

4. Maintaining Harmony with the Local Environment

Kyushu Electric makes positive efforts to protect the environment of surrounding communities, through such activities as environmental impact assessments prior to construction of power stations, environmental conservation during power facility operation, proper management of the facility itself, 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 plant is estimated and evaluated, and appropriate measures are taken to protect the environment of the vicinity. (See Related Information III5. (p.67) for details.)

(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 the environmental conservation agreements concluded with related local governments in 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 2001 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 particulates
- Installation of high efficiency precipitators, which remove particulates from exhaust gas

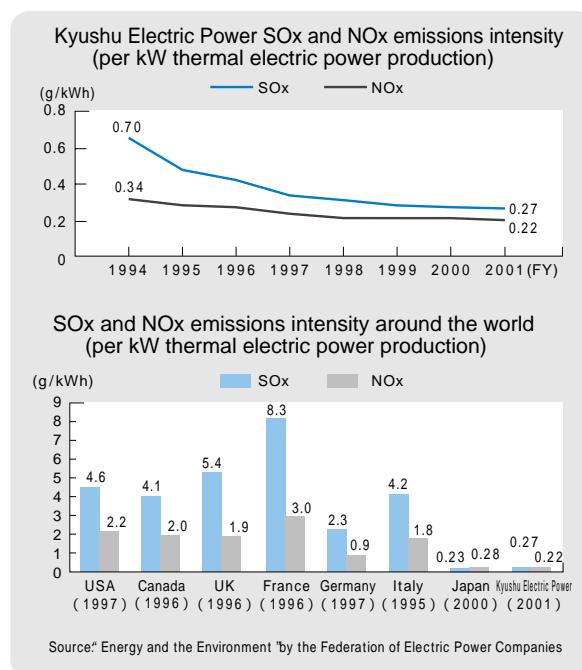
Water quality conservation

At all the company's thermal and nuclear power stations, waste water from facilities and sites is treated using special waste water treatment systems and is discharged after confirming its quality.

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

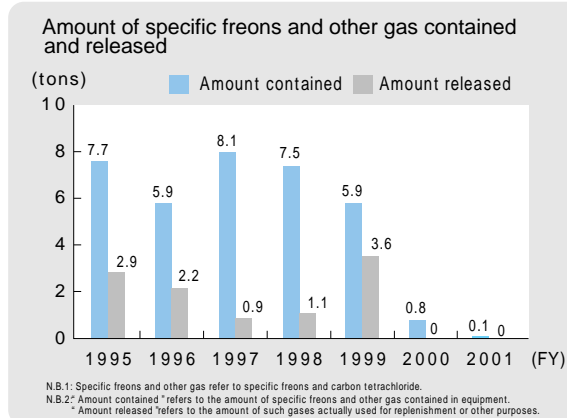
Kyushu Electric Power addresses noise and vibration problems by adopting low-noise, low-vibration equipment, installing mufflers and soundproofing walls, and by installing noise-producing equipment indoors.



(3) Ozone layer protection

Kyushu Electric Power tackles the reduction of specific freons and other gas to prevent ozone layer destruction.

Kyushu Electric Power's specific freons and other emissions (specific freons and carbon tetrachloride) have been zero since fiscal 2001, and their amount contained in fiscal 2001 was almost zero. These achievements were made possible by measures such as washing work clothing with water instead of dry-cleaning and changing generator refrigerant. Future tasks include reducing alternative freons and halon emissions, which are used as air conditioner refrigerant and in fire extinguishing facilities.



