MITSUBISHI GAS CHEMICAL COMPANY, INC.

Mitsubishi Building, 2-5-2 Marunouchi, Chiyoda-ku, Tokyo 100-8324

Corporate Communications Division Tel: +81-3-3283-5041 Fax: +81-3-3287-0833
Environment and Safety Division Tel: +81-3-3283-4828 Fax: +81-3-3283-4840
URL http://www.mgc.co.jp/eng/

CSR Report 2016

VOC FREE T&K
VEGETABLE OIL INK
森の町内会 間伐に寄与する紙 www.mori-cho.org
Printed on paper made with wood from forest thinnings. “Morino Chonai-Kai” (Forest Neighborhood Association) — Supporting sound forest management.

MITSUBISHI GAS CHEMICAL COMPANY, INC.

Contents

Responsible Care

At every stage of their operations, companies dealing with chemicals must ensure that the environment, safety and health are safeguarded. This starts with the development and manufacturing of chemicals, and goes all the way through to distribution, use and final disposal after consumption. It also involves publishing the results of those activities, being engaged and willing to communicate with society. The chemical industry refers to this conscientious activity as Responsible Care (RC).

Responsible Care®
OUR COMMITMENT TO SUSTAINABILITY

Editorial Policy

About This Report

The purpose of the CSR Report 2016 is to provide stakeholders with information about Mitsubishi Gas Chemical Company, Inc. (MGC) and our corporate social responsibility (CSR) activities, to broaden understanding about MGC and its activities.

The following guidelines were referenced during the creation of this report to provide an easier to understand layout using clear and concise language. In particular, efforts have been made in the MGC in Our Daily Lives section to show at a glance how MGC's products and technologies are used in the five target areas listed in the mid-term management plan MGC Advance2017. In addition, our vision for CSR activities based on our philosophy and initiatives and outcomes toward "Creating values to share with society" are highlighted in the MGC Group and CSR section. We openly welcome your honest opinions and feedback about the contents of this report.

MGC stands firmly committed to promoting further stakeholder engagement through the appropriate sharing of information.

Scope of This Report

Organizations included

All MGC offices in Japan. The activities of the entire MGC Group and individual subsidiaries are also covered in certain sections of the report.

Reporting period

April 1, 2015 through March 31, 2016 (includes some activities after April 2016).
However, Responsible Care (RC) activities are included from January 1, 2015 – December 31, 2015 (includes some RC activities after January 2016).

Reference Guidelines

- Ministry of the Environment, "Environmental Reporting Guidelines (2012)"
- Ministry of the Environment "Environmental Accounting Guidelines 2005"
- ISO 26000

Publication Information

Date of publication: December 2016

Disclaimer:
This report contains past and present facts, in addition to information about expectations regarding social conditions, management plans and policies of the company together with anticipated results. These assertions or assumptions are based on the information available at the time of drafting, however unforeseen circumstances may lead to unexpected social conditions or result in changes to business activities which are different to those expressed here.

Interview with the President

MGC Group will work collectively together toward "Creating values to share with society" to fulfill the expectations of customers and society

Toshikiyo Kurai
President and Representative Director

Q1 First, could you provide an overview of MGC Group's business and explain its growth strategy?

A1 We will realize sustainable growth in partnership with society by continuing to create products and technologies with value.

MGC Group supplies creative products and technologies, primarily in our four core business segments called the Natural Gas Chemicals Company, Aromatic Chemicals Company, Specialty Chemicals Company and Information & Advanced Materials Company under the MGC Philosophy for Being, which states "MGC contributes to societal growth and harmony by creating a wide range of value through chemistry."

In order to realize sustainable growth on a global stage into the future, we drew up a vision for the type of company MGC should aim to become by 2021, our 50th anniversary, and formulated mid-term management plans aimed at achieving it. Since FY 2015, we have promoted MGC Advance2017 as the third step for achieving our vision.

On formulating the current mid-term management plan, we established the Group Vision which states "Creating values to share with society" as a guide for clarifying where MGC Group is headed in the future, based on a consideration of business strategy from a long-term perspective. Under this Group Vision, which could also be termed the essence of the MGC Philosophy for Being, we will supply value that is widely welcomed and recognized by society.

Q2 Could you tell us about the content of MGC Advance2017 and progress in the first year?

A2 In addition to achieving growth in both sales and profit, structural reinforcement aimed at future growth made progress.

The title of the mid-term management plan, which is MGC Advance2017, expresses our commitment to turn the results of the past three years into a definite move forward or advance.

The Targets and Five Basic Strategies of Mid-term Management Plan MGC Advance2017

Target financial indicator values (FY 2017)

- Net sales: ¥700 billion
- Operating income: ¥40 billion
- Ordinary income: ¥55 billion
- ROE: ≧9%

Basic Strategies

1. Enhancing the profitability of existing businesses, especially core businesses
2. Restructuring underperforming businesses
3. Developing and creating new businesses
4. Improving group-wide operational efficiency
5. Improving total enterprise quality in support of sustainable growth

With regard to enhancing the profitability of existing businesses, in addition to turning JSP Corporation into a consolidated subsidiary in February 2015, MGC has pushed ahead to participate in the methanol and dimethyl ether production and sales business in the Republic of Trinidad & Tobago and in a shale gas and LNG project in Canada. Additionally, we have made investment toward future growth, including boosting production capacity for various derivatives at the Niigata Plant and Mizushima Plant and commencing construction of a geothermal power plant in Yuzawa, Akita Prefecture.

With regard to restructuring underperforming businesses, we halted the operation of ammonia production facilities at the Niigata Plant and made the decision to liquidate Japan Circuit Industrial Co., Ltd., a subsidiary that manufactured and sold printed circuit boards. As a result of these measures, consolidated financial results for FY 2015 outperformed the previous fiscal year on net sales, operating income, and ordinary income. Although ROE (return on equity), which has been added as a new consolidated management indicator, declined to 9.0% from 12.6% in the previous fiscal year, due in part to lower net income resulting from a fall in extraordinary income, the target was achieved.

Q3 Could you tell us about future initiatives for creating new businesses, which is one of the central pillars of the mid-term management plan?

A3 In addition to clarifying the business areas to focus on, we have pressed ahead with building the framework to accelerate commercialization, including external alliances.

Under the mid-term management plan, we listed energy, information/communications, mobility, medical/food, and infrastructure as business areas to focus on in anticipation of social issues going forward. We are speeding up the creation of new businesses to meet these future trends with a focus on providing new value.

In order to speed up the creation of new businesses, not only “closed innovation,” but also “collaborative innovation” with chemical manufacturers will be important. Therefore, we have pressed ahead with building a framework for collaborating with chemical manufacturers, becoming a strategic partner of Universal Materials Incubator Co., Ltd. that aims to create new businesses in the materials and chemicals field in addition to establishing a joint venture company with Nippon Kayaku Co., Ltd. for Japanese production of monoclonal antibody pharmaceuticals including biosimilars.

In promoting these initiatives, there are many cases of overlap in the fields of new businesses and existing business. Therefore, we established the Business Strategy Division to take a comprehensive view of the entire business in April 2016. Going forward, the Business Strategy Division will coordinate determination of the department in charge and the allocation of management resources to provide support for the establishment of new businesses from a perspective of total optimization.

In addition, the QOL Innovation Center Shirakawa, which we announced we would establish last fiscal year as a new site for development and manufacture of high value added products, is scheduled for operation in February 2017.

Q4 Could you tell us about the approach to group management?

A4 While working collectively to promote management, MGC Group also values the independence of each Group company.

As part of improving group-wide operational efficiency, one of the basic strategies in the mid-term management plan, the aim is to share and act on MGC management policies across all Group companies to maximize corporate value throughout MGC Group.

The key to this is the introduction of the Business Management Unit (BMU), which regards business in which there are strong ties between MGC and Group companies as a single unit. As a result, it is possible to develop and implement unified strategies for each business and to achieve clarification of where responsibility lies and greater operational efficiency. In addition, our direction is shared through such bodies as the Group Presidents’ Meeting. Going forward, we plan to establish Group-wide performance indicators by FY 2018.

While working collectively in this way to promote management, MGC Group respects the independence of each Group company and also regards an atmosphere that encourages innovative value creation to be important. We will seek to create new businesses and enhance the value of the Group through synergies between the technologies and facilities possessed by each Group company and the development capabilities of MGC.

MGC’s fundamental approach is growing together with others, which not only includes Group companies but also our joint venture partners and trading companies. Based on this approach, we will promote the sharing of know-how, technical collaboration, and exchange of human resources between Group companies to speed up the generation of synergies going forward.

Q5 Could you tell us about your safety initiatives?

A5 We are drawing on lessons learned from two accidents to recognize the importance of safety once more while working together as a group to promote initiatives.

Under the safety philosophy that the top priority of our business is ensuring safety, MGC carried out Accident Zero (AZ) Project from FY 2007. This has been followed by our new safety project Bridge since FY 2014 as we seek to reinforce safety and on-site competencies. In conjunction with this, MGC Group has been working together with the goal of achieving zero accidents and occupational injuries by sharing case studies of accidents and occupational injuries as well as best practices at individual companies through the MGC Group Environment and Safety Council.

Unfortunately, there was a chemical exposure accident at the Niigata Plant in July 2015 and an explosion and fire at the Kashima Plant in November the same year. Luckily, neither of these accidents resulted in serious occupational injuries or directly affected the local area. However, the press coverage they received renewed our awareness of the major impact that a single accident has on society. It is vital for every individual staff member to recognize once more that the trust built up over a long period of time can be lost in an instant.

Currently, we are further enhancing our safety activities with a focus on Bridge. While naturally raising individual safety awareness, we will also work to develop manuals and other materials on a group-wide basis, including outside Japan.

Q6 In closing, do you have a message for stakeholders?

A6 We will strive to enhance the economic, social and environmental dimensions of corporate value by promoting the MGC Group Vision which states “Creating values to share with society.”

Our basic approach at MGC Group is to realize sustainable growth in partnership with society through management that values prosperous coexistence with stakeholders, including customers, business partners, investors, employees, and local communities with the aim of practicing the MGC Group Vision of “Creating values to share with society.” In addition, we operate our business in diverse local communities, and we aspire not only to generate employment but also to contribute closely to the community, thus raising our presence.

It is also relevant to improving total enterprise quality in support of sustainable growth, which is one of the basic strategies of the mid-term management plan, that withdrawal from and contraction of underperforming businesses, continued from the previous mid-term management plan, has been a “painful reform.”

The environment around us will experience dramatic change going forward, so it is essential that we too continue to evolve in order to achieve sustainable growth. Recognizing this, we will regard change as an opportunity for the achievement of our vision. MGC Group will work hard to live up to the expectations of its stakeholders for evolution and growth, and, at the same time, we will continue to welcome honest feedback and requests from our stakeholders as well.

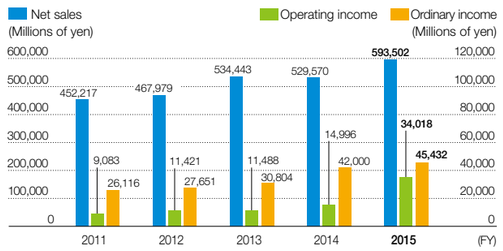
Operating a Global Business in a Truly Wide Range of Segments, from Basic Chemicals to Fine Chemicals and Functional Materials

Corporate Information (as of March 31, 2016)

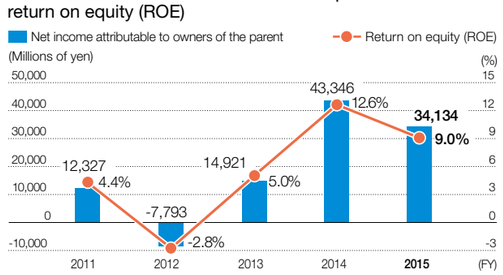
Company name MITSUBISHI GAS CHEMICAL COMPANY, INC.
Head office address Mitsubishi Building, 2-5-2 Marunouchi, Chiyoda-ku, Tokyo 100-8324
Established January 15, 1918
Incorporated April 21, 1951
Capital ¥41.97 billion
Number of employees
8,176 (consolidated), 2,344 (non-consolidated)
Number of consolidated subsidiaries 77
Main business sites in Japan
Branch Osaka Branch
Overseas offices Shanghai Office, Taiwan Office
Research institutes
Tokyo Techno Park (Tokyo Research Laboratory, MGC Chemical Analysis Center, Research and Development Center), Niigata Research Laboratory, and Hiratsuka Research Laboratory
Plants
Niigata Plant, Mizushima Plant, Kashima Plant, Yokkaichi Plant, Yamakita Plant, Naniwa Plant, and Saga Plant

Financial Highlights (consolidated)

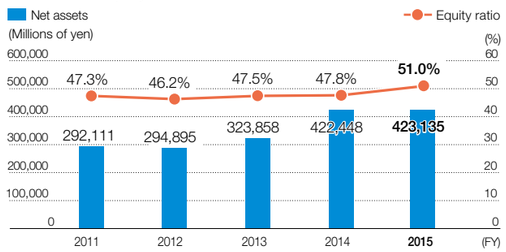
Net sales/operating income/ordinary income



Net income attributable to owners of the parent/ return on equity (ROE)



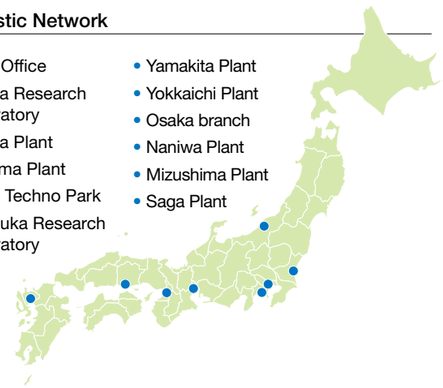
Net assets/equity ratio



* Some MGC affiliates outside of Japan have been using International Financial Reporting Standards (IFRS) since FY 2015.

Domestic Network

- Head Office
- Niigata Research Laboratory
- Niigata Plant
- Kashima Plant
- Tokyo Techno Park
- Hiratsuka Research Laboratory
- Yamakita Plant
- Yokkaichi Plant
- Osaka branch
- Naniwa Plant
- Mizushima Plant
- Saga Plant



International Network

- AGELESS (THAILAND) CO., LTD.
- BRUNEI METHANOL COMPANY SDN. BHD.
- CARIBBEAN GAS CHEMICAL LTD.
- KOREA ENGINEERING PLASTICS CO., LTD.
- JSP INTERNATIONAL GROUP LTD.
- METANOL DE ORIENTE, METOR, S.A.
- MGC ADVANCED POLYMERS, INC.
- MGC ELECTROTECHNO (THAILAND) CO., LTD.
- MGC MONTNEY HOLDINGS LTD.
- MGC PURE CHEMICALS AMERICA, INC.
- MGC PURE CHEMICALS SINGAPORE PTE. LTD.
- MGC PURE CHEMICALS TAIWAN, INC.
- MGC TRADING (THAILAND) LTD.
- MITSUBISHI GAS CHEMICAL AMERICA, INC.
- MITSUBISHI GAS CHEMICAL ENGINEERING-PLASTICS (SHANGHAI) CO., LTD.
- MITSUBISHI GAS CHEMICAL EUROPE GMBH
- MITSUBISHI GAS CHEMICAL SHANGHAI COMMERCE LTD.
- MITSUBISHI GAS CHEMICAL SINGAPORE PTE. LTD.
- PT PEROKSIDA INDONESIA PRATAMA
- POLYXYLENOL SINGAPORE PTE. LTD.
- PTM ENGINEERING PLASTICS (NANTONG) CO., LTD.
- SAMYOUNG PURE CHEMICALS CO., LTD.
- SAUDI METHANOL COMPANY (AR-RAZI)
- SUZHOU MGC SUHUA PEROXIDE CO., LTD.
- TAI HONG CIRCUIT INDUSTRIAL CO., LTD.
- TE AN LING TIAN (NANJING) FINE CHEMICAL CO., LTD.
- THAI POLYACETAL CO., LTD.
- THAI POLYCARBONATE CO., LTD.

Businesses and Main Products — Operating Eight Businesses through Four Companies

Natural Gas Chemicals Company

Methanol and Organic Chemicals Business

The Methanol and Organic Chemicals business has an extensive line up of products that are useful for people's lives ranging from methanol and ammonia and their various derivatives which are basic chemical raw materials through to functional materials that form the raw materials for plastics, coating compounds, synthetic fibers, adhesive agents, artificial leather, pharmaceuticals, and agricultural chemicals.

Energy & Resources Business

The Energy & Resources business promotes operations inside and outside of Japan in search of energy for chemical manufacturing, including exploration and development for natural gas and oil in Niigata Prefecture. The Energy & Resources business is conducting a development project for clean, renewable geothermal energy in Akita Prefecture as well as new geothermal energy developments in Hokkaido and the Tohoku region.

Aromatic Chemicals Company

Aromatic Chemicals Business

Our highly original product portfolio, which includes aromatic aldehydes, primarily metaxylene chains, and aromatic polycarbonates are used in intermediate materials for pharmaceuticals, agricultural chemicals and aromatics, resin raw materials, and additives. MX-Nylon helps to retain the freshness of food and beverages and reduce the weight of packaging.

Foamed Plastic Business

Our foamed plastic provides a range of performance benefits such as shock absorption, thermal and sound insulation with structural strength, chemical resistance and recyclability and very low weight. It is widely used in daily life and typical uses are food containers, residential insulation materials, industrial packaging materials, and automotive components, contributing to energy and resource savings, and conservation of the environment.

Specialty Chemicals Company

Inorganic Chemicals Business

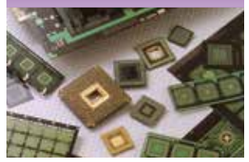
Our Inorganic Chemicals Business supplies hydrogen peroxide for industrial use, chemicals for use in the electronics industry and environmental chemicals based on hydrogen peroxide which have low environmental impact and diverse functions such as bleaching, disinfecting, oxidizing, and metal etching. We also offers monomers for ultra-high refractive index lenses and photoresist monomers.

Engineering Plastics Business

Engineering plastics, such as polycarbonate and polyacetal, have contributed to reducing the weight of automobiles and machinery components. Our Engineering Plastics Business also offers special polycarbonates for optical applications and polycarbonate sheet (film) which has advantages for surface processing technologies.

Information & Advanced Materials Company

Electronics Materials Business



Our Electronics Material Business supplies materials for electronics including laminates for printed circuit boards (PCB) and support materials for drilling in the PCB manufacturing process. These products meet the stringent requirements of the PCB industry. In particular, BT laminates, which led to plastic semiconductor packages, have contributed to the evolution of semiconductor.

