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2018 Minerals Yearbook

ASBESTOS [ADVANCE RELEASE]

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Asbestos

By Daniel M. Flanagan

Domestic survey tables were prepared by Benjamin N. Bryden, statistical assistant.

The last company that mined asbestos in the United States ceased operations in 2002; domestic consumers have since been wholly dependent on imports to meet manufacturing needs. In 2018, U.S. apparent consumption of asbestos fiber (mineral or unmanufactured asbestos, not including asbestos in manufactured products) increased to 681 metric tons (t) from 332 t in 2017. Actual consumption in each year may have been higher or lower owing to stockpiling by companies, but information about industry stocks was unavailable. Domestic consumption oscillated in recent years but has not exceeded 775 t, less than 0.1% of peak consumption in the early 1970s, since 2012 (fig. 1). Since 2013, annual consumption of asbestos fiber in the United States averaged approximately 545 t. Global production of asbestos was an estimated 1.15 million metric tons (Mt) in 2018, slightly less than revised 1.16 Mt in 2017 (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. 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 have never been widely produced or used. Other forms of amphibole asbestos also 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 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 for asbestos-containing items such as brake shoes and clutches, cement, flooring, packings and gaskets, and thermal and electrical insulation grew rapidly. Apparent consumption of asbestos in the United States increased from 20,400 t in 1900 (estimated) to 153,000 t in 1920 and 660,000 t in 1950 (fig. 1). Consumption continued to rise 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 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). Most U.S. manufacturers had halted production of asbestos-containing products, begun using asbestos substitutes, and (or) replaced asbestos-containing products with ones that did not contain asbestos.

Legislation and Government Programs

The Frank R. Lautenberg Chemical Safety for the 21st Century Act, which amended the Toxic Substances Control Act of 1976, was signed into law during 2016. The legislation granted the U.S. Environmental Protection Agency (EPA) greater authority to evaluate the risks to human health and the environment posed by new chemicals and those already in the marketplace. In 2017 and 2018, the EPA released reports that identified and refined the end uses, exposure pathways, and environmental and human health hazards that will be considered in the asbestos evaluation. If the agency determines that asbestos presents an unreasonable risk, it will be required to take mitigating actions (U.S. Environmental Protection Agency, 2016, 2017, 2018b).

In June 2018, the EPA proposed a significant new use rule (SNUR) under section 5 of the Toxic Substances Control Act of 1976. If adopted, the regulation would require manufacturers to request approval from the EPA before importing, manufacturing, or processing asbestos for adhesives, arc chutes, beater-add gaskets, extruded sealant tape and other tape, filler for acetylene cylinders, high-grade electrical paper, millboard, missile liner, pipeline wrap, reinforced plastics, roof and other coatings, roofing felt, sealants, separators in fuel cells and batteries, vinyl floor tile, and any other building material (other than cement). Asbestos-containing products subject to the proposed SNUR are not currently manufactured in the United States (U.S. Environmental Protection Agency, 2018a, p. 26922).

Consumption

Domestic consumption of unmanufactured asbestos fiber increased to 681 t in 2018 from 332 t in 2017. Asbestos consumption in the United States fluctuated in recent years but remained less than 0.1% of peak consumption in the early 1970s. Since 2014, annual U.S. consumption has averaged approximately 500 t (table 1). The chloralkali industry, which

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uses asbestos to manufacture semipermeable diaphragms that separate chlorine generated in electrolytic cells from the starting brine, accounted for all domestic consumption of asbestos fiber in 2018 (table 2). The proportion of asbestos used by the chloralkali industry increased over the past several years, rising from an estimated 35% of consumption in 2010 as other end uses ceased (Virta, 2011).

