

## Summary

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#### SUMMARY OF FINDINGS

Alkalies and chlorine (NAICS 325181) production decreased 0.2 percent to 35,506.6 thousand short tons in 2002, from 35,562.8 thousand short tons in 2001. Chlorine (NAICS 3251811) production increased 1.3 percent to 23,969.2 thousand short tons in 2002, from 23,668.1 thousand short tons in 2001. Sodium hydroxide (NAICS 325181411) production decreased 3.6 percent to 10,429.4 thousand short tons in 2002, from 10,816.7 thousand short tons in 2001. Finished sodium

bicarbonate (NAICS 3251817131) production increased 4.3 percent to 590.1 thousand short tons in 2002, from 565.8 thousand short tons in 2001.

Titanium dioxide (NAICS 3251311) production increased 6.2 percent to 1,553.5 thousand short tons in 2002, from 1,463.0 thousand short tons in 2001.

Hydrochloric acid (NAICS 3251884125, 4131) production increased 1.7 percent to 4,450.7 thousand short tons in 2002, from 4,376.1 thousand short tons in 2001. Aluminum sulfate, commercial (NAICS 3251887151) production increased 3.3 percent to 1,161.5 thousand short tons in 2002, from 1,123.9 thousand short tons in 2001. Sodium sulfate, high purity (NAICS 325188A1A1) production decreased 2.4 percent to 551.2 thousand short tons in 2002, from 564.5 thousand short tons in 2001. Sodium chlorate (NAICS 325188A141) production decreased 9.0 percent to 794.9 thousand short tons in 2002, from 873.2 thousand short tons in 2001.

For general CIR information, explanation of general terms and historical note, see the appendix.

Address inquiries concerning these data to Primary Goods Industries Branch, Manufacturing and Construction Division (MCD), Washington, DC 20233-6900, or call Mai Le, 301-763-4797.

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# U S C E N S U S B U R E A U

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Table 1. Summary of Production of Principal Inorganic Chemicals  
[Short tons]

Quarter and year	Chlorine gas (100 percent) (3251811111)	Sodium hydroxide, total liquid (100 percent) (3251814111)	Titanium dioxide, commodity weight (3251311100)	Hydrochloric acid (100 percent) (3251884125, 4131)	Aluminum sulfate commercial (17 percent Al <sub>2</sub> O <sub>3</sub> ) (3251887151)	Sodium sulfate, high purity (100 percent Na <sub>2</sub> SO <sub>4</sub> ) (325188A1A1)	Finished sodium bicarbonate (58 percent NaHCO <sub>3</sub> ) (3251817131)	Sodium chlorate (100 percent) (325188A141)
<b>2002</b>								
Total.....	12,879,395	10,429,430	1,553,513	4,450,721	1,161,456	551,171	590,116	794,861
Fourth quarter.....	3,149,458	2,472,846	393,156	1,099,766	274,551	r/ 145,898	154,321	210,860
Third quarter.....	3,309,716	2,665,802	395,943	1,155,774	331,575	138,096	153,164	184,170
Second quarter.....	3,204,137	r/ 2,660,696	400,633	1,117,049	307,022	134,796	147,424	189,611
First quarter.....	3,216,084	r/ 2,630,086	363,781	1,078,132	r/ 248,308	132,381	135,207	210,220
<b>2001</b>								
Total.....	12,664,934	10,816,733	1,463,037	4,376,139	1,123,907	564,487	565,842	873,215
Fourth quarter.....	3,026,325	2,466,347	347,160	1,029,490	264,997	146,479	147,205	222,744
Third quarter.....	3,252,046	2,744,069	383,365	1,111,809	314,003	132,478	144,064	204,639
Second quarter.....	3,121,425	2,894,955	348,679	1,101,546	283,572	145,349	137,984	215,316
First quarter.....	3,265,138	2,711,362	383,833	1,133,294	261,335	140,181	136,589	230,516

r/Revised by 5 percent or more from previously published data.

Table 2. Summary of Primary Production of Specified Inorganic Chemicals: 2002 and 2001  
 [Short tons, unless otherwise noted]

