

DOW PHOTO



HOMESTEAD Dow operations in Midland, Mich., where the company was founded in 1897.

GLOBAL TOP 50

U.S. companies come out on top in tough year marked by widespread drops in sales and profits

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IN A DEVELOPMENT PREDICTED LAST year in *Chemical & Engineering News's* Global Top 50 survey for 2000, Dow Chemical pushed BASF out of the top slot among the world's 50 leading chemical producers. Surprisingly, however, after five years at the head of the C&EN rankings, BASF was also nudged out of the second spot.

The top companies, in fact, are now Dow Chemical, as a result of its merger with Union Carbide, followed by perennial number two, DuPont, and then Ger-

many's BASF. BASF's total sales were higher in 2001 than those of either Dow or DuPont, but a significant part of those sales are in oil and gas, which C&EN excludes for purposes of this ranking.

The remainder of the top 10 are the same as in last year's rankings for 2000, although the order has shifted.

Germany's Bayer is in fourth position, up from the fifth slot—ironic given its efforts to boost pharmaceuticals (which are excluded from C&EN's rankings) and downplay chemicals (which are counted).

Bayer is followed by France's TotalFinaElf, also up one spot from the previous year. ExxonMobil has been pushed down into sixth place. Rounding out the top 10 are the Anglo-Dutch petrochemicals giant Shell; Germany's Degussa; and BP and ICI, both based in the U.K.

The financial results of the Top 50 companies worldwide confirm that 2001 was, indeed, an unhappy year. Aggregate sales for the Top 50 were \$404.4 billion, down 8% from the previous year. Sales for only 16 individual companies showed a rise, with the largest growth coming from Dow as it incorporated the sales of Union Carbide.

AND SALES FOR three of the four regional blocks represented in the rankings dropped. The segment of U.S. chemical producers held only 15 companies in 2001, with a 33% share of total sales. That was a drop from the 35% of last year, represented by 17 companies. U.S. aggregate sales were down by 12%, to \$135.2 billion in 2001.

Sales of the Top 50's European chemical producers were down 8%, to \$195.2 billion. The proportion was stable, however, at 48%.

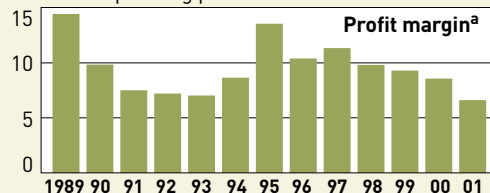
Sales from companies in "other regions" were off by 20%, reaching only \$23.1 billion. In part that reflects the chart's loss of one producer, Canada's Nova Chemicals, which had entered the rankings last year for the first time but barely missed it this year. This segment now includes producers in China, Saudi Arabia, Taiwan, and India. However, although this region's share of the Top 50 slipped slightly from 6.5% in 2000 to 5.7% last year, it is still significantly higher than the 3.5% share of total sales of 1999, when three companies were in the "other regions" listing.

Only chemical producers in Japan as a segment showed a sales increase, of 10%. But again, that partly reflects the increase

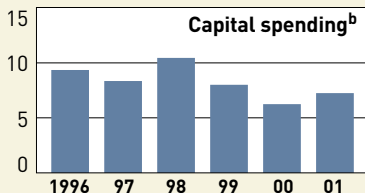
BOTTOMING OUT?

Profit margins fall below lows of last industry cycle; capital and R&D spending are also down

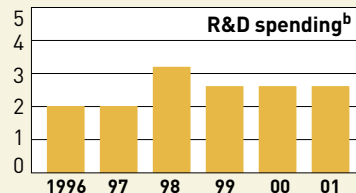
Chemical operating profit as % of sales



% of chemical sales



% of chemical sales



NOTE: Based on C&EN's annual listing of the global Top 50 chemical producers. **a** Chemical operating profits as a percentage of chemical sales. **b** As a percentage of chemical sales.

