

# CSR Report 2019

CORPORATE SOCIAL RESPONSIBILITY REPORT 2019



Creating a Better Future Through *Monozukuri*

 **CENTRAL GLASS CO., LTD.**

# CSR at the Central Glass Group

The Central Glass Group defines CSR as achieving our Corporate Philosophy. Cooperation and collaboration with our many stakeholders are essential in order to fulfill our social responsibility through our Basic Philosophy and Basic Policies founded in observance to our Code of Conduct. The Central Glass Group strives to fulfill the Corporate Philosophy in all of our activities.

## Corporate Philosophy

### Basic Philosophy

## “Creating a Better Future Through *Monozukuri*\*”

The Central Glass Group will contribute to the establishment of a truly prosperous society through the spirit of *Monozukuri*.

\**Monozukuri* refers to all the business activities in which the Central Glass Group engages with a basic stance of integrity and sincerity, including R&D, quality oriented manufacturing, and sales.

### Basic Policies

- Create new value through innovative technologies.
- Grow together with society while remaining environmentally friendly.
- Endeavor to increase corporate value with global growth as our driving forces.
- Aim to be a vibrant enterprise with a pioneering spirit and respect for diversity.

### Code of Conduct

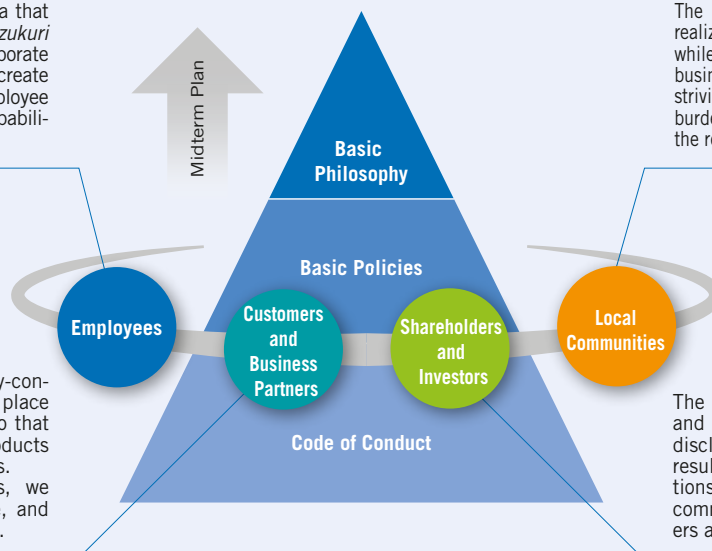
1. Take responsibility for one’s own actions, and engage in honest corporate activities.
2. Refine one’s awareness, and constantly pursue original ideas and technologies.
3. Achieve the establishment of a society in which all people can live in comfort and good health, and protect the global environment.
4. Create products that satisfy customers all over the world by learning about different cultures and customs.
5. Respect the diversity of every individual, and never cease to embrace the challenges of the future.

## CSR System at the Central Glass Group

The Central Glass Group will fulfill our corporate social responsibilities through continual improvement efforts utilizing Plan, Do, Check and Act (PDCA) cycles for every activity based on the CSR system outlined below.

The Group focuses on the idea that *Monozukuri* starts with *Hitozukuri* as the foundation of our corporate growth, and we aim to create workplaces in which every employee is able to demonstrate their capabilities and skills to the utmost.

The Group carries out quality-control initiatives that always place customer satisfaction first, so that we can provide reliable products and services to our customers. With our business partners, we work to build fair, equitable, and positive relationships of trust.



The Group contributes to the realization of a sustainable society while recognizing the effect of our business activities on the environment, striving to reduce our environmental burden, and growing in harmony with the regions where we do business.

The Group strives to realize rapid and highly transparent information disclosure. Through our financial results, briefings, and publications, we are working to prioritize communication with all shareholders and investors.

## Midterm Plan (FY2018-FY2020)

The Central Glass Group has formulated a three-year Midterm Plan from FY2018 to FY2020.

This plan raises the need to act quickly throughout the entire Group to anticipate and be ready for environmental changes after the medium term.

### Basic Policies

**Achieve new growth by strengthening our business foundations and original technologies.**

- Strengthen our business foundations by clarifying and focusing on our priorities.
- Deliver added value by anticipating the needs of customers and society.
- Ensure compliance and contribute to the development of society as a global corporation.

### Basic Strategies

#### 1. Return to a medium- to long-term growth path.

- Pursue returns by selectively allocating management resources to business fields targeted for growth.
- Secure funding for investments in growing areas through restructuring according to business and organizational characteristics.
- Boost earning power and efficiency as well as improve cash flows through carefully selected investments.

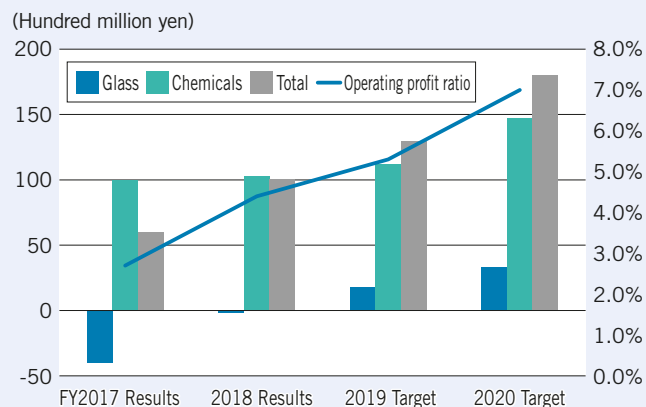
#### 2. Distribute cash flows based on a well-balanced consideration of shareholder returns, investments and financial discipline.

#### 3. Continue strengthening R&D to ensure future growth.

### Management Target

	FY2018 Results	FY2020 target in the Midterm Plan
Operating profit	10 billion yen	18 billion yen
Operating profit ratio	4.4%	7.0% or more
ROE	4.5%	6.0%
Total return ratio to shareholders	40.2%	At least 30%

### Operating Profit/Operating Profit Ratio



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### Editorial Policy

This CSR Report 2019 aims to accessibly provide more comprehensive information about our engagement with all of the Central Glass stakeholders from our customers, business partners, and investors to employees and members of the local communities.

### Reference Guidelines

- Responsible Care Code of the Japan Responsible Care Council (JRCC)
- ISO 26000 (Guidance on social responsibility)
- Environmental Reporting Guidelines 2018 of the Ministry of the Environment

### Report Period

April 2018 to March 2019

(The period for information related to health and safety as well as social and environmental activities of overseas affiliates was from January to December 2018.)

### Scope of the Report

The Central Glass Group (Data was only gathered from the plants, research centers, and headquarters of Central Glass Co., Ltd. along with some of our domestic and overseas affiliates.)

### Central Glass Group and the Sustainable Development Goals

Sustainable Development Goals (SDGs) are international objectives to be achieved by 2030 that were adopted at the United Nations Summit held in September 2015. These objectives consist of 17 goals with 169 targets to achieve a sustainable world.

The Central Glass Group works toward the targets set out by the SDGs through various business activities with the aim of contributing to society and the sustainable growth of the Group.





# Contributing to the a Truly Prosperous

## Philosophy and Policies

The Central Glass Group has formulated a Basic Philosophy as part of our Corporate Philosophy to create a better future through *Monozukuri*. The Group will contribute to the establishment of a truly prosperous society through this spirit of *Monozukuri*. *Monozukuri* is a concept encompassed in all of our corporate activities from research and development to manufacturing and sales as a sincere business practice which forms the foundation of the Group.

I believe that achieving the above Corporate Philosophy fulfills the corporate responsibility of the Central Glass Group, which exists as a company dedicated to *Monozukuri*. We will continue to further business activities centered on realizing our social responsibility while deepening cooperation and coordination with all of our stakeholders.

## Compliance

We must adhere to laws and regulations as a prerequisite to the expansion of our businesses, and therefore, compliance is an indispensable requirement to fulfilling our corporate social responsibility.

We continually heighten the transparency and fairness of overall management and clarify the auditing function of directors and the business execution duties of executive officers, and strive to establish an efficient and rational organizational structure that can respond swiftly to changes in the business environment in order to further enhance corporate value as well as expand revenue. In addition, we are enriching understanding of compliance among our employees through educational and awareness-raising activities conducted by our Compliance Promotion Committee.

However, there have been several issues stemming from insufficient awareness towards quality-related compliance.

We are reinforcing governance through reemphasizing the importance of compliance throughout the Group to live up to the expectations of each and every stakeholder on a foundation of "sincerity" in business.

# Establishment of Society Through *Monozukuri*

## Optimization of Human Resources

We have also developed our educational systems in accordance with the belief that *Monozukuri* starts with *Hitozukuri*—the development of human resources—including those for employee development and the training of global human resources. Additionally, in order to promote diversity, we are working actively to provide opportunities for non-Japanese employees.

We believe maintaining and improving working environments in which our employees can feel safe and secure is essential to the sound development of our business. Therefore, we have introduced a system that prohibits employees from working extended hours beyond the prescribed limit. Furthermore, since FY2009, we have been operating a system under which all employees receive stress checks and consult with specialists if any problems are discovered.

We have also been developing systematic measures to actively support employees who are raising children or caring for family members, such as creating support programs that go beyond statutory requirements.

## Promotion of the Active Participation of Female Employees

Many of our *Monozukuri* processes are carried out on equipment operating 24hrs a day. Up until recently, Central Glass Co., Ltd. had not been actively employing women at manufacturing sites due to working conditions such as a three-shift system that includes late night shifts. This has resulted in a total employee gender ratio skewed toward men. In order to more actively employ women, we have set targets, such as the percentage for female hires, in the Action Plan to Promote Female Workplace Participation drafted in 2016, which has already shown some success.

## Midterm Plan and Globalization

In the Midterm Plan that began in FY2018, the Central Glass Group aims to reach 18 billion yen in operating profit in FY2020. Since it would be extremely challenging to reach through only business expansion in the shrinking Japanese market, we are actively seeking to strengthen our position in the global market where the population continues to grow.

Overseas sales have already grown to make up more than 50% of sales for the entire Group, including exports from Japan. To further increase the overseas sales ratio, we are furthering business expansion in China and other Asian countries, the United States, and Europe.

Today, sales of electrolytes for secondary lithium ion batteries are performing well, and production facilities in Japan, Korea and China are operating smoothly. The initial area of our new plant in the Czech Republic finished construction and began production in March 2019. This plant is expected to have an annual production capacity of 20,000 tons at the start of full operation in 2020, which will largely contribute to profit during the last year of the Midterm Plan.

The Central Glass Group focuses its strength on creating products able to address social issues, such as electrolytes for secondary lithium ion batteries that help the development of electric vehicles, as well as hydrofluoroolefin products that have a low global warming potential. We also contribute to the establishment of a truly prosperous society by driving forward research and development based on the three key areas—the environment/energy, comfortable daily life, and the life sciences.

We look forward to the ongoing understanding and support from all of our stakeholders as we move into the future.



Tadashi Shimizu  
Representative Director, President & CEO  
Central Glass Co., Ltd.

# Business Outline of the Central Glass Group



## ◆ Corporate Outline (As of March 31, 2019)

<b>Company Name</b>	Central Glass Co., Ltd.
<b>Established</b>	October 10, 1936
<b>Number of Employees</b>	1,633 (6,832 consolidated)
<b>Capital</b>	18,168.28 million yen
<b>Listed Stock Exchange</b>	Tokyo Stock Exchange

## ◆ Major Products of Each Segment

Segment	Product Category	Major Products
Glass Business	Architectural Glass	Float glass, figured glass, wired glass, heat reflective glass, fabricated glass (tempered glass, heat-resistant tempered glass, laminated glass, insulating glass units, security glass), mirrors, anti-fog mirrors, decorated glass, screen glass, thin flat glass for LCDs, chemical tempered glass, glass powder and glass paste
	Automotive Glass	IR-cut glass, UV-cut glass, glass antennas, privacy glass, module glass, acoustic glass, defogging glass, head-up display glass, and other various safety glasses
	Glass Fiber	Continuous glass fiber, glass wool
Chemicals Business	Basic Chemicals	Hydrofluoroolefin products, polyaluminum chloride, gypsum, hydrofluoric acid
	Fine Chemicals	Active ingredients & intermediates for pharmaceuticals/agrochemicals, fluorine organic/inorganic compounds, high-purity fluorine gases, electronic materials, electrolytes for lithium ion batteries, fluorine organic/inorganic reagents
	Fertilizers	NPK compound fertilizer, NK compound fertilizer, coated fertilizer, organic chemical fertilizer, fertilizer materials, microbiological agents/materials

\*The Glass Fiber Business shifted from the jurisdiction of the Chemicals Business to the Glass Business on April 1, 2019.

Central Glass Sales Co., Ltd.  
 Central Glass Engineering Co., Ltd.  
 Takada Co., Ltd.\*  
 Tohoku Glass Engineering Co., Ltd.  
 Bishu Silica Sand Co., Ltd.  
 Mie Glass Industry Co., Ltd.  
 Central Glass Plant Services Co., Ltd.  
 Central Saint-Gobain Co., Ltd.  
 Central Glass Module Co., Ltd.  
 Japan Tempered & Laminated Glass Co., Ltd.  
 Central Chemical Co., Ltd.  
 Central Glass Fiber Co., Ltd.  
 Tosho Central Co., Ltd.  
 Sowa Transportation and Warehouse Co., Ltd.  
 Central Engineering Co., Ltd.  
 Ube Analytical Center Co., Ltd.  
 Ube Yoshino Gypsum Co., Ltd.  
 Central Insulation Co., Ltd.

\*Takada Co., Ltd. was absorbed by Central Glass Sales Co., Ltd. on April 1, 2019.

Carlex Glass America, LLC (US)  
 Northwestern Industries, Inc. (US)  
 SynQuest Laboratories, Inc. (US)  
 Central Glass International, Inc. (US)

## The Americas

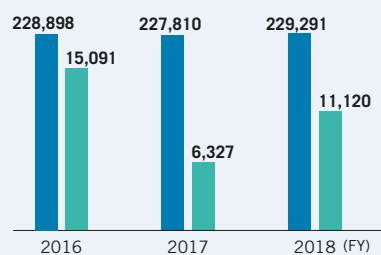


### ◆ Business Sites in Japan

<b>Head Office</b>	Kowa-Hitotsubashi Bldg., 7-1 Kanda-Nishikicho 3-chome, Chiyoda-ku, Tokyo
<b>Chemical Research Center</b>	17-5 Nakadai 2-chome, Kawagoe City, Saitama Prefecture
<b>Chemical Research Center (Ube)</b>	5253 Okiube, Ube City, Yamaguchi Prefecture
<b>Glass Research Center</b>	1510 Okuchi-cho, Matsusaka City, Mie Prefecture
<b>Ube Plant</b>	5253 Okiube, Ube City, Yamaguchi Prefecture
<b>Matsusaka Plant</b>	1521-2 Okuchi-cho, Matsusaka City, Mie Prefecture
<b>Matsusaka Plant</b>	6 Chikko-Minamimachi, Sakai-ku, Sakai City, Osaka Prefecture
<b>Sakai Manufacturing Site</b>	
<b>Kawasaki Plant</b>	10-2 Ukishima-cho, Kawasaki-ku, Kawasaki City, Kanagawa Prefecture

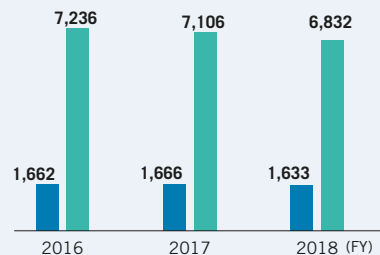
### Net Sales and Ordinary Income (Consolidated)