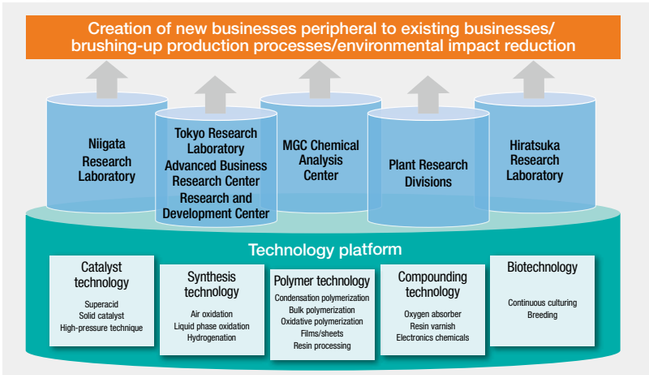
Oxygen Absorbers Business

The chemical principle of oxidation, where iron reacts with oxygen and rusts, has been put to use in a barrier film to absorb oxygen in a completely sealed container to protect foods against oxidation and deterioration. This product concept led to the development of AGELESS, the world's first oxygen absorber, which made MGC the pioneer of oxygen absorption technology.

Research and Development Strategy and Structure

MGC's research and development activities are divided into Company R&D and Corporate R&D. Company R&D assesses changing market needs, and brings research laboratories and centers, plant research and technology divisions and marketing divisions together to undertake research and development in line with each company's business strategy. Corporate R&D aims to create new core businesses through the Advanced Business Development Division with a focus on research and development centered on promising fields (See page 14) that leverage Group strengths from a medium- to long-term perspective.

R&D goals and targets



MGC is a chemical company engaged in a truly wide range of segments, from basic chemicals to fine chemicals and functional materials.
In this section, we showcase MGC's products and technologies in energy, information/communications, mobility, medical/food, and infrastructure, which are the five target fields listed in the mid-term management plan MGC Advance2017.

Energy/Infrastructure

Methanol

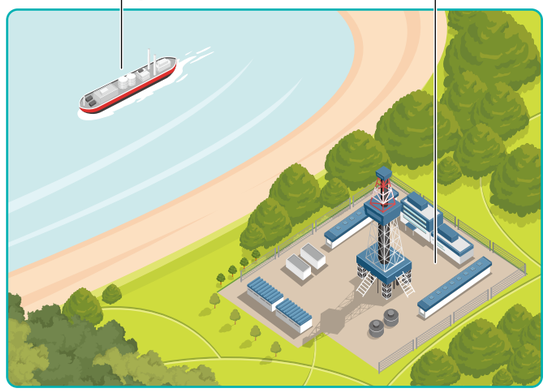
Used in plastics, fibers, and pharmaceuticals as a basic chemical, with diverse applications for derivatives too. MGC has methanol plants outside of Japan, supporting much of global demand.

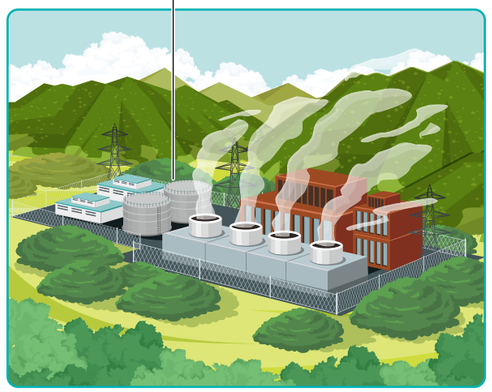
Shale gas and LNG

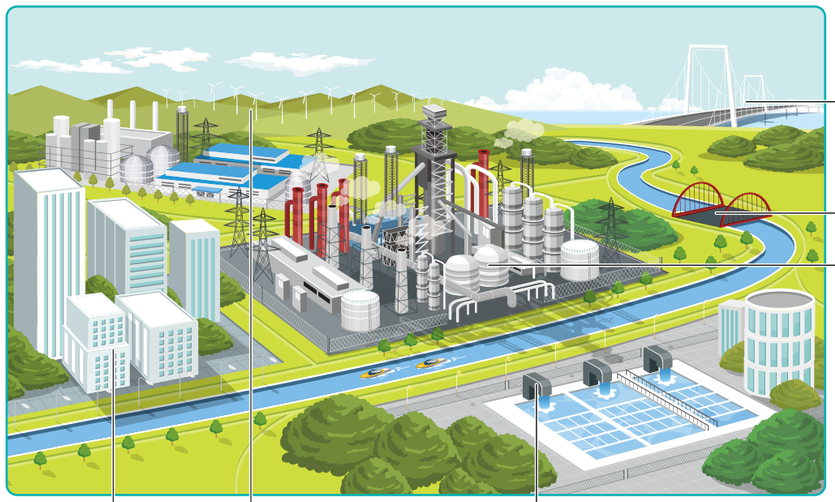
As a new fuel, demand has increased. In order to procure raw fuel in a stable manner, MGC is taking part in a shale gas and LNG project in Canada.

Geothermal power generation

MGC is developing clean geothermal energy with low CO_2 emissions during generation and promoting power generating projects.







Metaxylenediamine (MXDA)

Used in structures such as bridges, plant pipes, and tanks to prevent metal deterioration.

1,3-Bis (Aminomethyl) cyclohexane

Outstanding weatherability, used in coatings and paints. Helps to extend the life of building walls and floors and wind turbine blades.

Phthalic anhydride and Isophthalic acid

Used in plasticizing agents for softening PVC water pipes.

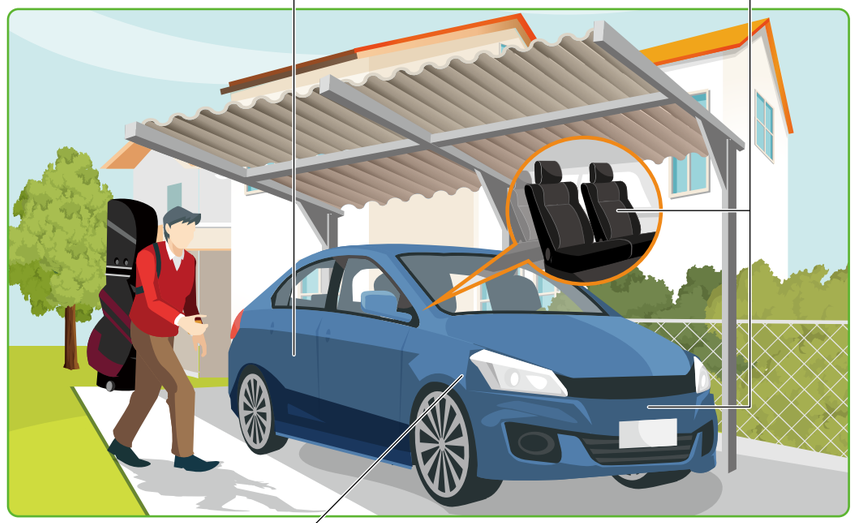
Mobility

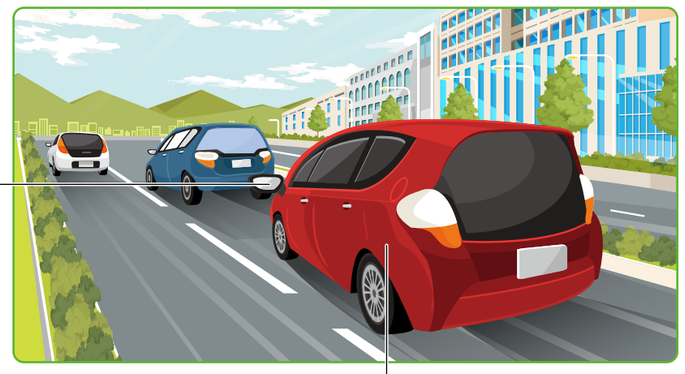
Glycidyl methacrylate

Used in automotive topcoat paints.

Foamed plastic

Widely used in automotive interiors and exteriors, including bumpers and seats. Light-weight foam with high shock absorbing properties has helped to enhance collision safety performance and improve fuel economy.





Miscellaneous engineering plastics

Used as a component in door mirrors, headlights, automotive interiors, and the camera lenses of drive recorders.

Polyacetal

Used in interior components and fuel pump modules.

Information/Communications

BT materials for semiconductor packages

MGC was the first in Japan to develop this plastic PWB material that helps to make mobile devices more compact and high performance.

Polycarbonate (Iupilon)

Used in touch panels and liquid crystal displays for mobile devices.

EL chemicals

Used during the manufacture of semiconductors.

Epoxy printed wiring board (PWB) material

Highly reliable material used in motherboards.

Miscellaneous engineering plastics

Used in the outer casings, internal gears and photoreceptor drums of printers, copy machines, and other office automation equipment.

special Polycarbonate (Iupizeta EP)

Used in camera lenses. Features excellent optical properties, such as high transparency and a high refractive index, which contributes to higher resolution cameras.

Medical/Food

Medical Sector

Drying and de-oxydation agent (PharmaKeep)

Maintains low oxygen concentration levels and low humidity for pharmaceuticals, which ensures longer lasting quality.

Anaerobic culture system (AnaeroPack)

Used in microorganism testing at clinical labs to speed up diagnosis and assist with research and development in the medical sector.

Peracetic acid (Diapower)

Used in the disinfectant and sterilization of medical devices and equipment.

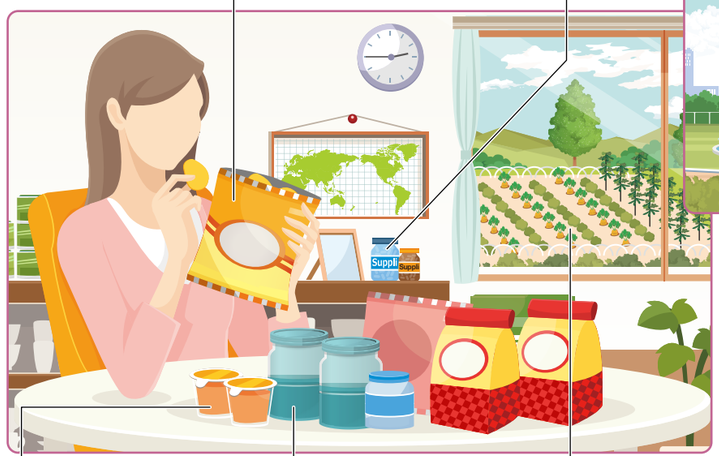
Food Sector

Oxygen absorbers (AGELESS, AGELESS OMAC)

Absorbs oxygen in sealed containers to maintain a long shelf life, taste and freshness. Maintains the quality of food and helps reduce wastage.

Pyrroloquinoline quinone (PQQ)

A new food ingredient considered to be not only beneficial for the brain but also for beauty as well.



Heat-resistant polyester resin (ALTESTER)

Used in jello and other containers because it is easily molded and is highly transparent.

Hydrogen peroxide (Diapower HP)

Used to clean and disinfect food and beverage containers contributing to longer shelf lives at room temperature.

Aromatic aldehydes

Used as raw material for agricultural chemicals.

purified Isophthalic acid

Used in PET bottles.

Polyamide (MX Nylon)

Used for hot tea and carbonated beverages because of its excellent gas barrier properties.

Neopentylglycol

Used in the outer film for PET bottles.

We work on CSR activities as a corporate group that “contributes to societal growth and harmony by creating a wide range of value.”

MGC Philosophy

Philosophy for Being

MGC contributes to societal growth and harmony by creating a wide range of value through chemistry.

Management Philosophy

- Management that creates an inspiring work environment and builds a dynamic group with respect for motivations and abilities
- Marketing that expands and creates markets, with an eye on the world to capture its needs
- Creative research and development that deeply understands needs and refines the seeds that will grow success
- Production activities that strive for technological improvement, environmental conservation, safety, and better products
- An open corporate culture for shared goals and individual growth

Principles of Conduct
As a Professional Group

1. Courage unafraid of change
2. Aspiration toward lofty goals
3. Perseverance toward achieving goals
4. Communication to broaden rapport

Safety Philosophy

The top priority of our business activity is ensuring safety.

MGC Corporate Behavior Guidelines

Mitsubishi Gas Chemical Company, Inc. (“MGC” or “the Company”) aims to be a company that acts with sound judgment and maintains the trust and understanding of society. The Company operates under six behavioral principles, presented and explained below, and will share knowledge of these principles widely throughout Group companies.

Senior managers recognize that it is their role to embody the spirit of these principles, and while ensuring that they have a full understanding of the necessary information inside and outside the Company, they will take the initiative to promote a high level of corporate ethics, and strive to develop and operate an effective framework for this purpose through the internal control system. Furthermore, if an incident takes place in contravention of these guidelines, they will take command and fulfill their obligations for internal and external disclosure, strive to identify the cause of the incident and prevent its recurrence, and deal with the matter strictly and fairly in respect to all parties, including management itself.

(1) MGC will ensure customer and consumer satisfaction and trust by providing high-quality products and services that are useful, safe and reliable.
(2) MGC will voluntarily and proactively address environmental issues.
(3) MGC will comply with laws, regulations and rules, and will conduct fair, transparent, appropriate and open business activities.
(4) MGC will endeavor to ensure broad-ranging communication with society through appropriate disclosure of information.
(5) MGC will engage in business activities that are useful for society, and actively contribute to society as a responsible corporate citizen.
(6) MGC will provide comfortable and productive working conditions for employees, and will ensure a safe and rewarding working environment.

Being a Corporate Group that Continues to Gain a High Level of Trust from Society

As members of society, corporations are supported by diverse stakeholders, including business partners, local communities, and employees. As a corporate group that continues to gain a high level of trust from society, MGC Group ensures the soundness of corporate activities through the implementation of compliance and exhaustive risk management in addition to actively promoting environmental and safety activities.

We formulated the MGC Philosophy and the MGC Corporate Behavior Guidelines as the guiding principles for putting these beliefs into action. Going forward, every single employee will strive to put corporate social responsibility (CSR) into practice in order to earn the trust and support of stakeholders.

Innovative Technology and Research and Development

Environment-related expenses in R&D (FY 2015)

For environmentally friendly products
2 billion yen

For environmentally friendly production methods
1 billion yen

→ See page 6 for Research and Development Structure

Product Development to Meet Social Needs

Product varieties
Approx. **140**

→ See pages 7-10 for MGC in Our Daily Lives

Offering Highly Safe and Reliable Products and Services to Enhance Customer Satisfaction

Customer companies
Approx. **13,000** (domestically)

The number of manufacturers, domestically, who use and consume MGC products. Trading companies not included.

→ See page 17 for Together with Customers

Promoting Fair and Appropriate Transactions

Suppliers
Approx. **2,500** (domestically)

→ See page 17 for Together with Our Business Partners

Creating Safe and Comfortable Workplaces

Employees (consolidated)
8,176

→ See pages 17-20 for Together with Employees

Appropriate Information Disclosure and Dialogue

Shareholders
24,171

→ See page 22 for Together with Shareholders and Investors

Promoting Social Contribution Activities

Donations of chemistry experiment kits
Approx. **10,000**

→ See pages 21 and 22 for Together with the Community

Contributing to Conservation of the Global Environment

CO_2 emissions reduction*1
21 % (over FY 1990 levels)

Chemical substance management and air pollutant emissions*2
45 % reduction (over FY 2010 levels)

*1 GHG emissions intensity (CO_2 equivalent) *2 PRTR substances

→ See pages 27-46 for Responsible Care and MGC

Strengthening the CSR Management System

Employees receiving grade-specific training
240 (MGC)

→ See page 23 for Corporate Governance
→ See pages 24-26 for Compliance and Risk Management

We are working on measures one by one based on the mid-term management plan aimed at “Creating values to share with society.”

MGC Group’s Strengths

- Unique proprietary technologies
- Global marketing structure
- Development structure to meet customer needs
- Wide range of businesses
- Strong relationships with leading clients
- Production system consisting of multiple locations

Mid-term Management Plan–Five Basic Strategies

1 Enhancing the profitability of existing businesses, especially core businesses

Mainly invest management resources in core businesses to further enhance profitability.

	Core Businesses	Semi-Core Businesses
Natural Gas Chemicals Segment	Methanol/Natural resources and energy	
Aromatic Chemicals Segment	MXDA & MX Nylon/Foam	Aromatic aldehydes
Specialty Chemicals Segment	Hydrogen peroxide & electronic chemicals (EL chemicals)/ Polycarbonate & functional sheet film	Polyacetal
Information & Advanced Materials Segment	BT materials/AGELESS	

2 Restructuring underperforming businesses

We will find exit strategies for underperforming businesses.

3 Developing and creating new businesses

Create business in new areas meeting future market needs, in addition to surrounding areas of existing ones.

New Business Development Measures

- Establish Advanced Business Development division
- ¥50 billion for R&D investment
- Pursue M&A for growth
- Utilization of QOL Innovation Center Shirakawa

4 Improving group-wide operational efficiency

Maximize corporate value through group management action.

5 Improving total enterprise quality in support of sustainable growth

Achieve further improvement in quality that continuously enhances MGC Group’s competitiveness.

