

# [Important Issues] Reduction of Wastewater and Industrial Waste

## Policy and Basic Approach

The Nippon Kayaku Group uses and discharges large amounts of water in its business activities. Recognizing water as a key issue at all of its sites, the Nippon Kayaku Group pays attention to appropriate use of water and environmental conservation in surrounding areas, and manages wastewater by setting voluntary management standards that are stricter than the values stipulated by laws and regulations, and by prefectural and municipal ordinances.

With regard to waste, we must work toward achieving a recycling-oriented society with a low environmental impact by pushing forward with our efforts to make efficient use of and recycle different materials throughout the various life cycle stages, from production to consumption and up to final disposal. In view of this, Nippon Kayaku Group has set recycling rate and zero emission rate as key performance indicators (KPIs) in **KAYAKU Vision 2025 (KV25)**. In addition to reducing waste, we are also working to effectively use waste generated in business activities as further resources. Furthermore, in April 2022, the Act on Promotion of Resource Circulation for Plastics came into effect. The situation regarding plastics waste reduction is changing, and becoming increasingly severe. Against the backdrop of problems such as climate change and plastic waste, the movement to promote plastic resource recycling is becoming more active in Japan. The Nippon Kayaku Group also uses plastic and disposes of it as waste, but works with the 3Rs in mind: reducing the plastic we emit (Reduce), reusing it (Reuse), and recycling it as a resource (Recycle).

## System

> [System for implementing Responsible Care](#)

## Audits

The Nippon Kayaku Group conducts audits at each business site and Group company through central environmental safety and health audit, to ensure that wastewater and waste are being managed appropriately. In our central environmental safety and health audit, we check wastewater and waste management for deficiencies and problems under laws, regulations, and ordinances, and check wastewater treatment plants and waste storage sites to identify any problems with the state of management.

> [Responsible Care Audits](#)

## Indicators

> [Environmental Management](#)

## Initiatives

### Compliance with Environmental Regulations

The Nippon Kayaku Group installs wastewater treatment facilities at each plant according to the composition of wastewater discharged in manufacturing processes, and sets voluntary management values that are stricter than the emission standards of laws and local government ordinances, to ensure that standard values are not exceeded. In FY2022, there were no violations of laws or ordinances relating to wastewater, such as the Water Pollution Prevention Act, and laws and regulations relating to waste discharge, such as the Act on Waste Management and Public Cleansing.

> [Number of environmental violations](#)

## Wastewater

### ◆ Reduction of PRTR Substances

In FY2022, Nippon Kayaku announced that it handles 75 types of chemical substances requiring submission of notices under the PRTR Act (the Act on the Assessment of Releases of Specified Chemical Substances in the Environment and the Promotion of Management Improvement). To reduce our impact on the external environment, we are implementing various measures such as installing processing equipment and converting raw materials.

Indicator	Scope	Unit	FY2018	FY2019	FY2020	FY2021	FY2022
Emissions of PRTR substances	Atmosphere	Non-consolidated tons	17.1	18.9	16.8	25.2	38.7
	Water bodies	Non-consolidated tons	11.4	13.3	9.1	14.7	51.4
	Soil	Non-consolidated tons	0	0	0	0	0
	<b>Total*</b>	<b>Non-consolidated</b> <b>tons</b>	<b>28.5</b>	<b>32.2</b>	<b>25.9</b>	<b>39.9</b>	<b>90.1</b>

\* The total sum may be incongruent due to rounding.

### ◆ Water Environment Protection

The Nippon Kayaku Group sets voluntary management standards that are stricter than the values stipulated by laws and regulations, and by prefectural and municipal ordinances where each production base is located, and confirms that standard values are met when discharging wastewater. Nippon Kayaku also handles colorant-related products such as dyes and inkjet inks. Fukuyama Plant and Tokyo Plant—which manufacture these colorant material products—decolorize colored wastewater generated in the manufacturing process before discharge.

