



Responsible Care Report
Social & Environmental
Report

2015

Creating a Better Future Through *Monozukuri*

 **CENTRAL GLASS CO., LTD.**

Message from the President



Shuichi Sarasawa

Shuichi Sarasawa
Representative Director, President & CEO
Central Glass Co., Ltd.

Contributing to the Establishment of a Truly Prosperous Society through *Monozukuri*

Central Glass's Social Responsibility

Our social responsibility is to help create prosperous, healthy, and comfortable lifestyles while giving care to the environment, safety, and quality.

Central Glass was founded in 1936 with the goal of manufacturing and selling soda products. With subsequent changes in its business structure including entry into the glass business and expansion into the fine chemicals business, Central Glass has made headway into a business field combining "commodities and fine products" and "glass and chemicals." The Company has also actively pursued the development of new products based on flat glass and chemical products.

We are currently working to reinforce our business foundations with the glass business and chemicals business as our core businesses, while also leveraging our original technology to expand into the area of highly functional and high-added value products. We have also established a basic policy of increasing our corporate value through a commitment to the environment and energy savings as well as global business expansion.

We fulfill our social responsibility as a manufacturer through these kinds of businesses as well as by preserving the environment, safety, and quality throughout the entire lifecycle, from product development to disposal, as part of our responsible care initiatives.

Corporate Philosophy

Our Corporate Philosophy is a statement of the aspirations we have been cultivating and sharing since the Company's establishment and is the starting line for our corporate activities.

In March 2015, we articulated the aspirations cultivated and shared since the Company's establishment as the Central Glass Group Corporate Philosophy.

The Corporate Philosophy comprises the Basic Philosophy and Basic Policy. The Basic Philosophy is "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*.

The Basic Policy presents a more specific direction in which to move toward achievement of the Basic Philosophy. It consists of four policies: (1) Create new value through original technology; (2) Pursue harmony with the environment and harmonious coexistence with society; (3) Strive to increase corporate value powered by global growth; and (4) Aspire to be a vibrant company that respects the pioneering spirit and diversity.

The Corporate Philosophy represents the aspirations that the Central Glass Group must communicate to its stakeholders. It will serve as the starting line from which we carry out the Central Glass Group's corporate activities, and I believe that it will increase our sense of identity and strengthen our power as a Group.

Corporate Philosophy

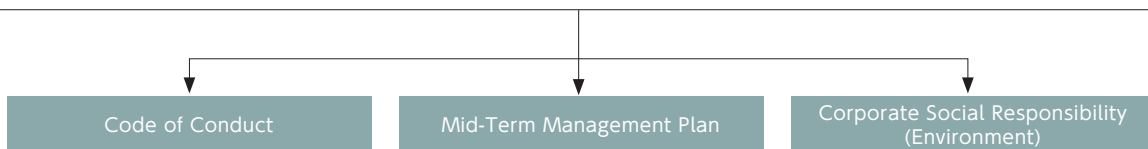
Basic Philosophy

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 Policy



Mid-Term Management Plan

We are pursuing new growth based on three key phrases: (1) Environment and energy, (2) Life sciences, and (3) Comfortable living.

We have formulated a five-year medium-term management plan that began in fiscal 2014. Under the plan, we are implementing four basic strategies with a core policy of "achieving new growth by strengthening our business foundations and original technologies."

The four strategies are: (1) Achieve revenue growth through aggressive investment in growth businesses, focusing on the key phrases of environment and energy, life sciences, and comfortable living; (2) Promote structural reforms in existing core businesses; (3) Aggressively expand overseas operations and strengthen Group management; and (4) Strengthen our R&D structure with our eyes set ten years into the future.

In the glass business, we will work to stay in the black by improving business revenue in Japan, while outside Japan we will move ahead with the development of an automotive glass production system and improvement of our customer service. We are focusing on architectural eco-glass, high-performance automotive glass, and glass for electronic materials as growth businesses.

In the chemicals business, we discontinued production of soda ash at the end of May 2015 and will accelerate the restructuring of this business into a growth business. At our Ube Plant we are building production facilities for low-GWP fluorocarbons, which are currently produced at our Kawasaki Plant, with the goal of starting operations in the second half of fiscal 2016. We anticipate surging demand for electrolytes for lithium-ion batteries to continue in the future, and therefore plan to start production in China in early 2016 following South Korea. We are also focusing on environmentally friendly fertilizers, fluorine-related products for semiconductors, and active ingredients and intermediates for agrochemicals and pharmaceuticals as growth businesses into which we are investing aggressively.

Global Expansion

We are steadily expanding our businesses in both the glass and chemicals sectors.

The Central Glass Group is actively pursuing a global presence. Outside Japan we have sites in the United States, the United Kingdom, Germany, Luxembourg, China, Taiwan, South Korea, India, and Vietnam. In recent years, our automotive glass business has aggressively invested business resources overseas in line with the global expansion of our customers, and in November 2014, we acquired two subsidiaries of Guardian Industries Corporation. In addition, we agreed to establish a joint venture in Indonesia with France-based Saint-Gobain S.A. In the chemicals business, we are steadily expanding our business with a focus on China and South Korea.

At the same time, the expansion of the manufacturing industry in Japan has become severely constrained by the country's declining population and changes in its industrial structure. For our part, as a path toward survival in the Japanese manufacturing industry, we are sticking to a policy of refining our technology, costs, and quality and conducting manufacturing and sales close to points of demand, with Japan as a mother plant.

R&D Backing Sustainable Growth

We strive to carry out R&D that accurately captures market needs while keeping contribution to society as our first and foremost goal.

We have designated explorations and R&D that will contribute to the enlargement of our business foundation in the long term as our "Future Fund" and are using them to pursue expansion into new business fields that are growing. The objective of the Fund is to nurture new businesses and technologies from a long-term perspective. Accordingly, in fiscal 2011 we switched from control of R&D expenditure by each business division to a system in which it is directly controlled by top management. We



set aside a budget for a corporate R&D program in addition to the traditional programs run by business divisions, and will use it to pursue original R&D with our sights set 10 and even 20 years down the road.

We call this corporate R&D program “New-STEP,” and through it we will explore new business fields that merge core technology elements of both glass and chemicals as well as developing new materials. We hope to rapidly create new products and businesses by focusing on development that accurately captures market needs, including environmentally friendly materials and new functional materials.

Our R&D has gradually begun to achieve results as products for electronic materials that were developed through collaboration between our Chemical Research Center and Glass Research Center have entered the stage of mass production.

Monozukuri Starts with Hitozukuri (Developing Human Resources)

We will maintain a commitment to developing human resources and the promotion of diversity.

At Central Glass we believe that *Monozukuri* starts with *Hitozukuri*, or developing human resources. That is, to manufacture excellent products, one must first foster exceptional human resources. In order to develop human resources capable

of handling our accelerating global expansion, we are working to foster talent that can play an active role in a wide range of fields through programs such as ones for learning English and Chinese as well as various educational programs targeting young employees. In addition, female workers in Japan are expected to play an active role to help society cope with the shrinking labor pool brought on by the declining population. Here at Central Glass, we are doing our best to improve the working environment for female employees. We are actively implementing programs to support the development of the next generation, such as our maternity and childcare leave programs. Not only are we supporting women during childbirth and childrearing through measures such as shortened working hours during childcare, but we are also encouraging male employees to take childcare leave. The results of these initiatives are already starting to appear.

In recent years, the diversity movement, which aims to produce synergistic effects by welcoming diverse human resources, has gained momentum. At Central Glass, we will continue to strive toward the promotion of diversity that can strengthen our *Monozukuri* through efforts such as supporting the careers of female employees, rehiring of employees after retirement age, and increasing recruitment of foreign nationals.

Toward Our 100th Anniversary

We will pursue sustainable growth while deepening ties with stakeholders.

Central Glass will mark its 80th anniversary next year. Our origins lie in Ube Soda Industry Co., Ltd., which was founded in 1936. At Central Glass, which started out as a chemical company producing fertilizers based on soda industry products, we have a strong tradition of “contribute to the establishment of a truly prosperous society through the spirit of *Monozukuri*.” The Central Glass Group remains committed to this aspiration that we have carried with us since our founding as we head toward our 80th and then our 100th anniversaries. Along the way, we will pursue sustainable growth while deepening ties with stakeholders, including customers and local communities. We look forward to your continued understanding and support as we move ahead into the future.

Environmental Principles

Central Glass will help create a truly prosperous society through the production of goods and services by giving consideration to the global environment, health, and safety at all times.

“Doing everything in the interests of humanity and the global environment.”

Action Guidelines

- 1 We will give consideration to the protection of the global environment and people’s health and safety on a group-wide scale in all activities spanning from R&D to production and sales.
- 2 We will build frameworks and systems that promote environmentally-conscious corporate activities and strive to make continual improvements.
- 3 We will make efforts to develop products and production technologies that are friendly to the global environment.

- 4 We will strive to build a recycling-based society by effectively using the earth’s resources and by recycling waste.
- 5 We will observe laws and regulations relating to the environment, health and safety, and make efforts in communicating with citizens.
- 6 As an employee of the company, each and every one of us will strive to contribute to society with a focus on the local community.

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Editorial Policy

We in the Central Glass Group have published this report with the objective of engaging in a dialogue with all of our stakeholders by reporting on our social and environmental activities. In preparing this report, our goal was to make it easy to read and understand in order to thoroughly inform readers of our activities.

Reference Guidelines

- Environmental Reporting Guidelines 2012 of the Ministry of the Environment
- Responsible Care (RC) Code of the Japan Responsible Care Council (JRCC)
- ISO 26000 (Guidance on social responsibility)

Scope of the report

Central Glass Group
 (The scope of data was only gathered from the plants and research institutes of Central Glass Co., Ltd. along with some of its subsidiaries.)

Report period

April 2014 to March 2015
 (The period for overseas companies was from January to December 2014)

What Is Responsible Care (RC)?

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



Business Outline of the Central Glass Group

Corporate Outline (as of March 31, 2015)

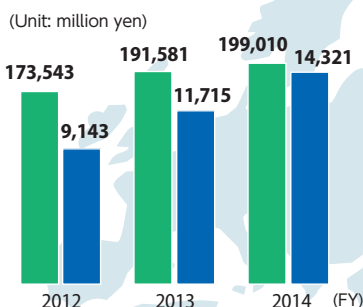
Company Name	Central Glass Co., Ltd.
Established	October 10, 1936
Number of Employees	1,572 (6,758 consolidated)
Capital	¥18,168.28 million
Listed Stock Exchange	Tokyo Stock Exchange

List of Workplaces

Head Office	Kowa-Hitotsubashi Bldg., 7-1 Kanda-Nishikicho 3-chome, Chiyoda-ku, Tokyo, Japan
Chemical Research Centers	17-5 Nakadai 2-chome, Kawagoe City, Saitama 5253 Okiube, Ube City, Yamaguchi
Glass Research Center	1510 Okuchi-cho, Matsusaka City, Mie
Ube Plant	5253 Okiube, Ube City, Yamaguchi
Matsusaka Plant	1521-2 Okuchi-cho, Matsusaka City, Mie
Matsusaka Plant Sakai Mfg. Site	6 Chikko-minamimachi, Sakai-ku, Sakai City, Osaka
Kawasaki Plant	10-2 Ukishima-cho, Kawasaki-ku, Kawasaki City, Kanagawa
Shanghai Rep. Office	2201 Yan An Road (West), Shanghai, China
Delhi Rep. Office	Unit. No.103 & 104, Tower B Spaze I-Tech Park, Sector-49, Sohna-Gurgaon Expressway, Gurgaon, Haryana, India

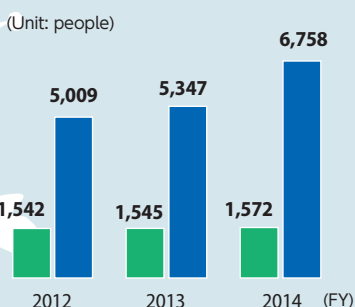
Trends in net sales and ordinary income (consolidated)

■ Net sales ■ Ordinary income

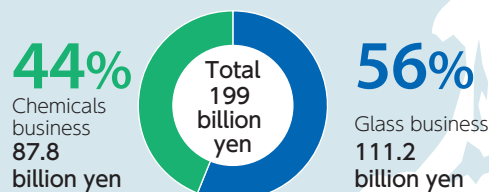


Trends in the number of employees

■ Non-consolidated ■ Consolidated



FY2014 sales by segment (consolidated)



Subsidiaries and Affiliates

33 Domestic companies

Central Glass Hokkaido Co., Ltd. *	Bishu Silica Sand Co., Ltd.	Central Engineering Co., Ltd.
Tohoku Garasu Kenzai	Japan Tempered & Laminated Glass Co., Ltd.	Ube Delivery Co., Ltd.
Central Glass Tohoku Co., Ltd. *	Central Insulation Co., Ltd.	Central Service Co., Ltd.
Central Glass Tokyo Co., Ltd. *	Central Glass Fiber Co., Ltd.	Ube Analytical Center Co., Ltd.
Central Glass Engineering Co., Ltd.	Mie Glass Industry Co., Ltd.	Fuji Shipping Co., Ltd.
Tosho Central Co., Ltd.	Central Glass Plant Services Co., Ltd.	Ube Yoshino Gypsum Co., Ltd.
Niigata Yoshino Gypsum Co., Ltd.	Sowa Transportation and Warehouse Co., Ltd.	Ube Ammonia Industries Co., Ltd.
Central Chemical Co., Ltd.	Central Glass Kansai Co., Ltd. *	Central Glass Kyushu Co., Ltd. *
Central Saint-Gobain Co., Ltd.	Kagi Shoten Co., Ltd. *	Central Saint-Gobain Investment Co., Ltd.
Central Glass Module Co., Ltd.	Takada Co., Ltd.	Sun Green Co., Ltd.
Central Glass Chubu Co., Ltd.*	Ube Trading Co., Ltd.	TOKUYAMA & CENTRAL SODA Inc.

* Now Central Glass Sale Co., Ltd.

