4 Maintaining Harmony with the Local Environment

Kyushu Electric Power takes positive measures to protect protect the environment of surrounding communities. Initiatives such as environmental impact assessments prior to construction of power stations, environmental conservation during power facility operation, and proper management of the facility itself are taken, as well as maintaining harmony with the local environment.

1 Environmental impact assessment

In accordance with the Environmental Impact Assessment Law, Kyushu Electric Power conducts a survey on the natural (sea, land and air) and social environment prior to the construction of power stations. Then, the environmental impact likely to be caused by construction of the power station is estimated and evaluated, and appropriate measures are taken to protect the environment of the power station vicinity.

Meteorological observation

2 Prevention of air, water and noise pollution

In operating its power stations and other facilities, Kyushu Electric Power conforms not only to the laws and regulations, but also to the environmental conservation agreements, concluded with related local governments with regard to air, water and noise pollution as well as vibration.

Measures against air pollution

Using the best technology in the world, Kyushu Electric Power takes measures to address exhaust gas from thermal power stations.

- Kyushu Electric Power's Fiscal 2002 emissions intensity (emissions per kW thermal electric power production) was 0.27g/kWh for sulfur oxide (SOx), and 0.22g/kWh for nitrogen oxide (NOx).

◇**SOx reduction measures**

- Use of heavy and crude oil with a low sulfur content
- Promotion of LNG use, which does not contain sulfur
- Installation of desulfurization facilities which remove SOx from exhaust gas
- Adoption of the in-furnace desulfurization method, which removes SOx within the boiler

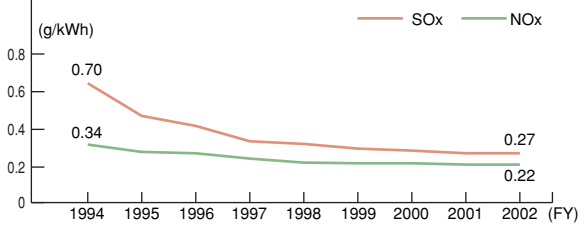
◇**NOx reduction measures**

- Combustion method improvement including boilers
  Adoption of the two-stage combustion method
  Adoption of the exhaust gas re-circulation combustion method
  Adoption of low NOx burners
- Installation of denitrification facilities, which remove NOx from exhaust gas

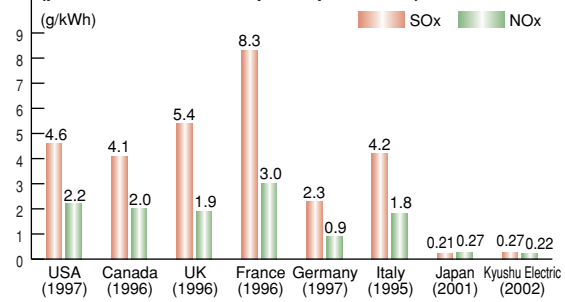
◇**Particulate reduction measures**

- Promotion of LNG use, which does not generate particulate
- Installation of high efficiency precipitators, which remove particulate from exhaust gas

Kyushu Electric Power SOx and NOx emissions intensity
(per kW thermal electric power production)



SOx and NOx emissions intensity around the world
(per kW thermal electric power production)



Source: "Energy and the Environment" by the Federation of Electric Power Companies

Water quality conservation

- Wastewater from facilities and sites is treated using special wastewater treatment systems at all of the company's thermal and nuclear power stations. It is then discharged once wastewater quality is confirmed.
- Quality analysis is conducted regularly for water in reservoirs at hydroelectric power stations. The water quality is maintained by measures including treating freshwater red tide with ultraviolet rays, selective water intake when water is turbid, and ensuring the health of neighboring forests.

Measures against noise and vibration

- Kyushu Electric Power addresses noise and vibration problems by adopting low-noise, low-vibration equipment, installing mufflers and soundproofing walls, and by installing noise-producing equipment indoors.

Measures against land pollution

- Kyushu Electric Power strictly abides by the laws and regulations on land pollution (the Soil Contamination Countermeasures Law, Water Pollution Control Law, Waste Disposal and Public Cleaning Law, Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management, etc.) to avoid discharge and leakage of toxic substances into the ground.
- From Fiscal 2003, the company began to conduct voluntary surveys on soil contamination for sites sold or purchased by the company, aiming to avoid the risk of land pollution.

3 Environmental protection management

Kyushu Electric Power's power stations are strictly managed to ensure environmental protection by means of environmental monitoring and chemical substance control.

Environmental monitoring

- Continuous monitoring using environmental supervisory instruments
- Video camera monitoring
- Patrol monitoring
- Regular measurement and analysis
- Reporting environmental data to related authorities

● The environment surrounding the power stations is under strict control, cooperating with relevant municipalities and neighboring businesses.

