

Sakaide Refinery

as of 31 March, 2004

Address:	1-1 Bannosu Midori-machi, Sakaide-shi, Kagawa-ken
Start-up:	October 1972
Total area:	847,943m ²
Employees:	216
Capacity:	120,000 ballels/day
ISO 9001:	May 10, 1996
ISO 14001:	June 18, 1997



About Sakaide Refinery

Sakaide Refinery, the westernmost of the Cosmo refineries, serves as a supply base for oil products in Shikoku and other parts of western Japan. When Kakinomoto Hitomaro, a poet represented in the Man-yoshu (8th Century collection of poems), drifted ashore on the coast of Sanuki (Kagawa), he is said to have composed the poem: "Jeweled seaweed, the Province of Sanuki; Is it your nature that the sight of you never tires me; Or is it your god's nature?" Sakaide Refinery is located near a monument commemorating this poem, and looks out on the Setonaikai national park, which still continues to provide that magnificent, panoramic and scenic view. To protect this beautiful scenery and environment, to build a harmonious relationship with the local community, and to earn a reputation as a responsible refinery, each and every one of our employees strives for environmental conservation and safety. We engage in locally based activities to strengthen our tie with the local community; for example, we clean streets near the refinery and participate in a softball competition along with local community associations. Most notably, our employees, together with a neighborhood association, have taken part as reinforcements in the Athletic program of the Shamijima elementary/junior high school, which has only seven pupils. As this example shows, we consider it particularly important to have heartwarming exchanges with local residents. We are, as a member of the local community, committed to running a safe, trusted refinery well into the future.



Yoshikatsu Suematsu
Director
Sakaide Refinery

Communication activity

- Information exchange sessions with businesses in the Bannosu area in relation to safety and environment;
- Lending of facilities to local sport enthusiast groups (53 times, 785 people in FY 2003);
- Cleaning of commuter streets (4 times in FY 2003, with 80 participants in total), etc.

Award

- Received an award from the Director-General of the Fire and Disaster Management Agency as an outstanding business treating hazardous articles.



Number of staff holding environmental qualifications

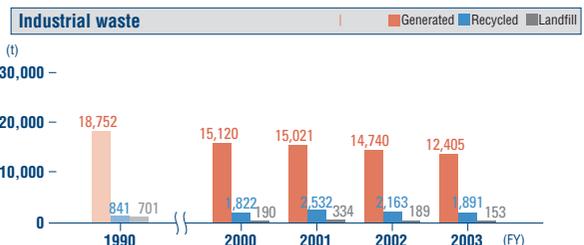
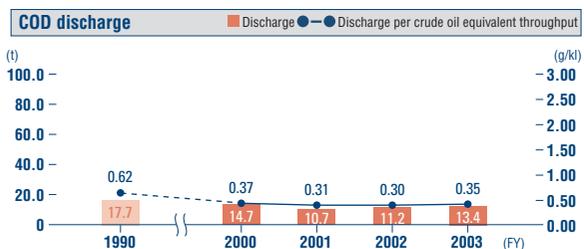
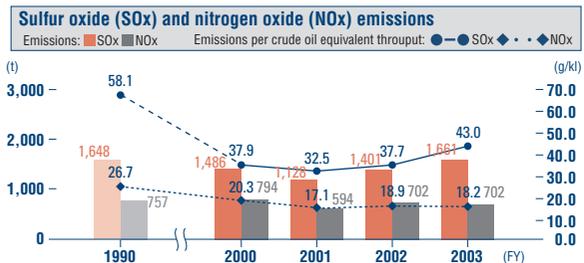
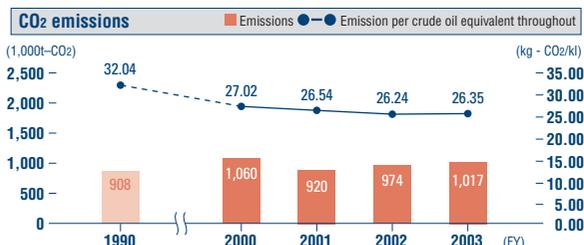
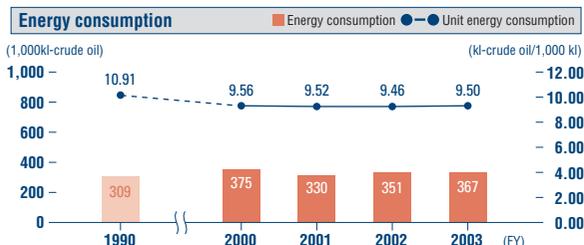
Air pollution control manager	9
Water pollution control manager	10
Noise pollution control manager	1
Hazardous materials officer (Class A & B)	224
High-pressure gas production safety manager (Class A & B)	175
Qualified person for heat management	12
Qualified person for electricity management	5
Specially controlled industrial waste manager	2
Engineering manager for disposal facilities of industrial waste	2
Boiler operator (Special grade)	2
Boiler operator (1st & 2nd grade)	210

