Chiba Refinery

as of March 31, 2004

Address:	2 Goi-Kaigan, Ichihara-shi, Chiba-ken
Start-up:	February 1963
Total area:	1,202,841m2
Employees:	353
Capacity:	240,000 ballels/day
ISO 9001:	December 25, 1996
ISO 14001:	March 13, 1998

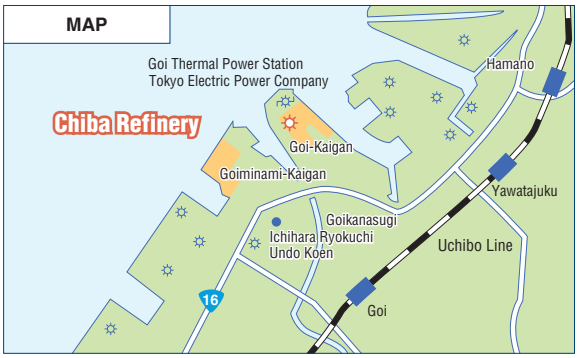
About Chiba Refinery

Chiba Refinery commenced its operation in 1963, in early years of Keiyo Industrial Area construction. Nowadays, this area has become one of the Japanese leading mega industrial areas. Here, as a pivotal factory of Chiba Petrochemical Federation, as well as our largest supply base in eastern Japan, the refinery has been through reinforcement and modernization and become one of the largest domestic refineries.
Under this situation, as a refinery recognized as a social existence, its operation would be inconceivable without "symbiosis with local community". In order to realize this, it is essential for us "to be trusted by local community". For this purpose, we consider it necessary to secure safe operation and encourage mutual understanding through communication. We facilitate dialogues through various local activities by hosting Hien cup youth baseball tournaments, which has been held for more than 30 years, sponsoring "Rinkai Festival", which has become a major festival of Ichihara city, cleaning national roads voluntarily as a part of community clean-up campaign, organizing refinery visits for elementary and junior high school students and visiting special care facilities and others.

Takashi Yashima
Director
Chiba Refinery

Communication activity

- Exchanges with local fire-fighting teams (participated by 5 teams and 10 corporations)
- Exchanges with officials of local neighborhood associations
- Ichihara city youth baseball tournaments, Ichihara junior high school tennis tournaments (co-hosted with Maruzen Petrochemical Co., Ltd.)
- Goi Rinkai festival, Goi Rinkai bon festival dance (sponsored by 6 local neighborhood associations in special industrial area and nearby 10 corporations)
- Visits to a special care facility "Heiwa-En" (organized using donations from employees), etc.



Number of refinery visitors in FY2003	**36 times, 473 visitors**
No accident record (total hours, as of Dec. 2003)	**15,702,000 hours**
PCB custody	**High pressure condenser: 62** **High voltage transformer: 17** **Others**

Number of staff holding environmental qualifications

Air pollution control manager	16
Water pollution control manager	21
Noise pollution control manager	4
Dioxin pollution control manager	2
Hazardous materials officer (Class A & B)	575
High-pressure gas production safety manager (Class A & B)	268
Qualified person for heat management	19
Qualified person for electricity management	6
Specially controlled industrial waste manager	3
Engineering manager for disposal facilities of industrial waste	2
Boiler operator (Special grade)	4
Boiler operator (1st & 2nd grade)	330

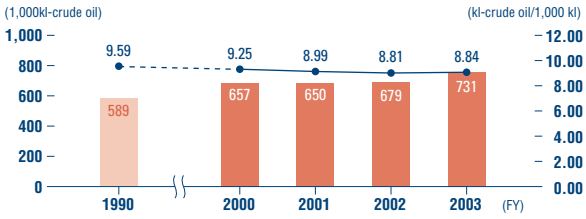
Regulated pollutants

	Pollutant	Standard	Actual Performance in FY 2003	
			Maximum	Average
Air pollutants	NOx (m³N/hour; total pollutant load control)	141.1	111.7	91.5
	SOx (m³N/hour; total pollutant load control)	189.7	148.1	111.7
	Particulate (boiler; g/m³N)	0.07	0.031	0.019

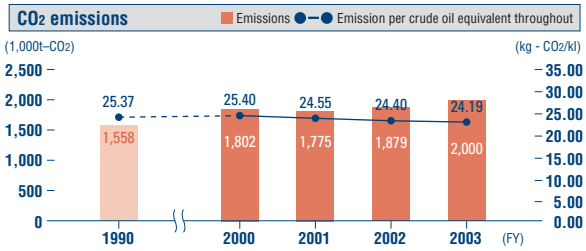
	Pollutant	Standard	Actual Performance in FY 2003	
			Maximum	Average
Water pollutants	COD (kg/day; total pollutant load control)	223	142.9	90.8
	COD (mg/L)	25	3.9	3.3
	SS (mg/L)	50	9.6	6.0
	Oil Content (mg/L)	3	0.8	0.7
	Nitrogen (mg/L)	10	2.1	1.9
	Phosphorus (mg/L)	1	0.1	0.07
	Phenols (mg/L)	0.5	Below measurement threshold	

Environmental performance (energy, etc.)

