




**CHEMICAL
INDUSTRY
OF
JAPAN
2006**



Supporting our wealthy and comfortable life,
the chemical industry,
which is living together with nature,
fosters the dream of mankind.

Introduction

The chemical industry is frequently described as quite difficult to understand by people outside of the industry. The chemical industry has been defined as “the industry that manufactures various products from various raw materials for various purposes by using primarily chemical technologies. However, like steel, those which are categorized separately are excluded.” (Mr. Yoshiro Tokuhisa, “Is There A Future for The Chemical Industry?” published by Nihon Keizai Shimbun Co.)

Viewed that way, the scope of the chemical industry changes depending on what is categorized separately from among manufacturing that primarily uses “chemical technologies.” Although there are various opinions, the statistics on which major charts and tables of this brochure are based conform to the category “17 – Chemical Industry” of the Standard Industrial Classification for Japan (second classification). Its contents are described in detail on Page 5.

Even among published government statistics, the definition of the chemical industry could differ due to differences in the purposes for compilation and use by ministries and agencies. For example, in the trade statistics of the Ministry of Finance, synthetic rubbers, artificial fibers, and materials for photos and movies are excluded from the “Chemical Industry” category and radioactive elements are included because the ministry uses the unified classification under an international treaty.

Moreover, there are cases in which pharmaceuticals are not treated as chemical products. An example is the ranking data of the world’s chemical companies on Page 10.

Meanwhile, there are opinions that the scope of the chemical industry is wider. In such a case, plastic products or plastic products and rubber products are added to the “Chemical Industry.” Total shipments of the former amounted to 35 trillion yen and the latter to 38 trillion yen in 2004. At any rate, the chemical industry ranks third in manufacturing after transportation machinery and electrical machinery.

** The statistics used in this brochure conform to the Standard Industrial Classification for Japan (second classification): “Chemical Industry.”
(Source)

Ministry of Economy, Trade and Industry [Census of Manufactures]

Ministry of Economy, Trade and Industry [Basic Survey of Overseas Business Activities]

Ministry of Internal Affairs and Communications [Survey of Research and Development]

Ministry of Finance [Financial Statements Statistics of Corporations by Industry]

Ministry of Education, Culture, Sports, Science and Technology [Annual Report on the Promotion of Science and Technology]

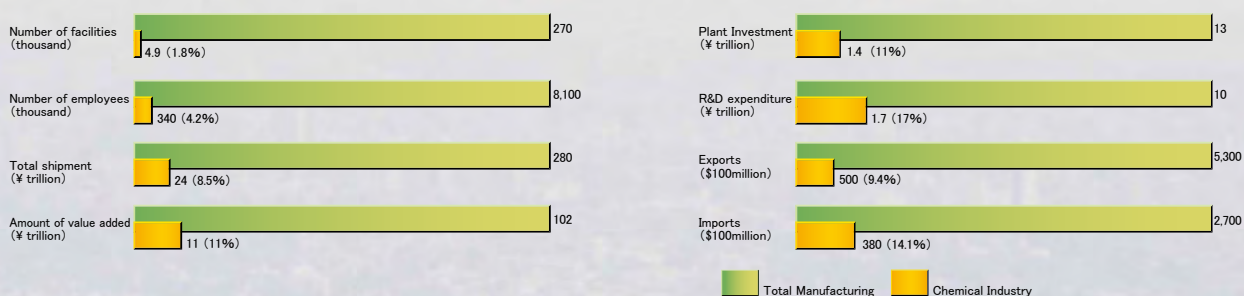
Ministry of Health, Labour and Welfare [Monthly Labor Survey]

Japan Productivity Center for Socio-Economic Development

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■ Japan's chemical industry vs. all manufacturing industries in 2004



(Source) Ministry of Economy, Trade and Industry [Census of Manufactures]
 Ministry of Finance [Financial Statements Statistics of Corporations by Industry]
 Ministry of Internal Affairs and Communications [Survey of Research and Development]
 Japan External Trade Organization

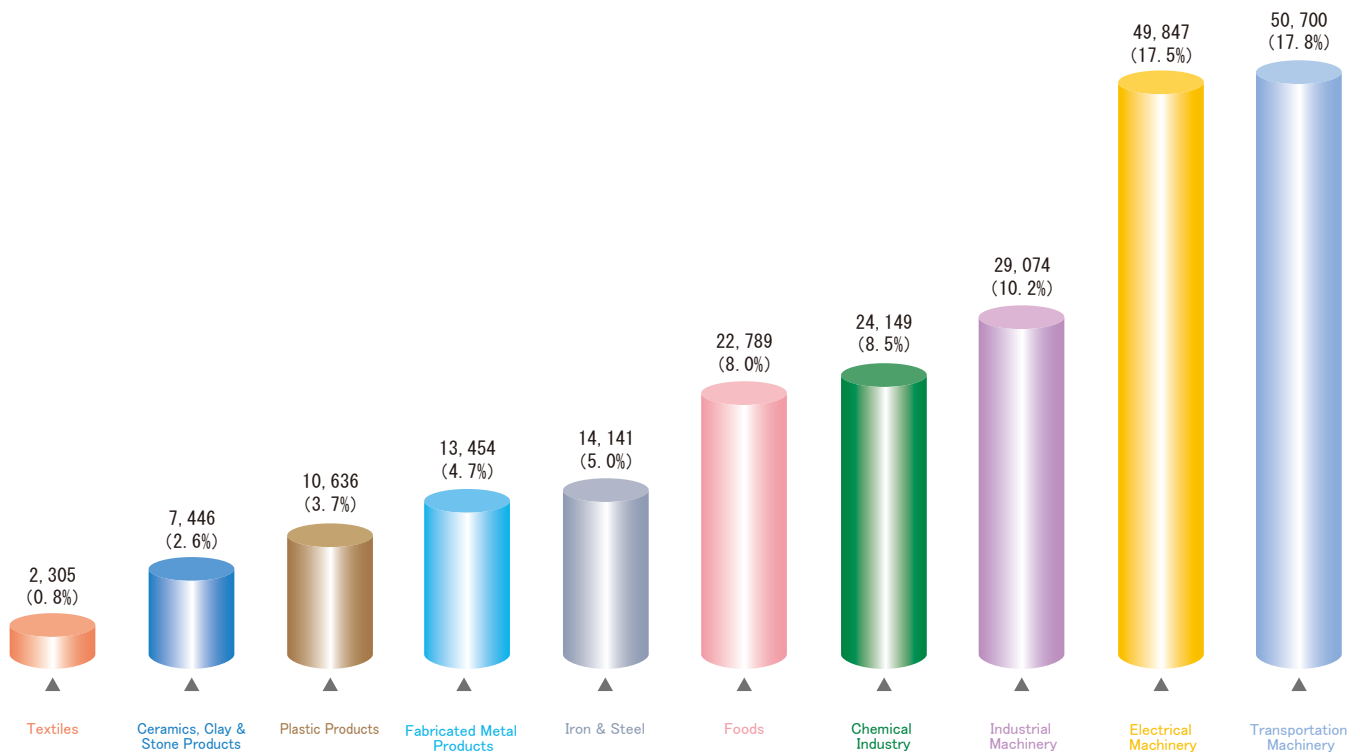
(Note) Data of plant investment and R&D expenditure are those of FY 2004. (Apr.1, 2004–Mar.31,2005)

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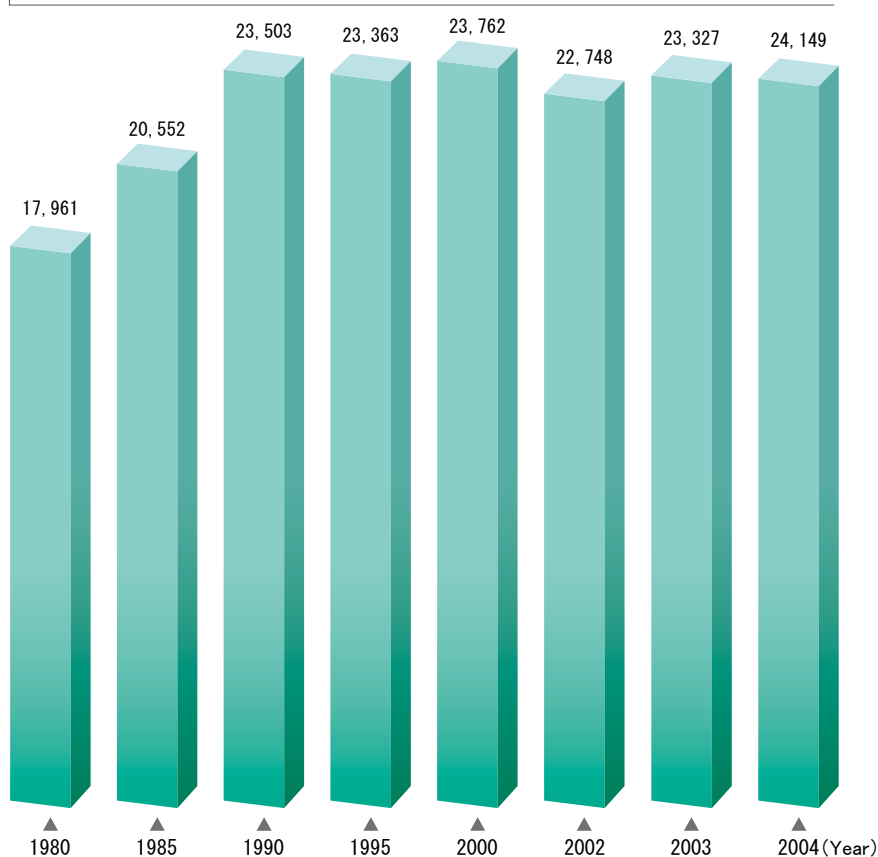
Total Production (Shipments) of Chemical Industry Amounts to Over Yen 24 Trillion.

Chemical industry's shipment value in 2004 amounted to yen 24 trillion accounting for 8.5% of entire manufacturing industry.

■ Shipment value of the chemical industry in the manufacturing industries in 2004 [¥ billion, %]



■ Trend in shipment value [¥ billion]



■ Shipment value of the chemical industry in the manufacturing industries [¥ billion]

Industry	Year	Every 5th year					Recent three years			%
		1980	1985	1990	1995	2000	2002	2003	2004	
Chemical Industry		17,961	20,552	23,503	23,363	23,762	22,748	23,327	24,149	8.5%
Foods		22,196	20,542	22,748	24,117	23,888	22,984	22,762	22,789	8.0
Textiles		7,781	8,087	7,838	4,230	3,008	2,478	2,394	2,305	0.8
Plastic Products		—	8,052	10,466	10,530	10,486	9,628	10,079	10,636	3.7
Ceramics, Clay & Stone Products		8,304	8,772	10,724	10,169	8,860	7,678	7,415	7,446	2.6
Iron & Steel		17,864	17,754	18,269	14,073	11,927	10,963	11,903	14,141	5.0
Fabricated Metal Products		10,311	13,094	18,574	17,646	15,143	13,737	13,243	13,454	4.7
Industrial Machinery		17,361	24,190	33,225	29,884	29,972	25,477	26,068	29,074	10.2
Electrical Machinery		22,160	40,842	54,529	54,831	59,449	46,041	48,014	49,847	17.5
Transportation Machinery		24,897	36,179	46,858	44,215	44,367	47,997	49,887	50,700	17.8
Others		63,289	67,254	76,640	72,973	69,616	59,630	58,644	59,877	21.1
Total manufacturing		212,124	265,321	323,373	306,030	300,478	269,362	273,734	284,418	100.0

(Source) Ministry of Economy, Trade and Industry [Census of Manufactures]

(Note) Statistics of facilities with more than four employees

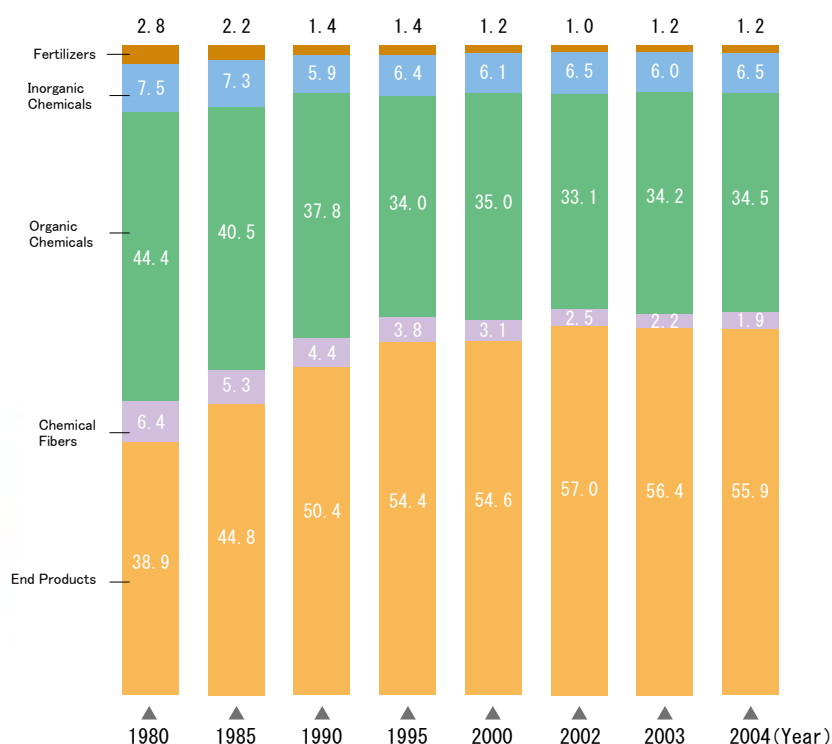
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Chemical Products That Meet The Needs of Various Fields

Products that chemical industry produces are used as raw materials and intermediary products by other industries. At the same time, many end products include drugs & medicines, cosmetics, detergents, paints, film and other materials that help us enjoy a comfortable modern life.



