



SHELL CHEMICAL

INDUSTRY SLASHES THOUSANDS OF JOBS

EMPLOYMENT shrank significantly in Europe and the U.S. but held steady in Japan

THE CHEMICAL JOBS picture in 2009 was startlingly different from that in 2008. Although the recession was well under way by the end of 2008, C&EN found that industry employment that year actually increased in Europe and Japan and decreased only slightly in the U.S. But by the end of 2008, most chemical firms had announced that layoffs were coming, and thousands of chemists lost their jobs over the next 12 months.

In the U.S., the companies followed by C&EN laid off 28,000 employees, or more than 10% of their combined workforce in 2009. In the chemical industry as a whole, 5.2% fewer people were employed at the end of 2009 than at the end of 2008, according to the U.S. Department of Labor. The shrinkage was less than that in overall U.S. manufacturing, which lost a staggering 11.4% of its workforce.

All U.S. chemical firms tracked by C&EN

laid off workers in 2009 except for H.B. Fuller and Stepan, where employment held steady. Between the acquisition of Rohm and Haas and several rounds of layoffs, Dow Chemical ended 2009 with 1,100 more employees than it started with. At the end of 2008, however, Rohm and Haas reported that it had 15,500 workers, meaning that thousands of former employees of the two firms are now looking for work.

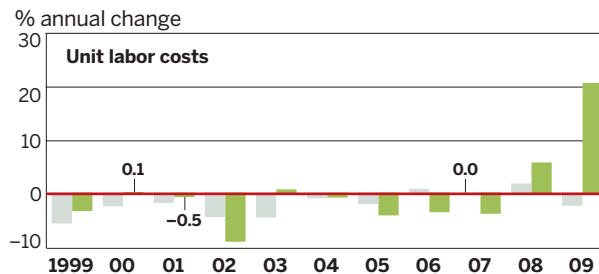
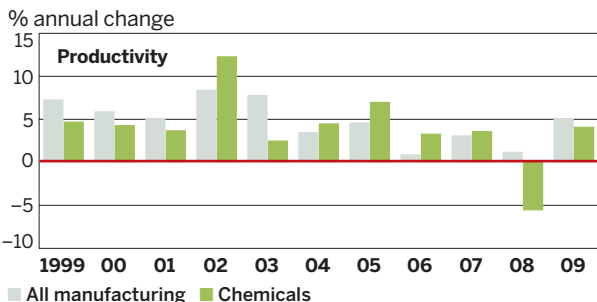
AS FIRMS IDLED PLANTS, production workers lost jobs at higher rates than those in the general chemical workforce. Production jobs declined by 6.8% compared with 2008, and layoffs occurred in every sector of the U.S. chemical enterprise, including pharmaceuticals, which had seen a decade of steady growth. Those left behind worked more hours and were more productive compared with 2008, but except for pharmaceutical workers, most did not enjoy significant pay raises.

Cost cutting in the pharmaceutical industry meant massive layoffs for medicinal chemists, starting in January when Pfizer announced 800 job cuts in R&D. By the end of the year, the big drugmaker had completed its acquisition of Wyeth and announced the elimination of an astounding 19,500 jobs. Merck & Co. said it would lay off 16,000 employees after its purchase of Schering-Plough. Johnson & Johnson, AstraZeneca, GlaxoSmithKline, and Eli Lilly & Co. also gave thousands of workers their walking papers during 2009.

The newly laid-off chemists faced a labor market in which long-term unemployment had become the rule rather than the exception. In 2009, according to the Bureau of Labor Statistics, the number of all workers unemployed for more than 27

U.S. PRODUCTIVITY

Manufacturing productivity increased while unit labor costs in the chemical industry soared



SOURCES: Federal Reserve Board, Bureau of Labor Statistics, C&EN estimates

weeks increased from 2.7 million in January to 6.1 million in December.

