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ASBESTOS [ADVANCE RELEASE]

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Asbestos

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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 2017, U.S. apparent consumption of asbestos fiber (mineral or unmanufactured asbestos, not including asbestos in manufactured products) decreased to 332 metric tons (t) from revised 747 t in 2016. 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 fluctuated in recent years but has not exceeded 775 t, less than 0.1% of peak consumption in the early 1970s, since 2012 (fig. 1). Global production of asbestos was 1.17 million metric tons (Mt) in 2017, 9% less than 1.28 Mt in 2016 (tables 1, 8).

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 as well as those already in the marketplace. The agency will be required to take mitigating actions if it determines that asbestos presents an unreasonable risk. In 2017, the EPA released a report identifying the end uses, exposure pathways, and environmental and human health hazards that will be considered in the asbestos evaluation (U.S. Environmental Protection Agency, 2016, 2017).

Consumption

Consumption of unmanufactured asbestos fiber in the United States fluctuated in recent years but, since 2012, has not exceeded 775 t, less than 0.1% of peak consumption in 1973. In 2017, domestic consumption fell to 332 t from revised 747 t in 2016. The chloralkali industry, which uses asbestos to manufacture semipermeable diaphragms that separate chlorine generated in electrolytic cells from the starting brine, accounted for all domestic asbestos fiber consumption in 2017 (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 2017, the average U.S. customs unit value for all grades of imported unmanufactured asbestos decreased slightly to $1,870 per metric ton from revised $1,910 per metric ton in 2016. Unit values of individual fiber grades were as follows: grade 3, $1,480 per metric ton; grades 4 and 5, $1,990 per metric ton; and unspecified fiber grades, $2,260 per metric ton (table 5). From grade 1 through grade 7, the unit value rises because the degree of processing increases, and the length of asbestos fibers decreases.

Foreign Trade

In 2017, the United States imported 332 t of chrysotile valued at $621,000, compared with revised 747 t valued at $1.43 million in 2016. 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 in 2017 originated in Brazil (table 5). The United States also imported an unknown quantity of asbestos within manufactured products; the total value of these items was reported as $8.39 million, an increase of 9% from revised $7.67 million in 2016 (tables 1, 6). However, some nonasbestos products likely were imported under the Harmonized Tariff Schedule of the United States codes for articles that contain asbestos, based on reported imports from countries that have banned asbestos. One known application of asbestos in imported manufactured products was for asbestos-containing gaskets used to create a chemical containment seal in the production of titanium dioxide. Other potential uses suggested by bill of lading data in a commercial trade database and (or) company safety data sheets included adhesives, brake linings, coatings, knitted fabrics, and sealants, but the available information was insufficient for definitive confirmation (U.S. Environmental Protection Agency, 2017, p. 21–23).

Reported exports of unmanufactured asbestos fiber totaled 143 t with a free alongside ship value of $92,000 in 2017, compared with 587 t valued at $116,000 during 2016 (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 $30.4 million of manufactured asbestos products in 2017, a 14% decrease from $35.4 million in 2016 (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. The estimates for 2017 are preliminary because data for many countries were either unavailable or based on incomplete information at the time of compilation. 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.

Based on preliminary data, global apparent consumption in 2017 was 993,000 t, potentially marking the first year since the 1940s that global asbestos fiber consumption was less than 1.0 Mt, pending the release of additional information. India was the leading consumer of asbestos, followed by China, Russia, Uzbekistan, Indonesia, Brazil, Thailand, Sri Lanka, Vietnam, and Bangladesh. These 10 countries collectively accounted for 92% of the estimated worldwide asbestos consumption.

In 2016, apparent world consumption of asbestos declined by 10% to revised 1.24 Mt from revised 1.37 Mt in 2015. Decreases in consumption of more than 10,000 t took place in Brazil, China, India, and Russia, whereas consumption in Kazakhstan, Sri Lanka, and Uzbekistan increased by more than 10,000 t. India was the leading consumer of asbestos, followed by China, Brazil, Indonesia, Russia, Uzbekistan, Vietnam, Sri Lanka, Thailand, and Kazakhstan. These 10 countries collectively accounted for 93% of the estimated worldwide asbestos consumption.

World production of asbestos fiber in 2017 totaled 1.17 Mt, 9% less than 1.28 Mt in 2016. Russia was the leading producer and accounted for roughly 60% of global output, followed by Kazakhstan, Brazil, and China (table 8).