Many industrial applications in the United States have terminated 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 2018, the average U.S. customs unit value for all grades of imported unmanufactured asbestos decreased by 11% to $1,670 per metric ton from $1,870 per metric ton in 2017. Unit values of individual fiber grades were $1,540 per metric ton for grade 3 and $1,980 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

In 2018, the United States imported 681 t of chrysotile valued at $1.13 million, compared with 332 t valued at $621,000 in 2017. Additional imports were reported each year by the U.S. Census Bureau, but information from a commercial trade database suggests that some of the shipments were misclassified. All asbestos mineral imports originated from Brazil (89%) and Russia (11%) (table 5). The United States also imported an unknown quantity of asbestos within manufactured products; the total value of these items was reported as $11.4 million, an increase of 35% from $8.39 million in 2017 (tables 1, 6). However, some nonasbestos products likely were imported under the Harmonized Tariff Schedule of the United States codes for asbestos-containing articles, based on reported imports from countries that have 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, 2018b, p. 21–26).

Reported exports of unmanufactured asbestos fiber totaled 235 t with a free alongside ship value of $63,000 in 2018, compared with 143 t valued at $92,000 during 2017 (table 4). However, these shipments were likely waste material or improperly classified because asbestos has not been mined domestically since 2002. The United States exported and (or) reexported $27.7 million of manufactured asbestos products in 2018, a 9% decrease from $30.4 million in 2017 (table 3). Many reported export destinations have banned the use of asbestos and asbestos products, indicating that shipments to these countries likely were misclassified. In addition, little or no asbestos products, such as asbestos board, asbestos friction components, asbestos gaskets and packings, asbestos insulating paper, and asbestos-cement products have 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 unmanufactured asbestos consumption are presented in table 7. At the time of compilation, the available data were insufficient to make reliable 2018 estimates for most countries. Apparent consumption was calculated as production plus imports minus exports; data regarding changes in industry and Government stocks were not available and thus were not considered. In 2017, apparent world consumption of asbestos declined by 6% to 1.14 Mt from 1.21 Mt in 2016. Decreases in consumption of more than 10,000 t took place in Brazil, China, Kazakhstan, Sri Lanka, and Vietnam, whereas consumption in India, Russia, and Uzbekistan increased by more than 10,000 t. India was the leading consumer of asbestos, followed by China, Russia, Indonesia, Uzbekistan, Vietnam, Thailand, Brazil, Sri Lanka, and Bangladesh; these 10 countries collectively accounted for 93% of the estimated worldwide asbestos consumption.

World production of asbestos fiber in 2018 was an estimated 1.15 Mt, slightly less than 1.16 Mt in 2017. Russia was the leading producer and accounted for roughly 60% of global output, followed by Kazakhstan, China, and Brazil (table 8).

Brazil.—The Supreme Federal Court of Brazil enacted a comprehensive national ban on asbestos in November 2017. The court ruling extended an asbestos prohibition that was limited to the State of Rio de Janeiro to the entire country. However, Eternit S.A., the sole asbestos producer in the country, continued to operate in 2018. Pending the release of the full court ruling, the company disputed the national nature of the ban and considered asbestos to be legal in those States without explicit laws that disallow its use (Eternit S.A., 2018, p. 11; 2019).

Canada.—Regulations banning the exportation, importation, sale, and use of asbestos, as well as the exportation, importation, manufacture, sale, and use of asbestos-containing products, took effect on December 30, with limited exceptions. The use of asbestos diaphragms in the chloralkali industry, which manufactures chlorine and sodium hydroxide, would continue to be permitted until the end of 2029. Extraction of byproduct materials from asbestos mining wastes was also excluded, and the Government granted a $12 million loan to Alliance Magnesium Inc. to extract magnesium metal from asbestos tailings at former mines in the towns of Asbestos and Thetford Mines in southern Quebec (Franklin, 2018; Rabson, 2018).

Ukraine.—The Ministry of Health issued an order prohibiting the production and use of asbestos and asbestos-containing products on June 26, 2017, that was expected to take effect

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at the beginning of 2018 (LB.ua, 2017). However, the Ministry of Justice repealed the rule in April 2018 owing to anticipated adverse economic effects on the asbestos-cement and construction industries (Robert J. Pigg, Principal Officer, Asbestos Information Association/North America, written commun., April 26, 2018).

