USGS
science for a changing world

2007 Minerals Yearbook

ASBESTOS

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

May 2010

Published by AsbestosClaims.Law
asbestosclaims.law/library/11042/1

ASBESTOS

By Robert L. Virta

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, mostly from Canada, satisfied domestic manufacturing needs. U.S. apparent consumption declined to 1,730 metric tons (t) in 2007 from 2,230 t in 2006. World production was 2.20 million metric tons (Mt), an increase from 2.18 Mt in 2006.

Legislation and Government Programs

The Mine Safety and Health Administration reviewed testimony related to its proposed reduction of the 8-hour time-weighted average permissible exposure level to 0.1 fiber per cubic centimeter (f/cc) from 2.0 f/cc for asbestos in 2007. A limit of 1 f/cc for a 30-minute exposure for coal, metal, and nonmetal mining also was proposed. The proposed changes were approved on February 29, 2008, and became effective April 29, 2008 (Mine Safety and Health Administration, 2008).

The National Institute of Occupational Safety and Health issued a proposed strategic plan for asbestos health research. The plan outlined proposed epidemiological studies, characterization of asbestos collected on air monitor filters from past industry monitoring, improvement of sampling analysis methods, a review of definitional issues related to asbestos, and health research on fiber-like cleavage fragments. Public comments were solicited for consideration in further developing research topics (National Institute of Occupational Safety and Health, 2007).

Health research and asbestos cleanup continued in Libby, MT, where vermiculite contaminated with asbestos was mined and processed, and at several vermiculite processing plants across the country. The U.S. Environmental Protection Agency (EPA) received funding for the study of analytical issues, epidemiology, and toxicology as related to amphibole exposures at Libby (U.S. Environmental Protection Agency, 2007c). As part of the EPA study, its National Health and Environmental Effects Research Laboratory developed strategies for five studies to investigate health effects of asbestos exposure (U.S. Environmental Protection Agency, 2007b). The EPA also continued its cleanup and sampling of the Libby area (U.S. Environmental Protection Agency, 2007a).

The geologic environments most likely to contain asbestos are magnesium-rich rocks that were altered by metamorphic or magmatic processes. These geologic settings include serpentinites, altered ultramafic and mafic rocks, dolomitic marbles, and metamorphosed dolostones, metamorphosed iron formations, and alkalic intrusions and carbonatites. Knowledge of asbestos associations with rock types may help regional planners mitigate exposures to naturally occurring asbestos, which are asbestos occurrences not associated with commercial asbestos operations (Van Gosen, 2007).

Consumption

U.S. consumption of asbestos was 1,730 t in 2007, a decrease from 2,230 t in 2006 (table 1). Roofing products accounted for 41% of U.S. consumption; coating and compounds, 35%; and other unknown or unspecified uses, 24%. Most of the asbestos reported under "Coating and compounds" probably was used in roofing products. Most roofing applications were coatings, which accounted for an estimated 75% of the U.S. asbestos end-use market. Chrysotile was the only type of asbestos used in the United States in 2007, about 72% of which was grade 7; the rest was grades 5, 4, and 3, in descending order of percentage (table 2).

Prices

The average free alongside ship (f.a.s.) unit value of asbestos fiber exports and reexports was $517 per metric ton in 2007, an increase from $254 per ton in 2006. The average U.S. customs unit value for all grades of imported asbestos increased to $473 per ton in 2007 from $448 per ton in 2006. The average value of imported crude chrysotile, all from Canada, was $175 per ton in 2007, a slight decrease from $180 per ton in 2006. The average unit value for imports of milled, grade 4 chrysotile was $2,170 per ton in 2007, an increase from $2,080 per ton in 2006. The unit value of other grades of chrysotile, all from Canada and Zimbabwe, was $417 per ton in 2007, an increase from $292 per ton in 2006 (table 5).

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 on its Interactive Tariff and Trade Dataweb Web site (U.S. International Trade Commission, 2008).

