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MGC

# CSR Report 2014

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MITSUBISHI GAS CHEMICAL COMPANY, INC.

# Contents


Interview with the President ..... 2

**Profile of Mitsubishi Gas Chemical (MGC)**

Company Overview ..... 5
MGC Products in Our Daily Lives ..... 7
R&D System ..... 11
Supply Chain Contributions ..... 12

**CSR Management**

MGC's Efforts in CSR ..... 13
Corporate Governance ..... 14
Compliance and Risk Management ..... 15
Stakeholders and MGC ..... 18

**Responsible Care and MGC**

Environment and Safety Management ..... 23
Results and Plans for RC Activities at MGC ..... 25
Occupational Health and Safety, Process Safety, and Disaster Prevention ..... 27
Environmental Impact of Business Activities of the MGC Group ..... 29
Preservation of Biodiversity ..... 30
Initiatives for the Prevention of Global Warming ..... 31
Chemical Emissions of the MGC Group ..... 34
Waste Reduction in the MGC Group ..... 35
Air and Water Conservation in the MGC Group ..... 36
Safety Management of Chemicals and Products ..... 37
Environmental Accounting ..... 39
RC Activities at Business Sites ..... 40
13 Member Companies of the MGC Group Environment and Safety Council ..... 44


**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

## About This Report

The purpose of the 'CSR Report 2014' 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. This year's edition highlights a wide range of MGC products and how they are used to benefit society, in order to appeal to a wider audience of stakeholders. 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 office 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, 2013 through March 31, 2014 (includes some activities after April 2014).
However, Responsible Care (RC) activities are included from January 1, 2013 – December 31, 2013 (includes some RC activities in 2014).

## Reference Guidelines

- Ministry of the Environment, "Environmental Reporting Guidelines (2012)"
- Ministry of the Environment "Environmental Accounting Guidelines 2005"
- Global Reporting Initiative (GRI)
  "Sustainability Reporting Guidelines Version (G3.1)"
  "Sustainability Reporting Guidelines Version (G4)"
- ISO 26000

## Publication Information

Date of publication: December 2014
Date of next scheduled publication: December 2015

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.





# Committed to achieving sustainable growth together with society by continually producing valuable chemicals

**Q1 Can you tell us about MGC's businesses and their unique features?**

**A1 We leverage our creative and innovative technologies to bring valuable chemicals to various sectors.**

The MGC Group, under its philosophy, "To contribute to societal growth and harmony by creating a wide range of value through chemistry," aims to achieve sustainable growth on a global stage. Together with our stakeholders, we practice CSR as a leading chemicals group with a major presence and a strong platform of proprietary technology.

Since our founding in 1918, we have continually created new technologies and new value. Today, we comprise four business segments; namely, the Natural Gas Chemicals Company, Aromatic Chemicals Company, Specialty Chemicals Company and Information & Advanced Materials Company. Through these we supply creative products only made possible by MGC to a broad range of sectors, from basic chemicals to functional materials and healthcare, among others.

The MGC Group must pursue the right business portfolio structure in order to achieve sustainable growth, because its operations span a wide range of sectors and the operating environment differs for each product line. For this reason, the MGC Group has created a vision for 2021, which coincides with the 50th anniversary of its founding, and is currently implementing a medium-term management plan toward that end. Currently, we are in the middle of the second phase of this plan called MGC Will2014, which runs from FY 2012 to FY 2014.

**Q2 Can you tell us about the progress of medium-term management plan MGC Will2014 and your medium- to long-term business strategy for the future?**

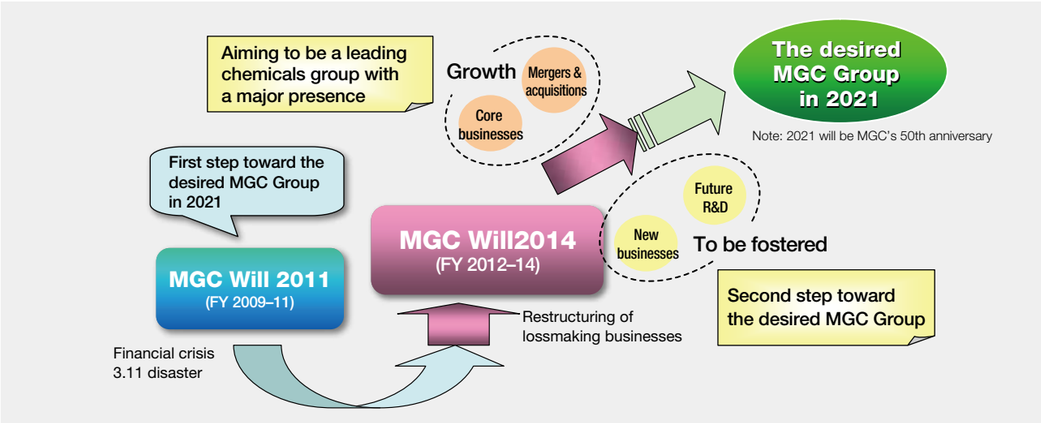
**A2 We are steadily moving forward with our four basic strategies, including reinforcement of our core business.**

There are four basic strategies set out in medium-term management plan MGC Will2014; namely, strengthening the core businesses, accelerating development of new businesses, restructuring loss-making businesses, and improving total enterprise quality in support of sustainable growth.

If core businesses are not properly in line, then our measures will end up never being implemented. For this reason, first we have been reviewing our current strategy based on changes in our operating environment, with the goal of strengthening the core businesses. At the same time, we have been focusing on accelerating development of new businesses as an initiative directly related to our future growth. As illustrated by the fact that more than 90% of our products are developed in-house, the MGC

**Toshikiyo Kurai**
President and Representative Director

**Medium-Term Management Plan “MGC Will2014”**




Group’s greatest strength can be found in its creative technological prowess. We will leverage this strength while actively pursuing technical alliances with outside companies in our sector and different sectors as well as R&D institutes, which will enable us to streamline and speed up R&D. Given recent mega trends, we will focus on markets that are more resilient in the face of economic fluctuations, such as healthcare, foods, and infrastructure.

As an initiative for new businesses, in 2011 we launched the Next Generation Business Project Group that is pursuing organization-wide and cross-functional research activities. We are making solid progress in medical packing solutions, one of the project’s research themes, as we have had a number of different customers evaluate samples.

Starting from FY 2014, we focus on strengthening engagement with markets as well as examining and revising policies. At the same time, we will make decisions about the future of projects based on reinforced management achieved through the further use of the PDCA cycle. Market development requires a product’s value and uses are thoroughly proposed to customers, while new product development requires us to engage customers and identify their specific needs. This enables us to develop better quality products in a speedier manner.

As for restructuring loss-making businesses, we have successfully exited or reduced our presence in businesses where we lack competitive advantages and also greatly cut back on fixed costs. In this manner, we will continue focusing on our core competencies. In doing so, it will be important to examine whether businesses are in tune with global trends, instead of focusing exclusively on whether they can churn out short-term profits.

Finally, we will work on further improving the performance of our manufacturing frontlines and developing production processes with less of an impact on the environment, as part of improving total enterprise quality in support of sustainable growth. At the same time, focus will be given to developing global human resources and all other employees of the MGC Group. Additionally, we will carry out management streamlining across the MGC Group through such means as shortening the cash conversion cycle and realizing other improvements.

**Q3 What type of safety initiatives is MGC implementing?**

**A3 We are moving forward with Group-wide safety initiatives based on our shared Safety Philosophy.**

The elimination of occupational accidents and injuries represents our top priority from the standpoint of maintaining a safe working environment for employees. These efforts will also help us fulfil our mission to society of providing stable supplies of our products. Following an accident at our Niigata Plant in 2007, MGC has carried out the “Accident Zero (AZ)” Project at all of its facilities in a concerted effort for safety. Our six years of activities, both tangible and intangible, helped MGC to completely eliminate occupational injuries resulting in lost work time for the very first time on a standalone basis in 2013. To maintain and continue this success while also achieving zero occupational accidents and injuries at our partner companies, we launched a new safety project in FY 2014 called “Bridge” (see page 28).

In recent years, as the ratio of overseas production increases, sharing our Safety Philosophy, which states, “The top priority of our business activity is ensuring safety,” across the entire MGC Group is essential to achieving zero occupational accidents and injuries. With this in mind, we will communicate more effectively with our other business sites while further enhancing safety awareness at MGC, and also create safety standards tailored to the operations and situation of each region.

**Q4 What are your thoughts about the environmental impacts of chemical companies?**

**A4 We will strive to reduce our impacts on the environment and focus on making contributions to the environment through our products.**

The MGC Group recognizes that the mission of a chemicals company is to help protect the earth’s environment, and we are carrying out activities to reduce the environmental impacts resulting from our business activities and to reduce environmental risks from our chemical products. As for the environmental impacts caused by our business activities, we are using key indicators to mitigate these impacts, such as the energy consumption intensity and raw materials per unit product. The environmental risks of chemicals are controlled according to rigorous standards that prevent leakages in every aspect of the value chain.

Together with these activities, we are focusing on making contributions to the environment through our products. In addition to products that directly benefit the environment, such as clean fuels and chemical agents that purify the air or water, we are marketing the merits of products that contribute indirectly as well. For example, our films that improve the luminance of LCD panels help to reduce LED usage, which in turn reduces energy consumption. Additionally, MX nylon resin reduces the weight of beverage bottles which reduces fuel consumption during their transport. Through dialogue with the markets, we are working to spread the use of these products further to contribute to the sustainable growth of the MGC Group while also helping to reduce the impacts society has on the environment.

**Q5 In closing, what are the management challenges you are focusing on currently and what measures are you taking to address them?**

**A5 We will contribute to the resolution of societal issues while reinforcing our Group management and human resource development.**

As the leader of the MGC Group, I will emphasize the reinforcement of Group management and human resource development.

The MGC Group employs a workforce of more than 10,000 in Japan and abroad, while it has many different organizational systems. Therefore, it is my mission to manage the Group while constantly being aware whether or not our employees’ initiatives are helping to streamline the Group’s operations and practices.

In addition, the MGC Group has traditionally fostered a corporate culture that supports imagination and innovation led by the frontlines, where people of different backgrounds can thrive, regardless of age or job title. We will continue to pass down this DNA and develop the human resources that will lead our company into the future. For example, expertise that cannot be acquired through desk learning, such as plant operation technologies, must be passed down on the front lines. Therefore, we will pursue the most optimal personnel allocations and human resource exchanges based on the age composition of our workforce at each of our sites.

Our chemical products not only contribute to the environment, but also have the potential to solve a variety of issues faced by society, such as aging populations and resource depletion, including water and food shortages caused by population increases. Helping to build a more affluent and sustainable society through the power of chemistry is an important social responsibility of a chemical company and our greatest contribution to society.

We will continue to pursue the MGC Group’s philosophy, “To contribute to societal growth and harmony by creating a wide range of value through chemistry,” while tackling the various management tasks I have discussed here. We look forward to your continued support and guidance as we move forward.

# Providing the Technology and Products That Help People Increase Their Quality of Life While Supporting Sustainable Development of the Global Community

## Corporate Information (as of March 31, 2014)

**Company name**
MITSUBISHI GAS CHEMICAL COMPANY, INC.

**Head office address**
Mitsubishi Building, 5-2 Marunouchi 2-chome, Chiyoda-ku, Tokyo 100-8324, Japan

**Established** January 15, 1918

**Incorporated** April 21, 1951

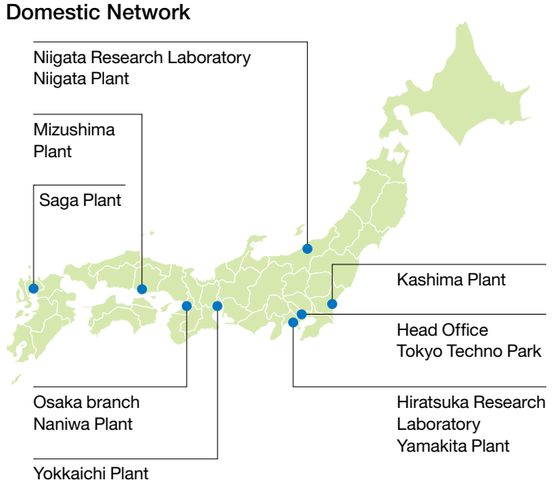
**Capital** ¥41.97 billion (as of the end of March, 2014)