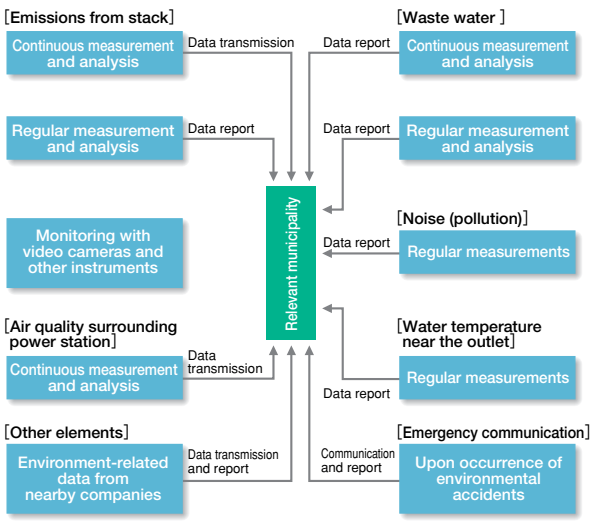
◇Environmental monitoring for radioactivity around nuclear power stations

The radioactivity of air, seawater and environmental samples of agricultural and marine products is measured. Similar measurements are also performed in the prefectures where nuclear power stations are located.

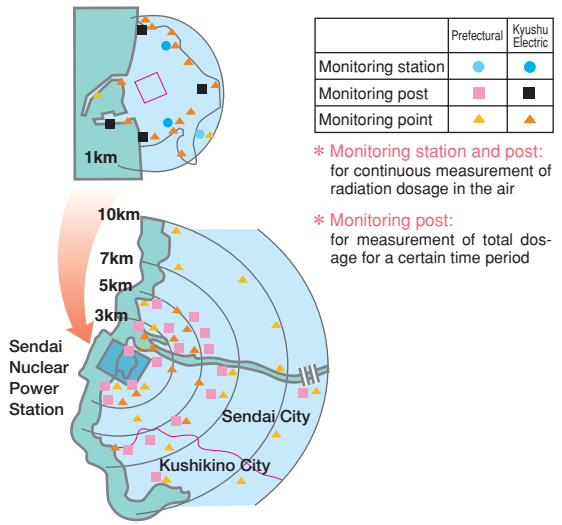
● Kyushu Electric Power reports on the measurement results to the related prefectures. The prefectures in turn review and evaluate the reports under the guidance and advice of academic experts, and publicize the findings in public relations magazines.

● The radiation dosage for people living near power stations is less than 0.001mSv per year. This is much lower than the 1mSv per year statutory dosage limit, and also lower than the annual 0.05mSv target set by the Nuclear Safety Commission.

Environmental monitoring and reporting flow



Radioactivity inspection in the vicinity of Sendai Nuclear Power Station



Radioactive waste management

Radioactive waste includes low-level radioactive waste issued from nuclear power stations and high-level radioactive waste resulting from spent fuel reprocessing. Both require different management and disposal methods.

◇Management of low-level radioactive waste

● Waste in the form of gas or liquid is discharged into the air or sea after being treated, measured for radioactivity, and confirmed as safe. The influence of such discharge on power stations' surrounding environment is in the range of natural radiation.

■ Discharge status of radioactive gaseous waste and liquid waste

Unit: Bq

			Targeted value	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002
Gaseous waste	Rare gases	Genkai N.P.S.	2.2×10^{15}	6.6×10^{10}	3.1×10^{11}	2.9×10^{10}	1.1×10^{10}	8.8×10^{9}	1.2×10^{10}
		Sendai N.P.S.	1.6×10^{15}	3.4×10^{10}	3.7×10^{10}	6.7×10^{10}	3.1×10^{10}	1.5×10^{10}	1.6×10^{10}
	Iodine	Genkai N.P.S.	5.9×10^{10}	N.D.	3.9×10^{6}	N.D.	N.D.	N.D.	N.D.
		Sendai N.P.S.	6.2×10^{10}	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Liquid waste (excl. tritium)		Genkai N.P.S.	1.4×10^{11}	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
		Sendai N.P.S.	7.4×10^{10}	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

※ N.P.S.: Nuclear Power Station
N.B. 1: Bq (becquerel) shows the concentration of radioactivity.
N.B. 2: N.D. stands for the values less than detectable critical concentration.