(Unit: million yen) ■ Net sales ■ Ordinary income

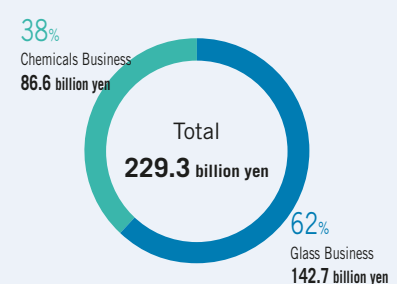


### Number of Employees

(Unit: people) ■ Non-consolidated ■ Consolidated

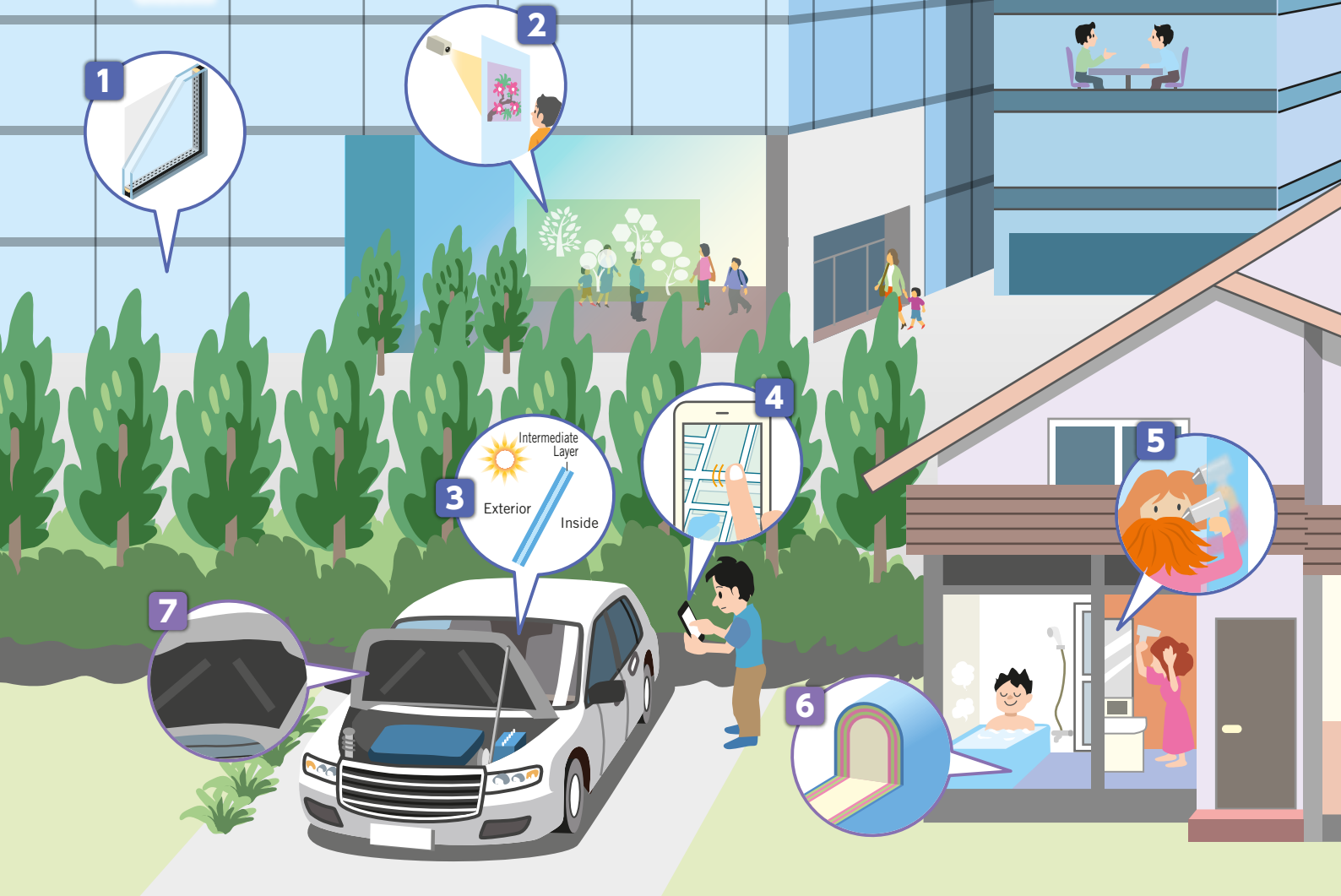


### FY2018 Sales by Segment (Consolidated)



# Products of the Central Glass Group

The Central Glass Group supplies products related to the fields of glass and chemicals. The Group supports many aspects of a comfortable daily life such as providing raw materials for glass products used in commercial buildings, residences and automobiles, as well as raw materials for industrial products, materials supporting industrial production processes, fertilizers, and pharmaceutical products. The Central Glass Group develops and provides environmentally friendly products and products that take people's health and safety into consideration.



## Glass Business

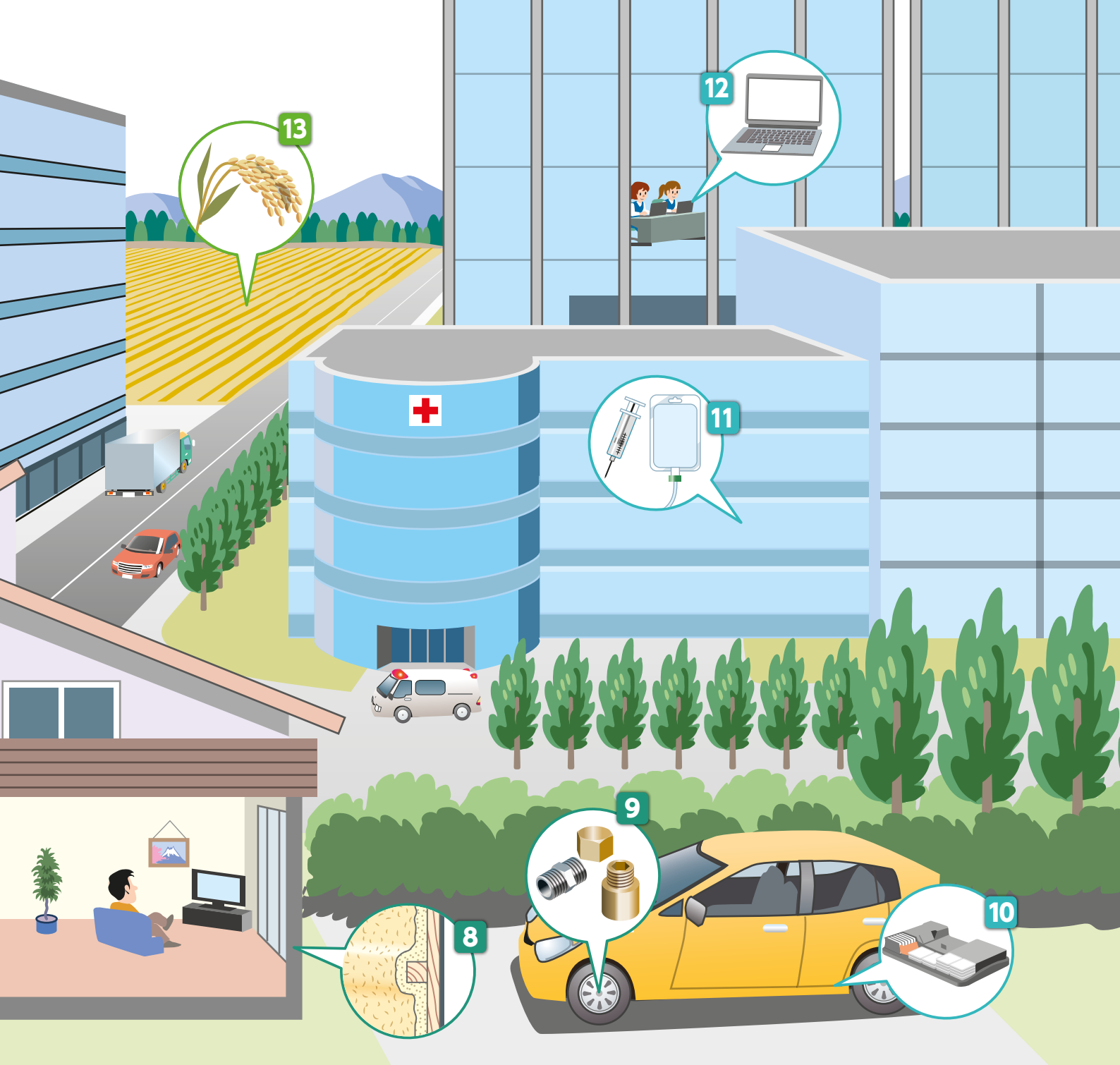
### Glass

- 1 Architectural Glass**  
Glasses like eco-glass, security glass, and soundproof glass that save energy and contribute to more comfortable interiors.
- 2 Transparent Screen Glass (Auroverre®)**  
Glass screens that combine the transparency of glass with the ability to project images.
- 3 Automotive Glass**  
Laminated glass and tempered glass for automotive windows, and high-performance glass such as heat-insulating glass that contributes to environmental protection.
- 4 Glass for Touch Panels**  
Ultra-thin glass for touch sensor panels and cover glass.
- 5 Lead-Free and Anti-Fog Mirrors**  
Environmentally friendly lead-free mirrors that do not contain the harmful components usually used in back coatings, and anti-fog mirrors with special coatings applied to their surfaces in order to prevent fogging.

### Glass Fiber

- 6 Resin-Reinforced Materials (Bathtubs, etc.)**  
Continuous glass fiber widely used in such diverse applications as fiber-reinforced plastics for bathtubs, housing, automobiles, ships, and electronic products.
- 7 Automotive Sound-Absorbing Materials**  
Glass wool, a noncombustible and fire-resistant material used for heat insulation and sound absorption in automobiles, railcars, etc.





### Basic Chemicals

**8 Blowing Agent for Insulation Foams**  
 Hydrofluoroolefin blowing agent which is used in insulation foams used for housing and freezer showcases. Hydrofluoroolefin is an environmentally friendly fluorocarbon material that has low global warming potential and does not damage the ozone layer.

**9 Fluorine Cleaning Agents and Solvents**  
 Hydrofluoroolefin fluorocarbon materials used in cleaning agents for thorough degreasing of metal parts, in detergents for dry cleaning, as well as in solvents for special coatings.

### Fine Chemicals

**10 Electrolytes for Lithium Ion Batteries**  
 For applications such as in electric vehicles and hybrid vehicles.

**11 Active Ingredients & Intermediates for Pharmaceuticals**  
 Active ingredients and intermediates for pharmaceuticals such as anesthetics and antiulcer drugs utilizing fluorine chemicals and other technologies developed in-house at Central Glass Co., Ltd.

**12 Fluorine Products for Electronic Materials**  
 Fluorine-based process gases, cleaning gases, and resist materials employed in the production of semiconductors and LCD panels used in computers and smartphones.

### Agri-Bio

**13 Environmentally Friendly Agricultural Materials**  
**Coated Fertilizer Cera-coat®**  
 A controlled-release fertilizer developed based on the concepts of ideal fertilizing effect, saving labor, low cost, and environmental friendliness. Highly effective, so less of the product needs to be used.  
**Microbial Control Agents**  
 Anti-microbial agricultural chemicals suitable for organically or specially cultivated agricultural products. Extremely safe for humans, animals, and crops. Can be used until just before harvest, without being counted as pesticide use.

# Initiatives to Address Social Issues at the Central Glass Group

The Central Glass Group strives to find various solutions to address social issues.

In this special feature, we will introduce the success of our hard work in research and development to reduce the environmental impact of automobiles.

## Chemicals Business

Expanding the global electrolytes supply for automotive batteries to contribute to growth of eco-friendly vehicles

### Establishment of New Production Sites of Electrolytes for Secondary Lithium Ion Batteries

The electrolytes for secondary lithium ion batteries that the Central Glass Group produces are widely used in electric vehicles (EV) and other eco-friendly cars, stationary power storage, and start-stop systems. The unique additives which we have developed provide attributes that significantly improve battery performance such as lifespan and output.

In order to meet the growing demand in electrolytes for eco-friendly vehicle batteries in the rapidly expanding market, in March 2017 the Central Glass Group established the industry's first large-scale electrolyte production and sales company on the European mainland in the Czech Republic. The first plant was completed in March 2019. The construction of this plant has enabled us to be able to meet the pace of expected growth in the European market.

Greater demand for the electrolytes is also forecasted in the future due to increasing awareness worldwide about eco-friendly vehicles, including in Europe with their strict vehicle emissions regulations. We have set up electrolyte production sites in Japan, Korea, China, and the Czech Republic and will further advance the global supply system of electrolytes for the batteries of eco-friendly vehicles.



Exterior of Central Glass Czech s.r.o.

### Founding of a Joint Venture to Support Electrolyte Production in China



Exterior of Jiangxi Tinci Central advanced materials Co., Ltd.

Jiangxi Tinci Central advanced materials Co., Ltd. was established in April 2018 in China as a joint venture to produce lithium hexafluorophosphate (LiPF<sub>6</sub>), which is an essential component of electrolytes. This new venture improves the supply system and enables the provision of LiPF<sub>6</sub> to all the production sites throughout the Central Glass Group.

## VOICE

Central Glass Czech s.r.o.

### Sayako Maruyama

**We promote the electrolytes business worldwide.**



I have been in charge of quality assurance since Central Glass Czech was established. As the plant began operation, the company brought together people who were very curious and highly motivated about the electrolytes business. Although we are all busy, we work together in a family-like atmosphere. I was delighted the other day when I saw one of my colleagues enthusiastically sewing the company logo onto a white lab coat. I do also see people struggling with inexperience or unexpected problems. As the company expands, I strive to make this plant a place that encourages our team members to flourish and grow while prioritizing the stability of operations.



Members of Central Glass Czech s.r.o.

## Developing Lead-free Solder for Tempered Glass

### Adapting to Stricter Environmental Regulations for Automobiles

The End-of-Life Vehicles Directive (ELV Directive) was enacted in the European Union in October 2000 to reduce the environmental impact of automotive products that have reached their end of life. This directive aims to ensure disposal companies can efficiently dispose of end-of-life vehicles in order to reduce vehicle waste and encourage recycling of end-of-life vehicles and parts. Lead, which is regulated under the ELV Directive, has been reported to have adverse effects on the human body, such as neurotoxicity, nephrotoxicity, and reproductive toxicity. The ELV Directive mandates the use of lead-free solder for the tempered glass of any vehicle models authorized from January 2016.

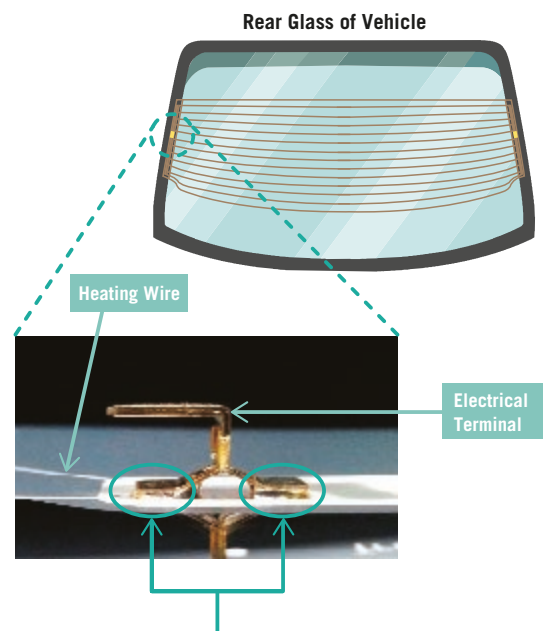
### Establishing Stable Production Processes Free of Substances Prohibited Under Environmental Regulations

The Central Glass Group has striven to reduce its environmental impact even before the ELV Directive was enacted. Since the latter half of the 1990s, we have been working to develop lead-free solder that does not use substances prohibited under environmental regulations.

Lead solder has been used for a long time due to its superior cost performance. We faced many challenges while developing a lead-free soldering alloy with comparable cost performance that does not use substances prohibited by environmental regulations. The establishment of core production technology that uses lead-free solder and the development of stable production processes were also major challenges. We were able to overcome these challenges by January 2016 and are currently delivering products using lead-free solder to many of our customers.

In the future, we aim to design even more efficient processes in an effort to deliver environmentally-friendly products to many more of our customers worldwide.

### Lead-free Soldered Terminal



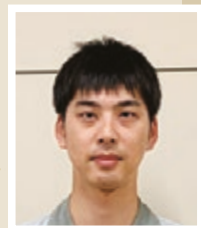
The heating wire on the rear glass of the vehicle needs to be supplied with electricity in order to defog the glass. The terminals that supply this electricity are attached using the lead-free solder.

## VOICE

Glass Manufacturing  
Technology Center

### Akihiro Matsumoto

**We aim to develop products that have low environmental impact.**



The glass of vehicle windows must both provide protection to passengers and ensure visibility. I believe that it is increasingly important to manufacture not only quality products but also products with low environmental impact like lead-free solder in line with the expectations of modern society.

In addition to developing environmentally-friendly products, we aim to conserve energy by developing efficient production equipment and to advance sustainable production technology that minimizes waste.

# Increasing Transparency and Fairness of Overall Management

The Central Glass Group has established a corporate governance structure to increase transparency and fairness of our overall management as well as to improve efficiency and speed. We carry out initiatives to raise all employees' awareness of compliance in order to practice sincere corporate activities.

