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2014 Minerals Yearbook

ASBESTOS [ADVANCE RELEASE]

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

December 2015

Published by AsbestosClaims.Law
asbestosclaims.law/library/11049/1

ASBESTOS

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Asbestos has not been mined in the United States since 2002, with imports meeting the needs of domestic consumers. Domestic mining ended owing to the decline of U.S. and overseas markets that resulted from health and liability issues associated with asbestos use. Estimated U.S. apparent consumption was 406 metric tons (t) in 2014, a 47% decrease from 772 t in 2013. World production decreased slightly to 2.02 million metric tons (Mt) in 2014 from 2.05 Mt in 2013 (table 1).

Prior to 1900, U.S. consumption of asbestos was less than 10,000 metric tons per year (t/yr) because technological development had not yet created large markets for asbestos. In the early 1900s, rapid expansion of the automotive and construction industries provided ready markets for asbestos. Demand for such items as asbestos brake shoes and clutches, asbestos-cement products, asbestos flooring, asbestos packings and gaskets, and asbestos thermal and electrical insulation grew rapidly. By 1950, more than 600,000 t/yr of asbestos was being used by domestic manufacturers, making the United States the leading global consumer of asbestos (fig. 1). With the expansion of the U.S. economy after World War II, consumption of asbestos continued to increase, reaching an alltime high of 801,000 t in 1973. The contraction of U.S. markets for asbestos began in the 1970s in response to health and liability issues. By 2000, U.S. consumption of asbestos had decreased to late-19th-century levels, about 14,600 t/yr, or less than 2% of 1973 consumption. Most U.S. manufacturers had ceased production of asbestos-containing products, begun using asbestos substitutes, and (or) replaced asbestos-containing products with ones that did not contain asbestos. U.S. asbestos consumption, which took more than 100 years to peak, almost completely collapsed in less than 10 years, with many uses completely disappearing. Principal uses for asbestos in 2000 were roofing products, gaskets, and friction products, with 62%, 21%, and 12% of the market, respectively, compared with uses in 1973 when the major markets were vinyl asbestos tile and sheet flooring (31%), asbestos-cement pipe (27%), roofing (10%), packing and gaskets (9%), and friction products (brakes and clutches) (8%) (Clifton, 1975; Virta, 2003). By 2014, the chloralkali industry, where asbestos was used to manufacture semipermeable diaphragms that separate chlorine generated at the electrolytic cell anode from the starting brine, accounted for most of U.S. asbestos consumption.

Consumption

In 2014, estimated U.S. apparent consumption of asbestos decreased by 47% to 406 t from 772 t in 2013 (table 1). The chloralkali industry was the leading consumer of asbestos, accounting for most of the asbestos imports and consumption (table 2). Based on import statistics and manufacturing trends during the past 4 years, uses for other than chloralkali manufacture have declined. Minor to trace markets for asbestos likely were coatings and compounds, plastics, and roofing products.

Chrysotile was the only type of asbestos used in the United States in 2014, with grade 3 and 4 fiber each accounting for 46% and unspecified fiber grades accounting for 8% (table 2).

Prices

The average U.S. customs unit value for all grades of imported asbestos increased by 21% to $1,825 per ton in 2014 from $1,508 per ton in 2013 (table 5).

Foreign Trade

In 2014, the United States imported 406 t of chrysotile valued at $741,000, a 47% decline from 772 t valued at $1.16 million in 2013 (table 5). After a buildup of stocks in 2012, it was likely that imports were in balance with annual domestic needs. All fiber imports were from Brazil (table 5). The United States also imported $5.63 million of products with a basis of asbestos and products with a basis of asbestos and magnesium carbonate, a 14% increase from $4.94 million of product imports in 2013 (table 6). The increase took place because unit values were greater for many imported product categories in 2014 than in 2013. Products imported under the Harmonized Tariff Schedule (HTS) code for articles of asbestos-cement probably were manufactured using cellulose or other asbestos substitutes. Some nonasbestos products likely were included under other asbestos HTS codes as well based on reported asbestos product imports from countries that have banned asbestos use.