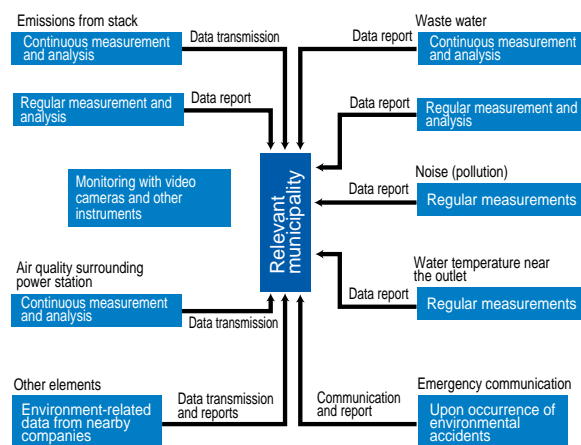
(4) Environmental protection management

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

Environmental monitoring

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

The environment surrounding power stations is under strict control, with power stations cooperating with relevant municipalities and neighboring businesses. No major environmental accidents have occurred to date.



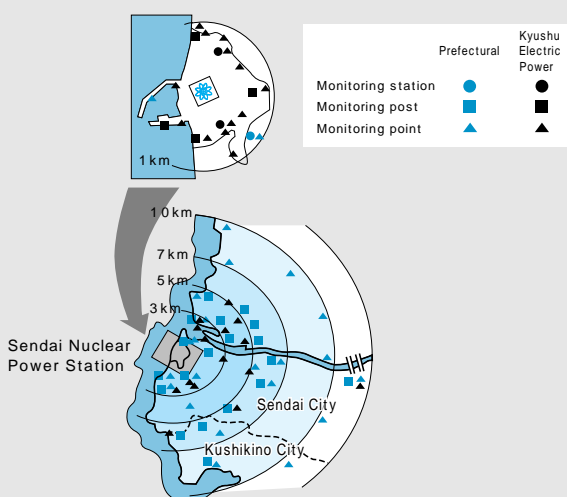
Environmental monitoring for radioactivity around nuclear power stations

The radioactivity of air, seawater and environmental samples of agricultural and marine products is measured to confirm that the environments surrounding nuclear power stations are not influenced by radiation. Similar measurements are also carried out by 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 0.001 mSv per year. This is much lower than the 1 mSv per year statutory dosage limit, and also lower than the annual 0.05 mSv target set by the Nuclear Safety Commission.

Radioactivity inspection in vicinity of Sendai Nuclear Power Station



* Monitoring station and post: continuous measurement of radiation dosage in the air
 * Monitoring point: measurement of total dosage for a certain period of time

Radioactive waste management

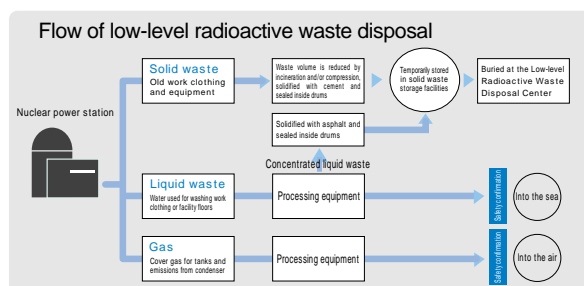
Radioactive waste includes low-level radioactive waste issued from nuclear power stations and high-level radioactive waste resulting from spent fuel reprocessing. Both require different management and disposal methods.

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.

Concentrated, treated waste water 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.



Low-level radioactive waste storage status

(Unit: a 200-liter drum)

	Waste stored in power station sites	Waste transferred *
Genkai Nuclear Power Station	20,143 (18,074)	5,936 (5,936)
Sendai Nuclear Power Station	9,775 (9,689)	—
Total	29,918 (27,763)	5,936 (5,936)

Figures are the cumulative totals as of the end of FY2001, and figures in parentheses are totals as of the end of FY2000.

* Amount transferred to the Low-level Radioactive Waste Disposal Center.

