



## Initiatives for Environmental Protection

Nippon Kayaku is committed to achieving a balance between the efficiency of production and reducing its impacts on the environment. For this reason, we consider environmentally friendly management to be an important task. We are now striving to achieve the various environmental targets we have set.

We are working to improve facilities and treatment processes in order to use energy and exhaust gas including green house gas emissions more efficiently and to lower the amount of substances released from effluent and waste that impact the environment.

### Promotion of Environmental Protection Activities

Nippon Kayaku has established specific numerical targets as one aspect of the mid-term environmental targets it has set for fiscal 2020, and with these targets in mind, we are now implementing activities for environmental protection. Also, to achieve these targets, we are working to reinforce our responses to natural disasters as well as promoting the development and improvement of wastewater treatment technologies.

### Results of the Mid-term Corporate Plan for the Environment

Nippon Kayaku has established a mid-term corporate plan for the environment for the period running from fiscal 2011 to fiscal 2020 that consists of six items covering three areas. Fiscal 2017 was the seventh year of this plan. In addition, in response to the interim results of fiscal 2015, we set the target value for fiscal 2020 to a more stringent level.

The scope of reporting covers Nippon Kayaku (non-consolidated).

#### Mid-term Corporate Master Plan for the Environment (FY 2011 - FY 2020)

	Prevention of Global warming	Reducing Our Chemical Substance Footprint		Reduction of waste		
	Energy Derived CO <sub>2</sub> Emission* <sup>1</sup> (Production Divisions+ Operation Divisions)	VOC* <sup>2</sup> Emissions	COD* <sup>3</sup> Emissions	Total waste produced	Recycling Rate	Zero Emission Rate* <sup>4</sup>
Fiscal 2017 results	71,300 tons	24,5 tons	132.1 tons Total emissions 9,596,000 tons	20,552 tons	79.7% Displacement outside of the factory 19,213 tons of which final disposal volume 1,148 tons	5.6%
Year-on-year	Decreased 1.1 %	Decreased 16.1%	Increased 5.5%	Increased 0.8%	Decreased 1.5%	Increased 0.8%
Target value for fiscal 2020	Under 79,500 tons	Under 42 tons	Under 150 tons	Under 23,500 tons	More than 80%	Under 3.0%

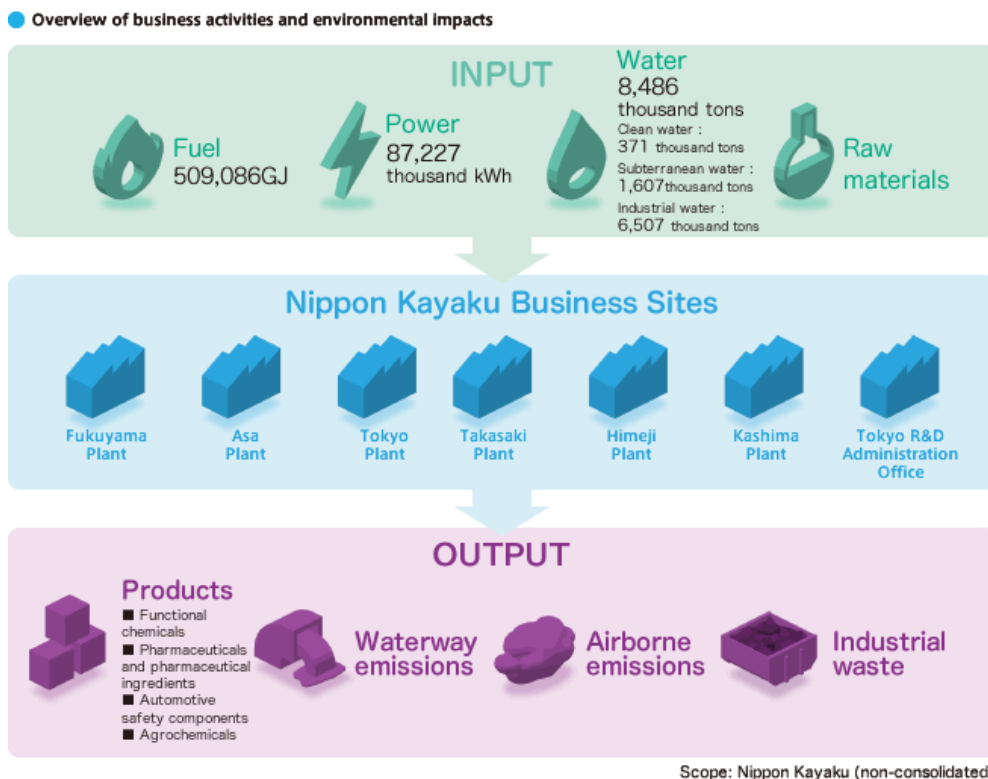
\*1 Energy-derived CO<sub>2</sub> emissions: Japanese Government policy is to reduce these emissions by 3.8% versus 2005 (82.6 thousand tons).

