

Production growth sputtered in most sectors

Following the impressive gains of 1994, production of chemicals in 1995 grew at a tempered pace. Most sectors fulfilled the predictions of a "soft landing" from the double-digit growth of 1994, but others slid.

Production by the U.S. chemical industry rose 1% in 1995, on the heels of the 5% gain in 1994, according to the Federal Reserve Board's index of production for chemicals and allied products. The index for chemicals and synthetic materials—basic industrial chemicals plus polymers—rose 2% in 1995 after an 8% rise in 1994. C&EN's tally of the 50 largest volume chemicals shows less softening, from 7.6% growth in 1994 to 5.0% growth in 1995.

Nearly every chemical category posted gains on the board's production index in 1995. Growth ranged from 1% for soaps and toiletries and paints to 6% for drugs and medicines and 5% for organic chemicals. Declines hit rubber and plastic products, down 2%, and inorganic pigments, down 2% as well.

Although the board's production index for inorganic chemicals—"basic chemicals"—shows a 3% decline in production in 1995, inorganics in C&EN's tally of 50 largest volume chemicals increased 4.5% overall. Sulfuric acid production gained 6% to reach nearly 48 million tons, and ammonia and chlorine output each rose 3%.

Production of organic chemicals showed mixed results in 1995, with some organics, such as acetic acid and maleic anhydride, logging double-digit gains of 18% and 16%, respectively. Meanwhile, ethylene glycol output fell 14% on the heels of 1994's 17% gain, and methanol production dropped 7% after a 16% gain in 1994.

For chlorofluorocarbons, 1995 was the last year of legal U.S. production for U.S. use under the Clean Air Act and the Montreal Protocol on Substances That Deplete the Ozone Layer. CFC-22 production fell 14% and CFC-12 production dropped 57%. Output of perchloroethylene, which is a feedstock

for the CFC replacement hydrofluorocarbon-134a, rose 5% after last year's 9% drop.

Output of synthetic materials rose 3%, according to the board. The Society of the Plastics Industry (SPI) tally shows a different story, with many declines. Production of urea, melamine, and phenolic resins declined 5%, 3%, and 1%, respectively. Meanwhile, polyvinyl chloride production grew 5% and nylon, 8%, according to SPI.

Fiber production stalled in 1995; neither noncellulosic nor cellulosic fibers showed growth. Acrylic and nylon production fell 2% and 1%, respectively. Polyester and olefin registered less than 1% growth.

Production of most minerals increased in 1995, with sodium carbonate up 8%, lime up 7%, and potash up 6%. Output of phosphate rock, the largest volume up mineral, was up 6%.

The architectural uses sector maintained growth for paints and coatings, output of which was up 2% over 1994.

Architectural uses rose 5%, original equipment manufacture use held steady, and "special purpose" use dipped 4%.

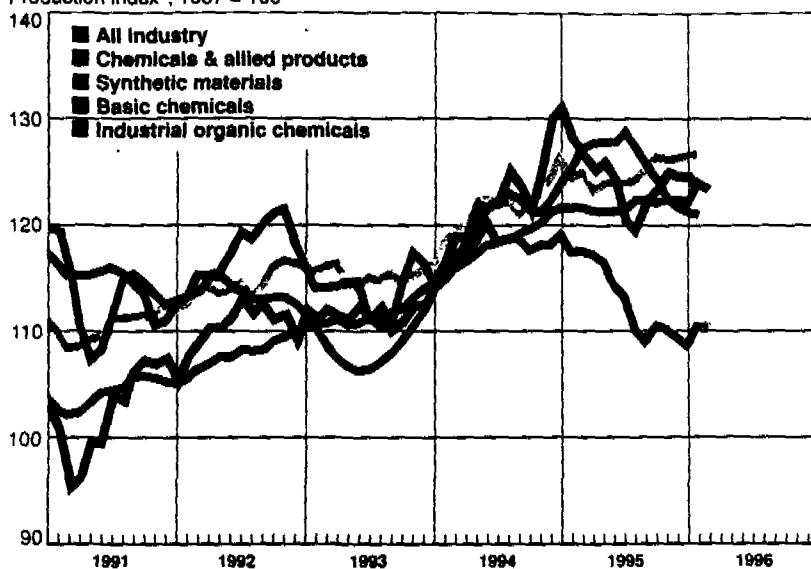
According to the Fertilizer Institute, combined U.S. consumption of nitrogen, phosphates, and potash fertilizers fell 5%, while production increased for most products. Only production of ammonium nitrate, monoammonium phosphate, and concentrated superphosphate fell.

For 1994, the latest year for which data are available, pesticide production rose 5% overall, reaching 1.3 billion lb. But although herbicides—bolstered by no-till farming—increased 16%, insecticides—which had unusually high production in 1993—fell 18%.

Market analysts are expecting overall production growth to continue through 1996. This year will bring "pretty much more of the same," says Allen J. Lenz, director of economics at the Chemical Manufacturers Association. "I don't see any reason to expect greater increases than in 1995."

U.S. chemical production grew slightly in 1995

Production index^a, 1987 = 100



^a Seasonally adjusted Source: Federal Reserve Board

TOP 50 CHEMICALS: Organics outpaced inorganics as production of chemicals rose overall

Rank			Billions of lb		Rank		Billions of lb		
1995	1994 ^a		1995	1994			1995	1994	
1	1	Sulfuric acid	95.36	89.63	26	27	Ethylene oxide	7.62	7.24
2	2	Nitrogen	68.04	63.91	27	26	Hydrochloric acid	7.33	7.47
3	3	Oxygen	53.48	50.08	28	28	Toluene ⁱ	6.73	6.75
4	4	Ethylene	46.97	44.60	29	29	p-Xylene	6.34	6.26
5	5	Lime ^b	41.23	38.37	30	31	Cumene	5.63	5.22
6	6	Ammonia	35.60	34.51	31	32	Ammonium sulfate	5.24	5.18
7	7	Phosphoric acid	26.19	25.58	32	30	Ethylene glycol	5.23	6.09
8	8	Sodium hydroxide	26.19	25.11	33	33	Acetic acid	4.68	3.98
9	10	Propylene	25.69	23.94	34	34	Phenol ^j	4.16	3.92
10	9	Chlorine	25.09	24.37	35	35	Propylene oxide	4.00	3.70
11	11	Sodium carbonate ^c	22.28	20.56	36	36	Butadiene ^k	3.68	3.38
12	18	Methyl tert-butyl ether	17.62	13.61	37	37	Carbon black	3.32	3.25
13	14	Ethylene dichloride	17.26	16.76	38	39	Isobutylene	3.23	3.08
14	12	Nitric acid	17.24	17.22	39	38	Potash ^l	3.22	3.08
15	13	Ammonium nitrate ^d	15.99	17.03	40	41	Acrylonitrile	3.21	3.03
16	16	Benzene	15.97	15.27	41	40	Vinyl acetate	2.89	3.04
17	15	Urea ^e	15.59	15.90	42	42	Titanium dioxide	2.77	2.76
18	17	Vinyl chloride	14.98	13.85	43	43	Acetone	2.76	2.66
19	22	Ethylbenzene	13.66	10.76	44	45	Butyraldehyde	2.68	2.19
20	21	Styrene	11.39	11.29	45	44	Aluminum sulfate	2.41	2.21
21	19	Methanol	11.29	12.18	46	46	Sodium silicate	2.25	2.01
22	20	Carbon dioxide ^f	10.89	11.80	47	47	Cyclohexane	2.13	1.96
23	23	Xylene	9.37	9.06	48	48	Adipic acid	1.80	1.80
24	24	Formaldehyde ^g	8.11	8.17	49	—	Nitrobenzene	1.65	1.44
25	25	Terephthalic acid ^h	7.95	7.58	50	49	Bisphenol A	1.62	1.70
TOTAL ORGANICS							285.89	270.40	
TOTAL INORGANICS							464.10	444.15	
GRAND TOTAL							749.99	714.55	

^a Revised from 1994 rankings. ^b Except refractory dolomite. ^c Natural and synthetic. ^d Original solution. ^e 100% basis. ^f Liquid and solid only. ^g 37% by weight. ^h Includes both acid and ester without double counting. ⁱ All grades. ^j Synthetic only. ^k Rubber grade. ^l K₂O basis.

PRODUCTION: Most chemicals followed total manufacturing trend with slow growth in 1995

Industrial production indexes, 1987 = 100												% annual change	
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1994-95	1985-95
Total index	94.4	95.3	100.0	104.4	106.0	106.0	104.2	107.7	111.5	118.1	120.5	2%	2%
Manufacturing, total	91.6	94.3	100.0	104.7	106.4	106.1	103.8	108.2	112.3	119.7	121.6	2	3
Nondurable manufacturing	91.5	94.9	100.0	102.3	103.7	104.4	103.4	106.7	108.6	113.0	112.3	-1	2
Chemicals & products	91.4	94.6	100.0	106.0	109.2	111.8	110.5	114.4	115.4	121.3	123.0	1	3
Chemicals & synthetic materials	92.2	93.9	100.0	107.5	112.2	114.5	110.0	113.5	111.0	119.9	122.3	2	3
Basic chemicals	96.1	95.1	100.0	104.7	108.4	118.9	114.8	117.6	114.2	117.7	113.7	-3	2
Alkalies & chlorine	93.6	92.1	100.0	104.8	107.3	107.2	104.2	105.4	108.1	114.1	117.4	3	2
Inorganic pigments	95.1	96.2	100.0	111.4	114.0	109.0	101.3	114.2	113.4	119.6	117.6	-2	2
Inorganic chemicals, nec ^a	97.2	94.7	100.0	103.5	107.7	123.8	119.2	122.4	115.0	116.0	109.0	-6	1
Industrial organic chemicals	94.1	95.0	100.0	111.6	117.8	119.4	113.7	113.8	108.9	120.2	126.2	5	3
Synthetic materials ^b	86.9	91.6	100.0	104.3	107.7	105.8	102.4	110.4	111.7	121.6	124.9	3	4
Plastic materials	84.1	88.2	100.0	104.0	106.0	106.7	101.2	112.0	110.2	120.0	122.9	2	4
Synthetic fibers	86.6	93.7	100.0	103.5	110.5	102.8	102.7	105.9	110.7	120.4	122.3	2	4
Chemical products	90.2	95.9	100.0	104.7	106.3	108.8	110.4	114.8	118.2	121.7	126.3	4	3
Drugs & medicines	88.5	96.7	100.0	104.9	108.6	112.6	118.9	127.4	128.2	134.4	142.1	6	5
Soaps & toiletries	91.3	96.7	100.0	106.4	107.3	109.4	108.1	109.4	116.3	115.3	116.1	1	2
Paints	95.7	97.5	100.0	103.1	98.9	97.1	93.7	96.0	100.4	105.1	106.4	1	1
Agricultural chemicals	96.1	88.5	100.0	106.5	115.3	119.3	116.1	118.8	119.3	128.0	132.2	3	3
Petroleum products	92.6	98.9	100.0	101.9	102.3	103.3	101.7	102.6	105.7	106.7	109.6	3	2
Rubber & plastic products	85.8	90.8	100.0	102.6	106.0	107.2	105.5	116.2	123.9	135.9	133.7	-2	5

^a Not elsewhere classified. ^b Includes synthetic rubber. Source: Federal Reserve Board

ORGANIC CHEMICALS: Mixed results, but production of most grew in 1995

Millions of lb unless otherwise noted	Production										% annual change		
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1994-95	1985-95
Acetic acid, synthetic	2,897	2,728	3,246	3,159	3,294	3,751	3,615	3,594	3,327	3,984	4,683	18%	5%
Acetone	1,788	1,910	1,846	2,303	2,524	2,329	2,347	2,435	2,430	2,664	2,761	4	4
Acrylonitrile	2,346	2,349	2,182	2,452	2,609	2,676	2,647	2,829	2,489	3,026	3,207	6	3
Aniline	716	824	829	1,029	1,016	989	961	1,009	991	1,263	1,391	10	7
Benzene, mg ^{a,b}	1,283	1,362	1,575	1,608	1,631	1,699	1,569	1,636	1,677	2,074	2,168	5	5
Bisphenol A	949	956	1,000	1,340	1,241	1,149	1,219	1,197	1,286	1,702	1,623	-5	6
1,3-Butadiene ^c	2,340	2,546	2,931	3,169	3,121	3,088	3,054	3,232	3,117	3,376	3,682	9	5
1-Butanol	716	881	1,155	1,194	1,751	1,269	1,320	1,279	1,337	1,477	1,493	1	8
Caprolactam	1,089	1,109	1,156	1,261	1,307	1,379	1,284	1,377	1,433	1,510	1,575	4	4
Chloroform	275	422	462	524	588	484	505	na	476	565	na	—	—
Cumene	3,345	3,745	4,105	4,455	4,426	4,311	4,168	4,666	4,393	5,217	5,625	8	5
Cyclohexane	1,657	2,070	2,276	2,297	2,273	2,460	2,307	2,242	2,000	1,962	2,134	9	3
Diethyl phthalate	275	296	343	344	306	310	270	270	254	259	na	—	—
Ethanol, synthetic	649	529	574	562	549	546	526	698	678	648	626	-3	0
Ethanolamines ^d	537	543	627	608	667	727	658	694	706	754	814	8	4
Ethylbenzene	7,386	9,020	9,346	9,929	9,235	8,369	8,871	11,108	9,336	10,758	13,656	27	6
Ethylene	29,847	32,859	34,951	37,204	34,988	36,467	39,955	40,924	40,019	44,602	46,966	5	5
Ethylene dichloride	12,101	12,940	12,197	13,028	13,383	13,849	13,713	15,150	17,947	16,762	17,263	3	4
Ethylene glycol	4,178	4,771	5,183	5,517	5,461	5,070	4,809	5,128	5,200	6,090	5,230	-14	2
Ethylene oxide	5,430	5,430	4,785	5,953	5,031	5,355	5,248	5,829	5,330	7,238	7,621	5	3
2-Ethylhexanol	536	571	662	743	612	650	657	692	695	732	743	1	3
Formaldehyde, 37% ^e	5,606	5,549	5,733	6,280	5,893	6,720	6,612	8,278	8,189	8,165	8,110	-1	4
Isobutylene	na	1,124	1,035	1,244	1,193	1,212	972	952	1,073	3,078	3,235	5	12
Isopropyl alcohol	1,235	1,301	1,371	1,389	1,474	1,456	1,342	1,463	1,272	1,451	1,424	-2	1
Maleic anhydride	394	359	382	448	475	424	381	436	358	478	554	16	3
Methanol, synthetic	5,003	7,205	7,537	8,142	8,167	8,344	8,704	8,082	10,506	12,176	11,292	-7	8
Methyl tert-butyl ether	1,891	3,375	3,514	5,680	8,227	8,884	9,570	10,877	12,900	13,610	17,620	29	25
Methyl chloride	410	605	373	597	461	772	916	966	1,053	999	1,065	7	10
Methyl ethyl ketone	537	600	672	482	450	465	513	479	539	600	583	-3	1
Methyl methacrylate	858	943	1,029	1,100	1,161	1,182	1,102	1,208	1,148	1,318	1,372	4	5
Methylchloroform	869	652	694	724	783	803	644	692	452	335	na	—	—
Methylene chloride	467	566	516	504	482	461	389	362	354	403	na	—	—
Perchloroethylene	678	414	473	498	481	372	239	245	271	247	260	5	-9
Phenol, synthetic ^f	2,841	3,115	3,351	3,562	3,806	3,538	3,597	3,707	3,191	3,920	4,163	6	4
Phthalic anhydride	820	863	1,035	999	917	940	587	898	853	959	994	4	2
Propylene ^g	14,887	16,522	19,019	21,224	20,571	21,846	21,549	23,421	21,470	23,943	25,691	7	6
Propylene glycol	500	573	747	840	805	754	666	509	846	933	1,019	9	7
Styrene	7,622	7,888	8,014	8,984	8,337	8,017	8,114	9,000	9,594	11,294	11,386	1	4
Terephthalic acid, dimethyl ester ^h	6,490	6,257	7,601	10,234	8,426	7,773	7,640	5,637	7,105	7,575	7,950	5	2
Toluene, mg ^{a,i}	698	611	967	892	806	861	873	833	880	931	927	0	3
Urea	13,356	12,528	14,866	15,828	16,008	16,432	16,266	17,532	16,572	15,904	15,592	-2	2
Vinyl acetate	2,112	1,710	1,813	2,561	2,552	2,659	2,732	2,657	2,773	3,036	2,893	-5	3
Vinyl chloride	9,463	8,439	8,402	9,058	10,135	10,623	11,142	11,307	14,220	13,850	14,976	8	5
o-Xylene	675	788	940	971	983	943	767	918	831	915	1,025	12	4
p-Xylene	4,779	5,035	5,155	5,601	5,344	5,200	5,350	5,656	5,791	6,255	6,342	1	3

Notes: As of Oct. 1, 1996, the International Trade Commission will no longer collect or publish annual synthetic organic chemicals data. ^a Tar distillers and coke-oven operators not included. ^b Specification grades. ^c Rubber grade. ^d Mono-, di-, and triethanolamines. ^e By weight. ^f Does not include data for coke ovens and gas-retort ovens. ^g All grades. ^h Includes both acid and dimethyl ester (DMT) without double counting. ⁱ All grades, includes material used in blending motor fuel. mg = millions of gallons. na = not available.

Sources: International Trade Commission, C&EN estimates

INORGANIC CHEMICALS: Output of several products up in another mostly upbeat year

Thousands of tons unless otherwise noted	Production											% annual change	
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 ^a	1994-95	1985-95
Aluminum sulfate ^b	1,268	1,222	1,227	1,237	1,243	1,227	1,185	1,047	1,050	1,107	1,204	9%	-1%
Ammonia, 100% ^{c,d}	17,319	14,487	16,098	16,821	16,468	17,003	17,169	17,924	16,858	17,256	17,801	3	0
Ammonium nitrate, 100% ^e	6,776	6,091	6,547	7,504	7,871	7,713	7,819	7,981	8,255	8,517	7,993	-6	2
Ammonium sulfate, 100% ^f	2,093	2,080	2,189	2,333	2,384	2,519	2,243	2,391	2,424	2,588	2,619	1	2
Chlorine ^g	10,402	10,436	11,078	11,257	11,413	11,809	11,421	11,757	11,957	12,187	12,544	3	2
Hydrochloric acid, 100% ^h	2,807	2,413	2,996	3,228	3,268	3,140	3,301	3,610	3,492	3,734	3,663	-2	3
Hydrogen, bcf, 100% ^{i,j}	121	136	173	177	146	148	153	162	213	254	238	-6	7
Hydrogen peroxide, 100% ^k	144	152	153	168	204	238	254	280	301	318	na	—	—
Nitric acid, 100% ^k	7,631	6,734	7,225	7,991	8,349	7,932	7,927	8,136	8,254	8,611	8,621	0	1
Nitrogen gas, bcf, 100% ^l	665	677	685	722	744	749	770	818	796	882	939	6	4
Oxygen, bcf, 100% ^l	393	383	405	452	460	462	470	525	547	605	646	7	5
Phosphoric acid, 100% P ₂ O ₅	10,607	9,578	10,599	11,659	11,737	12,035	12,109	12,826	11,515	12,792	13,096	2	2
Phosphorus ^m	359	364	344	343	353	346	308	271	258	255	na	—	—
Sodium chlorate, 100%	259	267	289	267	290	327	449	555	539	559	612	9	9
Sodium hydroxide, 100%	10,811	10,691	11,553	10,533	11,470	12,030	11,713	12,244	12,466	12,555	13,094	4	2
Sodium silicate ⁿ	692	791	952	812	833	816	870	924	1,006	1,007	1,125	12	5
Sodium sulfate, 100% ^o	1,203	837	799	819	755	786	794	609	592	527	467	-11	-9
Sulfuric acid, 100% ^p	39,890	35,993	39,256	42,580	43,301	44,337	43,466	44,524	39,348	44,813	47,681	6	2
Titanium dioxide, 100% ^q	860	931	968	1,022	1,101	1,077	1,095	1,253	1,279	1,380	1,383	0	5

a Preliminary. b Commercial, 17% Al₂O₃; includes municipalities. c Synthetic anhydrous. d Excludes by-product ammonia liquor and ammonium sulfate. e Original solution. f Synthetic and noncoked by-product. g Includes quantities liquefied for use, storage, or shipment. h Includes anhydrous hydrochloric acid production. i High- and low-purity gas. j Liquid and gas; excludes amounts vented and used as fuel, and amounts produced in petroleum refineries for captive use. k Includes unspecified amounts produced but not withdrawn from the system. l Excludes amounts produced and consumed in making synthetic ammonia or ammonia derivatives. m Elemental, white (yellow), and red (technical). n Soluble silicate glass (water glass), solid and liquid (anhydrous); excludes amounts produced and consumed in making meta-, ortho-, and sesquisilicates. o Anhydrous, high and low purity, and Glauber's salt. p Gross (new and fortified). q Composite and pure. bcf = billions of cubic feet. na = not available. Sources: Department of Commerce, Bureau of the Census.

MINERALS: Gains continued in 1995, phosphate rock contributed to the rise

Thousands of tons	Production											% annual change	
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 ^a	1994-95	1985-95
Bromine, sold or used ^b	160	155	168	180	193	195	187	188	195	215	233	8%	4%
Calcium chloride, production ^c	584	419	462	508	471	518	466	400	484	638	na	—	—
Lime, production ^d	15,690	14,474	15,733	17,052	17,152	17,452	17,270 ^e	17,857	18,664	19,184	20,617	7	3
Lithium, consumption ^{e,f}	2.5	2.6	2.6	3.0	3.0	3.0	2.9	2.5	2.5	2.8	2.9	4	1
Phosphate rock													
Production	56,035	44,445	45,144	50,032	54,913	51,084	53,016	51,770	39,125	45,305	47,948	6	-2
Exports	10,071	8,651	9,319	8,920	8,644	6,876	5,602	4,104	3,525	3,086	3,042	-1	-11
Potash (K₂O equivalent)^g													
Production	1,429	1,325	1,391	1,677	1,758	1,888	1,928	1,879	1,664	1,542	1,641	6	1
Imports	5,063	4,643	4,490	4,648	3,758	4,590	4,990	4,683	4,809	5,321	5,406	2	1
Apparent consumption ^h	5,893	5,338	5,609	5,803	4,960	6,011	6,186	5,898	5,988	6,432	6,345	-1	1
Sodium carbonate, productionⁱ	8,511	8,511	8,438	8,891	9,632	9,915	10,093	9,926	10,338	10,278	11,138	8	3
Sulfur, production^j	12,797	12,221	11,617	11,845	12,778	12,743	11,928	11,753	12,080	12,677	13,228	4	0
Recovered elemental & Frasch	11,381	10,868	10,321	10,602	11,462	11,312	10,488	10,326	10,548	11,156	11,574	4	0
Other production	1,416	1,354	1,296	1,243	1,316	1,431	1,440	1,427	1,532	1,521	1,653	9	2
Apparent consumption ^h	13,192	11,669	12,481	14,012	13,983	14,942	14,865	14,717	13,803	13,669	14,550	6	1

a Preliminary data, except those for phosphate rock. b Elemental bromine sold as such or used in preparation of bromine compounds by primary producers. c 100% CaCl₂ equivalent. d Sold or used by producers for commercial or captive use. Produced from limestone and dolomite, does not include amount regenerated by paper industry; excludes Puerto Rican production. e Estimated. f Lithium content basis. g Includes munite and sulfate of potash, potassium magnesium sulfate, and parent salts; excludes other chemical compounds containing potassium. h Calculated from shipments plus imports minus exports. i Natural and synthetic until 1986, natural only from 1987. j Sulfur content basis. na = not available. Sources: Bureau of Mines, Bureau of the Census, U.S. Geological Survey.

PLASTICS: Thermosets stalled, but some thermoplastics made gains last year

Millions of lb ^a	Production											% annual change	
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1994-95	1985-95
THERMOSETTING RESINS													
Epoxy ^b	385	398	433	486	509	499	497	457	512	601	632	5%	5%
Melamine	192	173	212	207	222	202	196	232	270	300	290	-3	4
Phenolic ^{c,d}	2,621	2,735	2,869	3,066	2,879	2,946	2,658	2,923	3,078	3,229	3,204	-1	2
Polyester ^e	1,223	1,271	1,367	1,404	1,319	1,221	1,075	1,175	1,264	1,468	1,577	7	3
Urea	1,210	1,271	1,382	1,425	1,477	1,496	1,483	1,548	1,744	1,914	1,816	-5	4
TOTAL	5,631	5,848	6,263	6,588	6,408	6,364	5,909	6,335	6,868	7,512	7,519	0%	3%
THERMOPLASTIC RESINS													
Polyethylene													
Low density ^f	8,889	8,903	9,599	10,397	9,695	11,148	11,582	11,917	12,067	12,600	12,886	2%	4%
High density ^g	6,671	7,182	7,995	8,400	8,102	8,337	9,213	9,808	9,941	11,117	11,211	1	5
Polypropylene ^h	5,139	5,812	6,647	7,274	7,238	8,310	8,330	8,421	8,629	9,539	10,890	nc	nc
Styrene polymers													
Polystyrene	4,054	4,470	4,780	5,187	5,104	5,021	4,954	5,096	5,383	5,848	5,656	-3	3
Styrene-acrylonitrile ⁱ	87	92	126	148	113	135	109	113	105	138	130	-6	4
Acrylonitrile-butadiene-styrene and other styrene polymers ^j	2,036	2,196	2,254	2,418	2,394	2,351	2,287	2,610	2,924	3,230	2,908	-10	4
Polyamide, nylon type	399	465	507	566	569	558	576	668	768	943	1,020	8	10
Polyvinyl chloride & copolymers ^k	6,772	7,256	7,971	8,350	8,478	9,096	9,164	9,989	10,257	11,712	12,295	5	6
Thermoplastic polyester ^l	965	1,175	1,394	1,652	1,630	1,879	2,115	2,413	2,549	3,196	3,785	18	15
TOTAL^k	35,012	37,551	41,273	44,392	43,323	46,835	48,330	51,035	52,623	58,323	60,781	2%	4%
GRAND TOTAL^k	40,643	43,399	47,536	50,980	49,731	53,199	54,239	57,370	59,491	65,835	68,300	2%	4%

Note: Totals are for those products listed and exclude some small-volume plastics. a Dry-weight basis unless otherwise specified. b Unmodified. c Includes other tar-acid resins. d Gross-weight basis. e Unsaturated. f Density 0.940 and below. g Density above 0.940. h Data for 1995 include Canada. i Data include Canada from 1994. j Includes styrene-butadiene copolymers and other styrene-based polymers. k Production totals include polypropylene, but annual change figures do not. nc = not comparable. Source: Society of the Plastics Industry

SYNTHETIC RUBBER: Shipments rose 3%, only polychloroprene fell in 1995

Thousands of metric tons	Shipments											% annual change	
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1994-95	1985-95
Styrene-butadiene rubber	753	736	847	829	827	791	727	796	817	851	881	4%	2%
Polybutadiene	392	384	414	430	427	431	416	465	473	505	529	5	3
Ethylene-propylene	174	188	205	224	225	208	192	207	227	262	267	2	4
Nitrile-solid	58	64	72	75	72	69	71	74	78	84	84	0	4
Polychloroprene	82	82	81	82	79	79	70	72	70	76	70	-8	-2
Other ^a	297	422	457	399	393	380	362	381	400	408	427	5	4
TOTAL	1,756	1,876	2,076	2,039	2,023	1,958	1,838	1,995	2,065	2,186	2,258	3%	3%

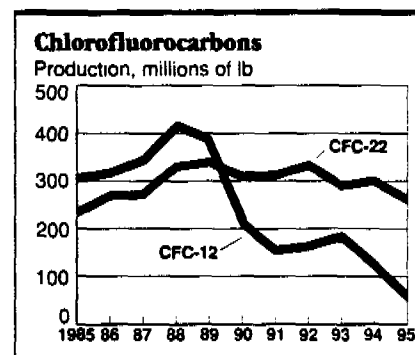
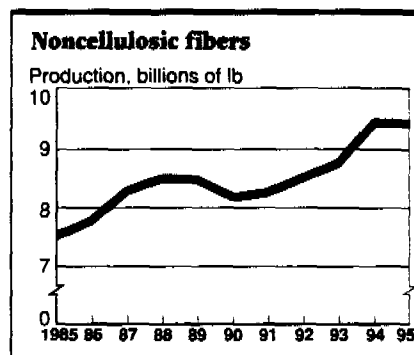
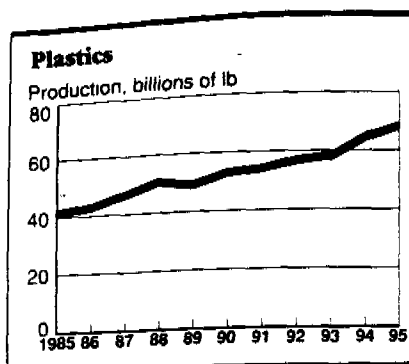
Note: Data include Canada. a Includes butyl styrene-butadiene rubber latex, nitrile latex, polysoprene, and miscellaneous others. Source: International Institute of Synthetic Rubber Producers

