

# Environmental Reporting

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Environmental Management

Global Warming Prevention

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## Environmental Management

We believe that the Kuraray Group’s mission as a material and intermediate material manufacturer is as follows:

- Contributing to society by providing the materials and intermediate materials required for products that are needed to create a low carbon society and an eco-friendly society; and
- Producing items with as low an environmental impact as possible.

With this in mind, we are working consistently to implement environmental conservation activities that include promoting measures against global warming, managing chemical substance emissions, and ensuring beneficial use of wastes.

**【Note】**  
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.

- Before fiscal 2013: Actuals in 12 months from April to March of the following year
- 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 (For reference purposes): Actuals for 12 months from January to December

## Environmental Targets and Results

☆☆☆: Largely achieved, ☆☆☆: Achieved, ☆: Need to be improved

|  | Scope | FY2017 |                     | FY2018 target | Medium-term environmental target (FY2020 target) | Evaluation |
|--|-------|--------|---------------------|---------------|--|------------|
|  |       | Target | Actual performances |               |  |            |
|  |       |        |                     |               |  |            |

|  | Scope                  | FY2017  |  | FY2018 target   | Medium-term environmental target (FY2020 target)  | Evaluation |
|--|------------------------|---|--|---|---|------------|
|  |                        | Target  | Actual performances  |   |   |            |
| Global warming prevention                  | Kuraray Group in Japan | Reduce GHG emissions*1 by 12,000 tons-CO <sub>2</sub> e or more compared with FY2016                    | Reduced by 9,600 tons-CO <sub>2</sub> e compared with FY2016 [Environmental efficiency (GHG emissions)] Improved by 8.7% compared with FY2010    | Reduce GHG emissions by 13,000 tons-CO <sub>2</sub> e or more compared with FY2016 Reduce GHG emission intensity index by 1 percentage point or more compared with FY2016             | Improve GHG emission intensity index by 1 percentage point or more year on year   | ☆          |
|  | Overseas affiliates    | [Environmental efficiency (energy consumption)*2] Improve by 7% compared with FY2010                    | [Environmental efficiency (energy consumption)] Decreased by 9.1% compared with FY2010   | Improve energy intensity index by 1 percentage point or more compared with FY2016   | Improve energy intensity index by 1 percentage point or more year on year   | ☆          |
| Management of chemical substance emissions | Kuraray Group in Japan | [JCIA-designated PRTR substance emissions] Maintain the level of FY2010 emissions (1,104 tons), or less | JCIA-designated PRTR substance emissions:1,066 tons [Environmental efficiency (PRTR substance emissions)] Improved by 20.1% compared with FY2010 | Reduce JCIA-designated PRTR substance emissions to less than the FY2016 level (957 tons)  | Reduce JCIA-designated PRTR substance emissions to less than the FY2016 level (957 tons)  | ☆☆         |
| Reduction of waste                         | Kuraray Group in Japan | Reduce waste by the equivalent of 1% relative to FY2016 (900 tons), or more                             | Reduced waste by 1,180 tons [Environmental efficiency (waste generation)] Maintained at the same level as FY2010                                 | Reduce waste by the equivalent of 1% relative to FY2016 (900 tons), or more Reduce final landfill volume to less than the FY2016 level (251 tons)                                     | Reduce waste by the equivalent of 1% relative to FY2016 (900 tons), or more Reduce final landfill volume to less than the FY2016 level (251 tons) | ☆☆         |
|  | Overseas affiliates    | [Environmental efficiency (waste generation)] Improve by 7% compared with FY2010                        | [Environmental efficiency (waste generation)] Decreased by 31.6% compared with FY2010  | Complying with the legal requirements of each country where overseas production bases are located, we will continue reducing waste generation and conducting quantitative management. |   | ☆          |