■ Trend of shipment composition in chemical industry [%]

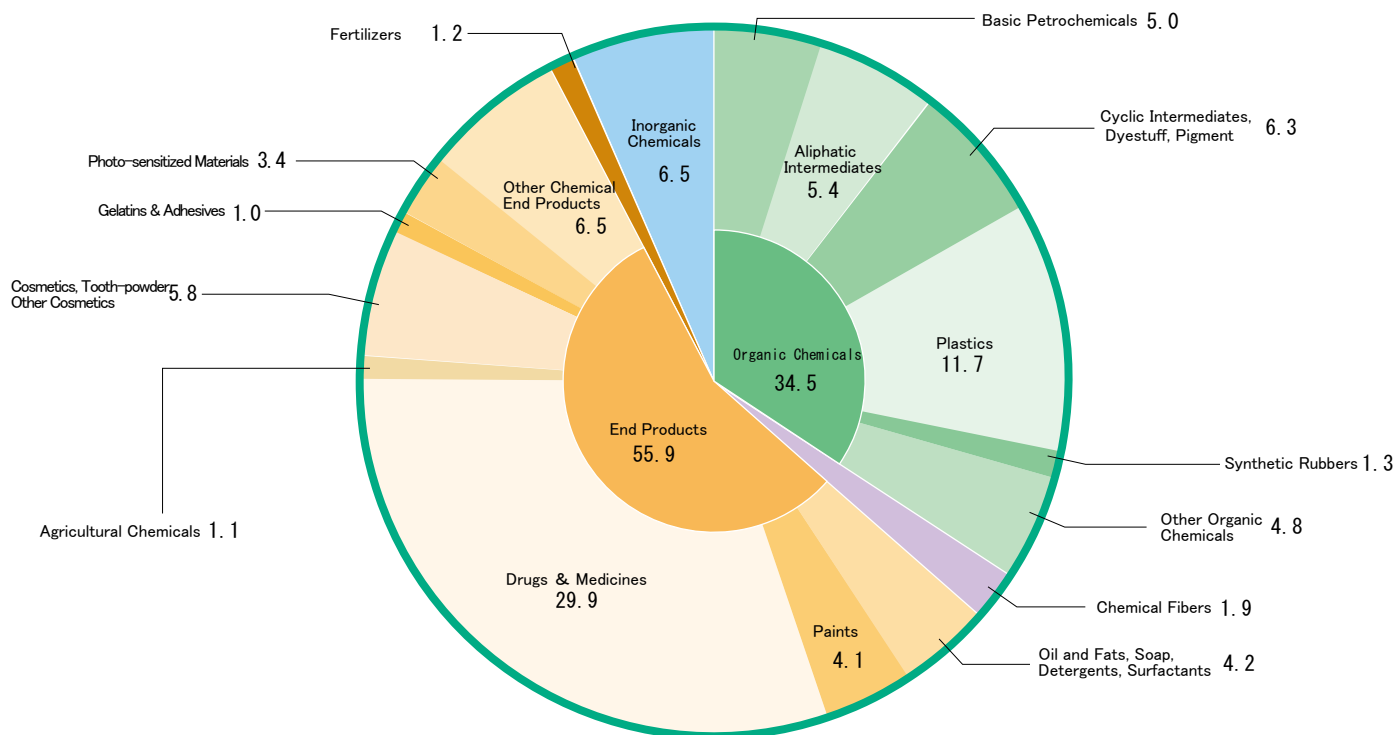


■ Trend of shipment composition in chemical industry [%]

Industry	Year	Every 5th year				Recent three years		
		1980	1985	1990	1995	2000	2002	2003
Chemical Industry		100.0	100.0	100.0	100.0	100.0	100.0	100.0
Fertilizers		2.8	2.2	1.4	1.4	1.2	1.0	1.2
Inorganic Chemicals		7.5	7.3	5.9	6.4	6.1	6.5	6.0
Organic Chemicals		44.4	40.5	37.8	34.0	35.0	33.1	34.2
▶Basic Petrochemicals		10.9	6.2	5.1	2.6	2.9	4.1	4.1
▶Aliphatic Intermediates		6.1	5.5	4.5	5.5	7.1	5.6	6.4
▶Cyclic Intermediates, Dyestuff, Pigment		9.2	7.4	6.9	6.9	6.1	6.2	5.6
▶Plastics		11.1	14.2	15.4	14.0	13.6	11.6	11.6
▶Synthetic Rubbers		2.2	2.4	2.3	1.7	1.5	1.8	1.9
▶Other Organic Chemicals		5.0	4.7	3.6	3.3	3.8	3.9	4.8
Chemical Fibers		6.4	5.3	4.4	3.8	3.1	2.5	2.2
End Products		38.9	44.8	50.4	54.4	54.6	57.0	56.4
▶Oil and Fats, Soap, Detergents, Surfactants		3.5	3.8	4.1	4.0	3.5	4.4	4.3
▶Paints		4.3	4.9	4.9	4.6	4.1	4.4	4.1
▶Drugs & Medicines		14.1	18.6	21.9	25.7	27.0	30.0	30.2
▶Agricultural Chemicals		1.8	2.2	1.6	1.6	1.4	1.3	1.2
▶Cosmetics, Tooth-powder, Other Cosmetics		4.1	5.2	5.9	6.4	6.0	6.0	5.9
▶Gelatin & Adhesives		0.8	0.9	1.0	1.0	1.0	1.0	1.0
▶Photo-sensitized Materials		2.3	3.6	4.1	4.6	4.4	3.3	3.3
▶Other Chemical End Products		4.6	5.7	6.9	6.6	7.2	6.7	6.4

(Source) Ministry of Economy, Trade and Industry [Census of Manufactures]
 (Note) Statistics of facilities with more than four employees

■ Composition of chemical products shipped in 2004 [%]



■ The major chemical industry indices with breakdown by product in 2004

	Number of Facilities	Employee Force (Persons)	Shipment (in Yen billion)	Value Added (in Yen billion)	Composition (%)			
					Number of Facilities	Employee Force	Shipment	Value Added
Chemical Industry	4,928	341,298	24,149	11,439	100.0	100.0	100.0	100.0
Fertilizers	158	5,230	283	108	3.2	1.5	1.2	0.9
Inorganic Chemicals	768	32,439	1,558	632	15.6	9.5	6.5	5.5
Organic Chemicals	700	76,143	8,333	2,925	14.2	22.3	34.5	25.6
▶ Basic Petrochemicals	13	2,937	1,216	288	0.3	0.9	5.0	2.5
▶ Aliphatic Intermediates	70	8,330	1,306	496	1.4	2.4	5.4	4.3
▶ Cyclic Intermediates, Dyestuff, Pigment	170	15,089	1,530	570	3.4	4.4	6.3	5.0
▶ Plastics	183	27,524	2,819	981	3.7	8.1	11.7	8.6
▶ Synthetic Rubbers	12	3,384	306	163	0.2	1.0	1.3	1.4
▶ Other Organic Chemicals	252	18,879	1,156	427	5.1	5.5	4.8	3.7
Chemical Fibers	54	9,967	465	155	1.1	2.9	1.9	1.4
End Products	3,248	217,519	13,511	7,619	65.9	63.7	55.9	66.6
▶ Oil and Fats, Soap, Detergents, Surfactants	292	15,183	1,012	547	5.9	4.4	4.2	4.8
▶ Paints	428	18,591	984	354	8.7	5.4	4.1	3.1
▶ Drugs & Medicines	939	93,632	7,216	4,662	19.1	27.4	29.9	40.8
▶ Agricultural Chemicals	70	4,121	263	99	1.4	1.2	1.1	0.9
▶ Cosmetics, Tooth-powder, Other Cosmetics	417	29,191	1,408	901	8.5	8.6	5.8	7.9
▶ Gelatins & Adhesives	160	5,504	242	93	3.2	1.6	1.0	0.8
▶ Photo-sensitized Materials	70	15,099	822	360	1.4	4.4	3.4	3.2
▶ Other Chemical End Products	872	36,198	1,564	603	17.7	10.6	6.5	5.3

(Source) Ministry of Economy, Trade and Industry [Census of Manufactures]

(Note) Statistics of facilities with more than four employees

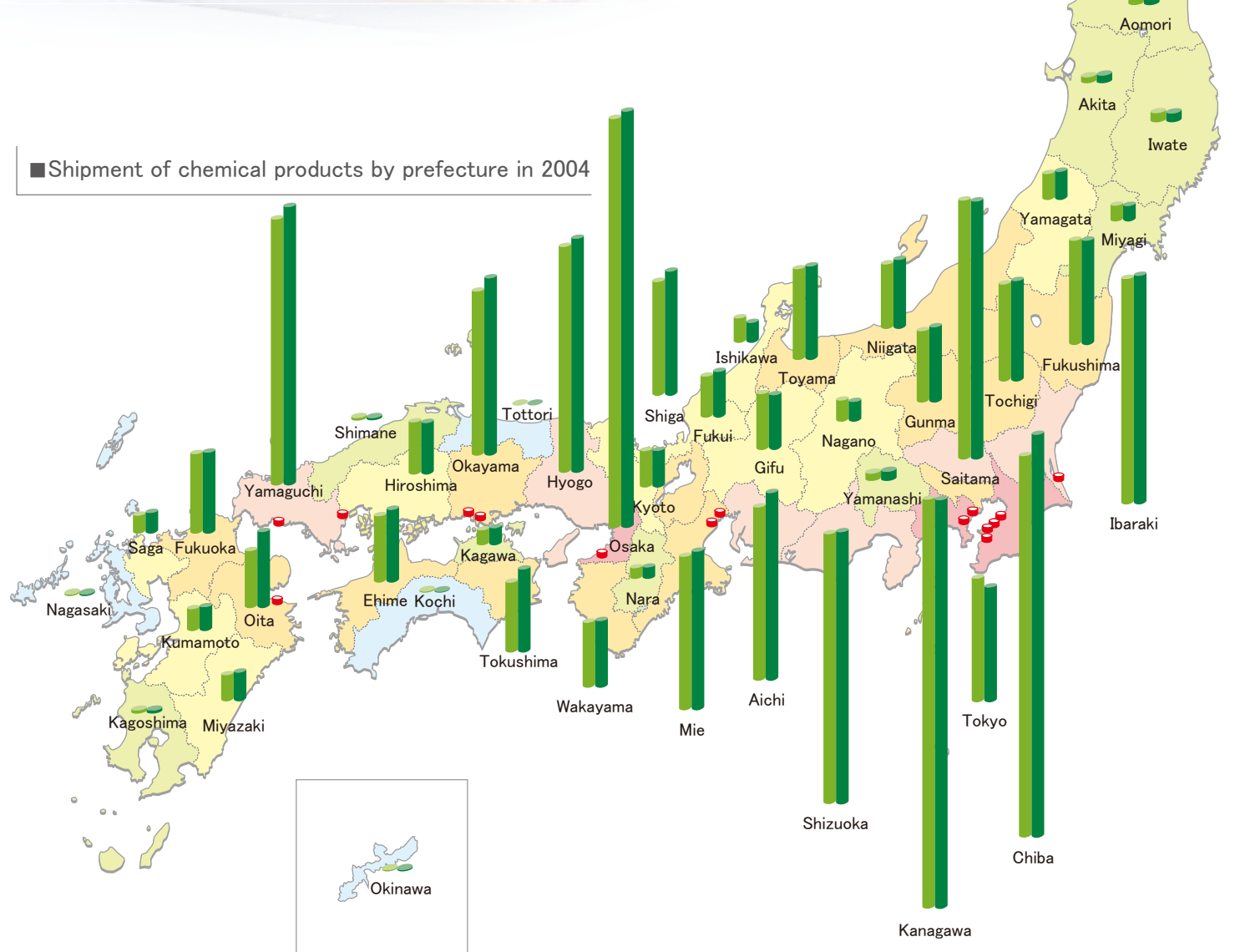
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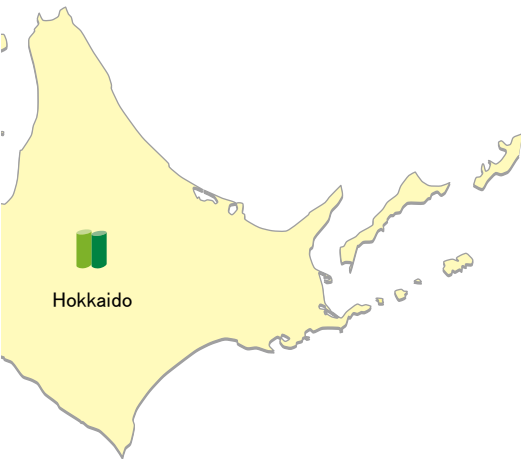
Shipment by Prefecture

Osaka ,Kanagawa and Chiba shipped more than yen 2 trillion each.