SYNTHETIC FIBERS: Production stagnated after 1994 gains, acrylic and nylon fell

Millions of lb	Production											% annual change	
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1994-95	1985-95
NONCELLULOSIC FIBERS													
Acrylic ^a	631	616	592	588	543	506	454	439	433	442	432	-2%	-4%
Nylon	2,343	2,514	2,689	2,669	2,740	2,662	2,535	2,556	2,659	2,740	2,703	-1	1
Olefin ^b	1,249	1,393	1,494	1,588	1,639	1,822	1,866	2,002	2,142	2,419	2,428	0	7
Polyester	3,341	3,305	3,541	3,680	3,594	3,195	3,411	3,576	3,557	3,858	3,887	1	2
TOTAL	7,564	7,828	8,316	8,525	8,516	8,185	8,266	8,573	8,791	9,459	9,450	0%	2%
CELLULOSIC FIBERS													
Acetate ^c & rayon	558	619	605	614	580	505	486	495	505	498	498	0%	-1%
GRAND TOTAL	8,122	8,447	8,921	9,139	9,096	8,690	8,752	9,068	9,296	9,957	9,948	0%	2%

a Includes modacrylic. b Includes olefin yarn and monofilaments and olefin and vnyon staple, tow, and fiberfill. c Includes diacetate and triacetate, excludes production for cigarette filters. Source: Fiber Economics Bureau

1 PRODUCTION BY THE U.S. CHEMICAL INDUSTRY



PAINTS AND COATINGS: Shipments grew more slowly in 1995, special-purpose coatings slumped

Millions of gal	Shipments											% annual change	
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 ^a	1994-95	1985-95
Architectural	478	498	527	536	538	558	538	576	608	645	678	5%	4%
Product ^b	352	368	340	366	360	339	320	312	357	382	382	0	1
Special purpose	145	135	146	154	179	196	180	173	179	194	186	-4	3
TOTAL	975	1,001	1,013	1,056	1,077	1,093	1,038	1,061	1,144	1,221	1,246	2%	2%

^a Calculated from quarterly data. ^b For original equipment manufacturers. Source: Department of Commerce

AEROSOLS: Output of containers declined 2%, despite gains in food and personal products

Millions of units	Production											% annual change	
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1994-95	1985-95
Personal products	879	952	964	1,100	1,015	1,050	905	990	930	973	1,007	3%	1%
Household products	630	635	640	650	680	680	690	695	738	751	725	-3	1
Automotive & industrial products	342	375	379	440	475	415	450	455	420	438	420	-4	2
Paints & finishes	290	297	307	331	350	350	350	380	390	410	374	-9	3
Insect sprays	190	193	190	190	197	190	200	200	207	200	184	-8	0
Food products	140	136	140	157	175	175	192	190	205	215	252	17	6
Animal products	15	22	22	8	8	8	8	8	6	7	7	0	-7
Miscellaneous	23	18	80	31	12	15	19	71	44	79	34	-57	4
TOTAL	2,509	2,628	2,722	2,907	2,912	2,883	2,814	2,989	2,940	3,073	3,003	-2%	2%

Note: Data include Puerto Rican production. Source: Chemical Specialties Manufacturers Association

CHLOROFLUOROCARBONS: Production plummeted in last year before U.S. ban

Millions of lb	Production											% annual change	
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995 ^a	1994-95	1985-95
Chlorodifluoromethane (CFC-22)	235	271	275	333	343	306	314	331	291	306	262	-14%	1%
Dichlorodifluoromethane (CFC-12)	302	322	335	414	392	209	157	163	185	127	55	-57	-16
Trichlorofluoromethane (CFC-11)	176	202	198	249	192	135	99	100 ^a	72	19 ^a	na	—	—

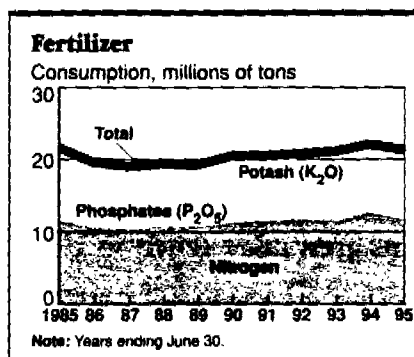
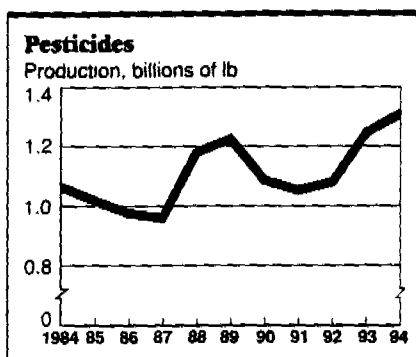
^a Preliminary. na = not available. Source: International Trade Commission

1 PRODUCTION BY THE U.S. CHEMICAL INDUSTRY

PESTICIDE PRODUCTION: Total rose in 1994 on herbicide and nematicide gains

	Production											% annual change	
Millions of lb	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1993-94	1984-94
Herbicides	688	647	625	623	676	676	643	657	696	749	868	16%	2%
Insecticides	211	213	204	185	203	208	264	181	194	308	253	-18	2
Nematicides	53 ^a	50 ^a	66	76	85	112	67 ^a	72	71 ^a	82	86	5	5
Fungicides	78	75	70	62	193 ^b	207 ^b	85	na	85	77	72	-6	-1
Plant growth regulators	8	8	5	2 ^a	4	5 ^a	6 ^a	17	11 ^a	11 ^a	8 ^a	-27	0
TOTAL ^c	1,074	1,014	982	964	1,183 ^b	1,222 ^b	1,093	1,054	1,087	1,252	1,319	5%	2%

^a Does not include production intended for sale outside the U.S., which is included in annual total. ^b These seemingly anomalous values have been verified by the source. ^c Includes miscellaneous other pesticides and, in some cases, production, usually intended for sale outside the U.S., not reported by subcategory. na = not available.
Source: American Crop Protection Association



FERTILIZER CONSUMPTION: Reversing 1994 gains, nitrogen led declines in 1995 use

	Consumption											% annual change	
Thousands of tons	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1994-95	1985-95
Nitrogen (N)	11,493	10,424	10,210	10,512	10,593	11,076	11,287	11,446	11,393	12,643	11,720	-7%	0%
Phosphates (P ₂ O ₅)	4,658	4,178	4,008	4,129	4,117	4,345	4,201	4,218	4,436	4,521	4,417	-2	-1
Potash (K ₂ O)	5,553	5,053	4,837	4,973	4,838	5,203	5,001	5,042	5,141	5,268	5,123	-3	-1
TOTAL	21,704	19,655	19,055	19,614	19,548	20,624	20,489	20,706	20,970	22,432	21,260	-5%	0%

Note: Years ending June 30. Source: Fertilizer Institute

FERTILIZER PRODUCTION: Most products continued gains in 1995

Thousands of tons	Production										% annual change		
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1994-95	1985-95
NITROGEN PRODUCTS													
Ammonia	16,594	12,565	13,357	14,136	14,052	14,446	13,790	13,309	12,588	14,475	15,670	8%	-1%
Ammonium nitrate	3,178	2,250	2,472	2,765	2,703	2,579	2,551	2,487	2,584	2,744	2,643	-4	-2
Ammonium sulfate	2,343	2,058	2,153	2,260	2,327	2,460	2,195	2,342	2,382	2,554	2,579	1	1
Urea	3,975	3,564	4,253	4,501	4,430	4,287	4,241	4,164	3,863	4,614	5,177	12	3
PHOSPHATE PRODUCTS													
Diammonium phosphate	10,800	7,492	9,537	11,575	13,160	13,226	13,573	14,119	12,964	14,641	15,722	7%	4%
Monoammonium phosphate	1,641	1,416	1,679	1,818	1,862	2,252	2,227	2,342	2,693	2,869	2,617	-9	5
Concentrated superphosphate	2,570	2,127	2,049	2,032	1,777	1,988	1,914	2,074	1,555	1,757	1,631	-7	-4
Phosphate rock	49,348	36,227	39,330	42,220	47,676	44,269	44,877	45,941	34,800	39,172	42,657	9	-1
Phosphoric acid (P ₂ O ₅)	9,837	8,085	8,903	10,234	10,742	11,036	10,934	11,354	10,503	11,979	12,272	2	2
POTASH PRODUCTS													
Potassium chloride	1,713	1,715	1,810	2,243	2,316	2,351	2,387	2,337	1,927	1,845	1,840	0%	1%

Note: Figures are based on Fertilizer Institute surveys and may not represent the entire industry. Source: Fertilizer Institute

Chemicals set sales and earnings records

Finances in the chemical industry continued to improve in 1995 with a first half that was strong enough to carry a weaker second six months of the year.

Demand was up, prices improved somewhat, exports increased, and plant efficiencies rose. As a result, the industry set sales records for the year, posted its best earnings performance ever, and had the highest profitability since 1988.

According to government data, ship-

ments of chemicals and allied products last year rose 7% from 1994, and demand for industrial chemicals, the largest and most cyclical segment, grew 11%. At the same time, prices for chemicals and allied products increased 8% and tabs for industrial chemicals rose 13%. Last year was the second consecutive year of double-digit increase in the producer price index for industrial chemicals.

During the year, exports grew 20% over 1994, and, despite a 19% rise in

imports, the chemical trade surplus rose 20% to a record \$21.3 billion.

And chemical companies continued to improve plant efficiencies, demonstrated as a 2.4% rise in productivity. Although unit labor costs increased, chemical firms continued to hold the line on employment costs, with a continuing reduction in total employment—almost entirely at the expense of white-collar workers. This resulted in a surge in average sales per employee for chemical producers. At 33 major chemical firms, for instance, average sales per employee in 1995 rose almost 18% from the previous year to \$301,000.

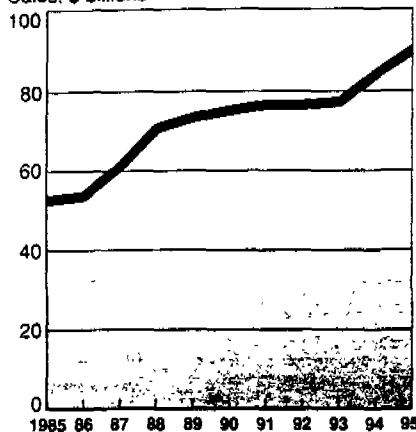
The greatly improved demand and pricing shoved sales considerably upward. For the 30 major chemical companies regularly tracked by C&EN (C&EN, Feb. 19, page 16), combined sales rose 6.1% to \$90.5 billion. And this follows an 11.5% increase in sales the year before. This substantial sales increase, coupled with cost containment, raised earnings at a much more rapid rate. Earnings from continuing operations, excluding extraordinary and nonrecurring items—in other words, the earnings that products generated—increased 47% to \$8.7 billion for these 30 firms. In 1994, earnings from the same companies had improved about 40%.

With the earnings growth outpacing sales improvement by such a wide spread, profit margins also shot up. For the 30 companies, the average profit margin last year was 9.6%, up from 6.9% in 1994. And average return on stockholders' equity shot up to 23.9% last year from 17.3% the year before.

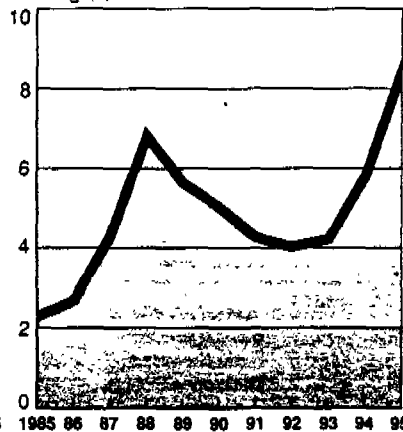
The improved demand for chemical products has given chemical producers the confidence to expand production capacity. According to a C&EN survey of 24 companies, spending on new plants and equipment surged 23% in 1995. This was the first increase in aggregate capital spending for these companies since 1990.

Sales, earnings, and profitability soared in 1995

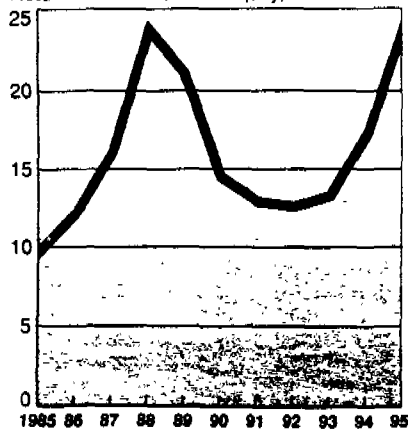
Sales, \$ billions



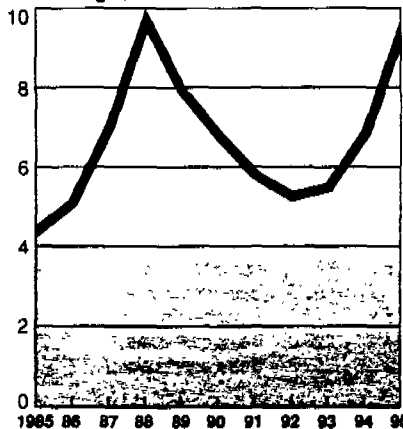
Earnings, \$ billions



Return on stockholders' equity, %^a



Profit margin, %^b



Note: Based on data for 30 major chemical companies. ^a After-tax earnings as a percentage of year-end stockholders' equity ^b After-tax earnings as a percentage of sales.

TOP 100 CHEMICAL PRODUCERS: Sales growth caused many changes in ranking

Rank 1995	Rank 1994		Chemical sales 1995 (\$ millions)	Change from 1994	Chemical sales as % of total sales	Industry classification	Chemical operating profits ^a (\$ millions)	Change from 1994	Chemical operating profits as % of total profits	Operating profit margin ^b	Identifiable chemical assets (\$ millions)	Chemical assets as % of total assets	Operating return on chemical assets ^c
1	2	Dow Chemical	\$19,234.0	21.8%	95.2%	Basic chemicals	\$4,254.0	105.8%	109.3%	22.1%	\$16,853.0	71.5%	25.2%
2	1	DuPont	18,433.0	9.4	43.7	Diversified	3,457.0	27.9	62.2	18.8	14,177.0	38.0	24.4
3	3	Exxon	11,737.0	23.0	9.5	Petroleum	2,734.0	116.6	26.8	23.3	9,595.0	10.5	28.5
4	4	Hoechst Celanese	7,395.0	7.6	100.0	Basic chemicals	584.0	nm	100.0	7.9	na	na	na
5	5	Monsanto	7,251.0	7.4	80.9	Basic chemicals	917.0	-2.1	93.1	12.6	7,470.0	70.4	12.3
6	6	General Electric ^d	6,628.0	17.6	9.5	Diversified	1,465.0	51.5	13.4	22.1	9,095.0	4.0	16.1
7	12	Mobil	6,155.0	46.7	8.2	Petroleum	1,551.0	1,791.5	31.9	25.2	3,212.0	7.6	48.3
8	7	Union Carbide	5,888.0	21.0	100.0	Basic chemicals	1,348.0	144.6	100.0	22.9	5,622.0	89.9	24.0
9	9	Amoco	5,655.0	27.2	18.2	Petroleum	1,256.0	108.3	43.6	22.2	5,183.0	17.4	24.2
10	8	Occidental Petroleum	5,410.0	15.6	50.6	Petroleum	1,107.0	200.8	121.2	20.5	5,181.0	29.1	21.4
11	10	Eastman Chemical	5,040.0	16.4	100.0	Basic chemicals	964.0	51.6	100.0	19.1	4,854.0	100.0	19.9
12	11	BASF Corp.	4,847.0	9.9	75.9	Basic chemicals	na	na	na	na	na	na	na
13	13	Shell Oil	4,841.0	18.8	19.8	Petroleum	957.0	215.8	42.3	19.8	4,836.0	17.9	19.8
14	17	Huntsman Chemical	4,300.0	26.5	100.0	Basic chemicals	na	na	na	na	na	na	na
15	16	Arco Chemical	4,282.0	25.1	100.0	Basic chemicals	823.0	73.3	100.0	19.2	4,135.0	100.0	19.9
16	15	Rohm and Haas	3,884.0	9.9	100.0	Basic chemicals	540.0	10.9	100.0	13.9	3,578.0	91.4	15.1
17	14	ICI Americas	3,824.0	16.1	100.0	Basic chemicals	na	na	na	na	na	na	na
18	21	Chevron	3,758.0	22.6	10.1	Petroleum	785.0	143.8	28.5	20.9	2,524.0	7.4	31.1
19	18	AlliedSignal ^e	3,713.0	13.5	25.9	Diversified	563.0	37.7	44.7	15.2	3,302.0	26.5	17.1
20	19	W.R. Grace	3,665.5	13.9	100.0	Specialty chemicals	387.4	15.1	100.0	10.6	3,787.0	83.4	10.2
21	23	Ashland Oil ^f	3,551.0	23.1	29.2	Petroleum	159.0	27.2	80.3	4.5	na	na	na
22	20	Air Products ^g	3,536.0	12.3	91.5	Basic chemicals	638.0	20.8	106.0	18.0	4,709.0	81.0	13.5
23	27	Hanson	3,207.0	17.5	42.1	Diversified	914.0	161.9	65.3	28.5	na	na	na
24	26	Praxair	3,146.0	16.0	100.0	Basic chemicals	548.0	22.6	100.0	17.4	4,134.0	100.0	13.3
25	25	Ciba U.S.	3,012.0	9.5	56.9	Specialty chemicals	na	na	na	na	na	na	na
26	24	Phillips Petroleum ^d	2,984.0	6.8	22.1	Petroleum	482.0	49.2	33.2	16.2	2,222.0	18.6	21.7
27	29	Dow Corning	2,492.9	13.1	100.0	Specialty chemicals	378.2	18.6	100.0	15.2	4,958.4	100.0	7.6
28	34	Lyondell Petrochemical	2,466.0	38.3	50.0	Petroleum	641.0	55.2	90.8	26.0	1,365.0	52.4	47.0
29	28	Rhône-Poulenc Inc.	2,400.0	4.3	100.0	Specialty chemicals	na	na	na	na	na	na	na
30	30	National Starch	2,399.9	13.4	100.0	Specialty chemicals	330.0	11.6	100.0	13.8	2,159.3	100.0	15.3
31	31	Great Lakes Chemical	2,361.1	14.3	100.0	Specialty chemicals	497.3	13.4	100.0	21.1	2,468.9	100.0	20.1
32	22	Akzo Nobel Inc. ^d	2,213.1	-11.6	82.0	Basic chemicals	na	na	na	na	na	na	na
33	32	Hercules	2,200.0	8.6	90.6	Basic chemicals	398.0	15.4	109.6	18.1	1,495.0	60.0	26.6
34	33	FMC	2,153.3	11.7	47.7	Machinery	323.5	18.4	61.2	15.0	1,953.4	45.4	16.6
35	38	IMC Global ^f	1,924.0	33.5	100.0	Agrochemicals	381.8	128.2	100.0	19.8	2,693.2	100.0	14.2
36	35	Elf Atochem	1,800.0	12.5	100.0	Basic chemicals	na	na	na	na	na	na	na
36	37	Solvay America	1,800.0	24.1	100.0	Basic chemicals	na	na	na	na	na	na	na
38	36	Lubrizol	1,663.6	4.0	100.0	Specialty chemicals	214.2	-4.0	100.0	12.9	1,492.0	100.0	14.4
39	—	Zaneca Inc. ^d	1,626.4	5.9	100.0	Drugs	na	na	na	na	na	na	na
40	43	PPG Industries	1,595.0	23.1	22.6	Glass products	383.0	68.7	28.8	24.0	1,129.0	18.2	33.9
41	39	Morton International ^f	1,564.7	14.2	47.0	Diversified	223.5	15.4	47.5	14.3	1,459.3	52.9	15.3
42	41	Witco ^h	1,543.6	15.5	77.8	Specialty chemicals	68.6	-43.7	41.7	4.5	2,078.4	75.0	3.3
43	46	Olin	1,501.0	25.6	47.7	Diversified	145.0	150.0	59.2	9.7	1,223.0	53.8	11.9
44	44	Cabot ^g	1,487.8	19.9	81.3	Basic chemicals	286.8	72.9	95.8	19.3	1,167.9	70.6	24.6
45	42	International Flavors	1,439.5	9.5	100.0	Specialty chemicals	390.7	10.2	100.0	27.1	1,249.8	81.5	31.3
46	47	CF Industries	1,383.1	16.9	100.0	Agrochemicals	295.8	89.3	100.0	21.4	1,476.7	100.0	20.0
47	45	Geon	1,267.8	4.9	100.0	Basic chemicals	127.2	24.6	100.0	10.0	752.0	100.0	16.9
48	51	Arcadian Partners	1,266.9	15.1	100.0	Agrochemicals	292.3	149.2	100.0	23.1	1,270.7	100.0	23.0
49	52	Cytac	1,260.1	14.4	100.0	Basic chemicals	122.7	79.1	100.0	9.7	1,293.8	100.0	9.5
50	49	BF Goodrich	1,259.0	9.6	52.3	Basic chemicals	149.7	35.1	62.4	11.9	922.4	37.1	16.2

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Operating
return on
chemical
assets^a

	Rank 1995	Rank 1994		Chemical sales 1995 (\$ millions)	Change from 1994	Chemical sales as % of total sales	Industry classification	Chemical operating profits ^b (\$ millions)	Change from 1994	Chemical operating profits as % of total profits	Operating profit margin ^c	Identifiable chemical assets (\$ millions)	Chemical assets as % of total assets	Operating return on chemical assets ^a
25.2%	51	54	Albemarle	\$1,244.2	15.1%	100.0%	Specialty chemicals	\$116.9	24.4%	100.0%	9.4%	\$1,204.5	100.0%	9.7%
24.4	52	53	H. B. Fuller ^d	1,243.8	13.3	100.0	Specialty chemicals	69.8	5.9	100.0	5.6	828.9	100.0	8.4
28.5	53	40	Nalco Chemical	1,214.5	-2.6	100.0	Specialty chemicals	205.5	0.6	100.0	16.9	1,370.1	100.0	15.0
na	54	48	Farmland Industries ^e	1,171.4	0.7	16.1	Agricultural supplies	198.7	57.7	67.7	17.0	410.9	18.8	48.4
2.3	55	—	Borden Inc.	1,139.5	14.5	19.2	Food products	140.2	11.4	-57.5	12.3	565.0	14.9	24.8
6.1	56	56	Engelhard	1,128.8	15.4	39.7	Diversified	197.1	16.7	80.3	17.5	1,003.2	61.0	19.6
8.3	57	60	Wetlan	1,109.4	18.5	100.0	Basic chemicals	132.9	9.2	100.0	12.0	1,210.7	100.0	11.0
4.0	58	57	Georgia Gulf	1,081.6	13.2	100.0	Basic chemicals	327.9	42.4	100.0	30.3	507.3	100.0	64.6
4.2	59	58	Uniroyal Chemical ^g	1,079.3	14.0	100.0	Specialty chemicals	148.1	29.0	100.0	13.7	1,171.7	100.0	12.6
1.4	60	62	Fina Inc.	1,059.7	19.2	29.4	Petroleum	295.9	72.8	137.6	27.9	531.7	21.4	55.7
9.9	61	68	Sterling Chemicals ^a	1,030.2	47.0	100.0	Basic chemicals	242.8	407.9	100.0	23.6	609.9	100.0	39.8
na	62	59	Aristech	1,023.0	8.2	100.0	Basic chemicals	na	na	na	na	na	na	na
9.8	63	65	Condea Vista ^f	996.4	37.4	100.0	Basic chemicals	na	na	na	na	na	na	na
na	64	55	Ethyl	960.5	-5.7	100.0	Basic chemicals	142.4	-8.1	100.0	14.8	983.8	100.0	14.5
9.9	65	64	Freeport-McMoRan	960.0	31.4	96.4	Agrochemicals	205.9	66.3	112.6	21.4	na	na	na
5.1	66	63	NL Industries	894.1	16.1	87.3	Basic chemicals	161.2	100.2	80.7	18.0	1,063.4	83.6	15.2
na	67	—	Courtaulds ^d	873.0	-11.8	100.0	Specialty chemicals	61.0	-21.8	100.0	7.0	na	na	na
1.1	68	89	Terra Industries	829.7	126.2	36.2	Agrochemicals	340.9	274.6	90.3	41.1	1,209.4	64.7	28.2
7.1	69	67	Loctite	785.1	11.6	100.0	Specialty chemicals	120.0	5.4	100.0	15.3	715.6	100.0	16.8
3.2	70	69	Sigma-Aldrich	775.9	13.1	80.8	Specialty chemicals	177.3	18.7	86.8	22.9	789.1	80.1	22.5
na	71	66	Betz Laboratories	752.5	6.2	100.0	Specialty chemicals	109.9	-6.5	100.0	14.6	630.5	100.0	17.4
3.5	72	75	Degussa Corp.	751.0	34.1	30.9	Specialty chemicals	na	na	na	na	na	na	na
na	73	70	Borden Chemicals	739.6	12.4	100.0	Basic chemicals	200.9	5.5	100.0	27.2	568.5	100.0	35.3
3.3	74	71	Kerr-McGee	707.0	10.6	39.3	Petroleum	122.0	32.6	169.4	17.3	802.0	24.8	15.2
na	75	72	Intl. Specialty Products	689.0	14.8	100.0	Specialty chemicals	127.1	28.1	100.0	18.4	1,312.9	100.0	9.7
7	76	78	Aluminum Co. of America	671.2	24.0	5.4	Nonferrous metals	na	na	na	na	na	na	na
6	77	73	Union Carbide	666.8	15.8	15.8	Diversified	75.9	12.9	9.1	11.4	494.9	10.2	15.3
10	78	74	GenCorp ^d	619.0	8.8	34.9	Rubber products	59.0	15.7	52.2	9.5	236.0	16.2	25.0
na	79	77	Rexene	615.2	14.4	100.0	Basic chemicals	125.1	66.6	100.0	20.3	520.6	100.0	24.0
3	80	83	Mallinckrodt ^f	576.8	32.0	26.1	Diversified	68.5	11.0	20.8	11.9	800.4	29.4	8.6
1	81	85	Vulcan Materials	576.3	40.4	39.4	Nonmetallic minerals	87.8	nm	32.6	15.2	395.5	32.5	22.2
na	82	—	Laporte	541.8	3.8	100.0	Specialty chemicals	60.3	-10.7	100.0	11.1	na	na	na
6	83	80	Ferro	540.4	11.7	40.8	Specialty materials	27.4	100.0	27.8	5.1	345.8	39.5	7.9
6	84	81	Stepan	528.2	19.0	100.0	Specialty chemicals	32.9	11.1	100.0	6.2	362.5	100.0	9.1
2	85	76	Hüls America	527.0	-4.5	100.0	Specialty chemicals	na	na	na	na	na	na	na
na	86	79	Unocal	509.0	5.2	6.0	Petroleum	113.0	39.5	38.0	22.2	309.0	3.1	36.6
na	87	88	Sun Co.	484.0	27.7	4.8	Petroleum	68.0	112.5	51.9	14.0	249.0	4.8	27.3
4	88	—	General Chemical	480.9	3.5	87.3	Basic chemicals	105.2	6.4	98.4	21.9	377.0	87.4	27.9
na	89	92	First Mississippi ^f	449.0	38.2	69.9	Agrochemicals	126.3	129.2	121.6	28.1	199.4	44.1	63.3
9	90	82	Lonza Inc.	404.3	-4.7	100.0	Specialty chemicals	na	na	na	na	na	na	na
3	91	93	Mississippi Chemical ^f	388.2	25.5	100.0	Agrochemicals	80.9	113.5	100.0	20.8	302.2	100.0	26.8
3	92	87	Crompton & Knowles	385.6	-2.0	57.9	Specialty chemicals	42.6	-29.9	58.9	11.0	318.0	65.7	13.4
9	93	94	Terra Nitrogen	373.3	24.3	100.0	Agrochemicals	169.7	93.7	100.0	45.5	338.1	100.0	50.2
6	94	91	Georgia-Pacific	372.0	11.4	2.6	Wood products	na	na	na	na	na	na	na
3	95	97	Cambrex Corp.	357.2	47.8	100.0	Specialty chemicals	44.5	112.9	100.0	12.5	402.6	100.0	11.1
0	96	90	Petrolite ^k	338.9	-1.7	92.9	Specialty chemicals	15.8	-39.7	80.2	4.7	216.0	73.8	7.3
9	97	86	OSi Specialties	337.1	nm	100.0	Specialty chemicals	na	na	na	na	na	na	na
0	98	—	Asarco	308.6	11.2	9.7	Nonferrous metals	19.0	35.7	3.9	6.2	266.0	6.1	7.1
5	99	95	Calgon Carbon	291.9	6.5	100.0	Basic chemicals	33.4	33.6	100.0	11.4	338.0	100.0	9.9
2	100	—	Kemira	286.0	-3.4	100.0	Basic chemicals	na	na	na	na	na	na	na

a. Operating profit is sales less administrative expenses and cost of sales. b. Chemical operating profit as a percentage of sales. c. Chemical operating profit as a percentage of identifiable chemical assets. d. Chemical sales include significant amounts of nonchemical products. e. Fiscal year ended Sept. 30. f. Fiscal year ended June 30. g. Chemical sales only. h. Reflects purchase of OSi Specialties in October 1995. i. Fiscal year ended Nov. 30. j. Fiscal year ended Aug. 31. k. Fiscal year ended Oct. 31. nm = not meaningful. na = not available.