Business Division/Segment/Major Products

Glass Business	Architectural glass	Float glass, figured glass, wired glass, heat reflective glass, fabricated glass (tempered glass, fire-resistant tempered glass, laminated glass, insulating glass units, crime-prevention glass), mirrors, anti-fog mirrors, decorated glass, photovoltaic (PV) glass
	Automotive glass	IR-cut glass, UV-cut glass, glass antennas, privacy glass, module glass, acoustic glass, glass with conductive heating defogger print, head-up display glass, and other various safety glasses
	Glass for electronic materials	Thin flat glass for LCDs, chemical tempered glass, powder glass and glass paste
Chemicals Business	Basic chemicals	Soda ash, calcium chloride, polyaluminum chloride, gypsum, hydrofluoric acid, fluorocarbon products
	Fine chemicals	Active ingredients & intermediates for pharmaceuticals/agrochemicals, fluorinated organic/inorganic compounds, high purity gases, electronic materials, electrolytes for lithium-ion batteries, fluorinated organic/inorganic reagents
	Fertilizers	NPK compound fertilizer, NK compound fertilizer, coated fertilizer, organic chemical fertilizer, fertilizer materials, microbiological plant-protection agents/materials
	Glass fibers	Glass fiber, glass wool

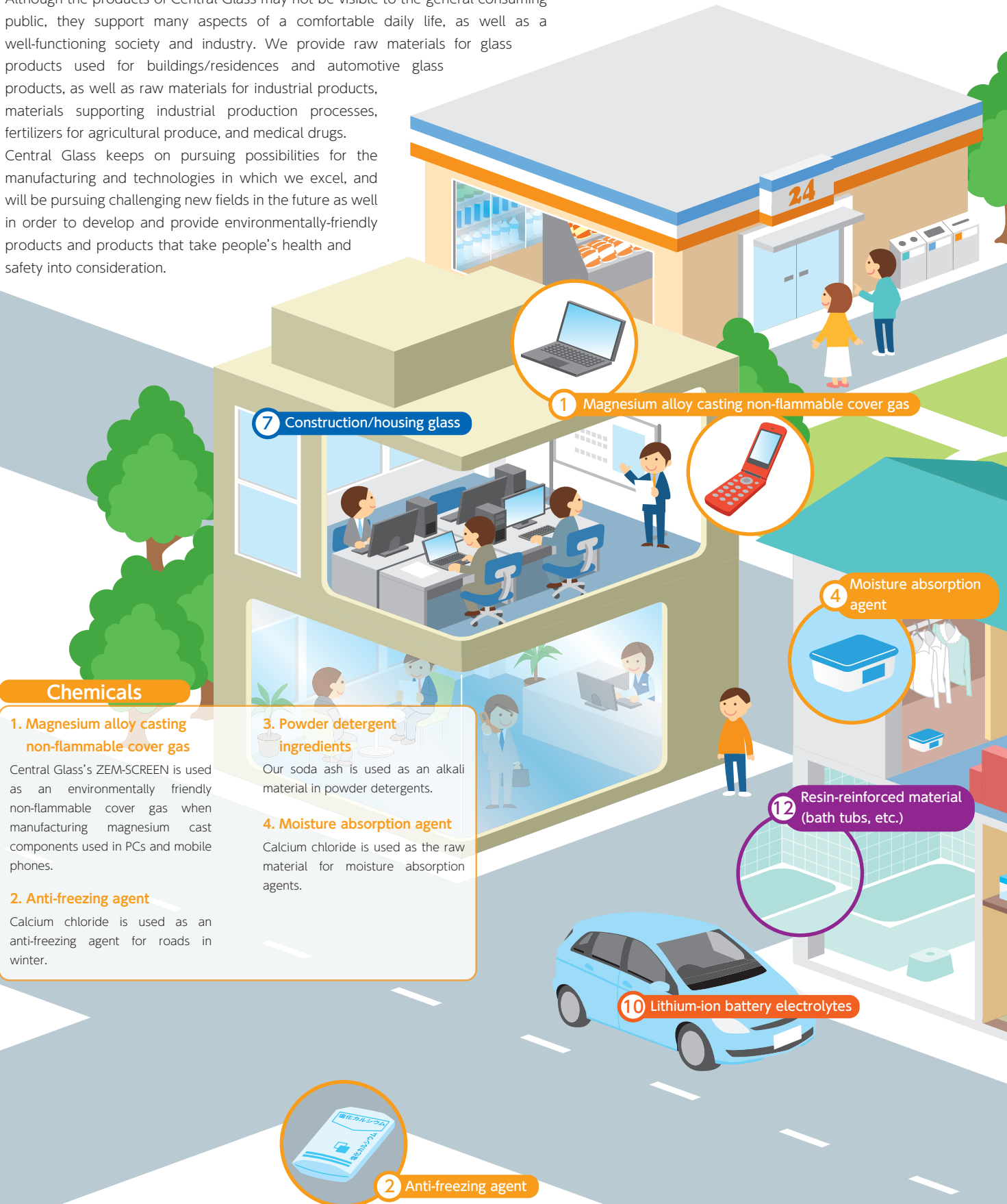
24 Companies Overseas

Northwestern Industries, Inc. (US)	Yue Sheng Industrial Co., Ltd. (Taiwan)
Central Glass International, Inc. (US)	Taiwan Central Glass Co., Ltd. (Taiwan)
Central Glass America Inc. (US)	Giga Gas & Electronic Materials Company (Taiwan)
Carlex Glass Company, LLC (US)	Central Glass Trading (Shanghai) Co., Ltd. (China)
Carlex Glass America, LLC (US)	Zhejiang Central Glass Chemspec Company Ltd. (China)
Carlex Glass of Indiana, Inc. (US)	Giga Gas & Electronic Materials Trading (Shanghai) Co., Ltd. (China)
SynQuest Laboratories, Inc. (US)	Saint-Gobain Central Sekurit (Qingdao) Co., Ltd. (China)
Apollo Scientific Limited (UK)	Central Glass (Zhangjiagang) Co., Ltd. (China)
Central Glass Europe Limited (UK)	Central Glass Korea Co., Ltd. (South Korea)
Central Glass Germany GmbH (Germany)	JCEL Co., Ltd. (South Korea)
Carlex Glass Luxembourg, S.A. (Luxembourg)	Thai Central Chemical Public Co., Ltd. (Thailand)
	Japan Vietnam Fertilizer Company (Vietnam)
	Central Glass Company India Private Limited (India)

Products of the Central Glass Group

Central Glass Group products are used in various ways in order to enrich people's daily lives.

Central Glass Group supplies products related to the fields of glass and chemicals. Although the products of Central Glass may not be visible to the general consuming public, they support many aspects of a comfortable daily life, as well as a well-functioning society and industry. We provide raw materials for glass products used for buildings/residences and automotive glass products, as well as raw materials for industrial products, materials supporting industrial production processes, fertilizers for agricultural produce, and medical drugs. Central Glass keeps on pursuing possibilities for the manufacturing and technologies in which we excel, and will be pursuing challenging new fields in the future as well in order to develop and provide environmentally-friendly products and products that take people's health and safety into consideration.



Chemicals

1. Magnesium alloy casting non-flammable cover gas

Central Glass's ZEM-SCREEN is used as an environmentally friendly non-flammable cover gas when manufacturing magnesium cast components used in PCs and mobile phones.

2. Anti-freezing agent

Calcium chloride is used as an anti-freezing agent for roads in winter.

3. Powder detergent ingredients

Our soda ash is used as an alkali material in powder detergents.

4. Moisture absorption agent

Calcium chloride is used as the raw material for moisture absorption agents.

7 Construction/housing glass

1 Magnesium alloy casting non-flammable cover gas

4 Moisture absorption agent

12 Resin-reinforced material (bath tubs, etc.)

10 Lithium-ion battery electrolytes

2 Anti-freezing agent

Fertilizer

5. Environmentally-conscious agricultural products/microbial control agents

Coated fertilizer Cera-coat®R

(Manufactured and sold by Central Chemical Co., Ltd.)
This is a coated fertilizer with adjustable fertilizer effects that was developed around the three concepts of offering ideal fertilizer effects, power savings and low cost, and being environmentally friendly. Its powerful fertilizer effects make it possible to reduce the amount used.

Microbial control agents

Supporting higher levels of safety for humans, animals, and produce, these agents can be used until before harvest. Essentially, they are environmentally sound microbial agrochemicals suitable for organic and low-chemical farming, because their application is not counted as the use of agrochemical spraying.

5 Environmentally-conscious agricultural products/microbial control agents

11 Active ingredients and intermediates for pharmaceuticals

Glass

6. Glass for touch panels

Extremely thin glass used for sensor substrates and glass covers for touch panels.

7. Construction/housing glass

Glass types that contribute to energy saving and comfort indoors, such as eco-glass, crime-prevention glass, and soundproof glass.

8. Lead-free mirrors and anti-fog mirrors

(Manufactured by Mie Glass Industry Co., Ltd.)
Our lead-free mirrors are environmentally friendly, as the back coating contains no harmful lead components. Our anti-fog mirror suppresses blurring due to a special functional coating applied on the mirror surface.

9. Automotive glass

Our automotive glass is used for windshields and side and rear windows in automobiles.

Fine chemicals

10. Lithium-ion battery electrolytes

Our electrolytes are used for lithium-ion batteries used to power electric vehicles (EVs) and hybrid cars.

11. Active ingredients and intermediates for pharmaceuticals

We supply active ingredients and intermediates for such pharmaceuticals as anesthetics and ulcer treatment drugs by utilizing fluorine chemicals and other technologies that we have accumulated in-house.

6 Glass for touch panels

8 Lead-free mirrors and anti-fog mirrors

3 Powder detergent ingredients

9 Automotive glass

13 Automotive sound insulating material

Glass fiber

12. Resin-reinforced material (bath tubs, etc.)

(Manufactured by Central Glass Fiber Co., Ltd.)
Glass fiber is widely used in such diverse applications as fiber-reinforced plastic for bath tubs, housing, automobiles, ships, and electronics products.

13. Automotive sound insulating material

(Manufactured by Central Glass Fiber Co., Ltd.)
Glass wool is a noncombustible, fire-resistant material used as a heat- and sound-insulating material for automobiles, rail cars, etc.

A Next-Generation Blowing Agent That Will Help in the Fight Against Global Warming

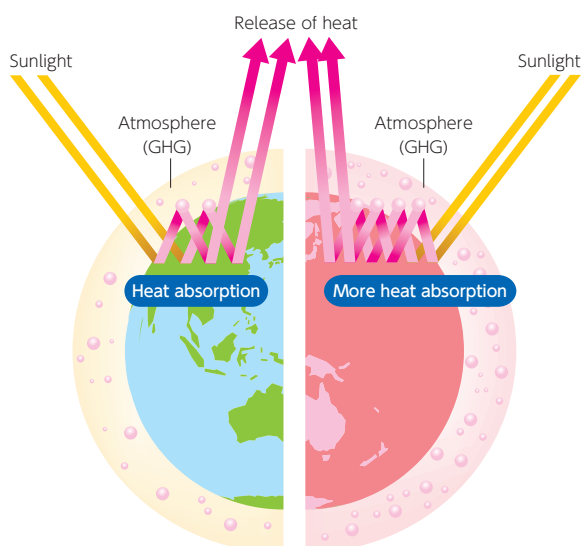
Awareness of Social Issues and Central Glass's Initiatives

Development of Non-Ozone Depleting CFC Alternatives with Extremely Low Global Warming Potential

Although it is usually not directly visible in our everyday lives, rigid urethane foam is used in various insulation applications, including heat insulation materials in the walls and ceilings of office buildings, houses, and apartments as well as insulation for refrigerators and freezers.

Encapsulating a blowing agent inside tiny bubbles called closed cells increases the thermal insulating properties of rigid urethane foam. Fluorine-based blowing agents are widely used because they have low thermal conductivity and are nonflammable.

Mechanism of Global Warming



The Earth about 200 years ago

The concentration of carbon dioxide was about 280 ppm at the time of the start of the Industrial Revolution.

The Earth today

The concentration of carbon dioxide surpassed 400 ppm in 2013.

Source: Website of the Japan Center for Climate Change Actions (<http://www.jccca.org/>)

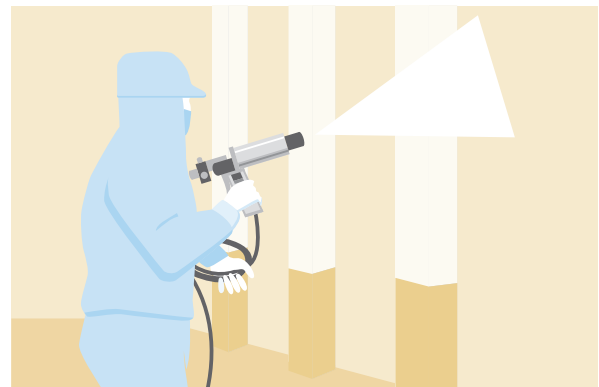
Technology and Market Developments toward CFC-Free Alternatives

The fluorine-based blowing agents currently used are hydrofluorocarbons (HFCs), known as non-ozone depleting second-generation CFC alternatives. Central Glass is the only company in Japan that manufactures and sells HFC-245fa. However, since HFCs are greenhouse gases that absorb heat released from the surface of the earth, they have been designated as gases to be reduced under the Kyoto Protocol. That is why Central Glass has been developing technology for HFO-1233zd(E) in order to supply the world with an environmentally friendly next-generation blowing agent that has a low global warming potential (GWP)*.

The performance of HFO-1233zd(E) is either equal or superior to that of the HFC-245fa currently used, but it does not contribute to ozone depletion and is a low-GWP product with a GWP approximately 1/1000 that of existing products (GWP < 1).

* Global warming potential (GWP): A number indicating a greenhouse gas's degree of effect on global warming compared to the benchmark carbon dioxide.

Spraying urethane foam (artist's interpretation)



Central Glass Wins Award of Excellence in the 17th Ozone Layer Protection and Global Warming Prevention Awards

Thanks to its work on developing technology for the next-generation blowing agent HFO-1233zd(E), in 2012 Central Glass's Kawasaki Plant became the world's first manufacturer of HFO-1233zd(E).

Central Glass received significant praise for its work in developing this industrial manufacturing method and production technology, and in September 2014, Central Glass and Honeywell Japan Inc. were co-recipients of an Award of Excellence in the 17th Ozone Layer Protection and Global Warming Prevention Awards hosted by Nikkan Kogyo Shimbun, Ltd., a daily newspaper company. The award, which was established in 1998 with the aim of encouraging measures to protect the ozone layer and prevent global warming, recognizes technologies that contribute to the protection of the global environment.