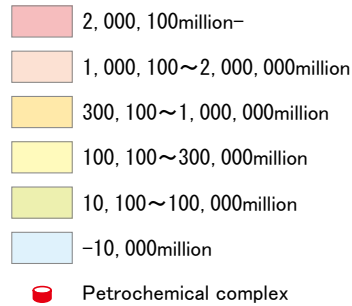


■ Shipment of chemical products by prefecture in 2004





2003 — 2004



■ Shipment of chemical products by prefecture in 2004 (ranking)

	Prefecture	Shipment (¥100million)	Increase/decrease from previous year (%)	Employee force
1	Osaka	22,163	100.9	34,418
2	Kanagawa	21,791	99.3	26,873
3	Chiba	21,542	105.5	17,736
4	Yamaguchi	14,936	104.9	14,021
5	Shizuoka	14,748	103.6	22,795
6	Saitama	13,743	99.5	20,540
7	Hyogo	12,537	103.9	20,125
8	Ibaraki	12,162	100.8	11,356
9	Aichi	10,021	108.8	15,774
10	Okayama	9,443	108.0	9,538
11	Mie	8,545	105.2	11,666
12	Shiga	6,696	110.8	6,784
13	Tokyo	6,092	92.2	15,062
14	Fukushima	5,646	99.9	7,950
15	Tochigi	5,352	104.6	5,365
16	Toyama	4,985	103.0	10,790
17	Tokushima	4,300	114.2	7,807
18	Fukuoka	4,213	101.1	7,218
19	Gunma	4,071	105.5	5,908
20	Oita	4,048	131.9	2,155
21	Ehime	3,909	106.1	5,003
22	Niigata	3,715	106.7	6,477
23	Wakayama	3,547	102.0	4,905
24	Gifu	2,912	97.2	4,874

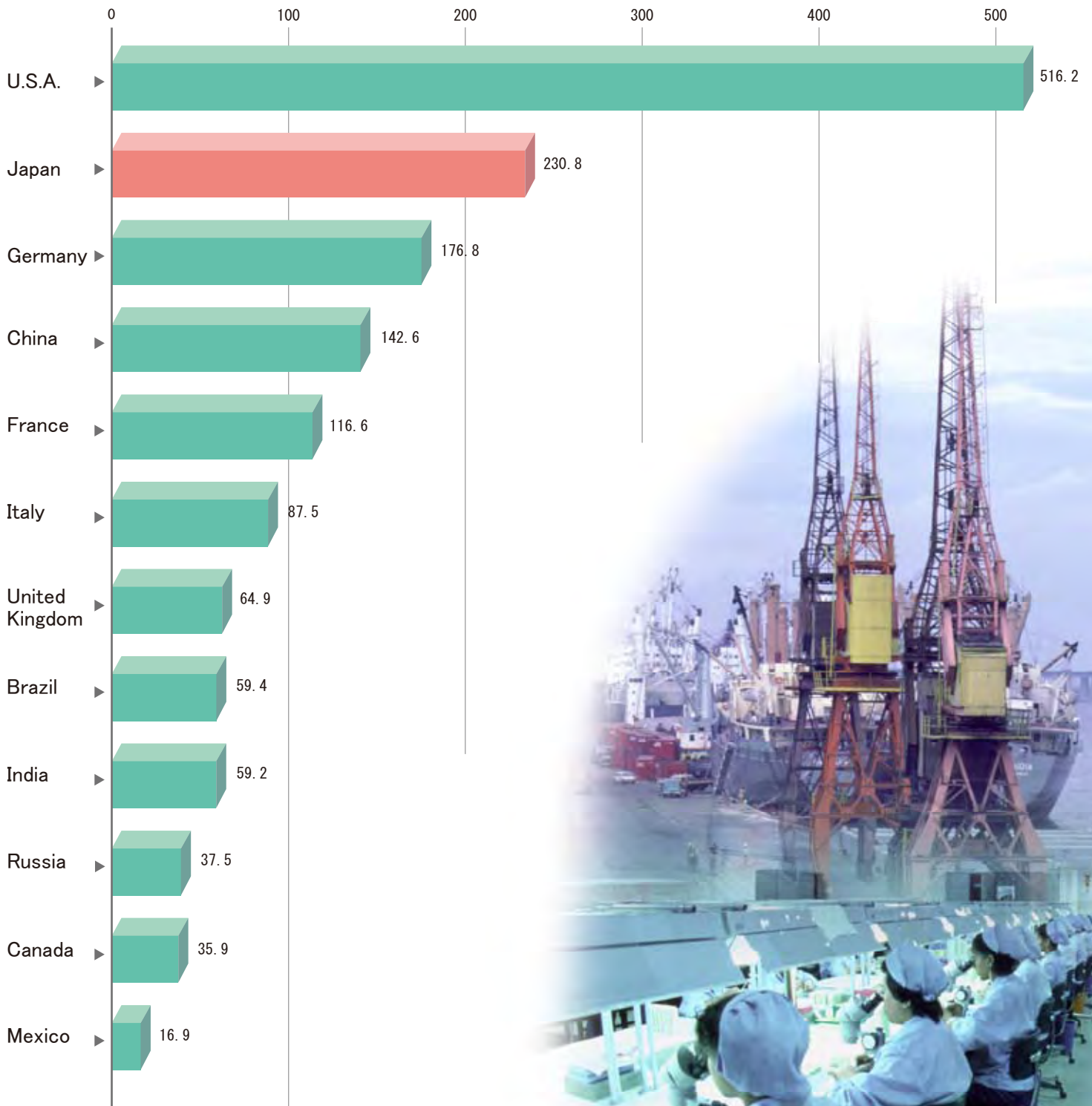
	Prefecture	Shipment (¥100million)	Increase/decrease from previous year (%)	Employee force
25	Hiroshima	2,780	98.7	5,463
26	Fukui	2,404	114.2	4,052
27	Kyoto	1,953	101.7	5,393
28	Yamagata	1,521	109.3	2,941
29	Miyazaki	1,473	109.7	2,642
30	Hokkaido	1,336	94.9	3,444
31	Kumamoto	1,204	108.1	3,464
32	Ishikawa	1,065	86.4	1,480
33	Saga	1,053	111.0	1,664
34	Nagano	1,007	94.8	2,037
35	Kagawa	896	108.8	2,715
36	Miyagi	791	98.8	1,696
37	Nara	677	104.7	3,016
38	Yamanashi	509	121.7	1,019
39	Iwate	458	92.1	1,332
40	Akita	387	120.2	876
41	Aomori	322	109.0	551
42	Kagoshima	184	100.2	567
43	Shimane	130	90.1	395
44	Nagasaki	88	106.5	262
45	Okinawa	77	108.7	770
46	Kochi	39	85.0	282
47	Tottori	22	92.3	97
	Total	241,493	103.5	341,298

(Source) Ministry of Economy, Trade and Industry [Census of Manufactures]
 (Note) Statistics of facilities with more than four employees

4

Japan's Chemical Industry, The World's Second Biggest in Shipments after The U.S.A.

■ Shipment of chemical products by country in 2004 [\$billion]



(Source) American Chemistry Council

■ The world's leading chemical companies in 2004

Ranking	Company (Country)	Chemical Sales [\$ million]			Chemical Operating Profits [\$ million] ^a		
		Chemical Sales (\$ million) 2004	Change from 2003	Chemical Sales as % of Total Sales	Chemical Operating Profits (\$ million) ^a	Change from 2003	Operating Profit Margin ^b
1	Dow Chemical (U.S.A.)	40,161.0	23.1%	100.0%	3,459.0	66.1%	8.6%
2	BASF (Germany)	38,189.1	12.9	81.8	4,375.6	130.5	11.5
3	Du Pont (U.S.A.) ^c	30,130.0	-0.4	99.9	na	-	-
4	Royal Dutch Shell (U.K./Netherlands)	29,497.0	41.7	11.1	930.0	nm	3.2
5	Exxon Mobil (U.S.A.) ^d	27,781.0	37.6	9.5	3,428.0	139.4	12.3
6	Total (France)	24,927.9	16.1	16.3	1,350.7	94.6	5.4
7	BP (U.K.)	21,209.0	31.9	7.2	-337.0	nm	def
8	Bayer (Germany) ^e	18,088.3	10.0	61.3	1,409.2	nm	7.8
9	China Petroleum & Chemical (China)	16,730.0	39.4	22.4	2,261.0	428.3	13.5
10	Mitsubishi Chemical (Japan)	16,274.0	14.8	80.4	1,116.0	60.6	6.9
11	SABIC (Saudi Arabia)	15,901.0	53.7	86.8	5,252.1	123.4	33.0
12	Degussa (Germany)	13,985.1	-1.6	100.0	1,058.5	29.3	7.6
13	Formosa Plastics Group (Taiwan) ^f	12,627.0	40.1	53.9	2,715.0	81.1	21.5
14	Akzo Nobel (Netherlands)	11,806.0	0.0	73.6	1,333.3	42.0	11.3
15	Huntsman Corp. (U.S.A.)	11,437.9	63.6	100.0	159.4	132.0	1.4
16	Mitsui Chemicals (Japan)	11,350.0	12.7	100.0	744.0	49.1	6.6
17	Air Liquide (France)	10,713.8	11.6	91.9	1,680.8	7.6	15.7
18	ICI (U.K.)	10,258.2	-4.2	100.0	877.3	21.6	8.6
19	Sumitomo Chemical (Japan)	9,883.0	14.6	82.5	604.0	87.6	6.1
20	Toray Industries (Japan)	9,869.0	24.5	82.2	599.0	42.6	6.1
21	DSM (Netherlands)	9,641.8	28.1	100.0	608.2	66.3	6.3
22	Equistar Chemicals (U.S.A.)	9,316.0	42.3	100.0	498.0	nm	5.3
23	Dainippon Ink & Chemicals (Japan)	9,273.0	2.9	100.0	445.0	9.9	4.8
24	Chevron Phillips (U.S.A.)	9,238.0	33.7	100.0	707.0	830.3	7.7
25	Shin-Etsu (Japan)	8,946.0	16.2	100.0	1,403.0	20.7	15.7
26	General Electric (U.S.A.) ^c	8,290.0	17.1	5.4	710.0	15.3	8.6
27	Lanxess (Germany) ^g	7,528.6	4.8	100.0	92.0	nm	1.2
28	PPG Industries (U.S.A.)	7,309.0	10.6	76.8	1,068.0	13.7	14.6
29	Asahi Kasei (Japan)	7,142.0	18.6	56.1	589.0	96.3	8.2
30	BOC (England)	7,095.2	5.3	84.2	929.7	19.9	13.1

(Source) Chemical & Engineering News

(Note) Financial figures converted at the 2004 average exchange rates of \$1.00 U.S. = 0.804 euros; 0.546 British pounds; 1.243 Swiss francs; 3.74 Saudi riyals; 108.15 Japanese yen; 1.145.24 South Korean won; 33.373 Taiwan dollars; 45.26 Indian rupees; 8.28 Chinese yuan; 6.44 South African rand; 6.74 Norwegian crowns; and 1.302 Canadian dollars.

a Operating profit is sales less administrative expenses and cost of sales.

b Chemical operating profit as a percentage of chemical sales.

c Sales include a significant amount of nonchemical products.

d Profits and profitability rates are after-tax.

e Excludes Lanxess.

f Data represents the sums of Formosa Plastics Corp. and Formosa Chemicals & Fiber Corp., plus 40% of Nan Ya Plastics, and 25% of Formosa Petrochemical.

g Spun off in January 2005; pro forma data.

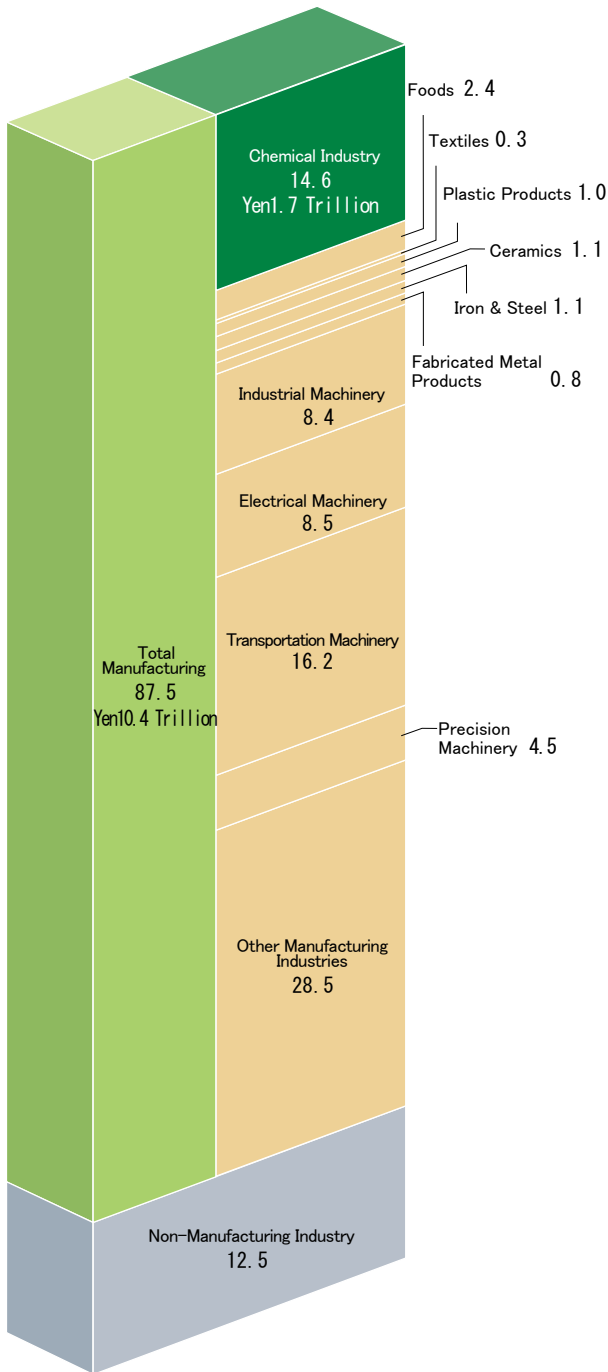
def = deficit. na = not available. nm = not meaningful.

(Note) Drugs & medicines are excluded.

5 Yen 1,700 Billion Spent for Research And Development

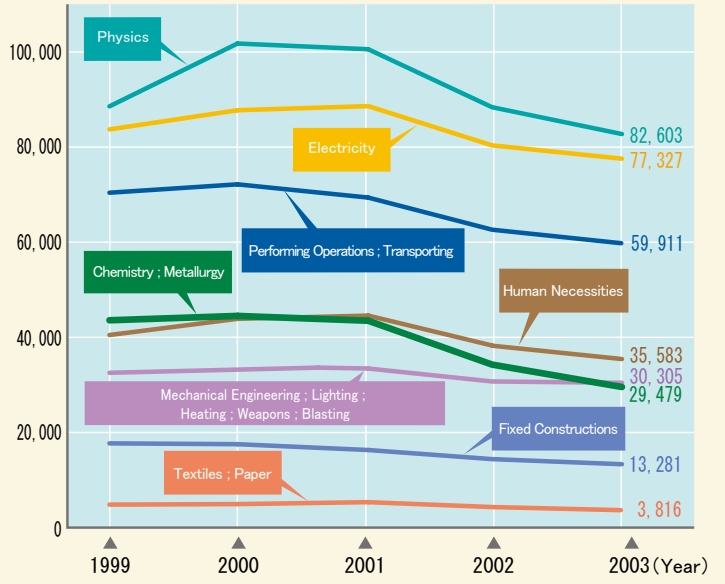
Research and development expenditures of the chemical industry in FY 2004 (Apr.1, 2004 – Mar.31, 2005) in Japan amounted to yen 1,700 billion, accounting for 15% of all industry R&D expenditures. The percentage of research expenditures to sales was 5.2%, which was second highest after precision machinery.