GLOBAL TOP 50

Mergers and acquisitions put U.S. firms on top in 2001

2001	2000		CHEMICAL SALES				CHEMICAL OPERATING PROFITS			CAPITAL SPENDING		
			TOTAL SALES 2001 (\$ MILLIONS)	2001 (\$ MILLIONS)	CHANGE 2000-01	AS % OF TOTAL SALES	2001 (\$ MILLIONS)	CHANGE 2000-01	OPERATING PROFIT MARGIN ^a	2001 (\$ MILLIONS)	CHANGE 2000-01	AS % OF CHEMICAL SALES
1	3	Dow Chemical (U.S.)	\$27,805.0	\$27,805.0	20.8%	100.0%	\$1,247.0	-45%	4.5%	\$1,587.0	17.6%	5.7%
2	2	DuPont (U.S.) ^b	27,689.0	26,787.0	-5.7	96.7	6,844.0	113.4	25.5	1,246.0	-35.3	4.7
3	1	BASF (Germany)	29,093.6	24,725.4	-6.3	85.0	-108.3	nm	nm	2,516.0	-3.3	10.2
4	5	Bayer (Germany)	27,102.2	18,299.7	-2.4	67.5	1,038.4	-41.4	5.7	1,732.2	1.7	9.5
5	6	TotalFinaElf (France) ^c	94,280.7	17,510.1	1.9	18.6	980.2	-27.0	5.6	1,442.2	19.1	8.2
6	4	ExxonMobil (U.S.) ^b	213,488.0	15,943.0	-25.9	7.5	882.0	-24.0	5.5	872.0	-40.6	5.5
7	8	Shell (U.K./Netherlands)	177,281.0	14,250.0	-12.6	8.0	97.0	-91.3	0.7	760.0	-22.2	5.3
8	7	Degussa (Germany) ^c	11,568.7	11,568.7	-17.1	100.0	435.1	-21.5	3.8	1,055.4	14.0	9.1
9	10	BP (U.K.)	174,218.0	11,515.0	2.4	6.6	128.0	-83.2	1.1	1,150.0	-27.4	10.0
10	9	ICI (U.K.)	9,249.4	9,249.4	-17.1	100.0	771.6	19.1	8.3	342.6	-17.6	3.7
11	11	Akzo Nobel (Netherlands)	12,631.3	9,126.6	-1.1	72.3	685.7	-14.1	7.5	439.5	-1.6	4.8
12	15	Huntsman Corp. (U.S.)	8,500.0	8,500.0	6.3	100.0	na	—	—	na	—	—
13	14	Mitsui Chemicals (Japan) ^d	7,836.5	7,836.5	1.4	100.0	348.6	-22.3	4.4	967.3	91.1	12.3
14	13	Mitsubishi Chemical (Japan) ^d	14,644.6	7,500.0	-5.8	51.2	39.4	-88.1	0.5	368.3	4.0	4.9
15	18	Dainippon Ink & Chemicals (Japan) ^d	8,059.4	7,476.1	0.4	92.8	252.1	-32.9	3.4	350.2	5.6	4.7
16	16	General Electric (U.S.)	125,913.0	7,069.0	-9.1	5.6	1,596.0	-17.0	22.6	814.0	42.1	11.5
17	21	Henkel (Germany)	11,691.3	6,940.5	7.4	59.4	856.7	59.6	12.3	408.2	-41.7	5.9
18	22	SABIC (Saudi Arabia)	7,683.5	6,784.0	6.8	88.8	1,442.3	-26.0	21.3	504.2	-54.8	7.4
19	20	DSM (Netherlands)	7,134.7	6,754.3	-4.7	94.7	410.0	-31.9	6.1	583.7	8.8	8.6
20	12	Sumitomo Chemical (Japan) ^d	8,376.7	6,636.7	-5.2	79.2	181.2	-47.6	2.7	519.5	61.5	7.8
21	24	Rhodia (France)	6,516.2	6,516.2	6.5	100.0	14.3	-96.5	0.2	432.4	-4.0	6.6
22	26	Air Liquide (France)	7,455.2	6,495.6	10.1	87.1	1,054.5	14.6	16.2	636.5	-15.2	9.8
23	17	Chevron Phillips (U.S.)	6,010.0	6,010.0	-21.3	100.0	-431.0	nm	—	291.0	—	—