The employment picture was also bleak in Europe, where the 18 companies surveyed by C&EN shed nearly 20,000 jobs. Large layoffs occurred at BASF, AkzoNobel, Clariant, and Linde. Bucking the trend, Merck KGaA and Syngenta added workers.

In Japan, most chemical firms held on to their workers in 2009. Shin-Etsu Chemical, the only firm that significantly cut jobs, trimmed its payroll by 2,300 employees. The total number of jobs at Japanese firms surveyed by C&EN was up, due mostly to the acquisition of Mitsubishi Rayon by Mitsubishi Chemical Holdings.

Although chemical company executives

finished the year vowing that earnings and the economy would rebound in 2010, none admitted to any plans to increase staffing. Instead, most said they would work hard to hold on to the fiscal discipline instilled in 2009 and harness the improved productivity of their remaining workforce to increase profit margins over the next few years.

OVERALL U.S. EMPLOYMENT

All manufacturing sectors except agricultural chemicals saw layoffs in 2009

THOUSANDS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	ANNUAL CHANGE	
												2008-09	1999-09
Manufacturing	17,322	17,263	16,441	15,259	14,510	14,315	14,226	14,155	13,879	13,406	11,883	-11.4%	-3.4%
Chemicals	983	980	959	928	906	887	872	866	861	847	803	-5.2	-1.8
Basic chemicals	195	188	181	170	162	156	150	147	149	152	145	-4.6	-2.7
Resins, synthetic rubber & fibers	137	136	126	115	112	110	108	105	106	105	93	-11.4	-3.5
Agricultural chemicals	51	48	46	45	42	42	40	38	36	37	37	0.0	-2.9
Pharmaceuticals	261	274	283	291	292	290	288	292	295	291	285	-2.1	0.8
Paints, coatings & adhesives	78	80	75	72	69	68	68	67	65	62	58	-6.5	-2.7
Soaps & toiletries	131	13	127	121	119	115	114	111	110	107	102	-4.7	-2.2
Other chemicals	128	127	120	114	111	107	104	105	101	95	85	-10.5	-3.7

NOTE: Average annual domestic employment. **SOURCE:** Department of Labor

U.S. COMPANY EMPLOYMENT

Slow decline in chemical employment accelerated in 2009

THOUSANDS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Air Products & Chemicals	17.4	17.5	17.8	17.2	18.5	19.9	20.2	20.7	22.1	21.1	18.9
Albemarle (a)	2.6	2.5	3.0	3.0	3.0	3.7	3.7	3.6	4.1	4.1	4.0
Cabot	4.5	4.5	4.3	4.5	4.4	4.3	4.4	4.3	4.3	4.3	4.0
Cytec Industries (b)	4.9	4.8	4.5	4.3	4.5	4.5	7.3	6.7	6.8	6.7	5.8
Dow Chemical (c)	39.2	41.9	52.7	50.0	46.4	43.2	42.4	42.6	45.9	46.1	52.2
DuPont	94.0	93.0	79.0	79.0	81.0	60.0	60.0	59.0	60.0	60.0	58.0
Eastman Chemical	14.7	14.6	15.8	15.7	15.0	12.0	12.0	11.0	10.8	10.5	10.0
H.B. Fuller	5.4	5.2	4.9	4.6	4.5	4.5	4.0	3.7	3.2	3.1	3.1
Georgia Gulf (d)	1.4	1.3	1.2	1.2	1.2	1.2	1.1	6.7	5.2	4.5	3.5
W.R. Grace	6.3	6.3	6.4	6.4	6.3	6.4	6.4	6.4	6.5	6.3	5.9
Lubrizol (e)	4.1	4.4	4.5	5.2	5.0	7.8	7.5	6.7	6.9	7.0	6.7
NewMarket Corp. (f)	1.5	1.5	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.3	1.1
PPG Industries	33.8	35.6	34.9	34.1	32.9	31.8	30.8	32.2	34.9	44.9	39.9
Praxair	24.1	23.4	24.3	25.0	25.4	27.0	27.3	27.0	28.0	26.9	26.2
Solutia	10.6	10.2	9.2	7.3	6.3	5.7	5.4	5.1	6.0	3.7	3.4
Stepan	1.4	1.4	1.5	1.5	1.4	1.4	1.5	1.5	1.5	1.6	1.6
TOTAL EMPLOYEES (g)	307.4	304.7	300.3	289.6	285	261	262.9	264.7	272.9	272.3	244.3