Product code	Product description	2002					2001				
		Total production (quantity)	Total shipments, including interplant transfers			Total production (quantity)	Total shipments, including interplant transfers				
			Quantity		Value		Quantity		Value		
Chlorine and alkalis:											
Chlorine (100 percent):											
3251811111	Gas 1/.....	12,879,395	9,697,202	757,370	12,664,934	8,873,527	620,182				
	Fourth quarter.....	a/ 3,149,458	a/ 2,353,302	a/ 241,090	a/ 3,026,325	a/ 2,115,056	a/ 120,335				
	Third quarter.....	a/ 3,309,716	a/ 2,462,183	a/ 223,489	a/ 3,252,046	a/ 2,297,699	a/ 143,873				
	Second quarter.....	a/ 3,204,137	a/r/ 2,599,939	a/r/ 171,407	a/ 3,121,425	a/ 2,204,922	a/ 159,413				
	First quarter.....	a/ 3,216,084	a/r/ 2,281,778	a/r/ 121,384	a/ 3,265,138	a/ 2,255,850	196,561				
3251811121	Liquid.....	11,089,817	10,893,653	919,034	11,003,150	10,085,590	729,594				
	Fourth quarter.....	a/ 2,665,497	a/ 2,696,570	a/ 304,476	a/ 2,594,789	a/ 2,393,242	a/ 140,869				
	Third quarter.....	a/ 2,851,091	a/ 2,822,698	a/ 280,402	a/ 2,849,465	a/ 2,580,236	a/ 167,408				
	Second quarter.....	a/ 2,789,418	a/ 2,881,337	a/ 200,097	a/ 2,738,168	a/ 2,541,244	a/ 188,275				
	First quarter.....	a/ 2,783,811	a/r/ 2,493,048	a/r/ 134,059	a/ 2,820,728	a/ 2,570,868	a/ 233,042				
3251814111	Liquid 2/.....	10,429,430	(X)	(X)	10,816,733	(X)	(X)				
	Fourth quarter.....	a/ 2,472,846	(X)	(X)	a/ 2,466,347	(X)	(X)				
	Third quarter.....	a/ 2,665,802	(X)	(X)	a/ 2,744,069	(X)	(X)				
	Second quarter.....	a/r/ 2,660,696	(X)	(X)	a/ 2,894,955	(X)	(X)				
	First quarter.....	a/r/ 2,630,086	(X)	(X)	a/ 2,711,362	(X)	(X)				
3251817111	Potassium hydroxide (caustic potash) (88 to 92 percent), liquid 2/.....	517,885	661,128	163,500	512,141	(D)	165,825				
	Fourth quarter.....	142,250	(D)	44,685	107,920	115,832	29,659				
	Third quarter.....	120,412	(D)	41,073	131,334	(D)	43,508				
	Second quarter.....	126,324	163,276	41,258	129,856	(D)	(D)				
	First quarter.....	128,899	145,664	36,484	143,031	(D)	(D)				
3251817131	Finished sodium bicarbonate (58 percent NaHCO <sub>3</sub> ).....	590,116	(D)	(D)	565,842	529,017	132,078				
	Fourth quarter.....	154,321	(D)	(D)	147,205	(D)	(D)				
	Third quarter.....	153,164	(D)	(D)	144,064	(D)	(D)				
	Second quarter.....	147,424	(D)	(D)	137,984	131,986	34,973				
	First quarter.....	135,207	(D)	(D)	136,589	127,313	33,530				
2123913111	Sodium carbonate, natural (soda ash) (58 percent) 3/.....	11,530	(X)	(X)	11,402	(X)	(X)				
	Fourth quarter.....	2,987	(X)	(X)	2,868	(X)	(X)				
	Third quarter.....	2,917	(X)	(X)	2,824	(X)	(X)				
	Second quarter.....	2,853	(X)	(X)	2,872	(X)	(X)				
	First quarter.....	2,773	(X)	(X)	2,838	(X)	(X)				
Chlorine bleaches and other inorganic bleaching compounds:											
325188G1P4	Industrial, liquid and dry.....	r/ 392,141	(S)	(S)	340,895	(S)	(S)				
	Fourth quarter.....	(S)	(S)	(S)	(S)	(S)	(S)				
	Third quarter.....	b/r/ 116,968	(S)	(S)	b/ 106,106	(S)	(S)				
	Second quarter.....	(S)	(S)	(S)	b/ 91,880	(S)	(S)				
	First quarter.....	(S)	(S)	(S)	(S)	(S)	(S)				
Acids:											
Hydrochloric (100 percent):											
3251884125	From chlorine and hydrogen.....	r/ 367,689	r/ 217,244	r/ 34,714	423,505	254,551	38,603				
	Fourth quarter.....	a/r/ 103,855	b/r/ 60,449	a/r/ 9,512	b/ 98,948	b/ 60,123	a/ 9,311				
	Third quarter.....	b/ 91,082	b/ 53,518	a/ 8,453	b/ 109,160	65,738	9,419				
	Second quarter.....	b/ 82,442	46,578	b/ 7,357	b/ 115,216	65,621	9,330				
	First quarter.....	b/ 90,310	b/ 56,699	a/ 9,392	b/ 100,181	63,069	10,543				
3251884131	Byproduct and other 4/.....	4,083,032	2,816,544	r/ 134,580	3,952,634	2,858,099	126,117				
	Fourth quarter.....	a/ 995,911	a/ 663,917	b/r/ 30,291	a/ 930,542	a/ 659,006	a/ 31,385				
	Third quarter.....	a/ 1,064,692	a/ 725,712	b/r/ 32,786	a/ 1,002,649	a/ 717,265	b/ 31,776				
	Second quarter.....	a/ 1,034,607	a/ 745,927	b/r/ 36,116	a/ 986,330	a/ 736,537	b/ 34,260				
	First quarter.....	a/ 987,822	a/ 680,988	b/r/ 35,387	a/ 1,033,113	a/ 745,291	a/ 28,696				
3251884141	Hydrocyanic, including anhydrous (100 percent).....	r/ 526,686	(D)	r/ 97,769	534,600	(D)	108,323				
	Fourth quarter.....	a/ 135,938	(D)	(D)	a/ 140,037	(D)	a/ 27,857				
	Third quarter.....	a/ 162,562	(D)	(D)	a/ 120,185	(D)	a/ 30,843				
	Second quarter.....	a/r/ 140,816	(D)	a/ 26,989	a/ 140,784	(S)	a/ 25,953				
	First quarter.....	b/r/ 87,370	(D)	a/ 26,295	a/ 133,594	(S)	a/ 23,670				
Aluminum oxide and aluminum compounds:											
3313110100	Aluminum oxide (except natural alumina) (100 percent Al <sub>2</sub> O <sub>3</sub> ).....	(D)	(D)	r/ 797,580	3,155,596	3,310,687	r/ 880,139				
	Fourth quarter.....	(D)	(D)	b/ 195,769	853,109	1,019,732	b/r/ 255,552				
	Third quarter.....	(D)	(D)	b/ 198,796	839,134	811,047	b/r/ 213,253				
	Second quarter.....	(D)	(D)	b/r/ 204,927	735,105	730,640	b/r/ 200,877				
	First quarter.....	(D)	(D)	b/r/ 198,088	728,248	749,268	b/r/ 210,457				

Continued

Table 2. Summary of Primary Production of Specified Inorganic Chemicals: 2002 and 2001  
 [Short tons, unless otherwise noted]