Ratio of R&D expenditures to sales by industry in 2004 [%]



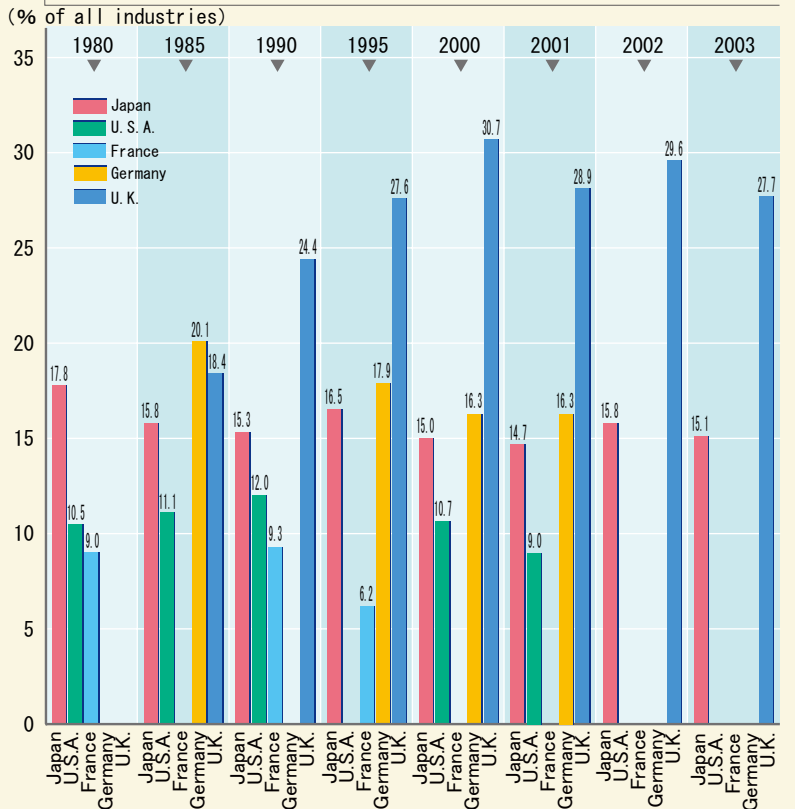
(Source) Ministry of Internal Affairs and Communications [Survey of Research and Development]

Trend of number of applications for patents by sector



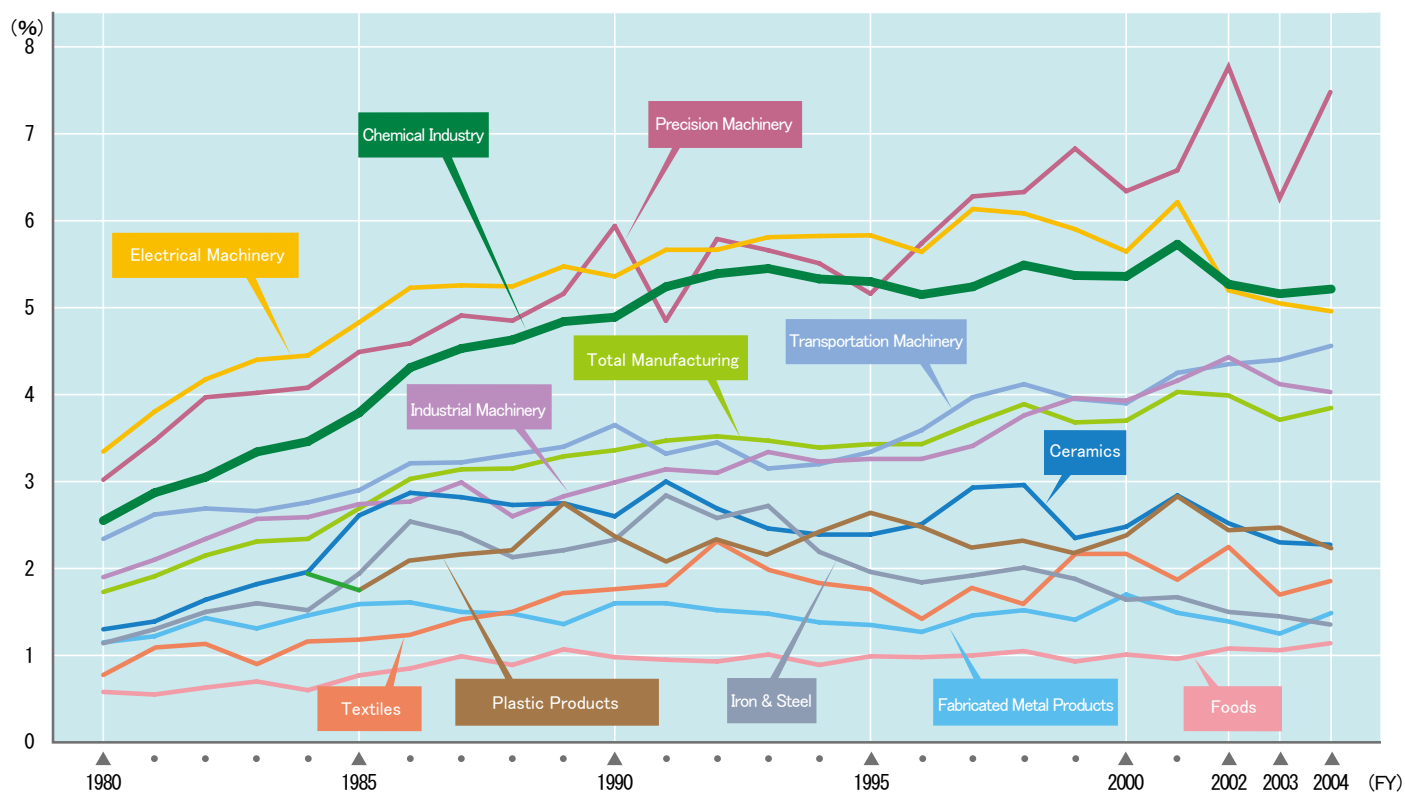
(Source) Japan Patent Office

Chemical industry R&D expenditures in major countries



(Source) Ministry of Education, Culture, Sports, Science and Technology [Annual Report on the Promotion of Science and Technology]

■ Ratio of R&D expenditures to sales by industry



■ Ratio of R&D expenditures to sales by industry [%]

Industry	Fiscal Year	Every 5th year				Recent three years			
		1980	1985	1990	1995	2000	2002	2003	2004
Chemical Industry		2.55	3.79	4.89	5.30	5.36	5.24	5.16	5.20
Foods		0.58	0.77	0.98	0.99	1.01	1.08	1.06	1.11
Textiles		0.77	1.18	1.76	1.76	2.17	2.25	1.70	1.88
Plastic Products		—	1.75	2.37	2.64	2.38	2.44	2.47	2.27
Ceramics		1.30	2.61	2.60	2.39	2.48	2.52	2.30	2.28
Iron & Steel		1.14	1.94	2.33	1.96	1.64	1.50	1.45	1.32
Fabricated Metal Products		1.15	1.59	1.60	1.35	1.70	1.39	1.25	1.45
Industrial Machinery		1.90	2.74	2.99	3.26	3.93	4.43	4.12	4.08
Electrical Machinery		3.35	4.82	5.36	5.83	5.64	5.20	5.05	4.97
Transportation Machinery		2.34	2.90	3.65	3.34	3.90	4.35	4.40	4.56
Precision Machinery		3.02	4.49	5.94	5.16	6.34	7.77	6.26	7.44
Total manufacturing		1.73	2.69	3.36	3.43	3.70	3.99	3.71	3.87

(Source) Ministry of Internal Affairs and Communications [Survey of Research and Development]

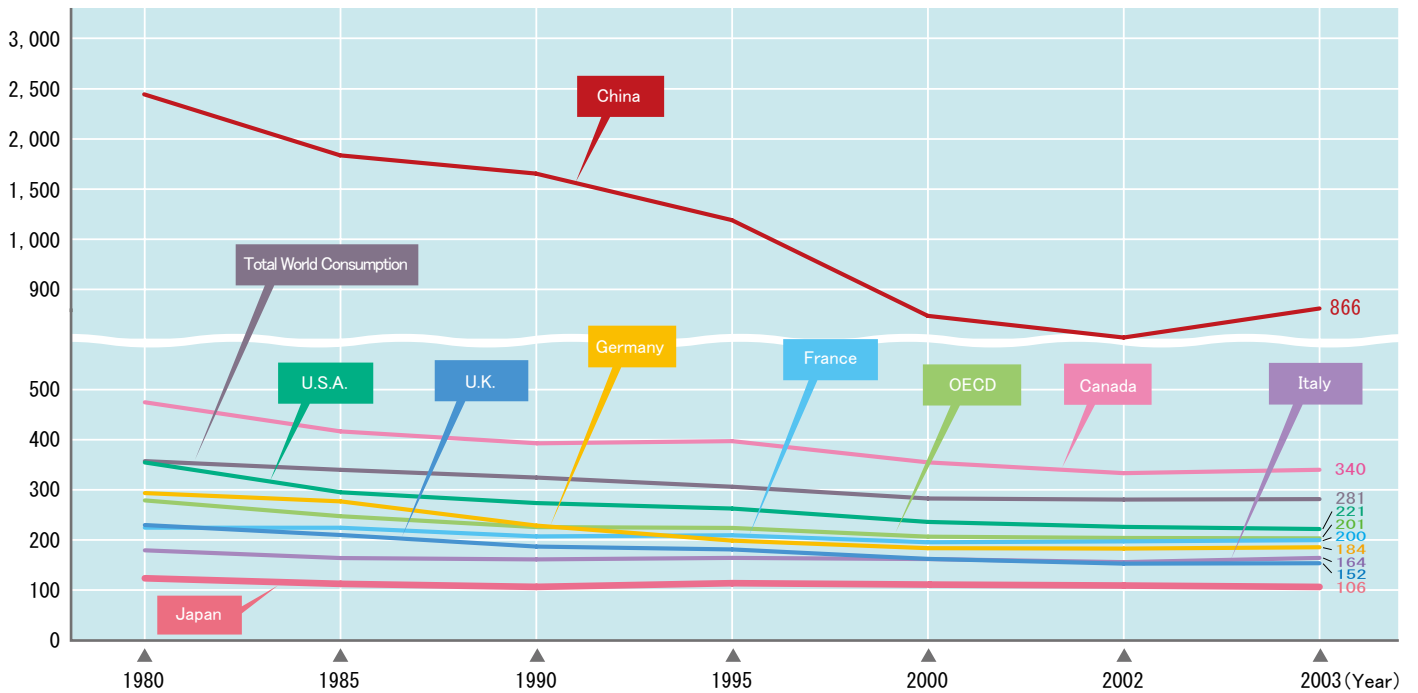
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Japan Is An Energy-Saving Superpower

CHEMICAL INDUSTRY OF JAPAN
2006

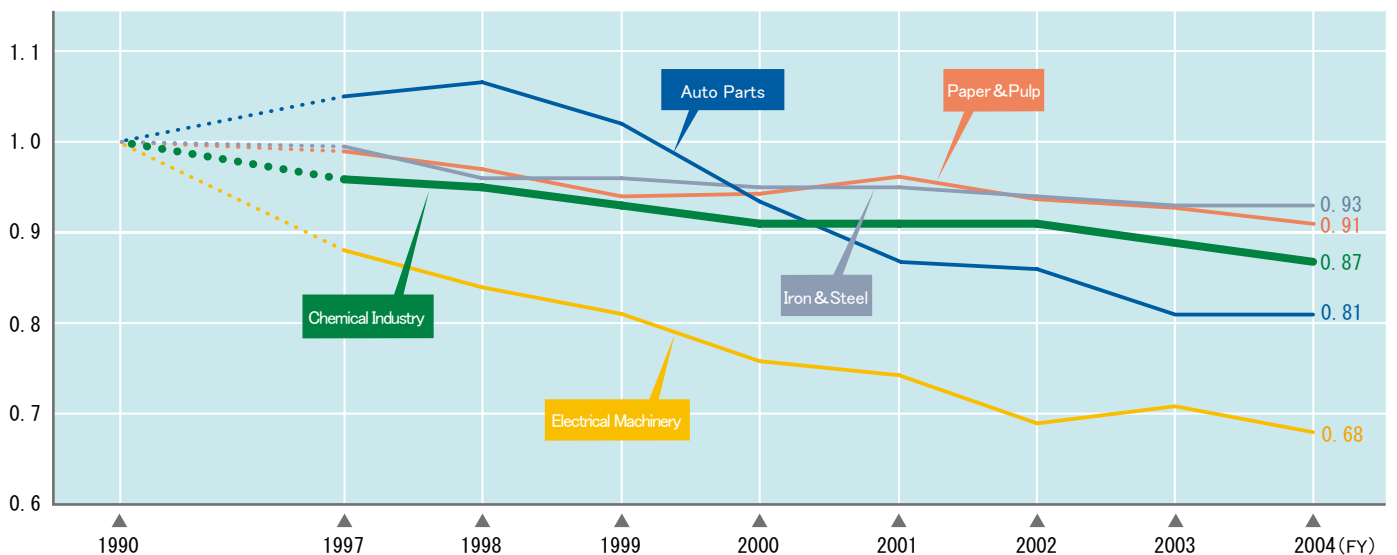
Japan uses the least energy per GDP of all advanced countries.

