

# Environmental Reporting

Corporate Statements

The Kuraray Group  
Code of Conduct

Compliance Handbook

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**【Notes】** As a result of the change in months in each fiscal year, the environmental data and information contained in this report including graphs are as follows.

- Fiscal 2014: Actuals for 9 months from April to December + Actuals for January to March 2014 (or estimated value) [Partially overlaps with fiscal 2013]
- After fiscal 2015 : Actuals for 12 months from January to December

## Reducing of Environmental Load

### Control on Emission of Chemical Substances

Based on the Law Concerning Reporting, etc. of Pollutant Release and Transfer Register (PRTR Law), the Kuraray Group in Japan checks, records and reports relevant chemical substances to the national government of Japan. The Kuraray Group similarly discloses on its official site, etc. emissions of chemical substances not only covered by the PRTR Law, but also designated by the Japan Chemical Industry Association (JCIA). In addition to them, persistent organic pollutants (POPs), volatile organic compounds (VOCs), hazardous atmospheric pollutants (HAPs) and particulate matter (PM) are considered to be chemical substances and Kuraray is taking action as explained in the table.

> Environmental Data

Classification	Chemical substances	Actions to be taken
POPs	Polychlorobiphenyl (PCB)	Storing, managing, reporting and processing to render harmless in accordance with the Law Concerning Special Measures against PCB Waste. (Fiscal 2027 is set as a time limit for harm-free processing)
	Dioxin and the like	Emissions are measured for individual plants and other business units (Please visit our Environmental Data site)
	Substances other than the above	Not applicable to Kuraray manufacturing and use
VOC HAP		Included as substances in the pollutant release and transfer register (PRTR) and emissions are measured and reported as PRTR substances. (Please visit our Environmental Data site for emissions by each plant)

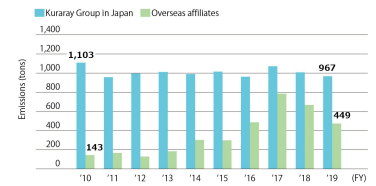
Classification	Chemical substances	Actions to be taken
PM		Emissions of particles of soot are reported in Material Flow
PRTR		Emissions of substances applicable to the law and to the list compiled by the Japan Chemical Industry Association are measured and reported (Please visit our Environmental Data site for emissions by each plant)

The Kuraray Group in Japan had made a major capital investment by the beginning of the 2000s to reduce chemical substance emissions, and has achieved about an 80% reduction compared to fiscal 1999. Now, we have set a target of “keeping the emissions of JCIA-designated PRTR substances\* below the fiscal 2016 result in the Medium-term Environmental Plan, based on the concept that even if the production scale expands, the environmental impact outside the plants will not be increased from the base year. To achieve this target, when we consider expansion of our production facilities, etc., we also examine and carry out investment projects in consideration of measures to keep the emissions below the current level. In fiscal 2019, emissions of the entire Kuraray Group in Japan totaled 967 tons (886 tons into the atmosphere and 81 tons into water areas). As a result, they have gone down in comparison with fiscal 2018, but have not yet reached the figures achieved in fiscal 2016 (less than 957 tons) set as a target. Going forward, we will continue to take measures to prevent further environmental impact outside of our plans.

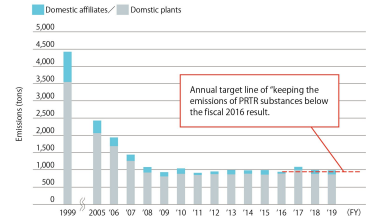
The annual policy of the Kuraray Group outside Japan is to comply with the environmental regulations of the respective countries where each production base is located. The emissions of the Kuraray Group outside Japan showed an increasing trend up to the previous fiscal year because we incorporated new business through M&As and the capacity utilization of production sites rose over the past few years. However, the emissions of Kuraray Group outside Japan totaled 449 tons in fiscal 2019.