Main Themes

- Minimizing losses using safe and stable operations
- Strengthening internal control and compliance systems
- Securing and training human resources for the future of the Group
- Realizing a healthy and strong financial position

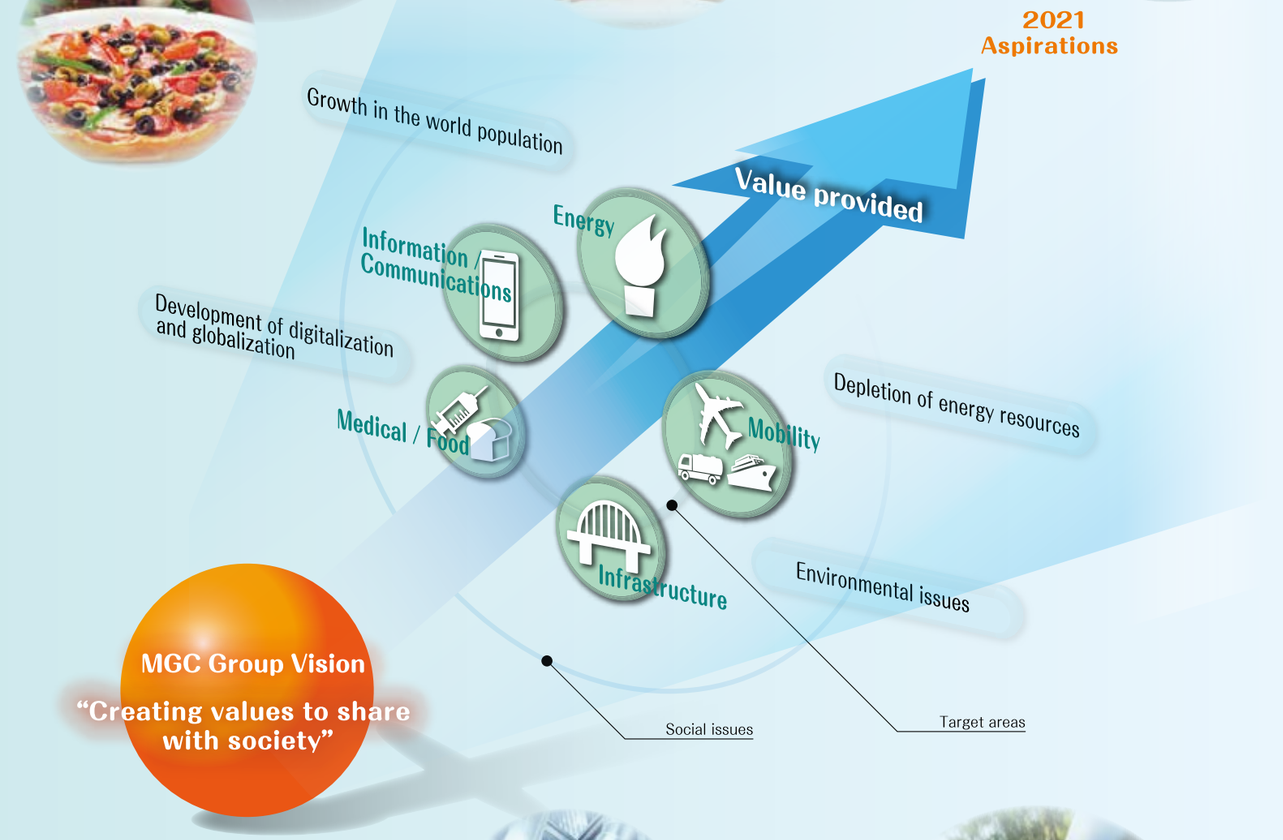
We will create values to share with society and realize sustainable growth.

Based on our Philosophy for Being, which is “MGC contributes to societal growth and harmony by creating a wide range of value through chemistry,” we have constantly tried to create new technologies and value to grow in partnership with society.

In tandem with the globalization of recent years, the rapidly changing economic environment and social structures around us have become increasingly complex. While providing value to society based on our four companies, MGC aspires to continually create new businesses to solve social issues that arise in the future and deliver new value.

Based on these aspirations, MGC established “Creating values to share with society” as the Group Vision in FY 2015.

We will create not only economic but also social value, that is, value that is shared with society, and aim to realize sustainable growth.



We achieved success in various projects aimed at realizing our vision for 2021.

Expanded PQQ, a Coenzyme in Focus as a Health Food Ingredient, into the Japanese Market

In October 2015, MGC began full-scale sales in Japan of pyrroloquinoline quinone disodium salt ("PQQ", product name: BioPQQ), which is a new dietary ingredient.

MGC leads the world in elucidating the actions of PQQ on the living body, and has discovered a neuroprotective action, enhancement of nerve growth factor, an antioxidant action, and mitochondria biogenesis, among others so far in joint research with universities and research institutions inside and outside Japan. In particular, in terms of its effects on improving brain functions, it has been shown in human studies to enhance memory and cognitive abilities which form part of the cognitive function.

As an ingredient that is also eligible for Foods with Function Claims notification, it is expected to be used in foods to meet demand from an aging population.

Following approval in the U.S. in 2008, a decision approving use in food was received from Japan's Ministry of Health, Labour and Welfare, and MGC began sales of PQQ in Japan. Going forward, we will expand sales of PQQ in the Japanese market and develop the product as a new focus of the life science business.

PQQ powder

Developed the World's Highest Refractive Index Lens Material to Realize Lighter, Thinner Lenses for Eyeglasses

Lighter, thinner plastic lenses are required for eyeglasses. The key to this is the refractive index of the lens material, and the higher the refractive index, the thinner the lens can be made.

As the manufacturer with more than a 50% share of the global market for ultra-high refractive index ophthalmic lens material (lens monomer) with refractive indices of 1.70 or higher, MGC is pursuing even higher specifications. At present, the refractive index of the leading ultra-high refractive index plastic lens is 1.74 and that of the highest ultra-high refractive index lens material (MGC's) is 1.76. However, in December 2015, MGC successfully developed a material with a refractive index of 1.80, the world's highest for a plastic lens.

Lens with the world's highest refractive index

Developed Mass Production Technology for $LiBH_4$-based Solid-state Electrolyte to Assist with Greater Lithium Battery Capacity

In January 2016, MGC developed a mass production technology for solid-state electrolyte for lithium secondary batteries using $LiBH_4$ (lithium borohydride) jointly with Tohoku University's Advanced Institute for Material Research (AIMR) and Institute for Materials Research. The solid-state electrolyte is a material with a theoretical capacity at least ten times that of current lithium batteries, which Tohoku University has successfully developed to date.

All solid battery using $LiBH_4$

Exhibited Plastic Container for Injectable Drugs in Europe and U.S. Expected to be Glass-Alternative Container

MGC developed OXYCAPT, a multilayer-plastic container for injectable drugs. As the world's only plastic container with a glass-like oxygen barrier, it is expected to be used for injectable drugs that are sensitive to oxygen such as bio-drugs. We exhibited the plastic container at exhibitions held in three countries in Europe and North America in autumn 2015, and it attracted attention.

OXYCAPT vial

OXYCAPT syringe

Commenced Work to Boost Production Capacity for GMA, Raw Material for Automotive Top Coating

MGC is carrying out work to boost production capacity for glycidyl methacrylate (GMA) at the Niigata Plant which it aims to complete in September 2017. GMA is primarily used as a raw material for automotive top coating, and its use in acid-epoxy based paints, which are resistant to acid rain and scratching, has increased since the 1990s. Going forward, in addition to the expected increase in global automotive production, use of GMA is increasing in modifiers for engineering plastics, adhesives and other coating materials.

Niigata Plant

Promoted Commercialization Projects for Geothermal Energy in Akita, Hokkaido, and Iwate

MGC is promoting exploration/development and power generating projects for geothermal energy, which is a renewable energy source.

In May 2015, we began the construction of the Wasabizawa geothermal power plant in Yuzawa City, Akita Prefecture in a joint venture with Electric Power Development Co., Ltd. and Mitsubishi Materials Corporation. In June the same year, we conducted a short-term flow test*1 on the geothermal exploratory well in the Musadake area in Shibetsu Town, Hokkaido, which we have been developing in a joint venture with Japan Petroleum Exploration Co., Ltd. and Mitsubishi Materials Corporation. We confirmed 26 tons of steam per hour and 16 tons of hot water per hour*2. Moreover, in October 2015, we established Appi Geothermal Energy Corporation in a joint venture with Mitsubishi Materials Corporation with the aim of commercializing geothermal power generating projects in the Appi area of Hachimantai City, Iwate Prefecture, and have begun the environmental impact assessment.

MGC will continue to promote the commercialization of geothermal energy, which is a clean, all-Japanese energy source that can provide a stable supply of power without being affected by the weather or the seasons.

*1: Short-term test held to confirm steam and hot water from the well
*2: The amount measured on June 25, 2015

Flow test during NEDO survey in Appi area

Musadake SMMG-2D well short-term flow test

Together with Stakeholders

As a member of society MGC contributes to the community, and by fulfilling its responsibilities to various stakeholders, the company will earn society's trust and sympathy.

Together with Customers

We work hard to provide safe and highly reliable products and services to all of our customers, from direct business partners to the end consumer. As part of these efforts, all of our plants have acquired an ISO 9000 series of certification in quality management.

If problems related to the Product Liability Law occur, the designated staff person in charge of complaints at each Company will work with the business division in question, the production divisions, research divisions, or logistics divisions, and investigate the source of the problem.

At the same time, the designated staff person in charge of complaints reports to the Product Liability Committee so that the committee can implement company-wide preventive measures. Additionally, until now problems related to the Product Liability Law have not occurred at MGC.

In addition to these company-wide activities, we are also striving to raise customer satisfaction in each particular business division.

Together with Our Business Partners

We carry out fair and open procurement activities in full compliance with applicable laws and we are building relationships of trust with our business partners to help build an environmentally-friendly and safety-minded supply chain.

Compliance with the act against delay in payment of subcontract proceeds, etc. to subcontractors

All of our business transactions with business partners are in full compliance with the Act against Delay in Payment of Subcontract Proceeds, Etc. to Subcontractors. Every year we check the entire company for compliance with this important law. We have also created a check sheet to verify the applicability of this law during new business transactions and regularly hold in-house training sessions on the law to ensure complete compliance. In FY 2015, we improved our purchasing system in order to be even more certain of engaging in the appropriate issue of orders.

Working with partner companies

We are working closely with the shipping providers of our partner companies to ensure safety during transportation, to enhance logistics quality, and to carry out a modal shift. Additionally, we also carry out audits of our partner companies from the standpoint of compliance and to build more positive, lasting relationships.

Safety education at the first delivery due to our modal shift.

Together with Employees

Respect for human rights

At MGC, we strictly adhere to our Corporate Behavior Guidelines and MGC Code of Conduct, to respect individual personality and human rights, to not hurt anyone by discriminating against them based on their race, gender, nationality, age, religion or place of origin. We provide separate training courses on human rights for new employees and managers to raise awareness of human rights among all employees. Our Code of Conduct also articulates that sexual harassment and power harassment are prohibited. We are committed to preventing them within our company, and reinforce this principle through training sessions, internal communications and a special consultation desk.

These guidelines and code—along with the four fundamental principles* of the International Labor Organization (ILO)—have been communicated to our Group companies overseas.

* 1. Freedom of association and the effective recognition of the right to collective bargaining; 2. Elimination of all forms of forced or compulsory labour; 3. Effective abolition of child labour; and 4. Elimination of discrimination in respect of employment and occupation.

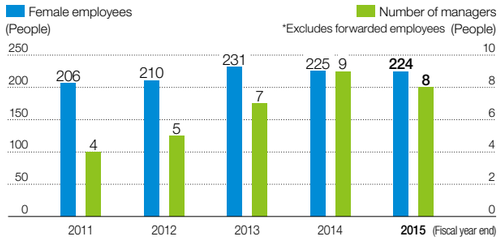
Promoting diversity

We are putting effort toward creating an environment that respects diversity and enables our employees, who themselves are diverse individuals, to display their unique capabilities and approach work with a sense of purpose and meaning.

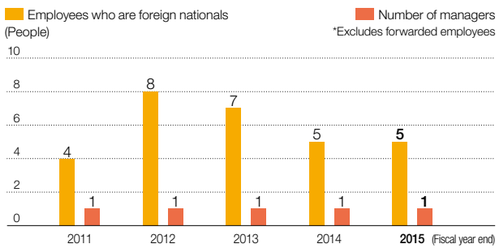
■ More active role for women

We have prepared an action plan ending in FY 2021 that targets a four-fold increase in the percentage of female managers over FY 2015. Under the action plan, we are implementing measures to support career development and working to enhance systems that assist with balancing work and family life.

Number of female employees/managers (non-consolidated)



Number of employees/managers who are foreign nationals (non-consolidated)



■ Re-employment of retirees

The re-employment rate for retirees has reached 100% for seven years in a row from FY 2009 to FY 2015 as a result of our retiree re-employment scheme. Providing the opportunity for re-employment to all employees who desire it and their continued work contributes to creating a vibrant workplace.

Re-employment of retirees

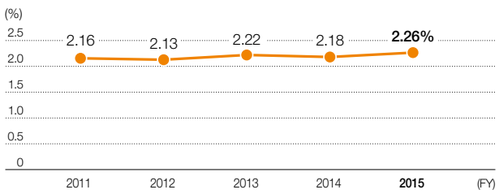
* Fiscal year = end of September + end of March

■ Employment of people with disabilities

MGC's employment rate for people with disabilities was 2.26% as of the end of FY 2015, which exceeded the legally mandated rate of 2.0%. We will continue working to create a workplace environment that allows people with various disabilities to display their capabilities.

Employee with a disability at work.

Employment rate for people with disabilities (as of March 31, 2016)



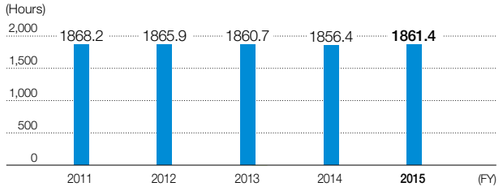
Work-life balance

We have introduced a flextime system with the aim of realizing work-life balance. We have also established a system for accumulating annual leave (up to 40 days) for effective utilization of otherwise expired annual leave as well as various types of special leave, including leave for marriage, bereavement, a spouse giving birth, work transfers, volunteering, donation, and self-care. In FY 2015, usage of annual leave was 91.3%. We have maintained a high rate of annual leave usage for many years, and a climate that makes it easy to take annual leave has been created.

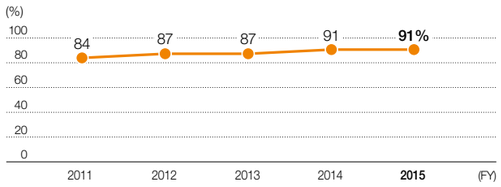
■ Efforts to reduce working hours

Total working hours were 1,861 hours per employee in FY 2015. In order to reduce working hours, we are making efforts that include establishing a no-overtime day and measures to encourage employees to take their annual leave through such groups as the Shorter Hours Committee established by labour and management.

Total annual working hours (average for labour union members)



Percentage of annual paid leave being taken (average for labour union members)



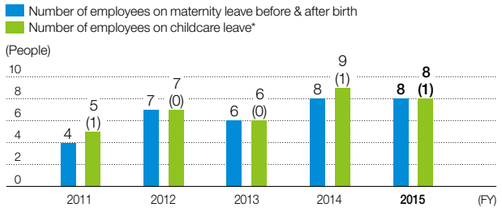
■ Childcare and nursing care

We have established a system for child care that exceeds the statutory requirements, including childcare leave until a child reaches two years and one month and a system of shorter working hours until a child enters elementary school. We have achieved a 100% return to work after childcare leave for five years in a row. In FY 2016, we added fertility treatment to the intended uses of accumulated annual leave and prepared a pamphlet on our childcare systems.

Pamphlet on our childcare systems

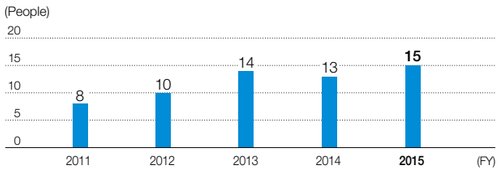
We have established a system that exceeds the statutory requirements for nursing care leave. This includes allowing a maximum of one year, which can also be split.

Maternity leave



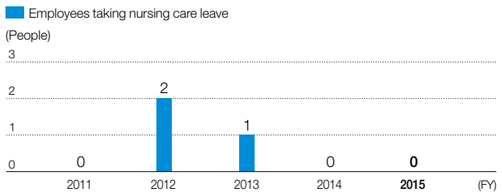
* Parenthesis indicates the number of males who took childcare leave
* For women, the fiscal year of child care leave is determined by the first day of maternity leave.

Number of employees using reduced working hours for childcare



* Number of users during the FY

Number of employees taking nursing care leave



Health management

We provide regular health checkups every year for all officers and employees, and the checkup rate is practically 100%. When the results of tests indicate the need for retesting or there are any findings, we work to promote employee health through health guidance provided by industrial physicians and public health nurses.

Care for mental health

It is important that our employees maintain their physical health, and at MGC we have implemented programs to ensure mental healthcare as well. The Employee Assistance Program (EAP) is one of these, in which employees can freely contact external professional institutes by e-mail, telephone or in person to discuss concerns.

In addition, we conduct an annual “mental health” test to assess stress conditions and provide opportunities for self-evaluation while striving to raise stress awareness through workshops. In FY 2015, we promoted the creation of a framework for the effective implementation of stress checks, which have been made mandatary under Japan’s Industrial Safety and Health Act.

We also conduct mental health training during sessions designed for new employees and employees receiving a promotion.

MGC’s human resource development

Our people are our greatest asset. MGC maintains “fostering small numbers attentively” as its human resource development policy. Our desire is to create a work environment that fosters each employee as a professional in a system that raises personal intelligence and capacity while furthering individuality.

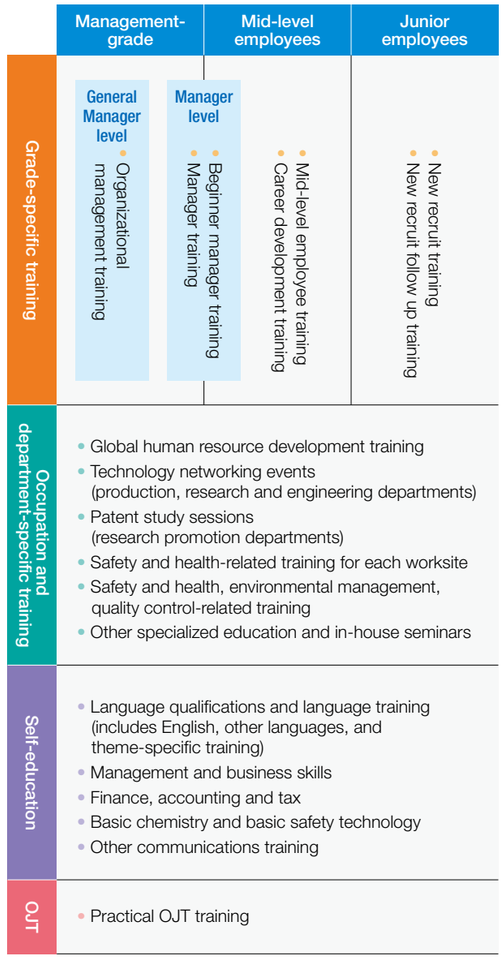
■ Personnel system

MGC’s personnel system is a multi-stream vocational qualification grading system based on management by objectives. Up to the standard age of 28, employees belong to the same basic career path regardless of gender or educational background, and then move on to select courses that will help them in their career. We support all employees equally, providing them with a range of career opportunities in line with individual aspirations that meet their role, achievements and capabilities.

■ Development of human resource capabilities

In order to create an environment for each employee to achieve individual goals, we are working to enhance self-development programs for each rank and sector using tools such as skill-development training and distance education.

