 years (Hervey, 2019).

Zimbabwe.—At the former Mashaba Mine, which closed in 2007, Shabanie Mashaba Mine Holdings began producing asbestos from tailings and was working to dewater the mining shafts and procure equipment to restart underground production. As of August, the company was producing about 500 metric tons per month of asbestos. At full capacity, output from the mine was expected to be 75,000 metric tons per year (Chingwere, 2019). Prior to 2019, asbestos was last produced in Zimbabwe in 2013.

Outlook

Domestic use of unmanufactured asbestos fiber has declined significantly since the 1970s and will likely remain steady or continue to decrease over the long term as alternative materials and (or) new technologies displace it from the chloralkali production process. The trajectory of world production in the coming years will depend on the outcome of the asbestos ban in Brazil and the restart of mining in Zimbabwe. However, significant global demand for asbestos products is expected to continue in several regions of the world, particularly for cement pipe, roofing sheets, and other construction materials in Asia.

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TABLE 1
SALIENT ASBESTOS STATISTICS[1]

		2015	2016	2017	2018	2019
United States:						
Exports and reexports:						
Unmanufactured:[2]						
Quantity	metric tons	517	587	143	235	2
Value[3]	thousands	$116	$116	$92	$63	$9
Asbestos products, value[3, 4]	do.	$26,100	$35,400	$30,400	$27,700	$25,000
Imports for consumption:						
Unmanufactured:[5]						
Quantity	metric tons	325	747	332	681	172
Value[6]	thousands	$612	$1,430	$621	$1,130	$270
Asbestos products, value[6, 7]	do.	$4,640	$7,670	$8,390	$11,400	$7,260
Consumption[e, 8]	metric tons	860 r	770 r	520 r	500 r	450
World:						
Consumption[e, 8]	metric tons	1,330,000	1,210,000	1,160,000 r	1,200,000	1,190,000
Production	do.	1,290,000	1,250,000	1,160,000	1,200,000 r	1,170,000 e

[e]Estimated. [r]Revised. do. Ditto.

[1]Table includes data available through July 9, 2020. Data are rounded to no more than three significant digits.

[2]May include nonasbestos materials and (or) exports of crudes, fibers, stucco, sand, and refuse. Asbestos is no longer mined in the United States.

[3]Free alongside ship value.

[4]Little to no manufacturing of asbestos products has taken place in the United States for many years. Reported exports may have been reexports and (or) exports of products that were similar to but did not contain asbestos.

[5]Additional imports were reported by the U.S. Census Bureau in all years except 2019, but bill of lading information from a commercial trade database suggests that these shipments were misclassified.

[6]U.S. customs declared value.

[7]May include nonasbestos materials.

[8]Consumption of unmanufactured asbestos fibers. Consumption in the United States is estimated as a 5-year rolling average of imports for consumption. Consumption in other countries is estimated as country production plus imports minus exports. Changes in Government and industry stocks were not considered because data were unavailable.

TABLE 2
ESTIMATED U.S. CONSUMPTION OF ASBESTOS FIBERS BY END USE, GRADE, AND TYPE[1, 2]

(Metric tons)

	Chrysotile			
End use	Grade 3	Grades 4, 5	Unspecified grade	Total
2018:				
Chloralkali industry	240 r	230 r	30 r	500 r
Other	--	--	--	--
Total	240 r	230 r	30 r	500 r
2019:				
Chloralkali industry	220	200	30	450
Other	--	--	--	--
Total	220	200	30	450

[r]Revised. -- Zero.

[1]Table includes data available through July 9, 2020. Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Consumption is estimated as a 5-year rolling average of imports for consumption.