Zimbabwe.—The Government had previously announced that it secured a $100 million loan to reopen the Mashava and Shabanie Mines in southern Zimbabwe by yearend 2017 (Bara, 2017). However, official Government statistics indicated that no asbestos was mined in the country during 2018 (Zimbabwe National Statistics Agency, 2019, p. 51). Information about the status of the mine restarts was not available as of yearend 2018.

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 and consumption 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, such as brake pads and linings, cement pipe, construction materials, floor and ceiling tiles, and roofing sheets, is expected to continue in several regions of the world, particularly Asia.

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U.S. Environmental Protection Agency.

TABLE 1
SALIENT ASBESTOS STATISTICS[1]

		2014	2015	2016	2017	2018
United States:						
Exports and reexports:						
Unmanufactured:[2]						
Quantity	metric tons	279	517	587	143	235
Value[3]	thousands	$54	$116	$116	$92	$63
Asbestos products, value[3, 4]	do.	$29,800	$26,100	$35,400	$30,400	$27,700
Imports for consumption:						
Unmanufactured:[5]						
Quantity	metric tons	416 r	325	747	332	681
Value[6]	thousands	$757 r	$612	$1,430	$621	$1,130
Asbestos products, value[4, 6]	do.	$5,630	$4,640	$7,670	$8,390	$11,400
Consumption, apparent[7]	metric tons	416 r	325	747	332	681
World, production	do.	1,520,000	1,290,000 r	1,250,000 r	1,160,000 r	1,150,000 e

eEstimated. rRevised. do. Ditto.
[1]Table includes data available through September 11, 2019. 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]May include nonasbestos products.
[5]Additional imports were reported by the U.S. Census Bureau, but bill of lading information from a commercial trade database suggests that some shipments were misclassified.
[6]U.S. customs declared value.
[7]Consumption of unmanufactured asbestos; assumed to equal imports. Information to make a reliable estimate of company stockpiles was unavailable.

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TABLE 2
U.S. ASBESTOS CONSUMPTION BY END USE, GRADE, AND TYPE[1, 2, 3]

(Metric tons)

	Chrysotile			
End use	Grade 3	Grades 4, 5	Unspecified grade	Total
2017:				
Chloralkali industry	117	142	73	332
Other	--	--	--	--
Total	117	142	73	332
2018:				
Chloralkali industry	483	198	--	681
Other	--	--	--	--
Total	483	198	--	681

-- Zero.

[1]Table includes data available through September 11, 2019. Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Estimated end-use distribution based on bill of lading data.

[3]Consumption assumed to equal imports. Information to make a reliable estimate of company stockpiles was unavailable. Additional imports were reported by the U.S. Census Bureau, but bill of lading information from a commercial trade database suggests that some shipments were misclassified.

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

(Thousand dollars)

	2017			2018		
Country or locality	Unmanufactured fiber[3]	Manufactured products[4]	Total	Unmanufactured fiber[3]	Manufactured products[4]	Total
Afghanistan	--	--	--	--	165	165
Algeria[5]	--	148	148	--	--	--
Canada	11	2,860	2,870	22	2,640	2,660
China	--	2,360	2,360	--	1,740	1,740
Colombia	--	474	474	--	616	616
Dominican Republic	--	578	578	--	483	483
Egypt[5]	--	251	251	--	27	27
El Salvador	--	2,170	2,170	--	2,020	2,020
Gabon	--	--	--	--	230	230
Guatemala	--	1,170	1,170	--	1,770	1,770
Honduras	--	1,450	1,450	--	6,870	6,870
Hong Kong[5]	--	848	848	--	32	32
Italy[5]	--	91	91	--	195	195
Japan[5]	--	63	63	--	153	153
Kenya	--	426	426	--	385	385
Korea, Republic of[5]	3	332	335	--	478	478
Liberia	--	454	454	--	--	--
Malaysia	--	46	46	--	256	256
Mexico	--	4,900	4,900	38	5,460	5,500
Panama	--	31	31	--	191	191
Saudi Arabia[5]	--	374	374	--	51	51
Sierra Leone	--	459	459	--	--	--
Singapore	11	41	52	--	336	336
Sint Maarten[5]	--	174	174	--	90	90
Taiwan	--	109	109	--	172	172
Trinidad and Tobago	--	133	133	--	15	15
United Arab Emirates	47	309	356	--	77	77
United Kingdom[5]	3	8,590	8,590	--	1,560	1,560
Venezuela	--	31	31	--	354	354
Other[5]	17 [r]	1,550 [r]	1,560 [r]	3	1,380	1,380
Total	92	30,400	30,500	63	27,700	27,800

