

# 2020

## Safety & Environmental Report



**TAIYO YUDEN**

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## Editorial Policy

<b>Why this Report was Published</b>	The Taiyo Yuden Group strives for perpetual growth while fulfilling its corporate social responsibilities. Making efforts toward improving safety and the environment is an important social responsibility at Taiyo Yuden, so we promote such activities on a global scale. Every fiscal year, we publish a Safety and Environmental Report presenting our goals, our efforts, major results, and other details in a comprehensive yet easy to understand format.
<b>Intended Readership</b>	This publication assumes a target readership consisting not just of customers and clients, but also local communities in the vicinity of our sites, stockholders, investors, people involved in environmental activities or occupational health and safety, NGOs, students, group employees, and a wide range of other stakeholders. We also publish this English version to make the contents available to readers overseas.
<b>Referenced Guidelines</b>	This report follows the Environmental Reporting Guidelines (2018 edition) issued by the Japanese Ministry of the Environment. We have listed the core indicators of environmental performance while referring to the GRI standard. Mixing in charts and figures, it outlines the Taiyo Yuden Group's environmental impact describes our management systems, spotlights current issues and reports on specific measures for improving that impact.
<b>Publication on our Website</b>	This report is published on the Taiyo Yuden website, in consideration of effective use of resources, etc. We hope that this report will help you gain a deeper understanding of our environmental, health, and safety activities, and be used as a reference for making an objective judgment of the Group.

Reference : The Taiyo Yuden website  
<http://www.ty-top.com/>

## Scope of Disclosure

<b>Organizations Covered by this Report</b>	<p>This report covers TAIYO YUDEN CO., LTD. and its domestic and overseas subsidiaries. Safety and environment data covers the following Taiyo Yuden Group members: six domestic sites, eight domestic consolidated subsidiaries, and six overseas consolidated subsidiaries.</p> <p><b>[Within Japan]</b>  <b>TAIYO YUDEN CO., LTD.</b>            Takasaki Global Center / Haruna Plant / Nakanojo Plant / Tamamura Plant / Yawatabara Plant / R&amp;D Center / (Hongo Photovoltaic Power Plant)</p> <p><b>Consolidated Subsidiaries</b>            TAIYO YUDEN CHEMICAL TECHNOLOGY CO., LTD. / TAIYO YUDEN TECHNO SOLUTIONS CO., LTD. / FUKUSHIMA TAIYO YUDEN CO., LTD. / NIIGATA TAIYO YUDEN CO., LTD. / TAIYO YUDEN ENERGY DEVICE CO., LTD. / WAKAYAMA TAIYO YUDEN CO., LTD. / TAIYO YUDEN Mobile Technology Co., Ltd. / Kankyo Assist Co., Ltd.</p> <p><b>[Outside Japan]</b>  <b>Consolidated Subsidiaries</b>            South Korea: KOREA TONG YANG YUJUN CO., LTD.</p> <p>China: TAIYO YUDEN (TIANJIN) ELECTRONICS CO., LTD. / TAIYO YUDEN (GUANGDONG) CO., LTD.</p> <p>Philippines: TAIYO YUDEN (PHILIPPINES), INC.</p> <p>Malaysia: TAIYO YUDEN (SARAWAK) SDN. BHD.</p>
<b>Period Covered by this Report</b>	This Report focuses on our performance from April 1, 2019 to March 31, 2020 (Date of any activities which have taken place outside this period are specified).
<b>Date of Issue</b>	July 2020 (Previous Issue: July 2019; Next issue scheduled for July 2021)

# Safety and Environmental Management System 2-1

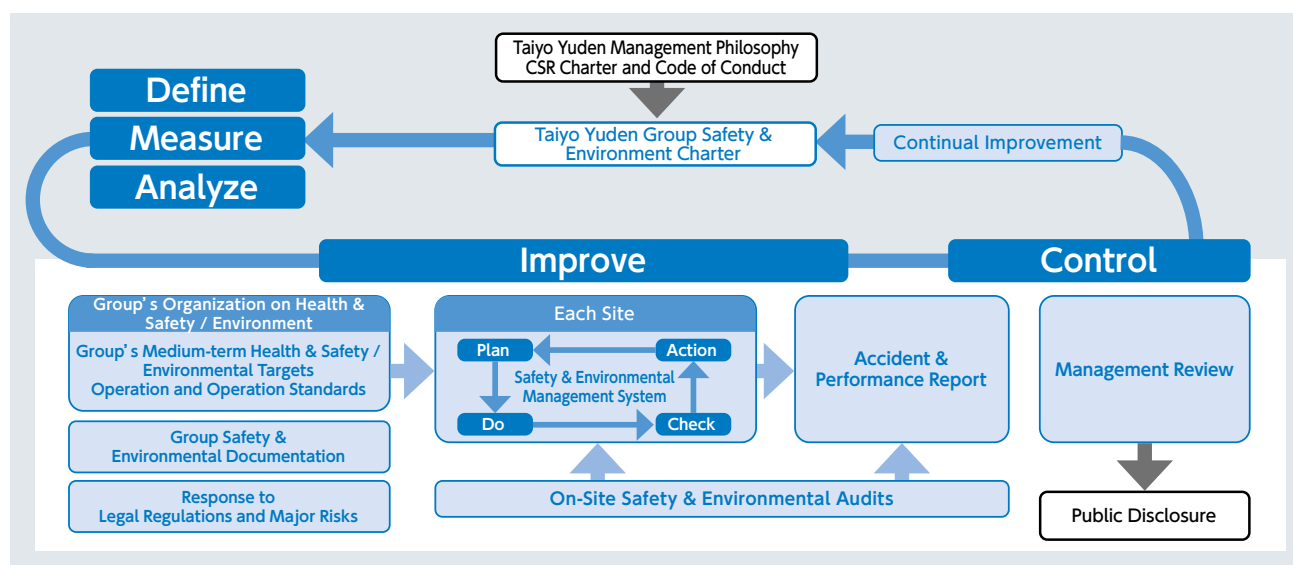
02

Our group-wide Safety and Environmental Management System keeps individual activities proceeding toward common goals under a common philosophy.

## System Overview

This management system consists of long- and short-cycle activities.

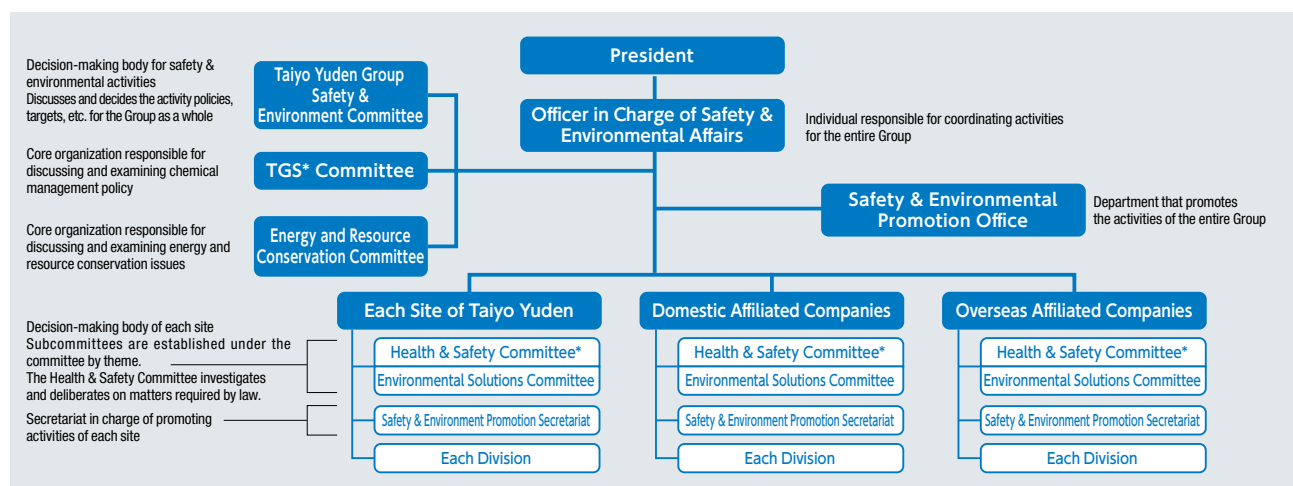
In the long-cycle activities, which are designed for the entire group, we are making continuous improvements based on common goals and criteria by checking achievements based on reports about site audits and from sites and by reviewing the management system. For site-specific short-cycle activities, we have an ISO 14001-compliant management system and the Occupational Health and Safety Management System (OHSMS) in place.