Brazil.—According to multiple news agencies, the Supreme Federal Court of Brazil enacted a comprehensive national ban on asbestos in November 2017. The court ruling extended an asbestos prohibition that had been limited to the State of Rio de Janeiro to the entire country. However, Eternit S.A., the sole asbestos producer in Brazil, announced in December that it would continue to operate in 2018. Pending the release of the full court ruling, which was not available as of yearend 2017, 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 also announced that it would replace chrysotile with synthetic fibers in its asbestos-cement tiles and redirect all asbestos fiber output to the international market in response to changes in demand (Eternit S.A., 2018, p. 2, 3, 11).

Oman.—A ban on the importation of asbestos-containing products took effect in July. The use of all types of asbestos fiber within the country has been illegal since 2009 (Al Harthy, 2017; Times News Service, 2017).

Sri Lanka.—The Government of Sri Lanka had announced in September 2016 that a ban on asbestos imports would take effect in 2018 and that prohibitions on the manufacture of asbestos-containing products and the importation of asbestos roofing materials would begin in 2024. In December 2017, the proposed bans were canceled for chrysotile owing to concerns over substitute materials and trade tensions with Russia, the leading supplier of Sri Lankan asbestos imports. A prohibition on the use of crocidolite, enacted in 1987, remained in effect (Bandara, 2017; Karunaratna, 2017).

Zimbabwe.—In September, the Government announced that it secured a $100 million loan from XCMG Group (China) to reopen by yearend the Mashava and Shabanie Mines in southern Zimbabwe, which had been closed since 2006. The two mines

collectively produced 140,000 metric tons per year (t/yr) of asbestos at their peak and were expected to sell at least 60,000 t/yr to consumers in India, Kazakhstan, Russia, and Zimbabwe (Bara, 2017; Langa, 2017).

Outlook

Domestic use of unmanufactured asbestos fiber has consistently declined 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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Occupational Safety and Health Administration.
U.S. Environmental Protection Agency.

TABLE 1
SALIENT ASBESTOS STATISTICS[1]

		2013	2014	2015	2016	2017
United States:						
Exports and reexports:						
Unmanufactured:[2]						
Quantity	metric tons	27	279	517	587	143
Value[3]	thousands	$48	$54	$116	$116	$92
Asbestos products, value[3, 4]	do.	$33,300	$29,800	$26,100	$35,400	$30,400
Imports for consumption:						
Unmanufactured:[5]						
Quantity	metric tons	772	406	325 r	747 r	332
Value[6]	thousands	$1,160	$741	$612 r	$1,430	$621
Asbestos products, value[4, 6]	do.	$4,930 r	$5,630	$4,640	$7,670 r	$8,390
Consumption, apparent[7]	metric tons	772	406	325 r	747 r	332
World, production	do.	1,650,000 r	1,520,000 r	1,330,000 r	1,280,000	1,170,000

rRevised. do. Ditto.
[1]Table includes data available through June 10, 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 for some years, but bill of lading information from a commercial trade database suggests that some of the shipments were misclassified.
[6]U.S. customs declared value.
[7]Consumption assumed to equal imports. A significant quantity of asbestos may have been added to company stockpiles in 2016, but information to make a reliable estimate was unavailable.

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
2016:				
Chloralkali industry	322 r	410 r	15 r	747 r
Other	--	-- r	--	-- r
Total	322 r	410	15 r	747 r
2017:				
Chloralkali industry	117	142	73	332
Other	--	--	--	--
Total	117	142	73	332

rRevised. -- Zero.
[1]Table includes data available through June 10, 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. A significant quantity of asbestos may have been added to company stockpiles in 2016, but information to make a reliable estimate was unavailable.

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)