\*2 VOC: Volatile Organic Compounds (VOCs). This tally includes all chemical substances of reporting regulation, emitted into the atmosphere.

\*3 COD: Chemical Oxygen Demand. An indication of the amount of oxygen needed to oxidize a subject compound under a predetermined condition using oxidizing agents.

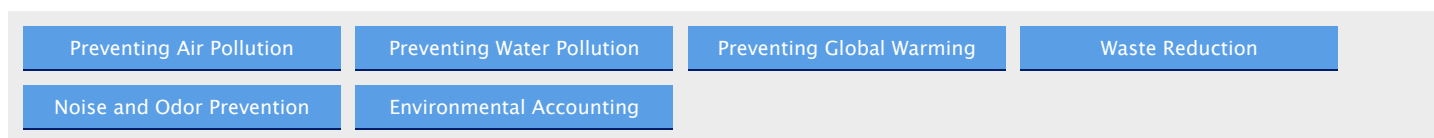
\*4 Zero emission rate: The amount of internal and external landfill waste produced as a percentage of total waste produced.

## Energy and Material Balance



## Results of Our Efforts to Reduce Environmental Impacts

As part of its effort to reduce environmental impacts, Nippon Kayaku focuses on preventing air, water and noise and odor pollution as well as stopping global warming and reducing waste.

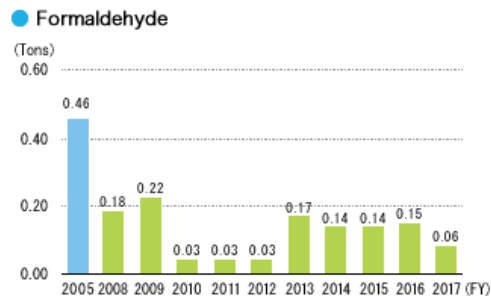
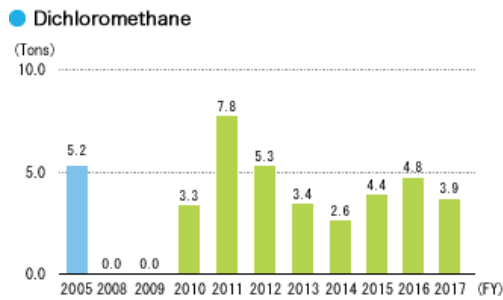
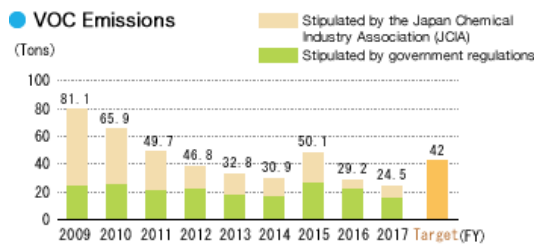


### Preventing Air Pollution

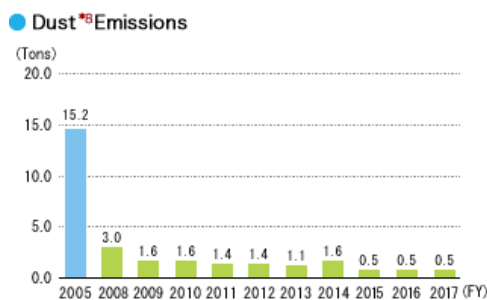
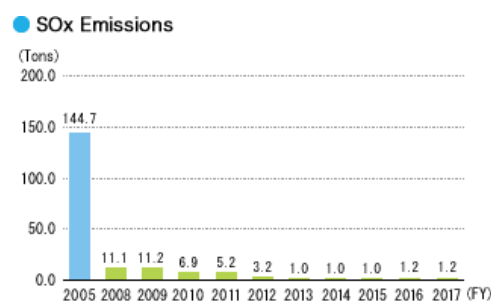
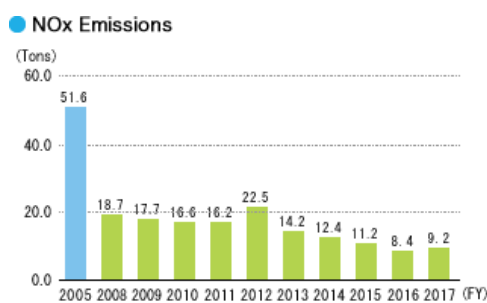
To help prevent air pollution, we carefully manage substances subject to Japan's Air Pollution Control Act, hazardous substances released into the air and other air pollutants.

