

CSR Activity Report (CSR Guideline Activity Reports)

## Safety, Accident Prevention, and Environmental Preservation

**Ensure the safety and health of society and employees, and protect the environment in all business processes, from procuring raw materials and manufacturing to the supply and disposal of products.**



### Basic Approach to Environmental Preservation

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Corporate efforts to help realize a sustainable society have become increasingly vital in recent years. Toray Group established its Medium-Term Environmental Plan in fiscal 2000 to strengthen and enhance initiatives for reducing environmental impact. The Group has set key performance indicators (KPIs) to reduce greenhouse gas emissions per unit of sales in order to fight global warming, as well as to reduce atmospheric emissions of certain chemical substances (PRTR substances and VOCs, etc.) and waste. These efforts have continued during the course of all five Medium-Term Environmental Plans up until fiscal 2020.

Under the Toray Group Sustainability Vision announced in July 2018, the Group aims to achieve two targets per unit of revenue by 2030: a 30% reduction in greenhouse gas emissions from production activities and a 30% reduction in water usage, both compared with fiscal 2013.

Under the medium-term management program Project AP-G 2022, which covers the period from fiscal 2020 to fiscal 2022, the Group promoted the Challenge 30 Project, a company-wide project to tackle specific activities to realize the Toray Group Sustainability Vision of reducing greenhouse gas emissions and water consumption per unit of revenue. To achieve these two targets, three-year KPIs were included in CSR Roadmap 2022, the Group's medium-term CSR plan, and initiatives were implemented to meet the targets. With these efforts, the Group met its targets for fiscal 2030 ahead of schedule in fiscal 2022. Therefore, to further accelerate its activities to realize a sustainable world, the Group significantly raised the numerical targets in the Toray Group Sustainability Vision from the 30% reduction to a more than 50% reduction in both greenhouse gas emissions and water consumption per unit of revenue compared to fiscal 2013. The Group is also accelerating efforts by setting the target of reducing greenhouse gas emissions in Japan by at least 40% compared to fiscal 2013.

To meet the new targets, three-year KPIs have been included in CSR Roadmap 2025, which covers the period from fiscal 2023 to fiscal 2025. The company-wide Challenge 30 Project has also been renamed the Challenge 50+ Project to further promote reduction efforts through routine energy-saving activities, the introduction of renewable energy, elimination of the use of coal, and other means. Moreover, in addition to reducing greenhouse gas emissions and water consumption per unit of revenue, CSR Roadmap 2025 also continues to set KPIs relating to atmospheric VOC emission reduction and waste recycling rate improvement. The Group is taking steps to meet these, including by strengthening its management of priority-focus companies and factories, namely those have a particularly large environmental impact.

\* Refer to the following activity reports for more information on basic approaches and policies regarding safety and disaster prevention, as well as for issue awareness and policies regarding individual environmental issues.

## Related Policies

### **Ten Basic Environmental Rules** (Established January 2000 and revised June 2011)

#### **1. Prioritize environmental preservation**

We shall comply with all laws, regulations, and agreements in all of our business activities. Taking biodiversity into consideration, we shall place the highest priority on environmental preservation in the manufacture, handling, use, sale, transport, and waste disposal of products.

#### **2. Prevent global warming**

We shall promote energy conservation and work to reduce our unit energy consumption and our carbon dioxide emissions.

#### **3. Achieve zero emissions of environmental pollutants**

We shall strive continuously to reduce our emissions with the ultimate goal of achieving zero emissions of hazardous chemical substances and waste materials into the environment.

#### **4. Use safer chemical substances**

We shall collect, maintain, and provide information on the health and environmental effects of the chemical substances we handle while striving to use safer chemical substances.

#### **5. Promoting Recycling**

We shall develop recycling technologies for products, containers, and packaging and cooperate with society in promoting the recovery and reuse of such items.

#### **6. Improve the level of environmental management**

We shall work to maintain and improve the level of our environmental management while working to upgrade our environmental management technology and skills, performing self auditing, and taking other measures.

#### **7. Contribute to society through environmental improvement technologies and products**

We shall meet the challenge of developing new technologies and shall contribute to society through environmental improvement technologies as well as products that place a low burden on the environment.

#### **8. Improve the environmental management of our overseas businesses**

In our overseas business activities, we shall place top priority on complying with local laws and regulations, and further, we shall manage those businesses in accordance with the management standards of the Toray Group.

#### **9. Improve employees' environmental awareness**

We shall strive to improve our employees' awareness of environmental issues through environmental education, social activities, internal communications activities, and other means.

## 10. Share environmental information with society

We shall deepen mutual understanding of Toray Group environmental policies and practices by widely publicizing our environmental preservation efforts and their results in environmental reports and other publications directed at local communities, investors, and the media.

# Safety, Health, Accident Prevention and Environmental Preservation Management

## Action Policy and Main Activities

Toray Group operates a policy for safety, health, accident prevention, and environmental activities. The policy is revised every year to reflect the results from the previous fiscal year, and specifies the main activities to implement in each policy area.

## Safety, Health, Accident Prevention, and Environment Activity Policy of Toray Group in 2022

Action policy		Main activities
Safety	Pursue zero occupational accidents	<ul style="list-style-type: none"><li>• Wrap up 3S/5S<sup>1</sup> activities</li><li>• Thorough elimination of similar accidents</li></ul>
Healthier lives	Emphasize occupational health management	<ul style="list-style-type: none"><li>• Enhance and strengthen mental health management</li><li>• Rigorous chemical substance management</li></ul>
Accident prevention	Pursue zero fire accidents	<ul style="list-style-type: none"><li>• Strengthen fire accident prevention management</li></ul>
	Enhance crisis management for natural disaster risks	<ul style="list-style-type: none"><li>• Strengthen preparation for and response to large-scale earthquake and water disasters</li></ul>
Environment	Pursue zero environmental accidents	<ul style="list-style-type: none"><li>• Thorough elimination of similar accidents</li></ul>
	Promote Sustainability Vision	<ul style="list-style-type: none"><li>• Promote Challenge 30 Project</li><li>• Make efforts to reduce environmental impact</li><li>• Address the problem of marine plastic waste</li></ul>

<sup>1</sup> 3S/5S: 3S stands for *seiri* (sort), *seiton* (set in order), and *seiso* (shine). Adding *seiketsu* (standardize) and *shitsuke* (sustain) to 3S make up 5S.

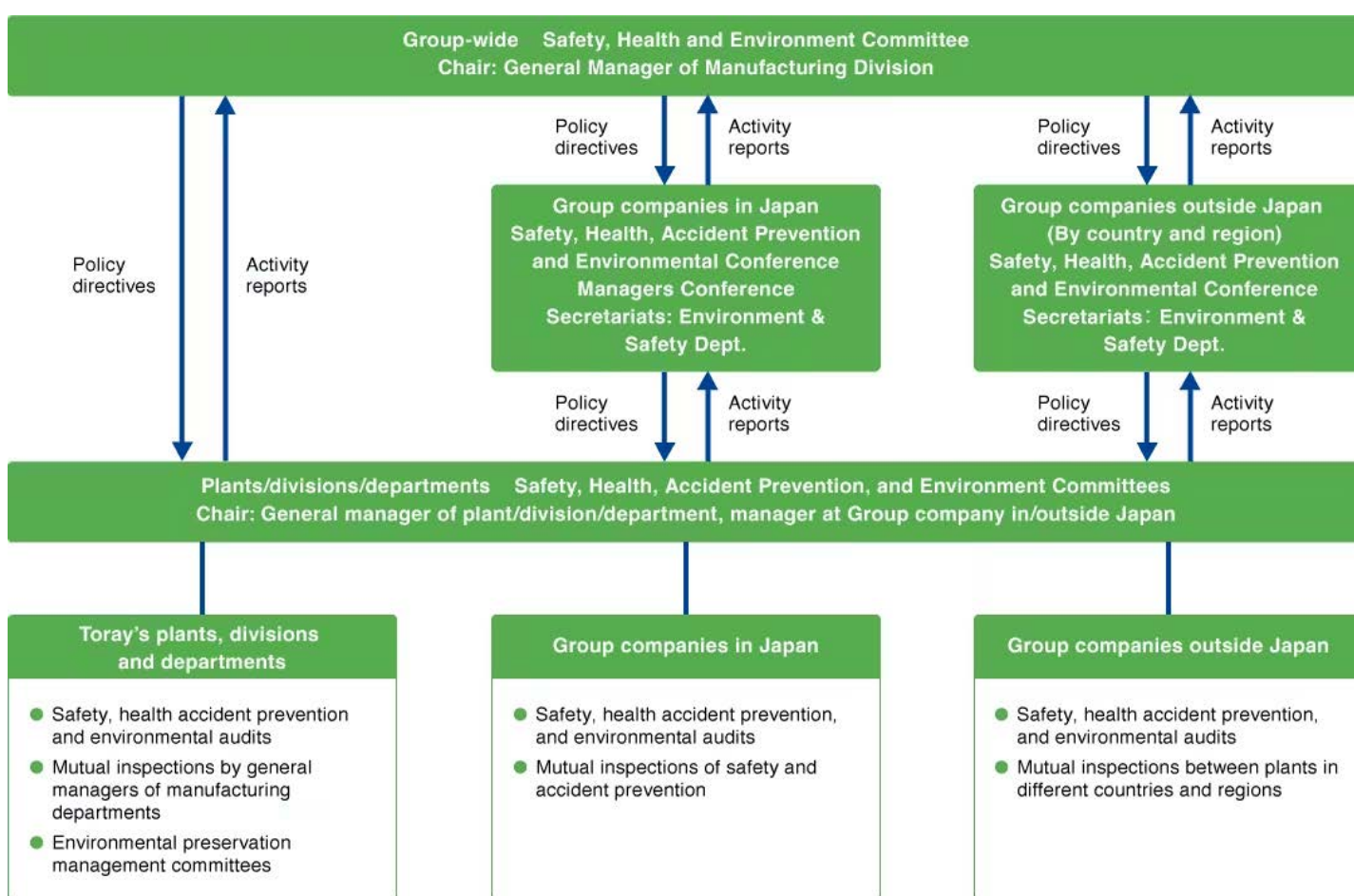
## Structure

### Safety, Health, Accident Prevention, and Environmental Preservation Promotion System

Toray Industries, Inc. places a group-wide committee, namely the Safety, Health, and Environment Committee, at the top of its system for safety, health, accident prevention, and environmental preservation (see chart below). The committee meets annually.

The committee discusses and sets policies and strategies for the entire Toray Group and its Responsible Care initiatives. The chair of the committee<sup>2</sup> has absolute responsibility and authority over these matters. Progress on the issues determined by the committees is managed in the business divisions and plants using the PDCA cycle.

### Safety, Health, Accident Prevention, and Environmental Preservation Promotion System (Fiscal 2022)



<sup>2</sup> As of July 2023, the executive vice president (member of the board) serves as chair of the Safety, Health, and Environment Committee.

## Audits and Follow-Up Measures

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Toray Group conducts annual audits to objectively assess and improve the execution and management of safety, health, accident prevention, and environmental initiatives at offices and plants of group companies. Internal audits are conducted using a standardized audit checklist, and encompass visits and production floor guidance provided by directors and managers from other group companies.

In fiscal 2022, audits were conducted for all 13 plants and one research laboratory at Toray Industries, 27 plants operated by 27 group companies in Japan, and 83 plants operated by 64 group companies outside Japan. The audits focused on the following areas: safety measures for work related to rotating parts; prevention of electrical fires and spontaneous combustion from heat storage with heat insulating materials; and thoroughness of measures to prevent environmental accidents. The audits helped to secure systematic improvements by identifying and addressing facility issues and issues relating to management.

## ISO 14001 Certification

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Toray Group is pursuing the acquisition of ISO 14001, the certification for environmental management system, by all of its group companies, offices, and plants. Toray Industries had completed accreditation for all 13 of its plants by the end of 2000. By fiscal 2022, 32 plants at 23 group companies in Japan and 68 plants at 49 group companies outside Japan were certified.

In fiscal 2022, Toray Celanese Co. Ltd., a newly established company in Japan, was added to the scope of certification, and Toray Industries (India) Private Limited acquired certification for the first time, increasing the total by two companies and two plants.

### Related Information

> [Sites with ISO 14001 Certification](#)

## CSR Roadmap 2022 Targets

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### CSR Roadmap goals

1. Place the highest priority on safety, thoroughly uphold the basic rules, and strive to prevent disasters and accidents
2. Reduce environmental impact by working to fulfill the Medium-Term Environmental Plan
3. Pursue environmental and biodiversity preservation on the basis of policies on water resources and biodiversity

## Main Initiatives and Key Performance Indicators

### KPI

#### Safety

- |   |     |
|---|-----|
| (1) Aim for zero major accidents  | 3-① |
| (2) Achieve world's best standard for safety management   | 3-② |
| (3) Create a comfortable working environment to ensure the safety and health of employees and to raise the level of safety and health | -   |

#### Accident Prevention

- |   |     |
|---|-----|
| (4) Aim for zero fire and explosion accidents | 3-③ |
|---|-----|

#### Environmental Prevention

- |   |     |
|---|-----|
| (5) Aim for zero environmental accidents  | 3-④ |
| (6) Reduce greenhouse gas emissions per unit of revenue   | 3-⑤ |
| (7) Reduce water consumption per unit of revenue  | 3-⑥ |
| (8) Reduce atmospheric VOC <sup>3</sup> emissions   | 3-⑦ |
| (9) Aim for a high waste recycling rate   | 3-⑧ |
| (10) Conduct a survey of palm oil contained in raw materials and switch to certified products   | 3-⑨ |
| (11) Systematically adopt renewable energy  | -   |
| (12) Reduce atmospheric emissions of substances subject to the PRTR Act <sup>4</sup>  | -   |
| (13) Pursue the greening of each site in consideration of the regulations of each country and region and harmony with the surrounding environment | -   |

Key Performance Indicator (KPI)	Target			Fiscal 2022 Result
	Fiscal 2020	Fiscal 2021	Fiscal 2022	
3-① Number of major accidents	0	0	0	0
3-② Achieve world's best standard for safety management (not exceeding 0.05 frequency rate for occupational accidents resulting in lost work time)	No more than 0.05	No more than 0.05	No more than 0.05	0.37
3-③ Number of fire and explosion accidents	0	0	0	2
3-④ Number of environmental accidents	0	0	0	7
3-⑤ Reduction of greenhouse gas emissions per unit of revenue (%)	At least 20% lower than fiscal 2013 (Fiscal 2022)			34.6% <sup>5&amp;6</sup>
3-⑥ Water usage per unit of revenue (%)	At least 25% lower than fiscal 2013 (Fiscal 2022)			31.9% <sup>6</sup>
3-⑦ Reduction of atmospheric VOC emissions (%)	At least 70% lower than fiscal 2000	At least 70% lower than fiscal 2000	At least 70% lower than fiscal 2000	70.9%
3-⑧ Waste recycling rate (%)	At least 86%	At least 86%	At least 86%	86.8%
3-⑨ Conduct a survey of palm oil contained in raw materials (%)	Usage survey of certified products : 100%	Decision making (Yes/No) of shifting to certified raw materials : 100% (Fiscal 2022)		100%

Reporting scope : Toray Group (3-①, 3-②, 3-③, 3-④, 3-⑤, 3-⑥, 3-⑦ and 3-⑧)  
Toray Industries, Inc. (3-⑨)

<sup>3</sup> Volatile organic compounds

<sup>4</sup> Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof

<sup>5</sup> Until FY 2022, this was calculated by multiplying the GHG emissions and revenue of individual subsidiaries worldwide by the applicable Toray Industries' equity share. Starting in FY 2023 however, the calculation method will change, and the degree of financial control Toray Industries has over the individual subsidiary (not the equity share) will be used, in accordance with the GHG Protocol, the international standard. Under the latter calculation method, the reduction is 32.7%.

<sup>6</sup> The calculation of the figure for the baseline of FY 2013 includes data for companies that joined the Toray Group in FY 2014 or later.

## Related Materiality for CSR

- Accelerating Climate Change Mitigation
- Promoting a Circular Economy
- Taking a Nature-Positive Approach
- Ensuring Safety and Fire Accident prevention

\* Click [here](#) for CSR Roadmap 2025 from the perspective of materiality (PDF:392.4KB). [PDF](#)

\* Click [here](#) for a PDF summary of the main materiality-related initiatives, KPIs and progress achievements up to fiscal 2022 under the CSR Roadmap 2022 (PDF: 1.6MB). [PDF](#)

## Looking to the Future

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Toray Group will continue to carry out safety, accident prevention and environmental preservation activities based on international frameworks such as ISO 14001 and Responsible Care as well as the Group's medium- and long-term and single-year goals. The Group is committed to protecting the health and safety of employees and the public and reducing its environmental impact.

Click [here](#) for the main initiatives and KPIs for CSR Guideline No. 3 "Safety, Accident Prevention, and Environmental Preservation" during the CSR Roadmap 2025 period (fiscal 2023–2025).



## CSR Activity Report (CSR Guideline Activity Reports) - Safety, Accident Prevention, and Environmental Preservation

### Occupational Safety and Accident Prevention Activities

Toray Group pursues its own safety activities using occupational health and safety management systems (such as OHSAS 18001 and ISO 45001). Toray Group employees take part in an introductory training session immediately after joining the Group to learn and demonstrate their level of understanding of specific procedures and internal rules related to occupational safety. For mid-level employees and managers, the Group provides education on management and supervisory responsibility for occupational safety at every type of group training it holds, as well as studies of more concrete case studies related to the occupational health and safety management systems. In addition, officers in charge of production, as well as production engineering and Environment & Safety Department employees, conduct safety and health, accident prevention, and environment audits of all group companies and plants every year and evaluate and seek improvements in the status of activities from a standardized perspective. In addition, best practices are shared at sites throughout the Group to enhance the entire Group's performance. Employees are key stakeholders of Toray Group. Needless to say, ensuring their safety is the prerequisite to their capacity to make the most of their potential.

Officers and employees work together to implement persistent safety initiatives with the goal of zero accidents, out of respect for humanity and the sanctity of life.

To raise the awareness, every year, Toray Group creates a group-wide safety slogan. In 2022, the aim was once again for each and every employee of Toray Group to come together as a concerted group to raise awareness of safety as the top priority and to uphold this year's slogan—Top Priority is Safety, Pursue “Zero Accidents”—Heighten safety awareness and back to basic all the time—to ensure that basic safety rules and work fundamentals are thoroughly followed on work sites.

Due to the potentially serious impact of an accident not only within the company but on surrounding communities, the Group acts with strong determination to prevent accidents such as fires and explosions, making accident prevention a top priority.

Toray Group sets up safety and health committees and works to ensure the safety and health of its employees through united efforts of labor and management, based on occupational safety and health laws in the countries in which it operates. These efforts help to ensure a pleasant working environment.

#### **2022 Safety Slogan**

Safety is Our First Priority. We Pursue Zero Accidents.

—Raise Awareness and Commit to the Basics

Every year, the Toray Industries president, executive vice presidents and other officers, as well as Group company presidents and plant managers meet at the Toray Group Safety Meeting. At the meeting, safety action policies and main activities are shared to set a common course, activities at worksites are reported, and safety awards are given to raise awareness of safety and foster horizontal development for good practices. In 2022, the meeting was held online with Toray plants and its group companies in Japan, with the Tokyo Head Office of Toray Industries serving as the main venue, in order to prevent the spread of COVID-19.



2022 Toray Group Safety Meeting at Tokyo Head Office

Furthermore, the Safety Summit, on-site safety lecture by Toray Industries directors, and other events are held on a national and regional basis, and at each group company and plant of the Group. These efforts promote a common awareness of the Toray Group safety slogan, policies, and main activities, enabling centralized management of safety activities across the Group. In addition, representatives of the senior management and labor unions at Toray Industries hold regular meetings. They discuss issues related to safety and health, establish a shared understanding of the issues, and engage in forward-looking discussions to improve the workplace environment. Safety and health committee meetings are also held at each business site (plant) every month, with the participation of the site head, managers and labor union representatives concerned. They share safety activity policies and give and receive instructions to prevent recurrence of occupational accidents that have recently occurred in Toray Group, while also reporting and discussing other matters related to occupational safety and health.

## Examples of Workplace Initiatives in Fiscal 2022

### General Safety Summit Held at Toray Mishima Plant

Toray Industries' Mishima Plant holds a safety summit every year with about 60 group companies and subcontractors that operate on its premises. In fiscal 2022, as part of thorough measures to prevent the spread of COVID-19, the number of in-person attendees at the convention venue was limited. Accordingly, approximately 170 people attended, including those who participated through video conferencing.



Participants at Toray Mishima Plant General Safety Summit

In addition to the presentation of awards to various departments and companies for safety performance and to recognize outstanding safety examples, participants reviewed the occupational accidents that had occurred in 2022. Goals and details of the Mishima Plant special safety activities that began in December were shared with subcontractors. Representative departments and subcontractors also presented safety activity case studies of their own. Finally, the participants collectively pledged to intently promote special safety activities under the Mishima Plant special safety slogan, “Visualize Safety, Visualize Focus, Must Achieve Zero Accidents 180!” as part of a formal safety declaration.

**Malaysia Toray Group Safety Convention [Toray Industries (Malaysia) Sdn. Berhad]**

Toray Industries (Malaysia) [TML] held its 31st Safety Convention virtually with 68 participants from TML, Penfabric (PAB), Toray Plastics (Malaysia) [TPM], Penfibre (PFR), and Toray Malaysia Systems Solution (TMS).

Participants presented and shared safety initiatives and countermeasures, further deepening their knowledge of safety awareness and best practices through a question-and-answer session. In addition, prizes were presented to winners of the safety poster and slogan competitions.



