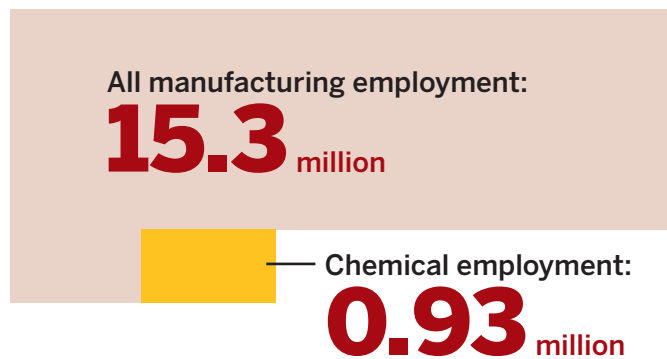
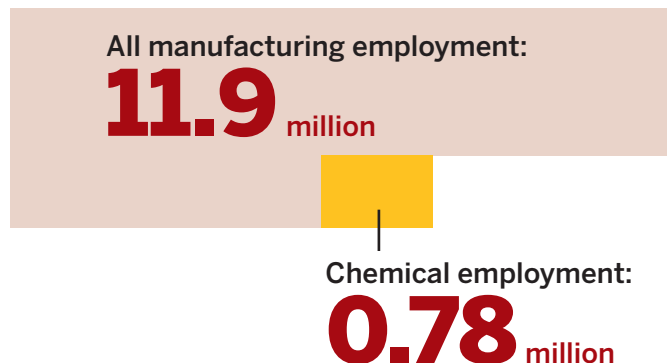


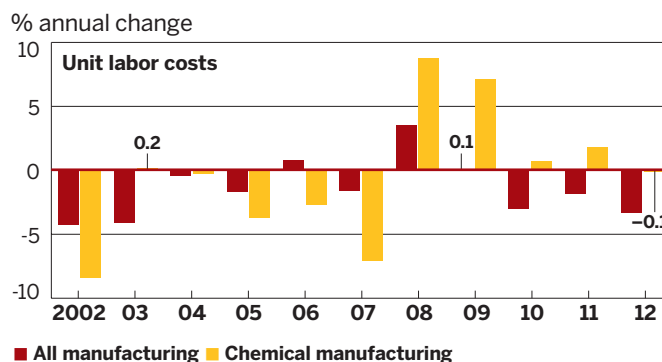
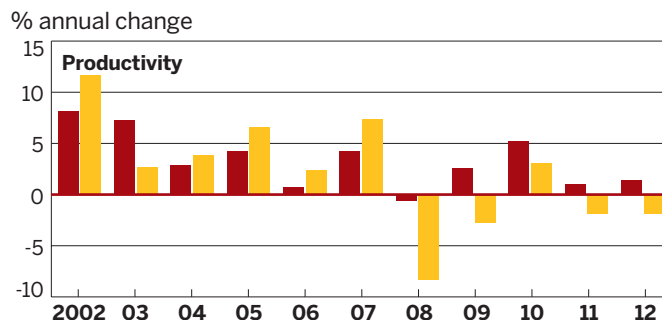
U.S. manufacturing employment in 2002:



In 2012:



U.S. chemical sector's productivity dropped while labor costs rose



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

CHEMICAL PAYROLL RISE IS SPOTTY

Deal-making contributes to **EMPLOYMENT** growth at some major chemical firms

IN 2012, the overall U.S. manufacturing sector saw a modest 1.6% increase in jobs, or 193,000 positions. The uptick did not reach the chemical industry, however, where payrolls were flat overall. And revised statistics from the Department of Labor show that chemical employment decreased by 3,000 workers in 2011 compared with 2010.

The number of employees at some firms did increase notably in the U.S. as well as in Europe and Japan, but the growth was driven by acquisitions rather than by overall job expansion. For example, Eastman Chemical picked up 3,400 workers when it acquired Solutia. Similarly, Cabot's pur-

chase of Norit and Cytec Industries' deal to take over Umeco added to employee counts at those firms.

In Europe, Linde added the largest number of workers. Of Linde's 11,600 new hires, more than 10,800 came through its acquisition of the U.S. home health care business Lincare. In contrast, several European firms trimmed staff, including AkzoNobel, Arkema, BASF, Bayer, Clariant, Kemira, Lonza, Merck, and Wacker Chemie.


Japanese chemical firms tracked by C&EN increased employment by nearly 3% in 2012. That figure reflects in large part moves outside Japan. Asahi Kasei, for

example, grew by 3,000 when it bought U.S. medical device maker Zoll and expanded chemical operations in Thailand. Japan's most profitable chemical firm, Shin-Etsu Chemical, acquired a majority stake in a domestic vinyl producer and also expanded operations in China and Vietnam. Overall, the company brought in 1,500 workers.