Under the initiative of the Japan Chemical Industry Association, the industry is taking action to voluntarily manage and reduce emissions of 12 control substances \*5 that are deemed to be harmful air pollutants. Of these 12 control substances, we used five substances after 1995, but stopped the use of benzene in 1995. Emissions of chloroform and ethylene oxide have been cut to zero since fiscal 2007. About dichloromethane emissions there were few times of zero since fiscal 2007, but have risen slightly since fiscal 2010 because of their minor use in products. Formaldehyde emissions continue to occur, albeit in small amounts, because of its use in products and in sterilization and fumigation. Going forward we will focus particularly on reducing the use and emissions of dichloromethane and formaldehyde through production process improvements and other means.

Air pollutants sulfur oxide (SOx) \*6 and nitrogen oxide (NOx) \*7 are emitted during boiler operations. To date, the Nippon Kayaku Group has gradually shifted the fuel for its boilers from Bunker C heavy oil with high sulfur content to other lower sulfur content fuels such as Bunker A, in addition to LPG and natural gas, which are sulfur free. As a result, since fiscal 2008, we maintain to reduce SOx emissions about, we made further reductions. The Nippon Kayaku Group will continue to make efforts. to properly maintain air pollution prevention equipment, carry out regular inspections and upkeep, and reduce overall emission of air pollutants into the atmosphere.



\*5 12 control substances subject to voluntary controls: acrylonitrile, acetaldehyde, vinyl chloride monomer, chloroform, 1,2-dichloroethane, dichloromethane, tetrachloroethylene, trichloroethylene, 1,3-butadiene, benzene, formaldehyde, and ethylene oxide.



\*6 SOx (sulfur oxide): SOx is emitted when fossil fuels that contain sulfur are burned. SOx reacts with water in the atmosphere to form sulfuric acid and sulfurous acid, which are causes of air pollution and acid rain.

\*7 NOx (nitrogen oxide): NOx is produced when burned chemical substances react to nitrogen in the air and when fuels and chemical substances that contain nitrogen compounds such as coal are burned. Not only is it a major cause of air pollution including photochemical smog and acid rain, but NOx also has a harmful effect on the human respiratory system. In addition, NOx is also known to include the greenhouse gas dinitrogen monoxide.

\*8 Dust: Dust mainly refers to fine particulate soot found in dust smoke produced when burning fossil fuels. In addition to a major cause of air pollution, humans can contract pneumoconiosis or other harmful health conditions when breathing dust in high concentrations.

### Nippon Kayaku Fukuyama VOC Reduction Initiative

Some of the products manufactured at the Fukuyama Plant are made utilizing organic solvents which are target compounds of VOC emission control.

While removal of such compounds is a required process at the final stage of manufacturing, a small amount of these organic solvents are released into the atmosphere during this process. Upon reviewing the potential of recovering and reusing these organic solvents, we achieved a reduction of VOCs released into the air by more than 30% as well as reduced the amount of organic solvents used through equipment modifications and process improvement.

### VOC Emissions

FY	ton
2013	12.0
2014	10.0
2015	11.5
2016	5.6
2017	5.2

### Response to Water Risks

The Sustainable Development Goals (SDGs) were adopted at the UN Summit in September 2015. The SDGs consist of 17 goals and 169 targets to achieve by 2030. Within the 17 goals, Goal 6 (water and sanitation), Goal 12 (sustainable production and consumption), Goal 13 (climate change), Goal 14 (ocean conservation), and Goal 15 (ecosystems and forests) are items related to water risks \*1. The Nippon Kayaku Group is working not only to resolving waste water issues as discussed in the Special Feature article, but also the reduction of water usage.

\*1 Water risks refer to the following three main categories.

1. Physical risk: impact on business operations due to drought, flood, and water pollution
2. Regulation risk: tightening water quality standards and revisions to waterworks and sewerage charges
3. Reputation risk: declined corporate image based on response to water access rights

## Preventing Water Pollution

The Nippon Kayaku Group has set voluntary wastewater discharge control standards that are tougher than requirements laid out in national laws and local ordinances.

And The Nippon Kayaku Group produces color material-related products including dyes and ink jet printer ink, among others. Our Tokyo and Fukuyama plants, where color material-related products are manufactured, fully decolorize colored wastewater before it is discharged.

The Nippon Kayaku Group has made efforts to reduce its COD emissions by employing activated sludge treatment equipment at plants with high levels of COD emissions.

## PRTR\*9 Initiatives

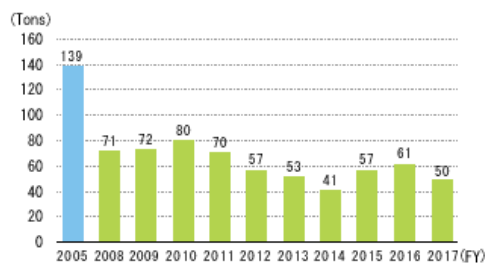
Since 1995, the Nippon Kayaku Group has participated in the Japan Chemical Industry Association led initiative to reduce compounds identified in the PRTR regulation, working to reduce its emissions of PRTR controlled compounds into the environment. In fiscal 2017, our emissions of PRTR controlled substances totaled 27.4 tons which marked about 6% increase from 25.9 tons in fiscal 2016. This was caused in fiscal 2017 by increased amount of use at the PRTR substance of Kashima Plant. Among PRTR substances, toluene emissions were high, but it decreased to 15.5 tons in 2015, 9.7 tons in 2016 and 3.8 tons in fiscal 2017.