[r]Revised. -- Zero.
[1]Table includes data available through September 11, 2019. 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. Shipments reported under these categories may have been reexports and (or) exports of products that were similar to but did not contain asbestos.
[5]Destination has banned the use of asbestos. Data may include some nonasbestos products.

Source: U.S. Census Bureau.

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

	2017		2018	
	Quantity[2] (metric tons)	Value[3] (thousands)	Quantity[2] (metric tons)	Value[3] (thousands)
Unmanufactured, asbestos[4]	143	$92	235	$63
Manufactured:[5]				
Cement products	28	33	13	100
Friction products	NA	7,500	NA	8,170
Gaskets, packing, and seals	485	3,760	222	2,390
Paper and millboard	NA	189	NA	190
Other articles	4,310	18,900	7,240	16,900
Total	4,820	30,400	7,480	27,700

NA Not available.
[1]Table includes data available through September 11, 2019. 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 are 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. Shipments reported under these categories 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]

	Brazil		Russia		Total	
Type	Quantity (metric tons)	Value[3] (thousands)	Quantity (metric tons)	Value[3] (thousands)	Quantity (metric tons)	Value[3] (thousands)
2017:						
Chrysotile:						
Spinning fibers, grade 3	117	$173	--	--	117	$173
Milled, grades 4 and 5	142	282	--	--	142	282
Unspecified grade	73	165	--	--	73	165
Total	332	621	--	--	332	621
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

-- Zero.
[1]Table includes data available through September 11, 2019. 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, but bill of lading information from a commercial trade database suggests that some shipments were misclassified.
[3]U.S. customs declared value.

Source: U.S. Census Bureau.

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TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF MANUFACTURED PRODUCTS WITH BASIS OF ASBESTOS IN 2018[1]

HTS[2] code	Category	Quantity[3] (metric tons)	Value[4]	Major sources[5]	Percent of value[6]
6811.40.0000	Asbestos-cement products	48	$97,800	China	92
6812.80.9000	Crocidolite products (except footwear)[7]	52	26,400	China, Italy[8]	100
6812.91.9000	Clothing (except footwear)[7, 9]	1	42,800	Germany,[8] Spain[8]	91
6812.92.0000	Paper, millboard, and felt[7, 9]	NA	25,200	India, Germany,[8] France[8]	100
6812.93.0000	Compressed asbestos fiber jointing[7, 9]	NA	38,500	China, India	100
6812.99.0002	Yarn and thread[7, 9]	51	410,000	Mexico	100
6812.99.0003	Cords and string[7, 9]	(10)	2,500	Japan[8]	100
6812.99.0010	Products for use in civil aircraft[7, 9]	NA	9,090	China, Israel,[8] Canada	100
6812.99.0020	Gaskets, packing, and seals[7, 9]	8	310,000	Japan,[8] Guatemala, Taiwan, Germany[8]	81
6812.99.0025	Building materials[7, 9]	NA	248,000	Canada	91
6812.99.0055	Asbestos articles not elsewhere specified[7, 9]	NA	340,000	China	95
6813.20.0010	Brake linings and pads, civil aircraft[11]	NA	370,000	Japan[8]	97
6813.20.0015	Brake linings and pads, other[11]	NA	2,990,000	China	81
6813.20.0020	Other friction materials, civil aircraft[11]	NA	12,400	France[8]	100
6813.20.0025	Other friction materials[11]	NA	6,450,000	Japan[8]	98
Total		160	11,400,000		

NA Not available.
[1]Table includes data available through September 11, 2019. 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 are not available.
[4]U.S. customs declared value.
[5]Countries and (or) localities 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]Articles of fabricated asbestos fibers or of mixtures with a basis of asbestos or with a basis of asbestos and magnesium carbonate.
[8]Country has imposed a ban on asbestos. Material may have been misclassified as asbestos or transshiped.
[9]Excludes crocidolite products.
[10]Less than ½ unit.
[11]Articles with a basis of asbestos, of other mineral substances, or of cellulose, whether or not combined with textile or other materials (containing asbestos).