Product code	Product description	2002					2001				
		Total production (quantity)	Total shipments, including interplant transfers			Total production (quantity)	Total shipments, including interplant transfers				
			Quantity	Value			Quantity	Value			
3251887121	Aluminum chloride, anhydrous (100 percent).....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Fourth quarter.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Third quarter.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Second quarter.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	First quarter.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3251887131	Aluminum hydroxide, trihydrate (100 percent).....	r/ 393,959	r/ 394,681	r/ 164,143	313,708	384,452	r/ 158,916				
	Fourth quarter.....	a/r/ 72,397	(S)	(S)	108,826	(S)	(S)	(S)	(S)	(S)	(S)
	Third quarter.....	a/r/ 105,263	(S)	(S)	63,886	(S)	(S)	(S)	(S)	(S)	(S)
	Second quarter.....	a/r/ 123,537	a/r/ 121,220	b/r/ 47,951	78,802	(S)	(S)	(S)	(S)	(S)	(S)
	First quarter.....	r/ 92,762	(S)	(S)	62,194	a/ 69,179	b/r/ 33,952				
3251887151	Aluminum sulfate: Commercial (17 percent aluminum oxide) 5/.....	1,161,456	1,115,345	134,673	1,123,907	1,059,954	r/ 132,495				
	Fourth quarter.....	a/ 274,551	a/ 257,755	a/ 31,747	264,997	a/ 249,458	b/r/ 30,952				
	Third quarter.....	a/ 331,575	a/ 321,793	a/ 45,400	314,003	a/ 294,843	b/r/ 36,993				
	Second quarter.....	a/ 307,022	a/ 298,159	a/ 31,499	283,572	a/ 268,065	b/r/ 33,639				
	First quarter.....	a/r/ 248,308	a/ 237,638	a/ 26,027	261,335	a/ 247,588	b/r/ 30,911				
3251887161	Iron-free (17 percent aluminum oxide).....	283,980	283,967	21,889	337,767	330,779	23,380				
	Fourth quarter.....	a/ 70,323	a/ 70,190	a/ 5,410	84,575	a/ 82,410	a/ 5,718				
	Third quarter.....	a/ 71,353	a/ 71,633	a/ 5,670	87,159	a/ 85,898	a/ 6,006				
	Second quarter.....	a/ 64,303	a/ 64,196	a/ 5,211	84,332	a/ 82,559	a/ 5,997				
	First quarter.....	a/ 78,001	a/ 77,948	a/ 5,598	81,701	a/ 79,912	a/ 5,659				
3251887171	Aluminates (sodium aluminate, potassium aluminate, etc.) (100 percent).....	372,660	314,287	41,787	384,541	349,370	53,744				
	Fourth quarter.....	94,212	80,480	a/ 10,351	96,381	b/ 85,754	b/ 12,827				
	Third quarter.....	99,753	85,257	a/ 10,917	96,419	b/ 86,903	b/ 13,165				
	Second quarter.....	b/ 85,774	b/ 69,551	b/ 9,303	93,499	b/ 84,621	b/ 12,886				
	First quarter.....	b/ 92,921	b/ 78,999	b/ 11,216	98,242	b/ 92,092	b/ 14,866				
325188A111	Potassium and sodium compounds: Potassium iodide (100 percent).....	r/ 326	r/ 334	4,659	r/ 320	r/ 243	4,306				
	Fourth quarter.....	77	73	909	(D)	r/ 68	1,121				
	Third quarter.....	(D)	r/ 74	1,276	(D)	r/ 51	968				
	Second quarter.....	(D)	90	1,208	a/r/ 80	r/ 63	1,104				
	First quarter.....	74	97	1,266	b/r/ 72	r/ 61	1,113				
325188A117	Potassium pyrophosphate (tetra-potassium pyrophosphate) (anhydrous, 100 percent).....	r/ 36,572	r/ 33,166	r/ 20,770	36,151	27,789	20,173				
	Fourth quarter.....	(S)	(S)	b/ 6,991	8,686	a/ 7,576	b/ 5,330				
	Third quarter.....	(S)	(S)	b/ 4,813	10,208	a/ 6,949	b/ 5,190				
	Second quarter.....	a/r/ 9,104	a/ 8,051	a/r/ 4,774	(D)	a/ 7,772	b/ 5,438				
	First quarter.....	a/r/ 7,745	a/ 6,994	a/r/ 4,192	(D)	b/ 5,492	b/ 4,215				
325188A124	Potassium phosphates (100 percent by weight).....	r/ 31,331	r/ 32,311	25,936	29,569	30,299	20,459				
	Fourth quarter.....	a/r/ 9,214	r/ 8,742	r/ 7,540	9,006	(D)	5,435				
	Third quarter.....	a/r/ 6,426	b/ 7,286	b/ 6,509	(D)	(D)	5,204				
	Second quarter.....	a/r/ 7,804	a/ 8,519	6,572	(D)	(D)	4,968				
	First quarter.....	a/r/ 7,887	7,764	a/ 5,315	(D)	(D)	4,852				
325188A141	Sodium chlorate (100 percent).....	794,861	794,676	229,392	873,215	879,000	264,793				
	Fourth quarter.....	a/ 210,860	a/ 199,833	a/ 56,776	222,744	a/ 215,502	a/ 64,887				
	Third quarter.....	a/ 184,170	a/ 199,536	a/ 57,191	204,639	a/ 214,584	a/ 64,942				
	Second quarter.....	a/ 189,611	a/ 188,434	a/ 53,697	215,316	a/ 215,842	a/ 66,170				
	First quarter.....	a/ 210,220	a/ 206,873	a/ 61,728	230,516	a/ 233,072	a/ 68,794				
325188A147	Sodium hydrosulfide (sodium sulfydrate (100 percent).....	(D)	(D)	(D)	(D)	(D)	(D)				
	Fourth quarter.....	(D)	(D)	(D)	(D)	(D)	(D)				
	Third quarter.....	(D)	(D)	(D)	(D)	(D)	(D)				
	Second quarter.....	(D)	(D)	(D)	(D)	(D)	(D)				
	First quarter.....	(D)	(D)	(D)	(D)	(D)	(D)				
325188A151	Sodium hydrosulfite (100 percent).....	(D)	(D)	(D)	(D)	(D)	(D)				
	Fourth quarter.....	(D)	(D)	(D)	(D)	(D)	(D)				
	Third quarter.....	(D)	(D)	(D)	(D)	(D)	(D)				
	Second quarter.....	(D)	(D)	(D)	(D)	(D)	(D)				
	First quarter.....	(D)	(D)	(D)	(D)	(D)	(D)				

Table 2. Summary of Primary Production of Specified Inorganic Chemicals: 2002 and 2001  
 [Short tons, unless otherwise noted]