## Promotion Structure

The officer in charge of safety and environmental affairs appointed by the President has overall responsibility for building and managing the promotion structure for Taiyo Yuden's Safety and Environmental Management System.

The Taiyo Yuden Group Safety and Environment Committee, the Taiyo Green Strategy (TGS) Committee, and the Energy and Resource Conservation Committee debate and decide policies and issues to be addressed. Each manager of sites then converts his/her decisions into actual plans matching the characteristics of each site, and takes charge of publicizing, enforcing and promoting these concrete targets.



\* TGS: Taiyo Green Strategy

\* The Health & Safety Committee consists of representatives selected from among management and employees.

# Safety and Environmental Management System 2-2

03

## Certification Acquisition Status

The Taiyo Yuden Group is ISO 14001 certified for its production sites and development centers. The group receives Validated Assessment Program (VAP) audits by the Responsible Business Alliance (RBA), which started with the returning of the OHSAS 18001 certificate, on a continuous basis in line with the set plan.

### List of Certifications Acquired

Location	Name of Sites	Acquired ISO14001 Certification	Certification authorities
Japan	TAIYO YUDEN CO., LTD. Takasaki Global Center, Haruna Plant, Nakanojo Plant, Tamamura Plant, Yawatabara Plant, R&D Center	<b>4270140</b> (as of Oct. 1998) Collectively certified in Japan	BV
	TAIYO YUDEN CHEMICAL TECHNOLOGY CO., LTD.		
	TAIYO YUDEN TECHNO SOLUTIONS CO., LTD.		
	FUKUSHIMA TAIYO YUDEN CO., LTD.		
	NIIGATA TAIYO YUDEN CO., LTD.		
	TAIYO YUDEN ENERGY DEVICE CO., LTD.		
	WAKAYAMA TAIYO YUDEN CO., LTD.		
	TAIYO YUDEN Mobile Technology Co., Ltd. Kankyo Assist Co., Ltd.		
South Korea	KOREA KYONG NAM TAIYO YUDEN CO., LTD.	<b>KR002580</b> (as of Mar. 2002)	BV
China	TAIYO YUDEN (TIANJIN) ELECTRONICS CO., LTD.	<b>CN08/10665</b> (as of Aug. 2008)	SGS
	TAIYO YUDEN (GUANGDONG) CO., LTD.	<b>CNGZ302307-UK</b> (as of Dec. 2001)	BV
Philippines	TAIYO YUDEN (PHILIPPINES), INC.	<b>PH13/0920.00</b> (as of Nov. 2001)	SGS
Malaysia	TAIYO YUDEN (SARAWAK) SDN. BHD.	<b>EMS00226</b> (as of Oct. 2002)	SIRIM

# Safety and Environmental Audits

04

Triple audits evaluate each site's compliance, accident risk management, and the environmental impact situation aimed at producing continuous improvement.

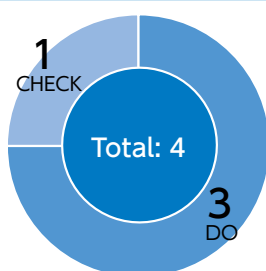
## External Audits

ISO14001 certification audits by certification authorities

Sites with ISO14001 certification underwent the audits required to update or maintain such certification. These audits uncovered 4 nonconformities. The root causes were analyzed and corrective action was promptly taken in response to each issue. The nonconformities were minor issues relating to our management systems, and were not directly linked with environmental pollution or occupational accidents.

The RBA-VAP audits for FY2019 have been completed in nine domestic sites and three overseas sites.

### Number of Nonconformity Instances Found with External Audits



### Nonconformity Examples

#### Nonconformity Examples and Details

Calibration of the measuring instruments that measure the VOC concentration was not performed at an appropriate frequency.

Cleaning of the grease traps in the employee cafeteria kitchen was insufficient.

#### Corrective/Improvement Measures

We added a description of the calibration frequency to the monitoring and measurement rules and provided education to related personnel who use the measuring instruments.

We stipulated the cleaning procedure and provided education to the persons in charge. In addition, we provided instructions on the cleaning work and confirmed it.

## Internal Site Audits

Audits of site safety and environmental activities at regularly scheduled intervals allow us to compare sites.

Domestic sites: Once every two years  
Overseas sites: Once every three years

In FY2019, we performed site audits to examine the status of compliance with the laws and customer requirements specified in the Safety and Environmental Management System.

In each audit, auditors checked documents and performed on-site examinations concerning matters such as the training, assignment, and job performance of qualified personnel; submission of notifications and reports; implementation of checks and examinations; provision of displays and notices; use and storage of chemicals; and management of waste materials.

The audits revealed inadequacies in areas such as reserve personnel management for qualified personnel, waste product treatment contractor management, and hazard indication management.

Countermeasures were implemented and validated for inadequacies found during the site audits.

We aim to improve the level of health, safety, and environmental protection activities for the whole group by globally incorporating societal requirements in a timely manner and sharing the results after benchmarking products from all sites.

### Issue Examples

Reserve qualified personnel in reserve at plants was not secured.

There were inadequacies in some parts of the periodic inspection plan for waste product treatment contractors.

Hazard indications were not provided on some of the outdoor chemical tanks.

## Internal Audits

Audits targeting site departments on observance of safety and environment laws, target achievement, and performance.

Once or twice every year

All sites conducted internal audits of their departments in accordance with their management systems. Priority areas were determined for each site, and 48 nonconformities were uncovered as a result of conducting internal audits (at sites in Japan).

Corrective action was completed in all cases without delay, and after a follow-up check, it was reported to the managers that the management system has been effective in complying with the Taiyo Yuden Group's policies and goals.

## Other Audits

### On-site inspection of waste disposal contractors (Sites in Japan)

During FY2019, we inspected and audited 25 companies (four collection and delivery company; three collection, delivery and intermediate processing companies; and eighteen intermediate processing companies). As a result, it was confirmed that all inspected operators are processing and disposing of waste appropriately. The operators have been classified into three ranks from the results of these inspections, with the frequency of future inspections varying depending on the rank of the operator.



# Safety and Environmental Risk Management

05

Various types of regularly scheduled training are implemented to respond to sudden accidents, disasters, and other risks, with the objectives of early discovery, rapid response, prevention and mitigation. The Taiyo Yuden Group reconfirms appropriate procedures and strives for continuous improvement.