Award ceremony
(source: Nikkan Kogyo Shimbun, Ltd.)



HFO-1233zd(E) production plant at the Kawasaki Plant

Voice

With an extremely low global warming potential (GWP) and ozone depletion potential (ODP), 1233zd(E) is an environmentally friendly product that I am proud to produce every day.

Yuzuru Morino

Deputy General Manager
Production Department



Voice

Since 1233zd(E) is one of a few outstanding products in the world and plays an important role for the environment, we are increasing the efficiency of production and distribution in order to reliably meet customer needs.

Yasuo Tajima

Deputy General Manager
Personnel & General Affairs
Department



Ube Plant to Begin Production of Next-Generation Blowing Agent in Fiscal 2016

Central Glass has helped to lower the GWP of rigid urethane foam by manufacturing the next-generation blowing agent HFO-1233zd(E) at its Kawasaki Plant and supplying it to Japan and other developed countries such as the US.

Demand for next-generation blowing agents, which are materials that show great promise in the fight against global warming, is expected to increase both within Japan and overseas. Central Glass announced in January 2015 that it would establish a production facility at its Ube Plant in order to meet that societal need and contribute to measures against global warming.

By starting production at the Ube Plant in fiscal 2016 in addition to the current Kawasaki Plant, we will continue to fortify our operations so that we can supply this next-generation blowing agent globally.



HFO-1233zd(E) ISO tank container
(Reprinted with the permission of the NRS Corporation)

Special
Feature

2

Contributing to the Prevention of Global Warming through Products

Development of Radio Wave-Transmitting Heat Shielding Automotive Glass

Awareness of Social Issues

Meeting Diverse Needs Brought On by Environmental Changes and the Evolution of Automobiles

Glass is transparent and durable. It is affordable yet adds a high-class feel. These features make it an indispensable material for automobiles. Meanwhile, demanding targets have been set for CO₂ emissions (fuel consumption) as an automotive countermeasure against global warming. Reducing CO₂ emissions from vehicles is an important step in the pursuit of a low-carbon society.

With hopes pinned on the spread of eco-cars (HV and EV) as an environmental measure, there has been demand for increased range in these vehicles. If heat, i.e. energy from solar radiation, could be prevented from entering the interior of the vehicle, passenger comfort could be increased, thereby reducing the use of air conditioning. This could help increase the vehicle's range as a result.

Additionally, the window glass used in automobiles, which are moving vehicles, has an essential safety function in protecting passengers. That is why automotive window glass is also called safety glass. Since it ensures driving visibility and protects passengers from wind, rain, and flying objects as well as in the event of an accident, its fundamental performance is regulated by law. In addition to fulfilling its essential functions as safety glass, automotive window glass must also play a crucial role as a high value-added material combining a variety of functions in order to meet the diverse needs brought on by environmental changes and the evolution of the automobile.

Central Glass's Initiatives

Enhancing the Heat-Shielding Performance of Windshields to Prevent Solar Radiation Energy from Entering Vehicle Interiors

The percentage of solar radiation energy that enters a vehicle's

interior is greatest through the transparent window glass and especially through the windshield, which has particularly high transmissivity and is installed at a slant across a large area. Accordingly, enhancing the heat-shielding performance of the windshield is the most effective approach.

Conventional heat-shielding windshields use a heat-absorbing material to absorb heat rays or a metallic film to reflect them. However, these methods have their issues. In the former, the absorbed heat is reradiated into the vehicle interior, while in the latter, various radio waves essential to communications cannot pass through.

That is why Central Glass is aiming to develop a new type of heat shielding glass that is both heat-reflective and radio wave-transmitting by using technology that selectively reflects only the near-infrared portion of the spectrum of solar radiation energy.

Heat shielding glass that can contribute to the fight against global warming is the target of extremely high expectations. There are still issues to overcome in commercialization, but we will push ahead with development while grasping market needs precisely in order to achieve this aim as quickly as possible.

Voice

Aiming to Develop High-Quality, High Value-Added Automotive Window Glass

The most important requirement for automotive window glass is that it must protect the safety of passengers. At minimum, it must possess mechanical durability, the environmental resistance to avoid deterioration even after many years of exposure to sunlight, temperature, wind, and rain, and the optical properties to ensure clear visibility.

At the same time, automotive window glass is becoming more sophisticated with the addition of multiple features in order to meet the diversifying needs brought on by a changing environment and the evolution of the automobile. Combining glass with new materials is a very effective way to increase functionality, and in the case of heat shielding glass, combination with heat-reflecting materials is being attempted. Working out how to combine glass with new heat-reflecting materials while maintaining adequate quality as automotive window glass is a major challenge. We are striving to find a solution by working out the properties of the materials.



Kensuke Izutani
Research Engineer
Glass Research Center



Corporate Governance and Compliance

Corporate Governance

The basic concept behind the corporate governance*¹ of the Central Glass Group is to continually increase the transparency and fairness of our overall management in order to enlarge corporate value, further increase profits, and make efforts to

establish an efficient and reasonable organizational structure that can readily respond to changes in the management environment. See the chart below for our specific corporate governance structure.

Compliance

In order to establish corporate governance, it is essential to raise our awareness of compliance*² in addition to upgrading and reinforcing our corporate governance framework. To fulfill this purpose, the Central Glass Group established the "Central Glass Group's Code of Conduct" as the internal code for conducting faithful business activities with stakeholders such as business partners, concerned organizations, customers, consumers, and employees. Every employee carries a card displaying this Code of Conduct to constantly enhance awareness of compliance. The top executives also strive to set a good example through their actions.

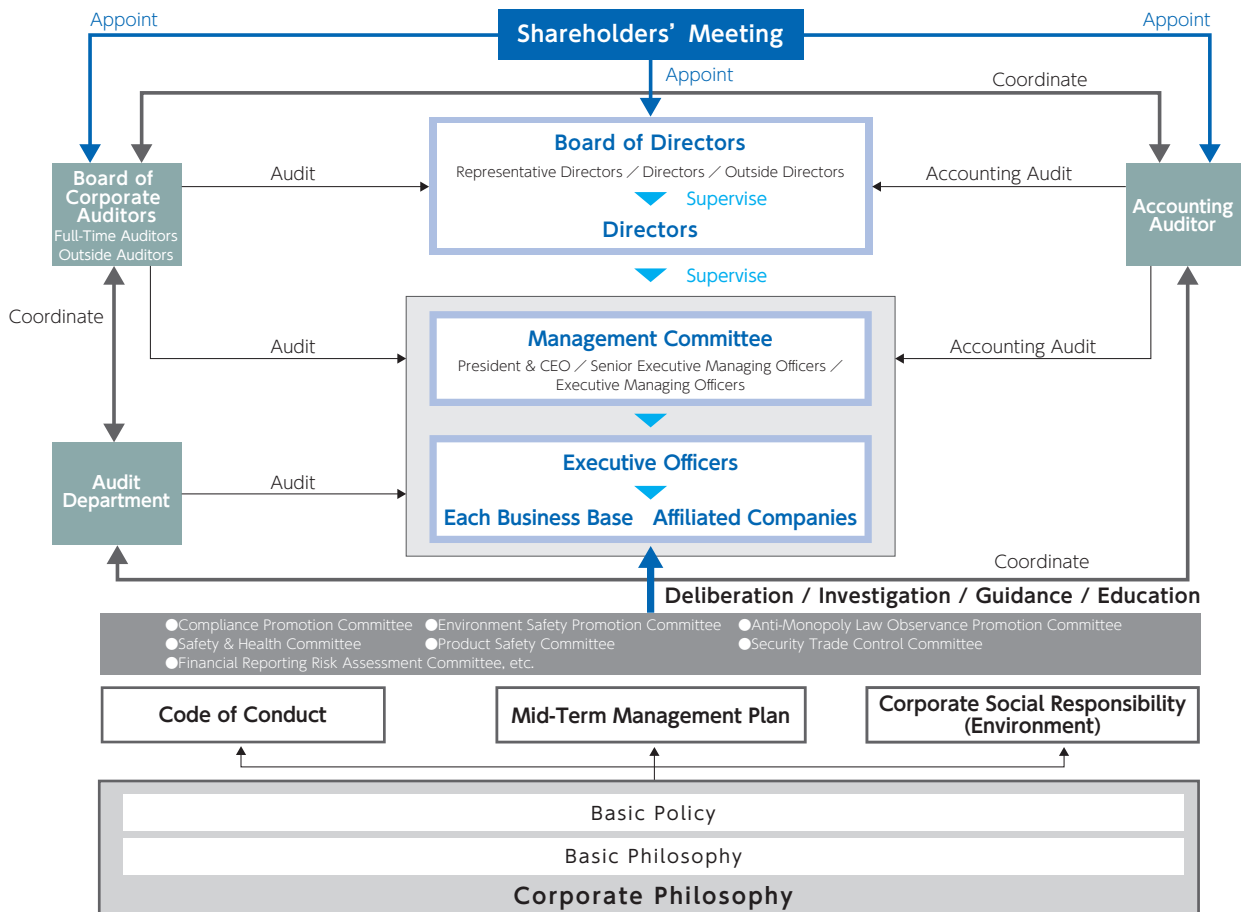
We also created a "Compliance Manual" to serve as a guide on dictating social norms and corporate ethics. This manual covers a wide range of fields including, among others: anti-monopoly law; independence from antisocial forces; intellectual property rights; regulations on insider trading; environmental conservation;

the workplace environment; the protection and management of information; and respect for human rights. The Central Glass Group also established and started operating a Whistle Blowing System so that all employees can obtain guidance and consult on issues.

The effective use of these systems, together with regular education through internal training seminars, helps each employee gain a deeper understanding of relevant laws and regulations and take appropriate action when conducting business. Through these activities, the Central Glass Group aims to enhance both awareness and compliance.

- *1 Corporate governance: The way a corporation should be governed
- *2 "Compliance" refers not only to the observance of laws and regulations in a limited sense, but also includes the observance of a wide range of social norms when conducting business activities.

Organizational Chart for Corporate Governance





Environment & Safety Management

The Central Glass Group undertakes voluntary management activities aimed at making improvements by taking care to ensure the environment, safety, and health and environmental protection over the total life cycle of our products, from the R&D stages through to the procurement of raw materials, production, distribution, use, and disposal. We pay meticulous attention in order to maintain, manage, and guarantee the quality of the products that we deliver to our customers, and have set in place structures for their production, transportation, and supply. We promote management that is responsive to the societal demands of every one of our stakeholders as we aspire to be a company that is truly beneficial and contributes to society.

Targets and Progress

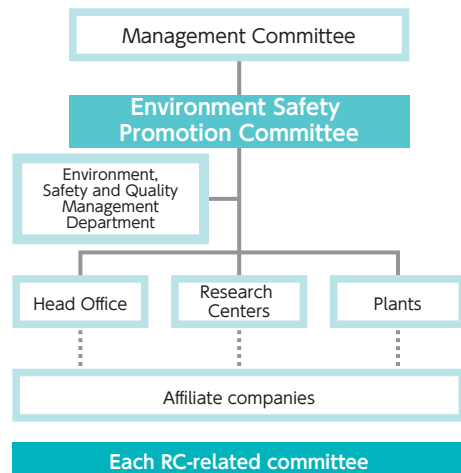
Major Issues	P Mid-Term Targets	D FY2014 Results	C Ratings	A FY2015 Plans
Establishment & maintenance of environmental management system	<ul style="list-style-type: none"> Renew and maintain certification at main workplaces. 	Ube Plant, Kawasaki Plant, and Matsusaka Plant (including the Sakai Manufacturing Site) maintained ISO 14001 certification.	◎	Renew and maintain certification at main workplaces.
	<ul style="list-style-type: none"> Renew, maintain certification, and acquire new certification at affiliates. Improve self-management level at affiliates that have not acquired certification. 	Domestic affiliates that have already acquired certification maintained and continued their certification. During onsite audits, provided guidance on self-management to affiliates that have not yet acquired certification.	○	Renew and maintain certification at affiliates. Improve self-management level at affiliates that have not acquired certification.

Environment, Safety, and Quality Management Promotion Systems

The various supervisory departments for each area form the core when it comes to promoting the environment, safety, and quality management systems at Central Glass. They coordinate with other related departments in order to follow up on the various activities at our head office, plants, research centers, and affiliate companies.

As indicated in the figure on the right, our Environment Safety Promotion Committee forms the core of our responsible care activities, while our Environment, Safety and Quality Management Department serves as the secretariat for this. They support and promote activities related to environmental and safety matters carried out by each of our departments.

Environment and safety management promotion system



Environmental safety aspects	Environment, Safety and Quality Management Department
Product safety aspects	Quality Assurance Department
Education/human resource building aspects	Personnel Department
Occupational safety and health aspects	Personnel Department, Environment Safety Department
Social demands	Corporate Administration Department

Environment and Safety Audits

Central Glass carries out environment and safety audits every year focusing on our plants, research centers, and domestic affiliate companies. Central Glass's audits are conducted in two stages: a self-audit in which all targeted workplaces use a checklist to check the status of their RC activities, and an onsite audit in which the Environment Safety Department checks workplaces, selected based on the self-audit results, through direct visits.

In FY2014, onsite audits were carried out at 17 of our workplaces, and we also instituted site visits, documentation

checks, and hearings on matters of concern and important issues. During onsite audits, we verify whether RC activities are being implemented appropriately and perform detailed checks including confirming environmental compliance and conducting safety risk assessments. This helps improve initiatives at each of our workplaces.

Furthermore, in fiscal 2015 we began preparing an overseas checklist along with other materials to expand environment and safety audits to overseas affiliates.