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2 FINANCES OF THE U.S. CHEMICAL INDUSTRY

FINANCIAL ANALYSIS: Major chemical companies had big improvements in ratios last year

		Profit margin ^a	Return on invest- ment ^b	Debt as % of debt plus equity	% total sales abroad ^c	% total assets abroad ^d	Sales per em- ployee ^e	Dividends as % of net income	CAPITAL SPENDING ^f		R&D as % of sales	Sales as % of assets	Net plant as % of gross plant
									As % of sales	As % of net plant			
Air Products ^g	1995	9.5%	4.2%	33.2%	25.1%	32.8%	\$261	31.3%	25.5%	24.8%	2.7%	66.5%	47.6%
	1994	8.9	4.0	29.5	24.5	31.7	262	34.9	17.5	20.4	2.8	69.2	45.9
Albemarle	1995	5.1	3.3	24.3	36.0	40.5	415	21.2	9.0	16.4	2.4	103.3	45.9
	1994	4.7	2.8	30.4	28.8	40.5	292	18.7	6.5	10.6	2.6	94.9	46.6
Arco Chemical	1995	12.4	9.8	31.1	44.3	44.6	na	50.2	4.8	8.5	1.9	98.8	60.2
	1994	8.4	6.2	35.1	36.0	38.2	na	83.3	5.7	8.4	2.3	87.4	63.0
Betz Laboratories	1995	10.4	8.8	21.8	26.1	37.2	183	62.1	8.5	21.8	4.3	119.3	46.6
	1994	10.3	9.2	22.9	22.1	28.9	178	64.9	7.8	19.8	4.2	127.5	48.7
Cabot ^h	1995	9.4	8.1	30.9	48.8	44.8	446	15.8	7.2	18.6	3.2	110.6	48.8
	1994	4.7	4.0	35.4	40.5	29.5	311	30.0	4.4	10.6	2.9	103.9	50.3
Calgon Carbon	1995	7.3	4.8	2.5	37.5	32.3	266	151.6	4.4	7.2	1.9	86.4	59.4
	1994	3.1	2.0	2.7	38.6	32.2	216	75.4	2.6	4.0	2.3	79.8	64.1
Crompton & Knowles	1995	6.1	7.8	21.1	12.5	23.5	242	62.2	2.7	14.0	2.1	137.5	56.7
	1994	8.6	11.0	19.4	16.6	20.9	234	45.8	3.7	18.5	2.1	136.4	57.7
Cytex Industries	1995	6.2	4.5	16.1	37.9	17.7	252	18.5	7.7	16.0	3.5	97.4	46.0
	1994	5.1	3.3	0	23.0	16.4	220	20.5	10.5	19.8	3.6	91.8	47.0
Dow Chemical	1995	11.0	6.6	39.0	55.3	57.1	511	34.5	7.0	17.5	4.0	85.7	34.9
	1994	4.7	2.9	39.2	50.3	44.2	373	77.1	5.9	13.6	6.3	75.4	37.6
Eastman Chemical	1995	11.1	6.8	44.3	23.3	17.1	285	23.8	8.8	14.6	3.5	103.8	44.9
	1994	7.8	4.4	48.0	21.6	14.3	247	29.5	6.5	9.7	3.9	98.9	45.5
Ethyl	1995	7.7	6.7	42.5	43.7	26.9	534	80.0	4.7	10.5	5.7	97.6	60.0
	1994	8.3	8.8	47.2	38.7	25.8	783	63.6	12.5	33.9	7.0	113.9	63.5
First Mississippi ^h	1995	9.0	9.3	26.6	na	na	na	14.9	8.5	25.8	1.1	142.1	50.8
	1994	3.5	3.3	37.0	8.6	na	na	34.0	6.1	15.4	na	134.6	51.5
H. B. Fuller ⁱ	1995	2.5	3.1	35.7	44.4	48.4	194	28.0	7.3	25.5	2.1	150.1	58.4
	1994	2.8	3.5	32.1	41.9	61.2	171	26.0	5.9	22.0	2.2	147.8	57.4
Geon	1995	5.6	5.0	39.7	na	na	735	17.8	5.5	15.7	1.4	168.6	39.3
	1994	4.8	4.2	27.9	na	na	668	23.8	5.1	12.9	1.2	152.7	43.6
Georgia Gulf	1995	17.2	25.8	85.2	na	na	946	6.6	8.0	27.6	na	213.2	58.5
	1994	12.8	17.5	91.0	na	na	834	0	6.2	23.1	na	187.9	57.1
BF Goodrich	1995	4.9	4.8	32.5	10.3	8.9	181	52.2	6.1	17.2	5.4	96.7	56.8
	1994	3.0	2.8	31.6	10.8	8.0	164	98.3	5.9	14.8	3.4	89.1	59.6
W.R. Grace	1995	5.3	4.0	51.3	53.8	27.9	173	57.8	14.7	31.0	3.3	58.2	55.0
	1994	1.6	1.5	42.2	35.0	26.2 ^j	134	158.5	8.7	25.7	2.6	81.7	53.6
Great Lakes Chemical	1995	12.5	12.3	19.4	55.0	53.1	na	9.7	10.4	32.2	2.7	95.6	59.9
	1994	13.5	13.8	9.9	54.6	50.8	na	9.7	6.0	20.3	2.9	97.8	58.4
Hercules	1995	13.7	9.7	21.6	42.6	30.3	308	28.5	4.8	11.7	2.4	97.3	39.0
	1994	9.7	6.4	19.2	31.9	24.3	235	32.5	5.8	13.5	2.3	95.9	39.2
IMC Global ^h	1995	6.6	3.2	40.3	10.2	9.4	na	6.9	3.3	3.4	na	71.4	54.1
	1994	0.5	0.2	51.2	9.6	8.3	na	0	2.8	2.1	na	51.9	56.8

		Profit margin ^a	Return on invest- ment ^b	Debt as % of debt plus equity	% total sales abroad ^c	% total assets abroad ^d	Sales per em- ployee ^e	Dividends as % of net income	CAPITAL SPENDING ^f		R&D as % of sales	Sales as % of assets	Net plant as % of gross plant
									As % of sales	As % of net plant			
International Flavors	1995	17.3%	13.3%	1.0%	68.7%	53.2%	\$310	55.5%	6.6%	20.2%	6.3%	93.8%	55.8%
	1994	17.2	13.3	1.4	67.4	50.8	288	53.3	7.7	24.9	6.2	94.0	55.1
Loctite	1995	10.7	11.3	16.3	62.2	63.8	181	38.7	4.3	16.2	3.8	109.7	57.7
	1994	11.7	12.0	0.6	56.7	58.9	166	34.8	8.4	29.1	4.0	105.2	59.3
Lubrizol	1995	8.0	6.4	18.6	56.5	42.4	362	44.7	11.4	28.0	6.3	111.5	46.8
	1994	9.2	7.8	12.1	56.0	40.8	352	39.8	10.1	28.7	10.4	114.2	44.1
Monsanto	1995	8.1	6.3	30.9	37.2	29.8	314	42.0	5.6	17.7	7.3	84.5	39.1
	1994	7.5	5.4	32.3	35.0	33.4	282	46.5	4.9	14.5	7.4	93.0	37.3
Morton International ^h	1995	8.8	9.3	11.6	20.5	22.9	241	22.1	7.6	22.5	2.2	120.7	55.8
	1994	7.9	8.2	12.4	20.0	20.6	218	24.2	7.7	21.9	2.3	115.7	57.2
Nalco Chemical	1995	11.2	9.2	27.6	43.2	35.7	200	57.6	10.4	24.4	3.3	88.6	47.2
	1994	11.2	10.6	31.1	36.3	35.9	240	50.1	9.3	24.0	3.4	104.9	49.1
Olin	1995	4.4	3.8	32.8	9.8	8.7	242	47.1	6.4	21.0	1.2	138.6	35.9
	1994	3.4	2.7	35.8	7.8	5.3	208	67.0	5.6	17.0	1.3	130.9	35.1
Petrolite ^k	1995	1.7	1.5	20.1	38.5	31.8	203	203.9	3.5	12.0	3.5	124.7	38.6
	1994	1.9	1.6	19.5	35.7	33.1	205	181.4	5.9	18.2	3.4	117.2	40.1
PPG Industries	1995	10.9	8.8	22.3	33.4	32.1	226	31.1	6.3	15.7	3.3	113.9	44.0
	1994	8.1	6.2	22.6	31.6	31.2	206	46.2	5.1	11.7	3.4	107.4	44.5
Praxair	1995	8.3	4.0	45.4	50.1	54.8	173	17.2	19.1	21.9	1.9	76.1	48.4
	1994	7.5	3.5	51.6	54.2	56.0	152	18.2	12.0	13.9	2.1	77.0	46.7
Quaker Chemical	1995	2.9	3.3	9.0	54.8	44.1	261	89.7	4.3	17.4	5.0	122.4	47.5
	1994	4.8	5.0	11.5	50.0	44.7	204	60.6	4.8	18.0	5.1	114.4	49.0
Rohm and Haas	1995	7.5	5.2	25.4	44.2	35.3	333	37.3	10.7	20.4	5.0	99.2	49.3
	1994	7.5	4.9	28.0	42.4	34.3	289	38.6	9.6	17.3	5.7	91.5	49.4
SigmaAldrich	1995	13.7	11.1	1.6	33.2	31.3	171	14.4	6.3	18.4	na	97.4	57.3
	1994	13.0	10.9	2.0	29.2	30.2	155	15.2	8.5	24.0	na	100.0	59.7
Stepan	1995	3.0	2.7	47.1	14.4	13.0	417	34.4	7.4	20.4	2.3	145.7	42.4
	1994	3.1	2.5	44.7	16.2	13.9	351	38.4	9.7	23.4	2.8	136.6	44.0
Sterling Chemicals ^g	1995	14.9	20.9	30.2	14.0	33.6	1,148	0	5.2	17.5	na	168.9	60.5
	1994	2.7	2.9	67.6	17.5	34.8	579	0	1.8	4.2	na	121.9	63.6
Union Carbide	1995	14.7	10.1	38.1	30.9	19.1	511	13.4	9.2	19.3	2.4	94.1	44.2
	1994	8.0	5.2	37.3	27.3	20.7	405	32.4	8.4	16.1	2.8	96.8	43.2
Witco	1995	3.4	2.9	40.5	41.6	39.3	247	94.2	5.8	14.3	2.7	71.6	58.0
	1994	4.8	4.6	26.9	30.8	36.9	278	51.4	4.8	14.9	1.9	115.9	50.8
AVERAGE 1995		9.7%	6.8%	32.4%	39.5%	36.8%	\$301	32.2%	8.3%	18.3%	3.7%	93.1%	44.9%
AVERAGE 1994		6.9%	4.8%	32.9%	36.0%	33.4%	\$256	45.1%	7.0%	15.0%	4.2%	91.0%	45.2%

Note: Net income is from continuing operations, excluding significant nonrecurring and extraordinary items. a Net income as a percentage of sales. b Net income as a percentage of current assets plus gross plant. c Consolidated sales only. d Foreign identifiable assets as a percentage of total assets. e Thousands of dollars. f Actual spending on new facilities and purchase of land and new equipment in consolidated companies. g Fiscal year ends Sept. 30. h Fiscal year ends June 30. i Fiscal year ends Nov. 30. j Excludes Canada. k Fiscal year ends Oct. 31. na = not available.

CMA 054566

First significant capital spending boost in five years

After four years of decelerating capital spending, major U.S. chemical companies significantly boosted spending levels in 1995. The 24 major chemical makers C&EN surveyed seem to have thrown caution to the wind and collectively increased their spending levels 23% to \$8.3 billion. The 1995 spending boost was the second largest in a decade; 1988's 25% rise was the largest, and the 22% hike in 1989 was a close third.

Still, the major chemical makers' spending levels are not so intemperate as they may appear at first blush. Over the past decade, spending levels first crossed the \$8 billion mark in 1989 when expanding sales and strong prof-

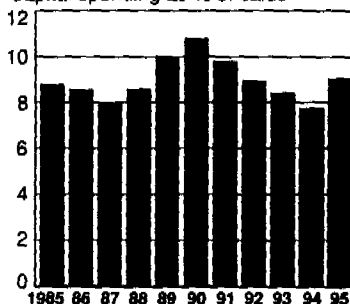
its provided the industry with the capital and self-confidence to reinvest in its future. The trend continued through 1990 when the major chemical makers bolstered capital spending to the decade high of \$9.7 billion.

Between 1991 and 1993, most companies limited their capital spending because earnings were under pressure and demand for product slowed. Even in 1994, when earnings and sales improved, major chemical producers tempered their investment spending.

With a strong year behind them, chemical makers saw 1995 as a year to expand, although not so much in the U.S. as overseas. Federal Reserve Board statistics show that domestic chemical industry capacity utilization during the year held steady in the low 80% range. So, many opportunities must be abroad. And indeed, throughout the year many companies invested overseas, particularly in the Asia-Pacific region.

Capital spending as percent of sales turned up

Capital spending as % of sales



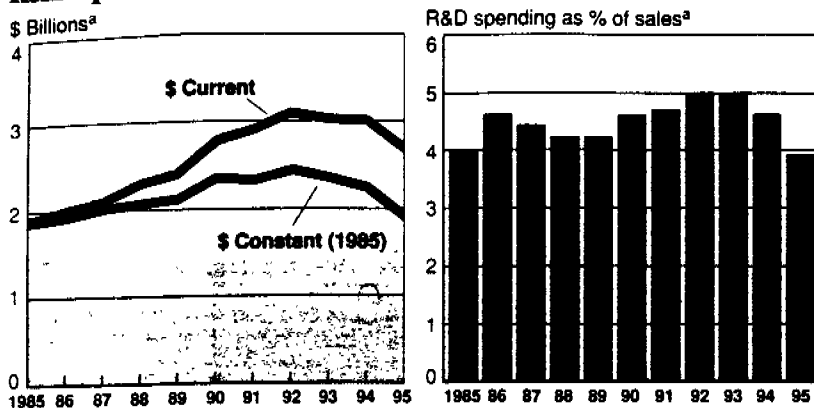
Note: Worldwide data for 24 major chemical producers. Source: Company data

CHEMICAL CAPITAL SPENDING: Major chemical producers bolstered spending 23% in 1995

\$ Millions	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Air Products	\$392	\$367	\$323	\$387	\$414	\$468	\$506	\$428	\$491	\$611	\$870
Cabot ^a	184	80	83	170	192	174	198	78	65	74	131
Crompton & Knowles	3	4	4	7	13	16	11	13	14	22	18
Dow Chemical	806	890	995	1,267	1,764	2,119	1,908	1,608	1,414	1,183	1,417
DuPont ^b	1,176	1,229	1,357	1,735	2,106	2,608	2,045	2,058	1,667	1,292	1,476
Ethyl	90	134	139	151	119	152	166	157	205	141	45
H. B. Fuller	15	13	30	40	41	31	30	34	42	65	91
BF Goodrich	202	144	143	181	240	243	219	200	146	130	148
W.R. Grace	348	199	243	418	485	514	447	398	310	445	538
Great Lakes Chemical	21	18	35	47	40	49	71	69	79	123	247
Hercules	234	257	205	251	293	273	214	150	149	164	117
Loctite	9	11	17	15	24	29	34	40	45	57	33
Lubrizol	40	41	42	55	65	77	82	96	128	161	189
Monsanto	645	520	505	590	607	750	591	586	437	409	500
Nalco Chemical	60	64	57	62	86	115	137	131	118	126	127
Olin	154	128	115	147	142	187	177	173	132	149	201
PPG Industries	452	498	499	410	671	567	335	282	293	356	448
Petrolite	24	25	19	20	19	18	22	18	19	22	13
Praxair ^c	—	—	—	—	—	—	—	333	240	326	600
Quaker Chemical	6	5	4	5	8	13	8	7	9	9	10
Rohm and Haas	159	179	222	338	385	412	265	283	382	339	417
Stepan	19	14	26	20	34	38	34	34	25	43	39
Union Carbide	649	524	502	671	785	744	817	359	395	409	542
Witco	76	60	69	72	70	91	74	73	104	107	116
TOTAL	\$5,764	\$5,404	\$5,634	\$7,059	\$8,603	\$9,688	\$8,391	\$7,608	\$6,909	\$6,763	\$8,333
ANNUAL CHANGE	4%	-6%	4%	25%	22%	13%	-13%	-9%	-9%	-2%	23%

Note: Figures are for worldwide spending on construction, equipment, and land in consolidated businesses. Where possible, acquisition costs and investments in nonconsolidated businesses are excluded. Prior years are not restated to reflect company revisions. a Includes acquisitions and investments. b Excludes Conoco. c Spun off from Union Carbide in 1992. Source: Company data

R&D spending fell again, both in value and as percent of sales



^a R&D spending by 17 major chemical producers. Source: Company data

R&D SPENDING: Most chemical producers increased spending, but chemical firm total fell 12%

\$ Millions	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
CHEMICAL COMPANIES											
Air Products ^a	\$51	\$61	\$57	\$72	\$71	\$72	\$80	\$85	\$92	\$97	\$103
Albemarle ^b	—	—	—	—	—	—	—	—	30	28	30
Dow Chemical ^c	547	605	670	772	873	1,136	1,159	1,289	1,256	1,261	808
Ethyl	47	47	50	59	61	65	69	73	45	50	55
W.R. Grace	92	94	107	119	125	148	150	151	135	132	121
Hercules	76	71	74	74	79	92	86	70	76	65	59
International Flavors	34	39	45	50	52	57	62	71	75	81	91
Lubrizol	44	51	62	65	70	74	80	90	89	91	105
Monsanto	470	596	615	648	598	612	627	651	626	609	658
Morton International ^d	25	29	31	35	38	48	59	61	69	66	73
Nalco Chemical	32	33	35	37	41	45	47	48	50	46	40
Olin	53	56	62	58	66	66	41	39	41	35	39
Petrolite	12	12	12	12	12	12	11	12	14	13	13
Praxair ^e	—	—	—	—	—	—	—	62	58	58	61
Rohm and Haas	124	133	142	156	175	178	183	199	205	201	194
Union Carbide	275	148	159	159	181	191	190	155	139	136	144
Witco	21	22	23	24	25	26	28	29	40	41	53
TOTAL	\$1,903	\$1,997	\$2,144	\$2,340	\$2,467	\$2,822	\$2,897	\$3,085	\$3,040	\$3,010	\$2,647
ANNUAL CHANGE	13%	5%	7%	9%	5%	14%	3%	6%	-1%	-1%	-12%
PHARMACEUTICAL & DIVERSIFIED COMPANIES											
AlliedSignal	\$343	\$459	\$400	\$415	\$381	\$426	\$381	\$320	\$313	\$318	\$353
American Home Products ^f	217	227	247	328	345	369	431	552	663	817	1,355
Bristol-Myers Squibb	412	474	563	688	789	881	993	1,083	1,128	1,108	1,199
DuPont	1,144	1,156	1,223	1,319	1,387	1,428	1,298	1,277	1,132	1,047	1,067
Eli Lilly ^g	370	427	466	512	605	703	767	925	955	839	1,042
FMC	149	146	132	144	150	158	135	145	149	167	188
Merck & Co.	426	480	566	669	751	854	998	1,112	1,173	1,231	1,331
Pfizer	287	336	401	473	531	640	757	863	974	1,139	1,442
PPG Industries	176	204	227	232	233	218	220	203	201	218	236
Procter & Gamble ^d	400	479	549	615	628	693	786	861	956	1,059	1,257
Schering-Plough	175	212	251	298	327	380	426	522	578	620	657
3M	520	586	650	721	784	865	914	1,007	1,030	1,054	883
TOTAL	\$4,619	\$5,186	\$5,675	\$6,414	\$6,911	\$7,615	\$8,106	\$8,870	\$9,252	\$9,617	\$11,010
ANNUAL CHANGE	11%	12%	9%	13%	8%	10%	6%	9%	4%	4%	14%

Note: Prior years are not restated to reflect company revisions. ^a For fiscal year ending Sept. 30. ^b Spun off from Ethyl in early 1994. Data for 1993 are pro forma. ^c Sold Marion Merrell Dow drug operations to Hoechst in 1995. ^d Fiscal year ends June 30. ^e Spun off from Union Carbide in 1992. ^f Acquired American Cyanamid in December 1994. ^g Spun off and sold off medical devices businesses in 1994. Source: Company data

2 FINANCES OF THE U.S. CHEMICAL INDUSTRY

SHIPMENTS: Industrial chemicals expanded faster than other chemical categories

\$ Billions	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	% annual change	
												1994-95	1985-95
All manufacturing industries	\$2,334.5	\$2,335.9	\$2,475.9	\$2,682.5	\$2,792.7	\$2,873.6	\$2,821.9	\$2,934.1	\$3,102.2	\$3,370.0	\$3,600.1	7%	4%
Chemicals & allied products	204.8	205.7	229.5	259.7	278.1	288.2	289.0	301.5	313.8	341.5	366.9	7	6
Industrial chemicals	114.7	112.2	126.2	145.5	156.2	157.3	152.3	156.4	160.9	179.8	198.8	11	6
Drugs, soaps & toiletries	61.3	66.4	74.0	81.8	88.0	95.2	101.9	110.4	117.4	122.3	125.7	3	7
Petroleum & coal products	176.6	122.6	130.4	131.4	143.7	172.7	160.4	154.6	147.3	144.4	155.3	8	-1
Rubber & plastic products	75.6	78.4	86.6	94.2	98.4	101.4	103.6	103.3	104.1	113.7	120.1	6	5
Paper & allied products	94.7	99.9	109.0	122.6	131.4	131.4	124.4	131.3	129.4	138.0	165.9	20	6

Source: Department of Commerce

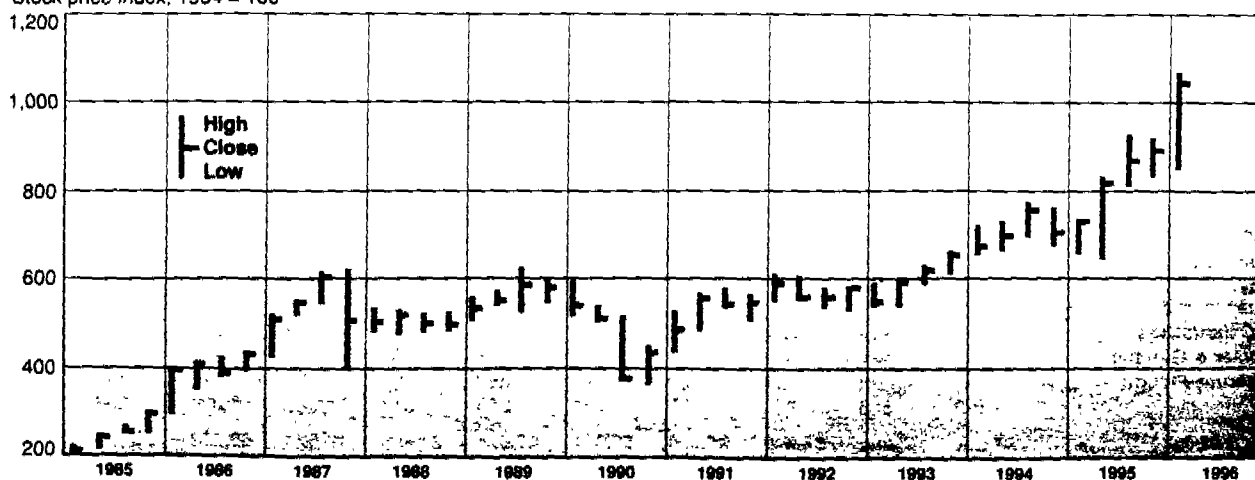
PRICES: Plastic resins rose faster than commodities and other chemicals last year

Producer price indexes, 1982 = 100	Annual average											% annual change	
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1994-95	1985-95
All commodities	103.1	100.2	102.8	106.9	112.2	116.3	116.5	117.2	118.9	120.4	124.7	4%	2%
Industrial commodities	103.7	99.9	102.6	106.3	111.6	115.8	116.5	117.4	119.0	120.7	125.5	4	2
Finished goods	104.7	103.2	105.4	108.0	113.6	119.2	121.7	123.2	124.7	125.5	127.9	2	2
Chemicals & allied products	103.7	102.6	106.4	116.3	123.0	123.6	125.6	125.9	128.2	132.1	142.6	8	3
Industrial chemicals	96.0	91.5	95.5	106.8	114.8	113.2	111.8	109.3	110.4	114.3	128.6	13	3
Prepared paint	105.3	107.0	108.1	112.2	119.5	124.8	129.9	131.6	133.2	135.3	142.0	5	3
Paint materials	109.5	104.4	107.3	115.7	129.1	136.3	135.8	131.1	131.5	132.1	139.8	6	2
Drugs & pharmaceuticals	122.2	129.9	139.1	148.4	160.0	170.8	182.6	192.2	200.9	206.0	210.7	2	6
Fats & oils, inedible	110.6	80.5	92.7	110.9	95.5	88.1	86.8	93.0	95.6	110.6	126.8	15	1
Agricultural chemicals & chemical products	96.2	94.2	96.4	104.5	108.7	107.4	111.7	110.3	109.9	119.9	130.0	8	3
Plastic resins & materials	107.5	104.4	110.3	132.4	133.4	124.1	120.0	116.4	117.1	122.4	143.9	18	3
Other chemicals & allied products	105.2	105.8	107.0	111.9	117.3	118.9	121.5	123.3	125.5	127.1	130.7	3	2
Rubber & plastic products	101.9	101.9	103.0	109.3	112.6	113.6	115.1	115.1	116.0	117.6	124.3	6	2

Source: Department of Labor

Chemical company stock prices continued their upward surge

Stock price index, 1954 = 100^a



^a C&EN stock price index of Air Products, Dow Chemical, W.R. Grace, Hercules, Monsanto, Rohm and Haas, and Union Carbide weighted according to number of shares outstanding for each company

Chemical, drug firms continued strong

Sales and earnings growth in 1995 continued to show strength, as it had in 1994, for major U.S. chemical producers. And their close relatives—the pharmaceutical and biopharmaceutical producers whose product development and manufacturing processes are chemistry based—should have no complaints about last year.

For the 40 major chemical producers surveyed by C&EN for this section, 1995 sales increased 10% on average compared with 1994. Sales were up for 34 companies, whereas for the remaining six—Ethyl, W.R. Grace, Hercules, Nalco Chemical, Petrolite, and Witco—sales dropped. But the sales decline for Grace, Hercules, and Witco—the three with the largest decreases—resulted from selling off businesses during the year.

Earnings growth in 1995 was even more impressive than sales growth. On average, earnings rose 95% for the 39 companies that reported profits in both 1994 and 1995. And Occidental Chemical, the 40th company, moved from a

minor loss in 1994 to a large net profit in 1995.