## Firefighting Training



**Takasaki Global Center**

Conducted a fire extinguishing training using fire pumps.  
(October 2019)



**NIIGATA TAIYO YUDEN**

Conducted an early-stage fire extinguishing training using fire extinguishers.  
(September 2019)



**KOREA KYONG NAM TAIYO YUDEN**

Conducted training on water discharge from a fire engine under the guidance of the fire department.  
(October 2019)

## Emergency Training for Spillage of Chemical Substances



**Haruna Plant**

Conducted training on isolating a gutter and collecting a chemical substance for a scenario in which a chemical substance has leaked into a gutter.  
(January 2020)



**TAIYO YUDEN Mobile Technology**

Conducted training on preventing a chemical substance from spreading for a scenario in which a chemical substance leaked while it was being replenished during the night.  
(November 2019)



**TAIYO YUDEN (GUANGDONG)**

Conducted training on the emergency procedures for a scenario in which natural gas used for boilers leaked.  
(February 2020)

## Evacuation and Medical Emergency Training



**Yawatabara Plant /  
TAIYO YUDEN TECHNO SOLUTIONS**

Conducted an evacuation drill for a scenario in which a fire occurred.  
(October 2019)



**WAKAYAMA TAIYO YUDEN**

Conducted first aid training using cardio-pulmonary resuscitation and an AED.  
(August 2019)



**TAIYO YUDEN (SARAWAK)**

Conducted first aid training and transportation drill of the injured.  
(November 2019)

## Removing Soil Contamination

TAIYO YUDEN CHEMICAL TECHNOLOGY voluntarily conducted soil and ground water contamination surveys, and made clean-up efforts in accordance with the Japanese Ministry of the Environment guidelines.

## Environmental Accidents

No accidents that could affect the surrounding environment have occurred.

# Employee Enrichment through Safety and Environmental Training

06

We provide a variety of training programs covering both general and specialized knowledge to promote employees' awareness of preventing occupational injury and illness, as well as active participation in environmental conservation.

## Training Structure

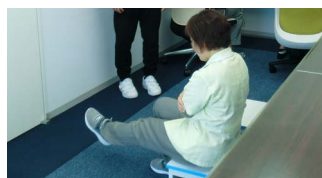
Name	Category	Purpose	Main Subjects
General Training	Awareness	Raising new recruits' awareness of occupational health and safety and environmental preservation, and ensuring they understand environmental problems pertinent to companies	General theory of Safety and Environment / Status of Safety and Environment at the Taiyo Yuden Group
		Deepening all employees' understanding of the Taiyo Yuden Group Safety and Environment Charter and Course of Action and teaching them the skills to act accordingly	Management system (including the Safety and Environment Charter) / Mental health
		Understanding potential hazards and environmental impact with regard to divisional health and safety/environmental activities and work	Division activities / Matters for compliance in work
Health & Safety Training	Abilities	Deepening understanding of the role of the duty for employee safety required by legal regulations and teaching foremen skills to instruct their subordinates regarding health and safety.	Role of the General Manager of Health and Safety / Role of management / Role of foreman / Chemical substance management / Hazardous material management
		Teaching of specialized skills to operators of forklifts, cranes, and other heavy equipment, as well as managers of processes that handle organic solvents and the like, and employees involved in these tasks	Workplace restricted duties / Training for specific tasks / Prevention of static electricity accidents
		Teaching the skills to recognize risks and creating a safe and sanitary workplace	Risk assessment / Health and Safety targets / Cases of Health and Safety accidents and their countermeasures
Environmental Training		Teaching special skills to managers and relevant employees involved with equipment and facilities for which a legal notification is required	Management to prevent deterioration of water quality / Management to prevent air pollution / Waste management
		Training skills to integrate business activities with environmental activities in order to balance an improvement in our environmental impact with improved resource productivity	Chemical substances and their environmental impact / Environmental targets / Cases of environmental improvements / Causes of environmental accidents and their countermeasures

## Training Examples

### General Training

#### Holding events associated with health and safety

At all sites, we hold various events associated with health and safety, providing employees with opportunities to raise their awareness and improve their skills. These events include locomotion tests to check physical capabilities such as walking and standing, driving aptitude assessment, and a company-wide nonsmoking campaign.



Locomotion test

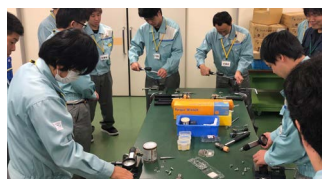


Driving aptitude assessment

### Occupational Health and Safety Training

#### Training for facility maintenance staff

We provided training on how to use tools correctly, as well as the methods and knowledge of maintenance, in order to improve the safety and efficiency of maintenance work.



Training for facility maintenance staff

#### Education programs about chemical substances

We provided education programs on the dangers of chemical substances and preventive measures such as wearing protective equipment with the objective of preventing injuries and poisoning from chemical substances.



Education programs about chemical substances

### Environmental Training

#### Training for the managers of wastewater treatment facilities

We provided the managers of wastewater treatment facilities with training on the wastewater regulatory standards and water treatment technologies, including on-site training.



Training for the managers of wastewater treatment facilities (on-site)



Training for the managers of wastewater treatment facilities

# Environmental Accounting

07

The Taiyo Yuden Group promotes an effective environmental management by adopting environmental accounting to make clear what resources our domestic sites apply to their environmental preservation activities.

## Environment Maintenance Costs

Type of cost		Expenses (million yen)	Investment (million yen)	Main items
Business unit area costs		1,124	483	
Breakdown	Pollution prevention	712	274	Monitoring and measurement of atmosphere, water quality, noise, vibration, and soil; preparations for and responses to emergencies
	Conservation of global environment	51	9	Ozone depleting substance emission reduction, water quality improvement, exhaust gas purification, resource conservation
	Cost for global warming prevention	80	194	Greenhouse gas emission reduction, energy conservation
	Resource recycling costs	281	6	Waste management, and outsourcing of waste treatment; reduction of waste; recycling
Upstream / downstream business activities		6	—	Activities to improve the environmental impact of products, green procurement
Management activity costs		468	—	Building and operating an EMS; surveillance audits; environmental training; costs for operating secretariat; department operations costs
R&D		299	—	R&D costs to improve the environmental impact of product processes etc.
Social activities		13	—	Donations to environmental groups; participation in communities' global environmental preservation events
Response to environmental damage		0	—	
Total		1,910	483	

## Environment Maintenance Effectiveness

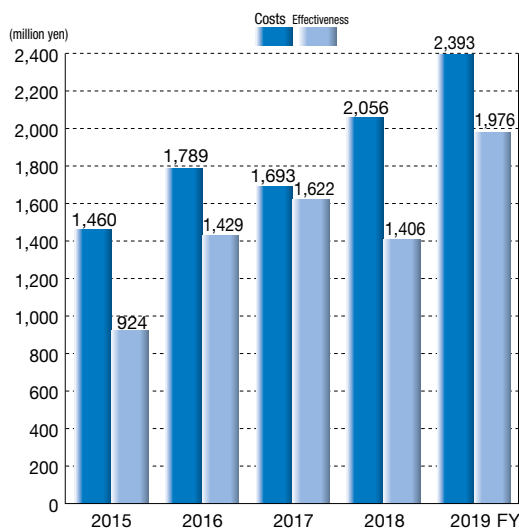
We calculate the economic effects only for those activities clearly improving our environmental impact.