The chemical industry, which spent most of the 2000s boosting productivity, is now worried about slow global economic growth and is reluctant to hire. Still, in the U.S., the jobs climate has been more stable recently than during the past decade, which saw an average 1.7% yearly decrease in chemical employment.

Meanwhile, the global pharmaceutical industry continued to lay off workers last year, including in R&D positions. Job cuts were announced at AstraZeneca, Novartis, Takeda Pharmaceutical, Johnson & Johnson, Human Genome Sciences, and Sanofi. Pink-slip deliveries can be difficult to track, however, and official U.S. statistics show that pharma employment was unchanged in 2012.

Number of employees per \$10 million in sales at chemical firms:



19.6 In Europe
16.3 In U.S.
14.3 In Japan

U.S. chemical production worker change in weekly pay from 2011:

-0.1%

OVERALL U.S. EMPLOYMENT

Chemical job growth for all types of employees was flat in most sectors, ending a negative trend

THOUSANDS	2002	2010	2011	2012	ANNUAL CHANGE	
					2011-12	2002-12
Manufacturing	15,259	11,528	11,726	11,919	1.6%	-2.4%
Chemicals	928	787	784	784	0.0	-1.7
Basic chemicals	170	142	142	143	0.7	-1.7
Resin, synthetic rubber & fibers	115	89	91	92	1.1	-2.2
Agricultural chemicals	45	35	36	37	2.8	-1.9
Pharmaceuticals	291	277	270	271	0.4	-0.7
Paints, coatings & adhesives	72	57	57	57	0.0	-2.3
Soaps & toiletries	121	102	103	103	0.0	-1.6
Other chemicals	114	84	85	81	-4.7	-3.3

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

U.S. COMPANY EMPLOYMENT

Total employment at firms tracked by C&EN rose for a second year in a row, beat 2002 level

THOUSANDS	2002	2010	2011	2012
Air Products & Chemicals	17.2	18.3	18.9	21.3
Albemarle	3.0	4.0	4.3	4.3
Ashland ^a	24.3	14.5	15.0	14.6
Cabot	4.5	3.9	4.1	4.8
Cytec Industries ^b	4.3	6.0	5.5	6.6
Dow Chemical ^c	50.0	49.5	51.7	54.4
DuPont ^d	79.0	60.0	70.0	70.0
Eastman Chemical ^e	15.7	10.0	10.0	13.5
H.B. Fuller	4.6	3.3	3.5	3.7
Georgia Gulf ^f	1.2	3.6	4.1	3.9
W.R. Grace	6.4	6.0	6.3	6.5
Huntsman Corp. ^g	7.2	12.0	12.0	12.0
NewMarket Corp. ^h	1.1	1.6	1.6	1.7
PPG Industries	34.1	38.3	38.4	39.2
Praxair	25.0	26.3	26.2	26.5
Stepan	1.5	1.8	1.8	1.9
TOTAL EMPLOYEESⁱ	279.1	259.1	273.4	284.9

NOTE: Data are not restated for acquisitions, divestitures, or similar developments. **a** Acquired ISP in 2011. **b** Acquired Surface Specialties in 2005. **c** Acquired Rohm and Haas in 2009. **d** Acquired Danisco in 2011. **e** Acquired Solutia in 2012. **f** Acquired Royal Group in 2006. **g** Held initial public offering of stock in 2005; acquired Ciba's textile effects business in 2006. **h** Formerly Ethyl Corp. **i** For companies reporting. SOURCE: Company data

EUROPE COMPANY EMPLOYMENT

Gas firms Linde and Air Liquide added the most workers in 2012

THOUSANDS	2002	2010	2011	2012
Air Liquide (France)	30.8	43.6	46.2	50.0
AkzoNobel (Netherlands) ^a	60.7	55.6	57.2	50.6
Arkema (France) ^b	ne	13.9	15.8	13.8
BASF (Germany) ^c	89.4	109.1	111.1	110.8
Bayer (Germany)	122.6	111.4	111.8	110.5
Clariant (Switzerland) ^d	27.8	16.2	22.1	21.2
DSM (Netherlands)	18.5	21.9	22.2	23.5
Givaudan (Switzerland)	5.8	8.6	8.9	9.1
Kemira (Finland) ^e	10.4	5.6	5.0	4.9
Lanxess (Germany) ^f	ne	14.6	16.4	17.2
Linde (Germany)	46.0	48.4	50.4	62.0
Lonza (Switzerland) ^g	6.2	8.3	11.0	10.8
Merck (Germany) ^h	34.5	40.6	40.7	38.8
Solvay (Belgium) ⁱ	30.3	14.7	29.1	29.1
Syngenta (Switzerland)	20.0	26.2	26.3	27.3
Wacker (Germany) ^j	ne	16.3	17.2	16.3
TOTAL EMPLOYEES^k	503.0	555.0	591.4	595.9

a Divested pharmaceuticals in 2007 and purchased ICI in 2008. **b** Spun off from Total in 2006. **c** Purchased Ciba in 2009. **d** Purchased Süd-Chemie in 2011. **e** Spun off Tikkurila in 2010. **f** Spun off from Bayer in January 2005; prior figures are pro forma. **g** Purchased Arch Chemicals in 2011. **h** Purchased Millipore in 2010. **i** Sold its pharmaceuticals unit and changed its accounting procedures in 2010; bought Rhodia in 2011. **j** Became a publicly traded company in 2005. **k** For companies reporting. **ne** = nonexistent. SOURCE: Company data