Overall earnings growth was driven by the triple-digit increases of Cabot, Dow Chemical, and Union Carbide, as well as by Sterling Chemicals' and IMC Global's strong performance in 1995 after poor outcomes in 1994. These gains balanced out earnings that fell at Crompton & Knowles, Ethyl, Grace, Lubrizol, Nalco, Petrolite, and Witco.

Unlike 1994, earnings results generally were not hit as hard by restructuring charges. Whereas the majority of companies had double-digit increases, only five—Betz Laboratories, Borden Chemicals & Plastics, Ferro, H. B. Fuller, and Great Lakes Chemical—had single-digit earnings growth.

In the drug sector, sales increased an average 19% in 1995 for 10 major U.S. drug companies, about double the growth rate in 1994. American Home Products' sales rose 49%; it acquired American Cyanamid in late 1994.

However, American Home Products

was the only drug producer whose earnings dropped—by about 3%—in 1995. Earnings were up an average 10% for the remaining nine firms. But, as a percentage of sales, drug company earnings were flat or down.

Six major biopharmaceutical producers had a much better year in 1995 than in 1994, despite a \$512 million loss reported by Chiron. Chiron's loss largely came from costs related to its partnership with Ciba. And Immunex, although it did not show a profit, did succeed in cutting its loss to about \$11 million from about \$29 million in 1994.

But the other four of the six biopharmaceutical firms were profitable, with Biogen returning to the fold. Net earnings for the three companies that reported profits in both 1994 and 1995—Amgen, Genentech, and Genzyme—jumped nearly 40%.

Overall revenues were up an average 46% for the six major biopharmaceutical companies, although Biogen's, which are largely from royalties, dropped 4%.

COMPANY RESULTS: Most chemical producers posted sales, earnings gains in 1995

Year	Net sales	Earnings	Total assets	Net plant and equipment	Capital expenditures	Stockholders' equity	EARNINGS			Dividend, \$ per share	Dividend yield, % of price	Stock price range, \$ per share	Price-earnings ratio
							% of sales	% of stockholders' equity	\$ per share				
(Money figures in millions of dollars unless otherwise indicated)													
CHEMICALS													
Air Products													
1995 ^a	\$3,865	\$368.0	\$5,735	\$3,502.0	\$870.0	\$2,317	9.5%	15.9%	\$3.29	\$1.01	2.0%	\$59-43	15.5
1994 ^a	3,485	309.0	4,969	2,982.6	611.1	2,139	8.9	14.4	2.71	0.95	2.1	50½-38½	16.3
1993 ^a	3,328	276.9	4,697	2,705.6	490.6	2,037	8.3	13.6	2.43	0.89	2.1	49½-37½	17.8
1992 ^a	3,217	271.0	4,420	2,745.7	427.5	2,026	8.4	13.4	2.40	0.805	2.0	49½-31¾	16.9
Albemarle ^b													
1995	\$1,244	\$63.7	\$1,176	\$685.9	\$112.4	\$594	5.1%	10.7%	\$1.00	\$0.21	1.3%	\$20-12¼	16.1
1994	1,081	43.6	1,108	665.1	70.4	514	4.0	8.5	0.68	0.20	1.3	17½-12½ ^c	22.2
1993	903	22.7	1,051	674.9	88.1	666	2.5	3.4	0.39	—	—	—	—
Arco Chemical													
1995	\$4,085	\$508.0	\$4,135	\$2,293.0	\$195.0	\$1,969	12.4%	25.8%	\$5.28	\$2.65	5.8%	\$50½-41½	8.7
1994	3,423	276.0	3,737	2,221.0	186.0	1,659	8.1	16.6	2.87	2.50	5.3	51-43½	16.4
1993	3,192	214.0	3,502	2,173.0	181.0	1,576	6.7	13.6	2.23	2.50	5.8	47¼-39¼	19.4
1992	3,098	197.0	3,599	2,230.0	295.0	1,630	6.4	12.1	2.05	2.50	6.0	47¼-36½	20.4
Betz Laboratories													
1995	\$752	\$77.9	\$599	\$333.8	\$64.1	\$312	10.4%	25.0%	\$2.47	\$1.46	3.4%	\$46½-38¾	17.3
1994	708	73.2	549	308.9	55.0	318	10.3	23.0	2.43	1.43	3.0	53½-42¼	19.7
1993	685	63.4 ^d	517	300.7	63.2	295	9.3	21.5	2.05 ^d	1.39	2.7	62½-40	25.1
1992	707	82.0	506	288.4	74.3	293	11.6	28.0	2.71	1.33	2.3	66¼-48¼	21.1
Borden Chemicals & Plastics													
1995	\$740	\$150.9	\$569	\$354.6	\$27.1	\$216	20.4%	69.9%	\$4.07	\$4.66 ^e	24.7%	\$25½-12¼	4.6
1994	658	146.4	543	283.3	22.6	246	22.2	59.5	3.98	3.52 ^e	19.4	26½-9½ ^e	4.6
1993	433	-1.4	444	306.0	15.0	230	—	—	-0.04	0.78 ^e	6.1	17½-8¼ ^e	—
1992	402	27.1	467	335.1	10.5	261	6.7	10.4	0.73	1.59 ^e	9.0	22½-12¾ ^e	24.1

^a Fiscal year ends Sept. 30. ^b Became an independent company on Feb. 28, 1994; prior to that was part of Ethyl. Data for 1994 and 1993 are pro forma. ^c From Feb. 28 only. ^d Includes \$16.2 million charge for restructuring. ^e Per partnership preference unit.

Explanation of column headings in tables of company results

Year. Data are for calendar year unless otherwise indicated. Data for earlier years are not restated to reflect subsequent acquisitions or divestitures.

Net sales. Gross sales, less discounts, allowances, and returns; generally excludes excise taxes and other operating income or revenues.

Earnings. Net sales and other income, less operating costs, nonoperating charges, depreciation, depletion, interest expense, deferred charges, minority interest in income, and taxes. Nonrecurring or extraordinary credits and charges have been excluded. Extraordinary charges that cannot be excluded are indicated by a footnote.

Total assets. Sum at year's end of current assets, investments, prepaid expenses, net plant and equipment, and other tangible assets. Excludes insofar as possible intangible assets including goodwill, value of patents, and the like.

Net plant and equipment. Value at

year's end of fixed assets, less accumulated depreciation, amortization, and depletion.

Capital expenditures. Total spending during the year for new fixed assets, such as plant, equipment, and land, and for replacement and modernization of facilities.

Stockholders' equity. Equity at year's end of preferred and common stockholders, including value of capital stock, capital and earned surplus, and surplus reserves, as well as contingency and miscellaneous reserves for which no definite purpose is stated. Intangible assets are deducted insofar as possible.

Earnings (breakdown). Percent of sales: earnings divided by net sales. Percent of stockholders' equity: earnings divided by stockholders' equity. Dollars per share: earnings, less preferred dividends, divided by the number of shares of common stock outstanding. All figures are adjusted for

stock splits, but no adjustment has been made for earlier years as a result of stock dividends or for dilution that might result from the conversion of preferred stock or debt to common stock or the exercise of stock options outstanding.

Dividends per share. Cash dividends paid (or declared) on each share of common stock; excludes the value of stock dividends, which are indicated by a footnote.

Dividend yield. Dividends per share divided by the average of the high and low prices of the common stock during the year.

Stock price range. High-low market prices of common stock during the year, adjusted for stock splits but not for stock dividends.

Price-earnings ratio. Average of the high and low prices of the common stock during the year divided by earnings per share.

Year	Net sales	Earnings	Total assets	Net plant and equipment	Capital expenditures	Stockholders' equity	EARNINGS			Dividend, \$ per share	Dividend yield, % of price	Stock price range, \$ per share	Price-earnings ratio
							% of sales	% of stockholders' equity	\$ per share				
(Money figures in millions of dollars unless otherwise indicated)													
Cabot													
1995 ^a	\$1,830	\$171.9	\$1,640	\$706.5	\$131.2	\$671	9.4%	25.6%	\$4.35	\$0.60	1.4%	\$57 ⁷ / ₈ –25 ⁷ / ₈	9.6
1994 ^a	1,680	78.2	1,543	694.5	73.6	488	4.7	16.0	2.06	0.53	2.0	29 ³ / ₁₆ –24 ¹ / ₁₆	13.0
1993 ^a	1,614	59.8 ^b	1,411	646.5	65.0	363	3.7	16.5	1.50 ^b	0.52	2.2	28 ¹ / ₈ –18 ¹ / ₈	15.6
1992 ^a	1,557	62.2	1,467	703.2	78.1	406	4.0	15.3	1.59	0.52	2.6	26 ¹ / ₈ –14 ¹ / ₁₆	12.6
Crompton & Knowles													
1995	\$666	\$40.5	\$432	\$130.0	\$18.2	\$188	6.1%	21.5%	\$0.84	\$0.52	3.3%	\$20–12	19.0
1994	590	50.9	389	117.1	21.7	181	8.6	28.2	1.00	0.46	1.8	27 ¹ / ₄ –24 ¹ / ₈	25.7
1993	558	52.0	330	99.9	14.3	207	9.3	25.1	1.00	0.38	1.7	27 ¹ / ₄ –17 ¹ / ₈	22.4
1992	518	43.3	316	98.8	12.8	177	8.4	24.5	0.87	0.31	1.6	23 ¹ / ₈ –16	22.9
Cytac Industries ^c													
1995	\$1,260	\$78.0	\$1,276	\$605.7	\$97.2	\$325	6.2%	24.0%	\$5.40	0	—	\$64 ¹ / ₄ –31 ¹ / ₄	8.9
1994	1,101	41.5	1,181	586.7	116.1	65	3.8	64.0	3.15	0	—	41 ³ / ₄ –12 ¹ / ₄	8.7
1993	1,008	–286.3	1,062	581.4	110.6	11	—	—	–22.19	0	—	—	—
Dow Chemical													
1995	\$20,200	\$2,221.0	\$22,924	\$8,113.0	\$1,417.0	\$6,703	11.0%	33.1%	\$8.28	\$2.90	4.2%	\$78–61 ¹ / ₈	8.4
1994	20,015	938.0	22,180	8,726.0	1,183.0	3,847	4.7	24.4	3.37	2.60	3.8	79 ¹ / ₄ –56 ¹ / ₂	20.1
1993	18,060	644.0 ^d	21,071	8,580.0	1,397.0	3,600	3.6	17.9	2.33 ^d	2.60	4.7	62–49	23.8
1992	18,971	276.0 ^e	20,978	8,801.0	1,595.0	3,682	1.5	7.5	0.99 ^e	2.60	4.6	62 ¹ / ₈ –51 ¹ / ₄	57.6
DuPont													
1995	\$42,163	\$3,399.5	\$37,112	\$21,341.0	\$3,240.0	\$8,236	8.1%	41.3%	\$5.81	\$2.03	3.2%	\$73–52 ¹ / ₈	10.8
1994	39,333	2,727.0	36,667	21,120.0	3,050.0	12,822	6.9	21.3	4.00	1.82	3.3	62 ³ / ₈ –48 ¹ / ₄	13.8
1993	37,098	566.0 ^f	36,775	21,423.0	3,621.0	10,952	1.5	5.2	0.83 ^f	1.76	3.6	53 ¹ / ₈ –44 ¹ / ₂	59.3
1992	37,799	975.0 ^g	38,409	21,882.0	4,448.0	11,304	2.6	8.6	1.43 ^g	1.74	3.5	54 ¹ / ₈ –43 ¹ / ₂	34.4
Eastman Chemical ^h													
1995	\$5,040	\$559.0	\$4,854	\$3,049.0	\$446.0	\$1,528	11.1%	36.6%	\$6.78	\$1.64	2.8%	\$69 ¹ / ₂ –48 ¹ / ₂	8.7
1994	4,329	336.0	4,375	2,906.0	281.0	1,295	7.8	25.9	4.05	1.60	3.4	56–39 ¹ / ₂	11.8
1993	3,216	267.0	4,341	3,059.0	368.0	1,061	8.3	25.2	2.46	—	—	—	—

^a Fiscal year ends Sept. 30. ^b Includes \$47 million charge for restructuring. ^c Became an independent company on Dec. 17, 1993; prior to that was part of American Cyanamid. ^d Includes \$180 million charge for Marion Merrell Dow reorganization. ^e Includes \$433 million charge for reorganization. ^f Includes \$167 million gain for restructuring adjustment. ^g Includes \$1.62 billion charge for restructuring. ^h Became an independent company on Dec. 31, 1993; prior to that was part of Eastman Kodak. Data for 1993 are pro forma.

2 FINANCES OF THE U.S. CHEMICAL INDUSTRY

Year	Net sales	Earnings	Total assets	Net plant and equipment	Capital expenditures	Stockholders' equity	EARNINGS			Dividends, \$ per share	Dividend yield, % of price	Stock price range, \$ per share	Price-earnings ratio
							% of sales	% of stockholders' equity	\$ per share				
(Money figures in millions of dollars unless otherwise indicated)													
Ethyl													
1995	\$961	\$74.0	\$969	\$428.3	\$44.8	\$395	7.7%	18.7%	\$0.62	\$0.50	4.4%	\$13½-9½	18.2
1994 ^a	1,019	91.5	1,011	434.4	147.3	371 ^b	9.0	24.7	0.78	0.50 ^b	3.4	19½-9½	18.7
1993 ^c	1,938	90.0	2,009	998.3	205.0	640	4.6	14.1	0.76	0.60	2.5	30⅞-16¾	31.3
1992	2,975	269.4	9,070	829.8	157.4	1,267	9.1	21.3	2.27	0.60	2.2	30½-23¾	11.9
Ferro													
1995	\$1,323	\$49.3	\$780	\$307.3	\$49.5	\$287	3.7%	17.2%	\$1.64	\$0.54	2.1%	\$30⅝-21⅝	15.9
1994	1,194	47.4	751	288.6	59.7	316	4.0	15.0	1.52	0.54	1.9	35⅞-21⅞	18.9
1993	1,066	57.5	714	257.8	43.7	305	5.4	18.9	1.83	0.51	1.7	34¾-26¼	16.6
1992	1,098	58.8	674	227.6	44.8	323	5.4	18.2	1.90	0.45	1.6	31½-23½	14.5
First Mississippi													
1995 ^d	\$643	\$57.8	\$439	\$213.2	\$54.9	\$220	9.0%	26.3%	\$2.80	\$0.35	1.4%	\$34⅛-14¼	8.6
1994 ^d	508	17.7	378	201.9	31.1	178	3.5	9.9	0.88	0.30	2.4	17-8½	14.5
1993 ^{d,e}	430	2.7	384	206.1	39.1	161	0.6	1.7	0.13	0.30	3.2	11¾-7¼	73.1
1992 ^d	525	4.2	468	277.3	33.6	188	0.8	2.2	0.21	0.30	2.6	14⅞-8	54.5
FMC													
1995	\$4,510	\$212.1	\$3,956	\$1,829.6	\$494.1	\$308	4.7%	68.9%	\$5.72	0	—	\$79½-57⅝	12.0
1994	4,011	173.4	3,143	1,537.4	356.0	208	4.3	83.4	4.66	0	—	65-45½	11.9
1993	3,754	164.3	2,721	1,390.2	244.5	125	4.4	131.4	4.45	0	—	53-41½	10.6
1992	3,974	192.6	2,763	1,502.1	314.5	156	4.8	123.5	5.04	0	—	53-42⅝	9.5
H. B. Fuller													
1995 ^f	\$1,244	\$31.2	\$774	\$355.1	\$90.7	\$244	2.5%	12.8%	\$2.22	\$0.63	1.9%	\$39¾-27¾	15.2
1994 ^f	1,097	30.9	684	295.1	65.0	216	2.8	14.3	2.20	0.58	1.6	42¼-29	16.2
1993 ^f	975	21.7 ^g	544	232.5	41.8	229	2.2	9.5	1.55 ^g	0.54	1.5	42¾-31¼	23.9
1992 ^f	934	35.6	543	223.2	34.4	237	3.8	15.0	2.55	0.46	1.1	53¼-32⅝	16.8
Geon ^h													
1995	\$1,268	\$71.3	\$752	\$444.7	\$70.0	\$209	5.6%	34.1%	\$2.75	\$0.50	1.7%	\$31⅝-26	10.4
1994	1,209	57.9	792	478.0	61.5	240	4.8	24.1	2.06	0.50	1.7	31⅝-25⅝	13.9
1993	973	2.2	721	481.6	44.1	230	0.2	1.0	0.08	0.38	1.8	24¼-19⅞	271.1
Georgia Gulf													
1995	\$1,082	\$186.5	\$507	\$312.5	\$86.3	\$51	17.2%	365.7%	\$4.73	\$0.32	0.9%	\$40¾-26⅝	7.1
1994	955	122.2	508	255.6	59.1	31	12.8	394.2	2.88	0	—	43¼-21⅝	11.3
1993	769	42.2	405	222.8	29.6	-111	5.5	—	1.01	0	—	23¾-16½	19.9
1992	779	46.3	419	211.7	14.3	-161	5.9	—	1.18	0	—	28⅝-15¾	18.8
BF Goodrich													
1995	\$2,409	\$118.0	\$1,913	\$859.2	\$147.7	\$302	4.9%	39.1%	\$4.30	\$2.20	3.9%	\$72⅝-41⅝	13.3
1994	2,199	65.7	1,919	873.3	129.3	373	3.0	17.6	2.24	2.20	5.1	48-39⅝	19.4
1993 ⁱ	1,818	15.3 ^j	1,814	836.0	146.2	349	0.8	4.4	0.28 ^k	2.20	4.7	53⅞-39½	166.7
1992	2,526	-9.4 ^k	2,206	1,215.8	200.2	583	—	—	-0.69 ^k	2.20	4.5	58⅞-38⅞	—
W.R. Grace													
1995 ^l	\$3,666	\$194.7	\$5,561	\$1,736.1	\$537.6	\$495	5.3%	39.3%	\$2.03	\$1.18	2.2%	\$71¼-38½	27.0
1994	5,093	283.3	5,558	1,730.0	444.6	832	5.6	34.1	3.01	1.40	3.4	46½-36	13.7
1993	4,408	234.4	5,627	1,454.1	309.6	1,036	5.3	22.6	2.56	1.40	3.7	41¼-34⅝	14.8
1992	5,518	79.4	5,300	1,707.9	398.4	1,246	1.4	6.4	0.88	1.40	3.6	45-32	43.8
Great Lakes Chemical													
1995	\$2,361	\$295.6	\$2,052	\$765.3	\$246.6	\$1,000	12.5%	29.6%	\$4.52	\$0.44	0.7%	\$74⅝-54¾	14.3
1994	2,065	278.7	1,700	605.9	123.1	900	13.5	31.0	4.00	0.39	0.6	82-48¾	16.3
1993	1,792	272.8	1,560	468.0	79.3	916	15.2	29.8	3.82	0.35	0.5	84-64½	19.4
1992	1,496	232.7	1,432	429.8	69.4	753	15.6	30.9	3.27	0.31	0.5	71⅝-50¼	18.6
Hercules													
1995 ^m	\$2,427	\$332.8	\$2,493	\$999.7	\$116.8	\$1,082	13.7%	30.8%	\$2.93	\$0.84	1.7%	\$62¼-38¼	17.2
1994	2,821	274.2	2,941	1,216.1	164.2	1,295	9.7	21.2	2.29	0.75	2.1	40½-32⅝	15.5
1993	2,773	208.4	3,162	1,309.3	149.5	1,368	7.5	15.2	1.62	0.75	2.5	38½-21⅞	18.4
1992	2,865	167.9	3,228	1,348.3	150.1	1,746	5.9	9.6	1.23	0.75	4.2	21¼-14⅞	14.1
IMC Global													
1995 ^d	\$1,924	\$127.1	\$2,693	\$1,868.2	\$64.2	\$763	6.6%	16.7%	\$4.30	\$0.30	0.7%	\$54⅝-34⅞	10.1
1994 ^d	1,442	6.9	2,778	1,927.4	40.7	655	0.5	1.1	0.28	0	—	49¼-26	134.1
1993 ^d	897	0.5	2,056	1,326.5	106.1	430	0.1	0.1	0.02	0.81	2.3	45⅞-24⅝	1,756
1992 ^d	1,059	90.9	1,778	1,266.8	177.7	615	8.6	14.8	4.12	1.08	2.0	68-42⅝	13.1

^a Excludes business spun off as Albemarle on Feb. 28, 1994. In 1993, this business contributed \$903 million in sales and \$22.7 million in earnings. ^b On Feb. 28, 1994, shareholders received one Albemarle share for every two Ethyl shares. ^c Excludes insurance business, spun off in 1993. In 1992, this business contributed \$162.5 million to earnings, spin-off reduced stockholders' equity by \$677.5 million. ^d Fiscal year ends June 30. ^e Excludes coal, oil, and certain other technology businesses discontinued in the 1992-93 fiscal year. In the year ended June 30, 1992, these businesses contributed \$71.5 million to net sales and decreased earnings by \$11.9 million. ^f Fiscal year ends Nov. 30. ^g Includes \$6 million charge for restructuring. ^h Became an independent company on April 29, 1993; prior to that was part of BF Goodrich. Data for 1993 are pro forma. ⁱ Excludes major portion of vinyl business, spun off as separ. company in 1993. In 1992, this business contributed \$894.3 million to net sales and decreased earnings by \$79.6 million. ^j Includes \$13.3 million charge for restructuring. ^k Includes \$10 million charge for restructuring. ^l Excludes health care operations in anticipation of spin-off. In 1994, this business contributed \$1.875 billion to net sales and \$124.7 million in earnings. ^m Excludes 70% of aerospace business sold to Alliant Techsystems in March 1995.

Year	Net sales	Earnings	Total assets	Net plant and equipment	Capital expenditures	Stockholders' equity	EARNINGS			Dividend, \$ per share	Dividend yield, % of price	Stock price range, \$ per share	Price-earnings ratio
							% of sales	% of stockholders' equity	\$ per share				
(Money figures in millions of dollars unless otherwise indicated)													
International Flavors & Fragrances													
1995	\$1,439	\$248.8	\$1,534	\$468.6	\$94.5	\$1,117	17.3%	22.3%	\$2.24	\$1.24	2.5%	\$55½-45½	22.5
1994	1,315	226.0	1,400	405.7	101.1	1,008	17.2	22.4	2.03	1.08	2.6	47½-35½	20.6
1993	1,189	202.4	1,225	323.4	82.3	892	17.0	22.7	1.78	1.02	2.8	39½-33	20.5
1992	1,126	189.7	1,268	286.4	51.1	977	16.8	19.4	1.64	0.93	2.6	38¾-31½	21.4
International Specialty Products													
1995	\$689	\$67.4	\$882	\$475.6	\$38.9	\$213	9.8%	31.6%	\$0.68	\$0	—	\$11-6¾	12.8
1994	600	45.8	807	477.1	31.1	85	7.6	53.9	0.46	0.05	0.7%	8½-5¾	15.1
1993	548	29.6 ^a	786	478.5	62.9	77	5.4	38.4	0.30 ^a	0.05	0.6	9¾-5¾	25.8
1992	571	57.2	800	452.1	70.5	46	10.0	124.0	0.57	0.05	0.4	15½-8¾	21.6
Loctite													
1995	\$785	\$83.9	\$606	\$286.7	\$33.9	\$287	10.7%	29.3%	\$2.40	\$0.96	2.0%	\$50½-43¾	19.6
1994	704	82.4	560	203.3	59.1	314	11.7	26.2	2.33	0.82	2.0	46¾-35	17.5
1993	613	68.3	511	164.5	46.3	266	11.1	25.7	1.88	0.79	2.0	45½-34¾	21.4
1992	608	72.3 ^b	479	139.0	40.2	305	11.9	23.7	1.99 ^b	0.74	1.6	50½-39¾	22.7
Lubrizol													
1995	\$1,664	\$132.8	\$1,492	\$676.8	\$189.3	\$849	8.0%	15.6%	\$2.08	\$0.93	3.0%	\$37¾-25½	15.1
1994	1,593	148.8	1,353	558.7	160.5	791	9.3	18.8	2.26	0.89	2.7	38½-28½	14.9
1993	1,518	113.5	1,146	437.6	127.9	696	7.5	16.3	1.67	0.85	2.7	36¾-26½	18.9
1992	1,545	124.6	1,112	375.6	95.8	804	8.1	15.5	1.81	0.81	2.7	34¾-24¾	16.4
Monsanto													
1995	\$8,962	\$728.0	\$8,647	\$2,832.0	\$500.0	\$1,768	8.1%	41.2%	\$6.27	\$2.70	2.8%	\$124¾-68¼	15.4
1994	8,272	623.0	7,757	2,817.0	409.0	1,814	7.5	34.3	5.33	2.47	3.2	86½-66½	14.4
1993	7,902	479.0	7,451	2,802.0	437.0	1,666	6.1	28.8	4.22	2.30	3.7	75-48¾	14.7
1992	7,763	346.0	8,019	3,005.0	586.0	1,939	4.5	17.8	3.11	2.20	3.6	71¼-49¾	19.5
Morton International													
1995 ^c	\$3,326	\$294.1	\$2,432	\$1,119.5	\$252.2	\$1,339	8.8%	22.0%	\$1.96	\$0.44	1.5%	\$32-25¾	14.7
1994 ^c	2,850	226.5	2,130	1,004.9	219.9	1,067	7.9	21.2	1.51	0.37	1.2	37¼-25½	20.8
1993 ^c	2,310	146.0	1,894	914.3	201.4	856	6.3	17.1	0.90	0.32	1.5	26½-16¾	24.1
1992 ^c	2,044	144.5	1,755	835.2	200.1	867	7.1	16.7	0.98	0.32	1.6	21½-17¼	19.8
Nalco Chemical													
1995	\$1,215	\$135.7	\$1,239	\$520.0	\$126.7	\$449	11.2%	30.2%	\$1.71	\$0.99	3.0%	\$38½-28½	19.5
1994	1,346	151.1	1,168	523.9	125.6	430	11.2	35.1	1.89	0.945	2.8	37¾-29¾	17.9
1993	1,389	152.7	1,100	558.5	117.8	438	11.0	34.9	1.88	0.885	2.6	37¾-30¼	18.1
1992	1,375	145.0	1,232	533.3	131.0	458	10.5	31.7	1.90	0.84	2.4	40¾-30¾	18.8
Occidental Petroleum													
1995	\$10,423	\$511.0	\$17,815	\$13,867.0	\$979.0	\$4,630	4.9%	11.0%	\$1.31	\$1.00	4.7%	\$24¾-18	16.2
1994	9,236	-36.0	17,989	14,502.0	1,103.0	4,457	—	—	-0.36	1.00	5.3	22¾-15½	—
1993	8,116	74.0 ^d	17,123	14,284.0	1,083.0	3,958	0.9	1.9	0.12 ^d	1.00	5.0	23½-16¾	168.2
1992	8,494	126.0 ^e	17,877	14,051.0	860.0	3,440	1.5	3.7	0.41 ^e	1.00	5.1	23½-15¾	47.4
Olin													
1995	\$3,150	\$140.0	\$2,151	\$956.0	\$201.0	\$720	4.4%	19.4%	\$5.50	\$2.40	3.8%	\$77½-48¾	11.4
1994	2,658	91.0	1,921	879.0	149.0	640	3.4	14.2	3.65	2.20	4.1	60½-46	14.5
1993	2,423	40.0	1,816	885.0	132.0	482	1.7	8.3	1.90	2.20	4.9	50½-39¾	23.8
1992	2,376	55.0	1,904	934.0	173.0	615	2.3	8.9	2.17	2.20	4.8	54¾-37¼	21.2
Petrolite													
1995 ^f	\$365	\$6.2	\$284	\$111.4	\$12.6	\$150	1.7%	4.1%	\$0.55	\$1.12	4.0%	\$32½-23¼	50.7
1994 ^f	369	7.0	297	127.1	21.8	148	1.9	4.7	0.62	1.12	3.3	40¼-28	55.0
1993 ^f	352	20.5	282	124.1	18.9	144	5.8	14.2	1.82	1.12	3.5	40¼-24	17.7
1992 ^f	318	16.5	241	107.0	18.3	165	5.2	10.0	1.45	1.12	4.2	31½-21¾	18.4
PPG Industries													
1995	\$7,058	\$767.6	\$6,194	\$2,835.0	\$454.0	\$2,569	10.9%	29.9%	\$3.80	\$1.18	10.7%	\$13-9	2.9
1994	6,331	515.0	5,894	2,742.0	356.0	2,557	8.1	20.1	2.43	1.12	7.2	17-14	6.4
1993	5,754	295.0	5,652	2,787.0	293.0	2,473	5.1	11.9	1.39	1.04	4.3	27-21	17.3
1992	5,814	319.0	5,662	2,972.0	283.0	2,699	5.5	11.8	1.51	0.94	4.7	23-17	13.2
Praxair ^g													
1995	\$3,146	\$262.0	\$3,819	\$2,737.0	\$600.0	\$806	8.3%	32.5%	\$1.82	\$0.32	1.2%	\$33¾-19¾	14.8
1994	2,711	203.0	3,430	2,350.0	326.0	749	7.5	27.1	1.45	0.28	1.4	24¾-16¾	14.1
1993	2,438	143.0	3,188	2,273.0	240.0	568	5.9	25.2	1.06	0.25	1.5	18¼-15	15.7
1992	2,604	84.0	3,283	2,315.0	333.0	483	3.2	17.4	0.64	0.25 ^h	1.6 ^h	17½-13½ ⁱ	24.0

a Includes \$13.9 million charge for restructuring. b Includes \$12.7 million charge for restructuring. c Fiscal year ends June 30. d From continuing operations; excludes income from sale of coal business of \$221 million. e From continuing operations; excludes loss from coal business of \$622 million. f Fiscal year ends Oct. 31. g Became an independent company on June 30, 1992; prior to that was part of Union Carbide. Data for first half of 1992 are pro forma and are not included in Union Carbide data. h On full-year basis. i From June 30 only.