\* Substances subject to the PRTR Act and substances designated by the Japan Chemical Industry Association

Trends in Chemical Substance Emissions at Kuraray Group



Trend in PRTR substances emission in Kuraray Group in Japan



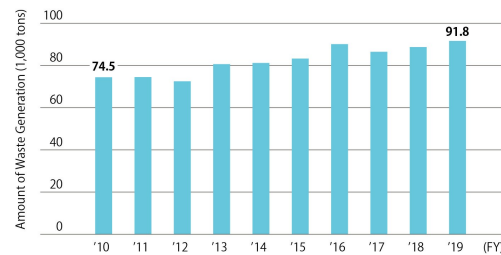
## Reduction and Effective Use of Waste, and Reduction of Landfill Waste

Since fiscal 2011, the Kuraray Group in Japan has been maintaining “an effective utilization rate of waste of 95% or higher, and final landfill disposal rate of 0.5% or lower.” In fiscal 2019 also, these rates were achieved and the effective utilization rate was 96.8% and final landfill disposal rate was 0.40%. Waste generation of the Kuraray Group in Japan increased slightly in fiscal 2019 compared with that in fiscal 2018. However, as a result of the continuous efforts made by plants and affiliates to maximally reduce waste generation such as by improving product yields and the recycling of waste materials by separation and collection, waste generation was reduced by 2,030 tons in fiscal 2019, and we achieved our target, making a reduction of at least 1% (900 tons) of the amount in fiscal 2016. Almost all of the waste generated is recycled into material or energy

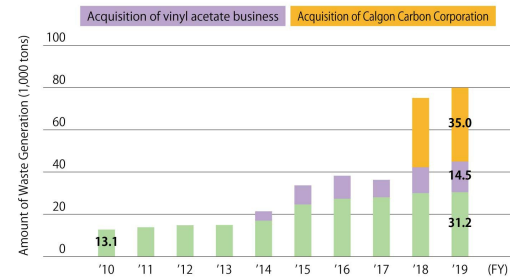
and this means we maintained the rate of beneficial use of waste at a high level. Through this activity, we are taking care not to affect the external environment. Conversely, the landfill disposal amount in fiscal 2019 was 365 tons, a slight increase from the previous fiscal year, which did not reach our target amount of the results from fiscal 2016 (less than 251 tons). We will continue to take measures to reduce the amount of waste generated and make effective use of the waste generated.

In addition, the amount of waste generated by the Kuraray Group outside Japan in fiscal 2019 increased slightly compared with that in fiscal 2018. This was attributable to the restart of production that had been suspended due to problems in 2018. Each production site is complying with the legal requirements of its home country and has been progressing in activities to enhance the yield rate and improve our intensity index. Going forward, we will continue to implement reduction measures such as optimizing the operating conditions and recycling materials.

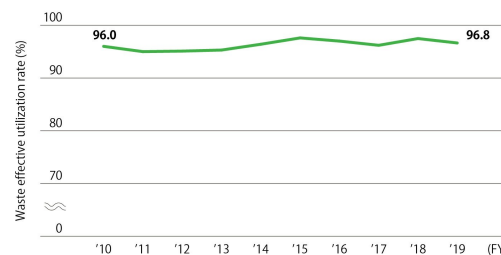
Trends in the Amount of Waste Generation at Kuraray Group in Japan



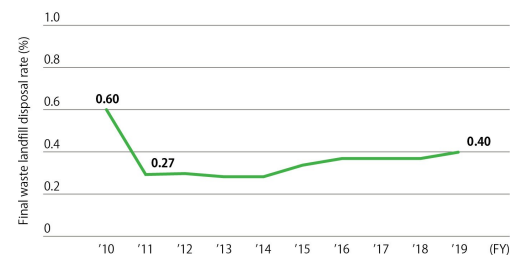
Trends in the Amount of Waste Generation at Overseas affiliates



Trends in Waste Effective Utilization Rate at Kuraray Group in Japan



Trends in Final Waste Landfill Disposal Rate at Kuraray Group in Japan



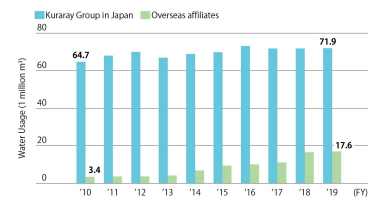
## Effective Utilization of Water Resources

The Kuraray Group including its overseas affiliates is not engaged in production activities in areas in which water resources are scant and where our business activities significantly affect the water sources of such areas. However, there is pressing demand for water resources worldwide, and we will continue engaging in corporate activities while recognizing these resources as being vital.