Source: U.S. Census Bureau.

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TABLE 7
ESTIMATED CONSUMPTION OF ASBESTOS FIBERS, BY COUNTRY OR LOCALITY, 2014–17[1, 2, 3]

(Metric tons)

Region and country or locality	2014	2015	2016	2017
Africa:				
Angola	409	326	167	NA
Benin	NA	184	1,630	NA
Ghana	451	NA	(4)	--
Nigeria	--	35	353	18
South Africa	4	1,530	3,520	3,180 r
Zimbabwe	5,280	1,550	265 r	851 r
Other	470	578	1,030	68
Total	6,620	4,200	6,960 r	4,120 r
Asia and the Middle East:				
Bangladesh	12,100	10,400	11,900	18,300
China	366,000	304,000	280,000	235,000 r
India	379,000	370,000	308,000	318,000
Indonesia	109,000	120,000	114,000	105,000 r
Kazakhstan	39,500	11,400 r	25,300	10,500
Korea, North	710	362	577	629 r
Kyrgyzstan	5,630	4,450	6,800	9,170
Malaysia	3,590	2,980	2,240	2,460 r
Pakistan	2,300	2,850	2,880	3,430 r
Philippines	2,670	1,780	3,110	2,910 r
Russia	156,000	124,000	101,000	118,000 r
Sri Lanka	42,100	34,500	47,400	35,700 r
Tajikistan	60	514	1,430	4,380 r
Thailand	41,900	36,500	32,700	42,600 r
Turkmenistan	4,280	4,790	4,280	6,410
Uzbekistan	76,400	56,100	70,600	97,000
Vietnam	52,900	61,300	58,100	43,100 r
Other	1,350	1,700	959	857 r
Total	1,300,000	1,150,000	1,070,000	1,050,000 r
Central America and North America:				
Cuba	2,890	4,100	3,080	4,610
El Salvador	723	487	365	960
Mexico	10,200	12,100	4,150	587
United States	416 r	325	747	332
Other	398	100	5	40
Total	14,600	17,100	8,350	6,530
Europe:				
Belarus	6,210	7,180	5,530	6,580 r
Romania	103	4,160	2,700	887
Ukraine	24,700	10,400	15,500	16,000
Other	115	161 r	306	218
Total	31,200	21,900 r	24,100	23,700 r
Oceania	26	109	27	163
South America:				
Bolivia	6,260	4,170	4,740	2,200
Brazil	181,000	125,000 r	89,900 r	40,300 r
Colombia	8,940	5,960	197	3,330
Ecuador	4,470	4,100	2,750	1,510
Other	220	1,130	690	720
Total	201,000	141,000 r	98,300 r	48,100 r
Grand total	1,550,000	1,330,000 r	1,210,000 r	1,140,000 r

rRevised. NA Not available. -- Zero.

[1]Table includes data available through September 11, 2019. 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 the United Nations Comtrade 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]Less than ½ unit.

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

(Metric tons)

Country or locality	2014	2015	2016	2017	2018
Brazil	311,227	232,052 [r]	170,000 [r, e]	135,000 [r, e]	110,000 [e]
China	258,632	227,073	191,632	124,723	125,000 [e]
India	227	--	--	--	--
Kazakhstan	213,100	179,800 [r]	192,600	192,700	202,900
Russia	733,067	650,375	691,712	710,248 [r]	710,000 [e]
Total	1,520,000	1,290,000 [r]	1,250,000 [r]	1,160,000 [r]	1,150,000 [e]

[e]Estimated. [r]Revised. -- Zero.
[1]Table includes data available through April 3, 2019. 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.