	2016			2017		
Country or locality	Unmanufactured fiber[3]	Manufactured products[4]	Total	Unmanufactured fiber[3]	Manufactured products[4]	Total
Australia[5]	4	97	101	--	25	25
Brazil	--	325	325	--	66	66
Canada	--	2,100	2,100	11	2,860	2,870
China	--	1,710 r	1,710 r	--	2,360	2,360
Colombia	--	642	642	--	474	474
Dominican Republic	--	2,520	2,520	--	578	578
El Salvador	--	1,940	1,940	--	2,170	2,170
France[5]	--	46	46	--	40	40
Germany[5]	--	31	31	--	92	92
Guatemala	--	704	704	--	1,170	1,170
Honduras	--	603	603	--	1,450	1,450
Hong Kong	--	1,550	1,550	--	848	848
Italy[5]	--	74	74	--	91	91
Japan[5]	--	540	540	--	63	63
Korea, Republic of[5]	--	1,680	1,680	3	332	335
Mexico	84	5,400 r	5,480	--	4,900	4,900
Netherlands[5]	--	52	52	--	50	50
Philippines	--	10	10	--	35	35
Sierra Leone	--	436 r	436 r	--	459	459
United Arab Emirates	--	1,730	1,730	47	309	356
United Kingdom[5]	--	8,850	8,850	3	8,590	8,590
Venezuela	--	89	89	--	31	31
Other[5]	29	4,280 r	4,310 r	28	3,420	3,450
Total	116	35,400	35,500	92	30,400	30,500

rRevised. -- Zero.
[1]Table includes data available through June 10, 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 but did not contain asbestos.
[5]Destination country has banned the use of asbestos. Data may include some nonasbestos products.

Source: U.S. Census Bureau.

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

Product	2016		2017	
	Quantity[2] (metric tons)	Value[3] (thousands)	Quantity[2] (metric tons)	Value[3] (thousands)
Unmanufactured, asbestos[4]	587	$116	143	$92
Manufactured:[5]				
Cement products	66	294	28	33
Friction products	NA	8,210 r	NA	7,500
Gaskets, packing, and seals	559	5,930 r	485	3,760
Paper and millboard	NA	1,990	NA	189
Other articles	2,070 r	19,000	4,310	18,900
Total	2,690 r	35,400	4,820	30,400

rRevised. NA Not available.
[1]Table includes data available through June 10, 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 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 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]

Type	Brazil		Russia		Total	
	Quantity (metric tons)	Value[2] (thousands)	Quantity (metric tons)	Value[2] (thousands)	Quantity (metric tons)	Value[2] (thousands)
2016:						
Chrysotile:						
Spinning fibers, grade 3	322 r	$566	--	--	322 r	$566
Milled, grades 4 and 5	410	835	--	--	410	835
Unspecified grade	--	--	15 r	$30	15 r	30
Total	732 r	1,400	15 r	30	747 r	1,430
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

rRevised. -- Zero.
[1]Table includes data available through June 10, 2019. Data are rounded to no more than three significant digits; may not add to totals shown.
[2]U.S. customs declared value.

Source: U.S. Census Bureau.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF MANUFACTURED PRODUCTS WITH BASIS OF ASBESTOS IN 2017[1]

HTS[2] code	Category	Quantity[3] (metric tons)	Value[4] (thousands)	Major sources[5]	Percent of value[6]
6811.40.0000	Asbestos-cement products	20	$14,800	Honduras, China	100
6812.80.9000	Crocidolite products (except footwear)[7]	(8)	7,250	Switzerland[9]	100
6812.91.9000	Clothing (except footwear)[7, 10]	(8)	18,000	Mexico, China, Bangladesh	100
6812.93.0000	Compressed asbestos fiber jointing[7, 10]	NA	142,000	China, India	100
6812.99.0002	Yarn and thread[7, 10]	11	106,000	Mexico, Japan[9]	100
6812.99.0004	Woven or knitted fabric[7, 10]	1	18,800	China, Italy[9]	100
6812.99.0010	Products for use in civil aircraft[7, 10]	NA	4,810	Canada	100
6812.99.0020	Gaskets, packing, and seals[7, 10]	12	341,000	Japan,[9] Israel,[9] France[9]	75
6812.99.0025	Building materials	NA	8,920	China	100
6812.99.0055	Asbestos articles not elsewhere specified[7, 10]	NA	33,500	China, France[9]	100
6813.20.0010	Brake linings and pads, civil aircraft[11]	NA	77,600	United Kingdom,[9] Brazil, Japan[9]	100
6813.20.0015	Brake linings and pads, other[11]	NA	2,330,000	China	62
6813.20.0020	Other friction materials, civil aircraft[11]	NA	2,420,000	Japan[9]	98
6813.20.0025	Other friction materials[11]	NA	2,870,000	Japan[9]	93
Total		46	8,390,000		

NA Not available.
[1]Table includes data available through June 10, 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 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]Less than ½ unit.
[9]Country has imposed a ban on asbestos. Material may have been misclassified as asbestos or transshiped.
[10]Excludes crocidolite products.
[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.