Type of effectiveness	Economic effect (million yen)	Effects on amounts*	Main items
Energy saving	104	1,483kL	Improvement in productivity; improvement in energy management method
Conservation of resources	10	39t	Reduction in amount of chemical substances used through improvement in process yield etc.
Reduction in waste, and recycling	1,862	5,087t	Improvement in recycling rate
<b>Total</b>	<b>1,976</b>		

\*"Effects on amounts" indicate the calculated difference with the case where no activities are conducted to improve our environmental impact.

\* No penalties related to the environment have been paid.

## Trends in Environmental Accounting



### Environmental Accounting Standards

1. The sum total of the costs for complying with environment-related laws and regulations, the costs incurred purely for the purpose of improving our environmental impact, and the EMS operation costs are calculated. However, in cases where environmental preservation costs partially overlap the costs for other purposes, the latter shall be deducted and the balance shall be applied.
2. Depreciation costs shall be the current fiscal year's depreciation expenses at the environmental conservation facilities.
3. If a clear-cut distinction cannot be made between the environmental cost and that for other purposes, if 50% or more of the content is environment-related, the full amount can be counted as the environmental preservation cost.
4. The cost-effectiveness by saving energy is yielded from the reduction of either the rated dissipation or the operating time or both.
5. The cost-effectiveness by reducing and recycling waste is calculated as follows:

**Lowered costs through reducing waste and recycling =**

**[Unit cost of waste treatment in the prior fiscal year (JPY/ton) – Unit cost of waste treatment in this fiscal year (JPY/ton)] × Amount of waste generated (tons)**



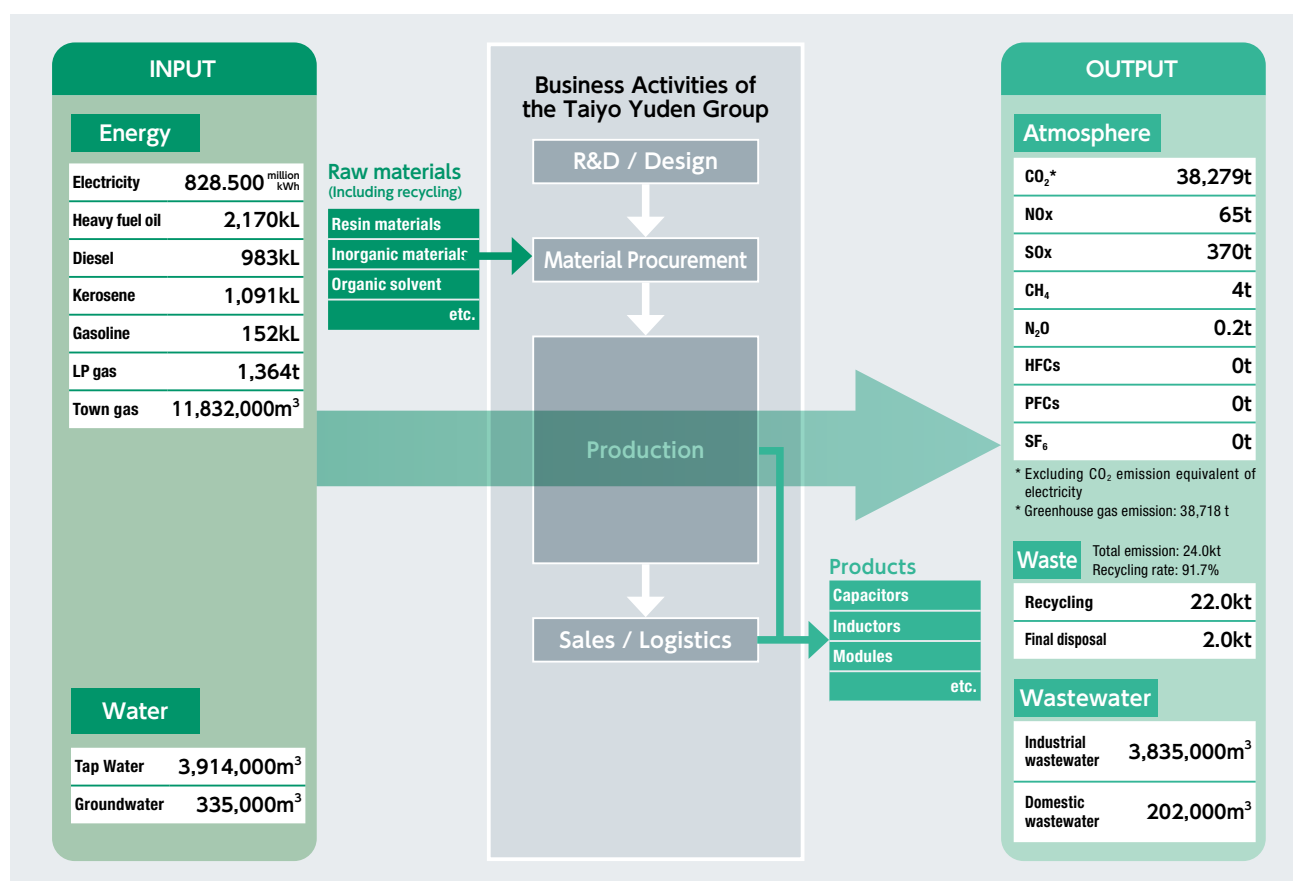
# Determining Environmental Impact of Corporate Activities

08

Detailed understanding and analysis of the environmental impact of corporate activities is a prerequisite to devising various measures to improve this.

## FY2019 Material Balance

The Taiyo Yuden Group primarily produces electronic components for delivery to our customers, set manufacturers. These electronic components have a life cycle with only a small environmental impact during use. The bulk is during production, with the main environmental impact arising from energy and water consumption, emissions (including CO<sub>2</sub>) in the course of manufacture, waste and wastewater. The Taiyo Yuden Group is striving to improve our environmental impact by first identifying and analyzing in detail this environmental impact and then taking such measures as minimizing the resources applied and conserving other energy and resources by improving production processes. The Taiyo Yuden Group products are used in electrical and electronic equipment, automobiles, and other products which become waste once their product lifetime is over. We are therefore also striving to remove hazardous substances from these products.



### Reasons for Changes from FY2018

In FY2019, electricity and city gas usage increased due to the increase of production volume.

In addition, diesel usage increased because generators were used as a flood countermeasure in FUKUSHIMA TAIYO YUDEN.

# Achievement Levels for Medium-Term Environmental Targets

09

We set medium-term environmental targets for the Group overall.  
Our environmental impact improvement efforts are implemented over all sites.

## Taiyo Yuden Group Environmental Targets and Results

We are aiming to reduce our environmental impact over the five-year period from fiscal 2016 to 2020. We first medium-term environmental goals on a per-project basis, and then set sub-goals on a per-site basis and then on a per-department basis so that each business unit can actually work on specific activities.