In 2007, U.S. exports of asbestos fiber were 815 t with an f.a.s. value of $421,000, a decrease from 3,410 t valued at $866,000 in 2006. There has been no U.S. asbestos production since 2002, so exports probably consisted of reexports of imported fiber (table 4). The United States exported $29.2 million of products manufactured using asbestos in 2007. Canada was the leading importer, followed by Mexico, the Republic of Korea, and China. These four countries accounted for 65% of the value of manufactured products exported from the United States in 2007 (table 3). Brake linings, clutch linings, and disk pads accounted for 53% of the value of manufactured products exported in 2007 (table 4). Because no asbestos brake components (HTS code 681320) are manufactured in the United

Minerals Yearbook: Asbestos Chapters, 2007
ACL Doc 11042 · Page 2 of 7
Published by AsbestosClaims.Law
asbestosclaims.law/library/11042/2

States, these values probably represent exports from stocks, reexports of asbestos products, or products incorrectly classified under the HTS codes. The same is true for exports of asbestos-cement products (HTS code 681140), which accounted for 1% of the value of U.S. asbestos-product exports.

In 2007, the United States imported 1,730 t of asbestos valued at $819,000. Canada supplied 95% of the tonnage. Asbestos also was imported from Zimbabwe (table 5). Only chrysotile was imported into the United States in 2007. Based on the import source, asbestos listed under "Other, unspecified asbestos type" in table 5 probably was chrysotile.

The United States also imported $37.2 million worth of products with a basis of asbestos and products with a basis of asbestos and magnesium carbonate (U.S. International Trade Commission, 2008). Some nonasbestos products probably are included under the asbestos HTS codes based on reported asbestos imports from countries which have banned asbestos use (table 6).

Comparison of trade data under HTS codes 6811 and 6813 is not feasible for 2006 and 2007 because of the use of new HTS codes that encompass only asbestos products in 2007. Prior to January 2007, HTS codes 6811 and 6813 encompassed asbestos products and products manufactured using asbestos substitutes.

World Review

World production of asbestos was estimated to be 2.20 Mt in 2007, an increase from 2.18 Mt in 2006. Russia was the leading producer of asbestos, followed by China, Kazakhstan, Brazil, Canada, and Zimbabwe. These countries accounted for 96% of the world production (table 7).

Canada.—LAB and Co., Inc. and LAB Chrysotile Inc. (the general partner of LAB) filed for bankruptcy under the Bankruptcy and Insolvency Act of Canada. The companies began examining several scenarios to maximize the value of their assets, including the selling of land and equipment or forming a new partnership (Mazarin Inc., 2007).

JM Inc. and LAB Chrysotile Inc. announced that the companies created an agency, Chrysotile Canada Inc., to handle sales of asbestos from their asbestos mining operations. While not merging, the agency was formed to improve the global market standing of the two Canadian producers in the face of a higher valuation of the Canadian dollars and competition from foreign, particularly Russian, producers. LAB Chrysotile also announced that is was planning to close its Bell underground mine in Thetford Mines, Quebec (McDougall, 2007).

Korea, Republic of.—The Ministry of Labor in the Republic of Korea announced that it would restrict the import, manufacture, and use of asbestos in stages through 2008, and a total ban was to be in force by 2009 (Royer, undated).

New Caledonia.—The Government of New Caledonia imposed a ban on asbestos production, import, and sale on April 1, 2007. Exemptions to the ban for asbestos still found in cars and machinery are effective through the end of 2011 (Radio New Zealand International, 2007).

Zimbabwe.—A Zimbabwe-South Africa Joint Taskforce agreed to continued the use of chrysotile and asbestos products from Zimbabwe. The decision was made because producers in Zimbabwe conformed to International Labor Organization conventions 162 and 155, which deal with the use and handling of asbestos and asbestos products. The taskforce also stipulated that the two countries will probably develop guidelines on the use of substitutes for chrysotile (Matambanadzo, 2007).

Outlook

U.S. consumption probably will decrease as U.S. use of asbestos fiber and asbestos-containing products continues to decline. World production probably will remain between 2.0 and 2.3 Mt for the next few years as demand still remains high in many regions of the world, particularly in Asia.

References Cited

Matambanadzo, Peter, 2007, Zim gets nod to produce asbestos: Cape Town, South Africa, The Herald (Harare), June 26, 1 p. (Accessed June 27, 2007, at http://allafrica.com/stories/printable/200706260026.html.)

Mazarin Inc., 2007, Announcement: Thetford, Quebec, Canada, Mazarin Inc. press release, July 25, 1 p.

McDougall, Stephen, 2007, Rival asbestos firms join sales forces: Quebec, Canada, Canada.com, November 1, 1 p. (Accessed November 5, 2007, at http://www.canada.com/components/print.aspx?id=5075a56f-8b19-4a6f-8aec-b06a341e5012.)

