

THE MINERAL INDUSTRY OF INDIANA

This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the Indiana Geological Survey for collecting information on all nonfuel minerals.

In 2000, the estimated value¹ of nonfuel mineral production for Indiana was \$729 million, based upon preliminary U.S. Geological Survey (USGS) data. This was nearly a 1.4% increase from that of 1999² and followed a 4.1% increase from 1998 to 1999. The State ranked 21st (20th in 1999) among the 50 States in nonfuel mineral production value, of which Indiana accounted for close to 2% of the U.S. total.

Indiana's increase in nonfuel mineral value in 2000 resulted from a \$9 million rise in crushed stone and a more than \$3 million increase in lime, while small increases also occurred in industrial sand and gravel, gypsum and dimension stone (descending order of change). Decreases that occurred were those of portland cement, down \$3 million, and construction sand and gravel, down \$2 million (table 1). Peat and masonry cement values also decreased slightly, while common clay and gemstones remained the same. In 1999, most nonfuel minerals increased in value, led by a \$25 million rise in construction sand and gravel and more than \$5 million increases each in cement (estimated), lime, and dimension stone; smaller increases also occurred in industrial sand and gravel, peat, and common clay. The only significant decreases in 1999 were a \$10 million drop in crushed stone and a more than \$2 million decrease in gypsum. No production or sale of ball clay or crushed slate was reported to the USGS for either 1999 or for 2000.

Compared with USGS estimates of the quantities of minerals produced in the other 49 States during 2000, Indiana remained first in dimension stone and one of the top States producing masonry cement. The State rose to third from fourth in the production of peat and to seventh from eighth in lime. Additionally, the State was a significant producer of portland cement, crushed stone, construction sand and gravel, and common clays, ranking 11th, 12th, 14th, and 14th, respectively. The State's mines exclusively produce industrial minerals and coal; all raw steel and primary aluminum produced in the State

¹The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending upon the minerals or mineral products. Production may be measured by mine shipments, mineral commodity sales, or marketable production (including consumption by producers) as is applicable to the individual mineral commodity.

All 2000 USGS mineral production data published in this chapter are preliminary estimates as of July 2001 and are expected to change. For some mineral commodities, such as construction sand and gravel, crushed stone, and portland cement, estimates are updated periodically. To obtain the most current information, please contact the appropriate USGS mineral commodity specialist. A telephone listing of the specialists may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals/contacts/comdir.html>, by using MINES FaxBack at (703) 648-4999 from a fax machine with a touch-tone handset (request Document #1000 for a telephone listing of all mineral commodity specialists), or by calling USGS information at (703) 648-4000 for the specialist's name and number. All Mineral Industry Surveys—mineral commodity, State, and country—also may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>; facsimile copies may be obtained from MINES FaxBack.

²Values, percentage calculations, and rankings for 1999 may vary from the Minerals Yearbook, Area Reports: Domestic 1999, Volume II, owing to the revision of preliminary 1999 to final 1999 data. Data for 2000 are preliminary and are expected to change; related rankings may also change.

were processed from materials received from other domestic and foreign sources. Indiana continued to lead the Nation in the production of raw steel, with an estimated output of about 23.3 million metric tons of raw steel, as reported by the American Iron and Steel Institute. Based upon USGS data, the State remained third in the production of primary aluminum.

The following narrative information was provided by the Indiana Geological Survey³ (IGS). It was a very active year for Indiana's industrial minerals industry. There were 3,807 individuals employed mining industrial minerals in Indiana during 2000, according to data released by the U.S. Mine Safety and Health Administration. Although representing an increase of less than 1% more than 1999 levels, employment remains high for the State's industrial minerals industry.