Medium-Term (FY2016 to FY2020) Environmental Targets			Achievements	Evaluation
Environmental risk management	Global	Compliance with applicable environmental laws and regulations	All applicable legal requirements are satisfied	○
		Maintain zero accidents that affect the ecosystem and carry out ongoing training	No accident has occurred that may affect an ecosystem. We are regularly conducting emergency training.	○
Contributing through environmentally friendly products	Global	Develop "smart products"	We are continuously developing downsized products and other smart products that help alleviate environmental impacts.	○
		Reduce environmental impact per each product	We have reviewed the production conditions, methods, and equipment to reduce the environmental load per product.	○
		Regulatory compliance for chemicals contained in products (RoHS, ELV, REACH)	Requirements for the amounts of chemicals contained in products are satisfied.	○
Curbing global warming	Global	5% improvement in "average energy consumption per unit" (weighted average by business unit) over FY2016-FY2020 compared with FY2011-FY2015	In FY2016 and FY2019, we achieved a 20.8% increase on average over the target of 5%.	○
Preserving biodiversity Effective use of resources by "Reducing" consumption	Global	5% improvement in "average waste generation per unit" (weighted average by business unit) over FY2016-FY2020 compared with FY2011-FY2015	In FY2016 and FY2019, we achieved a 9.4% increase on average over the target of 5%.	○
		5% improvement in "average water use per unit" (weighted average by business unit) over FY2016-FY2020 compared with FY2011-FY2015	In FY2016 and FY2019, we achieved a 23.3% increase on average over the target of 5%.	○
Preserving biodiversity Effective use of resources by "Reuse" and "Recycling"	Global	10% improvement in "average final disposal volume per unit" (weighted average by business unit) over FY2016-FY2020 compared with FY2011-FY2015	In FY2016 and FY2019, we achieved a 35.6% increase on average over the target of 10%.	○
	Japan	Recycle 99.5% of waste or more	In fiscal 2019 alone, we achieved a 100% increase over the target 99.5%.	○
Preserving biodiversity Nature conservation in local area	Global	Continue to carry out nature conservation activities in local area (in forests etc.)	We have continuously carried out activities for planting trees and preserving the Taiyo no Mori forest and Taiyoyama Mountain.	○

\* Weighted average: An average in which each quantity to be averaged is assigned a weight.

# Curbing Global Warming

10

There are three categories for greenhouse gases (GHG) emitted during the course of business activities: Direct emissions from use of energy (SCOPE 1), Indirect emissions from energy use (SCOPE 2) and Indirect emissions other than from energy use (SCOPE 3). GHG emissions cannot be easily measured, so we concentrate on energy use and reducing energy consumption.

## Results of Efforts to Reduce Greenhouse Gases and Energy Consumption

In FY2019, the amount of GHG emitted by the entire group decreased by 8,000 t-CO<sub>2</sub>e compared to FY2018. Specifically, the sites in Japan maintained their emissions at 188,000 t-CO<sub>2</sub>e, while overseas sites decreased theirs to 298,000 t-CO<sub>2</sub>e from 306,000 t-CO<sub>2</sub>e in FY2018 (see G1).

The amount of energy used by the entire group increased by 4,000 kL compared to FY2018. Specifically, sites in Japan increased their usage to 102,000 kL from 95,000 kL in FY2018, while overseas sites decreased theirs to 128,000 kL from 131,000 kL in FY2018 (see G2).

Energy usage is broken down into 91% for SCOPE 2 and 9% for SCOPE 1 (see G3).

Improvement in energy intensity, which we aim to achieve in the medium term environmental target, was 20.8% on average for FY2016–FY2019 (see G4).

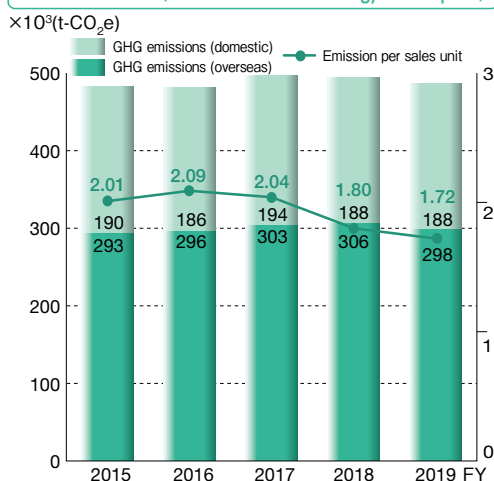
We will continue to review production processes with a focus on core products to further improve the production efficiency and lower energy usage.

Note: Changes in the conversion factor have a major impact on GHG calculations, so the medium environmental targets were set according to energy consumption (crude oil equivalent), a factor that has measureable results.

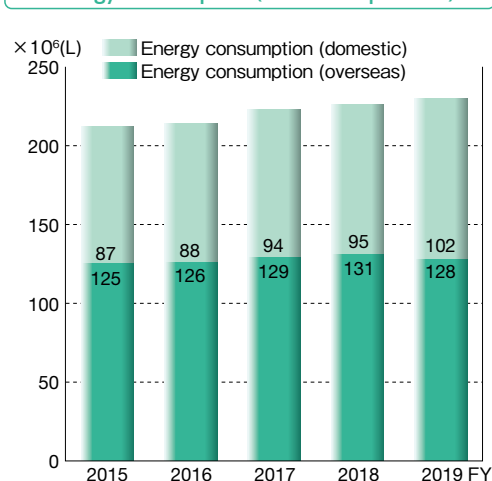
Note: GHG emissions are calculated using GHG Protocol factors (electricity by country).

Note: GHG emissions in Japan have been corrected after reviewing the electricity-CO<sub>2</sub> conversion factor.

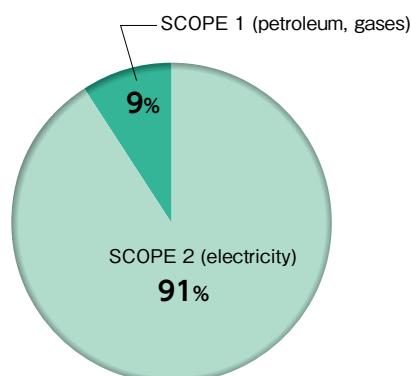
G1: GHG Emissions (calculated from total energy consumption)



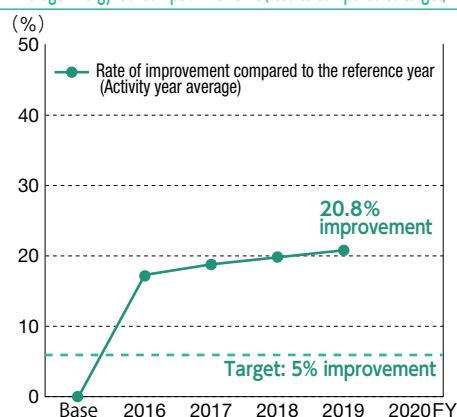
G2: Energy Consumption (crude oil equivalent)



G3: Breakdown of Energy Consumption (crude oil equivalent)



G4: Average Energy Consumption Per Unit (results compared to target)



## Efforts on Indirect Emissions Other than from Energy Use (SCOPE 3)

In recent years, there has been an increasing demand from our stakeholders to disclose information on SCOPE3 emissions, in addition to information on SCOPE1 and SCOPE2 emissions. In order to respond to such a demand, we are striving to keep track of our SCOPE3 emissions. We have ascertained that our greenhouse gas emissions from purchased goods/services were 311,000 t-CO<sub>2</sub>e (group), 7,614 t-CO<sub>2</sub>e (domestic sites) from commuting, 462 t-CO<sub>2</sub>e from business trips (domestic sites), 6,343 t-CO<sub>2</sub>e from disposal and processing of waste (domestic sites) and 38,868 t-CO<sub>2</sub>e from transporting products (group).

# Reducing Waste / Preserving Water Resources 2-1

11

We strive to reduce environmental effect on biodiversity while coexisting with nature, and we use the 3Rs (reduce, reuse, recycle) to reduce waste and make effective use of water resources.

## Results of Reducing Waste

The amount of waste generated in FY2019 by the entire group increased to 24,000 tons from 23,300 tons in FY2018. This increase was caused by an increase in production volume and other factors (see G1).

The waste (including valuables) mainly consists of waste plastic, sludge, and waste oil (see G2).