Mine Safety and Health Administration, 2008, Asbestos exposure limit: Federal Register, v. 73, no. 41, February 29, p. 11283-11304.

National Institute for Occupational Safety and Health, 2007, Asbestos and other mineral fibers—A roadmap for scientific research, February, 2 p. (Accessed February 21, 2007, via http://www.cdc.gov/niosh/docket/NIOSHdocket0099.html.)

Radio New Zealand International, 2007, Asbestos production, import, and sale to be banned from New Caledonia: Wellington, New Zealand, Radio New Zealand International, February 26, 1 p. (Accessed February 20, 2007, at http://www.rnzi.com/pages/news.php?op=read&id=30391.)

Royer, Lucien, [undated], South Korea announces plans for total asbestos ban by 2009: Paris, France, International Trade Union Confederation, 1 p. (Accessed February 25, 2007, at http://www.unep.org/labour_environment/PDFs/gumessage_South-Korea-asbestos2009.pdf.)

U.S. Environmental Protection Agency, 2007a, Annual sampling and cleanup update: Libby, Montana, U.S. Environmental Protection Agency, April, 1 p.

U.S. Environmental Protection Agency, 2007b, Dosimetric and toxicologic assessment of amphibole fiber-containing material from Libby, Montana: Research Triangle Park, North Carolina, U.S. Environmental Protection Agency, August 14, 32 p.

U.S. Environmental Protection Agency, 2007c, Toxicity studies on Libby amphibole asbestos: U.S. Environmental Protection Agency, September 11, 1 p. (Accessed February 20, 2007, at http://www.epa.gov/region8/superfund/libby/amphibole.html.)

U.S. International Trade Commission, 2008, Interactive tariff and trade dataweb: U.S. International Trade Commission. (Accessed February 15, 2008, at http://dataweb.usitc.gov/.)

Van Gosen, B.S., 2007, The geology of asbestos in the United States and its practical applications: Environmental and Engineering Geoscience, v. 8, no. 1, February, p. 55-68.

GENERAL SOURCES OF INFORMATION

U.S. Geological Survey Publications

Asbestos. Ch. in Mineral Commodity Summaries, annual.

Asbestos. Ch. in United States Mineral Resources, Professional Paper 820, 1973.

Asbestos. Open-File Report 02-149, 2002.

Mineral Commodity Profiles—Asbestos. Circular 1255-KK, 2005.

Minerals Yearbook: Asbestos Chapters, 2007
ACL Doc 11042 · Page 3 of 7
Published by AsbestosClaims.Law
asbestosclaims.law/library/11042/3

Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Natural Asbestos Occurrences in the Eastern United States, Open-File Report 2005-1189, 2005.
Reported Historic Asbestos Prospects and Natural Asbestos Occurrences in the Central United States, Open-File Report 2006-1211, 2006.
Reported Historic Asbestos Prospects and Natural Asbestos Occurrences in the Rocky Mountain States of the United States, Open-File Report 2007-1182, 2007.
Reported Historic Asbestos Prospects and Natural Asbestos Occurrences in the Southwestern United States, Open-File Report 2008-1059, 2008.
Tabulation of Asbestos-Related Terminology. Open-File Report OF-02-458, 2005.
Worldwide Asbestos Supply and Consumption Trends from 1900 through 2003. Circular 1298, 2006.

Other

Asbestos. Ch. in Mineral Facts and Problems, U.S. Bureau of Mines Bulletin 675, 1985.
Asbestos Information Association/North America.
Chrysotile Institute, The.
U.S. Consumer Product Safety Commission.
U.S. Department of Health and Human Services:
Agency for Toxic Substances and Disease Registry.
National Institutes of Health.
National Institute for Occupational Safety and Health.
U.S. Department of Labor:
Mine Safety and Health Administration.
Occupational Safety and Health Administration.
U.S. Environmental Protection Agency.

TABLE 1
SALIENT ASBESTOS STATISTICS[1]

		2003	2004	2005	2006	2007
United States:						
Exports and reexports:[2]						
Unmanufactured, value	thousands	$920	$333	$398	$866	$421
Asbestos products, value	do.	$290,000	$341,000	$374,000 r	$443,000	$29,200 [3]
Imports for consumption, unmanufactured:						
Quantity	metric tons	4,650	3,450	2,530	2,230	1,730
Value[4]	thousands	$5,840	$806	$1,420	$1,000	$819
Consumption, apparent[5]	metric tons	4,650	3,450	2,530	2,230	1,730
World, production	do.	2,400,000 r	2,330,000 r	2,250,000 r	2,180,000 r	2,200,000

rRevised. do. Ditto.