Acquisition Status for Environmental Management System (EMS) and Other Certifications

Our plants and affiliate companies	Environmental Management System ISO 14001, etc.	Quality Management System ISO 9001, etc.
Ube Plant	○	○
Kawasaki Plant	○	○
Matsusaka Plant (including Sakai Manufacturing Site)	○	○
Central Glass Tokyo Co., Ltd. - Urayasu Plant (now Central Glass Sales Co., Ltd. - Urayasu Plant)		○
Central Glass Kansai Co., Ltd. - Sakai Office / Shikoku Office (now Central Glass Sales Co., Ltd. - Sakai Plant / Sakai Manufacturing Site)	○ (Sakai Office)	○
Central Glass Engineering Co., Ltd.		○
Central Chemical Co., Ltd. - Ube Plant	○	
Central Glass Module Co., Ltd.		○
Japan Tempered & Laminated Glass Co., Ltd.	○*1	○
Central Glass Fiber Co., Ltd. Matsusaka Plant / Kasugai Plant	○ (Matsusaka Plant)	○
Mie Glass Industry Co., Ltd. - Matsusaka Plant / Oishi Plant	○	○ (Matsusaka Plant)
Central Glass Plant Services Co., Ltd.	○	
Central Service Co., Ltd.		○
Carlex Glass Company, LLC (US)	○	○
Carlex Glass America, LLC (US)	○	○
Carlex Glass of Indiana, Inc. (US)	○	○
Carlex Glass Luxembourg, S.A. (Luxembourg)	○	○
Apollo Scientific Limited (UK)	○	○
JCEL Co., Ltd. (South Korea)	○	○
Taiwan Central Glass Co., Ltd. (Taiwan)		○
Giga Gas & Electronic Materials Company (Taiwan)		○
Central Glass Chemspec Company Ltd. (China)		○

○ : Certification acquired ※1 Eco-Action 21



Environment and safety onsite audit
Central Glass Chubu Co., Ltd., Shizuoka Branch
(now Central Glass Sale Co., Ltd., Shizuoka Mfg. Site)

Education and Training for Environmental and Safety Aspects

Under the recognition that “all of our employees are talented individuals and treasures to the company”, each of the workplaces in the Central Glass Group focuses its efforts on education and training. Education and training are indispensable to deepening the understanding of every one of our employees regarding CSR and the environment as members of society, as well as to acting in a responsible manner or minimizing damage when disasters occur. We offer education and training at each workplace in a timely manner by choosing themes that are suited to the timing of implementation and targeted employees, with the goal of raising their awareness of such environmental, safety, and other issues. In FY2014 we carried out disaster drills and provided education related to the environment and safety at many of our workplaces on several occasions.

At the Matsusaka Plant, we carried out danger-sensing workshops with the aim of raising the danger sensitivity and safety awareness of each and every employee. In March 2015,

we opened a “Danger-Sensing Dojo” equipped with original devices that were designed jointly by veteran and junior employees of the Engineering & Technical Sections, including a falling glass weight sensation device and an incision sensation device. The dojo is used for a variety of educational programs, including training of new hires and job rotation training. During these training sessions, junior and mid-career employees pay close attention as veteran employees recount cases of accidents that they witnessed up close in the past. Experiencing simulated dangers leaves them gasping in surprise. These are precious opportunities to pass along and share awareness of disaster prevention measures.

A partial list of the education and training related to the environment and other issues that were offered at our head office, research centers, plants, and affiliate companies in FY2014 is shown in the table below.

Examples of environmental education and training held in FY2014

Workplace	Overview of education and training	Targeted persons	Dates held	Number of attendees
Head Office	5 Whys analysis (safety)	Safety personnel at workplaces that handle flat glass	January 2015	25 people
Chemical Research Center	Health lecture (by industrial physician)	Center staff	July 2014	47 people
Chemical Research Center (Ube)	Lessons on accident case studies	Center staff	June 2014	63 people
Glass Research Center	AED training	Center staff	August 2014	50 people
Ube Plant	Law study session: “Status of improvements related to opportunities for improvements in the OHSAS 18001 renewal review”	Employees of the Ube Plant and affiliates	July 2014	69 people
Matsusaka Plant	Danger-sensing workshops	All employees, including affiliates and partner companies	As needed starting in October 2014	Approx. 1,500 people
Matsusaka Plant - Sakai Manufacturing Site	Sakai Mfg. Site Comprehensive Disaster Prevention Drill	Employees on the premises of the Sakai Mfg. Site	August 2014	60 people
Kawasaki Plant	Education on the Poisonous and Deleterious Substances Control Act (in line with revisions to regulations for prevention of injury from poisonous and deleterious substances at plants)	Members of each section	December 2014	200 people
Central Chemical	Environmental ISO education	Members of manufacturing section	May 2014	70 people



Environment, Safety & Quality Management

Environmental Accounting

We undertake environmental accounting in order to assess the environmental costs related to our environmental preservation initiatives for the air, water, soil, and disposal of waste. Construction of facilities for environmental preservation accounted for the majority of the amounts we invested, while waste disposal expenses accounted for the majority of our expenses. In fiscal 2014, we constructed facilities for the

preservation of the global environment and invested nearly the same amount as the previous year.

The costs of water and soil pollution prevention measures, etc. decreased mainly due to a decrease in production volumes of some products. Meanwhile, our costs related to product R&D for next-generation environmental protection increased.

In the future we, along with our affiliate companies, will continue to use our capital investments and environmental preservation spending to promote environmental preservation measures.

Environmental Preservation Costs

(Unit: million yen)

Category	Major initiatives	FY2013		FY2014	
		Investments	Expenses	Investments	Expenses
(1) Business area costs		871	3,930	859	3,553
Pollution prevention costs	Preventing the pollution of the air, water, soil, etc.	301	2,112	119	1,949
Global environmental preservation costs	Preventing global warming, measures to conserve energy, etc.	204	88	656	96
Resource recycling costs	Waste disposal, recycling treatment, etc.	366	1,730	84	1,508
(2) Upstream/downstream costs	Collection, recycling, and appropriate disposal of products, etc.	0	0	0	0
(3) Cost of management activities	Maintaining the EMS, environmental monitoring, environmental education costs, etc.	2	236	0	244
(4) Cost of R&D activities	R&D of products involved in environmental preservation	8	494	20	539
(5) Cost of social activities	Improving the environment, contributing to local communities, etc.	0	2	0	2
(6) Cost of dealing with environmental damage	Restoring the environment, environmental preservation compensation, etc.	0	0	0	0
Total		881	4,662	879	4,338

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.

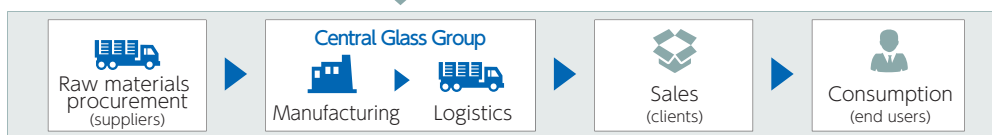
A huge amount of heat energy is needed to melt raw materials in the glass business, so its central issue is measures to prevent global warming. The development of environmentally friendly products and reducing waste are the central issues of the chemicals business, and sustained efforts are being made toward energy saving activities and to establish recycling systems.

INPUT

Total amount of materials input 1,058,000 tons		Amount of water resources input 20,141 million m³		Amount of net energy input 15,203TJ[*]	
Central Glass 760,000 tons	Affiliate companies 298,000 tons	Central Glass 11,981 million m ³	Affiliate companies 8,160 million m ³	Central Glass 9,493TJ	Affiliate companies 5,710TJ

Raw materials, processed goods, molded goods, secondary materials, etc. Water supply, industrial water, groundwater, etc.

* TJ (terajoules) is a unit for energy (joules). One terajoule is equal to one trillion joules.



OUTPUT

Atmosphere		Water		Waste	
Emissions of greenhouse gases 1,011,000 t-CO₂	Net amount of discharged water 16,313 million m³	Net emissions of waste 95,000 tons			
Central Glass 697,000 t-CO ₂	Central Glass 9,527 million m ³	Central Glass 59,000 tons	Affiliate companies 36,000 tons		
Affiliate companies 314,000 t-CO ₂	Affiliate companies 6,786 million m ³	Final amount of waste disposed 31,000 tons			
Emissions of substances that damage the atmosphere 4,813 tons	Emissions of substances that affect water quality 106 tons	Central Glass 27,000 tons	Affiliate companies 4,000 tons		
Central Glass 3,773 tons	Central Glass 76 tons	Recycling rate for waste 66%			
Affiliate companies 1,040 tons	Affiliate companies 30 tons	Central Glass 54%	Affiliate companies 86%		

From energy sources, non-energy sources, and transport COD, total phosphorous, total nitrogen

Reporting range	
•Central Glass: Three plants, one manufacturing site, three research centers, and the head office	•Affiliate companies: 12 major domestic manufacturing companies and 10 major overseas companies



The Central Glass Group recognizes industrial safety and health, security and disaster prevention, and safety of chemical substances as the most important challenges in our corporate activities and promotes initiatives for each of them.

Targets and Progress

Progress Accomplished:◎ Made steady progress:○ Additional measures required:△				
Major Issues	P Mid-Term Targets	D FY2014 Results	C Rating	A FY2015 Plans
Industrial health and safety	<ul style="list-style-type: none"> No injuries causing lost work hours (try various timely measures) 	There were eight accidents that resulted in lost work hours at group companies in Japan, including affiliates. This was down four from the previous year. The implementation of items requested in the annual report on Group-wide industrial accidents was confirmed through RC audits. Each workplace was implementing measures.	○	Implement proactive measures against accidents based on the analytical results of annual reports on Group-wide industrial accidents.
	<ul style="list-style-type: none"> Enhance risk management for industrial health and safety 	Continue to maintain OHSAS18001 certification at our Ube Plant. Continued efforts toward establishment of risk management systems at our Matsusaka and Kawasaki Plants.	○	Maintain and continue management system and cross-deploy it to other workplaces.
Security and disaster prevention	<ul style="list-style-type: none"> Conduct voluntary safety audits on high-pressure gas by management Enhance preventative measures against disasters 	Periodic inspections were carried out by administrators at our Ube, Kawasaki, and Matsusaka Plants and Sakai Manufacturing Site. Voluntary safety audits on high-pressure gas were conducted. The state of management at workplaces with elevators, including statutory inspections, was confirmed for all group companies in Japan, including affiliates.	○	Continue to comply with laws and pass on safety techniques and know-how. Efforts toward establishing equipment safety measures.
Chemical and product safety	<ul style="list-style-type: none"> Implement appropriate management of chemical substances 	Compliance with the Act on the Evaluation of Chemical Substances, Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management. Thereof, and Industrial Safety and Health Act, and provision of information to the concerned parties (requiring various submissions). Sequentially improved SDS.	◎	Continue compliance with laws & regulations and revision of our SDS.
	<ul style="list-style-type: none"> Promote alternatives to or detoxification of environmental impact substances <ul style="list-style-type: none"> Asbestos PCBs Other environmental impact substances 	Removed and treated non-scattering asbestos-containing materials from manufacturing facilities when upgrades were made. Completion of final disposal of high-concentration PCB machinery by plants and affiliates in the Ube district within the JESCO Kitakyushu region.	○	Continued removal of asbestos used at workplaces when upgrades are made. Continued strict management of machinery containing PCBs and their disposal according to local administrative guidance.
	<Promotion of Green Procurement> <ul style="list-style-type: none"> Implement audits on chemical substances Provide information to customers promptly 	Confirmation of chemical substance management (compliance with laws) and customer response status through an environmental safety self-checklist in each Group company in Japan, including affiliates, based on the "Green Procurement Guidelines."	○	Efforts to reduce the environmental impact of products by enhancing management of our database of information and to provide reliable and prompt information to our customers.

Industrial Safety and Health

The Central Glass Group recognizes that maintaining a safe working environment is a basic requirement for all business operations. Accordingly, we carry out industrial safety and health activities at all of our workplaces, including affiliates.

In 2014, we have carried on with activities based around the mainstay of our Policies on Safety and Health, which include items such as "raise and ensure awareness of safety" and "recheck work manuals and ensure thorough compliance with them." In addition, we called attention to safety measures by holding the "Summertime Industrial Accident Prevention Campaign," as well as by issuing a white paper on "Industrial Accidents" and awarded "Safe Operation Awards" in 2014 to further motivate awareness of industrial safety.

In 2014, among all our Group companies in Japan including affiliates, there were eight accidents resulting in lost work hours,

which was four less than the previous year.

Compared to 2013, the frequency rate of accidents that resulted in lost work hours (see the graph on the next page) worsened at Central Glass but showed a trend toward improvement at cooperating companies. Both, however, were below the averages for all industries and the manufacturing industry.

To make further improvements in the future, it is essential that we eliminate latent dangers through risk assessments and thoroughly implement measures to prevent the recurrence of similar accidents.

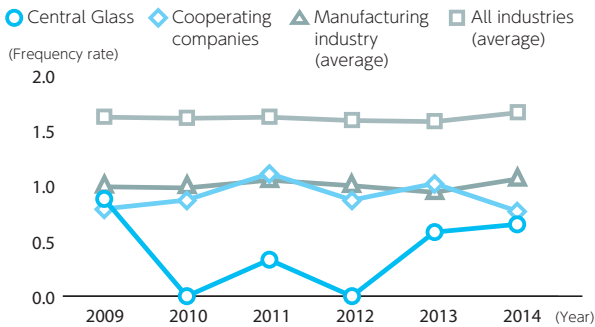
We will continue to make efforts to reduce the occurrence of accidents, including through such initiatives, in the future.

*Cooperating companies: Affiliate companies and cooperating contractors



Safety

Frequency rate of accidents resulting in lost work hours



Frequency rate of accidents resulting in lost work hours = (Number of deaths or injuries by accident / Total work hours) x 1,000,000 (The frequency rate of accidents that result in lost work hours per million working hours)

<2014 Policies on Safety and Health-Priority Implementation Items>

1. Raise and ensure awareness of safety (take responsibility for one's own safety)
2. Set in place basic operation manuals and ensure thorough compliance with them
3. Enhance efforts to promote safety and reinforce safety and health education and training
4. Establish a system for industrial safety and health management (risk assessments)
5. Prevent traffic accidents during everyday driving as well as commutes
6. Promote healthcare, the maintenance of health, and mental healthcare
7. Strictly comply with no-smoking rules in workplaces (encourage separate smoking areas and urge employees to quit smoking)
8. Comply with the reporting system for when accidents occur

Security and Disaster Prevention

Since most major plants of Central Glass are located in areas designated according to 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 authorities concerned with the environment, security, and disaster prevention as we aim to completely eliminate facility disasters.

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

We carry out drills at our plants and workplaces that simulate various different disasters and abnormal conditions in the aim of raising our level of disaster preparedness with our employees

and the employees of each plant's contractors.