Product code	Product description	2002				2001			
		Total production (quantity)	Total shipments, including interplant transfers		Total production (quantity)	Total shipments, including interplant transfers			
			Quantity	Value		Quantity	Value		
325188A157	Sodium phosphates:								
	Dibasic (produced for sale)								
	(100 percent) 6/.....	19,672	r/	13,581	r/	15,389	16,797	12,844	13,408
	Fourth quarter.....	a/ 4,227		3,191		3,773	4,075	2,184	2,529
	Third quarter.....	a/ 5,167		(D)		(D)	5,166	2,982	2,965
325188A164	Fourth quarter.....	a/ 5,239		(D)		(D)	(D)	(D)	(D)
	Second quarter.....	a/ 5,039		(D)		(D)	(D)	(D)	(D)
	First quarter.....	(D)		(D)		(D)	17,739	12,288	
	Fourth quarter.....	(D)		(D)		(D)	3,671	2,950	
325188A167	Third quarter.....	(D)		(D)		(D)	5,291	3,407	
	Second quarter.....	(D)		(D)		(D)	(D)	(D)	
	First quarter.....	(D)		(D)		(D)	(D)	(D)	
	Fourth quarter.....	51,173		41,777		41,035	50,296	46,335	44,810
325188A171	Meta (100 percent).....	51,173		41,777		41,035	50,296	46,335	44,810
	Fourth quarter.....	a/ 14,377	a/	11,200		10,752	11,689	10,466	10,636
	Third quarter.....	a/ 13,068	a/	10,719		10,220	15,348	13,572	13,286
	Second quarter.....	a/ 11,287		10,233		10,016	a/ 10,891	a/ 10,537	a/ 9,754
	First quarter.....	12,441		9,625		10,047	12,368	11,760	11,134
325188A177	Acid pyro (100 percent).....	24,534		23,496		19,363	26,669	24,808	20,343
	Fourth quarter.....	a/ 6,189	a/	6,049	a/	4,911	6,946	6,512	5,332
	Third quarter.....	a/ 6,396	a/	5,996	a/	4,926	6,672	6,492	4,911
	Second quarter.....	5,671		6,124		5,043	6,518	6,501	4,948
	First quarter.....	6,278		5,327		4,483	6,533	5,303	5,152
325188A174	Tripoly (100 percent).....	(D)		(D)		(D)	(D)	(D)	(D)
	Fourth quarter.....	(D)		(D)		(D)	(D)	(D)	(D)
	Third quarter.....	(D)		(D)		(D)	(D)	(D)	(D)
	Second quarter.....	(D)		(D)		(D)	(D)	(D)	(D)
	First quarter.....	(D)		(D)		(D)	(D)	(D)	(D)
325188A181	Other sodium phosphates, including mono- and tribasic.....	(X)		(X)	r/	13,431	(X)	(X)	(S)
	Fourth quarter.....	(X)		(X)	b/	3,179	(X)	(X)	(S)
	Third quarter.....	(X)		(X)	b/	4,154	(X)	(X)	(D)
	Second quarter.....	(X)		(X)		(S)	(X)	(X)	(S)
	First quarter.....	(X)		(X)		(S)	(X)	(X)	(D)
325188A184	Sodium silicate (soluble silicate glass, liquid, and solid) (anhydrous) 7/.....	1,161,832		707,260	r/	216,724	1,179,466	(S)	(S)
	Fourth quarter.....	b/ 278,670	a/	183,488	b/	55,560	b/ 288,314	(S)	(S)
	Third quarter.....	b/ 308,741		(S)		(S)	b/ 299,965	(S)	(S)
	Second quarter.....	b/ 290,958		(S)		(S)	b/ 296,945	(S)	(S)
	First quarter.....	b/ 283,463		(S)		(S)	b/ 294,242	(S)	(S)
325188A187	Metasilicate pentahydrate (100 percent).....	35,402		27,201		9,064	38,739	32,265	9,495
	Fourth quarter.....	8,392		7,385		2,372	9,612	7,707	2,179
	Third quarter.....	9,872		5,597		2,141	10,189	8,393	2,482
	Second quarter.....	8,551		8,049		2,645	8,241	8,248	2,468
	First quarter.....	8,587		6,170		1,906	10,697	7,917	2,366
325188A1A1	Metasilicate anhydrous (100 percent).....	r/ 28,577	r/	28,772		11,055	30,752	29,050	12,661
	Fourth quarter.....	6,232		7,352		2,442	8,259	6,750	2,820
	Third quarter.....	7,758		7,441		2,899	5,593	6,936	3,116
	Second quarter.....	(D)		(D)		2,839	(D)	7,405	3,322
	First quarter.....	(D)		(D)		2,875	(D)	7,959	3,403
325188A1A7	Sodium sulfate (100 percent):								
	High purity.....	551,171		508,512		35,436	564,487	582,090	r/ 45,788
	Fourth quarter.....	b/r/ 145,898	b/	122,426	b/	8,473	b/ 146,479	b/ 129,819	b/r/ 9,993
	Third quarter.....	b/ 138,096	b/	110,505	b/r/	8,011	b/ 132,478	b/ 147,434	b/r/ 11,980
	Second quarter.....	b/ 134,796	b/	153,513	b/r/	10,762	b/ 145,349	b/ 166,912	b/r/ 13,104
325188A1A7	Fourth quarter.....	b/ 132,381	b/	122,068	b/	8,190	b/ 140,181	b/ 137,925	b/r/ 10,711
	Sodium sulfite (100 percent).....	r/ 81,941	r/	73,096		7,589	r/ 83,694	(D)	(D)
	Fourth quarter.....	b/ 22,971		(D)		(D)	(D)	(D)	(D)
	Third quarter.....	b/ 15,931		(D)	a/	2,221	a/r/ 15,813	(D)	(S)
	Second quarter.....	(D)	a/r/	16,317	a/	2,623	(D)	(D)	(S)
First quarter.....	(D)		(D)		(D)	(D)	(D)	(S)	

Table 2. Summary of Primary Production of Specified Inorganic Chemicals: 2002 and 2001  
 [Short tons, unless otherwise noted]