■ World's primary energy consumption per GDP [tons in crude oil equivalent / 2000 price, \$million]



(Source) The Energy Conservation Center, Japan [Handbook of Energy & Economic Statistics in Japan]

■ Energy consumption per unit of major industries in Japan [1990=1.0]



(Source) Nippon Keidanren [Results of the Fiscal 2005 Follow-up to the Keidanren Voluntary Action Plan on the Environment—Section on Global Warming Measures]

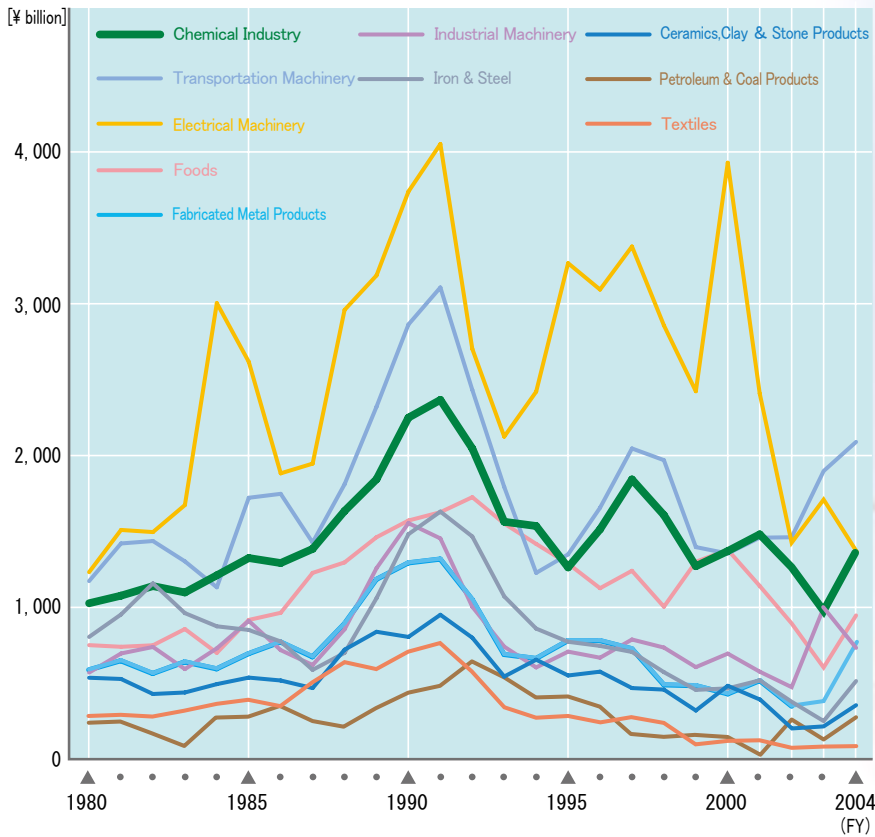
7

Chemical Industry Ranks High in Plant Investment



Plant investment by the chemical industry accounted for 11% of all manufacturing industries.

■ Trend of plant investment by industry



■ Trend of plant investment by industry [¥ billion]

Industry	Year	Every 5th year					Recent three years			
		1980	1985	1990	1995	2000	2002	2003	2004	
Chemical Industry		1,024	1,322	2,247	1,260	1,368	1,261	985	1,361	10.5%
Foods		748	914	1,569	1,285	1,376	891	604	930	7.2
Textiles		273	391	710	275	113	69	83	89	0.7
Petroleum & Coal Products		239	280	438	413	146	262	132	281	2.2
Ceramics, Clay & Stone Products		533	534	802	548	480	199	218	353	2.7
Iron & Steel		802	848	1,479	770	463	375	274	506	3.9
Fabricated Metal Products		588	695	1,293	781	430	349	383	783	6.0
Industrial Machinery		567	908	1,552	705	692	471	998	743	5.7
Electrical Machinery		1,229	2,615	3,737	3,265	3,927	1,423	1,710	1,378	10.6
Transportation Machinery		1,170	1,719	2,861	1,346	1,352	1,459	1,845	2,094	16.1
Others		2,112	2,855	4,795	3,200	2,891	2,280	2,452	4,463	34.4
Total manufacturing		9,286	13,082	21,483	13,849	13,238	9,039	9,684	12,982	100.0

(Source) Ministry of Finance [Financial Statements Statistics of Corporations by Industry]

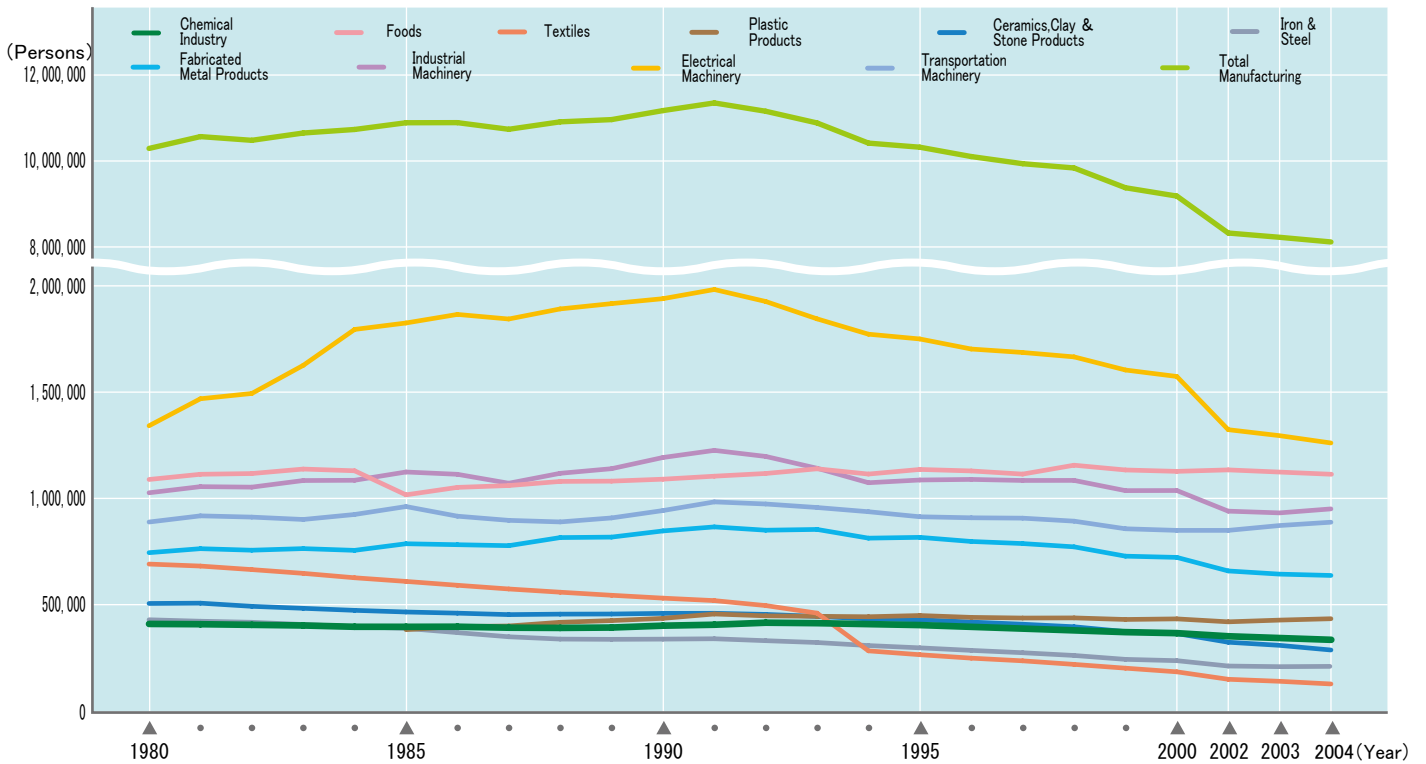
8

340,000 Workers Are Employed



The number of employees in the chemical industry accounted for 4.2% in entire manufacturing industry.

■ Changes in the number of employees by industry



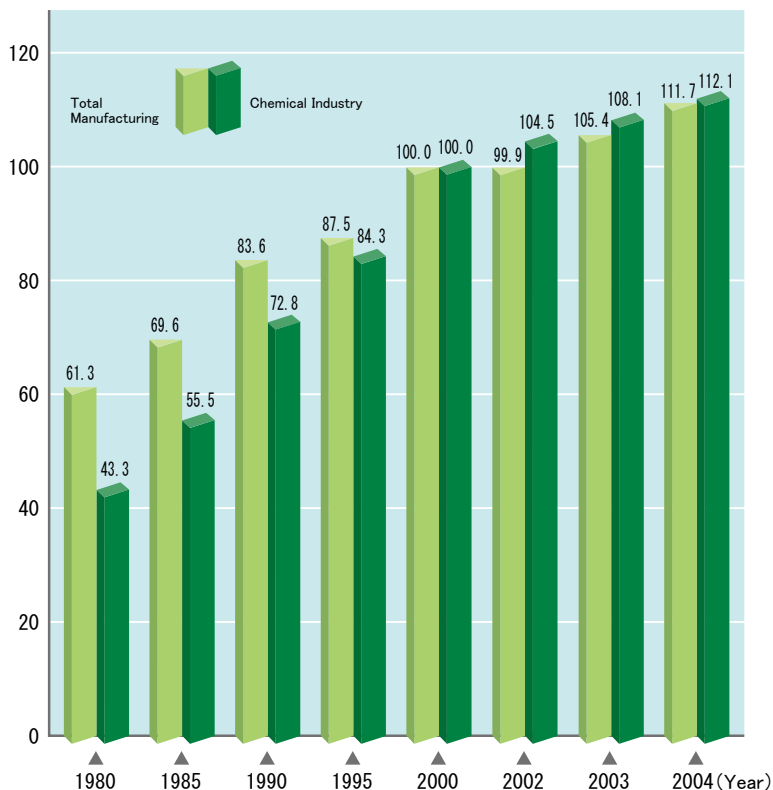
■ Changes in the number of employees by industry [persons]

Industry	Year	Every 5th year					Recent three years			
		1980	1985	1990	1995	2000	2002	2003	2004	
Chemical Industry		409,338	395,748	401,076	392,109	365,953	353,980	344,889	341,298	4.2%
Foods		1,089,035	1,016,731	1,090,403	1,136,236	1,127,177	1,137,521	1,127,507	1,107,720	13.7
Textiles		691,018	609,462	530,736	264,528	184,004	155,071	149,214	139,506	1.7
Plastic Products		—	382,247	435,523	448,939	433,177	417,945	430,784	434,591	5.4
Ceramics, Clay & Stone Products		505,585	465,483	459,040	429,023	363,997	321,735	310,950	298,011	3.7
Iron & Steel		428,957	388,357	337,811	296,824	236,525	209,087	207,214	207,712	2.6
Fabricated Metal Products		744,546	786,604	846,915	816,694	722,425	667,367	658,229	646,343	8.0
Industrial Machinery		1,026,377	1,124,229	1,192,406	1,086,575	1,037,079	941,689	937,392	956,253	11.8
Electrical Machinery		1,341,722	1,825,314	1,939,729	1,750,103	1,573,683	1,326,340	1,299,122	1,272,854	15.7
Transportation Machinery		888,840	961,590	942,795	913,535	849,517	853,472	877,452	899,805	11.1
Others		3,166,500	2,934,184	2,996,395	2,786,017	2,290,296	1,939,382	1,885,397	1,809,583	22.3
Total manufacturing		10,291,918	10,889,949	11,172,829	10,320,583	9,183,833	8,323,589	8,228,150	8,113,676	100.0

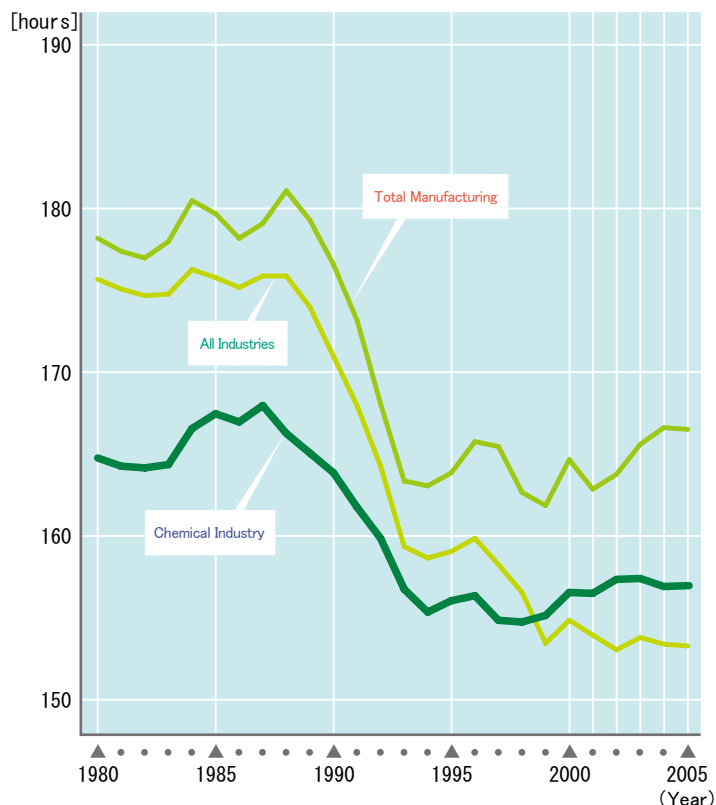
(Source) Ministry of Economy, Trade and Industry [Census of Manufactures] (Note) Statistics of facilities with more than four employees



■ Indices of physical labor productivity [2000=100]



■ Working hours (monthly average of total net working hours)



■ Indices of physical labor productivity [2000=100]