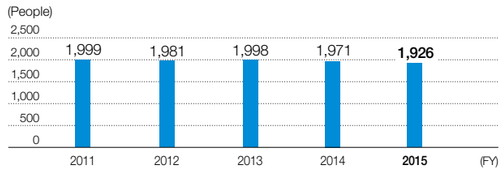
MGC company-wide education and training system



Union/labor-management relations

Over the years MGC and the Mitsubishi Gas Chemical Workers Union have built up mutual trust and respect between each other based on positive labor-management relations, which allows them to work together to solve various issues. We regularly hold management council meetings with the aim of sharing awareness of issues related to management and the business environment, including such themes as the workstyle, welfare, and treatment of employees, and meetings of the Personnel System Review Committee and other committees for joint labor-management discussion of various systems. Together we have revised the personnel system, the re-employment system, and retirement plans. Other issues such as wages and bonuses are determined through yearly collective bargaining and other negotiations.

Number of labor union members (as of December 31, 2015)

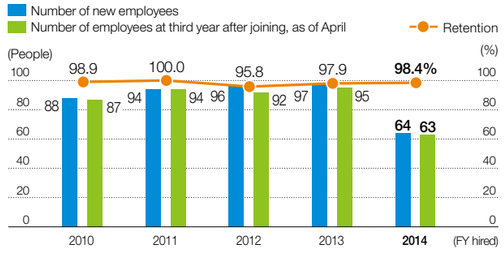


* The participation rate is 100% due to the union-shop system.

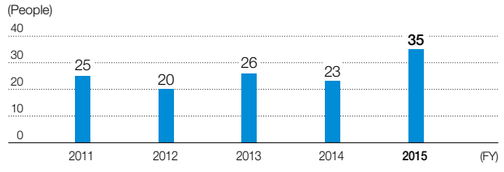
Employee tenure (as of March 31, 2016)

	Male	Female	Total
Average age	41 years old and 5 months	39 years old and 10 months	41 years old and 3 months
Number of years worked	18 years and 4 months	16 years and 10 months	18 years and 2 months

Retention of new employees (third year after joining)



Turnover



* Number of regular employees and those retiring at their own accord (including completion of leave of absence period, support changing job type, and excluding job transfers)

Together with the Community

Response to the Kumamoto Earthquake

We express our heartfelt sympathty to all those affected by the April 2016 Kumamoto Earthquake.

MGC provided approximately 10,000 servings of processed fruit products with a long shelf life thanks to the use of deoxygenated containers (AGELESS OMAC) to the area affected by the earthquake.

We will continue making efforts to contribute to the local community while hoping for the reconstruction of the affected area as soon as possible.

Providing processed fruit products to the affected area

Interaction with local communities

■ Supporting NPOs through provision of disaster supplies

MGC stores a certain volume of food and drinking water at the company to prepare for a disaster. We replace these disaster supplies within the best before period and provide them to NPOs, thus supporting their activities. The disaster supplies that we provided in the February 2016 replacement were donated through NPOs to orphanages for the food and mainly to children in Fukushima Prefecture for the drinking water.

Providing disaster supplies to NPO

■ Beautification activities in the local community

At each of its sites, MGC participates in cleanup activities for roads, nearby riverbeds, and other areas.

Cleanup for floodplain of Takahashi River (Mizushima Plant)

Tree planting for the Sagami River (Hiratsuka Research Laboratory)

■ Involvement in community activities

We participate in community festivals, blood donation drives, and traffic safety campaigns on local roads to encourage interaction with the local community.

Participating in local traffic safety campaign (Yokkaichi Plant)

Blood donation drive (Niigata Research Laboratory)

Initiatives for the next generation

We are working to promote an interest in chemistry at educational institutions in the communities surrounding our business sites to develop the next generation. For example, we host student visits and internships involving local junior high schools, high schools, technical junior colleges and universities as part of commitment to help develop the next generation. Since 2008 we have provided junior high schools near our facilities with chemistry kits to make their own pocket heating pads. These kits help students understand the oxidation of iron, which generates heat and makes the pads warm. We provided approx. 10,000 kits to 90 schools in Japan in FY 2015.

Hosting a student visit from local high school students(Mizushima Plant)

Chemistry experiment kits

Environmental and disaster preparedness activities in the local community

To deepen understanding of our environmental conservation and process safety activities by local communities, MGC has continued to participate in local dialogue meetings held by the Japan Chemical Industry Association (JCIA).

In addition, we are working together with local communities to promote safety and disaster preparedness through joint drills with fire departments and other means. All of MGC's plants have obtained ISO 14001 certification and continually strive to improve the quality of their environmental management systems.

Local dialogue meeting on Responsible Care for the Niigata north district (Niigata Research Laboratory, Niigata Plant)

Disaster preparedness drill (Kashima Plant)

Holding a panel exhibition to make the public aware of natural resources produced in Niigata

MGC, which is engaged in the development of natural gas resources in Niigata Prefecture, held a panel exhibition with TOHO EARTHTECH, INC., an MGC Group company, from May 27–29, 2016 to make the public aware of natural gas dissolved in water and iodine, two local products deep beneath the ground of Niigata. The theme of the exhibition was "Turning ancient underground water into Niigata's advantage."

The exhibition featured a range of chemical products that use natural gas and iodine as raw materials, ancient seawater pumped from 1000m underground, a model of geological strata, and a model of the re-injection system of all produced water which allows production without causing ground subsidence. In addition, people attending the exhibition were able to deepen their understanding of natural gas dissolved in water and iodine using a quiz format. We also exhibited 3D art which reproduced the subsurface geology.

Approximately 3,500 people visited during the exhibition period and made such comments as, "I didn't know that there are these kind of resources underneath Niigata," and "I hope it leads to the development of industry in Niigata."

Together with Shareholders and Investors

To ensure shareholders and the investment community correctly understands MGC, we strive to disclose information in a fair and transparent manner through information disclosures in accordance with laws and the rules of stock exchanges, the announcement of information on our website or through media outlets, and through reports to shareholders.

Basic policy on profit distribution

MGC places the improvement of corporate value through business expansion and growth as a challenge of the greatest importance, takes into consideration investment and lending plans, financial health, and future business trends in order to realize future business growth, and works to achieve an optimal allotment of retained earnings and returns to shareholders.

Regarding dividends, the decision to continue steady dividends is made taking into account trends in business results.

In addition, MGC's basic policy on the repurchase of its own shares is to consider the market environment, etc. while conducting such purchases in a flexible manner in order to enhance returns to shareholders and improve capital efficiency.

The annual dividend for FY 2015 was ¥16 per share, an increase of ¥2 per share. In addition, MGC conducted a repurchase of its own shares in May 2016 totaling 10 million shares for ¥6,253,180,000.

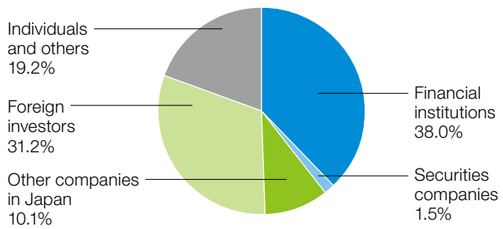
General meeting of shareholders

The annual shareholders meeting is held avoiding peak days so that as many shareholders can attend as possible. MCG is also endeavoring to send the convocation notice earlier as well as posting the information on the company website before sending the convocation notice to give shareholders more time to consider what to vote. We also translate the convocation notice and other documents into English and have adopted an electronic voting platform in order to improve convenience for shareholders.

Briefings for institutional investors and securities analysts

For institutional investors and securities analysts, we hold earnings briefings, as well as business briefings. In addition, we posted reference material from our earnings briefings, as well as business reports, on our website in an effort to share information about MGC in a timely fashion.

Composition of shareholders (as of March 31, 2016)



Corporate Governance

We strive to operate an effective corporate governance system and to continually reinforce and enhance our system in order to fulfill the expectations of all stakeholders.

Basic Approach to Corporate Governance

As a member of society, MGC strives to operate an effective corporate governance system and to continually reinforce and enhance our system in order to fulfill the expectations of all stakeholders, including shareholders.

Basic policy

(1) We ensure the rights and equality of shareholders.
(2) We cooperate properly with stakeholders other than shareholders.
(3) We ensure appropriate information disclosure and transparency.
(4) We fulfill the responsibilities of the Board of Directors, etc.
(5) We engage in constructive dialogue with shareholders.

Overview of Corporate Governance Structure

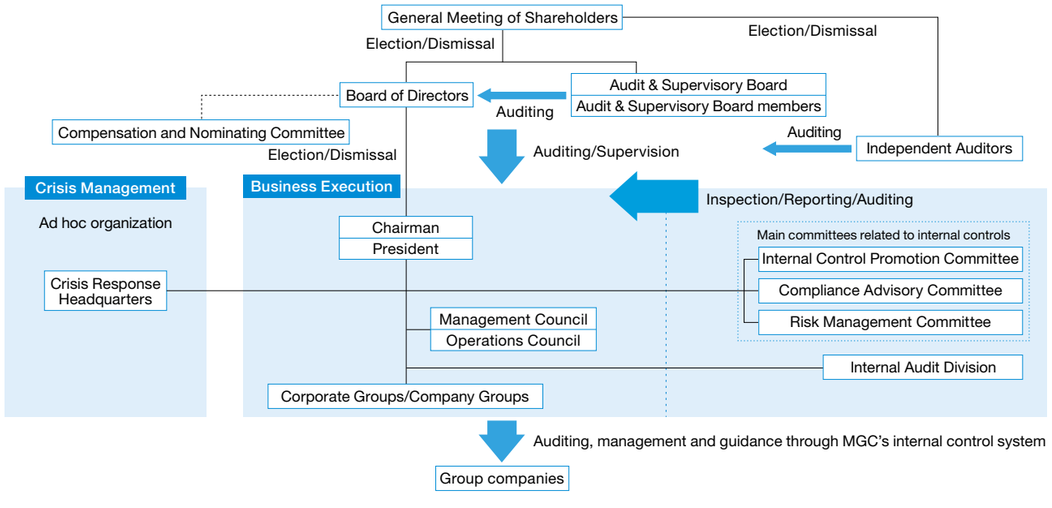
For the sake of appropriate management supervision and counsel from an external perspective, and to raise our management transparency and fairness, MGC appoints two outside directors. Our management structure as of June 30, 2016 consists of 12 directors, including two outside directors, and 24 executive officers (including people who concurrently serve as directors).

Any important matters affecting MGC are to be reviewed and decided with a broader perspective at the Management Council where management policy may be discussed, and at the Operations Council where definitive action plans may be discussed. In addition, MGC draws upon the expertise of legal counsel and other experts when required in the decision-making process and the business execution of the company.

There are four Audit & Supervisory Board members, two of whom are external. They attend important meetings as well as board meetings, conduct audits of departments, inspect subsidiaries, and strive to understand the decision-making process and status of business execution. In addition to ensuring a rational decision-making process and compliance with the law and corporate ethics, the Audit & Supervisory Board members conduct inspections of our business operations. They regularly exchange opinions with directors and receive status reports on business execution from directors and employees on a regular basis, or immediately when involving material matters. Members request explanations as required and state their views. They also inspect important documents concerning business execution, and require information from directors and employees.

Moreover, in order to ensure transparency, objectivity and appropriateness in the processes for determining compensation for directors and executive officers and those for determining the nomination and election of directors, Audit & Supervisory Board members, and executive officers, proposals on compensation and the appointment of officers are reviewed by the Compensation and Nominating Committee composed of the Chairman, the President and the outside directors before submission to the Board of Directors.

Corporate governance framework



Compliance and Risk Management

In our aim to earn the trust and understanding of the community, MGC practices compliance while readying and strengthening systems for responding to any manner of risk.

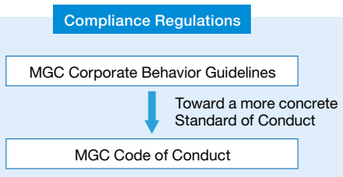
MGC Group Compliance

Compliance at MGC Group involves not only abiding by laws and company rules, but also widely upholding fair, transparent and free business activities based on its responsibilities to society as a group of companies. Based on this understanding, we have summarized the actions to be taken by executive officers and employees in the "MGC Corporate Behavior Guidelines" and the "MGC Code of Conduct" and we make revisions to these guidelines and code of conduct as necessary based on changes that take place in society.

To ensure thorough compliance across the entire MGC Group, we distribute the "MGC Compliance Handbook" to all of our employees in Japan. For overseas Group companies, we also created English, Chinese and Thai language versions of the "MGC Corporate Behavior Guidelines" and the "MGC Code of Conduct" to ensure the philosophy of MGC Group is made known to and practiced by all.


MGC compliance handbook

MGC compliance concepts

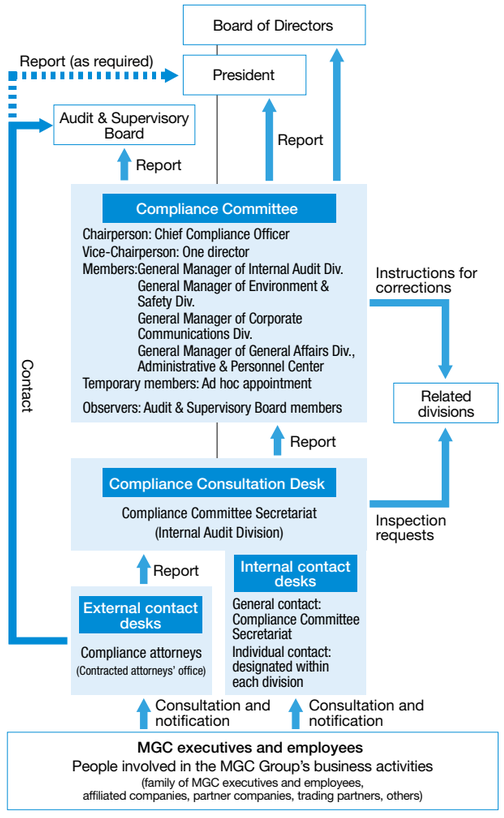


Compliance System

MGC has established a Compliance Committee to supervise matters concerning the Group's compliance program, headed by the Chief Compliance Officer and reporting directly to the President. The Compliance Committee also includes a director (as vice-chairperson), heads of compliance-related departments, and others. The roles of the Committee are as follows:

1. **Formulating and deliberating on the framework, policies, and implementation measures of MGC Group compliance.**
2. **Understanding the implementation status of MGC Group compliance, and providing necessary guidance and supervision.**
3. **Inspecting instances of noncompliance, and formulating and deliberating on measures for rectification and prevention of recurrence.**

MGC compliance structure



Compliance implementation measures, guidance and supervision, and steps taken to rectify and prevent recurrence of noncompliance, which are formulated and deliberated on by the Compliance Committee, are reported to the MGC President and Audit & Supervisory Board, then implemented after following specified internal procedures.

In addition, MGC has set up a "Compliance Consultation Desk" to achieve early detection and undertake preventative steps against unethical practices. Our internal contact desks are staffed by internal audit departments, while external contact desks can be found at the offices of specialized attorneys, including access to female attorneys. These specialized attorneys also provide advice to the Compliance Committee and assist with the training of various related departments.

Reports and consultations brought to the attention of the Consultation Desk and deemed as potentially serious compliance violations are promptly reported to the Compliance Committee chairperson. The Compliance

Committee decides on necessary rectification or recurrence prevention measures after investigating the related facts. Investigation results and the details of said measures are also reported back to the party responsible for the consultation or report.

Compliance Education

MGC sets aside October each year as “Ethics Month” to conduct compliance training for employees. The president also sends out a circular to all business sites to raise awareness about compliance issues.

In FY 2015, we chose specific items of timely nature from among the 40 different types of legal compliance training materials contained on our intranet. These items were provided to employees, through our e-learning system.

Given rising need to respond to compliance issues, such as cartel involvement or illegal payoffs, at Group companies affiliated with our overseas businesses in emerging countries and other locations, MGC is also working to enhance the quality of its compliance training for staff that are dispatched as officers to overseas affiliates.

Screenshot from the e-learning system

Risk Management in MGC Group

In response to the various risks related to our business activities, MGC launched company-wide, comprehensive risk management activities in 2006 with the establishment of a Risk Management Committee. To disseminate knowledge at the start of our activities, we conducted seminars for top management and for employees at all workplaces on the topics of the importance and practice of risk management.

Presently, we are reviewing measures for the highest priority risks out of those risks listed in the identification and assessment of latent risks and formulating a business continuity plan (BCP) when necessary. BCPs created by each department are centrally managed by the secretariat of the Risk Management Committee to ensure other departments have access for use as reference.

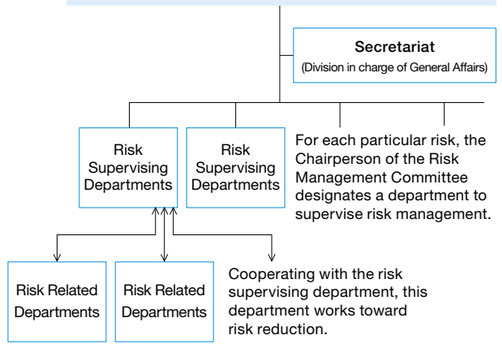
In addition, with regard to risks at Group companies, the MGC department that supervises each company shares information and responds when necessary. The risks with a major impact on MGC are reviewed by the Risk Management Committee.

Risk Management Framework

The Risk Management Committee, headed by the Chief Risk Officer, is composed of the general managers of the administrative divisions of the four Companies conducting business activities and the heads of all corporate divisions. The Committee assesses risk situations from broad perspectives, and instructs and oversees departments to prioritize risks and enact risk reduction measures.

In terms of risks associated with project implementation, we have developed an action plan to identify and evaluate risks inherent in our operations or internal control systems. We then take the appropriate measures. In the event that a serious risk is identified, we set up a special group to cope with it according to internal rules.

Risk management promotion system



Risk Management Committee’s Annual Plan for FY 2015

Among the risks that accompany our business activities, we have identified earthquakes, toxic or hazardous substance leaks, fire and explosion, and information leaks as four that must be handled with priority on a companywide basis. Our workplaces are also examining countermeasures related to these priorities.

In FY 2015, we actively pursued major annual policy points that included those listed below.

1. **To continue carrying out independent and autonomous risk management activities for identified risks and improve the quality of risk management.**
2. **To upgrade risk management at Group companies inside and outside Japan.**
3. **To continue subcommittee activities through setting of independent issues (including efforts aimed at completing seismic reinforcement of business site buildings)**

Major Initiatives in Risk Management Activities

Measures against major natural disasters

MGC has deployed company-wide a safety confirmation system to cope with a major natural disaster such as an earthquake directly below the southern part of Tokyo, which is assumed by the Cabinet Office to be a possible occurrence. In addition, we have provided offices with emergency devices, such as wireless communication devices, so as to enable communication among workplaces even when regular telephone communications become disabled or restricted.