Moreover, each business division is moving forward with the formulation of a business continuity plan (BCP) to allow us to continue or resume operations as quickly as possible in the event that operations are temporarily impacted by a disaster such as an earthquake.

We will continue with such activities in the future with safety as our highest priority.



Comprehensive disaster prevention drill (Sakai Mfg. Site)

Logistical Safety

Central Glass and its domestic affiliate companies implement periodic training and education for not only their employees but also employees at the workplaces to which they consign transporting. This is done to prevent accidents during the transportation of chemical substances and to minimize the damage if accidents occur. For example, at our Ube Plant, when drivers are appointed to transport things like high-pressure gases, they are given instruction by transportation managers. Furthermore, our domestic affiliate companies that handle chemical logistics provide education via SDS at monthly safety meetings and other such occasions.

When chemical substances are to be transported by road, we prepare emergency contact cards (yellow cards) for drivers

which they carry not only when obligated by law, such as in the transportation of high-pressure gases and poisonous substances, but also in the transportation of other chemical substances. On the cards, measures to be taken to minimize damage and details to be reported are clarified so that the transporter, firefighters or police officers can respond appropriately and promptly should an accident occur during transportation by road. The details listed on these cards are periodically revised by the relevant departments.

Safety of Chemical Substances

The regulations on chemical substances in countries 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 lead to the minimization of 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, in recent years revisions to laws on chemical substances have been pushed forward in Asian countries, and we must continue to comply with these in the proper manner. Against this background, 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 has been surveying, aggregating, and reporting PRTR*¹ data voluntarily since 1995, prior to the enactment of the Chemical Substances Management Act*² (2000), in an effort to reduce emissions of chemical substances into the environment. The number of substances subject to notification in FY2014 at Central Glass and its domestic affiliate companies decreased by nine substances compared with the previous fiscal year to 54 substances (results for each of Central Glass's plants are given in the section "Activities at Plants" at the end of the report). What is more, we comply with laws and regulations such as the Industrial Safety and Health Act, the Poisonous and Deleterious Substances Control Act, and the High Pressure Gas Safety Act. Our affiliate companies in both Japan and overseas work to get a grasp of local laws and the chemical substances they handle in an effort 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

*² Chemical Substances Management Act: act on confirmation, etc. of release amounts of specific chemical substances into the environment and promotion of improvements to the management thereof

SDS

Central Glass and our domestic affiliate companies strive to provide information through SDSs*³ that conform to GHS.*⁴ When handling chemical substances and the like, measures necessary for risk abatement can be taken based on the information listed in the SDSs, which is conducive to protecting safety and the environment.

In addition, in an effort to manage safety, we strive to ensure that employees are thoroughly familiar with the SDSs for not only our products but also for purchased raw materials.

*³ 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.

*⁴ GHS: The Globally Harmonized System of Classification and Labeling of Chemicals

Handling Asbestos

Structural components containing asbestos are still used in some of the buildings and production facilities at Central Glass and our domestic affiliate companies. We therefore identify the locations where those components are used and manage them appropriately. Components used for such applications as insulation or packing for piping in production facilities are being removed one by one as facilities are upgraded. Moving forward, we will continue to comply with laws and ordinances and promote appropriate measures for this.

Handling PCB Waste

Central Glass and our domestic affiliate companies rigorously store and manage waste condensers and other equipment that contain PCBs (polychlorinated biphenyls) in compliance with the PCB Special Measures Law. The legally mandated disposal of the corresponding PCB waste is promoted at Japan Environmental Storage & Safety Corporation (JESCO) facilities in each district. In FY2014 our plants and affiliate companies in the JESCO Kitakyushu District completed the disposal of their PCB waste. At the same time, we also undertake the appropriate management of what could be termed low-concentration PCB devices, which have been confirmed as having PCB intermixed in them.

Initiatives for Green Procurement

Central Glass is promoting the following initiatives across the entire company in order to proactively advance "green procurement." Green procurement gives priority to procuring raw materials and materials that have less of an impact on the environment when obtaining such goods.

Nowadays, as a result of moves like the enactment of Europe's REACH regulations and the revised Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc., thoroughly ensuring the management of chemical substances throughout the entire supply chain and sharing information related to the chemical substances contained in products have grown increasingly important. Through these initiatives, we will promote the reliable management of chemical substances and accommodate requests for the public disclosure of information.

- ◆ Select environmentally conscious raw materials from the R&D through to the trial manufacturing stages
- ◆ Manage raw materials based on the "Green Procurement Guidelines"
 - Confirm the environmental management systems of our suppliers
 - Confirm whether or not substances that we have voluntarily chosen to restrict are contained within the raw materials we purchase
- ◆ Prevent the intermixing of environmental impact substances through appropriate process management
- ◆ Manage products (management of packaging materials and confirmation that targeted chemical substances are not contained within products)
- ◆ Share information among the concerned parties through the creation and use of a "Green Procurement Database"
- ◆ Provide education for the persons in charge of the relevant departments



Environment

Central Glass, along with all of our affiliate companies, will strive to realize a rich society through measures that ensure the protection of the global environment and the health and safety of people in all of our activities ranging from the R&D stages to the purchasing of raw materials, manufacturing, distribution, use, disposal, and all other stages in the life cycle of our products.

Targets and Progress

Major Issues	P Mid-Term Targets	D FY2014 Results	C Ratings	A FY2015 Plans
Prevention of global warming (energy and resource conservation)	<FY2020 Target> ● Reduce FY2020 CO ₂ emissions by 15% relative to FY2005.	CO ₂ emissions totaled 682,000 tons, down 27% from FY2005.	⊙	Continue working toward the FY2020 target of a 15% reduction in CO ₂ emissions relative to FY2005.
Reduction of waste	<FY2015 Target> ● Reduce final landfill disposal volume by 65% relative to FY2000.	Final landfill disposal volumes at our main plants were down 61% from FY2000.	○	Continue working toward the FY2015 target of a 65% reduction in final landfill disposal volume relative to FY2000.

Our Efforts to Prevent Global Warming

The Central Glass Group strives to reduce emissions of greenhouse gases into the atmosphere through the manufacturing and shipper's transportation of goods in order to prevent global warming.

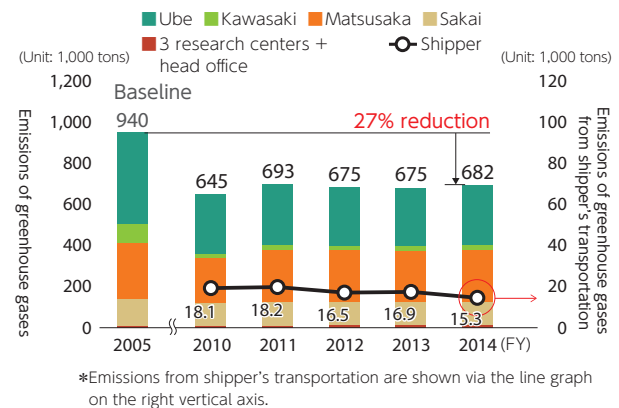
Central Glass

Central Glass has set and is working toward a target of reducing the greenhouse gases given off by the use of fuel, purchased power, and raw materials for manufacturing by 15% relative to 2005 levels by 2020, with this serving as a mid-term initiative to prevent global warming.

For FY2014 we reduced this by 27% relative to FY2005. Emissions of greenhouse gases at the Matsusaka and Ube plants increased over the previous year due to increases in energy consumption associated with plant operation.

Greenhouse gas emissions resulting from transportation of products and other cargo by truck, ship, rail, etc. decreased from the previous fiscal year. Nevertheless, we will continue to streamline our energy use in transportation.

Central Glass's emissions of greenhouse gases



Central Glass Group

With respect to our emissions of greenhouse gases (including those at our domestic and overseas affiliate companies), due to the increase in the number of our overseas manufacturing sites, the greenhouse gas emissions for the Central Glass Group are on an upward trajectory.

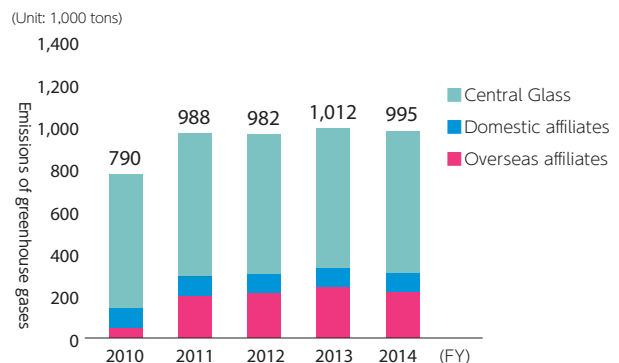
Number of main overseas affiliates that reported GHG emissions

2010: 6 companies 2011: 7 companies
2012-2013: 8 companies 2014: 10 companies

Each workplace is reducing emissions of greenhouse gases through energy saving initiatives, updating of equipment, and other measures to prevent global warming.

* In order to calculate greenhouse gas emissions from purchased power at our overseas workplaces, we used the emission coefficients of each country from the IEA CO₂ Emissions from Fuel Combustion 2013.

Central Glass Group's emissions of greenhouse gases



Reducing Environmental Impact Substances

When it comes to Central Glass's manufacturing sites, our plants are operated in compliance with emissions standards for the atmosphere and water quality in the area. Reducing environmental impact substances is an important challenge in consideration of the global environment and human health and safety, and so for the future we will continue to undertake appropriate management for this.

Countermeasures Against Substances that Damage the Atmosphere

Of the substances that damage the atmosphere, trends in our emissions of sulfur oxide (SOx), nitrogen oxide (NOx), and ash dust are shown below. The variations in our emissions are largely due to our production output. In order to curb emissions of these substances, our plants have been installing abatement equipment and undertaking management to ensure that they fall well under environmental standards.

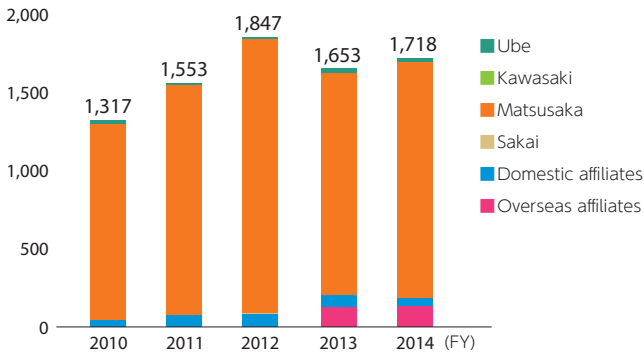
Countermeasures Against Substances that Affect Water Quality

Of the substances that affect water quality, trends in our chemical oxygen demand (COD) and total emissions of both phosphorous and nitrogen are shown below.

Our plants undertake management in order to curb emissions of these environmental impact substances and comply with emissions standards.

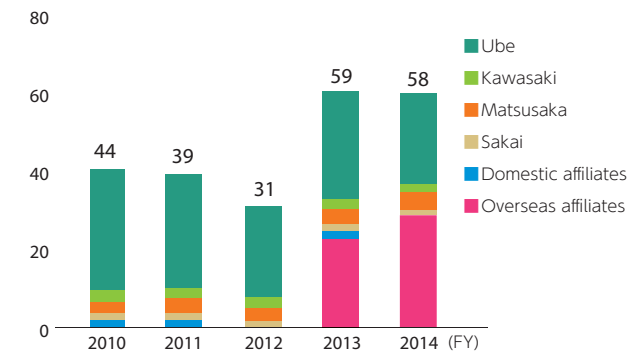
SOx emissions

(Unit: tons)



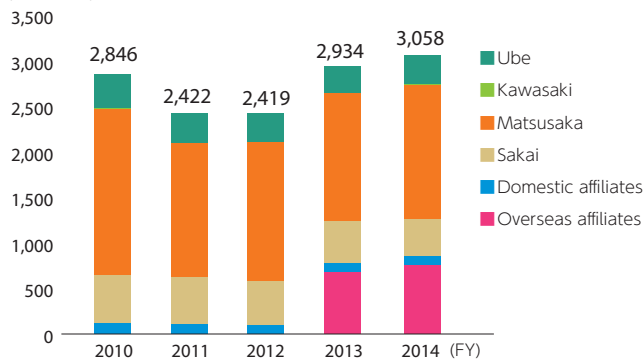
Chemical oxygen demand (COD)

(Unit: tons)



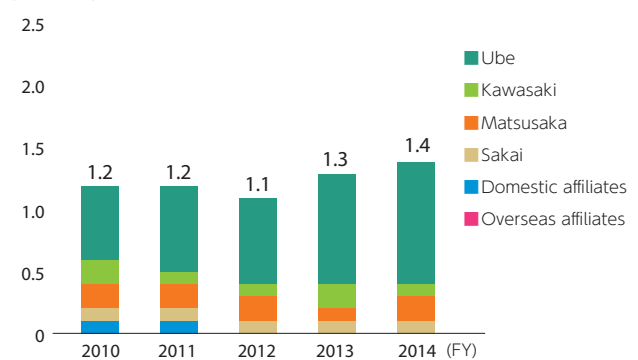
NOx emissions

(Unit: tons)



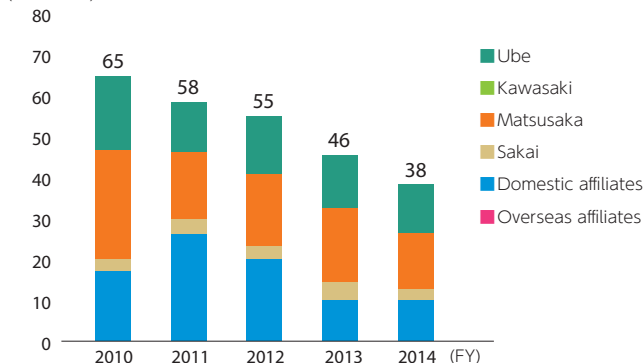
Total phosphorous emissions

(Unit: tons)



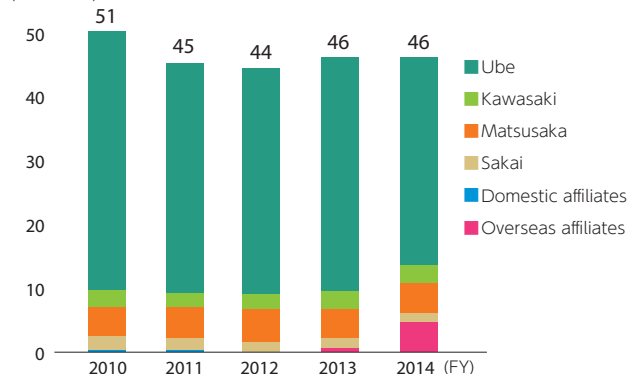
Ash dust emissions

(Unit: tons)



Total nitrogen emissions

(Unit: tons)



* Tabulation of emissions of environmental impact substances at overseas affiliates began in FY2013.