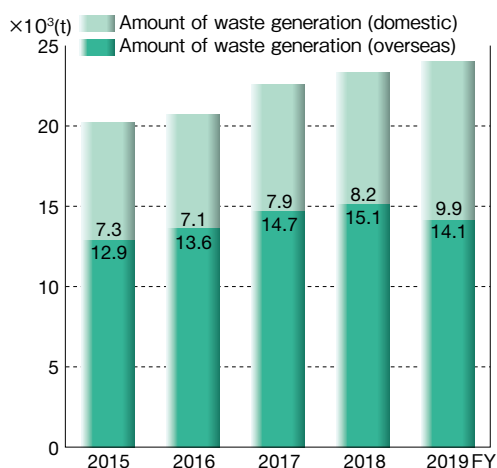
The final amount of waste disposed of inside Japan decreased to 0 tons from 3 tons in FY2018. The waste recycling rate, which we aim to improve in the medium term, was 100% (see G3).

The total amount of waste disposed of outside Japan increased to 2,000 tons from 1,800 tons in FY2018 (see G4).

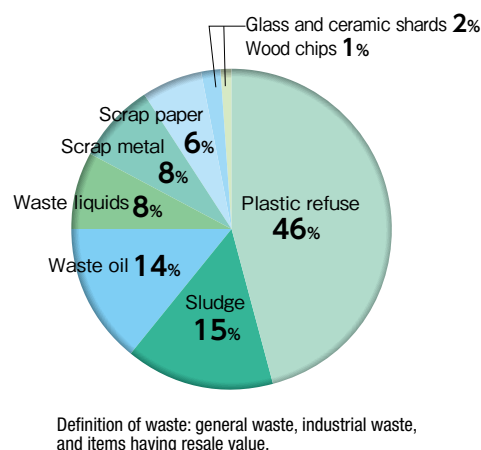
Improvement in waste generation per unit of production, which we aim to achieve as a medium-term environmental goal, was 9.4% on average for FY2016–FY2019 (see G5). The final amount of waste disposed of per unit of production was improved by 35.6% on average for FY2016–FY2019 (see G6).

We will continue working to reduce waste volumes, boost in-house recycling rates, and recycle waste into resources at our overseas sites.

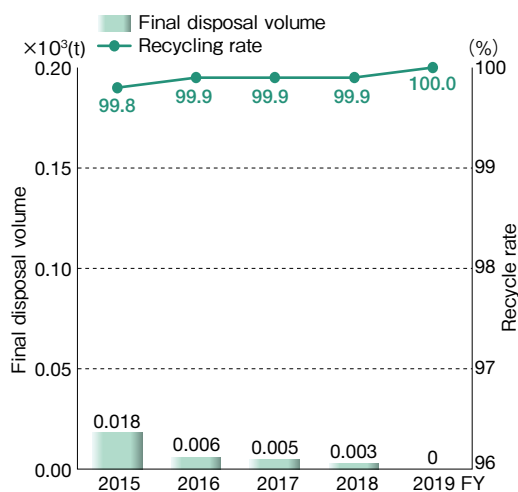
G1: Amount of Waste Generation



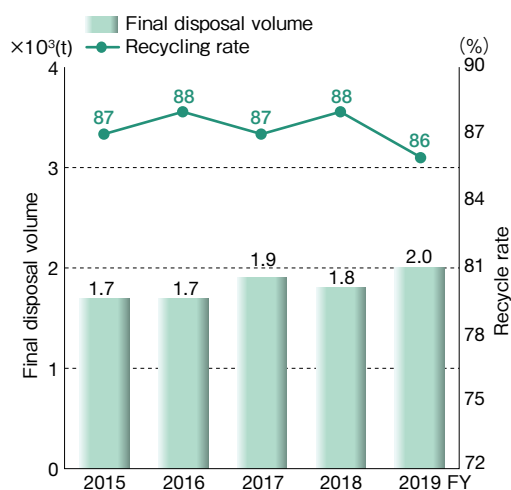
G2: Breakdown of Waste



G3: Domestic Final Disposal Volumes and Recycling Rates



G4: Overseas Final Disposal Volumes and Recycling Rates

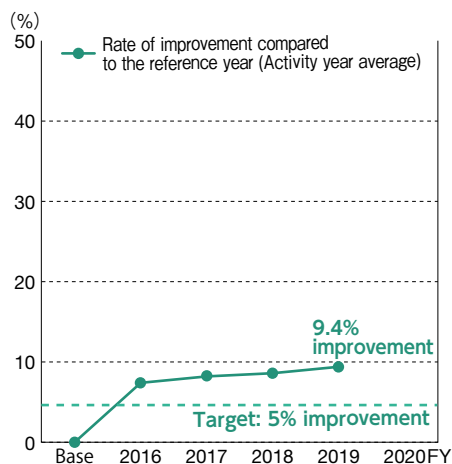


# Reducing Waste / Preserving Water Resources 2-2

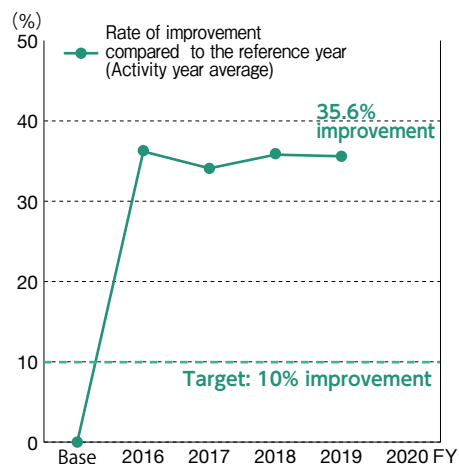
12

## Results of Reducing Waste

G5: Average Waste Generation Per Unit (results compared to target)



G6: Average Final Disposal Volume Per Unit (results compared to target)



## Resource Recycling Efforts

99.9% of the waste generated in the course of our business activities is recycled and reused as resources in society. However, we are also promoting efforts to reuse waste for the business activities of the Taiyo Yuden Group.

For solvent A, which is the most frequently used solvent in our business activities, 14% of the amount used is recycled waste solvent. In addition, for reels that are used for packaging electronic parts, strict quality checks are performed and 12% of all the reels are recycled reels.

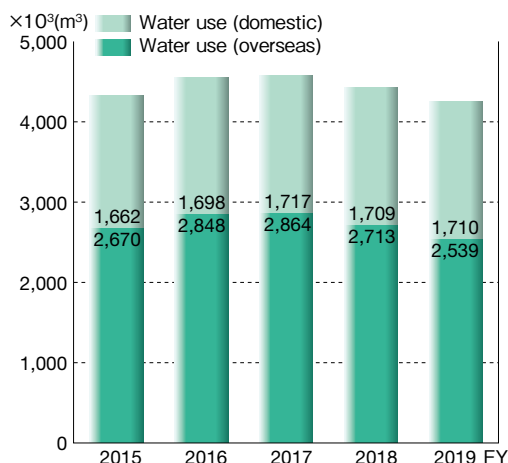
## Results of Water Resource Efforts

The water usage of the entire group decreased from 4,422,000 m<sup>3</sup> in FY2018 to 4,249,000 m<sup>3</sup> in FY2019. Specifically, the sites in Japan increased their usage to 1,710,000 m<sup>3</sup> from 1,709,000 m<sup>3</sup> in FY2018, while the sites outside Japan decreased to 2,539,000 m<sup>3</sup> from 2,713,000 m<sup>3</sup> in FY2018 (see G7).