CMA 054573

2 FINANCES OF THE U.S. CHEMICAL INDUSTRY

Year	Net sales	Earnings	Total assets	Net plant and equipment	Capital expenditures	Stockholders' equity	EARNINGS			Dividend, \$ per share	Dividend yield, % of price	Stock price range, \$ per share	Price-earnings ratio
							% of sales	% of stockholders' equity	\$ per share				
(Money figures in millions of dollars unless otherwise indicated)													
Rohm and Haas													
1995	\$3,884	\$292.0	\$3,577	\$2,048.0	\$417.0	\$1,442	7.5%	20.2%	\$4.22	\$1.56	2.7%	\$64 ⁷ / ₈ -49 ¹ / ₂	13.6
1994	3,534	264.0	3,736	1,960.0	339.0	1,495	7.5	17.7	3.79	1.44	2.4	68 ¹ / ₂ -53 ³ / ₄	16.1
1993	3,269	126.0	3,394	1,869.0	382.0	1,311	3.9	9.6	1.74	1.36	2.5	62-47 ¹ / ₄	31.4
1992	3,063	174.0	3,297	1,768.0	283.0	1,280	5.7	13.6	2.53	1.28	2.5	59 ⁵ / ₈ -42 ³ / ₄	20.2
Stepan													
1995	\$528	\$16.1	\$363	\$192.5	\$39.2	\$122	3.0%	13.2%	\$1.51	\$0.45	2.5%	\$20 ⁷ / ₈ -14 ³ / ₄	11.8
1994	444	13.8	325	183.7	42.9	111	3.1	12.4	1.29	0.43	2.9	17 ¹ / ₁₆ -12 ³ / ₈	11.7
1993	439	10.8	300	168.9	25.4	104	2.5	10.4	0.98	0.41	2.6	18 ³ / ₁₆ -12 ⁹ / ₁₆	16.0
1992	436	10.4 ^a	297	167.9	34.4	100	2.4	10.4	0.95 ^a	0.37	2.1	22 ⁷ / ₈ -13 ¹ / ₈	18.9
Sterling Chemicals													
1995 ^b	\$1,030	\$153.2	\$555	\$309.1	\$54.0	\$184	14.9%	83.3%	\$2.76	\$0	—	\$14-8 ¹ / ₄	4.0
1994 ^b	701	19.1	524	291.1	12.3	39	2.7	49.0	0.34	0	—	13 ³ / ₄ -3 ³ / ₈	25.2
1993 ^b	519	-5.4	482	314.3	12.2	13	—	—	-0.10	0.06	1.5%	5-3 ¹ / ₈	—
1992 ^b	431	4.5	536	343.8	16.0	24	1.0	18.8	0.08	0.245	5.4	5 ¹ / ₈ -3 ⁷ / ₈	56.3
Union Carbide													
1995	\$5,888	\$863.0	\$6,190	\$2,808.0	\$542.0	\$1,979	14.7%	43.6%	\$6.01	\$0.75	2.2%	\$42 ³ / ₄ -25 ¹ / ₂	5.7
1994	4,865	389.0	4,991	2,542.0	409.0	1,472	8.0	26.4	2.44	0.75	2.6	35 ⁷ / ₈ -21 ¹ / ₂	11.8
1993	4,640	165.0	4,645	2,420.0	395.0	1,384	3.6	11.9	1.00	0.75	3.8	23 ¹ / ₈ -16	19.6
1992	4,872	119.0	4,856	2,539.0	359.0	1,153 ^c	2.4	10.3	0.76	0.875 ^c	6.3	17 ¹ / ₈ -10 ⁷ / ₈	18.4
Witco													
1995	\$1,985	\$66.9	\$2,044	\$812.0	\$115.8	\$276	3.4%	24.2%	\$1.18	\$1.12	3.7%	\$36-24	25.4
1994	2,225	107.1	1,728	720.0	107.4	749	4.8	14.3	1.91	1.03	3.5	35-24 ³ / ₈	15.5
1993	2,143	79.9 ^d	1,622	696.5	103.7	496	3.7	16.1	1.56 ^d	0.94	3.3	32 ¹ / ₄ -24	18.0
1992	1,729	53.9 ^e	1,562	721.2	72.6	364	3.1	14.8	1.19 ^e	0.92	4.0	25 ¹ / ₂ -20	19.1
PHARMACEUTICALS													
Abbott Laboratories													
1995	\$10,012	\$1,689.0	\$9,413	\$4,250.0	\$947.0	\$4,397	16.9%	38.4%	\$2.12 ^f	\$0.84	2.2%	\$44 ³ / ₄ -30 ⁵ / ₈	17.8
1994	9,156	1,516.7	8,524	3,920.9	929.5	4,049	16.6	37.5	1.87	0.76	2.6	34-25 ³ / ₈	15.9
1993	8,408	1,399.1 ^f	7,689	3,511.0	952.7	3,675	16.6	38.1	1.69 ^f	0.68	2.5	30 ⁷ / ₈ -22 ⁵ / ₈	15.8
1992	7,852	1,239.1 ^g	6,941	3,099.2	1,007.2	3,348	15.8	37.0	1.47 ^g	0.60	2.0	34 ¹ / ₈ -26 ¹ / ₈	20.5
American Home Products													
1995	\$13,376	\$1,482.0	\$12,713	\$3,960.3	\$637.5	\$-3,107	11.1%	—	\$4.78	\$3.02	3.7%	\$99 ⁷ / ₈ -61 ¹ / ₄	16.9
1994 ^h	8,966	1,528.3 ⁱ	12,494	3,811.9	472.5	-4,927	17.0	—	4.97 ⁱ	2.94	4.8	67 ¹ / ₄ -55 ³ / ₈	12.3
1993	8,305	1,469.3	6,971	2,059.8	517.9	3,160	17.7	46.5%	4.73	2.86	4.6	69-55 ¹ / ₂	13.2
1992	7,874	1,370.7	6,433	1,777.8	428.1	2,854	17.4	48.0	4.36	2.66	3.6	84 ¹ / ₄ -63 ¹ / ₄	16.9
Bristol-Myers Squibb													
1995	\$13,767	\$2,402.0	\$12,710	\$3,760.0	\$513.0	\$4,603	17.4%	52.2%	\$4.75	\$2.96	4.1%	\$87 ¹ / ₈ -57 ³ / ₄	15.3
1994	11,984	2,330.0	11,971	3,666.0	573.0	4,765	19.4	48.9	4.58	2.92	5.3	61-50	12.1
1993	11,413	2,269.0	11,910	3,374.0	570.0	5,749	19.9	39.5	4.40	2.88	4.9	67 ¹ / ₄ -50 ⁷ / ₈	13.4
1992	11,727	2,108.0	10,651	3,141.0	647.0	5,867	18.0	35.9	4.07	2.76	3.7	90 ¹ / ₈ -60	18.4
Johnson & Johnson													
1995	\$18,842	\$2,403.0	\$14,923	\$5,196.0	\$1,256.0	\$6,095	12.8%	39.4%	\$3.72	\$1.28	1.8%	\$92 ³ / ₈ -53 ³ / ₈	19.6
1994	15,734	2,006.0	13,265	4,910.0	937.0	4,719	12.7	42.5	3.12	1.13	2.4	56 ¹ / ₂ -36	14.8
1993	14,138	1,787.0	11,317	4,406.0	975.0	4,643	12.6	38.5	2.74	1.01	2.3	50 ³ / ₈ -35 ⁵ / ₈	15.7
1992	13,753	1,625.0	11,168	4,115.0	1,103.0	4,455	11.8	36.5	2.46	0.89	1.7	58 ³ / ₄ -43	20.7
Eli Lilly													
1995	\$6,764	\$1,307.0	\$10,307	\$4,239.3	\$551.3	\$1,327	19.3%	98.5%	\$2.30	\$1.33	4.7%	\$33 ¹ / ₈ -23 ⁹ / ₁₆	12.3
1994 ^j	5,712	1,185.1 ^k	10,096	4,411.5	576.5	999 ^l	20.7	118.6	2.05 ^k	1.26	4.4	33 ¹ / ₈ -23 ¹ / ₂	13.8
1993	6,452	491.1 ^m	9,624	4,200.2	633.5	4,164	7.6	11.8	0.79 ^m	1.22	4.6	31-22 ¹ / ₂	33.9
1992	6,167	827.6 ⁿ	8,213	4,072.1	912.9	4,440	13.4	18.6	1.43 ⁿ	1.13	3.1	43 ⁷ / ₈ -28 ⁷ / ₈	25.4
Merck													
1995	\$16,681	\$3,335.2	\$17,006	\$5,269.1	\$1,005.5	\$4,909	20.0%	67.9%	\$2.70	\$1.24	2.4%	\$67 ¹ / ₄ -36 ³ / ₈	19.2
1994	14,970	2,997.0	14,644	5,296.3	1,009.3	3,927	20.0	76.3	2.38	1.14	3.4	39 ¹ / ₂ -28 ¹ / ₈	14.2
1993	10,498	2,166.2 ^o	13,282	4,894.6	1,012.7	3,376	20.6	64.2	1.87 ^o	1.03	3.0	44 ¹ / ₈ -25 ⁵ / ₈	18.1
1992	9,663	2,446.6	10,933	4,271.1	1,066.6	4,849	25.3	50.5	2.12	0.92	1.9	56 ⁵ / ₈ -40 ¹ / ₂	22.1

CMA 054574

a Includes \$6.5 million net charge for asset write-offs, restructuring, and environmental expenditures. b Fiscal year ends Sept. 30. c On June 30, stockholders received one share in the newly formed industrial gases company, Praxair, for every share of Union Carbide stock. The effect of this spin-off was to reduce Union Carbide stockholders' equity by \$733 million. d Includes \$100.6 million charge for environmental expenditures, disposition of businesses, workforce reduction, legal judgment, and other costs. e Includes \$20 million charge for consolidation of offices. f Includes \$70 million credit related to product withdrawal and \$272 million gain on sale of investment. g Includes \$215 million charge for product withdrawal. h Reflects acquisition of American Cyanamid, Dec. 1, 1994. i Includes \$173.7 million charge for restructuring. j Reflects divestiture of medical devices and diagnostic businesses during 1994. k Includes \$66 million charge for recall of three products and \$58.4 million charge for in-process R&D associated with September 1994 acquisition of Sphing Pharmaceuticals. l Reduced by \$4.41 billion for good related to acquisition of PCS. m Includes \$1.03 billion charge for restructuring. n Includes \$404 million charge for restructuring. o Includes \$775 million charge for restructuring.

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Price-
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ratio

49 1/2 13.6
53 1/4 16.1
47 1/4 31.4
42 3/4 20.2

14 3/4 11.8
12 3/8 11.7
12 9/16 16.0
13 1/8 18.9

3 1/4 4.0
3 3/8 25.2
3 1/8 —
3 7/8 56.3

25 1/2 5.7
21 1/2 11.8
6 19.6
0 7/8 18.4

1/4 25.4
4 3/8 15.5
4 18.0
0 19.1

Year	Net sales	Earnings	Total assets	Net plant and equipment	Capital expenditures	Stockholders' equity	EARNINGS			Dividends, \$ per share	Dividend yield, % of price	Stock price range, \$ per share	Price-earnings ratio
							% of sales	% of stockholders' equity	\$ per share				

(Money figures in millions of dollars unless otherwise indicated)

Pfizer													
1995	\$10,021	\$1,572.9	\$11,486	\$3,472.6	\$696.3	\$4,264	15.7%	36.9%	\$2.50	\$1.04	3.1%	\$39 1/4-26 5/8	13.3
1994	8,281	1,298.4	10,773	3,073.2	671.5	3,998	15.7	32.5	2.09	0.94	2.8	39 1/16-26 1/8	15.8
1993	7,478	1,182.5	9,100	2,632.5	634.2	3,634	15.8	32.5	1.85	0.84	2.6	37 1/16-26 1/4	17.4
1992	7,230	1,093.5 ^a	9,222	2,305.1	674.2	4,350	15.1	25.1	1.63 ^a	0.74	1.9	43 1/2-32 1/16	23.4
Rhône-Poulenc Rorer													
1995	\$5,142	\$433.7	\$5,167	\$1,621.0	\$281.5	\$-1,463	8.4%	—	\$3.21	\$1.20	2.7%	\$53 1/4-36 1/2	14.0
1994	4,175	428.8	3,489	1,123.0	220.9	1,108	10.3	38.7%	3.03	1.12	3.1	42 3/8-30 1/2	12.1
1993	4,019	417.0	3,167	1,032.0	250.4	939	10.4	44.4	2.93	1.10	2.5	54-32 3/8	14.8
1992	4,096	423.3	2,913	974.5	284.3	623	10.3	67.9	2.99	0.68	1.2	69 3/8-44 3/8	19.0
Schering-Plough													
1995	\$5,104	\$1,053.0	\$4,665	\$2,098.9	\$293.8	\$1,623	20.6%	64.9%	\$2.85	\$1.13	2.3%	\$60 5/8-35 13/16	16.9
1994	4,657	922.0	4,157	2,082.3	271.6	1,406	19.8	65.6	2.42	0.99	3.0	37 1/16-27 1/16	13.6
1993	4,341	825.0	4,134	1,967.7	365.2	1,399	19.0	59.0	2.09	0.87	2.8	35 1/2-25 7/8	14.5
1992	4,056	720.0	3,967	1,748.5	403.2	1,407	17.8	51.2	1.80	0.75	2.5	35 1/16-24 15/16	16.7
Warner-Lambert													
1995	\$7,040	\$740.0	\$5,696	\$2,006.0	\$387.3	\$1,841	10.5%	40.2%	\$5.48	\$2.60	3.0%	\$98-73 3/8	15.6
1994	6,417	694.0	5,153	1,846.0	406.4	1,437	10.8	48.3	5.17	2.44	3.3	86 3/4-60	14.2
1993	5,794	645.0	4,514	1,599.3	347.1	1,076	11.1	59.9	4.78	2.28	3.3	76 3/8-59 3/4	14.2
1992	5,598	643.7	3,921	1,507.1	334.3	1,372	11.5	46.9	4.78	2.04	3.0	79 1/4-58 3/8	14.4

BIOPHARMACEUTICALS

Year	Net sales	Earnings	R&D spending	R&D as % of sales	Total assets	Net plant and equipment	Stockholders' equity	EARNINGS			Stock price range, \$ per share	Price-earnings ratio
								% of sales	% of stockholders' equity	\$ per share		

(Money figures in millions of dollars unless otherwise indicated)

Amgen												
1995	\$1,818.6	\$537.7	\$451.7	24.8%	\$2,432.8	\$743.8	\$1,671.8	29.6%	32.2%	\$1.92	\$59 3/8-28 1/4	22.8
1994	1,549.6	319.7 ^b	323.6	20.9	1,994.1	665.3	1,274.3	20.6	25.1	1.14 ^b	29 1/16-17 1/16	20.7
1993	1,306.3	366.0 ^c	255.3	19.5	1,765.5	586.9	1,172.0	28.0	31.2	1.30 ^c	35 3/8-15 3/4	19.7
1992	1,050.7	357.6 ^d	182.3	17.4	1,374.3	426.0	933.7	34.0	38.3	1.22 ^d	38 3/8-25	26.3
Biogen												
1995	\$134.7 ^e	\$5.7	\$87.4	64.9%	\$461.2	\$115.0	\$375.0	4.2%	1.5%	\$0.16	\$66 1/2-32	307.8
1994	140.4 ^e	-4.9 ^f	91.2	65.0	369.7	73.2	321.8	—	—	-0.15 ^f	55 3/4-27 1/4	—
1993	136.4 ^e	32.4	79.3	58.1	349.5	38.5	318.0	23.8	10.2	0.93	47 3/4-24 1/4	38.7
1992	121.7 ^e	38.3	60.4	49.6	311.2	32.3	284.9	31.5	13.4	1.12	49 3/4-18 1/4	30.4
Chiron												
1995	\$992.9	\$-512.2 ^g	\$343.8	37.3%	\$1,418.6	\$517.8	\$600.8	—	—	\$-12.62 ^g	\$113 3/4-47 3/4	—
1994	276.0	18.3	166.2	60.2	963.9	286.2	486.8	6.6%	3.8%	0.53	95 1/8-51 7/8	138.7
1993	147.9	18.4	140.0	94.7	906.6	204.0	460.3	12.4	4.0	0.55	85 1/2-41 1/8	115.1
1992 ^h	111.6	-92.6 ⁱ	142.9	128.0	712.4	89.6	492.9	—	—	-3.07 ⁱ	73 3/4-34 3/4	—
Genentech												
1995	\$635.3	\$146.4	\$363.0	57.1%	\$2,011.0	\$503.7	\$1,602.0	23.0%	9.1%	\$1.21	\$53-44 1/2	40.3
1994	601.0	124.4	314.3	52.3	1,745.1	485.3	1,348.8	20.7	9.2	1.04	53 1/2-41 3/4	45.8
1993	457.4	58.9	299.4	65.5	1,468.8	456.7	1,116.8	12.9	5.3	0.50	50 1/2-31 1/4	81.8
1992	391.0	20.8	278.6	71.3	1,305.1	432.5	1,007.3	5.3	2.1	0.18	39 1/2-25 7/8	181.6
Genzyme												
1995 ^j	\$356.9	\$21.7	\$68.9	19.3%	\$875.3	\$329.4	\$675.3	6.1%	3.2%	\$1.45 ^k	\$70 3/4-27 1/4 ^k	33.6 ^k
1994 ^l	288.7	16.3	55.3	19.2	629.1	296.8	389.7	5.6	4.2	1.22 ^k	38 1/2-25 1/4 ^k	26.1 ^k
1993	233.9	-6.1 ^l	48.3	20.6	512.5	196.2	304.5	—	—	-0.25 ^l	46 1/4-25 1/4	—
1992	180.0	-30.3	39.7	22.1	480.7	87.9	322.9	—	—	-1.40	66 1/2-32 1/2	—
Immunex												
1995	\$137.6	\$-11.3	\$83.5	60.7%	\$146.4	\$87.5	\$109.9	—	—	\$-0.29	\$18 1/2-9 3/4	—
1994	135.8	-29.1	77.6	57.1	178.9	96.3	91.0	—	—	-0.85	19 3/4-10 3/4	—
1993	119.1 ^m	-430.3 ^{m,n}	72.5 ^m	60.9 ^m	182.2 ^o	100.5 ^o	111.9 ^o	—	—	-9.58 ^{n,o}	34 3/4-13 3/4 ^o	—
1992	51.9	-77.6 ^p	37.1	71.5	233.1	97.0	131.3	—	—	-5.21 ^p	68-22 1/2	—

in the newly
d Includes
solidation of
acquisition of
\$66 million
for goodwill

^a Includes \$110.5 million net gain from \$258.6 million sale of assets. ^b \$204.6 million charge for restructuring, and \$56.5 million gain associated with retirement benefits from divested operations. ^c Includes \$116.4 million write-off for in-process technology related to acquisition of Synergen on Dec. 22, 1994. ^d Includes \$129 million legal assessment. ^e Includes royalty income from licensees' sales of several major products. ^f Includes \$25 million charge for discontinuing the development of Hirulog. ^g Includes \$454 million in extraordinary items largely relating to company's partnership with Ciba. ^h Results of Cetus following Dec. 12, 1991; acquisition are included in data for 1992 and later years. ⁱ Includes \$37.6 million write-off of technology. ^j Consolidated financial data; includes general division and tissue repair division created December 1994. ^k For general division only. ^l Includes \$49 million purchase of R&D and \$26.5 million goodwill and restructuring costs. ^m Merged June 2, 1993, with Lederle Laboratories oncology business; combined figures for predecessor and successor companies. ⁿ Includes \$346.4 million for acquisition of in-process R&D, \$14.8 million for merger costs, and \$25.6 million for modified stock option plan. ^o Merged June 2, 1993, with Lederle Laboratories oncology business; figures for successor company only. ^p Includes \$58.7 million purchase of R&D.

CMA 054575

3 EMPLOYMENT IN THE U.S. CHEMICAL INDUSTRY

Chemical employment continues downward

In 1995, the overall economy and the demand for chemicals were fairly strong; however, top industry managers at major chemical companies continued their drive to increase operating efficiencies with fewer people, thereby reducing employment costs and thus increasing profits.

Back in 1992, chemical industry employment seemed on a steady keel, and the average number of employees stood at 1.084 million. However, the tide turned in 1993 when the industry began to downsize. In that year, the average number of industry employees declined to 1.081 million. Industry employment continued to decline through 1995, when the number of employees stood at 1.045 million—a loss of 39,000 employees from 1992.

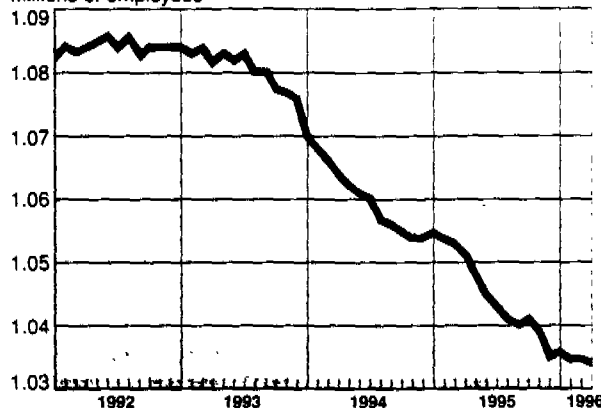
All but one segment of the chemical industry have experienced job losses since 1992. The only exception is in the paints and allied products sector, where employment has held steady. Department of Labor statistics show most cuts since 1992 affected white-collar and managerial workers.

As production and product demand rose in recent years, the industry has cautiously increased the numbers of its production workers. The annual average number of chemical industry production workers rose from 567,000 in 1992 to 582,000 in 1995—an increase of 15,000 jobs. The number of production workers rose in most chemical industry segments in 1995, except for the plastic materials and synthetics segment, where it declined 3%, and the soap, cleaners, and toilet goods sector, where it declined 1%.

Employment at 22 major chemical firms followed the industry trend. The major chemical firms collectively reduced employment by 34,200 from 1994 to 1995. Although the nearly 12% reduction in employment for the major chemical companies is far greater than the nearly 2% drop in all chemical industry jobs, employment levels at two companies largely accounted for the change.

Chemical employment enters into fourth year of decline

Millions of employees^a



^a Seasonally adjusted employment in U.S. chemicals and allied products industry. March and April 1996 figures are preliminary. Source: Department of Labor

W.R. Grace has an agreement in effect to sell its kidney dialysis unit and no longer counts the unit's employees in its active duty rosters. Grace counted 16,700 fewer employees in 1995 than it did in 1994. And Dow Chemical sold its Marion Merrell Dow pharmaceutical operations to Bayer, and sold some other units as well. Dow Chemical counted 14,200 fewer employees in 1995 than it did in 1994.

Although overall chemical industry jobs declined, the ranks of chemists and engineers increased for the chemicals and allied products category, at least for 1994, according to the most recent statistics from the National Science Foundation.

