CSR Guidelines & Activity Reports

Safety, Accident Prevention, and Environmental Preservation

Environment

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

For information on Toray Group's basic approach and policies on safety, accident prevention and environmental preservation, please visit the links for the related topics in the Activity Reports below.

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 2018

Action policy		Main activities
Safety	3Z activities[1] for zero accidents	• Thoroughly practice “Anzen Koh-Doh”[2] • Thorough elimination of similar accidents • Thoroughly practice safety activities in each business • Expand communication to foster positive, communicative, and disciplined workplaces
Health	Rigorous chemical substance management	• Expand and strengthen management of hazardous chemical substances and toxic chemicals
	Emphasize occupational health management	• Implement a plan for countermeasures against pandemic influenza • Enhance mental health management
Accident prevention	Achieve zero fire accidents	• Thoroughly take fire prevention measures
	Improve large-scale earthquake response	• Maintain large-scale earthquake preparedness • Execute large-scale earthquake and tsunami response drills
Environment	Achieve zero environmental accidents	• Implement strict measures to prevent environmental accidents
	Help to build a more sustainable world	• Implement the Fifth Medium-Term Environmental Plan

1 3Z Activities is a program that aims for zero accidents, zero problems, and zero claims under the slogan of “Maintaining Zero, Day-to-Day.” The Manufacturing Division leads the program, which aims to achieve the goals of the Toray Group's medium-term management program.

2 This refers to thinking about and acting on the basics of safety in order to enhance personal hazard sensitivity, identify hazards in the workplace, and ensure one’s own safety.

Structure

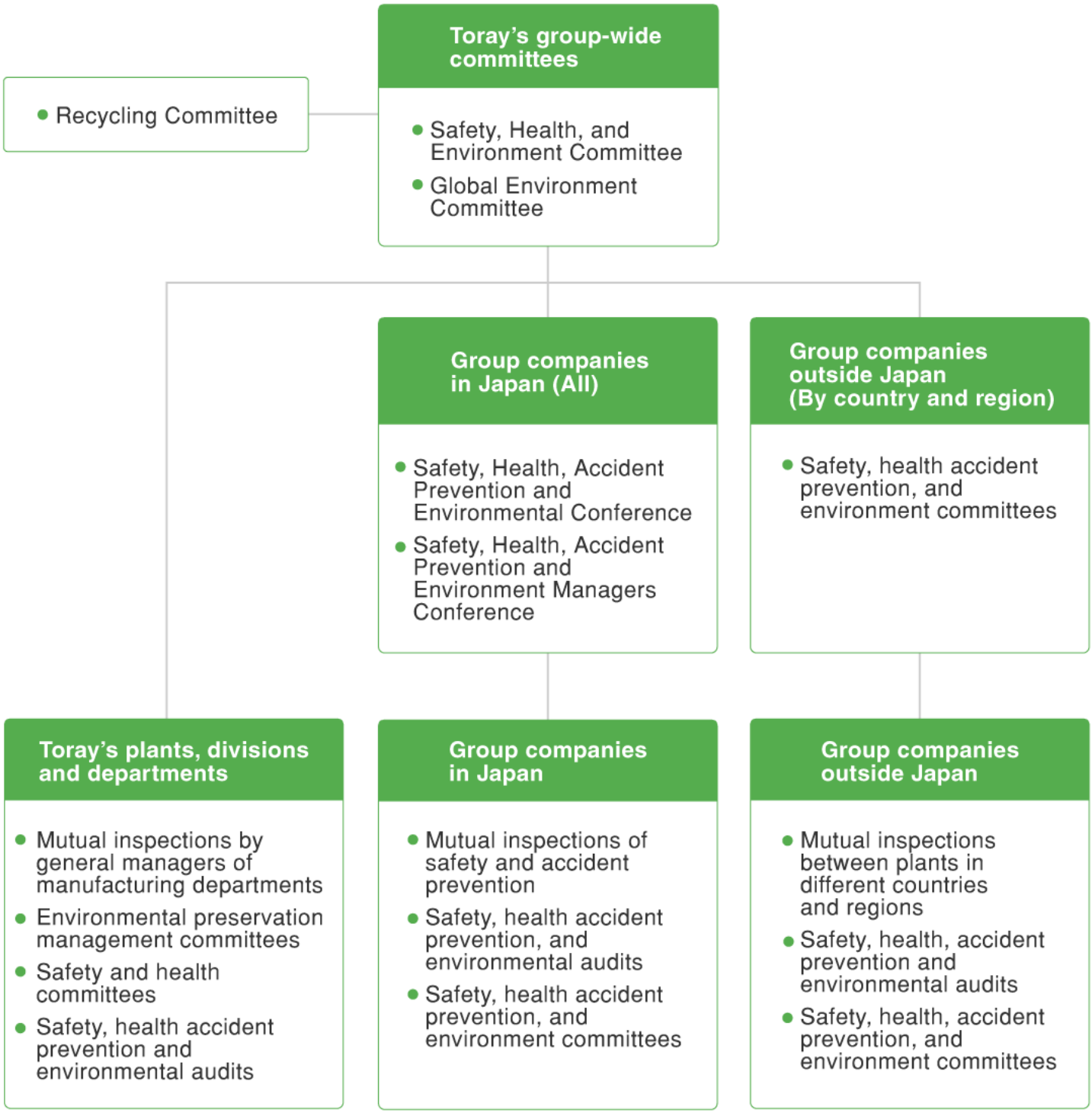
Safety, Health, Accident Prevention, and Environmental Preservation Promotion System

Toray Industries, Inc. implements its system for safety, health, accident prevention, and environmental preservation through two group-wide committees: the Safety, Health, and Environment Committee and the Global Environment Committee[3] (see chart below). Each committee meets annually.

The Safety, Health, and Environment Committee establishes policies and strategies for the entire Toray Group. The Global Environment Committee discusses and sets strategies aimed at securing the growth of the Green Innovation business, fighting climate change, and helping to build a recycling-oriented society. The chairs of both committees have absolute responsibility and authority. Progress on the issues determined by the committees is managed in the business divisions and plants using the PDCA cycle.

3 With the dissolution of the Global Environment Committee on August 1, 2018, responsibility for environmental technology development was transferred to the Technology Committee and responsible care to the Safety, Health, and Environment Committee. The Recycling Committee, which had been overseen by the Global Environment Committee, was also eliminated, and product recycling initiatives are now implemented by individual business divisions.

Safety, Health, Accident Prevention, and Environmental Preservation Promotion System (Fiscal 2018)



Audits and Follow-Up Measures

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 2018, audits were conducted for all 13 plants and one research laboratory at Toray Industries, 46 plants operated by 27 group companies in Japan, and 73 plants operated by 53 group companies outside Japan. The audits focused on the following areas: ensuring basic safety rules are followed; thoroughly eliminating similar accidents; increasing the safety awareness of unit heads and unit chiefs; implementation of strict measures to prevent environmental accidents; and progress on Fifth Medium-Term Environmental Plan activities. The audits helped to secure systematic improvements by identifying and addressing facility issues and issues relating to management.

ISO 14001 Certification

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 2018, 35 plants at 21 group companies in Japan and 58 plants at 43 group companies outside Japan were certified. In fiscal 2018, one plant at Toray BSF Coating Korea Limited in the Republic of Korea newly acquired ISO 14001 certification.

Related Information

› Sites with ISO 14001 Certification

Responsible Care Program

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.[4] In fiscal 2018, the Company set priority issues: implementing the Fifth Medium-Term Environmental Plan, strengthening accident-prevention countermeasures and ensuring implementation of the chemical risk assessments.

4 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.

Complying with REACH and Other International Chemical Substance Regulations

All business divisions of Toray Industries, as well as its group companies in and outside Japan, have systems in place for securing compliance with regulations on the restriction of chemical substances such as the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) in Europe. Toray Group completed registration of substances designated by REACH by the final deadline of May 31, 2018. The Group is also registering chemical substances based on recently revised laws in the Republic of Korea and Taiwan.
Toray Industries and some of its group companies in Japan use chemical substance management systems and the List of Lists (LOLI) Database,[5] a comprehensive database of chemical hazard and toxicity information and regulations in countries around the world, to strengthen their efforts to handle chemical substances safely and in compliance with relevant laws and regulations worldwide.

5 Provided by the U.S. company, ChemADVISOR, Inc., LOLI is a search tool and database of regulatory lists from many countries around the world.

Complying with Japan's Chemical Substances Control Law

With the revision of Japan's Chemical Substances Control Law[6] in April 2011, companies have been required to report on the manufacture, import, and utilization of general chemical substances. Toray Industries and its group companies in Japan studied the revisions, made the necessary preparations and completed their report covering fiscal 2018 in June 2019.

6 Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.

CSR Road Map Targets and Results

Clarify and fully comply with the basics of safety guidelines, and encourage employees to think carefully before taking action to prevent accidents

[Related material issue for CSR]

- Ensuring safety and disaster preparedness

01

■KPI
Number of major accidents

■Reporting scope
Toray Group

■Target in 2018 (calendar year)
0

Result in 2018 (calendar year)
0

02

■KPI
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 2018 (calendar year)
No more than 0.05

Result in 2018 (calendar year)
0.28

03

■KPI
Number of fire and explosion accidents

■Reporting scope
Toray Group

■Target in 2018 (calendar year)
0

Result in 2018 (calendar year)
2

04

■KPI
Number of environmental accidents

■Reporting scope
Toray Group

■Target in fiscal 2018
0

Result in fiscal 2018
1[7]

7 The impact on the environment was extremely minor. For more information, please refer to the "Environmental Risk Management" page in the "Safety, Accident Prevention, and Environmental Preservation" section.