Furthermore, as part of our BCP, we conduct emergency training sessions using these systems and equipment each year, so that even if headquarters becomes paralyzed due to a major natural disaster, each of our facilities such as plants and research centers may continue supporting customers and maintaining other services, supplementing the headquarters’ function.

We also are pushing forward initiatives for first responder training at each workplace, as well as gathering stocks of reserve supplies. To cite examples of other initiatives, we have planned for scenarios in which working employees and guests visiting MGC face difficulties returning to their homes after a disaster. We have stocked food, drinking water, and other materials to allow persons in the company to remain in offices for at least three days.

In FY 2015, MGC progressively carried out seismic reinforcements, steadily moved forward with responses to buildings which are old and have a greater potential of causing injuries should a major earthquake occur, which were found as a result of the earthquake resistance assessments conducted up until last year. Additionally, we increased the plants covered in the examinations into improving plant-wide seismic performance, including manufacturing equipment, at the model plants which we conducted in the previous fiscal year.

Going forward, we will continue efforts to review the effectiveness of measures through exercises and drills related to disaster prevention and business continuity to strengthen our preparation for a large-scale natural disaster.

Wireless communication device for emergency use

Disaster reserve supplies

Measures against information leakages

Regarding the prevention of information leaks—one of the risk issues we have targeted for priority treatment—we examined ways to manage technical information and other measures.

Going forward, in addition to issuing warnings and strengthening our information management practices, we think it is important to minimize information leakage risks based on scenarios where secrets were leaked and to address the challenge of striking the right balance between the prevention of information leakages and effectively sharing this information within the company.

Risk management of group companies

As a risk management measure including Group companies, we are carrying out requests for enhanced risk management, while also exchanging information after investigating on each company’s initiatives and practices. In FY 2015, we promoted a review into upgrading risk management at Group companies given the increasing need for internal control as a corporate group. As a result, we decided to further strengthen PDCA cycles through mutual collaboration between Group companies and the MGC department that supervises the particular companies.

Environment and Safety Management

We at MGC conduct business activities with sustainable development, building a recycling-based society, and safe operations as critical management issues, and promote Responsible Care (RC) throughout MGC as the means to assure environmental and safety activities.

The MGC Group Policies on Environment and Safety

As an important member of the community, the MGC Group makes an effort to earn social trust by recognizing our responsibility to contribute to the community, to secure the environment and safety of the community, and to put our corporate activities in harmony with the protection of the global environment under the principle of sustainable development.

Environmental and Safety Targets: Zero Accidents, Zero Occupational Injuries, and Environmental Preservation

Fundamental Policies

- Ensuring health and safety in our operations
- Ensuring process safety through the improvement of self-maintenance technologies and on-site competency
- Reducing environmental impacts and contributing to sustainable social development
- Ensuring safety in the handling, use, and disposal of chemical products
- Ensuring environmental conservation and safety in the logistics of obtaining raw materials and storing and delivering our products
- Strengthening relationships with stakeholders
- Promoting the MGC Group's environmental and safety activities
- Continuously improving environmental and safety management systems

MGC's RC Medium-Term Plan 2017

* The descriptions of distribution safety, dialogue with society, and RC in general have been omitted.

RC Code	RC Medium-Term Plan (2015–2017)
Occupational Health and Safety	**Working toward zero occupational injuries and accidents** ■ Enhance everyday safety activities (*Kiken Yochi*: hazard prediction; *Hiyari Hatto*: near-miss incident identification activities; the 5Ss; etc.) ■ Enhance communications. ■ Prevent the occurrence of similar occupational injuries and similar incidents. ■ Prevent occupational injuries in partner companies. ■ Perform risk assessments for handled chemicals.
Process Safety and Disaster Prevention	■ Establish a framework for activities (Bridge) to eliminate accidents. ■ Adopt and operate the safety competency assessment system of the Japan Society for Safety Engineering. • Construct frameworks enabling plants themselves to practice PDCA. ■ Strengthen and deepen risk assessment (RA). • Establish activities composed of identification, reduction, and periodical review of risks. ■ Establish PDCA in education at business sites, including OJT. ■ Analysis and horizontal communication of case studies from other companies, past case studies, HH case studies, etc. ■ Enhance disaster readiness framework. ■ Enhance equipment management and improve self-maintenance technologies. ■ Formulate "MGC Safety Standards" applicable to the entire MGC Group.
Environmental Preservation	■ Reduce energy consumption intensity to below 85% of the FY 1990 level. • Implementation of energy saving measures and reduction of equipment problems. ■ Reduce greenhouse gas emissions intensity to below 72% of the FY 1990 level. ■ Reduce emissions of PRTR substances by 10% compared with FY 2014. ■ Maintain zero emission of wastes (Zero emissions at MGC: 0.3% or less final disposal of generated wastes, by weight). ■ Reduce generated waste volume by 10% compared with FY 2014. ■ Promote initiatives related to conservation of biodiversity. ■ Formulate methods for evaluation of environmentally friendly products.
Chemical and Product Safety	■ Provide up-to-date safety information on handled chemical products and incorporate information into SDSs (safety data sheets). ■ Risk management for handled chemical products. • Participate in JIPS.* • Risk management for new products. ■ Adapt to EU REACH regulation and other overseas regulations.

* **JIPS:** Japan Initiative of Product Stewardship, a voluntary initiative advanced by the Japan Chemical Industry Association (JCIA) for strengthening chemical product management. JIPS is the Japanese version of the GPS (Global Product Strategy), international voluntary initiative for chemical product management.

Message from the Director in Charge of Environment and Safety

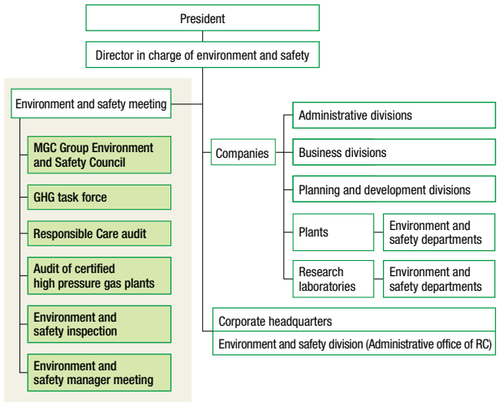
Kenji Inamasa
Senior Managing Executive Officer

MGC is continuing its initiatives under the RC Medium-Term Plan 2017, established last year, to foster a culture of safety and achieve zero occupational injuries and accidents. Over the past several years we have improved our safety performance by pushing forward with initiatives in working groups at each plant and undertaking initiatives aimed at improved communication, upgraded equipment, and enhanced on-site competency. However, in 2015 a chemical exposure accident occurred at the Niigata Plant in July and an explosion and fire in hydrogen peroxide production equipment at the Kashima Plant in November. Our company deeply regrets the concern and trouble placed on nearby residents and to stakeholders. While the incidents fortunately resulted in no personal injury or damage to the environment, they reaffirmed the magnitude of the social and managerial impact of accidents, and caused us to deeply feel our responsibility in the matter. To ensure that such accidents do not happen again, the Company is working as one to reevaluate the essential hazardousness of chemical substances, perform risk assessments at business sites, and take measures to address areas of danger and hazardous processes. In terms of the environment, we are continuing our efforts to set and meet the numerical targets in reduction of emissions of chemicals, reduction of industrial wastes, and energy saving measures. As a result, we have been able to cut the amount of PRTR substances and VOCs.

Under the safety philosophy that the top priority of our business activities is ensuring safety, we will continue to execute our RC Medium-Term Plan 2017. Doing so, we will aim to be a "superior and distinctive chemical company" as we continue our initiatives toward safe and secure production.

Responsible Care Promotion System

All of MGC's divisions, at both the segment and corporate level, follow fundamental environmental and safety principles that promote Responsible Care. Every December, MGC holds environment and safety meetings, which are chaired by the President and consist of all executive officers, division heads, and plant managers. MGC also takes steps to make continuous improvements in the PDCA cycle based on the RC Medium-Term Plan targets and annual activity targets.



RC Audits in 2015

The director in charge of environment and safety, together with an auditing team, conducts the RC audit. This audit assesses the implementation status of RC action plans at each of our sites while deciding upon and auditing high importance audit items for the year.

In 2015, we audited the status of 1) progress in activities (Bridge) to eliminate accidents, 2) partner companies' initiatives to prevent occupational injuries, 3) implementation of measures to prevent recurrence of past incidents, 4) implementation of countermeasures for medium-scale accidents and disaster reduction training incorporating these, 5) operation of reagent management systems, 6) conformity with the Act on Rational Use and Proper Management of Fluorocarbons, and 7) initiatives related to the prevention of falls.

- **Audit period**
  June – October, 2015
- **Auditees**
  5 plants, 3 laboratories (including Tokyo Techno Park), business divisions of 4 segments, Purchasing & Logistics Center
- **Audit findings**
  Full conformity (31 cases) Non-conformity (no cases) Improvement orders (8 cases) Comments (36 cases)
- **Follow-up issues identified in previous year**
  We audited the handling of items identified at workplaces in the previous year to confirm that proper measures have been taken.

RC audits (Niigata Plant)

Results and Plans for RC Activities at MGC

★★★ : Achieved ★★ : Mostly achieved ★ : Further efforts required

	RC Medium-Term Plan 2015–2017	2015 RC Action Plan		2015 Achievements	Assessment	2016 RC Action Plan
Occupational Health and Safety	1. Enhance everyday safety activities (*Kiken Yochi*: hazard prediction; *Hiyari Hatto*: near-miss incident identification activities; the 5Ss; etc.) 2. Enhance communications. 3. Prevent the occurrence of similar occupational injuries and similar incidents. 4. Prevent occupational injuries in partner companies. 5. Perform risk assessments for handled chemicals.	We will firmly establish the safety culture that was fostered through the Accident Zero (AZ) activity, and will share this culture with partner companies to eliminate industrial accidents. 1. Steadily continue daily safety activities (hazard prediction, *Hiyari Hatto* [near-miss] incident identification activities, 5Ss) to prevent these from becoming routine and stagnant. 2. Enhance communication within business sites. 3. Analysis of past case studies, case studies from other companies, HH case studies, etc. and horizontal communication of these to prevent the occurrence of similar incidents. 4. Activities to prevent occupational injuries at partner companies • Improve equipment, support education, conduct risk assessment in work and construction, enhancement communication, etc. 5. Conduct surveys of risks and hazards to workers from chemical substances (adapt to the Amendment of the Industrial Safety and Health Law).		1 We steadily undertook hazard prediction activities prior to work, *Hiyari Hatto* (near-miss) incident identification activities, and thorough 5Ss activities, including in unsteady situations. 2 Through patrols by plant managers, get-togethers with section chiefs, and other actions, we worked to enhance communication within business sites. 3 We carried out surveys of understanding concerning troubles, analysis of trouble diaries, checks of the effectiveness of past measures, and analysis and communication of major *Hiyari Hatto* (near-miss) incidents, and worked to communicate these horizontally across the company. 4 We built a framework for exchanging information among business sites and partner companies, strengthened patrols, and enhanced mutual interaction among Occupational Health and Safety Committee members and safety education, including education on entering plants. 5 As a part of PL education, we explained MGC's risk assessment methods and control banding methods at each business site, and held workshops as well. Every business site is moving forward with preparations to adapt to MGC's methods and control banding methods; some have already begun implementation.	★ ★	To achieve the targets of the RC Medium-Term Plan 2017, we will firmly establish the safety culture that was fostered through the AZ activity in which all employees took part, and will share this culture with partner companies to eliminate industrial accidents. 1. Steadily continue daily safety activities (hazard prediction, *Hiyari Hatto* [near-miss] incident identification activities, 5Ss) to prevent these from becoming routine and stagnant. 2. Enhance communication within business sites. 3. Analysis of past case studies, case studies from other companies, HH case studies, etc. and horizontal communication of these to prevent the occurrence of similar incidents. 4. Activities to prevent occupational injuries at partner companies • Improve equipment, support education, conduct risk assessment in work and construction, enhancement communication, etc. 5. Conduct surveys of risks and hazards to workers from chemical substances (adapt to the Amendment of the Industrial Safety and Health Law).
Process Safety and Disaster Prevention	1. Establish a framework for activities (Bridge) to eliminate accidents. 2. Adopt and operate the safety competency assessment system of the Japan Society for Safety Engineering. • Construct frameworks enabling plants themselves to practice PDCA. 3. Strengthen and deepen risk assessment. • Firmly establish activities composed of identification, reduction, and periodical review of risks. 4. Establish PDCA in education at business sites, including in OJT. 5. Analyze and horizontally communicate case studies from other companies, past case studies, *Hiyari Hatto* case studies, etc. 6. Enhance our disaster readiness framework. 7. Enhance equipment management and improve self-maintenance technologies. 8. Formulate "MGC Safety Standards" applicable to the entire MGC Group.	Work toward the strengthening of on-site competency and safety competency, and the elimination of accidents and irregularities. 1. Establish the Bridge framework. 2. Adopt the safety competency assessment system of the Japan Safety Competency Center. 3. Enforce risk assessments for unsteady situations (emergencies, startup, shutdown, operational errors, personnel changes, etc.) 4. Steadily implement RC education and training according to education guidelines (improvement, etc. of operational capability and emergency response capability; enhancement of education and training). 5. Prevent the occurrence of similar accidents through analysis of our and other companies' past case studies (use of the JCIA's Safety and Accident Prevention Guidelines, etc.) 6. Enhance our disaster readiness framework. 7. Enhance equipment management and prepare for the renewal of high pressure gas certification. 8. Consider MGC Safety Standards.		1. We established safety and disaster prevention subcommittees at all plants and promoted Bridge activities. At the Bridge leader conference, we exchanged accident case studies from business sites, along with ideas concerning safety information. We are now exchanging ideas on future Bridge activities. We held company-wide improvement presentation meetings to horizontally communicate environment and safety awards and other best practices from business sites. 2. We prepared a list of themes for improvement following self-evaluations at the Mizushima Plant, and pursued countermeasures. We completed evaluations in a manufacturing division at the Niigata Plant (No. 5 Chemicals Section) and are undertaking the activity at other manufacturing departments. 3. In accordance with the Safety and Accident Prevention Guidelines, we have completed identification of risks similar to the three major accidents in unsteady situation risk assessments, and are pursuing countermeasures. Some business sites have begun initiatives toward unsteady situation risk assessments to further enhance comprehensiveness. 4. Committees related to education have evaluated educational activities, and are operating the PDCA cycle with respect to safety education. To improve operations and our emergency response capabilities, we are converting standards manuals to "Know-Why." Some business sites are investigating initiatives to improve operational skills and the adoption of operation simulations. 5. We carried out surveys of understanding concerning troubles, analysis of trouble diaries, checks of the effectiveness of past measures, and analysis and communication of major *Hiyari Hatto* (near-miss) incidents, and worked to communicate these horizontally across the company. 6. We planned drills that simulate medium-scale accidents (i.e., the occurrence of accidents at multiple locations). After running the drills, we plan to identify issues and conduct reviews, including of the framework. 7. We are conducting equipment management according to MOSMS* priority. In particular, as leaks occurred at the Niigata Plant due to external corrosion and other equipment faults, we reviewed relevant frameworks, launched a working group, and began investigations. 8. We referred to OSHA*/PSM*, safety platforms (safety competency assessment systems), Safety and Disaster Prevention Guidelines (JCIA), and the Safety and Accident Prevention Guidelines and came up with a list of items and are creating a checklist.	★ ★	Work toward the strengthening of on-site competency and safety competency, and the elimination of accidents and irregularities. 1. Establish the Bridge framework. 2. Adopt the safety competency assessment system of the Japan Safety Competency Center. 3. Enforce risk assessments for unsteady situations (emergencies, startup, shutdown, operational errors, personnel changes, etc.) 4. Steadily implement RC education and training according to education guidelines (improvement, etc. of operational capability and emergency response capability; enhancement of education and training). 5. Prevent the occurrence of similar accidents through analysis of our and other companies' past case studies (use of the JCIA's Safety and Accident Prevention Guidelines, etc.) 6. Enhance our disaster readiness framework. 7. Enhance equipment management. 8. Begin formulation and operation of MGC Safety Standards).
Environmental Preservation	1. Reduce energy consumption intensity to 85% or lower of the FY 1990 level. • Implementation of energy saving measures and reduction of equipment problems 2. Reduce greenhouse gas emissions intensity to 72% or lower of the FY 1990 level.	Undertake social contribution through the environment, while continuing to reduce environmental impacts. 1., 2. Improve our energy consumption intensity and greenhouse gas emissions intensity. • Promote energy saving measures. • Operate stably through the reduction of equipment problems.		1., 2. Our FY 2015 energy consumption intensity was 95% that of FY 1990, the same as in FY 2014. Greenhouse gas (GHG) emissions intensity was 79% that of FY 1990, a 3.1% improvement from the previous year. We implemented over 60 measures to reduce energy consumption, including effective use of heat from waste gas and warm wastewater, strengthening of in-house power generation using excess steam, reduction of heat usage in purifying equipment, reviewing the fuels we use, switching to LED lighting, and adoption of new energy-saving equipment. These measures yielded an energy conservation effect equivalent to 16,000kL of crude oil, and a greenhouse gas emission reduction effect equivalent to 76,000 tons of CO_2.	★ ★	Undertake social contribution through the environment, while continuing to reduce environmental impacts. 1., 2. Improve our energy consumption intensity and greenhouse gas emissions intensity.
	3. Reduce emissions of PRTR substances by 10% compared with FY 2014.	3. Adapt to the PRTR Law. • Business sites will specify substances with high levels of emissions as key substances, and will draft and execute reduction plans for these.		3. The PRTR substance emissions volume for MGC alone in FY 2015 was 278 tons, a reduction of approximately 7% from FY 2014.	★ ★ ★	3. Continue notifications and reduction of emissions in accordance with the PRTR Law.
	4. Maintain zero emission of wastes (Zero emissions at MGC: 0.3% or less final disposal of generated wastes, by weight). 5. Reduce generated waste volume by 10% compared with FY 2014.	4., 5. Continue zero emissions initiatives. • Maintain low levels of final disposal of wastes. • Work to reduce our volume of generated wastes.		4. The zero emissions rate for MGC overall in FY 2015 was 0.89%, meaning that we did not achieve zero emissions. (This was due to the temporary generation of landfilled wastes accompanying the decommissioning of a portion of business at the Niigata Plant. The other seven business sites individually maintained zero emissions, and are undertaking even further reductions in final disposal.) 5. Generated waste volume at MGC in FY 2015 was 78,000 tons, a reduction of about 3% from 81,000 tons in FY 2014.	★	4., 5. Continue measures to reduce wastes.
	6. Promote initiatives related to conservation of biodiversity. 7. Formulate methods for evaluation of environmentally friendly products.	6. Initiatives toward the preservation of biodiversity. • Actively participate in and cooperate with nature conservation and environmental beautification activities near our business sites. • Consider specific activities for the preservation of biodiversity. 7. Consider methods for evaluation of environmentally friendly products.		6. In addition to maintenance of the forest preserve surrounding the Niigata Plant and the Yokkaichi Plant's receipt of an outside award in a plant cultivation contest (along with a special award in our 8th company-wide improvement presentation meetings for the same event), we participated in cleanup activities around our business sites. 7. We launched a survey of evaluation methods used for environmentally conscious products at other companies.	★ ★	6. Promote initiatives toward the preservation of biodiversity. 7. Consider methods for evaluation of environmentally friendly products.
Chemical and Product Safety	1. Provide up-to-date safety information on handled chemical products and incorporate information into SDSs (safety data sheets). 2. Risk management for handled chemical products. • Participate in JIPS. • Risk management for new products. 3. Adapt to EU REACH regulation and other overseas regulations.	We will carry out risk management of products. 1. Provide up-to-date information through SDSs. • Comply with new JIS (JIS Z 7253) for SDSs (with completion by December 2015). • Acquire and disseminate the latest versions of raw material SDSs. 2. Risk management of handled chemical products. • Participate in the JIPS initiative of the JCIA and creation of Safety Summaries. • Promote risk assessment for new products. 3. Adapt to REACH regulation. • Adapt to EU REACH regulation. • Adapt to regulations of non-EU countries. 4. Reinforce management of chemical reagents.		1. We created and revised 1,122 SDSs to reflect up-to-date information. We completed compliance with new JIS for SDSs in all divisions in December. We obtained the latest versions of raw materials SDSs and stored these in our environment and safety database. 2. We collected information on risk assessment tools (GSSMaker), etc. for the creation of Safety Summaries. Internal safety studies for new products conducted in 2015 consisted of 13 acute toxicity studies, 15 Ames mutagenicity studies, 4 primary skin irritation studies, and 1 pathogenicity study, for 33 in total (compared with a respective 37, 10, 12, and 0 studies, respectively for a total of 59, in 2014). 3. In preparation for REACH registration, we created the analysis reports for 14 substances scheduled for registration in 2018. With regard to non-EU foreign regulations, we provided by email, information obtained from industry associations. . 4. To enhance the reagent management system, we increased the number of login IDs and adopted a backup system. Operation of the reagent management system began in May 2015 at all business sites. 5. We put the following forms on the computer system. • Warning label (product label) screening forms • SDS registration request forms • Safety testing request form for external parties (for internal contact purposes)	★ ★ ★	We will carry out risk management of products. 1. Provide up-to-date information through SDSs. 2. Manage risks in handled chemical products. • Participate in the JIPS initiative of the JCIA and creation of Safety Summaries. • Promote risk assessment for new products. 3. Adapt to foreign regulations. • Adapt to EU REACH regulation. • Adapt to regulations of non-EU countries.