The result of the VOC emission reduction effect surely appeared.

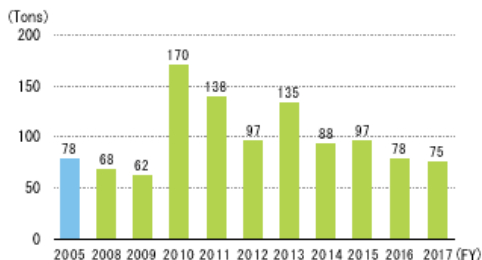
### ● COD Emissions



### ● SS\*10 Emissions



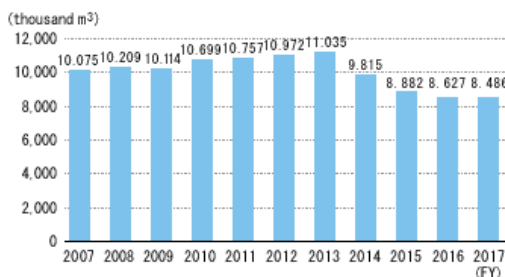
### ● Nitrogen Emissions



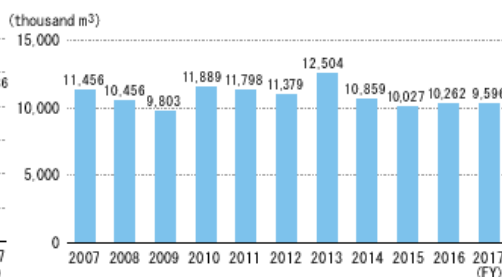
### ● Phosphorus Emissions



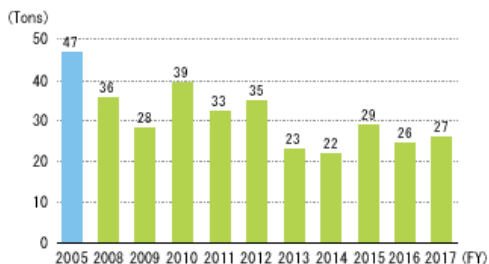
### ● Water Consumption



### ● Drainage



### ● Emissions of PRTR Controlled Substances



\*9 PRTR: Pollutant Release and Transfer Register. The PRTR regulation is designed to prevent occurrences of environmental safety incidents by encouraging businesses to improve their own chemical substance management.

\*10 SS: Suspended Solids. SS is a water-quality indicator generally referring to insoluble substances of 2 mm or less in diameter suspended in water. The organic matter and metal originating in particulate-like mineral, animals-and-plants plankton and its corpse, a sewer, factory effluent, etc. are contained. The increase in SS worsens transparency, and influences underwater photosynthesis by preventing light penetration.

### Nippon Kayaku Fukuyama Initiative to Reduce Water Usage

As of 2015, the amount of contracted volume of industrial water usage was 24,000 m<sup>3</sup>/day. In November 2015, this amount was amended to 23,000m<sup>3</sup>/day, which has been further reduced at the present to 22,000 m<sup>3</sup>/day through our implementation of reduction efforts.

The Fukuyama Plant conducts treatment of waste water resulting from the colorant manufacturing process at its own expense. The treated water is then released into the Seto Inland Sea. Since the beginning of 2000, we have strived to optimize the treatment method of waste water resulting from the manufacturing of colorants for inkjet printer ink. This included many efforts to implement individualized treatment by brand and to revise the manufacturing process to realize reduced wastewater amounts.

Through these efforts, we have achieved a reduction in industrial water usage as stated above since 2015. At present, we are still working to develop better wastewater treatment techniques. Moreover, in addition to industrial water, we also use the city water supply during the manufacturing and equipment cleaning processes, which is also target for our reduction initiative.

### Kayaku Safety Systems Europe a. s.(KSE) Introduction of Rainwater Utilization System

KSE\*11 introduced a system in 2017 to utilize rainwater more effectively following capital investment activities in support of the environment and its environmental protection policies. This system not only complies with the laws and regulation of the Czech Republic, but also contributes to the Nippon Kayaku Group's CSR-centered management.

This initiative not only received a positive review during a regular inspection on construction management performed by an administrative institution of the Government of the Czech Republic, but also has lowered costs following reduced water usage because non-potable tap water is no longer used.

Under the rainwater utilization project, KSE installed a 55m<sup>3</sup> water storage tank under its parking lot and installed two 35m<sup>3</sup> water storage tanks in the basement under its building as permanent facilities. Rainwater stored in these tanks is used to supply water to the building's restrooms.