Reduce environmental impact by working to fulfill the Fifth Medium-Term Environmental Plan (achieve targets by fiscal 2020)

[Related material issues for CSR]

- Addressing substances with negative environmental impact
- Addressing resource and energy issues
- Reducing greenhouse gas emissions

05

■KPI
Reduction of atmospheric VOC emissions (%)

■Reporting scope
Toray Group

■Target in fiscal 2018
At least 70% lower than fiscal 2000

Result in fiscal 2018

72%

06

■KPI
Waste recycling rate (%)

■Reporting scope
Toray Group

■Target in fiscal 2018
At least 86%

Result in fiscal 2018

85.7%

07

■KPI
Reduction of greenhouse gas emissions per unit of sales (%)

■Reporting scope
Toray Group (Japan)

■Target in fiscal 2018
At least 15% lower than fiscal 1990

Result in fiscal 2018

30%

Pursue environmental preservation on the basis of policies on water resources and biodiversity

[Related material issues for CSR]

- Initiatives for managing water resources
- Conserving biodiversity

08

■KPI
Water usage per unit of sales (%)

■Reporting scope
Toray Group

■Target in fiscal 2018
No more than 61% of 2001 level

Result in fiscal 2018

51%

09

■KPI
Number of companies and plants developing greenery policy and plan

■Reporting scope
Toray Group

■Target in fiscal 2018
at least 50

Result in fiscal 2018

54

Looking to the Future

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.

Occupational Safety and Accident Prevention Activities

Materiality Focus

Environment

Toray Group pursues its own safety activities using occupational health and safety management systems (such as OHSAS 18001 and ISO 45001). In addition, officers and other employees audit all group companies and plants every year and evaluate and seek improvements in the status of their management of safety and health, accident prevention and environment 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 fiscal 2018, the Group used the unique keyword of "Anzen Koh-Doh"[1] to remind employees worldwide to take thoughtful safety actions. Toray Group is working hard to ensure that the message reaches all of its employees including those at group companies outside of Japan.

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 health and safety laws in the countries in which it operations. These efforts help to ensure a pleasant working environment.

1 This refers to thinking about and acting on the basics of safety in order to enhance personal hazard sensitivity, identify hazards in the workplace, and ensure one's own safety.

2019 Safety Slogan

AP-G 2019

We Should Achieve "Zero Accidents". Each of us does "Anzen Koh-Doh"!

—"Seriousness," "Motivation," "Awareness"

Every year, company presidents and plant managers from Toray Industries and its group companies around the world 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. The Group's employees are all united under the leadership of top management in working on safety activities with the aim of achieving zero accidents. Furthermore, the Safety Summit, safety lectures 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.



2018 Toray Group Safety Meeting in Toray Human Resources Development Center



Toray Group Safety Summit in China

Toray Group Safety Record

Number of major accidents

■Reporting scope
Toray Group

■Target in 2018 (calendar year)
0

Result in 2018

0

Number of fire and explosion accidents

■Reporting scope
Toray Group

■Target in 2018 (calendar year)
0

Result in 2018

2

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 2018 (calendar year)
No more than 0.05

Result in 2018 (calendar year)

0.28

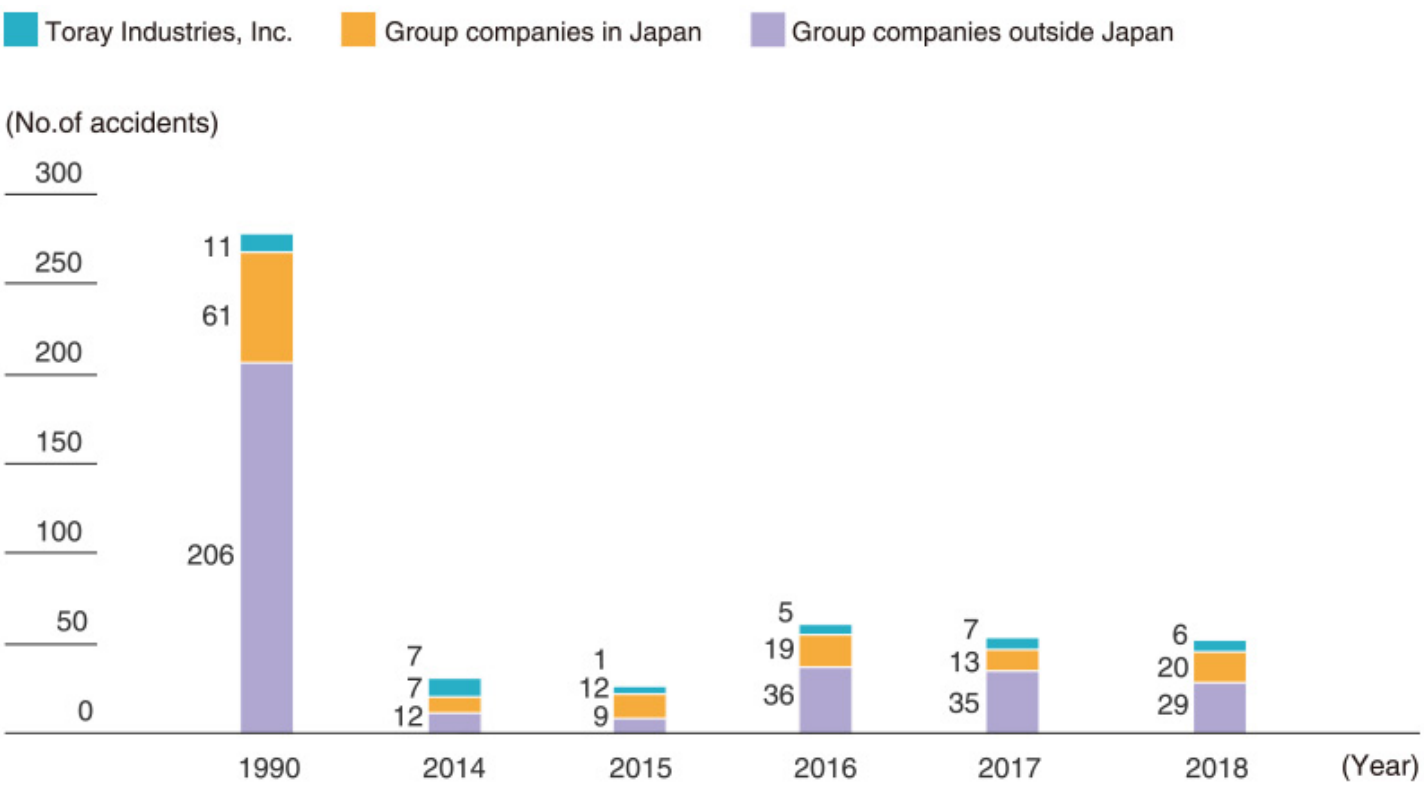
Toray Industries has collected data on all occupational accidents since 1980, and for Toray Group since 1990. Both the number of occupational accidents and frequency of occupational accidents resulting in lost work time have declined, compared with when the data was first collected.
The frequency rate for occupational accidents resulting in lost work time for Toray Group overall in 2018 improved by 0.11 points to 0.28. Although this is a positive result compared with that of Japan's manufacturing industry (1.20), it fell far short of the target of 0.05 or lower. One reason for this is that group companies outside Japan that recently joined Toray Group 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.



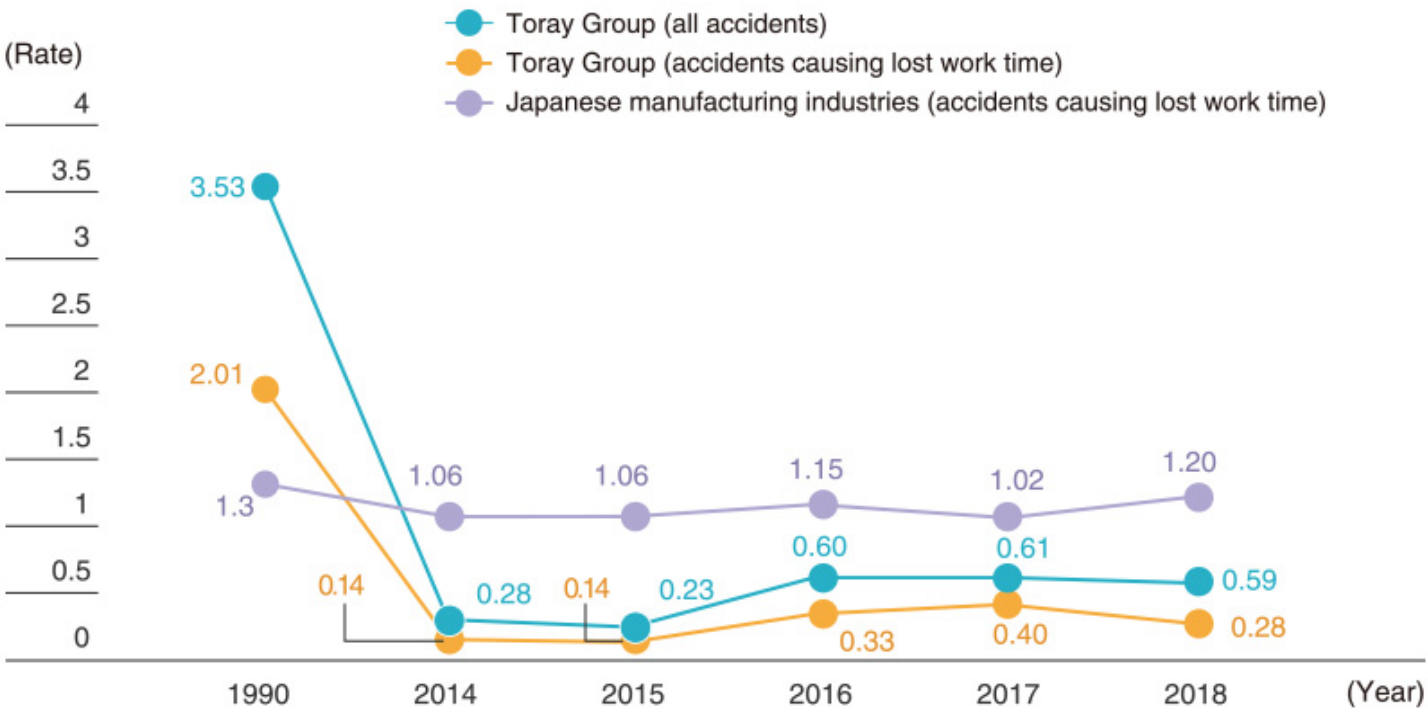
A safety meeting with the participation of unit heads at ' Plant (Toray Industries, Inc.)