**Number of employees**
5,445 (consolidated), 2,434 (non-consolidated)

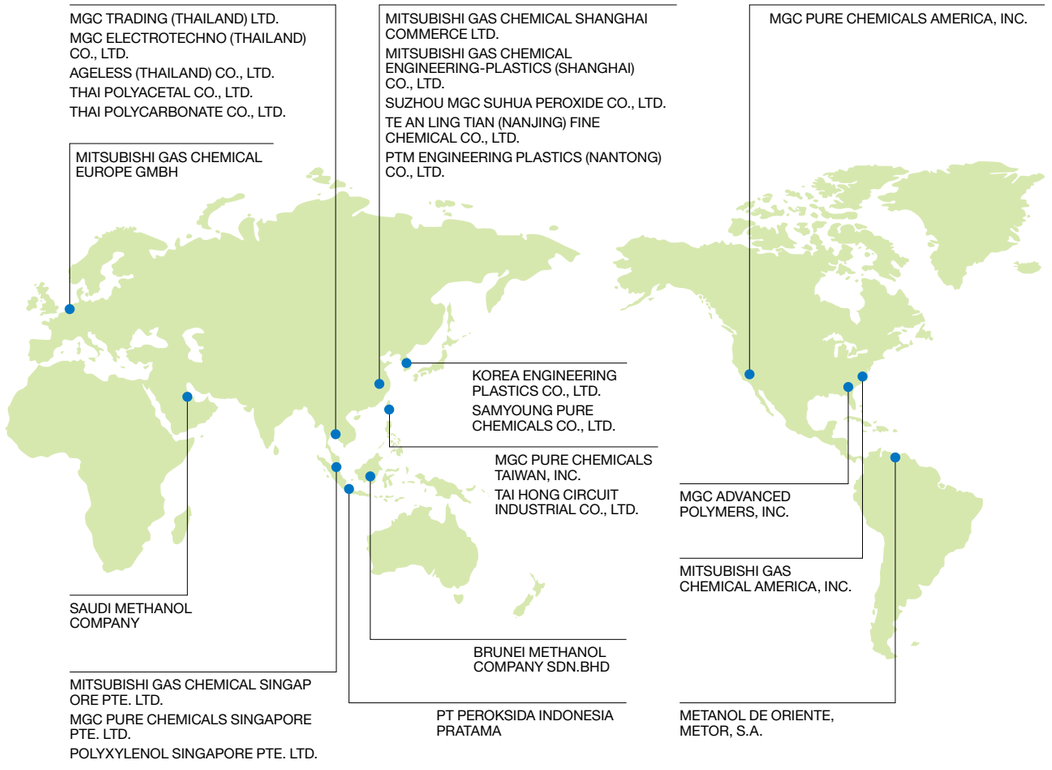
**Number of consolidated subsidiaries** 40

**Main business sites in Japan**
**Branches** Osaka branch
**Overseas offices** Shanghai Office, Taiwan Office
**Research institutes**
Tokyo Techno Park (Tokyo Research Laboratory, Research and Development Center, MGC Chemical Analysis Center), Niigata Research Laboratory, and Hiratsuka Research Laboratory
**Plants**
Niigata Plant, Mizushima Plant, Kashima Plant, Yokkaichi Plant, Yamakita Plant, Naniwa Plant, and Saga Plant

## Domestic Network

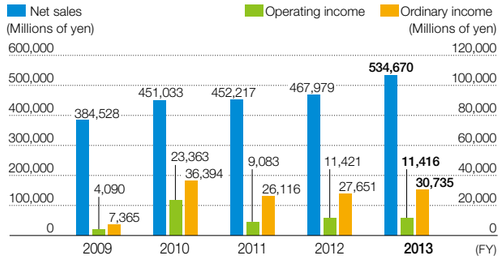



## International Network

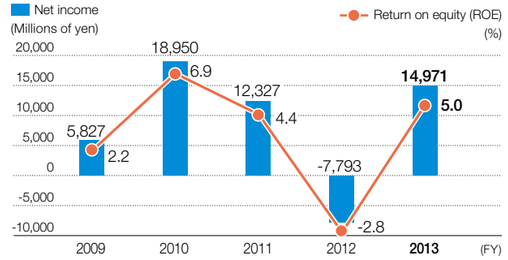



## Financial and Non-Financial Highlights

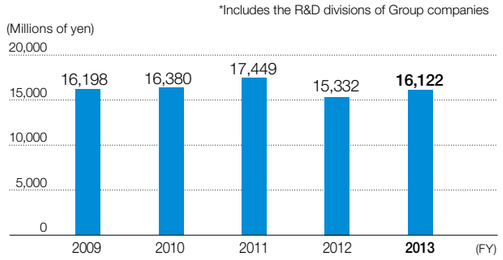
### Net sales / operating income / ordinary income (consolidated)



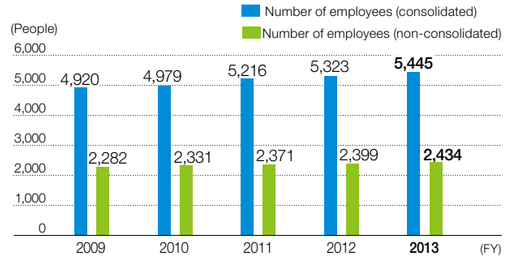

### Net income / return on equity (ROE) (consolidated)



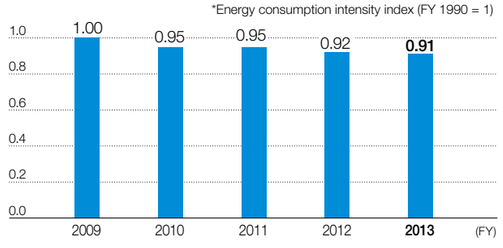

### R&D expenditures [consolidated]



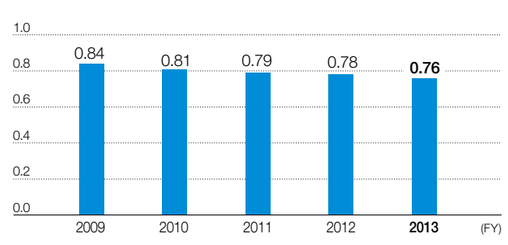

### Number of employees (consolidated/non-consolidated)



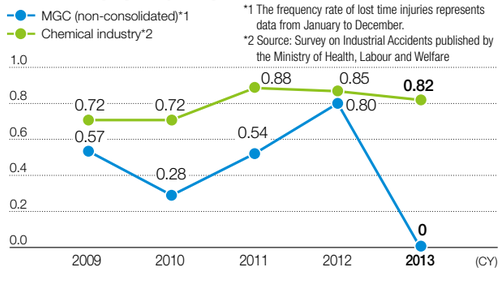

### Energy consumption intensity (non-consolidated)



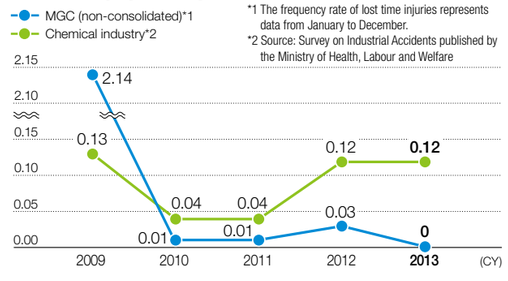

### GHG emissions intensity (non-consolidated)



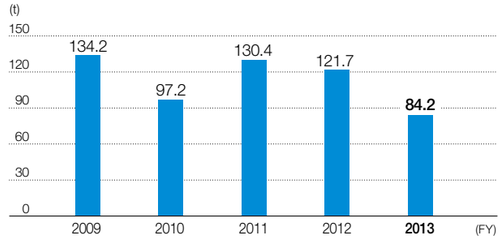

### Lost time injury frequency rate




### Lost time injury severity rate




### Final disposal volume of waste (non-consolidated)



MGC is a chemical company engaged in a truly wide range of segments, from basic chemicals to fine chemicals and functional materials.
MGC's diverse array of products and technologies are used in many familiar products found in our home, at the office and at various other facilities.

# In the home

### Para-xylene
Used as a raw material for polyester fibers.

### Polycarbonate film (lupilon™ Film)
Used in diffusion films for LCD displays to ensure light evenly reaches across the entire screen.

### Hydrogen peroxide
Used for bleaching in a pulp and paper production process


### Para-xylene and Meta-xylene
Used in PET bottles.

### MX nylon resin (MXNYLON™)
Used for hot tea and carbonated beverages because of its excellent gas barrier properties.

### Neopentylglycol
Used in the outer film for PET bottles.


### AGELESS™
Absorbs oxygen in sealed containers to maintain a long shelf life, taste and freshness. Used to maintain the quality of food.

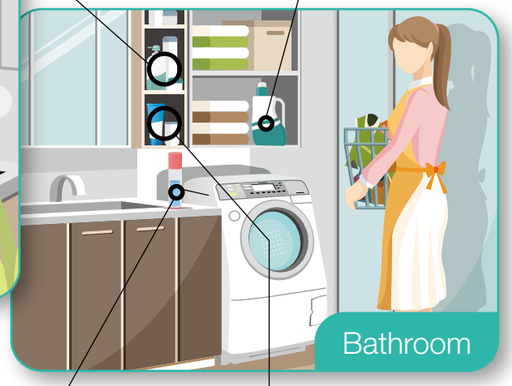
### Heat-resistant polyester resin (ALTESTER™)
Used in jello and other containers because it is easily molded and is highly transparent.


### Toluic acid
Used as a repellent in mosquito and other bug sprays.

### Ortho-xylene and Meta-xylene
Used in plasticizing agents for softening PVC water pipes because of their resistance to corrosion.


### Aromatic aldehydes
Used in fragrances included in soaps and shampoos. Able to recreate a wide range of scents through ingredient blending.

### Hydrogen peroxide
Found in oxygen bleaches that can be used for whites and colors. Once broken down, it becomes harmless oxygen and water, resulting in zero environmental impact.




### Hydrogen peroxide (Diapower™HP)
Used to clean and disinfect food and beverage containers contributing to longer shelf lives at room temperature.

### AGELESS OMAC™
A film that absorbs oxygen to prevent oxidation of contents. Widely used in retort pouch foods and prepared foods heated with boiling water.

### Dimethyl ether (DME)
Used as a spray propellant in place of CFCs, which damage the ozone layer.

### Pyrroloquinoline quinone (PQQ)
A strong antioxidant that protects cells from oxydation damage. Used in compounds for cosmetics sold in Japan.

# At the office

### Polycarbonate (Iupilon™)

Used in touch panels.

### 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.


### Lense monomer

Used in eye glass lenses. Its high index of refraction makes lenses thinner and lighter weight.



### BT printed wiring board (PWB) material

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

### Etching liquid

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.

### Meta-xylenediamine (MXDA)

Used in paints and other coatings.

# Around town

### Neopentylglycol

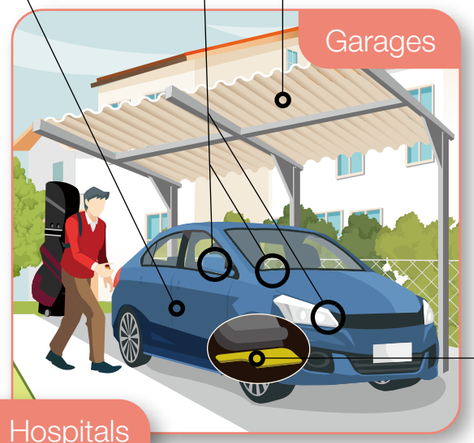
Used in powdered paints and coatings.

### Miscellaneous engineering plastics

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

### Polycarbonate (Iupilon™Sun Guard)

Used as a roofing material because of its weather resistance and it maintains its color even when exposed to ultraviolet rays.




### Methanol

Used in raw materials for polyester fibers in carpets and other products.

### Anaerobic culture system (AnaeroPack™)

Used in microorganism testing at clinical labs.

### Meta-xylenediamine

Used in wind turbine blades.



### Drying and de-oxydation agent (PharmaKeep™)

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

### Peracetic acid (Diapower™)

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

### RP System™

Widely used to preserve cultural assets.

### Methyl methacrylate (MMA)

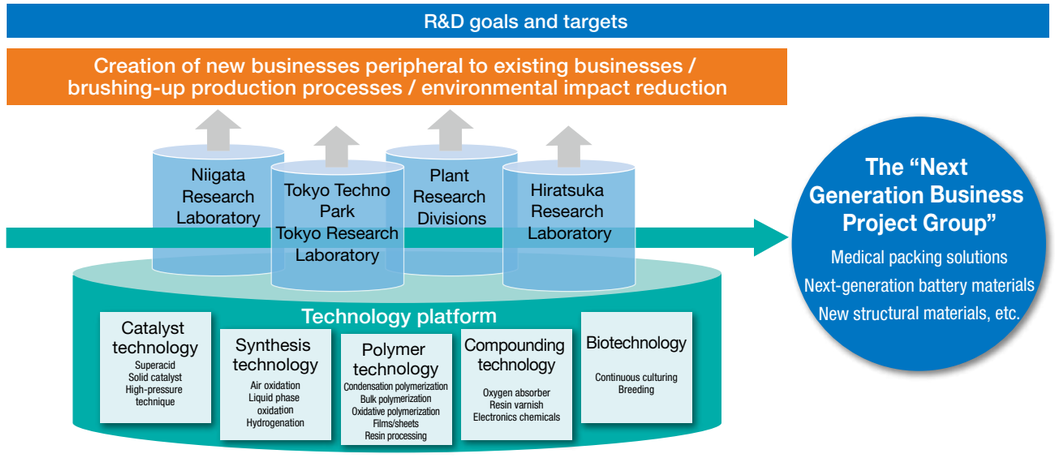
Used in aquarium tanks because of its high transparency.

# Responding to the needs of society by passing down a corporate culture that values proprietary technologies.

## R&D Strategy

In our existing businesses, MGC is utilizing its technology platform based on the core technologies of catalysts, synthesizing processes, polymers, and biotechnology to advance research and development into: methanol, xylene, and xylene derivatives, engineering plastics and their processed products, product groups using hydrogen peroxide, an oxygen absorber, and many more products that we provide to society.

In addition, we are leveraging our long-standing core technologies to improve new processes in the chemical chain and we are expanding our R&D strategy to target growth fields, such as electronics, the environment, energy, life sciences, and food packaging, among others. We are boosting activity under the Next Generation Business Project Group, which is under the direct supervision of the President. This project, a research and development organization, is aimed at creating new core businesses at MGC.