Year	Industry	Manufacturing Industries		Chemical Industry	
		Indices	Increase rate %	Indices	Increase rate %
Every 5th year	1980	61.3	3.5	43.3	△0.2
	1985	69.6	2.8	55.5	3.5
	1990	83.6	2.7	72.8	4.6
	1995	87.5	4.4	84.3	8.1
	2000	100	6.3	100	2.6
Recent three years	2002	99.9	3.4	104.5	3.4
	2003	105.4	5.5	108.1	3.4
	2004	111.7	6.0	112.1	3.7

(Source) Japan Productivity Center for Socio-Economic Development

■ Working hours (monthly average of total net working hours) [hours]

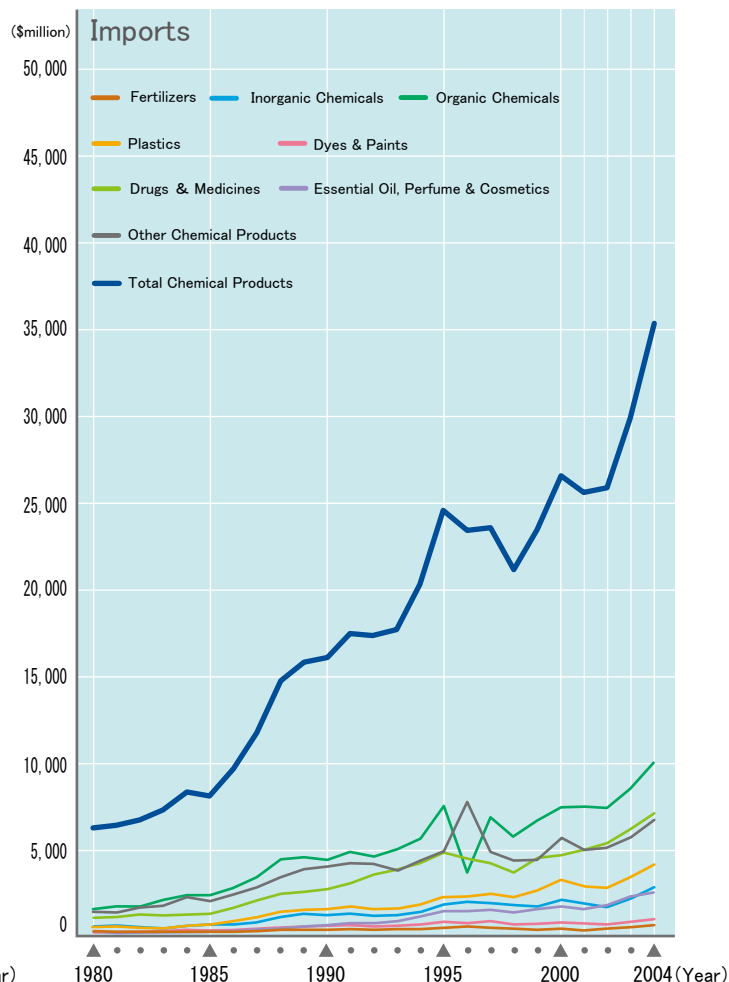
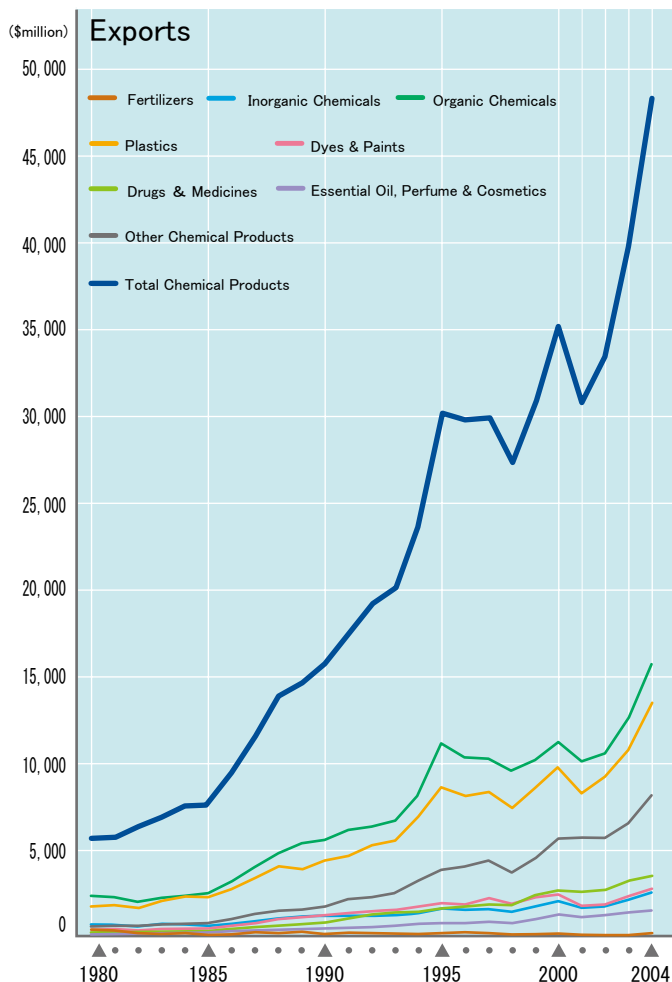
Year	Industry	All Industries	Total manufacturing	Chemical Industry
Every 5th year	1985	175.8	179.7	167.5
	1990	171.0	176.6	163.9
	1995	159.1	163.9	156.1
	2000	154.9	164.7	156.6
	2003	153.8	165.6	157.3
Recent three years	2004	153.3	167.7	156.9
	2005	152.4	166.8	157.0

(Source) Ministry of Health, Labour and Welfare [Monthly Labour Survey]

10 Exports/Imports

The trade surplus continued to increase, amounting to \$13 billion in 2004. As to the export, petrochemical products to Asia showed a remarkable increase.

Exports and imports of chemical products

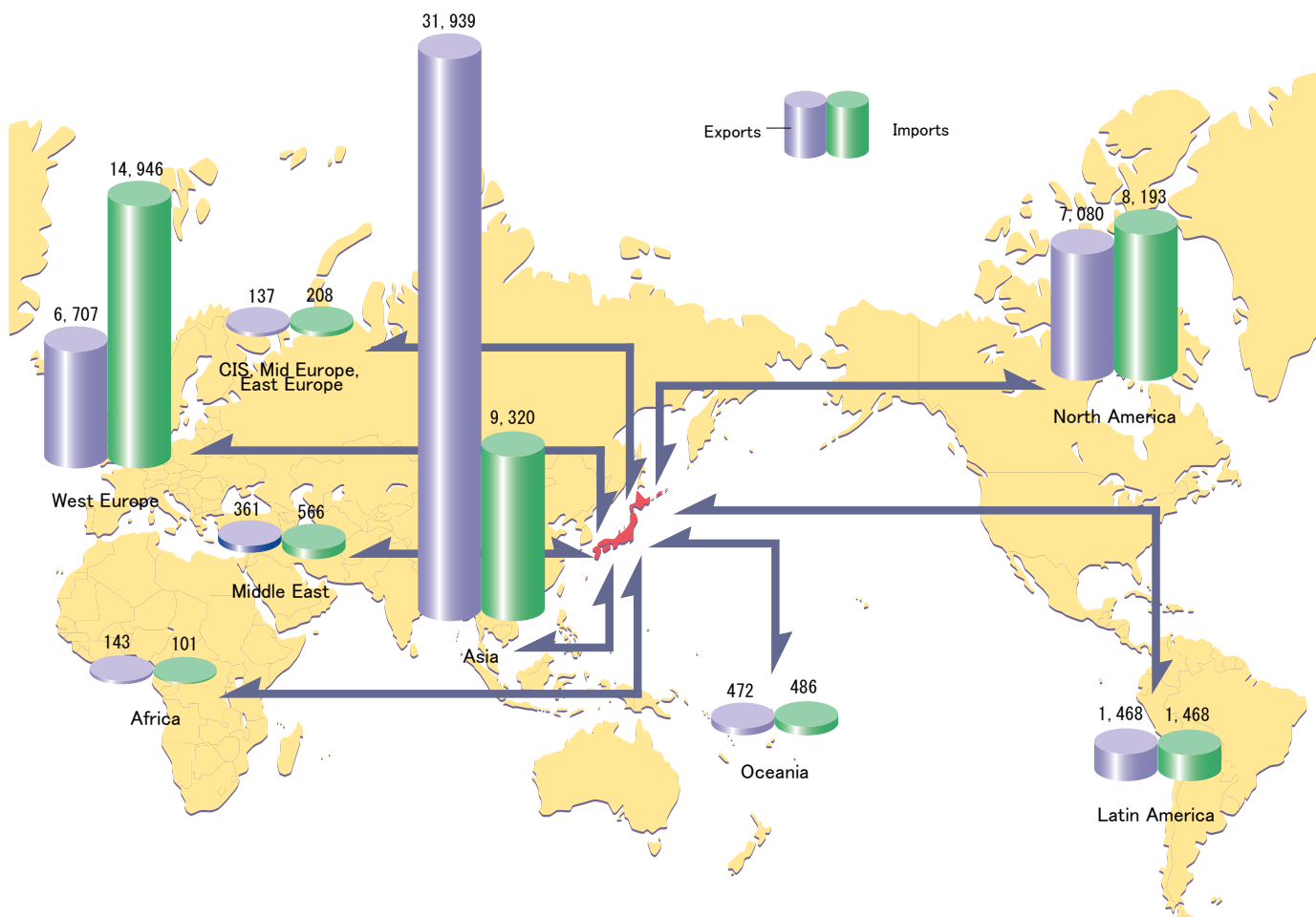


Exports and imports of chemical products [\$million]

Exports									Products	Imports										
Every 5th year					Recent three years					Every 5th year					Recent three years					
1980	1985	1990	1995	2000	2002	2003	2004			1980	1985	1990	1995	2000	2002	2003	2004			
377	127	101	122	93	84	86	103		0.2%	Fertilizers	279	258	405	527	529	523	530	642		1.8%
719	708	1,188	1,720	2,084	1,882	2,128	2,620		5.4	Inorganic Chemicals	642	742	1,194	1,974	2,131	1,834	2,164	2,916		8.3
2,276	2,512	5,640	11,110	11,191	10,638	12,703	15,707		32.5	Organic Chemicals	1,679	2,411	4,457	7,587	7,546	7,425	8,568	10,009		28.4
1,867	2,261	4,386	8,649	9,810	9,257	10,812	13,671		28.3	Plastics	563	744	1,660	2,321	3,226	2,951	3,451	4,169		11.8
425	558	1,224	1,938	2,436	1,968	2,325	2,877		6.0	Dyes & Paints	272	319	700	914	880	794	944	1,030		2.9
295	391	879	1,843	2,733	2,812	3,180	3,541		7.3	Drugs & Medicines	1,074	1,292	2,834	4,908	4,764	5,438	6,195	7,112		20.2
174	263	579	897	1,198	1,167	1,326	1,595		3.3	Essential Oil, Perfume & Cosmetics	231	252	725	1,502	1,803	1,884	2,231	2,604		7.4
636	879	1,876	3,917	5,790	5,578	6,543	8,193		17.0	Other Chemical Products	1,462	2,054	4,069	4,937	5,736	5,083	5,795	6,807		19.3
6,767	7,698	15,872	30,196	35,336	33,385	39,104	48,306		100.0	Total Chemical Products	6,202	8,073	16,045	24,670	26,615	25,932	29,878	35,288		100.0

(Source) Ministry of Economy, Trade and Industry [White Paper on International Economy and Trade]

■ Exports and imports of chemical products in 2004 by region [\$ million]



■ Exports and imports of chemical products in 2004 by region [\$ million]

Exports									Region	Imports								
Every 5th year					Recent three years					Every 5th year					Recent three years			
1980	1985	1990	1995	2000	2002	2003	2004	1980		1985	1990	1995	2000	2002	2003	2004		
3,024	3,161	8,641	18,376	21,123	20,178	24,290	31,939	66.1%	Asia	574	665	2,425	4,171	6,013	5,918	7,184	9,320	26.4%
257	169	283	243	264	275	318	361	0.7	Middle East	28	153	602	611	490	460	527	566	1.6
881	1,125	3,183	5,226	5,462	5,160	5,891	6,707	13.9	West Europe	2,081	2,651	6,510	10,814	11,219	11,100	12,842	14,946	42.4
845	1,532	2,605	4,945	6,563	5,969	6,642	7,080	14.7	North America	2,730	3,667	5,500	7,511	7,630	6,765	7,417	8,193	23.2
272	219	282	703	1,302	1,246	1,356	1,468	3.0	Latin America	194	347	584	839	647	1,113	1,230	1,468	4.2
158	114	138	152	151	139	130	143	0.3	Africa	67	70	69	85	50	40	69	101	0.3
302	286	384	480	393	346	379	472	1.0	Oceania	240	99	202	481	430	395	440	486	1.4
1,029	1,091	357	70	78	71	99	137	0.3	CIS, Mid Europe, East Europe	288	420	153	157	136	141	168	208	0.6
6,767	7,698	15,872	30,196	35,336	33,385	39,104	48,306	100.0	Total Chemical Products	6,202	8,073	16,045	24,670	26,615	25,932	29,878	35,288	100.0

(Source) Ministry of Economy, Trade and Industry [White Paper on International Economy and Trade]