TABLE 7
ESTIMATED ASBESTOS CONSUMPTION, BY REGION AND COUNTRY OR LOCALITY, 2013–17[1, 2, 3, 4]

(Metric tons)

Region and country or locality	2013	2014	2015	2016	2017[p]
Africa:					
Angola	816	409	326	167	NA
Benin	NA	NA	184	1,630	NA
Ghana	2,040	451	NA [r]	(5) [r]	NA
Nigeria	349	--	35	353 [r]	18
South Africa	854	4	1,530	3,520 [r]	3,340
Zimbabwe	4,360	5,280	1,550	(5) [r]	(5)
Other	233 [r]	470	578 [r]	1,030 [r]	68
Total	8,660	6,620 [r]	4,200 [r]	6,700 [r]	3,420
Asia and the Middle East:					
Bangladesh	8,030	12,100	10,400	11,900	18,300
China	454,000 [r]	366,000 [r]	304,000 [r]	280,000 [r]	125,000
India	303,000	379,000	370,000	308,000	318,000
Indonesia	148,000	109,000	120,000	114,000	95,500
Kazakhstan	67,200	39,500	11,300	25,300 [r]	10,500
Korea, North	611	710	362	577	221
Kyrgyzstan	7,200	5,630	4,450	6,800	9,170
Malaysia	4,960	3,590	2,980	2,240	2,430
Pakistan	3,800	2,300	2,850	2,880	3,050
Philippines	2,650	2,670	1,780	3,110	2,720
Russia	209,000	156,000	124,000	101,000 [r]	97,800
Sri Lanka	34,900	42,100	34,500	47,400	35,600
Tajikistan	3	60	514	1,430	1,820
Thailand	53,100	41,900	36,500	32,700	38,500
Turkmenistan	5,280	4,280	4,790	4,280	6,410
Uzbekistan	81,800	76,400	56,100	70,600	97,000
Vietnam	57,800	52,900	61,300	58,100	26,900
Other	2,590 [r]	1,350 [r]	1,700 [r]	959 [r]	182
Total	1,440,000 [r]	1,300,000 [r]	1,150,000 [r]	1,070,000 [r]	889,000
Central America and North America:					
Cuba	4,770	2,890	4,100	3,080	4,610
El Salvador	729	723	487	365	960
Mexico	7,110	10,200	12,100	4,150 [r]	587
United States	772	406	325	747	332
Other	61 [r]	398 [r]	100 [r]	5 [r]	40
Total	13,400	14,600	17,100	8,350 [r]	6,530
Europe:					
Belarus	10,600	6,210	7,180	5,530	3,380
Romania	27	103	4,160	2,700	887
Ukraine	35,200	24,700	10,400	15,500 [r]	16,000
Other	553 [r]	115 [r]	1,610 [r]	306 [r]	218
Total	46,500 [r]	31,200 [r]	23,300 [r]	24,100 [r]	20,500
Oceania	250	26	109	27	163
South America:					
Bolivia	4,420	6,260	4,170	4,740	2,200
Brazil	165,000	181,000	163,000	120,000	65,300
Colombia	16,000	8,940	5,960	197	3,330
Ecuador	4,160	4,470	4,100	2,750 [r]	1,510
Other	1,010	220	1,130	690	720
Total	191,000	201,000	179,000	128,000 [r]	73,100
Grand total	1,700,000 [r]	1,550,000 [r]	1,370,000 [r]	1,240,000 [r]	993,000

[p]Preliminary. [r]Revised. NA Not available. -- Zero.

[1]Table includes data available through June 10, 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]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[3]	2013	2014	2015	2016	2017
Argentina[4]	101	--	--	--	-- [e]
Brazil	290,825	311,227 [r]	270,000 [e]	200,000 [e]	160,000 [e]
China	303,668 [r]	258,632 [r]	227,073 [r]	191,632 [r]	124,723
India	267	227	--	--	--
Kazakhstan	243,400	213,100	179,700	192,600	192,700
Russia	810,352	733,067	650,375 [r]	691,712 [r]	690,000 [e]
Zimbabwe	377	--	--	--	--
Total	1,650,000 [r]	1,520,000 [r]	1,330,000 [r]	1,280,000	1,170,000

[e]Estimated. [r]Revised. -- Zero.

[1]Table includes data available through May 16, 2018. 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.