TABLE 3
VALUE OF U.S. EXPORTS AND REEXPORTS OF UNMANUFACTURED ASBESTOS FIBERS AND MANUFACTURED ASBESTOS-BASED PRODUCTS, BY COUNTRY OR LOCALITY[1, 2]

(Thousand dollars)

	2018			2019		
Country or locality	Unmanufactured fiber[3]	Manufactured products[4]	Total	Unmanufactured fiber[3]	Manufactured products[4]	Total
Afghanistan	--	165	165	--	56	56
British Virgin Islands	--	--	--	--	178	178
Canada[5]	22	2,640	2,660	--	3,020	3,020
China	--	1,740	1,740	--	702	702
Colombia	--	616	616	--	345	345
Dominican Republic	--	483	483	--	45	45
Ecuador	--	42	42	--	70	70
El Salvador	--	2,020	2,020	--	1,150	1,150
Gabon	--	230	230	--	47	47
Guatemala	--	1,770	1,770	--	283	283
Guinea	--	--	--	--	96	96
Honduras	--	6,870	6,870	--	1,200	1,200
Hong Kong[5]	--	32	32	--	673	673
Israel[5]	--	121	121	--	150	150
Italy[5]	--	195	195	--	10	10
Japan[5]	--	153	153	--	255	255
Kenya	--	385	385	--	133	133
Korea, Republic of[5]	--	478	478	--	135	135
Malaysia	--	256	256	--	--	--
Mexico	38	5,460	5,500	--	13,500	13,500
Nigeria	--	70	70	--	685	685
Panama	--	191	191	--	374	374
Peru	--	119	119	--	87	87
Portugal[5]	--	120	120	--	197	197
Singapore	--	336	336	--	31	31
St. Kitts and Nevis	--	--	--	--	84	84
Taiwan[5]	--	172	172	--	199	199
Trinidad and Tobago	--	15	15	--	77	77
United Kingdom[5]	--	1,560	1,560	--	174	174
Venezuela	--	354	354	--	--	--
Other[5]	3	1,150 r	1,150 r	9	982	990
Total	63	27,700	27,800	9	25,000	25,000

rRevised. -- Zero.

[1]Table includes data available through March 30, 2020. Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Free alongside ship value.

[3]May include nonasbestos materials and (or) exports of crudes, fibers, stucco, sand, and refuse. Asbestos is no longer mined in the United States.

[4]Little to no manufacturing of these products has taken place in the United States for many years. Reported exports may have been reexports and (or) exports of products that were similar to but did not contain asbestos.

[5]Destination country has banned the use of asbestos. Data may include nonasbestos products.

Source: U.S. Census Bureau.

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TABLE 4
U.S. EXPORTS AND REEXPORTS OF UNMANUFACTURED ASBESTOS FIBERS AND MANUFACTURED ASBESTOS-BASED PRODUCTS, BY PRODUCT[1]

Product	2018 Quantity[2] (metric tons)	2018 Value[3] (thousands)	2019 Quantity[2] (metric tons)	2019 Value[3] (thousands)
Unmanufactured, asbestos[4]	235	$63	2	$9
Manufactured:[5]				
Cement products	13	100	43	120
Friction products	NA	8,170	NA	15,700
Gaskets, packing, and seals	222	2,390	82	2,250
Paper and millboard	NA	190	NA	238
Other articles	7,240	16,900	1,360	6,660
Total	7,480	27,700	1,480	25,000

NA Not available.

[1]Table includes data available through March 30, 2020. Data are rounded to no more than three significant digits; may not add to totals shown.

[2]For manufactured products, the quantity is the gross weight and represents the minimum quantity because data for some Harmonized Tariff Schedule of the United States codes and (or) countries were not available.

[3]Free alongside ship value.

[4]May include nonasbestos materials and (or) exports of crudes, fibers, stucco, sand, and refuse. Asbestos is no longer mined in the United States.

[5]Little to no manufacturing of these products has taken place in the United States for many years. Reported exports may have been reexports and (or) exports of products that were similar to but did not contain asbestos.

Source: U.S. Census Bureau.