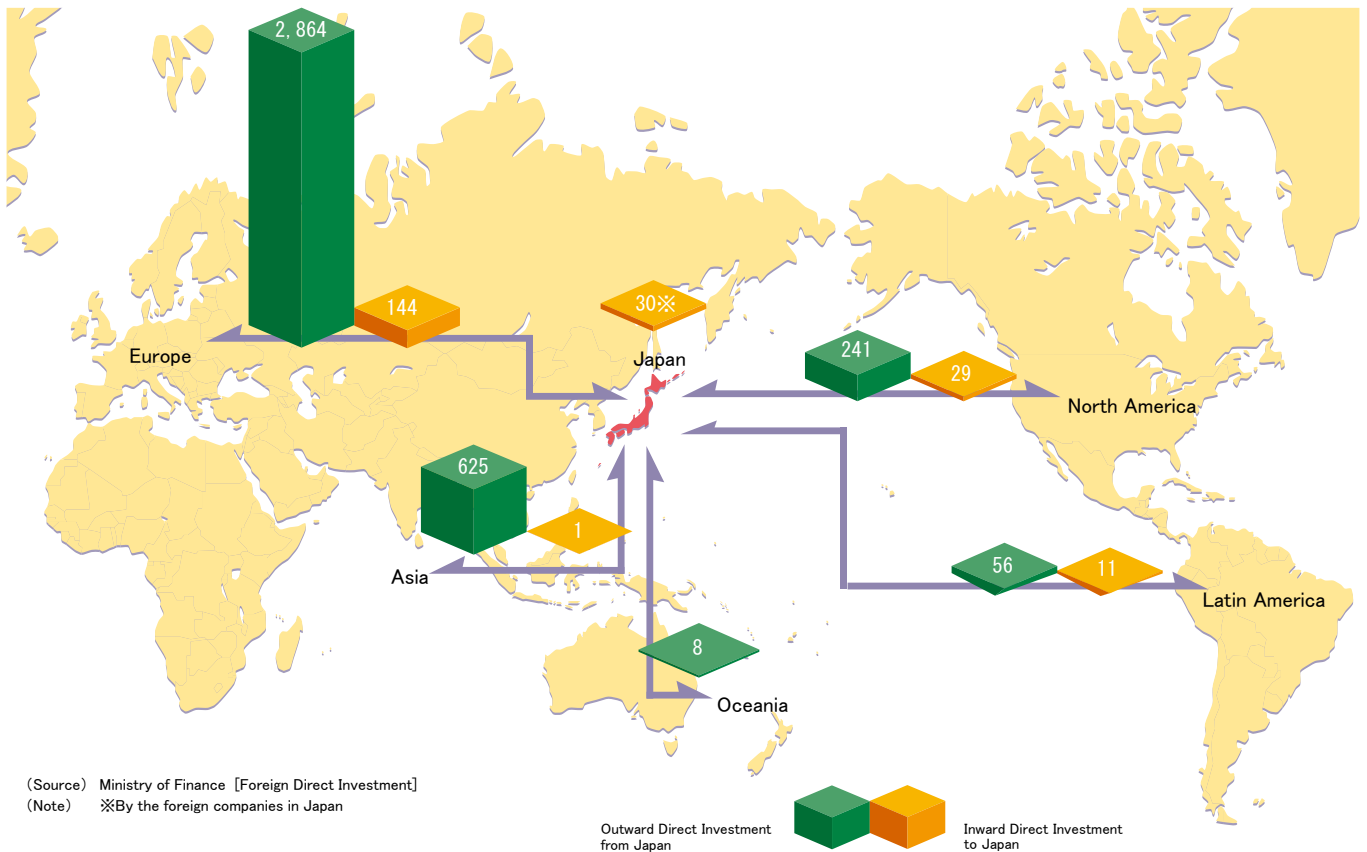
11

Outward Direct Investment Amounts to Yen 380 Billion, While Inward Direct Investment Amounts to Yen 21 Billion

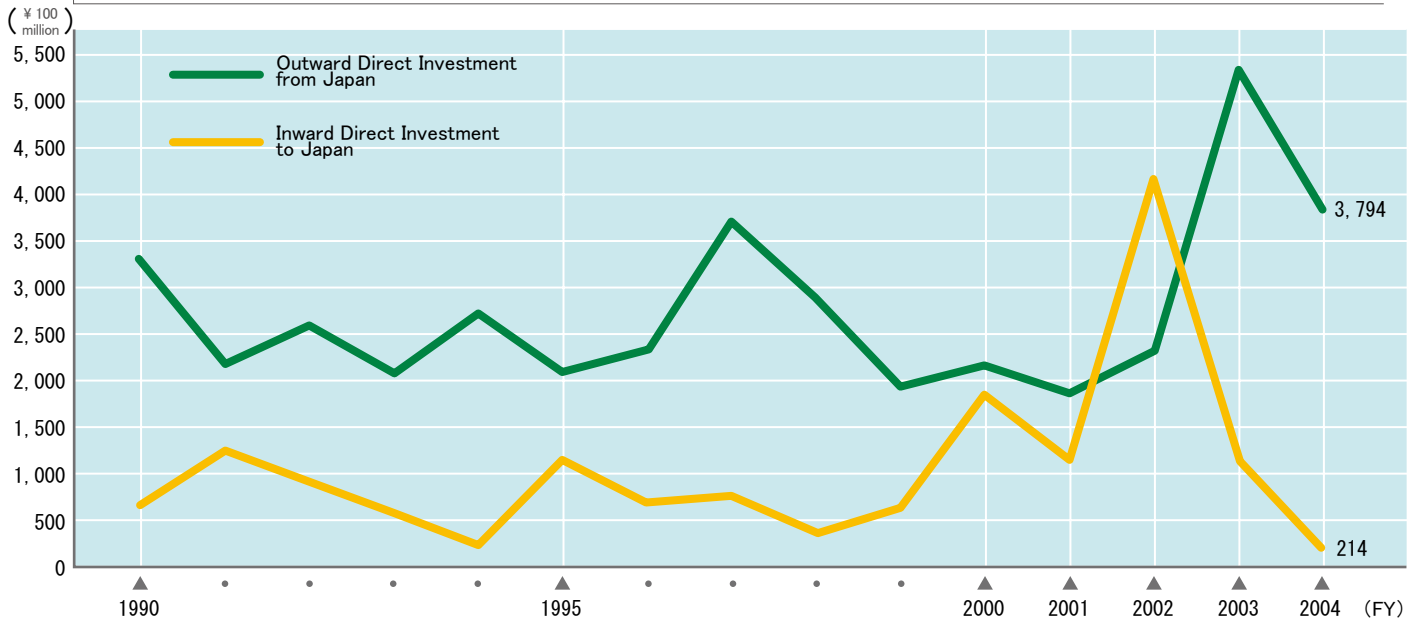


Inward direct investment dropped to the lowest level in the past 10 years in FY2004 due to increased investment in China and other countries by foreign companies.

■ Outward direct investment of the Japanese chemical industry and inward direct investment to the chemical industry in Japan in FY 2004 [¥ 100million]

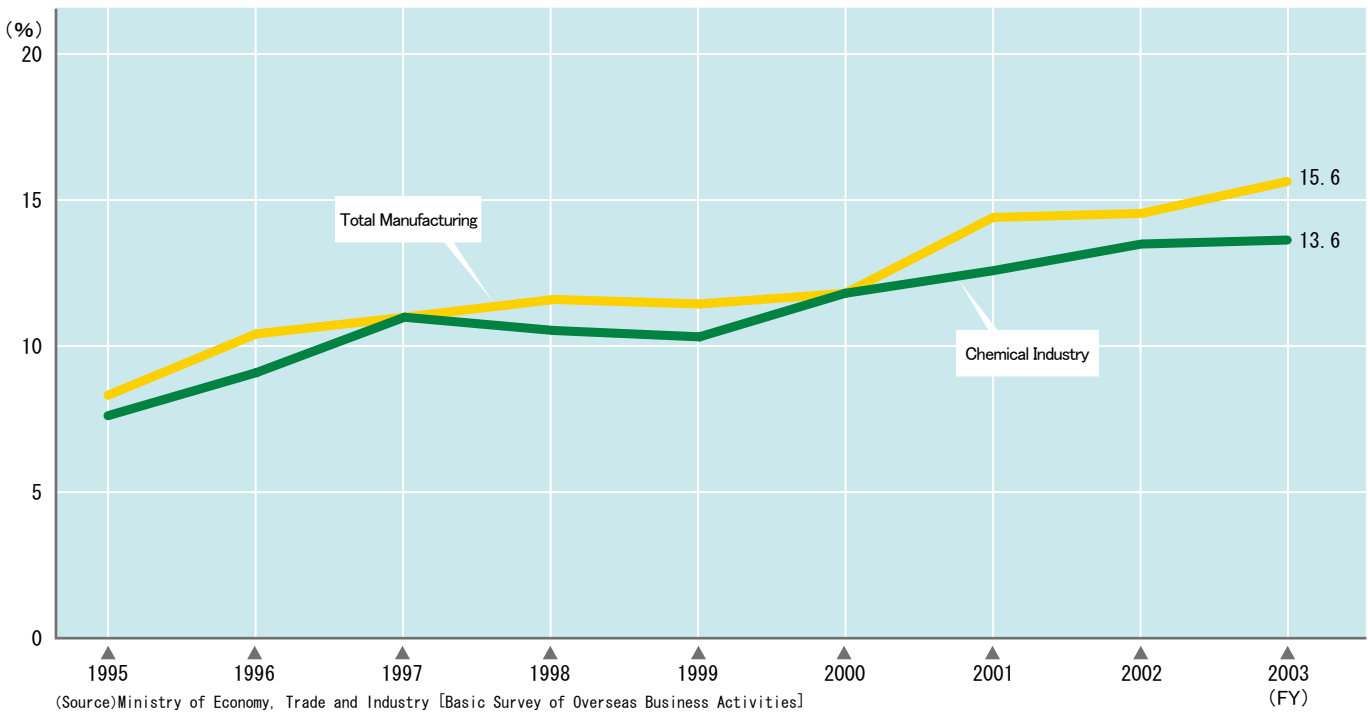


■ Actual outward direct investment of the Japanese chemical industry and inward direct investment to the chemical industry in Japan

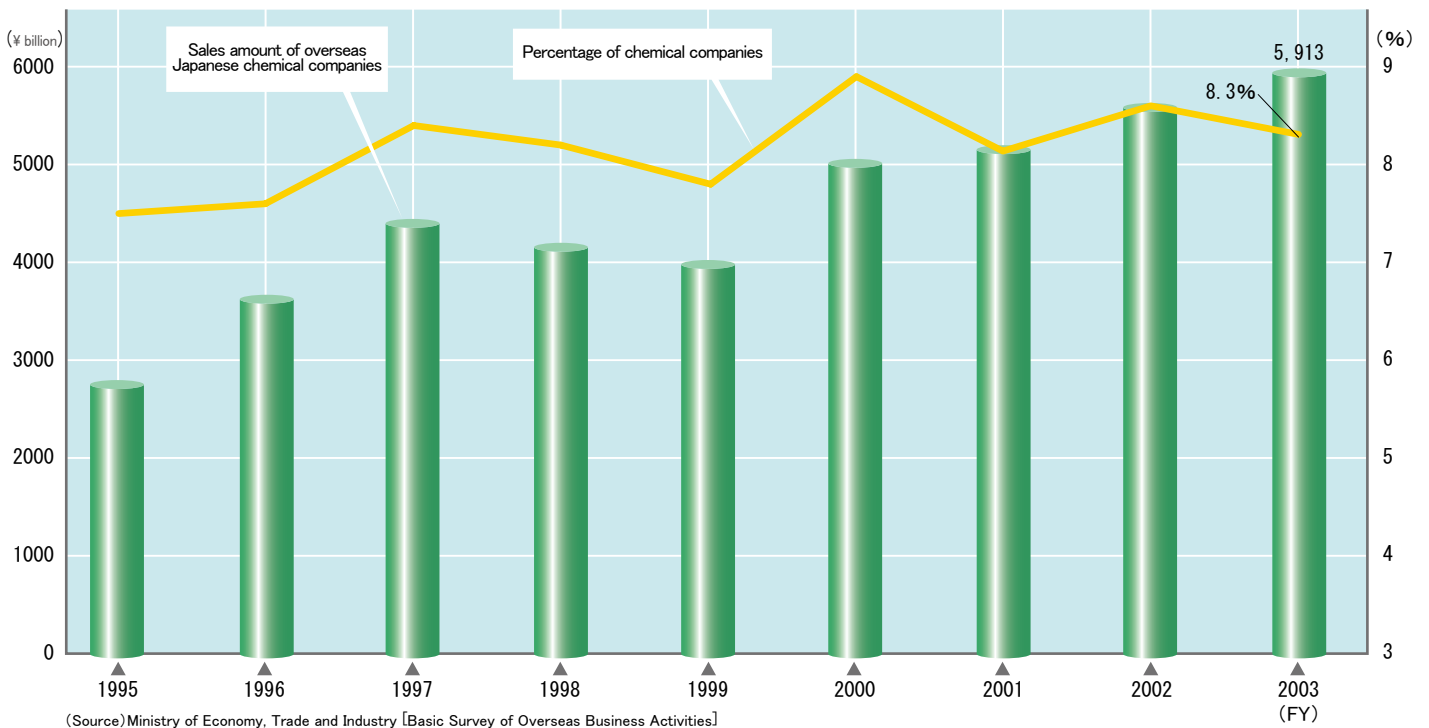


Overseas production of the Japanese chemical industry has amounted to over 14%.