## Corporate Governance

The Central Glass Group is continually increasing the transparency and fairness of our overall management, and strives to establish an efficient and rational organizational structure that can swiftly respond to changes in the business environment in order to further enhance our corporate value and expand our revenue. This is our fundamental concept of corporate governance.

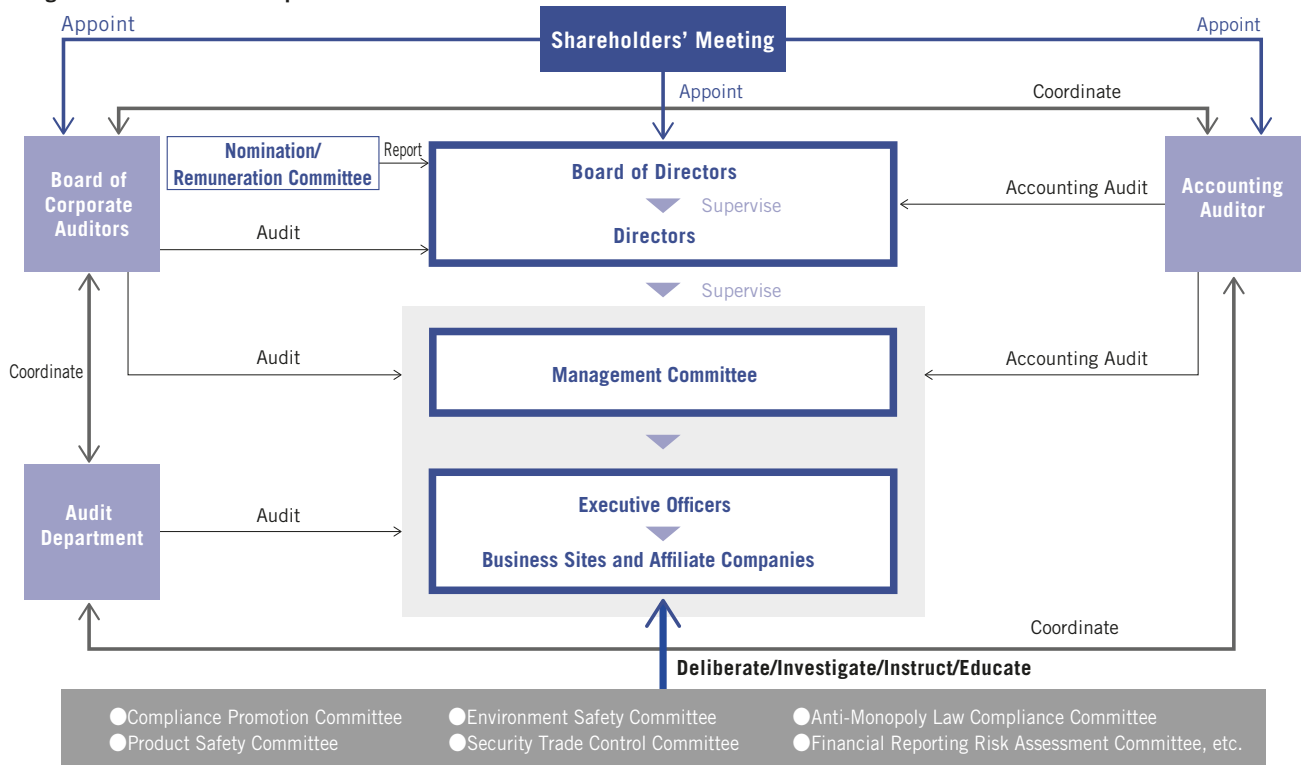
Based on this concept, we position our Board of Directors and Board of Corporate Auditors as the foundation of our corporate governance. In addition, we have adopted an executive officer system. By separating decision-making regarding important business matters, the supervision

of business execution, and the actual execution of business, we have slimmed down the Board of Directors to make management more efficient and prompt.

We have, in addition to an assigned Accounting Auditor in accordance with the Companies Act, an Audit Department for the purpose of internal auditing, which conducts audits of the full range of activities of Central Glass Co., Ltd. and our affiliates, and reports its findings to the Representative Director and the Board of Corporate Auditors.

The Board of Corporate Auditors, the Accounting Auditor, and Audit Department staff exchange information and opinions, ensure coordination, and share problems to embrace and rationalize the auditing process.

Organizational Chart for Corporate Governance



## Board of Directors

As a rule, the Board of Directors meets once a month, or when necessary, to deliberate and resolve legal and important managerial issues in line with the regulations covering the Board of Directors, and supervises the execution of business by the Directors and Executive Officers including the Representative Director.

Independent Outside Corporate Auditors and Outside Directors, who have no potential for a conflict of interest with ordinary shareholders, ensure fair and consistent decision-making by the Board of Directors.

## Management Committee

The Management Committee generally meets once a week, in line with the regulations governing its activities, to deliberate and resolve important issues affecting the execution of business, and to deliberate proposals to be put forward to the Board of Directors.

## Board of Corporate Auditors

The Board of Corporate Auditors generally meets once a month to deliberate and resolve important auditing issues. Corporate Auditors also share information and frequently exchange opinions with each other. In addition they meet periodically with the Representative Director to discuss important matters of management and auditing.

The Corporate Auditors attend important meetings such as those of the Board of Directors, and audit the performance of duties that are carried out by the Directors and Executive Officers, as well as the performance of duties of each department and affiliate of the Group.

## Audit Department

The Central Glass Group has established the Audit Department at the head office for the purpose of managing internal control systems related to internal audits and financial reporting.

Internal audits are carried out to maintain the effectiveness and efficiency of groupwide operations, conserve resources, and manage compliance to laws and regulations as well as to internal rules. Operating audits are also conducted preemptively to prevent dishonest practices. Through these audits, the Audit Department strives to sustain appropriate and efficient business operations by providing counsel and advice about improvements when necessary.

In FY2018, they conducted operating audits based on the annual plan. When counsel or advice about improvements was given through the audit, they provided continual support until improvements were implemented.

They also raise awareness about the Central Glass Group Policy Initiative each year and evaluate the effectiveness of internal control at important sites from an objective

standpoint as part of its internal control system to ensure trustworthy financial reporting.

In FY2018, they conducted assessments in line with this policy initiative and submitted an internal control report that analyzed its effectiveness for the groupwide financial reporting as of March 31, 2019.

The Audit Department also convenes regularly and when necessary to cooperate with the Corporate Auditors. The mutual exchange of information and establishment of a cooperative framework drives the comprehensiveness and efficiency of audits.

## Environment Safety Promotion Committee

The Central Glass Group has set up the Environment Safety Promotion Committee as an organization to promote groupwide Responsible Care activities in order to secure the environment, safety, and health throughout the entire life cycle from development to disposal of products based on the Responsible Care management policies.

In FY2018, the Environment Safety Promotion Committee presented the groupwide Responsible Care activities in FY2017 as well as the groupwide activity plans in FY2018 to the Group, in addition to reporting the activities of the manufacturing and R&D divisions in order to share information and promote continuous improvement.

### Committee Composition

Chairperson	Executive Officer in charge of the Environment, Safety & Quality Management Department
Vice-Chairpersons	Executive Officers in charge of chemicals technology & manufacturing/glass technology & manufacturing
Committee Members	General Managers of the Personnel Department, Chemicals Technical Planning & Management Department, Chemicals Production Engineering Center, Glass Manufacturing Technology Center, Glass Quality Assurance Department, Chemicals Quality Assurance Department, Environment, Safety & Quality Management Department, Chemical Research Center, Glass Research Center; Plant Managers of Ube Plant, Matsusaka Plant, Kawasaki Plant; and the Site Manager of the Matsusaka Plant Sakai Manufacturing Site
Observers	Corporate Auditors



FY2018 Environment Safety Promotion Committee

**Increasing Transparency and Fairness of Overall Management**

**Anti-Monopoly Law Compliance Committee**

The Central Glass Group has established an Anti-Monopoly Law compliance system and set up the Anti-Monopoly Law Compliance Committee as an organization to promote adherence to the Anti-Monopoly Law.

In FY2018, while primarily conducting internal education in the sales division, the Anti-Monopoly Law Compliance Committee also verified whether any information was disclosed that may conflict with the Anti-Monopoly Law, examined the trends in detection of cartels, and surveyed subcontracting relations. Furthermore, the committee also provided education about the Act Against Delay in Payment of Subcontract Proceeds, etc. to Subcontractors through outside instructors and engaged in activities to ensure compliance with the Anti-Monopoly Law.

**Committee Composition**

Chairperson	Executive Officer in charge of the Corporate Administration Department
Committee Members	General Managers of the Corporate Administration Department, International Business Department, Purchasing Department, Glass Sales Department, Automotive Glass Department, Glass Business Planning & Development Department, Glass Manufacturing Technology Center, Chemicals Sales Department, Medi-chemicals Sales Department, Specialty Chemicals Sales Department, Electronic Materials Sales Department, Energy Materials Sales Department, Chemicals Business Development Department, Agri-Bio Business Promotion Department, and Glass Fiber Department
Observers	Corporate Auditors; General Manager of the Audit Department; Tosho Central Co., Ltd.; Central Chemical Co., Ltd.; Central Glass Fiber Co., Ltd.; and Central Saint-Gobain Co., Ltd.

**Product Safety Committee**

Product safety is the top priority of the Central Glass Group, and we secure the safety of products across all processes from new product development, manufacturing and distribution to sales, after-sales service and disposal. We have set up the Product Safety Committee as an organization to determine swift and appropriate measures to address matters related to the Product Liability Act.

The Product Safety Committee was not convened in FY2018. However, the Group regularly held training sessions related to product safety for the committee members while conducting activities to prevent any safety issues and to prepare a swift response when necessary.

**Committee Composition**

Chairperson	Executive Officer in charge of the Environment, Safety & Quality Management Department
Vice-Chairpersons	Executive Officers in charge of the Glass Quality Assurance Department and Chemicals Quality Assurance Department
Committee Members	General Managers of the Corporate Administration Department, Marketing and Sales departments, Glass Manufacturing Technology Center, Chemical Technical Planning & Management Department, Glass Quality Assurance Department, Chemicals Quality Assurance Department, and Environment, Safety & Quality Management Department
Observers	Corporate Auditors



FY2018 Product Safety Training Session

**Security Trade Control Committee**

For the purpose of sustaining international peace and safety and preventing the stockpiling of weapons of mass destruction as well as conventional arms, the Central Glass Group exports goods and provides technology in accordance with regulations based on export and trade laws, such as the Foreign Exchange and Foreign Trade Control Act which regulates trade regarding supplying exports of cargo as well as providing technology to non-residents and to foreign countries. We act under a basic policy to never breach such laws and have established the Security Trade Control Program to fully raise internal awareness about this policy as well as a Security Trade Control Committee to thoroughly implement this program.

In FY2018, the Security Control Committee thoroughly raised awareness about compliance with laws and regulations by providing reports on the classification of exported products of the Glass Segment and Chemicals Segment; distributing information on major amendments to laws, regulations and policies; and sharing the results of internal audits.

Furthermore, the committee conducted training targeting sales staff, such as learning an overview of security export control as well as information and procedures for classifications through external lecturers, in addition to internal seminars through in-house instructors, while also engaging in activities to ensure compliance with these policies.

**Committee Composition**

Chairperson	Representative Director
Committee Members	General Managers of the Glass Business Planning & Development Department, Chemicals Business Development Department, Information & Computer System Department, Glass Sales Department, Automotive Glass Department, Glass Manufacturing Technology Center, Chemicals Sales Department, Medi-chemicals Sales Department, Specialty Chemicals Sales Department, Electronic Materials Sales Department, Energy Materials Sales Department, Agri-Bio Business Promotion Department, Glass Fiber Department, Environment, Safety & Quality Management Department, Chemical Research Center, and Glass Research Center
Outside Committee Members	General Manager in charge of exports and imports at Tosho Central Co., Ltd.
Observers	Corporate Auditors and General Manager of the Audit Department

## Financial Reporting Risk Assessment Committee

The Central Glass Group evaluates and analyzes the influence of management decision-making and accounting records on financial reporting. We have set up the Financial Reporting Risk Assessment Committee to ensure the reliability of financial reporting.

In FY2018, the Financial Reporting Risk Assessment Committee carried out activities focused on evaluating and analyzing past and potential events carrying financial reporting risk caused by internal and external factors in order to prevent financially risky reporting and presented them to the Management Committee when necessary.

### Committee Composition

Chairperson	Executive Officer in charge of the Finance & Accounting Department
Committee Members	Executive Officers in charge of the Corporate Administration Department, Audit Department; General Managers of the Finance & Accounting Department, Corporate Administration Department, and Audit Department
Observers	Corporate Auditors

## Compliance Promotion Committee

The Central Glass Group drafted the Compliance Manual to promote compliance. We have also set up the Compliance Promotion Committee as an organization to assess and deliberate on matters related to compliance.

In FY2018, the Compliance Promotion Committee put in place an internal reporting system that encompasses affiliate companies, responded to internal reports, and conducted compliance promotion education.

### Committee Composition

Chairperson	Executive Officer in charge of the Corporate Administration Department
Committee Members	General Managers of the Corporate Administration Department, Personnel Department, and Audit Department
Observers	Corporate Auditors

## Compliance with the Corporate Governance Code

Central Glass Co., Ltd. disseminates necessary information in accordance with each fundamental rule of the Corporate Governance Code.

Amendments enacted to the Corporate Governance Code by the Tokyo Stock Exchange in June 2018 require all publicly listed companies to publish corporate governance reports that include the response to the amended Corporate Governance Code.

In order to adhere to these amendments, Central Glass Co., Ltd. has established the Nomination and Remuneration Committee and follows the intentions of the Corporate Governance Code in operating and continually reviewing fair and rapid decision-making mechanisms as we strive to realize sustainable growth and increase corporate value over the medium and long term.

Central Glass Plant Services Co., Ltd., one of our Group companies, acquired FUJIHARDWARE Co., Ltd. on August 1, 2018. After discovering that back when the Central Glass Plant Services Osaka Plant was owned by FUJIHARDWARE Co., Ltd., some products had not undergone a re-heating treatment in violation of internal regulations, it was further found that the thickness of the glass had been measured before the strengthening process, although JIS stipulates that it must be carried

out after the process. We were notified that the JIS certification for the Central Glass Plant Services Osaka Plant was revoked on December 21, 2018.

We sincerely apologize to everyone for the great burden and inconvenience caused by the revocation of the JIS certification.

We will restructure and enhance our process management and quality management systems in an effort to restore trust to the Central Glass Group.



# Promoting Management that Fulfills Social Responsibilities

In order to realize our Corporate Philosophy, the Central Glass Group promotes the management of environmental, safety and quality activities based on our groupwide governance system.

## Environment and Safety Management

The Central Glass Group promotes management of environment and safety with Responsible Care (“RC”) activities at the core to secure the environment, safety, and health as well as protect the environment over the entire life cycle of our products, from the R&D stage to the procurement of raw materials, production, logistics, use, and disposal.

### Environment Policy in 2018

1. Ensure strict compliance.
2. Implement activities for preventing global warming.
3. Manage substance of concern adequately.

### Management Policy for Safety and Health in 2018

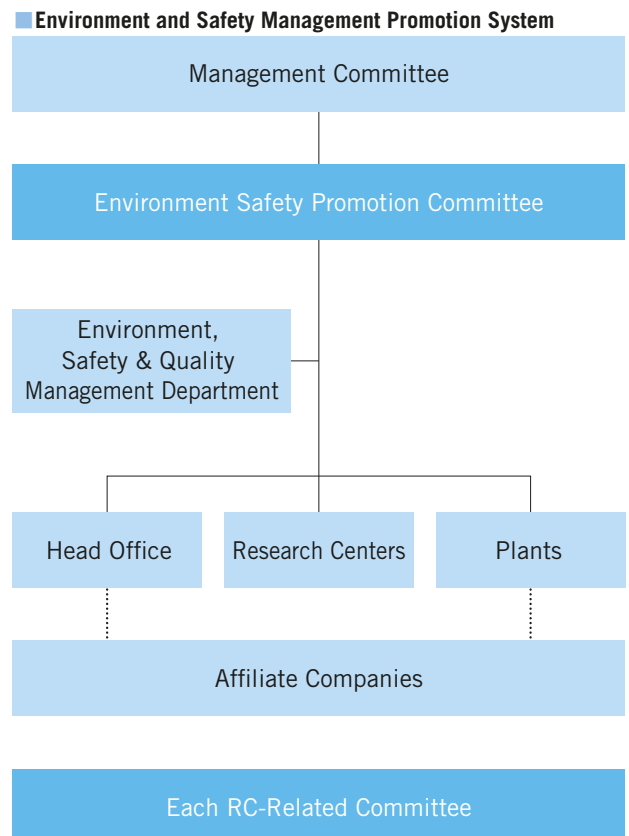
“Make efforts to maintain and enhance a safe, healthy and vibrant working environment, and achieve the Zero-accident. Safety first! ”

#### Priority implementation items

1. Strengthen safety and health management system
2. Conduct risk assessment surely —Eliminate potential hazards—
3. Implement thorough prevention measures for reoccurrence of past accidents —Prevent similar accidents—
4. Increase awareness of all employees to prevent disasters and accidents
5. Enhance health management and mental healthcare
6. Enhance health maintenance by encouraging to take leave and managing appropriate working hours
7. Prevent traffic accidents not only during a commute but also in daily events
8. Improve emergency reporting system further and comply with it

## Environment and Safety Management Promotion System

The Central Glass Group emphasizes Responsible Care activities in our management of environment and safety. An Environment Safety Promotion Committee has been established and the Environment, Safety, and Quality Management Department acts as the organizer under the promotion system to further the activities of the Central Glass Group. The head office, research centers and plants refine the activity plan with items unique to each business site and engage in specific environment and safety initiatives.