The Indiana Department of Transportation (INDOT) awarded \$681 million in highway-related contracts for the 2000 construction season. This was the second highest amount awarded in a single year, surpassed only by the \$709 million awarded in 1999. INDOT also awarded \$15.7 million for nonhighway transportation-related projects, such as historic bridge renovation and trail development. The State awarded an additional \$5 million in grants for historic preservation projects and for park development along the Wabash River. Numerous highway construction and repair projects were conducted during the year. The largest of these was \$94.1 million for continued repair and improvements to I-65 north of Indianapolis in Marion County and from the Ohio River to Sellersburg in Clark County. The consulting firm Bernardin, Lochmueller, and Associates, Inc., with scientific support from academia and from State agencies, continued to study alternative routes for the extension of I-69 through southwestern Indiana. Fourteen possible routes are currently under consideration and can be viewed at the web site <http://www.i69indyevn.org> along with other information about the project. Several public hearings about the project were held during the year. A route for extension of the \$339 million Hoosier Heartland highway connecting Fort Wayne with Lafayette was also under investigation. A feasibility study will continue for another year to determine whether to build one or two bridges across the Ohio River in the Louisville, KY, and Jeffersonville, IN, area. Currently nine routes are under consideration for this project. A new midfield airport terminal and other related improvements are planned for the Indianapolis International Airport at a total estimated cost of \$890 million. Funding for the project was still being arranged. Between \$390 to \$619 million may be spent on new construction and on other improvements to the Gary Airport in Lake County. Planned improvements include extending the runway and adding both a new terminal and a four-story parking garage.

In other construction news, a \$455 million Daimler Chrysler transmission plant will be built at Kokomo in Howard County,

³Kathryn R. Shaffer, Minerals Statistician, authored the text of State minerals information submitted by the Indiana Geological Survey.

and \$77 million will be spent on an existing Daimler Chrysler plant at New Castle in Henry County.

There were several developments in Indiana's crushed stone industry. Material Service Corp. opened a new crushed stone quarry near Monon in White County. Hanson Aggregates Midwest, Inc. acquired Aggrock Quarries, Inc., which operates a crushed stone quarry near Sellersburg in Clark County. Global Stone Co., a subsidiary of Oglebay Norton Co., acquired J.M. Huber Corp. and renamed the plant Global Stone Portage LLC. The plant currently produces ground limestone, but may add new products including roofing materials and industrial fillers. The plant will use raw materials from Global Stone quarries in Michigan. A 10% interest in Pembroke Calox, Inc. was acquired by Baltic International USA, Inc. The companies plan to develop a quarry in high-calcium reserves near Stinesville in Monroe County. Crushed stone quarries closed during the year include Hanson Aggregates Midwest Region, Russellville Stone, in Putnam County, and Lowell Quarries Ltd., Lowell Mining, in Lake County.

Developments in the dimension limestone industry include the following. Star Stone Co., Inc. opened the Patton Hill Quarry in Lawrence County. This is the second dimension limestone quarry for the company, which also owns the currently inactive Hunter Valley Quarry in Monroe County. Walton Quarries, Inc. began quarrying dimension limestone near Bloomington in Monroe County on property owned by C&H Stone Co., a stone fabricating company. The quarry was formerly leased by BG Hoadley Quarries, Inc., which continues to produce dimension limestone from the neighboring Maple Hill Quarry. Walton Quarries, Inc. owns another dimension limestone quarry in Lawrence County that is currently inactive. Demand for dimension limestone has been high; at least one other stone fabricator is looking for a quarry site because it is unable to purchase enough stone to meet demand.