Initiatives to Reduce Industrial Waste

In line with the spirit of Japan's Basic Act on Establishing a Sound Material-Cycle Society, the Central Glass Group is striving to reduce industrial waste.

Central Glass

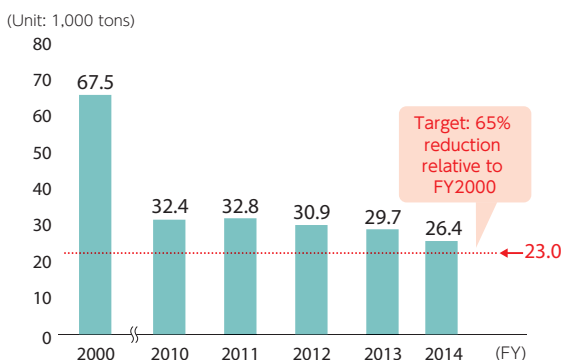
Central Glass's plants have upheld "promoting reductions and recycling of industrial waste" as an important task for our responsible care activities.

The amount of waste (final amount disposed) in FY2014 came to approximately 26,400 tons, for a 61% reduction compared to FY2000 levels. We have laid out the goal of reducing this by 65% relative to FY2000 levels by FY2015 (final amount disposed of 23,000 tons), and have been making efforts to achieve this target.

As an initiative to reuse resources, the glass division currently reuses nearly 100% of the large volumes of cullet generated at our plants. The chemicals division has also achieved efficient use of resources by developing technology to recover fluorine in its fluorine form from the fluorine-containing wastewater emitted during our manufacturing processes. Fluorite is the main ingredient in fluorine compounds.

With respect to recycling initiatives, our chemicals division operates a treatment facility that recycles the sludge waste generated by our plants into a raw material for cement. We are currently making efforts to further increase the amount of waste treated in this manner.

Final amount of industrial waste disposed (Central Glass' plants)



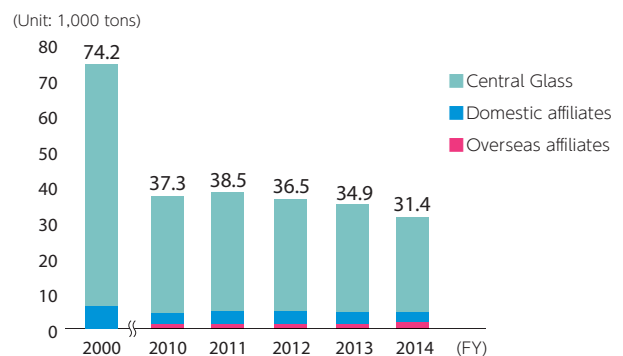
Central Glass Group

As a waste-emitting company, Central Glass, along with its domestic affiliates, unfailingly complies with Japan's Wastes Disposal and Public Cleansing Act and other relevant laws when it comes to the sorting and storage of waste, as well as consignment, monitoring, and manifest management for proper disposal by industrial waste disposers.

Each of the Central Glass Group's major domestic affiliate companies carries out its own original reduction measures, and as a result, on the whole, our major domestic affiliate companies have roughly halved their amount of waste (final amount disposed) in recent years relative to FY2000 levels.

We began tabulating the amount of waste at overseas affiliates in FY2006 and continued to follow up with them in FY2014. Each individual company is carrying out efforts to reduce its waste. In particular, our glass plants deployed overseas have been working to reuse nearly 100% of their glass, just like our domestic plants.

Final amount of industrial waste disposed (Central Glass Group)



Number of main overseas affiliates that reported GHG emissions

2010: 6 companies 2011: 7 companies
 2012-2013: 8 companies 2014: 10 companies

Green Procurement

Central Glass and our domestic affiliate companies enacted "Green Procurement Guidelines" in 2006, and have begun giving priority to purchasing products and services from suppliers that strive to reduce their environmental impact.

In March 2014, we revised the Central Glass Group's "Green Procurement Guidelines" given the fact that cases in which judgments could not easily be made in a business sense arose, as did variance in the judgment criteria. In April 2014 we also clarified the judgment criteria and narrowed down the targeted

items (paper, office furniture, lighting apparatus, and etc.) in order to allow for new green procurement efforts. We are forging ahead with such efforts throughout the Central Glass Group.

Our FY2014 results for green procurement at Central Glass were 81% for targeted items on a monetary basis. Going forward, we will deploy green procurement in stages at the workplaces of affiliates where initiatives have not yet been implemented.



The Central Glass Group strives to provide products and services that our customers love and can use with peace of mind.

Quality

The Central Glass Group carries out quality control initiatives that always place customer satisfaction first and foremost as we work toward our goal of establishing a truly prosperous society through the spirit of *Monozukuri*. Not only do we comply with laws and regulations, but we also ensure product safety and accurately determine our customers' requirements, which are reflected in our products and services.

We have established a basic quality policy and formulate annual

quality policies that are then rolled out to each workplace and affiliate company. Each worksite strives to make continuous quality improvements in order to achieve quality objectives based on the quality policies. We check and assess conformity with requirements as well as the validity of our Quality Management System (QMS), manufacturing processes, and products through quality audits and reviews, tying the results into activities to improve quality.

Quality Education and Awareness Building

Central Glass encourages its employees to take Quality Management and Quality Control (QC/QM) Exams as an effort to promote knowledge related to quality management and improvement. We have now expanded this initiative to domestic affiliates.

In addition, we provide "5 Whys analysis" education to the quality division and manufacturing division as well as the research division and sales division as a means of preventing

the recurrence of issues. We also educate the sales division regarding quality activities and train the research division and manufacturing division in the preparation of safety data sheets (SDS).

Through these efforts, we raise quality awareness among all employees and apply quality-related knowledge and techniques to quality activities, helping us carry out good "*Monozukuri*."

32nd Company-Wide QC Circle Rally

We held the 32nd Company-Wide QC Circle Rally on Friday, November 21, 2014.

President Sarasawa gave the opening address. He told attendees: "You did well, considering that there are still problems that we cannot seem to solve no matter how hard the engineers try. As a manufacturer, quality, cost, and delivery, or 'QCD,' are issues where we absolutely must pursue improvement, and therein lies our path to survival as a manufacturer. I hope to put more energy into QCD through the QC Circle Rally in the future, but I will need your help."

The number of circles that took part in this rally was 10 in total. This consisted of five circles from affiliate companies, two of them from overseas, and five from our plants' manufacturing divisions. There were presentations by each circle on various

proposals and measures for cutting costs and improving quality, as well as a lively question and answer session between judges and attendees.

Following the presentations, Executive Officer Iwasaki gave a review in which he told attendees: "The participation of affiliate companies from overseas gave this year's rally a different atmosphere than usual, and I think that the content of the presentations was even better than in previous years. I am very glad that each workplace is putting serious efforts into QC activities." He then offered comments to each circle.

With the participation from overseas affiliates, this year's QC Circle Rally was a cosmopolitan event where attendees could see with their own eyes signs of the globalization that has been advancing rapidly in recent years.



Awards Ceremony



32nd Company-Wide QC Circle Rally

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

* Please see P28-31 for the initiatives at each plant.

49th Central Glass International Architectural Design Competition

Central Glass has been sponsoring competitions for architectural design ideas since 1966. Starting with the 10th competition in 1975, it became an international competition as the "Central Glass International Architectural Design Competition" to invite entries from overseas.

The theme of the 49th competition in 2014 was "A City Symbol Loved by Residents." There were 252 entries in total, 156 from Japan and 96 from overseas (refer to the back cover for the First Place Prize design).

The theme of the 50th International Architectural Design 2015 is "The Glass" 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 culture. As a company that promotes architectural culture, we believe that it is highly meaningful for us to provide occasions to consider a desirable society and environment through this competition.

Central Glass takes great pride in our continuing efforts to sponsor this competition over many years.



Award ceremony after the final screening (First Place Prize)

Chief Judge: Riken Yamamoto
(Riken Yamamoto & Field Shop)
Judges: Keiichi Okamoto (Nikken Sekkei Ltd.)
Taro Ashihara
(Taro Ashihara Architects)
Teruo Kobayashi
(Obayashi Corporation)
Hiroshi Naito
(Naito Architect & Associates)
Kengo Kuma
(Kengo Kuma & Associates)
*Titles omitted, listed in random order

26th Junior Science Classes



Lesson in progress

The "Summer Vacation Junior Science Class" is held every year under the auspices of the Summer Vacation Junior Science Class Executive Committee and jointly hosted by the Yamaguchi

Industrial Promotion Foundation in cooperation with universities, technical colleges, corporate research institutes, and more. It is held in the hope of showing children with infinite future potential how interesting and fun science can be. In 2014, it was held at 17 venues in Yamaguchi Prefecture in collaboration with 12 related organizations between July 22 and August 22.

Central Glass wholeheartedly agrees with the premise, and on July 29 we held a class at the Chemical Research Center (Ube) in which 20 elementary and junior high school students from Ube City and other cities in Yamaguchi Prefecture participated.

Under the theme of "Let's experience the wonders of heat and light," young researchers played the role of instructors and prepared numerous hands-on experiments using household items. It was structured so that all of the children could personally experience and enjoy science by having them form small groups. During the class, the children engaged enthusiastically in the experiments and sometimes gasped in surprise while their parents kept a close eye on them, and many parents marveling at the experiments themselves were seen throughout the venue. We hope to be able to continue playing an active role in hosting these classes in the future to provide opportunities for more children to learn how exciting science can be and grow up with an interest and curiosity in science.



Participating children and employees

Volunteer Firebreak-Cutting Ahead of a Prescribed Burn of the Akiyoshidai Plateau



Volunteers cutting a firebreak ahead of a prescribed burn at Akiyoshidai

The Ube Branch of the Central Glass Labor Union engages in a variety of volunteer activities to contribute to the local community. As one activity, six members of the union volunteered to help cut grass for a firebreak ahead of a prescribed burn of the Akiyoshidai Plateau.

Yamaguchi Rengo (the Yamaguchi branch of the Japanese Trade Union Confederation) organizes the volunteer work every year between November and December, and 2014 was the 11th year in a row that the union participated.

Mine City conducts the prescribed burn of the Akiyoshidai Plateau in February of the following year, and the volunteer work, which serves as preliminary preparation, involves cutting a swath of grass around the perimeter to prevent the fire from

spreading.

The volunteers reached the worksite after walking for 20 minutes along a rugged mountain road. Then, with grass cutters and sickles in hand, they spent about two hours working together with around 500 members of other labor unions to cut a 3-km firebreak around the broad karst plateau.

Although the volunteers worked under tough early winter conditions with a cold wind blowing, everyone put in a single-minded effort. They were therefore rewarded with a feeling of intense satisfaction and accomplishment upon seeing the end results.

This activity has been incorporated into the labor union's policy, and we plan to continue our active involvement.

Charity Stand at a Flea Market

The Head Office and Kawasaki branches of the Central Glass Labor Union voluntarily host a stand for charity at a flea market. Employees supply the items sold, including unused daily necessities found at home and work. The proceeds are donated to a volunteer organization as part of the union's social welfare activities.



Flea market

This has become an annual event in the early summer. A booth is rented at Shinagawa Intercity, the flea market venue, and the volunteers work while wiping off their dripping sweat in the heat. Every year, nearly all the items supplied are sold.

A wide variety of items are set out, but the most popular ones are usually soap, detergent, and towels used for Japan's traditional midsummer- and year-end gift-giving customs. Beyond these there is a wide variety, ranging from nostalgic items to geeky treasures. The venue overflows with people, and the volunteers enjoy the work as it is a good opportunity to interact with people outside the company. In fiscal 2014, the proceeds amounted to 40,000 yen.

While this is a low-key initiative, we believe that when individuals, no matter how small, step forward as members of their union and company and combine forces with many people toward the same goal, they produce powerful results. Accordingly, we will continue to carry out these kinds of activities.

"Donating School Bags Full of Memories" Campaign

The Matsusaka Branch of the Central Glass Labor Union has established a Committee on Volunteering and Charities that carries out activities that contribute to the local community. In FY2014, we took part in the "Donating School Bags Full of Memories" campaign organized by the Japanese Organization for International Cooperation in Family Planning (JOICFP) through our head organization, the Mie Prefectural Council for Laborer Welfare.

The purpose of the "Donating School Bags Full of Memories" campaign is to donate used Japanese elementary school bags (which are sturdy backpacks made of leather) to Afghanistan to help children attend school, especially girls with few opportunities for education. There are still many girls in

Afghanistan who cannot attend school. If these school bags help them attend school, they will have the opportunity to acquire health-related knowledge that may benefit them if they become mothers in the future.

We were able to collect and send 13 school bags to Afghanistan. Participation in social contribution activities and volunteer activities is extremely important for the labor union, and we intend to continue proactively engaging in these activities.



School bags full of memories

Major Cooperation and Aid Activities

Dates	Activities	Amount of donations, etc.	
Sep. 2014	Donation by Central Glass to the NPO Peoples' HOPE Japan to fund surgeries for heart diseases	2 million yen (ongoing support)	
(The following activities were carried out by our labor union.)			
Jul. 2014	Campaign to aid atomic bomb survivors	At the request of RENGO Local of Yamaguchi, donated to Yuda-en, a support center for atomic bomb survivors in Yamaguchi Prefecture	121,346 yen
Aug. 2014	UNICEF Foreign Coin Collection Campaign	Donation to protect the lives, health, and rights of children in developing countries	2.46 kg (2014 results)
Sep. 2014	"Ecocap" program	The Matsusaka Branch of the Labor Union collected bottle caps (ecocaps) and donated them to an NPO.	(96,320 ecocaps, equivalent to the cost of purchasing polio vaccines for 112 people)
Dec. 2014	Year-End Welfare Campaign by Ube District Committee, the Chubu Regional Council, and RENGO Local of Yamaguchi	Donated to the Shinsei-kai Ube Kurumi-en, a social welfare corporation in Ube City via the Ube District Committee	100,000 yen
Dec. 2014	RENGO Ai Campaign OISCA Children's Forest Program	Money sent to JEC through the Labor Union's headquarters	262,789 yen (Breakdown: 69,799 yen from Ube, 35,085 yen from Sakai, 55,923 yen from Matsusaka, 10,688 yen from Kawasaki, and 91,294 yen from the Head Office)



Employees

Making Things Is about Developing Human Resources

Central Glass 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. We encourage voluntary skill development by offering an educational system that supports employees’ efforts to improve their skills as well as adopting Career Assessment for the Next! (CAN!), a personnel assessment system that performs multifaceted assessments of employees’ ability to accomplish tasks, competencies, goal management, and more. In this way, we are promoting the establishment of a corporate culture where employees can work at their best.