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, while taking "Anzen Koh-Doh" even further. To ensure familiarity with "Anzen Koh-Doh" practices, unit heads in charge of work sites will take the leading role at Toray Industries and its group companies in Japan in reforming safety awareness and actions in their own workplaces. Toray Industries has held report meetings for discussion of safety, in which unit heads meet to share and discuss their activities, since 2015.
In terms of fire prevention, small-scale fires occurred at Toray Industries and one group company outside Japan, but these accidents did not cause human damage nor did either affect any area outside of plant premises. One accident involved a fire in a vehicle parked in the employee parking lot, and the other a fire on the lawn caused by a spark from the neighboring company's construction sites; neither involved fire in a Toray plant itself.

Number of Occupational Accidents: Toray Group (Lost work time and non-lost work time)



Occupational Accident Frequency Rate[2]: Toray Group



2 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

(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 inspections to determine whether there are any problems with 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 surveys

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 countermeasures. In addition, information about the accident is shared throughout the Group and measures taken to prevent a reoccurrence.

Enhancing Safety and Accident-Prevention Training

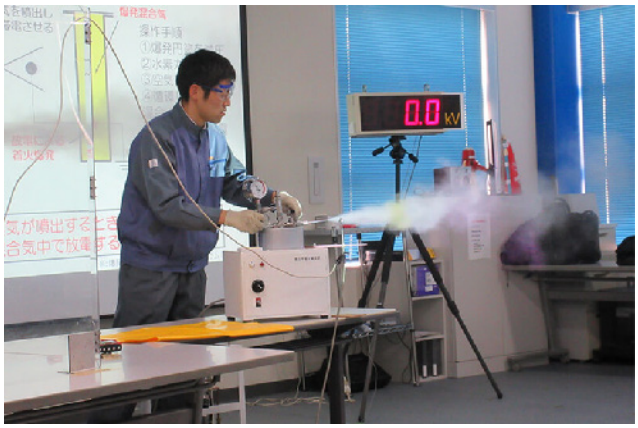
As part of their safety and accident prevention training, Toray Group companies and plants provide workshops and hands-on simulations to sensitize employees to dangers and hazards. Safety devices are used to simulate dangers such as getting caught up in rollers, electrocution, and residual pressure. 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 newsletter, *People*. In 2018, as in the previous year, the newsletter focused on the basics of fires and explosions.



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



Training using accident case studies at Nagoya Plant (Toray Industries, Inc.)



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

Implementing Safety Management Together with Subcontractors

Toray Group recognizes its duty to ensure the safety of the many subcontractors working at its sites. Occupational health and safety committees meet once a month with the participation of representative employees from subcontractors. Regular safety and liaison meetings are conducted to gain input from subcontractors, and are used to communicate the Group's policies and measures. At plants, Toray and subcontractors work together on safety initiatives, including safety posters, slogan contests and safety suggestions.



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

Mutual Safety Inspections by Toray Affiliates on Premises of Toray Plants

Toray Industries had the presidents of Toray affiliates that provide ancillary services for plant operations participate in annual mutual safety inspections of their facilities in order to verify the progress of safety initiatives. In 2018, the monitoring of hazardous work included work with sharp blades and heavy load transport. Personnel advised each other on areas needing improvement and monitored the progress of improvements.



Mutual safety inspection
(Tsuchiura Shokusan 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.
Group plants that are next to the sea conduct evacuation drills in the event of a tsunami triggered by a large-scale earthquake.



Safety confirmation team during an evacuation drill (Du Pont-Toray Co., Ltd.)



Firefighting training (Toray Textiles, Inc.)

Initiatives for Improving Fire-Prevention Capabilities

In 2018, Toray Group outlined four key tasks (see below) to strengthen fire prevention at Toray Group. The 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.
In earthquake preparedness measures, Toray places the highest priority on employee safety and has strengthened its earthquake response by implementing evacuation drills using its employee safety verification system. Additionally, the Group conducts business continuity planning in order to meet its social responsibility to keep supply lines open in the event of a large-scale earthquake.

Four Tasks

Tasks	Results of 2018 activities
Effectively use fire-prevention checklists	1. Revised fire-prevention checklists Revised checklists to reflect knowledge and lessons learned from recent near-misses at Toray Group and began using them
Enhance fire-prevention training	1. Provided fire-prevention training for engineers, etc., company-wide (elementary and intermediate levels) 2. Prepared plant education for entire group and carried out on a trial basis 3. Provided fire-prevention training for operators at plants (younger operators and leader courses)
Enhance change management	1. Operated manufacturing process change standards on manufacturing conditions, work contents, workers and equipment. 2. Applied these standards at group companies outside Japan guided by Toray's main plant
Build a safety management system for hot work	1. Supported and guided companies and plants to appropriately operate the framework (in Japan) 2. Rolled out the initiative to group companies outside Japan



Fire-prevention training for engineers, etc., company-wide
(Toray Human Resources Development Center)

Distribution Safety Initiatives

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.

Health Effects and Response to Asbestos

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 health effects on former and current Toray Group employees as of March 31, 2019 are described below.

Certified occupational accidents arising from handling asbestos (Toray Group): 104 (77)
Certified health victims based on Japan's Act on Asbestos Health Damage Relief (Toray Group): 8 (7)
Medical examination recipients involving asbestos (Toray Group): 4,022

Note: Figures in parentheses refer to fatalities.

CSR Guidelines & Activity Reports - Safety, Accident Prevention, and Environmental Preservation

Progress on the Fifth Medium-Term Environmental Plan

Environment

Toray Group is now implementing its Fifth Medium-Term Environmental Plan, which runs from fiscal 2016 to fiscal 2020. The plan aims to further reduce the Group's environmental impact. Amid further projected increases in production volumes for high-performance films and carbon fiber, the Group will continue to pursue environmental initiatives in order to achieve the challenging targets of the new plan.

Progress on the Fifth Medium-Term Environmental Plan Target

Area	Toray Group fiscal 2020 target	Fiscal 2018 results
Curb global warming	Maintain greenhouse gas emissions at least 15% below the fiscal 1990 level (Toray Industries, Inc.)	23% reduction
	15% or greater reduction in greenhouse gas emissions per unit of sales compared to fiscal 1990 (Toray Group in Japan)	30% reduction
Management of chemical substances	Atmospheric emissions of PRTR Law-Specified substances: Maintain at least 70% below the fiscal 2000 level (Toray Group)	66% reduction
	Atmospheric emissions of volatile organic compounds (VOCs): Maintain at least 70% below the fiscal 2000 level (Toray Group)	72% reduction
Waste reduction	Zero emissions goal: Achieve at 45 or more Toray Group plants	Achieved at 44 plants
	Simply disposed waste rate: 22.5% or lower (Toray Group)	21.6%
	Recycling rate: Maintain at 86% or more (Toray Group)	85.7%
	Landfill waste rate: 1.3% or lower (Toray Group in Japan)	1.0%

CSR Guidelines & Activity Reports - Safety, Accident Prevention, and Environmental Preservation