In 2014, reported exports of asbestos fiber were 279 t with a free alongside ship value of $54,000, a tenfold increase from 27 t valued at $48,000 in 2013 (tables 1, 3, 4). Because no asbestos was produced domestically, this material was most likely improperly classified as asbestos fiber. The United States exported and reexported $29.7 million of asbestos products in 2014, an 11% decrease from $33.4 million in 2013. Mexico was the leading destination for asbestos products, accounting for 22% of the value of export shipments, followed by the Republic of Korea with 13% and Canada with 6% (table 3). The remainder was distributed among 87 other countries (U.S. International Trade Commission, undated). Many countries listed as export destinations in table 3 banned the use of asbestos and asbestos products, so asbestos product imports from the United States likely were reexported or the U.S. exports were misclassified as asbestos. Another consideration suggesting misclassification is that the chloralkali industry used the bulk of U.S. asbestos imports and the remaining imports were insufficient to account for the asbestos-containing products that were reported as exported.

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Friction products, including brake linings, clutch linings, and disk pads, accounted for 31% of the value of manufactured products exported in 2014, followed by gaskets, packing, and seals with 16% (table 4). Little or no asbestos board, asbestos friction components (brakes and clutches), asbestos gaskets and packings, asbestos insulating paper, or asbestos-cement products have been produced in the United States for many years, thus shipments under these product categories may have been reexports of asbestos products, and (or) exports of products that may have been similar but did not contain asbestos.

World Review

World production of asbestos decreased slightly to 2.02 Mt in 2014 from 2.05 Mt in 2013. Russia was the leading producer of asbestos, followed by China, Brazil, and Kazakhstan. These four countries accounted for almost 100% of world asbestos production (table 8).

Estimates of world consumption, by country, are presented in table 7. Apparent consumption was calculated as production plus imports minus exports. Changes in stocks, which were not available, were not considered. Apparent world consumption increased by 6% in 2013 to 2.10 Mt from 1.98 Mt in 2012. Significant increases in consumption took place in Brazil, China, Kazakhstan, and Russia, and significant decreases took place in India, Mexico, Uzbekistan, and Vietnam. In 2013, China was the leading consumer of asbestos, followed by Russia, India, Brazil, Indonesia, Uzbekistan, Kazakhstan, Vietnam, Thailand, and Turkmenistan. These 10 countries accounted for 93% of global asbestos consumption (table 7). Data for 2014 were not available at the time of publication.

Outlook

U.S. consumption continues to decline as substitutes, alternative materials, and new technology displace asbestos from the few remaining domestic asbestos markets. The chloralkali industry appears to account for the bulk of the U.S. asbestos consumption. Use of asbestos by the chloralkali industry, however, may decline in the future as producers of chloralkali adopt membrane technology, which does not use asbestos. Globally, asbestos-cement products will continue to be the leading asbestos-based market. World production is likely to remain between 1.9 Mt to 2.0 Mt for the near future because of continued demand for asbestos products in many regions of the world.

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TABLE 1
SALIENT ASBESTOS STATISTICS[1]

		2010	2011	2012	2013	2014
United States:						
Exports and reexports:						
Unmanufactured:						
Quantity[2]	metric tons	171	169	47	27	279
Value[3]	thousands	$121	$207	$69	$48	$54
Asbestos products, value[3]	do.	$27,000	$27,000	$26,400	$33,400	$29,700
Imports for consumption, unmanufactured:						
Quantity	metric tons	1,040	1,180	1,610	772	406
Value[4]	thousands	$821	$1,100	$2,520	$1,160	$741
Consumption, apparent[e]	metric tons	1,040	1,180	1,020	772	406
World, production	do.	2,010,000	2,050,000	2,020,000 [r]	2,050,000 [r]	2,020,000

[e]Estimated. [r]Revised. do. Ditto.
[1]Data are rounded to no more than three significant digits.
[2]May include reexports and nonasbestos material.
[3]Free alongside ship value; includes exports of crudes, fibers, stucco, sand, and refuse. May also include reexports and nonasbestos material.
[4]U.S. customs declared value.

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

(Metric tons)

	Chrysotile					
End use	Grade 3	Grade 4	Grade 5	Grade 7	Unspecified grade	Total
2013:						
Chloralkali industry	300	250	130	--	--	680
Other	--	--	--	--	92	92
Total	300	250	130	--	92	772
2014:						
Chloralkali industry	187	186	--	--	--	373
Other	--	--	--	--	33	33
Total	187	186	--	--	33	406

-- Zero.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Estimated end-use distribution based on prior year end-use data, import data, and industry trends.