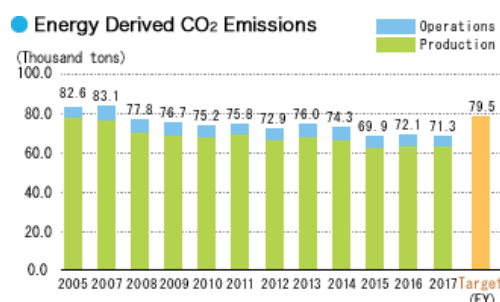
In fiscal 2018, KSE plans to install a 66m<sup>3</sup> water tank, its largest water tank to date, under a different building.

\*11 [KSE] A group company located in the Czech Republic that manufactures automotive safety components.

### Preventing Global Warming

At each business site, we have been working on energy conservation measures such as improving the operation of utility equipment, replacing it with high efficiency equipment, and changing to LED lighting. We will continue making efforts to attain the medium-term environmental goals.

In addition, As part of its efforts to help reduce CO<sub>2</sub> emissions from homes, the Nippon Kayaku Group has established the program to encourage employees to conserve energy at home called "My Home is Currently Conserving Electricity", which focuses exclusively on electricity usage. In 2015, we created new version of Kayakuma the Bear with the phrase "I'm currently conserving electricity" to raise greater awareness of this campaign.



As for measures against global warming, we must establish stricter targets for our medium-term environmental targets for fiscal 2030 set to be established shortly, taking into account the Paris Agreement concluded at COP21 in November 2016. At the same time, we need to energize activities focused not only on conventional approaches to energy conservation, but also on energy loss. This fiscal year we examine specific details to be included in the medium-term environmental targets for fiscal 2030.

**Kayaku Safety Systems (Huzhou) Co., Ltd.**  
**Initiatives for Reducing Environmental Impacts**

KSH \*12 has switched over to LED lighting, made modifications to its pneumatic system, and carried out energy conservation activities including switching off equipment when not in use and educating employees, in order to contribute to the prevention of global warming. While it is achieving results from these initiatives, KSE is continuing to make efforts by combining the power of its entire workforce. In aiming to be an environmentally friendly company, KSE ensures that dangerous wastes are sorted and disposed of by an accredited vendor. The company has also prepared and registered an emergency response manual for environmental accidents and is working to have the necessary facilities and materials in place for any contingency.

\*12 KSH: A group company located in China that manufactures automotive safety components.

item	2015	2016	2017	2018
Intensity of electricity usage (Electricity usage/Net sales) (kWh/10,000 RMB)	174.6	169.9	158.8	153
Electricity cost savings (10,000 RMB)	-	17.5	51.4	21
CO <sub>2</sub> reduction (tons)	-	165.5	463.2	200
SO <sub>2</sub> reduction (tons)	-	20.1	60.5	26

\*Figures for 2015 to 2017 are actual results, while figures for 2018 are targets.  
 CO<sub>2</sub> and SO<sub>2</sub> calculations based on coal-fired electricity generation.

**Introduction of a Photovoltaic System at the Himeji Plant**

The electricity situation for the Himeji Plant has changed a great deal since before the Great East Japan Earthquake as follows.

1. Electricity supply shortages are forecast every year for the Kansai Electric Power Company service area during the summer months because of lost capacity from the shutdown of nuclear power plants, and so customers have been asked to reduce their electricity usage during peak times

2. The minimum necessary electricity needed to contact customers and other related stakeholders during a major disaster is required as part of its BCP measures

The Himeji Plant began operating a power generation system combining a photovoltaic system and lithium-ion batteries in April 2014 to satisfy the following three conditions.

1. Use of a system that can reduce the plant's electricity usage during time of peak demand in non-emergency situations

2. A system that can operate even when external lifelines are cut off

3. A system that can ensure the minimum operations of indirect and sales departments in case of a blackout from a major disaster

The capacity of each component of the system is as follows.

**Photovoltaic system: 54kW generating capacity**

**Lithium-ion batteries: Output of 30kVa**

After putting the system into operation, the Himeji Plant has been able to reduce its use of electricity by up to 50kW during peak demand times in the summer. Additionally, the Himeji Plant was forced to initiate an emergency shutdown due to a nearby accident in December 2014. The photovoltaic system and lithium-ion batteries operated as normal and supported the operations of indirect and sales departments. In the future, the Himeji Plant will increase the number of solar panels and take further steps for its BCP and energy saving activities.

**Activities by Kayaku Safety Systems de Mexico, S.A. de C.V. (KSM) to Reduce its Environmental Impacts**

KSM is working on a number of themes for improving the environment, including reducing its use of energy to lower its green gas emissions.

