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2011 Minerals Yearbook

ASBESTOS

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

December 2013

Published by AsbestosClaims.Law
asbestosclaims.law/library/11046/1

Asbestos

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Domestic survey tables were prepared by Richard H. Kraft, statistical assistant, and the world production table was prepared by Lisa D. Miller, international data coordinator.

Asbestos has not been mined in the United States since 2002, and imports satisfied the needs of domestic consumers. U.S. apparent consumption was 1,180 metric tons (t) in 2011, an increase from 1,040 t in 2010. World production was 2.03 million metric tons (Mt) in 2011, almost unchanged from 2.04 Mt in 2010.

Legislation and Government Programs

The U.S. Geological Survey issued a map detailing reported historic asbestos mines, historic asbestos prospects, and natural asbestos occurrences in the southwestern United States. The map and dataset contain location, mineralogy, geology, and references to asbestos sites in California (Van Gosen and Clinkenbeard, 2011).

In April, the National Institute of Occupational Safety and Health (NIOSH) issued a revision to its strategic plan for asbestos research. The plan discussed the need for a better understanding of factors important to the toxicity of fibers, better data on occupational exposure to different types of fibers, and improved sampling and analytical methods (National Institute for Occupational Safety and Health, 2011, p. v–ix).

Consumption

U.S. apparent consumption of asbestos was calculated to be 1,180 t in 2011, a 13% increase from 1,040 t in 2010 (table 1). It is likely that much of the additional 140 t of chrysotile imported in 2011 went into stocks for future use rather than being used because it was unlikely that markets had expanded. Roofing products accounted for 41% of U.S. consumption; diaphragms for the chloralkali industry, 28%; coating and compounds, 2%; plastics, less than 1%; and other uses, 29%. Much of the chrysotile for which no end use was specified was likely to have been imported and (or) used by the chloralkali industry in 2011, based on trade data reported by United Business Media Global Trade (undated). Asbestos acts as a semipermeable diaphragm to separate the chlorine generated at the cell anode from the starting brine in the electrolytic cell. Chrysotile was the only type of asbestos used in the United States in 2011, 49% of which was grade 7, 16% was grade 5, 12% was grade 4, and 23% was unspecified (table 2).

Prices

The average free alongside ship (f.a.s.) unit value of unmanufactured asbestos fiber exports was $1,230 per metric ton in 2011, an increase from $708 per ton in 2010. The average U.S. customs unit value for all grades of imported asbestos increased to $931 per ton in 2011 from $786 per ton in 2010 because of higher valued chrysotile imports of unspecified grade from Canada and higher value grade 4 imports from Brazil. The average value of imported crude chrysotile, all from Canada, was $883 per ton in 2011, a slight increase from that of 2010. The average unit value for imports of milled, grade 4 chrysotile declined to $1,620 per ton in 2011 from $1,860 per ton in 2010 because of lower valued imports from Brazil and Canada.

Foreign Trade

The following section summarizes significant trade statistics on asbestos and products manufactured using asbestos. Detailed trade statistics, by country and individual U.S. port districts, are available from the International Trade Commission's Interactive Tariff and Trade Dataweb Web site (U.S. International Trade Commission, undated).

In 2011, U.S. exports of asbestos fiber were 169 t with an f.a.s. value of $207,000, a decrease in tonnage from 171 t valued at $121,000 in 2010 but a significant increase in value (tables 3, 4). Asbestos was exported to Mexico, Canada, Taiwan, the Dominican Republic, and Peru, in decreasing order by quantity. Asbestos has not been produced in the United States since 2002; thus, reported exports probably consisted of reexports of imported fiber or improperly classified products. The United States exported and reexported $27 million of asbestos products in 2011, unchanged from that of 2010. The United Kingdom was the leading destination for asbestos products, followed by the Republic of Korea, Mexico, and Canada. These four countries accounted for 52% of the value of asbestos products exported and reexported from the United States in 2011 (table 3). The United Kingdom banned the use of asbestos in 1999, so imports from the United States probably were reexported from the United Kingdom or other products were misclassified as asbestos products. The same applies to several other countries listed in table 3 that have banned the use of asbestos or asbestos products.

Friction products, including brake linings, clutch linings, and disk pads, accounted for 44% of the value of manufactured products exported in 2011 (table 4). Because no asbestos brake components under Harmonized Tariff Schedule of the United States (HTS) code 6813.20 or asbestos-cement products under HTS code 6811.40 were manufactured in the United States, shipments under these two HTS code categories probably represented reexports of asbestos products and (or) exports of products incorrectly classified under these HTS codes.

In 2011, the United States imported 1,180 t of asbestos valued at $1,100,000. Imports were from Canada (77% of the tonnage), Brazil (22%), and South Africa (1%) (table 5). The U.S. Census Bureau indicated that some amosite was imported in 2011. This was likely to have been chrysotile because the asbestos was imported from Canada and amosite mining ended in 1992 with the closure of the South African amosite mines. Based on the import source, asbestos listed under "other, unspecified asbestos type" in table 5 probably was chrysotile.