Group photo of participants

**Toray Group Safety Record**

CSR Roadmap 2022  
Main Initiatives (1)(2)(3)(4)

**Number of major accidents**

■Reporting scope: Toray Group  
 ■Target in 2022 (calendar year): 0



**Number of fire and explosion accidents**

■Reporting scope: Toray Group  
 ■Target in 2022 (calendar year): 0



**Achieve world’s best standard for safety management**

(not exceeding 0.05 frequency rate for occupational accidents resulting in lost work time)

■Reporting scope: Toray Group  
 ■Target in 2022 (calendar year): No more than 0.05



Toray Industries has collected data on all occupational accidents since 1980, and for Toray Group since 1990. Both the number of occupational accidents and frequency of occupational accidents resulting in lost work time have declined, compared with when the data was first collected. The frequency rate for occupational accidents resulting in lost work time for Toray Group overall in 2022 was 0.37. Although this is a positive result compared with that of Japan's manufacturing industry (1.25), it fell far short of the Group target of achieving the world's highest standard of safety management of 0.05 or lower. One reason for this is that group companies had many accidents resulting in lost work time. Accordingly, the Group is working to strengthen safety management at those group companies with support and guidance from Toray's main plant in Japan.

Toray Group will continue to identify the root cause of each accident to prevent reoccurrence, and avoid similar accidents based on the lessons learned in these accidents. Additionally, the Group will raise employee awareness of the need to practice safety first at all times.

Toray Group believes that safety activities depend upon a repetition of simple things. It is important to commit to the basics of safety and for everyone, without exception, to practice the basics at all times. The first step is to work on the comprehensive implementation of the 5S's—*seiri* (sort), *seiton* (set in order), *seiso* (shine), *seiketsu* (standardize) and *shitsuke* (sustain). Through these activities, all employees learn to adopt *seiketsu* and *shitsuke*. *Seiketsu* fosters employees' motivation to keep the workplace standardized and clean, and *shitsuke* raises employees' awareness to adhere to the rules. They also take the time to reconsider movement pathways to make work safer. Managers repeatedly go around worksites, praising good behavior in an effort to raise workplace morale.

Next, the Group works to eliminate accidents in routine activities. Managers strive to maintain a sense of alertness in the workplace by continually reminding people to act with safety first, considering what the consequences (accidents) could be under any and all circumstances. In addition, if an occupational accident does occur, an accident report is sent out to the entire Toray Group. In an effort to eliminate similar accidents, the unit heads and unit chiefs of each workplace take a leading role in discussing the report with workplace team members, imagining the cause of the accident as a specific danger in their own workplace, in order to raise everyone's safety awareness and ensure commitment to the basics.

While there were no fire or explosion accidents at Toray Industries or Group companies in Japan in 2022, there were two such accidents at Group companies overseas. The cause of the accidents included an electrical fire. As part of measures to help prevent electrical fires, Toray Industries has revised the checklist for preventing fires that it uses and has established a new section for electrical equipment. Toray offices and plants use these checklists to identify and address electrical fire risks and conduct daily inspections.

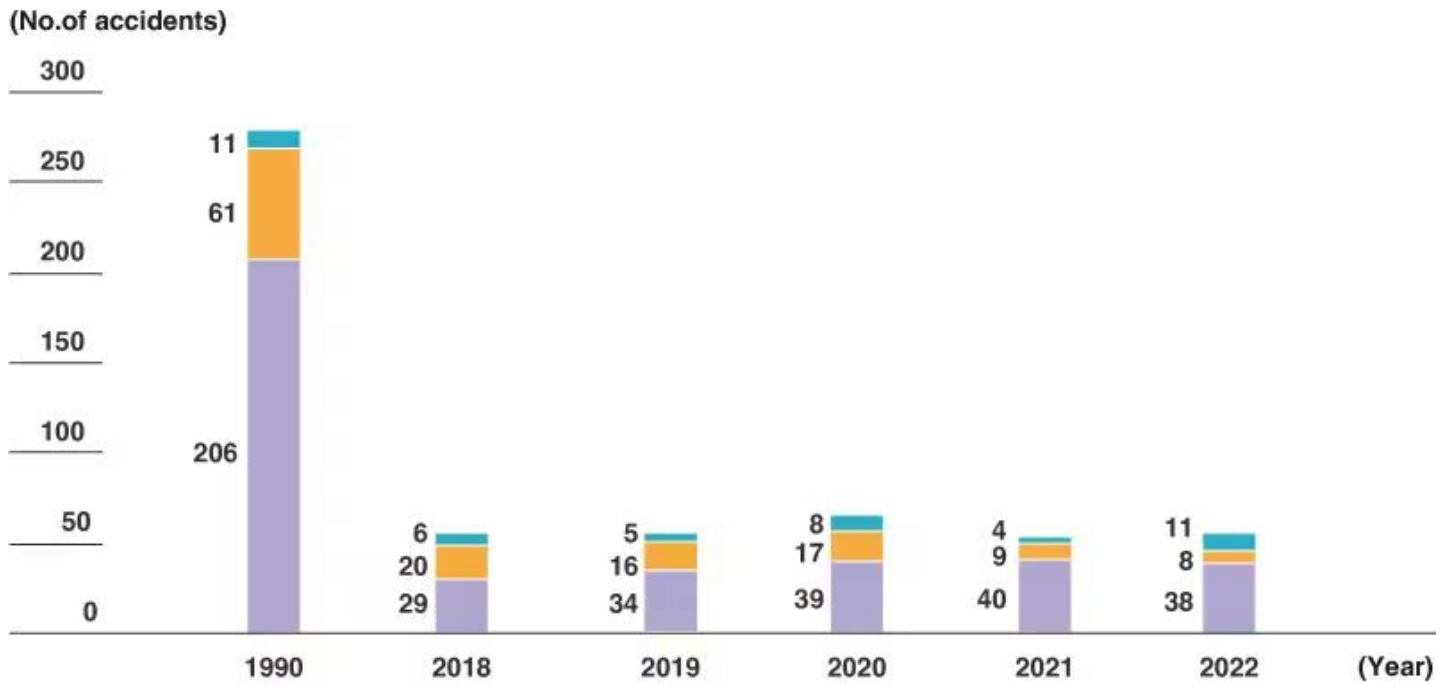
In an effort to eliminate similar fire-related accidents, the Group has a system to enable Group companies to rapidly share critical information on fire-related accidents. The Group uses knowledge gained from previous accidents to adopt effective fire prevention strategies and implement unified accident prevention management standards.



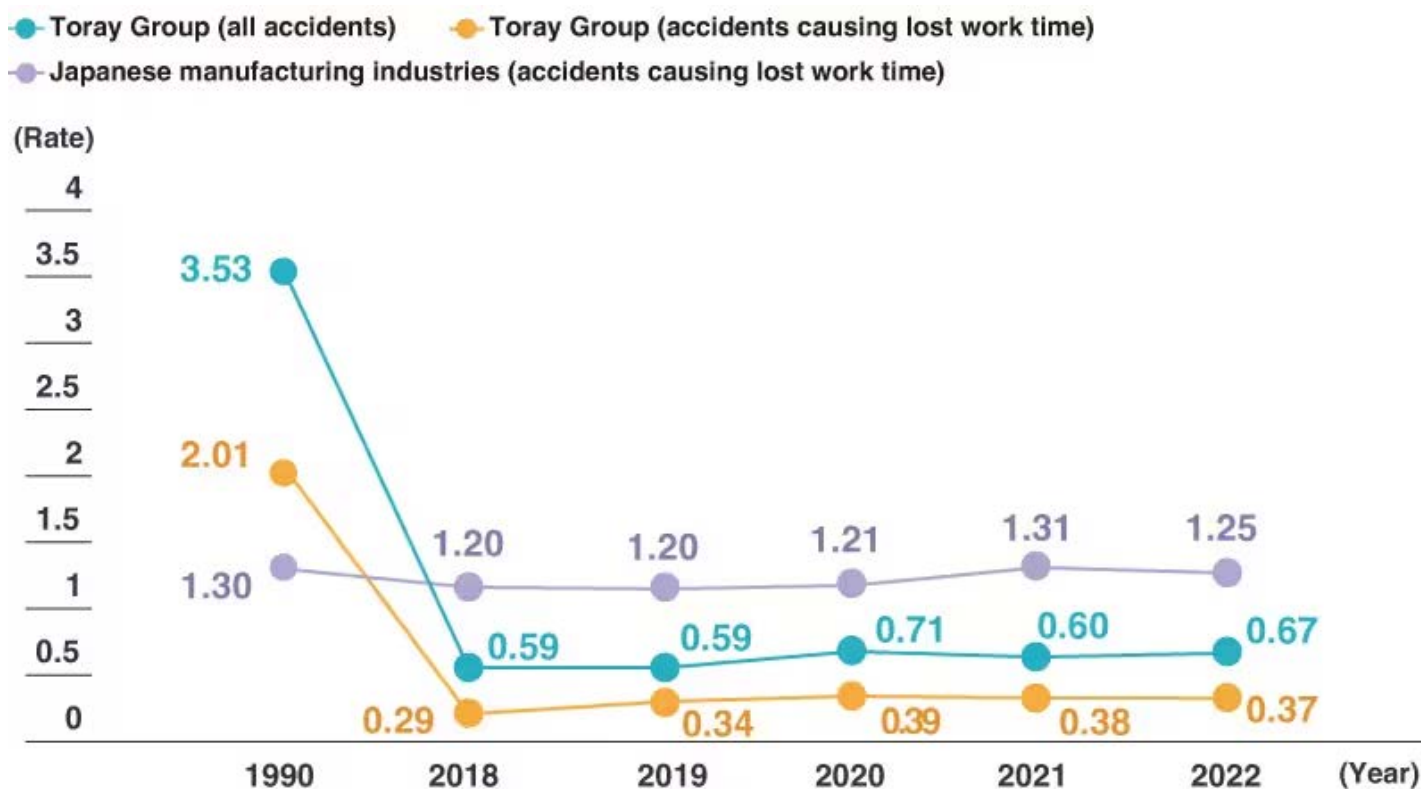
Example of work made safer by improving movement pathways through a change in layout

Number of Occupational Accidents<sup>1</sup>: Toray Group (Lost work time and non-lost work time)

■ Toray Industries, Inc. 
 ■ Group companies in Japan 
 ■ Group companies outside Japan



## Occupational Accident Frequency Rate<sup>2</sup>: Toray Group



<sup>1</sup> Data for Japan includes non-regular employees (part-time employees, contract employees, casual part-timers, and dispatched workers). Data from outside of Japan does not include temporary staff.

<sup>2</sup> Occupational accident frequency rate: The number of fatalities and injuries at worksites per one million cumulative working hours.

## Identifying Danger (Hazards), Evaluating Risk, and Accident Surveys

CSR Roadmap 2022  
Main Initiatives (1)(2)(3)

### 1. Identifying danger (hazards) and evaluating risk

Toray Group has a system whereby employees report any potential risks in the workplace to managers and the managers provide feedback on countermeasures and improvements. Before starting work, hazard prediction information, near miss reports, and safety proposals are shared with employees to confirm and mitigate risks. Company inspectors also carry out audits to review the system for preventing occupational accidents and the status of the implementation of countermeasures. If there are any problems, the inspectors give instructions for improvements.

### 2. Accident investigation

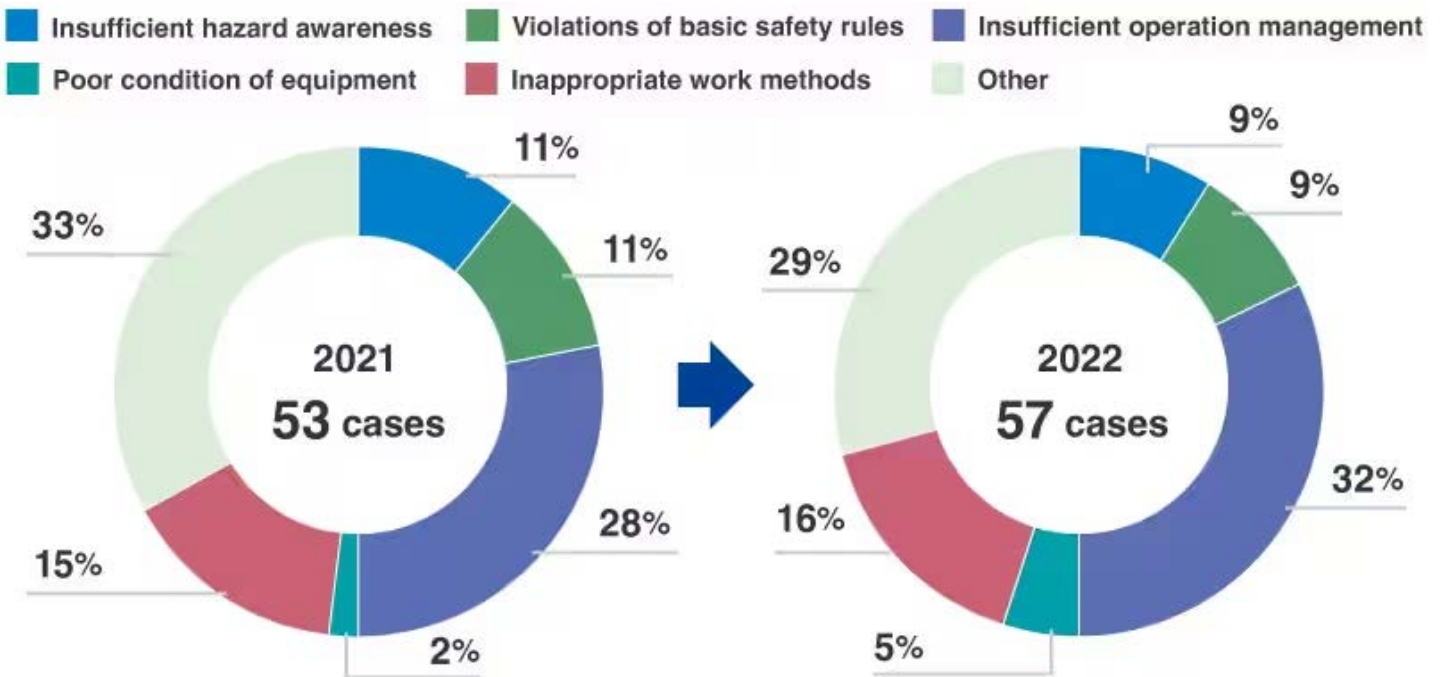
In the event of an occupational accident, the emergency response review meeting and the countermeasure meeting are convened to clarify the chain of events leading up to the accident, identify the cause, and decide on and execute countermeasures. In addition, information about the accident is shared throughout the Group and measures taken to prevent a recurrence.

### 3. Prioritized risk reduction activities

In 2021, 28% of Toray Group occupational accidents were caused by insufficient operation management, such as unclear work methods, ambiguous work instructions, and self-initiated work methods. Of these types of accidents, 15% occurred in situations in which inappropriate work methods were used, including the use of inappropriate tools and the implementation of unsafe work procedures, despite prescribed work methods and procedures being in place. In the first half of 2022, Toray Group worked to eliminate accidents caused by insufficient operation management by developing thorough safety confirmation measures to be taken before starting operations. These measures focus on giving and confirming specific instructions on work methods and procedures before the work is performed. Although such accidents decreased during the period that the measures were implemented, they ultimately increased slightly to 32%. In the second half of 2022, in order to eliminate accidents caused by inappropriate work methods, managers identified risks by conducting on-site patrols to check actual work conditions, and workers themselves conducted risk detection and work improvement activities to identify potential risks in their own specific tasks. Although such accidents saw an initial decline after these activities were conducted, they ultimately remained at 16%, essentially unchanged.

In addition to the remaining issues that have resulted from these outcomes, the Group is also analyzing accident occurrences from various perspectives and promoting the improvements needed to eliminate accidents. It also implements plan-do-check-action (PDCA) cycles to reduce risks.

**Causes of Occupational Accidents (Both Requiring and Not Requiring Work Absence) at Toray Group in 2021 / 2022**



## Enhancing Safety and Accident-Prevention Training

As part of their safety and accident prevention training, Toray Group companies and plants provide workshops and hands-on simulations to sensitize employees to dangers and hazards. Safety simulators enable workers to experience the dangers of electrocution, residual pressure, and getting caught in rollers. Virtual reality (VR) technology is also used to realistically simulate accidents at worksites. In the area of accident prevention, the Group conducts simulation training to teach employees about the risk of fires and explosions, and provides training on the fundamentals of accident prevention.

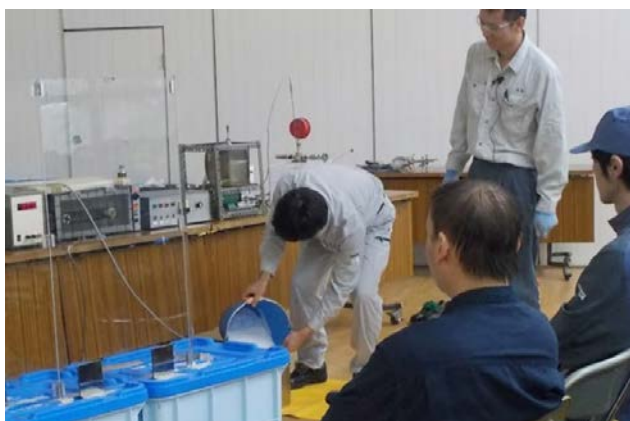
Additionally, the Group publishes on familiar topics regarding safety and accident prevention in its in-house magazine, *People*, in an effort to spread understanding of the fundamentals of accident prevention.



Simulation training at Mishima Plant (Toray Industries, Inc.)



Simulation training at Nagoya Plant (Toray Industries, Inc.)



Demonstrating the danger of fires and explosions at Gifu Plant (Toray Industries, Inc.)



## Implementing Safety Management Together with Subcontractors

CSR Roadmap 2022  
Main Initiatives (1)(2)(3)

Toray Industries implements uniform safety activities for its own work as well as subcontracted work that is subcontracted to on-site Toray affiliates<sup>3</sup> and Group companies. Monthly occupational health and safety committees and regular safety and liaison meetings are used to discuss the implementation status of safety activities and enhance communication with subcontractors, to ensure that all parties are aligned in the implementation of safety activities. Employees conduct on-site monitoring of operations in practice such as those involving forklifts and sharp-edged objects and use the results to generate recommendations for necessary improvements that enhance safety and ease of work. Subcontractors also submit their requests for work and equipment improvements, to increase physical safety.

<sup>3</sup> Toray affiliates: Toray Industries' subsidiaries that provide ancillary services for plant operations



On-site monitoring of actual work (Toray Coms Nagoya Co., Ltd.)

## Safety Management Implemented by Subcontractors

CSR Roadmap 2022  
Main Initiatives (1)(2)(3)

Toray Group recognizes its duty to ensure the safety of the many subcontractors working at its sites. As colleagues working in the same workplace, subcontractors are made aware of, and expected to comply with, Toray Group rules. Subcontractors also participate in monthly meetings of occupational safety and health committees. Regular safety and liaison meetings are conducted to gain input from subcontractors and are used to communicate the Group's policies and to make sure all measures are implemented. In addition, the Group educates subcontractors who work on a short-term basis about Toray Group rules before work commences and manages safety thoroughly. At plants, Toray and subcontractors work together on safety initiatives, including safety posters, slogan contests and safety suggestions.



Safety meeting at Aichi Plant (Toray Industries, Inc.)

## Preparing for Accidents through Fire-Prevention Drills

All companies and plants in Toray Group are making efforts to improve their accident-prevention capabilities by carrying out fire-fighting drills specifically intended for fires and explosions. These drills include practice using water hoses, rescuing the injured, responding to a chemical leak, and giving emergency notification to authorities and local residents.

Since 2012, Group companies and plants have been conducting annual drills on setting up a company-wide emergency headquarters in response to a large-scale earthquake. The drills also involve checking on employees and monitoring facilities damage and supply chains. In 2022, online drills were conducted not only for setting up emergency headquarters, but also for implementing the headquarters emergency response over the days following an earthquake. In addition to conducting drills for the initial response to a large-scale earthquake, Group plants in seaside locations conduct drills of the evacuations that would be needed if a tsunami were triggered by a large-scale earthquake.



Fire prevention drill (Toray Precision Co., Ltd.)



Firefighting training (Toray PEF Products, Inc.)

### Examples of Workplace Initiatives in Fiscal 2022

#### Participating in Tokai City Firefighting Ceremony (Toray Industries, Inc. Tokai Plant)

The Accident Prevention Team of the Tokai Plant Environment and Safety Section participated in the Tokai City Firefighting Ceremony held in Tokai City, Aichi Prefecture, alongside a large chemical high-altitude fire truck.

In addition to a procession that included the Tokai City Fire Department, fire brigades, the Waterfront Industrial Zone Security Liaison Council, and corporate firefighting teams from six area companies, nursery school children dressed in firefighting uniforms also walked in procession. The ceremony concluded with water released simultaneously from multiple hoses in a pledge to work for a year free of fire and accidents.

The Tokai Plant will continue to work to prevent fires and accidents on its premises and in the community through active participation in accident prevention activities.



Members of the Environment and Safety Section Accident Prevention Team at the ceremony

## Initiatives for Improving Fire-Prevention Capabilities

CSR Roadmap 2022  
Main Initiatives (4)

In 2022, as part of the regularly held activities to strengthen fire prevention for the Fire Prevention Project Part II, Toray Group in Japan held lectures on revised checklist contents to upgrade the skills of its FP<sup>4</sup> key persons, who play a pivotal role on the frontlines by promoting accident prevention inspections and measures. Toray Group's internal accident prevention experts provided support and guidance in identifying the root cause and taking countermeasures to prevent reoccurrence of those fire accidents and near misses for which the experts decided onsite audits and investigations were necessary.

The Group's earthquake measures seek to mitigate damage, while placing utmost priority on saving the lives of employees and preventing impacts on local communities. The Toray Group Business Continuity Plan (BCP) for a Large-Scale Earthquake outlines the emergency response to an earthquake and subsequent activities to maintain and restore business operations, as well as the Group's duties and normal readiness. In particular, for critical products, the Group develops BCPs that encompass supply chains and continually works to reduce risks.

<sup>4</sup> FP : Fire Prevention

## Distribution Safety Initiatives

CSR Roadmap 2022  
Main Initiatives (1)(4)

Toray Industries is working to ensure safe distribution in its operations. In an effort to manage safety when transporting hazardous substances, the Company concludes security agreements with certain customers, raw material manufacturers, and shipping companies to designate their specific safety responsibilities and roles with regards to safety.

