

2018

Safety & Environmental Report



TAIYO YUDEN

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Editorial Policy

Why this Report was Published	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.
Intended Readership	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.
Referenced Guidelines	This report follows the Environmental Reporting Guidelines (2012 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.
Publication on our Website	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

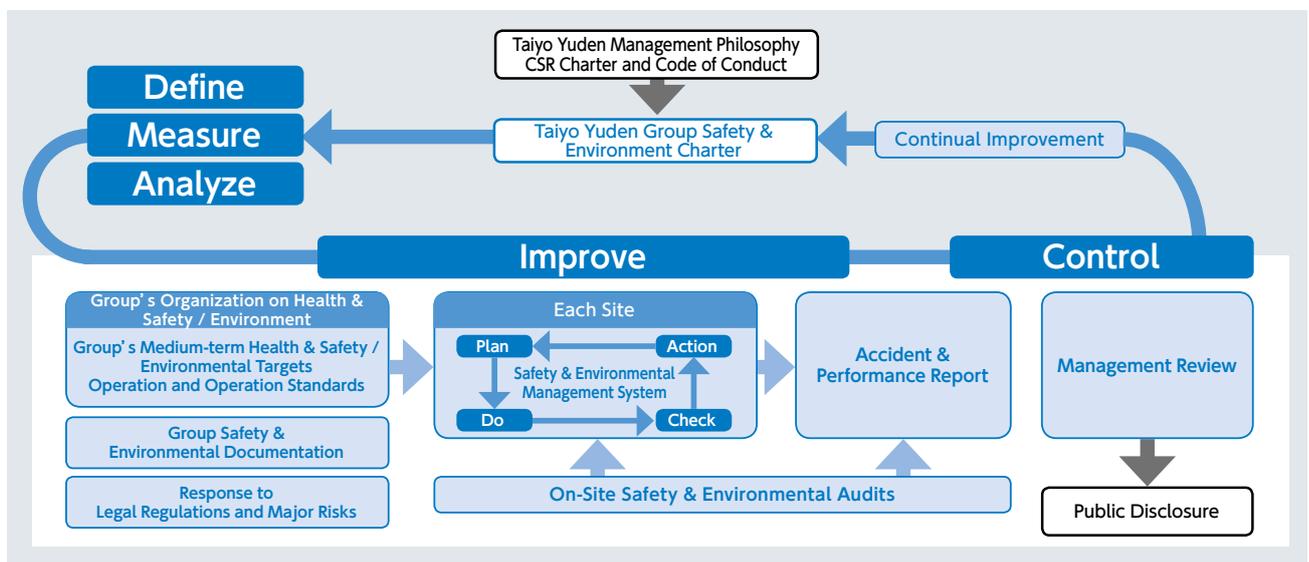
Organizations Covered by this Report	This report covers TAIYO YUDEN CO., LTD. and its domestic and overseas subsidiaries and affiliates. Safety and environment data covers the following the Taiyo Yuden Group members: six domestic sites, eight domestic group companies, and six overseas group companies. [Within Japan] TAIYO YUDEN CO., LTD. Takasaki Global Center / Haruna Plant / Nakanojo Plant / Tamamura Plant / Yawatabara Plant / R&D Center / (Hongo Photovoltaic Power Plant) Consolidated Subsidiaries 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. [Outside Japan] Consolidated Subsidiaries South Korea: KOREA TAIYO YUDEN CO., LTD. / KOREA TONG YANG YUJUN CO., LTD. / China: TAIYO YUDEN (GUANGDONG) CO., LTD. / TAIYO YUDEN (TIANJIN) ELECTRONICS CO., LTD. Philippines: TAIYO YUDEN (PHILIPPINES), INC. Malaysia: TAIYO YUDEN (SARAWAK) SDN. BHD.
Period Covered by this Report	This Report focuses on our performance from April 1, 2017 to March 31, 2018 (Date of any activities which have taken place outside this period are specified).
Date of Issue	July 2018 (Previous Issue: July 2017; Next issue scheduled for July 2019)

Safety and Environmental Management System 2-1

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

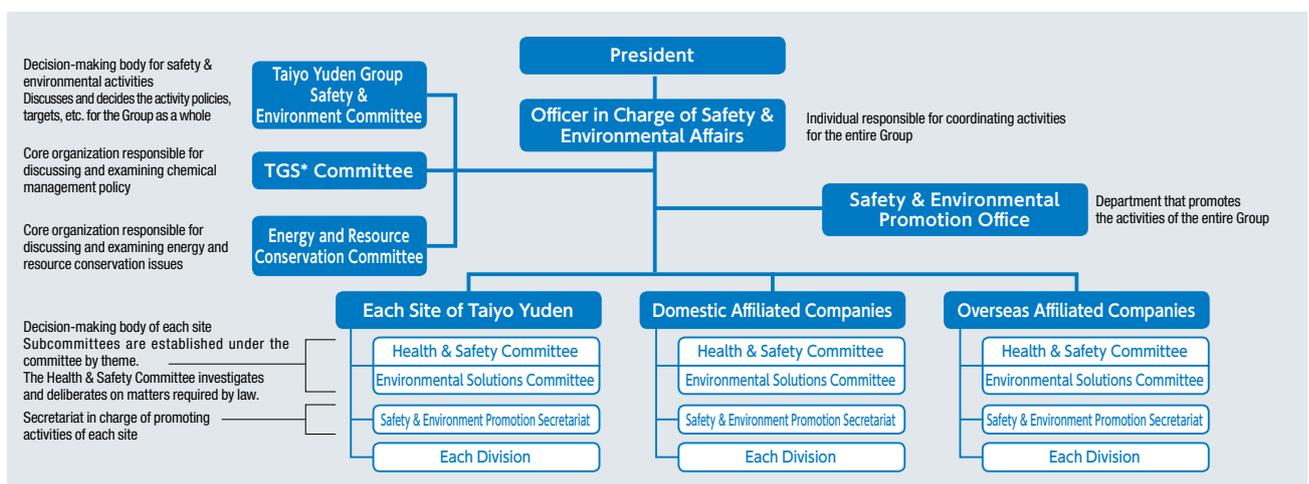
System Overview

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 short-cycle activities, which are specific to each site, we are making efforts based on management systems established according to ISO14001 and OHSAS18001.