JAPAN COMPANY EMPLOYMENT

Asahi and Toray boosted headcount, but Showa Denko shrank its payroll

THOUSANDS	2002	2010	2011	2012
Asahi Kasei	26.2	25.0	25.4	28.4
DIC ^a	28.4	21.6	20.4	20.3
JSR Corp.	4.4	5.3	5.4	5.7
Kaneka	6.7	8.4	8.5	na
Mitsubishi Chemical Holdings ^b	38.6	53.9	54.0	55.1
Mitsui Chemicals	13.2	12.8	12.9	12.8
Shin-Etsu Chemical	16.5	16.3	16.2	17.7
Showa Denko	12.0	11.6	11.6	9.9
Sumitomo Chemical	17.0	29.4	29.8	30.4
Teijin	24.0	17.5	16.8	16.6
Toray	34.9	38.7	40.2	42.6
Tosoh	9.4	11.2	11.2	11.3
TOTAL EMPLOYEES	231.3	251.7	252.3	259.3

NOTE: Fiscal year ends on March 31 of the following year, except Showa Denko's, which ends on Dec. 31. **a** Formerly Dainippon Ink & Chemicals. **b** Holding firm made up of Mitsubishi Chemical, Mitsubishi Rayon, Mitsubishi Tanabe Pharma, and Mitsubishi Plastics. **na** = not available. SOURCE: Company data

Chemical production worker weekly pay in 2012:

\$910.03

U.S. PRODUCTION WORKERS

Economic recovery brought a slight increase in chemical and manufacturing jobs

THOUSANDS	2002	2010	2011	2012	ANNUAL CHANGE	
					2011-12	2002-12
Manufacturing	10,768	8,077	8,228	8,394	2.0%	-2.5%
Chemicals	532	474	480	491	2.3	-0.8
Basic chemicals	104	92	90	98	8.9	-0.6
Resin, synthetic rubber & fibers	81	58	59	62	5.1	-2.6
Pharmaceuticals	128	160	157	158	0.6	2.1
Soaps & toiletries	76	62	63	63	0.0	-1.9

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

U.S. PAY

Workers making resins and pharmaceuticals saw weekly earnings dip in 2012

WEEKLY EARNINGS	2009	2010	2011	2012
Manufacturing	\$726.12	\$765.18	\$784.29	\$749.81
Chemicals	841.18	888.25	910.88	910.03
Basic chemicals	1,056.85	1,113.97	1,071.02	1,114.97
Resin, synthetic rubber & fibers	907.46	935.53	912.17	866.22
Pharmaceuticals	862.90	923.46	1,031.50	1,001.57
Soaps & toiletries	600.34	642.56	646.05	655.91

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

Employees added in 2012 at industrial gas firms tracked by C&EN:

18,100

Rise in employment at Japanese chemical firms tracked by C&EN since 2002:

28,000

U.S. PRODUCTIVITY

Most chemical sectors saw a drop in productivity ...

PRODUCTIVITY INDEX ^a , 2002 = 100	2002	2010	2011	2012	ANNUAL CHANGE, 2011-12
Manufacturing	100.0	133.2	134.5	136.4	1.4%
Chemicals	100.0	114.0	111.8	109.7	-1.9
Basic chemicals	100.0	127.4	128.6	119.6	-7.0
Resin, synthetic rubber & fibers	100.0	125.8	120.3	119.3	-0.9
Pharmaceuticals	100.0	79.2	79.6	77.2	-3.0
Soaps & toiletries	100.0	149.7	149.0	153.2	2.8

... while the results in overall labor costs were mixed

UNIT LABOR COST INDEX ^b , 2002 = 100	2002	2010	2011	2012	ANNUAL CHANGE, 2011-12
Manufacturing	100.0	120.1	117.9	114.0	-3.3%
Chemicals	100.0	115.7	117.8	117.6	-0.1
Basic chemicals	100.0	102.5	101.1	106.4	5.2
Resin, synthetic rubber & fibers	100.0	124.2	130.0	123.0	-5.4
Pharmaceuticals	100.0	124.4	132.6	135.0	1.8
Soaps & toiletries	100.0	101.9	93.8	88.5	-5.6

^a Productivity index is calculated by dividing indexes for production by indexes for workhours of production employees. ^b Unit labor cost index is calculated by dividing indexes for hourly wages by indexes for output per workhour.

SOURCES: Federal Reserve Board, Department of Labor

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