## Initiatives to Reduce Health Effects of Chemical Substances on Employees

CSR Roadmap 2022  
Main Initiatives (1)(2)(3)(4)

In consideration of the health risks to the Company's employees and contract employees, Toray Group is implementing the following initiatives for the handling of chemical substances.

### 1. Study the actual handling of chemical substances

Toray Group collects annual data on the volume of chemical substances handled by offices and plants of Group companies and volume in their possession. Furthermore, the Group clearly indicates the danger of mutagenicity for each chemical substance as stipulated in the Industrial Safety and Health Act, and discloses the risks.

### 2. Implement chemical substance risk assessments

Toray Group implements risk assessments using working environment measurements for the chemical substances that it handles, as well as using ECETIOC's Targeted Risk Assessment (TRA) tool and control banding. The risk assessment results are used to protect the health of employees by implementing comprehensive measures to prevent worker exposure to organic solvents and dust where it is required.

### 3. Conduct follow-up through internal audits

Toray Group conducts an annual safety, health, accident prevention, and environmental audit, to objectively evaluate the methods for handling chemical substances and working conditions. The audit is used to identify any oversights or unattended issues and implement necessary improvements.

#### 4. Other

Toray Group endeavors to maintain and improve working conditions by conducting working environment measurements and on-site monitoring of actual work in accordance with the risk level of handled substances. It also conducts medical checkups to continually follow-up on the health status of employees. To prevent health issues among workers, the Group conducts training on the dangerousness of handled chemicals, and prepares and keeps records of the on-site monitoring of actual work.

## Health Effects and Response to Asbestos

CSR Roadmap 2022  
Main Initiatives (3)

Toray Group has manufactured and imported building materials containing asbestos in the past. In addition, certain buildings and facilities were constructed using such materials and thermal insulation containing asbestos. Starting in 2005, when asbestos-related health hazards became a social concern in Japan, Toray took action to address the issue of its own asbestos-containing facilities. The health program offers medical examinations to current and former employees who handled even small amounts of asbestos and wish to undergo an examination. Toray Group is working in good faith with individuals diagnosed with asbestos-related health issues by assisting with their applications for workers' compensation and providing an ongoing program of medical examinations. The Group has not been contacted about health issues by residents living near affected plants. The cumulative health impacts on former and current Toray Group employees as of March 31, 2023 are as follows.

Certified occupational accidents arising from handling asbestos (Toray Group): 122 (105)\*

Certified health victims based on Japan's Act on Asbestos Health Damage Relief (Toray Group): 8 (8)\*

Medical examination recipients involving asbestos (Toray Group): 4,041

\* Note: Figures in parentheses refer to fatalities as of March 2023.

Click [here](#) for the main initiatives for CSR Guideline 3, "Safety, Accident Prevention, and Environmental Preservation" in CSR Roadmap 2022.

## CSR Activity Report (CSR Guideline Activity Reports) - Safety, Accident Prevention, and Environmental Preservation

# Conserving Energy and Reducing Greenhouse Gas Emissions

Seeking to contribute to a carbon-neutral world, Toray Group pursues initiatives for reducing greenhouse gas emissions. In the Toray Group Sustainability Vision announced in July 2018, the Group set out the target of reducing greenhouse gas emissions<sup>1</sup> from production activities per unit of revenue by 30% compared with the baseline year of fiscal 2013 across the entire Toray Group worldwide as a quantitative target for fiscal 2030. In its CSR Roadmap 2022, the Group set out an interim target of reducing greenhouse gas emissions per unit of revenue<sup>1</sup> Group-wide by 20% by fiscal 2022 compared with fiscal 2013. As a result of efforts to reduce CO<sub>2</sub> emissions during manufacturing by conserving energy with improved manufacturing processes, increasing utilization of renewable energy, and reducing coal consumption, the Group reduced greenhouse gas emissions per unit of revenue by 34.6%<sup>2</sup> by the end of fiscal 2022.

In March 2023, the target set out in the Toray Group Sustainability Vision for reducing greenhouse gas emissions from production activities per unit of revenue was raised significantly from a 30% reduction compared with the baseline year of fiscal 2013 to a reduction of more than 50%<sup>1</sup>. The Group also set a target of reducing absolute greenhouse gas emissions for Toray Group in Japan by at least 40%<sup>1</sup> compared to fiscal 2013, thereby accelerating the Toray response to climate change.

<sup>1</sup> Scope 1 (direct emissions from plants, offices, and vehicles, etc. owned by the Group) and Scope 2 (indirect emissions resulting from the production of electricity and other energy consumed by the Group) emissions.

<sup>2</sup> Until FY 2022, this was calculated by multiplying the GHG emissions and revenue of individual subsidiaries worldwide by the applicable Toray Industries' equity share. Starting in FY 2023 however, the calculation method will change, and the degree of financial control Toray Industries has over the individual subsidiary (not the equity share) will be used, in accordance with the GHG Protocol, the international standard. Under the latter calculation method, the reduction is 32.7%.

## Energy Conserving Activities

CSR Roadmap 2022  
Main Initiatives (6)

Toray Group sets annual energy-conserving targets for each company and plant and promotes group-wide energy-conserving activities.

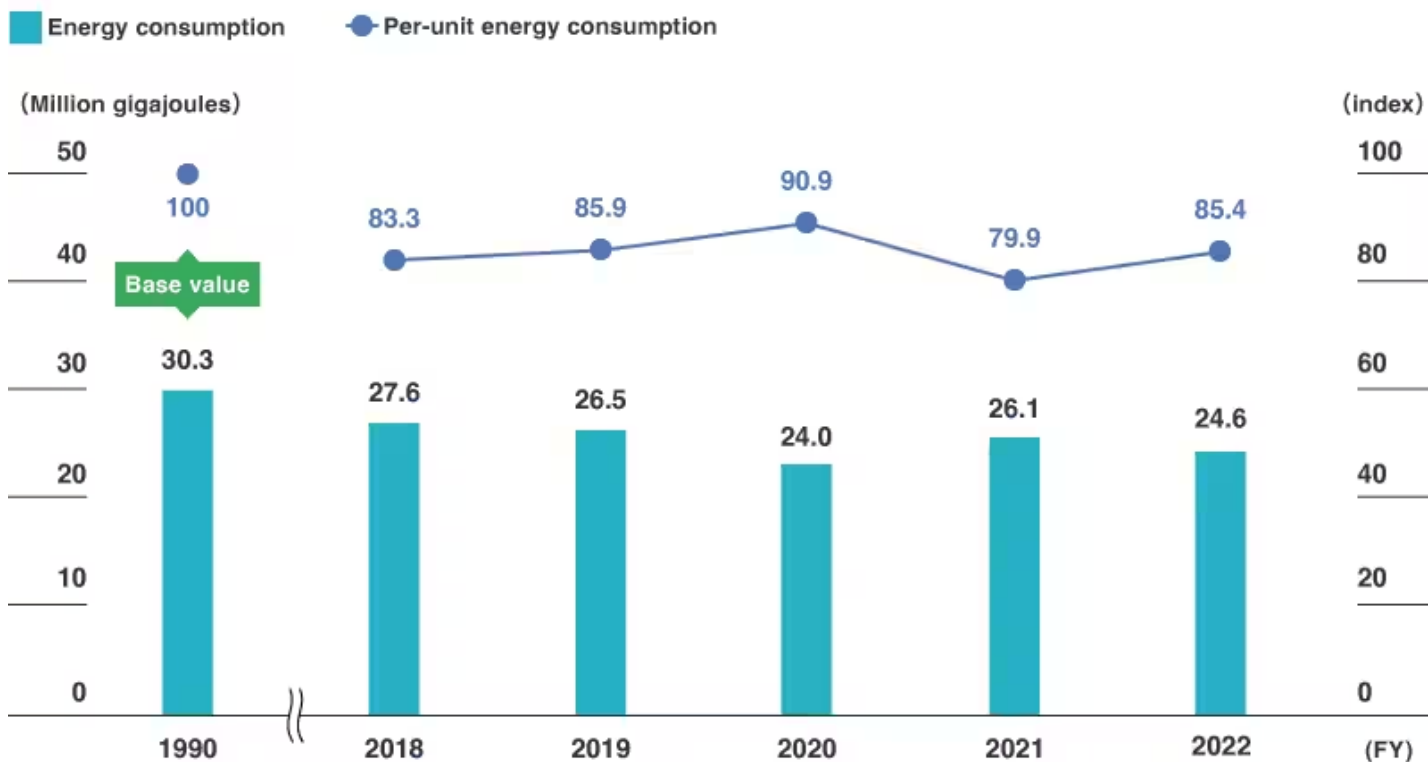
It also checks the progress of its energy-conserving measures on a monthly basis.

Toray Industries is promoting energy-conserving activities with a goal of reducing its per-unit energy consumption<sup>3</sup> by 2% annually.

In fiscal 2022, energy consumption decreased by 5.9% year on year due to more efficient use of energy and efforts to reduce energy waste and loss. However, per-unit energy consumption deteriorated 6.9% year on year due to a 12.0% reduction in production volumes, while improved 14.6% compared to the baseline year of fiscal 1990.

<sup>3</sup> Energy consumption per converted production volume

## Energy Consumption and Per-unit Energy Consumption Index (Toray Industries, Inc.)<sup>4</sup>



<sup>4</sup> The energy consumption shown in this graph does not include renewable energy.

As part of its proactive energy-conserving activities, Toray Group organizes teams whose members are familiar with manufacturing processes and facilities to help carry out annual energy-conserving diagnostics at plants in Toray Industries and its group companies around the world to come up with ideas for further energy conservation. In fiscal 2022, these activities were conducted at five of Toray Industries' plants, three group company plants in Japan, and four group company plants outside of Japan. As a result, the Group reduced greenhouse gas emissions by about 10,000 tons-CO<sub>2</sub> equivalent.



Review of energy conserving diagnostics via web conference

## Toray Group Greenhouse Gas Emissions (Scope 1 and 2)

CSR Roadmap 2022  
Main Initiatives (6)

### Reduction of greenhouse gas emissions per unit of revenue (%)

■ Reporting scope: Toray Group  
 ■ Target: At least 20% lower than fiscal 2013 (Fiscal 2022)

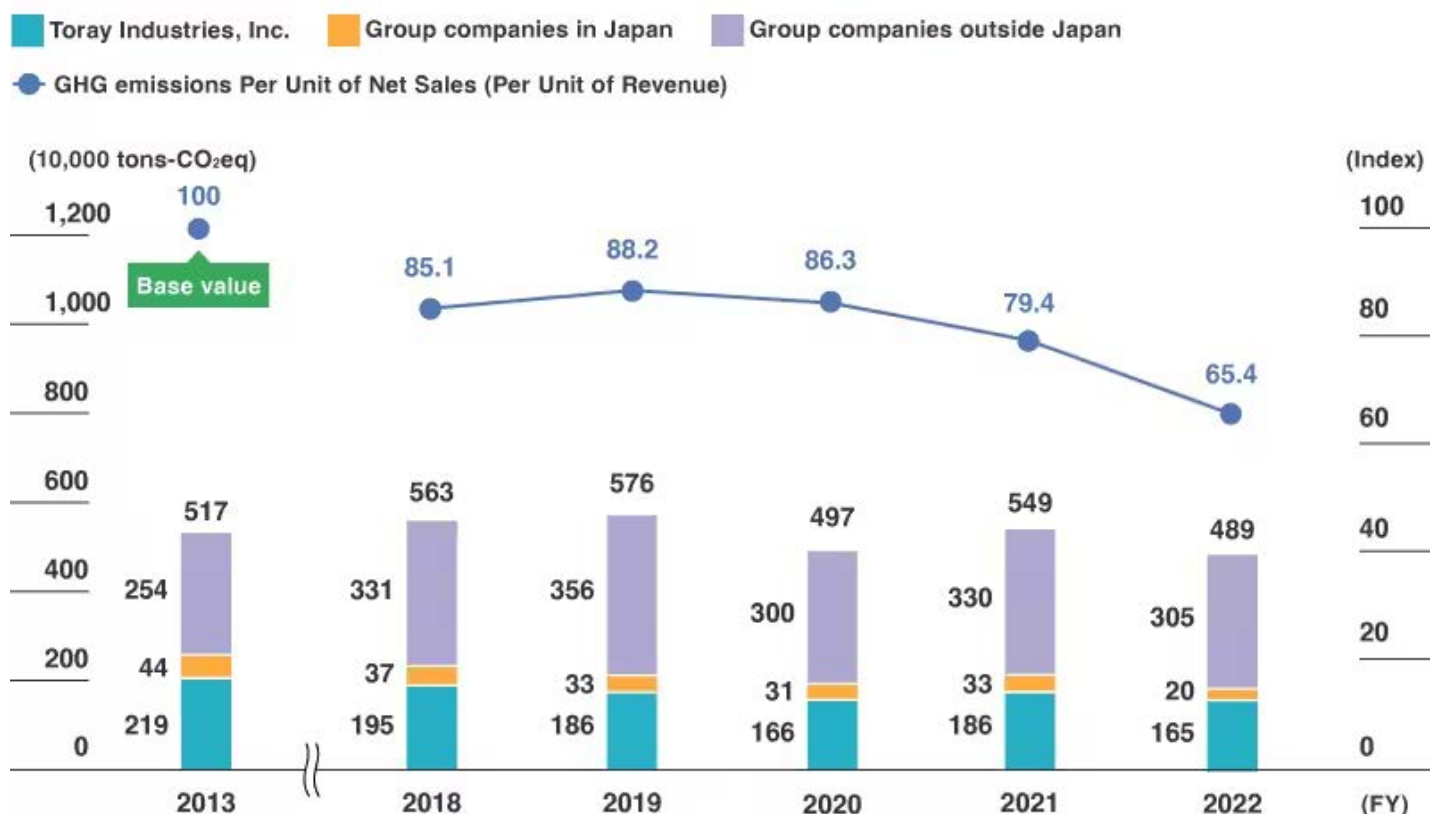
Result in fiscal 2022

**34.6%**<sup>5</sup>

Toray Group's greenhouse gas emissions (Scope 1 and 2) reduction target was established in the CSR Roadmap 2022. The Group as a whole implemented systematic reduction measures with the goal of achieving a 20% reduction of greenhouse gas emissions per unit of revenue by fiscal 2022, compared to fiscal 2013. Overall greenhouse gas emissions (Scope 1 and 2) for Toray Group in fiscal 2022 decreased by 10.9% year on year to 4.89 million tons-CO<sub>2</sub> equivalent. In terms of per unit of revenue, the Group reduced emissions by 34.6%<sup>5</sup> compared to the baseline year of fiscal 2013. This reduction was due to efforts to reduce greenhouse gas emissions to the bare minimum (energy-conserving through process improvement, utilization of renewable energy, and reduction of coal use at group plants outside of Japan, etc.), as well as an increase in sales revenue groupwide.

<sup>5</sup> Until FY 2022, this was calculated by multiplying the GHG emissions and revenue of individual subsidiaries worldwide by the applicable Toray Industries' equity share. Starting in FY 2023 however, the calculation method will change, and the degree of financial control Toray Industries has over the individual subsidiary (not the equity share) will be used, in accordance with the GHG Protocol, the international standard. Under the latter calculation method, greenhouse gas emissions are 5.66 million tons in FY 2013 and 5.12 million tons in FY 2022, which means a 32.7% reduction per unit of revenue in FY 2022 compared to FY 2013.

### Greenhouse Gas Emissions (Scope 1 and 2) and Greenhouse Gas Emissions Per Unit of Net Sales (Per Unit of Revenue) (Toray Group)



Note: Per unit of net sales until fiscal 2019, as Japanese GAAP was used until then, and per unit of revenue from fiscal 2020 onwards, as International Financial Reporting Standards (IFRS) have been adopted since then. Figures for the baseline year of fiscal 2013 are recalculated to include companies that joined Toray Group in fiscal 2014 or later.

## Reduction of Coal Use at Plants Outside of Japan

P.T. Indonesia Toray Synthetics ceased coal-fired power generation in 2021 and switched to purchased power, reducing CO<sub>2</sub> emissions by 250,000 ton-CO<sub>2</sub> per year.



Transformer substation at P.T. Indonesia Toray Synthetics

## Toray Group Greenhouse Gas Emissions (Scope 3)

In addition to Scope 1 (direct emissions from plants, offices, and vehicles, etc. owned by the Group) and Scope 2 (indirect emissions resulting from the production of electricity and other energy consumed by the Group), Toray Group also calculates Scope 3 emissions (other indirect emissions).

### Toray Group Scope 3 Emissions

(10,000 tons-CO<sub>2</sub>eq)

Category 1: Purchased goods and services	898.0
Category 2: Capital goods	39.6
Category 3: Fuel and energy related activities	94.5
Category 4: Upstream transportation and distribution	21.0
Category 5: Waste generated in operations	1.1
Category 6: Business travel	0.6
Category 7: Employee commuting	2.2
Category 8: Upstream leased assets	0.2
<b>Total</b>	<b>1,057.1</b>

Note: Toray is currently working to identify and calculate Scope 3 emissions for all of Toray Group.



## Calculation Method for Scope 3 Categories

Category	Calculation Method
1. Purchased goods and services	Calculated by multiplying the volume of purchased products and services (physical and monetary data) by the emission factor for each item. (See Inventory Database for Environmental Analysis (IDEA) [Ver. 2.3] and Emission Factor Database for Calculating Greenhouse Gas Emissions of Organizations Through the Supply Chain [Ver. 3.3].)
2. Capital goods	Calculated by multiplying the amount of payment for purchased capital goods by the emission factor. (See Emission Factors for Calculating Greenhouse Gas Emissions of Organizations Through the Supply Chain [Ver. 3.3].)
3. Fuel and energy related activities	<p><b>Fuel</b> Calculated by multiplying the amount of purchased fuel by the emission factor for the fuel type. (See IDEA [Ver. 2.3].)</p> <p><b>Electricity and Steam</b> Electricity: Calculated by multiplying the input data of electricity procured from power companies by the average emission factor of all power sources. (See Emission Factors Database for Calculating Greenhouse Gas Emissions of Organizations Through the Supply Chain [Ver. 3.3].) Steam (heat): Calculated by multiplying the input data of procured heat by its emission factor. (See Emission Factors for Calculating Greenhouse Gas Emissions of Organizations Through the Supply Chain [Ver. 3.3].)</p>
4. Upstream transportation and distribution	<p><b>Raw Materials</b> Emissions for transportation are calculated by multiplying weight and distance by emission factors for each type of transportation. (See Shippers' Guide to Energy Conservation Promotion, 7th Edition, Ministry of Economy, Trade and Industry.) * Emission impacts from storage and loading/unloading are minimal and therefore not included.</p> <p><b>Products</b> Emissions for transportation are calculated by multiplying weight, distance, and loading rate by emission factors for each type of transportation. (See Emission Factors for Calculating Greenhouse Gas Emissions of Organizations Through the Supply Chain [Ver. 3.3].) * Emission impacts from loading/unloading are minimal and therefore not included.</p>
5. Waste generated in operations	Calculated by multiplying the amount of waste for each type of waste by the emission factor applicable to type of waste. (See Emission Factors for Calculating Greenhouse Gas Emissions of Organizations Through the Supply Chain [Ver. 3.3].)
6. Business travel	Calculated by multiplying the total number of employees by the emission factor. (See Emission Factors for Calculating Greenhouse Gas Emissions of Organizations Through the Supply Chain [Ver. 3.3].)

Category	Calculation Method
7. Employee commuting	Calculated by multiplying the total number of employees and the average number of days of operation by the emission factor. (See Emission Factors for Calculating Greenhouse Gas Emissions of Organizations Through the Supply Chain [Ver. 3.3].)
8. Upstream leased assets	Calculated by multiplying floor area of relevant building by the emission factor per unit of floor area. (See Emission Factors for Calculating Greenhouse Gas Emissions of Organizations Through the Supply Chain [Ver. 3.3].)

\* The number of companies included in the calculations differs by category.

### Related Information

Toray Industries has obtained third-party assurance of its greenhouse gas emissions from LRQA Limited for Scope 1 and 2 emissions for Toray Industries and group companies outside of Japan, as well as for Scope 3 emissions (categories 1, 2, 3, 4, 5, 6, 7, and 8) for the entire Today Group.