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

Safety and Environmental Management System 2-2

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Certification Acquisition Status

The Taiyo Yuden Group has obtained ISO14001 certification for all production sites and development centers. Most sites of the Group have also obtained OHSAS18001 certification.

List of Certifications Acquired

Location	Name of Sites	Acquired ISO14001 Certification	Certification authorities	Acquired OHSAS18001 Certification	Certification authorities
Japan	TAIYO YUDEN CO., LTD. Takasaki Global Center, Yawatabara Plant, Tamamura Plant, Haruna Plant, Nakanojo Plant, R&D Center	3532082 (as of Oct. 1998) Collectively certified in Japan	BV	3531737 (as of May 2001) Collectively certified in Japan (Except TAIYO YUDEN ENERGY DEVICE CO., LTD., KANKYO ASSIST CO., LTD.)	BV
	TAIYO YUDEN ENERGY DEVICE CO., LTD.				
	TAIYO YUDEN CHEMICAL TECHNOLOGY CO., LTD.				
	TAIYO YUDEN TECHNO SOLUTIONS CO., LTD.				
	WAKAYAMA TAIYO YUDEN CO., LTD				
	KANKYO ASSIST CO., LTD.				
	NIIGATA TAIYO YUDEN CO., LTD.				
TAIYO YUDEN MOBILE TECHNOLOGY CO., LTD.					
FUKUSHIMA TAIYO YUDEN CO., LTD.					
South Korea	KOREA TAIYO YUDEN CO., LTD.	20BK00267-UK (as of Mar. 2002)	BV	IND17.5654/U (as of Oct. 2002)	BV
	KOREA KYONG NAM TAIYO YUDEN CO., LTD.	20BK00256-UK (as of Mar. 2002)	BV	IND17.3431U/HS (as of Oct. 2002)	BV
China	TAIYO YUDEN (GUANGDONG) CO., LTD.	CNGZ301353-UK (as of Dec. 2001)	BV	CNGZ301645-UK (as of Jan. 2003)	BV
	TAIYO YUDEN (TIANJIN) ELECTRONICS CO., LTD.	CN08/10665 (as of Aug. 2008)	SGS	CN16/10165 (as of Jan. 2016)	SGS
Philippines	TAIYO YUDEN (PHILIPPINES), INC.	PH13/0920.00 (as of Nov. 2001)	SGS	CH14/1329.00 (as of Nov. 2002)	SGS
Malaysia	TAIYO YUDEN (SARAWAK)SDN. BHD.	ER0280 (as of Oct. 2002)	SIRIM	SR0198 (as of Sep. 2004)	SIRIM

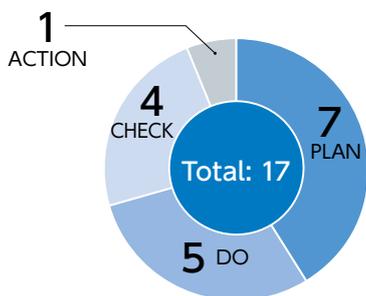
Safety and Environmental Audits

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

External Audits ISO14001 and OHSAS18001 certification audits by certification authorities

Sites with ISO14001 or OHSAS18001 certification underwent the audits required to update or maintain such certification. These audits uncovered 17 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.

Number of Nonconformity Instances Found with External Audits



Nonconformity Examples

Nonconformity Examples and Details

Hazard sources were not identified and risks were not assessed in association with the new chemical substances that they have just started to use.

The anemometer used to measure the wind velocity of local exhaust systems was not calibrated.

Although corrective actions were taken against nonconformities found during internal audits, they have not been validated.

Corrective/Improvement Measures

We have identified hazard sources and assessed risks associated with the chemical substances, and provided education based on the guidelines. In addition, we have established a system in which experts can perform checks when changes occur.

We have registered the anemometer in the management ledger for measurement equipment and had it calibrated by the manufacturer.

We have decided to make the validation a topic to be discussed by the committee until it is completed.

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 FY2017, we audited all the domestic sites to verify that their management systems conform to ISO 14001:2015. While verifying the efforts of each site to follow the revised manuals and rules, we discovered that some did not fully conform to the requirements that were newly added to ISO 14001:2015.

We audited all the Taiyo Yuden Group sites to verify their risk assessment and site management situation associated with chemical substances. While verifying their situations concerning the implementation of risk assessment and the usage and management of chemical substances on site, inadequacies were revealed, such as failure to convey the risk assessment results or not correctly wearing protective gear.

Countermeasures were implemented and validated for inadequacies and nonconformities found during the internal site audits. By incorporating global social requirements and sharing the results after benchmarking products from all sites, we hope to increase the level of health and safety/environmental activities of the entire Group.

Issue Examples

Issues, risks and opportunities related to the requirements were not organized sufficiently.

The type of gas mask was not appropriate for the chemical substances used.

The safety data sheets (SDS) placed at the worksite were not up to date.

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 52 non conformities 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 FY2017, we inspected and audited 16 companies (one collection and delivery company; six collection, delivery and intermediate processing companies; and nine 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



Yawatabara Plant

Conducted a water-discharge exercise using an outdoor fire hydrant. (May 2017)



TAIYO YUDEN (GUANGDONG)

Conducted an early-stage fire extinguishing exercise using dry chemical extinguishers. (December 2017)



KOREA KYONG NAM TAIYO YUDEN

Conducted training on water discharge from a fire engine under the guidance of the fire department. (October 2017)

Emergency Training for Spillage of Chemical Substances



Tamamura Plant

Conducted training on collecting leaked oil for a scenario in which heavy oil has leaked. (November 2017)



TAIYO YUDEN TECHNOC SOLUTIONS

Conducted training on isolating a gutter and collecting the chemical substance for a scenario in which a chemical substance has leaked into the gutter. (November 2017)



TAIYO YUDEN (MALAYSIA)

Conducted training on preventing a leaked chemical substance from spreading for a scenario in which a container fell over and leaked while in transport. (November 2017)

Evacuation and Medical Emergency Training



R&D Center

Conducted first aid training using cardio-pulmonary resuscitation and an AED. (February 2018)



TAIYO YUDEN Mobile Technology

Conducted an evacuation drill for an earthquake. (October 2017)



TAIYO YUDEN (TIANJIN) ELECTRONICS

Conducted training on transporting injured people for a scenario in which injuries have occurred in a fire. (November 2017)

Removing Soil Contamination

We completed our soil and ground water contamination surveys and made clean-up efforts following the Japanese Ministry of the Environment guidelines in 2003. No surveys were conducted in FY2017.