Activity in the construction sand and gravel industry was strong during 2000. Bethlehem Sand and Gravel began producing near the town of Bethlehem in Clark County and will barge all products to Louisville, KY, for use by company-owned asphalt and concrete plants. At least 22 other sand and gravel operations opened during the year. U.S. Aggregates, Inc. opened three new sand and gravel pits: Noblesville Plant No. 2 in Hamilton County, Waverly Plant in Morgan County, and Richmond Plant No. 2 in Wayne County. Two pits were opened by Northeast Indiana Sand & Gravel Co. in Whitley County. Other new sand and gravel pits that opened include Vulcan Materials Co.'s Swisher Pit in Tippecanoe County and Irving Gravel Co., Inc.'s Auburn Pit in DeKalb County. Nugent Sand Co., which operates pits at Columbus in Bartholomew County and at Bethlehem in Clark County, is renovating a former Martin Marietta Aggregates sand and gravel property into a barge-loading facility. The site is on the Ohio River at Utica in Clark County. A 50% interest in Fidler, Inc. was acquired by Aggregate Industries, Inc.; Fidler, Inc., a division of Nova Materials, LLC, operates three sand and gravel operations in Elkhart County. S&G Excavating, Inc. acquired the Martin Marietta Aggregates' Terre Haute Pit in Vigo County and combined it with the company's neighboring South Pit. Other sand and gravel company acquisitions include Beaver Gravel Corp.'s purchase of Waverly Sand and Gravel in Morgan County and Stonehenge Concrete & Gravel Co., Inc.'s purchase of Rinard's Gravel Pit in Randolph County. Sand and gravel pit

closures during 2000 include Rogers Group, Inc.'s Martinsville Sand & Gravel in Morgan County, Critser Companies, Inc.'s Jasper County Sand & Gravel in Jasper County, Jones & Sons, Inc.'s Plant No. 3 in Knox County, Wilhelm Gravel Co., Inc.'s Sheets Pit in Noble County, Graber Enterprise, Inc.'s Auburn Sand and Stone in DeKalb County, Buster Cement's Hayes Sand & Gravel in Henry County, Brookfield Sand & Gravel's Cardinal Sand & Gravel in Shelby County, Strubbe Gravel in Hancock County, and Navillus Aggregates in Grant County.

Developments in other industrial minerals industries include Essroc Cement Corp.'s plans to construct a new \$100 million kiln at its plant at Speed, Clark County. This replacement of an older kiln will modernize the plant and enable it to meet increased demand for cement and to improve the plant's ability to meet environmental standards. Lone Star Industries, Inc.'s new semidry cement operation at its Greencastle Plant in Putnam County has nearly doubled the plant's previous capacity. Because of poor market conditions, KPT, Inc., a tile plant at Bloomfield in Greene County, laid off 38 of its 109 employees in May. The company also dropped some product lines and cut its workweek from 7 to 5 days.

Large quantities of imported steel continued to hurt Indiana's steel companies in 2000. LTV Steel Corp., which operates an integrated steel mill at East Chicago in Lake County, filed for Chapter 11 bankruptcy protection. The company will also sell its tinplate mills in East Chicago and Aliquippa, PA, to the U.S. Steel Group. The Pennsylvania facility will close, and some equipment will be moved to the Indiana mill. The number four blast furnace was idled at U.S. Steel Group's Gary Works in Lake County. Weirton Steel Corp., which with Corus Group plc operates GalvPro LP, a hot-dipped galvanized steel plant in Clark County, received a \$25.5 million federal loan under the Emergency Steel Loan Guarantee Act. Costs associated with starting up the the GalvPro LP operation last year were a factor in the company's financial problems, and Weirton Steel is considering selling its interest in the company. Bethlehem Steel Corp. will close its slab mill and stop producing ingots at Burns Harbor in Porter County. The company laid off 40 people at its integrated steel mill at Burns Harbor because of decreased sales. Slater Steel, Inc. is shutting down the melt shop at its Fort Wayne Specialty Alloys mill at Fort Wayne in Allen County and is moving that part of its operation to the company's Atlas Specialty Steels plant in Welland, Ontario, Canada. The shutdown will affect 90 employees and is part of the company's cost-saving plan to integrate operations.

However, on a more positive note, minimills Steel Dynamics, Inc. and Nucor Steel, Inc. experienced record sales during 2000. These companies operate mills at Butler in DeKalb County and at Crawfordsville in Montgomery County, respectively. Steel Dynamics, Inc. broke ground for a consolidated steel building products plant called "New Millennium Building Systems" near its Butler steel plant, a corporate headquarters building near Fort Wayne in Allen County, and was awaiting State approval to begin construction on a \$260 million structural steel plant at Columbia City in Whitley County. Nucor Steel, Inc. plans to build a strip casting facility at Crawfordsville. Improvements were made at these integrated mills: Ispat Inland, Inc.'s East Chicago Plant, Bethlehem Steel Corp.'s Burns Harbor Plant, LTV Steel Corp.'s East Chicago Plant, and U.S. Steel Group's Gary Plant.