Conserving Energy and Curbing Global Warming

Materiality Focus

Environment

Addressing Climate Change

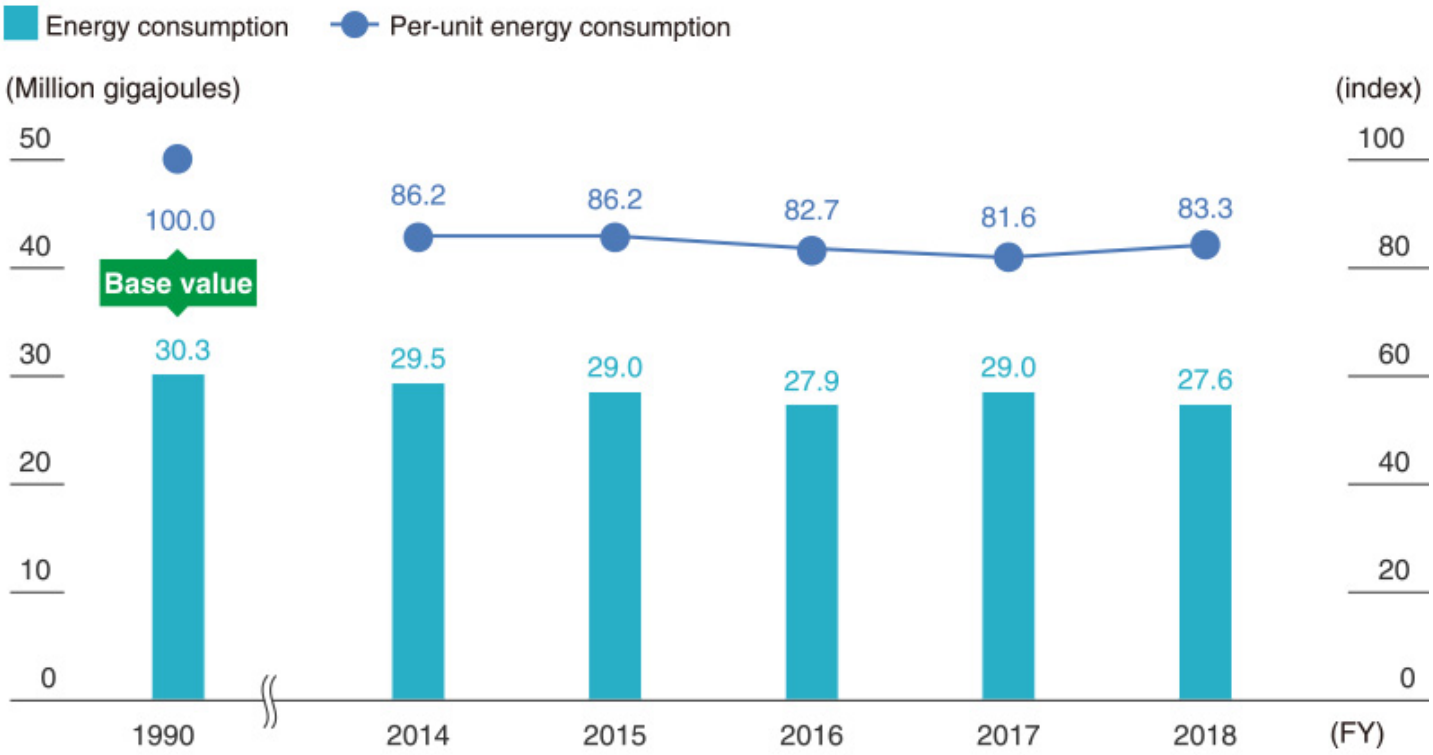
With a view to helping realize sustainable, low-carbon societies, the Toray Group has been pursuing initiatives for reducing greenhouse gas emissions. Toward this end, the Group is working to reduce CO_2 emissions and save energy during manufacturing by improving manufacturing processes, increasing utilization of renewable energy and reducing coal consumption in accordance with its Fifth Medium-Term Environmental Plan, which was launched in fiscal 2016.

Toray Industries' Energy Conservation Activities

Toray Industries, Inc. has set a goal of reducing its per-unit energy consumption[1] by 2% annually. In fiscal 2018, the Company's energy consumption was down 4.7% year-on-year due mainly to a decrease in production volumes. Meanwhile, its per-unit energy consumption rose 2.1% year-on-year (16.8% below the base year of fiscal 1990).

1 Energy consumption per converted production volume

Energy Consumption and Per-unit Energy Consumption Index (Toray Industries, Inc.)



Toray Group organizes energy conservation teams to help carry out annual energy conservation diagnostics at plants in Toray Industries and its group companies around the world. In fiscal 2018, these activities were conducted at 4 of Toray Industries' plants, along with 2 group company plants at in Japan and one outside Japan. Thanks to these proactive energy-saving initiatives, the Group reduced greenhouse gas emissions by about 39,600 tons-CO_2 equivalent.



Review for energy conservation diagnostics at Toray Plastics Precision Co., Ltd.

Toray Industries' Efforts to Fight Climate Change

Reduction of greenhouse gas emissions per unit of sales

■**Reporting scope**
Toray group (Japan)

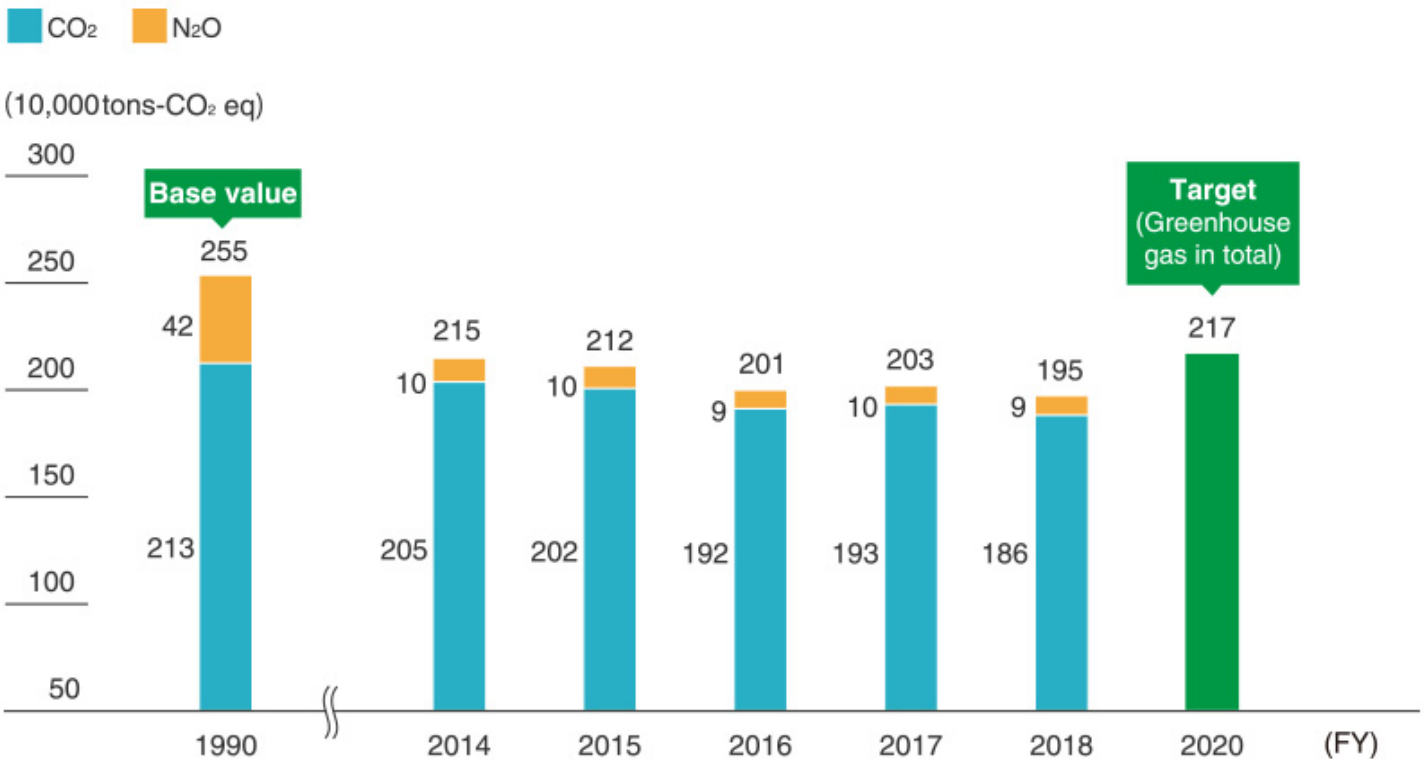
■**Target in Fiscal 2018**
At least 15% lower than fiscal 1990

Result in fiscal 2018

30%

Toray Industries systematically works to reduce greenhouse gas emissions, with the goal of maintaining greenhouse gas emissions at least 15% lower than the 1990 level by 2020. In fiscal 2018, the Company's CO_2 emissions decreased by 74,000 tons year-on-year. Greenhouse gas emissions were down 3.8% year-on-year at 1.95 million tons, which was 23.2% below the 1990 level, continuing to meet the reduction target (11% below fiscal 2013 level).
Moving forward, Toray Industries will endeavor to meet its reduction targets despite the higher production volumes projected due to business growth.

Greenhouse Gas Emissions (Toray Industries, Inc.)



Related Information

Toray Industries has obtained third-party assurance of its greenhouse gas emissions from Lloyd's Register Quality Assurance Limited (LRQA) for Scope 1 (direct emissions from plants, offices, vehicles, etc. owned by the Company), Scope 2 (indirect emissions from the generation of energy), and Scope 3 (other indirect emissions). [2]

Scope 1: 1,610,000 ton

Scope 2: 340,000 ton

Scope 3: 740,000 ton

2 Scope 3 emissions are calculated for Category 2 (capital goods), Category 3 (fuel and energy-related activities not included in Scope 1 or Scope 2), and Category 4 (upstream shipping and distribution).

› Third-Party Assurance

Installing Renewable Energy Systems

Toray Group is systematically installing renewable energy systems. Toray Industries installed and started to operate a small hydroelectric system that generates power using the incoming industrial water pressure in Nagoya Plant in fiscal 2016, and installed a solar power generation system in Seta Plant in fiscal 2017. Both systems have been operating. In addition, the Tokai Plant began co-combusting sludge fuel, which is carbon neutral, as boiler fuel from fiscal 2017.