## Research and Development Sites and Structure

MGC's research and development sites comprise laboratories, plant research technology sections, and development and technology centers, each of which carries out research related to its overseeing company. Research and development is divided into Company R&D and Corporate R&D. Company R&D assesses changing market needs, and brings research and development divisions, manufacturing, and marketing together to undertake research and development in line with companies' business strategies. Corporate R&D aims to create new businesses from a mid- to long-term perspective, with the Next Generation Business Project as its main activity. The MGC Analysis Center performs contract analysis and safety testing for the entire company.

| Research and development sites | | Tokyo Techno Park | | | Niigata Research Laboratory | Hiratsuka Research Laboratory | Niigata Plant | Mizushima Plant | Yokkaichi Plant | Yamakita Plant | Kashima Plant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Tokyo Research Laboratory | Research and Development Center | MGC Chemical Analysis Center | | | | | | | |
| Company R&D | Natural Gas Chemicals Company | | | ● | ● | ● | ● | ● | | | |
| | Aromatic Chemicals Company | | | ● | ● | ● | ● | ● | | | |
| | Specialty Chemicals Company | ● | | ● | | | | | ● | ● | ● |
| | Information & Advanced Materials Company | ● | ● | ● | | | | | | | |
| Corporate R&D | Corporate Division (Next Generation Business Project Group, etc.) | ● | | ● | ● | ● | | ● | | | |





# Delivering a Diverse Variety of Functions while Considering Environmental and Safety Aspects

## Research and Development

**Environment-related expenses in R&D**
(FY 2013)

For environmentally friendly products: **2** billion yen

For environmentally friendly production methods: **1** billion yen

- Development of energy saving technologies
- Development of environmentally friendly products
- Product design using safe raw materials
- Process design, development of production techniques
- Assessments of product safety

## Manufacturing

**$CO_2$ emissions reduction*1: 24%** (over FY 1990 levels)

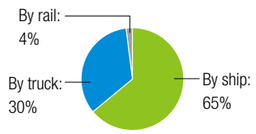
**Chemical substance management and air pollutant emissions*2: 44%** reduction (over FY 2010 levels)

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

- Procurement of safe raw materials
- Appropriate management of chemical substances
- Safe production and accident prevention
- Emergency response training
- Energy efficiency
- Environmental preservation
- Global warming prevention

## Marketing and Transport

**Ratio of transport volume*3**
(FY 2013)




*3: Transport volume = Weight of cargo x Distance

- Modal shift
- Reducing logistics costs
- Ensuring safe distribution
- Training for responding to logistics accidents
- Fair marketing practices
- Quality assurance practices

## Customer Companies

**Customer companies*4 approx. 13,000** (domestically)

Providing products and technologies, through our broad-based business in basic chemical products and specialized products, not only in the chemical industry, but also in a diversity of other industries, including the electrical machinery, electronic device, vehicle, fiber, paper pulp, food packaging, and pharmaceutical industries.

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

- Providing safety information (issuing SDS)
- Technological services and complaint handling
- Response to the PL Law
- Guidance for safe disposal methods (issuing SDS)

## Consumers

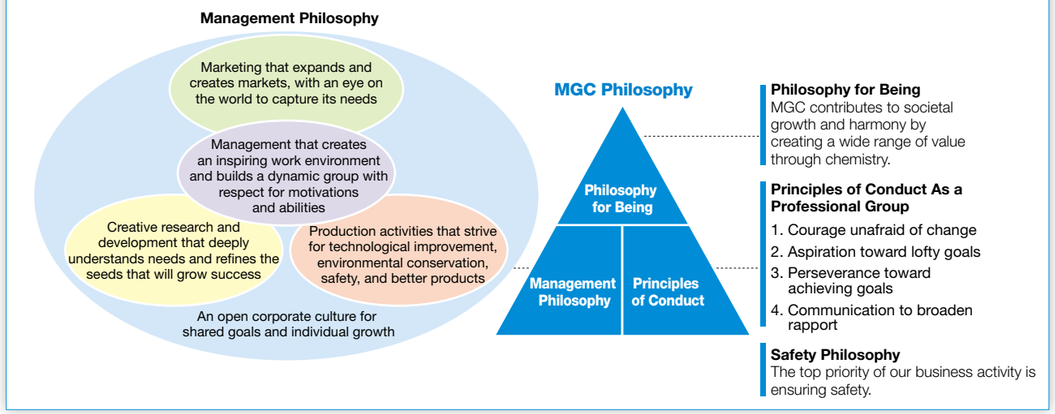
**Providing functionality and security to end users through products of our customer companies**

- Risk assessment within the supply chain
- Product planning based on risk assessment
- Manufacture and supply of products in line with product plans
- Appropriate safety assessment of new products
- Providing the most up-to-date safety information to customer companies

# MGC's Efforts in CSR

We established the "MGC Philosophy for Being" and the "MGC Corporate Behavior Guidelines," as a guide for our company to gain the trust and understanding of society and to lead our employees to foster confidence and pride in working for MGC. In addition, we have incorporated CSR initiatives as part of our medium-term management plan called MGC Will2014, which we are currently implementing.

## MGC Philosophy




## 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.

For entire guidelines, please refer to our website; http://www.mgc.co.jp/eng/about/compliance/

## MGC Group Vision

"The MGC Group aims to develop and grow sustainably on the global stage as a leading chemicals group with major presence and a strong platform of proprietary technology while taking CSR in all its activities."





# Corporate Governance

Maintaining a sound and transparent management system is a key management issue, and a number of measures are being pursued to improve transparency, ensure fairness, and accelerate decision-making.

## Basic Approach to Corporate Governance

MGC has adopted an executive officer system aimed at a sound and highly transparent management structure. The Board of Directors is positioned as the organization responsible for making decisions on critical management issues, including basic management policies, and for supervising business execution by MGC directors. This has strengthened governance and enhanced the operational framework by clarifying functions and responsibilities. MGC has also adopted an internal company system for its business divisions, which has clarified responsibility and improved management performance.

MGC aims to enhance the transparency and fairness of management through internal audits performed by Audit & Supervisory Board members and will develop effective corporate governance through appropriate disclosure of management information.

## Overview of Corporate Governance Structure

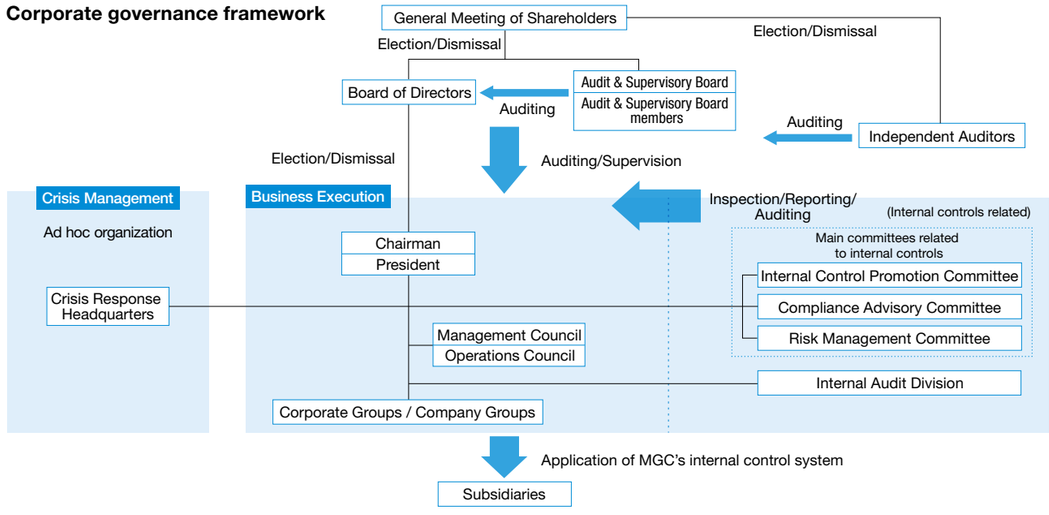
For the sake of management supervision and counsel from an external perspective, and to raise our management transparency and fairness, MGC appoints one external director. Our current management structure consists of 11 directors, including one external director, and 22 executive officers (including 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 enhance internal controls and improve efficiency of business management, MGC has established an Internal Audit Division that is separate from the statutory auditors. This division oversees the execution of MGC and MGC Group companies to ensure appropriate practices, and conducts internal audits in accordance with our annual plan.

**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.

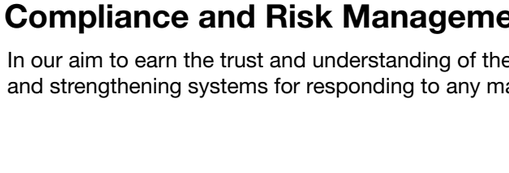
## MGC Group Compliance

Compliance at the 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. We have summarized this philosophy in the “MGC Corporate Behavior Guidelines” and the “MGC Code of Conduct” and in FY 2013, we made revisions to our code of conduct based on changes that have taken 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. In FY 2013, this handbook was updated based on the revisions made to our code of conduct and other contents.. For overseas Group companies, we created Chinese and Thai language versions of the code of conduct to complement our existing English edition.

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.**

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 conveyed to the party responsible for the report or consultation.

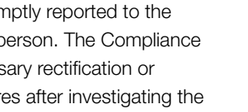
## Compliance Education

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 2013, 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.

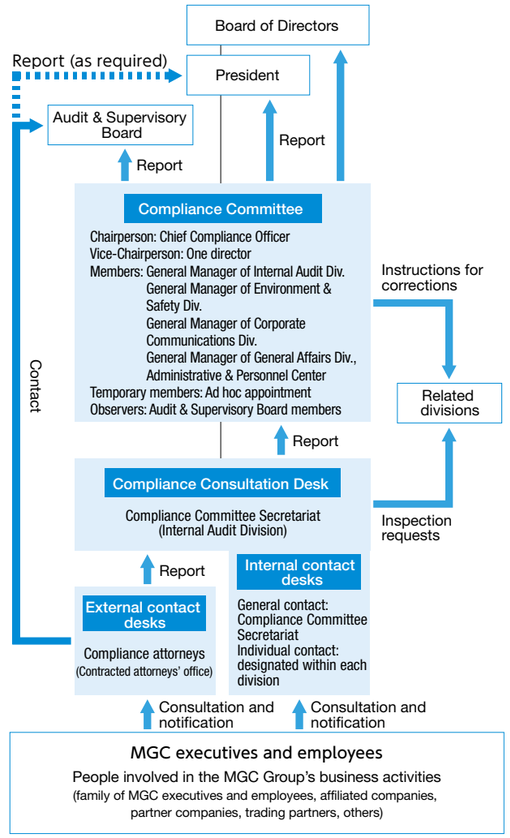
With illegal payoffs in emerging countries now widely recognized as a global business risk, in FY 2013 we gathered the presidents of our Group companies affiliated with overseas businesses to reaffirm that such payoffs are strictly forbidden and we trained expatriate staff using the applicable training materials.

MGC is also working to enhance the quality of its compliance training for staff that are dispatched overseas.



Screenshot from the e-learning system

### MGC compliance structure




## Risk Management in the MGC Group

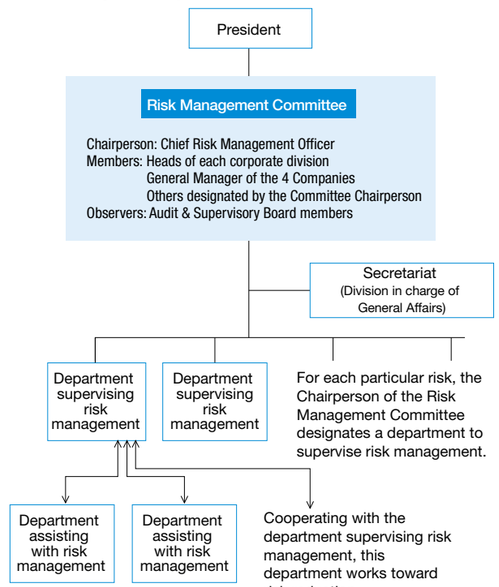
In response to the various risks related to our business activities, MGC launched company-wide, comprehensive risk management activities in 2006 with the establishment of a Risk Management Committee. To disseminate knowledge at the start of our activities, we conducted seminars for top management and for employees at all workplaces on the topics of the importance and practice of risk management. Presently, we are working on reviewing and implementing measures to reduce latent risks and making efforts to revise our BCP. We will examine measures against risks given the highest priority after all company-wide risks were identified and assessed and when necessary we will create a business continuity plan (BCP). 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.

## Risk Management Framework

The Risk Management Committee, headed by the Chief Compliance Officer, is composed of the heads of the four Companies conducting business activities, as well as 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



# Compliance and Risk Management

## Risk Management Committee's Annual Plan for FY 2013

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 company-wide basis. Our workplaces are cooperating on formulating countermeasures and conducting BCPs.

In FY 2013, we actively pursued major annual policy points that included those listed below.

1. **To appropriately consider, in line with periodic business challenges, the risks incumbent upon MGC to treat as management targets, and for those risks that we must regard as significant and of priority status, to enact measures that will address them quickly and effectively.**
2. **To begin work on comprehensive earthquake resistance measures at our business sites.**
3. **To continually prevent information leakages and carry out related measures.**
4. **To continually implement planned improvements based on the lessons learned from the Great East Japan Earthquake.**
5. **To work toward further enhancement of our risk management practices in MGC and at group companies.**

## Major Initiatives against Significant Risks

### 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 in the northern part of Tokyo Bay, 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 visiting guests 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 2013, MGC carried out earthquake resistance assessments covering all of its business sites that contain buildings which are relatively old and have a greater potential of causing injuries should a major earthquake occur. Based on these assessments, we finalized responses ranging from seismic retrofitting to building closures. Additionally, we selected a model plant to carry out a review of the methods used to check the seismic performance of a whole business site, including manufacturing equipment. At the same time, we purchased satellite mobile phones for our business sites to be used as a mode of communication during an emergency.

Wireless communication device for emergency use / Satellite mobile phone

Disaster reserve supplies

Earthquake resistance assessment (Yokkaichi Plant)

### Measures Against Information Leakages

Regarding the prevention of information leaks—one of the risk issues we have targeted for priority treatment—we went over whether there was any vital information in each division, and investigated management practices. We are also pursuing the review of management methods for technical information and the centralized management of personal computers used within the company.