Product code	Product description	2002					2001					
		Total production (quantity)	Total shipments, including interplant transfers			Total production (quantity)	Total shipments, including interplant transfers					
			Quantity	Value	Quantity		Value	Quantity	Value			
Other inorganic chemicals:												
325188G141	Calcium carbonate (precipitated) (100 percent).....		2,172,223		2,114,962		276,735		2,094,698	(D)	265,570	
	Fourth quarter.....	a/	561,928		545,596	a/	70,447	a/	514,675	(D)	a/ 65,382	
	Third quarter.....	a/	544,306		528,042	a/	69,377	a/	523,706	(D)	a/ 65,608	
	Second quarter.....	a/	531,608		519,561	a/	68,107	a/	524,301	(D)	a/ 66,907	
	First quarter.....		534,381		521,763		68,804	a/	532,016	(D)	a/ 67,673	
325188G144	Calcium chloride (100 percent).....	r/	1,462,757	r/	794,930	r/	69,236		1,622,966		896,745	103,299
	Fourth quarter.....	b/	374,458	b/	246,297	a/	24,594	a/	504,087	b/	237,431	a/ 27,197
	Third quarter.....	b/	324,203	b/r/	168,453	a/	14,020	a/	394,014	b/	189,805	a/ 16,922
	Second quarter.....	b/	389,779	b/r/	211,207	a/	16,859	a/	423,356	b/	239,940	b/ 25,333
	First quarter.....	a/	374,317	b/r/	168,973	a/	13,763	b/	301,509	b/	229,569	b/ 33,847
325188G147	Calcium phosphates: Monobasic (21 percent minimum P)											
	(100 percent).....	(D)			927,656		198,240		976,965		958,472	231,052
	Fourth quarter.....	(D)			(D)		45,228		242,015		229,764	a/ 56,336
	Third quarter.....	(D)			(D)		45,868		(D)		(D)	b/ 60,905
	Second quarter.....	(D)			(D)	a/	53,261		(D)		(D)	53,515
	First quarter.....	(D)			218,749	a/	53,883		(D)		(D)	60,296
325188G151	Dibasic (18.5 percent minimum P)											
	(100 percent).....		405,707		382,439		148,194		470,962		447,887	162,108
	Fourth quarter.....		101,932		90,931		26,260		111,805		116,139	39,224
	Third quarter.....		97,566		92,651	b/	40,438		107,053		104,386	b/ 39,749
	Second quarter.....		105,873		93,567	b/	41,098		125,211		112,801	41,709
	First quarter.....		100,336		105,290	b/	40,398		126,893		114,561	41,426
3253124241	Tribasic (defluorinated phosphate rock) (18.0 percent minimum P) 8/ Animal feed grade (defluorinated phosphate rock) (100 percent).....		483,248		478,938		116,478		486,004		466,722	114,464
	Fourth quarter.....		111,511		120,203		29,150		131,096		107,457	a/ 27,975
	Third quarter.....		118,380		123,251	a/	28,374		118,241		117,168	b/ 30,286
	Second quarter.....		126,326		122,684	a/	30,460		109,820		119,759	29,788
	First quarter.....		127,031		112,800	a/	28,494		126,847		122,338	26,415
325998H1E4	Carbon, activated 9/ Granular carbons (dry weight) 10/.....	(D)		(S)		(S)		(S)		(S)		(S)
	Fourth quarter.....	(D)		(S)		(S)		(S)		(S)		(S)
	Third quarter.....	(D)		(S)		(S)		(S)		(S)		(S)
	Second quarter.....	(D)		(S)		(S)		(S)		(S)		(S)
	First quarter.....	(D)		(S)		(S)		(S)		(S)		(S)
325998H1E7	Pulverized carbons (dry weight).....	r/	66,960	r/	117,941	r/	49,742		68,942		99,976	58,023
	Fourth quarter.....	(S)		b/	27,399	b/r/	11,601		(S)		(S)	b/ 14,499
	Third quarter.....	(S)		b/	34,600	b/r/	14,767		(S)	b/	28,796	b/ 18,243
	Second quarter.....	b/r/	16,308	(S)	(S)	b/r/	11,087		(S)	b/	20,747	b/ 13,898
	First quarter.....	b/	14,018	(S)	(S)	b/r/	12,287	b/	18,788	a/	17,829	b/ 11,383
325188G181	Hydrogen peroxide (100 percent by weight).....	(S)		(S)			163,768		(S)		(S)	(S)
	Fourth quarter.....	(S)		(S)		b/	42,838		(S)		(D)	(D)
	Third quarter.....	(S)		(S)		b/	41,714		(S)		(S)	(S)
	Second quarter.....	(S)		(S)		b/	41,799		(S)		(S)	(S)
	First quarter.....	(S)		(S)		b/	37,417		(S)		(S)	(S)
325188G184	Iodine (100 percent) (quantity in pounds).....	(D)	r/ 3,206,405				19,193		(D)		3,874,870	25,566
	Fourth quarter.....	(D)		(D)	a/	4,531		(D)			896,697	a/ 6,062
	Third quarter.....	(D)		(D)	a/	4,822		(D)			871,830	a/ 5,655
	Second quarter.....	(D)		792,767	a/	4,758		(D)			(D)	a/ 7,808
	First quarter.....	(D)		816,764	a/	5,082		(D)			(D)	a/ 6,041
325188G187	Ferric chloride (100 percent).....	r/	213,212	(S)		(S)		r/	215,638	r/	219,691	r/ 21,469
	Fourth quarter.....	a/	71,895	(S)		(S)		a/r/	67,639		(S)	(S)
	Third quarter.....	a/	72,669	(S)		(S)		b/	62,287		(S)	(S)
	Second quarter.....	a/	68,648	(S)		(S)		a/r/	85,712	a/r/	74,680	b/r/ 8,204
	First quarter.....	a/	70,973	(S)		(S)		a/r/	77,386	a/r/	72,229	b/ 7,694
325188G191	Iron oxides and hydroxides, excluding iron oxide including pigments (100 percent).....	(S)		(S)		(S)		(S)		(S)		(S)
	Fourth quarter.....	(D)		(D)		(D)		(S)		(S)		(S)
	Third quarter.....	(S)		(D)		(D)		(S)		(S)		(S)
	Second quarter.....	(S)		(S)		(S)		b/	5,689		(D)	(D)
	First quarter.....	(S)		(S)		(S)		a/	13,636		(D)	(D)

Table 2. Summary of Primary Production of Specified Inorganic Chemicals: 2002 and 2001  
[Short tons, unless otherwise noted]