Environmental Accidents

No accidents that could affect the surrounding environment have occurred.

Employee Enrichment through Safety and Environmental Training

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	Training for new recruits	Raising new recruits' awareness of occupational health & safety and environmental preservation, and ensuring they understand environmental problems pertinent to companies
		General training	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
		Workplace training	Understanding potential hazards and environmental impact with regard to divisional health and safety/environmental activities and work
Health & Safety Training	Abilities	Training for managers, instructors and supervisors	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.
		Training for specialists	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
		Training for risk assessors	Teaching the skills to recognize risks and creating a safe and sanitary workplace
Environmental Training	Abilities	Training for specialists	Teaching special skills to managers and relevant employees involved with equipment and facilities for which a legal notification is required
		Specialized training	Training skills to integrate business activities with environmental activities in order to balance an improvement in our environmental impact with improved resource productivity
			General theory of Safety & Environment / Status of Safety & Environment at the Taiyo Yuden Group
			Management system (including the Safety and Environment Charter) / Mental health
			Division activities / Matters for compliance in work
			Role of the General Manager of Health and Safety / Role of management / Role of foreman / Chemical substance management / Hazardous material management
			Workplace restricted duties / Training for specific tasks / Prevention of static electricity accidents
			Risk assessment / Safety and Health targets / Cases of Safety and Health accidents and their countermeasures
			Management to prevent deterioration of water quality / Management to prevent air pollution / Waste management
			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 health classes with a salad bar, lifestyle measurement meetings, driving aptitude assessments, and lectures on traffic.



Health class with a salad bar



Driving aptitude assessment

Occupational Health and Safety Training

High pressure gas safety education

We learned accident information and handling precautions associated with high pressure gases with the objective of preventing accidents in high pressure gas facilities.



High pressure gas safety education

Static electricity education

We invited external instructors to provide lectures on subjects such as the danger of static electricity (ignition of flammable objects by spark discharge), factors that cause static electricity, and countermeasures against static electricity.



Static electricity education

Environmental Training

Waste management education

We provided education programs on subjects including the classification of waste, outsourcing contracts, and the manifest system for managers of waste materials, with the objective of helping them to abide by laws and regulations.



Waste management education



Waste management education (on-site)

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	900	241		
Breakdown	Pollution prevention	431	73	Monitoring and measurement of atmosphere, water quality, noise, and vibration; emergency preparedness and response
	Conservation of global environment	259	168	Curbing emission of greenhouse gases; curbing emission of ozone-depleting substances; improvements in water quality; exhaust gas cleaning; energy saving; resource saving
	Resource recycling costs	210	—	Waste management, and outsourcing of waste treatment; reduction of waste; recycling
Upstream / downstream business activities	4	—	Activities to improve the environmental impact of products, green procurement	
Management activity costs	281	—	Building and operating an EMS; surveillance audits; environmental training; costs for operating secretariat; department operations costs	
R&D	260	—	R&D costs to improve the environmental impact of product processes etc.	
Social activities	7	—	Donations to environmental groups; participation in communities' global environmental preservation events	
Response to environmental damage	0	—		
Total	1,452	241		

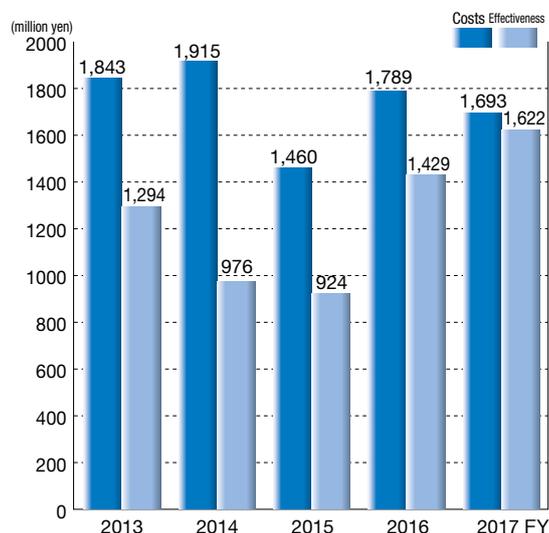
Environment Maintenance Effectiveness

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	87	2,056kL	Improvement in productivity; improvement in energy management method
Conservation of resources	23	64t	Reduction in amount of chemical substances used through improvement in process yield etc.
Reduction in waste, and recycling	1,512	3,067t	Improvement in recycling rate
Total	1,622		

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

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:

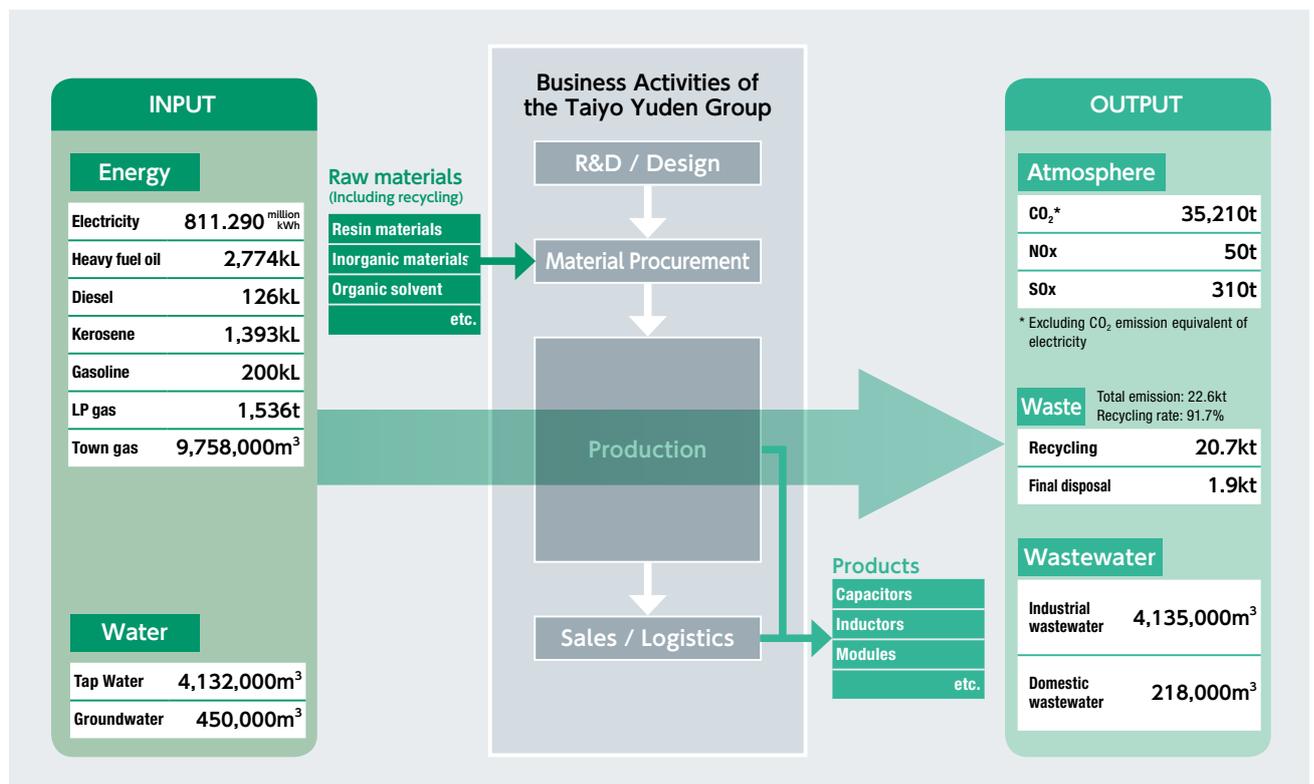
Lowered costs through reducing waste and recycling =
[Unit cost of waste treatment in the prior fiscal year (JP¥/ton) – Unit cost of waste treatment in this fiscal year (JP¥/ton)] × Amount of waste generated (tons)

Determining Environmental Impact of Corporate Activities

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

FY2017 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 CO₂) 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 FY2016

In FY2017, electricity and city gas usage increased due to the increase of production volume both domestically and overseas.

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 set 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 FY2017, we achieved a 18.8% 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 FY2017, we achieved a 8.2% 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 FY2017, we achieved a 18.3% 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 FY2017, we achieved a 34.1% increase on average over the target of 10%.	○
	Japan	Recycle 99.5% of waste or more	In fiscal 2017 alone, we achieved a 99.9% 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

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 FY2017, the amount of GHG emitted by the entire group increased by 21,000 tons-CO₂e compared to FY2016. Specifically, the sites in Japan increased their emissions to 211,000 tons-CO₂e from 197,000 tons-CO₂e in FY2016, while the sites outside Japan increased to 303,000 tons-CO₂e from 296,000 tons-CO₂e in FY2016 (see G1).

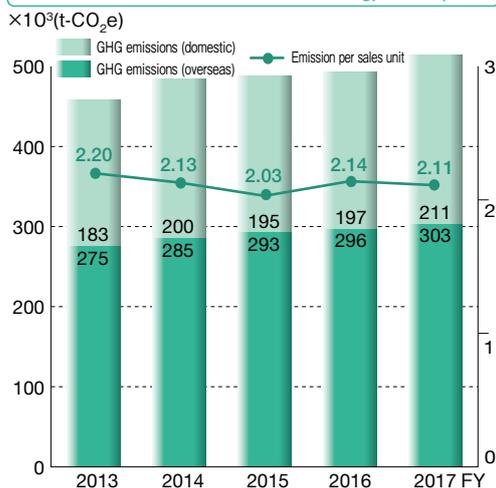
The amount of energy used by the entire Group increased by 9,000 kL compared to FY2016. Specifically, the sites in Japan increased their usage to 94,000 kL from 88,000 kL in FY2016, while the sites outside Japan increased to 129,000 kL from 126,000 kL in FY2016 (see G2). Energy usage is broken down into 93% for SCOPE 2 and 7% for SCOPE 1 (see G3).

Improvement in energy intensity, which we aim to achieve in the medium term, was 18.8% in FY2016 and FY2017 on average (see G4). We will continue to review production processes with a focus on core products to further improve the production efficiency for larger energy usage.

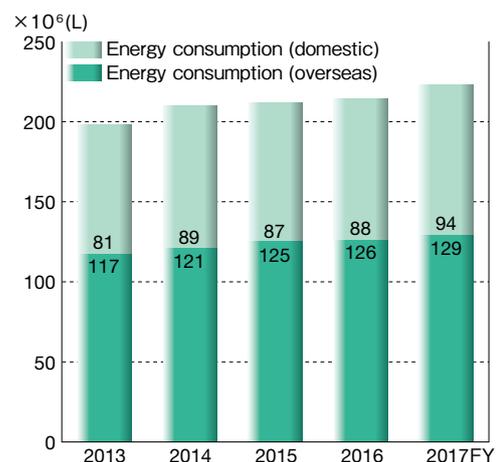
Note: Changes in the conversion factor have a major impact on GHG calculations, so the medium environmental targets were set according to energy consumption (crude oil equivalent), a factor that has measureable results.

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

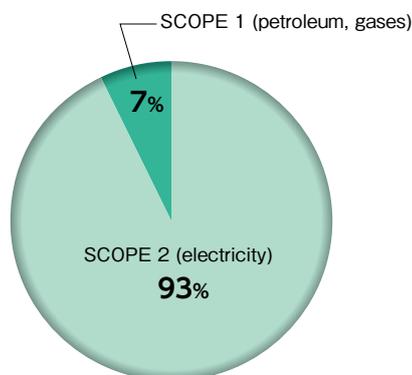
G1: GHG Emissions (calculated from total energy consumption)



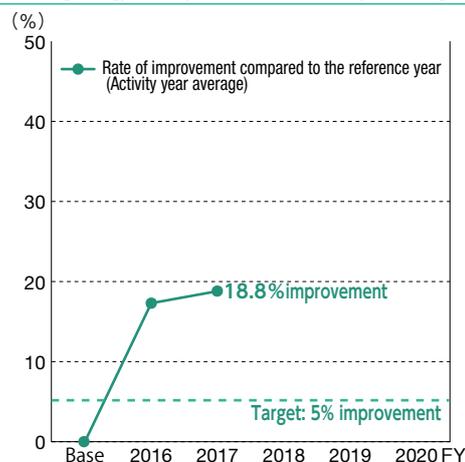
G2: Energy Consumption (crude oil equivalent)