In addition to issuing warnings and strengthening our information management practices, we are taking measures to minimize information leakage risks based on scenarios where secrets were actually leaked and we are addressing the challenge of striking the right balance between the prevention of information leakages and properly 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 evermore enhanced risk management, while also exchanging information after surveying and reporting on each company's initiatives and practices.





# 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

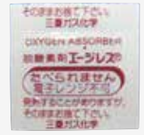
We work hard to provide safe and highly reliable products and services to all of our customers, from direct business partners to the end consumer. As part of these efforts, all of our plants have acquired an ISO 9000 series of certification in quality management.

When problems related to the Product Liability Law arise, the designated staff person in charge of complaints at each Company works with the business division in question, the production divisions, research divisions, or logistics divisions, and investigates the source of the problem. Related divisions report to the Product Liability Committee so that the committee can implement company-wide preventive measures.

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

### Developing New AGELESS™ Products based on Customer Feedback

MGC first developed AGELESS™, a deoxidation agent that prevents food spoilage using iron to absorb oxygen, more than 35 years ago.




AGELESS™ FJ-10R

AGELESS™ is available in various different types depending on the application and many newly developed products in the line are based on customer feedback, resulting in a true customer-centered evolution. For example, AGELESS OMAC™, a deoxidation film, was created based on customers who wanted an alternative to canned foods. In addition, the world's smallest* deoxidation agent AGELESS™ FJ-10R was developed based on a customer who wanted to affix AGELESS™ to the side of individual confectionery packages. Going forward, we stand committed to building positive relationships with customers and developing products that fulfill their needs

*As of June 2014.

AGELESS OMAC™

### Honored with a PQS Award from Intel Corporation

MGC received a Preferred Quality Supplier (PQS) award from Intel Corporation, a global leader in semiconductors. Intel presents this award to suppliers and MGC has been a recipient for four consecutive years since 2010.* MGC was recognized for the quality, cost, supply system, technical prowess, customer service, labor and ethics systems and environmental sustainability costs with regards to its chemicals used in the manufacture of semiconductors.

* We received the PQS award in 2010, 2011 and 2013 and the Supplier Continuous Quality Improvement (SCQI) award in 2012.

## Together with the Community

### Environmental and Disaster Preparedness Activities in the Local Community

To explain our environmental conservation and process safety activities to local communities and deepen mutual understanding, 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.

Community dialogue on responsible care (Niigata Plant)

Fire fighting training exercise (Tokyo Techno Park)

# Together with Stakeholders

## Interaction with local communities

### ■ Beautification Activities in the Local Community

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

Cleanup along the Takahashi River (Mizushima Plant)

Cleanup along the Hasaki coastline (Kashima Plant)

### ■ Involvement in community activities

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

Participated in the Matsuhama Festival (Niigata Research Laboratory and Niigata Plant)

Directing traffic for school children (Kashima Plant)

## Initiatives for the Next Generation

We are working to promote an interest in chemistry through partnerships with educational institutions in the communities surrounding our business sites.

For example, we host students for tours and learning programs and dispatch employees to universities as guest instructors for a period of six months as part of commitment to 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. Since 2011, we have also donated these kits to schools in areas affected by the earthquake. We provided approx. 12,000 kits to 85 schools in FY 2013.

Student tour (Hiratsuka Research Laboratory)

Chemistry experiment kits

## Donated Emergency Rations for Disasters to an NPO

MGC reviewed its disaster preparedness supplies in May 2013 and decided to donate canned bread and alpha rice (a total of 3,960 meals) that had yet to expire to NPO Second Harvest Japan.

Second Harvest Japan accepts donations of food products that of good quality, but no longer have commercial value from companies, farmers and individuals. In turn, it provides these products to various welfare facilities and organizations. The donations from MGC are also being put to positive use by the NPO.

# 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.

## 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.

Reducing $CO_2$ emissions using a modal shift

# Together with Employees

## 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.

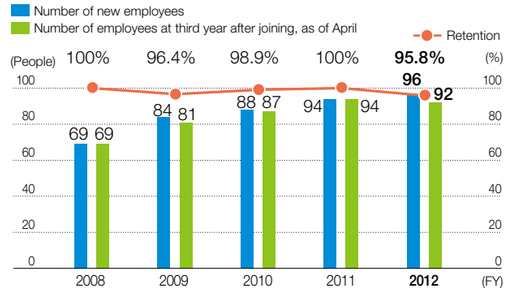
### ■ Development of human resource capabilities

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.

**Employee tenure (as of March 2014)**

| | Male | Female | Total |
|---|---|---|---|
| Average age | 40 years old and 11 months | 39 years old and 0 months | 40 years old and 9 months |
| Number of years worked | 18 years and 1 month | 16 years and 3 months | 17 years and 11 months |

**Retention of new employees (three years after joining)**




**MGC's Training Programs**

| | Young demographic | Intermediate, experienced demographic | Management demographic | Features |
|---|---|---|---|---|
| Rank-specific education and training | New employee training<br>New employee follow-up training | Intermediate, experienced employee training<br>Career enhancement training | Section Chief rank: Entry-level manager training<br>Manager training<br>General Manager rank: Organizational management training | **● Features of rank-specific education and training**<br>Training based on the employee's specific rank within the company, from new employees to management-level employees, encompasses education tailored to the knowledge, capabilities, manner of working, approach to working, business skills, and management skills necessary for each rank. It provides a valuable opportunity for employees to give thought to the future course of their own career. In recent years, this has also included life/career training regarding individual work and lifestyle issues for employees who have reached the age of 50. |
| Job-type/sector-specific training | ● Educational development for global workers<br>● Technology exchange sessions (Production, Research, Engineering Divisions)<br>● Patent training sessions (Research Promotion Division)<br>● Workplace-specific and health and safety-related education<br>● Health and safety, environmental management, and quality control-related education<br>● Other specialized education and in-house seminars | | | **● Features of job-type / sector-specific training**<br>Training based on the employee's specific job or department within the company is an opportunity for workers to acquire the necessary, specialized knowledge and skills for their division, which cannot be addressed well in larger general training sessions. |
| Self-development | ● Language qualifications and language training (including English, other languages, and theme-based language programs)<br>● Management and business skills<br>● Financial accounting, bookkeeping, and taxation<br>● Basic chemical knowledge and basic safety technology knowledge<br>● Other distance learning | | | **● Features of self-development education**<br>The company offers language learning training courses customized to each employee's level, in addition to a selection of over 270 types of distance learning courses (from fields as diverse as management, business skills, financial accounting, chemistry, foreign languages, career planning, and health) ranging from subjects directly related to employees' work tasks to subjects of personal interest. |
| On the job training | ● OJT through actual work tasks | | | |

# Together with Stakeholders

## Promoting Diversity

We are putting effort toward promoting diversity (in terms of different working styles), so that our employees, who themselves are diverse individuals, can display their unique capabilities and approach work with a sense of purpose and meaning.

### ■ More Active Role for Women and the Hiring of Foreign Nationals

We began hiring women for career track positions in 1991 and recently the number of female managers has been on the rise. We have also created a system allowing shorter working hours and a flex-time system for employees to achieve a balance between childcare and work, which helped boost the rate of employees returning from childcare leave to 100% for three consecutive years.

In addition, we are hiring more employees of foreign nationality, accompanying the globalization of our business.

### ■ Re-employment of retirees

In response to measures that raise the eligibility age for payments from the public pension program, we have introduced a retiree re-employment scheme to support a life for workers after retirement. Providing all employees the opportunity to continue working* if they are healthy and desire to do so contributes to creating a vibrant workplace.

* 2008 to 2013: The re-employment rate has been 100% for six consecutive years.

### ■ Employment of people with disabilities

MGC's employment rate for people with disabilities was 2.22% as of the end of FY 2013, 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.

## Consideration for work-life balance

We believe that work-life balance is indispensable for job satisfaction. To help promote this idea we have implemented a no-overtime day, encouraged our employees to take their paid leave, and introduced various systems such as flextime as well as a system that allows employees to roll-over expired annual leave.

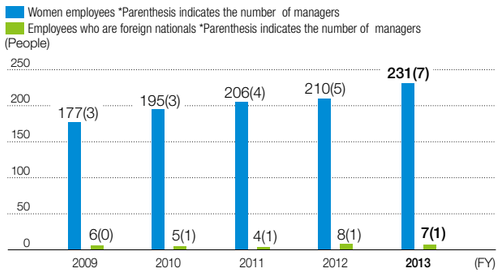
We continue to enhance our childcare leave and nursing-care leave systems, in addition to a system allowing shorter working hours, to help employees balance work with family life.

## Care for mental health

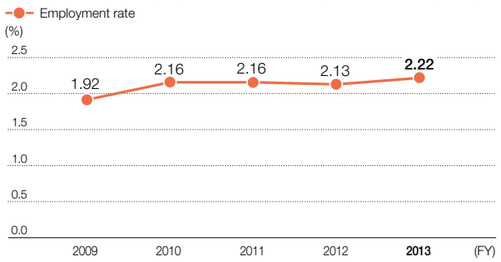
It is important that our employees maintain their physical health, at MGC we have implemented programs to ensure mental health as well. The Employee Assistance Program (EAP) is one of these, in which employees can freely contact external professional institutes by e-mail, telephone or in person to discuss 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. We also conduct mental health training during sessions designed for new employees and employees receiving a promotion.

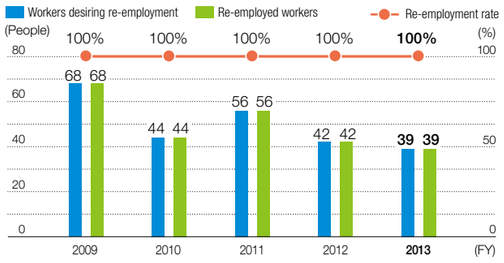
**Number of female employees/managers and number of employees/managers who are foreign nationals (non-consolidated)**




**Employment rate for people with disabilities (at end of fiscal years)**

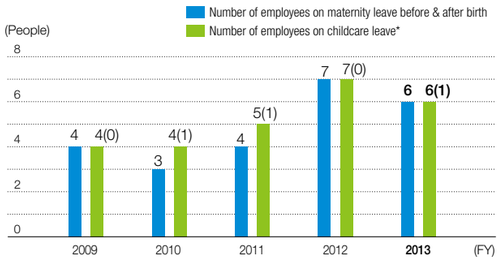



**Re-employment of retirees**




*Fiscal year = end of September + end of March

**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.

## 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.

## Support for social contribution activities

We strive to create a work environment where employees are able to engage in a variety of social contribution activities as part of their daily lives. For example, in FY 2009, we introduced paid "volunteer leave" and paid "donor leave" as special paid leave options. We also provide employees with paid leave for public service activities such as participating in the saibanin (jury) system or the Committee for the Inquest of Prosecution.

## 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 to discuss issues related to management, and organize a joint management committee for more specific agendas. 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.

# 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

Returning profits to shareholders is considered one of MGC's most important management issues. Distributions are determined by a combination of performance-linked factors and stable dividends, based on a comprehensive analysis of business performance over the medium to long term, capital investment plan, and financial soundness.

In FY 2013 our full-year dividend was 12 yen per share.

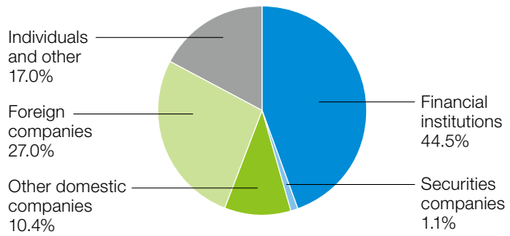
## General meeting of shareholders

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 to give shareholders more time to consider what to vote, and adopt an electronic voting system for better convenience.

## 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, 2014)**



# Environment and Safety Management

Sustainable development, building a recycling-based society, and safe operations are the three critical business challenges that MGC faces. Responsible Care (RC) is our response to both the environmental and safety issues, and has been rolled out in MGC and is understood by the entire Group.

## The MGC Group Policies on Environment and Safety

**The MGC Group, as an important member of the community, 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 security management of facilities and increasing self-protection technologies and skills
- Reducing the environmental impact of business activities
- Ensuring safety in use, handling, and disposal of products
- Development of environmentally-friendly and safety-conscious products and technologies
- Ensuring environmental conservation and safety in the logistics of obtaining raw materials, and storing and delivering our products
- Building society's confidence in us

We shall comply fully with applicable domestic laws and foreign rules and shall also cooperate with related international organizations, international and national administrative organs, and nongovernmental organizations as required.