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

(Thousand dollars)

Country	2013			2014		
	Unmanufactured fiber[4]	Manufactured products	Total	Unmanufactured fiber[4]	Manufactured products	Total
Australia	--	15	15	--	298	298
Brazil	--	388	388	--	141	141
Canada	--	1,180	1,180	--	1,720	1,720
China	--	533	533	--	475	475
France	--	9	9	--	21	21
Germany	--	2,230	2,230	--	775	775
Italy	16	70	86	--	574	574
Japan	--	476	476	--	534	534
Korea, Republic of	--	3,700	3,700	--	3,850	3,850
Mexico	--	13,100	13,100	54	6,440	6,490
Netherlands	--	45	45	--	10	10
United Kingdom	--	245	245	--	93	93
Venezuela	--	1,130	1,130	--	1,170	1,170
Other	32	10,300	10,300	--	13,600	13,600
Total	48	33,400	33,400	54	29,700	29,800

-- Zero.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Free alongside ship value.
[3]Data may include some nonasbestos products based on destination countries that have banned the use of asbestos.
[4]Includes exports of crudes, fibers, stucco, sand, and refuse. May also include nonasbestos materials.

Source: U.S. Census Bureau.

TABLE 4
U.S. EXPORTS AND REEXPORTS OF ASBESTOS AND ASBESTOS-BASED PRODUCTS[1]

	2013		2014	
	Quantity (metric tons)	Value[2] (thousands)	Quantity (metric tons)	Value[2] (thousands)
Unmanufactured, asbestos[3]	27	$48	279	$54
Manufactured:				
Cement products[4]	NA	540	NA	275
Friction products[5]	NA	7,560	NA	9,180
Gaskets, packing, and seals	NA	13,000	NA	4,790
Paper and millboard	NA	332	NA	405
Other articles[6]	NA	11,900	NA	15,100
Total	NA	33,400	NA	29,700

NA Not available.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Free alongside ship value.
[3]Includes crudes, fibers, stucco, sand, and refuse. May also include nonasbestos materials.
[4]May include reexports and also cellulose fiber panel, sheet, tile, and tube cement products because asbestos-cement products are not manufactured in the United States.
[5]May include some nonasbestos brake and clutch shipments.
[6]May include some nonasbestos materials.

Source: U.S. Census Bureau.

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

Type	Brazil	
	Quantity (metric tons)	Value[2] (thousands)
2013:		
Chrysotile:		
Spinning fibers, grade 3	356	402
Milled, grade 4	276	551
All other	140	211
Total	772	1,160
2014:		
Chrysotile:		
Spinning fibers, grade 3	187	213
Milled, grade 4	186	333
All other	33	194
Total	406	741

[1]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 PRODUCTS WITH BASIS OF ASBESTOS IN 2014

HTS[1] code	Category	Quantity (metric tons)	Value[2]	Major sources[3]	Percent of category total[4]
2524.90.00.00	Asbestos	406	$741,000	Brazil	100% of weight.
6811.40.00.00	Asbestos-cement products	873	644,000	Canada	94% of weight.
6812.91.10.00	Footwear	(5)	2,470	Hong Kong	100% of weight.
6812.91.90.00	Other, fabricated asbestos fibers; clothing[6]	1	13,400	China	80% of weight.
6812.93.00.00	Compressed asbestos fiber jointing[6]	NA	36,400	China, India	100% of value.
6812.99.00.02	Yarn and thread[6]	158	1,360,000	Mexico	100% of weight.
6812.99.00.04	Woven or knitted fabric[6]	(5)	10,000	Italy, Japan[7]	100% of weight.
6812.99.00.10	Other, for use in civil aircraft[8]	(5)	15,300	China, Hong Kong	100% of weight.
6812.99.00.20	Gaskets, packing, and seals[8]	27	271,000	China, Israel	93% of weight.
6812.99.00.25	Buidling materials[8]	NA	17,200	Canada	100% of value.
6812.99.00.55	Other, fabricated asbestos fiber[8]	NA	24,900	South Korea, Taiwan, India, Japan[7]	100% of value.
6813.20.00.10	Brake lining and pads, civil aircraft[8]	NA	491,000	Canada	82% of value.
6813.20.00.15	Brake lining and pads, other[8]	NA	1,810,000	China, Germany[7], Spain[7]	70% of value.
6813.20.00.20	Articles for use in civil aircraft[8]	NA	160,000	France[7]	100% of value.
6813.20.00.25	Other, friction materials[8]	NA	774,000	China	80% of value.