■ Trend of overseas production of Japanese companies



■ Sales of Japanese chemical companies based overseas and its percentage of all overseas Japanese manufacturing companies' sales



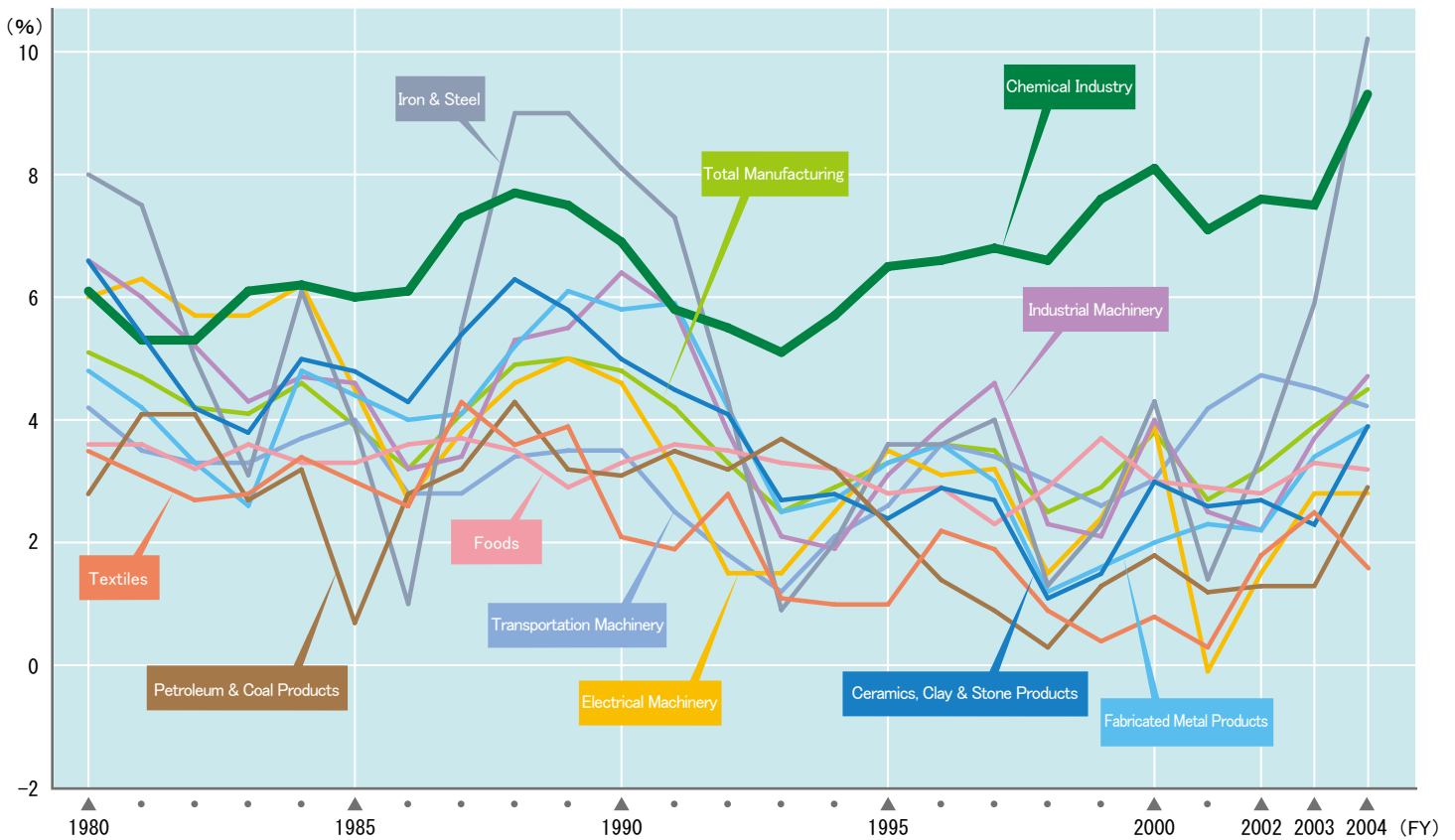
13

Operating Profit Ratio



Operating profit ratio to sales increased to 9.3%.

■ Trend of ratio of operating profits to sales by industry



■ Trend of ratio of operating profits to sales by industry [%]

Industry	Year	Every 5th year					Recent three years		
		1980	1985	1990	1995	2000	2002	2003	2004
Chemical Industry		6.1	6.0	6.9	6.5	8.1	7.6	7.5	9.3
Foods		3.6	3.3	3.3	2.8	3.0	2.8	3.3	3.2
Textiles		3.5	3.0	2.1	1.0	0.8	1.8	2.5	1.6
Petroleum & Coal Products		2.8	0.7	3.1	2.3	1.8	1.3	1.3	2.9
Ceramics, Clay & Stone Products		6.6	4.8	5.0	2.4	3.0	2.7	2.3	3.9
Iron & Steel		8.0	3.9	8.1	3.6	4.3	3.4	5.9	10.2
Fabricated Metal Products		4.8	4.4	5.8	3.3	2.0	2.2	3.4	3.9
Industrial Machinery		6.6	4.6	6.4	3.1	4.0	2.2	3.7	4.7
Electrical Machinery		6.0	4.5	4.6	3.5	3.9	1.5	2.8	2.8
Transportation Machinery		4.2	4.0	3.5	2.6	3.0	4.7	4.5	4.2
Total manufacturing		5.1	3.9	4.8	3.3	3.8	3.2	3.9	4.5

(Source) Ministry of Finance [Financial Statements Statistics of Corporations by Industry]

Summary of Major Indices

CHEMICAL INDUSTRY OF JAPAN
2006



Major indices in 2004

Industry	Year	Number of Facilities	Number of Employees (Persons)	Total Shipment (Yen billion)	Amount of Value Added (Yen billion)	Plant Investment (Yen billion)	R&D Expenditures (Yen billion)
Chemical Industry		4,928	341,298	24,149	11,439	1,361	1,738
Foods		33,886	1,107,720	22,789	8,611	930	282
Textiles		8,004	139,506	2,305	998	89	38
Plastic Products		16,233	434,591	10,636	4,362	na	118
Ceramics, Clay & Stone Products		14,044	298,011	7,446	3,726	353	129
Iron & Steel		4,370	207,712	14,141	4,874	506	135
Fabricated Metal Products		34,764	646,343	13,454	5,959	783	101
Industrial Machinery		33,508	956,253	29,074	11,256	743	991
Electrical Machinery		20,733	1,272,854	49,847	16,747	1,378	1,009
Transportation Machinery		12,053	899,805	50,700	14,197	2,094	1,928
Others		88,383	1,809,583	59,877	19,622	4,744	3,918
Total manufacturing		270,906	8,113,676	284,418	101,792	12,982	10,388

(Source) Ministry of Economy, Trade and Industry [Census of Manufactures] ; Ministry of Finance [Financial Statements Statistics of Corporations by Industry] ; Ministry of Internal Affairs and Communications [Survey of Research and Development]

Ratio of chemical industry to all manufacturing industries [%]

Industry	Year	Number of Facilities	Number of Employees	Total Shipment	Amount of Value Added	Plant Investment	R&D Expenditures
Chemical Industry		1.8	4.2	8.5	11.2	10.5	16.7
Foods		12.5	13.7	8.0	8.5	7.2	2.7
Textiles		3.0	1.7	0.8	1.0	0.7	0.4
Plastic Products		6.0	5.4	3.7	4.3	na	1.1
Ceramics, Clay & Stone Products		5.2	3.7	2.6	3.7	2.7	1.2
Iron & Steel		1.6	2.6	5.0	4.8	3.9	1.3
Fabricated Metal Products		12.8	8.0	4.7	5.9	6.0	1.0
Industrial Machinery		12.4	11.8	10.2	11.1	5.7	9.5
Electrical Machinery		7.7	15.7	17.5	16.5	10.6	9.7
Transportation Machinery		4.4	11.1	17.8	13.9	16.1	18.6
Others		32.6	22.3	21.1	19.3	36.5	37.7
Total manufacturing		100.0	100.0	100.0	100.0	100.0	100.0

(Source) Ministry of Economy, Trade and Industry [Census of Manufactures] ; Ministry of Finance [Financial Statements Statistics of Corporations by Industry] ; Ministry of Internal Affairs and Communications [Survey of Research and Development]

Chemical Industry Supports Our Life and Other Industries, Protects The Earth and Realizes Our Dream

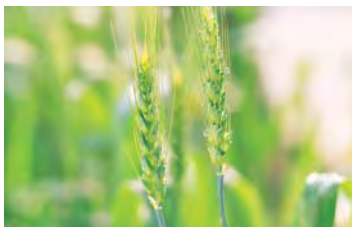
■ Chemical Industry and Technology and Social Needs



H New materials to cope with "sick house" syndrome, Ultra light/ultra hard new materials, Fire retardant new materials, Heat-resist(heat accumulating) materials



F Plant breeding by biotechnology, Factorization of agriculture, Highly functional packaging film materials/systems, Super enzymes



Allergy-free apparels, Waterproof and ventilation apparels, Form-memorizing apparels



Clothes



Resources and Energy

Solar generation, Fuel cells, Use of biomass, High-level oil-chemicals technology

Chemical Products, Technology and Activities That Meet The Needs of Various Fields



Transportation/Telecommunication/Electronics

Display materials (LCD, PDP, EL, etc.), Clean automobiles, Ultra lightweight automobiles, Cellular phone materials, Optical fiber



Environment

Green chemistry, Measures to cope with global warming, Water treatment/water production, Prevention of atmospheric pollution (SOx, NOx, VOC, etc.), Biodegradable polymers, Measures to cope with environmental hormone issue



Medical Treatment/Health

Biotechnology, Prevention of infection in hospitals, Genomic medicines

Nano Technology/New Materials

Carbon nano-tube, Organic electroluminescence

Information Disclosure

PRTR, Risk communications, MSDS

Global Activity

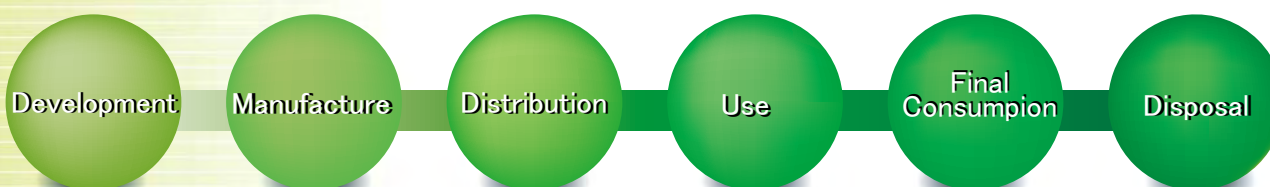
ICCA activity



About Responsible Care

What is Responsible Care?

Chemical substances—necessary and important to modern daily life. However, sometimes these substances can turn dangerous, becoming hazardous to human health and safety and the environment when handled improperly. The task of preserving the environment and ensuring the health and safety of humans has increased in step with the rise of global environmental problems and the rapid industrialization of developing countries. Adding to this situation the potential hazards linked to advanced technology has made it difficult to ensure the ecological soundness and safety of chemical operations and products simply by imposing laws and regulations. Thus, it is increasingly more important for companies that deal with chemical substances to undertake voluntary measures to ensure environmental preservation and human safety and health. Reflecting this trend, the world chemical industry started an initiative that promotes a voluntary management system aimed at preserving the environment against and ensuring the safety from chemical substances throughout the product's life cycle, from development through disposal. This initiative has been named "Responsible Care" (RC).



As a representative of the Japanese chemical industry and an important member of the global chemical industry, the JCIA promotes Responsible Care initiatives in cooperation with the ICCA. In 1990, the JCIA drew up "The Guiding Principles for the Improvement of Environmental, Health, and Safety Conditions." With the objective of promoting the implementation of the program in Japan, the JCIA established the Japan Responsible Care Council (JRCC) in 1995.

Responsible Care Logotype



レスポンシブル・ケア®

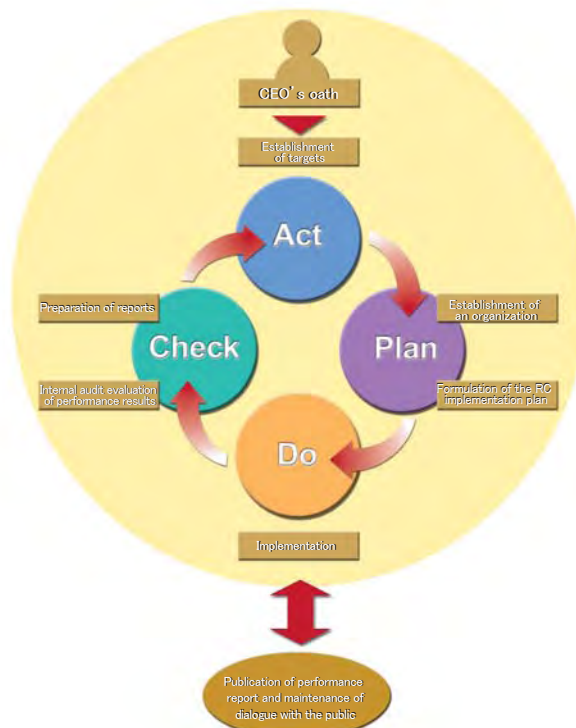
The logotype used to promote Responsible Care is authorized by the International Council of Chemical Associations (ICCA) as an international trademark for use by companies and organizations that implement Responsible Care programs. Permission to use the logotype is granted to member companies of chemical industry associations recognized by the ICCA. In Japan, the Japan Chemical Industry Association (JCIA), the Japan Responsible Care Council (JRCC), and member companies of the JRCC are exclusively authorized to use the logotype.

Procedures for Implementing RC

Member companies implement RC in accordance with the Codes and Guidelines for the Implementation of Responsible Care.

RC should be implemented in accordance with the Plan-Do-Check-Act (PDCA) cycle.

Member companies should present their implementation plans and performance results to the JRCC annually by submitting a Responsible Care Implementation Plan, a Responsible Care Implementation Report, and a Responsible Care Internal audit Certificate.



Main Activities of Responsible Care

Responsible Care is a Voluntary Initiative with company's commitment to improve all aspects of Environment, Health and Safety and to communicate with the public about activities and achievement to ensure transparency on the following five considerations.

RC is a set of voluntary activities based on a public commitment by companies engaged in the manufacture or handling of chemical substances. RC covers all aspects of performance related to the manufacture and handling of chemical substances.

- Environmental preservation (Protecting human health and preserving the natural environment)
 - Operational safety and disaster prevention (Preventing disasters at facilities and minimizing damage in case of disaster)
 - Occupational safety and health (Protecting the safety and health of workers)
 - Product stewardship (Providing information relating to the properties and handling procedures of chemical products to protect the safety and health of all people handling the products and the environment)
- RC requires companies to publicize their performance and maintain dialogue with the public; the approach aims to promote communications with the public and foster a better understanding of the role of companies that manufacture and handle chemical substances.

RC is a set of activities aimed at preserving the environment and ensuring safety and health in all stages of chemical substance life cycles from development and manufacturing to distribution, use, final consumption, and disposal. (product stewardship)