## FY2018 Targets and Performance Results

Major Issues	(Plan) FY2018 Targets	(Do) FY2018 Performance Results	(Check) Ratings	(Act) FY2019 Initiatives
Harmony with the environment and harmonious coexistence with society	Promote Environment Policy in 2018.	<ul style="list-style-type: none"> <li>Implemented activities based on the annual policies at each business site in accordance with the Environment Policy in 2018.</li> <li>Verified the status of initiatives with environmental safety self-audit reports and on-site environment and safety audits in addition to furthering these evaluations through management reviews at the Environment Safety Promotion Committee.</li> </ul>	○	Promote FY2019 Environment Policy.
Maintenance and improvement of the workplace environment	Promote Management Policy for Safety and Health in 2018.	<ul style="list-style-type: none"> <li>Implemented activities based on the safety and health management plan at each business site in accordance with the Management Policy for Safety and Health in 2018.</li> <li>Verified the status of initiatives with environmental safety self-audit reports and on-site environment and safety audits in addition to furthering these evaluations through management reviews at the Environment Safety Promotion Committee.</li> </ul>	○	Promote FY2019 Safety and Health Management Policy.
Promotion of environmental protection	Reduce greenhouse gas emissions by FY2020 (Target: 15% reduction relative to FY2005).	<ul style="list-style-type: none"> <li>Greenhouse gas emissions (CO<sub>2</sub> equivalent): 475,000 tons (51% reduction relative to FY2005).</li> </ul>	○	Continue activities to reduce greenhouse gas emissions by FY2020 (Target: 15% reduction relative to FY2005).
	Reduce the final disposed amount of FY2020 industrial waste (Target: 71% reduction relative to FY2000).	<ul style="list-style-type: none"> <li>Final disposed amount of industrial waste: 9,000 tons (86% reduction relative to FY2000).</li> </ul>	○	Continue activities to reduce the final disposed amount of industrial waste (Target: 71% reduction relative to FY2000).
Promotion of security and disaster prevention	Thoroughly comply with laws and regulations and pass on safety techniques and know-how.	<ul style="list-style-type: none"> <li>Conducted activities in accordance with the Security and Accident Prevention Guidelines.</li> </ul>	○	Thoroughly comply with laws and regulations.
	Emphasize efforts toward establishing equipment safety measures.	<ul style="list-style-type: none"> <li>Verified the progress of management, such as statutory inspections, self-inspections, and operational standards.</li> </ul>	○	Implement equipment safety measures and ensure operational safety.
	Effectively utilize accident data.	<ul style="list-style-type: none"> <li>Expanded operations of a Security and Disaster Prevention Database to domestic affiliate companies and shared accident data and recurrence prevention measures.</li> </ul>	○	Encourage the effective use of the Security and Disaster Prevention Database.
Promotion of industrial health and safety	Implement measures to prevent occupational accidents, utilizing information such as factor analyses of the 2017 occupational accident report.	<ul style="list-style-type: none"> <li>Provided cautionary reminders to each business site taking into consideration the type and timing of incidents.</li> <li>Number of occupational accidents: 49</li> </ul>	△	Implement measures to prevent occupational accidents based on the 2018 occupational accident report.
	Hold safety training sessions for the purpose of formulating clear recurrence prevention measures.	<ul style="list-style-type: none"> <li>Held safety training sessions to rectify the causes of accidents through the "5 Whys Analysis" technique.</li> </ul>	○	Continue to hold safety training sessions for the purpose of formulating clear recurrence prevention measures.
	Maintain and continue the management system and adopt it at other business sites.	<ul style="list-style-type: none"> <li>Continued to maintain OHSAS 18001 certification at Ube Plant.</li> <li>Prepared to acquire OSMHS certification at Matsusaka Plant.</li> </ul>	○	Maintain and continue the management system.
Promotion of logistical safety	Prepare new yellow cards and revise existing yellow cards.	<ul style="list-style-type: none"> <li>Prepared yellow cards for new chemical substances and revised existing yellow cards.</li> </ul>	○	Prepare new yellow cards and revise existing yellow cards.
Promotion of chemical and product safety	Comply with relevant laws and regulations and successively revise SDS and GHS labeling.	<ul style="list-style-type: none"> <li>Registered required documents relating to the Chemical Substances Management Act, the Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc., and Industrial Safety and Health Act.</li> <li>Revised SDS and GHS labeling.</li> </ul>	○	Continue to comply with relevant laws and regulations and successively revise SDS and GHS labeling.
	Asbestos management: Completely remove and properly handle asbestos when renovating equipment.	<ul style="list-style-type: none"> <li>Properly disposed of equipment that uses materials containing asbestos upon removal and renewal.</li> <li>Disposed of asbestos at Ube Plant, Matsusaka Plant and two affiliate companies.</li> </ul>	○	Continue to completely remove and properly handle asbestos when renovating equipment.
	PCB management: Strictly manage machinery containing PCBs and conduct disposal according to local administrative guidance.	<ul style="list-style-type: none"> <li>Properly managed and disposed of PCBs at business sites that have machinery containing PCBs.</li> <li>Identified equipment containing a high concentration of PCBs through an audit, and disposed of equipment containing a low concentration of PCBs at many business sites.</li> </ul>	○	Continue to strictly manage machinery containing PCBs and dispose of PCBs according to local administrative guidance.

Rating: ○: Achieved target △: Achieved most targets but not all ×: Additional measures required

\*The period for data collected about health and safety was from January to December 2018.

## Promoting Management that Fulfills Social Responsibilities

### Quality Management

The Central Glass Group formulates an annual quality policy taking into consideration the quality assessment results for the previous fiscal year and basing it on the Basic Quality Policy. This annual policy is rolled out at each business site and affiliates in Japan and abroad. Each business site strives to make continuous quality improvements in order to achieve quality objectives based on the annual quality policy. We check and assess conformity with requirements as well as the effectiveness of our Quality Management System, manufacturing processes, and products through quality management audits and reviews of quality improvement initiatives, tying the results into activities aimed at improving quality.

#### Basic Quality Policy

Central Glass aspires to truly contribute to society with the environment, safety, and quality as our fundamental principles. We always place customer satisfaction first and provide reliable products and services that customers love and can use with peace of mind throughout the entire product lifecycle, from product development to disposal after use.

#### Action Guidelines

1. Listen to customers and respond promptly.
2. Build quality through our processes and continually improve our products.
3. Provide customers with appropriate information regarding the quality and features of our products.

#### Quality Policy in 2018

##### 1. Ensure strict compliance

“Ensure strict compliance, ‘Follow what is decided.’ and ‘Follow what we decide.’ Implement fair and honest quality activities with recognition of significant influence that inadequate actions may cause on quality.”

##### 2. Enhance quality management system

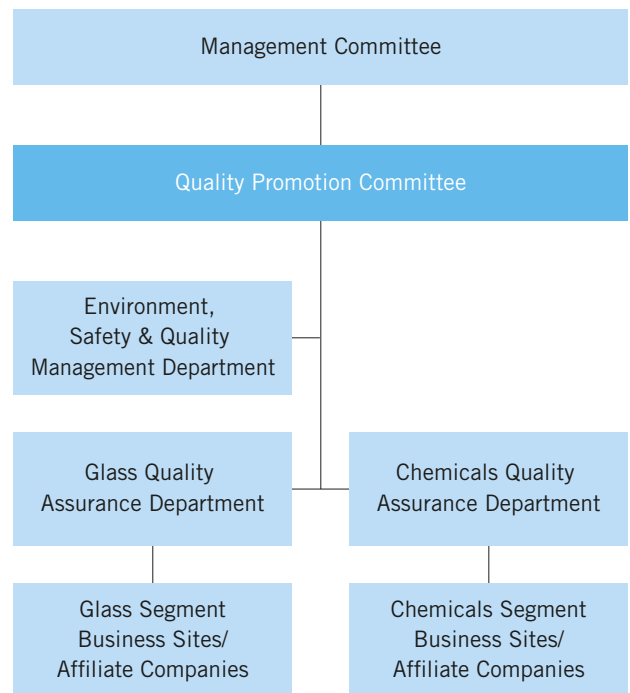
“Validate quality management system and make a continual improvement in all processes.”

##### 3. Increase effectiveness of quality improving activities

“Determine the true cause of nonconformity to ensure prevention of recurrence and carry out thorough prevention measure in all processes.”

### Quality Management Promotion System

The Central Glass Group provides products that satisfy customers based on our management policy in addition to regularly convening a Quality Promotion Committee and promoting quality assurance activities throughout the whole Group in order to continually improve all processes. We conduct quality assurance activities through an organizational structure that allows us to take practical action on quality assurance by dividing corporate administration and the glass and chemicals business operations for the purpose of enhancing the functionality of quality assurance systems suited to each segment.



#### FY2018 Targets and Performance Results

Major Issues	(Plan) FY2018 Targets	(Do) FY2018 Performance Results	(Check) Ratings	(Act) FY2019 Initiatives
	Ensure strict compliance.	<ul style="list-style-type: none"> <li>Conducted product safety training sessions that included cases of quality defects and product accidents from other companies as well as countermeasures, circumstances resulting in litigation due to recalls or product liability (PL), and education about laws and regulations.</li> <li>Held a meeting to establish measures against serious quality issues due to an incident in which some tempered glass manufactured by our OEM was shipped without undergoing a re-heating treatment that was required by both our customers and Central Glass Co., Ltd. (Please refer to p.15)</li> </ul>	×	Ensure strict compliance. “Follow what is decided” and “Follow what we decide.” Recognize the impact of improper actions on quality and review quality activities groupwide.
Improvement of customer satisfaction	Improve the Quality Management System.	<ul style="list-style-type: none"> <li>Maintained the quality assurance system and conducted quality improvement activities through quality audits at each business site such as manufacturing sites and affiliate companies.</li> <li>Promoted quality management activities through quality audits of sub-contractors and suppliers of raw materials.</li> </ul>	○	Thoroughly reinforce quality performance by continually improving the effectiveness of the Quality Management System.
	Implement more effective quality improvement activities.	<ul style="list-style-type: none"> <li>Conducted quality and product safety education through position-based and department training.</li> <li>Thoroughly implemented measures to identify root causes and prevent manufacturing or shipping defective products by analyzing the claims by segment and product type.</li> </ul>	○	Actively implement preemptive activities to prevent quality issues and reduce risk. Thoroughly implement measures to prevent a recurrence of defects and work to improve quality performance.

Rating: ○: Achieved target △: Achieved most targets but not all ×: Additional measures required

# Promoting Responsible Care Activities

The Central Glass Group will strive to enrich society through measures that ensure the protection of the global environment and the health and safety of people through Responsible Care activities.

## What Is Responsible Care?

Most chemical companies voluntarily work to secure the environment, safety, and health throughout every process, from the development stage of chemical substances to their manufacture, distribution, use, final consumption, and their disposal. Those companies then publicize the results of their activities to engage in dialogue and communication with society. These activities are referred to as Responsible Care.



## Environment and Safety Audits

The Central Glass Group checks the conditions of management systems, occupational safety and health, environmental conservation, logistical safety, chemical and product safety measures and dialogue with the communities at plants, research centers and domestic affiliates.

To verify the status of each item, each business site conducts an environmental safety self-audit, followed by an on-site environment and safety audit by an audit team that includes the chairperson of the Environment Safety Promotion Committee to directly verify the level of management.

In FY2018, all 52 business sites in Japan comprising the Central Glass Group conducted environmental safety self-audits, in addition to which we executed on-site environment and safety audits at 15 of those sites.

If improvements or corrective actions were requested during these audits, we provided support until they were implemented.

We also inspected 11 overseas business sites to check the conditions of occupational accidents and environmental conservation.

We will continue to ensure compliance with laws and regulations for occupational safety and environmental conservation as well as carry out environment and safety activities at each domestic and overseas business site.

## Promotion of Environmental Protection

### The Flow of Substances at the Central Glass Group

The Central Glass Group quantitatively tracks the environmental impact of manufacturing processes in order to identify environmental issues and implement measures for making improvements as we constantly strive to reduce the burden on the environment. The Glass Segment and Chemicals Segment each have a large focus on making sustained efforts toward energy saving activities and the establishment of recycling systems. In the Glass Segment, establishing measures to prevent global warming is a priority, since daily operations require a huge amount of heat energy to melt raw materials. On the other hand, the Chemicals Segment engages in the development of environmentally friendly products and reduction of waste.

### INPUT

Total Amount of Materials Input ..... 1,071,000 tons		Total Amount of Water Resources Input ..... 22,952 million m <sup>3</sup>		Amount of Net Energy Input ..... 13,751 TJ*	
Central Glass Co., Ltd.	Affiliate Companies	Central Glass Co., Ltd.	Affiliate Companies	Central Glass Co., Ltd.	Affiliate Companies
701,000 tons	370,000 tons	11.926 million m <sup>3</sup>	11.026 million m <sup>3</sup>	6,843 TJ	6,908 TJ

\*J (joule) is a unit for energy.  
TJ (terajoule) is equal to one trillion joules.



### OUTPUT

Atmosphere		Water		Waste	
Total Emissions of Greenhouse Gases ..... 907,000 tons-CO <sub>2</sub> e		Total Amount of Discharged Water ..... 20,836 million m <sup>3</sup>		Total Amount of Waste Produced ..... 165,000 tons	
Central Glass Co., Ltd.	Affiliate Companies	Central Glass Co., Ltd.	Affiliate Companies	Central Glass Co., Ltd.	Affiliate Companies
475,000 tons-CO <sub>2</sub> e	432,000 tons-CO <sub>2</sub> e	10.576 million m <sup>3</sup>	10.260 million m <sup>3</sup>	43,000 tons	122,000 tons
Emissions of Air Pollutants ..... 5,113 tons		Discharge of Water Pollutants ..... 89 tons		Final Disposed Amount of Waste ..... 21,000 tons	
Central Glass Co., Ltd.	Affiliate Companies	Central Glass Co., Ltd.	Affiliate Companies	Central Glass Co., Ltd.	Affiliate Companies
3,614 tons	1,499 tons	62 tons	27 tons	9,000 tons	12,000 tons
Reporting range		Recycling Rate of Waste ..... 89%		Recycling Rate of Waste	
● Central Glass Co., Ltd.: 3 plants, 1 manufacturing site, 3 research centers, and the head office		Central Glass Co., Ltd.		Affiliate Companies	
● Domestic affiliates: 6 major affiliates		77%		94%	
● Overseas affiliates: 11 major affiliates					
Tabulation of emissions of environmental pollutants at overseas affiliates began in FY2013.					
Some business sites for which calculations were unavailable are excluded.					

## Promoting Responsible Care Activities

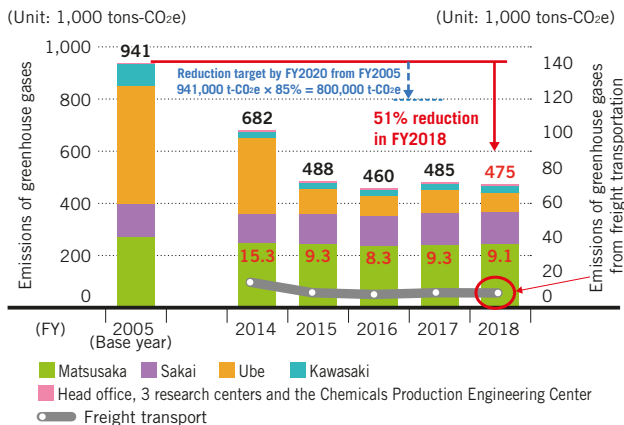
### Reduction of Greenhouse Gas Emissions

Central Glass Co., Ltd. has set and is working toward a FY2020 target of reducing greenhouse gases that are given off by the use of fuel, purchased power, and raw materials for manufacturing by 15% relative to FY2005 levels with this serving as a mid-term initiative to prevent global warming.