In fiscal 2016, KSM replaced its exterior lighting facilities on the western side of its property. Until then, it had used 400 watt bulbs for exterior lighting, but KSM replaced all of these bulbs with ten 32 watt and twelve 57 watt photovoltaic lights.

This will reduce energy consumption by 32,000kW a year over the 10-year life of the photovoltaic panels. Converting this to environmental impacts, KSM reduce CO<sub>2</sub> emissions by 15 tons, which is the same as reducing coal consumption by 16 tons. By 2018, KSM plans to reduce the amount of electricity it purchases from the Federal Electricity Commission in Mexico by 5%, and then reduce it by another 1% each year until 2023 to reach



the goal of a 10% reduction.

### Wuxi Advanced Kayaku Chemical Co., Ltd. (WAC) Switching to LED lighting

WAC is a Nippon Kayaku subsidiary established in Wuxi City, China in 1996 that manufactures synthetic dyes for textiles and paper. Starting in fiscal 2016, WAC began gradually switching out fluorescent lighting to LED lighting, and thus far it has replaced a total of 362 fluorescent bulbs with LED lights.

These 36 watt fluorescent bulbs were replaced with two hundred fifty 15 watt and one hundred twelve 20 watt LED lights. Simulations show that using these LED lights for eight hours will lower WAC's annual usage of electricity by about 20,000kW. This is equivalent to approximately 6.6 tons of coal used to produce this power. This will also lower WAC's annual carbon footprint by about 17 tons. WAC is committed to working to further reduce its electricity usage as well as maintaining and improving the natural environment.

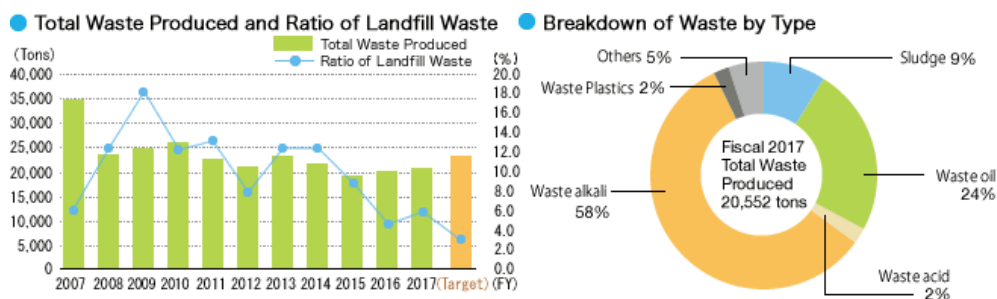


### Rolling Out Eco-friendly Sales Vehicles

Information on efficacy and safety is essential to ensuring that patients use our pharmaceutical products correctly. Nippon Kayaku stations medical representatives (MR) throughout Japan in order to gather and provide information on our proprietary pharmaceuticals by visiting medical institutions in person. All of the company-owned sales vehicles used by these MR in their daily visits were recently switched over to eco-friendly hybrid vehicles, with the exception of colder weather areas requiring all-wheel drive.

### Waste Reduction

In fiscal 2017, the Nippon Kayaku generated 20,552 tons of waste, which represents 0.8% increase compared to fiscal 2016. Landfill waste in fiscal 2017 amounted to 1,148 tons, and Zero Emissions rate of 5.6%. It was an increase of 0.8 points from fiscal 2016, but we will continue to make efforts toward the 2020 target.



### Fukuyama Plant (Nippon Kayaku Fukuyama) Achieved Zero Net Emissions through Changes to its Sludge Treatment Process

Many types of wastes are produced during the Fukuyama Plant's production activities. Sludge that occurs from the treatment of waste liquids accounts for a considerably large portion of these wastes.

This sludge is difficult to dispose of because it contains moisture. In the past, this sludge was disposed of in landfills after undergoing appropriate treatment, but after examining whether this sludge could be recycled to reduce environmental impacts, the Fukuyama Plant found that it could be utilized as fuel for adjusting the heat used in waste incineration plants. Also, our waste disposal vender now has a source of recycled fuel, so both it and the Fukuyama Plant are able to utilize this sludge more effectively.

As a result, the Fukuyama Plant was able to reach its zero emission rate target (less than 1%) for the portion of its waste disposed of in landfills. Not only this, but it was also able to increase the recycling rate of waste and lower disposal costs.

### Noise and Odor Prevention

We conduct our business with a conscious effort toward minimizing noise and odor pollution in the areas surrounding our factories. We regularly measure noise levels around our factories, making every effort to be a positive members of the local community or odor-monitor-system. As such, any feedback or requests that we receive from local residents at company-sponsored events such as community round-tables are treated with the utmost priority. We also conduct regular work environment measurements in the factory to protect our employees from excessive noise and other hazardous chemicals.