## RC Medium-Term Plan 2014

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

| RC Code | RC Medium-Term Plan (2011–2014) |
|---|---|
| Occupational Health and Safety<br>Process Safety and Disaster Prevention | **Working toward zero occupational injuries and accidents**<br>■ Establish a culture of safety.<br>• Enhance communications.<br>• Eradicate human error.<br>• Identify fundamental causes of accidents and occupational injuries, and undertake active measures to improve equipment.<br>■ Enhance voluntary process safety inspections.<br>■ Enhance joint disaster prevention systems with neighboring affiliates. |
| Environmental Preservation | ■ Reduce the energy consumption intensity to below 85% of the FY 1990 level.<br>• Implement energy saving measures and reduction of equipment problems.<br>■ Reduce greenhouse gas emissions intensity to below 75% of the FY 1990 level.<br>■ Reduce emissions of PRTR substances and VOCs.<br>• Focus reductions on substances with high emissions volumes.<br>■ Achieve zero emissions of waste.<br>(Zero emissions: Implement the 3Rs to reduce final disposal of generated wastes to 0.3% or less by weight.)<br>■ Workplaces that achieve zero emissions will further reduce their final disposal volume. |
| Chemical and Product Safety | ■ Provide product safety information.<br>• Reflect up-to-date information in safety data sheets (SDSs).<br>■ Conduct product risk management.<br>• Perform risk evaluation and risk reduction.<br>• Adapt to overseas regulations for product risk management.<br>• Conduct appropriate assessment of new products.<br>■ Promote development of products with lower environmental impact and energy saving technologies. |

## Message from the Director in Charge of Environment and Safety

Kenji Inamasa
Managing Executive Officer

MGC is promoting a company-wide project aimed at eradicating occupational injuries and accidents, and fostering a culture of safety. This fiscal year marked the end of the second stage of the project, which is divided into three-year stages. We are pushing forward with the initiatives of our working groups at each plant. Through initiatives aimed at improved communication, upgraded equipment, and enhanced on-site competency, 2013 marked the first time that MGC was able to completely eliminate all lost time injuries. The results of this project were reported at the first company-wide safety presentation and subsequently rolled out thereafter. These activities will ensure safer and more secure corporate activities because they link up with the Bridge activities for the next project.

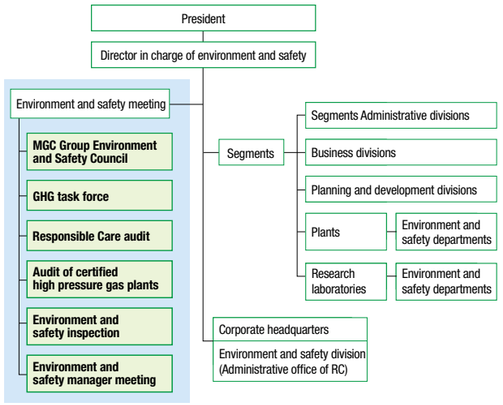
In terms of environmental issues, we are continuing our efforts to set and meet the numerical targets in each area of: reduction of emissions of chemical, reduction of industrial wastes, and energy saving measures. As a result, we have been able to broadly cut the amount of PRTR substances that we release. In recent years, major accidents continued to occur in the chemical industry. We are cng out risk assessment at each business site to determine the likelihood of similar accidents occurring at MGC. We are working to identify areas of danger and hazardous processes, and pushing forward with corresponding prevention measures. We are also fostering a culture of safety by incorporating the Guidelines for Prevention of Chemical Plant's Accidents published by the Japan Chemical Industry Association and the safety assessment system of the Japan Safety Competency Center, which was established in April 2013 by the Japan Society for Safety Engineering.

Since the Great East Japan Earthquake, new damage scenarios for earthquakes have been created. Based on these, we are reviewing our earthquake resistance and our disaster manuals, while also continuing with earthquake drills, so that we can safely halt our plants in the event of an earthquake.

The MGC initiatives described here have brought real results, though they are still not entirely sufficient. Going forward, MGC 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 Audit in 2013

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 2013, we audited measures to prevent accidents at plants, which included identifying and reducing risks associated with abnormal reactions, explosions/fires, and emergency shutdowns, as well as the implementation of statutory inspections and voluntary inspections and the safety of workers when handling heavy objects.

■ **Audit period**
August – October, 2013

■ **Auditees**
5 plants, 3 laboratories (including Tokyo Techno Park), business divisions of 4 segments, Purchasing & Logistics Center

■ **Audit findings**
Full conformity (26 cases) Non-conformity (no cases)
Improvement orders (19 cases) Comments (29 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.


Tokyo Techno Park / Audit


Niigata Plant / Audit

# Results and Plans for RC Activities at MGC

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

| RC Code | RC Medium-Term Plan 2011–2014 | 2013 RC Action Plan | | 2013 Achievements | Assessment | 2014 RC Action Plan |
|---|---|---|---|---|---|---|
| **Occupational Health and Safety**<br><br>**Process Safety and Disaster Prevention** | Working toward zero occupational injuries and accidents<br><br>■ Establish a culture of safety.<br>• Enhance communications.<br>• Eradicate human error.<br>• Identify fundamental causes of accidents and occupational injuries, and undertake active measures to improve equipment.<br>■ Enhance voluntary process safety inspections.<br>■ Enhance joint disaster prevention systems with neighboring affiliates. | We will continue with our daily activities (hazard prediction activities, *Hiyari-Hatto* [near miss] identification activities, and the 5S activities) and risk assessments, while ensuring enhanced communication and that all employees work toward achieving zero occupational injuries and accidents. Specific details are as follows:<br><br>1. Continue daily activities (hazard prediction activities, *Hiyari-Hatto* [near miss] identification activities, 5S activities).<br>2. Thoroughly pursue the elimination of plant accidents. (Identify and reduce risk from abnormal reactions, explosions/fires, and risk occurring during emergency equipment shutdown.)<br>3. Enhance communication and link communication to eradication of human error.<br>4. Firmly establish accident and occupational injury analysis methods.<br>5. Firmly establish, utilize, and enhance our company-wide facility management systems.<br>6. Enhance emergency response, including fire-extinguishing capabilities, for neighboring affiliates and partner companies.<br>7. Pursue activities for preventing occupational injuries at partner companies. (Enhance facility upgrades, support for the training of partners' employees, and communication with partners.) | | 1. We proactively carried out daily activities in each business site. We made changes to increase the participation rate in the identification of *Hiyari-Hatto* [near misses]. We shared case studies at business sites and tracked progress until improvement measures were completed. We also utilized *Hiyari-Hatto* [near misses] examples as materials of teaching and risk assessments.<br>2. We worked on identifying and mitigating risk scenarios for each department in terms of not only emergency shutdowns, but also in the event time has passed since workers evacuated following a shutdown. As part of our efforts to prevent major accidents in the chemical industry, we also completed our identification of processes with the potential to lead to abnormal reactions or explosions/fires and began reviewing measures.<br>3. We worked to enhance communication by utilizing the opportunities presented by workplace round-tables, patrol rounds, and safety meetings held before the beginning of work. Some plants also held discussions between the plant manager, team leads and assistant leads of operational sections on the topic of safety activities.<br>4. We continued to firmly establish causal analysis habits by holding seminars, etc. on methods for comprehensively analyzing the fundamental causes of accidents and occupational injuries.<br>5. We continued with utilizing to full effect our company-wide facility management system, and further strengthened our management of tracking equipment history.<br>6. During emergency response training for earthquakes and fires, we reexamined systems for cooperative disaster prevention and emergency communication report systems and verified matters to be passed on to firefighters at each business site.<br>7. Each business site worked with partner companies to hold safety and health committee meetings, to carry out emergency response training, to issue proposals for *Hiyari-Hatto* [near misses], to carry out improvement proposal activities, and supported safety and health activities. | ★<br>★ | We will continue with our daily activities (hazard prediction activities, *Hiyari-Hatto* [near miss] identification activities, and the 5S activities) and risk assessments, while ensuring enhanced communication and that all employees work toward achieving zero occupational injuries and accidents. Specific details are as follows:<br><br>1. Continue daily activities (hazard prediction activities, *Hiyari-Hatto* [near miss] identification activities, 5S activities).<br>2. Prevent accidents and occupational injuries by reinforcing our on-site competency.<br>3. Continue to thoroughly pursue the elimination of plant accidents. (Identify and reduce risk from abnormal reactions, explosions/fires, and risk occurring during emergency equipment shutdown.)<br>4. Enhance communication and link communication to eradication of human error (ongoing).<br>5. Establish emergency response system, including neighboring affiliates, partner companies and fire departments.<br>6. Continue to pursue activities for preventing occupational injuries at partner companies. (Enhance facility upgrades, support for the training of partners' employees, and communication with partners.) |
| **Environmental Preservation** | ■ Reduce the energy consumption intensity to below 85% of the FY 1990 level.<br>• Implement energy saving measures and reduction of equipment problems.<br>■ Reduce greenhouse gas emissions intensity to below 75% of the FY 1990 level. | We will plan and formulate goals for each business site in order to achieve our medium-term targets. Specific details are as follows:<br><br>1. Advance energy saving measures while reducing equipment troubles to assure stable operation, and improve our energy consumption intensity and greenhouse gas emissions intensity. In particular, establish concrete measures for workplaces at which steam trap check-ups and steam equipment energy conservation check-ups were performed. | | 1. We reduced the energy consumption intensity by approx. 1.5% year-on-year, to 91% of the FY 1990 level. We reduced greenhouse gas emissions intensity by approx. 2.2% year-on-year, to 76% of the FY 1990 level. Energy-saving measures included improving the efficiency of utility facilities through boiler modifications and making modifications to pipework of plants. The net result was an energy savings effect equivalent to 8,700 kL of crude oil. Results of these measures brought a reduction in GHG emissions equivalent to approx. 12,000 tons of $CO_2$. Noteworthy here are the concrete benefits that have resulted from check-ups on steam equipment, undertaken for the sake of greater energy efficiency at each plant since FY 2011. | ★<br>★ | We will plan and formulate goals for each business site in order to achieve our medium-term targets. Specific details are as follows:<br><br>1. Advance energy saving measures while reducing equipment troubles to assure stable operation, and improve our energy consumption intensity and greenhouse gas emissions intensity. In particular, establish concrete measures for workplaces at which steam trap check-ups and steam equipment energy conservation check-ups were performed. |
| | ■ Reduce emissions of PRTR substances and VOCs.<br>• Focus reductions on substances with high emissions volumes. | 2. Set priorities for reducing emission volumes of PRTR substances and VOCs for each business site, and draft and enact reduction plans with clear target values. | | 2. We implemented reduction plans at business sites with high emissions of mainly 1,2,4-trimethylbenzene. We reduced our emissions of PRTR substances on the Japan Chemical Industry Association's list by approx. 44% over FY 2010 levels on a target substance basis. We reduced our emissions of VOCs by approx. 48% over FY 2010 levels. | ★<br>★<br>★ | 2. Set priorities for reducing emission volumes of PRTR substances and VOCs for each business site, and draft and enact reduction plans with clear target values. |
| | ■ Achieve zero emissions of waste.<br>■ Workplaces that achieve zero emissions will further reduce their final disposal volume. | 3. Continue to achieve zero emissions of waste. Set a waste reduction target for each business site and strive to achieve even lower emissions. | | 3. We achieved zero emissions at 9 of our 10 business sites (production sites and research labs). The amount of final waste disposed of in landfills totaled 84 tons, which marked a 31% reduction over the 122-ton figure from last fiscal year. | ★<br>★<br>★ | 3. Continue to achieve zero emissions of waste. Set a final landfill reduction target for each business site and strive to achieve even lower waste landfill. |
| **Chemical and Product Safety** | ■ Provide product safety information.<br>• Reflect up-to-date information in safety data sheets (SDSs). | We will carry out risk assessments on products. Specifically, this entails:<br><br>1. Reflect up-to-date product safety information in SDS.<br>• Provide accurate information on hazards to customers, etc.<br>• Comply-with new JIS (JIS Z 7253) for SDS by December 2015.<br>• Reexamine and put to use the SDS/label management system. | | 1. We reflected up-to-date information on the SDS of regular products and products in development, affecting a total of 204 items for which a new SDS was created or existing SDS revised.<br>• We provided clients with newly created or revised SDS, ensuring that they are given the most up-to-date information.<br>• We clarified procedures for making SDS compliant with new JIS standards and trained related parties. About 30% of the all SDS were revised or had a draft proposal finalized for compliance with the new JIS standards.<br>• We improved a system for revision of SDS and labeling by clarifying procedures for the timing of SDS and label revisions, and we conducted training about the system as part of GHS training held at all business sites. | ★<br>★<br>★ | We will carry out risk assessments on products. Specifically, this entails:<br><br>1. Reflect up-to-date product safety information in SDS.<br>• Provide accurate information on hazards to customers, etc.<br>• Comply (by December 2015) with new JIS (JIS Z 7253) for SDS.<br>• Reexamine and put to use the SDS/label management system. |
| | ■ Conduct product risk management.<br>• Perform risk evaluation and risk reduction.<br>• Adapt to overseas regulations for product risk management.<br>• Conduct appropriate assessment of new products.<br>■ Promote development of products with lower environmental impact and energy saving technologies. | 2. Implement in-house education on risk evaluation.<br>3. Set implementation plans for risk evaluation. (Promote safety assessment during new product development.)<br>4. Adapt to and support overseas laws and regulations.<br>5. Promote development of products with lower environmental impact and energy saving technologies. | | 2. We provided training on Europe's REACH regulation at all business sites as a form of product liability training.<br>3. We examined the implementation of the Japan Initiative of Product Stewardship (JIPS), a risk evaluation project advocated by the Japan Chemical Industry Association. We conducted 38 cases of in-house safety testing for new products in 2013; 15 related to acute toxicity, 11 to the Ames test, and 12 to primary skin irritation. (Last fiscal year, these numbers were 15, 12, and 13 cases respectively, for a total of 40 cases.)<br>4. We registered all 17 substances (2 overlapping substances) by the second REACH registration deadline of May 31, 2013 (including MGC Group companies). | ★<br>★<br>★ | 2. Implement in-house education on risk evaluation.<br>3. Set implementation plans for risk evaluation. (Promote safety assessment during new product development.)<br>4. Adapt to and support overseas laws and regulations.<br>5. Promote development of products with lower environmental impact and energy saving technologies.<br>6. Reinforce management of chemical reagents. |

# 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

**The top priority of our business activity is ensuring safety. 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 near-miss incidents. Our worksites also advance various safety activities such as safety-related education and drills, and occupational health and safety risk assessments.