INDUSTRIAL EMPLOYMENT: No chemical segments gained employees in 1995

Thousands	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	% annual change	
												1994-95	1995-96
All manufacturing	19,248	18,947	18,999	19,314	19,391	19,076	18,406	18,104	18,075	18,303	18,405	1%	0%
Chemicals & allied products	1,044	1,021	1,025	1,057	1,074	1,086	1,076	1,084	1,081	1,061	1,045	-2	0
Industrial inorganic chemicals	143	135	131	133	135	138	129	136	135	132	129	-2	-1
Plastic materials & synthetics	172	168	168	177	182	180	178	173	166	162	158	-2	-1
Drugs	206	208	215	228	232	237	247	257	265	263	259	-2	2
Soap, cleaners & toilet goods	148	146	152	159	160	159	155	154	157	153	152	-1	0
Paints & allied products	63	63	63	63	62	61	58	58	58	58	58	0	-1
Industrial organic chemicals	160	154	148	146	150	155	155	154	151	144	143	-1	-1
Agricultural chemicals	59	54	51	52	54	56	57	58	56	55	53	-4	-1
Miscellaneous chemical products	94	93	97	100	99	100	97	94	92	93	93	0	0
Petroleum & coal products	179	169	164	160	156	157	160	158	152	149	144	-3	-2
Rubber & miscellaneous plastics products	818	823	842	866	888	888	862	878	909	952	972	2	2

Note: Average annual domestic employment. Source: Department of Labor

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PRODUCTION WORKERS: Chemical industry gained for third straight year

Thousands	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	% annual change	
												1994-95	1985-95
All manufacturing	13,084	12,864	12,952	13,193	13,230	12,947	12,434	12,287	12,341	12,615	12,727	1%	-1%
Chemicals & allied products	577	568	575	596	603	600	580	567	573	579	582	1	0
Industrial inorganic chemicals	72	69	67	69	70	70	64	61	58	57	57	0	-3
Plastic materials & synthetics	114	113	111	116	119	116	110	104	104	109	106	-3	-1
Drugs	95	96	99	101	102	105	109	112	117	121	127	5	2
Soap, cleaners & toilet goods	93	93	97	102	101	98	95	94	96	95	94	-1	0
Paints & allied products	31	30	31	31	32	31	30	30	30	30	31	1	0
Industrial organic chemicals	82	81	83	86	88	86	81	76	78	80	81	1	0
Agricultural chemicals	37	33	32	33	34	34	34	35	33	31	31	0	-2
Miscellaneous chemical products	54	53	55	58	59	59	58	56	54	55	56	2	0
Petroleum & coal products	109	106	107	104	102	103	103	103	99	97	93	-4	-1
Rubber & miscellaneous plastics products	632	639	653	674	692	686	662	677	703	741	756	2	2

Note: Average annual domestic employment. Source: Department of Labor

EMPLOYMENT OF WOMEN: Decade brought increases in all chemical fields

	1984		1994	
	Thousands	% of total	Thousands	% of total
All manufacturing	6,295.0	32%	5,987.0	33%
Chemicals & allied products	282.5	27	335.2	32
Industrial inorganic chemicals	24.9	17	30.3	23
Plastic materials & synthetics	38.5	22	40.1	25
Drugs	89.3	43	120.2	46
Soap, cleaners & toilet goods	61.3	42	68.3	45
Paints & allied products	11.9	19	12.0	21
Industrial organic chemicals	26.1	16	30.6	21
Agricultural chemicals	9.0	15	10.8	20
Miscellaneous chemical products	21.5	23	22.8	25
Petroleum & coal products	29.9	16	24.8	17
Rubber & miscellaneous plastics products	280.4	34	325.2	34

Note: Average annual domestic employment. Source: Department of Labor

WORKWEEK: Mixed for chemicals and allied products, shorter for all manufacturing

Hours	1992	1993	1994	1995
All manufacturing	41.0	41.4	42.0	41.6
Chemicals & allied products	43.1	43.1	43.2	43.3
Industrial inorganic chemicals	43.5	43.8	44.4	45.4
Plastic materials & synthetics	43.8	44.1	44.1	44.2
Drugs	42.5	41.4	41.3	41.8
Soap, cleaners & toilet goods	41.3	41.9	41.3	40.9
Paints & allied products	41.6	42.2	43.2	42.6
Industrial organic chemicals	45.6	45.4	45.4	45.1
Agricultural chemicals	44.7	44.7	45.5	45.0
Miscellaneous chemical products	42.6	42.9	43.4	43.5
Petroleum & coal products	43.8	44.2	44.4	43.8
Rubber & miscellaneous plastics products	41.7	41.8	42.2	41.5

Note: For production workers in domestic employment. Source: Department of Labor

EMPLOYMENT OF SCIENTISTS, ENGINEERS: Grew again in chemical industry in 1994

Thousands	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Total, all industry	584.1	622.5	671.0	695.8	708.6	722.5	743.6	773.4	779.3	764.7	768.5
Chemicals & allied products	69.8	71.1	75.8	75.2	75.8	78.3	80.4	81.6	85.6	86.5	93.1
Drugs & medicines	30.8*	30.8	31.8	32.6	33.0	34.4	34.3	35.4	38.7	42.3	48.5
Industrial chemicals	25.6	23.5	24.9	22.4*	22.5*	23.1*	23.0*	22.7*	29.9	26.4	28.8
Other chemicals	13.4	16.7	19.1	20.2	20.3	18.8	18.9	17.0	17.0	17.8	15.8
Petroleum refining & extraction	13.3	13.5	10.4	9.9	9.5	10.7	11.1	11.4	11.5	11.0	9.7

Note: Full-time equivalent number of R&D scientists and engineers in industry, as of January of each year. * Partly estimated. Source: National Science Foundation

3 EMPLOYMENT IN THE U.S. CHEMICAL INDUSTRY

CHEMICAL EMPLOYMENT: Jobs at major firms are down nearly 12% from a year ago

Thousands	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Air Products	18.7	16.6	12.1	13.3	14.1	14.0	14.6	14.5	14.1	13.3	14.8
Betz Laboratories	2.5	2.6	2.0	3.1	3.4	3.7	4.0	4.2	4.1	4.0	4.1
Cabot	7.7	6.6	5.1	5.2	5.5	6.0	5.3	5.4	5.4	5.4	4.1
Crompton & Knowles	2.3	1.3	1.3	1.6	1.7	1.8	2.0	2.2	2.3	2.5	2.8
Dow Chemical	53.2	51.3	53.1	55.5	62.1	62.1	62.2	61.4	55.4	53.7	39.5
Ethyl^a	10.5	10.5	10.0	10.4	5.5	5.7	6.0	6.3	5.5	1.5	1.8
H. B. Fuller	4.4	4.5	4.6	5.2	5.5	5.6	5.6	5.8	6.0	6.4	6.4
BF Goodrich	26.2	11.9	12.0	12.3	11.9	14.7	14.4	13.4	13.4	13.4	13.3
W.R. Grace	116.9	41.4	39.4	45.7	46.4	49.0	46.6	44.1	34.0	37.9	21.2
Hercules	25.4	25.1	23.2	22.7	23.3	19.9	17.3	15.4	14.1	12.0	7.9
International Flavors	3.7	3.8	4.1	4.2	4.2	4.2	4.2	4.2	4.4	4.6	4.7
Loctite	2.6	2.9	3.2	3.3	3.5	3.7	3.6	3.7	4.0	4.2	4.3
Lubrizol	5.2	4.8	4.8	4.8	5.3	5.2	5.3	4.6	4.6	4.5	4.6
Monsanto	56.1	51.7	49.7	45.6	42.2	41.1	39.3	33.8	30.0	29.4	28.5
Nalco Chemical	5.1	4.9	5.1	5.4	5.5	5.9	6.8	6.7	6.8	5.6	6.1
Olin	14.9	13.2	14.1	16.4	15.4	15.2	14.4	13.5	12.4	12.8	13.0
PPG Industries	37.5	36.5	36.8	36.3	35.5	35.1	33.7	32.3	31.4	30.8	31.2
Praxair^b	—	—	—	—	—	—	—	18.6	16.8	17.8	18.2
Rohm and Haas	11.8	12.1	12.0	12.4	13.0	12.9	12.9	13.8	13.0	12.2	11.7
Stepan	0.9	0.9	1.0	1.0	1.2	1.3	1.3	1.3	1.3	1.3	1.3
Union Carbide	91.5	50.3	43.1	44.0	46.0	38.8	36.7	15.1	13.1	12.0	11.5
Witco	8.1	8.0	7.8	7.6	7.4	7.3	6.9	8.4	8.2	8.0	8.1
TOTAL EMPLOYEES	505.2	360.9	344.5	356.0	358.6	353.2	343.1	328.7	300.3	293.3	259.1
ANNUAL CHANGE	2.3%	-28.6%	-4.5%	3.3%	0.7%	-1.5%	-2.9%	-4.2%	-8.6%	-2.3%	-11.7%
SALES PER EMPLOYEE	\$109.2	\$143.8	\$169.4	\$191.9	\$200.1	\$213.1	\$211.2	\$222.4	\$232.7	\$253.0	\$300.0
(\$ thousands)											

Note: Data are not restated for acquisitions, divestitures or similar developments. ^a Spun off Albemarle in 1994. ^b Spun off from Union Carbide in 1992. Source: Company data.

WAGES: Hourly earnings rose last year for most categories of chemical production workers

	Hourly earnings				Weekly earnings			
	1992	1993	1994	1995	1992	1993	1994	1995
All manufacturing	\$11.46	\$11.74	\$12.06	\$12.36	\$469.86	\$486.04	\$506.52	\$514.18
Chemicals & allied products	14.51	14.82	15.14	15.66	625.38	638.74	654.05	678.08
Industrial inorganic chemicals	15.72	16.37	16.79	17.53	683.82	717.01	745.48	795.86
Plastic materials & synthetics	15.38	15.29	15.40	16.13	673.64	674.29	679.14	712.95
Drugs	14.11	14.68	14.78	15.20	599.68	607.75	610.41	635.36
Soap, cleaners & toilet goods	12.03	12.39	12.69	12.79	496.84	519.14	524.10	523.11
Paints & allied products	12.68	12.71	12.99	13.10	527.49	536.36	561.17	558.06
Industrial organic chemicals	17.29	17.68	18.19	19.11	788.42	802.67	825.83	861.86
Agricultural chemicals	14.82	15.07	15.34	15.74	662.45	673.63	697.97	708.30
Miscellaneous chemical products	13.06	13.49	14.05	14.48	556.36	578.72	609.77	629.80
Petroleum & coal products	17.90	18.53	19.07	19.39	784.02	819.03	846.71	849.2
Rubber & miscellaneous plastics products	10.36	10.57	10.70	10.92	432.01	441.83	451.54	453.1

Note: For production workers in U.S. employment. Source: Department of Labor.

Chemical industry productivity rose again

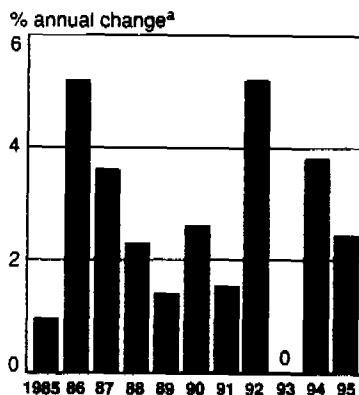
Increased chemical output and more efficient use of production labor drove chemical industry productivity higher again last year. But at the same time, higher wages increased unit labor costs. In fact, after the government revised its production and employment data, new calculations showed that despite massive reductions in chemical employment, unit labor costs had fallen in only four out of the past 10 years.

Productivity is an index measuring the amount of production for each unit of labor. The unit labor cost index measures the labor cost per unit of output. Ideally, the productivity index should rise and the unit labor cost index should fall.

Using statistics from the Labor Department and revised data from the Federal Reserve Board, C&EN estimates that productivity for chemicals and allied products rose 2.4% last year to an index of 120.7 (1987 = 100). The productivity increase came on 3.1% growth in the production index to 125.1 and a modest 0.7% rise in the index of aggregate production workhours to 103.6.

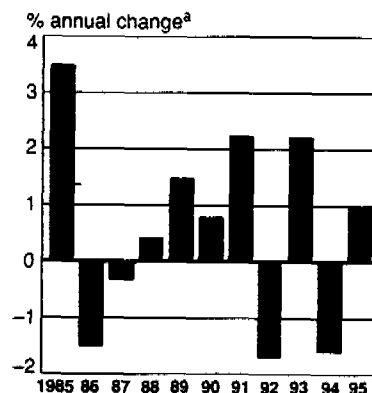
However, growth of hourly produc-

Productivity growth slowed in 1995 ...



^a Chemicals and allied products. Sources: Federal Reserve Board, Bureau of Labor Statistics, C&EN estimates

... but unit labor costs increased moderately



tion wages in the chemical industry outstripped that of productivity, driving unit labor costs up slightly last year. According to the Labor Department, average hourly production wages increased 3.5% in 1995. This, coupled with the lower 2.4% growth in productivity, caused the index of unit labor costs to rise 1.0% to 104.9.

Last year, the chemical industry was outperformed by the overall U.S. manufacturing segment, where productivity rose 3.8% on a 3.7% increase in output and essentially unchanged workhours. And unit labor costs for all manufacturing fell 1.4% as hourly wages for production workers increased just 2.4%.

PRODUCTIVITY: Most factors improved for chemicals and all manufacturing again in 1995

Indexes, 1987 = 100	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
CHEMICALS & ALLIED PRODUCTS											
Production	91.4	94.6	100.0	106.0	109.2	111.8	110.5	114.4	115.4	121.3	125.1
Workhours	99.6	98.0	100.0	103.6	105.2	105.0	102.3	100.7	101.6	102.9	103.6
Productivity ^a	91.8	96.5	100.0	102.3	103.8	106.4	108.0	113.6	113.6	117.9	120.7
Hourly production wages	93.5	96.8	100.0	102.7	105.8	109.5	113.5	117.3	119.8	122.4	126.7
Unit labor costs ^b	101.8	100.3	100.0	100.4	102.0	102.8	105.1	103.3	105.5	103.8	104.9
ALL MANUFACTURING											
Production	91.6	94.3	100.0	104.7	106.4	106.1	103.8	108.2	112.3	119.7	124.1
Workhours	99.9	98.8	100.0	102.1	102.1	99.4	95.4	95.0	96.4	99.9	99.8
Productivity ^a	91.7	95.5	100.0	102.8	104.2	106.7	108.8	113.8	116.5	119.8	124.3
Hourly production wages	96.3	98.2	100.0	102.8	105.8	109.3	112.8	115.6	118.5	121.7	124.6
Unit labor costs ^b	105.0	102.9	100.0	100.3	101.5	102.4	103.7	101.6	101.6	101.6	100.2

Note: Data for 1988 and subsequent years have been revised; earlier years have not. ^a Productivity is output per workhour, calculated by dividing indexes for production by indexes for workhours of production employees. ^b Unit labor costs are labor costs per unit of output, calculated by dividing indexes for wages by indexes for output per workhour. Sources: Federal Reserve Board, Department of Labor, C&EN estimates

Growth slowed for big chemical markets

The general U.S. economy improved last year from the year before, but growth slowed. And many major end-use markets for chemicals actually declined, according to data from government sources.

According to the Commerce Department, current-dollar gross domestic product (GDP) increased 4.6% in 1995 compared with 5.8% growth in the economy in 1994. And constant-dollar (1992) GDP increased just 2.1% last year after 3.4% growth the year before. Much of the slowdown came in the second half of last year as the economy was held in check by interest rate

manipulation by the Federal Reserve Board.

Spending on goods and services, an essential part of GDP growth, did not contribute as it had the year before. Personal consumption expenditures rose 4.7% last year on a current-dollar basis. This followed 5.6% growth the year before. And real (1992 dollar) spending increased just 2.5% in 1995, down from a 3.0% annual increase in the previous year.

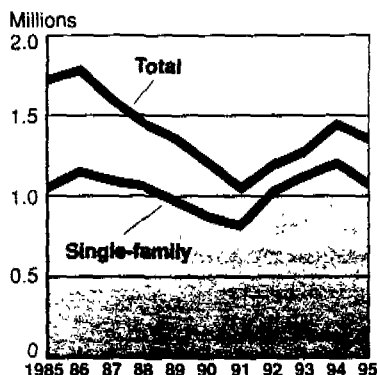
Big end-use chemical markets really slowed last year. Increasing mortgage rates and an end to so-called pent-up demand cut into the construction mar-

kets. Total housing starts fell 7.5% in 1995 from the year before, and starts for single-family housing declined 10% on an annual basis.

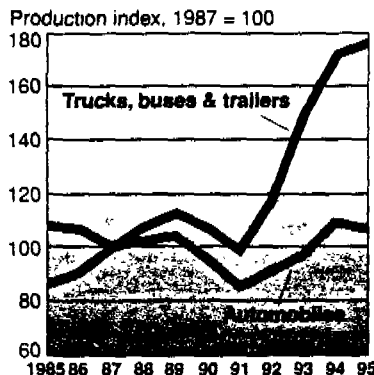
Automotive output last year could be called lackluster, at best. Automobile production fell 2.5% following a 13% rise in 1994, and output of trucks, buses, and trailers rose just 1.7% after a 16% increase the year before.

Smaller volume end markets grew some last year. For instance, tire production increased 6.9%; paper and products grew a slight 2.0%; plastic products gained 2.7%; and household appliances inched up 1.5%.

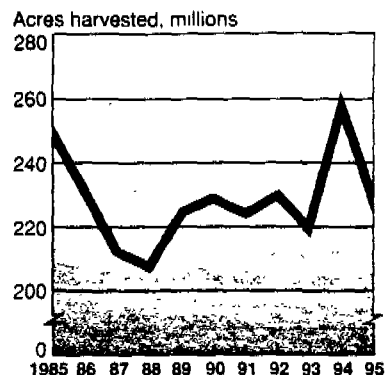
Housing starts



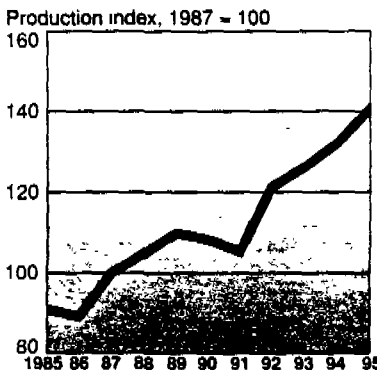
Motor vehicles



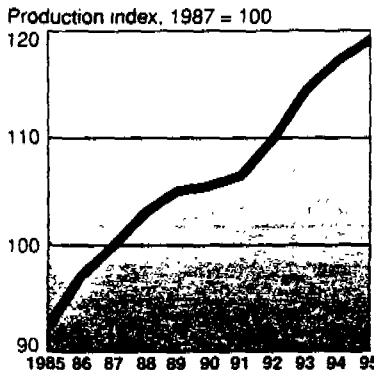
Crops



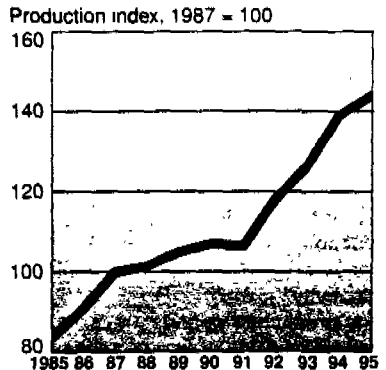
Tires



Paper and products



Plastic products

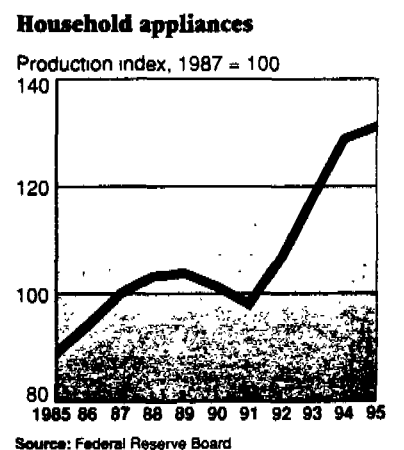
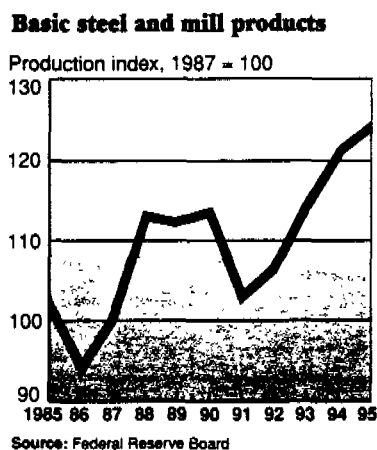
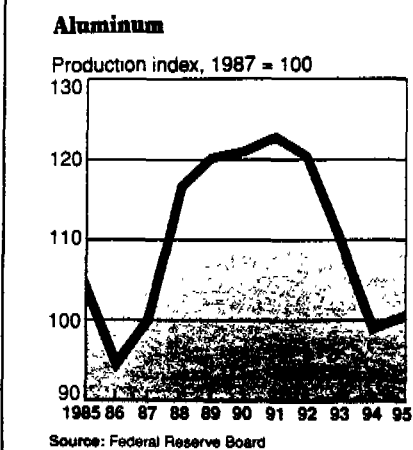
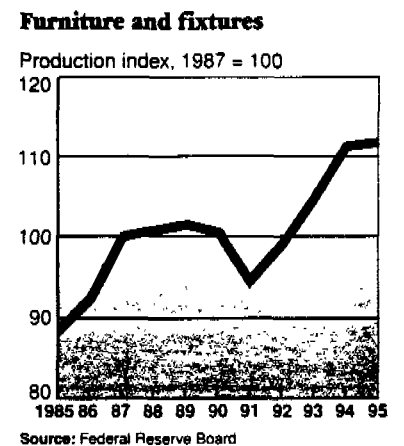
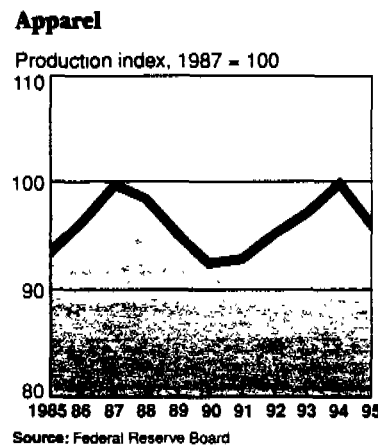
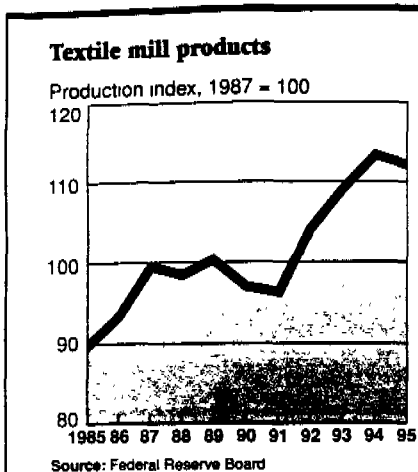
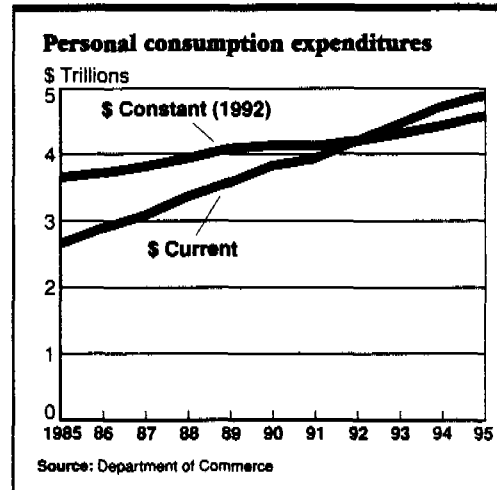
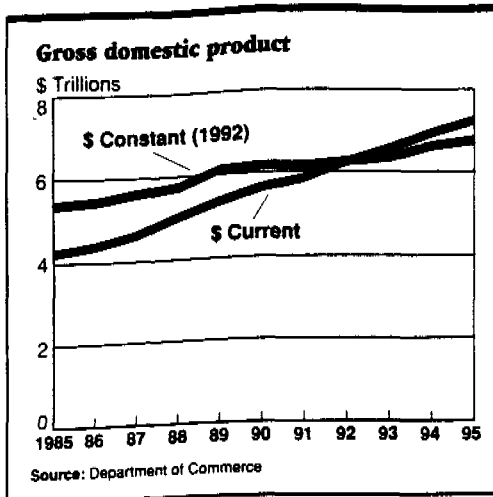


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U.S. chemical trade was robust in 1995

Although the overall U.S. trade deficit continued to climb in 1995, the U.S. chemical industry maintained a trade surplus. Spurred by the relative strength of the world's economies in 1994, international chemical trade growth carried over into 1995, reaching its peak at midyear. But in fourth-quarter 1995 and into 1996, chemical trade felt the malaise of the world's overall economy.

U.S. chemical makers exported \$61.7 billion worth of products in 1995, a 20% gain from 1994. And the chemical trade surplus reached \$21.3 billion—compared with \$17.7 billion in 1994—despite a 19% rise in chemical imports. The 1995 surplus surpassed the previous record high, \$18.8 billion in 1991.

Asia, excluding Japan, continued to be the leading growth generator for U.S. chemical exports. The value of chemicals shipped to that region, including China and Vietnam, grew 33% in 1995. The value of imports from China grew 18%, and those from Vietnam and the rest of Asia grew 13%.

However, U.S. chemical export growth recovered substantially with Japan during 1995, as well as with Australia, the Middle East nations, Africa, and the Eastern Europe nations. In 1994, U.S. chemical export sales to these nations and regions dropped to single-digit growth. And chemical trade between the U.S. and Latin America continued to grow, despite the recession in Mexico and the continuing

economic difficulties in Brazil and other South American nations.

For the most part, U.S. chemical exports and imports grew in all categories on a product-by-product basis. However, the 20% increase in fertilizer exports in 1995 did not match the 50% growth in 1994. And U.S. fertilizer imports grew just 7% in 1995, compared with 14% in 1994. U.S. trade in inorganic chemicals ended the year with a \$74 million deficit, double that of 1994.

Worldwide chemical trade reached an estimated \$437 billion in 1995, a 15% increase over 1994. The U.S., Japan, Italy, and the U.K. experienced healthy growth in chemical exports in 1995. But those four countries also had higher growth in chemical imports in 1995.

U.S. TOTAL TRADE BALANCE: Exports outpaced imports, but balance widened

\$ Billions	1992	1993	1994	1995	% change 1994-95
Total exports	\$448.2	\$456.9	\$502.5	\$574.9	14%
Total imports	532.5	589.4	668.6	749.3	12
Trade balance	-84.3	-132.5	-166.1	-174.4	nm

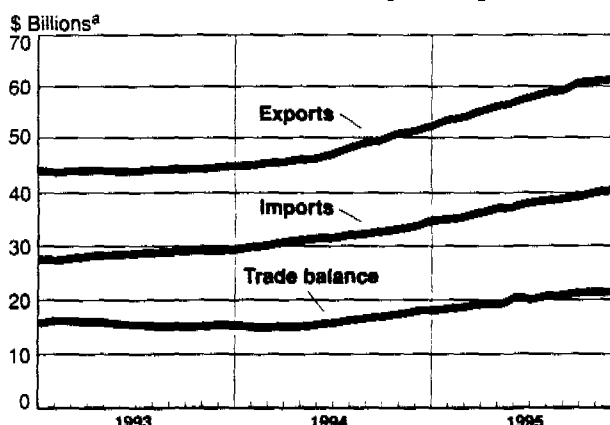
nm = not meaningful. Source: Department of Commerce

U.S. CHEMICAL TRADE: Exports, imports, and surplus continued to advance

\$ Millions	1992	1993	1994	1995	% change 1994-95
Chemical exports	\$43,956	\$45,066	\$51,600	\$61,701	20%
Chemical imports	27,684	28,502	33,915	40,378	19
Chemical trade balance	16,272	16,564	17,685	21,323	21

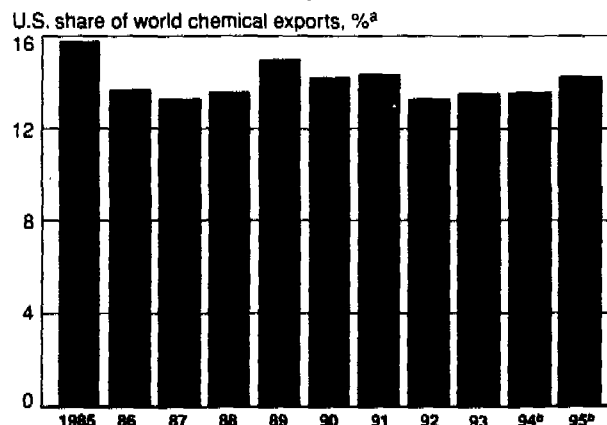
Source: Department of Commerce

U.S. chemical trade balance grew again ...



a Running 12-month totals. Source: Bureau of the Census

... as U.S. share of exports also inched up



a U.S. chemical exports as a percentage of total world chemical exports less U.S. chemical imports. b C&EN estimates.

U.S. CHEMICAL TRADE: Asia, Latin America led strong export growth again in 1995

\$ Millions	1992		1993		1994		1995		% change, 1994-95	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
European Union	\$12,050	\$12,067	\$11,599	\$12,249	\$12,868	\$13,574	\$14,682	\$15,698	14%	16%
Canada	7,285	4,950	8,224	5,494	9,416	6,679	10,653	8,150	13	22
Latin America	7,222	1,582	7,715	1,737	9,337	2,290	11,465	2,859	23	25
Japan	4,708	3,175	4,966	3,572	5,201	4,181	6,129	5,107	18	22
Communist Asia	1,208	509	843	576	1,529	741	2,027	876	33	18
Rest of Asia	7,054	1,589	7,431	1,676	8,500	1,917	11,273	2,168	33	13
Australia	1,432	332	1,218	177	1,270	270	1,555	227	22	-16
Middle East	766	408	762	506	777	766	900	958	16	25
Africa	609	108	607	126	577	148	610	112	6	-24
Eastern Europe	174	270	263	429	246	802	273	1,019	11	27
Other	1,448	2,694	1,438	1,960	1,878	2,039	2,547	3,204	14	26
TOTAL	\$43,956	\$27,684	\$45,066	\$28,502	\$51,600	\$33,915	\$61,701	\$40,378	20%	19%

Source: Department of Commerce

WORLD CHEMICAL TRADE: Imports expanded in U.S., Japan, Italy, and the U.K.

\$ Millions	1992		1993		1994		1995		% change, 1994-95	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
European Union*	\$110,134	\$94,687	\$114,747	\$91,595	\$140,804	\$115,659	\$157,721	\$132,041	12%	14%
Germany	60,814	39,812	57,868	34,289	66,305	39,139	70,477	43,263	6	11
France	31,343	26,312	31,795	24,540	36,088	28,577	40,821	32,673	13	14
U.K.	23,762	18,491	27,940	20,994	29,847	22,590	33,585	27,343	13	21
Netherlands	26,200	16,813	24,102	16,628	28,685	18,624	32,327	20,988	13	13
Belgium-Luxembourg	24,832	20,695	27,095	21,225	31,824	23,279	35,889	25,339	13	9
Italy	10,661	17,275	13,192	18,590	15,225	22,340	19,575	27,553	29	23
U.S.	43,956	27,684	45,066	28,502	51,600	33,915	61,701	40,378	20	19
Japan	25,760	23,379	23,910	21,316	25,239	21,220	30,077	24,548	19	16
Switzerland	17,977	9,685	18,899	10,025	19,866	10,605	20,332	10,978	2	4
Canada	4,738	6,909	5,447	8,578	7,120	10,773	8,882	12,405	25	15
WORLD	\$333,245	\$333,245	\$330,291	\$330,291	\$379,835^b	\$379,835^b	\$436,810^b	\$436,810^b	15%	15%

a. Includes, in addition to listed countries, Denmark, Ireland, U.S. share of world chemical exports, Spain, and Greece: 1992, 1993, and 1994 data for Germany revised to include all 16 German states. b. C&EN estimates. Source: European Chemical Industry Council (CEPIC)

U.S. TRADE, BY PRODUCTS: Exports, imports in all categories grew strongly

\$ Millions	1992		1993		1994		1995		% change, 1994-95	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
Organic chemicals	\$10,993	\$9,366	\$11,076	\$9,279	\$12,826	\$10,799	\$16,395	\$13,325	28%	23%
Plastics in primary form	7,178	2,247	7,224	2,520	8,675	3,512	10,756	4,331	24	23
Medicinals & pharmaceuticals	5,357	3,812	5,750	4,135	6,093	4,680	6,554	5,544	8	18
Inorganic chemicals	4,119	3,300	3,809	3,284	4,068	4,105	4,581	4,655	13	13
Plastics in nonprimary form	3,076	2,046	3,517	2,328	3,810	2,422	4,337	2,821	14	16
Essential oils & perfume materials	2,631	1,712	3,046	1,808	3,536	1,995	3,943	2,309	12	16
Dyeing, tanning & coloring materials	1,867	1,626	2,013	1,700	2,323	1,868	2,621	2,080	13	11
Fertilizers, manufactured	2,372	952	1,797	1,136	2,699	1,296	3,226	1,392	20	7
Other	6,363	2,623	6,834	2,312	7,570	3,238	9,288	3,921	23	21
TOTAL	\$43,956	\$27,684	\$45,066	\$28,502	\$51,600	\$33,915	\$61,701	\$40,378	20%	19%

Source: Department of Commerce

6 FOREIGN CHEMICAL INDUSTRIES - CANADA

The Canadian chemical industry posted strong growth in 1995. And Canada's chemical producers' dependence on the U.S. export and import markets lessened further in 1995, as both U.S. chemical export and import share continued to decline. The Canadian Chemical Producers' Association (CCPA), with a membership of 68 companies, reported that member companies posted record sales, profits, and exports for 1995. Sales for those companies rose 17% from the previous year.