24	29	PPG Industries (U.S.)	8,169.0	5,933.0	-5.5	72.6	586.0	-31.8	9.9	167.0	-70.2	2.8
25	19	Equistar (U.S.)	5,909.0	5,909.0	-21.2	100.0	-44.0	nm	—	110.0	-16	1.9
26	25	China Petroleum & Chemical Corp. (China)	36,770.2	5,907.9	-13.0	16.1	-84.6	nm	—	1,443.4	92.5	24.4
27	30	Clariant (Switzerland)	5,843.9	5,843.9	-6.7	100.0	373.6	-44.4	6.4	299.0	-5.6	5.1
28	—	Teijin (Japan) ^d	7,596.0	5,777.1	26.6	76.1	148.0	320.6	2.6	332.2	8.7	5.8
29	37	Air Products & Chemical Corp. (U.S.)	5,717.2	5,466.8	4.4	95.6	864.9	-3.5	15.8	750.1	-2.3	13.7
30	43	Formosa Plastics (Taiwan)	8,263.4	5,434.0	2.9	65.8	620.9	-29.1	11.4	851.5	-16.5	15.7
31	28	Toray Industries (Japan) ^d	8,355.0	5,399.2	-3.4	64.6	89.0	-68.3	1.6	303.3	1.2	5.6
32	23	Syngenta (Switzerland) ^c	6,323.0	5,385.0	-8.5	85.2	738.0	-14.8	13.7	253.0	36.8	4.7
33	35	Eastman Chemical (U.S.)	5,384.0	5,384.0	1.7	100.0	-126.0	nm	—	234.0	3.5	4.3
34	45	BOC (U.K.) ^e	5,987.6	5,240.1	-22.5	87.5	784.7	-23.2	15.0	460.5	-15.9	8.8
35	36	Asahi Kasei (Japan) ^d	9,833.0	5,184.1	-9.3	52.7	143.3	-69.1	2.8	405.2	9.7	7.8
36	41	Praxair (U.S.)	5,158.0	5,158.0	2.3	100.0	1,333.0	9.3	25.8	595.0	-15.5	11.5
37	—	Shin-Etsu (Japan) ^d	6,375.7	5,136.5	-6.7	80.6	678.5	-1.1	13.2	517.1	-28.8	10.1
38	31	Reliance Industries (India) ^d	5,301.1	5,012.5	-15.5	94.6	559.9	-52.5	11.2	na	—	—
39	40	Norsk Hydro (Norway)	16,988.5	4,937.0	-0.8	29.1	223.8	28.4	4.5	127.2	-38.9	2.6
40	32	Rohm and Haas (U.S.)	5,666.0	4,917.0	-18.1	86.8	567.0	-33.3	10.0	401.0	2.6	7.1
41	38	Solvay (Belgium)	7,810.6	4,811.3	4.5	61.6	318.7	-16.5	6.6	384.9	-6.7	8.0
42	42	Ineos Group (U.K.)	4,800.0	4,800.0	-4.0	100.0	na	—	—	na	—	—
43	33	Aventis (France) ^c	20,536.8	4,753.5	-8.3	23.1	514.7	16.4	10.8	na	—	—
44	44	Celanese (Germany)	4,562.8	4,562.8	-2.1	100.0	85.0	-52.3	1.9	323.2	36.2	7.1
45	39	Ciba Specialties (Switzerland)	4,361.5	4,361.5	-6.8	100.0	450.5	-13.1	10.3	153.3	0.0	3.5
46	34	ENI (Italy)	43,797.7	4,262.0	-12.6	9.7	-297.2	nm	—	361.0	52.2	8.5
47	49	Monsanto (U.S.)	5,462.0	3,755.0	-3.3	68.7	775.0	-29.5	20.6	382.0	-34.4	10.2
48	—	Borealis (Denmark)	3,319.4	3,319.4	-0.1	100.0	48.3	3.8	1.5	131.6	-34.7	4.0
49	46	Honeywell (U.S.)	23,652.0	3,313.0	-18.3	14.0	52.0	-84.4	1.6	325.0	24.5	9.8
50	47	Lyondell (U.S.)	3,226.0	3,226.0	-20.1	100.0	274.0	-37.7	8.5	178.0	71.2	5.5