Number of refinery visitors in FY2003	22 times, 370 visitors
No accident record (total hours, as of Dec. 2003)	680,000 hours
PCB custody	None

Regulated pollutants

	Pollutant	Standard	Actual Performance in FY 2003	
			Maximum	Average
Air pollutants	NOx (m³N/hour; total pollutant load control)	190.0	50.0	39.0
	SOx (m³N/hour; total pollutant load control)	164.0	89.2	66.2
	Particulate (boiler; g/m³N)	0.05	0.005	0.005
Water pollutants	COD (kg/day; total pollutant load control)	120.0	63.6	36.5
	COD (mg/L)	15 (10)	7.0	3.9
	SS (mg/L)	15 (10)	7.0	4.0
	Oil Content (mg/L)	2	Below measurement threshold	
	Nitrogen (mg/L)	120 (60)	1.7	1.5
	Phosphorus (mg/L)	16 (8)	0.05	0.04
	Phenols (mg/L)	1	Below measurement threshold	
			Values in () are daily average.	

Environmental performance (energy, etc.)



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	580	0	0	580	0
Xylene	kg/year	2,400	0	0	2,400	0
Cobalt and its compounds	kg/year	0	0	0	0	2,700
1,3,5-trimethyl benzene	kg/year	0.4	0	0	0.4	0.0
Toluene	kg/year	8,800	0	0	8,800	0
Nickel compounds	kg/year	0	0	0	0	34,000
Benzene	kg/year	2,500	0	0	2,500	0
Molybdenum and its compounds	kg/year	0	0	0	0	46,000
Zinc compounds (water soluble)	kg/year	0	1,800	0	1,800	0
Cyclohexylamine	kg/year	0	0	0	0	0

Environmental accounting

Environmental costs (million yen)		FY 2003	
		Investment	Expenditure
Business area	Pollution prevention	33	770
	Global environmental conservation	0	0
	Resource recycling	0	90
Up/Down-stream	Green Purchasing	0	0
	Reduction of environmental impact of products	182	8,762
	Sulfur reduction of products	175	6,284
	Substitution of toxic substances in gasoline	7	2,478
Management activity		0	63
Research and development		0	0
Social activity		0	0
Total		215	9,685

Purchasing recycled paper: 1 million yen

Economic benefits (million yen) 0 million yen

Item	FY 2003	
	Reduction (year-on-year)	
	Concentrations/unit value	Impact
Business area		
Reduced resources input into business activities		
Energy input	-0.04 (kl-crude/1,000kl)	-600 (TJ)
Water input	-10 (kg/kl)	-492 (1,000t)
Reduced emissions and waste generation		
Emissions to air: CO2	-0.11 (kg-CO2/kl)	-43 (1,000t-CO2)
SOx	-5.3 (g/kl)	-260 (t)
NOx	0.7 (g/kl)	0 (t)
Benzene	0.01 (g/kl)	0.00 (t)
Emissions to water: COD	-0.05 (g/kl)	-2.2 (t)
Industrial waste : Generation	76 (g/kl)	2,335 (t)
Recycled	9 (g/kl)	272 (t)
Landfill	1 (g/kl)	36 (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	0
Regular gasoline	-0.0003	-8
Naphtha	0.0056	-19
Jet fuel oil	0.0008	0
Kerosene	0.0003	6
Diesel fuel	0.0165	301
Heavy fuel oil A	0.0427	-571
Heavy fuel oil C	-0.0059	-4,003
LPG	-0.0002	0
Total	-0.0207	-4,294
Reducing benzene in gasoline	0.0765 (vol%)	860 (t)
CO2 emissions from product use	-0.0066 (t-CO2/kl)	-1,096 (1,000t-CO2)