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 a growing demand from our stakeholders to disclose information on SCOPE 3 emissions, in addition to information on SCOPE 1 and SCOPE 2 emissions. To meet this demand, we are working to obtain a clear picture of our SCOPE 3 emissions. We have ascertained that our GHG emissions from purchased goods and services in FY2017 were 328,000 tons-CO₂e (group), 7,046 tons-CO₂e from commutes (domestic sites), 459 tons-CO₂e from business trips (domestic sites), 5,142 tons-CO₂e from disposal and processing of waste (domestic sites), and 34,905 tons-CO₂e from transporting products (group).

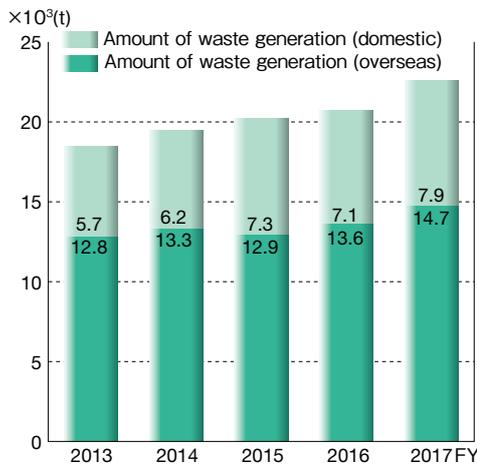
Reducing Waste / Preserving Water Resources 2-1

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.

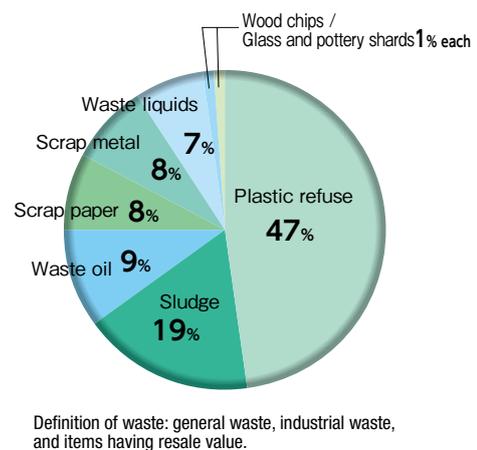
Results of Reducing Waste

The amount of waste generated in FY2017 by the entire group increased to 22,600 tons from 20,700 tons in FY2016. This 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 in Japan decreased to 5 tons from 6 tons in FY2016. The waste recycling rate, which we aim to improve in the medium term, was 99.9% (see G3). The total amount of waste disposed outside Japan increased from 1,700 tons in FY2016 to 1,900 tons in FY2017 (see G4). Improvement in waste generation per unit of production, which we aim to achieve as a medium-term environmental target was 8.2% in FY2016 and FY2017 on average (see G5). The final amount of waste disposed per unit of production was improved by 34.1% in FY2016 and FY2017 on average (see G6). We will continue working to reduce waste volumes, boost in-house recycling rates, and recycle waste into resources at our overseas sites.

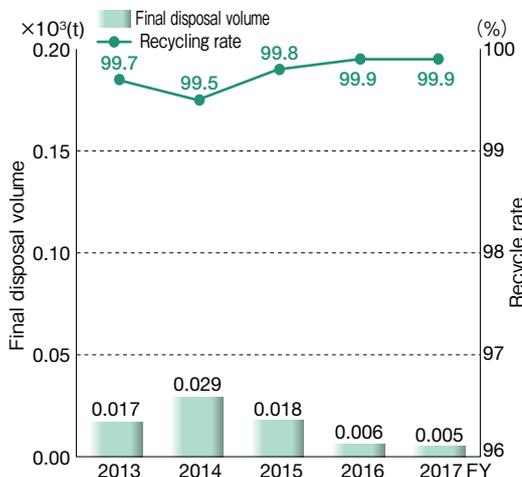
G1: Amount of Waste Generation



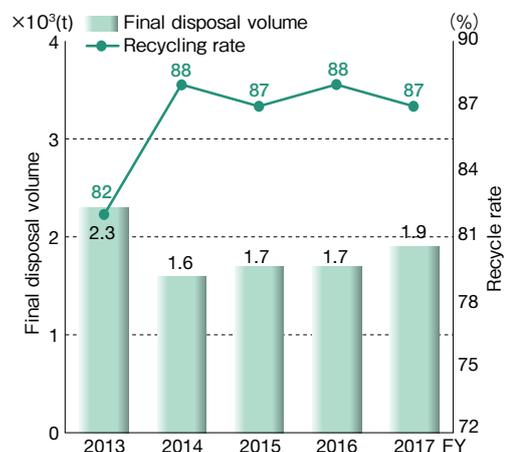
G2: Breakdown of Waste



G3: Domestic Final Disposal Volumes and Recycling Rates



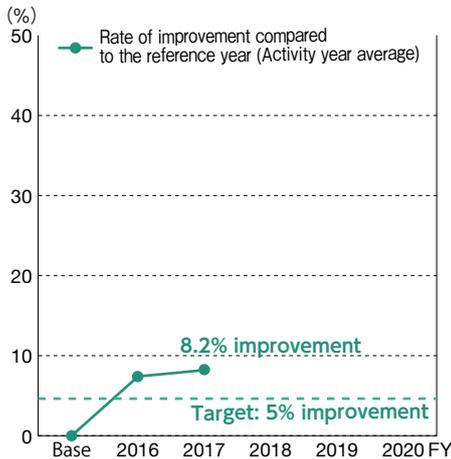
G4: Overseas Final Disposal Volumes and Recycling Rates



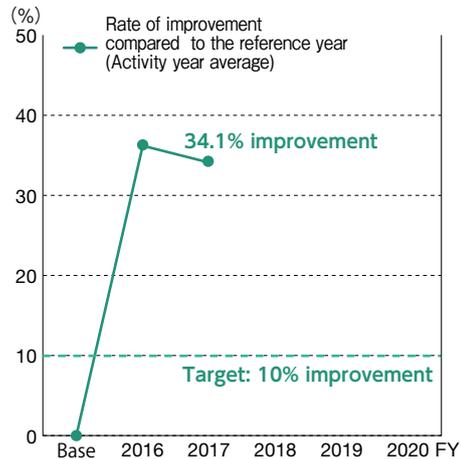
Reducing Waste / Preserving Water Resources 2-2

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, 16% 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 16% of all the reels are recycled reels.