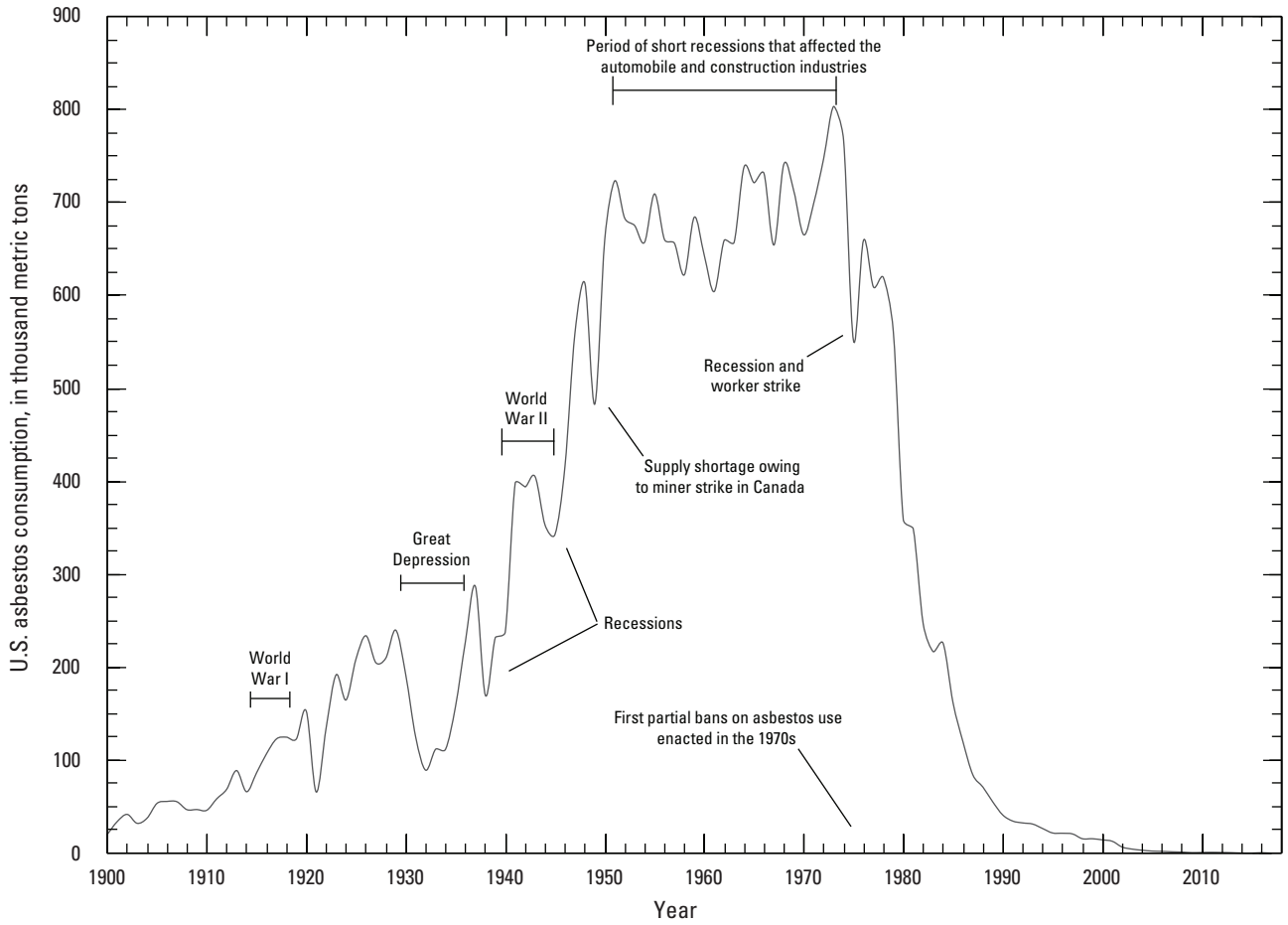


Figure 1. U.S. asbestos consumption from 1900 to 2018.

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