* **MOSMS:** Maintenance Optimum Strategic Management System. A plan-led mechanism for equipment maintenance, advocated by the Japan Institute of Plant Maintenance.

* **OSHA:** Occupational Safety and Health Administration.
* **PSM:** Process Safety Management.

Occupational Health and Safety, Process Safety, and Disaster Prevention

MGC's top priority is to ensure safety, and we have a proactive approach aimed at zero accidents and zero occupational injuries.

Safety Philosophy

Ensuring safety is the top priority of our business activity.

Safety is the basis of our business activity and ensuring safety is our duty to society.

Occupational Health and Safety Initiatives

To achieve our objective of no occupational injuries, our workplaces continuously engage in everyday safety activities such as 5S activities, hazard prediction, and proposals to address *Hiyari Hatto* (near-miss) incidents. Our worksites also advance various safety activities such as safety related education and drills, and occupational health and safety risk assessments.

Commendation ceremony for safe driving(Yamakita Plant)

Safety assembly (Mizushima Plant)

Safety patrols (Niigata Plant)

Laboratory director patrol (Niigata Research Laboratory)

Basic lifesaving (AED) course (Hiratsuka Research Laboratory)

New employees participating in hands-on disaster drills (Yokkaichi Plant)

Safety performance

In 2015, occupational injury incidents resulting in lost time totaled one case at MGC, and two cases at partner companies.

Change in lost time injury frequency rate*1

	2011	2012	2013	2014	2015
MGC	0.54	0.80	0	0	0.27
Chemical industry	0.88	0.85	0.82	0.76	0.81
Manufacturing industry	1.05	1.00	0.94	1.06	1.06

***1 Frequency rate:** Number of occupational injury casualties per one million working hours

Change in lost time injury severity rate*2

	2011	2012	2013	2014	2015
MGC	0.01	0.03	0	0	0.00
Chemical industry	0.04	0.12	0.12	0.17	0.04
Manufacturing industry	0.08	0.10	0.10	0.09	0.06

***2 Severity rate:** Number of lost working days per 1,000 working hours

Preventing occupational injuries at partner companies

We share information on occupational injuries, perform risk assessments, provide safety education, and carry out joint disaster reduction training aimed at industrial accident prevention in partner companies, while we work to enhance our cooperative frameworks. In some plants, we also conduct audits and safety inspections of partner companies.

Regular maintenance safety assembly (Kashima Plant)

Hazard prediction activities at partner companies (Niigata Plant)

Process Safety and Disaster Prevention Activities

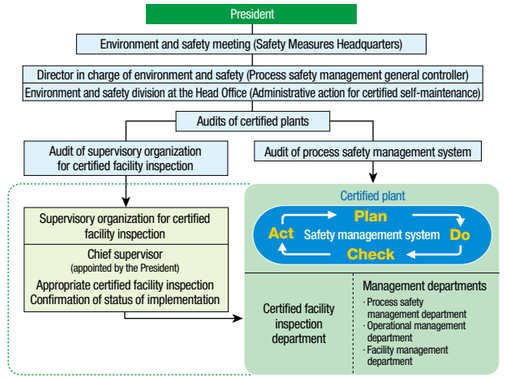
To prevent the occurrence of accidents and injuries, it is important to continue stable operation by ensuring safety of production processes and soundness of equipment. In each plant, we utilize equipment maintenance (M3) and other systems to conduct checks and make renewal plans, and perform checks, repairs, and renewals with priority set according to risk and the importance of facilities.

In response to the accidents that occurred at the Niigata Plant and Kashima Plant in 2015, we enhanced our accident cause analysis and implementation of countermeasures, and undertook initiatives to prevent recurrence. We also implemented comprehensive inspections of equipment and processes, envisioning work in unsteady situations such as an emergency shutdown, and are undertaking measures to reduce identified risks.

Certified high pressure gas plants

Niigata Plant and Mizushima Plant, which are high pressure gas safety management code certified plants, are audited by the Director in charge of environment and safety (Process Safety Management General Controller) under the company rules for "High pressure gas certification safety management". The aim of our audits is to objectively evaluate the high pressure gas safety management system and the certified inspection management framework to ensure that they are working effectively.

Certified process safety management system for high pressure gas



Responding to emergencies

In preparation for accidents, we establish a self disaster readiness framework at each business site and carry out various disaster reduction drills according to sites' annual plans.

Comprehensive disaster prevention drill (Mizushima Plant)

Fire hose drills (Niigata Plant)

Logistics accident simulation drill (Yokkaichi Plant)

Marine rapid response drill (Kashima Plant)

Accident Elimination (Bridge) Activities

As a result of undertaking a company-wide project to eliminate accidents (Accident Zero, or AZ) from 2008 to 2013, MGC succeeded in steadily reducing accidents and occupational injuries.

From FY 2014, we have been working through the local safety and disaster prevention subcommittee in each plant to tackle the resolution of plant-specific themes, from a frontline perspective through working group activities by subcommittee members. We are doing so under the label Bridge activities, through which we seek to carry forward the achievements of AZ activities.

In these activities, we continue to undertake actions with improvement of "on-site competency" in individuals and organizations and prevention of equipment and operational problems through cooperation with the Production Technology Division as key policies. At the same time, our Environment and Safety Division and Production Technology Division are cooperating to continue support for accident and trouble countermeasures at plants, along with initiatives to improve on-site competency. We are also moving forward with evaluations of the safety competency assessment system of the Japan Society for Safety Engineering, which we began successively applying to plants in FY 2014. With respect to the evaluations, we are establishing a self-led improvement system that identifies weaknesses in plants and manufacturing departments, formulates action plans to overcome the weaknesses, and addresses them through the PDCA cycle.

Along with holding company-wide improvement presentation meetings that integrate our past company-wide safety presentation meetings and company-wide production technology improvement presentation meetings, we worked to enhance information exchange and communication through means that include company-wide networking of educational materials and reports concerning safety and disaster preparedness and occupational safety, and leveraging these at all business sites.

Internal evaluations of safety competency (Niigata Plant)

Bridge leader conference

Company-wide improvement reports

Operations training simulator (Niigata Plant)

Environmental Impacts Accompanying Business Activities
(Domestic MGC Group)

Member companies of the MGC Group Environment and Safety Council in Japan make efforts to contribute to the reduction of environmental impacts and the sustainable development of society, in accordance with the MGC Group's fundamental environmental and safety principles.
The table below displays the environmental impact of the MGC Group's operations in Japan in FY 2015.

Total for the domestic MGC Group*1

FY 2014*2	FY 2015
Sites tabulated: 67	Sites tabulated: 66

INPUTS	Units	2014	2015
Energy consumption (crude oil equivalent)	1,000 kL	595	567
Water usage			
Tap water	1,000 m^3	1,196	1,279
Industrial water	1,000 m^3	24,582	22,060
Groundwater	1,000 m^3	1,395	1,358
River water	1,000 m^3	10,660	9,131
Others	1,000 m^3	1,250	1,240
Total water consumption	1,000 m^3	39,084	35,068

OUTPUTS	Units	2014	2015
Emissions to atmosphere			
Greenhouse gas emissions (CO_2 equivalent)	1,000 tons	1,431	1,280
SOx	tons	66	72
NOx	tons	669	628
Soot and dust emissions	tons	17	19
Released to water area			
Drainage volume	1,000 m^3	42,298	30,928
COD emissions	tons	266	196
Total nitrogen emissions	tons	447	283
Total phosphorus emissions	tons	38	46
Generation of waste			
Amount generated	tons	140,093	128,356
Amount recycled (including amount sold)	tons	40,134	37,860
Transfer to off-site	tons	36,241	34,700
Final disposal	tons	3,469	2,278
Notified substances under PRTR Law			
Emissions (air)	tons	1,452	892
Emissions (water)	tons	20	20
Emissions (soil)	tons	0	0
Total amount emitted	tons	1,472	913
Total amount transferred	tons	868	628

MGC alone

FY 2014*2	FY 2015
Sites tabulated: 13	Sites tabulated: 13

INPUTS	Units	2014	2015
Energy consumption (crude oil equivalent)	1,000 kL	497	472
Water usage			
Tap water	1,000 m^3	672	606
Industrial water	1,000 m^3	21,397	19,022
Groundwater	1,000 m^3	387	452
River water	1,000 m^3	10,660	9,131
Others	1,000 m^3	934	898
Total water consumption	1,000 m^3	34,050	30,110

OUTPUTS	Units	2014	2015
Emissions to atmosphere			
Greenhouse gas emissions (CO_2 equivalent)	1,000 tons	1,196	1,052
SOx	tons	53	54
NOx	tons	600	576
Soot and dust emissions	tons	10	8
Released to water area			
Drainage volume	1,000 m^3	33,394	27,585
COD emissions	tons	238	174
Total nitrogen emissions	tons	428	263
Total phosphorus emissions	tons	35	45
Generation of waste			
Amount generated	tons	81,172	78,496
Amount recycled (including amount sold)	tons	20,956	20,675
Transfer to off-site	tons	8,229	8,472
Final disposal	tons	1,086	700
Notified substances under PRTR Law			
Emissions (air)	tons	284	257
Emissions (water)	tons	14	20
Emissions (soil)	tons	0	0
Total amount emitted	tons	298	278
Total amount transferred	tons	363	237

*1 The total for the domestic MGC Group is the sum of environmental impact data for the MGC Group's main domestic manufacturing and processing businesses (member companies of the MGC Group Environment and Safety Council; see pages 44 to 46) and MGC itself (production sites such as plants and non-production sites such as laboratories and sales offices, with MGC training centers and company-owned recreation facilities together treated as the equivalent of one site).
The environmental impact values shown in the table for the Group as a whole capture over 90% of the scope of consolidated accounting for the MGC Group in Japan.
*2 FY 2014 data may appear differently in CSR Report 2015 because it has been revised.

Environmental Impacts Accompanying Business Activities
(Overseas MGC Group)

MGC surveys and compiles environmental impact data for group companies sited overseas that engage in manufacturing. Data for 2014 and 2015 covers 14 companies and 16 sites.

Overseas MGC Group Companies*3

2014*2	2015
Sites tabulated: 16*4	Sites tabulated: 16*4

INPUTS	Units	2014	2015
Energy consumption (crude oil equivalent)	1,000 kL	—	320
Water usage			
Tap water	1,000 m^3	287	317
Industrial water	1,000 m^3	4,537	4,757
Groundwater	1,000 m^3	8	10
River water	1,000 m^3	0	0
Others	1,000 m^3	2,033	2,117
Total water consumption	1,000 m^3	6,864	7,200

OUTPUTS	Units	2014	2015
Emissions to atmosphere			
Greenhouse gas emissions (CO_2 equivalent)	1,000 tons	—	2,439
Released to water area			
Drainage volume	1,000 m^3	3,928	4,115
Generation of waste			
Amount generated	tons	10,038	10,186
Amount recycled (including amount sold)	tons	7,186	7,236
Final disposal	tons	1,138	1,034
Notified substances under PRTR (TRI) Law			
Emissions (air)	tons	73	93
Emissions (water)	tons	26	27
Emissions (soil)	tons	0	0
Total amount emitted	tons	98	120
Total amount transferred	tons	251	346

*3 Targeted companies: AGELESS (THAILAND) CO., LTD.; KOREA ENGINEERING PLASTICS CO., LTD.; MGC ADVANCED POLYMERS, INC.; MGC ELECTROTECHNO (THAILAND) CO., LTD.; MGC PURE CHEMICALS AMERICA, INC.; MGC PURE CHEMICALS TAIWAN, INC.; MITSUBISHI GAS CHEMICAL ENGINEERING-PLASTICS (SHANGHAI) CO., LTD.; MGC PURE CHEMICALS SINGAPORE PTE. LTD.; PT PEROKSIDA INDONESIA PRATAMA; SAMYOUNG PURE CHEMICALS CO., LTD.; SUZHOU MGC SUHUA PEROXIDE CO., LTD.; TE AN LING TIAN (NANJING) FINE CHEMICAL CO., LTD.; THAI POLYACETAL CO., LTD.; THAI POLYCARBONATE CO., LTD.
*4 As some data is not collected for some companies, data may not be available for all locations.
Note: Groundwater usage volume by the overseas MCG Group on P34 of CSR Report 2015 was in error. The correct data is 5,000m^3 in 2013 and 8,000m^3 in 2014.

Preservation of Biodiversity
(MGC alone)

Endorsing the aims of the Keidanren (Japan Business Federation) Declaration of Biodiversity, MGC signed on as a promotional partner of the Declaration in 2009.

In 2014, MGC became a member of the Keidanren Nature Conservation Committee with the aim of engaging in activities to protect the natural environment and conserve biodiversity.

Among the chemical substances handled by the chemical industry are many which may have a severe impact on human health and ecosystems if unintentionally released into nature.

Carrying out its business activities with a keen awareness of this, MGC will strive to maintain a rich natural environment and preserve biodiversity through chemical management founded on responsible care, environmental preservation, conservation of resources and energy, and the development of environmentally conscious products and technologies. Doing so, we will contribute to sustainable development.

In addition, we are undertaking activities related to biodiversity through close-at-hand activities such as flower campaigns and maintenance of forest preserves around plants (see page 30). These activities are gradually becoming widespread, with results that include an outside award given to a plant that participated in a plant cultivation contest.

Initiatives for the Prevention of Global Warming (MGC alone)

At MGC, each sector—manufacturing, transportation, office and residence—is making efforts to prevent global warming.

FY 2015 energy consumption and greenhouse gas (GHG) emissions for all of MGC's business activities were as follows. Emissions from plants' manufacturing divisions account for 97% of greenhouse gas emissions.

	Energy consumption (1,000 kL crude oil equivalent)	Greenhouse gas emissions (1,000 tons CO_2 equivalent)
Plant Manufacturing Division	465.2	1,040.1
Transportation Sector (shipper)	10.3	26.5
Office Area	6.3	12.2
Business activities overall	**481.9**	**1,078.8**

The Plant Manufacturing Division, which is at the center of the initiatives, has set the following targets and is working on measures.

Energy consumption intensity*1: Reduce to 85% or lower compared with FY 1990 levels by FY 2017
GHG emissions intensity*2: Reduce to 72% or lower compared with FY 1990 levels by FY 2017

***1 Energy consumption intensity:** The amount of energy consumption per unit of production volume
***2 Greenhouse gas emissions intensity:** The amount of GHG emissions per unit of production volume

Manufacturing Plant Initiatives

We undertook reductions in energy consumption and GHG emissions in manufacturing plants, and in FY 2015 we succeeded in year-on-year reductions in energy consumption of 5% and GHG emissions of 3%.

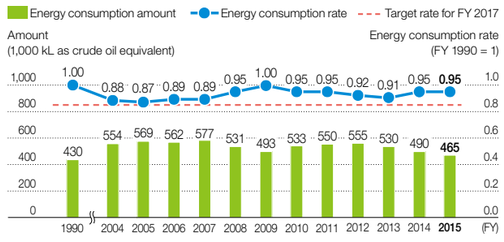
Energy consumption intensity was 95% that of FY 1990, the same as in the previous year, while GHG emissions intensity was 79% that of FY 1990, a 3.1% improvement from the previous year.

We implemented over 60 measures to reduce energy consumption, including recovering heat from waste gas and hot wastewater, recovering excess steam, reducing heat consumption at the refinery, changing fuels, switching to LED lighting, and adopting new energy-saving equipment.