We also institute a variety of health management and mental health care measures for all our employees to support them in maintaining both their physical and mental health. In addition, we promote initiatives to support childbirth and childrearing for our employees to achieve a well-rounded work-life balance.

English Conversation Lessons by Interns

Amid intensifying international competition, Central Glass plans to boost its expansion into global markets including increasing its overseas bases. As overseas business increases as a percentage of our overall business, there are more opportunities for our employees in Japan to interact with foreigners. This means that they need to develop job performance skills that include sensitivity to different cultures and values in addition to language abilities.

Accordingly, we started accepting interns from overseas at our Matsusaka Plant in FY2012 in an effort to promote awareness of diversity and improve communication skills. In addition to their regular duties, interns devote one to two hours per day

to English conversation lessons, providing English instruction to our employees through small talk in English and issue-checking. This is time well-spent, as communicating with each other allows our employees to improve their English abilities and knowledge of Western culture while the interns learn Japanese and Japanese culture.



Lesson in progress

Study Abroad Programs

In addition to internal education such as OJT and group training sessions, Central Glass has established a program that dispatches employees to educational institutions in and outside Japan with the aim of fostering specialists who possess advanced expertise and knowledge. We send several employees every year to MBA and MOT programs. Our MBA study abroad program is designed to foster candidates for high-level managerial positions who will be responsible for the future development of Central Glass. Participants spend two years diligently studying in order to systematically acquire an

understanding of good business practices, the ability to see the big picture, and creative abilities while fostering strong motivation and high aspirations. Our MOT study abroad program aims to develop human resources well-versed in both



Class members abroad

Comment

Account of Short-Term Study Abroad

I participated in a short-term study abroad in Canada and the United States lasting about five months. In Vancouver, Canada I took a total of seven classes, including private lessons, at a language school on weekdays from 9 AM to 4:30 PM while living with a host family. I learned how to give presentations, mainly on business topics, and practiced reading, listening, discussion, and other skills.

I did not merely acquire English; it was a valuable experience in which I also took part in local customs, interacted with students from many countries, and learned different ways of thinking and values. In the US, I saw and learned how local employees work at an affiliate company of Central Glass, which was an opportunity to come into contact with real-world English that was different from the classroom English I learned in Canada. These days I have regular exposure to English at work, so I intend to keep working hard each day so that I can apply what I learned through my study abroad to my job.



Yumi Yokoyama
Automotive Glass Department

technology and management who are capable of furthering strategic research and technical development and can help boost our corporate value. We also offer short-term study abroad to improve practical

foreign language abilities and foster international awareness in an effort to develop human resources who can play an active role in the global expansion of Central Glass's business.

Mental Healthcare Measures

The stress experienced by workers has been growing in recent years, and it is said that more than 60% of workers feel strong anxiety or stress regarding their jobs. A law issued in 2014 that revises a part of Japan's Industrial Safety and Health Act has established a system in which stress checks are obligatory. Central Glass has been conducting stress checks on all employees since 2009 from the standpoint of primary prevention to keep mental health issues from arising.

We have also worked with an outside organization to create an environment in which employees can access telephone consultations and counseling services without hesitation. What

is more, we provide self-care training to employees aimed at prevention and early detection of mental health issues and line-care training to managers with the goal of improving the workplace environment.

In addition, we have established a Return-to-Work Support Program for employees who have taken time off due to a mental health issue. The program aims to follow up with employees on leave, facilitate a smooth return to work, and prevent the recurrence of illness after returning to work through cooperation with industrial physicians and other healthcare providers.

Initiatives to Support the Development of the Next Generations

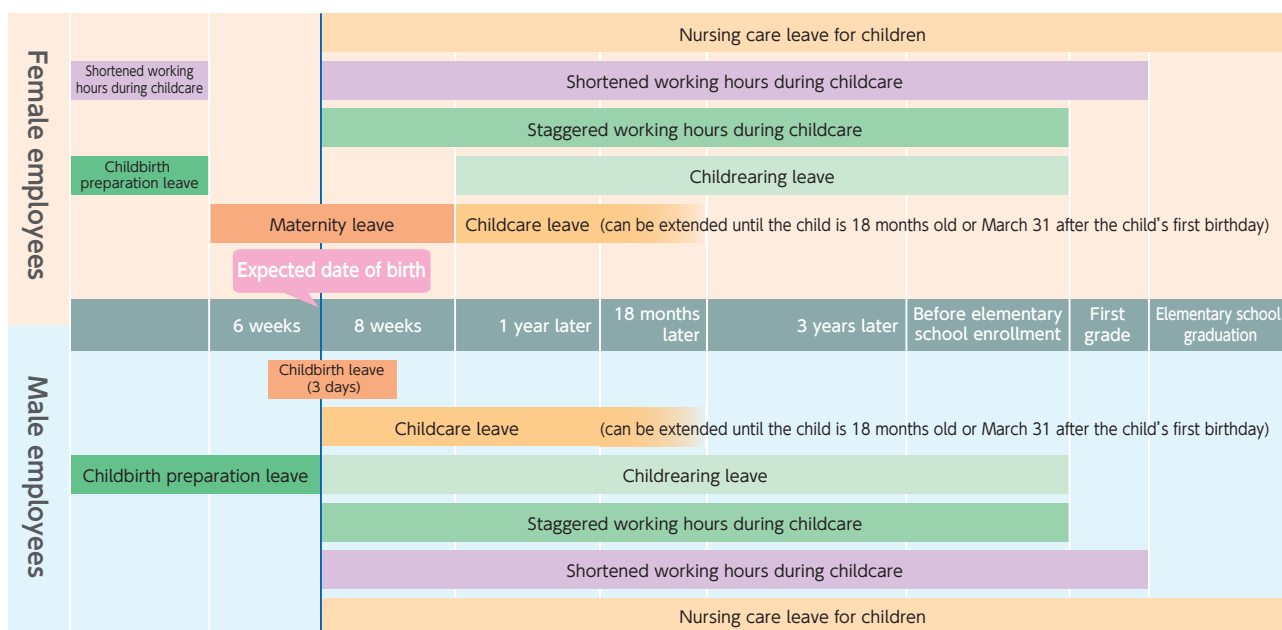
The term of validity of Japan's Act on Advancement of Measures to Support Raising Next-Generation Children was extended 10 years until March 31, 2025. In a country where the birthrate is falling precipitously, the aim of the extension is to create a more positive and richer environment in which the children who will build the next generation of society can be born and grow up healthy.

Central Glass has enhanced its support programs beyond the legal requirements including extending the length of and providing partial pay during childcare leave, introducing a leave system

for events such as hospital visits during pregnancy (childbirth preparation leave), expanding programs such as shortened working hours, and extending the age range of children whose parents are eligible for leave programs in addition to existing childcare-related programs.

Going forward, we will continue to create support programs that facilitate participation by both male and female employees in child-raising and will improve our work environments to allow employees to balance work and childrearing.

List of programs to support the raising of the next generation



Activities at Individual Plants

Ube Plant



Plant Overview

Address	5253 Okiube, Ube City, Yamaguchi
Number of employees	505 (as of March 31, 2015)
Major items produced	Soda ash, fertilizer, fluorine-related products, other chemicals
	Acquired ISO 14001 certification (December 2000) Acquired ISO 9001 certification (December 1997) Acquired OHSAS 18001 certification (April 2011)

Regional Activities

- Cleanup activities for city and prefectural roads on our plant-wide 5S Day (once a month)
- Cleanup activities in Tokiwa Park (once a year)
- Cleanup activities around Lake Ono (once a year)
- Protection and cultivation of grasslands at Akiyoshidai (once a year)
- Cleanup activities around Ube Higashi Port (once a year)
- Forest maintenance activities to protect water resources (once a year)
- Road cleaning using road sweepers (every day)
- Regional town hall meeting in the Ube district

Regional Town Hall Meeting in the Ube District

Four chemical companies located in the Ube District hold an annual regional town hall meeting with local residents. The 12th meeting was held on January 24, 2015 at the Ube Chemical Plant of Ube Industries, Ltd. 50 people including members of the local administration, NGOs, and local residents participated. The four companies involved first offered overviews of their plants and their environmental initiatives. The Japan Chemical Industry Association then presented its initiatives for communication with residents (the history of regional town hall meetings and their status in other regions). Next, the Ube City Administration explained its environmental protection initiatives in Ube City. Following these presentations, the participants were divided into

three groups and assigned one of the three topics of “chemical substances and industrial waste,” “security, disaster prevention, and urban development,” and “Ube-style urban development” to exchange opinions under the common theme of “What we expect from companies.”

Each group conducted a lively exchange of opinions on its topic, and practical viewpoints concerning security and the environment were raised, making this a highly meaningful town hall meeting. We will continue our efforts to engage in communication with the residents of the region in order to create a safe and secure plant together.



The 12th Regional Town Hall Meeting



Nobuyuki Tokunaga
General Manager
Ube Plant

Message from the General Manager

The Ube Plant started manufacturing soda ash and caustic soda in 1936, and expanded its operations into the manufacturing of chemical fertilizers and inorganic chemical products.

At present, it also manufactures active ingredients for pharmaceuticals and high purity fluoride gas and is proactively working to expand into the fine chemicals business.

In May 2015, we discontinued production of soda ash, which had been one of our main products since the foundation of the company. We are making a concerted effort to develop new businesses that will enable us to offer environmentally friendly products such as foaming agents with a low global warming potential.

The plant’s green spaces have been furnished with rows of cherry trees, and in spring, local residents are able to enjoy the beautiful blossoms and the natural environment that exists in harmony with us. We will continue in our efforts to be a safe and open plant that offers local residents a feeling of security.

PRTR

Ordinance designation No	Substance name	Emissions			Comparison with the previous year	Quantity transferred
		Atmosphere	Water	Soil		
16	2,2'-Azodiisobutyronitrile	0	0	0	⇒	0
41	3'-Isopropoxy-2-trifluoromethylbenzaniide (also known as Flutolanil)	0	0	0	⇒	0
53	Ethylbenzene	1,400	0	0	↘	0
80	Xylene	2,000	0	0	↘	1.5
81	Quinoline	0	0	0	⇒	0
186	Dichloromethane (also known as methylene chloride)	2,300	0	0	↘	8,800
232	N,N-Dimethylformamide	19	0	0	⇒	8
243	Dioxins (Unit: mg-TEQ/year)	0.066	0.0049	0	↗	0
296	1,2,4-Trimethylbenzene	160	0	0	↗	0
300	Toluene	1,200	0	0	↘	3,600
349	Phenol	85	150	0	↘	0
374	Hydrogen fluoride and its water-soluble salts	570	0	0	↘	5,800
411	Formaldehyde	0	0	0	⇒	0
438	Methylnaphthalene	38	0	0	↘	0

*Quantities emitted, discharged, or transferred are listed for those materials handled in amounts exceeding 1,000 kg in 2014 (except for dioxins)

*Four materials (asbestos, triethylamine, trichloroethylene, and benzene) were handled in amounts exceeding 1,000 kg in 2013, but those quantities were reduced to less than 1,000 kg in 2014.

Kawasaki Plant



Plant Overview

Address	10-2 Ukishima-cho, Kawasaki-ku, Kawasaki City, Kanagawa
Number of employees	196 (as of March 31, 2015)
Major items produced	Inorganic chemicals, organic chemicals
	Acquired ISO 14001 certification (May 2007) Acquired ISO 9001 certification (July 2001)

Regional Activities

- Roku-Cho-Kai (Regular social gatherings with residents of neighboring areas including Tono Town and the Daishi District)
- Regular cleanups of the roads around the plant
- Regular exchanges of information concerning the environment and safety with employees of neighboring plants in the Kawasaki Industrial Complex
- Activities related to environmental safety conducted to improve the local environment through the Research Society for Environmental Safety Technology in the Kawasaki Industrial Complex
- Participation in joint disaster drills with neighboring businesses in the Ukishima District

Regular Cleanups around the Plant

At the Kawasaki Plant, we never forget that we are a member of the local community, and we organize regular cleanups around the plant in order to contribute to the region.

Rail tracks for freight deliveries to businesses in the Ukishima District and National Highway 409, which sees heavy traffic, run in front of our Kawasaki Plant. Trash is scattered throughout the area, apparently dumped by drivers and pedestrians. We organize regular cleanups of the area, in addition to calling for passers-by to improve their manners and not leave litter like cigarettes by posting signs (stickers).

Through these activities we are not only able to maintain a beautiful, trash-free environment around our plant, but also to genuinely feel that we are making a contribution to our

Message from the General Manager

The Kawasaki Plant recently transitioned from the soda electrolyte business to the fine chemicals business. Our main products currently include HFC-245fa (an alternative to CFCs, pharmaceutical intermediates, cleaning gases for semiconductors, and photoresist materials). Our production system allows us to stably supply a wide range of fine chemicals products.

We have also commenced full-scale production of a range of environmentally friendly products, including HFO-1233E, a CFC substitute with a low global warming potential and superior heat insulation properties to current blowing agents, which won an Award for Excellence at the 17th Ozone Layer Protection and Global Warming Prevention Awards, and next-generation electrolytes for lithium-ion batteries.

While our products may have changed with the times, the Kawasaki Plant's care for the environment and commitment to safe operations have never wavered, and our entire team is united in its efforts to ensure that our score remains perfect in these areas.



Yukinari Hashimoto
General Manager
Kawasaki Plant

local environment. We feel that these activities are extremely meaningful.