^a Operating profit as a percentage of chemical sales. ^b Operating profits after tax. ^c Pro forma for 2000. ^d Fiscal year ended March 31. ^e Fiscal year ended Sept. 30, 2001. na = not available. nm = not meaningful.

R&D SPENDING		
2001 (\$ MILLIONS)	CHANGE 2000-01	AS % OF CHEMICAL SALES
\$1,072.0	20.2%	3.9%
1,588.0	-10.6	5.9
965.0	6.9	3.9
953.4	3.3	5.2
na	—	—
na	—	—
na	—	—
414.5	-7.3	3.6
na	—	—
220.3	-13.1	2.4
270.4	4.1	3.0
na	—	—
300.2	-6.4	3.8
na	—	—
82.3	-6.2	1.1
na	—	—
195.2	17.7	2.8
na	—	—
246.2	15.1	3.6
na	—	—
176.4	0.9	2.7
124.1	57.9	1.9
na	—	—
266.0	-5.7	4.5
na	—	—
na	—	—
242.1	-1.2	4.1
na	—	—
123.0	-0.8	2.2
na	—	—
na	—	—
611.0	-3.6	11.3
160.0	7.4	3.0
85.9	0.8	1.6
na	—	—
66.0	1.5	1.3
na	—	—
10.5	—	—
19.8	1.1	0.4
230.0	-11.2	4.1
81.5	12.2	1.7
na	—	—
451.2	7.7	9.5
85.0	1.1	1.9
163.4	-5.8	3.7
na	—	—
560.0	-4.8	14.9
34.0	-2.6	1.0
832.0	1.7	25.1
32.0	-8.6	1.0

from six to eight Japanese companies in the Top 50, as newcomers Teijin and Shin-Etsu joined the rankings.

The additions, in turn, reflect the nascent merger and acquisition activity and an increasing drive toward globalization by Japanese firms. The additions also indicate growth—despite a slowdown last year in the electronics business—of chemicals for electronics over the years. For example, Teijin last year digested the Twaron aramid fibers business acquired from Acordis, significantly boosting global sales at the company. And Shin-Etsu's success in the silicon wafers business helped boost its chemicals sales. On the other hand, Sumitomo's place in the rankings has dropped because of the exclusion of its pharmaceutical operations, formerly included as pharmaceutical chemicals businesses.

Denmark's petrochemicals producer Borealis was the other newcomer, reentering after a year out of the Top 50. In addition to Nova, Occidental Petroleum—which has been in and out of the

were not high enough to make the threshold.

And Germany's Henkel spun off its chemicals operations as the new company Cognis in November 2001. Cognis will be on the borderline of entering the Top 50: A pro forma annual report for Cognis, for example, shows it at roughly \$2.8 billion in 2001 sales, quite a ways under the cutoff for this year.

HOWEVER, COGNIS' report also inadvertently highlights the impact of currency exchange rates on company rankings in C&EN's survey. The company's pro forma results for 2001 in euros—the common currency now used in 12 of the 15 European Union countries—was 3.1 billion euros, which translates into \$2.8 billion at the 2001 average exchange rate of \$1.00 = 1.117 euros used in the survey.

However, the euro has strengthened against the dollar over the past couple of months, hitting parity this month. At a one-to-one exchange rate,



COMPLEX Researcher at SABIC's facilities in Riyadh, Saudi Arabia, work on polymers.

Top 50 over the years that C&EN has compiled it—again slipped off. The other company to leave the rankings, of course, was Union Carbide, which vanished into Dow. That was the major merger-related change in the rankings for the year.

Next year's rankings, based on 2002 financial results, will show more change, but primarily because of divestitures rather than acquisitions.

The most notable question mark regarding divestitures hangs over DuPont: The company has decided to sell its fibers business, possibly by spinning it off to shareholders, by the end of 2003. That would take about \$6.5 billion off its sales. Depending upon when the separation occurs, DuPont may wind up swapping places with BASF, and possibly with Bayer, in next year's rankings.