NA Not available.
[1]Harmonized Tariff Schedule of the United States.
[2]U.S. customs declared value.
[3]Countries are listed in decreasing order.
[4]Percentage contribution of total imports by major import sources, by weight or value.
[5]Less than ½ unit.
[6]Mixtures with a basis of asbestos or with a basis of asbestos and magnesium carbonate.
[7]Material likely misclassified as asbestos or transshipment.
[8]Mixtures with a basis of asbestos, of other mineral substances, or of cellulose, whether or not combined.

Source: U.S. Census Bureau.

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TABLE 7
ESTIMATED ASBESTOS APPARENT CONSUMPTION, BY COUNTRY, 2010–13[1, 2, 3]

(Metric tons)

Region	2010	2011	2012	2013
Africa:				
Angola	1,660	1,320	880	581
Ghana	1,670	1,380	821	2,040
Nigeria	1,820	2,150	1,820	349
South Africa	-11	4,210	1,350	-6
Zimbabwe	9,890	3,990	3,940	5,440
Other[4]	1,730	1,490	1,630	150
Total	16,800	14,500	10,400	8,550
Asia and the Middle East:				
Bangladesh	2,020	4,370	2,230	8,030
China	614,000	638,000	531,000	570,000
India	407,000	303,000	473,000	303,000
Indonesia	112,000	124,000	162,000	156,000
Iran	35,100	6,740	-60	57
Kazakhstan	-1,370	155,000	5,290	66,800
Korea, Republic of				
Kyrgyzstan	6,810	8,220	8,190	7,200
Malaysia	11,500	6,760	2,350	6,510
North Korea	1,140	1,690	1,250	611
Pakistan	13,300	9,390	10,100	6,320
Philippines	3,960	3,250	1,970	2,650
Russia	258,000	283,000	196,000	432,000
Sri Lanka	47,900	61,100	54,700	23,000
Thailand	79,300	81,400	58,000	53,100
Turkmenistan	3,200	5,240	6,680	53,000
Uzbekistan	98,600	17,100	104,000	81,400
Vietnam	67,400	60,400	78,900	57,800
Other[4]	-4,580	1,260	-6,170	648
Total[r]	1,750,000	1,770,000	1,690,000	1,830,000
Central America and North America:				
Cuba	7,720	5,860	10,300	4,770
Mexico	13,800	10,200	17,000	7,140
Other[4]	-34,300	-22,300	913	800
Total	-12,800	-6,260	28,300	12,700
Europe:				
Belarus	26,700	25,100	13,100	11,100
Ukraine	60,300	55,900	42,000	35,000
Other[4]	-3,220	-12	-4,610	1,230
Total	83,800	81,000	50,500	47,300
Oceania	20	45	34	--
South America:				
Bolivia	3,750	5,590	5,360	4,420
Brazil	171,000	189,000	168,000	181,000
Colombia	12,300	20,000	25,200	16,000
Ecuador	4,720	6,150	4,740	4,160
Other[4]	1,930	1,480	1,310	1,200
Total	194,000	223,000	204,000	207,000
Other areas (nonspecified)	2,000	2,000	120	854
Grand total	2,040,000	2,080,000	1,980,000	2,100,000

[r]Revised. -- Zero.

[1]Calculated as country production plus imports minus exports. Production data were from table 8 and trade data were from the United Nations Commodity Trade database.

[2]Previously, Kazakhstan, Kyrgyzstan, Russia, Turkmenistan, and Uzbekistan were included under Europe to be consistent with country groupings in the early to middle 1900s. The table was revised to be consistent with current convention.

[3]Negative values are net exports.

[4]Includes countries with apparent consumption less than 1,000 metric tons or with net exports.