Facility for co-combustion of sludge fuel at Tokai Plant (Toray Industries, Inc.)

Renewable energy generated in fiscal 2018	**10,325 MWh**

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

Toray Industries, Inc.

- Seta Plant
- Ehime Plant
- Mishima Plant
- Okazaki Plant
- Nasu Plant

Group companies in Japan

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

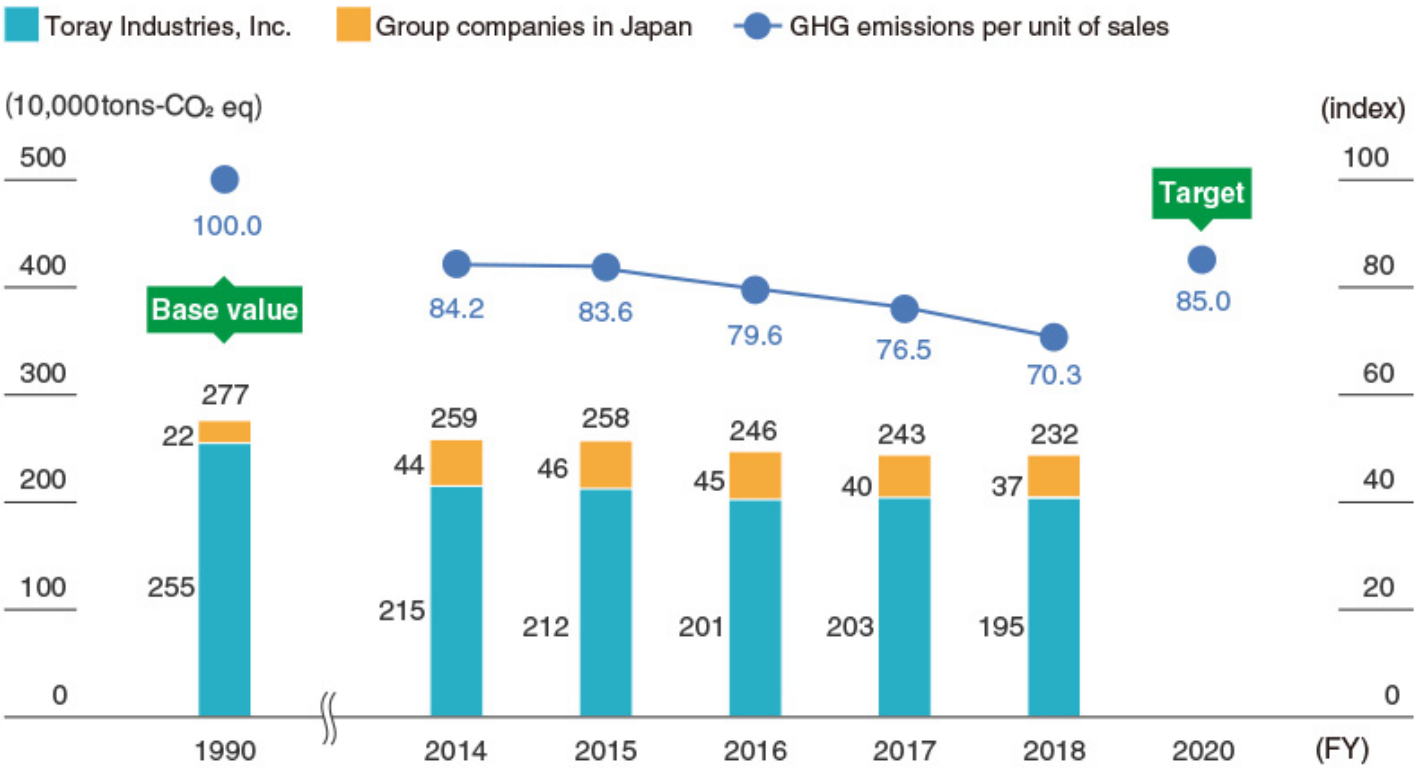
Group companies outside Japan

- Toray Membrane USA, Inc.
- Toray Plastics (America), Inc.
- Thai Toray Synthetics Co., Ltd.
- Penfabric Sdn. Berhad
- Toray Polytech (Nantong) Co., Ltd.
- Toray Advanced Materials Korea Inc.

Greenhouse Gas Emissions (Toray Industries and Its Group Companies in Japan)

Toray Industries and its group companies in Japan are addressing climate change under a goal of reducing emissions by 15% on a per-unit-of-sales basis by fiscal 2020 compared to the fiscal 1990 level.
Greenhouse gas emissions were down 4.3% in fiscal 2018 compared to the previous fiscal year. Greenhouse gas emissions per unit of sales improved by 6.2 points compared to the previous fiscal year and were 29.7% below the base year.

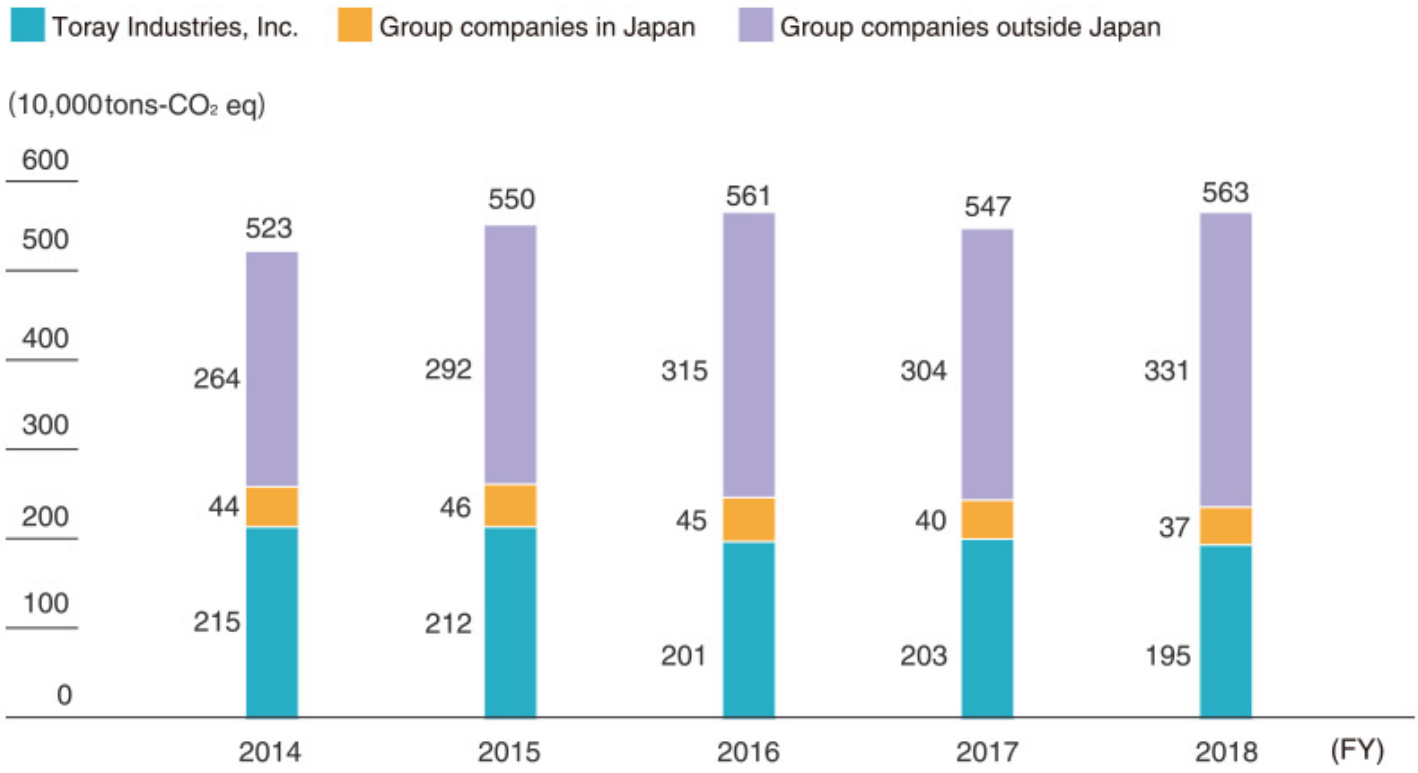
Greenhouse Gas Emissions and Greenhouse Gas Emissions Per Unit of Sales (Toray Group in Japan)



Greenhouse Gas Emissions (Toray Group)

Fiscal 2018 greenhouse gas emissions for Toray Group worldwide were 5.63 million tons-CO_2 equivalent, an increase of 2.9% compared to the previous year. All Toray Group manufacturing companies and plants will continue to work to achieve the Group's goal of reducing the per-unit energy consumption rate by 2% each fiscal year.

Greenhouse Gas Emissions (Toray Group)



Initiatives to Protect the Ozone Layer

Toray Industries successfully ceased using chlorofluorocarbons (CFCs) in all manufacturing processes in 1994. The Company has also stopped purchasing CFCs for use in refrigeration equipment and will finish upgrading refrigeration equipment that uses CFCs by fiscal 2019.