[3]In addition to the countries and (or) localities listed, Afghanistan, North Korea, Romania, and Slovakia may have produced asbestos, but available information was inadequate to make reliable estimates of output.

[4]Most uses of asbestos have been banned since 2001. An exception allowing the use of asbestos-containing diaphragms in the chloralkali process expired in 2014. Production in 2015 was reported by the Government of Argentina.

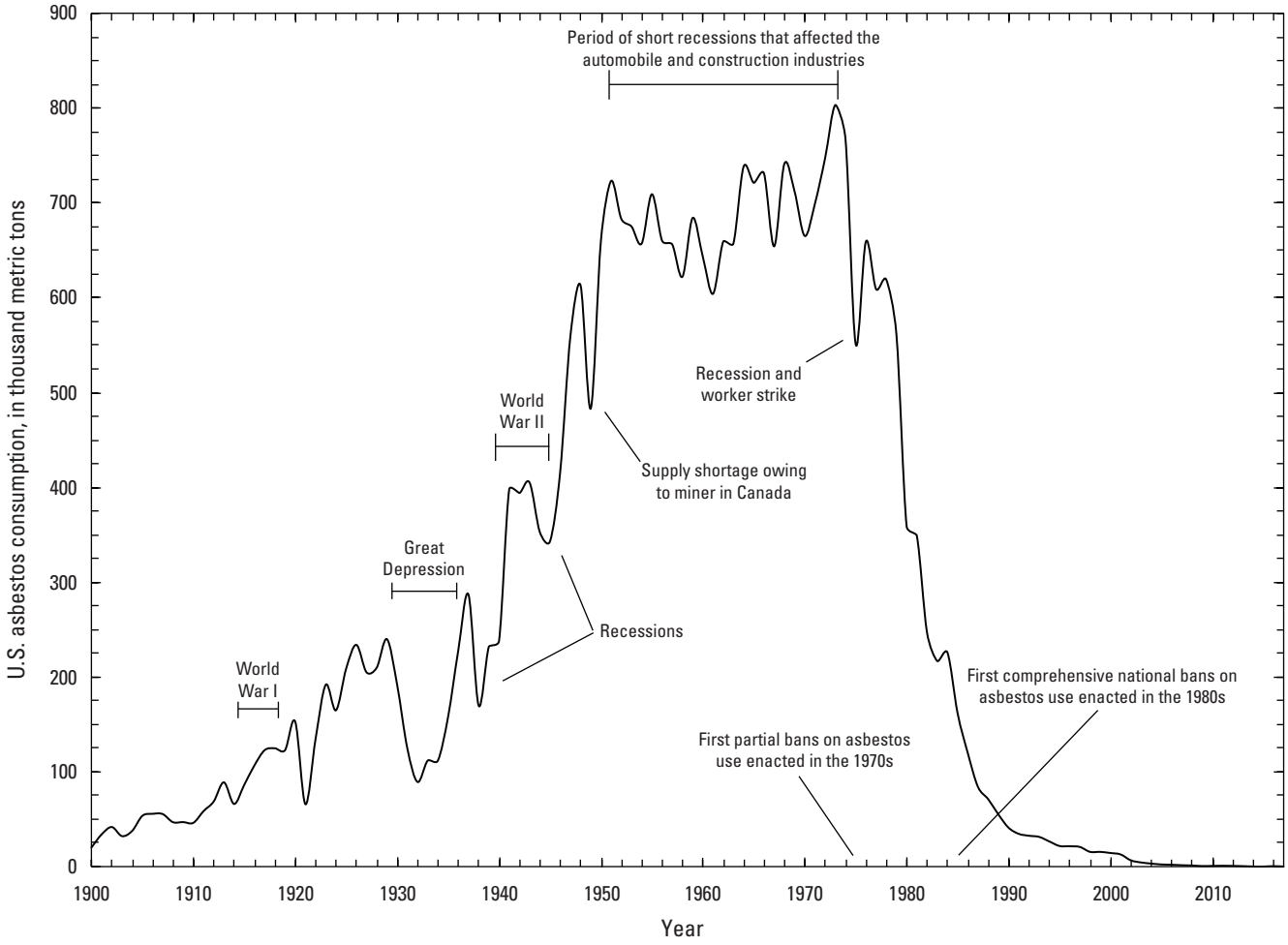

Figure 1. U.S. asbestos consumption from 1900 to 2017.