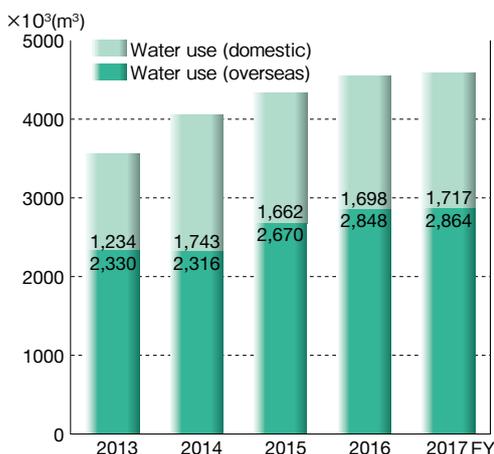
Results of Water Resource Efforts

The water usage of the entire group increased from 4,546,000 m³ in FY2016 to 4,581,000 m³ in FY2017. Specifically, the sites in Japan increased their usage to 1,717,000 m³ from 1,698,000 m³ in FY2016, while the sites outside Japan increased to 2,864,000 m³ from 2,848,000 m³ in FY2016 (see G7).

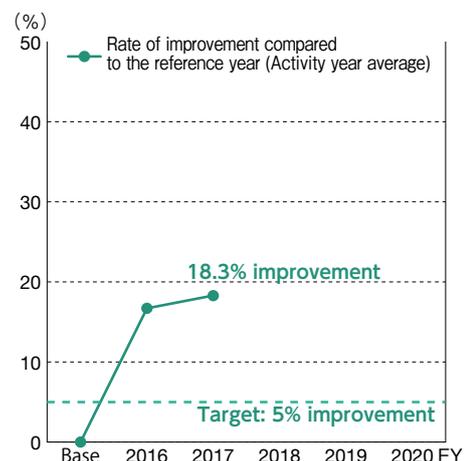
Improvement in water usage per unit of production, which we aim to achieve as a medium-term environmental target, was 18.3% in FY2016 and FY2017 on average (see G8).

The amount of recycled water was 514,000 m³.

G7: Water Use



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



Our Efforts

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Reducing Greenhouse Gas Emissions

Improved compressor operation efficiency

[Haruna Plant, Nakanojo Plant, TAIYO YUDEN CHEMICAL TECHNOLOGY, TAIYO YUDEN (GUANGDONG) CO., LTD.]

We run more than one compressor to supply compressed air to production lines, but the use of compressed air depends on the operation status of each production line. To control the operation of compressors according to the required amount of compressed air, Haruna Plant, Nakanojo Plant, TAIYO YUDEN CHEMICAL TECHNOLOGY, and TAIYO YUDEN (GUANGDONG) CO., LTD. modified their system by introducing a control board for controlling the number of compressors and inverter control. This improvement has resulted in the optimal operation of compressors, eliminating unnecessary electricity consumption.

The amount of GHG emissions reduced as a result was 223 tons-CO₂e per year.

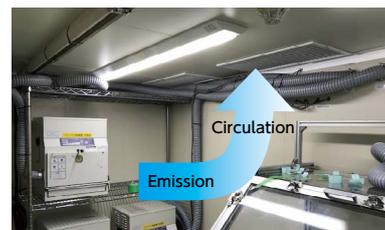


Compressors to supply compressed air

Energy conservation of dry room air conditioning system [TAIYO YUDEN ENERGY DEVICE]

In order to create an environment with low humidity, air-conditioned dry rooms are provided. We have updated the dehumidifiers that generate dry air to those with smaller energy consumption. In addition, we have reduced the operation load on the humidifiers by circulating the air.

The amount of GHG emissions reduced as a result was 136 tons-CO₂e per year.

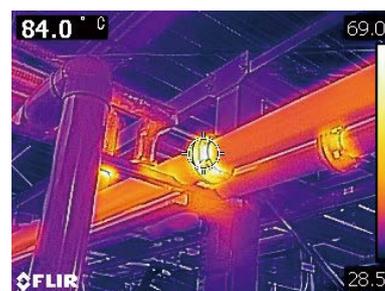


Circulation by recycling emissions

Reduction of energy consumption by controlling heat dissipation from pipes [TAIYO YUDEN CHEMICAL TECHNOLOGY]

Since the temperature of the pipes that transmit steam can rise very high, they lose energy by dissipating heat. We measured the temperature of the pipes by thermography and identified locations where the surface temperature rose (flanges and valves) and attached insulating materials to them. As a result of this countermeasure, unnecessary heat dissipation from the pipes that were transmitting steam was suppressed, resulting in the reduction of load on the boiler facilities.

The amount of GHG emissions reduced as a result was 9 tons-CO₂ per year.



Measurement of the steam pipe surface temperature

Reducing Water Use

Water conservation by recycling wastewater

[WAKAYAMA TAIYO YUDEN, TAIYO YUDEN (PHILIPPINES)]

In WAKAYAMA TAIYO YUDEN, the water recycling rate was increased by changing the process of treating water used for cutting from manual to automatic. In TAIYO YUDEN (PHILIPPINES), water usage was reduced by recycling the water discharged during intermediate processes of the water treatment facilities in the cooling tower.

The amount of water reduced as a result was approximately 32,000 tons per year.