Indicator	Scope	Unit	FY2018	FY2019	FY2020	FY2021	FY2022
COD	Non-consolidated	tons	155.3	168.7	150.6	153.6	171.8
Total phosphorus emissions	Non-consolidated	tons	1.6	10.6	3.2	11.2	7.1
Total nitrogen emissions	Non-consolidated	tons	93.2	74.8	83.2	73.5	114.0
SS*	Non-consolidated	tons	45.3	46.0	48.4	49.9	47.5

\* SS: Suspended solids (SS refers to particulate-like substances of 2 mm or less in diameter found floating or suspended in water. These include metal particles, animal and plant plankton and their carcasses, and organic and metal sediments originating from sewage and factory effluents, among others. The increase in SS causes a decline in water transparency, and affects underwater photosynthesis by preventing light penetration.)

### ◆ Initiatives at Each Business Site

#### Joetsu Plant

##### Training on Wastewater

Joetsu Plant, which produces polarizers, uses around 20,000m<sup>3</sup> of water every month in production processes.

The wastewater discharged as part of production contains various chemical substances, and the amount of industrial waste is reduced by processing wastewater using water treatment equipment and reusing it as process water. After monitoring the quality of wastewater discharged into rivers using analyzers, the plant set even stricter voluntary management standard values than those stipulated by ordinances, and only wastewater meeting those standards is discharged into rivers.

At the plant, employees of the Facilities, Environment and Safety Department serve as instructors, providing training to employees who work on and supervise how wastewater used for production is treated and discharged into rivers, as well as on wastewater treatment facilities and drainage methods. Going forward, we will continue to conduct regular training to deepen employee understanding and reduce environmental impact.



## Industrial Waste

### ◆ Response to the Act on Promotion of Resource Circulation for Plastics

As the situation surrounding plastics continues to change and grow increasingly severe, the Act on Promotion of Resource Circulation for Plastics was enforced in Japan in April 2022.

Nippon Kayaku falls under the category of a large-volume emitter under the Act. In order to contribute to the realization of a sustainable society, Nippon Kayaku keeps in mind the 3Rs (Reduce, Reuse, and Recycle), and will continue to systematically set targets and reduce waste plastic.

### Waste Plastic Output

Indicator	Scope	Unit	FY2020	FY2021	FY2022
Waste plastic output	Non-consolidated	tons	954	888	886
Recycling rate	Non-consolidated	%	80.2	80.8	81.8

### ◆ Initiatives at Each Business Site

#### Fukuyama Plant

##### Zero Emissions through Effective Use of Waste

Nippon Kayaku is reducing the amount of waste it generates, and is engaged in consideration for utilizing generated waste as resources. Many types of waste are generated in the production activities of Fukuyama Plant, but sludge generated in wastewater treatment by microorganisms accounts for a large percentage of them. This sludge is difficult to dispose of because it contains moisture. In the past, it was disposed of in landfills under appropriate management. As a result of considering whether this sludge can be used as a resource with the aim of reducing environmental impact, it was found that it can be recycled as a fuel (so-called reduced fuel) used by waste incineration companies to adjust calorific value, and it is now being used by such waste incineration companies for this purpose. The ash generated when used for incineration is further effectively used as a raw material for cement and roadbed materials. Fukuyama Plant is also considering the use of industrial waste, and has not only achieved a zero landfill disposal rate but also a recycling rate of 100%.

Going forward, we will continue working to maintain a zero emission rate (the ratio of landfill disposal to total waste produced) of 1% or less, as set forth in our Sustainability Action Plan, and a recycling rate of at least 80% or higher.

#### Kayaku Safety Systems de Mexico

##### Industrial Waste Management

Kayaku Safety Systems de Mexico has been making untiring efforts to recycle solid waste, such as wood, cardboard, non-ferrous metals, aluminum and plastics, by separating them into appropriate categories and finding external suppliers that can re-use them. These different types of waste are stored for a period of two to three months at designated sites and are picked up by government-certified suppliers on a regular basis. Of the waste that is collected, those types that can be recycled are transported to recycling companies. There, wood is made into wood pallets, cardboard is recycled into new cardboard, and plastics, aluminum and ferrous metals are used to produce new raw materials.

This program extends to non-production areas such as break areas, where organic and non-organic waste such as plastic bottles are separated to undergo proper treatment for recycling.

Since the end of 2021, we have improved our waste separation management. In the past, there was no established separation method, and resources that could otherwise be used effectively were included in waste and disposed of. In view of this, we established reuse and disposal standards for each type of waste, and separated waste based on these standards. This not only makes sorting decisions easier for workers, increasing efficiency and accuracy, but also increases the amount of metal, wood, and plastic we recycle. Plastic materials that were previously considered waste have also been reviewed, and as a result, more materials can now be reused. The specific results for last fiscal year are shown below.