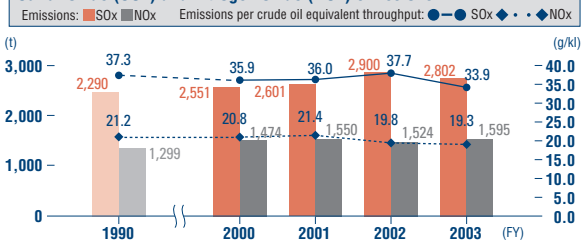
Energy consumption



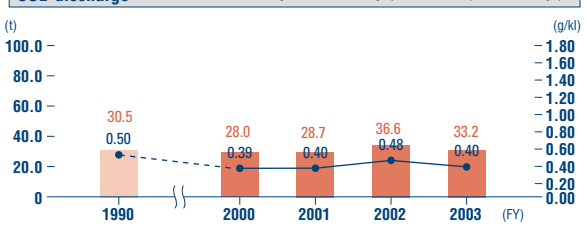
CO_2 emissions



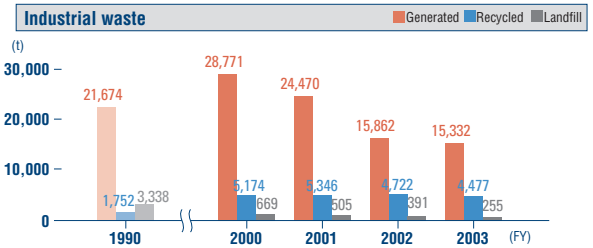
Sulfur oxide (SOx) and nitrogen oxide (NOx) emissions



COD discharge



Industrial waste



Environmental performance (PRTR)

PRTR listed substances		Releases				Transfers
		Air	Water	Soil	Total	
2-aminoethanol	kg/year	0	0	0	0	0
Ethyl benzene	kg/year	300	0	0	300	0
Xylene	kg/year	1,300	0	0	1,300	0
Cresol	kg/year	0	0	0	0	0
Cobalt and its compounds	kg/year	0	0	0	0	1,100
1,3,5-trimethylbenzene	kg/year	26	0	0	26	0
Toluene	kg/year	5,500	0	0	5,500	0
Nickel compounds	kg/year	0	0	0	0	70,000
Nonylphenol	kg/year	0	0	0	0	0
Hydrazine	kg/year	0	0	0	0	0
Benzene	kg/year	760	0	0	760	0
Molybdenum and its compounds	kg/year	0	0	0	0	86,000
Cyclohexylamine	kg/year	0	0	0	0	0
Dioxins	mg-TEQ/year	0	29	0	29	0

Environmental accounting

Environmental costs (million yen)

Item		FY 2003	
		Investment	Expenditure
Business area	Pollution prevention	84	1,340
	Global environmental conservation	4	2,783
	Resource circulation	19	346
Up/Down-stream	Green Purchasing	0	0
	Reduction of environmental impact of products	998	14,317
	Sulfur reduction of products	965	12,307
	Substitution of toxic substances in gasoline	33	2,010
Management activity		7	176
Research and development		0	0
Social activity		0	1
Total		1,112	18,963

Purchasing recycled paper: 1 million yen

Economic benefits (million yen)

Item	FY 2003
Costs saved through energy conservation (cogeneration)	937
Total	937

Environmental benefits

Item		FY 2003 Reduction (year-on-year)	
		Concentrations/unit value	Impact
Business area			
Reduced resources input into business activities			
Energy input		–0.03 (kl-crude/1,000kl)	–2,019 (TJ)
Water input		–14 (kg/kl)	–1,891 (1,000t)
Reduced emissions and waste generation			
Emissions to air:	CO_2	0.21 (kg-CO_2/kl)	–121 (1,000t-CO_2)
	SOx	3.8 (g/kl)	98 (t)
	NOx	0.5 (g/kl)	–71 (t)
	Benzene	0.00 (g/kl)	0.11 (t)
Emissions to water:	COD	0.4 (g/kl)	69 (t)
Industrial waste :	Generation	21 (g/kl)	530 (t)
	Recycled	7 (g/kl)	245 (t)
	Landfill	2 (g/kl)	136 (t)
Up/Down-stream benefits			
Reduced environmental impact of products			
Reduced sulfur content in products		(sulfur content: mass %)	(potential SOx: t)
	High octane gasoline	0.0001	1
	Regular gasoline	0.0000	1
	Naphtha	–0.0004	–41
	Jet fuel oil	0.0094	97
	Kerosene	0.0010	31
	Diesel fuel	0.0191	675
	Heavy fuel oil A	0.0315	1,473
	Heavy fuel oil C	0.0004	–5,801
	LPG	–0.0001	0
	Total	–0.0087	–3,564
Reducing benzene in gasoline		0.0774 (vol %)	1,464 (t)
CO_2 emissions from product use		–0.0136 (t-CO_2/kl)	–1,528 (1,000t-CO_2)