Product code	Product description	2002				2001			
		Total production (quantity)	Total shipments, including interplant transfers		Total production (quantity)	Total shipments, including interplant transfers			
			Quantity	Value		Quantity	Value		
325188G01A1	Magnesium chloride (100 percent).....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	32,318
	Fourth quarter.....	(D)	(D)	(D)	(D)	(D)	a/r/	(D)	5,472
	Third quarter.....	(D)	(D)	(D)	(D)	(D)	a/r/	(D)	6,375
	Second quarter.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	First quarter.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
325188G01B1	Manganese dioxide (100 percent).....	45,777	47,129	59,471	68,503	49,436			55,821
	Fourth quarter.....	a/ 12,194	a/ 9,621	12,552	15,169	12,964			15,583
	Third quarter.....	11,134	14,949	19,687	18,561	10,827			12,607
	Second quarter.....	10,136	13,549	16,673	20,327	(S)			(S)
	First quarter.....	12,313	9,010	10,559	b/ 14,446	(S)			(S)
325188G1F1	Phosphorus oxychloride (100 percent).....	r/ 29,873	(D)	(D)	(D)	31,919	(D)	(D)	(D)
	Fourth quarter.....	(D)	(D)	(D)	b/ 7,868	(D)	(D)	(D)	(D)
	Third quarter.....	(D)	(D)	(D)	b/ 6,911	(D)	(D)	(D)	(D)
	Second quarter.....	(D)	(D)	(D)	b/ 8,871	(D)	(D)	(D)	(D)
	First quarter.....	a/ 8,106	(D)	(D)	b/ 8,269	(D)	(D)	(D)	(D)
325188G1F7	Phosphorus trichloride (chloride) (100 percent).....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Fourth quarter.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Third quarter.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Second quarter.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	First quarter.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
325188G1G7	Silicon tetrachloride (sitet) (100 percent SiCl4).....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Fourth quarter.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Third quarter.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Second quarter.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	First quarter.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
325188G1K1	Sulfur dioxide (100 percent).....	r/ 89,958	r/ 79,095	r/ 11,946		81,243		71,313	12,544
	Fourth quarter.....	23,696	20,721	a/ 3,262	a/ 19,446	a/ 15,964	a/ 15,964	a/ 2,763	
	Third quarter.....	27,142	24,479	a/ 3,555	a/ 23,012	a/ 19,188	a/ 19,188	a/ 3,365	
	Second quarter.....	r/ 21,814	r/ 18,680	a/r/ 2,577	16,857	a/ 16,502	b/ 16,502	b/ 2,879	
	First quarter.....	17,306	15,215	a/ 2,552	21,928	a/ 19,659	b/ 19,659	b/ 3,537	
325188G1M1	Zinc sulfate (100 percent).....	r/ 31,665	33,559	r/ 19,964		29,137		(D)	20,124
	Fourth quarter.....	(D)	(D)	3,778	b/ 6,286	(D)	(D)	(D)	(D)
	Third quarter.....	9,430	(D)	4,760	6,973	(D)	(D)	(D)	5,586
	Second quarter.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	4,737
	First quarter.....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3251311100	Titanium dioxide (composite and pure) (commodity weight) 11/.....	1,553,513	(X)	(X)	1,463,037	(X)	(X)	(X)	(X)
	Fourth quarter.....	393,156	(X)	(X)	347,160	(X)	(X)	(X)	(X)
	Third quarter.....	395,943	(X)	(X)	383,365	(X)	(X)	(X)	(X)
	Second quarter.....	400,633	(X)	(X)	348,679	(X)	(X)	(X)	(X)
	First quarter.....	363,781	(X)	(X)	383,833	(X)	(X)	(X)	(X)

D Withheld to avoid disclosing data for individual companies. r/Revised by 5 percent or more from previously published data. S Does not meet publication standards. X Not applicable.

1/Production includes amounts liquefied.

2/Liquid production data represent total production, including quantities later evaporated to solid caustic.

3/Source: U.S. Geological Survey. Quantity reported in thousands of short tons.

4/Includes production from salt and acid.

5/Excludes quantities produced and consumed in municipalities.

6/Represents quantities produced only for sale or interplant transfer.

7/Excludes amounts produced and consumed in making meta, ortho, and sesquisilicates.

8/Includes animal feed, but excludes other grades and superphosphate or other fertilizer materials.

9/Excludes reactivated carbon.

10/Includes pelleted carbon.

11/Represents total stocks of producing companies, including amounts held at locations other than producing plants.

Note: Percent of estimation of each item is indicated as follows: a/10 to 25 percent of this item is estimated. b/26 to 50 percent of this item is estimated. c/Over 50 percent of this item is estimated.

Table 3. Production, Exports, Imports, and Apparent Consumption of Selected Inorganic Chemicals: 2002 and 2001  
[Quantity in metric tons]

Product code	Product description	Year	Production (quantity)	Exports of domestic merchandise 1/	Imports for consumption 2/	Apparent consumption 3/ (quantity)	Percent imports to apparent consumption
							(quantity)
3251811111	Chlorine gas.....	2002	11,683,992	18,566	409,695	12,075,121	3.4
		2001	11,489,436	20,964	358,060	11,826,532	3.0
3251814111	Sodium hydroxide, total liquid (all processes).....	2002	9,461,421	2,773,558	1,065,056	7,752,919	13.7
		2001	9,812,776	3,135,049	1,199,785	7,877,512	15.2
3251817111	Potassium hydroxide, liquid.....	2002	469,817	41,128	24,678	453,367	5.4
		2001	464,607	59,376	26,101	431,332	6.1
3251817131	Finished sodium bicarbonate.....	2002	535,344	62,947	14,288	486,685	2.9
		2001	513,323	65,768	3,856	451,411	0.9
3251884125, 131	Hydrochloric acid.....	2002	4,037,627	54,761	96,744	4,053,001	2.4
		2001	3,969,967	63,859	100,060	4,006,168	2.5
3313110100	Aluminum oxide.....	2002	(D)	1,217,045	2,859,702	(D)	(D)
		2001	2,862,709	1,208,704	2,943,027	4,597,032	64.0
3251887121	Aluminum chloride.....	2002	(D)	13,081	1,300	(D)	(D)
		2001	(D)	15,676	1,155	(D)	(D)
3251887131	Aluminum hydroxide, trihydrate.....	2002	357,394	77,390	231,279	511,283	45.2
		2001	284,591	56,242	243,846	472,195	51.6
3251887151	Aluminum sulfate (commercial).....	2002	1,053,655	6,717	5,211	1,069,146	0.5
		2001	1,019,591	7,670	8,138	1,020,060	0.8
3251887171	Aluminates.....	2002	338,072	17,094	17,063	338,041	5.0
		2001	348,850	15,721	21,499	354,628	6.1
325188A111	Potassium iodide.....	2002	r/ 296	84	631	843	74.9
		2001	r/ 290	23	522	790	66.1
325188A124	Potassium phosphate.....	2002	28,423	2,068	16,645	43,000	38.7
		2001	26,825	1,843	14,312	39,293	36.4
325188A141	Sodium chlorate.....	2002	721,086	39,828	528,239	1,209,497	43.7
		2001	792,167	32,834	495,379	1,254,712	39.5
325188A174	Sodium phosphate tripoly.....	2002	(D)	13,546	80,074	(D)	(D)
		2001	(D)	12,260	91,117	(D)	(D)
325188A181	Sodium silicates (other than metasilicates).....	2002	1,053,996	18,086	35,378	1,071,288	3.3
		2001	1,069,994	24,517	40,094	1,085,571	3.7
325188A184, 187	Sodium metasilicates.....	2002	58,041	24,362	1,213	34,892	3.5
		2001	63,041	20,441	2,273	44,874	5.1
325188A1A7	Sodium sulfite.....	2002	r/ 74,336	23,423	11,611	62,524	18.6
		2001	r/ 75,926	24,105	9,546	61,367	15.6
325188G141	Calcium carbonate (precipitated).....	2002	1,970,608	74,419	75,841	1,972,030	3.8
		2001	1,900,278	69,596	103,180	1,933,862	5.3
325188G144	Calcium chloride.....	2002	1,326,991	132,111	197,414	1,392,294	14.2
		2001	1,472,330	114,697	257,499	1,615,132	15.9
325998H1E4, 1E7	Carbon activated (granular and pulverized).....	2002	(D)	48,044	52,920	(D)	(D)
		2001	(S)	46,682	47,973	(S)	(S)
325188G181	Hydrogen peroxide.....	2002	(S)	51,356	61,125	(S)	(S)
		2001	(S)	50,447	67,318	(S)	(S)
325188G184	Iodine.....	2002	(D)	1,429	6,187	(D)	(D)
		2001	(D)	1,454	5,024	(D)	(D)
325188G191	Iron oxides and hydroxides.....	2002	(S)	44,423	6,922	(S)	(S)
		2001	(S)	38,096	12,188	(S)	(S)
325188G01A1	Magnesium chloride.....	2002	(D)	4,574	20,127	(D)	(D)
		2001	(D)	3,625	61,954	(D)	(D)