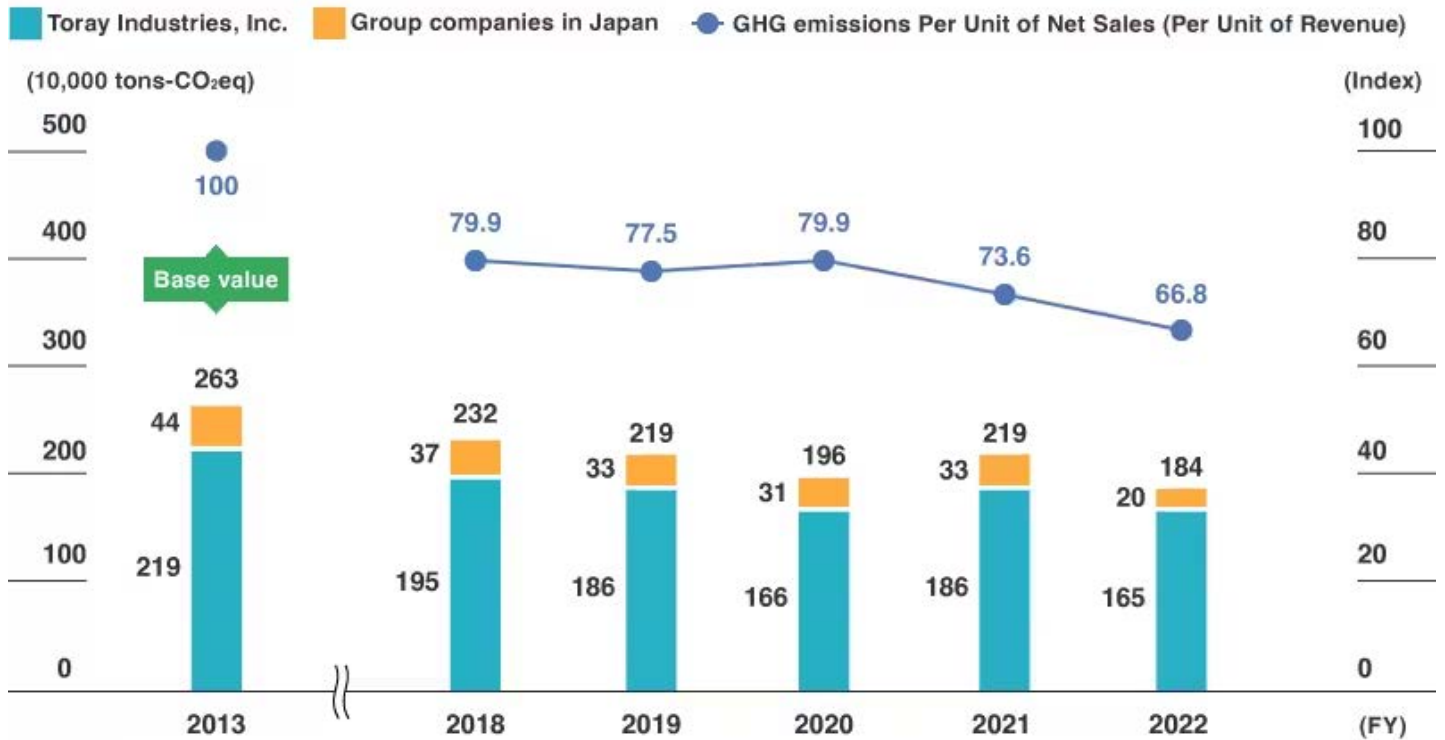
> [Third-Party Assurance](#)

## Greenhouse Gas Emissions (Scope 1 and 2) for Toray Industries and Its Group Companies in Japan

CSR Roadmap 2022  
Main Initiatives (6)

In fiscal 2022, greenhouse gas emissions (Scope 1 and 2) at Toray Industries and its group companies in Japan decreased by 16.1% compared to the previous fiscal year. Greenhouse gas emissions per unit of revenue improved by 9.2% compared to the previous fiscal year, due to efforts to reduce emissions and an increase in sales revenue. This resulted in a 33.2% reduction compared to fiscal 2013.

## Greenhouse Gas Emissions and Greenhouse Gas Emissions Per Unit of Net Sales (Per Unit of Revenue) (Toray Group in Japan)



Note: Per unit of net sales until fiscal 2019, as Japanese GAAP was used until then, and per unit of revenue from fiscal 2020 onwards, as International Financial Reporting Standards (IFRS) have been adopted since then.

## Greenhouse Gas Emissions (Scope 1 and 2) (Toray Industries, Inc.)



Toray Group is systematically installing renewable energy systems. It installed and started to operate a solar power generation system at the Basic Research Center (Kamakura) in fiscal 2022. Outside of Japan, Toray Resin Co. (United States) has also begun operation of a solar power generation system, as well.

In addition, the Tokai Plant of Toray Industries began co-combusting sludge fuel, which is carbon neutral, as boiler fuel from fiscal 2017.



Solar power generation system at Toray Industries Basic Research Center (Kamakura)



Solar panels installed on Toray Resin Co. (United States) grounds

**Renewable energy generated in fiscal 2022**

**80,803 MWh**

Toray Group has installed solar power generation facilities at the following plants:

### Toray Industries, Inc.

- Shiga Plant
- Seta Plant
- Ehime Plant
- Mishima Plant
- Okazaki Plant
- Nasu Plant
- Basic Research Center (Kamakura)

### Group companies in Japan

- Toray Construction Co., Ltd.
- Toray Engineering Co., Ltd.
- Toray Precision Co., Ltd.
- Toray Engineering Central Co., Ltd.
- Toray Engineering West Co., Ltd.
- Toray Textiles, Inc.
- Toyo Plastic Precision Co., Ltd.
- Toray Fine Chemicals Co., Ltd.
- Soda Aromatic Co., Ltd.
- Toray Advanced Film Co., Ltd.
- Toray Carbon Magic Co., Ltd.
- Toyo Jitsugyo Co., Ltd.

### Group companies outside Japan

- Toray Advanced Materials Korea Inc.
- Thai Toray Synthetics Co., Ltd.
- Penfabric Sdn. Berhad
- Toray Sakai Weaving & Dyeing (Nantong) Co., Ltd.
- Toray Fibers (Nantong) Co., Ltd.
- Toray Plastics Precision (Zhongshan) Ltd.
- Toray Resin Co.
- Toray Plastics (America) , Inc.
- Delta-Tech S.p.A.
- Toray Membrane USA, Inc.

## Effective Use of 100% Renewable Electricity at the Headquarters of Toray Industries

Toray Industries signed a green power supply service<sup>6</sup> agreement with Mitsui Fudosan Co., Ltd. for the Toray head office located in Tokyo's Nihonbashi Mitsui Tower.

By utilizing, through Mitsui Fudosan, the environmental value of the wind power facilities that Electric Power Development Co., Ltd. operates, Toray's head office has effectively used 100% renewable energy since April 2022. On a global basis, the estimated annual reduction in greenhouse gas emissions should be around 1,500 tons-CO<sub>2</sub>. In April 2023, the Nagoya Branch of Toray Industries, which is located in the Nagoya Mitsui New Building, introduced a Green Power Supply Service and has switched virtually all of its electricity use to 100% renewable energy.

<sup>6</sup> Green power supply service: A unique service developed by Mitsui Fudosan that uses non-fossil fuel energy certificates to provide electricity to the tenants of its office buildings, which is effectively generated using 100% renewable energy.

## Initiatives to Protect the Ozone Layer

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Toray Industries ceased using chlorofluorocarbons (CFCs) in all manufacturing processes and stopped purchasing CFCs for use in refrigeration equipment in 1994. The Company finished upgrading refrigeration equipment using CFCs in fiscal 2019.

### Related Information

For disclosure of information related to climate change in line with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), refer to [Toray Group's Approach to Climate Change](#).

Click [here](#) for the main initiatives for CSR Guideline 3, "Safety, Accident Prevention, and Environmental Preservation" in CSR Roadmap 2022.

## CSR Activity Report (CSR Guideline Activity Reports) - Safety, Accident Prevention, and Environmental Preservation

# Chemical Management

## Responsible Care Program

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Under Responsible Care programs, chemical companies pursue voluntary management of chemical substances, transparent disclosure, and communication with the public. Companies committed to Responsible Care take safety, health, and environmental measures across the entire product lifecycle—from development, manufacturing, distribution and consumer use to the disposal—and then disclose the results of their efforts.

Toray Industries implements its program in accordance with the Responsible Care Global Charter.<sup>1</sup> In fiscal 2022, the Company promoted the Sustainability Vision and rigorous chemical substance management.

<sup>1</sup> The Responsible Care Global Charter was originally established in 2005 to encourage companies to take concrete action that is understandable to external stakeholders. The Charter was revised in 2014, and Toray Industries was a signatory to both the original and revised Charter.

## Compliance Status Regarding Worldwide Chemical Substance Regulations

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All business divisions of Toray Industries, as well as its group companies in and outside Japan, have chemical substance management systems in place for securing compliance with relevant regulations worldwide, such as Japan's Chemical Substances Control Law and the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) in Europe. As a part of this compliance effort, the Group registers chemical substances registration in accordance with national laws and regulations. The Group also reports production and import volumes, manages substances of high concern, a category that includes substances of very high concern (SVHC) under REACH, and studies the use of alternative substances.

In 2022, in addition to revising its safety data sheets (SDS) to comply with the revised PRTR Law and JIS requirements, the Group took measures to comply with restrictions on chemical substances (microplastics, bisphenol A, etc.) under consideration for restriction under REACH.

## Management of Chemicals in Products (CiP)

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Toray Industries has established the Toray Green Procurement Guidelines (established June 2004, latest revision June 2022) with the aim of reducing the impact on the global environment of the entire cycle from product development, manufacturing, distribution, use, to disposal. The guidelines address the following legally regulated substances by identifying them as either banned or controlled substances. In addition, the company identifies and manages controlled substances according to the relevant laws and regulations for each business.

### Banned Substances

- Class I specified chemical substances regulated under the Japanese Act on the Regulation of Manufacture and Evaluation of Chemical Substances
- Substances banned under the Japanese Industrial Safety and Health Act

### Controlled Substances

- 10 restricted substances under the EU RoHS Directive
- Azo compounds that form specified amines under the Japanese Act on Control of Household Products Containing Harmful Substances
- Ozone depleting substances under the Japanese Act on the Protection of the Ozone Layer
- Radioactive substances

Controlled substances other than those listed above are designated primarily in accordance with the laws and regulations pertaining to chemSHERPA<sup>2</sup>.

<sup>2</sup> chemSHERPA: Information-sharing scheme for chemical substances, managed by the Joint Article Management Promotion-consortium (JAMP) (<https://chemsherpa.net/english>)

## Further Improving Chemical Management in Toray Group

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To better respond to increasingly stricter regulations worldwide, Toray Group is working to enhance its chemical management by utilizing IT systems and improving in-house training. The Toray Chemicals Management System (TCMS), which began operating in fiscal 2019, is used to reliably and promptly confirm the registration status of chemical substances and regulations in destination countries, as well as to issue SDS compliance with specific countries' laws and regulations.

In addition, the Group also established a new in-house education system to raise awareness and increase the knowledge levels of employees in charge of chemical management. In fiscal 2022, Toray Industries conducted training for Group employees who wished to participate on eight topics, including chemical management laws in the U.S. and basic knowledge of chemical management for sales representatives. A total of 3,065 employees took part in the training sessions.

CSR Activity Report (CSR Guideline Activity Reports) - Safety, Accident Prevention, and Environmental Preservation

## Voluntary Initiatives to Reduce Atmospheric Emissions of Chemical Substances

As a corporate group that does business in the chemicals sector, Toray Group places the highest priority on reducing emissions of chemicals into the atmosphere in order to reduce its environmental impact.

The Group is working to achieve its targets for reducing atmospheric emissions of volatile organic compounds (VOCs) and substances specified under Japan's Pollutant Release and Transfer Register Law (PRTR Law). Under Toray's CSR Roadmap 2022, which covered the period from fiscal 2020 to 2022, the Group aimed to reduce its VOC atmospheric emissions by 70% or more each year compared to fiscal 2000, until fiscal 2022. Starting in fiscal 2020, the Group has been focusing on making reductions at group companies and plants with high atmospheric emissions of PRTR-applicable substances and VOCs, while following up on their progress. Under CSR Roadmap 2025, which covers the period from fiscal 2023 to 2025, the Group aims to reduce its annual VOC atmospheric emissions by 72% or more compared to fiscal 2000, until the end of the period. In order to achieve this goal, group companies with high VOC atmospheric emissions as of the end of fiscal 2022 are being targeted, and efforts are being made to further reduce emissions at these companies.

### Reducing Atmospheric Emissions of PRTR Law-Specified Substances

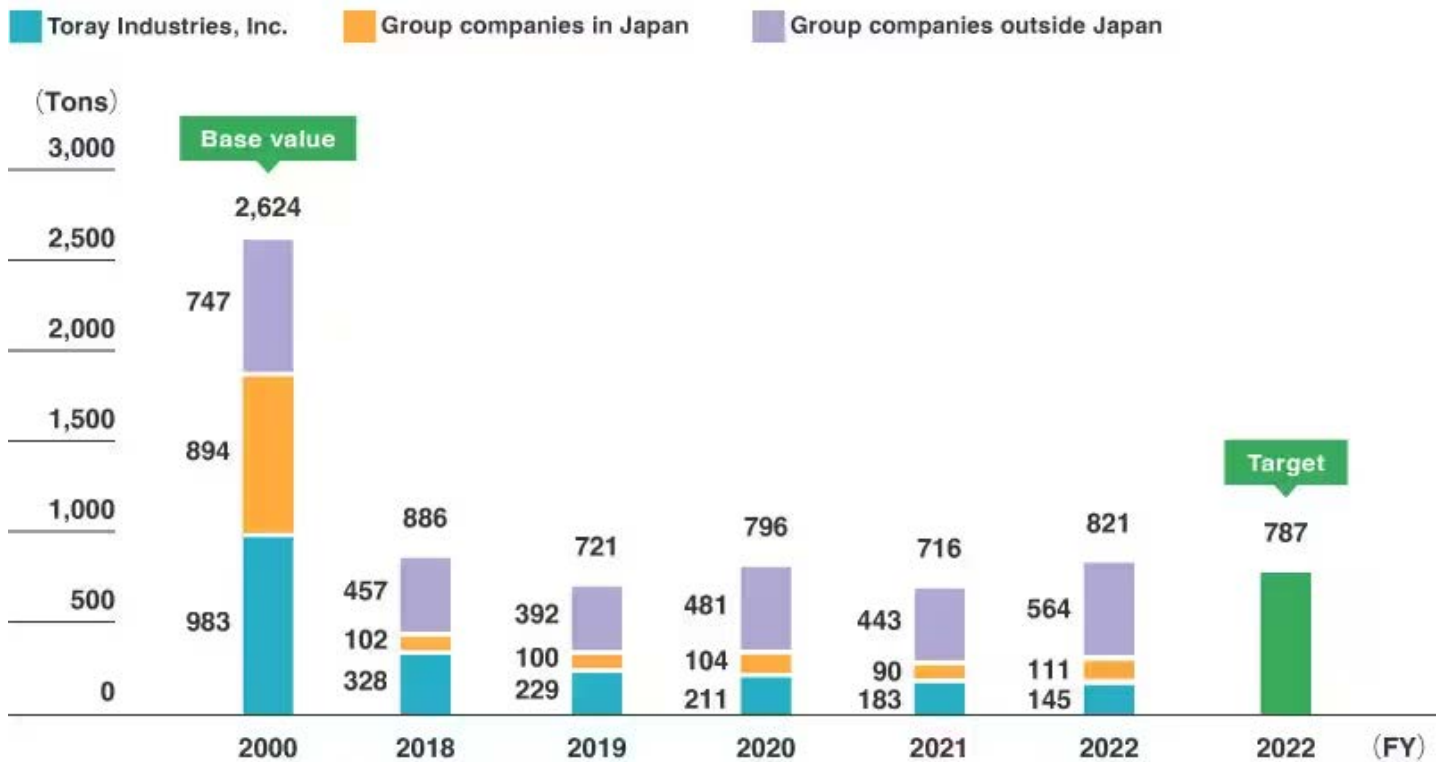
CSR Roadmap 2022  
Main Initiatives (12)

In fiscal 2022, Toray Group's atmospheric emissions of PRTR Law-specified substances were 821 tons. Although these emissions decreased at Toray Industries, emissions increased by 105 tons compared to the previous year at group companies in and outside of Japan. This was mainly due to increased production to meet demand during the post-pandemic economic recovery, and due to the startup of new factories. As a result, the Group achieved a 68.7% reduction compared to the base year of fiscal 2000, falling just short of the 70% reduction target.

Some substances covered by the PRTR Law pose particular concerns regarding their effects on human health. For these substances, the Group will continue to promote voluntary reductions in atmospheric emissions while paying close attention to legal and regulatory trends in the countries and regions where applicable manufacturing sites are located.



## Atmospheric Emissions of PRTR Law-Specified Substances



## Reduction of Atmospheric VOC Emissions

CSR Roadmap 2022  
Main Initiatives (8)

### Reduction of atmospheric VOC emissions (%)

■ Reporting scope  
Toray Group

■ Target in fiscal 2022  
At least 70% lower than fiscal 2000

Result in fiscal 2022

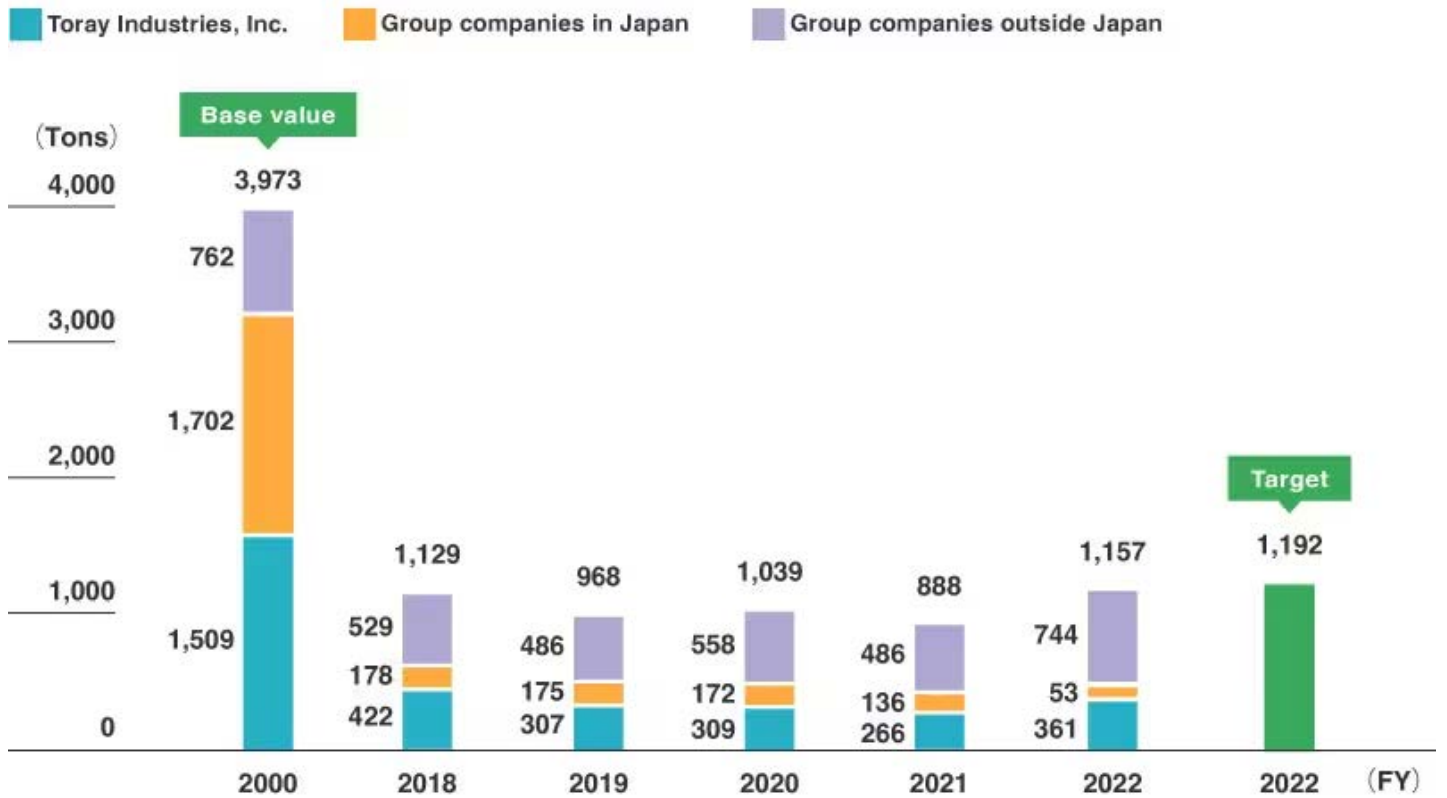
**70.9%**

In fiscal 2022, Toray Group's atmospheric VOC emissions were 1,157 tons, up 30.3% (269 tons) compared to the previous fiscal year.

The emissions were 70.9% below the base year of fiscal 2000, achieving for the second consecutive year the CSR Roadmap 2022 target of a 70% reduction compared to the base year.

The main reason for the increase in VOC emissions was a recovery in production at group companies outside Japan, and the startup of new plants. Covering the period from fiscal 2023 to 2025, the CSR Roadmap 2025 establishes an annual reduction target of 72% or more compared to fiscal 2000, until the end of the period. To achieve this goal, the Group is targeting companies with high VOC atmospheric emissions as of the end of fiscal 2022 and is working to further reduce emissions.

## Atmospheric VOC Emissions



Click [here](#) for the main initiatives for CSR Guideline 3, "Safety, Accident Prevention, and Environmental Preservation" in CSR Roadmap 2022.