More certainly, French pharmaceuticals company Aventis will leave the list next year. Because of its agrochemicals business, Aventis is the sole remaining primarily pharmaceutical producer on the list, but the firm has now sold agrochemicals to Bayer. Switzerland's Roche, the next-to-last pharmaceuticals producer to survive in the rankings, fell off the list several years ago when it spun off its flavors and fragrances subsidiary Givaudan; without Givaudan's sales to bolster its fine chemicals and vitamins unit, Roche's chemical sales

Cognis' sales reckon at \$3.1 billion, putting it on the borderline of the ranking. Similarly, had BASF's euro sales been converted at parity, it would have edged out DuPont for the number two position.

One of the few major mergers that could have an impact on the rankings for 2002 will occur if Degussa's current majority owner, German power company E.ON, manages to sell its stake in Degussa to compatriot firm RAG, a mining and engineering company that already owns the German chemicals company Rütgers. The proposed acquisition is contingent upon antitrust approval of various complicated related deals, so it is not a sure thing. But if it goes through, RAG will become the third of Germany's Big Three—along with BASF and Bayer—and the combined sales of Degussa and Rütgers will solidify its presence in the top 10.

The rankings for 2001 also show the impact of the cycle that the industry is going through. In the Top 50 for 1999, for example, the individual company cutoff was \$3.5 billion in sales. In buoyant 2000, the cutoff was \$3.6 billion. The rankings for the tough year of 2001, however, show Lyondell wrapping up the Top 50 with sales of \$3.2 billion.

Likewise, in contrast to the rankings for 2000,

when all the companies in the top 10 had sales of more than \$10 billion, this year's rankings show only the first nine over that mark. ICI, which has transformed itself from a basic chemicals giant into a specialty specialties company, had sales of only \$9.2 billion, following the sale of a large chunk of its industrial chemicals business.

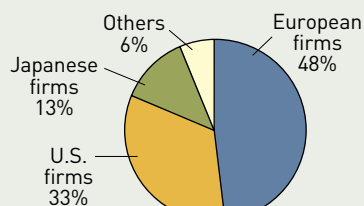
As might be expected, the atrocious year of 2001 had a decided impact on the profitability of the Top 50. The aggregate operating profit for the group was \$28.4

billion, down 24% from 2000. And the average profit margin slipped from 8.5% in 2000 to 7.0% last year, fulfilling the glum predictions of profit warnings issued widely throughout the industry during the year and fulfilling predictions in last year's rankings.

And the profit picture probably would not have changed much had operating profits been included for the two privately held companies in the listings—the U.S.'s Huntsman Corp. and Ineos of the U.K.

CONTINENTAL

Companies in Europe make up almost half of global Top 50 sales



2001 global Top 50 sales = \$404.4 billion

PETROCHEMICAL PRODUCERS such as Shell, ExxonMobil, BP, and TotalFinaElf posted serious drops in profits for the year, hard hit by a combination of high feedstock prices and low selling prices. Five companies in 2001 actually posted operating losses: Chevron Phillips, Equistar, China Petroleum & Chemical Corp. (Sinopec), Eastman Chemical, and the petrochemical operations of Italy's ENI. For ENI, it was a disappointing return to its historical red ink, following several years when chemicals turned a profit.

By contrast the few companies that reported profit growth tended to be further

downstream—ICI, Rhodia, and Henkel, as examples—or particularly specialized, such as industrial gases producer Air Liquide.

On the other hand, total reported capital spending as a percentage of aggregate sales went up or remained steady.

Aggregate capital spending, for example, was up by 5.4% in 2001 over 2000, to \$28.5 billion, representing 7.0% of sales. The Top 50 companies were split relatively evenly between those cutting back and those boosting—sometimes significantly—their capital expenditures. The increase in capital spending as a proportion of sales even during a bad year could be seen either as a vote of confidence in the prospects for the industry or an inability to postpone projects already begun—or probably a bit of both.

Total reported R&D spending was \$10.6 billion, or 2.6% of chemical sales, the same proportion as for both 1999 and 2000. As in previous years, C&EN's analysis excludes formulated products such as pharmaceuticals and consumer products, which traditionally support big spending in R&D, in preference to capital projects. ■