TABLE 5
U.S. IMPORTS FOR CONSUMPTION OF ASBESTOS FIBERS, BY TYPE AND ORIGIN[1, 2]

Type	Brazil Quantity (metric tons)	Brazil Value[3] (thousands)	Russia Quantity (metric tons)	Russia Value[3] (thousands)	Total Quantity (metric tons)	Total Value[3] (thousands)
2018:						
Chrysotile:						
Spinning fibers, grade 3	408	$654	75	$89	483	$743
Milled, grades 4 and 5	198	392	--	--	198	392
Unspecified grade	--	--	--	--	--	--
Total	606	1,050	75	89	681	1,130
2019:						
Chrysotile:						
Spinning fibers, grade 3	--	--	45	59	45	59
Milled, grades 4 and 5	--	--	82	177	82	177
Unspecified grade	--	--	45	34	45	34
Total	--	--	172	270	172	270

-- Zero.

[1]Table includes data available through March 30, 2020. Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Additional imports were reported by the U.S. Census Bureau in 2018, but bill of lading information from a commercial trade database suggests that these shipments were misclassified.

[3]U.S. customs declared value.

Source: U.S. Census Bureau.

TABLE 6

U.S. IMPORTS FOR CONSUMPTION OF MANUFACTURED ASBESTOS-BASED PRODUCTS IN 2019[1]

HTS[2] code	Category	Quantity[3] (metric tons)	Value[4]	Major sources[5]	Percent of value[6]
6811.40.0000	Asbestos-cement products	22	$46,800	China, Canada,[7] Vietnam	90
6812.80.9000	Crocidolite products (except footwear)[8]	10	22,900	China, Dominican Republic	100
6812.91.9000	Clothing (except footwear)[8, 9]	NA	4,570	Canada[7]	100
6812.93.0000	Compressed asbestos fiber jointing[8, 9]	NA	51,100	China, India	100
6812.99.0002	Yarn and thread[8, 9]	85	686,000	Mexico	100
6812.99.0003	Cords and string[8, 9]	NA	10,200	Japan,[7] China	100
6812.99.0004	Woven or knitted fabric[8, 9]	NA	12,400	India	100
6812.99.0010	Products for use in civil aircraft[8, 9]	NA	12,000	United Kingdom,[7] Canada[7]	100
6812.99.0020	Gaskets, packing, and seals[8, 9]	8	279,000	Japan,[7] China	58
6812.99.0025	Building materials[8, 9]	NA	2,970,000	Canada[7]	98
6812.99.0055	Asbestos articles not elsewhere specified[8, 9]	NA	39,600	Switzerland,[7] China, Mexico, Canada[7]	91
6813.20.0010	Brake linings and pads, civil aircraft[10]	NA	86,600	Singapore, France[7]	92
6813.20.0015	Brake linings and pads, other[10]	NA	1,440,000	China	69
6813.20.0020	Other friction materials, civil aircraft[10]	NA	3,630	France[7]	100
6813.20.0025	Other friction materials[10]	NA	1,600,000	Japan[7]	97
Total		125	7,260,000		

NA Not available.

[1]Table includes data available through March 30, 2020. Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Harmonized Tariff Schedule of the United States.

[3]Gross weight of product; represents the minimum quantity because data for some countries were not available.

[4]U.S. customs declared value.

[5]Countries are listed in decreasing order of value. Includes all countries with a percentage contribution of 10% or more by value.

[6]Percentage contribution of total imports by major import sources.

[7]Country has imposed a ban on asbestos. Material may have been misclassified as asbestos or transshipped.

[8]Articles of fabricated asbestos fibers, of mixtures with a basis of asbestos, or of mixtures with a basis of asbestos and magnesium carbonate.

[9]Excludes crocidolite products.

[10]Articles with a basis of asbestos or asbestos-containing articles of other mineral substances or of cellulose.

Source: U.S. Census Bureau.