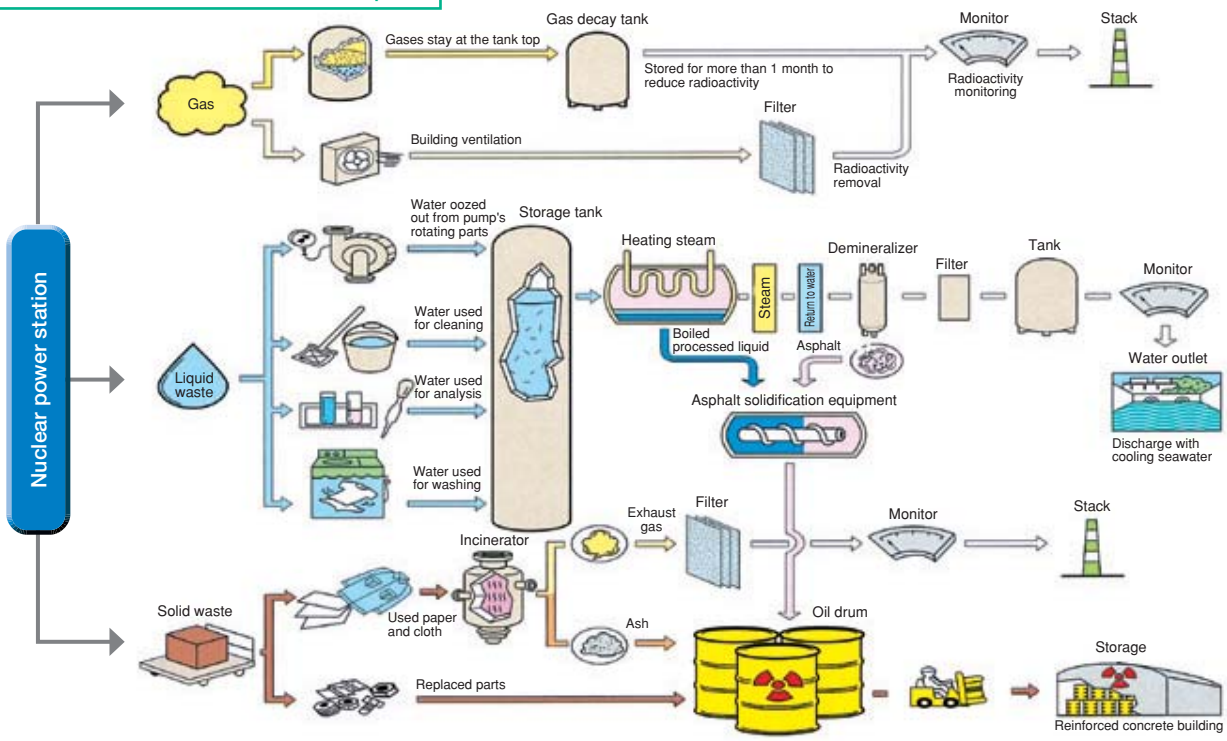
- Concentrated, treated wastewater is solidified with asphalt and sealed inside drums.
- Solid waste is first bulk-reduced by incineration and/or compression, and sealed inside drums. These drums are first stored stringently in the solid waste storage located within the power station site. The drums are then transferred to the Low-level Radioactive Waste Disposal Center of Japan Nuclear Fuel Limited in Rokkasho-mura, Aomori Prefecture. There, they are buried and kept until the waste ceases to have any effect on the living environment.

Radioactive solid waste storage status (Unit: a 200-liter drum)

	Waste stored in power station sites	Waste transferred*
Genkai Nuclear Power Station	19,934 (20,143)	6,536 (5,936)
Sendai Nuclear Power Station	10,150 (9,775)	—
Total	30,084 (29,918)	6,536 (5,936)

N.B. Figures are the cumulative totals as of end of FY 2002, and figures in parentheses are totals as of end of FY 2001.
*Amount transferred to the Low-level Radioactive Waste Disposal Center.

Flow of low-level radioactive waste disposal



COLUMN NO.2 Laws and regulations related to radioactive waste

Radioactive waste, discharged from nuclear power stations, is controlled by laws and regulations which are different from the ones applied to general waste. General waste, discharged from households and business entities, is to be recycled as much as possible from the point of effective use of resources and environmental conservation. All the waste generated within each nuclear power station's controlled areas (areas for which radioactivity influence, resulting from nuclear power reactor operation, is required to be managed) is categorized as low-level radioactive waste, while waste generated from reprocessing of spent fuel outside power stations is categorized as high-level radioactive waste. Disposal of high-level radioactive waste is regulated by the Law concerning the Regulations of Nuclear Material Substances, Nuclear Fuel Substances and Nuclear Reactors which defines the method of storage, and locations for storage and disposal. Kyushu Electric Power makes every effort to reduce the generation of low-revel radioactive waste and to minimize the volume of waste generated.