[1]Data are rounded to no more than three significant digits.

[2]Free alongside ship value; includes exports of crudes, fibers, stucco, sand, and refuse.

[3]Includes only asbestos products in 2007. Product export data prior to 2007 also included nonasbestos products.

[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 3	Grade 4	Grade 5	Grade 7	Unspecified grade	Total
2006	19	29	294	1,680	213	2,230
2007:						
Coatings and compounds[3]	4	5	300	303	--	611
Roofing products	--	--	68	643	--	710
Other	--	33	--	296	80	409
Total	4	37	368	1,240	80	1,730

-- 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.

Published by AsbestosClaims.Law
asbestosclaims.law/library/11042/4

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

(Thousand dollars)

	2006			2007		
Country	Unmanufactured fiber[4]	Manufactured products[5]	Total	Unmanufactured fiber[4]	Manufactured products	Total
Australia	--	3,370	3,370	--	291	291
Brazil	--	2,710	2,710	--	413	413
Canada	6	184,000	184,000	3	7,340	7,340
China	12	20,900	20,900	62	2,340	2,400
France	--	16,800	16,800	--	233	233
Germany	--	9,210	9,210	--	237	237
Italy	--	10,500	10,500	--	165	165
Japan	--	15,400	15,400	--	380	380
Korea, Republic of	--	15,100	15,100	--	2,470	2,470
Mexico	806	55,800	56,600	88	6,880	6,960
Netherlands	--	34,900	34,900	--	196	196
United Kingdom	--	13,800	13,800	--	609	609
Venezuela	--	3,120	3,120	145	334	479
Other	42	57,100 r	57,100 r	123	7,300	7,430
Total	866	443,000	444,000	421	29,200	29,600

rRevised. -- 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 for 2006 include asbestos and nonasbestos products and data for 2007 includes only asbestos products.

[4]Includes exports of crudes, fibers, stucco, sand, and refuse. May also include nonasbestos materials.

[5]Includes products manufactured using asbestos, cellulose fiber, and other asbestos substitutes.

Source: U.S. Census Bureau.

TABLE 4
U.S. EXPORTS AND REEXPORTS OF ASBESTOS AND ASBESTOS–, CELLULOSE–, AND OTHER FIBER–BASED PRODUCTS[1]

	2006		2007	
	Quantity (metric tons)	Value[2] (thousands)	Quantity (metric tons)	Value[2] (thousands)
Unmanufactured, asbestos[3]	3,410	$866	815	$421
Manufactured:				
Friction products[4]	NA	363,000	NA	15,500
Clothing, cord, fabric, yarn	NA	1,940	NA	--
Gaskets, packing and seals	NA	1,780	NA	1,280
Cement products[5]	NA	63,500	NA	282
Paper and millboard	NA	1,310	NA	470
Other articles[6]	NA	11,100	NA	11,700
Total	NA	443,000	NA	29,200

NA Not available. -- Zero.

[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]Includes asbestos and cellulose fiber brakes and clutches in 2006 and only asbestos products in 2007.

[5]Includes asbestos and cellulose fiber panel, sheet, tile, and tube cement products in 2006 and only asbestos cement products in 2007.

[6]Includes asbestos and cellulose fiber products in 2006 and only miscellaneous asbestos products in 2007.

Source: U.S. Census Bureau.

Minerals Yearbook: Asbestos Chapters, 2007
ACL Doc 11042 · Page 5 of 7
Published by AsbestosClaims.Law
asbestosclaims.law/library/11042/5

TABLE 5

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

Type	Canada		Zimbabwe		Total	
	Quantity (metric tons)	Value[2] (thousands)	Quantity (metric tons)	Value[2] (thousands)	Quantity (metric tons)	Value[2] (thousands)
2006:						
Chrysotile:						
Crude	200	$36	--	--	200	$36
Spinning fibers	41	8	--	--	41	8
Milled, grade 4	--	--	213	$442	213	442
All other	1,400	302	--	--	1,400	302
Other, unspecified asbestos type	377	216	--	--	377	216
Total	2,020	562	213	442	2,230	1,000
2007:						
Chrysotile:						
Crude	80	14	--	--	80	14
Milled, grade 4	--	--	66	143	66	143
All other	1,110	279	14	33	1,120	312
Other, unspecified asbestos type	466	350	--	--	466	350
Total	1,650	643	80	176	1,730	819

-- Zero.