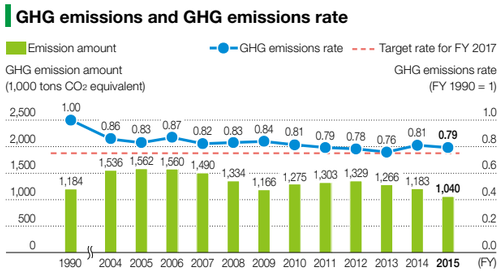
The energy conserved by these measures has risen to 16,000 kL crude oil equivalent. The reduction in GHG emissions is 76,000 tons CO_2 equivalent.

Looking ahead, we are planning measures including the adoption of new-model co-generation systems and recovery of heat from incineration.

Energy consumption amount and consumption rate



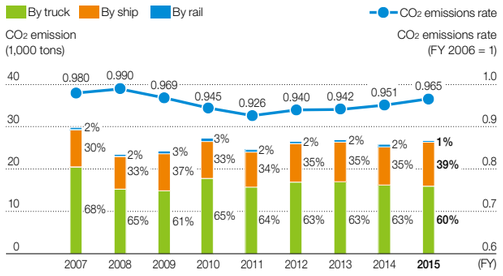
GHG emissions and GHG emissions rate



Initiatives in the Transportation Sector

In our transportation sector, we have undertaken energy-saving initiatives focused on enlarging transport lots and making a modal shift to rail transport. In FY 2015, energy consumption and GHG emissions each increased by 7% due to a 5% increase in transportation volume (as measured in ton-kilometers, or transport weight × transport distance).

CO_2 emissions



We improved the heat efficiency of co-generation facilities

In order to efficiently use energy in MGC's plants, we are making use of co-generation facilities that simultaneously performs power generation and heating. Unlike thermal power generation operated primarily to generate electricity, co-generation also performs heating of various raw materials required by chemical plants, enabling an overall increase in energy efficiency and contributing to the reduction of GHG emissions.

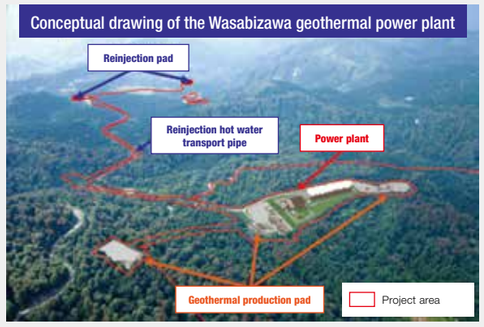
With co-generation facilities, reducing the amount of fuel used and raising energy efficiency are everyday tasks. We expanded heat recovery equipment in the Yokkaichi Plant in FY 2015. This equipment uses steam from the hot water accumulated in boilers, and has allowed us to achieve a 1.0% improvement in energy efficiency. The conserved energy is 24 kL crude oil equivalent per month, while the reduced GHG emissions are about 13 tons CO_2 equivalent. Converted to city gas usage by average households, the recovered energy is equivalent to about 1 month of usage by 240 houses (or 20 years of usage by 1 house).

We are developing geothermal energy

MGC is participating in a project to develop and generate electricity from geothermal energy, a type of renewable energy. Environmentally friendly and clean, geothermal energy emits minimal CO_2 during power generation and is a renewable resource that can last forever if used appropriately. Geothermal power also shows great promise for being generated entirely within Japan making good use of our abundant resources. There are also high hopes for it because of its advantage as a base-load power source unaffected by weather or seasons.

Over the past 20 years, MGC has conducted a joint project in Hachimantai, Akita Prefecture, to supply an adjacent power plant with geothermal steam. In May 2015, we began construction of the Wasabizawa geothermal power plant as part of a joint project in Yuzawa, Akita Prefecture. The power plant is expected to begin operation in 2019 and achieves an output of 42,000 kW, or the equivalent of 70,000 average households' power usage.

We are also taking part in several survey projects in Hokkaido and the Tohoku region, with the aim of constructing new geothermal power plants. (See page 16 for the latest information on this project.)



Activities in the Office Area

We conduct a number of proactive measures to reduce energy consumption at our head office and laboratories, including switching to LED lighting, participating in 'Cool Biz' during summer and 'Warm Biz' during winter, and shortening the hours of air conditioning operation.

As a result of undertaking these measures, we succeeded in reducing our GHG emissions by 1% in FY 2015.

Looking ahead, we are planning initiatives that include increasing the efficiency of LED lighting and air conditioning.

Energy consumption in the office area

FY	Energy consumption (1,000 kL crude oil equivalent)	Greenhouse gas emissions (1,000 tons-CO_2 equivalent)
2010	6.68	11.05
2011	5.66	8.98
2012	5.80	10.67
2013	6.17	12.41
2014	6.14	12.32
2015	6.34	12.20

Reducing Chemical Substance Emissions (Domestic MGC Group)

Each MGC Group company assesses and issues notifications on substances subject to the Pollutant Release and Transfer Register (PRTR), while working to reduce the amounts released and transferred.

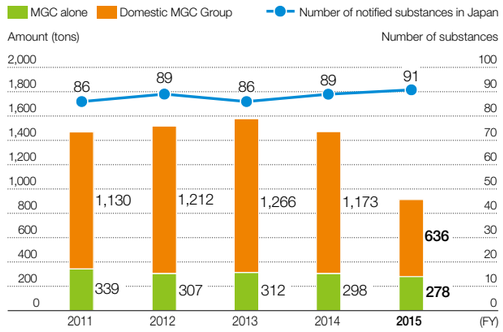
Substances Subject to Notification under the PRTR Law

In FY 2015, the number of substances subject to notification due to handling in excess of prescribed amounts was 91 for the MGC Group overall, with the respective companies and business sites conducting notifications.

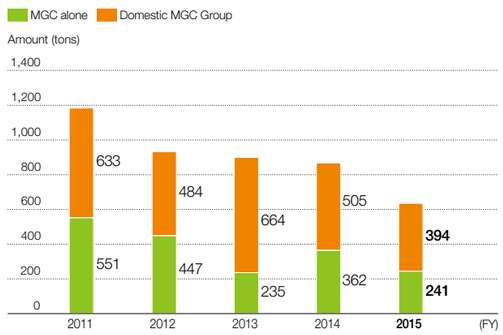
Our annual emission of these substances totaled 914 tons, a decrease of about 38% from 1,471 tons in the previous year. The primary reason for the reduction was the plan undertaken by JSP Corporation, a Group company, to replace a PRTR-targeted blowing agent used in the manufacture of a portion of its products with a non-PRTR-targeted blowing agent.

The Group's amount of transfers totaled 635 tons, a decrease of 232 tons, or about 27%, from the previous year. The primary reason for the decrease was the completion of the temporary outside waste processing that we performed last fiscal year.

PRTR Law substance emissions



PRTR Law substance transfers



* PRTR emissions volume and transfer volume have been revised because of changes to tabulation data for FY 2014.

PRTR Law Substances with High Levels of Emissions

Among the substances registered under the PRTR Law, those listed below are emitted by the entire MGC Group in amounts of 10 tons or more.

- **Chloromethane (574 tons)**
- **1,2,4-Trimethylbenzene (176 tons)**
- **Dichloromethane (45 tons)**
- **Xylene (20 tons)**
- **Toluene (14 tons)**

Japan Chemical Industry Association PRTR-Targeted Substances (MGC alone)

As of 2015, the Japan Chemical Industry Association (JCIA), of which MGC is a member, has specified 328 Class I Designated Chemical Substances stipulated by the PRTR Law, and a JCIA specified 90 substance plus 1 substance group as voluntary PRTR-targeted substances (with only atmospheric emissions calculated for the JCIA-specified substances). The entire chemical industry is working toward the reduction of emissions of these PRTR substances.

The amount of the substances emitted by MGC in FY 2015 totaled 73 substances and 278 tons, a decrease of about 20 tons, or about 7%, from 298 tons in the previous fiscal year.

Volatile Organic Compounds (VOCs) (MGC alone)

At MGC (alone), PRTR substances for which notification was provided under law, and substances stipulated by JCIA for which there was release into the atmosphere, are tallied as VOCs.

Atmospheric release of VOCs in FY 2015 totaled 23 substances and about 349 tons, a decrease of about 8 tons, or about 2%, from 358 tons in the previous fiscal year.

Reduction of Waste (Global MGC Group)

Each MGC Group company is striving to reduce waste by promoting the 3Rs of waste (Reduce, Reuse, Recycle), and to undertake the proper disposal of wastes in accordance with law.

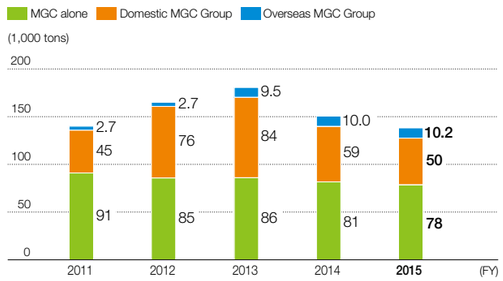
Waste Reduction Achievement

FY 2015 waste amounts totaled about 138,500 tons Group-wide, a decrease of about 11,600 tons, or about 8%, from the previous year.

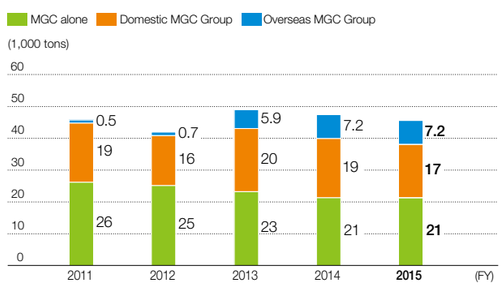
Final disposal for the Group totaled 3,312 tons, a decrease of 1,295 tons from the previous year. This was primarily due to an end to the generation of unneeded items associated with the review of business in the domestic group.

The increase in final disposal amount in FY 2014 and 2015 for MGC alone was a one-off increase associated with review of business.

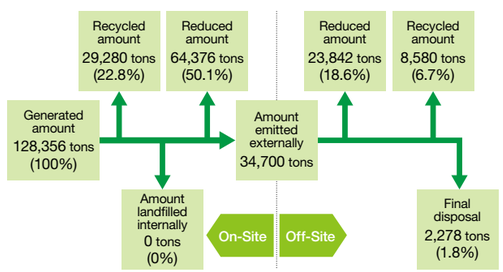
Amount of waste generated



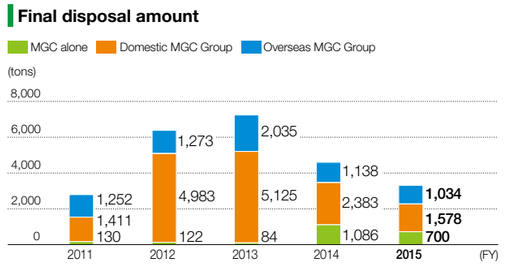
Recycled amount



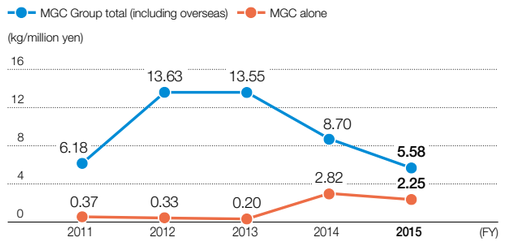
Waste treatment in the domestic MGC group in FY 2015



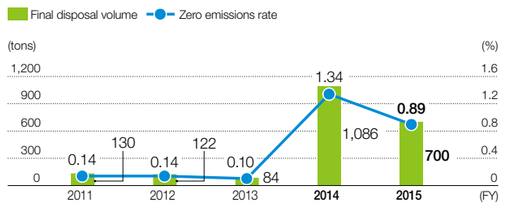
Final disposal amount



Final disposal intensity compared to net sales



Final disposal volume and zero emissions rate (MGC alone)



* Past data has been reviewed and corrected.

Promoting the pulping and reuse of office paper and the recycling of plastic bottle caps (MGC alone)

MGC separates and collects used office paper and confidential documents, and pulps these through outsourced contractors. Pulping prevents the generation of CO_2, and allows paper to be reborn as recycled paper.

In addition, with the cooperation of vending machine sellers, plastic bottle caps are collected from our offices for recycling. These are used to aid welfare activities including support for vaccines in developing countries.

Collection box for paper

Collection container for plastic bottle caps

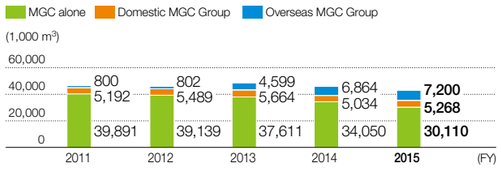
Conservation of Water and Atmospheric Environments
(Global MGC Group)

To preserve the soundness of the water and air resources so vital to the Earth and to use them sustainably, MCG Group companies monitor use and emissions of these resources.

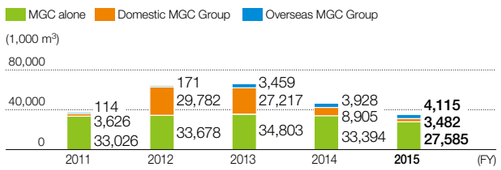
Water Consumption/Wastewater Volume

The increase in wastewater in FY 2012 and FY 2013 in our domestic Group was a one-off event due to the intensive processing of wastewater stored in tanks associated with the decommissioning of facilities.

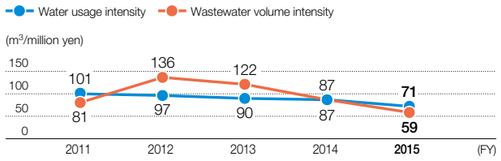
Water consumption



Wastewater



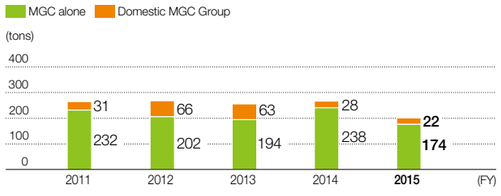
Global water usage/wastewater volume intensity compared to consolidated net sales



Preservation of the Water Environment (Domestic Group)

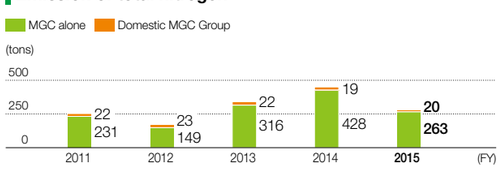
The increase in nitrogen seen during FY 2013 was a one-off increase due to processing of wastewater associated with the decommissioning of facilities.

Emission of COD

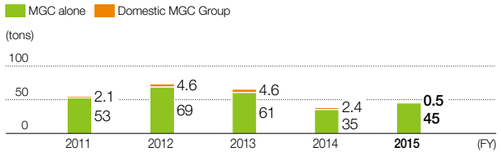


Note: Past data on this page has been reviewed and corrected.

Emission of total nitrogen

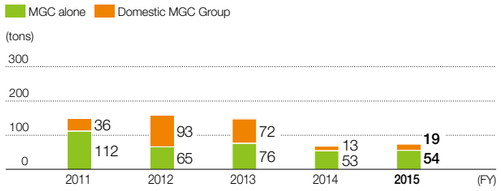


Emission of total phosphorous

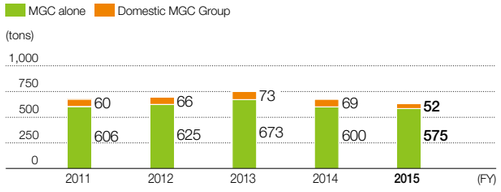


Preservation of Atmospheric Environment (Domestic Group)

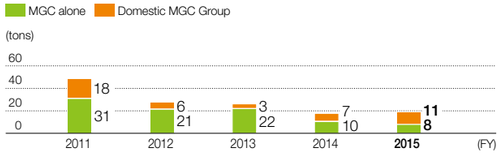
Emission of SOx



Emission of NOx



Emission of soot and dust



* Data on substances emitted into water and air environments is at present known only for domestic group companies.

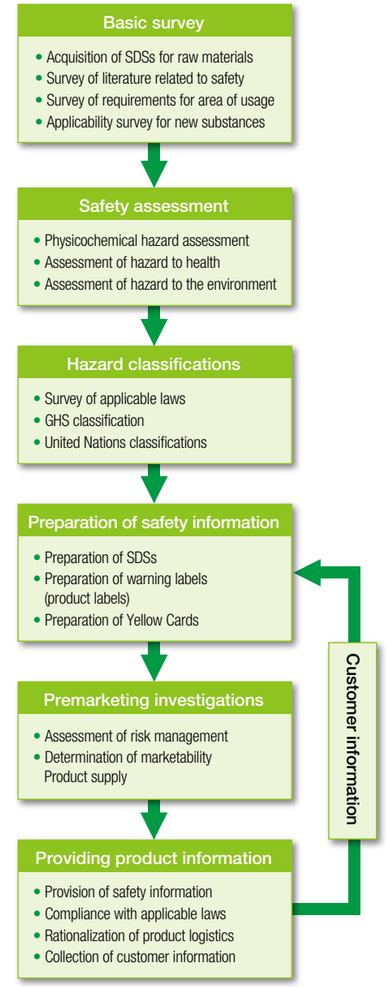
Safety Management of Chemicals and Products

As a responsible provider of chemical products, MGC clearly explains properties, safety, and handling of its chemical products, as well as deploying various activities to protect the environment and to ensure the health and safety of all who use our products.

Safety Assessment of Chemical Substances and Products

At the development stage of products, MGC first conducts basic surveys and safety assessments. When products correspond to new chemical substances, we submit the notifications required by law and conduct necessary safety testing. We then classify products according to whether they do or do not come under each legal regulation, as well as according to their degree of hazard under standards such as GHS,*1 and create safety information such as safety data sheets (SDSs). Based on these, we perform risk assessments (based on hazards of the substances themselves and exposure) for all product processes, from manufacture to disposal, and offer the products after appraisal.

*1 **GHS:** The Globally Harmonized System of Classification and Labeling of Chemicals. Chemical hazards are classified under fixed standards and are indicated clearly with pictograms on labels and SDS documentation. Ultimately, the information contributes to accident prevention, human health, and environmental preservation.



Providing Safety Information

MGC provides safety information on chemicals through means including submission of product SDSs, placement of product warning labels on containers, and distribution of Yellow Cards.

Safety data sheets (SDSs)

SDSs are documents that convey detailed information about the handling and safety of chemicals, and are submitted to companies that handle MGC's chemicals, such as customers, sales agents, and shipping companies. SDSs that conform to GHS-compliant JIS (JIS Z 7253) are available for all of our products; we are now working to further enhance the listed safety information.