Clark Maritime Centre on the Ohio River at Jeffersonville in Clark County planned to build a sixth and possibly seventh dock at the port. Plans include an expansion of rail service. The center has been growing rapidly and is home to seven steel-related businesses. Ground was broken at the center for BethNova Tube, LLC, a steel tube plant that will be a joint venture between Bethlehem Steel Corp. and Novamerican Steel, Inc. of Quebec, Canada. The plant will work in association with Voss/Clark Steel, also a tenant of the center, and will produce steel tubes for automobiles and trucks. Roll Forming Corp. has acquired land at the center and plans to build a \$47.8 million plant. The company also operates a plant in Kentucky.

Lafarge Corp. will process slag for Ispat Inland, Inc. at a \$27 million plant that Lafarge Corp. is building near the steel mill at East Chicago.

No mining-related legislation passed in Indiana during 2000. The U.S. Forest Service, however, is rewriting the management plan for the Hoosier National Forest as required by law every 10 to 15 years.

IGS is working with the Indiana Mineral Aggregates Association (IMAA) on three projects. One will map the locations of active aggregate operations using a geographical information system, and another will help in the establishment of an environmental stewardship program for IMAA members. The third project, nearing completion is the establishment of a Talking Rocks and Mineral Resources Trail at Manchester College's Koinonia environmental and retreat center in Kosciusko County. This 0.8-kilometer educational trail with 10 stations teaches visitors about the importance of Indiana's mineral commodities at the push of a button. A project to map bedrock geology of the north-central Heartlands area and the bedrock geology in the Indianapolis quadrangle at a scale of 1:100,000 was begun as a part of the USGS-funded STATEMAP program. A study of how the geologic

characteristics of Salem Limestone affect the mineral commodity's use as a building stone is being studied. Materials used to separate blocks of dimension stone after quarrying are also being studied to see what materials produce fewer pad marks. This study is being conducted in association with the Indiana Limestone Institute of America, Inc. In addition, abandoned underground limestone mines are being geophysically mapped, and databases of abandoned industrial minerals operations are being compiled.

In 2000, the IGS published a map showing locations of coal and industrial mineral operations (Shaffer, 2000), a publication on determining the most efficient limestones and dolomites for flue gas desulfurization (Shaffer and Sadowski, 2000), and a 2001 calendar on Indiana's limestone heritage (Indiana Geological Survey, 2000).

Rogers Group, Inc. received a 1999 About Face Quarries of the Year award from the National Stone Association for their Sieboldt crushed stone quarry in Lawrence County. Irving Materials, Inc. developed 2 hectares just north of its Huntington Quarry in Huntington County into an educational park called Irving Learning Trails. The park contains a rock garden, four ecosystems, and antique mining equipment and will be used for area schools; it is also open to the general public. The park, which was opened on Earth Day, may be expanded by 1 additional hectare.

References Cited

- Indiana Geological Survey, 2000, 2001 Indiana's limestone heritage poster: Indiana Geological Survey Miscellaneous Publications, CAL03.
Shaffer, N.R., 2000, Map of Indiana showing locations of coal and industrial minerals production: Indiana Geological Survey Miscellaneous Map, MM68.
Shaffer, N.R. and Sadowski, R., 2000, Proposal to determine the most efficient limestones and dolomites for flue gas desulfurization: Indiana Geological Survey Open-File Studies, OFS00-07, 153 p.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN INDIANA 1/ 2/