Continued



Table 3. Production, Exports, Imports, and Apparent Consumption of Selected Inorganic Chemicals: 2002 and 2001  
 [Quantity in metric tons]

Product code	Product description	Year	Production (quantity)	Exports of domestic merchandise 1/	Imports for consumption 2/	Apparent consumption 3/ (quantity)	Percent imports to apparent consumption (quantity)
325188G01B1	Manganese dioxide.....	2002	41,528	3,624	36,657	74,561	49.2
		2001	62,145	4,239	38,257	96,163	39.8
325188G1F1, 1F7	Phosphorous, oxychloride and trichloride.....	2002	(D)	932	82	(D)	(D)
		2001	(D)	957	390	(D)	(D)
325188G1K1	Sulfur dioxide.....	2002	81,609	2,435	59,265	138,439	42.8
		2001	73,702	2,241	51,560	123,022	41.9
325188G1M1	Zinc sulfate.....	2002	28,726	2,898	20,136	45,964	43.8
		2001	26,433	4,782	16,248	37,899	42.9
3251311100	Titanium dioxide (composite and pure).....	2002	1,409,323	539,835	231,176	1,100,664	21.0
		2001	1,327,245	415,258	208,834	1,120,821	18.6

D Withheld to avoid disclosing data for individual companies. r/Revised by 5 percent or more from previously published data. S Does not meet publication standards.

1/Source: Census Bureau report EM 545, U.S. Exports (see Table 4).

2/Source: Census Bureau report IM 145, U.S. Imports for Consumption (see Table 4).

3/Apparent consumption represents new domestic supply and is derived by subtracting exports from the total of manufacturers' production plus imports.

Table 4. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes and HTUSA Import Codes: 2002

Product code	Product description	Export code 1/	Import code 2/
3251881111	Chlorine gas.....	2801.10.0000	2801.10.0000
3251814111	Sodium hydroxide, total liquid (all processes).....	2815.11.0000 2815.12.0000	2815.11.0000 2815.12.0000
3251817111	Potassium hydroxide, liquid.....	2815.20.0050 2815.20.0090	2815.20.0050 2815.20.0090
3251817131	Finished sodium bicarbonate.....	2836.30.0000	2836.30.0000
3251884125, 131	Hydrochloric acid.....	2806.10.0000	2806.10.0000
3313110100	Aluminum oxide.....	2818.20.0000	2818.20.0000
3251887121	Aluminum chloride.....	2827.32.0000	2827.32.0000
3251887131	Aluminum hydroxide, trihydrate.....	2818.30.0000	2818.30.0000
3251887151	Aluminum sulfate (commercial).....	2833.22.0000	2833.22.0000
3251887171	Aluminates.....	2841.10.0000	2841.10.0000
325188A111	Potassium iodide.....	2827.60.2000	2827.60.2000
325188A124	Potassium phosphate.....	2835.24.0000	2835.24.0000
325188A141	Sodium chlorate.....	2829.11.0000	2829.11.0000
325188A174	Sodium phosphate tripoly.....	2835.31.0000	2835.31.0000
325188A181	Sodium silicates (other than metasilicates).....	2839.19.0000	2839.19.0000
325188A184, 187	Sodium metasilicates.....	2839.11.0000	2839.11.0000
325188A1A7	Sodium sulfite.....	2832.10.0000	2832.10.0000
325188G141	Calcium carbonate (precipitated).....	2836.50.0000	2836.50.0000
325188G144	Calcium chloride.....	2827.20.0000	2827.20.0000
325998H1E4, 1E7	Carbon activated (granular and pulverized).....	3802.10.0000	3802.10.0000
325188G181	Hydrogen peroxide.....	2847.00.0000	2847.00.0000
325188G184	Iodine.....	2801.20.0000	2801.20.0000
325188G191	Iron oxides and hydroxides.....	2821.10.0050	2821.10.0050
325188G01A1	Magnesium chloride.....	2827.31.0000	2827.31.0000

Continued

Table 4. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes and HTUSA Import Codes: 2002

Product code	Product description	Export code 1/	Import code 2/
325188G01B1	Manganese dioxide.....	2820.10.0000	2820.10.0000
325188G1F1, 1F7	Phosphorous, oxychloride and trichloride.....	2812.10.5010	2812.10.5010
325188G1K1	Sulfur dioxide.....	2811.23.0000	2811.23.0000
325188G1M1	Zinc sulfate.....	2833.26.0000	2833.26.0000
3251311100	Titanium dioxide (composite and pure).....	2823.00.0000 3206.11.0000 3206.19.0000	2823.00.0000 3206.11.0000 3206.19.0000

1/Source: 2002 edition, Harmonized System-based Schedule B, Statistical Classification of Domestic and Foreign Commodities Exported from the United States.

2/Source: Harmonized Tariff Schedule of the United States, Annotated (2002).

# Appendix.

## General CIR Survey Information, Explanation of General Terms and Historical Note

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### GENERAL

The CIR program has been providing monthly, quarterly, and annual measures of industrial activity for many years. Since 1904, with its cotton and fats and oils surveys, the CIR program has formed an essential part of an integrated statistical system involving the quinquennial economic census, manufacturing sector, and the annual survey of manufactures. The CIR surveys, however, provide current statistics at a more detailed product level than either of the other two statistical programs.