Mizushima Plant / Training on the handling of low voltage equipment

Kashima Plant / Hazard prediction training at the worksite

Yamakita Plant / Basic lifesaving training

Tokyo Techno Park / First-aid training

Niigata Research Laboratory / Workshop led by young employee instructors

Hiratsuka Research Laboratory / Observation of disaster reduction training

## Safety Performance

In 2013, occupational injury incidents resulting in lost time totaled zero cases at MGC, and one case at partner companies.

**Change in lost time injury frequency rate*1**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| MGC | 0.57 | 0.28 | 0.54 | 0.80 | 0 |
| Chemical industry | 0.72 | 0.72 | 0.88 | 0.85 | 0.82 |
| Manufacturing industry | 0.99 | 0.98 | 1.05 | 1.00 | 0.94 |

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

**Change in lost time injury severity rate*2**

| | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| MGC | 2.14 | 0.01 | 0.01 | 0.03 | 0 |
| Chemical industry | 0.13 | 0.04 | 0.04 | 0.12 | 0.12 |
| Manufacturing industry | 0.08 | 0.09 | 0.08 | 0.10 | 0.10 |

*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.

Kashima Plant / Regular Maintenance Safety Assembly

Yokkaichi Plant / Outdoor meeting at the time of regular maintenance

## Process Safety and Disaster Prevention Activities

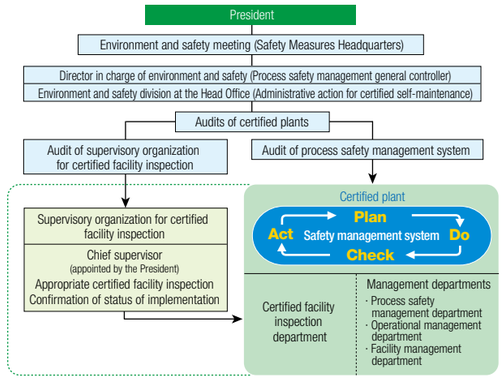
To prevent the occurrence of accidents and injuries, it is important to ensure the safety of production processes and the soundness of facilities. At each site we conduct inspections and renewal planning for facilities, and prioritize inspections, repairs and renewals according to each aging facility's risk and importance.

Considering the fact that explosions and fires continue to break out in the chemical industry, we have begun implementing risk reduction measures after identifying particular risks from a comprehensive inspection of facilities and processes to determine the likelihood of similar accidents occurring at MGC based on the scenario of an emergency shutdown.

## Certified High Pressure Gas Plants

We conduct audits of our certified high pressure gas plants under the direction of the Director in charge of environment and safety (Process Safety Management General Controller). Accordingly, our Niigata Plant and Mizushima Plant are "high pressure gas safety management code certified" high pressure gas plants. 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

As a precaution, MGC has established a disaster prevention system at each of its sites, and conducts various drills according to the annual plan.

Niigata Plant / Fire hose training

Mizushima Plant / Disaster reduction training for power outages

Yamakita Plant / Ammonia leak response drill

Tokyo Techno Park / Joint firefighting practice

## Accident Zero (AZ) Project Phase II

In response to yearly increases in accidents and abnormalities, as well as a serious accident that occurred at our Niigata Plant in December 2007, MGC launched the company-wide Accident Zero (AZ) Project in February of 2008. Over the three years since, we have continued activities to strengthen education and communication under the Project.

As these activities have become formalized and established in our laboratories we ended the project, and in FY 2011 we commenced AZ Project Phase II. As key directions during this period, we worked on improvement of "on-site competency" in individuals and organizations, and prevention of equipment and operational troubles through cooperation with the Production Technology Division.

In FY 2013, every plant undertook member-led working group activities and worked to resolve issues common to all plants with the perspective of the frontline in mind. Furthermore, MGC made progress on improving the visibility of on-site issues and completed its response, through TPM* activities and education on equipment management, as well as shared good practices across the company.

We connected these initiatives for the energizing of safety activities throughout the company, by means including liaison conferences for the special safety administrators responsible for AZ activity promotion in plants, and information exchanges through AZ activity inter-plant meetings. Through cooperation between the Environment and Safety Division and Production Technology Division, our support for accident and trouble countermeasures at plants is showing results.

Moving forward, we will change the name of the project to Bridge Activities in order to emphasize the importance of linking the results of the AZ Project with future practices. Activities will be continued at each plant through the local safety and disaster prevention subcommittee.

* **TPM (Total Productive Maintenance)** refers to improvement of production with the participation of all personnel.

Kashima Plant / TPM assessment

Mizushima Plant / Inter-plant meeting

Niigata Plant / Accident review meeting

Yokkaichi Plant / Inter-plant meeting

# Environmental Impact of Business Activities of the MGC Group

Member companies of the MGC Group Environment and Safety Council in Japan carry out Responsible Care activities to reduce environmental impacts 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 FY 2013.
The environmental impact figures shown in the table for the entire Group captures over 90% of the MGC Group's domestic consolidated accounting.

## Total for the domestic MGC Group*1

| FY 2012*2 | FY 2013 |
|---|---|
| Sites tabulated: 64 | Sites tabulated: 65 |

| INPUTS | Units | 2012 | 2013 |
|---|---|---|---|
| Energy consumption including purchased electricity (crude oil equivalent) | 1,000 kL | 678 | 746 |
| **Water usage** | | | |
| Tap water | 1,000 $m^3$ | 1,334 | 1,313 |
| Industrial water | 1,000 $m^3$ | 25,519 | 25,933 |
| Groundwater | 1,000 $m^3$ | 1,519 | 1,506 |
| River water | 1,000 $m^3$ | 15,145 | 13,340 |
| Others | 1,000 $m^3$ | 1,170 | 1,239 |
| Total water consumption | 1,000 $m^3$ | 44,686 | 43,342 |

| OUTPUTS | Units | 2012 | 2013 |
|---|---|---|---|
| **Emissions to atmosphere** | | | |
| Greenhouse gas emissions ($CO_2$ equivalent) | 1,000 tons | 1,612 | 1,785 |
| SOx emissions | tons | 158 | 147 |
| NOx emissions | tons | 691 | 746 |
| Soot and dust emissions | tons | 28 | 26 |
| **Released to water area** | | | |
| Drainage volume | 1,000 $m^3$ | 63,460 | 62,020 |
| COD emissions | tons | 268 | 256 |
| Total nitrogen emissions | tons | 171 | 338 |
| Total phosphorus emissions | tons | 74 | 65 |
| **Generation of waste** | | | |
| Amount generated | tons | 161,287 | 166,514 |
| Amount recycled (including amount sold) | tons | 40,864 | 40,031 |
| Transfer to off-site | tons | 31,226 | 38,097 |
| Final landfill | tons | 5,105 | 5,209 |
| **Notified substances under PRTR Law** | | | |
| Emissions (air) | tons | 1,497 | 1,554 |
| Emissions (water) | tons | 20 | 22 |
| Emissions (soil) | tons | 0 | 0 |
| Total amount emitted | tons | 1,517 | 1,576 |
| Total amount transferred | tons | 931 | 1,012 |

## MGC alone

| FY 2012*2 | FY 2013 |
|---|---|
| Sites tabulated: 13 | Sites tabulated: 13 |

| INPUTS | Units | 2012 | 2013 |
|---|---|---|---|
| Energy consumption including purchased electricity (crude oil equivalent) | 1,000 kL | 562 | 631 |
| **Water usage** | | | |
| Tap water | 1,000 $m^3$ | 763 | 723 |
| Industrial water | 1,000 $m^3$ | 21,848 | 22,302 |
| Groundwater | 1,000 $m^3$ | 393 | 365 |
| River water | 1,000 $m^3$ | 15,145 | 13,340 |
| Others | 1,000 $m^3$ | 1,049 | 936 |
| Total water consumption | 1,000 $m^3$ | 39,198 | 37,666 |

| OUTPUTS | Units | 2012 | 2013 |
|---|---|---|---|
| **Emissions to atmosphere** | | | |
| Greenhouse gas emissions ($CO_2$ equivalent) | 1,000 tons | 1,341 | 1,506 |
| SOx emissions | tons | 65 | 76 |
| NOx emissions | tons | 625 | 673 |
| Soot and dust emissions | tons | 21 | 22 |
| **Released to water area** | | | |
| Drainage volume | 1,000 $m^3$ | 33,678 | 34.803 |
| COD emissions | tons | 202 | 194 |
| Total nitrogen emissions | tons | 149 | 316 |
| Total phosphorus emissions | tons | 69 | 61 |
| **Generation of waste** | | | |
| Amount generated | tons | 84,915 | 86,012 |
| Amount recycled (including amount sold) | tons | 25,020 | 22,714 |
| Transfer to off-site | tons | 6,763 | 6,326 |
| Final landfill | tons | 122 | 84 |
| **Notified substances under PRTR Law** | | | |
| Emissions (air) | tons | 294 | 298 |
| Emissions (water) | tons | 13 | 15 |
| Emissions (soil) | tons | 0 | 0 |
| Total amount emitted | tons | 307 | 312 |
| Total amount transferred | tons | 447 | 235 |

*1 The data used for the total for the domestic MGC Group is the sum of the main domestic manufacturing and processing businesses (member companies of the MGC Group Environment and Safety Council; see pages 44 to 48) and MGC itself (production sites such as plants and non-production sites such as laboratories and sales offices).
*2 FY 2012 data may appear differently in CSR Report 2013 because it has been revised.

## Environmental Impacts from the Business Activities of the MGC Group Overseas

We are compiling environmental impact data for eight overseas production companies in the MGC Group.

Not all companies had data available for some of the item categories. In the future, we will increase the number of companies for which we compile data and we will make the surveys more detailed.

## Overseas MGC Group Companies

| 2012 | 2013 |
|---|---|
| Sites tabulated: 8* | Sites tabulated: 9* |

| INPUTS | Units | 2012 | 2013 |
|---|---|---|---|
| **Water usage** | | | |
| Tap water | 1,000 $m^3$ | 193 | 188 |
| Industrial water | 1,000 $m^3$ | 609 | 725 |
| Groundwater | 1,000 $m^3$ | 0 | 0 |
| River water | 1,000 $m^3$ | 0 | 0 |
| Others | 1,000 $m^3$ | 0 | 0 |
| Total water consumption | 1,000 $m^3$ | 802 | 913 |

| OUTPUTS | Units | 2012 | 2013 |
|---|---|---|---|
| **Emissions to atmosphere** | | | |
| Greenhouse gas emissions ($CO_2$ equivalent) | 1,000 tons | 17 | 19 |
| **Released to water area** | | | |
| Drainage volume | 1,000 $m^3$ | 171 | 159 |
| **Generation of waste** | | | |
| Amount generated | tons | 2,746 | 2,773 |
| Amount recycled (including amount sold) | tons | 655 | 452 |
| Final landfill | tons | 1,273 | 1,213 |
| **Notified substances under PRTR (TRI) Law** | | | |
| Emissions (air) | tons | 61 | 81 |
| Emissions (water) | tons | 0 | 0 |
| Emissions (soil) | tons | 0 | 0 |
| Total amount emitted | tons | 61 | 81 |
| Total amount transferred | tons | 188 | 190 |

* Te An Ling Tian (Nanjing) Fine Chemical Co., Ltd., MGC Advanced Polymers, Inc., MGC Pure Chemicals America, Inc., MGC Pure Chemicals Singapore Pte. Ltd., MGC Pure Chemicals Taiwan, Inc., PT Peroksida Indonesia Pratama, SamYoung Pure Chemicals Co. Ltd., AGELESS (Thailand) Co. Ltd.

# Preservation of Biodiversity

MGC is a signatory and promotional partner to the Keidanren (Japan Business Federation) Declaration of Biodiversity.

MGC sympathizes with and signed on as a promotional partner of the Keidanren (Japan Business Federation) Declaration of Biodiversity in 2009.

In May 2014, MGC became a member of the Keidanren Nature Conservation Committee in order to promote activities to protect the natural environment and conserve biodiversity.

**7 Clauses of Keidanren's Declaration of Biodiversity**

1. Appreciate nature's gifts and aim for corporate activities in harmony with the natural environment
2. Act from a global perspective on the biodiversity crisis
3. Act voluntarily and steadily to contribute to biodiversity
4. Promote corporate management for sustainable resource use
5. Create an industry, lifestyle, and culture that will learn from biodiversity
6. Collaborate with relevant international and national organizations
7. Spearhead activities to build a society that will nurture biodiversity

The business activities in the chemical industry have a significant impact on biological organisms and the natural environment.

Recognizing this and to continuously benefit from the abundant natural environment, in the course of our business, we set Responsible Care as the foundation on which we continue ever greater efforts to maintain a rich natural environment and preserve biodiversity through chemical product management, environmental protection, energy efficiency, and the development of environmentally friendly products and technologies.

# Initiatives for the Prevention of Global Warming

## MGC Overall Performance

At MGC, each sector—manufacturing, transportation, office and residence—is making efforts to prevent global warming.
FY 2013 energy consumption and greenhouse gas emissions for all of the company's business activities were as follows. Emissions from plants' manufacturing divisions account for 97% of greenhouse gas emissions.

| | Energy consumption (1,000 L crude oil equivalent) | Greenhouse gas emissions (1,000 tons-$CO_2$ equivalent) |
|---|---|---|
| Plant Manufacturing Division | 530.6 | 1267.5 |
| Transportation Sector (shipper) | 10.1 | 26.8 |
| Office Area | 6.2 | 12.4 |
| **Business activities overall** | 546.9 | 1306.7 |

For plant manufacturing divisions that are the focus of initiatives, we have set the following objectives for our measures.