### Environmental Accounting

Nippon Kayaku has tracked and shared all cost data associated with its environmental protection initiatives since fiscal 2000. Also, from fiscal 2003, we began calculating the returns from our environmental protection initiatives. Calculation of environmental costs and returns are made according to Environmental Accounting Guidelines (2005 Version) published by the Ministry of the Environment of Japan, and Environmental Accounting Guidelines for Chemical Companies published by the Japan Chemical Industry Association.

## ● Environmental Protection Costs (Fiscal 2017)

(Millions of yen)

Category		Investment	Total	Main Activities	
Cost Incurred in the Workplace	Pollution Prevention Cost	Air Pollution Prevention	98.4	116.2	Odor countermeasures, upgraded exhaust gas treatment facilities, etc.
		Water Pollution Prevention	24.7	239.2	Expanded waste liquid treatment facilities and upgraded equipment, etc.
		Underground seepage prevention	5.9	13.2	Dirt floor maintenance, expanded wastewater drains, etc.
		Noise and Vibration Prevention	0.0	0.2	Soundproofing measures for treatment tower and pumps, etc.
		Other		160.6	Disposal costs of facilities and pollution charges
	Global Environment Cost	Global Warming Prevention and Energy Conservation	152.9	41.1	Upgraded to high efficiency equipment, upgraded pumps, responded to CFC facilities, etc.
Resource Recycling Cost	Waste treatment	66.1	500.1	In-house processing costs and processing outsourcing costs	
Up- / Down-Stream Cost	Container Recycling Outsourcing		-	0.4	Outsourcing costs for repackaging products
	Sewage Processing Cost		-	81.7	Sewerage treatment costs Tank dredging costs
Management Activity Cost	System Maintenance and Operation		-	93.4	Internal auditor development cost and ISO14001 renewal costs
	Environmental Stress Monitoring		-	51.7	Analysis costs and outsourcing costs
	Information Disclosure		-	9.5	Outsourcing costs for preparing information disclosure documents on the environment
	Education, Training and Other		-	88.9	Outside lectures, workplace training, etc.
	Greening		-	163.0	Added plants and improved some greenery along the roadway Outsourcing costs
R&D Cost				316.3	Environmentally friendly R&D costs and wastewater treatment technology development costs
Social Activity Cost			-	9.0	Plant tours, community event sponsorship, responsible care, ICCA special committee, LRI research meeting costs
Environmental Damage Cost			-	0.0	
Total			348.0	1,884.6	

## ● Return from Environmental Protection Initiatives

(Millions of yen)

Sources of Return		Cost Reduction Return	Main Activities	
Workplace	Pollution Prevention Return	Air Pollution Prevention	0.0	Odor countermeasures
		Water Pollution Prevention	0.0	Improvements to effluent treatment facilities, Changes in agglomeration method for treating
		Pollution Load Levy Reduction	0.4	Installed soundproofing sheet
		Noise and Vibration Prevention	0.0	Upgraded boiler, switched to LED lighting, introduced energy efficient equipment
	Global Environment Return	Global Warming Prevention and Energy Conservation	45.6	Reduced cost by using gas cogeneration system, cut off steam system, and introduced energy-efficient equipment
	Resource recycling return	Reduction of Waste	1.6	Recovered valuables from waste, and recycled waste oil as auxiliary fuel
		Sale of Recycled Resources	13.3	Collected valuables, metals, sold paper products outside the group, and sold plastics outside the group
Other		8.6	Made changes to in-house recycling and the waste processing provider	
Up- / Down-Stream	Container Recycling		0.0	Reused plastic drums
Others			0.0	Implemented greening activities
Total			69.4	

- Scope: Nippon Kayaku (non-consolidated)
- Investments: Aggregate of all orders placed in fiscal year 2017 (April 2017 to March 2018) Capital expenditure: Compilation of capital appropriated for orders in April 2017 to March 2018
- Management cost: Any cost increase resulting from change in fuel type or change in waste processing method that are deemed appropriate from an environmental perspective are recorded under this category each year for a period of five years from the date the change is first administered.
- From a financial accounting standpoint, earnings realized from environmental protection initiatives are recorded in the fiscal year in which such earnings are realized.
- Earnings such as expense reduction and environmental impact reduction that are not considered from a financial accounting standpoint are reported for five years from the date it is first realized.

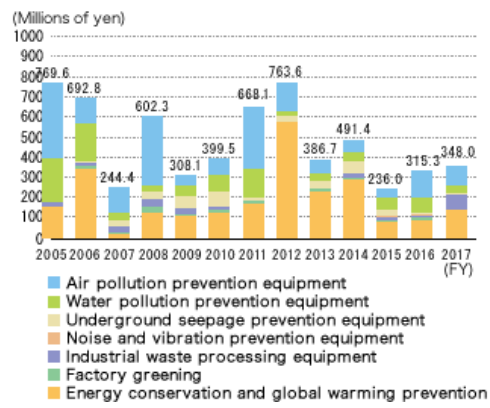
## Investments Related to the Environment, Health and Safety

The Nippon Kayaku Group makes well planned and continual investments in environment, safety and health related projects. In fiscal 2017, investments related to the environment totalled at 348 million yen, which is an increase of about 10% compared to fiscal 2016.