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TABLE 7

ESTIMATED WORLD CONSUMPTION OF ASBESTOS FIBERS, BY COUNTRY OR LOCALITY, 2015–19[1, 2, 3, 4]

(Metric tons)

Region	2015	2016	2017	2018	2019
Africa:					
Angola	326	167	254 r	157	78
Ethiopia	201	7	31	(5)	3
Gambia, The	43	878	NA	NA	NA
Zimbabwe	1,550	265	851	2,340	2,500
Other	254 r	293 r	94 r	18	21
Total	2,370 r	1,610 r	1,230 r	2,510	2,600
Asia and the Middle East:					
Azerbaijan	320	456	710	520	780
Bangladesh	10,400	11,900	18,300	16,600	22,900
China	304,000	280,000	235,000	256,000	247,000
India	370,000	308,000	318,000	376,000	373,000
Indonesia	120,000	114,000	105,000	110,000	122,000
Kazakhstan	11,400	25,300	40,500 r	26,200	30,800
Korea, North	362	577	629	756	937
Kyrgyzstan	4,450	6,800	9,170	9,320	7,870
Malaysia	2,980	2,240	2,460	3,310	3,230
Pakistan	6,370 r	6,610 r	7,110 r	6,550	2,320
Philippines	1,780	3,110	2,910	1,840	2,300
Russia	124,000	101,000	118,000	128,000	138,000
Sri Lanka	34,500	47,400	35,700	41,300	42,100
Tajikistan	514	1,430	4,380	9,210	15,100
Thailand	36,500	32,700	42,600	40,400	40,100
Turkmenistan	4,790	4,280	6,410	6,440	8,790
Uzbekistan	56,100	70,600	97,000	99,400	96,000
Vietnam	61,300	58,100	43,100	26,000	27,100
Other	1,230 r	1,020 r	448 r	394	783
Total	1,150,000	1,080,000 r	1,090,000 r	1,160,000	1,180,000
Central America and North America:					
Cuba	4,100	3,080	4,610	1,550	1,150
El Salvador	487	365	960	970	756
Mexico	12,100	4,150	587	426	108
United States	860 r	770 r	520 r	500	450
Other	161 r	171 r	71 r	53	1
Total	17,700 r	8,540 r	6,750 r	3,500	2,460
Europe:					
Belarus	7,180	5,530	6,580	9,140	7,360
Ukraine	10,400	15,500	16,000	12,300	10,300
Other	161	306	218	22	225
Total	17,700 r	21,400 r	22,800 r	21,400	17,900
Oceania	109	130 r	163	135	--
South America:					
Bolivia	4,170	4,740	2,200	959	658
Brazil	125,000	97,600 r	34,400 r	8,930	-11,100 [4]
Colombia	5,960	197	3,330	160	--
Ecuador	4,100	2,750	1,510	1,060	249
Peru	674	762	957	140	23
Venezuela	456	NA	NA	NA	NA
Other	(5) r	-- r	(5) r	(5)	--
Total	141,000	106,000 r	42,400 r	11,300	-10,200 [4]
Grand total	1,330,000	1,210,000	1,160,000 r	1,200,000	1,190,000

See footnotes at end of table.

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TABLE 7—Continued
ESTIMATED WORLD CONSUMPTION OF ASBESTOS FIBERS, BY COUNTRY OR LOCALITY, 2015–19[1, 2, 3, 4]

[r]Revised. NA Not available. -- Zero.
[1]Table includes data available through July 9, 2020. Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Calculated as country production plus imports minus exports. Changes in Government and industry stocks were not considered because data were unavailable. Production data were from table 8 and trade data were from a commercial trade database.
[3]Owing to data limitations, the apparent consumption estimates are best used for identifying trends in asbestos consumption over time rather than absolute consumption for a particular country in a particular year.
[4]Negative values are net exports (exports greater than production plus imports).
[5]Less than ½ unit.

TABLE 8
ASBESTOS: WORLD PRODUCTION, BY COUNTRY OR LOCALITY[1, 2]

(Metric tons)

Country or locality	2015	2016	2017	2018	2019
Brazil	232,052	177,677 [r]	129,094 [r]	110,000 [e]	15,000 [e]
China	227,073	191,632	124,723	135,000 [r, e]	150,000 [e]
Kazakhstan	179,800	192,600	192,700	202,900	210,900
Russia	650,375	691,712	714,105 [r]	752,917 [r]	790,000 [e]
Zimbabwe	--	--	--	--	2,500 [e]
Total	1,290,000	1,250,000	1,160,000	1,200,000 [r]	1,170,000 [e]

[e]Estimated. [r]Revised. -- Zero.
[1]Table includes data available through April 14, 2020. All data are reported unless otherwise noted. Totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.
[2]Marketable fiber production.