CSR Activity Report (CSR Guideline Activity Reports) - Safety, Accident Prevention, and Environmental Preservation

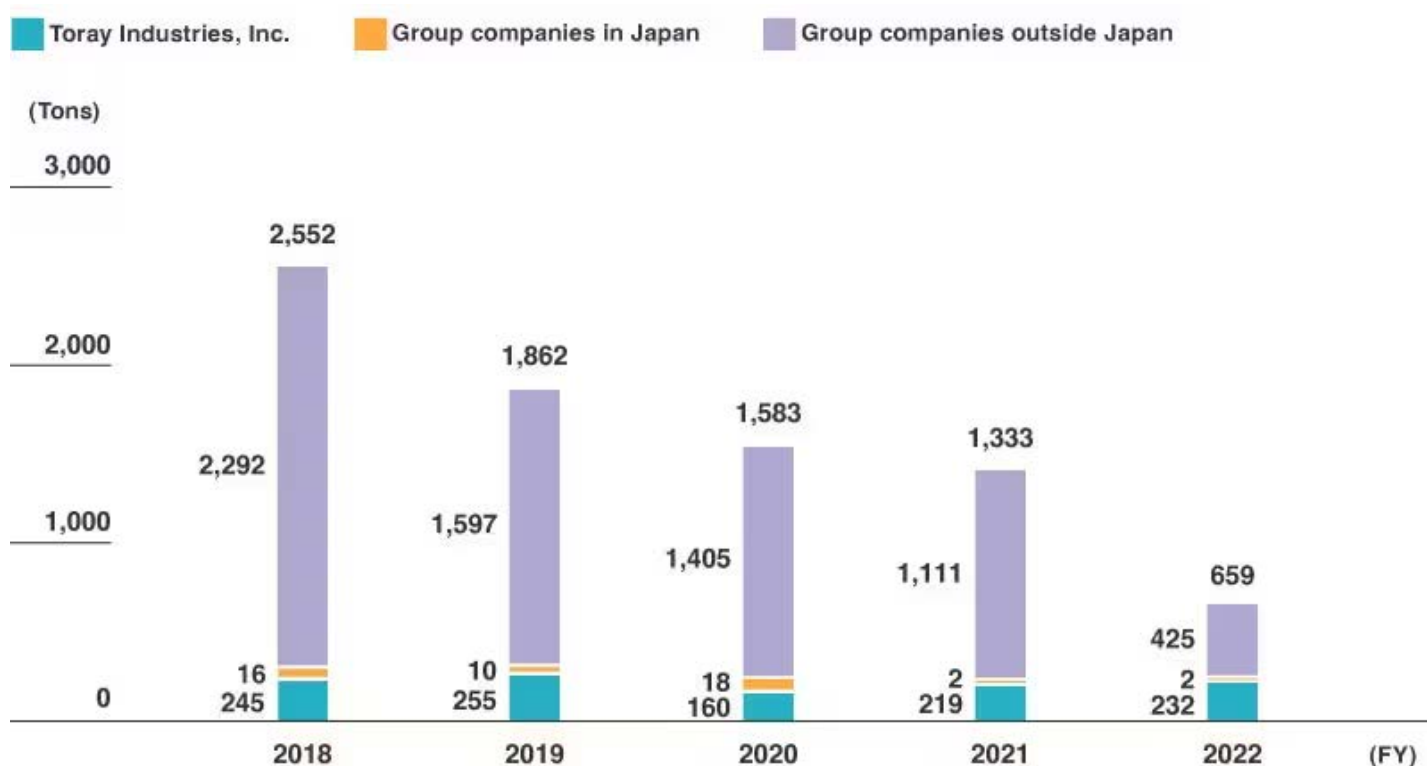
## Initiatives to Prevent Air and Water Pollution

Toray Group works continuously on environmental conservation measures at its production sites. Ongoing initiatives that it will continue include reducing sulfur oxide (SOx) emissions by installing desulfurization equipment and switching to cleaner fuels, and reducing biochemical oxygen demand (BOD) and chemical oxygen demand (COD) through stable operation and expansion of wastewater treatment facilities.

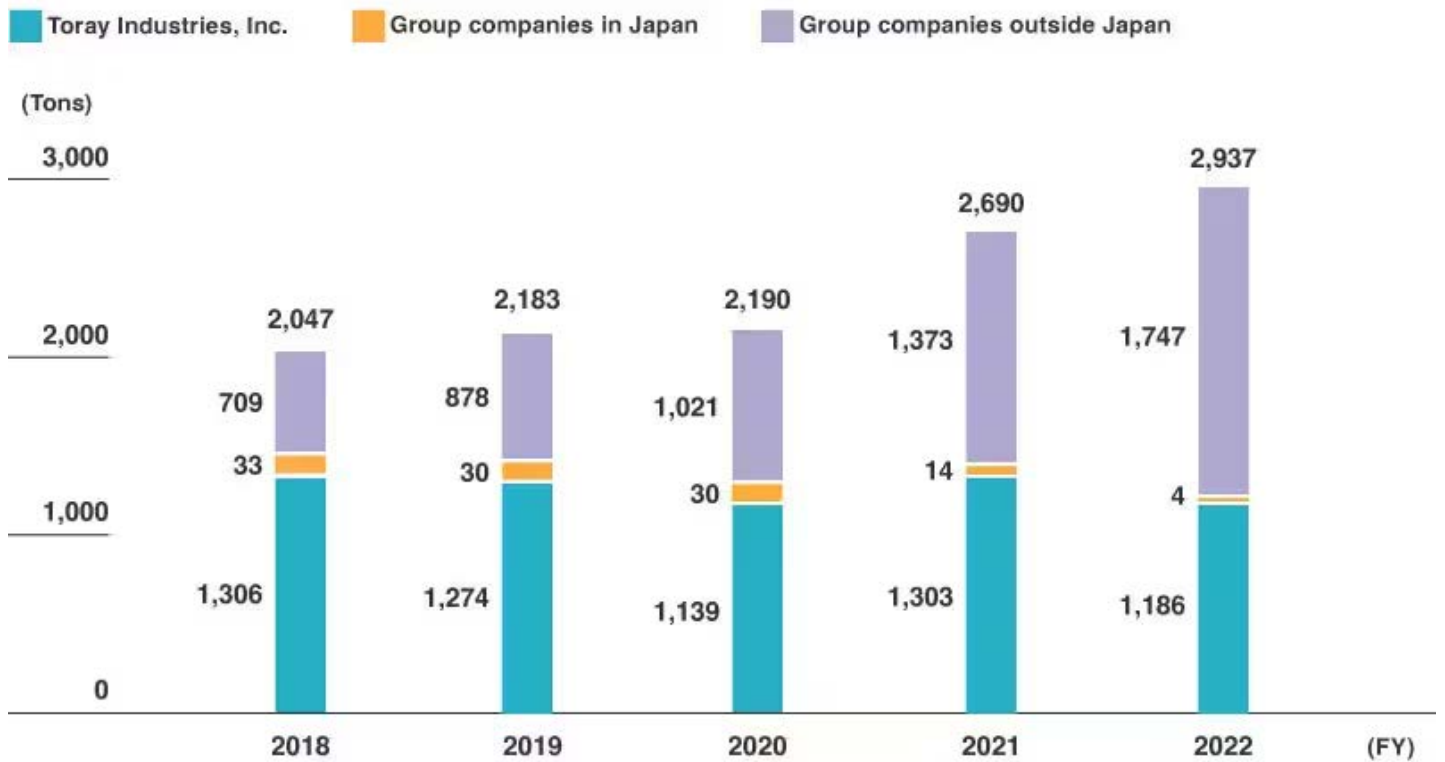
### Air Emission Management (Fiscal 2022 Result)

In fiscal 2022, Toray Group recorded 659 tons of SOx emissions (down 51% year on year), 2,937 tons of nitrogen oxide (NOx) emissions (up 9% year on year), and 522 tons of dust emissions (up 66% year on year). The year-on-year reduction in SOx emissions was due to the downsizing of coal-fueled boilers at group companies outside of Japan. The year-on-year increase in the other two air pollutants was due to higher production volumes based on business recovery associated with the COVID-19 pandemic.

#### Atmospheric Emissions (SOx)



## Atmospheric Emissions (NOx)



## Atmospheric Emissions (Dust)



## Wastewater Quality Management (Fiscal 2022 Result)

Toray Group monitors and complies with regulations concerning BODs, CODs, and nitrogen in countries and regions where it operates plants and implements water quality management for plant wastewater. Plants with high effluent loads are reducing effluents by installing wastewater treatment facilities (activated sludge method) that utilize the activated sludge method and other techniques. The Group is committed to remaining in compliance with regulations through everyday facilities operation management and regular self-testing of water quality.

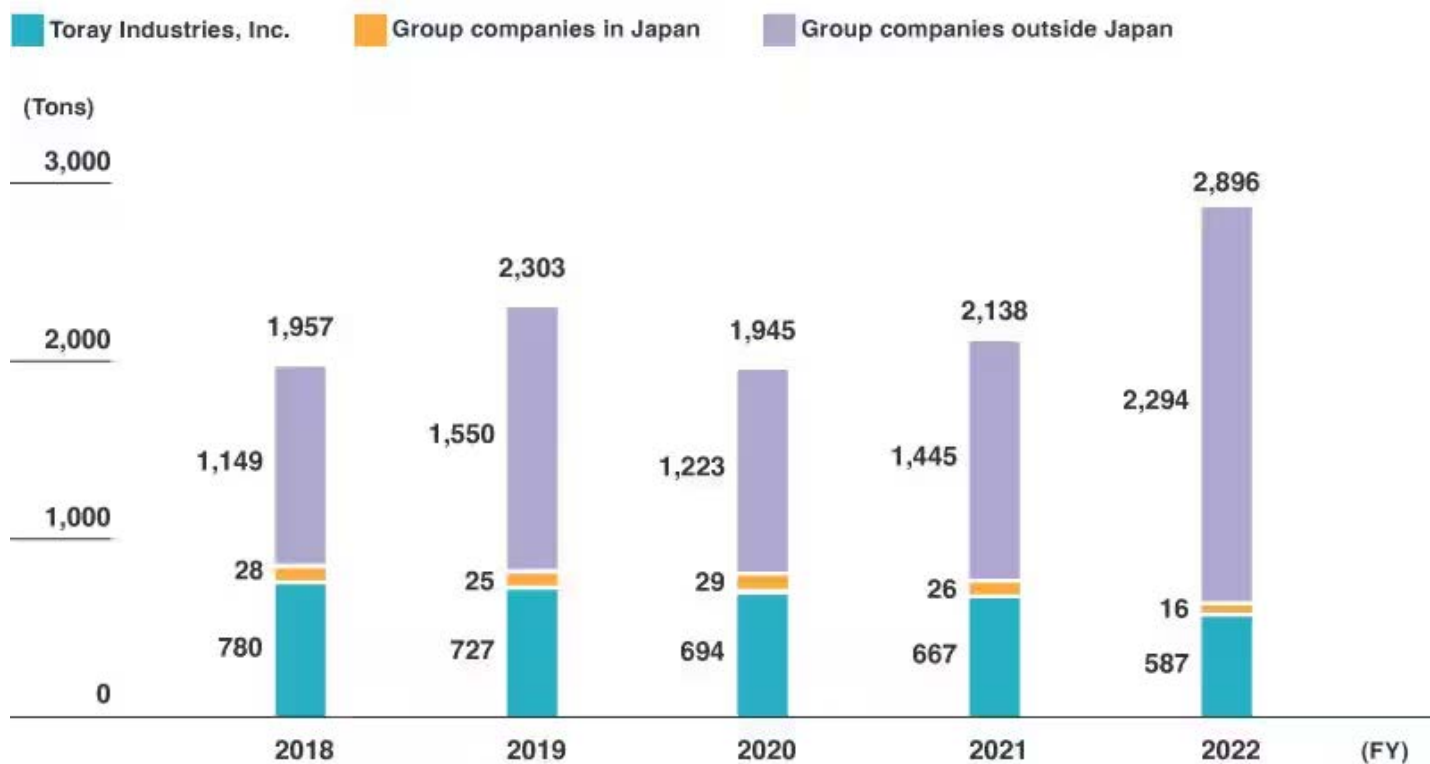
In fiscal 2022, Toray Group recorded 651 tons of BOD emissions (down 1% year on year) and 2,896 tons of COD emissions (up 35% year on year). BOD emissions remained at the same level as the previous year due to stabilization of the wastewater treatment process and other efforts. However, COD emissions increased due to higher production volumes based on business recovery associated with the COVID-19 pandemic, as well as operations at new plants.

Moving forward, Toray Industries will further strengthen the technical support provided to group companies to achieve greater reduction of effluent loads.

### Water Emissions (BOD)



## Water Emissions (COD)



The Group brings together wastewater managers every year to share and discuss strategies for enhancing wastewater management at production sites. The fiscal 2022 meeting was attended by 37 persons from Toray Industries' plants and 27 persons from group companies in Japan.

## CSR Activity Report (CSR Guideline Activity Reports) - Safety, Accident Prevention, and Environmental Preservation

### Initiatives for Managing Water Resources

Toray Group is working to provide solutions to water resources problems around the world, based on the following policies. In its own operations, the Group effectively uses and recycles water and properly manages water resources.

1. Toray Group recognizes that water is one of the most important resources for humanity, and that people are confronting problems related to water resources in many areas of the world.
2. Toray Group is committed to helping to solve global water resources problems through its products, technologies and services.
3. Toray Group continuously monitors the state of regional water resources, and conducts appropriate management of water resources, such as avoiding excessive water withdrawal so as to share these precious resources with the local communities where the Group operates.

Toray Group operates a variety of businesses around the world, and depending on the location, it may be greatly affected by water withdrawal restrictions. Its assessment, therefore, is that the Group faces a large risk regarding limits on water usage.

Accordingly, Toray Group uses the Aqueduct Water Risk Atlas, a water risk assessment tool provided by the World Resources Institute (WRI), to identify locations of high stress through water stress surveys in regions around the world where the Group's manufacturing sites and offices are located. In addition, the amount of water used in business activities in each region is monitored annually using a questionnaire from Toray Industries. Toray Group has determined that approximately 3.9% of its entire water withdrawals at all sites, including plants and offices, comes from regions where water stress is assessed to be high or extremely high.

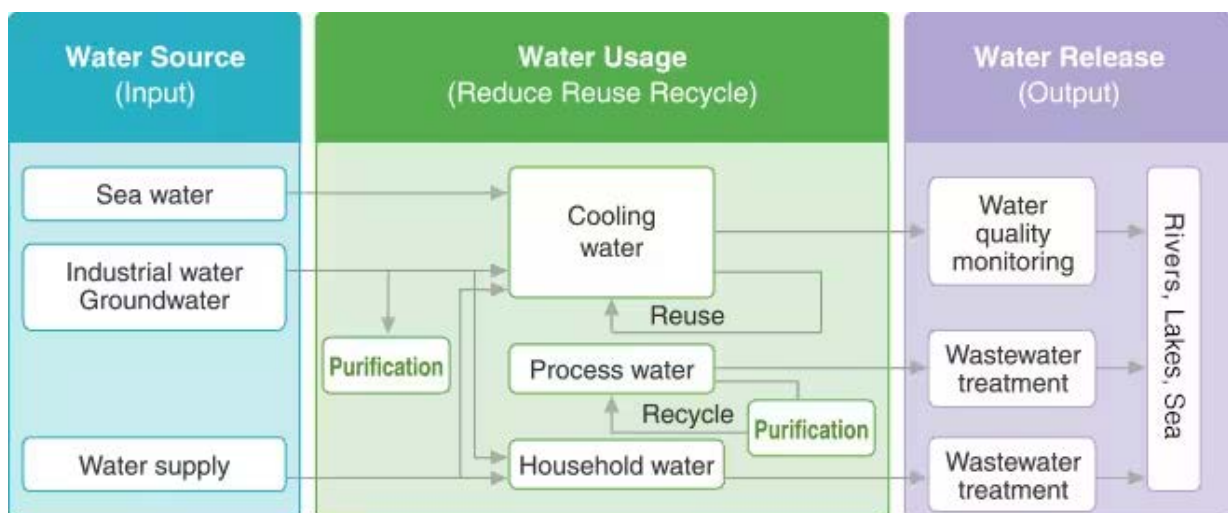
As stated in the Toray Group Sustainability Vision, a target has been set for reducing water usage per-unit of revenue by 2030. The Group understands the effects of water stress and promotes the 3Rs (reduce, reuse, recycle) for water resources through improvement of manufacturing processes, water-saving activities, and utilization of recycled water.

The Group fully understands local regulations regarding effluent and constantly monitors water quality, such as COD, before releasing effluent from its plants into public bodies of water. For example, Toray Sakai Weaving & Dyeing (Nantong) Co., Ltd., located in Nantong, China, recycles all water used for its looms and, additionally, purifies approximately 1,300 tons/day of effluent from the dyeing process using Toray reverse osmosis membrane water treatment technology before the effluent is drained. In this manner, group companies overseas reuse cooling water and recycle wastewater in an effort to reduce the amount of new water withdrawals taken from outside as industrial water.



Dyeing effluent is reused at Toray Sakai Weaving & Dyeing (Nantong) Co., Ltd. utilizing Toray reverse osmosis membranes.

### Water Resource Management by Toray Group



#### Related Information

See the following page for information on how Toray Group handles water hazard risks (floods, storm surges, etc.).

> [Business Continuity Plan Initiatives](#)



## Water usage per unit of revenue (%)

■Reporting scope	■Target
Toray Group	At least 25% lower than fiscal 2013 (Fiscal 2022)

Result in fiscal 2022

**31.9%**<sup>1</sup>

In fiscal 2022, Toray Group used 214 million tons of water, approximately 10 million tons less than the previous fiscal year. Compared to the amount used per unit of revenue in fiscal 2013, set to an index value of 100, usage in fiscal 2022 was 68.1 points, down 3.6 points from the previous fiscal year. In fiscal 2022, the total volume of water used decreased and water usage per unit of revenue improved, thanks to the reuse of cooling water and effluent in the manufacturing process.

<sup>1</sup> The calculation of the figure for the baseline of FY 2013 includes data for companies that joined the Toray Group in FY 2014 or later.

### Related Information

> [Environmental Data \(Water Usage\)](#)

## Comparative Water Usage Per Unit of Net Sales (Per Unit of Revenue)\* (Toray Group)

(FY)	2016	2017	2018	2019	2020	2021	2022
Comparative Water Usage Per Unit of Net Sales (Per Unit of Revenue)	90.9	82.5	77.9	77.1	82.4	71.7	68.1

\* Per unit of net sales until fiscal 2019, as Japanese GAAP was used until then, and per unit of revenue from fiscal 2020 onwards, as International Financial Reporting Standards (IFRS) have been adopted since then.

Click [here](#) for the main initiatives for CSR Guideline 3, "Safety, Accident Prevention, and Environmental Preservation" in CSR Roadmap 2022.

**CSR Activity Report (CSR Guideline Activity Reports) - Safety, Accident Prevention, and Environmental Preservation**

**Initiatives to Reduce Waste**

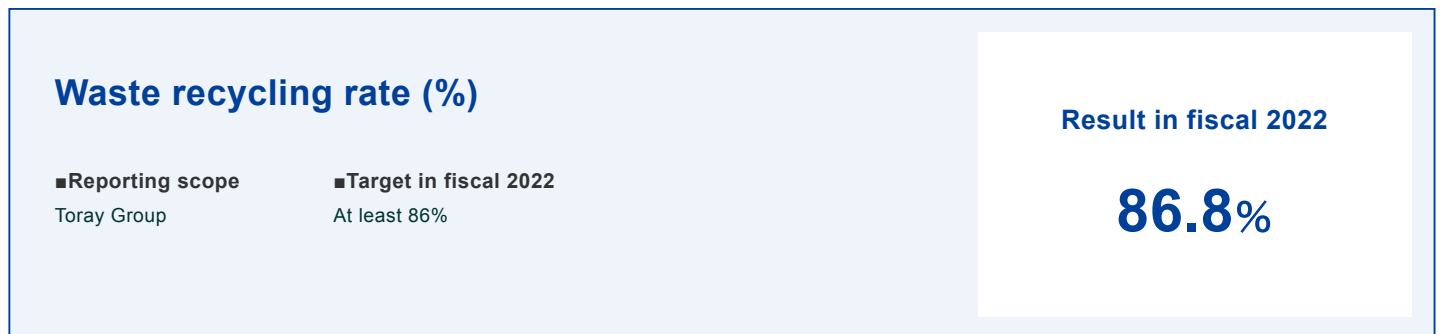
Toray Group is making effective use of resources as it works toward the realization of a sustainable, recycling-based world. Under its CSR Roadmap 2022, which covered fiscal 2020-2022, the Group worked to achieve a waste recycling rate<sup>1</sup> of 86% or higher every year through fiscal 2022. Since fiscal 2020, intensive efforts have been made to reduce the number of group companies and plants with low recycling rates and to follow up on progress being made.

<sup>1</sup> Waste recycling rate = (recycled resources + resources with monetary worth) / (total waste + resources with monetary worth)

**Results in Fiscal 2022**

CSR Roadmap 2022  
Main Initiatives (9)

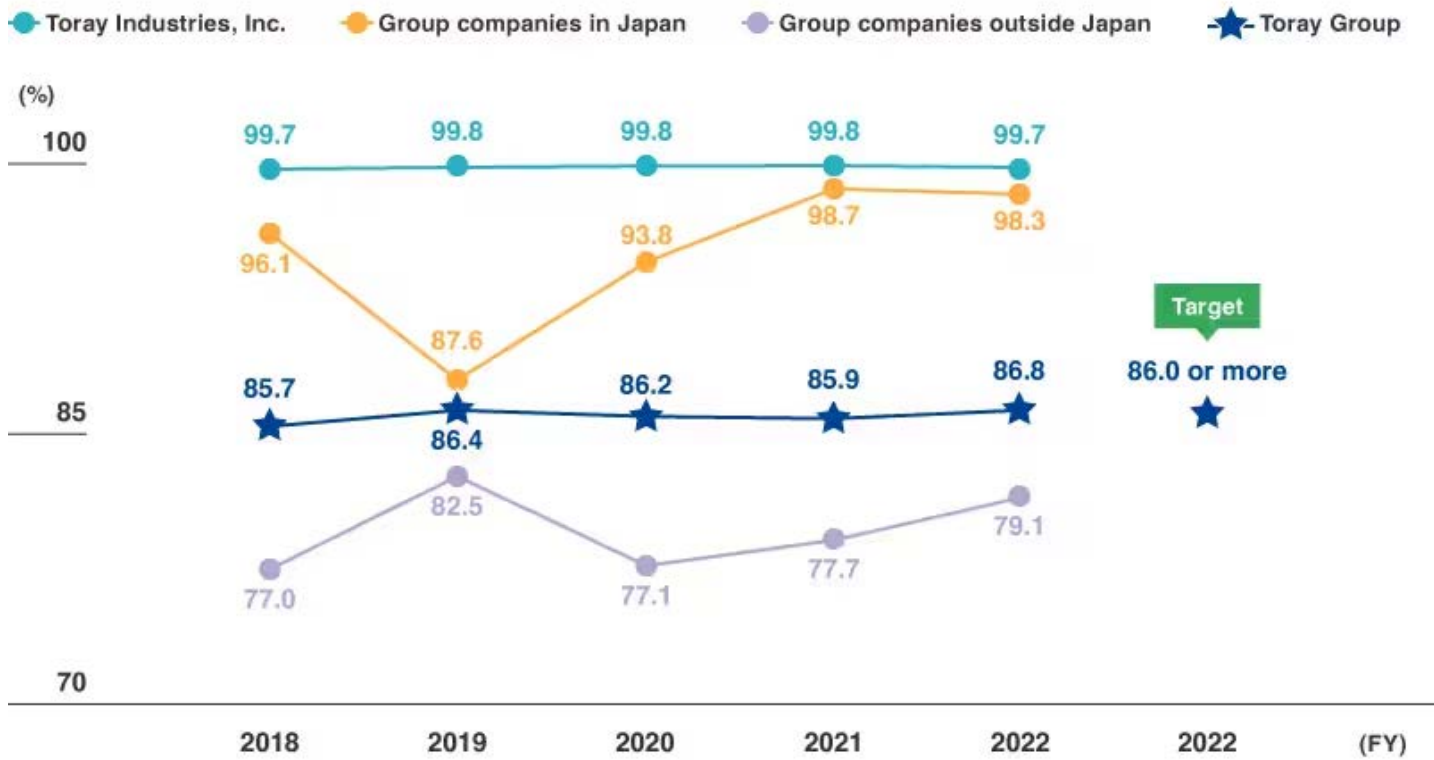
**Recycling Rate**



The Toray Group recycling rate in fiscal 2022 was 86.8%, up by 0.9 percentage points year on year, thanks to efforts to promote recycling of such items as film waste at group companies. As a result, the Group achieved its target of 86% or higher.

