

Kao's approach

We are working to reduce the waste generated at our plants and offices, increase recycling and reduce the amount of waste requiring landfill. We are also striving to reduce the amount of product packaging, diapers and other waste thrown away after consumers use our products. To verify that the waste generated at our plants and offices is properly disposed of, we visit waste treatment service providers and conduct site audits.

Kao's creating value to address social issues

Social issues we are aware of

Because of limited earth resources, increasing population and increased living standards around the world, life will eventually no longer be viable with traditional one-way economic models. Therefore, with the goal of achieving high resource efficiency, the movement to build recycle-based societies all over the world is quickly gaining momentum.

In areas where the social infrastructure for waste treatment systems is not sufficiently developed for the increase in the amount of waste generated, there are cases of waste causing damage to human health and environmental pollution due to being dumped or insufficiently treated at disposal facilities. In addition, the inappropriate disposal habits of consumers after consumption cause increases in marine plastic waste, adversely affecting marine and coastal ecosystems.

Kao's creating value

We are involved in many activities including activities for increasing resource productivity and activities collaborated with society.

Activities that reduce waste generated from factory plants and offices, that reduce the amount of raw materials used in products, and that promote

recycling are successful for improving resource productivity.

Furthermore, efforts to recover waste that has already leaked into the environment as well as curbing waste that may leak into the environment in the future are also activities that greatly contribute to the protection of marine and land ecosystems.

Risks related to realization of our vision by 2030

In order to increase resource efficiency beyond the level necessary for society, we must work toward the development of high-level technology. Failure to carry out these activities will lead to a decline in our reputation, resource depletion and waste increase, which will make it difficult to continue operations.

Moreover, if products continue to be consumed in areas where social infrastructures of waste disposal systems are insufficient, the cleanliness and sanitation of these areas may be impacted.

Opportunities related to realizing of our vision by 2030

By increasing resource efficiency at Kao plants, we can reduce the amount of resources needed, and our viability will improve even under future resource constraints.

Providing products with low resource consumption makes it possible to contribute to consumer cleanliness and sanitation in areas where social infrastructure is already limited, and in a society where future resource constraints will become severe.

Actively recovering waste that has already leaked into the natural environment at the corporate level also helps improve the resilience of the environment.

Contributions to the SDGs



Policies

Reducing waste from business activities

We are reducing the amount of waste generated at our plants and offices, and we are reusing and recycling waste and other materials inside and outside the company. We have set reduction targets for how much waste we generate and are working company-wide to achieve them.

In our plants, we are reducing loss of raw materials and product. For example, for liquid products, wastewater sludge is produced from cleaning the mixing and storage tanks at the production facility when the product produced is switched. For sheet-type products, a portion of the sheet material is left unused when the material is switched out. We study ways to reduce loss on an ongoing basis, according to the type of loss that occurs. We then implement improvements to reduce waste.

We ensure that generated waste is thoroughly separated so that it can be recycled, and, in cooperation with contracted waste treatment providers, we select the most appropriate recycling method. We monitor the amount of waste recycled and sent for final disposal along with the amount of waste generated to improve how waste is treated overall.

Reducing the volume of packaging

To reduce the amount of packaging used, we are reducing the amount of plastics used in packaging and making packaging more compact, for example by making contents more concentrated, and offering refill products. These activities are in accordance with the ISO 18600 series standards for packaging and the environment.



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Reducing the amount of product materials used

We offer products such as diapers and cleaning sheets that become waste after consumer use. While ensuring product performance, we develop technologies to reduce the amount of materials used and contribute to reducing waste.

Preventing illegal dumping of waste

When contracting waste treatment service providers to dispose of waste generated at our plants and offices, there is a risk of illegal dumping. To reduce this risk, we regularly visit the service providers to verify that the contracted waste is being disposed appropriately. The Kao Group in Japan has created a database containing information including the contracts with waste treatment service providers and the results obtained in surveys of appropriate waste treatment to verify prevention of illegal dumping. This system is also connected to the Electronic Manifest System for preventing illegal dumping, which together ensure prevention of illegal dumping.

Proper storage and treatment of PCB waste

Polychlorinated biphenyls (PCBs) were formerly used in insulating oil, such as in transformers and ballasts, but they have low degradability and therefore pose a risk to human health and to creating hazards in living environments. We appropriately store and treat PCB-containing waste according to the Waste Management and Public Cleansing Law and the Act

on Special Measures concerning Promotion of Proper Treatment of PCB Wastes, until its disposal is contracted to a service provider.