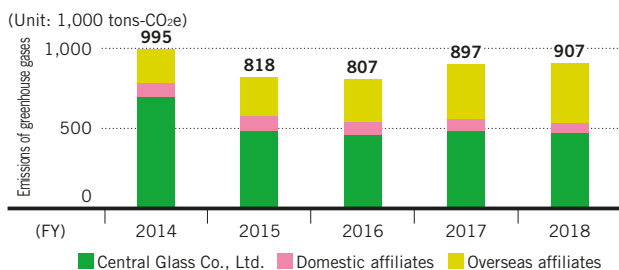
Our greenhouse gas emissions due to plant operations in FY2018 were 475,000 tons (CO<sub>2</sub> equivalent, 51% reduction relative to FY2005), which shows a reduction compared to the previous year as a result of the power optimization of plant operations. In addition, we reduced the amount of greenhouse gas emissions that were generated during the transportation of products relative to the previous year by shifting toward use of railway and sea vessels.

We will continue to strive to reduce the amount of greenhouse gas emissions of both domestic and overseas affiliates.

#### Changes in Greenhouse Gas Emissions (Central Glass Co., Ltd.)



#### Changes in Greenhouse Gas Emissions (Central Glass Group)



### Reduction of the Final Disposed Amount of Industrial Waste

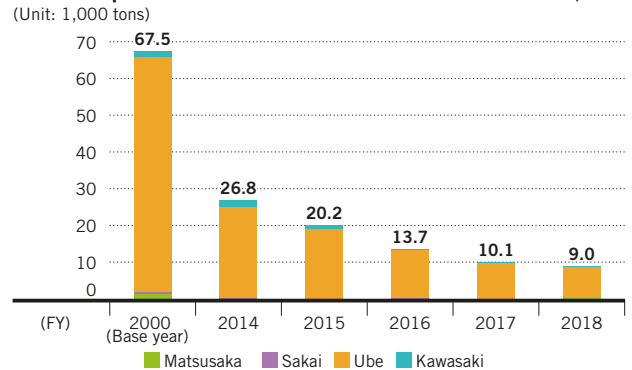
#### Central Glass Co., Ltd.:

Plants of Central Glass Co., Ltd. support promotion of reduction, reuse, and recycling of industrial waste as an important task in our Responsible Care activities, and each business site carries out initiatives accordingly.

From FY2016 onward, we have set a target of a 71% reduction from FY2000, based on targets that the Japan Chemical Industry Association and the Flat Glass Manufacturers Association of Japan set according to guidelines established by the Japan Business Federation. We aim to achieve this target by FY2020.

In FY2018, our industrial waste (final disposal volume) amounted to 9,000 tons, down 86% from FY2000. Thus, we have continued to achieve the target. We will continue management efforts to sustain our target achievement for FY2020. (Government target: 70% reduction in the final disposed amount of industrial waste in FY2020 compared to FY2000)

#### Final Disposed Amount of Industrial Waste (Central Glass Co., Ltd.)



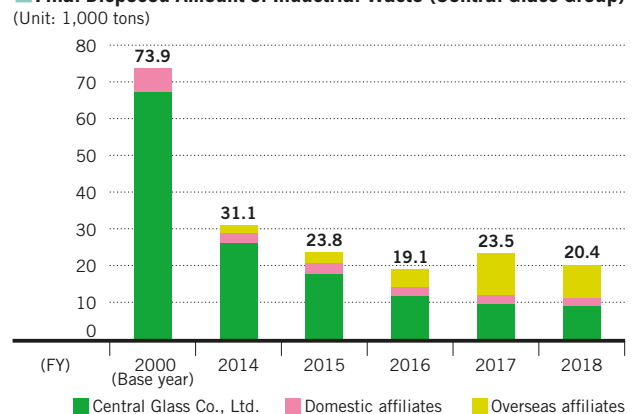
#### Central Glass Group:

The Central Glass Group has shown an overall reduction in waste in FY2018.

Although the waste generated from periodic repairs of the float glass manufacturing lines in FY2017 was fully disposed of within the same year, the amount of waste from our overseas affiliates slightly increased in FY2018 due to increased production. On the other hand, the amount of waste slightly decreased at our affiliates in Japan.

We will continue initiatives to reduce the amount of waste including both domestic and overseas affiliates.

#### Final Disposed Amount of Industrial Waste (Central Glass Group)



### Air and Water Pollutant Emissions

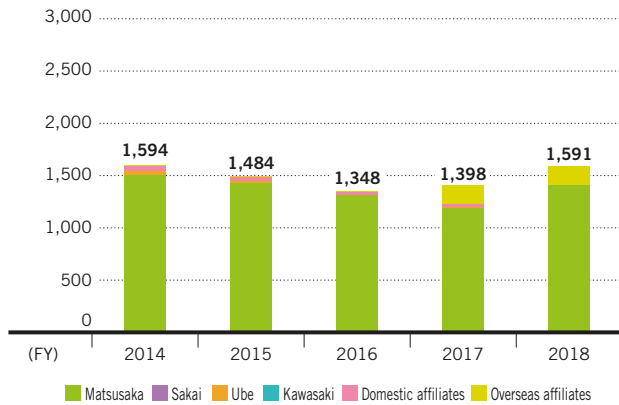
The Central Glass Group's manufacturing sites are operated in compliance with emission standards for atmosphere, water quality, and other environmental indicators in the regions where they are located. Reducing environmentally hazardous substances is an important challenge in regards to the global environment and human health and safety, therefore we will continue to carry out appropriate management.

### ● Status of Emissions of Air Pollutants

The trends in our emissions of three air pollutants, sulfur oxide (SOx), nitrogen oxide (NOx), and ash dust, are shown below.

#### ■ SOx Emissions

(Unit: tons)

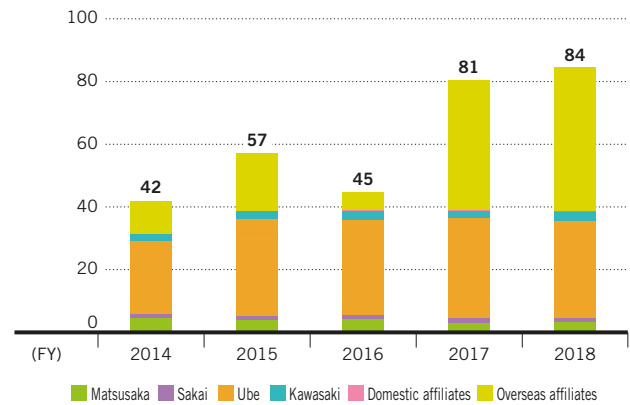


### ● Status of Emissions of Water Pollutants

Among controlled substances that impact water quality, trends in our chemical oxygen demand (COD) and emissions of phosphorous and nitrogen are shown below.

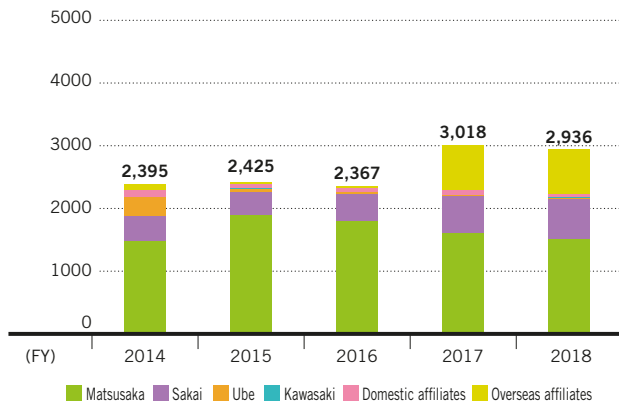
#### ■ Chemical Oxygen Demand (COD)

(Unit: tons)



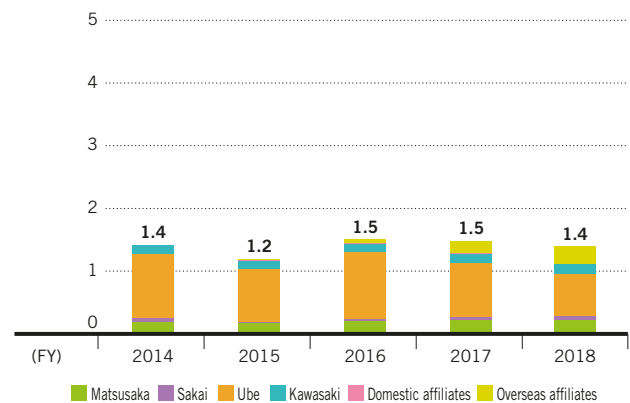
#### ■ NOx Emissions

(Unit: tons)



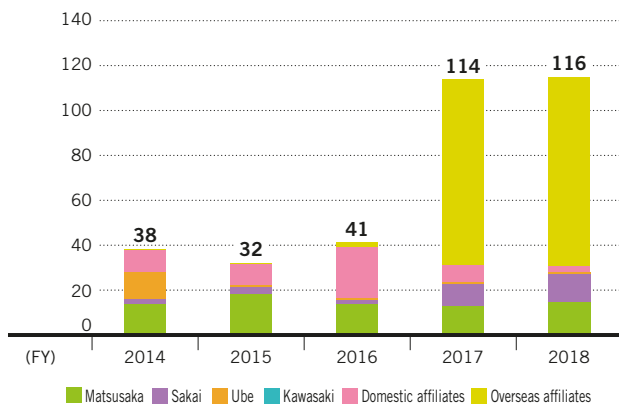
#### ■ Total Phosphorous Emissions

(Unit: tons)



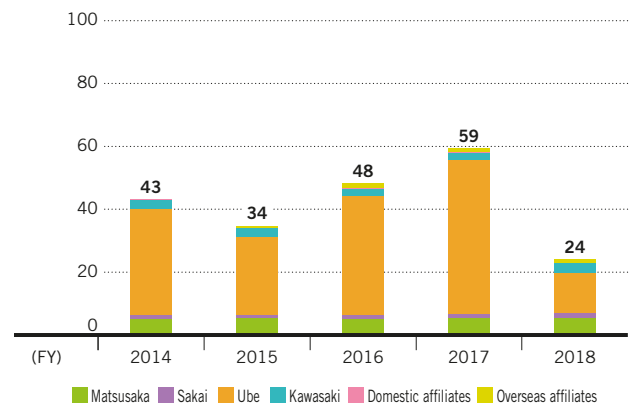
#### ■ Ash Dust Emissions

(Unit: tons)



#### ■ Total Nitrogen Emissions

(Unit: tons)



\*The data for overseas affiliates is shown only as reference because the data was collected according to the standards in each region.

## Promoting Responsible Care Activities

### Reduction of Chlorofluorocarbon Emissions from Industrial Air-conditioning Equipment and Refrigerators

Central Glass Co., Ltd. calculates the amount of chlorofluorocarbon emissions based on the Act on Rational Use and Proper Management of Fluorocarbons (2015). According to the results of simplified checks and regular inspections of 2,853 units at our business sites in FY2018, we were able to reduce the emissions relative to FY2017. However, since the total emissions at our business sites were 1,485 t-CO<sub>2</sub>e, which exceeded 1,000 t-CO<sub>2</sub>e, we notified the government in accordance with the above act.

In the future, we will strive to reduce emissions of chlorofluorocarbons through measures that include identification and repair of leakage areas, equipment management, and the control of the amount of refrigerants.

## Security and Disaster Prevention

Since the major plants of Central Glass Co., Ltd. are mostly located in areas designated by the Act on the Prevention of Disaster in Petroleum Industrial Complexes and Other Petroleum Facilities, each plant has established a full-scale security and disaster prevention system under the guidance of the authorities concerned with the environment, security, and disaster prevention, as we aim to completely eliminate facility disasters. We report any incident such as fire or leakage that occurs in a plant to fire departments and government agencies as an irregular incident.

We work to preemptively prevent accidents and disasters through efforts such as activities that are based on the Security and Accident Prevention Guidelines compiled by the Japan Chemical Industry Association (JCIA) at each plant and through the passing down of know-how to our young employees.

Furthermore, the relevant parties conduct safety inspections of facilities after installing, expanding, renovating, or updating equipment, before operations begin, in order to preemptively prevent any accidents or disasters.

## Industrial Health and Safety

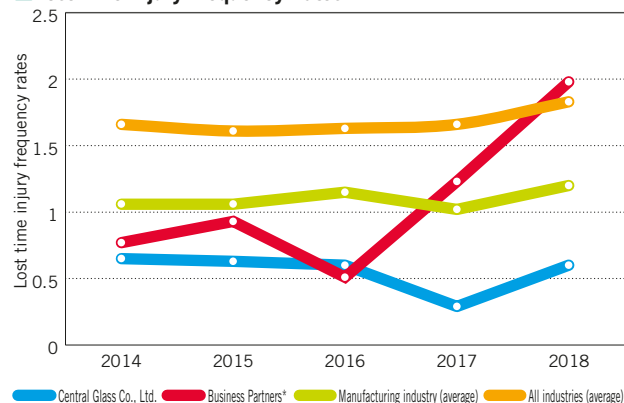
The Central Glass Group conducts safety and health activities at each business site under the basic policy and priority implementation items articulated in the Management Policy for Safety and Health for each fiscal year. We have also introduced Safety Operations Awards for business sites with zero accidents resulting in lost work hours in order to raise motivation about continued safety and health activities at each business site. Information about occupational accidents is also shared throughout the Central Glass Group in an effort to prevent occupational accidents.

In FY2018, the number of occupational accidents of the Group companies in Japan was 49 in total, of which 20 cases resulted in lost work hours and 29 cases did not result in lost time.

With respect to the state of workplace accidents, from the perspective of lost time injury frequency rates, our affiliate companies and business partners showed an increase in accidents with lost work hours. In addition, heat stroke also contributed to the increase in lost time injury frequency rates due to extremely high temperatures during the summer.

In the future, we will continue to work to promote occupational safety and health through measures such as safety activities, safety education, and cautionary reminders in order to prevent occupational accidents.

Lost Time Injury Frequency Rates



Lost time injury frequency rates = (Number of accidental deaths or injuries / Total work hours) x 1,000,000  
 (The frequency rate of accidents that result in lost work hours per million working hours)  
 (\*Business Partners: Affiliate companies and subcontractors)

## Logistical Safety

Central Glass Co., Ltd. and our domestic affiliate companies implement periodic training and education for not only their employees but also for employees at the business partners to which they outsource transporting, in order to prevent accidents during the transportation of chemical substances and to minimize the damage in case of incidents.

When chemical substances are transported by road, we prepare emergency contact cards (yellow cards) for drivers, which they carry not only when obligated by law, such as during the transportation of high-pressure gases and poisonous substances, but also when transporting other chemical substances, in accordance with the “Guidelines for Logistical Safety Management” that we have formulated.

In FY2018, we reviewed and revised the guidelines in order to further manage chemical substance transport properly. The details listed on these yellow cards are periodically revised by the relevant departments.

## Chemical and Product Safety

The regulations on chemical substances around the world have grown more sophisticated, moving from traditional hazard management to risk management that takes into account exposure factors. The intention is to achieve the goal

of the accord of the 2002 World Summit on Sustainable Development in Johannesburg, “Aiming to achieve, by 2020, the use and production of chemicals in ways that minimize significant adverse effects on human health and the environment.” Such regulations include Europe’s REACH regulations and Japan’s revised Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. Furthermore, revisions to laws on chemical substances have been pushed forward in Asian countries in recent years, and we must continue to properly comply with them. Following this trend, the Central Glass Group is working to ensure safety through a variety of different initiatives at every stage in which chemical substances are handled.

### Management of Chemical Substances

Central Glass Co., Ltd. has been voluntarily surveying, aggregating, and reporting PRTR<sup>\*1</sup> data since FY1995, prior to the enactment of the Chemical Substances Management Act (2000), in order to reduce emissions of chemical substances into the environment.

The number of substances subject to notification in FY2018 at Central Glass Co., Ltd. and our domestic affiliates decreased by four to 55 compared to the previous fiscal year (the status of each Central Glass plant is given in “Activities at Individual Plants” on pages 32 to 35).