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

(Metric tons)

Country[3]	2010	2011	2012	2,013	2014
Argentina	341	105	102 [r]	100 [e]	100
Brazil	302,257	306,321	304,569	290,825 [r]	284,000
Canada[e]	100,000	50,000	--	--	--
China[e]	400,000	440,000	420,000	420,000	400,000
India[e]	262 [r]	274 [r]	359 [r]	267 [r]	270
Kazakhstan	214,100	223,100	241,200	243,000 [r]	240,000
Russia[e]	995,174	1,031,880	1,050,000 [r]	1,100,000 [r]	1,100,000
Zimbabwe	2,400 [e]	--	--	--	--
Total	2,010,000	2,050,000	2,020,000 [r]	2,050,000 [r]	2,020,000

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

[1]World totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.

[2]Marketable fiber production. Includes data available through June 2, 2015.

[3]In addition to the countries listed, Afghanistan, North Korea, Romania, and Slovakia also produce asbestos, but output is not officially reported, and available general information is inadequate for the formulation of reliable estimates of output levels.

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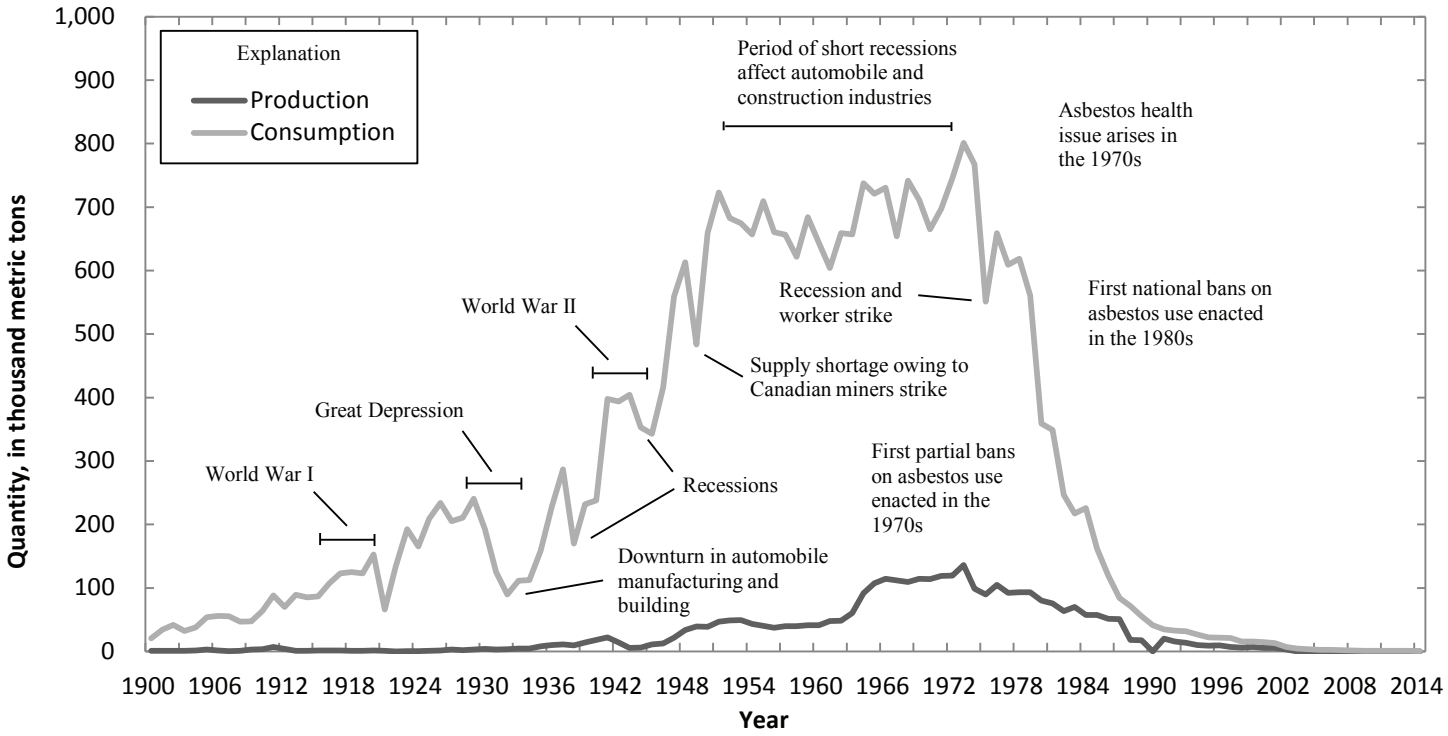


Figure 1. U.S. asbestos production and consumption from 1900 to 2014.

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