Promoting domestic recycling

With the goal of creating a society that recycles domestic resources, we choose waste disposal companies on the principles of recycling and final waste disposal discharged in each country.

Framework

Activities related to waste issues are managed under our Responsible Care (RC) promotion system. The performances of these activities are reported to the annual RC Promotion Committee, Japan RC Meeting and the Global RC Meeting, while important details are reported to the Internal Control Committee chaired by the president. The SCM Division, which manages our plants that account for the majority of waste generated by our plants and office, holds the Environment Working Group Meeting with environmental staff at all plants, manages progress relating to activity targets regarding recycling and reducing waste at plants, and internally develops Best Practices.

Site inspections of waste treatment service providers are conducted systematically in cooperation with the SCM Division, Procurement Division, Logistics Division, Information Technology Division, Sales Division and related companies.

Data reliability is ensured by using a database that centrally manages environmental data, and work tasks are standardized and made more efficient to adequately conduct activities with targeted outcomes.

Mid- to long-term targets and performance

2020 mid-term target

In 2013, we set the 2020 reduction targets for waste and other unwanted materials generated at all Kao Group sites and have aimed to achieve a standard reduction of 0.5% each year. The target percentage of final disposal at all Kao Group sites in Japan has been increased in phases. We began with the target of 0.5% or lower in 2004, then 0.2% or lower in 2007 and 0.1% or lower since 2010.

Waste-related targets

Index	Scope	2018 targets	2019 targets	2020 targets
Generated waste and other unwanted materials*1	All Kao Group sites	32% reduction	33% reduction	33% reduction
Final disposal ratio*2	All Kao Group sites in Japan	0.1% or lower	0.1% or lower	0.1% or lower

*1 Per unit of sales (2005 baseline).

*2 Ratio destined for final landfill disposal to the amount of generated waste.

Anticipated benefits from achieving mid- to long-term targets

Cost reductions or profit increase

Waste reduction can be achieved by improving productivity, which directly leads to a reduction in manufacturing costs. This also contributes to reductions in waste disposal costs.

Impacts on society

Activities that improve resource productivity by reducing the amount of waste generated, promoting recycling to reduce landfill disposal rates, and reducing the amount of resources used in products are important approaches for contributing to the promotion of a recycle-based society and realizing the One Planet Living vision for environmental sustainability.

Performance in 2018

1. Amount of generated waste and other unwanted materials

Due to reduction efforts at each of our worksites in 2018, the amount of generated waste and other unwanted materials decreased by 3 thousand tons compared to the previous year, with the reduction rate (per unit of sales) improving another 1% from the previous year to 26%, but underreached our target of a 32% reduction. We will continue to strengthen our activities to reduce generated waste and other unwanted materials.

Of the generated waste, 22 thousand tons were hazardous waste. No hazardous waste was transported internationally under the Basel Convention.

2. Recycling

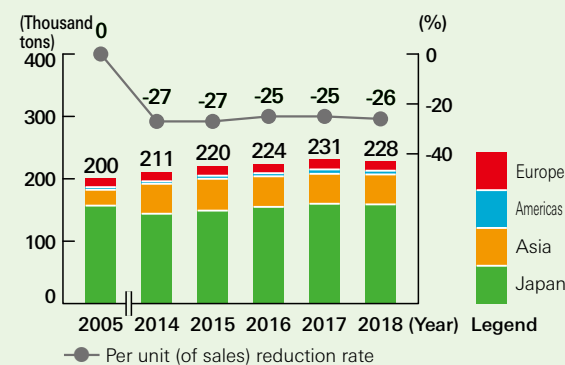
Waste reused or recycled* came to 211 thousand tons , a recycling rate of 93%.

We maintained our target of a 0.1% or lower final disposal ratio for waste. We have achieved our target of zero emissions for the 14th consecutive year since the target was set (final disposal ratio to generated waste for all Kao Group worksites in Japan).

* Includes thermal recycling (heat recovery).

In 2018, while we saw an improving trend in the amount of generated waste, reducing the gap with our 2020 target is a challenge and we will continue conducting activities to reduce waste.

Amount of generated waste and other unwanted materials (all sites)



* Boundary: Through 2014, all Kao Group production sites, as well as non-production sites in Japan. From 2015 onwards, also includes some non-production sites outside Japan.