NOTE: Data are not restated for acquisitions, divestitures, or similar developments. **a** Acquired Hercules in November 2008. **b** Acquired Surface Specialties in 2005. **c** Acquired Rohm and Haas in 2009 and Union Carbide in 2001. **d** Acquired Royal Group in 2006. **e** Acquired Noveon in 2004. **f** Formerly Ethyl Corp. **g** For companies reporting.
SOURCE: Company data

EMPLOYMENT

EUROPE COMPANY EMPLOYMENT

The economic downturn forced companies to lay off workers

THOUSANDS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Air Liquide (France)	29.0	30.3	30.8	30.8	31.9	35.9	35.9	36.9	40.3	43.0	42.3
AkzoNobel (Netherlands) (a)	70.7	69.8	70.4	60.7	64.6	61.5	61.3	61.9	42.6	60.0	57.1
Altana (Germany) (b)	ne	ne	ne	ne	ne	ne	ne	4.5	4.6	4.8	4.8
Arkema (France) (c)	ne	ne	ne	ne	ne	18.6	17.7	17.0	15.2	14.8	13.6
BASF (Germany)(d)	104.6	103.3	92.5	89.4	87.2	82.0	80.9	95.2	95.2	96.9	104.8
Bayer (Germany)	120.4	122.1	116.9	122.6	94.9	93.3	93.7	106.0	106.2	108.6	108.4
Clariant (Switzerland)	29.0	31.5	28.9	27.8	27.0	24.8	23.4	21.7	20.3	20.1	17.5
DSM (Netherlands)	21.8	21.8	21.5	18.5	26.1	24.5	22.8	22.2	23.3	23.6	22.7
Givaudan (Switzerland) (e)	4.9	5.1	5.3	5.8	6.0	5.9	5.9	6.1	8.8	8.8	8.5
Kemira (Finland)	10.7	9.6	10.2	10.4	10.5	9.7	7.7	9.2	10	10	8.8
Lanxess (Germany) (f)	ne	ne	ne	ne	20.5	19.7	18.3	16.5	14.6	14.8	14.3
Linde (Germany)	35.6	47.1	46.4	46.0	46.2	41.4	42.2	55.5	50.5	51.9	47.7
Lonza (Switzerland)	5.7	4.6	6.2	6.2	5.7	5.7	6.0	6.1	7.7	8.5	8.4
Merck (Germany)	32.7	33.5	34.3	34.5	34.2	28.9	29.1	30.0	31.0	32.8	33.1
Rhodia (France)	24.8	29.4	26.9	24.5	23.0	20.6	19.4	17.1	15.5	14.4	13.6
Solvay (Belgium)	32.8	32.3	29.4	30.3	30.1	29.3	28.7	29.3	28.3	29.4	28.2
Syngenta (Switzerland)	23.5	21.0	20.5	20.0	19.1	19.5	19.0	19.5	21.2	24.1	25.9
Wacker (Germany) (g)	ne	ne	ne	ne	ne	14.7	14.4	14.7	15.0	15.9	15.6
TOTAL EMPLOYEES (h)	566.3	581.7	559.9	546.5	545.7	555.3	545.5	583.5	563.6	594.9	575.3

a Divested pharmaceuticals in 2007 and purchased ICI in 2008. **b** Divested pharmaceuticals in 2006. **c** Spun off from Total in 2006; prior figures are pro forma. **d** Acquired Ciba in 2009. **e** Spun off from Roche in 2000; prior figures are pro forma. **f** Spun off from Bayer in January 2005; prior figures are pro forma. **g** Became a publicly traded company in 2005. **h** For companies reporting. **ne** = nonexistent. **SOURCE:** Company data