The volume of water intake (except seawater) of the Kuraray Group in Japan totaled 71.9 million m<sup>3</sup> per year. Some Kuraray plants in Japan are continuously reusing water such as by recycling thermal resources from hot waste water and cooling water for boiler operation.

Even though Kuraray plants in Japan are located in good places in terms of water resources, we believe that it is necessary to conduct business activities by considering the long-term prospects of a water supply such as risk of a water shortage caused by climate change due to global warming. In particular, we are undergoing a switch to the industrial water supply from Kurashiki city, because of the

Trends in Water Usage at Kuraray Group



construction work at Takahashi River to prevent flooding, it will be impossible for Kurashiki Plant to take water from the river. We will keep track of water consumption trends while continuously reducing our water consumption and effectively using water resources.

Since fiscal 2014, the water consumption of the Kuraray Group outside Japan has been increasing because we increased the self-production amount of raw material of poval resin and incorporated new businesses through M&A like an acquisition of Calgon Carbon Corporation. Water consumption in fiscal 2019 remained almost the same as the previous fiscal year, but the water intensity index (except seawater) fell below the target, decreasing 5.4 percentage points from the previous fiscal year. This was largely due to a decrease in converted production volume at some bases, as well as a decline in the energy intensity index.

## Conservation of Biodiversity

The Kuraray Group believes that continuing our efforts in implementing measures to global warming prevention, control on chemical substance emissions, reduction and effective use of waste, and effective utilization of water resources will lead to biodiversity conservation. We formulated the Action Policy for Biodiversity Conservation and has been promoting activities and the development of technologies and sales of products that contribute to biodiversity conservation. For example, employee volunteers at some Kuraray plants engage in forest conservation activities and endangered species protection activities in cooperation with local governments, etc. We also gained type approval certification from the Japanese government on May 30, 2012 for MICROFADE, a ballast water\* management system, and have promoted its sales. The International Convention for the control and management of Ships' Ballast Water and Sediments which came into effect in 2017 requires ballast water treatment equipment to be installed on all internationally operated vessels in sequence. Our MICROFADE's ability to clean ballast water has been attracting attention for its potential contribution to biodiversity conservation.

\* Ballast water, consisting of seawater that is drawn into ballast water tanks in order to maintain balance on cargo ships after unloading cargo, is often taken from a port in one country and is discharged at a port in another. The resulting disruption of local ecological systems following the introduction of foreign plant and animal species contained in ballast water has become an international problem.

## Examples of environmental conservation activities

Kurashiki Plant	<ul style="list-style-type: none"><li>-Established an area called "Kotori-no-Mori (little birds' forest)" on the premises to conserve the forest and create an environment where wild birds can live.</li><li>-Cleanup of Tamekawa Park in Tamashima (The Tamekawa Park is the home of Daruma pond frogs, an endangered species.)</li><li>-Implemented proper wastewater management in compliance with the Act on Special Measures concerning Conservation of the Environment of the Seto Inland Sea</li></ul>
	<ul style="list-style-type: none"><li>-Participated in Kojima Bay cleanup activity hosted by Okayama Prefecture</li></ul>

Okayama Plant	-Cooperated in the fishway test conducted at Kuraray's water source area on the premises of Okayama University of Science High School (to conserve the resources for Japanese eel, an endangered species of Asahi-gawa River)
Saijo Plant	-Joined Ehime Environmental Conservation Association and Saijo City Groundwater Conservation Association
Niigata Plant	-Participated in the "Kigyo-no-Morizukuri (development of forest by corporations)" campaign promoted by Niigata Prefecture -Participated in the cleanup activity hosted by the Tainai City Council for Social Welfare
Jointly held by labor union	-Tree planting activity on Mt. Fuji
Kuraray America, Inc.	-Supported the Texas Conservation Fund (TCF), a non-profit organization, and participated in the cleanup activity of local waterways
EVAL Europe N.V.	-Participated in the "Operation Clean Sweep" volunteer program (The program aims to prevent marine pollution caused by plastic pellets flowing into the aquatic environment.)

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