* Assurance provided for amount of generated waste and other unwanted materials.

* Per unit of sales is calculated based on Japanese standards up to fiscal 2015, and on International Financial Reporting Standards (IFRS) from fiscal 2016.

3. Inspection of waste treatment facilities

In 2018, we conducted inspections of 225 waste treatment sites with the cooperation of 175 waste treatment companies (Japan). As a result, no waste treatment companies were found to be in noncompliance with our evaluation standards.

4. Proper storage and treatment of PCBs

In 2018, we treated 1,126 waste items containing high levels of PCBs and 73 waste items containing low levels of PCBs. We are currently storing PCBs at Wakayama, Kawasaki, Sumida, Kashima, Odawara and KCMK Kumamoto (Japan).

Collaboration with stakeholders

Introducing cases at seminars and lectures on waste

In Japan, there have been reported that many incidents occur at waste treatment companies, which are caused by not providing sufficient information on the chemical substances to the contractor when contracting the waste treatment.

Therefore, we present cases at various seminars regarding waste with the aims of spreading our knowledge about past successful cases of improving communication with waste treatment companies, and identifying points of improvement in how we communicate information.

Thanks to these activities, there were again no incidents involving waste contracted for disposal from us in 2018.

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Our initiatives

Efforts in raw materials procurement

To reduce waste generated at our plants, we are adjusting the volume and frequency of raw materials deliveries from external suppliers. This contributes to reducing the amount of packaging materials we procure from our suppliers.

We use recycled materials for some of our products. We have been using recycled paper in the carton boxes and instructional inserts of many products since the 1960s, including powder-type clothing detergents. We use recycled polypropylene (PP) resin in the measuring spoon for *Attack* powder-type laundry detergent, which was first put on the market in 1987, and recycled polyethylene terephthalate (PET) in the fibers of *Quickle Wiper* floor dry cleaning sheets, which first appeared on the market in 1994. Additionally, we use recycled polyethylene terephthalate (PET) resin in *Quickle Wiper* and *Quickle Wiper* floor cleaning sheet packaging, as well as in *Kao Shampoo* containers and other containers sold in Taiwan.



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Efforts in development, manufacturing and sales

Reducing the amount of waste produced

We handle a large number of liquid products, and reducing the sludge produced from treating concentrated wastewater generated in the process of cleaning tanks and switching products is a major issue.

Kao Industrial (Thailand) treats wastewater using separate wastewater treatment facilities according to the COD concentration of the wastewater, which has successfully reduced the amount of sludge produced and contributes to reducing waste. Fatty Chemical (Malaysia) is also considering introducing equipment to treat wastewater.

To contribute to reducing the volume of generated waste at retailers, we are working with the understanding and cooperation of retailers to reduce the amount of boxes used in the delivery of products.

Enhancing waste recycling

One example of this is recycling the waste generated by the manufacture of diaper and feminine products to be turned into plastic pallets. We began test operation of this system at our plants in 2016, with cooperation from research laboratories and related divisions using the strengths of our matrix management. By 2018, we were able to recycle 413 tons of waste into approximately 26,500 plastic pallets.

Recycling cafeteria waste

Our Toyohashi plant encourages the recycling of cafeteria waste. In 2018, we signed a new contract with a company that purchases cooking oil waste generated by our cafeterias and recycles it into diesel fuel.

Efforts during use

Efforts in the Consumer Products Business

We continue to reduce the raw materials used in making products and in packaging that becomes waste after product use by consumers.

For example, as part of our efforts to reduce the amount of materials used in our products, we were able to reduce the product weight of *Merries* medium-sized disposable taped diapers by 37% while improving product function compared to its 1990 version, which received a 2018 Good Design Award.

Our main mission is to reduce the use of plastic containers and packaging by promoting refillable and replacement products.



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Efforts in the Chemical Business

This reduces the volume of raw materials used to one-tenth and post-use waste to one-sixteenth of comparable products.

In recognition of contributions to chemicals that are gentle to people and the environment and support the development of a sustainable society, we received the Minister of Economy, Trade and Industry Award in the 16th Green Sustainable Chemistry (GSC) Awards.

Take back system creation

The Chemical Business Division is conducting a program to reuse sold product packaging (take back system) to reduce their environmental impact.

In 2018, we collected and reused 18,524 one-ton packaging (IBC packaging) used by customer companies.