

Resource Circulation

◆◆◆ Policy and Concept ◆◆◆

In accordance with the aims stated in the Kansai Electric Power Group Environmental Action Policy, our Group is working actively to reduce emissions and recover resources. For industrial waste generated from our business activities, our Group is undertaking proactive 3R (reduce, reuse, recycle) efforts with the goal of achieving zero emissions. For ordinary garbage such as copy paper and other office waste, we are also conducting 3R efforts with sorting as the foundation in each business place. Efforts are also underway to promote safe, reliable, and complete disposal of PCB wastes and to promote green procurement.

● <Kansai Electric Power Group Environmental Action Policy 2. Initiatives contributing to the realization of a recycling-oriented society>

2. Initiatives contributing to the realization of a recycling-oriented society

Our efforts to contribute to realizing a recycling-oriented society include the following:

- (1) Promotion of proactive 3R efforts aimed at zero emissions
- (2) Promoting safe, reliable, and complete disposal of PCB wastes
- (3) Promoting green procurement

● Promoting green procurement

The Kansai Electric Power Group Green Procurement Manual is designed to contribute to creating a recycling-oriented society.

◆ Green procurement concept

- (1) Given that all procured goods or all machines and methods used for construction have an environmental impact, wherever possible we will opt for environmentally friendly office supplies, materials, equipment and construction machines/methods.
- (2) The concept is to “rethink” whether goods to be purchased are necessary at all, “reduce” the amount of purchase as much as possible, “reuse” unused goods at other locations (including extended use of purchased goods), “recycle” resources and “repair” things wherever possible.

◆◆◆ Goals ◆◆◆

Maintaining industrial waste recycling rate

99.5%

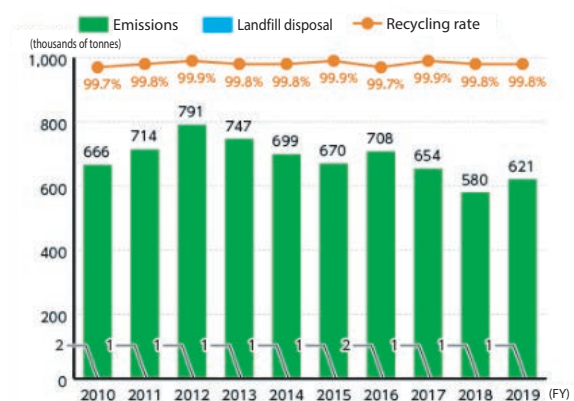
Proper processing of PCB wastes

Proceed with certainty to achieve processing before the legal deadline

◆◆◆ Efforts ◆◆◆

● Efforts to achieve zero emissions

The principal types of industrial waste generated by our Group include coal ash from coal-fired thermal power plants and concrete pole fragments remaining from power grid construction. In order to achieve zero emissions, we set a target for our Group of “a 99.5% or higher recycling rate” for industrial waste, and we are advancing efforts that include recycling all coal ash as raw material for cement and paving material for roads, for example. We achieved a 99.8% recycling rate in fiscal 2019, which marks the tenth consecutive year that we have reached our target. We are also working to reduce and recycle general waste, such as copy paper, produced by our offices.



◆ Changes in emissions and recycling rates for industrial wastes

● Safe, proper disposal of PCB

In line with relevant laws and regulations such as Law Concerning Special Measures Against PCB* Waste, we have a program in place to dispose of all equipment containing PCB (transformers, capacitors, fluorescent ballasts, etc.) safely and properly according to their characteristics.

◆ Disposal of high-level PCB

Equipment containing PCB (transformers, capacitors, fluorescent ballasts, etc.) is investigated retrospectively, referring to information on high-level PCB provided by the government and electric manufacturers; high-level PCB, if identified, is disposed of by the Japan Environmental Storage & Safety Corporation (JESCO) in accordance with the national PCB Waste Treatment Basic Plan. The deadline is approaching for the disposal of high-level PCB at the Group's business locations. The search is ongoing to avoid discovery of high-level PCB after the deadline expires. All high-level PCB is expected to be disposed of properly.

◆ Disposal of low-level PCB

We established the Recycling Center for Utility Pole Transformers in 2003 while soliciting consent from local residents and municipalities on disposal of low-level PCB; insulating oil and transformer cases contaminated with PCB were detoxified for recycling purposes, with treatment of these materials in storage completed by July 2015.

Meanwhile, equipment containing insulating oil (transformers in operation at power plants and substations, pole transformers in distribution facilities, etc.) is routinely inspected for maintenance purposes (regardless of the presence or absence of PCB) to ensure proper operation. Additionally, measures are in place in the event of the unplanned release of insulating oil due to natural disasters (typhoons, lightning strikes, etc.), where spillages are prevented and contamination is contained to minimize impacts on the environment.

Moreover, all equipment in operation is inspected for possible PCB contamination and properly treated according to its type, size and PCB levels, leveraging certified detoxifying business contractors authorized by the Minister of the Environment (Kanden Engineering Corporation's Solvent Cleansing Method, etc.), treatment facilities operating under license from prefectural governors, and the energized natural circulation washing technology in compliance with government procedures.

* Poly Chlorinated Biphenyl. PCB was widely used for transformer insulating oil, etc. because of its excellent properties as an electrical insulator. However, due to PCB being a hazard to ecosystems, production and use have since been largely banned. More often than not, high-level PCB was intentionally used while low-level PCB was accidentally mixed in.

● Performance data

Waste-related (non-consolidated)* ¹	Unit	FY2017	FY2018	FY2019
Amount of industrial waste and other emissions	1,000 t	653.6	580.0	621.3
• Soot particles (heavy/crude oil ash, coal ash, etc.)		438.3	387.0	384.7
• Sludge (desulfogypsum, waste water processing sludge, etc.)		130.3	107.9	129.7
• Cinders		28.6	25.3	45.8
• Demolition debris (waste concrete utility poles, etc.)		16.5	18.2	18.1
• Metal scraps		29.1	23.9	25.5
• Glass/ceramic scraps (thermal insulation scraps, insulator scraps, etc.)		1.8	1.3	2.4
• Waste oil		2.2	3.0	4.1
• Waste plastic		0.9	0.9	1.4
• (Repeated) Ash and gypsum		592.7	515.7	553.2
• Other		6	12.6	9.6
(Repeated) Special controlled industrial waste		5.5	8.3	7.1
Amount of industrial waste for landfill disposal	1,000 t	0.9	0.9	1.1
• Glass/ceramic scraps (thermal insulation scraps, insulator scraps, etc.)		0.06	0.09	0.19
• Sludge (wastewater processing sludge, etc.)		0.19	0.48	0.41
• Demolition debris		0.03	0.03	0.00
• Cinders		0.00	0.00	0.00
• Waste plastic		0.05	0.10	0.27
• Metal scraps		0.19	0.05	0.03
• Other		0.42	0.14	0.20
• (Repeated) Amount except for special controlled industrial waste		0.52	0.77	0.95
Industrial waste recycling rate* ²	%	99.9	99.8	99.8
Ash and gypsum waste recycling rate* ²	%	100	100	100
Amount of PCB waste* ³	1,000 t	4.7	7.4	6.6
Amount of high-level PCB processed (cumulative total)* ⁴	units	5,073	5,241	5,365

*1 The totals may not match up due to rounding.

*2 Industrial waste recycling rate = [(industrial waste and other emissions - amount of landfill disposal) ÷ (industrial waste and other emissions)] × 100

*3 Amount of detoxified PCB waste in landfill (high/low-level PCB) + recycled amount

*4 Number of transformers and capacitors containing high-level PCB, detoxified by JESCO