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	1998		1999		2000 p/	
	Quantity	Value	Quantity	Value	Quantity	Value
Cement, portland	2,500	176,000 e/	2,510	178,000 e/	2,500	175,000 e/
Clays, common	681	1,330	752	1,480	752	1,480
Gemstones	NA	3	NA	3	NA	3
Sand and gravel:						
Construction	24,000	101,000	29,500	126,000	28,500	124,000
Industrial	W	W	175	1,860	250	3,440
Stone:						
Crushed 3/ Dimension metric tons	61,800 r/ 220,000	283,000 28,200	59,500 255,000	273,000 33,500	60,000 230,000	282,000 33,600
Combined values of cement (masonry), clays [ball, (1998)], gypsum (crude), lime, peat, stone [crushed slate, (1998)], and value indicated by symbol W	XX	102,000	XX	106,000	XX	109,000
Total	XX	691,000	XX	719,000	XX	729,000

e/ Estimated. p/ Preliminary. r/ Revised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined values" data. XX Not applicable.

1/ Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

2/ Data are rounded to no more than three significant digits; may not add to totals shown.

3/ Excludes certain stones; kind and value included with "Combined values" data.

TABLE 2
INDIANA: CRUSHED STONE SOLD OR USED, BY KIND 1/

Kind	1998				1999			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone 2/	78 r/	48,000 r/	\$219,000 r/	\$4.56 r/	75	46,100	\$211,000	\$4.58
Dolomite	20 r/	11,900 r/	54,000 r/	4.55 r/	20	12,900	59,600	4.61
Slate	1	1,900	10,200	5.40	1	477	2,640	5.52
Total or average	XX	61,800 r/	283,000	4.58	XX	59,500	273,000	4.59

r/ Revised. XX Not applicable.

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

2/ Includes limestone-dolomite reported with no distinction between the two.

TABLE 3
INDIANA: CRUSHED STONE SOLD OR USED BY PRODUCERS
IN 1999, BY USE 1/ 2/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregate (+1 1/2 inch):			
Macadam	113	\$622	\$5.50
Riprap and jetty stone	731	4,190	5.74
Filter stone	309	1,780	5.75
Other coarse aggregate	435	1,890	4.35
Total or average	1,590	8,480	5.34
Coarse aggregate, graded:			
Concrete aggregate, coarse	4,630	22,000	4.75
Bituminous aggregate, coarse	3,550	17,700	4.98
Bituminous surface-treatment aggregate	2,990	12,700	4.27
Railroad ballast	50	282	5.64
Other graded coarse aggregate	1,630	6,920	4.24
Total or average	12,900	59,600	4.64
Fine aggregate (-3/8 inch):			
Stone sand, concrete	132	594	4.50
Stone sand, bituminous mix or seal	534	2,790	5.22
Screening, undesignated	209	776	3.71
Other fine aggregate	200	1,260	6.30
Total or average	1,080	5,420	5.04
Coarse and fine aggregates:			
Graded road base or subbase	3,610	18,100	5.00
Unpaved road surfacing	1,220	6,190	5.06
Crusher run or fill or waste	892	3,820	4.28
Lightweight aggregate (slate)	W	W	5.83
Other coarse and fine aggregates	3,780	14,500	3.82
Total or average	9,510	42,600	4.48
Other construction materials	15	53	3.53
Agricultural:			
Agricultural limestone	1,480	6,130	4.15
Poultry grit and mineral food	(3/)	(3/)	3.58
Chemical and metallurgical:			
Cement manufacture	3,750	13,900	3.71
Dead-burned dolomite manufacture	(3/)	(3/)	5.48
Flux stone	(3/)	(3/)	3.99
Sulfur oxide removal	472	2,110	4.47
Special, asphalt fillers or extenders	(3/)	(3/)	4.70
Other miscellaneous uses and specified uses not listed	(3/)	(3/)	3.97
Unspecified: 4/			
Reported	22,100	106,000	4.79
Estimated	5,700	25,000	4.41
Total or average	27,800	131,000	4.71
Grand total or average	59,500	273,000	4.59

W Withheld to avoid disclosing company proprietary data; included with "Other."

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

2/ Includes dolomite, limestone, limestone-dolomite, and slate.