Minerals Yearbook: Asbestos Chapters, 2011
ACL Doc 11046 · Page 2 of 7
Published by AsbestosClaims.Law
asbestosclaims.law/library/11046/2

The United States also imported $5.66 million of products with a basis of asbestos and products with a basis of asbestos and magnesium carbonate, a decrease from $5.78 million in 2010. Some nonasbestos products probably are included under the asbestos HTS codes based on reported asbestos imports from countries that have banned asbestos use (table 6).

World Review

World production of asbestos was estimated to be 2.03 Mt in 2011, almost unchanged from 2.04 Mt in 2010. It was estimated that Russia was the leading producer of asbestos, followed by China, Brazil, Kazakhstan, and Canada. These five countries accounted for 99% of the world production (table 7).

Canada.—For the first time in more than 130 years, asbestos was not mined in Canada although production may resume if conditions change. LAB Chrysotile (through its subsidiary Lac d'amiante du Canada) indefinitely idled its chrysotile mine in Thetford Mines, Quebec. In addition to labor issues, a rock slide prevented access to some of its high-grade ore. In January 2012, LAB Chrysotile filed for bankruptcy. The Jeffrey Mine stopped production while waiting for funding to further develop its underground mine. The companies continued to sell chrysotile fiber from inventory (Canadian Broadcasting Corp., 2011; 2012; Canadian Mining Journal, 2011).

Zimbabwe.—Zimbabwe Mining Development Corp. (ZMDC) announced that it planned to reopen the Mashava and Shabanie chrysotile mines. The mines were closed in 2008 for financial reasons. ZMDC planned on reactivating the mine in stages (Zimbabwean, The, 2011).

Outlook

Although U.S. imports increased in 2011, U.S. consumption likely remained unchanged compared with that in 2010. Some imports probably were placed into stocks for future use based on industry trends that show no growth in markets. U.S. asbestos consumption is likely to decline over time as the few remaining consuming industries slowly replace older asbestos-based technology or phase out its use. World production remained nearly 2 Mt because of continued demand for asbestos products in many regions of the world.

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Minerals Yearbook: Asbestos Chapters, 2011
ACL Doc 11046 · Page 3 of 7
Published by AsbestosClaims.Law
asbestosclaims.law/library/11046/3

TABLE 1
SALIENT ASBESTOS STATISTICS[1]

		2007	2008	2009	2010	2011
United States:						
Exports and reexports:[1]						
Quantity[2]	metric tons	815	368	59	171	169
Unmanufactured, value[2]	thousands	$421	$345	$69	$121	$207
Asbestos products, value[2, 3]	do.	$29,200	$33,200	$24,500	$27,000	$27,000
Imports for consumption, unmanufactured:						
Quantity	metric tons	1,730	1,460	869	1,040	1,180
Value[4]	thousands	$819	$1,090	$684	$821	$1,100
Consumption, apparent[5]	metric tons	1,730	1,460	869	1,040	1,180
World, production	do.	2,250,000	2,110,000	2,130,000	2,040,000 r	2,030,000

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[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.
[4]U.S. customs declared value.
[5]Consumption assumed to equal imports.

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

(Metric tons)

	Chrysotile				
End use	Grade 4	Grade 5	Grade 7	Unspecified grade	Total
2010	157	208	666	13	1,040
2011:					
Coatings and compounds[3]	--	--	19	--	19
Chloralkali industry	140	190	--	--	330
Plastics	--	--	5	--	5
Roofing products	--	--	486	--	486
Other	--	--	63	275	338
Total	140	190	573	275	1,180

-- Zero.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Estimated distribution based upon data provided by the Chrysotile Institute, Montreal, Quebec, Canada.
[3]Most of the asbestos reported under “Coating and compounds” probably was used in roofing products.

Minerals Yearbook: Asbestos Chapters, 2011
ACL Doc 11046 · Page 4 of 7
Published by AsbestosClaims.Law
asbestosclaims.law/library/11046/4

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

(Thousand dollars)

	2010			2011		
Country	Unmanufactured fiber[4]	Manufactured products	Total	Unmanufactured fiber[4]	Manufactured products	Total
Australia	--	203	203	--	73	73
Brazil	--	58	58	--	17	17
Canada	--	5,460	5,460	--	1,820	1,820
China	--	1,210	1,210	--	644	644
France	--	49	49	--	734	734
Germany	--	242	242	--	368	368
Italy	--	253	253	--	317	317
Japan	--	175	175	--	211	211
Korea, Republic of	--	1,600	1,600	--	3,300	3,300
Mexico	83	3,880	3,970	104	2,450	2,550
Netherlands	--	5	5	--	15	15
United Kingdom	--	5,100	5,100	--	6,530	6,530
Venezuela	--	119	119	--	351	351
Other	38	8,620	8,660	103	10,200	10,300
Total	121	27,000	27,100	207	27,000	27,200

-- 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]

	2010		2011	
	Quantity (metric tons)	Value[2] (thousands)	Quantity (metric tons)	Value[2] (thousands)
Unmanufactured, asbestos[3]	171	$121	169	$207
Manufactured:				
Cement products[4]	NA	236	NA	157
Friction products[5]	NA	15,000	NA	11,900
Gaskets, packing and seals	NA	1,510	NA	3,190
Paper and millboard	NA	50	NA	85
Other articles[6]	NA	10,200	NA	11,700
Total	NA	27,000	NA	27,000

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 also include some nonasbestos materials.