Waste type	Laws and regulations applied
Radioactive waste	The Law concerning the Regulations of Nuclear Material Substances, Nuclear Fuel Substances and Nuclear Reactors
General and industrial waste	Waste Disposal and Public Cleaning Law

Chemical substance control

Most chemical substances handled by Kyushu Electric Power are for use at thermal or nuclear power stations, and are properly managed at each office in full accordance with related laws and regulations.

◇PRTR (Pollutant Release and Transfer Register) system

Kyushu Electric Power has taken the initiative in investigating, collecting and disclosing data on specific chemical substances' emissions and amounts transferred.

■ PRTR investigation results (FY2002)※1

Index No.	Chemical substances	Applications	Unit	Amount handled	Amount released into environment				Amount transferred※2	FY 2001(reference)		
					Air	Water	Soil	Landfill		Amount handled	Amount released	Amount transferred
63	Xylene	Coating material for equipment	kg	5,600	5,600	0	0	0	0	4,800	4,800	0
179	Dioxin	Waste incinerator	mg-TEQ※3	—	54	0	0	0	34	—	40	14
253	Hydrazine	Feed water processing agent	kg	30,000	1.5	0	0	0	0	35,000	1.7	0
304	Boron and boron compounds	Reactivity control in nuclear reactors	kg	2,200	0	0	0	0	0	3,200	0	0
311	Manganese and manganese compounds	Desulfurization agent	kg	—※4	—	—	—	—	—	1,300	54	0
353	Tris phosphate (dimethyl phenyl)	Turbine control	kg	7,100	0	0	0	0	7,800	11,000	0	12,000

※ 1 : Calculated for 1 ton or more of Class 1 chemical substances, or 0.5 tons or more of specified Class 1 chemical substances handled by offices annually (Effective digit: 2). All dioxins are calculated regardless of the amount.
※ 2 : Amount transferred as waste
※ 3 : Since the toxicity of dioxins differs according to type, values are expressed in toxicity equivalent quantity (TEQ) in 2, 3, 7, 8-T4CDD.
※ 4 : Not calculated as the annual amount handled totaled under 1 ton.
N.B.1: Since FY 2002, under the Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management (full enforcement in Apr. 2001), enterprises are required to report to the government records and management of the quantity of specified chemical substances that are emitted and transferred.
N.B.2: Under the PRTR (Pollutant Release and Transfer Register) system, operators keep track of the amount of each chemical substance subject to PRTR that is released during operational activities and of the amount transferred as waste. These results are then reported. This system serves to promote voluntary management efforts by operators together with society as a whole, fostering countermeasures against the environmental risks imposed by such chemical substances.

◇Dioxins

Kyushu Electric Power is reducing the use of waste incinerators, which are believed to emit dioxins. As for the boilers installed at thermal power stations, only small amounts of dioxins are emitted because fuel contains little chlorine and a high combustion temperature is secured by an appropriate management system.

- In Fiscal 2002, the company discontinued the use of 39 waste incinerators, leaving eight waste incinerators still in operation as of the end of Fiscal 2002.
- Currently, seven of the above eight incinerators are not being used. The remaining one incinerator's emission levels meet all standards stipulated by the Dioxin Treatment Countermeasure Special Measures Law (enforced in Jan. 2000).

◇PCB (polychlorinated biphenyl)

- Equipment which utilizes PCB (1,512 high-voltage transformers, capacitors and others) is kept in special storage areas at Kyushu Electric Power under stringent surveillance.
- Kyushu Electric Power plans to treat the equipment and render it harmless by 2016, the deadline set by the Law Concerning Special Measures against PCB Waste, effective as of July 2001.

4 Harmony with the surrounding environment

When designing facilities, Kyushu Electric Power places a high priority on the natural and urban landscapes of their surrounding areas, and implements environmentally friendly measures such as tree planting, in addition to natural environment protection activities.

- Part of the section of 220kV Higashi-fukuoka new trunk line, which connects Kitakyushu Substation (Kitakyushu City) and Higashi-fukuoka Substation (Kasuya-gun, Fukuoka Pref.) crosses a part of the Kitakyushu Quasi-National Park which are designated as second and third class special areas. On installing the transmission line, an environmental impact assessment (park assessment), which took approximately one year, was carried out based on the guidance of local authorities, as the use, and activities conducted, in these areas are regulated by the Natural Parks Law.
- Based on the results, the installation was carried out by prioritizing the conservation of the scenic view from the observation deck, which attracts visitors. Steel towers were painted so as to be in harmony with the surrounding environment; and native trees were planted to revitalize the richness of the land.


Normal steel tower (unpainted)


Steel tower painted to be in harmony with the environment