Labels

Easy-to-understand GHS-compliant warnings and safety information for users are printed on labels affixed to our chemical products. We are revising the SDSs by reviewing the safety information, and are revising labels as well.

Yellow cards

A Yellow Card is a card readied in preparation for an accident during domestic shipment. It briefly lists a product's properties, laws that apply to the product, and emergency response measures, as well as contact information including fire departments, police departments, and MGC. We distribute these cards to shippers of chemicals, and ensure that they are carried during product shipments.

Safety Management of Chemicals and Products

Chemical and Product Safety Education

MGC conducts chemical and product safety education within its product liability (PL) training at each business site. In 2015, we conducted education on methods for safety evaluations in the product development process and on the work necessary to bring products to market.

As additional chemical substances became subject to mandatory risk assessments under the June 1, 2016 revisions to the Industrial Safety and Health Act, we conducted education on risk assessment methods for use in the handling of various chemical substances.

Compliance with EU REACH Regulation and Extending it to JIPS

As one adaption to the EU's REACH regulation for chemical product management, we are registering chemical substances that are exported to Europe. Since a portion of this registered information meshes with the activities of the Japan Initiative of Product Stewardship (JIPS) initiative of the JCIA, we are taking the hazard information and risk (exposure) information used for REACH registration and extending it to JIPS as well, while also making active use of it in our management of chemical substances.

GPS/JIPS Safety Summary

Emergency Responses in Distribution

At MGC workplaces, we have set up a wide-area support system that includes supplying emergency goods and apparatus to production sites and establishing communication between sites to facilitate emergency responses to accidents that occur during transportation. Because of our preparation of response systems and supplies, we cooperate with local police or fire departments upon request, should an accident occur during another company's transport of product in the vicinity of our workplaces.

We conduct training for scenarios that include terrorism, logistics accidents, and shipping accidents with marine spills that require oil barrier deployment.

Oil barrier deployment drill (Mizushima Plant)

Joint logistics disaster preparedness drills Yamakita Plant)

Logistics accident response drill (Naniwa Plant)

Logistics accident response drill (Yokkaichi Plant)

GLP certified testing facility

The MGC Niigata Research Laboratory is recognized by the Japanese government as conforming to GLP* test facilities for Ames mutagenicity study. GLP test reports command high confidence internationally. In addition, as GLP test reports can be used in notifications under the Industrial Safety and Health Law and the Law concerning the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc., we conduct GLP tests when notifications are necessary for new chemical substances that are part of our product development.

We conduct testing to assess the safety of the chemicals handled by the MGC Group, including acute oral toxicity studies, primary skin irritation tests studies, and pathogenicity studies.

* **GLP (Good Laboratory Practice):** GLP is a system which ensures the reliability of test results, through government recognition of excellent testing facilities that demonstrate GLP standards-based management, testing equipment, test planning, internal auditing systems, reliability assurance systems, and compliance with test result standards.

Colony analyzer

Environmental Accounting (MGC alone)

Through environmental accounting in accordance with guidelines by the Ministry of the Environment, MGC has quantitatively calculated and released the investment amount and costs of environmental preservation required for the business activities of MGC (alone), as well as the real economic benefits obtained.

Environmental Preservation Cost and Economic Benefits

Investment amount

The total amount of investment related to environmental preservation activities in FY 2015 was 3.3 billion yen. Major investments include the upgrading of co-generation equipment at the Mizushima Plant.

Expenses

Total expenses related to environmental conservation activities in FY 2015 were 7.8 billion yen. Of these, the highest expense was 2.7 billion yen for research and development, accounting for 34% of the total.

Economic benefits

The reduction of expenses through energy saving measures and the income from the sale of unneeded items generated in our business activities were recorded as real economic benefit.

Economic benefit

Title	Item	Amount (millions of yen)
Income	Profit on sale of valuable waste, etc.	25.9
Reduction of expenses	Effects due to energy saving	355.7

Environmental preservation cost

Breakdown			Main areas of activity	(millions of yen)	
				Investment	Expenses
Onsite cost	Pollution prevention cost	Air pollution prevention	Installation of PRTR substance collection equipment	253.8	727.0
		Water pollution prevention	Installation, reinforcement, and maintenance of wastewater treatment facilities and measuring equipment	103.4	1,606.9
		Soil, Noise	Prevention of soil infiltration	112.5	0.5
	Global environmental preservation cost		Upgrading of co-generation equipment; efficiency improvements in incineration facilities	2,554.8	1,216.3
	Resources recycling cost		Material and thermal recycling of waste	3.0	853.8
Up or down stream cost			Retrieval and reuse of product containers; yellow card management	0.0	51.2
Management activity cost			Maintenance of green spaces and environmental-related analysis	31.6	595.2
R&D cost			Research and development of energy-saving technologies and environmentally friendly products	263.7	2,729.3
Social contribution cost			Greening of surrounding areas; support for environmental conservation organizations	0.0	10.9
Environmental damage cost			Pollution impacts levy	0.0	75.9
Total				3,322.8	7,867.0

Compliance with the Ministry of the Environment's Environmental Accounting Guidelines 2005

Period: From April 1, 2015 to March 31, 2016

Scope: MGC only

Methods: Investments were proportionally related to the approved or enforced amount of capital expenditure to environmental preservation. Expenses were proportionally related to the ratio of environmental preservation and include depreciation allowance.

Environmental Preservation Investments

MGC began undertaking environmental preservation investments in FY 2015.

Environmental preservation investments are those investments which are difficult to adopt in conventional investment projects for reasons including long return on investment periods, but for which we are internally soliciting projects with large environmental burden reduction effects, aiming for execution on a total scale of about 100 million yen.

As an example, investment to replace air conditioning equipment with new energy-saving types promotes energy conservation and can reduce the use of fluorocarbons that have high ozone depletion coefficients and global warming coefficients. Moreover, replacing mercury-vapor lamps and fluorescent lights with LED lighting is a promising step to conserve energy and reduce equipment containing mercury.

In FY 2015, we upgraded air conditioning equipment, switched mercury-vapor lamps and other lighting to LED lighting, and equipped tanks and building roofs with insulating coating. In addition to an electric power consumption reduction effect equivalent to 324,000 kWh, we obtained environmental burden reduction effects including a 7 ton reduction in atmospheric emissions of PRTR substances.

The MGC Group Environment and Safety Council

Twelve domestic partner companies of the MGC Group that handle chemical products are promoting environmental and safety initiatives within the MGC Group Environment and Safety Council.
In addition, the director in charge of the environment and safety carries out environmental and safety audits on domestic and overseas affiliates.

RC Medium-Term Plan	2016 RC Action Plan
■ Strengthening of communication with domestic and overseas Group companies (conferences, audits, liaison meetings) ■ Group-wide practice of process safety and disaster prevention activities and labor safety activities ■ Group-wide practice of environmental management	■ Sharing and horizontal communication of information on abnormal occurrences and occupational injuries ■ Audit of domestic and overseas affiliates ■ Support for the environmental and safety activities of domestic and overseas affiliates ■ Setting of environmental impact reduction plans by the domestic MGC Group

MGC Group Environment and Safety Council Meeting

The Council meets twice a year to exchange ideas and to report on topics including MGC's and member companies' annual plans for environmental and safety activities, the results of the activities, and the status of accidents and occupational injuries.

Since 2012, the Council meets not only at the MGC headquarters, but also at MGC business sites and the business sites of Group companies, which provides an opportunity to raise the bar of environmental and safety activities by visiting the business sites of each company firsthand.


Plant briefing at SHINSANSO KAGAKU CO.


Plant tour at SHINSANSO KAGAKU CO.

Sharing Safety Information across the MGC Group

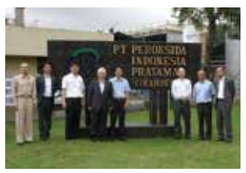
If an accident or occupational injuries occur at an MGC Group company, information is immediately distributed across the Group using the safety information conveyance system to help prevent similar incidents from occurring. Furthermore, excellent examples of environmental and safety initiatives at MGC Group companies are introduced and shared across the Group as good practices.

Environmental and Safety Audits

With the director in charge of the environment and safety as team leader, we conduct 4 or 5 domestic and 5 or 6 overseas environmental and safety audits each year in support of the Group companies' environment and safety activities.

In 2015, the 13 companies below were audited.

- JSP Corporation, Kansai Plant
- MGC Filsheet Co., Ltd., Tokorozawa Plant
- Japan Circuit Industrial Co., Ltd.
- Eiwa Chemical Industry Co., Ltd., Ujitawara Plant
- MGC Electrotechno Co., Ltd., Shirakawa Plant
- PT PEROKSIDA INDONESIA PRATAMA (PIP/Indonesia)
- BRUNEI METHANOL COMPANY SDN.BHD. (BMC/Brunei)
- MGC PURE CHEMICALS SINGAPORE PTE. LTD. (MPCS/Singapore)
- SAMYOUNG PURE CHEMICALS CO., LTD. (SYPC/South Korea)
- KOREA ENGINEERING PLASTICS CO., LTD. (KEP/South Korea)
- SUZHOU MGC SUHUA PEROXIDE CO., LTD. (China)
- MITSUBISHI GAS CHEMICAL ENGINEERING PLASTICS (SHANGHAI) CO., LTD. (China)
- TE AN LING TIAN (NANJING) FINE CHEMICAL CO., LTD. (China)



PIP (Indonesia) audit


BMC (Brunei) audit


MPCS (Singapore) audit


KEP (South Korea) audit

Eiwa Chemical Industry Co., Ltd.

Manufacture and sale of blowing agents

Address: Daido Seimei Co. Kyoto Bldg. 9F, 595-3 Manjuya-Cho, Sanjo-sagaru, Karasuma-dori, Nakagyo-ku, Kyoto-shi, Kyoto 604-8161, Japan
Tel: +81-75-256-5131
URL: http://www.eiwa-chem.co.jp/en/


Hirotsugu Yamamura
President & CEO

Eiwa Chemical Industry's blowing agents contribute to the reduction of environmental impacts in our customers' products by providing insulation and lessening weight. Our blowing agent master batch products contribute to the suppression of dust in customers' processes and the improvement of working environments.

We will work to further strengthen safety management and will continue to stably supply products, with safe operation as our foundation.


Firefighting drill using powder-based extinguishers

MGC Advanced Chemical Inc.

Manufacturing of chemical products and life science-related materials

Address: 4061-2, Tayuhama, Kita-ku, Niigata-shi, Niigata 950-3112, Japan
Tel: +81-25-259-7187
URL: http://mgc-ac.jp/ (Japanese only)


Takafumi Abe
President & CEO

As a member of the MGC Group, our company has the manufacture of life sciences-related materials and organic chemicals as its primary business. Through the practice we term "Safety assurance takes priority over all business activities," we endeavor daily to take environmental preservation into account and maintain safe and secure operations, so that we may be a presence trusted by the market and the community.


AED course

MGC Electrotechno Co., Ltd.

Manufacture of copper-clad laminates

Address: 9-41, Aza-Sugiyama, Oaza-Yone, Nishigo-mura, Nishishirakawa-gun, Fukushima 961-8031, Japan
Tel: +81-248-25-5000
URL: http://www.mgcet.jp/ (Japanese only)


Nobuhisa Ariyoshi
President & CEO

Our company aims to become the world's leading copper-clad laminate supplier, trusted by our customers. We possess equipment that spans prototype research to mass production, and are improving our competencies in manufacturing technology, quality control, quality assurance, maintenance, procurement, and more.

While giving consideration to the environment, we are also taking action to become a safe and accident-free company that is trusted in the community.


Firefighting drill

MGC Filsheet Co., Ltd.

Manufacture of polycarbonate film and sheet

Address: 4-2242, Mikajima, Tokorozawa-shi, Saitama 359-1164, Japan Tel: +81-4-2948-2151
URL: http://www.mgcfs.jp/en/


Kuniaki Jinnai
President & CEO

The functional films and sheets produced by our company are used in a variety of applications including display devices, automobiles, and sunglasses, where they aid in conferring functionality, conserving energy, and reducing weight. Among our environmental preservation initiatives, we continue to undertake risk assessments, diverse education and training, work improvement activities (Tokorozawa Plant), and activities to strengthen on-site competency (Osaka Plant), and make efforts to raise awareness among employees while sharing information between the two plants.


Disaster preparedness drill (fire hose drill)

The MGC Group Environment and Safety Council

JSP Corporation

Manufacture and sale of foamed plastics

Address: Shin-Nisseki Bldg., 4-2 Marunouchi 3-chome, Chiyoda-ku, Tokyo 100-0005, Japan
Tel: +81-3-6212-6300
URL: http://www.jsp.com/en/

Yukio Sakai
President & CEO

As a dedicated manufacturer of foamed plastics, we supply the world with products that meet the needs of the times with respect to energy conservation, resource conservation, and environmental preservation. As an internationally competitive company that prioritizes safety and adaption to the environment, we aim to engage in business activities that earn the trust and satisfaction of stakeholders, and work toward harmony between our business and the environment.

Holding a social gathering with community residents and local government at our Kansai Plant

Shin Sanso Kagaku Co.

Manufacture of hydrogen peroxide

Address: 148-58 Yufutsu, Tomakomai-shi, Hokkaido 059-1372, Japan
Tel: +81-144-55-7337
URL: http://www.sskc.co.jp/ (Japanese only)

Yasushi Hiramatsu
President & CEO

Shin Sanso Kagaku is the only manufacturer of environmentally friendly hydrogen peroxide in Hokkaido. We began operation in 1987 in Tomakomai, an industrial city with a port and surrounded by abundant nature, including Shikotsu- Toya National Park and a Ramsar Convention site.

With safety assurance and environmental preservation as our top priority, we engage in risk assessment activities, continuous improvement of energy consumption intensity, and stable production under zero accidents and zero occupational injuries.

Participation in an oil spill response drill.

Toyo Kagaku Co., Ltd.

Resinous molding processing

Address: 51-497 Aza-Doudou, Oaza-Morowa, Togo-cho, Aichi-gun, Aichi 470-0151, Japan
Tel: +81-561-39-0531
URL: http://www.toyo-kagaku.co.jp/ (Japanese only)

Masanori Shimuta
President & CEO

Toyo Kagaku has placed the elimination of occupational injuries (i.e., zero accidents and zero occupational injuries) at the top of our basic policies. We engage in safety activities including identification and improvement of hazardous locations and monitoring of traffic safety, under the idea that safety takes priority over all else.

In terms of the environment, we manufacture plastic molded products that take energy conservation into consideration, adopting energy saving equipment and reducing wastes through the improvement of material yields.

Drill for hazard prediction during transport by hand truck.

Japan Pionics Co., Ltd.

Manufacture and sale of gas purifiers and abatement system

Address: 3-32 Tamura 3-chome, Hiratsuka-shi, Kanagawa 254-0013, Japan
Tel: +81-463-53-8300
URL: http://www.japan-pionics.co.jp/en/

Masaaki Iijima
President & CEO

We believe that safety assurance and environmental preservation are the top priority of our business activities. While working continuously toward zero accidents and zero occupational injuries, product quality assurance, and strengthening of risk management, we participate actively in community activities as we aim to become a company trusted by the community.

We hope to strengthen these activities and, as a member of the MGC Group, contribute to the improvement of the Group's corporate value.

Participation in community activities (riverbed cleanup at the Sagami River)

Japan Finechem Co., Inc.

Manufacture and sale of fine chemicals, for industrial use, and electronic products

Address: Uchisaiwaicho Tokyu Bldg. 9F, 3-2 Uchisaiwaicho 1-chome, Chiyoda-Ku, Tokyo 100-0011, Japan
Tel: +81-3-5511-4600
URL: http://www.jfine.co.jp/eng/

Shigenobu Ono
President & CEO

Japan Finechem continuously works on safety activities under the slogan that safety comes before all else. Our goal is more than just preventing accidents from happening. We are endeavoring to ensure safe and stable operations by implementing facility and work process improvements identified through self-led activities, risk assessments and Hiyari-KY (hazard prediction) proposals, in order to establish a presence trusted by the markets and society for our strengths in safety practices.

Fire hose drill under the guidance of the local fire department

Fudow Co., Ltd.

Manufacture and sale of molding resin

Address: NOF Shin-Yokohama Bldg. 5F, 15-16 Shin-Yokohama 2-chome, Kouhoku-ku, Yokohama-shi, Kanagawa 222-0033, Japan
Tel: +81-45-548-4210
URL: http://www.fudow.co.jp/en/

Hideaki Matsumoto
President & CEO

Regaining the enthusiasm of our start, we conducted a workshop for all employees on basic safety matters. We intend to continue improving the content of the workshop and holding it as need arises, as we make efforts to create a workplace that enhances corporate value. At our Fujinomiya Plant, we solicited health and safety slogans in conjunction with National Industrial Health Week, and commended top submissions to improve safety awareness. Looking ahead, we will act across the company to promote environmental and safety activities.

Occupational health slogans written in calligraphy by Fujinomiya Plant administrative section employees

Japan U-PiCA Co., Ltd.

Manufacture and sale of unsaturated polyester resin and coating resins

Address: Madre Matsuda Bldg., 4-13 Kioi-cho, Chiyoda-ku, Tokyo 102-0094, Japan
Tel: +81-3-6850-0241
URL: http://www.u-pica.co.jp/en/

Yoshihiro Yamane
President & CEO

Under the philosophy of contributing to the realization of a more affluent society and comfortable living as a materials manufacturer, Japan U-PiCA is aiming for further improvement in the areas of environment, safety, and health. In terms of safety, we actively engage in hazard prediction activities and submission of *Hiyari Hatto* (near-miss) incidents while working to firmly establish the 5Ss, with the goal of zero accidents.

In terms of environmentally considerate products, we are enhancing our biomass-derived products and are also undertaking the development of materials for CFRP that will contribute to lower weight and energy conservation.

Fire hose drill

Yonezawa Dia Electronics Co., Inc.

Manufacture of printed circuit boards, auxiliary materials for processing

Address: 446-3 Hachimanbara 3-chome, Yonezawa-shi, Yamagata 992-1128, Japan
Tel: +81-238-28-1345

Nobuhisa Ariyoshi
President & CEO

Our company performs manufacturing and R&D of printed circuit boards and auxiliary sheets for drilling, using a variety of chemicals in our business activities.

Making preservation of the rich nature of Yonezawa our top priority, we perform risk assessments and planned maintenance of equipment to prevent leaks and other accidents that impact the environment. We also engage in KYT, *Hiyari Hatto* (near-miss) incident identification, and 5S activities, with the aim of achieving zero accidents.

Ongoing median strip greening activity