JAPAN COMPANY EMPLOYMENT

Overall headcount went up, most sharply at Mitsubishi Chemical after the acquisition of Mitsubishi Rayon

THOUSANDS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Asahi Kasei	26.6	26.7	26.2	25.7	25.0	23.8	23.0	23.7	23.9	24.2	25.1
DIC (a)	31.0	30.3	28.4	27.0	26.5	26.8	25.6	25.4	25.2	23.6	22.6
JSR	4.4	4.4	4.4	4.3	4.3	4.4	4.6	4.7	5.1	5.3	5.2
Kaneka	6.6	7.0	6.7	6.7	6.6	6.6	7.3	7.4	7.5	7.3	7.6
Mitsubishi Chemical (b)	33.5	33.0	38.6	37.6	33.5	33.3	33.0	33.4	39.3	41.8	53.9
Mitsui Chemicals	11.7	12.8	13.2	12.7	12.3	12.2	12.5	12.5	12.8	12.0	12.9
Shin-Etsu Chemical	18.8	19.4	16.5	16.6	17.4	18.2	18.9	19.2	20.2	19.2	16.9
Showa Denko	12.5	13.2	12.0	10.9	10.6	11.2	11.1	11.2	11.3	11.8	11.6
Sumitomo Chemical	17.5	17.4	17.0	17.9	19.0	20.2	24.2	24.7	25.6	26.9	27.8
Taiyo Nippon Sanso (c)	7.0	6.3	5.5	4.8	4.6	7.1	7.3	8.3	8.7	9.0	9.6
Teijin	22.0	22.3	24.0	23.3	20.6	19.0	18.8	19.1	19.1	19.4	18.8
Toray	35.5	35.7	34.9	33.8	32.9	33.7	34.7	36.6	38.6	37.9	37.9
TOTAL EMPLOYEES	218.9	227.2	225.7	219.7	211.7	216.4	220.9	226.1	237.3	238.4	249.9

NOTE: Fiscal year ends March 31 of the following year at all companies, except Showa Denko, where it ends Dec. 31. **a** Formerly Dainippon Ink & Chemicals. **b** Acquired Mitsubishi Rayon in 2009. **c** Nippon Sanso became Taiyo Nippon Sanso in 2004 when it acquired Taiyo Toyo Sanso; prior figures are for Nippon Sanso. **SOURCE:** Company data

U.S. PRODUCTION WORKERS

The economic crisis caused manufacturers to idle plants and reduce production workers

THOUSANDS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	ANNUAL CHANGE	
												2008-09	1999-09
Manufacturing	12,524	12,428	11,677	10,768	10,190	10,072	10,060	10,137	9,975	9,629	8,350	-13.3%	-3.6%
Chemicals	595	588	562	532	525	520	510	508	504	513	478	-6.8	-2.0
Basic chemicals	126	122	115	104	100	95	86	83	88	96	95	-1.0	-2.5
Resin, synthetic rubber & fibers	96	96	89	81	78	75	71	70	70	69	60	-13.0	-4.2
Agricultural chemicals	34	32	30	30	29	29	29	29	25	26	25	-3.8	-2.8
Pharmaceuticals	129	132	132	128	133	139	144	149	153	159	157	-1.3	1.8
Paints, coatings & adhesives	41	42	39	38	37	40	41	39	38	37	33	-10.8	-2.0
Soaps & toiletries	85	82	80	76	77	74	73	72	69	68	62	-8.8	-2.8

NOTE: Average annual domestic employment. **SOURCE:** Department of Labor

U.S. PAY

Workers in most sectors, except pharmaceuticals, did not get a significant pay increase