In its CSR Roadmap 2025, which covers fiscal 2023-2025, the Group set a numerical target for a waste recycling rate of 87% or higher in the final year, fiscal 2025. In order to achieve this goal, the Group has designated group companies with low recycling rates as of the end of fiscal 2022 as companies requiring attention and is taking steps to further reduce the rates at these companies.

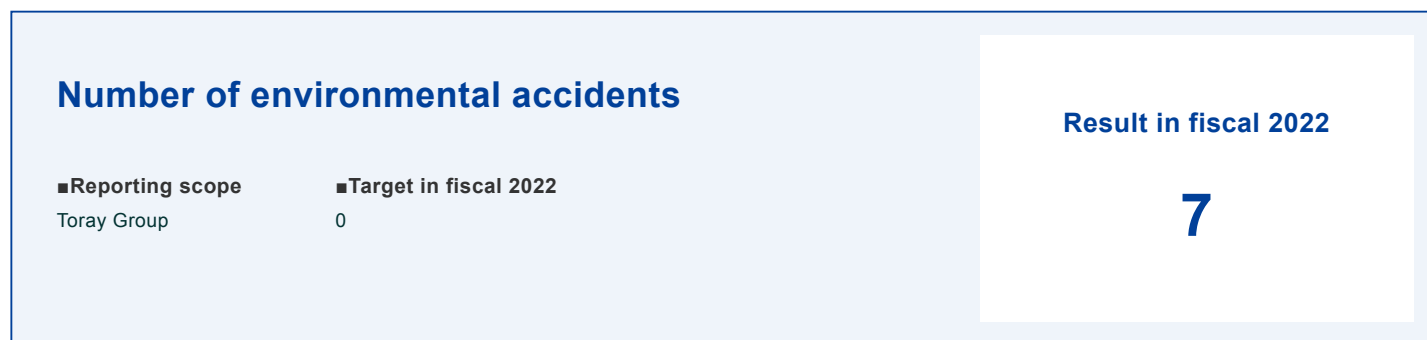
## Recycling Rate (Toray Group)



Click [here](#) for the main initiatives for CSR Guideline 3, "Safety, Accident Prevention, and Environmental Preservation" in CSR Roadmap 2022.

CSR Activity Report (CSR Guideline Activity Reports) - Safety, Accident Prevention, and Environmental Preservation

## Environmental Risk Management



## Compliance with Environmental Laws and Accidents in Fiscal 2022

CSR Roadmap 2022  
Main Initiatives (5)

In fiscal 2022, seven environmental accidents occurred within Toray Group, some of which were minor.

These were all accidents in which exhaust gas or wastewater emissions exceeded administrative and agreed standards for air or water quality. After promptly contacting the local governments, the plants involved confirmed, through analytical investigations and reviews of the surroundings based on internal rules, that the impact on the environment was extremely minor.

The causes of these accidents included failing to properly treat exhaust gas generated during non-routine work and failure to fully stop detected leaking of wastewater exceeding water quality standards from a plant during the manufacturing process. To prevent recurrences, the Group will take thorough measures such as ensuring the proper treatment of non-routine exhaust gas, and strengthening the management of wastewater within factories. The Group received two complaints from residents near its facilities concerning noise, which were seriously examined and addressed by implementing improvements.

### Environmental Accidents in Fiscal 2022 (Toray Group)

Administrative disposition due to violations of laws or ordinances <sup>1</sup>	0
<sup>1</sup> Serious environmental accidents resulting in improvement orders	
Accidents (environmental accidents, etc.) <sup>2</sup>	3
<sup>2</sup> Environmental accidents for which improvement guidance and recommendations are issued	
Slight but temporary exceeding of standard values <sup>3</sup>	4
<sup>3</sup> Environmental accidents for which improvement guidance and recommendations are not issued by local government	
Complaints/requests (noise, odor, etc.)	2

Toray Industries conducts product safety reviews before launching new products on the market. As part of these reviews, a prescribed checklist is used for environmental assessment. The Environment & Safety Department confirms and evaluates the measures taken for each stage of the new product's life cycle, from raw material procurement, manufacturing, packaging and distribution, to product use, recycling, and disposal.

### <Evaluation Checklist Items (excerpt)>

- Does the product comply with the Toray Green Procurement Guidelines? (e.g. Is it free from prohibited substances?)
- To help protect biodiversity, do the operational emissions exceed the standard values for regulated substances?
- Is recycling used within the processes and are waste heat and unused energy utilized effectively?
- Have the amounts of exhaust gas and noise generated during product use been reduced?
- Have measures been taken to reduce the environmental impact, such as by preventing the generation of harmful gases during incineration and by avoiding the leaching of hazardous substances during landfilling?

## Preventing Soil and Groundwater Pollution

Toray Group constructs protective embankments around its facilities and storage tanks for hazardous chemicals, and takes precautions to ensure that none of these dangerous substances leak or discharge into the surrounding area or contaminate the soil onsite. In fiscal 2022, remediation using wells to clean up groundwater pollution continued at Toray Monofilament Co., Ltd., and remediation to address soil pollution continued at Toray Industries' Nagoya Plant. Toray Group will continue these ongoing remediation efforts and voluntary surveys to monitor soil and groundwater pollution.

Click [here](#) for the main initiatives for CSR Guideline 3, "Safety, Accident Prevention, and Environmental Preservation" in CSR Roadmap 2022.

CSR Activity Report (CSR Guideline Activity Reports) - Safety, Accident Prevention, and Environmental Preservation

## Environmental Accounting

### Fiscal 2022 Environmental Accounting Report (Toray Industries, Inc.)

Toray Industries, Inc. has been practicing environmental accounting since 1999, to track investments and gauge their cost effectiveness.

In fiscal 2022, the Company's environment-related investment amounted to 1.49 billion yen, down 3.3 billion yen compared to the previous year due to a decrease in large-scale environment investments from the previous year. Cost totaled 9.26 billion yen, up 2.51 billion yen compared to the previous year, due to soaring fuel prices and other factors.

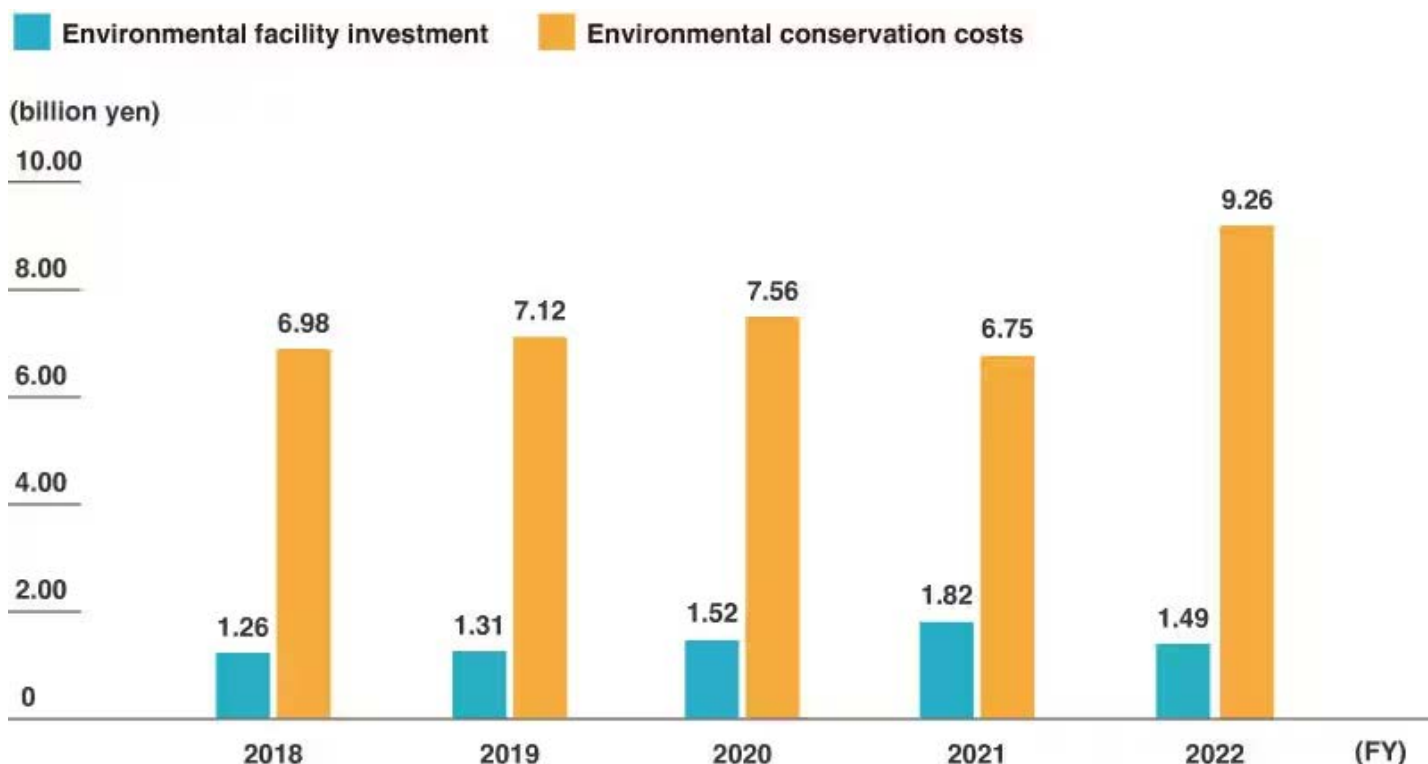
#### Fiscal 2022 Environmental Accounting Report (Toray Industries, Inc.)

Expenses				
Item		Subcategory and description	Investment (million yen)	Cost (million yen)
Business area costs	Pollution prevention costs	Air (including CFC countermeasures)	148	4,286
		Water quality	565	2,395
		Noise and vibration	33	12
		Greening	0	230
		Odors and other	51	149
	Global environment conservation costs	Energy conservation and combating global warming	57	38
	Resource recycling costs	Industrial waste reduction, recycling, disposal, and PCB waste disposal services	75	1,296
Upstream and downstream costs		Product recycling	561	92
		Container and package recycling	0	0

Expenses			
Item	Subcategory and description	Investment (million yen)	Cost (million yen)
Management activity costs	Indirect labor costs, ISO certification and maintenance, environmental communications, and education	0	551
Social initiative costs	Regional initiatives, support for organizations, etc.	0	55
Environmental remediation costs	SOx fines, soil purification, etc.	0	159
Total		1,489	9,262

Effectiveness		
Item		Amount (million yen)
Financial effects	Reduction in energy costs	38
	Reduction in industrial waste disposal costs	62
	Sale of valuable recycled resources with monetary value	776
Quantitative environmental effects	Reduction of greenhouse gas emissions	2,000 tons- CO <sub>2</sub> eq

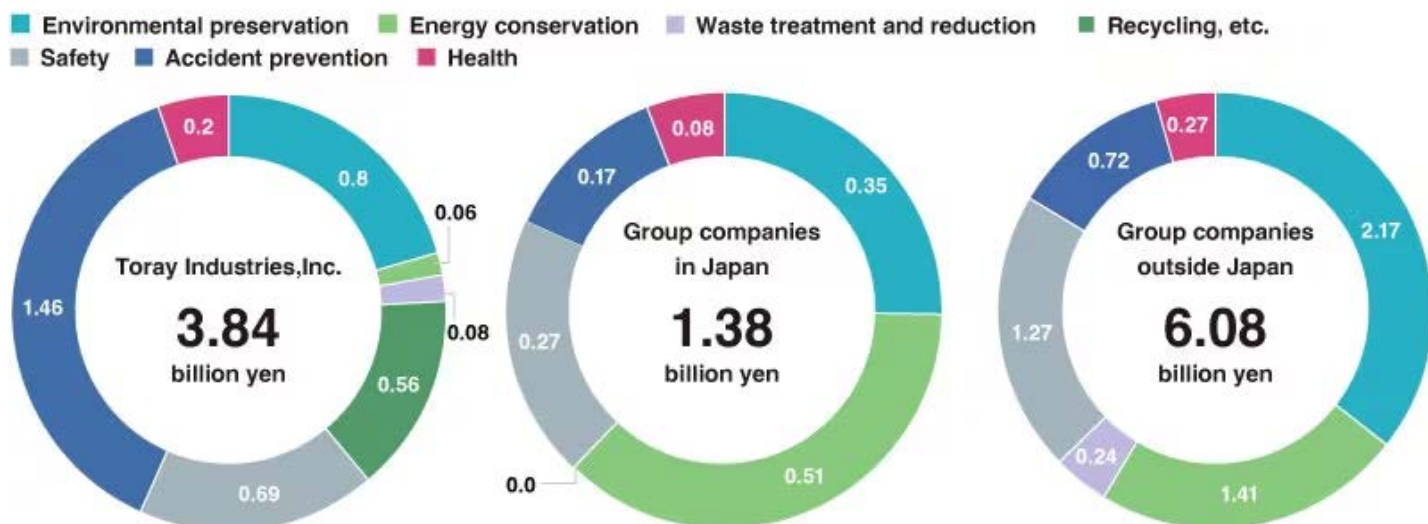
## Environmental Facility Investment and Environmental Conservation Costs (Toray Industries, Inc.)



## Facility Investment in Safety, Health, Accident Prevention, and Environmental Preservation Projects (Toray Group)

Toray Group reports on facility investments relating to safety, health, accident prevention, and environmental preservation projects. The Group continues to invest in safety improvements to facilities. As part of its environmental conservation efforts, the Group has invested in the expansion of exhaust gas emissions and wastewater treatment facilities and additional instrumentation to enhance wastewater management.

## Fiscal 2022 Facility Investment in Safety, Health, Accident Prevention, Environmental Preservation, and Energy Conservation Projects (Toray Group)





## **Toray Industries Environmental Accounting Standards**

- Some categories were changed based on the Ministry of the Environment's Guidelines for FY 2005.
- Only economic effects that can be determined with a high degree of certainty are included in the calculation. Presumed effects are not included.
- Capital investment also includes facility investments for which environmental preservation is not the main objective. Capital investment resulting from leases is also included. Expenses include labor costs and depreciation. However, internal labor costs related to local volunteer activities are not included.
- Energy cost reduction figures show the amount of reduction for the 12 months after the completion of an energy saving facility. Expenses are not recorded as they are deducted when the effect is calculated.
- Waste disposal cost reduction figures show the amount of reduction achieved through waste reduction efforts and resource recycling for 12 months after the measures are undertaken.
- Effects of reducing greenhouse gas emissions are measured over a 12-month period following the completion of measures or facilities to save energy.

## CSR Activity Report (CSR Guideline Activity Reports) – Safety, Accident Prevention, and Environmental Preservation

### Biodiversity Initiatives

Next to the issue of climate change, the issue of biodiversity preservation has been a major focus of the international community in recent years. Biodiversity forms the basis of natural capital such as water, air, plants, animals, and minerals that are indispensable to human society. Climate change caused by human activities, depletion of natural resources, ecosystem destruction, and species extinction are causing biodiversity loss to occur at an alarming rate, making it a serious problem facing humankind. This has sparked an international discussion about the importance of taking a nature positive approach to stopping and reversing biodiversity loss.

Toray Group views conservation of biodiversity as a critical global environmental issue that is of equal importance to reducing greenhouse gas emissions. Toray is contributing to biodiversity conservation and the nature positive approach through its business activities. This includes water treatment technology to produce reliably safe drinking water, water conservation through the reuse of treated wastewater, and air purification using fiber filter-related materials.

The Group also uses environmental assessment checklists to conduct safety reviews for all products and to carry out environmental risk investigations before making capital investment. The checklists enable the Group to ensure that it is not exceeding legal limits on regulated substances contained in exhaust gas, wastewater, and waste from manufacturing. Before utilizing land for the first time, Toray also uses the checklist to confirm any biodiversity-related factors such as regulations for production sites, the need for surveys of rare organisms, and any concerns from citizen groups. Through these efforts, Toray strives to assess its impact on biodiversity and help build a sustainable world.

### Working Group Considers Initiatives for Biodiversity

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In 2010, Toray Group launched a cross-organizational working group to develop biodiversity initiatives, which are prioritized and implemented under the guidance of the Toray Group Biodiversity Basic Policy. In 2023, the team was renamed the Nature Positive Working Group.

#### **Toray Group Biodiversity Basic Policy** Established December 2010

##### **Basic Approach**

Toray Group appreciates the gifts of nature that biodiversity provides and strives to realize the conservation and sustainable use of biodiversity. The Group contributes to society through the development and dissemination of products and technologies which advance conservation of biodiversity.

## Action Guidelines

1. We take into consideration the impact of our business activities on biodiversity and strive to realize the conservation and sustainable use of biodiversity.
2. We endeavor to develop environmentally friendly technologies and products and contribute to the conservation of biodiversity by making them available for use.
3. We practice fair use of genetic resources on the basis of relevant international agreements.
4. We recognize the influence of biodiversity within the supply chain and pursue coexistence with nature.
5. We strive to raise employee awareness on biodiversity and contribute to the building of a society that nurtures biodiversity through our communication with stakeholders.

Note: Toray Group respects Nippon Keidanren's Declaration of Biodiversity (Guide to Action Policies) and the Japanese Ministry of the Environment's Guidelines for Private Sector Engagement in Biodiversity.

The Group is a promotion partner of Nippon Keidanren's Declaration of Biodiversity. The policies and details of Toray Group's initiatives are outlined in the Initiative based on the [Declaration of Biodiversity by Keidanren](#).

Toray Industries has also participated in the 30 by 30 Alliance for Biodiversity since its launch by Japan's Ministry of the Environment on April 8, 2022.

With the goal of halting and reversing biodiversity loss (nature positive approach) by 2030, the Alliance was established by the Ministry of the Environment as a voluntary coalition of industry groups, government agencies, and private companies. Its aim is to help achieve the worldwide initiative for conserving 30% or more of Earth's land and ocean area as healthy ecosystems by 2030.