Voluntary Initiatives to Reduce Atmospheric Emissions of Chemical Substances

Materiality Focus

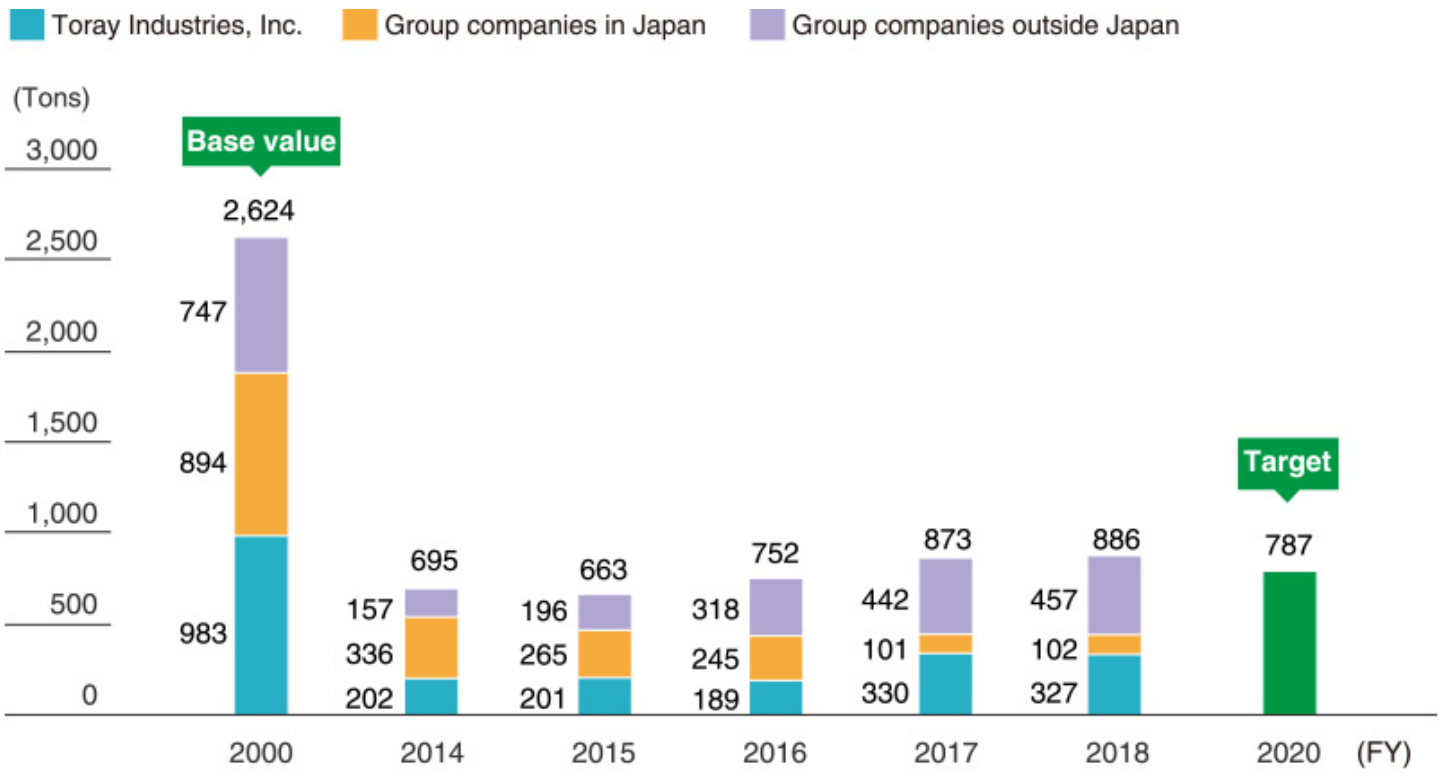
Environment

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.
Under the Fifth Medium-Term Environmental Plan, which covered fiscal 2016–2020, the Group works 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).

Reducing Atmospheric Emissions of PRTR Law-Specified Substances

In fiscal 2018, Toray Group's atmospheric emissions of PRTR Law-specified substances were 886 tons, which represented a 66% reduction compared to the base year of fiscal 2000. However, the Group fell slightly short of the target of a 70% reduction compared with the base year under the Fifth Medium-Term Environmental Plan.
In fiscal 2018, as in the previous year, the amount of atmospheric emissions of PRTR Law-specified substances increased due to increased production volume at Toray Battery Separator Film Korea Limited (TBSK), and other Toray sites. Toray Group aims to reduce atmospheric emissions by improving waste gas adsorption device operations and taking other measures.

Atmospheric Emissions of PRTR Law-Specified Substances



Reduction of Atmospheric VOC Emissions

Reduction of atmospheric VOC emissions (%)

■Reporting scope
Toray Group

■Target in fiscal 2018
At least 70% lower than fiscal 2000

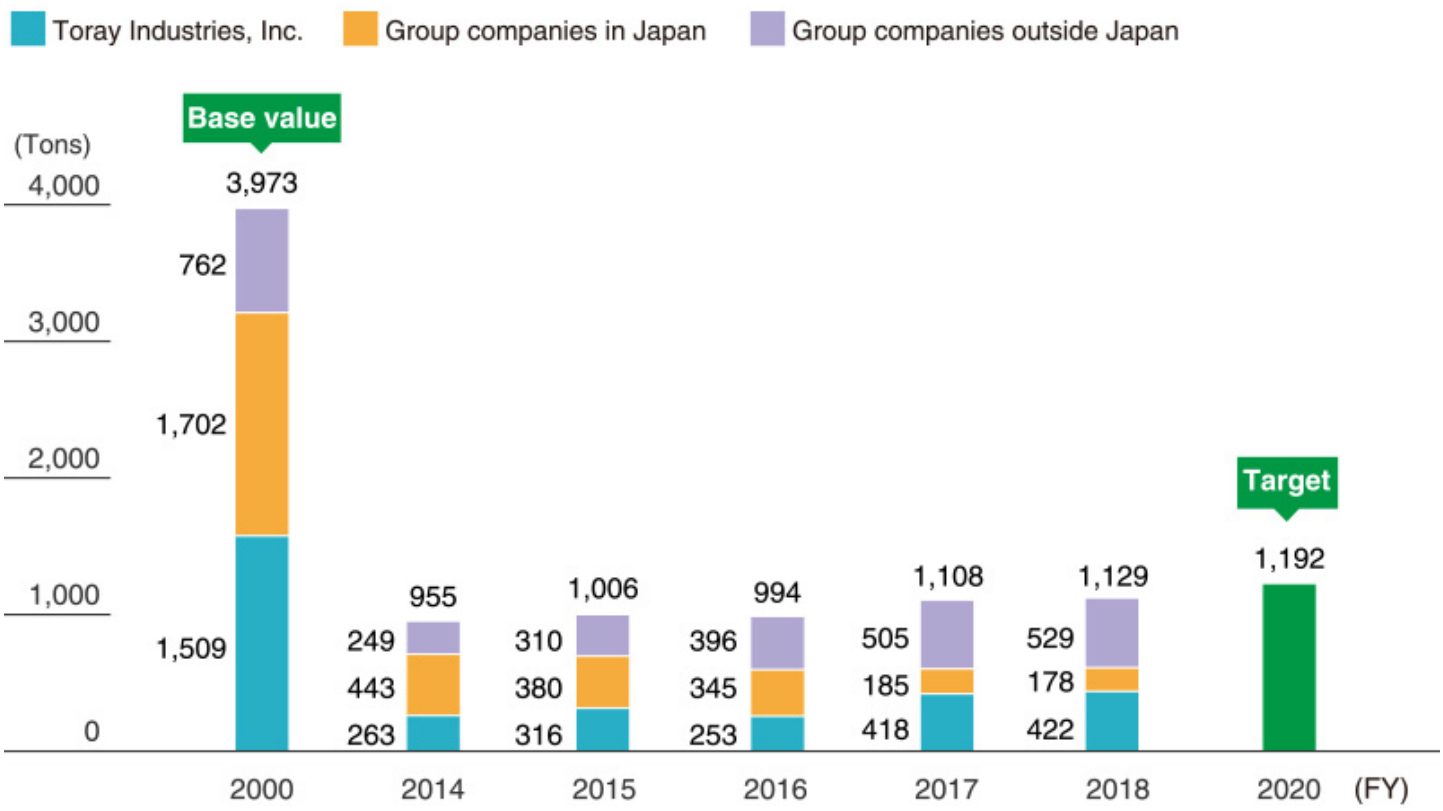
Result in fiscal 2018

72%

In fiscal 2018, Toray Group's atmospheric VOC emissions were 1,129 tons, up 2% (21 tons) compared to the previous fiscal year. As in the previous year, the major factor driving them up was increased production at Toray Battery Separator Film Korea Limited (TBSK). Toray Group is working to reduce planned emissions by taking steps such as improving waste gas adsorption device operations and identifying leak locations.

The emissions were 72% below the base year of fiscal 2000, achieving the fiscal 2020 target of a 70% reduction compared to the base year.