The primary objective of the CIR program is to produce timely, accurate data on production and shipments of selected products. The data are used to satisfy economic policy needs and for market analysis, forecasting, and decision making in the private sector. The product-level data generated by these surveys are used extensively by individual firms, trade associations, and market analysts in planning or recommending marketing and legislative strategies, particularly if their industry is significantly affected by foreign trade. Although production and shipments information are the two most common data items collected, the CIR program collects other measures also such as inventories, orders, and consumption. These surveys measure manufacturing activity in important commodity areas such as textiles and apparel, chemicals, primary metals, computer and electronic components, industrial equipment, aerospace equipment, and consumer goods.

The CIR program uses a unified data collection, processing, and publication system. The U.S. Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic census, manufacturing sector. The manufacturing sector provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is too large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. The CIR program includes a group of mandatory and voluntary surveys. Typically the monthly and quarterly surveys are conducted on a voluntary basis. Those companies that choose not to respond to the voluntary surveys are required to submit a mandatory annual counterpart corresponding to the more frequent survey.

### NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS), 1997

The adoption of the North American Industry Classification System (NAICS) in the 1997 Economic Census has had a major impact on the comparability of current and historic data. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those that left manufacturing are logging and portions of publishing. Prominent among the industries that came into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. The net effect of the classification changes are such that if the 1997 value of shipments data for all manufacturers were tabulated on an SIC basis, it would be approximately 3 percent higher.

Listed below are the NAICS sectors:

- 21 Mining
- 22 Utilities
- 23 Construction
- 31-33 Manufacturing
- 42 Wholesale Trade
- 44-45 Retail Trade
- 48-49 Transportation and Warehousing
- 51 Information
- 52 Finance and Insurance
- 53 Real Estate and Rental and Leasing
- 54 Professional, Scientific, and Technical Services
- 55 Management of Companies and Enterprises
- 56 Administrative and Support and Waste Management and Remediation Services
- 61 Educational Services
- 62 Health Care and Social Assistance
- 71 Arts, Entertainment, and Recreation
- 72 Accommodation and Food Services
- 81 Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

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The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## FUNDING

The Census Bureau funds most of the surveys. However, a number of surveys are paid for either fully or partially by other Federal Government agencies or private trade associations. A few surveys are mandated, but all are authorized by Title 13 of the United States Code.

## RELIABILITY OF DATA

Survey error may result from several sources including the inability to obtain information about all cases in the survey, response errors, definitional difficulties, differences in the interpretation of questions, mistakes in recording or coding the reported data, and other errors of collection, response, coverage, and estimation. These nonsampling errors also occur in complete censuses. Although no direct measurement of the biases due to these nonsampling errors has been obtained, precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize their influence.

A major source of bias in the published estimates is the imputing of data for nonrespondents, for late reporters, and for data that fail logic edits. Missing figures are imputed based on period-to-period movements shown by reporting firms. A figure is considered to be an impute if the value was not directly reported on the questionnaire, directly derived from other reported items, directly available from supplemental sources, or obtained from the respondent during the analytical review phase. Imputation generally is limited to a maximum of 10 percent for any one data cell. Figures with imputation rates greater than 10 percent are suppressed or footnoted. The imputation rate is not an explicit indicator of the potential error in published figures due to nonresponse, because the actual yearly movements for nonrespondents may or may not closely agree with the imputed movements. The range of difference between the actual and imputed figures is assumed to be small. The degree of uncertainty regarding the accuracy of the published data increases as the percentage of imputation increases. Figures with imputation rates above 10 percent should be used with caution.

## DATA REVISIONS

Statistics for previous years may be revised as the result of corrected figures from respondents, late reports for which imputations were originally made, or other corrections. Data that have been revised by more than 5 percent from previously published data are indicated by footnotes.

## DISCLOSURE

The Census Bureau collects the CIR data under the authority of Title 13, United States Code, which specifies that the information can only be used for statistical purposes and cannot be published or released in any manner that would identify a person, household, or establishment. "D" indicates that data in the cell have been suppressed to avoid disclosure of information pertaining to individual companies.

## EXPLANATION OF GENERAL TERMS

**Capacity.** The maximum quantity of a product that can be produced in a plant in 1 day if operating for 24 hours. Includes the capacity of idle plants until the plant is reported to be destroyed, dismantled, or abandoned.

**Consumption.** Materials used in producing or processing a product or otherwise removing the product from the inventory.

**Exports.** Includes all types of products shipped to foreign countries, or to agents or exporters for reshipment to foreign countries.

**Gross shipments.** The quantity or value of physical shipments from domestic establishments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale or use. Shipments of products purchased for resale are omitted. Shipments of products made under toll arrangements are included.

**Interplant transfers.** Shipments to other domestic plants within a company for further assembly, fabrication, or manufacture.

**Inventories.** The quantity or value of finished goods, work in progress, and materials on hand.

**Machinery in place.** The number of machines of a particular type in place as of a particular date whether the machinery was used for production, prototype, or sampling, or was idle. Machinery in place includes all machinery set up in operating positions.

**Net receipts.** Derived by subtracting the materials held at the end of the previous month from the sum of materials used during the current month.

**Production.** The total volume of products produced, including: products sold; products transferred or added to inventory after adjustments for breakage, shrinkage, and obsolescence, plus any other inventory adjustment; and products that undergo further manufacture at the same establishment.

**Quantities produced and consumed.** Quantities of each type of product produced by a company for internal consumption within that same company.

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**Quantity and value of new orders.** The sales value of orders received during the current reporting period for products and services to be delivered immediately or at some future date. Also represents the net sales value of contract change documents that increase or decrease the sales value of the orders to which they are related, when the parties concerned are in substantial agreement as to the amount involved. Included as orders are only those that are supported by binding legal documents such as signed contracts or letter contracts.

**Quantity and value of shipments.** The figures on quantity and value of shipments represent physical shipments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, f.o.b. plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and

returns. Shipments to a company's own branches are assigned the same value as comparable appropriate allocation of company overhead and profit. Products bought and resold without further manufacture are excluded.

**Stocks.** Total quantity of ending finished inventory.

**Unfilled orders (backlog).** Calculated by adding net new orders and subtracting net sales from the backlog at the end of the preceding year.

#### **HISTORICAL NOTE**

Data on inorganic chemicals have been collected by the Census Bureau since 1941. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library.