[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 OF PRODUCTS WITH BASIS OF ASBESTOS IN 2007

HTS[1] code	Category	Quantity (metric tons)	Value[2]	Major sources[3]	Percentage of category total[4]
2524.00.00.00	Asbestos	1,730	$819,000	Canada	95% of weight.
6811.40.00.00	Asbestos-cement products	690	686,000	Mexico, Switzerland[5], Finland[5], Canada	93% of weight.
6812.80.90.00	Other, fabricated crocidolite fibers; clothing[6]	24	105,000	China	99% of weight.
6812.91.10.00	Footwear, fabricated asbestos fibers; clothing[7]	1	2,700	do.	100% of weight.
6812.91.90.00	Other, fabricated asbestos fibers; clothing[7]	1	4,330	do.	99% of weight.
6812.92.00.00	Felt, millboard, and paper[7]	NA	232,000	United Kingdom[5]	91% of value.
6812.93.00.00	Compressed asbestos fiber jointing[7]	NA	562,000	Canada, Mexico	80% of value.
6812.99.00.01	Other, miscellaneous[7]	37	206,000	Mexico	100% of weight.
6812.99.00.02	Yarn and thread[7]	63	319,000	do.	99% of weight.
6812.99.00.03	Cord and string[7]	1	3,700	Italy[5]	100% of weight.
6812.99.00.04	Woven or knitted fabric[7]	7	89,700	South Africa	97% of weight.
6812.99.00.10	Articles for use in civil aircraft[7]	NA	16,700	United Kingdom[5]	100% of value.
6812.99.00.20	Gaskets, packing, and seals[7]	69	718,000	China, Japan	78% of weight.
6812.99.00.55	Other, fabricated asbestos fiber[7]	NA	609,000	South Africa, United Kingdom[5]	84% of value.
6813.20.00.10	Brake lining and pads, civil aircraft[7]	NA	2,310,000	France[5], United Kingdom[5]	90% of value.
6813.20.00.15	Brake lining and pads, other	NA	21,800,000	China	78% of value.
6813.20.00.25	Other, friction materials	NA	8,680,000	United Kingdom[5]	Do.

Do., do. Ditto. 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]Source likely a supplier of nonasbestos products only.

[6]Products likely to have been inaccurately classified and products probably do not contain crocidolite.

[7]Mixtures with basis of asbestos or with a basis of asbestos and magnesium carbonate.

Source: U.S. Census Bureau.

Published by AsbestosClaims.Law
asbestosclaims.law/library/11042/6

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

(Metric tons)

Country[3]	2003	2004	2005	2006	2007
Argentina	166	267	260 [r]	299 [r]	300
Brazil, fiber	231,117	252,067	236,047	227,304 [r]	230,000 [e]
Bulgaria[e]	300	300	300	300	300
Canada	200,500 [r]	220,000 [r]	185,000 [r]	185,000 [r, e]	185,000 [e]
China[e]	500,000	400,000	400,000 [r]	360,000 [r]	380,000
Colombia, crude ore[e]	60,000	60,000	60,000	60,000	60,000
India[e]	19,000	18,000	19,000	20,000	21,000
Iran[e]	1,470 [4]	6,000 [4]	1,300 [r]	1,300 [r]	1,400 [e]
Kazakhstan	354,500	346,500	300,500 [r]	300,000 [r, e]	300,000
Russia[e]	878,000 [4]	923,000 [4]	925,000	925,000	925,000
Serbia	111 [5]	110 [5]	143 [r, 5]	157 [r]	160
South Africa, chrysotile	6,218	--	--	--	--
Zimbabwe	147,000	104,000	122,041	100,000 [e]	100,000 [e]
Total	2,400,000 [r]	2,330,000 [r]	2,250,000 [r]	2,180,000 [r]	2,200,000

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

[1]World totals, U.S. data, 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 April 23, 2008.

[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.

[5]Montenegro and Serbia formally declared independence in June 2006 from each other and dissolved their union.

Minerals Yearbook: Asbestos Chapters, 2007
ACL Doc 11042 · Page 7 of 7
Published by AsbestosClaims.Law
asbestosclaims.law/library/11042/7