《Reference》Disposal of high-level radioactive waste

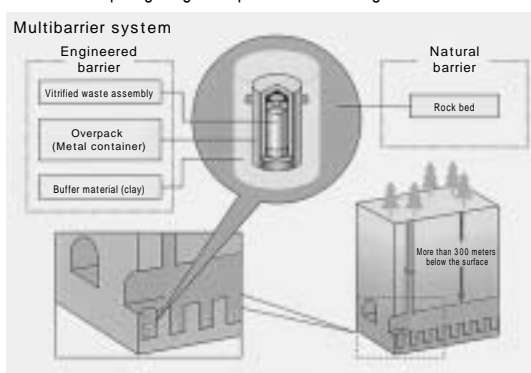
In Japan, spent fuel used up in nuclear power stations is reprocessed to extract uranium and plutonium for effective re-use in the nuclear fuel cycle. The high-level radioactive liquid waste generated in the process of spent-fuel reprocessing is mixed with glass matrix and encapsulated in stainless steel containers, called canisters, to form vitrified waste assemblies. This vitrified waste assembly is called high-level radioactive waste.

Guidelines set by the Japanese government require that high-level radioactive waste be stored in an interim storage facility for cooling for 30 to 50 years, and then finally disposed of in a stable geological formation at a depth of more than 300 meters.

For the purpose of implementing final disposal of high-level radioactive waste, the Nuclear Waste Management Organization of Japan (NUMO) was established in October 2000 under the Specified Radioactive Waste Final Disposal Act (promulgated in June 2000). According to the basic strategy on selection procedures for a preliminary survey site for specified radioactive waste etc., which was announced by NUMO in October 2001, the project schedule for final disposal is formulated as follows:

- by2007 Selection of preliminary survey site;
- by2012 Selection of precise survey site;
- by2027 Selection of a final disposal site; and
- by2037 Start of operation

Basic concept of geological disposal facilities for high-level radioactive waste



Chemical substance control

Most chemical substances Kyushu Electric Power handles 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. The following table shows results for fiscal 2001.

PRTR investigation results (FY2001) ^{*1}

Index No	Chemical substances	Applications	Unit	Amount handled	Amount released into environment				Amount transferred ^{*2}	FY2000 (reference)		
					Air	Water	Soil	Landfill		Amount handled	Amount released	Amount transferred
63	Xylene	Coating material for equipment	kg	4 800	4 800	0	0	0	0	—	—	—
124	HCFC-123	Refrigerant for AC	kg	—	—	—	—	—	—	1 100	0.1	0
179	Dioxins	Waste incinerator	mg-TEQ ^{*3}	—	40	0	0	0	14	—	140	230
253	Hydrazine	Feed water processing agent	kg	35 000	1.7	0	0	0	0	31 000	4.1	0
304	Boron and boron compounds	Reactivity control in nuclear reactors	kg	3 200	0	0	0	0	0	—	—	—
311	Manganese and manganese compounds	Desulfurization agent	kg	1 300	0	54	0	0	0	2 300	96	0
353	Tris phosphate (dimethyl phenyl)	Turbine control	kg	11 000	0	0	0	0	12 000	7 800	0	7 800

^{*1}: Calculated for 1 ton or more of Class 1 chemical substances, or 0.5 tons or more 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.

N.B. 1: Since fiscal 2002, enterprises are required to report to the government records and management of the quantity of specified chemical substances that are emitted and transferred, 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)

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 emit dioxins. In fiscal 2000 and 2001, the company discontinued the use of 16 waste incinerators. Forty-seven waste incinerators were still in operation at the end of fiscal 2001, but their emission levels meet all standards stipulated by the Law Concerning Special Measures against Dioxins (enforced in Jan. 2000).

PCB (polychlorinated biphenyl)

Equipment which utilizes PCB (1,511 high-voltage transformers, capacitors and others) is kept at 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.

(5) 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.

Shinchi Substation in Nagasaki City faces a road connecting China Town, Glover Garden and Oranda-dori street. The substation was constructed taking into consideration suggestions and opinions of the local residents and Nagasaki City, in order to ensure that the substation would blend well with its surrounding area at the entrance to Oranda-dori street, which features the former houses of early foreign residents and has an exotic atmosphere.

In January 2002, the substation was awarded a prize at the 12th competition of urban view plans of Nagasaki City for its achieving harmony with the surrounding environment.



Shinchi Substation won a prize at the 12th competition of urban view plans of Nagasaki City