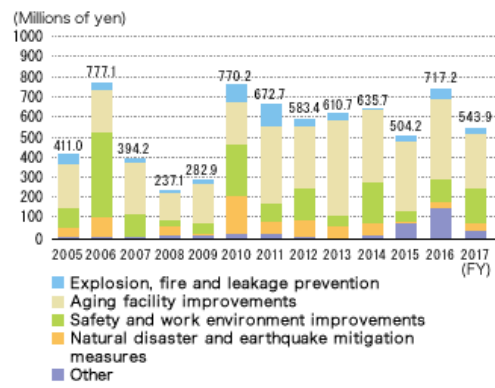
Investments related to health and safety totalled at 543.9 million yen in fiscal 2017, which is a decrease of about 24% compared to fiscal 2016. Out of that, investments in equipment renewals accounted for 51% of the total.



## ● Environment Related Capital Investments



## ● Safety and Health Related Investments



# FY2017 Energy saving activity summary sheet of Nippon Kayaku Group

☀ : Solar panel installation    ☑ : Unrealized due to lease limitaions    — : Non-applicable    ※High-load machinery: refrigerators/freezers, blowers, air compressors, steam boilers

Business site/Company name	Management of thermostat settings	electricity/water saving and conservation awareness	Reduction of fluorescent lighting ; Switch to LED lighting.	Controlled operation of high - load machinery*	Heat barrier film/paint, water dispersement
Head Office, NIPPON KAYAKU CO., LTD.	●	●	●	—	—
Fukuyama Plant/ NIPPONKAYAKU FUKUYAMA CO., LTD.	●	●	●	●	●
Asa Plant ☀	●	●	●	●	●
Tokyo Plant/ NIPPON KAYAKU TOKYO CO., LTD.	●	●	●	●	●
Takasaki Plant	●	●	●	●	●
Himeji Plant ☀	●	●	●	●	●
Kashima Plant	●	●	●	●	●
Tokyo business CENTER/ Tokyo P&D Administration Office	●	●	●	●	●
POLATECHNO CO., LTD.	●	●	●	●	×
MOXTEC, INC.	●	×	●	—	●
WUXI POLATECHNO OPTICS CO., LTD.	●	●	●	—	—
Dejima Tech B.V.	●	●	●	●	×
POLATECHNO (HONG KONG) CO., LIMITED	●	●	—	—	●
NIKKA FINE TECHNO CO., LTD.	●	●	●	—	—
Nippon Kayaku Korea Co., Ltd.	●	●	—	—	—
NIPPON KAYAKU AMERICA, INC.	●	●	—	—	●
Euro Nippon Kayaku GmbH	—	●	×	—	—
KAYAKU CHEMICAL (WUXI) CO., LTD.	●	●	●	●	●
MicroChem Corp.	●	●	●	●	—
Wuxi Advanced Kayaku Chemical Co., Ltd.	●	●	●	●	●
Shanghai KAYAKU International Trading Co., Ltd.	●	●	—	—	—
NIPPON KAYAKU FOOD TECHNO CO., LTD.	●	●	●	—	●
Tumor Diagnosis Support Co., Ltd.	●	●	●	—	●
NAC Co., Ltd.	●	●	●	—	—
Taiwan Nippon Kayaku Co., Ltd.	●	●	—	—	—
Kayaku Safety Systems Europe a.s.	●	●	●	●	—
Kayaku Safety Systems (Huzhou) Co., Ltd.	●	●	●	●	●
Kayaku Safety Systems de Mexico, S.A. de C.V. ☀	●	●	●	—	●
Kayaku Safety Systems Malaysia Sdn.Bhd.	●	●	●	—	●
Nishiminato Driving School Corporation	●	●	●	—	●
Okiura Golf Center Co., Ltd.	●	●	●	—	●
Kayaky (Shanghai) Co., Ltd.	●	●	—	—	—
JHMS Co., Ltd	●	●	●	—	—
Wako Toshi Kaihatsu Co., Ltd.	●	●	●	—	—
Kouwa Sangyo Co., Ltd.	●	●	●	—	●
Gunnan Sangyo Co., Ltd.	●	●	●	—	●
Head Office, Kayaku Japan Co., Ltd.	●	●	●	—	—
Asa Plant, Kayaku Japan Co., Ltd	●	●	●	●	●
Sanko Kagaku Kogyo Co., Ltd.	●	●	●	●	●
Head Office, KAYAKU AKZO CORPORATION	●	●	●	—	—
Asa Plant, KAYAKU AKZO CORPORATION	●	●	●	—	×