Atmospheric VOC Emissions



Initiatives to Prevent Air and Water Pollution

Materiality Focus

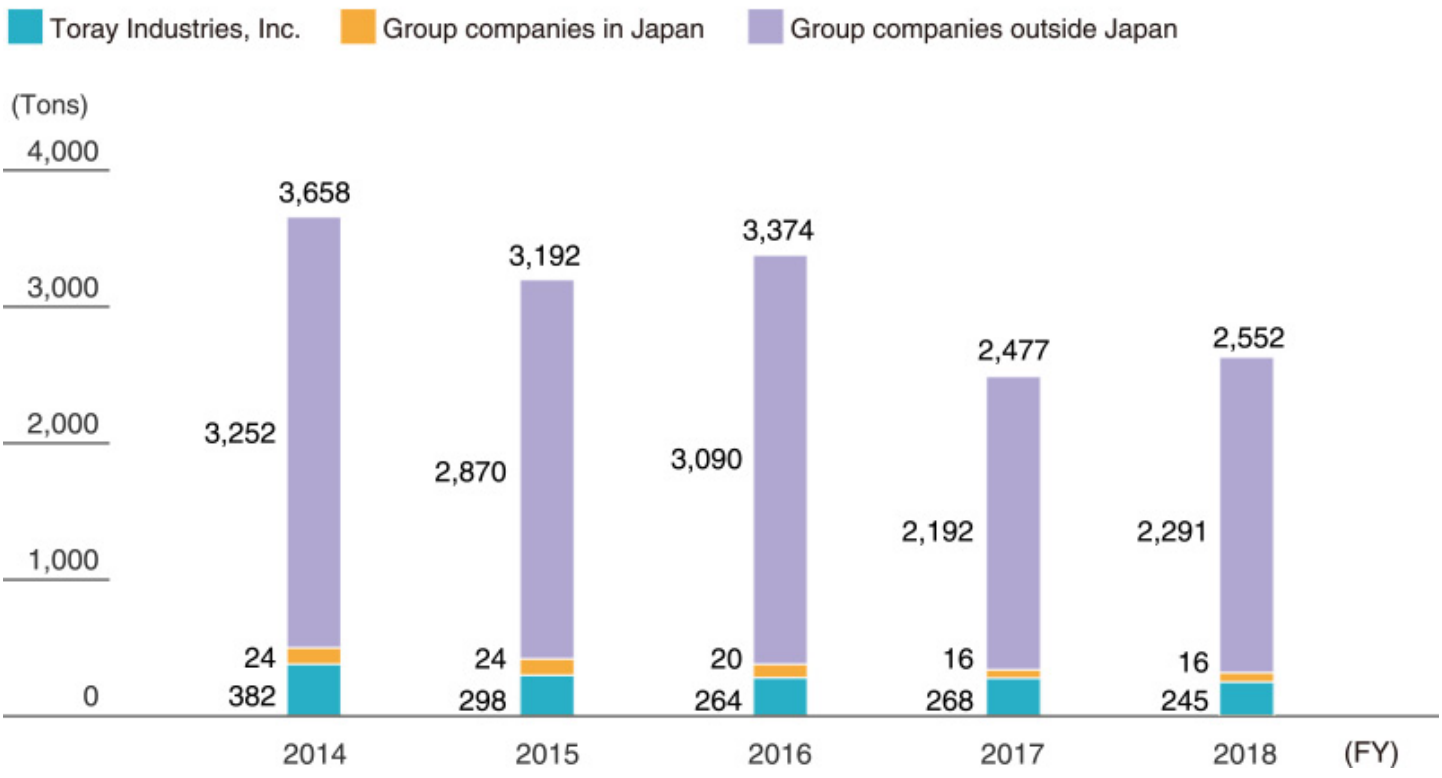
Environment

Toray Group implements ongoing initiatives at production sites to reduce sulfur oxide (SOx) emissions by installing desulfurization equipment and switching to cleaner fuels, and reduce chemical oxygen demand (COD) by expanding wastewater treatment facilities.

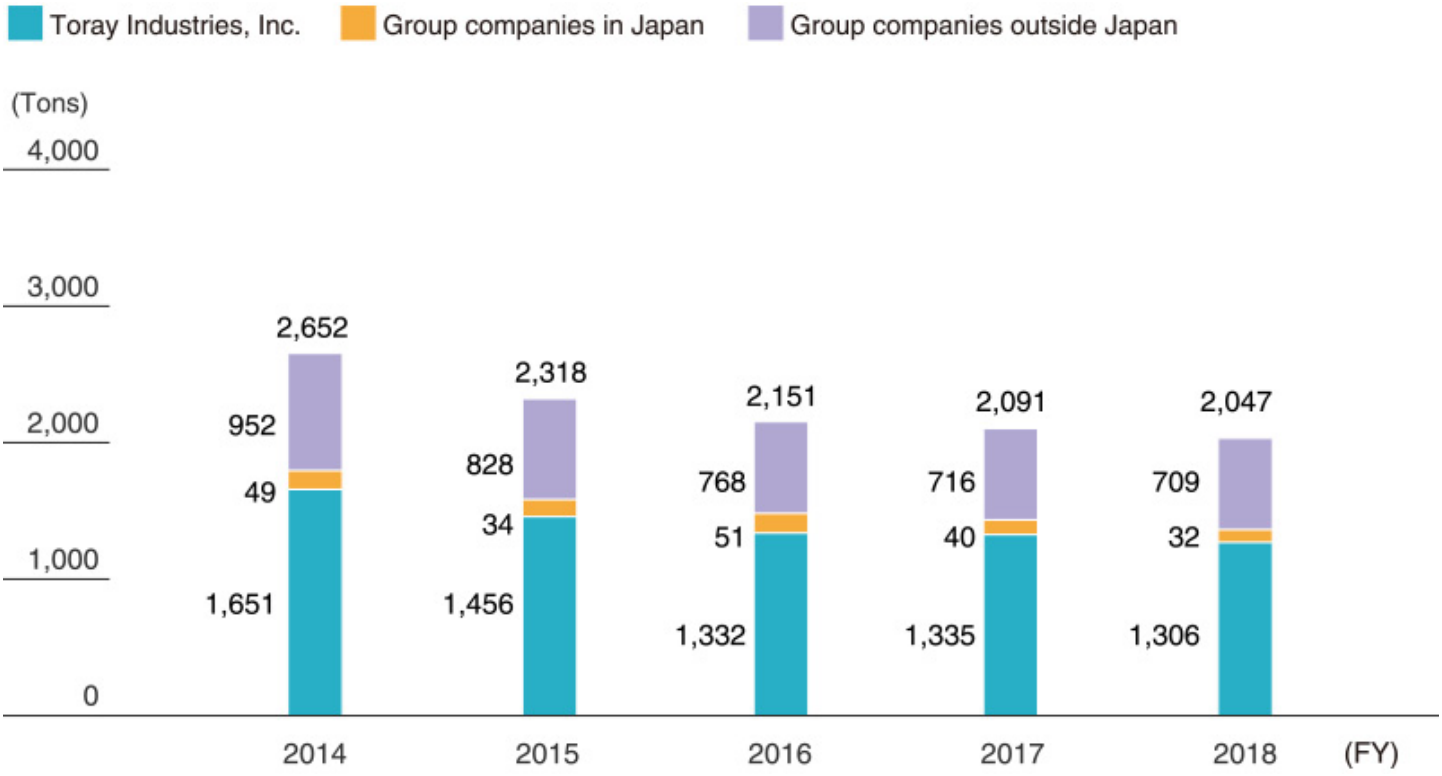
Air Quality Management

In fiscal 2018, Toray Group recorded 2,552 tons of SOx emissions (up 3% year-on-year), 2,047 tons of NOx emissions (down 2% year-on-year), and 271 tons of dust emissions (up 20% year-on-year). The increases in SOx and dust emissions were due to increased use of coal at group companies outside Japan.

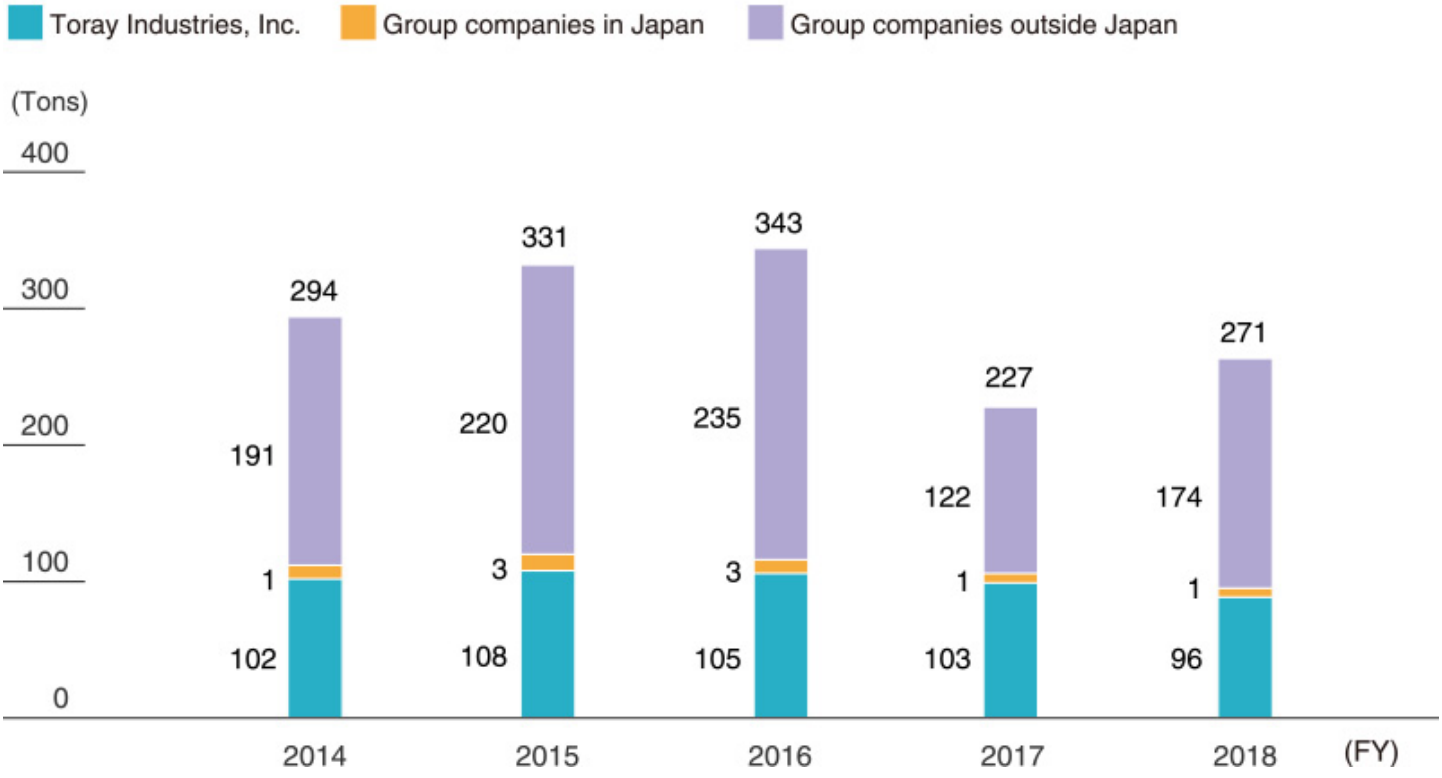
Atmospheric Emissions (SOx)