3/ Withheld to avoid disclosing company proprietary data; included in "Grand total."

4/ Reported and estimated production without a breakdown by end use.

TABLE 4
INDIANA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1999, BY USE AND DISTRICT 1/

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1 1/2 inch) 2/	413	2,430	239	1,140	935	4,910
Coarse aggregate, graded 3/	2,170	11,200	1,240	5,870	9,450	42,600
Fine aggregate (-3/8 inch) 4/	310	1,500	375	1,930	390	1,990
Coarse and fine aggregate 5/	4,760	18,600	1,390	6,970	3,360	16,900
Other construction materials	--	--	--	--	15	53
Agricultural 6/	1,050	4,360	W	W	W	W
Chemical and metallurgical 7/	W	W	W	W	W	W
Special 8/	W	W	--	--	--	--
Other miscellaneous uses and specified uses not listed	--	--	--	--	W	W
Unspecified: 9/						
Reported	7,290	35,800	9,300	43,100	5,540	27,100
Estimated	2,500	11,000	620	2,700	2,500	11,000
Total	19,300	88,300	14,500	66,300	25,700	118,000

W Withheld to avoid disclosing company proprietary data; included in "Total." -- Zero.

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

2/ Includes filter stone, macadam, and riprap and jetty stone, and other coarse aggregate.

3/ Includes bituminous aggregate (coarse), bituminous surface-treatment aggregate, concrete aggregate (coarse), railroad ballast, and other graded coarse aggregates.

4/ Includes screening (undesignated), stone sand (bituminous mix or seal), stone sand (concrete), and other fine aggregate.

5/ Includes crusher run (select material or fill), graded road base or subbase, lightweight aggregate (slate), unpaved road surfacing, and other coarse and fine aggregates.

6/ Includes agricultural limestone, mineral food, and poultry grit.

7/ Includes cement manufacture, dead-burned dolomite manufacture, flux stone, and sulfur oxide removal.

8/ Includes asphalt fillers or extenders.

9/ Reported and estimated production without a breakdown by end use.

TABLE 5
INDIANA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1999,
BY MAJOR USE CATEGORY 1/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	6,350	\$24,500	\$3.85
Plaster and gunite sands	91	497	5.46
Concrete products (blocks, bricks, pipe, decorative, etc.)	368	1,850	5.02
Asphaltic concrete aggregates and other bituminous mixtures	1,420	6,190	4.38
Road base and coverings	913	4,340	4.75
Road stabilization (cement and lime)	438	1,210	2.75
Fill	2,570	9,510	3.70
Snow and ice control	413	1,150	2.79
Other miscellaneous uses 2/	292	1,940	6.63
Unspecified: 3/			
Reported	12,900	59,900	4.63
Estimated	3,700	15,000	4.05
Total or average	29,500	126,000	4.26

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

2/ Includes filtration.

3/ Reported and estimated production without a breakdown by end use.

TABLE 6
INDIANA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1999,
BY USE AND DISTRICT 1/

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate (including concrete sand)	2,320	7,890	2,050	10,800	1,980	5,750
Concrete products (blocks, bricks, pipe, decorative, etc.) 2/	257	819	86	797	116	730
Asphaltic concrete aggregates and other bituminous mixtures	610	2,890	362	1,670	444	1,630
Road base and coverings 3/	529	2,360	W	W	W	W
Fill	689	2,070	1,620	6,370	257	1,070
Snow and ice control	143	361	W	W	W	W
Other miscellaneous uses 4/	198	1,190	82	665	12	76
Unspecified: 5/						
Reported	830	3,730	9,950	48,600	2,160	7,570
Estimated	2,300	8,900	680	2,800	750	2,900
Total	7,890	30,200	15,800	75,300	5,780	20,100

W Withheld to avoid disclosing company proprietary data; included in "Total."

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

2/ Includes gunite sands and plaster.

3/ Includes road and other stabilization (cement and lime).

4/ Includes filtration.

5/ Reported and estimated production without a breakdown by end use.