|  | Scope                  | FY2017  |   | FY2018 target  | Medium-term environmental target (FY2020 target)                           | Evaluation |
|--|------------------------|---|---|--|--|------------|
|  |                        | Target  | Actual performances   |  |  |            |
| Effective utilization of water resources | Kuraray Group in Japan | —   | —   | Considering the geographical conditions of Kuraray plants in Japan, we will not set a numerical target for the time being. However, we will continue to watch the water usage and save it as much as possible. |  | —          |
|  | Overseas affiliates    | [Environmental Efficiency (water usage except seawater)] Improve by 7% compared with FY2010 | Decreased water usage except seawater by 40.7% compared with FY2010 | Improve water intensity index (except seawater) by 1% or more compared with FY2017   | Improve water intensity index (except seawater) by 1% or more year on year | ☆          |

\*1) Greenhouse Gas

\*2) Almost all electric power and steam is purchased from external sources at Kuraray's affiliates outside Japan. Because the source of supply has a large effect on GHG emissions (changes in emission factor), energy consumption is evaluated without incorporating the impact of the supply source in order to properly evaluate the activities of our affiliates outside Japan.

## Environmental Management System

### ■ Environmental Conservation Promotion System

To undertake company-wide environmental conservation activities, Kuraray has established the Environmental Conservation Working Team (WT) and Global Warming WT within the CSR Committee, promoting measures against global warming, managing chemical substance emissions and ensuring the beneficial use of wastes.

### ■ Kuraray Group Environmental Policy and Activity Guidelines

The Kuraray Group has established the Kuraray Group Action Guideline for the Global Environment and Environmental Activity Policy. Furthermore, continuous improvements in its environmental activities are made by rotating the Plan-Do-Check-Act (PDCA) cycle and improving it in the plants, affiliates and head office in accordance with Kuraray Environmental Activity Management Rules. Kuraray plants and affiliates have acquired certificates under ISO 14001 (Environmental Management Systems) and are undertaking environmental conservation activities by rotating the PDCA cycle. Kuraray has been working on updating the ISO 14001 system to the 2015 version, and the transition is scheduled to be completed by the deadline of September 2018.

#### Kuraray Group Global Environment Action Guidelines

##### Basic Guidelines

We fulfill our responsibility to future generations through sustainable corporate activities that are in harmony with the global environment and the local community. In order to

achieve these basic guidelines, we will undertake the following activities.

- (1) We will assign the highest priority to the environment and safety in the course of our corporate operations.
- (2) We will work to improve the global environment and ensure its sustainability.
- (3) We will develop technologies and products that contribute to the goal of improving the global environment.

### **Policy of Environment and Industrial Safety Management Center for Fiscal 2017**

The Kuraray Group tackle following themes

1. Promotion of environmental conservation and environmental improvement activities in accordance with the environmental management system
2. Compliance with statutory requirements
3. Continuous improvement of environmental load to accomplish medium-term environmental targets
4. Prior arrangement to facilitate transition to ISO14001 (2015) to be completed by September

## **■ Environmental Impact Management**

In fiscal 2017, no leak accidents of chemical substances and wastes that cause severe damage to the environment were reported. The statutory effluent standard of drainage to public waters is strictly observed by the domestic Kuraray Group, and there was no incident causing significant impact on public waters including rivers, underground waters and marine waters. The transportation of hazardous wastes, which includes transportation of PCB-bearing wastes to outside disposal companies, is handled appropriately in accordance with the law.

## **■ Medium-term Environmental Plan and Review of the Plan**

The Kuraray Group has reviewed its Medium-term Environmental Plan on which the Group has been undertaking activities since 2011. This is because the Group has determined that “Environmental Efficiency\*<sup>1</sup>,” the conventional evaluation standard based on sales, is unable to provide an adequate evaluation of the environmental improvement activity results. This is due to significant changes in the business structure that have occurred with large-scale M&As plus changes in the market environment since the target was established. The renewed Medium-term Environmental Plan basically incorporates the Production Intensity Index\*<sup>2</sup> in order to provide a direct evaluation of the activity results.