Atmospheric Emissions (NOx)



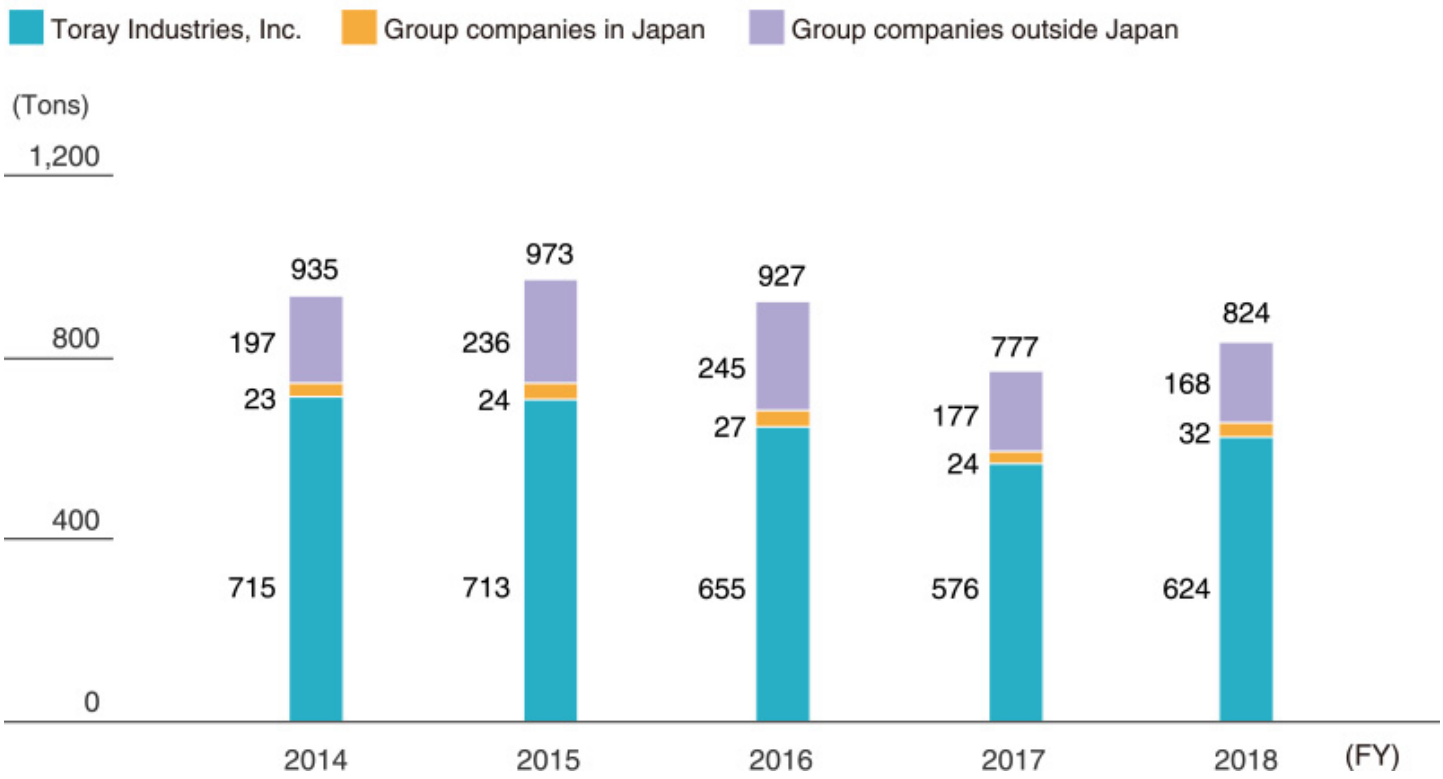
Atmospheric Emissions (Dust)



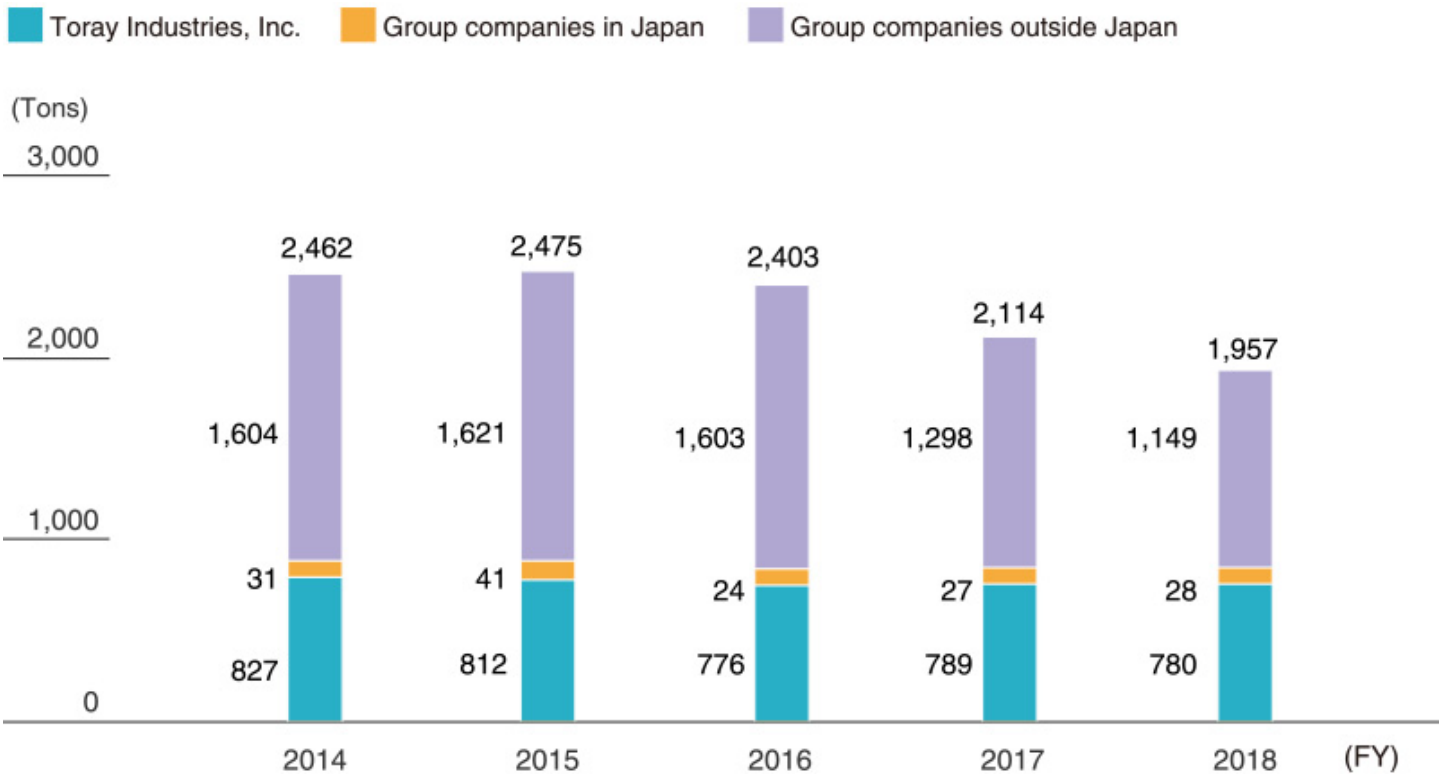
Water Quality Management

In fiscal 2018, Toray Group recorded 824 tons of BOD emissions (up 6% year-on-year) and 1,957 tons of COD emissions (down 7% year-on-year).
BOD emissions were up due to a change in the method of operating wastewater treatment facilities at Toray Industries Ehime Plant. A reason for the improvement in COD emissions was an upgrade to the method of operating wastewater treatment facilities at Luckytex (Thailand) Public Company Limited, a group company outside Japan.

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 2018 meeting was attended by 21 persons from nine of Toray Industries' plants and five persons from one group company in Japan.