We will continue to comply with laws and regulations including the Industrial Safety and Health Act, the Poisonous and Deleterious Substances Control Act, and the High Pressure Gas Safety Act in order to further improve measures ensuring the safety and health of workers. For our affiliate companies, both in Japan and overseas, we strive to recognize local laws and the chemical substances they handle in order to promote the management of chemical substances from a global perspective. We will continue working to properly manage chemical substances.

\*1 PRTR: Pollutant Release and Transfer Register

### Asbestos Management

Structural components containing asbestos are still used in some of the buildings and production facilities at Central Glass Co., Ltd. and our domestic affiliate companies. We therefore identify the locations where those components are used, manage them appropriately, and properly dispose of them upon removal, complying with the Industrial Safety and Health Act, Waste Management and Public Cleansing Act, etc.

In order to ensure appropriate handling, we conduct an on-site environment and safety audit once a year during which we survey the state of use, storage, and disposal of asbestos at Central Glass Co., Ltd. and our domestic affiliates and confirm the conditions.

In FY2018, we disposed of asbestos used in materials such as the thermal insulation of piping at production facilities at Ube Plant and some affiliates.

Moving forward, we will continue to comply with laws and ordinances and promote appropriate measures.

### Management of Instruments Containing PCB

Central Glass Co., Ltd. and our domestic affiliates ensure instruments such as transformers, stabilizers, and capacitors that contain polychlorinated biphenyl (PCB) comply with the Act on Special Measures Concerning Promotion of Proper Treatment of PCB Waste, Waste Management and Public Cleansing Act, and other laws and regulations. We dispose of PCBs through strict management, following the set schedule of disposal.

In order to ensure appropriate handling, we conduct on-site environment and safety audits each quarter as an opportunity to survey the state of storage and disposal of instruments containing PCBs at Central Glass Co., Ltd. and our domestic affiliates and to confirm the level of management.

In FY2018, we focused on checking for equipment containing high-concentrations of PCBs that would soon reach the deadline for disposal, such as equipment containing fluorescent light choke coils.

Moving forward, we will continue to comply with laws and ordinances and promote appropriate measures.

### SDS/GHS Labeling

Central Glass Co., Ltd. and our domestic affiliates strive to provide information through SDS<sup>\*1</sup> that conform to GHS<sup>\*2</sup>. When handling chemical substances, measures necessary for risk abatement can be taken based on the information listed in the SDS, which leads to safety and protection of the environment.

We continued to strive for comprehensive safety management in FY2018 by raising employee awareness about SDS, such as the SDS of products and purchased raw materials. We also take the same care in the labeling for containers and packaging in accordance with the GHS. We fully comply with amendments of the Industrial Safety and Health Act, including those executed in June 2016, which covers the addition of chemical substances, by informing departments responsible for creating labels and issuing labels after mutual confirmation among multiple departments.

Furthermore, we will properly comply with JIS Z 7252:2019 and JIS Z 7253:2019 for SDS creation and labeling methods, which will be amended in May 2019.

\*1 SDS: Safety Data Sheet. These are data sheets that list information related to the hazardousness of chemical substances and the like as well as information concerning the environment.

\*2 GHS: Globally Harmonized System of Classification and Labelling of Chemicals. This globally harmonized system classifies and labels chemical products.

### Promotion of Green Procurement

The Central Glass Group actively promotes green procurement to give priority to procuring raw materials and materials that have less impact on the environment.

In FY2018, we reviewed our internal database in order to smoothly run operations for green procurement.

Through these initiatives, we will promote the reliable management of chemical substances.

# Providing Reliable Products and Services to Our Customers

The Central Glass Group carries out quality control initiatives that always place customer satisfaction first as we work toward our goal of establishing a truly prosperous society through the spirit of *Monozukuri*. In addition to complying with laws and regulations, we ensure product safety in order to minimize risks to customers, and take customer feedback earnestly so that we can accurately understand their demands and provide reliable products and services.

## Quality Control Audits

The Central Glass Group systematically conducts quality control audits at each business site as well as at affiliates in Japan and overseas through each quality assurance department in the Glass and Chemical segments.

In FY2018, we conducted audits at 19 sites based on the annual plan. If corrective actions or improvements were requested during these audits, we provided support until they were implemented. We will continue to improve the level of activities at each site.

## Quality and Product Safety Education

In order to conduct comprehensive and systematic quality-related education, we established a quality education system for Central Glass Co., Ltd. and our affiliates in Japan, and began providing employees systematic education organized by position and division with the main purpose of facilitating understanding about quality-related laws and regulations as well as quality management methods.

In FY2018, we conducted rank-based training for newly appointed managers and assistant managers as an opportunity to provide education about topics such as quality-related laws and regulations as well as quality management methods.

For division training, we instructed the sales division on quality and product safety, and the research and manufacturing divisions on creating SDS labeling which conforms to GHS.

We utilize knowledge and techniques gained through these educational opportunities in promoting quality activities that put customer satisfaction first.



Training for Newly Appointed Managers



Education on Creating SDS Labels Conforming to GHS



Quality and Safety Education for the Sales Division



## 36th Groupwide QC Circle Conference

The Central Glass Group regularly holds groupwide QC Circle Conferences as a venue to present the success of quality improvement activities.

A total of ten teams (“Circles”) gave presentations at the 36th conference held in FY2018, consisting of five Circles from the manufacturing divisions, four from affiliates in Japan, and one from an overseas affiliate.

Each Circle presented its improvement activities based on various approaches it took towards its theme as well as the outcome of its efforts over the past year. There were also lively question and answer sessions among presenters, judges, and attendees.

As our QC Circles engage in friendly competition with each other through these groupwide conferences, they pursue the realization of the Central Glass Group’s corporate philosophy, “Creating a better future through *Monozukuri*.”



Presentation by “Shuttle 21”



Awards Ceremony

### ■ Circles Participating in the 36th Groupwide QC Circle Conference (In order of presentation)

Business Site	Circle Name
Ube Plant	MS-13X
Ube Plant	Shuttle 21
Ube Plant	Challenge A (Ace)
Central Chemical Co., Ltd. (Ube Plant)	Alps
Kawasaki Plant	D Team
Central Glass Fiber Co., Ltd. (Kasugai Plant)	Insulator
Carlex Glass America, LLC (Vonore Plant)	Lamination/Assembly
Matsusaka Plant	Thoroughbred
Mie Glass Industry Co., Ltd. (Matsusaka Plant)	Bamboo Shoot Circle
Central Glass Plant Services Co., Ltd. (Central Japan Plant)	MAC

## Supplier Initiatives

We always engage in activities to provide reliable Central Glass products and services and continually engage in activities with our business partners as well.

### Original Equipment Manufacturing (OEM) Audits

The quality assurance departments of the Glass and Chemicals segments of the Central Glass Group conduct audits at our OEMs as well as regular audits within the Group.

In FY2018, based on the annual plan, we conducted audits at 11 OEMs with their understanding and cooperation. If corrective actions or improvements were requested during the audits, we provided support until they were implemented.

### Conflict Mineral Surveys

Central Glass Co., Ltd. purchases materials from smelting companies certified through the Responsible Minerals Initiative (RMI) in accordance with the Reform and Consumer Protection Act (Section 1502) adopted in the United States regarding the procurement of conflict minerals (tantalum, tin, tungsten and gold).

In FY2018, thanks to their understanding and cooperation, we verified that all of our procurement partners handling conflict minerals were certified under the RMI.

# Manufacturing (*Monozukuri*) Is about Developing Human Resources (*Hitozukuri*)

Central Glass Co., Ltd. is a “*Monozukuri*” (manufacturing) company that has continually provided superior products with higher added value in order to enrich people’s lives. We focus on *Hitozukuri* (developing human resources) as the foundation of our corporate growth and strive to enhance our human resource development and HR programs with the aim of creating an environment where each individual can demonstrate his or her capabilities and skills to the utmost.

## Creating a Healthy and Vibrant Corporate Culture

The Act on Promotion of Women’s Participation and Advancement in the Workplace, which was enacted due to concerns about labor shortages by an aging population and a declining birthrate, required the formulation of a 10-year Action Plan beginning in FY2016 to actively appoint female employees to managerial positions and expand the range of occupational fields for women.

Central Glass Co., Ltd. aims to improve productivity by utilizing diverse human resources, carrying out effective education, and reviewing the working environment, and formulated the First Action Plan to Promote Female Workplace Participation (“First Action Plan”) from 2016 to 2017 to grasp the current situation and analyze the challenges. Measures to improve working style problems that were discovered during the First Action Plan have been reflected in the Second Action Plan to Promote Female Workplace Participation (“Second Action Plan”) which runs over four years from FY2018 to FY2021. We continue to aim to build a company where each and every employee can feel themselves grow and gain motivation to work over the long term by carrying out actions based on the Second Action Plan.

### Second Action Plan to Promote Female Workplace Participation (April 2018 to March 2022)

- Target 1** Increase the female employee ratio.
- Target 2** Raise awareness toward innovating working style.
  - (1) Promote changing working style to finish work within the designated working hours.
  - (2) Continue to implement “Smart Day”\*, overtime applications and planned leave program.
  - (3) Encourage managers, including line managers, to change their attitudes regarding working style.
- Target 3** Share child raising and nursing care information.
  - \* “Smart Day” refers to days designated for leaving work on time.

## Promotion of the Employment of Diverse Human Resources

Central Glass Co., Ltd. works to employ and develop diverse human resources while furthering the cultivation of a company culture where each and every employee can work enthusiastically.

In addition to employment of persons with disabilities and re-employment of people who have retired, we are working to hire a multinational workforce to take advantage of experiences from various cultures and values. In FY2018, our employment rate of persons with disabilities was 2.14%. Although we were unable to reach the employment rate target of 2.2%, Central Glass Co., Ltd. is committed to continually increasing our employment of persons with disabilities and to creating accommodating environments where they can exercise their diverse abilities.

### ■ Employment Status Data

Item	FY2016	FY2017	FY2018
Number of employees	1,662 (156) <sup>*1</sup>	1,666 (163) <sup>*1</sup>	1,633 (170) <sup>*1</sup>
Number of new recruits	83 (9) <sup>*2</sup>	75 (11) <sup>*2</sup>	68 (14) <sup>*2</sup>
Average age	36.2	36.3	36.3
Average years of continuous employment	14.5	14.8	14.7
Number of non-Japanese employees	5	6	10
Number of employees on shortened or staggered working hours during child care	20	30	22
Percentage of persons with disabilities	2.21%	2.41%	2.14%
Number of people who are re-employed after retirement	213	172	165

\*1 Number in brackets represents number of total female employees.

\*2 Number in brackets represents number of female employees among new recruits.

### ■ FY2018 Targets and Performance Results

Major Issues	(Plan) FY2018 Targets	(Do) FY2018 Initiative Results	(Check) Ratings	(Act) FY2019 Initiatives
Review/reform of working style and information sharing about the supporting systems	Maintain the number of recruits of new female graduates.	· Increased the ratio of new female graduates (14.7% to 20.6%)	○	Actively recruit women and establish an environment and policies to ensure long-term employment.
	(1) Investigate effective methods to raise awareness towards reforming working style.	· Examined specific awareness raising methods in model departments.	△	Examine the implementation of the streamlining of tasks in model departments.
	(2) Continue to implement Smart Day (days designated for leaving work on time), overtime applications and planned leave program.	· Continued the actions outlined in the First Action Plan.	○	Continue the actions outlined in the First Action Plan.
	(3) Understand the current state of managers’ awareness about working style.	· Confirmed the content of the existing training for managers.	△	Examine specific contents of the training for managers.
	Examine effective methods to share information about child raising and nursing care.	· Shared the information via the corporate intranet.	○	Continue to publicize relevant regulations, policies, and model cases.

Rating: ○: Achieved target △: Achieved most targets but not all ×: Additional measures required

## Initiatives to Support Work and Family Life Balance

Central Glass Co., Ltd. is building systems surpassing those mandated by law to support people who are raising children or caring for family members. Female employees using childbirth and parental leave programs have become a norm in the company culture, and male employees are also taking advantage of programs that include childbirth, child care and nursing care leave. Furthermore, female and male employee usage of child care leave and staggered working hours while raising children is increasing.

Furthermore, we are developing systems that support nursing care, while also informing and publicizing model cases that include clear usage procedures of these systems in order to eliminate the concerns of employees who may need to care for family members, so that they can balance work and care for their family members when necessary.

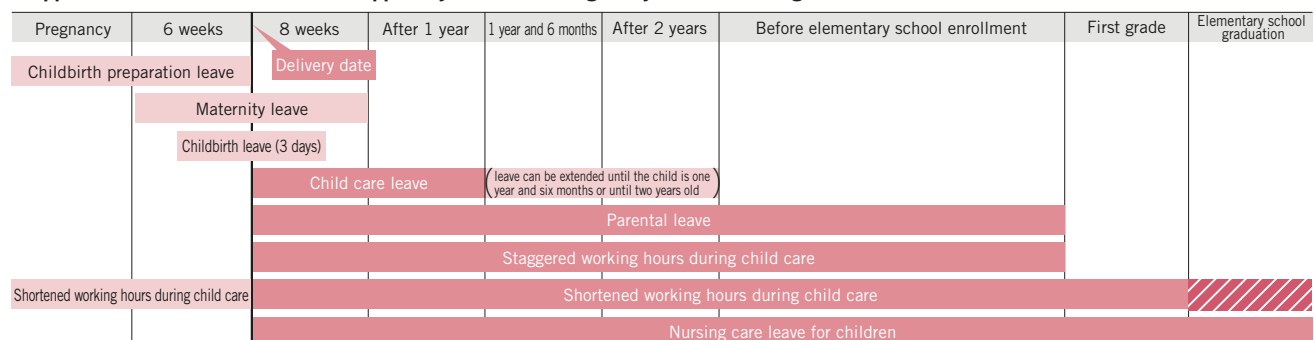
## Mental Healthcare


In recent years, along with increased awareness that mental issues could hurt not only the employees who suffer but also the atmosphere or productivity of the workplace, companies are expected to deal with mental healthcare in extremely discreet and sincere ways.

Since FY2009, the Central Glass Group has been encouraging every employee to assess their level of stress through the introduction of annual stress checks as a primary step to prevent mental disorders. Our policy is to have employees who have shown a high level of stress consult with an industrial physician, and then examine aspects such as the workplace environment.

We have also put in place a Return to Work Support Program that systematically outlines advice on support for an employee who has been absent from work due to a mental disorder, including information for their doctors and supervisors to help them return to work. This program establishes a framework to prevent a recurrence after the employee returns to work as well as to build an approach for accepting them back into the workplace.

### ■ Applicable Periods for Child Care Support System (from Pregnancy to Child-raising)



\* Only female employees are eligible for maternity leave, and only male employees are eligible for childbirth leave; all other measures are open to both male and female employees. The  section illustrates the period extension effective from April 1, 2019.

### ■ Child Care and Nursing Care Programs

Childbirth preparation leave*	Two days off per month for hospital visits, etc. during pregnancy.
Maternity leave	Legally mandated leave before and after childbirth.
Childbirth leave*	Three days off within a one-month period around the expected delivery date.
Child care leave	Legally mandated child care leave. Child care leave is available to employees with children between the ages of one year and six months to two years old. Up to five days of paid leave from the first day of leave.*
Parental leave*	One day off per month for child care.
Nursing care leave for children	36 days off per year for nursing care for children.*
Shortened working hours during child care*	Shortening of working hours by a maximum of two hours per day.
Staggered working hours during child care	One-hour postponement of the start of the workday for staggered working hours during child care.
Nursing care leave*	Total of 365 days of leave, which can be divided into up to three periods.
Time off for nursing care	Ten days off per year for nursing care and to attend to family members.*
Shortened working hours for nursing care	Shortening of working hours by one hour per day.

\*An asterisk indicates a program surpassing that mandated by law (the program itself, the length of time, etc.)

## VOICE

### Yuichi Kenmochi

Intellectual Property Department  
(Kawagoe)



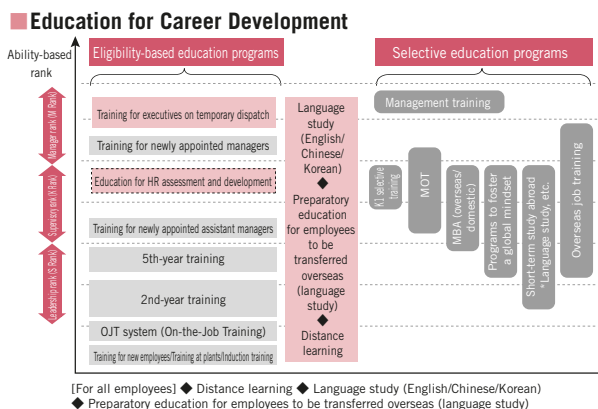
I took childbirth leave when my oldest son was born and child care leave for an additional week after my wife came home from the hospital.