Canadian chemical exports reached nearly \$11 billion in 1995, compared with nearly \$8.5 billion in 1994. Chemical imports were nearly \$12 billion, compared with \$10 billion in 1994. Therefore, the chemical trade deficit fell to \$1.1 billion in 1995, from \$1.6 billion in 1994. Export growth benefited from an increase in both organic chemicals and synthetic rubber and plastic materials; exports of each grew about 40% from 1994.

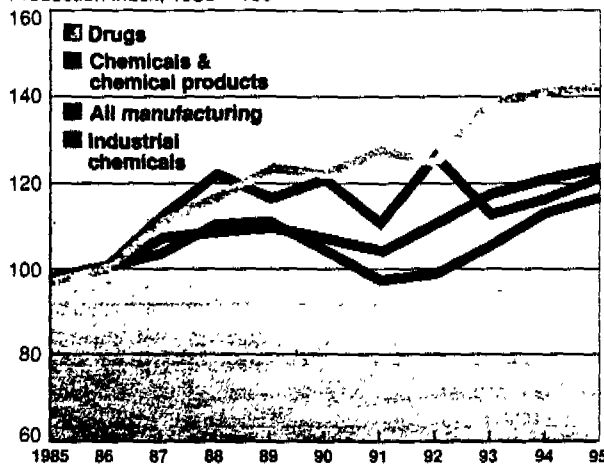
"There's no question that we see this as the top of what appears to be an eight-year cycle, and our forecasts tell us we can look forward to sustained growth in volume in 1996," says Bernard West, CCPA's chairman.

Much of the industry's growth in 1995 was attributed to chemical prices. CCPA reported, on average, that prices were up 14% last year from 1994. But based on member company outlooks, both prices and margins have peaked and "the industry will be hard-pressed to register a gain in

the dollar value of sales revenue in 1996." Prices are projected to drop 7% this year, causing a nearly 3% decline in the value of chemical sales.

Canada's chemical production grew modestly

Production index, 1986 = 100



Source: Statistics Canada

COMPANY RESULTS: Methanex's sales fell

\$ Millions (U.S.)	Sales	Net income ^a	Profit margin ^b	Capital expenditures	Employees (thousands)
Celanese Canada					
1995	\$470.0	\$82.0	17.4%	\$55.0	1.5
1994	458.0	73.0	15.9	12.2	1.5
1993	355.6	44.2	12.4	15.8	1.6
1992	326.9	26.7	8.2	11.0	1.5
DuPont Canada					
1995	\$1,335.3	\$132.7	9.9%	\$90.2	3.7
1994	1,221.9	113.1	9.3	62.4	3.7
1993	1,144.5	47.8	4.2	66.7	4.0
1992	1,032.5	59.6	5.8	79.0	4.1
Methanex					
1995	\$1,249.2	\$200.1	16.0%	na	na
1994	1,487.9	440.7	29.8	na	na
1993	533.4	10.6	2.0	na	na
1992	116.2	-8.6	-7.4	na	na
Nova Corp.					
1995	\$3,266.8	\$511.7	15.7%	\$543.7	5.7
1994	2,895.8	419.1	14.5	359.3	6.6
1993	2,429.3	139.2	5.7	325.1	6.3
1992	2,222.3	110.8	5.0	176.4	6.3
Potash Corp. of Saskatchewan					
1995 ^c	\$927.3	\$163.0	17.6%	na	4.6
1994	416.0	93.2	22.4	na	1.7
1993	255.6	45.7	17.9	na	1.8
1992	252.8	40.7	16.1	na	1.4

Note: Monetary statistics for all years converted from Canadian dollars to U.S. dollars on the basis of the 1995 average exchange rate of \$1.00 U.S. = \$1.372 Canadian. a Excludes extraordinary gains and losses. b Net income as a percentage of sales. c Acquired Texasgulf in March 1995 and White Springs Agricultural Chemicals in September 1995. na = not available.

PRODUCTION: Most chemicals grew

Thousands of metric tons	1992	1993	1994	1995	% change 1994-95
INORGANIC CHEMICALS					
Aluminum sulfate	170	193	173	171	-2%
Ammonia	3,770	4,181	4,384	4,655	6
Ammonium nitrate	1,064	1,025	938	1,031	10
Carbon black	161	166	167	176	5
Chlorine	1,364	1,170	1,074	1,131	5
Hydrochloric acid	168	134	134	138	3
Hydrogen peroxide	119	128	143	145	1
Nitric acid	960	917	910	991	9
Sodium chlorate	728	830	962	1,020	6
Sodium hydroxide	1,428	1,225	1,153	1,182	3
Sulfuric acid	3,225	3,713	4,065	4,220	4
ORGANIC CHEMICALS					
Benzene	686	685	770	781	1
Butadiene	181	174	170	205	21
Ethylene	2,521	2,536	2,716	3,130	15
Formaldehyde	133	154	168	na	—
Methanol	2,154	2,253	na	na	—
Propylene	753	766	716	719	0
Toluene	372	337	288	277	-4
Urea	2,550	3,090	3,153	3,331	6
Xylenes	339	311	356	434	22
PLASTICS					
Polyesters, unsaturated	40	45	60	58	-3
Polyethylene, high density	648	652	694	765	10
Polyethylene, low density	1,041	1,090	1,214	1,308	8
Polystyrene ^a	167	158	177	189	7
Polyvinyl chloride	385	419	470	434	-8

a Includes acrylonitrile-butadiene-styrene resins. na = not available. Source: Statistics Canada

SHIPMENTS: Industrial chemicals and plastics were up strongly in Canada last year

Millions (U.S.)	1990	1991	1992	1993	1994	1995	% change 1994-95
All manufacturing	\$214,268	\$201,539	\$204,373	\$225,774	\$254,951	\$282,777	11%
Chemicals & chemical products	16,271	15,767	16,040	16,371	18,072	20,006	11
Industrial chemicals, inorganic	1,872	1,733	1,752	1,899	1,989	2,281	15
Industrial chemicals, organic	3,766	3,398	3,416	3,191	3,280	3,861	18
Plastics & synthetic resins	2,054	1,884	1,886	1,932	2,931	3,595	23
Medicinals & pharmaceuticals	2,542	2,747	2,820	3,165	3,384	3,422	1
Adhesives	140	131	139	229	266	273	3
Paints & varnishes	1,179	1,138	1,096	1,086	1,135	1,163	2
Soaps & cleaners	1,106	1,215	1,374	1,185	1,125	1,120	0
Toilet preparations	716	764	808	792	715	697	-2
Printing ink	192	173	207	213	244	254	4

Note: Monetary statistics for all years are converted from Canadian dollars to U.S. dollars on the basis of the 1995 average exchange rate of \$1.00 U.S. = \$1.372 Canadian.
Source: Statistics Canada

CHEMICAL EXPORTS: Strong growth

\$ Millions (U.S.)	1992	1993	1994	1995
Inorganic chemicals	\$1,171	\$1,248	\$1,469	\$1,630
Organic chemicals	1,330	1,436	1,735	2,419
Fertilizers & fertilizer materials	1,221	1,271	1,560	1,683
Synthetic rubber & plastic materials	1,972	2,282	2,799	3,946
Other chemical products	709	829	891	1,113
TOTAL	\$6,403	\$7,066	\$8,454	\$10,791
Exports to U.S.	\$4,777	\$5,487	\$5,072	\$5,900
U.S. share	75%	78%	60%	55%

Note: Converted from Canadian dollars at the following exchange rates: 1992: \$1.00 U.S. = \$1.271 Canadian; 1993: \$1.00 U.S. = \$1.295 Canadian; 1994: \$1.00 U.S. = \$1.366 Canadian; 1995: \$1.00 U.S. = \$1.372 Canadian. Source: Statistics Canada

CHEMICAL IMPORTS: U.S. share dropped

\$ Millions (U.S.)	1992	1993	1994	1995
Organic chemicals	\$1,732	\$2,036	\$2,430	\$2,905
Synthetic rubber & plastic materials	2,560	2,744	3,307	4,115
Other chemical products	3,012	3,793	4,314	4,875
TOTAL	\$7,304	\$8,573	\$10,051	\$11,894
Imports from U.S.	\$5,571	\$6,571	\$6,010	\$6,536
U.S. share	76%	77%	60%	55%

Note: Converted from Canadian dollars at the following exchange rates: 1992: \$1.00 U.S. = \$1.271 Canadian; 1993: \$1.00 U.S. = \$1.295 Canadian; 1994: \$1.00 U.S. = \$1.366 Canadian; 1995: \$1.00 U.S. = \$1.372 Canadian. Source: Statistics Canada

PRICES: Ammonia, urea, plastics surged

Price index, 1986 = 100	1992	1993	1994	1995	% change 1994-95
All commodities	109.1	112.7	119.2	128.8	8%
Chemicals & chemical products	113.6	116.4	124.0	135.4	9
Inorganic industrial chemicals	102.7	105.4	111.5	128.8	16
Sulfuric acid	99.5	95.4	89.7	94.1	5
Chlorine	82.4	86.3	107.9	109.6	2
Ammonia	77.9	85.4	105.5	141.3	34
Organic industrial chemicals	111.7	119.7	139.4	158.6	14
Benzene-toluene-xylene	104.9	97.6	112.1	115.5	3
Olefins	139.2	153.6	175.0	183.6	5
Urea	86.9	93.2	106.0	139.3	31
Synthetic resins	97.7	101.4	116.3	139.3	20
Polyethylene ^a	92.2	90.3	105.7	137.2	30
Polystyrene	109.9	114.9	130.5	165.8	27
Thermosets	112.3	127.8	146.1	155.5	6
Agricultural chemicals	120.6	121.7	123.6	127.1	3
Mixed fertilizers	107.0	106.2	113.6	131.0	15
Pharmaceuticals	134.6	136.4	137.2	137.3	0
Paints & varnish	121.4	121.9	124.3	130.9	5
Soaps & cleansers	118.3	118.4	116.9	117.5	1
Toilet preparations	119.5	121.4	125.4	125.3	0
Pigments, lakes & toners	108.2	112.1	117.1	124.0	6
Inks	104.7	105.6	106.0	110.2	4

^a Includes both high- and low-density polyethylene. Source: Statistics Canada

TOTAL TRADE BALANCE: Surplus swelled . . .

\$ Billions (U.S.)	1992	1993	1994	1995	% change 1994-95
Total exports	\$121.0	\$136.5	\$165.4	\$192.1	16%
Total imports	116.4	130.8	148.4	164.3	11
Trade balance	4.6	5.7	17.0	27.8	64

Note: Converted from Canadian dollars at the following exchange rates: 1992: \$1.00 U.S. = \$1.271 Canadian; 1993: \$1.00 U.S. = \$1.295 Canadian; 1994: \$1.00 U.S. = \$1.366 Canadian; 1995: \$1.00 U.S. = \$1.372 Canadian. nm = not meaningful. Source: Statistics Canada

. . . while chemical trade deficit improved

\$ Millions (U.S.)	1992	1993	1994	1995	% change 1994-95
Chemical exports	\$6,403	\$7,066	\$8,454	\$10,791	28%
Chemical imports	7,304	8,573	10,051	11,894	18
Chemical trade balance	-901	-1,506	-1,596	-1,103	nm

6 FOREIGN CHEMICAL INDUSTRIES - EUROPE

In Europe, strong three quarters led industry

In 1995, the picture was only slightly less rosy for the European chemical industry than in 1994, when the industry decisively turned the corner from recession to upturn.

Chemical production in Western Europe grew 2.5% in volume in 1995, although growth varied widely among countries. Although the year as a whole showed growth in output and demand, the statistics do not take into account the quarterly records. After an exceptionally strong first-quarter performance, and strong second and third quarters, the industry saw a serious slump in the fourth quarter to levels below those reached in the corresponding quarter in 1994.

Customers bought heavily in the first several months of 1995, responding both to the pipeline effects of genuine consumer demand and in anticipation of rising prices. In fact, producer prices rose more than 7%, on average, in 1995 after several years of stability. Their increase in the first half extended an upward trend that began late in 1994.

However, by the third quarter, consumer demand began to flatten slightly, and prices peaked then fell back to more sustainable levels. Chemical industry customers stopped buying. The falloff was dramatic, but it was camouflaged in yearly totals.

A similar picture was seen in European chemical company sales and profits. A yearly picture shows substantial growth over 1994, with particularly strong recovery in profits. A quarterly picture, however, would show growth in the first nine months, then a drop in the last three.

On the other hand, the synthetic fibers industry in Europe saw a discouraging drop in fiber production across the board. Production of different types of fibers fell in most

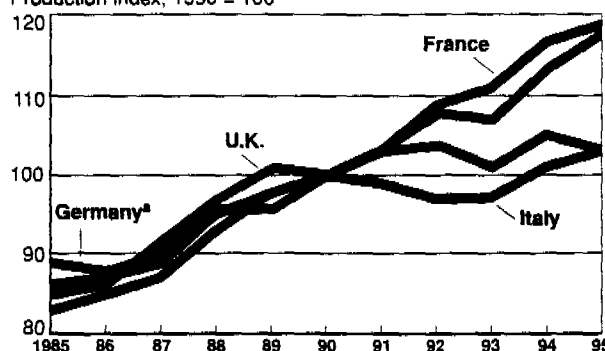
Western European countries, although it tended to stabilize or even pick up in Central European countries. However, viscose and rayon fibers—riding the wave of current popularity in European fashion—were sheltered, with most countries reporting increases in production.

The drive to shed jobs has tapered off, according to individual company reports and country statistics compiled by the European Chemical Industry Council (CEPIC).

That is true even in some of the chemical industries of Central European countries where chemical federations are being integrated into the CEPIC network.

Output dipped in Germany, rose elsewhere

Production index, 1990 = 100



a Data before 1994 are for former West Germany only.
Source: European Chemical Industry Council (CEPIC)

WESTERN EUROPEAN CHEMICAL INDUSTRY TRENDS: Sales were up across the board

\$ Billions	1991	1992	1993	1994	1995
GERMANY^a					
Sales	\$115.7	\$119.5	\$114.2	\$122.2	\$125.4
Exports	58.1	60.8	57.9	66.3	70.5
Imports	40.1	39.8	34.3	39.1	43.3
Capital spending	9.1	9.8	8.6	8.4	8.5
Production index ^b	102.1	103.1	101.0	105.2	102.7
Price index ^b	99.4	97.5	95.4	97.0	102.0
Employees (thousands)	594	655	609	570	538

FRANCE					
Sales	\$72.6	\$73.1	\$73.9	\$79.0	\$85.3
Exports	30.5	31.3	31.8	36.1	40.8
Imports	25.7	26.3	24.5	28.6	32.7
Capital spending	4.5	4.3	3.9	3.2	3.2
Production index ^b	102.1	108.4	110.5	117.0	119.2
Price index ^b	100.1	98.8	96.8	97.1	101.4
Employees (thousands)	264	260	255	250	248

\$ Billions	1991	1992	1993	1994	1995
U.K.					
Sales	\$45.6	\$46.6	\$52.1	\$56.0	\$61.6
Exports	22.0	23.8	27.9	29.9	33.6
Imports	17.3	18.5	21.0	22.6	27.3
Capital spending	3.8	3.3	3.0	3.0	3.1
Production index ^b	103.0	107.2	107.4	113.4	117.7
Price index ^b	104.0	105.7	110.6	113.4	120.2
Employees (thousands)	306	305	293	237	236

ITALY					
Sales	\$38.7	\$39.3	\$41.1	\$44.2	\$50.9
Exports	9.5	10.7	13.2	15.2	19.6
Imports	16.1	17.3	18.6	22.3	27.5
Capital spending	2.3	2.2	2.0	1.8	2.0
Production index ^b	98.9	95.8	97.2	100.5	103.2
Price index ^b	102.8	97.5	104.9	110.4	125.8
Employees (thousands)	215	208	200	193	191

\$ Billions	1991	1992	1993	1994	1995
BELGIUM					
Sales	\$32.3	\$32.3	\$32.1	\$35.6	\$39.0
Exports ^c	24.2	24.8	27.1	31.8	35.9
Imports ^c	20.4	20.7	21.2	23.3	25.4
Capital spending	2.8	2.5	1.8	1.7	1.9
Production index ^b	98.3	108.9	106.9	107.2	114.2
Price index ^b	99.3	98.7	98.1	100.9	107.8
Employees (thousands)	99	99	97	94	94
SPAIN					
Sales	\$32.3	\$23.8	\$23.9	\$27.7	\$32.0
Exports	5.2	4.2	4.4	6.7	8.4
Imports	9.5	8.8	9.4	12.0	15.2
Capital spending	0.8	0.9	0.9	0.9	1.3
Production index ^b	98.8	82.5	93.4	112.1	115.0
Price index ^b	100.6	88.5	100.7	105.6	118.9
Employees (thousands)	225	129	125	122	122
NETHERLANDS					
Sales	\$27.4	\$27.0	\$24.8	\$28.0	\$31.0
Exports	26.9	26.2	24.1	28.7	32.3
Imports	16.1	16.8	16.6	18.6	21.0
Capital spending	2.3	2.1	1.7	1.6	1.7
Production index ^b	100.0	99.1	94.0	99.0	102.0
Price index ^b	97.8	97.8	91.0	98.0	103.0
Employees (thousands)	92	89	85	81	81
SWITZERLAND					
Sales	\$18.9	\$20.3	\$21.6	\$23.8	\$25.0
Exports	16.2	18.0	18.9	19.9	20.3
Imports	9.0	9.7	10.0	10.6	11.0
Capital spending	100.8	104.4	112.7	129.1	141.9
Production index ^b	100.0	100.2	102.8	99.0	95.5
Price index ^b	72	72	72	70	70
Employees (thousands)	72	72	72	70	70
SWEDEN					
Sales	\$6.9	\$6.9	\$7.9	\$8.3	\$9.7
Exports	4.0	4.2	5.4	6.3	7.4
Imports	4.3	4.3	5.3	6.3	7.6
Capital spending	0.6	0.6	0.5	0.6	0.8
Production index ^b	92.3	99.1	115.5	145.9	149.5
Price index ^b	103.6	101.6	107.0	115.2	132.3
Employees (thousands)	40	37	36	30	31
IRELAND					
Sales	\$5.1	\$5.9	\$6.3	\$8.3	\$8.8
Exports	4.3	5.2	5.6	7.6	8.0
Imports	2.7	2.7	2.8	3.6	3.9
Production index ^b	117.7	142.9	156.8	187.5	na
Price index ^b	98.5	100.0	107.0	106.5	109.1
Employees (thousands)	15	15	15	17	17
POLAND					
Sales	\$1.8	\$2.5	\$3.7	\$4.6	\$6.7
Exports	0.4	0.6	0.8	1.2	na
Imports	0.4	1.2	1.9	0.3	na
Capital spending	0.2	0.2	0.2	0.4	0.5
Production index ^b	na	na	104.9	121.0	136.0
Price index ^b	133.4	153.1	163.0	259.0	341.0
Employees (thousands)	148	160	164	137	140
AUSTRIA					
Sales	\$9.0	\$6.1	\$5.8	\$6.0	\$6.3
Exports	4.2	4.2	4.2	4.7	na
Imports	5.7	5.8	5.8	6.5	na
Capital spending	0.9	1.0	0.8	0.6	0.6
Production index ^b	105.2	101.3	98.2	105.5	114.4
Employees (thousands)	54	33	50	49	49
TURKEY					
Sales	\$0.2	\$0.9	\$1.1	\$3.4	\$6.0
Exports	0	0.2	0.2	0.4	0.7
Imports	0.1	0.6	0.6	2.0	4.6
Capital spending	na	0	0	na	na
Production index ^b	71.7	100.0	108.4	na	na
Price index ^b	71.7	132.0	196.0	632.0	1,135.0
Employees (thousands)	40	39	38	41	45

\$ Billions	1991	1992	1993	1994	1995
DENMARK					
Sales	\$4.9	\$5.3	\$5.2	\$5.4	\$5.8
Exports	3.9	4.2	4.3	4.9	5.3
Imports	4.2	4.3	4.0	4.7	5.1
Capital spending	0.4	0.4	0.5	0.4	na
Production index ^b	100.7	107.0	109.0	122.0	134.0
Price index ^b	101.4	97.7	100.5	105.0	107.0
Employees (thousands)	27	27	28	29	na
FINLAND					
Sales	\$3.6	\$3.7	\$4.1	\$4.6	na
Exports	1.5	1.6	2.0	2.3	na
Imports	2.3	2.7	3.0	3.5	na
Capital spending	0.4	0.2	0.2	0.2	na
Production index ^b	94.1	92.9	93.5	108.4	110.5
Price index ^b	101.7	104.5	107.1	109.1	110.3
Employees (thousands)	19	19	18	18	na
NORWAY					
Sales	\$3.4	\$3.4	\$3.5	\$3.9	\$3.9
Exports	2.2	2.2	2.2	2.4	2.7
Imports	2.3	2.4	2.6	2.7	3.0
Capital spending	0.2	0.2	0.2	0.3	0.6
Production index ^b	97.6	96.4	100.3	103.8	105.5
Price index ^b	101.4	97.7	100.5	102.4	106.4
Employees (thousands)	14	12	12	13	13
HUNGARY					
Sales	\$1.5	\$1.5	\$1.6	\$2.2	\$3.3
Exports	0.6	0.6	0.6	0.9	1.7
Imports	1.0	1.0	1.2	1.8	2.5
Capital spending	0.1	0.1	0.1	0.1	0.2
Production index ^b	87.2	70.4	71.0	75.1	76.3
Price index ^d	133.4	153.1	163.0	194.1	255.0
Employees (thousands)	70	59	57	56	53
CZECH REPUBLIC					
Sales	na	\$1.9	\$1.8	\$2.9	\$3.1
Exports	na	1.2	1.3	1.6	1.8
Imports	na	1.4	1.7	2.1	2.8
Capital spending	na	na	na	0.4	na
Production index ^b	na	55.7	52.0	65.9	65.4
Price index ^d	na	229.7	240.3	240.6	263.0
Employees (thousands)	na	na	na	43	42
SLOVAKIA					
Sales	na	\$3.1	\$3.2	\$1.3	\$1.5
Exports	na	0.6	1.1	1.1	1.2
Imports	na	0.4	0.6	1.1	1.1
Capital spending	na	0.3	0.3	0.1	0.1
Production index ^b	na	78.0	74.0	65.5	72.0
Price index ^d	na	221.2	216.5	225.9	261.6
Employees (thousands)	na	49	40	28	27
GREECE					
Sales	na	na	na	na	\$1.0
Exports	na	na	na	na	0.2
Imports	na	na	na	na	0.5
Capital spending	na	na	na	na	na
Production index ^b	na	na	na	na	125.0
Price index ^b	na	na	na	na	160.0
Employees (thousands)	na	na	na	na	5
PORTUGAL					
Sales	\$5.0	na	na	na	na
Exports	0.9	na	na	na	na
Imports	2.1	na	na	na	na
Production index ^b	na	na	na	73.6	72.7
Employees (thousands)	na	na	na	na	na

Note: Monetary statistics for all years are converted from local currency to U.S. dollars on the basis of 1995 conversion rates as follows: \$1.00 = 10.08 Austrian schillings; 29.48 Belgian francs; 26.54 Czech crowns; 5.60 Danish crowns; 4.37 Finnish marks; 4.99 French francs; 1.43 German marks; 231.58 Greek drachmas; 125.68 Hungarian forints; 0.624 Irish pounds; 1.630 Italian lire; 1.61 Netherlands guilders; 6.33 Norwegian crowns; 2.4250 new Polish zlotys; 150 Portuguese escudos; 26.6 Slovakian crowns; 124.7 Spanish pesetas; 7.13 Swedish crowns; 1.18 Swiss francs; 45.845 Turkish lire; and 0.634 British pounds. a All 16 German states included for 1992-95, data for 1991 are for 11 former West German states only b 1990 = 100 c Includes Luxembourg d 1989 = 100 na = not available.