As an initiative to cope with the global warming issue, the Paris Agreement was enacted with targets for 2030. Meanwhile, Kuraray has postponed its rearrangement of post-2020 targets and reviewed the Plan for the period until 2020 because the Japanese government is at the initial stage of discussing measures for the reduction of greenhouse gas emissions.

The re-arranged targets are shown in the table “Environmental Targets and Results.” The Kuraray Group as a whole, including affiliates outside Japan, will strive to improve the

environment by constantly rotating the PDCA cycle.

\*1) Environmental Efficiency = Net sales/environmental load

Environmental Load: Volume of GHG emissions, chemical substance emissions, waste generation, etc.  
 Regardless of the reduction in GHG emissions in the production process, the absolute amount of emissions may be increased in response to an expansion of business activities, failing to provide adequate evaluation of the reduction efforts. Kuraray introduced Environmental Efficiency as an indicator since it incorporates Net Sales and Environmental Load to evaluate “how efficiently the company conducted production activities,” and promoted activities to improve this indicator until fiscal 2017.

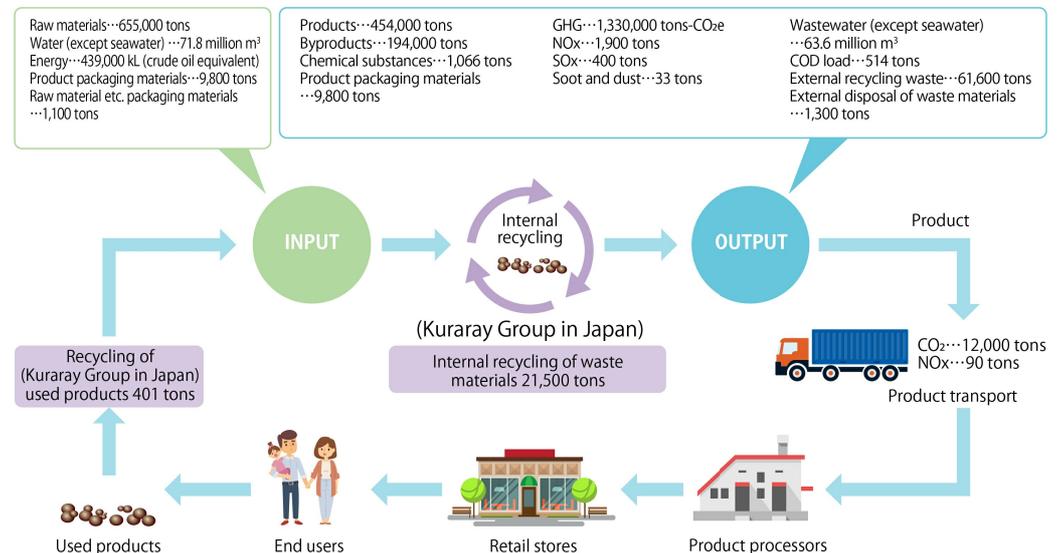
\*2) Production Intensity Index = Converted Production Volume/Environmental Load

Environmental Load: GHG Emissions Volume (Japan), Energy Consumption Volume (outside Japan), etc.  
 Production volume per environmental load unit. Figures are an index based on fiscal 2016 as 100. A significant change in the business structure due to incorporating new businesses may also cause a fluctuation in Environmental Efficiency (= Net Sales / Environmental Load), making the results of GHG emissions reduction efforts less reflected. For this reason, Kuraray newly introduced “Intensity Index” of converted production volume to evaluate “how efficiently the company conducted production activities.” It did this while reviewing the conversion coefficient in accordance with a change in the business environment, allowing on-site environment improvement activities to be more fairly reflected. Starting from fiscal 2018, Kuraray aims to improve this intensity index as an environmental objective.

## Material Flow in Business Activities

The Kuraray Group uses a large amount of energy, chemical substances and water resources in the course of its business activities. We make quantitative surveys on the used resources and emitted substances every year to help reduce environmental load associated with our business activities .

### Material Flow in Business Activities (Fiscal 2017, Kuraray Group in Japan)



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