Although my first experience of raising a baby was difficult, each day I felt fulfilled focusing on taking care of my son. I feel that the experience of dividing up the housework and child care tasks helped me learn how to plan and prioritize tasks at home, which also has improved my skills to organize and prioritize duties at work. Through my interactions with a baby who cannot speak yet, I have also learned to be more considerate to everyone. Soon my wife will also return to work from child care leave. I hope to continue to contribute to Central Glass while making my family a priority.

## Manufacturing (*Monozukuri*) Is about Developing Human Resources (*Hitozukuri*)

### Central Glass's Education System

The education that Central Glass Co., Ltd. provides to employees has two pillars: "education for career development" to foster global human resources and candidates for managerial positions, and "education about *Monozukuri*" to pass on and develop advanced techniques and skills. In both cases, we offer a wide range of educational opportunities including position-based education programs organized according to the participants' ages and positions, as well as selective education programs organized according to work duties and abilities.



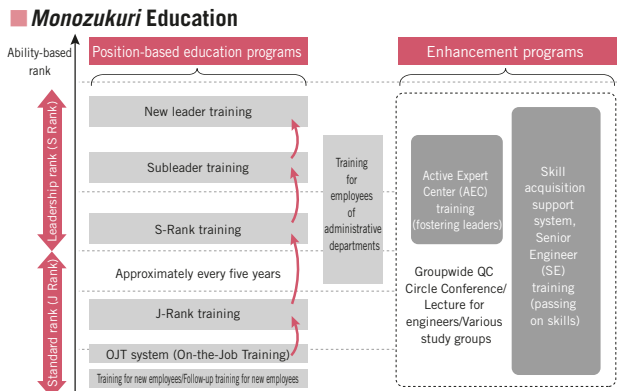
improved their English and Chinese language abilities in a relatively short period. We will continue to implement the courses in FY2019 to support improving the language skills of our employees.

In addition, the Short-term Study Abroad Program offers opportunities to our employees to attend foreign language schools for three to six months in order to develop their practical business skills in a foreign language and foster their global mindset.

In FY2018, one employee participated in the Short-term Study Abroad Program, which helped him improve his language abilities and cultivate a global mindset through interactions with the local people. We will continue to implement the program in FY2019.



Presentation of Achievements during the English Course to Develop Globally Minded Employees



## VOICE

### Shin Kitagawa

Glass Manufacturing Technology Center

I joined the Short-term Study Abroad Program and went to a language school for three months in Manila in the Philippines, where the official languages are English and Tagalog. I learned English at the language school every weekday from 9:30 a.m. to 5:00 p.m. The mornings were primarily made up of private lessons where I practiced my pronunciation and learned business English with my teachers, while in the afternoon I usually had discussion exercises with other students about a designated topic in group lessons. I recognized improvement in my speaking ability in the second half of my short study abroad thanks to the many student-oriented lessons at the Philippines language school. I also learned how important it is to have my own opinions and present them clearly because we were always required to share our thoughts during these lessons. On weekends, I went to Manila and the Cebu islands, which let me have some fun as well as learn about the local cultures. I not only studied English but also learned about cultural differences first-hand through these experiences. I am now in charge of the technical support operations of overseas companies after my short study abroad. I hope to take full advantage of the experience gained during this short term study abroad in my work in the future.

### Language Study

Central Glass Co., Ltd. provides English, Chinese and Korean language study programs to improve the language skills of our employees as part of the global human resource development program.

We also provide English and Chinese Courses to Develop Globally Minded Employees as enhancement programs, in which our employees are offered opportunities to join local on-site language schools or take intensive online lessons as a way to acquire more practical language abilities.

In FY2018, three employees took the English Course and two employees took the Chinese Course, where they

## Cultivating Global Awareness and Understanding Diversity

Central Glass Co., Ltd. conducts training to foster a global mindset in employees so that they can participate on the world stage. In FY2018, we carried out training to teach leadership rank employees the mindset and skills necessary for conducting business globally in order to provide motivation to develop their communication skills and their understanding of different cultures. We will also conduct training for supervisory rank employees in FY2019.

In addition, we began accepting interns from foreign universities at our plants starting from FY2012 in an effort to promote employees' awareness of diversity and improve communication skills with people from different countries.

In FY2018, we hosted an intern from the United States. Employees learned to embrace different cultures and values while gaining confidence in communicating in English through English lessons and workplace interactions with the intern. We also plan to host two interns from the United States in FY2019 to promote activities to grow understanding of diversity and different cultures as well as to improve communication skills.



Presentation by the Intern

## Fostering a New Generation of On-site Leaders

Central Glass Co., Ltd. has been conducting education for selected trainees at our Active Expert Centers (AECs), aiming to foster new generations of technical leaders at our plants. The AECs established at each plant are educational centers dedicated to passing on and developing technical skills. Each year, candidates for the next generation of leaders are selected from our manufacturing plants and leave their posts for one year of education as AEC trainees.

The trainees receive three months of fundamental education before being assigned a theme by the plant and repeatedly carrying out information gathering, analysis and discussion while visiting the production areas. This practical education effort works to solve problems in the manufacturing areas while investigating the root causes.

In FY2018, eight trainees selected from each plant participated in the AEC trainee education. We will continue to implement this education in FY2019 to further develop future on-site leaders.



Equipment Maintenance Lesson at the "Maintenance School"

### FY2018 Targets and Performance Results

Major Issues	(Plan)	(Do)	(Check)	(Act)
	FY2018 Targets	FY2018 Performance Results	Ratings	FY2019 Initiatives
Cultivation of global human resources through education for career development.	Implement language education programs.	<ul style="list-style-type: none"> <li>Conducted English, Chinese and Korean language study.</li> <li>Sent employees to overseas short-term study abroad programs.</li> </ul>	○	Continue to implement language education programs.
	Develop candidates for managerial positions.	<ul style="list-style-type: none"> <li>Sent two employees to the 2-year MOT program, where they earned degrees.</li> </ul>	○	Continue to develop candidates for managerial positions.
	Cultivate global awareness and understanding of diversity.	<ul style="list-style-type: none"> <li>Implemented training to foster a global mindset in leadership rank employees.</li> <li>Accepted one intern from the United States.</li> </ul>	○	Continue to implement training to foster a global mindset.
Improvement of on-site capabilities through <i>Monozukuri</i> education.	Foster a new generation of on-site leaders.	<ul style="list-style-type: none"> <li>Implemented basic education and programs for developing problem-solving skills through activities based on given themes to eight selected trainees.</li> </ul>	○	Continue to foster a new generation of leaders through Active Expert Center (AEC) trainee programs.
	Implement position-based education programs.	<ul style="list-style-type: none"> <li>Implemented position-based education programs.</li> <li>Implemented supervisor training to improve staff management skills.</li> </ul>	○	Continue to implement position-based education programs.

Rating: ○: Achieved target △: Achieved most targets but not all ×: Additional measures required

# Growing Together with Society

The support of and harmony with members of the local communities are absolutely essential for a company's continued existence. The Group will continue to build even better relations with every one of our stakeholders including members of local communities and customers, while also growing and improving together with society in order to realize a sustainable society.

## Participation in Flea Markets

Every year the management of the Central Glass Labor Union Head Office and Kawasaki Branch voluntarily participate in a flea market held at Shinagawa Intercity on their day off as a part of our social contribution activities. They spend a whole day from early morning displaying and selling goods collected from the Central Glass Group employees.

"I need a lot of towels for taking care of my sick family members," an elderly lady told us this year, carrying many towels in her hands while picking up other daily items to purchase as well. Toys and lunch boxes are popular among young couples with children. We often receive words of gratitude during the event and feel happy that we are able to provide things to people who really need them, which means more to us than the amount of sales.

In FY2018, the sales totaled 46,415 yen, which was donated to support volunteer organizations worldwide through Central Social Welfare. The Central Glass Labor Union will unify all of the employees to expand our circle of support through social contribution activities.



Flea Market

## 15th Regional Responsible Care Meeting in Ube District

Four plants from three chemical companies in Ube District hold a Responsible Care Meeting with the local communities every two years. The 15th Responsible Care Meeting was held on November 17, 2018 with the participation of 53 people from the local government, local NGOs and general citizens. After the four plants provided an overview of their plants and explained their environmental initiatives, the Japan Chemical Industry Association described Responsible Care and its communication activities. Ube City then illustrated their environmental conservation efforts, followed by discussions with two groups on themes such as chemical substance management and zero emission of waste. Both groups actively expressed their opinions and exchanged specific ideas about the environment, which led to a very successful meeting. We will continue to foster communication with the local residents to build safe and secure business sites together with everyone in the communities.



15th Regional Responsible Care Meeting in Ube District

## Mie Prefecture Kids' ISO 14000 Program

Matsusaka Plant has been offering the Mie Prefecture Kids' ISO 14000 Program to neighboring elementary schools since 2013 as one facet of its social contribution activities. This program aims to offer youths insights into the following items:

- (1) Encouraging youths to learn about the importance of environmental conservation.
- (2) Nurturing the development of a leadership mindset in the youths at home, while letting them experience success and gain confidence and a sense of accomplishment.
- (3) Developing problem solving skills through the Plan, Do, Check and Act cycle.

Kids' ISO is the only education program that has been officially approved to use "ISO" in its name by the International Organization for Standardization (ISO).

A parent of one of the youths sent a note commenting, "My child came home from school and talked with me about his own ideas for reducing our use of electricity and water. I am so happy that he was not simply sitting at lessons but was encouraged to generate his own ideas, and I am glad this education program was able to inspire these ideas in him. I must also confess I felt some regret for how wasteful I have been after talking with him."

Even though the program name contains "Kids", this program offers an opportunity to the local community members to learn about environmental conservation as well. We will continue to run this program in the future to contribute to creating a better society as a whole.



Lessons



Kids' ISO 14000 Manual

## Sakai-Semboku Rinkai District Disaster Prevention Drills

As a member company of the Sakai-Semboku Rinkai Special Disaster Prevention District Council, the Sakai Manufacturing Site secures the safety of the neighboring residents by preventing the occurrence or spread of disasters such as oil leakage or fire in the industrial complex. Along with the other member companies, Osaka government, and Sakai city government, as well as the police and fire departments, the Sakai Manufacturing Site participates as a Disaster Prevention member in the comprehensive disaster prevention drills conducted every year.

Furthermore, the Sakai Manufacturing Site has concluded a memorandum with the Sakai Fire Department to serve as a disaster response committee. The Sakai Manufacturing Site will engage in activities that include fire-fighting support, rescue assistance, relief aid, and personnel deployment support to areas around the site in the event of large-scale disasters, which will increase the capabilities of the local communities to respond in the case of an emergency.



Sakai-Semboku Rinkai District Disaster Prevention Drills

# Ube Plant



Address 5253 Okiube, Ube City, Yamaguchi Prefecture  
 Number of employees 644 (as of March 31, 2019)  
 Major items produced Fluorine products, other chemicals  
 Certifications ISO 14001 (December 2000)  
 ISO 9001 (December 1997)  
 OHSAS 18001 (April 2011)

## Message from the Plant Manager

Ube Plant, established in 1936 and located in the coastal industrial region of Ube along the Seto Inland Sea, began with soda production and expanded to production of fertilizers and fine chemicals products. Today, Ube Plant primarily manufactures fine chemicals containing organic and inorganic fluorine compounds from raw materials such as hydrofluoric acid. In recent years, we actively strive in environmentally responsible industries by manufacturing products for next-generation non-CFC refrigerants with low global warming potential. The plant's green spaces have been furnished with rows of cherry trees, and in spring, local residents enjoy the beautiful blossoms and natural environment. We will continue to make our plant safe and open to local residents.



**Isamu Mori**  
 Plant Manager  
 Ube Plant

### Regional Activities

- Carried out cleanup activities for city and prefectural roads on our plant-wide 5S Day (once a month)
- Carried out cleanup activities in Tokiwa Park (once a year)
- Carried out cleanup activities around Ube Higashi Port (once a year)
- Carried out cleanup activities around Lake Ono (once a year)
- Protected and cultivated the grasslands at Akiyoshidai Quasi-National Park (once a year)
- Held regional Responsible Care Meeting in the Western District of Yamaguchi (once every two years)
- Carried out forest maintenance activities to protect water resources (once a year)
- Cleaned roads with road sweepers (every day)
- Held regional Responsible Care Meeting in the Ube District (once every two years)

### Preparing for Accidents and Disasters

The industrial complexes that dot Japan handle enormous volumes of high-pressure gases and hazardous materials. Ensuring security at these industrial complexes is therefore a very important element in ensuring the safety and security of the nation's citizens.

In recent years, numerous accidents have occurred at industrial complexes, and their incidence is expected to remain high. Considering this, we work regularly to increase our ability to maintain security and prepare for disasters, and to take preventive steps against trouble. On November 12, 2018, we conducted a plant-wide disaster prevention drill assuming a hazardous chemical leak on the Central Chemical Ube Plant premises. We practiced our response during an emergency by executing disaster prevention activities with the cooperation of a total of 170 people from the Ube Sanyo-Onoda Fire Department and the plant disaster prevention team.

Over the past few years, we have conducted evacuation training that uses the situation of a massive earthquake and tsunami striking the Nankai Trough. However, this year we assumed an earthquake and tsunami occurring at the much closer Suo-nada fault and confirmed our emergency response procedures within

the plant including a ShakeOut earthquake drill, an initial earthquake response training method; employee safety confirmation; and post-earthquake status check of the plant. As additional tsunami response training, we implemented regular closeout drills of seawalls to verify our on-site emergency response.

As an effort to put in place an effective disaster prevention system for emergencies at night and on holidays, we conduct nighttime drills. The manager of disaster prevention (plant manager) and the assistant managers of disaster prevention (each line manager) then confirm the level of the emergency response to accidents.

We will continue working to further strengthen our security management. Our employees and business partners are united in their efforts in ensuring the safety of our plant and sense of security in our neighboring residents.



Ube Plant Firefighting Activities

### Pollutant Release and Transfer Register (PRTR)

(Unit: kg/year)

Ordinance Designation No.	Substance Name	Emissions			Compared to Previous Year	Quantity Transported
		Atmosphere	Water	Soil		
16	2, 2'-Azobisisobutyronitrile	0	0	0	→	0
33	Asbestos	0	0	0	→	10,000
41	3'-Isopropoxy-2-trifluoromethylbenzaniide (also known as Flutolanil)	0	0	0	→	0
71	Ferric chloride	0	0	0	→	0
80	Xylene	910	0	0	↗	3.5
81	Quinoline	0	0	0	→	0
94	Chloroethylene (also known as vinyl chloride)	0	0	0	→	0
127	Chloroform	0	0	0	→	16
149	Carbon tetrachloride	270	0	0	↘	11,000
186	Dichloromethane	240	0	0	↘	210
213	N,N-Dimethylacetamide	0	0	0	→	54,000
232	N,N-Dimethylformamide	19	0	0	→	3.9
243	Dioxins (Unit: mg-TEQ/year)	0.013	0.095	0	↗	0
296	1,2,4-Trimethylbenzene	67	0	0	↗	0
300	Toluene	430	0	0	↗	220
349	Phenol	130	220	0	↗	0
374	Hydrogen fluoride and its water-soluble salts	590	0	0	↘	900
411	Formaldehyde	0	0	0	→	0
438	Methylnaphthalene	44	0	0	↘	0

Quantities emitted, discharged, or transported are listed for those materials handled in amounts exceeding 1,000kg in FY2018 (except for dioxins).



# Kawasaki Plant



Address 10-2 Ukishima-cho, Kawasaki-ku, Kawasaki City, Kanagawa Prefecture  
 Number of employees 207 (as of March 31, 2019)  
 Major items produced Inorganic chemicals, organic chemicals  
 Certifications ISO 14001 (May 2007)  
 ISO 9001 (July 2001)

## Message from the Plant Manager

Formerly in the electrolytic soda business, Kawasaki Plant has successfully transitioned to the production of fine chemicals. As the plant in charge of the Chemicals segment, this plant currently produces a wide range of products such as our next-generation low GWP fluorine-based foam blowing agent HFO-1233zd (E) and our next-generation fluorinated solvent HFO-1233zd (Z), which offers both excellent environmental performance and high cleaning performance; as well as pharmaceutical intermediates, photoresist materials, and lithium ion battery electrolytes.