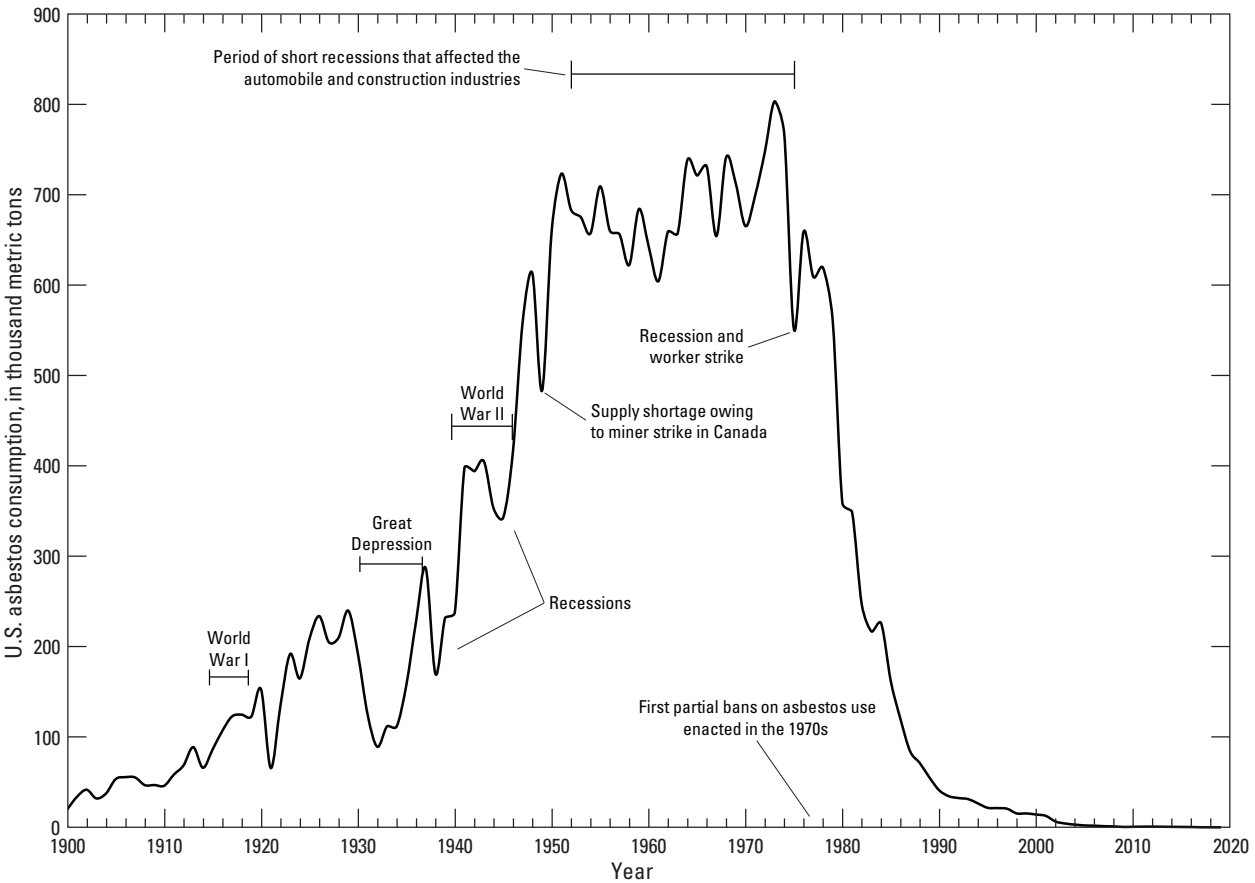


Figure 1. Asbestos consumption in the United States from 1900 to 2019.

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