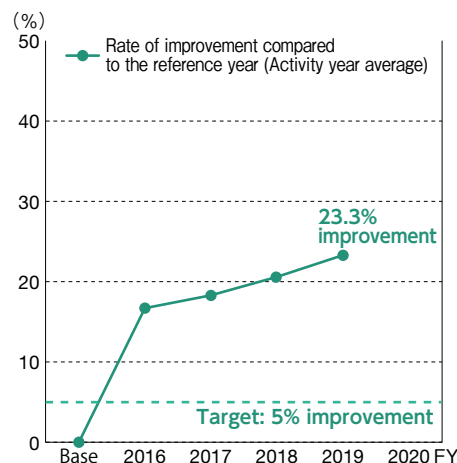
Improvement in water usage per unit of production, which we aim to achieve in the medium-term environmental target, was 23.3% on average for FY2016–FY2019 (see G8).

The amount of recycled water was 597,000 m<sup>3</sup>.

G7: Water Use



G8: Average Water Use Per Unit (results compared to target)





## Our Efforts

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### Reducing Greenhouse Gas Emissions

#### Improved vacuum pump operation efficiency [TAIYO YUDEN (GUANGDONG)]

We run various infrastructure facilities to maintain the operation of production facilities and working environments and are making various efforts to increase their operation efficiency, as their energy consumption is particularly high.

In TAIYO YUDEN (GUANGDONG), power consumption was reduced by updating the water-cooled vacuum pumps to air-cooled vacuum pumps and introducing inverters to control the pumps to operate only on an as-needed basis.

In addition, we succeeded in eliminating water usage for the cooling tower of the water-cooled vacuum pumps to cool down heated pumps, as it is not necessary for air-cooled vacuum pumps.

As a result of these improvements, GHG emissions of 185 t-CO<sub>2</sub>e per year and water usage of 1,300 t per year were reduced.



Air-cooled vacuum pump

#### Reduced energy consumption of tanks by suppressing heat radiation [TAIYO YUDEN CHEMICAL TECHNOLOGY]

The tanks for temporarily storing plating liquid used during production processes are made of metal, which causes energy loss due to heat radiation.

We have implemented a countermeasure by measuring the surface temperatures of the tanks using thermography to identify tanks with high temperatures and covering them with insulation. This countermeasure suppressed excess heat radiation from the tank surfaces, resulting in the reduction of energy loss.

The amount of GHG emissions reduced as a result was 4t-CO<sub>2</sub>e per year.



Measurement of tank surface temperature

### Response to Climate Change

We are promoting the use of renewable energies as a response to climate change. Currently, solar panels are installed in four sites to generate power.

In FY2019, Scope 2 GHG emission was reduced by 452 t-CO<sub>2</sub>e per year by generating 910 MWh.

FY2019 power generation amount	kWh	
Hongo Photovoltaic Power Plant	617,127	
TAIYO YUDEN Mobile Technology	232,472	
FUKUSHIMA TAIYO YUDEN	40,799	*1
WAKAYAMA TAIYO YUDEN	20,337	*2

\*1 Stopped due to the flood that occurred in October 2019.

\*2 Started power generation from March 2020.



Hongo Photovoltaic Power Plant



TAIYO YUDEN Mobile Technology



FUKUSHIMA TAIYO YUDEN



WAKAYAMA TAIYO YUDEN

### Reducing Water Use

#### Water conservation by recycling wastewater [TAIYO YUDEN (PHILIPPINES)]

Water usage was reduced by recycling water discharged from the intermediate processes of the water treatment facilities in the cooling tower for air conditioning.

The amount of water reduced was 23,000 t per year.



Piping for sending recycled water to the cooling tower

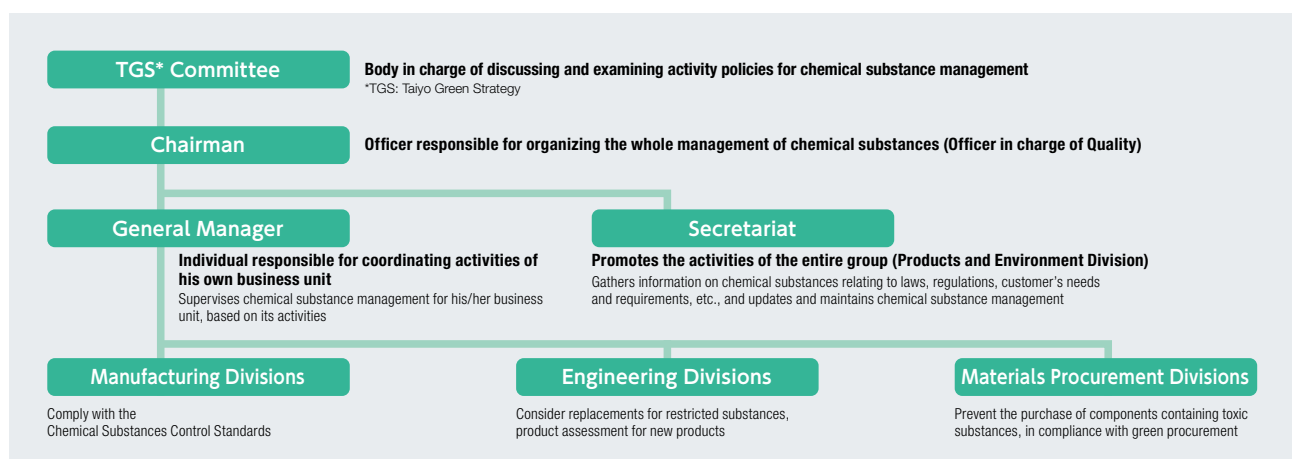
# Appropriate Management of Chemical Substances

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To ward off environment contamination with chemicals and adverse effects on human health, we have banned the use of forbidden substances, implemented a chemical management framework, and are working on reducing emission volumes.

## Chemical Management Framework

The Taiyo Yuden Group has its own standards in place for chemical substance management, which define chemical substances that must not be used, must only be used in limited situations, and must be managed.



### Target Chemicals

Prohibited substances	Cadmium, compounds containing cadmium, mercury, compounds containing mercury, hexavalent chromium compounds, etc.
Substances to be restricted	Lead in ceramic/glass frit and piezoelectric bodies, tetrabromobisphenol A (TBBPA), polycyclic aromatic hydrocarbons (PAHs), and so on.
Substances to be managed	Toluene, REACH SVHC (substance of very high concern), xylene, etc.

## PRTR Law Compliance

In order to reduce the risks that chemicals impose on the environment, the Taiyo Yuden Group reports to the government the amounts of chemicals released to the environment (air, water, and soil), and waste chemicals transported and recycled under the Japanese Law for Pollutant Release and Transfer Register (PRTR). The government publishes the records and a database of these quantities making them widely available to members of the general public.

### PRTR Restricted Substances

Substance Number	Chemical Substance Name	Emission (ton/year)	Amount Transferred (ton/year)	Amount Recycled (ton/year)	Substance Number	Chemical Substance Name	Emission (ton/year)	Amount Transferred (ton/year)	Amount Recycled (ton/year)
71	Ferric chloride	0.0	27.7	0.0	308	Nickel	0.2	1.8	69.2
82	Silver and its water-soluble compounds	0.0	1.3	3.1	309	Nickel compounds	0.6	4.6	19.6
87	Chromium and trivalent chromium compounds	0.0	0.1	0.0	374	Hydrogen fluoride and its water-soluble salts	0.0	1.5	0.0
272	Water-soluble copper salt	0.0	0.2	0.1	405	Boron compound	0.6	1.3	0.0
300	Toluene	28.2	5.1	31.6	438	Methylnaphthalene	0.1	0.0	0.0

Note: Target chemical substances and their incoming amount shown refer to substances for which their incoming amount exceeds 1 ton in compliance with the PRTR Law.