**Masaru Narimitsu**  
 Plant Manager  
 Kawasaki Plant

We also actively promote 3R (Reduce, Reuse, and Recycle) activities for the byproducts produced during the manufacturing processes of these products by reclaiming or recycling flammable waste oil and recycling sludge. Since FY2000 we have achieved the 71% reduction target, which is the FY2020 goal set by Central Glass Co., Ltd. for the final annual disposal amount. Our environmental activities have been recognized by the city of Kawasaki, and Kawasaki Plant has been certified as a business site taking environmental action, as defined by the city's bylaws.

By leveraging our location in Kawasaki, we are also working to engage in safe and environmentally-friendly plant operations in the region in aspects outside of our production activities, such as asking all of our employees to use public transportation for their commute to work.

Considerations about the environment and safety will always be necessary. Kawasaki Plant will continue to strive in environmental and safety efforts in the future.

### Regional Activities

- Carried out regular cleanups of roads around the plant
- Regularly exchanged information concerning the environment and safety with neighboring plants in the Kawasaki Industrial Complex
- Participated in joint disaster drills with neighboring business sites in the Ukishima District
- Participated in traffic safety guidance organized by the Kawasaki Rinko Traffic Safety Association
- Participated in Tokyo Bay General Survey for Water Environment (Analysis of and report on water quality in Tokyo Bay near the plant)
- Held road safety workshops (attended by Kawasaki-Rinko Police)

### Relationship of Security and Disaster Prevention

Since Kawasaki Plant is located in an industrial complex, we are required to maintain a system for security and prevention of disasters at all times, as defined in the Act for the Prevention of Disasters at Petrochemical Complexes, etc.

Every year we conduct disaster prevention drills incorporating earthquake-related leaks and fires in addition to tsunami evacuation drills, with the cooperation of our partners residing at the plant in order to ensure a rapid and clear response to emergencies. In the training for our plant disaster prevention organization members, we heighten awareness about security and disaster prevention and establish a system for emergencies through training that includes seminars on using AED and handling breathing apparatuses, drills for notification to relevant government bodies when confronted by abnormalities, drills for setting up a disaster prevention headquarters, fire hose drills and fire-fighting equipment training.

In addition, Kawasaki Plant is also a member of the Ukishima Joint Disaster Prevention Association, which is made up of com-



Earthquake Disaster Prevention Drills

panies from the same industry in the Ukishima District in Kawasaki. Cooperating with each member company, we are building a system to ensure mutual support in a disaster, including systematic disaster prevention drills. The member companies also regularly exchange information on security and disaster prevention.

### ■ Pollutant Release and Transfer Register (PRTR)

(Unit: kg/year)

Ordinance Designation No.	Substance Name	Emissions			Compared to Previous Year	Quantity Transported
		Atmosphere	Water	Soil		
81	Quinoline	0	0	0	→	0
94	Chloroethylene (also known as vinyl chloride)	2,700	0.3	0	↗	0
149	Carbon tetrachloride	240	0.4	0	→	11,000
213	N,N-Dimethylacetamide	10	0	0	→	71,000
243	Dioxins (Unit: mg-TEQ/year)	0.19	0.53	0	↗	0
280	1,1,2-Trichloroethane	0	4.5	0	↗	1,600
300	Toluene	29	0	0	↘	2,200
374	Hydrogen fluoride and its water-soluble salts	0	0	0	→	55
392	n-hexane	0.1	0	0	→	11,000

Quantities emitted, discharged, or transported are listed for those materials handled in amounts exceeding 1,000kg in FY2018 (except for dioxins).

Kawasaki Plant is continuing groundwater purification treatment as a result of contamination from a leak of 1,2-dichloroethane in 1982.

# Matsusaka Plant



Address 1521-2 Okuchi-cho, Matsusaka City, Mie Prefecture  
 Number of employees 233 (as of March 31, 2019)  
 Major items produced Automotive glass  
 Architectural and industrial float glass/fabricated glass  
 Functional glass for electronic materials  
 Certifications ISO 14001 (April 2000)  
 ISO 9001 (November 2003)  
 IATF 16949 (June 2018)

## Message from the Plant Manager

Matsusaka Plant manufactures polished glass using the world's only duplex equipment capable of employing a consecutive double-sided polishing method. We also manufacture float and fabricated glass for automotive and industrial applications.

Since the plant consumes a huge amount of energy and resources, we are always working to rigorously implement environmental conservation activities.

In order to conserve energy and power and reduce CO<sub>2</sub> emissions, we are working to reduce production loss, incorporate the introduction of equipment that conserves energy into large-scale renovations, and implement improvements to our operational technologies.

We continually aim to reach higher levels of waste reduction, as well as make efforts to recover valuable commodities from waste, one example of which is recycling almost all the waste glass we produce.

Each of our employees is continually working to achieve growth and improvement, based on our philosophy, "Creating a Better Future Through *Monozukuri*." We will continue to appreciate and contribute to local communities and work to make our plant safe and happy.



**Akira Yuasa**  
 Plant Manager  
 Matsusaka Plant

## Regional Activities

- Participated in Mie Prefecture Kids' ISO 14000 Program activities
- Participated in cleanup of waste drifting ashore at Toshijima Island, Toba City, organized by the Mie Prefecture Industrial Waste Countermeasures Promotion Council
- Exhibited Eco-Glass at the Matsusaka Environmental Fair held by the Matsusaka City Environmental Partnership Committee
- Participated in the Matsusaka Street Cleanup organized by Matsusaka City
- Lent plant grounds to youth sports associations and other organizations free of charge
- Provided company-owned land to neighboring local communities as temporary parking areas free of charge
- Invited local residents to the plant's summer festival
- Participated in beach cleanups, organized by Mie University's Mie Global Environment Center for Education & Research
- Participated in voluntary cleanup activities at Matsunase Beach organized by the Matsusaka Taki District Workers' Welfare Council (attended by Matsusaka branch members of the Central Glass Labor Union)
- Held "Ecocap" activities (plastic bottle cap collection) organized by the Matsusaka branch of the Central Glass Labor Union
- Deployed staff to Matsusaka City as "External Matsusaka-EMS Environmental Auditors"

## Nighttime Disaster Prevention Drills

Matsusaka Plant conducted a nighttime disaster prevention drill on March 28, 2019.

This drill called everyone into action for the purpose of establishing and verifying the effectiveness of an early fire-fighting response system at night, including identifying problem points. Members of the Plant Disaster Prevention team received information through the communication network and assembled at the designated Disaster Prevention headquarters. At the same time, teams belonging to the Plant Disaster Prevention Brigade were mobilized from among the workers on shift in each area of the plant to their designated locations.

After the drill was complete, the Plant Manager reviewed the success and failures of the drill while the members of the Disaster Prevention headquarters held an evaluation meeting. By conducting a drill that assembles these Disaster Prevention teams, Matsusaka Plant is able to establish an initial response system able to ensure immediate action as well as strengthen the crisis management system. In addition, we were able to test the efficiency of the mobilization methods. This will give our Plant Disaster Prevention members the ability to voluntarily respond and take action such as mobilizing, communicating, and reporting in future emergencies.

We will continue to conduct a wide range of drills in the future as we strive to enhance security and disaster prevention at Matsusaka Plant.



Nighttime Fire Hose Drill

## Pollutant Release and Transfer Register (PRTR)

(Unit: kg/year)

Ordinance Designation No.	Substance Name	Emissions			Compared to Previous Year	Quantity Transported
		Atmosphere	Water	Soil		
438	Methylnaphthalene	28	0	0	→	0

Quantities emitted, discharged, or transported are listed for those materials handled in amounts exceeding 1,000kg in FY2018 (except for dioxins).

In FY2002, Matsusaka Plant discovered groundwater containing arsenic and lead attributable to a past production method. The plant is currently continuing groundwater purification treatment.

# Matsusaka Plant Sakai Manufacturing Site



Address 6 Chikko-Minamimachi, Sakai-ku, Sakai City, Osaka Prefecture  
 Number of employees 37 (as of March 31, 2019)  
 Major items produced Architectural and residential flat glass  
 Flat glass for electronic materials, architectural frosted glass  
 Certifications ISO 14001 (December 1999)  
 ISO 9001 (February 1999)

## Message from the Site Manager

The Sakai Manufacturing Site is located in the center of Sakai in Osaka Prefecture, and it has been manufacturing flat glass since 1959 as the birthplace of the glass business of the Central Glass Group. In 1982, we adopted the float process as our manufacturing method.

In addition to cutting glass and producing insulating glass and other glass products, since May 2012 we have been operating sputtering equipment that deposits a thin metallic coating on glass surfaces, which enabled us to begin manufacturing Eco-Glass, a product that promotes the effective cooling and heating of buildings.

The Sakai Manufacturing Site is furthering the reduction of energy by reviewing furnace operating conditions and improving the productivity of the glass-melting furnace. We are continuing efforts to further reduce waste by recycling waste products and advancing the recovery of valuable materials from waste.

Sakai has also enacted regulations to promote itself as a city designated by government ordinance, and to follow these regulations our plant regularly cleans the harbor and road in front of the manufacturing site as part of beautification activities.

We will work to foster a safe and environmentally friendly plant in order to contribute to the establishment of a truly prosperous society through *Monozukuri* under the Basic Philosophy of "Creating a Better Future Through *Monozukuri*", so that everyone in the community can live with peace of mind.



**Nobuhisa Tanise**  
 Site Manager  
 Sakai Manufacturing Site  
 Matsusaka Plant

## Regional Activities

- Sponsored a flea market and donated proceeds to social welfare activities
- Sent employees to support rescue, fire suppression and first aid in case of a large-scale disaster as a member of the Sakai Disaster Response Committee
- Provided support for a project conducted by the Osaka Port Cleanup Association in Sakai Semboku Port to ensure the safety of ships navigating through the port and protect the environment
- Held a blood donation drive at the Sakai Manufacturing Site
- Carried out cleanups of coastal roads

## Safety and Disaster Prevention and Preparing for Accidents and Disasters

The Sakai Manufacturing Site is located in the center of Sakai and the Coastal Industrial Zone where cooperation between the government and local companies is strongly encouraged. We participate in high-pressure gas support request drills, training for fire-fighting notifications at night, Sakai-Semboku Rinkai District disaster prevention drills as well as comprehensive training to combat terrorism at the Sakai-Semboku Port. The Sakai Manufacturing Site will always cooperate and engage in these drills to make sure we are ready to respond to any emergency.

In addition to disaster prevention drills within the Sakai Manufacturing Site to ensure proper emergency response, we held a tsunami evacuation drill in March 2019 with the participation of roughly 100 people—everyone at the plant—to ensure each and every person working at the Sakai Manufacturing Site would be able to evacuate in the event of a tsunami.

The Sakai Manufacturing Site will cooperate with the local government and communities and continue to implement drills in order to ensure a clear and rapid response to a wide variety of accidents and disasters.

We will continue to strengthen our safety management in the future and include all employees at the site in these safety and disaster prevention efforts.



Disaster Prevention Drills

## Pollutant Release and Transfer Register (PRTR)

(Unit: kg/year)

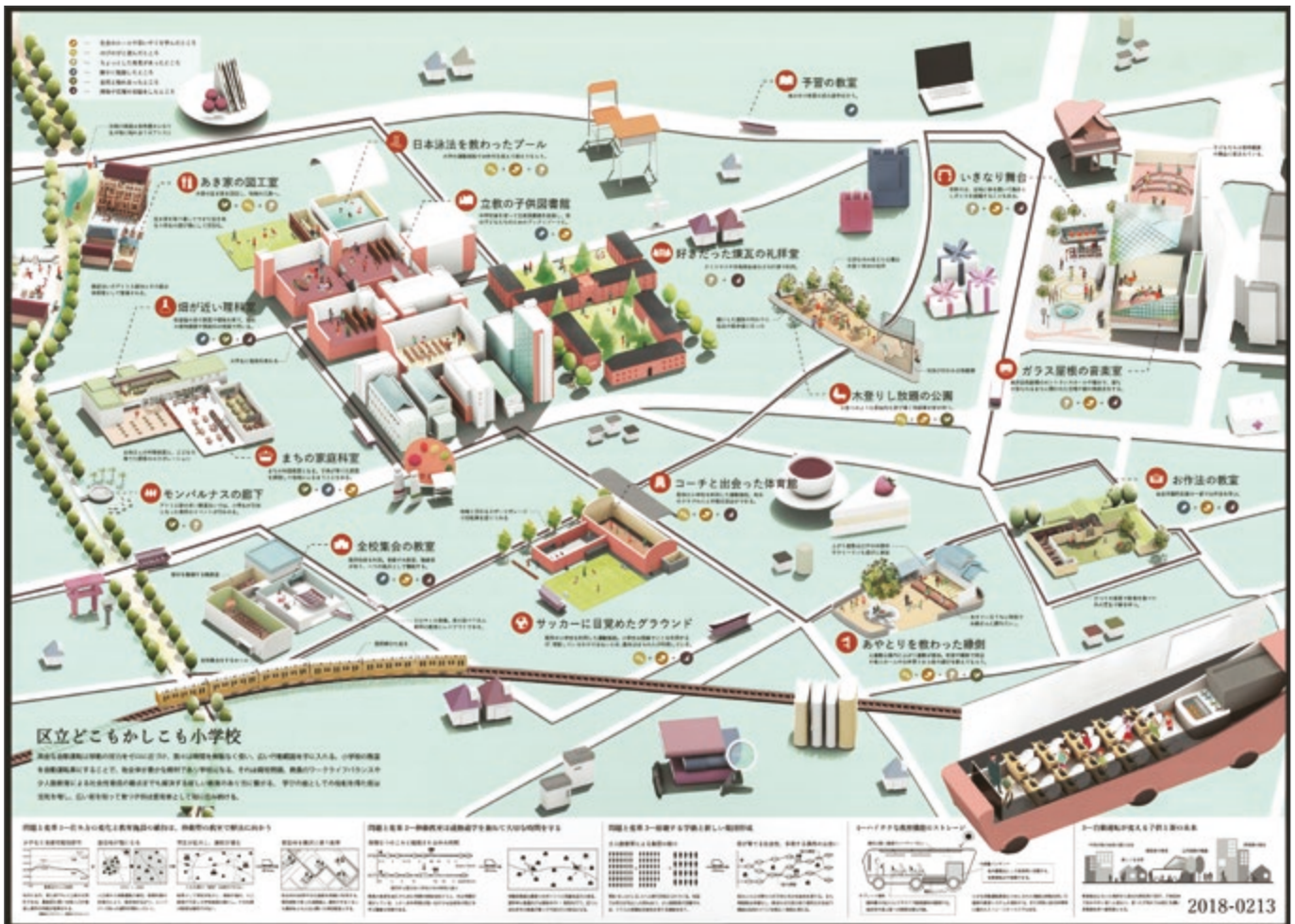
Ordinance Designation No.	Substance Name	Emissions			Compared to Previous Year	Quantity Transported
		Atmosphere	Water	Soil		
80	Xylene	71	0	0	↘	0
296	1,2,4-Trimethylbenzene	61	0	0	↘	0

Quantities emitted, discharged, or transported are listed for those materials handled in amounts exceeding 1,000kg in FY2018 (except for dioxins).

# Life, Towns, and Architecture, as Transformed by Autonomous Driving

Central Glass Co., Ltd. has been sponsoring a competition for architectural design concepts since 1966. Starting with the 10th competition in 1975, it was renamed the "Central Glass International Architectural Design Competition" and began inviting entries from overseas as well. In 2018, the grand prize was selected from among a total of 111 entries, of which 48 were from overseas.

We live in a time in which we need to pursue economic efficiency and rationality while simultaneously preserving the natural environment and protecting historical and traditional cultures. As a company that promotes architectural culture, we believe that it is highly meaningful for us to provide occasions to contemplate a desirable society and environment through this competition.



First place

**Keisuke Kuroda** (Graduate School, Tokyo University of Science)

**Yuriko Kamiya** (Graduate School, Waseda University)

## Ward-wide Elementary School

Safe autonomous driving enables us to travel more widely without wasting time by nearly eliminating the effort of travelling. Mobile elementary school classrooms with autonomous driving can turn the whole town into invaluable education materials. This new concept would also help foster a new ideal education system that addresses the problems of school closings, teachers' work-life balance, and difficulty of social education with a small number of students. It would make the town vibrant as a field of learning, and the youths who have learned the breadth of the town where they grew up would continue to live in that town which they have come to adore.



Concept of the CSR Report 2019  
Cover Page

We placed the Earth, representing society, in a prominent position because this report demonstrates our social responsibility. The refreshingly blue ocean, white beach, and blue sky symbolize the clarity of glass as well as the open possibilities of our future CSR activities.