At the Kawasaki Plant, we intend to continue our regular cleanups as a means of raising environmental awareness and increasing our contributions to the local region.



A cleanup

PRTR

(Unit: kg/year)

Ordinance designation No	Substance name	Emissions			Comparison with the previous year	Quantity transferred
		Atmosphere	Water	Soil		
81	Quinoline	0.015	0	0	↔	0
94	Chloroethylene (also known as vinyl chloride)	0	25	0	↔	0
149	Tetrachloromethane	620	0.46	0	↗	35,000
213	N,N-Dimethylformamide	11	0	0	↘	73,000
243	Dioxins (Unit: mg-TEQ/year)	0.015	0.13	0	↘	0
262	Tetrachloroethylene	0.11	0.1	0	↗	3,700
280	1,1,2-trichloroethane	1.2	3.8	0	↗	6,800
281	Trichloroethylene	0	0.16	0	↗	1,300
300	Toluene	200	0	0	↗	2,600
374	Hydrogen fluoride and its water-soluble salts	0	0	0	⇒	200
392	n-hexane	0.54	0	0	⇒	13,000

*Quantities emitted, discharged, or transferred are listed for those materials handled in amounts exceeding 1,000 kg in 2014 (except for dioxins)

Treatment to purify groundwater as a result of contamination by an ethylene dichloride leak in 1982 is still ongoing today.

Activities at Individual Plants

Matsusaka Plant



Plant Overview

Address	1521-2 Okuchi-cho, Matsusaka City, Mie
Number of employees	Plant : 159 (as of March 31, 2015)
Major items produced	Safety glass for automobiles, architectural and industrial flat glass, fabricated glass, functional glass for electronic equipment
	Acquired ISO 14001 certification (April 2000) Acquired ISO 9001 certification (November 2003) Acquired ISO/TS 16949 certification (June 2004)

Message from the General Manager

The Matsusaka Plant manufactures polished plate glass using the world's only duplex equipment capable of employing a consecutive double-sided polishing method. We also manufacture flat glass such as high-permeability cover glass for photovoltaic cells and processed glass for automotive and industrial applications.

Because the plant consumes a huge amount of energy and resources, we have been energetically implementing environmental conservation activities for many years.

In order to conserve energy and power and reduce CO₂ emissions, we are working to reduce loss, introducing equipment that conserves energy in conjunction with large-scale renovations, and pushing ahead with improvements to our operational technologies.

Since 2004, we have maintained zero emissions, but we are working to derive value from our waste (i.e. convert it into products) in order to achieve further reductions.

Of particular note is the fact that we reuse almost all of our end glass.

Each of our employees is continually working to achieve growth and improvement, based on our motto, "The Matsusaka Plant: Everything for the sake of people and the global environment -- Looking at the future through glass." We will continue to contribute to our region and work to make our plant safe and happy, never forgetting our sense of gratitude.



Akira Yuasa
General Manager
Matsusaka Plant

Regional Activities

- Participation in Mie Prefecture Kids' ISO 14000 Program activities
- Participation in cleanup of waste drifting ashore at Toshijima Island, Toba City, organized by the Mie Prefecture Industrial Waste Countermeasures Promotion Council
- Exhibition of Eco-Glass at the Matsusaka Environmental Fair held by the Matsusaka City Environmental Partnership Committee
- Opening of plant grounds to youth sports associations and other organizations free of charge
- Provision of company-owned land to neighboring municipalities as temporary parking areas free of charge
- Inviting local residents to plant's summer festival
- Participation in the Aqua Social Festival in Matsunase, organized by Mie University's Mie Global Environment Center for Education & Research (beach cleanup)
- Participation in voluntary cleanup activities at Matsunase Beach organized by the Matsusaka Taki District Workers' Welfare Council (Matsusaka Branch of the Labor Union)
- Participation in Ecocap (bottle cap collection) activities (Matsusaka Branch of the Labor Union)

Kids' ISO 14000 Program

The Kids' ISO 14000 Program is an environmental education program based on the ISO 14001 framework, conducted internationally with the cooperation of organizations including the United Nations University, the United Nations Environment Programme, and UNESCO. In Japan, related activities are organized by municipalities in cooperation with companies and schools in areas throughout the country, including Tokyo, Hokkaido Prefecture, Nagano Prefecture, and Mie Prefecture, with the support of the Ministry of the Environment, the Ministry of Economy, Trade and Industry, and the Ministry of Education, Culture, Sports, Science and Technology. Central Glass has been participating in the Mie Prefecture Kids' ISO 14000 Program since 2013, and we send our employees to give guest lectures at elementary schools in Matsusaka City every year.

The classes include demonstrations using models that allow the participating children to see the heat-shielding effect of multi-layered glass right before their eyes, which the children watch with rapt attention.

Since the children who participate in the classes continue thinking about how to save energy and reduce resource use after they go home and describe their ideas to their parents, the classes eventually educate the entire regional community.



A guest lecture in Matsusaka City

PRTR

Ordinance designation No	Substance name	Emissions			Comparison with the previous year	Quantity transferred
		Atmosphere	Water	Soil		
31	Antimony and its compounds	2	4	0	↔	0
405	Boron compounds	0	0	0	⇒	0
438	Methylnaphthalene	20	0	0	↔	0

*Quantities emitted, discharged, or transferred are listed for those materials handled in amounts exceeding 1,000 kg in 2014.

*Two materials (Xylene, 1,2,4-Trimethylbenzene) were handled in amounts exceeding 1,000 kg in 2013, but those quantities were reduced to less than 1,000 kg in 2014.

Matsusaka Plant

- Sakai Manufacturing Site



Plant Overview

Address	6 Chikko-minamimachi, Sakai-ku, Sakai City, Osaka
Number of employees	Plant : 47 (as of March 31, 2015)
Major items produced	Architectural and residential flat glass, flat glass for electronic equipment, architectural frosted glass
	Acquired ISO 14001 certification (December 1999) Acquired ISO 9001 certification (February 1999)

Message from the General Manager

The Sakai Manufacturing Site is located in the center of the Coastal Industrial Zone in Sakai City, Osaka, and we have been manufacturing flat glass continuously since 1959 as the birthplace of the Central Glass Flat Glass Division. In 1982, we adopted the float process as our manufacturing method and started manufacturing high-grade flat glass. In 2007, we completed our second round of cold repair work (repairs of the entire manufacturing lines starting from melting furnaces). As part of this process, we conducted improvement work that reduced our CO₂ emissions by 3%, and restarted production in April 2008. In August 2009, we conducted work to improve our float baths, and began manufacturing thin flat glass for use in electronic devices such as smartphones and other mobile terminals.

In May 2012, we completed our installation of spattering equipment that deposits thin metallic membranes on glass surfaces and began manufacturing Eco-Glass, a product that can reduce the cost of cooling and heating buildings.

We are also continuing to examine glass packing material recycling initiatives in order to reduce waste.

We will continue our work to realize environmentally friendly manufacturing in the future.



Tatsuo Kikuchi
General Manager
Sakai Manufacturing Site
Matsusaka Plant

Regional Activities

- Participation in the Osaka Bay Cleanup Project organized by the 5th Regional Coast Guard Headquarters
- Activities to inform the public about fires and first aid at the Sakai Fureai Festival as a member of the Sakai City Disaster Response Committee
- Organization of street campaigns for the Spring Disaster Prevention Drive around Sakai Station as a member of the Sakai City Disaster Response Committee
- Support for a flea market and donation of proceeds to social welfare activities
- Response to requests for dispatch of staff for rescue, firefighting, disaster relief, etc. as a plant that cooperates with Sakai City over firefighting
- Participation in comprehensive disaster drills in the Sakai/Senboku coastal area
- Provision of support for a project conducted by the Osaka Prefectural Seikoukai in Sakai Senboku Port to ensure the safety of ships navigating through the port and protect the environment

Participation in Osaka Bay Cleanup Project

Every year we conduct beautification activities along the Osaka Bay sea walls as part of a joint campaign organized by Osaka Prefecture to remove trash and ensure the cleanliness of the water in Osaka Bay.

In FY2014, we conducted a cleanup along the coast close to neighboring companies. Some pieces of trash we found were larger than the spaces between the tetrapods jammed into the crevices, and we were quite puzzled about how the objects had gotten there. After sending off numerous truckloads of trash, the sight of the clean breakwaters convinced us that our efforts had

been worthwhile. The cleanup also allowed us to work together with employees of the Sakai Marine Safety Station and other companies, which made it a very meaningful event.

We intend to continue this annual cleanup as one of our activities to benefit the region.



Cleaning up along the breakwater

PRTR

Ordinance designation No	Substance name	Emissions			Comparison with the previous year	Quantity transferred
		Atmosphere	Water	Soil		
80	Xylene	69	0	0	↔	0
296	1,2,4-Trimethylbenzene	79	0	0	↔	0

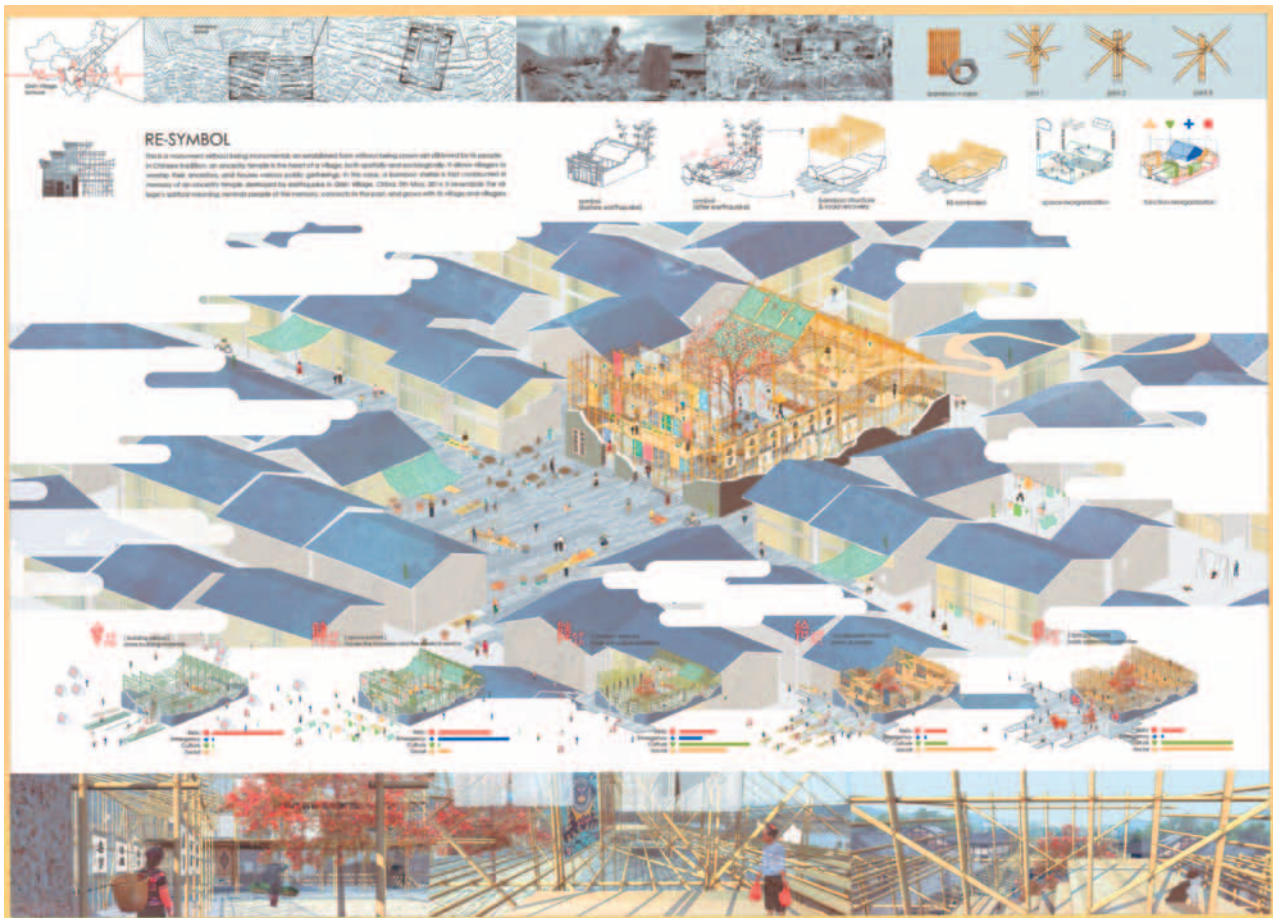
(Unit: kg/year)

*Quantities emitted, discharged, or transferred are listed for those materials handled in amounts exceeding 1,000 kg in 2014.

*One material (Methylnaphthalene) was handled in amounts exceeding 1,000 kg in 2013, but the quantity was reduced to less than 1,000 kg in 2014.

49th Central Glass International Architectural Design Competition

First Place: Li Siqi (China) and Chen Xiaoting (the Netherlands)



THEME

Theme

A City Symbol Loved by Residents

A city must be attractive. A city's attractiveness derives, for the most part, from the architecture that gives it character. In the past, the city's political and financial buildings – governmental buildings and plazas – took that role. The architecture became a symbol, gave distinction to the city, and became that city's measure. At times, it became, to the contrary, an intimidating symbol of authority for the residents.

In contemporary architecture, emphasis is given to the architecture's own functionality and rationality and as a result, it no longer defines a city's character or serves as its measure, and the symbolic character of architecture, this is to say, has been lost.

Nevertheless, a city's residents still need symbols. Not intimidating symbols of authority, but symbols loved by the city's people. Symbols cannot be created as a conscious aim. Rather, they must be fostered by the city's people. Just being an important or large building will not make something a symbol. Through long use of a building, people come to feel love for it and become conscious of it as a symbol. Through its presence, a symbol serves to activate a city, instill unity and vitalize the community (turn to Page 24 for the related article).

 **CENTRAL GLASS CO., LTD.**

Contact: **Environment, Safety and Quality Management Department**
Kowa-Hitotsubashi Bldg, 7-1 Kanda-Nishikicho 3-chome, Chiyoda-ku, Tokyo, 101-0054 Japan
TEL: +81-(0)3-3259-7359 FAX: +81-(0)3-3259-7394 <http://www.cgc-jp.com/>