Source: European Chemical Industry Council (CEIC)

MAN-MADE FIBERS: Production slipped in Western Europe, held steady or grew in Eastern Europe

Millions of lb	1991		1992		1993		1994		1995		% change, 1994-95	
	Non-cellulosics	Cellulosics	Non-cellulosics	Cellulosics	Non-cellulosics	Cellulosics	Non-cellulosics	Cellulosics	Non-cellulosics	Cellulosics	Non-cellulosics	Cellulosics
Germany ^a	1,779	382	1,804	360	1,797	392	1,867	434	1,793	442	-4%	2%
U.S.S.R./C.I.S. ^b	1,834	1,119	1,445	650	1,317	531	1,450	387	1,455	400	0	3
Italy	1,482	79	1,528	71	1,378	68	1,528	63	1,386	69	-9	10
Turkey	708	24	739	23	746	23	782	24	780	25	0	4
Benelux countries	606	115	598	110	593	99	695	115	682	117	-2	2
Spain	558	66	595	49	578	20	672	61	624	79	-7	30
U.K. ^{b,c}	514	218	529	242	512	213	500	245	495	240	-1	-2
Austria	84	262	90	282	82	289	93	296	91	307	-2	4
Poland	137	56	189	49	199	51	251	51	247	49	-2	-4
France	260	0	269	0	260	0	286	0	286	0	0	nm
Ireland	210	0	240	0	240	0	267	0	na	0	—	nm
Czech Republic ^d	178	90	176	86	167	90	169	92	175	92	4	0
Romania ^b	288	84	242	63	228	29	220	26	220	25	0	-4
Switzerland	238	0	247	0	212	0	220	0	215	0	-2	nm
Portugal	141	0	163	0	148	0	152	0	135	0	-11	nm
Finland	24	104	24	124	30	126	35	129	na	126	—	-2
Bulgaria ^b	151	9	103	9	96	9	96	8	97	8	1	0
Hungary ^b	61	0	27	0	32	0	55	0	58	0	6	nm

a. Data for 1991 are for West Germany only; subsequent years are for unified Germany. b. C&EN estimates for 1995. c. Figures for 1992, 1993, and 1994 revised to show acetate tow with cellulosics. d. Includes Slovakia. na = not available. nm = not meaningful. Source: International Rayon & Synthetic Fibers Committee

PRODUCTION: Germany posted solid gains; mixed results in other countries

Millions of lb	1992	1993	1994	1995	% change 1994-95
FRANCE					
Sulfuric acid	6,642	5,061	4,907	5,240	7%
Hydrochloric acid	1,327	1,260	1,319	838	-36
Chlorine	3,091	3,073	3,248	3,114	-4
Sodium hydroxide	3,250	3,240	3,438	3,300	-4
Carbon black	510	450	517	570	10
Ammonia	3,097	3,263	3,260	3,257	0
Benzene	1,618	1,604	1,683	1,742	4
Toluene	70	113	125	129	3
Ethylene	5,829	5,600	6,154	5,868	-5
Propylene	3,971	3,667	4,105	4,285	4
Butadiene	731	706	769	726	-6
Formaldehyde	90	92	265	259	-2
Polyethylene	2,954	2,930	3,140	3,118	-1
Polypropylene	1,975	2,139	2,425	2,352	-3
Polystyrene	1,119	1,059	1,146	1,120	-2
Polyvinyl chloride	2,416	2,587	2,639	2,395	-9
Synthetic rubber	1,098	1,069	1,140	1,346	18
Nitrogen fertilizers ^a	4,006	3,932	3,913	4,160 ^b	6
Phosphate fertilizers ^c	607	332	359	382	6
GERMANY^d					
Sulfuric acid	6,851	6,691	6,802	8,209	21%
Hydrochloric acid	1,836	1,819	1,904	1,918	1
Nitric acid	2,869	4,390	4,455	5,189	17
Chlorine	5,870	6,011	6,898	7,437	8
Sodium hydroxide	6,174	6,568	7,156	7,739	8
Sodium carbonate	2,726	3,490	3,037	4,757	57
Sodium sulfate	229 ^e	239	224	na	—
Carbon black	828	736	657	747	14
Ammonia	3,480	4,621	5,796	6,595	14
Benzene	3,383	3,341	4,277	5,982	40
Toluene	1,184	988	1,313	1,161	-12
Xylenes	1,233	1,235	1,473	1,589	8
Aniline	298	251	288	na	—
Ethylene	7,346	8,591	9,201	9,754	6
Propylene	4,405	5,366	5,870	6,414	9
Butadiene	1,414	1,939	2,039	2,129	4
Ethylene oxide	1,378	1,371	1,445	1,648	14
Ethylene glycol	501	509	489	623	27
Propylene oxide	1,226	1,327	1,561	1,631	4
Propylene glycol	391	424	502	494	-2
n-Butanol	753	696	870	990	14
Acetaldehyde	721	766	790	850	8
Acetic acid	721	749	892	1,024	15
Ethanol	199	342	365	na	—
Methanol	1,691	2,645	3,164	3,107	-2
Formaldehyde	1,478	1,411	1,594	1,556	-2
Phthalic anhydride	389	460	453	469	4

Millions of lb	1992	1993	1994	1995	% change 1994-95
Polyethylene^f					
Polypropylene	1,225	1,385	1,555	1,079	-31
Polyvinyl chloride	2,482	2,661	2,780	2,877	4
Synthetic rubber	1,076	1,284	1,415	1,177	-17
Nitrogen fertilizers	1,419 ^g	2,867 ^g	2,637 ^g	2,569 ^g	-3
Phosphate fertilizers	91 ^c	378 ^h	364 ^h	87 ^c	-76
ITALYⁱ					
Sulfuric acid	6,102	5,067	4,346	4,800	10%
Nitric acid	2,065	1,595	1,170	1,294	11
Hydrochloric acid	1,265	1,217	1,281	1,340	5
Chlorine	1,946	1,901	1,959	1,959	0
Sodium hydroxide	2,123	2,055	2,096	2,029	-3
Sodium perborate	286	277	180	149	-17
Carbon black	402	377	419	457	9
Ammonia	2,988	1,948	na	na	—
Benzene	1,137	1,320	na	na	—
Toluene	285	431	na	na	—
Xylenes	710	325	na	na	—
Formaldehyde	191	131	128	106	-17
Polyethylene	2,039	2,091	2,139	2,315	8
Polystyrene	674	555	609	598	-2
Polyvinyl chloride	1,358	1,346	1,318	1,266	-4
Nitrogen fertilizers ^a	5,802	5,017	3,763	3,515	-7
U.K.^j					
Sulfuric acid	2,170	2,699	2,134	2,153	1%
Hydrochloric acid	328	463	381	437	15
Chlorine	1,980	1,980	832	607	-27
Calcium carbonate	na	na	357	361	1
Sodium hydroxide	1,993	na	1,775	1,704	-4
Carbon black	na	361	395	413 ^k	5
Benzene	1,717	818 ^l	1,149	1,462	27
Toluene	na	257 ^m	185	226	22
Ethylene	4,263	2,557 ⁿ	2,847	2,571	-10
Propylene	1,835	632	1,701	1,432 ⁿ	-16
Formaldehyde	131	214 ^l	187	265	42
Polyethylene ^l	693	658 ^l	1,598	1,720	8
Polypropylene	721	821 ^l	484	394	-19
Polyvinyl chloride	647	724 ^l	799	854	7
Synthetic rubber	558	762 ^l	979	945	-4

a As N. b C&EN estimate based on 10 months' data. c As P₂O₅. d Data for 1992 are for West Germany only; subsequent years are for unified Germany; 1995 data are C&EN estimates based on six months' data. The classification system changed effective first-quarter 1995, and data are not necessarily directly comparable. e C&EN estimate based on nine months' data. f High density. g Compounded nitrogen fertilizers. h Compounded phosphate fertilizers. i C&EN estimate based on 11 months' data. j U.K. data collection revised in 1993 to be based on manufacturers' sales; subsequent years' data are not comparable unless shown as revised; 1995 data are C&EN estimates based on nine months' data. k C&EN estimate based on three months' data. l Revised. m C&EN estimate based on six months' data. na = not available. Sources: "U.K. Markets," CSO/TNAGB, government agencies for each country

6 FOREIGN CHEMICAL INDUSTRIES - ASIA - PACIFIC

The Asia-Pacific region generally had a stronger year in 1995 than it did the year before. In Japan, which has been especially weak, chemical production grew relatively strongly, but sales and profitability for chemical producers continued only the modest growth begun the previous year; the country's chemical industry still has a long way to go to get back to the high profitability of the late 80s.

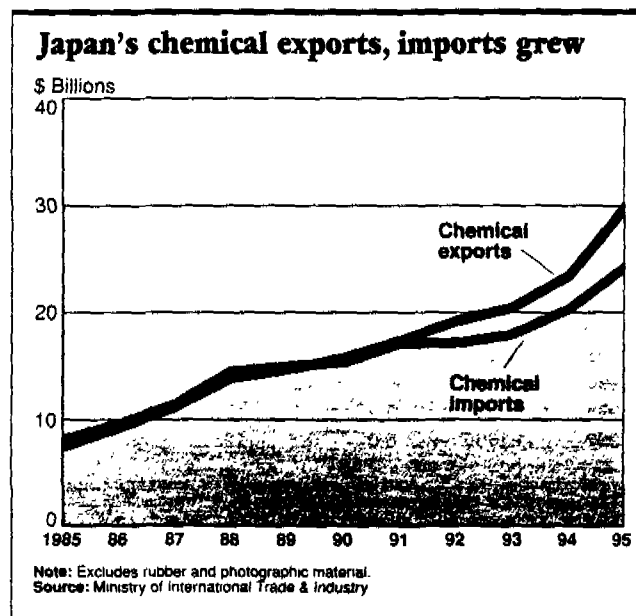
Other Asia-Pacific countries did better, however. In Taiwan, all sectors of the chemical industry showed solid growth in output. South Korea posted a 7% increase in chemical production, with chemical prices rising 12%. In China, for which composite data are unavailable, production of individual products rose strongly, with most basic organic and inorganic chemicals in the double-digit range.

JAPAN

INDUSTRY TRENDS: Most chemicals grew

Production index, 1990 = 100	1992	1993	1994	1995	% change 1994-95
All manufacturing	95.5	91.2	92.0	94.9	3%
All chemicals ^a	102.0	100.1	105.5	112.4	7
Petrochemicals	104.5	102.2	109.4	120.3	10
Aromatics	119.3	127.1	132.9	149.3	12
Alkalies & chlorine	97.0	94.2	93.8	98.6	5
Inorganic chemicals & pigments	96.2	90.8	90.9	95.6	5
Organic chemicals	105.7	102.0	105.4	116.5	11
Cyclic intermediates & dyes	105.9	104.8	116.3	126.0	8
Plastics	99.4	96.3	102.2	110.4	8
Synthetic fibers	106.3	106.9	108.8	116.1	7
Synthetic rubber	97.5	91.9	94.7	105.0	11
Fertilizers	95.5	92.9	91.4	91.7	0

^a Excludes pharmaceuticals. Source: Ministry of International Trade & Industry



PRODUCTION: Inorganics mixed, others up

Thousands of metric tons, unless otherwise indicated	1992	1993	1994	1995	% change 1994-95
INORGANIC CHEMICALS					
Ammonia	1,788	1,708	1,713	1,831	7%
Ammonium chloride	233	221	213	210	-1
Ammonium sulfate	1,830	1,681	1,710	1,771	4
Calcium carbide	270	245	246	273	11
Calcium superphosphate	396	393	395	367	-7
Carbon black	771	702	698	757	8
Chlorine, liquid	978	900	872	942	8
Hydrochloric acid	706	689	665	621	-7
Nitrogen ^a	9,129	8,957	9,098	9,130	0
Oxygen ^a	8,067	7,944	8,277	8,598	4
Sodium carbonate	1,057	1,056	1,050	1,049	0
Sodium hydroxide	3,866	3,777	3,786	4,004	6
Sodium silicate	722	729	831	836	1
Sulfuric acid	7,100	6,937	6,594	6,888	4
Titanium dioxide	252	246	238	249	5

ORGANIC CHEMICALS

Acetaldehyde	391	350	369	395	7
Acetic acid	451	484	519	574	11
Acetone	377	350	354	396	12
Acrylonitrile	621	594	610	663	9
Benzene ^b	3,309	3,327	3,620	4,013	11
Butadiene	851	809	856	991	16
Butanol	371	388	380	424	12
Caprolactam	548	510	519	545	5
Cyclohexane	632	633	640	681	6
Diethyl phthalate	297	279	292	298	2
Ethylene	6,104	5,773	6,125	6,944	13
Ethylene dichloride	2,708	2,735	2,792	2,932	5
Ethylene glycol	560	527	567	709	25
Ethylene oxide	721	680	716	803	12
Methanol	34	58	43	75	74
Octanol	327	312	305	321	5
Phenol	538	513	675	771	14
Phthalic anhydride ^b	165	152	171	170	-1
Propylene	4,536	4,272	4,435	4,956	12
Propylene glycol	302	286	283	304	7
Styrene	2,182	2,167	2,598	2,939	13
Terephthalic acid	1,425	1,553	1,579	1,681	6
Toluene ^b	1,150	1,191	1,219	1,374	13
Toluene diisocyanate	132	137	144	160	11
Urea	725	725	694	719	4
Xylene ^b	3,203	3,462	3,627	4,154	15

PLASTICS

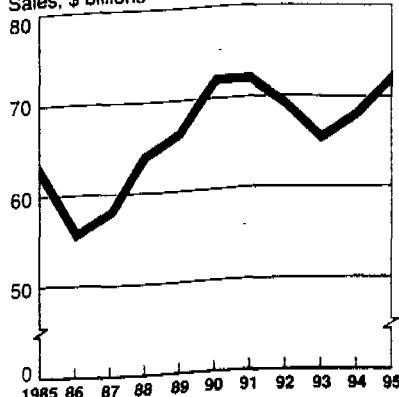
Phenolic resins	356	328	330	327	-1
Polyethylene	2,980	2,762	2,944	3,193	8
Polypropylene	2,038	2,031	2,225	2,502	12
Polystyrene	2,005	1,966	2,099	2,149	2
Polyvinyl chloride	1,981	1,980	2,112	2,274	8

SYNTHETIC RUBBER	1,388	1,310	1,349	1,498	11
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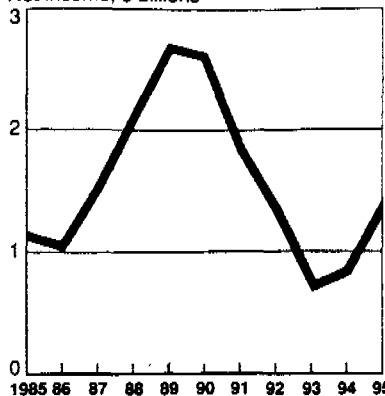
^a Millions of cubic meters. ^b Petroleum-based product only
Source: Ministry of International Trade & Industry

Profitability began to recover on 6% increase in sales

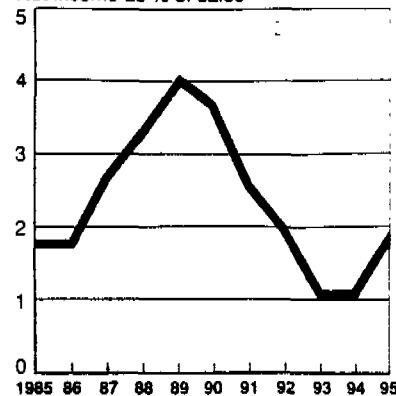
Sales, \$ billions



Net income, \$ billions



Net income as % of sales



Note: Based on results of 12 leading Japanese chemical companies: Asahi Chemical, Danippon Ink & Chemicals, Hitachi Chemical, Mitsubishi Chemical, Mitsui Toatsu Chemicals, Sekisui Chemical, Showa Denko, Sumitomo Chemical, Takeda Chemical Industries, Teijin, Toray Industries, and Ube Industries. The fiscal year for most, but not all, of these companies ends March 31. Monetary statistics for all years converted from yen to U.S. dollars on the basis of the 1995 average exchange rate of \$1.00 U.S. = 94.06 yen.
Sources: BZW Securities, SBC Warburg, Toyo Keizai Shinposha

JAPANESE COMPANY RESULTS: Profit margins improved and losses ended

\$ Millions	Net sales	Net income	Profit margin ^a	Total assets	Employees ^b (thousands)
Asahi Chemical^c					
1995	\$10,837	\$153.4	1.4%	\$11,342	16.3
1994	10,419	116.9	1.1	11,694	17.1
1993	9,958	118.8	1.2	11,603	17.6
1992	10,572	176.5	1.7	11,728	18.1
1991	10,365	312.1	3.0	11,046	15.5
Dainippon Ink & Chemicals^c					
1995	\$5,044	\$63.5	1.3%	\$7,207	7.1
1994	5,008	63.8	1.3	7,442	7.2
1993	4,938	66.5	1.3	7,352	7.3
1992	5,205	74.5	1.4	7,214	7.2
1991	5,501	84.4	1.5	6,878	7.0
Hitachi Chemical^c					
1995	\$2,730	\$44.2	1.6%	\$2,085	4.8
1994	2,604	34.0	1.3	2,084	4.9
1993	2,676	22.7	0.8	2,098	5.2
1992	2,979	22.7	0.8	2,260	5.6
1991	3,309	11.3	0.3	2,331	5.8
Mitsubishi Chemical^{c,d}					
1995	\$11,553	\$91.4	0.8%	\$14,812	13.6
1994	9,196	5.3	0.1	14,314	14.3
1993	7,405	33.9	0.5	10,122	11.3
1992	7,546	53.1	0.7	10,121	10.0
1991	7,732	56.7	0.7	11,120	9.3
Mitsui Toatsu Chemicals^c					
1995	\$4,181	\$43.3	1.0%	\$6,583	5.1
1994	3,987	0	—	7,017	5.5
1993	3,827	3.4	0.1	7,026	5.6
1992	4,201	32.2	0.8	6,745	5.7
1991	4,488	75.6	1.7	6,775	5.6
Sekisui Chemical^c					
1995	\$7,875	\$173.9	2.2%	\$6,469	6.0
1994	7,548	122.2	1.6	7,017	6.0
1993	7,308	119.0	1.6	7,072	6.0
1992	7,171	106.4	1.5	7,110	6.0
1991	6,910	226.0	3.3	6,709	5.8

\$ Millions	Net sales	Net income	Profit margin ^a	Total assets	Employees ^b (thousands)
Showa Denko^c					
1995	\$4,817	\$2.2	0.1%	\$6,708	4.3
1994	4,783	-197.6	—	7,302	5.0
1993	4,919	-242.3	—	7,500	5.3
1992	5,409	70.1	1.3	8,731	5.4
1991	6,132	2.1	—	8,984	5.4
Sumitomo Chemical^c					
1995	\$6,164	\$95.2	1.5%	\$8,581	7.0
1994	5,955	36.3	0.6	8,985	7.5
1993	5,800	-2.9	—	9,050	8.0
1992	6,636	59.2	0.9	9,052	8.0
1991	7,455	162.0	2.2	9,545	7.9
Takeda Chemical Industries^c					
1995	\$6,400	\$440.1	6.9%	\$9,238	10.9
1994	6,081	425.3	7.0	8,505	11.2
1993	5,971	394.1	6.6	8,405	11.2
1992	6,004	336.0	5.6	8,232	11.2
1991	5,963	345.1	5.8	7,899	11.1
Teijin^c					
1995	\$3,438	\$94.7	2.8%	\$5,868	7.2
1994	3,433	63.8	1.9	5,953	7.7
1993	3,305	80.7	2.4	5,949	7.6
1992	3,530	114.7	3.2	6,728	7.2
1991	3,605	158.3	4.4	6,217	6.8
Toray Industries^c					
1995	\$5,776	\$189.6	3.3%	\$9,532	10.5
1994	5,582	170.2	3.0	8,910	10.5
1993	5,626	196.2	3.5	8,843	10.8
1992	6,167	255.2	4.1	8,829	10.7
1991	6,370	288.8	4.5	8,835	10.4
Ube Industries^c					
1995	\$3,873	\$52.8	1.4%	\$6,617	6.6
1994	3,775	5.3	0.1	9,250	6.9
1993	3,921	-16.5	—	9,452	7.5
1992	4,500	29.2	0.6	10,305	7.7
1991	5,169	75.2	1.5	10,171	7.6

Note: Monetary statistics for all years converted from yen to U.S. dollars on the basis of 1995 average exchange rate of \$1.00 = 94.06 yen. ^a Net income as a percentage of sales. ^b As of Sept. 30, 1995. ^c Fiscal year ends March 31. ^d Resultant company from October 1994 merger of Mitsubishi Kasei and Mitsubishi Petrochemical. ^e Fiscal year ends Dec. 31.
Sources: BZW Securities, Toyo Keizai Shinposha, SBC Warburg

SOUTH KOREA

PRODUCTION: Polyvinyl chloride, acrylonitrile-butadiene-styrene rose strongly

Thousands of metric tons	1992	1993	1994	1995	% change 1994-95
Ethylene	2,769	3,273	3,667	3,721	1%
Composite fertilizers	2,188	2,365	2,514	2,454	-2
Propylene	1,482	1,808	2,095	2,131	2
Polypropylene	1,223	1,436	1,607	1,619	1
Polyethylene, high density	1,019	1,189	1,294	1,232	-5
Benzene	964	1,139	1,255	1,225	-2
Polyethylene, low density	761	853	923	970	5
Polystyrene	754	809	869	905	4
Polyvinyl chloride	726	760	791	914	16

Sources: Korean National Statistical Office, Korea Petrochemical Industry Association

Thousands of metric tons	1992	1993	1994	1995	% change 1994-95
Vinyl chloride	667	680	687	675	-2%
Butadiene	376	486	547	555	1
Sodium hydroxide	524	507	496	532	7
Acrylonitrile-butadiene-styrene	310	350	409	491	20
Synthetic detergents	360	339	365	357	-2
Carbon black	248	300	311	323	4
Paint	330	289	298	315	6
Acrylonitrile	104	124	136	146	7

PRICES: Plastics, basic chemicals surged

Producer price index, 1990 = 100	1992	1993	1994	1995	% change 1994-95
All commodities	107.0	108.6	111.6	116.8	5%
Chemical products	102.0	101.0	102.8	115.2	12
Basic chemicals	94.9	91.2	94.4	114.6	21
Synthetic rubber & plastic materials	94.4	90.0	94.1	118.2	26
Chemical fibers	103.3	100.1	104.8	120.4	15
Drugs, pharmaceuticals	104.0	104.5	106.0	107.8	2
Soaps, detergents & toiletries	106.7	111.3	113.9	117.2	3
Other chemical products	111.3	112.2	109.4	116.6	7
Rubber & plastic products	101.2	101.4	102.7	113.3	10
Rubber products	103.4	104.3	104.5	116.1	11
Plastic products	100.6	100.6	102.3	112.5	10

Sources: Korean National Statistical Office, Korea Petrochemical Industry Association

FOREIGN TRADE: Petrochemicals boomed

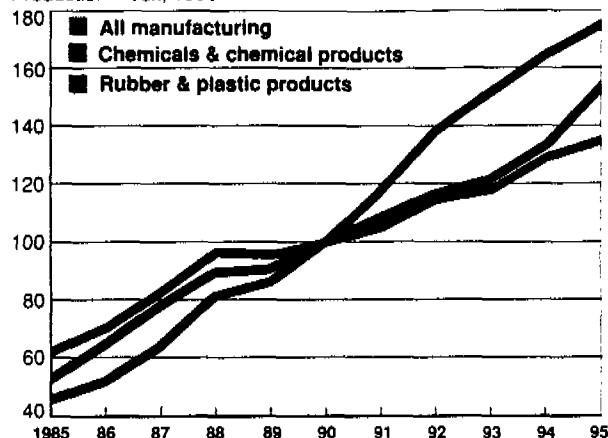
\$ Millions	1992	1993	1994	1995	% change 1994-95
Overall trade					
Exports ^a	\$76,632	\$82,236	\$96,013	\$125,058	30%
Imports ^b	81,775	83,800	102,348	135,119	32
Trade balance	-5,143	-1,564	-6,335	-10,061	nm
Chemical trade ^c					
Exports ^a	4,454	4,921	6,339	8,944	41
Imports ^b	7,661	8,228	9,763	13,156	35
Trade balance	-3,207	-3,307	-3,424	-4,212	nm
Petrochemicals					
Exports ^a	2,570	2,880	3,813	5,758	51
Imports ^b	2,577	2,669	3,150	4,929	56
Trade balance	-7	211	663	829	25

Note: Data supplied in U.S. dollars. ^a Free on board. ^b Includes cost, insurance, and freight. ^c Includes chemicals and related products. nm = not meaningful.

Sources: Korean National Statistical Office, Korea Petrochemical Industry Association

South Korea's chemical industry continued rapid growth

Production index, 1990 = 100



Source: Korean National Statistical Office

INDUSTRY TRENDS: Chemical output up 7%

Index, 1990 = 100	1992	1993	1994	1995	% change 1994-95
Chemicals and chemical products					
Production	138.1	152.3	164.9	176.1	7%
Shipments	134.1	149.1	164.4	174.6	6
Inventories	181.7	203.5	197.8	209.1	6
Rubber and plastic products					
Production	114.8	119.9	129.7	136.1	5
Shipments	112.2	118.3	130.2	135.9	5
Inventories	125.2	132.7	135.3	151.3	12
All manufacturing					
Production	116.2	121.1	134.4	150.6	12
Shipments	116.6	122.9	137.7	155.2	13
Inventories	129.8	132.8	142.1	163.3	15

Sources: Korean National Statistical Office, Korea Petrochemical Industry Association

PRODUCTION: Mixed results, plastics stable

Thousands of metric tons, unless otherwise noted	1992	1993	1994	1995	% change 1994-95
ORGANIC CHEMICALS					
Benzene	267	281	456	513	13%
Butadiene	94	90	127	121	-5
Diethyl phthalate	225	210	241	207	-14
Ethylene	734	742	889	847	-5
Ethylene glycol	178	174	188	199	6
Propylene	401	418	506	475	-6
Purified terephthalic acid	1,302	1,635	1,793	2,153	20
Styrene	338	369	419	415	-1
Toluene	17	12	38	23	-39
Urea	221	236	215	256	19
Vinyl chloride	650	780	853	806	-6
Xylene	215	231	487	580	19
INORGANIC CHEMICALS					
Ammonia, anhydrous	272	267	262	274	5
Ammonium sulfate	445	370	467	494	6
Calcium superphosphate	332	335	297	329	11
Carbon black	65	63	81	90	11
Hydrochloric acid	329	339	397	390	-2
Liquid caustic soda	361	383	484	534	10
Oxygen ^a	377	376	401	434	8
Sulfuric acid	715	644	727	769	6
PLASTICS & FIBERS					
Acrylonitrile-butadiene-styrene	569	642	742	757	2
Polyester ^b	1,641	1,753	1,905	1,984	4
Polyethylene ^c	360	369	411	426	4
Polypropylene	225	220	341	417	22
Polystyrene	522	587	618	664	7
Polyvinyl chloride	1,043	1,078	1,114	976	-12
SYNTHETIC RUBBER^d					
	109	108	198	250	26
PAINTS					
	379	419	474	512	8

^a Thousands of cubic meters. ^b Includes both fiber and staple without double counting.
^c High and low density. ^d Includes styrene-butadiene and polybutadiene
 Source: Taiwan Ministry of Economic Affairs

INDUSTRY TRENDS: Output mostly rose

Index, 1991 = 100	1992	1993	1994	1995	% change 1994-95
All manufacturing					
	104.0	106.4	112.6	117.6	4%
Chemicals					
Basic chemicals	114.2	121.7	145.2	153.2	6
Petrochemicals	112.5	118.5	124.0	133.6	8
Fertilizers	112.8	120.9	141.7	146.7	4
Synthetic fibers	102.0	100.5	104.6	112.7	8
Plastics & resins	112.4	115.9	129.8	137.2	6
Synthetic rubber	119.7	131.8	172.9	183.7	6
Chemical products	102.4	110.3	151.1	188.8	25
Paints & varnishes	108.5	115.6	128.2	134.9	5
Drugs & medicines	113.2	124.9	141.3	147.7	4
Pesticides	105.9	106.2	114.8	120.3	5
Industrial catalysts & additives	102.3	100.4	104.6	109.4	5
Rubber products	109.4	124.0	151.9	157.9	4
Rubber products	103.2	93.4	91.4	93.2	2
Plastic products	96.0	90.8	91.9	83.7	-9

Source: Taiwan Ministry of Economic Affairs

FOREIGN TRADE: Chronic chemical deficit

\$ Millions	1992	1993	1994	1995	% change 1994-95
Exports					
	\$74,643	\$81,636	\$89,559	\$107,516	20%
Imports					
	65,910	73,643	81,575	98,765	21
Trade balance	8,732	7,992	7,984	8,751	10
Chemical exports^a					
	6,647	7,349	8,509	10,929	28
Organic chemicals	434	482	651	1,115	71
Inorganic chemicals	138	172	191	243	27
Dyeing, tanning & coloring materials	377	446	536	656	22
Pharmaceuticals	45	39	45	43	-4
Essential oils, perfumes & cleansing materials	145	164	175	175	0
Plastics, plastic products	4,430	4,827	5,460	6,859	26
Rubber products	589	657	727	941	29
Chemical imports^a					
	8,833	9,815	11,638	14,721	26
Organic chemicals	3,323	3,673	4,424	6,393	45
Inorganic chemicals	696	683	841	852	1
Dyeing, tanning & coloring materials	637	699	774	822	6
Pharmaceuticals	275	321	367	426	16
Essential oils, perfumes & cleansing materials	264	299	390	470	20
Plastics & plastic products	1,733	1,941	2,335	2,726	17
Rubber products	581	564	610	736	21
Chemical trade balance	-2,186	-2,466	-3,128	-3,792	nm

Note: Converted from Taiwan dollars to U.S. dollars on the basis of the 1995 conversion rate, \$1.00 U.S. = \$27.32 Taiwan. ^a Includes chemicals and related products. nm = not meaningful. Source: Taiwan Directorate General of Customs

CHINA

PRODUCTION: All chemicals but rubber grew

Thousands of metric tons	1992	1993	1994	1995	% change 1994-95
Synthetic ammonia					
	22,981	22,035	24,095	27,047	12%
Fertilizer^a					
	20,479	20,160	23,027	25,872	12
Nitrogen	15,705	15,506	17,264	19,158	11
Phosphate	4,622	4,652	5,369	6,334	18
Sulfuric acid^b					
	14,087	13,140	14,890	17,410	17
Sodium carbonate					
	4,550	5,300	5,706	5,744	1
Sodium hydroxide^b					
	3,795	3,885	4,227	5,054	20
Plastics					
	3,308	3,354	3,620	4,172	15
Man-made fibers					
	2,132	2,215	2,690	2,867	7
Ethylene					
	2,003	2,040	2,192	2,430	11
Synthetic detergents					
	1,666	1,765	1,961	2,218	13
Benzene					
	803	832	869	961	11
Synthetic rubber					
	373	385	494	493	0
Pesticides^c					
	281	249	268	361	35

^a Nutrient content basis, as N, P₂O₅, or K₂O. ^b 100%. ^c On basis of active substance.
 Source: State Statistical Bureau of China, China Statistics Consultants Ltd.

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