TAIYO YUDEN (PHILIPPINES)

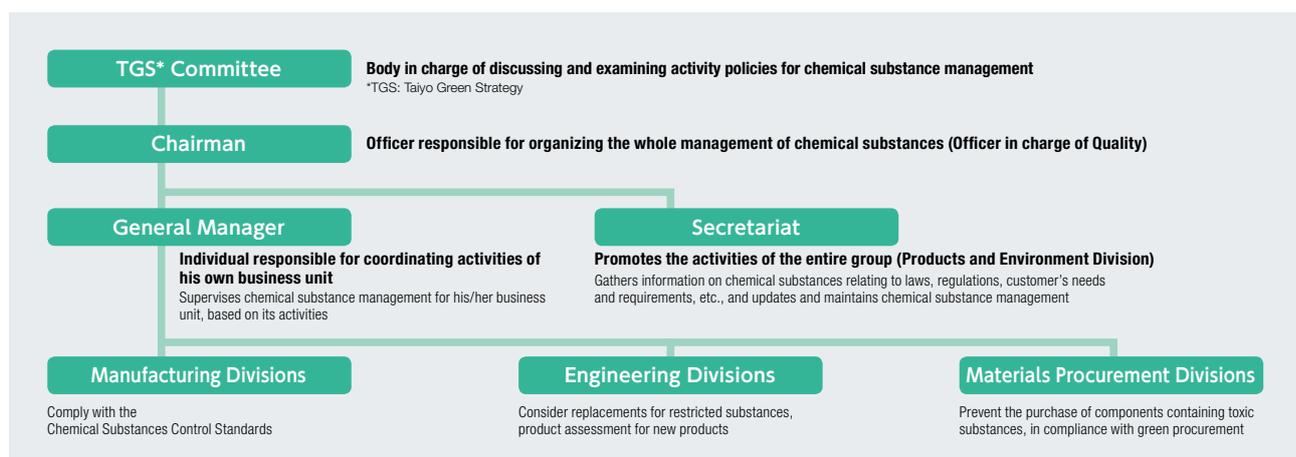
Appropriate Management of Chemical Substances

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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	25.4	0.0	308	Nickel	0.2	1.1	56.0
82	Silver and its water-soluble compounds	0.0	0.3	2.8	309	Nickel compounds	0.7	5.5	26.8
87	Chromium and trivalent chromium compounds	0.0	0.3	0.3	405	Boron compound	0.3	1.0	0.0
272	Water-soluble copper salt	0.0	0.2	0.1	438	Methylnaphthalene	0.1	0.0	0.0
300	Toluene	21.4	4.7	30.6					

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

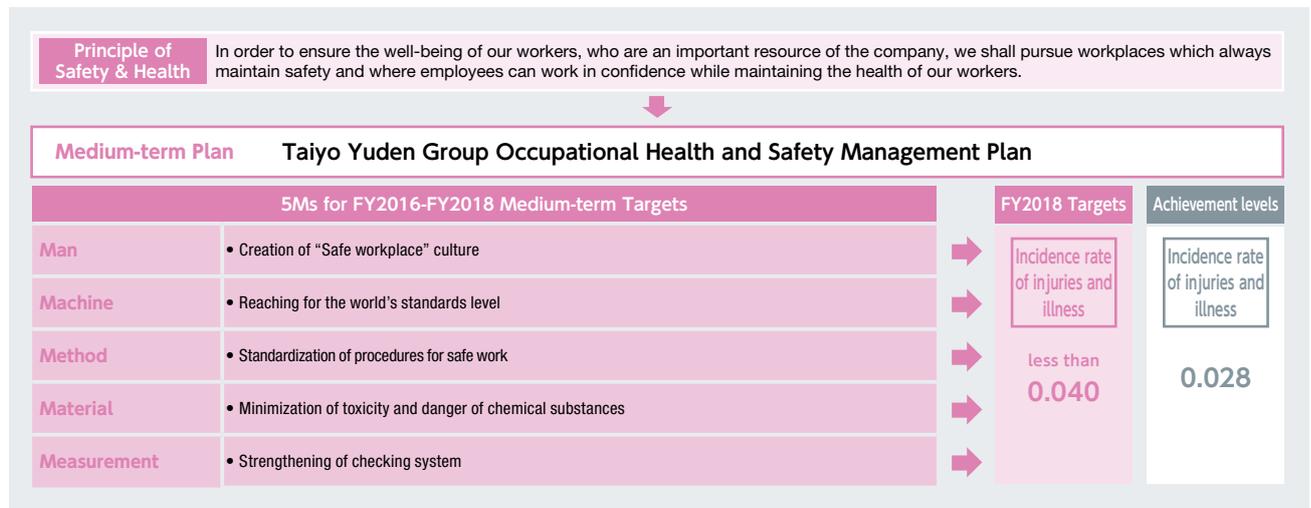
We do not use ozone-depleting substances in our production processes. Although we use HCFC as a coolant in air conditioners and other equipment, we carry out appropriate collection and disposal.

Achievement Levels for Medium-Term Occupational Health and Safety Targets

All employees participate in health and safety efforts based on the Fundamental Principle of Health and Safety outlined in the Taiyo Yuden Group Safety and Environment Charter and implemented according to OHSAS18001 specifications.

Fundamental Principle of Safety & Health and Targets

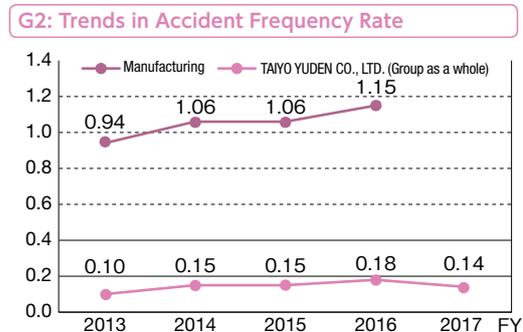
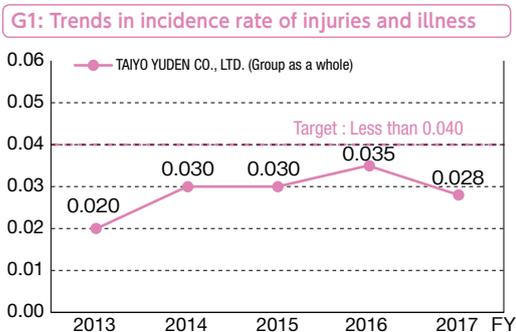
In order to realize our health and safety philosophy of “creating a workplace where employees can work without anxiety,” the Taiyo Yuden Group has drawn up group-wide medium-term plans. The medium-term plan is set to prevent industrial accidents by clarifying action targets for each 5Ms (Man, Machine, Method, Material, Measurement) and by setting a target incidence rate of injuries and illness for numerically evaluating the result of such efforts.