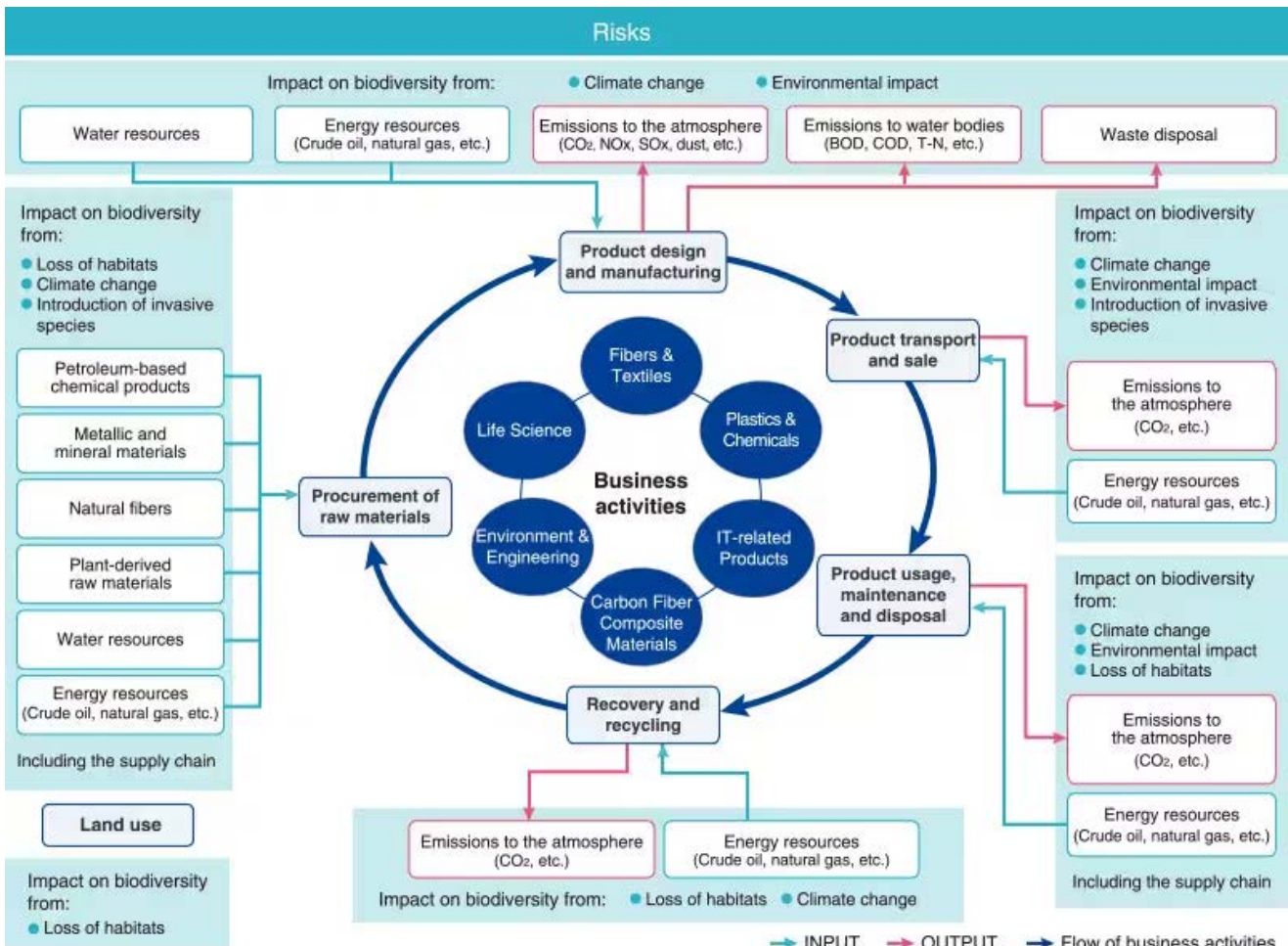
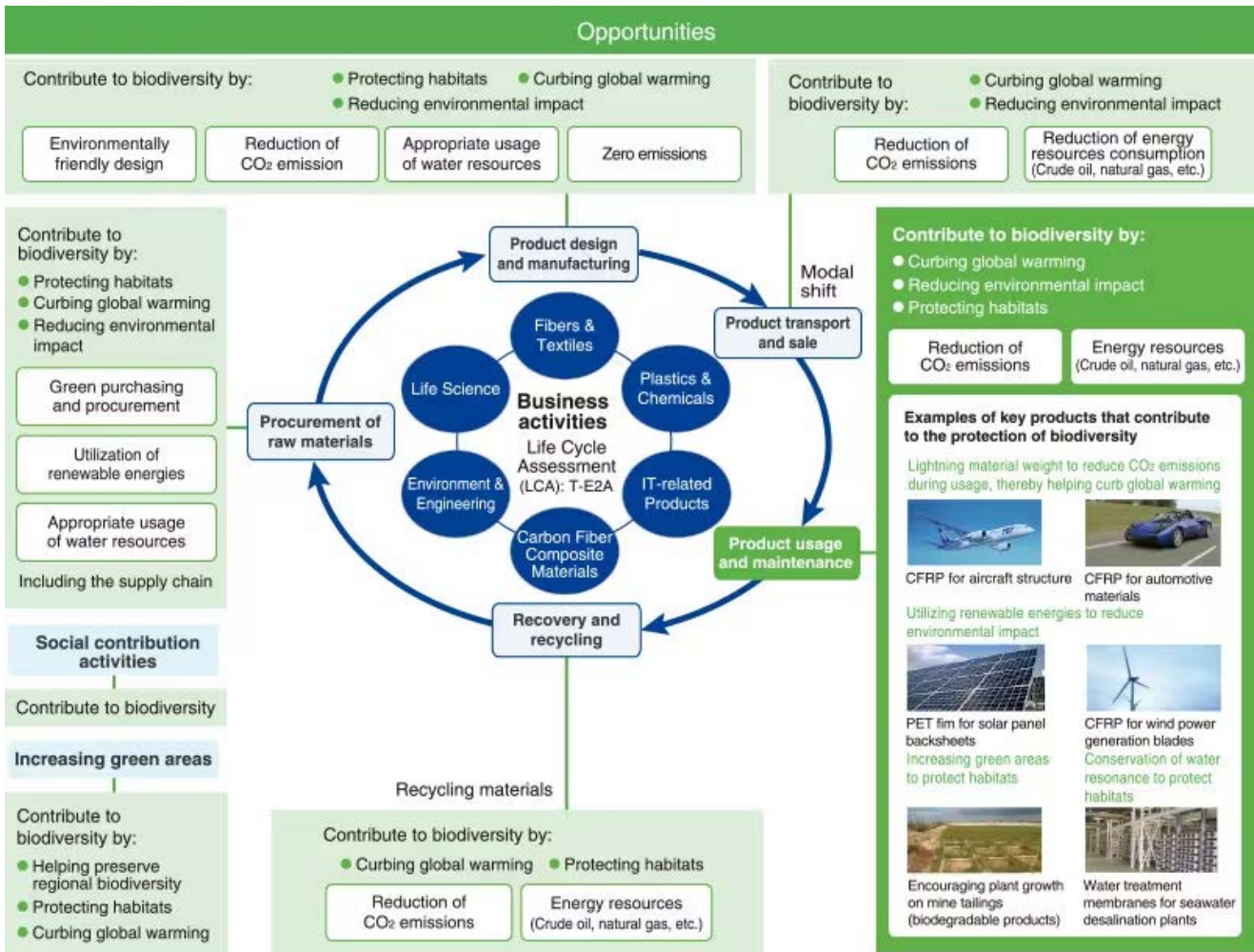
## Analysis of Biodiversity-related Opportunities and Risks Across the Toray Group Supply Chain

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The Group conducted an analysis of the biodiversity opportunities and risks relating to its business activities, namely, upstream raw material procurement, water and energy resource use, product and service design, operational emissions, and land use for operations, as well as downstream product use, disposal, collection, and recycling.

On the opportunity side, business activity effects on biodiversity include reductions to CO<sub>2</sub> emissions by offering products that reduce the weight of parts for aircraft and other equipment as well as protecting forests and habitats by offering products that maintain green areas and protect water resources. On the risk side, activity effects include the reduction of natural capital due to the use of water and energy resources, as well as climate change promotion and environmental impact resulting from emissions into the atmosphere and water bodies.

The two diagrams below show the biodiversity-related opportunities and risks across Toray Group's supply chain.



Note: These diagrams were produced based on the Map of Corporate Activities and Biodiversity<sup>®</sup> published by the Japan Business Initiative for Biodiversity.

## Toray Group Strategy

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Established in 2018, the Toray Group Sustainability Vision outlines a range of goals to be achieved by 2050. These include helping to create a net zero emissions world, where greenhouse gas emissions are completely offset by absorption (in other words, a net zero emissions, carbon-neutral world), a world where resources are sustainably managed, and a world with a restored natural environment, with clean water and air for everyone. The Group has been promoting initiatives to achieve these goals.

In May 2020, the Long-Term Corporate Vision TORAY VISION 2030 was announced with the aim of achieving sound, sustainable growth and creating social value by fiscal 2030. Then in March 2023, the three-year Project AP-G 2025 was launched with the title, Innovation and Resilience Management—Value Creation for New Momentum. As part of this effort, the Group has been promoting its Green Innovation businesses, which help solve global environmental problems and resource/energy issues, along with its Life Innovation businesses, which promote better medical care, health maintenance and longevity, public health, and human safety, including disaster and extreme weather response measures. Recently, the Green Innovation businesses and Life Innovation businesses were combined and renamed as Sustainability Innovation businesses. By expanding the products supplied by these businesses, Toray Group aims to provide essential solutions to solve global issues through nature-positive approaches.

## Green Initiatives as Part of Business Activities (Products and Technologies)

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Business activities that serve as green initiatives include the use of water treatment technology to produce clean and reliable drinking water, water resource conservation through the reuse of sewage and wastewater, and air purification using textile materials for filters. They also include the recycling of plastic products, switching to bio-based raw materials, and transitioning to clean energy and hydrogen fuel. Through its business activities, Toray is working to help preserve biodiversity and adopt a nature positive approach.

### Related Information

- > [Webpage: Four Perspectives of the World as Envisioned by the Toray Group in 2050—A world with a restored natural environment, with clean water and air for everyone](#)
- > [Realizing a Circular Economy](#)

### Initiatives to reduce the impact of emissions during operations, etc.

Toray is working on the effective use and appropriate management of water resources through water recycling and reuse. While reducing sulfur oxides (SOx) and nitrogen oxides (NOx), the Group is preventing air and water pollution by reducing biological oxygen demand (BOD) and chemical oxygen demand (COD) through reliable operation and enhancement of wastewater treatment facilities. It is also working to reduce waste through recycling and reuse.

#### Related Information

- > [Initiatives for Managing Water Resources](#)
- > [Initiatives to Prevent Air and Water Pollution](#)
- > [Initiatives to Reduce Waste](#)

### Increasing Green Areas

Plants at Toray Industries, Inc. and its group companies in Japan are operating greenery policies and plans, guided by the Toray Group Basic Policy for Increasing Green Areas.<sup>1</sup> The plans encompass initiatives to conserve green areas, including natural forests<sup>2</sup> that have been protected since the plants began operating. Sustainable greenery conservation initiatives also help to conserve the environment for communities.

Efforts to increase green areas by creating environmental conservation forests around Toray Industries' plants began in the autumn of 1973, when about 4,000 employees went to temples and shrines (which in Japan are usually surrounded by greenery) and mountains to collect tree seeds that had fallen there. Under the guidance of the late Professor Akira Miyawaki, who researched plant ecology at Yokohama National University, the seeds were grown into seedlings at each workplace, and employees painstakingly planted them one by one.

Nearly 50 years have passed since then, and the trees grown from seeds, including laurel, camphor, and oak, now cover over 10,000 m<sup>2</sup> around the Mishima Plant at Toray Industries.

It is still working to conserve the environment by increasing green areas. Altogether, Toray Industries has created green areas covering approximately 200,000 m<sup>2</sup> at 12 plants, including Mishima Plant and the Basic Research Laboratories (now the Basic Research Center) through the shrine forest method.<sup>3</sup>

<sup>1</sup> Toray Group Basic Policy on Increasing Green Areas was established in 2012, evolving out of greenery policies that were first established in 1973.

<sup>2</sup> Natural groves or forestation by species based on potential native vegetation

<sup>3</sup> Modeled after traditional forestry techniques used by Japanese shrines, this greening method reproduces green spaces in a state close to natural forests by using trees that are native to the area. In order to create forests with local genes, Toray employees collected seeds from shrines and forests near plants, grew them into seedlings, and planted the seedlings to create forests at the plants.

## Toray Industries, Inc. (Mishima Plant)



Immediately after planting (1973)



Current state (photo taken in 2022)

## Toray Industries, Inc. (Tokai Plant)



Tree planting (1976)



Current state (photo taken in 2023)

The Mishima Plant of Toray Industries has been recognized for its facility greening activities. It received the Chairperson's Encouragement Award of the Japan Greenery Research and Development Center as part of the Fiscal 2022 Factory Greening Award Program (commonly called the "National Award for Greenery Factory" program, sponsored by the Ministry of Economy, Trade and Industry). This award program for production facilities with outstanding greening activities is designed to support the Factory Location Act. The program's purpose is to recognize factories, organizations, and individuals responsible for outstanding improvements to the green environment in and around production facilities, and to promote further greening of factories in Japan. The Mishima Plant received its award in recognition of the fact that it has a larger proportion of green space than at the start of its operations, and that the plant's Chinju Forest is thriving.

The Tokai Plant of Toray Industries has also been recognized for its plant greening efforts. It was certified as "Excellent Stage 2" in the MOU (Maintenance, Operation and Utilization) category of the Social and Environmental Green Evaluation System (SEGES), a green certification program provided by Japan's Organization for Landscape and Urban Green Infrastructure.

## Toray Group's Basic Policy for Increasing Green Areas Established June 2012

- A. Toray Group contributes to the preservation of the natural environment by promoting tree planting using planting methods suitable for the biodiversity of local habitats.
- B. Toray Group aims to surround its production plants with greenery by giving priority to tree planting in areas at the boundaries of factory sites.
- C. Toray Group sets goals for making each of its production plants greener while considering how to attain harmony with the surrounding environment as well as regulations concerning green space ratios in each respective country or region.

## Supply Chain Initiatives

CSR Roadmap 2022  
Main Initiatives (10)

### Conduct a survey of palm oil contained in raw materials (%)

■Reporting  
scope

Toray Industries,  
Inc.

■Target in fiscal 2022

Decision making (Yes/No) of shifting to certified raw materials :  
100%

Result in fiscal 2022

**100%**

As one of its biodiversity conservation initiatives, Toray Group conducts a regular survey of products to determine the usage of bio-based raw materials in product manufacturing. The Group has also developed rules for checking the biodiversity impacts of products and applies the rules to all products from the development stage.

Among them, palm oil is a key raw material for follow-up action. Since fiscal 2020, the Group has been surveying relevant suppliers to find out whether raw materials are made with palm oil that uses certified palm nuts. Toray also surveys suppliers about the possibility of switching from non-certified palm oil to certified palm oil.

Going forward, Toray Group will continue to promote the use of palm oil that is environmentally friendly and ensures respect for human rights.

In addition, the Toray Group CSR Procurement Guidelines include requirements for biodiversity conservation and for minimizing environmental impact. Suppliers are asked to comply with these guidelines.

The Group is also promoting the collection and reuse of the packaging materials that come with Toray products.

### Related Information

- > [Establishing Sustainable Supply Chain](#)
- > [Toray Group Distribution Initiative](#)



Toray Group carries out biodiversity conservation through social contribution activities as a good corporate citizen. The Group is promoting the creation of a waterside biotope at a group plant with the help of local students. In collaboration with municipalities and NPOs, Toray employees are engaged in volunteer cleanup activities along rivers and beaches, as well as tree planting.

Please see the following page for more information.

### Related Information

- > [Social Contribution Activities as a Good Corporate Citizen Activities Carried Out in Fiscal 2022](#)

Click [here](#) for the main initiatives for CSR Guideline 3, "Safety, Accident Prevention, and Environmental Preservation" in CSR Roadmap 2022.

CSR Activity Report (CSR Guideline Activity Reports) - Safety, Accident Prevention, and Environmental Preservation

## Environmental Impact Overview

### Environmental Impact Overview Fiscal 2022

	Toray Industries, Inc.					Group companies in Japan					Group companies outside Japan				
	2019	2020	2021	2022	Compared to previous year (%)	2019	2020	2021	2022	Compared to previous year (%)	2019	2020	2021	2022	Compared to previous year (%)
<b>INPUT</b>															
Energy (1,000,000 gigajoules) <sup>1</sup>	27.8	25.3	27.3	25.6	93.9	5.8	5.3	5.8	5.4	92.8	61.0	50.9	63.4	61.3	96.7
Derived from non-renewable energy sources	26.5	24.0	26.1	24.6	94.1	5.8	5.3	5.8	5.0	86.0	60.9	50.7	63.2	61.1	96.6
Derived from renewable energy sources	1.3	1.2	1.2	1.1	89.5	0.0	0.0	0.0	0.4	—	0.1	0.2	0.1	0.3	262.3
Water usage (1,000,000 tons) <sup>1</sup>	171.8	165.7	171.8	166.2	96.7	13.4	11.5	11.5	8.6	74.9	41.9	37.6	40.5	39.1	96.6
Industrial water	132.1	129.9	130.9	127.1	97.1	4.0	3.5	3.7	1.1	29.5	18.3	16.5	20.4	14.1	69.0
Public water	0.2	0.2	0.2	0.2	80.0	0.2	0.3	0.3	0.4	129.2	10.3	10.3	10.1	16.5	163.7
Seawater	7.7	6.2	9.5	8.2	86.3	1.4	1.3	1.5	0.7	47.7	6.1	4.0	0.0	0.0	—
Groundwater	25.5	23.4	25.2	24.6	97.6	7.6	6.3	5.9	6.4	107.8	0.0	2.0	4.8	4.2	88.4
Others	6.2	6.0	6.0	6.1	101.7	0.2	0.1	0.1	0.1	60.6	7.2	4.8	5.2	4.2	81.6
<b>OUTPUT</b>															
<b>GHG (10,000 tons CO<sub>2</sub>eq)<sup>1,2&amp;3</sup></b>															
6 gases including CO <sub>2</sub>	186.0	165.7	186.2	164.7	88.4	33.4	30.7	33.3	19.5	58.5	356.3	300.5	329.8	305.1	92.5
Scope1 <sup>4</sup>	155.9	140.3	157.9	137.3	86.9	4.7	4.1	5.5	3.4	61.7	166.8	137.3	140.9	113.1	80.3
CO <sub>2</sub>	146.9	132.6	148.4	129.3	87.1	4.6	4.1	5.1	3.2	63.0	166.8	137.3	140.9	113.1	80.3
CH <sub>4</sub>	0.4	0.3	0.3	0.3	85.5	0.0	0.0	0.0	0.0	—	—	—	—	—	—
N <sub>2</sub> O	8.7	7.3	8.9	7.7	86.6	0.0	0.0	0.4	0.2	42.0	—	—	—	—	—
Other gases (HFCs, PFCs, SF <sub>6</sub> )	0.0	0.0	0.3	0.0	5.7	0.0	0.0	0.0	0.0	—	—	—	—	—	—
Scope2	30.1	25.5	28.3	27.4	96.8	28.7	26.6	27.7	16.1	58.1	189.5	163.1	188.8	192.0	101.7
<b>PRTR Law-specified substances (tons)</b>															
Atmospheric emissions	229.1	211.0	183.3	145.1	79.2	99.7	104.4	89.8	111.3	123.9	392.2	480.6	442.8	564.2	127.4
Water emissions	24.2	22.2	26.5	28.0	105.7	0.4	3.1	0.0	0.0	—	0.0	0.7	3.7	3.1	83.8
Waste transfers	1,054.1	577.4	499.1	733.4	146.9	1,674.1	2,468.9	957.4	917.5	95.8	2,140.4	4,276.9	4,611.1	5,287.7	114.7
<b>Air pollutants (tons)<sup>1</sup></b>															
SOx	254.9	160.1	219.4	232.0	105.7	9.7	17.9	2.4	1.6	67.0	1,597.4	1,404.7	1,111.3	425.1	38.3
NOx	1,274.0	1,139.2	1,302.6	1,186.0	91.0	30.2	29.7	14.3	4.2	29.4	878.4	1,020.7	1,372.9	1,746.7	127.2
Dust	121.9	60.9	102.6	77.0	75.0	3.1	1.5	4.7	1.0	20.3	234.1	133.3	207.4	443.5	213.8
VOC	307.4	309.2	266.1	361.0	135.7	175.0	172.2	136.4	52.7	38.6	486.0	557.8	485.9	743.5	153.0

	Toray Industries, Inc.					Group companies in Japan					Group companies outside Japan				
	2019	2020	2021	2022	Compared to previous year (%)	2019	2020	2021	2022	Compared to previous year (%)	2019	2020	2021	2022	Compared to previous year (%)
<b>Industrial wastewater (million tons)<sup>1</sup></b>															
	160.4	150.1	154.4	143.9	93.2	9.3	7.7	8.2	5.6	68.1	25.7	24.3	25.7	29.1	113.3
<b>Total water consumed (million tons)</b>															
Note: Calculated by subtracting industrial wastewater from water withdrawn															
	11.3	15.6	17.4	22.2	127.9	4.1	3.8	3.3	3.0	91.8	16.2	13.2	14.8	10.0	67.4
<b>Water pollutants (tons)</b>															
BOD	606.9	523.5	464.7	447.9	96.4	31.3	21.6	16.3	10.2	62.3	211.4	188.3	174.0	193.0	110.9
COD <sup>1</sup>	727.2	694.0	666.6	586.7	88.0	25.2	28.8	25.9	15.6	60.1	1,550.0	1,222.6	1,445.4	2,294.0	158.7
Nitrogen	341.2	340.4	405.8	389.3	95.9	13.5	8.6	7.6	4.1	53.9	—	—	—	—	—
Phosphorus	24.8	18.7	19.0	31.7	166.8	1.3	0.6	0.7	0.4	55.6	—	—	—	—	—
<b>Waste (1,000 tons)<sup>1</sup></b>															
Recycled	30.0	27.0	27.6	26.7	96.7	15.1	12.3	11.3	10.8	95.6	108.9	84.3	99.7	100.6	100.9
Incinerated and other	0.1	0.1	0.4	0.2	37.5	2.8	2.0	0.3	0.7	233.3	20.2	11.5	15.7	32.0	203.8
Direct landfill Diposal	0.2	0.0	0.0	0.0	—	4.3	0.9	0.3	0.3	100.0	22.7	17.7	19.2	19.1	99.5
<b>Coal ash (1,000 tons)<sup>1</sup></b>															
Recycled	68.1	66.6	69.0	67.5	97.9	—	—	—	—	—	19.0	12.5	15.8	11.6	73.3
Direct landfill Diposal	3.2	1.3	1.5	1.2	82.8	—	—	—	—	—	0.3	0.3	0.3	0.4	133.3
<b>Hazardous waste (1,000 tons)<sup>1&amp;5</sup></b>															
Hazardous waste	—	2.1	2.3	0.9	39.1	—	2.8	2.7	2.0	74.1	—	—	0.0	0.0	—
Non-hazardous waste	—	25.0	25.7	26.0	101.0	—	12.5	9.2	9.8	106.5	—	—	134.6	151.7	112.7

<sup>1</sup> Toray Industries' fiscal 2022 energy consumption, water use, greenhouse gas emissions (Scope 1 and 2), air emissions (SOx, NOx, Dust, and VOC), wastewater, chemical oxygen demand (COD) and industrial waste, as well as overseas group companies' energy consumption, greenhouse gas emissions (Scope 1 and 2), and industrial waste, has been verified by a third party, LRQA Limited.

<sup>2</sup> CO<sub>2</sub>-equivalent emissions are calculated from the conversion factor for each gas.

<sup>3</sup> Until FY 2022, this was calculated by multiplying the GHG emissions and revenue of individual subsidiaries worldwide by the applicable Toray Industries' equity share. Starting in FY 2023 however, the calculation method will change, and the degree of financial control Toray Industries has over the individual subsidiary (not the equity share) will be used, in accordance with the GHG Protocol, the international standard.

<sup>4</sup> CO<sub>2</sub> is aggregated for group companies outside Japan.

<sup>5</sup> Data corresponding to "industrial waste subject to special control," as defined in Japan's Waste Disposal and Public Cleansing Act, is recorded as hazardous waste generated.

## GHG Emissions in Toray's Supply Chain (Scope3)

(10,000 tons CO<sub>2</sub>eq)

	Toray Industries, Inc. <sup>6</sup>			Toray Group <sup>7</sup>
	2019	2020	2021	2022
Category 1: Purchased goods and services	—	—	231.5	898.0
Category 2: Capital goods <sup>6</sup>	12.8	10.2	9.2	39.6
Category 3: fuel and energy related activities <sup>6</sup>	68.9	63.1	19.0	94.5
Category 4: Upstream transportation and distribution <sup>6</sup>	4.7	3.8	4.3	21.0
Category 5: Waste generated in operations	—	—	2.0	1.1
Category 6: Business travel	—	—	1.3	0.6
Category 7: Employee commuting	—	—	0.2	2.2
Category 8: Upstream leased assets				0.2
Total	86.4	77.1	267.5	1,057.1

<sup>6</sup> Figures for fiscal 2019-2021 are aggregated for Toray Industries. Figures for categories 2, 3, and 4 have been verified by a third party, LRQA Limited.