- Energy consumption intensity *1: Reduce to 85% or lower compared with FY 1990 levels by FY 2014
- Greenhouse gas emissions intensity*2: Reduce to 75% or lower compared with FY 1990 levels by FY 2014

*1: Refers to the amount of energy used per production volume
*2: Refers to the amount of GHG emissions per production volume

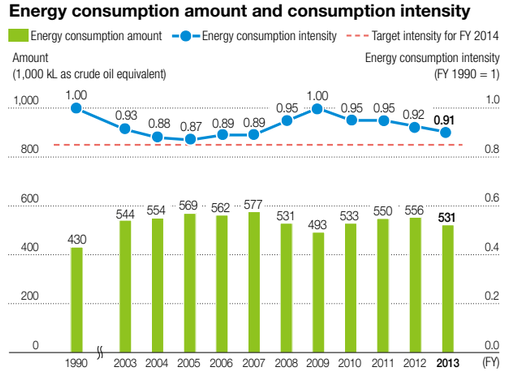
## Manufacturing Plant Initiatives

Our plant manufacturing division has continually worked to reduce our use of energy and emissions of greenhouse gases (GHG). In FY 2013, we were able to reduce energy usage and GHG emissions by 5% year on year, despite seeing an increase in production volume. Our energy consumption intensity, improved 1.5% year-on-year to 91%, using the 1990 level for base comparison, and GHG emissions intensity improved 2.2% year-on-year to 76%, also using the 1990 level for base comparison.

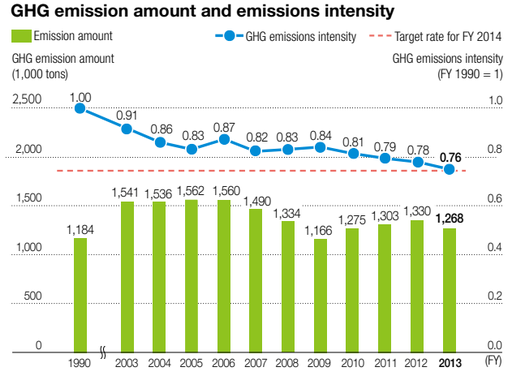
In our FY 2013 energy-efficiency measures, we implemented over 50 initiatives, including reducing the use of heat from reactor devices, recovering heat from steam, switching to inverter motors for pumps and ventilation machinery, and employing high efficiency transformers. The energy-saving results of these measures brought a crude oil equivalent reduction of 8,700 kL, and a reduction in GHG emissions equivalent to approx. 12,000 tons of $CO_2$.

Moving forward, we are planning to implement measures for collecting and using by-product gases, recovering heat from exhaust gases, and switching over to higher efficiency exhaust gas cracking furnaces. Furthermore, we are carrying out energy efficiency assessments of steam equipment to promote new energy efficiency measures. In FY 2013, we completed the assessment of our Yokkaichi Plant and came up with 33 new proposals for measures, which are expected to save energy in the amount equivalent to 1,200 kL of crude oil. Of the proposals for measures identified during the assessment of the Kashima Plant in FY 2012, we are currently moving forward with seven that are expected to deliver a comparatively quick return on investment. Once these measures are in place, the plant is expected to save energy in the amount equivalent to 640 kL of crude oil.

**Energy consumption amount and consumption intensity**




**GHG emission amount and emissions intensity**



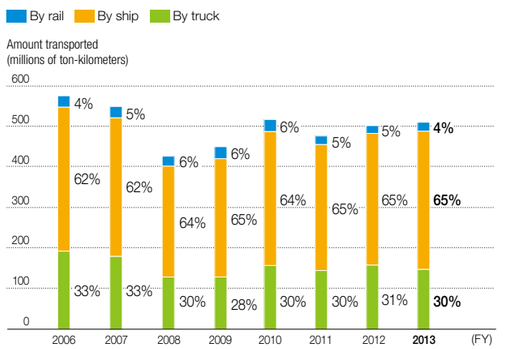

## Initiatives in the Transportation Sector

As an energy-saving measure in our Transportation Sector, MGC is undertaking initiatives focused on efficiency improvements in truck transport (use of larger transport lot sizes and improvement in loading ratio), use of larger ships for transport, and modal shift to rail transport.

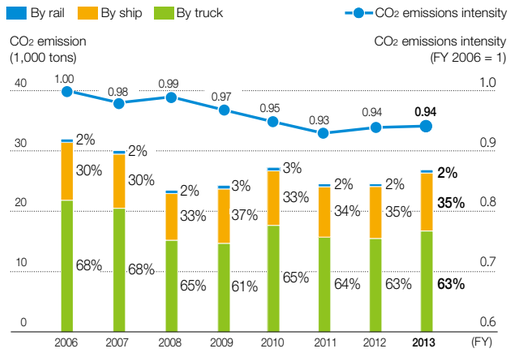
In FY 2013, our transportation volumes increased accompanying production increases, which brought a 1% rise in our ton-kilometers (transport weight × transport distance). Higher production led to an approx. 1% increase in $CO_2$ emissions as well. The result of this was $CO_2$ emissions intensity remaining roughly the same, though the statistic had shown improvement of about 6% in the eight years since FY 2006.

From here out, we are planning energy-saving measures that include a modal shift to rail from hauling on main lines.

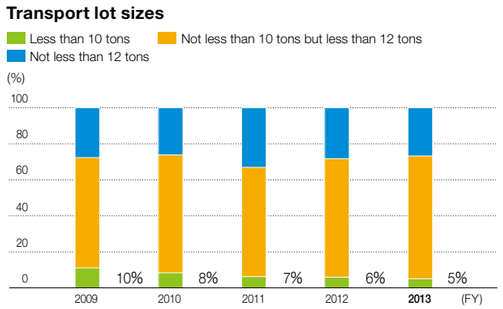
**Volume of transportation**




**$CO_2$ emissions from modes of transport used in physical distribution**




**Transport lot sizes**




## Activities in the Office and Employee Residence Area

We conduct a number of proactive measures to reduce energy consumption at our head office and laboratories. These include 'Cool Biz' during summer, 'Warm Biz' during winter, and turning off lights and computers when not in use.

We continued these measures in FY 2013 as well. Our annual energy consumption rose 6% year-on-year but we have been able to achieve an 8% reduction over FY 2010 (before the Great East Japan Earthquake).

In the employee residence area, we called on employees to work toward energy reduction by sending e-mail messages detailing real examples of energy saving steps centered around easily implemented approaches.

**Energy consumption in the business operations division**

| FY | Energy consumption (1,000 kL crude oil equivalent) | Greenhouse gas emissions (1,000 tons-$CO_2$ equivalent) |
|---|---|---|
| 2009 | 6.10 | 10.57 |
| 2010 | 6.68 | 11.05 |
| 2011 | 5.66 | 8.98 |
| 2012 | 5.80 | 10.67 |
| 2013 | 6.17 | 12.41 |

## Environmental Information Sharing System

We have rolled out our Environmental Information Sharing System, which manages information on the environmental impacts of business sites.

The system is intended to increase efficiency in the compilation of increasingly complex environmental information and in reporting tasks. We also built the system to use in identifying problem areas within each production process and in verifying the effects of energy conservation measures, particularly through assessment of per- production facility/per- product data on energy consumption and GHG emissions.

Going forward, we will put it to use in collection and analysis of environmental information from Group companies, including those overseas.

## Initiatives for the Prevention of Global Warming

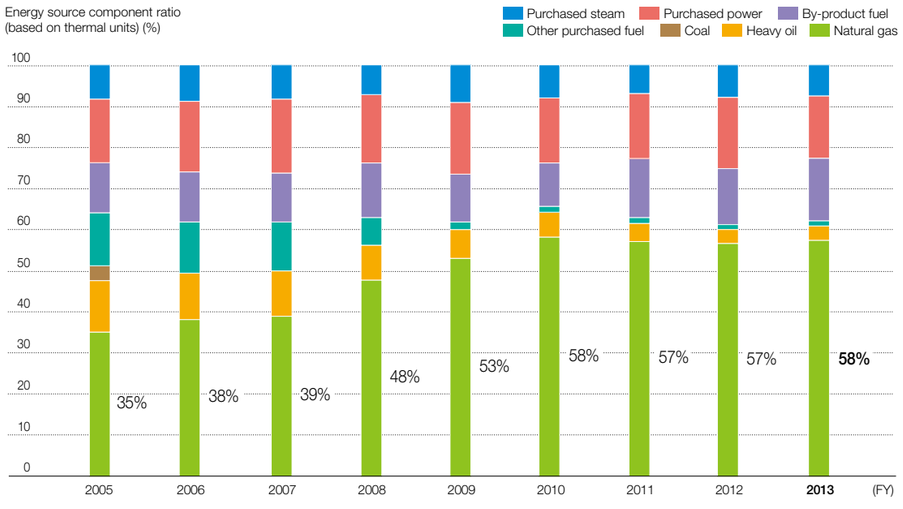
### Development and Utilization of Clean Energy

Natural gas is a clean fuel that has low emissions of $CO_2$ for each calorie of energy compared to petroleum, as well as less sulfur and other impurities. In Niigata Prefecture, MGC has been actively conducting exploration and development work on natural gas. We have deployed natural gas at our Niigata Plant, where it is used as both a raw material and an energy source.

We are also promoting the switch to natural gas-related fuels, such as city gas and LNG, at locations other than our Niigata Plant. Fuel conversion at our plants has come to an end, with natural gas-related fuels making up a larger percentage of our company-wide energy consumption. In FY 2013, this usage rose 1% year on year to 58%.

In addition, MGC is participating in a project in Hachimantai, Akita Prefecture, to supply an adjacent power plant with geothermal steam, a type of renewable energy. Geothermal energy is plentiful in Japan and is expected to see further development. MGC is also taking part in a project to survey and develop geothermal resources in Yuzawa City, Akita Prefecture, with the aim of constructing a geothermal power plant.

**Energy source component ratio**








# Chemical Emissions of the MGC Group

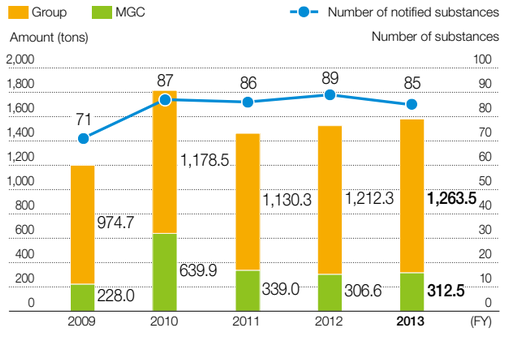
Each MGC Group company assesses and issues notifications on substances subject to the Pollutant Release and Transfer Register (PRTR), while working to reduce the amounts released and transferred.

### Substances Subject to Notification under the PRTR Law

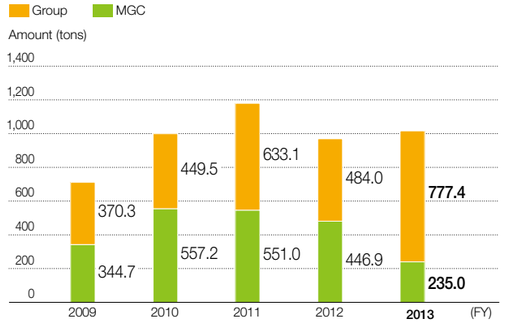
Substances subject to release and transfer notification under revisions to the PRTR Law increased to 462 in FY 2010.

Group-wide, we made notifications in FY 2013 for 85 substances handled that exceeded prescribed volumes. Our annual emission of those substances totaled 1,576 tons, an approx. 4% year-on-year increase over the 1,518 tons last fiscal year. The amount transferred totaled 1,012 tons Group-wide, an increase of approx. 9%, or 82 tons, compared with FY 2012's total. This increase was mainly due to an increase in production volume.

**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 2012.

### PRTR Law Substances with High Levels of Emissions

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

- Chloromethane (1,231 tons)
- 1,2,4-Trimethylbenzene (193 tons)
- Dichloromethane (64 tons)
- Xylene (20 tons)
- Toluene (13 tons)
- Isobutyraldehyde (12 tons)

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

The Japan Chemical Industry Association, in which MGC has joined, specified 433 substances plus 1 substance group* as voluntary "PRTR-targeted substances" in conjunction with revisions to the law at the time of reporting on actual performance in FY 2010. The entire chemical industry is working toward the reduction of PRTR substance emissions.

MGC, on a standalone basis, is working to assess and reduce substances, targeted by the JCIA in FY 2010. Eighty two of these substances were emitted in total, in the amount of 429 tons, in FY 2013. This marked an approx. 3 ton reduction over the previous year and an approx. 44% reduction compared to FY 2010.

Transferred amounts of these substances totaled 625 tons, a reduction of approx. 42%, or 460 tons, compared with FY 2012's total. This reduction was primarily due to a shutdown of certain equipment.

* "422 substances plus 1 substance group" from page 32 of CSR Report 2013 was an error. This has been revised in the current edition.

### Volatile Organic Compounds (VOCs) (MGC)

At MGC (standalone), PRTR Law substances, and those on the JCIA list, for which there is release into the atmosphere, are tallied as VOCs.

Amounts released into the atmosphere in FY 2013 totaled 22 substances and approx. 374 tons at all of our business sites, an increase of 3 tons, compared with FY 2012's total.

This marks a 48% reduction compared to FY 2010 results.

# Waste Reduction in the MGC Group

Each MGC Group company is striving to reduce waste, by promoting the 3Rs,* and properly dispose of waste according to applicable laws.