FY2016 Work-related Accidents and Safety Indicators

In FY2017, the incidence rate of injuries and illness for the entire group was 0.028, which was below the medium-term target of 0.040 (see G1). In FY2017, the accident frequency rate for the entire group was 0.14 (see G2), and the danger ratio was 0.0020. We are promoting countermeasures against occupational injury and illness by conducting risk assessments in all workplaces. We found no workplace with high-risks.

Going forward, we will continue to carry activities geared towards achieving zero work-related accidents from the perspective of 5Ms, based on our medium-term health and safety plan.



<p>Incidence rate of injuries and illness</p> $= \frac{\left(\text{Number of the absentees due to occupational injury (at least one workday lost)} \right) + \left(\text{Number of the absentees due to occupational illness (at least one workday lost)} \right)}{\text{Total actual number of hours worked by registered workers}} \times 200,000$	<p>Accident Frequency Rate</p> $= \frac{\text{Number of the victims of occupational injury (at least one workday lost)}}{\text{Total actual number of hours worked by registered workers}} \times 1,000,000$
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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 safety and health so they can work while bearing such knowledge in mind.

In FY2017, we reviewed the contents of our regular training program "Foreman Refresh Safety and Health Education," with the objective of improving the skills of foremen, who serve as key persons for worksite management, in order to raise the safety and health standard of each workplace. We have added more contents, such as the workplace training evaluation method and facility hazards, and started conducting the training.

We will continue to provide training programs to promote a safe workplace culture.



Foreman Refresh Safety and Health Education

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 FY2017, we started operations in accordance with standards that conform to the global standards for equipment safety (ISO and IEC). We have expanded the equipment safety training program, which we used to provide for employees engaging in equipment development and design within Japan with the aim of increasing their understanding of the Safety Standards for Group Equipment, to overseas. Experts (safety assessors) in equipment safety were dispatched to overseas sites to provide training, which include training on equipment safety countermeasures using actual equipment.

We will continue our efforts to reduce industrial accidents associated with equipment.

Equipment safety standard checklist

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 order to prevent falling accidents, which account for approximately 25% (in FY2016) of all industrial accidents in the Taiyo Yuden Group, we established the Group countermeasure policy and implemented countermeasures in all production sites in FY2017. These countermeasures include implementing measures against height differences in aisles or slopes and stairs, and displaying posters or warnings to raise awareness.

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



Installation of anti-slip tapes

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 FY2017, we conducted activities to reduce health risks in work areas where organic solvents are used. With respect to tasks, we measured the working environment of each worker (individual exposure concentration measurement) and the work areas and reviewed the health countermeasures based on the measurement results (e.g. reviewing the gas mask filter replacement frequency and sealing the source of chemical substances). For equipment, we have implemented countermeasures such as reducing the opening areas of the hoods after taking workability into consideration, in order to improve the absorption efficiency of the local exhaust systems.

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

Measurement

Enhancement of check levels

To provide safe and sanitary 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 the Taiyo Yuden Group, patrolling is performed from various perspectives by employees who specialize in health and safety and the zone managers of each workplace.

In FY2017, careful observations were made during workplace patrols and hidden risks in tasks and flow lines were identified, which led to the development of countermeasures. In addition, actual work scenes were recorded in some sites and potential risks that could not be found through workplace patrols were identified by repeatedly checking the recorded scenes, and countermeasures were implemented against these risks.

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

Efforts and Status 2-2

Health

① Maintaining low incidence ratio for mental health problems

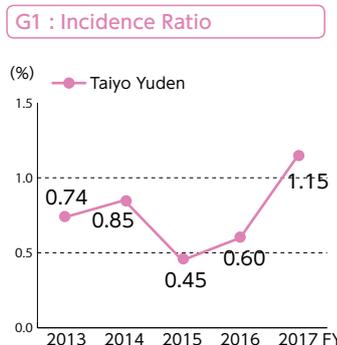
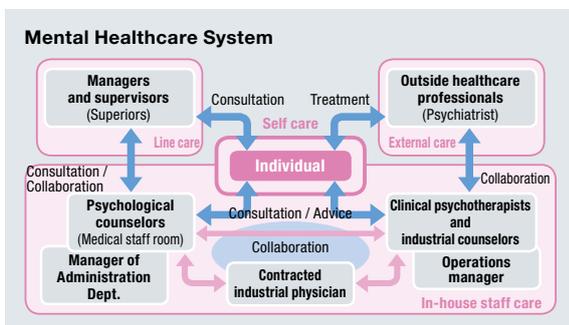
It has been over 10 years since the group introduced a mental healthcare program. During this period, our mental healthcare system has advanced through support activities such as counselling, line care training, support for leaves of absence and returning to work, and stress checks using an online system. In FY2017, we carried out activities for analyzing and improving workplaces after stress checks became mandatory by law.



Study meeting of the industrial healthcare staff

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 in poor condition earlier and provide them with the appropriate support. In addition, we invited partner psychiatrists and industrial physicians to provide lectures to the industrial health staff with training sessions about mental health, with the aim of building a more substantial care system.

The ratio of employees who suffer from an illness has gradually been increasing since FY2015, reaching 1.15% in FY2017. The reason for this is an increase in the number of young workers who suffer from illnesses, so we are working on countermeasures to facilitate the early detection of illnesses. We will continue to work on providing mental health care so that all employees can work with a healthy body and mind.



② Maintaining the rate of diagnosis in periodic medical checkups

In the Taiyo Yuden Group, industrial physicians, nurses, and public health nurses provide health guidance to help each employee improve their ability to care for their health. So far, we have provided three types of guidance: (1) exercise guidance, (2) health guidance, and (3) nutritional guidance.

The ratio of employees who were diagnosed with an illness was 51.6%, which was lower than the national average of 53.8%. In FY2017, to maintain or improve this situation, we held lifestyle measurement meetings at more work sites to make employees more health-conscious. In addition, we held nutrition or health classes under the slogan of "Review and change your lifestyle with higher health consciousness," which was established for TYHP 21 (Taiyo Yuden G Health Plan 21). We will continue to promote healthcare activities so that our employees can work in good health.



Nutrition class



Health class