	HOURLY EARNINGS				WEEKLY EARNINGS			
	2006	2007	2008	2009	2006	2007	2008	2009
Manufacturing	\$16.80	\$17.26	\$17.75	\$18.23	\$691.02	\$711.56	\$724.23	\$725.55
Chemicals	19.60	19.55	19.50	20.30	833.51	819.54	808.80	840.42
Basic chemicals	23.20	23.23	23.30	24.09	1,033.18	1,010.21	1,030.54	1,057.55
Resin, synthetic rubber & fibers	19.87	21.04	20.54	21.08	868.94	911.97	881.42	908.55
Agricultural chemicals	21.04	21.62	20.36	19.06	978.64	960.05	831.35	768.12
Pharmaceuticals	21.34	20.35	20.10	21.12	890.75	840.75	821.17	863.81
Paints, coatings & adhesives	16.06	15.97	16.48	16.85	676.51	668.18	689.10	679.06
Soaps & toiletries	15.03	15.21	15.21	15.71	604.75	601.55	587.88	600.12
Other chemicals	16.72	16.23	16.08	17.04	695.51	668.97	652.30	719.09

NOTE: For production workers in domestic employment. **SOURCE:** Department of Labor

U.S. PRODUCTIVITY

Productivity per worker spiked as firms laid off workers to cut costs ...

PRODUCTIVITY (a), 2004 = 100	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	ANNUAL CHANGE,
												2008-09
Manufacturing	75.1	79.4	83.2	90	96.8	100.0	104.4	105.1	108.1	109.2	114.6	4.9%
Chemicals	77.6	80.8	83.6	93.7	95.9	100.0	106.8	110.1	113.8	107.4	111.6	3.9
Basic chemicals	70.0	71.0	68.1	80.5	87.0	100.0	115.1	117.6	117.5	99.6	110.0	10.4
Resin, synthetic rubber & fibers	84.1	84.2	84.3	95.0	96.3	100.0	111.0	111.9	113.5	102.3	134.7	31.7
Agricultural chemicals	80.5	84.5	85.1	91.5	96.4	100.0	104.4	111.2	125.2	120.6	154.5	28.1
Pharmaceuticals	91.6	92.4	97.2	103.7	102.7	100.0	101.6	105.0	105.5	101.0	84.0	-16.8
Paints, coatings & adhesives	93.9	93.1	100.5	103.1	105.8	100.0	98.0	95.0	96.1	91.3	98.1	7.4
Soaps & toiletries	66.7	73.4	75.9	90.9	86.8	100.0	110.3	115.5	118.9	122.5	130.7	6.7

... but labor costs in basic chemicals and pharmaceuticals increased

UNIT LABOR COSTS (b), 2004 = 100	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	ANNUAL CHANGE,
												2008-09
Manufacturing	114.1	111.6	109.8	105.2	100.7	100.0	98.2	98.9	98.9	100.6	98.5	-2.1%
Chemicals	110.2	110.3	109.7	100.0	100.6	100.0	96.1	92.9	89.6	94.6	113.9	20.4
Basic chemicals	125.4	128.2	135.9	117.1	109.8	100.0	89.3	85.2	85.4	101.1	144.6	43.0
Resin, synthetic rubber & fibers	107.7	111.3	113.4	102.6	101.7	100.0	94.0	97.4	101.7	110.0	102.5	-6.8
Agricultural chemicals	100.8	101.1	108.0	109.5	100.9	100.0	105.6	100.0	91.2	89.2	71.2	-20.2
Pharmaceuticals	86.4	89.4	87.5	83.6	92.1	100.0	100.3	97.3	92.3	95.2	143.4	50.6
Paints, coatings & adhesives	89.7	93.1	90.5	93.3	93.1	100.0	102.3	104.0	102.3	111.1	105.3	-5.2
Soaps & toiletries	130.3	127.6	126.2	106.5	110.7	100.0	94.6	88.4	86.9	84.3	71.7	-14.9

a Productivity is output per hour, calculated by dividing indexes for production by indexes for workhours of production employees. **b** Unit labor costs are calculated by dividing indexes for hourly wages by indexes for output per workhour. **SOURCES:** Federal Reserve Board, Department of Labor