- Metal reused increased from 1 ton to 3 tons
- Wood waste reduced from 10 tons to 4 tons
- Plastic reuse increased from 50 tons to 73 tons

As part of our plan for this fiscal year, we aim to reuse packaging materials.



◆ Waste Data

Total waste produced in FY2022 was 27,621 tons, down approximately 3.3% from 28,568 tons in the previous year. Additionally, as a result of continuing to promote the recycling of waste that had been disposed of by landfill or incineration at each business site and continuing to implement initiatives to reduce environmental impact, the amount of landfill disposal was reduced to 233 tons, a decrease of about 22% from the previous fiscal year, and the zero emission rate fell by 0.2 percentage points to 0.8% from 1.0% in the previous year.

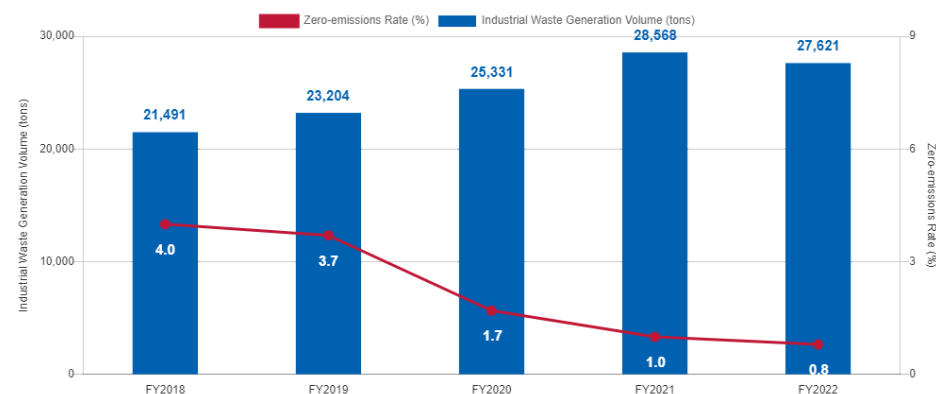
Going forward, we will continue to reduce waste generated by business activities and make effective use of generated waste, reduce waste sent to landfill, which has a major impact on the global environment, and continue efforts throughout the Group to protect the global environment and create a sustainable society.

Indicator	Scope	Unit	FY2018	FY2019	FY2020	FY2021	FY2022
Volume of non-hazardous waste generated	Non-consolidated	tons	16,626	17,973	19,406	22,065	21,190
	Volume of general waste generated	Non-consolidated	768	717	648	679	647
	Volume of industrial waste generated	Non-consolidated	15,858	17,256	18,758	21,387	20,543
Volume of hazardous waste generated (designated industrial waste subject to specific management)	Non-consolidated	tons	4,865	5,231	5,925	6,503	6,431
	Designated industrial waste	Non-consolidated	733	131	221	146	182
<b>Total*1</b>	<b>Non-consolidated</b>	<b>tons</b>	<b>21,491</b>	<b>23,204</b>	<b>25,331</b>	<b>28,568</b>	<b>27,621</b>
Types of waste	Sludge	Non-consolidated	2,171	2,206	1,979	2,307	2,338
	Waste oil	Non-consolidated	5,176	5,296	5,762	6,386	5,848
	Waste acid	Non-consolidated	425	617	2,243	2,185	1,524
	Waste alkali	Non-consolidated	12,105	13,399	13,377	15,784	16,064
	Waste plastic	Non-consolidated	557	642	954	888	886
	Other	Non-consolidated	1,057	1,044	1,015	1,019	961
Amount recycled	Non-consolidated	tons	17,493	19,584	20,449	23,290	23,963
Landfill amount	Non-consolidated	tons	870	847	404	298	233
Recycling rate*2	Non-consolidated	%	81.4	84.4	81.3	82.3	85.0
Zero-emissions rate	Non-consolidated	%	4.0	3.7	1.7	1.0	0.8

\*1 The total sum may be incongruent due to rounding.

\*2 Includes solvent recovery and reuse.

Trend in the Volume of Industrial Waste Generated and in the Zero-emissions Rate



Costs Relating to Pollution, Waste or Resource Use

> [Environmental Accounting](#)