Emission: This refers to the total emission into the atmosphere, water, and soil.

Amount Transferred: This refers to the amount whose disposal is outsourced to an industrial waste contractor outside the business facility concerned.

## Ozone-depleting Substances

We do not use ozone-depleting substances in our production processes. Although we use HCFC as a coolant in air conditioners and other equipment, we carry out appropriate collection and disposal.



## Efforts and Status 2-1

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### Man

#### Creation of "Safe workplace" culture

To create a safe workplace culture, we are carrying out activities to help employees increase their knowledge of Health and Safety so they can perform their work with such knowledge in mind.

In FY2018, we reviewed educational materials and methods and reinforced education based on the analysis results of the Safety Awareness Survey conducted on the employees of domestic group sites, in order to improve safety awareness of each employee. In the Safety Awareness Survey conducted in FY2019, the results of almost all items were improved, enabling us to confirm the results of the activities we have carried out.

We will continue to administer the Safety Awareness Survey regularly to promote a safe workplace culture.



Analysis results of Safety Awareness Survey

### Machine

#### Global standardization of equipment safety activities (ISO and IEC)

With the objective of ensuring our equipment safety activities conform to global standards (ISO and IEC), we are reviewing the Safety Standards for Group Equipment, which define measures against risks common to production equipment to enhance the safety measures for equipment. In FY2019, we trained and increased the number of qualified equipment safety experts such as Safety Assessors (SAs) and Safety Sub Assessors (SSAs) and reinforced the equipment safety system. Also, we implemented skill-up trainings for equipment design personnel and reviewed the group equipment safety standards based on feedback from equipment development designers and equipment safety experts. We will continue our efforts to reduce occupational injuries associated with equipment.



Training of qualified safety sub-assessors (SSAs)

### Method

#### Standardization of procedures for safe work

We are upgrading and reviewing procedures to standardize them and make them safe and consistent so that employees can work more safely. In FY2019, we established standards concerning the installation of identification displays for the traffic division for industrial vehicles and sidewalks specified in the requirements of the RBA Code of Conduct, and implemented countermeasures based on the actual operation status at each site.

We will continue to work towards promoting a safe working environment from a common perspective.



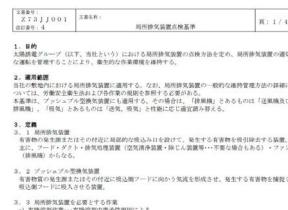
Traffic division identification display

### Material

#### Minimization of the harmfulness and danger of chemical substances

To minimize the hazards and dangers of chemical substances, we are continuously taking measures against risks associated with tasks that require workers to handle chemical substances. In FY2019, we categorized the documents of the domestic groups, which were integrated as the rules and standards related to chemical substances, into items requiring detailed management individually based on the magnitude of the risk, applicable laws or regulations, and other requirements and organized each rule and standard, in order to reduce risks.

We will continue to work towards minimizing the hazards and dangers of chemical substances.



Local exhaust ventilation system inspection standard

### Measurement

#### Enhancement of check levels

To provide safe and hygienic workplaces, we are working to raise check levels by upgrading and improving the methods for identifying invisible hazards (or those that have gone unnoticed). In FY2019, we established an internal audit team consisting of experts of each site and implemented audits from different perspectives, as well as introducing good case examples and providing guidance on improvement measures, with the aim of enhancing the internal audit function for health and safety. Through these initiatives, new issues were identified, and we were able to improve the safety standards of our workplaces by implementing appropriate measures against these issues.

We will continue to raise the check levels to provide safe and hygienic workplaces.



## Efforts and Status 2-2

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### Health

#### 1 Maintaining low incidence rate for mental health problems

The Taiyo Yuden Group has developed a system<sup>\*1</sup> for reducing incidences of mental health problems and conducting preventive activities. To care for the staff, we have established a system that allows the industrial health staff (including counselors, public health nurses, and nurses) to provide added care so that they can identify employees who are not feeling well earlier and provide them with the appropriate support.

In FY2019, activities were focused on care for employees experiencing high levels of stress based on the results of the stress check that is mandated by law. For individual employees, consultation with industrial physicians was provided to those who desired it.

For workplaces, discussions concerning countermeasures were held among the managerial staff of workplaces that were evaluated to have a high comprehensive risk value<sup>\*2</sup> in a stress check, public health nurses, and nurses.

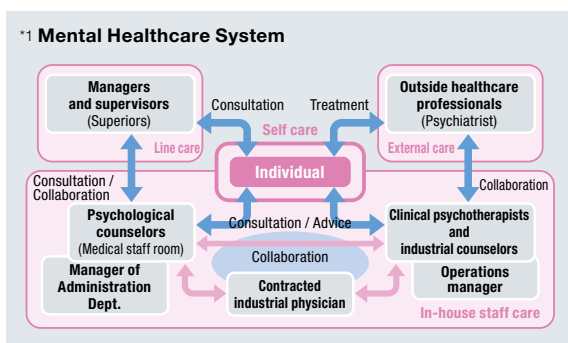
In addition, we provided harassment training, which has been continuously held, to employees in management or supervisor positions by inviting external lecturers.

The rate of employees suffering from mental illness has been on an increasing trend since FY2015. However, it decreased to 0.86% in FY2019, as a result of our continuous efforts for improvement (See G1).

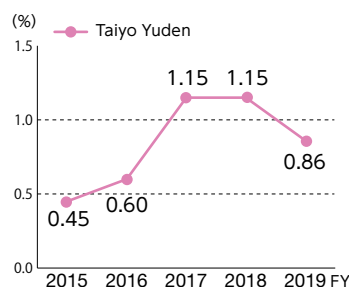
We will continue to work on providing mental health care so that all employees can work with a healthy body and mind.



Harassment training



G1 : Incidence rate



<sup>\*2</sup> Refers to the result of evaluation A: "work-related stress," B: "stress responses of the body and mind," and C: "support from people around you."

#### 2 Maintaining the rate of diagnosis in periodic medical checkups

The Taiyo Yuden Group is conducting health management activities to promote employee health, improve corporate performance, and enhance corporate social value. In FY2019, we carried out the following three activities in order to maintain the rate of diagnosis and boost health awareness of each employee.

- Activities aiming at enforcing a total smoking ban on company premises by April 2021 are being carried out in stages, targeting domestic sites.
  - For the improvement of non-smoking/smoking environments, we reviewed the smoking areas, layouts, and rules for the enforcement of a total smoking ban during working hours.
  - As part of a no-smoking information campaign, we selected a "non-smoking day" for each month and informed smokers of it.
  - To help employees stop smoking, we started providing in-house counseling, online support for smoking cessation using smartphones, and support for the utilization of a smoking cessation clinic.
- We held a "Seminar on women's health by an obstetrician-gynecologist" for female employees, with the aim of supporting working women to continue working with enthusiasm. From the seminar, the employees learned how to cope with health problems by knowing the condition of their own bodies.
- We have started providing articles summarizing health information that is easy-to-understand, with the aim of helping each employee improve their awareness and practice health management by gaining a correct understanding of health.

As a result, the rate of employees who were diagnosed with an illness in FY 2019 was 54.3%, while the national average was 56.6%. We will continue to promote healthcare activities so that our employees can work comfortably and in good health.



Seminar on women's health