<sup>7</sup> Figures for fiscal 2022 are aggregated for Toray Group. Figures for categories 1, 2, 3, 4, 5, 6, 7, and 8/figures for all categories have been verified by a third party, LRQA Limited.

## Index of Environmental Impact Per Unit of Sales<sup>8</sup>

	Toray Industries, Inc.					Group companies in Japan					Group companies outside Japan				
	2019	2020	2021	2022	Year-on-year comparison (points)	2019	2020	2021	2022	Year-on-year comparison (points)	2019	2020	2021	2022	Year-on-year comparison (points)
GHG emissions	55.4	59.8	57.0	48.5	-8.5	62.1	74.2	75.1	53.7	-21.4	67.1	58.4	50.1	44.4	-5.7
PRTR atmospheric emissions	20.5	41.0	30.2	22.0	-8.2	24.9	11.0	8.9	12.9	4.0	23.2	34.1	24.4	28.6	4.2
SOx emissions	4.1	3.2	3.7	3.6	-0.1	6.9	38.5	4.8	3.8	-1.0	9.0	6.8	4.2	1.5	-2.7
Water usage volume	70.5	84.3	74.2	66.0	-8.2	37.6	66.4	64.9	93.0	28.1	51.9	37.6	31.7	37.6	5.9
BOD emissions	36.7	40.8	30.7	27.3	-3.4	14.3	22.0	15.5	11.3	-4.2	26.1	14.2	10.3	40.3	30.0
Landfilled waste volume	79.3	0.9	0.9	0.6	-0.3	40.6	31.5	7.0	10.5	3.5	76.3	35.3	29.9	27.2	-2.7

<sup>8</sup> The amounts per unit of sales shown in the table are referenced to an index value of 100 set for the base year of fiscal 2001.

## Aggregate Environmental Impact Data by Company Type and Location

	Toray Industries, Inc.	Group companies in Japan	Group companies outside Japan
GHG	All 13 plants and 1 research laboratory	48 plants at 27 companies	88 plants at 66 companies
PRTR Law-specified substances	All 13 plants and 1 research laboratory	43 plants at 25 companies	86 plants at 66 companies
SOx, NOx, dust	All 13 plants and 1 research laboratory	40 plants at 25 companies	86 plants at 66 companies
BOD	All 13 plants and 1 research laboratory	40 plants at 25 companies	86 plants at 66 companies
COD <sup>9</sup>	All 13 plants and 1 research laboratory	40 plants at 25 companies	86 plants at 66 companies
Nitrogen and phosphorus	All 13 plants and 1 research laboratory	40 plants at 25 companies	—
Waste	All 13 plants and 1 research laboratory	43 plants at 25 companies	86 plants at 66 companies

<sup>9</sup> COD figures for Toray, group companies in Japan and Korea are given in COD<sub>mn</sub> (using the potassium permanganate method). Other group companies outside Japan are given in COD<sub>cr</sub> (using the potassium dichromate method).

CSR Activity Report (CSR Guideline Activity Reports) - Safety, Accident Prevention, and Environmental Preservation

## Chemical Substance Emissions and Transfer Data

### PRTR Law-Specified Substance<sup>1</sup> Emissions and Transfer Data for Fiscal 2022

<sup>1</sup> Chemical substances designated Class 1 under the April 2010 revision of Japan's PRTR Law

Toray Industries, Inc.	Tons (dioxins: mg-TEQ)			
Substance name	Atmospheric emissions	Water emissions	Soil emissions / company landfill	Waste transfers
Methyl acrylate	0.0	0.0	0.0	0.0
Acrylonitrile	9.0	6.7	0.0	0.3
Acetaldehyde	0.9	0.0	0.0	0.0
Antimony and its compounds	0.0	0.0	0.0	0.0
Asbestos	0.0	0.0	0.0	0.0
Ethylbenzene	0.0	0.0	0.0	0.0
ε-Caprolactam	0.2	11.1	0.0	20.2
Xylene	3.0	0.0	0.0	0.0
Chlorobenzene	0.1	0.0	0.0	2.1
Chloroform	0.4	0.0	0.0	3.1
Cobalt and its compounds	0.0	0.0	0.0	0.0
4,4'-diaminodiphenyl ether	0.0	0.0	0.0	0.0
Inorganic cyanide	0.0	0.0	0.0	0.0
1,4-Dioxane	0.0	0.0	0.0	0.0
Diuron	0.0	0.0	0.0	0.0
Dichlorobenzene	0.0	0.0	0.0	0.0
Dichloromethane	0.0	0.0	0.0	0.0

Toray Industries, Inc.	Tons (dioxins: mg-TEQ)			
	Substance name	Atmospheric emissions	Water emissions	Soil emissions / company landfill
N, N-dimethylacetamide	0.0	0.0	0.0	0.0
N, N-dimethylformamide	0.0	0.0	0.0	0.0
Styrene	0.0	0.0	0.0	0.0
Terephthalic acid	0.0	0.0	0.0	0.0
Dimethyl terephthalate	0.0	0.0	0.0	0.0
Trichloroethylene	0.0	0.0	0.0	0.0
Toluene	0.0	0.0	0.0	0.0
Nitrobenzene	0.0	0.0	0.0	0.0
O-, m- and p-Phenylenediamine	0.0	0.0	0.0	0.0
Phenol	0.0	0.0	0.0	0.0
Bromomethane	0.0	0.0	0.0	0.0
Benzene	0.0	0.0	0.0	0.0
Poly (oxyethylene) alkyl ether	0.0	0.0	0.0	0.0
Manganese and its compounds	0.0	0.0	0.0	0.0
Methyl methacrylate	0.0	0.0	0.0	0.0
Methylenebis (4,1-phenylene) diisocyanate	0.0	0.0	0.0	0.0
Nickel and its compounds	0.0	0.0	0.0	0.0
Dioxins	0.0	0.0	0.0	0.0
<b>Total</b>	13.6	17.8	0.0	25.7

Note: The list shows emissions and transfers of 34 substances (out of Toray Industries' 70 PRTR Law-specified substances) exceeding 50 kg and dioxins.

Group companies in Japan	Tons (dioxins: mg-TEQ)			
	Atmospheric emissions	Water emissions	Soil emissions / company landfill	Waste transfers
Ethyl acrylate	0.0	0.0	0.0	0.0
Butyl acrylate	0.1	0.0	0.0	0.2
Acrylonitrile	0.0	0.0	0.0	0.0
Acetonitrile	0.1	0.0	0.0	1.4
Allyl alcohol	0.1	0.0	0.0	2.3
Isopropyl alcohol / propyl alcohol	3.7	0.0	0.0	65.4
Ethylbenzene	29.8	0.0	0.0	40.0
Ethylene glycol	0.0	0.0	0.0	0.0
Epichlorohydrin	0.1	0.0	0.0	17.9
Xylene	22.4	0.0	0.0	2.6
1-chloro-2,4-dinitrobenzene	0.0	0.0	0.0	0.2
Dichloromethane	0.0	0.0	0.0	0.0
N, N-dimethylacetamide	15.7	0.0	0.0	427.0
N, N-dimethylformamide	0.0	0.0	0.0	0.0
Styrene	0.0	0.0	0.0	0.0
Triethylamine	0.1	0.0	0.0	1.9
Toluene	0.2	0.0	0.0	0.0
Carbon disulfide	0.0	0.0	0.0	0.0
1-nonanol	0.0	0.0	0.0	0.0
2-Ethoxyethanol	0.0	0.0	0.0	0.0
Hydroquinone	0.0	0.0	0.0	0.0
Pyridine	0.1	0.0	0.0	1.4
n-hexane	1.2	0.0	0.0	58.2
Poly (oxyethylene) alkyl ether	0.0	0.0	0.0	0.0
Formaldehyde	0.1	0.0	0.0	0.1
Maleic anhydride	0.0	0.0	0.0	2.0
Ethyl acetate	2.5	0.0	0.0	99.5



Group companies in Japan	Tons (dioxins: mg-TEQ)			
Substance name	Atmospheric emissions	Water emissions	Soil emissions / company landfill	Waste transfers
Methacrylate acid	0.0	0.0	0.0	0.0
Methyl methacrylate	0.1	0.0	0.0	0.0
3-methylpyridine	0.3	0.0	0.0	20.8
Dioxins	0.0	0.0	0.0	0.0
<b>Total</b>	<b>76.5</b>	<b>0.0</b>	<b>0.0</b>	<b>740.8</b>

Note: The list shows emissions and transfers of 30 substances (out of the 72 PRTR Law-specified substances for group companies in Japan) exceeding 50 kg and dioxins.

CSR Activity Report (CSR Guideline Activity Reports) - Safety, Accident Prevention, and Environmental Preservation

## Sites with ISO 14001 Certification

### Sites with ISO 14001 Certification (as of May 2023)

<b>Toray Industries, Inc. : All 13 plants</b>
Shiga, Seta, Ehime, Nagoya, Tokai, Aichi, Okazaki, Mishima, Chiba, Tsuchiura, Gifu, Ishikawa, Nasu
<b>Group companies in Japan: 32 plants at 23 companies<sup>1・2</sup></b>
<ul style="list-style-type: none"> <li>• Du Pont-Toray Co., Ltd. [Tokai]</li> <li>• Toray Opelontex Co., Ltd.</li> <li>• Toray Textiles, Inc. [Tokai]</li> <li>• Toray Coatex Co., Ltd. [Kyoto, Chemical Products]</li> <li>• Toray Hybrid Cord, Inc.</li> <li>• Toray Plastics Precision Co., Ltd. [Mishima, Koriyama]</li> <li>• Toray PEF Products Inc. [Konan]</li> <li>• Toray Monofilament Co., Ltd.</li> <li>• Toray Advanced Film Co., Ltd. [Takatsuki, Fukushima, Nakatsugawa]</li> <li>• Toray KP Films Inc.</li> <li>• Toray Fine Chemicals Co., Ltd. [Moriyama, Matsuyama, Tokai, Chiba]</li> <li>• Toray Engineering Co., Ltd. [Numazu]</li> <li>• Soda Aromatic Co., Ltd. [Noda, Koriyama, Okayama Chemicals]</li> <li>• Toray Building Materials Co., Ltd. [Fukushima]</li> <li>• DuPont Toray Specialty Materials Kabushiki Kaisha</li> <li>• Suido Kiko Kaisha, Ltd.</li> <li>• Toray Medical Co., Ltd.</li> <li>• Ichimura Sangyo Co., Ltd.</li> <li>• Toray International, Inc.</li> <li>• Chori Co., Ltd.</li> <li>• Toray Carbon Magic Co., Ltd.</li> <li>• Sowa Textile Co., Ltd. [Hakui]</li> <li>• Toray Celanese Co., Ltd.</li> </ul>

**Group companies outside Japan: 68 plants at 49 companies<sup>2</sup>**

USA	<ul style="list-style-type: none"> <li>• Toray Plastics (America), Inc. [Rhode Island, Virginia]</li> <li>• Toray Resin Co.</li> <li>• Toray Fluorofibers (America), Inc.</li> <li>• Toray Composite Materials America, Inc. (Decatur, Tacoma)</li> <li>• Toray Membrane USA, Inc.</li> </ul>
Mexico	<ul style="list-style-type: none"> <li>• Toray Advanced Textile Mexico, S.A. de C.V.</li> <li>• Toray Resin Mexico, S.A. de C.V.</li> </ul>
UK	<ul style="list-style-type: none"> <li>• Toray Textiles Europe Ltd.</li> <li>• Toray Advanced Composites UK Ltd.</li> </ul>
France	<ul style="list-style-type: none"> <li>• Toray Films Europe S.A.S.</li> <li>• Toray Carbon Fibers Europe [Abidos, Lacq]</li> </ul>
Germany	<ul style="list-style-type: none"> <li>• Euro Advanced Carbon Fiber Composites GmbH</li> <li>• Greenerity GmbH</li> </ul>
Italy	<ul style="list-style-type: none"> <li>• Alcantara S.p.A.</li> <li>• Delta-Tech S.p.A.</li> </ul>
Czech Republic	<ul style="list-style-type: none"> <li>• Toray Textiles Central Europe s.r.o.</li> </ul>
Hungary	<ul style="list-style-type: none"> <li>• Zoltek Zrt. (ZHU)</li> </ul>
Indonesia	<ul style="list-style-type: none"> <li>• P.T. Century Textile Industry Tbk</li> <li>• P.T. Easterntex</li> <li>• P.T. Indonesia Toray Synthetics</li> <li>• P.T. Acryl Textile Mills</li> <li>• P.T. Indonesia Synthetic Textile Mills</li> <li>• P.T. Toray Polytech Jakarta</li> </ul>
Thailand	<ul style="list-style-type: none"> <li>• Toray Textiles (Thailand) Public Company Limited [NPT, M1, M2, M3]</li> <li>• Thai Toray Synthetics Co., Ltd. [Bangkok, Ayutthaya, Nakhonpathom]</li> </ul>
Malaysia	<ul style="list-style-type: none"> <li>• Penfibre Sdn. Berhad [Fiber, film]</li> <li>• Penfabric Sdn. Berhad [M2, M3, M4]</li> <li>• Toray Plastics (Malaysia) Sdn. Berhad</li> <li>• Toray BASF PBT Resin Sdn. Berhad</li> </ul>
India	<ul style="list-style-type: none"> <li>• Toray Industries (India) Private Limited<sup>3</sup></li> </ul>

China	<ul style="list-style-type: none"> <li>• Toray Fibers (Nantong) Co., Ltd.</li> <li>• Toray Sakai Weaving &amp; Dyeing (Nantong) Co., Ltd.</li> <li>• Toray Plastics (Shenzhen) Ltd.</li> <li>• Toray Film Products (Zhongshan) Ltd.</li> <li>• Toray Plastics Precision (Zhongshan) Ltd.</li> <li>• Toray Plastics (Suzhou) Co., Ltd.</li> <li>• Toray Fibers &amp; Textiles Research Laboratories (China) Co., Ltd.</li> <li>• Toray Advanced Materials Research Laboratories (China) Co., Ltd.</li> <li>• Toray Polytech (Nantong) Co., Ltd.</li> <li>• Toray BlueStar Membrane Co., Ltd.</li> <li>• Toray Plastics (Chengdu) Co., Ltd.</li> <li>• Toray Medical (Qingdao) Co., Ltd.</li> <li>• Cangzhou Toray Fine Chemicals Co., Ltd.</li> </ul>
Republic of Korea	<ul style="list-style-type: none"> <li>• Toray Advanced Materials Korea Inc. [M1, M2, M3, M4, M5, Anseong, Yugu, Gunsan, Advanced Materials Research Center]</li> <li>• STEMCO, Ltd.</li> <li>• Toray Battery Separator Film Korea, Limited</li> <li>• Toray BSF Coating Korea Limited</li> </ul>
Taiwan	<ul style="list-style-type: none"> <li>• Toray Advanced Film Kaohsiung Co., Ltd.</li> </ul>
Saudi Arabia	<ul style="list-style-type: none"> <li>• Toray Membrane Middle East LLC</li> </ul>

**1** In addition, 12 plants at 10 companies received certification as affiliated companies on Toray Industries' sites.

**2** Information in brackets refers to the names of the plants.

**3** A company that newly acquired ISO 14001 certification in fiscal 2022.

CSR Activity Report (CSR Guideline Activity Reports) - Safety, Accident Prevention, and Environmental Preservation

## Environmental Data for Toray Industries and Principal Group Companies

### Environmental Data for 13 Toray Industries' Plants and Principal Group Companies

	Emission Volume														Principal manufactured products
	GHG emissions	PRTR				Gas emissions			Water emissions			Waste			
		Emissions			Waste transfers	SOx	NOx	Dust	BOD	COD	Effluent	Recycled	Simple incineration	Landfill disposal	
		Air Water	Water	Soil & landfill	Waste										
		10,000 tons CO <sub>2</sub> /year	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year	million m <sup>3</sup> /year	tons/year	tons/year	tons/year	
Shiga Plant	5.7	0.6	0.0	0.0	14.4	0.0	10.6	0.7	21.4	33.8	11.3	2,926.6	7.9	0.0	<ul style="list-style-type: none"> <li>• Base material of Ultrasuede™ man-made suede</li> <li>• TOPTICAL™ color filter</li> <li>• TORAYVINO™ home water purifier</li> </ul>
Seta Plant	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	84.5	0.0	0.0	<ul style="list-style-type: none"> <li>• TORAYLON™ acrylic fiber</li> <li>• Medical devices (Inoue Balloon catheters, ANTHRON™ P-U catheters)</li> </ul>
Ehime Plant	62.6	38.1	10.7	0.0	97.3	221.4	680.0	70.4	115.5	106.3	30.4	4,967.9	32.2	0.2	<ul style="list-style-type: none"> <li>• TORAY TETORON™ polyester staple fiber</li> <li>• TORAYCA™ carbon fiber</li> <li>• ROMEMBRA™ reverse osmosis membrane module</li> <li>• TORAYCON™ PBT resin</li> </ul>
Nagoya Plant	7.4	13.8	0.8	0.0	31.3	0.0	44.7	1.7	42.5	84.7	22.6	2,696.1	5.1	5.1	<ul style="list-style-type: none"> <li>• AMILAN™ nylon resin</li> <li>• TORAYCON™ PBT resin</li> <li>• Various fine chemicals</li> </ul>
Tokai Plant	58.9	26.6	16.5	0.0	17.7	7.9	315.0	0.5	217.7	229.8	19.4	6,391.4	35.0	0.0	<ul style="list-style-type: none"> <li>• Caprolactam</li> <li>• Terephthalic acid</li> <li>• TORAY TETORON™ polyester chips</li> <li>• TORELINA™ PPS resin</li> </ul>
Aichi Plant	1.9	0.0	0.0	0.0	12.9	0.0	1.4	0.0	0.0	0.0	1.5	159.2	0.6	0.0	<ul style="list-style-type: none"> <li>• Nylon filament yarn</li> <li>• RAYTELA™ plastic optical fiber</li> </ul>

	Emission Volume														Principal manufactured products
	GHG emissions	PRTR				Gas emissions			Water emissions			Waste			
		Emissions			Waste transfers	SOx	NOx	Dust	BOD	COD	Effluent	Recycled	Simple incineration	Landfill disposal	
		Air Water	Water	Soil & landfill	Waste										
		10,000 tons CO <sub>2</sub> /year	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year	tons/year	million m <sup>3</sup> /year	tons/year	tons/year	tons/year	
Okazaki Plant	7.4	12.0	0.0	0.0	535.9	0.0	43.4	1.9	12.7	28.6	5.9	3,491.1	2.7	2.7	<ul style="list-style-type: none"> <li>Nylon filament yarn</li> <li>TORAY WATERLESS PLATE™ printing plate</li> <li>Filtryzer™ hemodialyzers</li> <li>TORAYVINO™ home water purifier</li> </ul>
Mishima Plant	10.5	1.5	0.0	0.0	7.3	2.4	53.0	0.0	17.8	22.8	36.7	1,125.8	1.3	0.0	<ul style="list-style-type: none"> <li>LUMIRROR™ polyester film</li> <li>TORAY TETORON™ polyester filament yarn</li> <li>DORNER™ oral administration prostacyclin PGI2 derivative</li> <li>FERON™ natural interferon-β preparation</li> </ul>
Chiba Plant	1.4	9.7	0.0	0.0	1.3	0.0	8.6	0.0	6.8	72.8	5.2	1,976.8	12.2	4.0	<ul style="list-style-type: none"> <li>TOYOLAC™ ABS resin</li> </ul>
Tsuchiura Plant	2.3	0.0	0.0	0.0	0.0	0.0	4.6	0.1	1.3	1.2	0.3	369.2	0.0	0.0	<ul style="list-style-type: none"> <li>TORAYFAN™ BO polypropylene film</li> </ul>
Gifu Plant	6.9	1.3	0.0	0.0	8.8	0.0	19.7	0.4	11.0	6.3	10.4	1,224.4	0.3	0.3	<ul style="list-style-type: none"> <li>Ultrasuede™ man-made suede</li> <li>LUMIRROR™ polyester film</li> <li>TORELINA™ PPS film</li> </ul>
Ishikawa Plant	4.3	0.8	0.0	0.0	6.6	0.0	0.0	0.0	0.0	0.0	0.0	927.6	2.8	1.0	<ul style="list-style-type: none"> <li>TORAY TETORON™ polyester filament yarn</li> <li>Nylon filament yarn</li> <li>TORAYCA™ prepreg</li> </ul>
Nasu Plant	2.0	40.7	0.0	0.0	0.0	0.0	3.8	1.6	0.6	0.0	0.1	242.4	46.3	0.5	<ul style="list-style-type: none"> <li>Lithium-ion rechargeable battery</li> </ul>
Toray Hybrid Cord, Inc.	1.2	1.7	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	667.0	14.5	14.0	<ul style="list-style-type: none"> <li>Tire cord</li> <li>Carpet pile fiber</li> </ul>
Toray Fine Chemicals Co., Ltd. [Chiba]	2.4	1.4	0.0	0.0	47.1	0.0	0.0	0.0	0.0	0.0	0.0	1,651.1	15.5	12.8	<ul style="list-style-type: none"> <li>DMSO and DMS</li> <li>Functional acrylic resin</li> </ul>
Malaysia Penfibre Sdn. Berhad [Fibers & Textiles]	2.6	0.0	0.0	0.0	0.0	0.6	18.2	3.2	0.6	6.4	0.2	168.1	66.0	56.1	<ul style="list-style-type: none"> <li>TORAY TETORON™ polyester staple fiber</li> </ul>
France Toray Films Europe S.A.S.	3.5	0.0	0.0	0.0	54.0	0.0	14.8	0.0	3.8	18.4	1.4	3,117.6	751.2	576.1	<ul style="list-style-type: none"> <li>LUMIRROR™ polyester film</li> </ul>