Source: U.S. Census Bureau.

Minerals Yearbook: Asbestos Chapters, 2011
ACL Doc 11046 · Page 5 of 7
Published by AsbestosClaims.Law
asbestosclaims.law/library/11046/5

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

Type	Canada		Brazil		South Africa		Total	
	Quantity (metric tons)	Value[2] (thousands)	Quantity (metric tons)	Value[2] (thousands)	Quantity (metric tons)	Value[2] (thousands)	Quantity (metric tons)	Value[2] (thousands)
2010:								
Chrysotile:								
Crude	234	$204	--	--	--	--	234	$204
Milled, grade 4	177	307	13	$46	--	--	190	353
All other	374	145	--	--	--	--	374	145
Other, unspecified asbestos type	246	119	--	--	--	--	246	119
Total	1,030	775	13	46	--	--	1,040	821
2011:								
Amosite[3]	40	33	--	--	--	--	40	33
Chrysotile:								
Crude	142	125	--	--	--	--	142	125
Milled, grade 4	49	60	263	446	--	--	312	507
All other	613	408	--	--	--	--	613	408
Other, unspecified asbestos type	59	18	--	--	12	$6	71	24
Total	903	644	263	446	12	6	1,180	1,100

-- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]U.S. customs declared value.

[3]All imported from Canada; likely chrysotile misclassified as amosite.

Source: U.S. Census Bureau.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF PRODUCTS WITH BASIS OF ASBESTOS IN 2011

HTS[1] code	Category	Quantity (metric tons)	Value[2]	Major sources[3]	Percentage of category total[4]
2524.00.00.00	Asbestos	1,180	$1,100,000	Canada, Brazil	98% of weight.
6811.40.00.00	Asbestos-cement products	4,700	364,000	Canada	99% of weight.
6812.91.90.00	Other, fabricated asbestos fibers; clothing[5]	1	6,380	China	100% of weight.
6812.93.00.00	Compressed asbestos fiber jointing[5]	NA	467,000	Mexico	81% of value.
6812.99.00.01	Other, miscellaneous[5]	7	78,300	Peru	99% of weight.
6812.99.00.02	Yarn and thread[5]	55	437,000	Mexico	97% of weight.
6812.99.00.03	Cord and string[5]	4	29,400	Vietnam	100% of weight.
6812.99.00.04	Woven or knitted fabric[5]	5	36,600	China	100% of weight.
6812.99.00.10	Woven or knitted fabric; other[5]	NA	70	United Kingdom[6]	100% of value.
6812.99.00.20	Gaskets, packing, and seals[5]	44	385,000	China, Japan[6]	94% of weight.
6812.99.00.25	Building materials[5]	NA	9,000	Canada	100% of weight.
6812.99.00.55	Other, fabricated asbestos fiber[5]	NA	75,600	Peru, Korea, Republic of[6]	83% of value.
6813.20.00.10	Brake lining and pads, civil aircraft	NA	322,000	Brazil	85% of value.
6813.20.00.15	Brake lining and pads, other	NA	2,080,000	China, Japan[6]	52% of value.
6813.20.00.20	Articles for use in civil aircraft	NA	23,000	United Kingdom[6]	100% of value.
6813.20.00.25	Other, friction materials	NA	255,000	Canada	42% 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]Mixtures with basis of asbestos or with a basis of asbestos and magnesium carbonate.

[6]Material likely misclassified as asbestos.

Source: U.S. Census Bureau.

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TABLE 7
ASBESTOS: WORLD PRODUCTION, BY COUNTRY[1, 2]

(Metric tons)

Country[3]	2007	2008	2009	2010	2011
Argentina	282	298	290	300	NA
Brazil	254,000	288,000	288,000	302,000 [r]	302,000 [p]
Canada[e]	180,000 [4]	160,000	150,000	100,000	50,000
China[e]	390,000	380,000	440,000	400,000	440,000
India[e]	21,000	20,000	19,000	20,000	19,000
Kazakhstan	293,000	230,000	230,000 [e]	214,000	223,000
Russia[e]	1,030,000 [4]	1,020,000 [4]	1,000,000	1,000,000	1,000,000
Zimbabwe	84,500	11,500	4,970 [r]	2,400 [r, e]	-- [e]
Total	2,250,000	2,110,000	2,130,000	2,040,000 [r]	2,030,000

[e]Estimated. [p]Preliminary. [r]Revised. NA Not available. -- 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. Table includes data available through March 30, 2012.

[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.

[4]Reported figure.

Minerals Yearbook: Asbestos Chapters, 2011
ACL Doc 11046 · Page 7 of 7
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asbestosclaims.law/library/11046/7