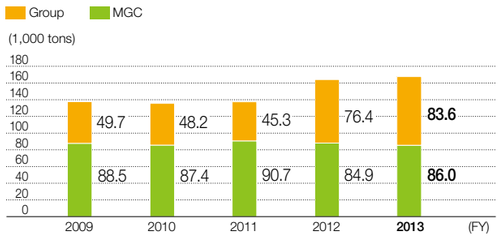
* 3Rs: Reduce, Reuse, Recycle (waste products)

## Waste Reduction Achievement

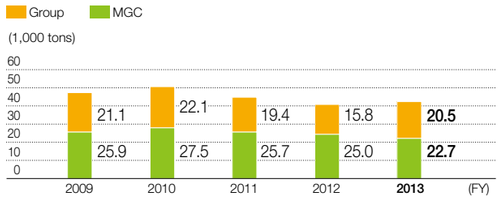
FY 2013 waste amounts totaled approx. 169,700 tons Group-wide, an increase of approx. 8,400 tons year-on-year. The primary reason for the increase was the continued generation of unneeded material during our reassessments of business operations.

Also, the final landfill amount, Group-wide, was 5,209 tons, an increase of 104 tons year-on-year. This increase was due to the continuing occurrence of sludge and soil waste associated with changes in business operations.

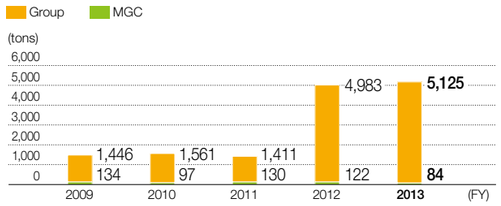
### Amount of waste generated



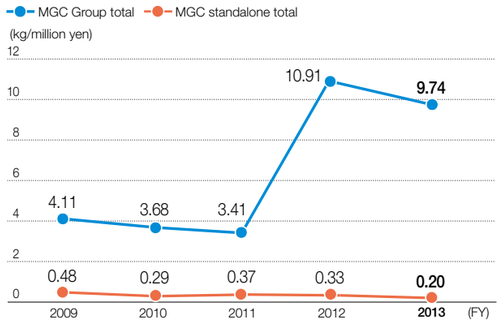

### Recycled amount




### Final landfill amount




### Final landfill waste intensity compared to consolidated net sales

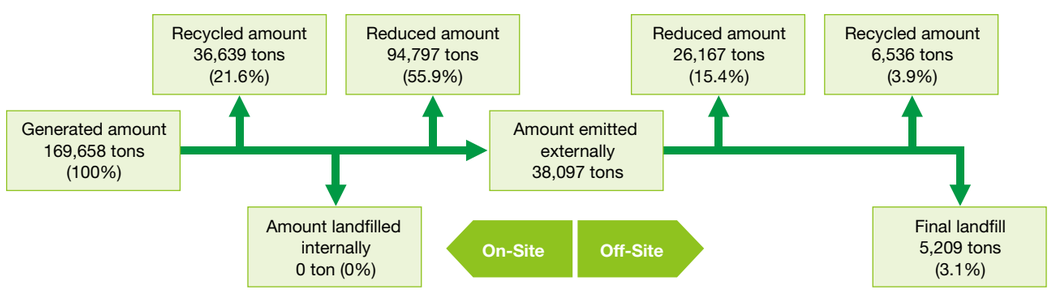



## Zero Emissions at MGC

MGC itself, as a single company, strives to reduce waste and defines zero emissions as a final landfill waste amount of 0.3% or lower.

For our 10 business sites, our zero emissions intensity came to 0.10%, with 84 tons of final landfill waste out of 86,012 tons generated, marking a reduction of 31% compared to the previous fiscal year. MGC has achieved zero emissions on a standalone basis since FY 2008.

## Waste Treatment in the MGC Group in FY 2013







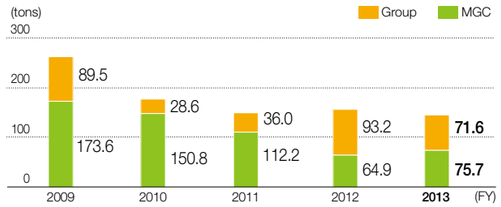

# Air and Water Conservation in the MGC Group

Each MGC Group company strives to further reduce its impact on the environment by actively investing in facilities so that a balance between natural environment preservation and sustainable production activities can be achieved.

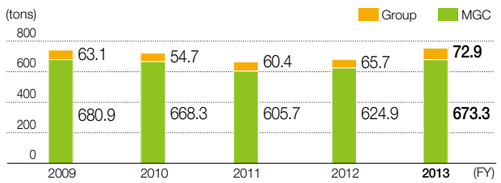
## Preservation of Air Quality

We are working to preserve air quality by managing emissions of sulfur oxides (SOx), nitrogen oxides (NOx), soot and dust, and other harmful substances contained in the emission gas of combustion facilities.

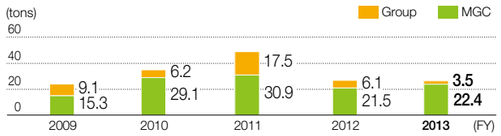
### Emission of SOx




### Emission of NOx



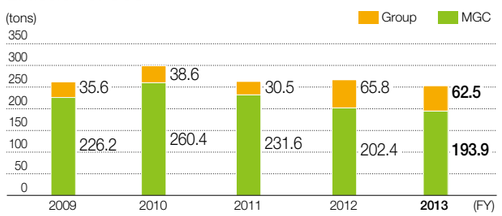

### Emission of soot and dust



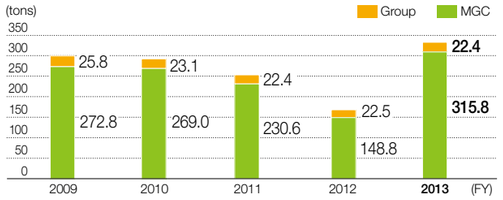

## Preservation of Water Quality

We are endeavoring to preserve water quality by managing chemical oxygen demand (COD), total nitrogen, total phosphorus, and other chemicals within our wastewater. The increase in nitrogen seen during FY 2013 was a one-off event caused by the processing of wastewater associated with the decommissioning of facilities.

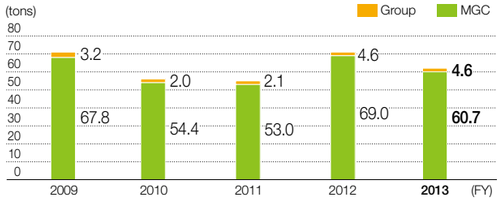
### Emission of COD




### Emission of total nitrogen




### Emission of total phosphorous

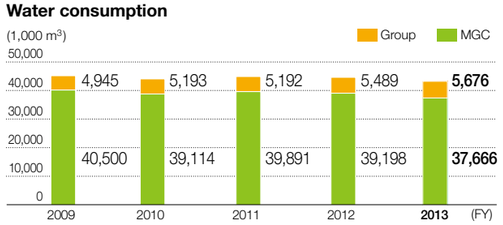



* Actual performance of air and water quality data from FY 2012 has been reviewed and revised.

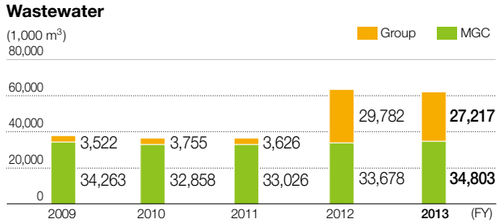
## Water Consumption / Wastewater Volume

The increase in wastewater was a one-off event due to the intensive processing of wastewater stored in tanks associated with the decommissioning of facilities.

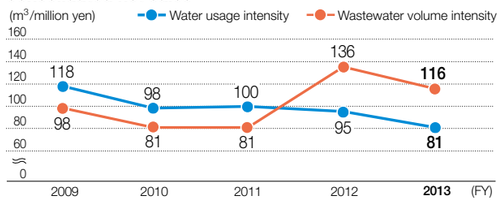
### Water consumption




### Wastewater




### Water usage/wastewater volume intensity compared to consolidated net sales




* Past water usage volume has been reviewed and revised.

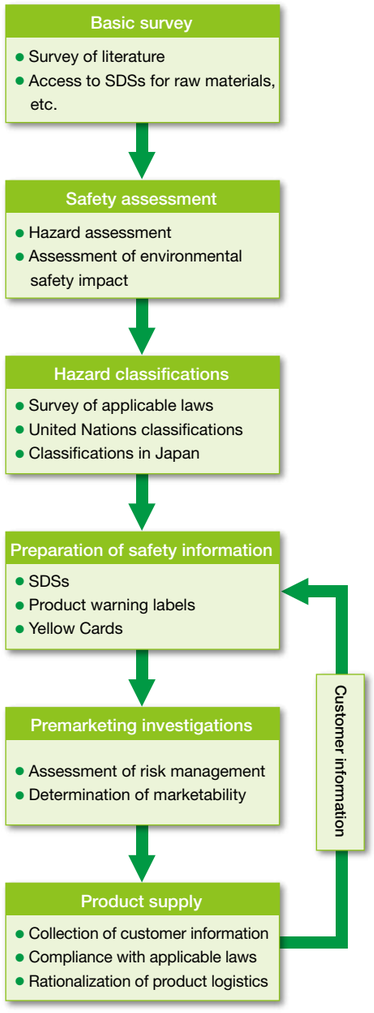
# Safety Management of Chemicals and Products

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 evaluations (of the hazards of the substances themselves, as well as of 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.

### SDSs (Safety Data Sheets)

SDSs are documents that convey detailed information about the handling and safety of chemicals, and are submitted to companies that handle our chemicals, such as customers, sales agents, and shipping companies. SDSs for all products are in compliance with GHS, and we are in the process of reviewing them in accordance with the new JIS (JIS Z 7253) and enhancing safety information.

### Labels

Easy to understand GHS compliant warnings and safety information for users are printed on labels affixed to our chemical products. At present, we are in the process of updating and reviewing label information in accordance with revision of SDSs based on the new JIS (JIS Z 7253).

### 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 our company. We distribute these cards to shippers of chemicals, and ensure that they are carried during product shipments.

## Chemical and Product Safety Education

MGC conducts chemical and product safety education within its PL (product liability) training at each business site. In FY 2014, we carried out briefings on the Product Liability Act and company rules related to the Act.

We also carry out launch screenings and practical training for SDS preparation, such as points of caution regarding product liability risk assessments and regarding what to include on SDSs for addressing risks.


PL education / Head Office

## Compliance with EU REACH Regulations

MGC and MGC Group companies have organized task forces to steadfastly respond to the EU REACH chemical product management regulations.

The task forces primarily work to register substances shipped to the EU, and to employ a system for faithfully reflecting the registration information on SDSs and labels to convey registered information to customers. In the future, we predict that an increased response will be necessary toward "substances of high concern" that require permission for their use and marketing. Consequently, we are working hard to procure relevant information on these products and to provide it to our customers.

## Emergency Responses in Distribution

At MGC workplaces, we have set up a wide-area support system that includes supplying emergency goods and equipment 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.


Training for deploying oil barriers in Mizushima Port / Mizushima Plant


Mizushima Port counter-terrorism training (detonation of explosive device) Mizushima Plant


Regional support vehicle with disaster reduction equipment / Mizushima Plant


Response to ship trouble / Mizushima 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 testing and biodegradability testing. 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 tests, primary skin irritation tests, and pathogenicity tests.

*** 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.

# Environmental Accounting

Using the Ministry of the Environment's guidelines on environmental accounting, the cost of necessary environmental preservation through MGC's (individual, non-Group) business activities and the effective economic result of those activities have been calculated quantitatively, and published for the public's review.

## Environmental Preservation Cost

The cost of environmental preservation activities includes the investment costs of installing facilities to reduce environmental impacts and the expenses associated with running and managing those facilities, as well as the cost of research and development into environmentally friendly products.

### Investments

The total of investment in environmental preservation activities in FY 2013 was 820 million yen. The main items of that investment were the reduced emissions of vent gas through the use of insulating paint on tanks at the Mizushima Plant, and the enhancement of wastewater processing facilities at the Niigata Plant.

### Expenses

Total expenses related to environmental conservation activities in FY 2013 were 8.3 billion yen. Of these, the highest expense was 2.8 billion yen for research and development, accounting for 34% of the total. The next highest was 1.7 billion yen for global environmental preservation, representing 21% of the total.

## Benefits of Environmental Preservation Activities

In addition to the reduction in the environmental impact that resulted from our environmental preservation efforts, we realized positive economic benefits, such as income from the sale of waste products and reduction of expenses through energy saving.

### Environmental preservation benefits

Compared to FY 2012, our energy consumption rate per unit of production in our Plant Manufacturing Division, and our GHG emissions intensity, showed improvement in FY 2013. The results are shown on the Global Warming Prevention initiatives pages.

### Economic benefit

We generated additional revenue by selling valuable waste for recycling and re-use by other companies, and through cost savings from reduced energy consumption.

**Economic benefit**

| Title | Item | Amount (millions of yen) |
|---|---|---|
| Income | Profit on sale of valuable waste, etc. | 31.9 |
| Reduction of expenses | Effects due to energy saving | 344.9 |

**Environmental preservation cost (Breakdown of investment and cost by business)**

| Breakdown | | | Main areas of activity | (millions of yen) | |
|---|---|---|---|---|---|
| | | | | Investment | Expenses |
| Onsite cost | Pollution prevention cost | Air pollution prevention | Installation, repairs, and maintenance of emission gas recovery equipment | 13.8 | 615.8 |
| | | Water pollution prevention | Installation, reinforcement, and maintenance of wastewater treatment facilities and measuring equipment | 167.8 | 1,644.1 |
| | | Soil, Noise | Prevention of soil infiltration; noise prevention measures | 33.6 | 0.0 |
| | Global environmental preservation cost | | Maintenance of cogeneration facilities; replacement with high efficiency equipment | 110.5 | 1,746.3 |
| | Resources recycling cost | | Material and thermal recycling of waste | 23.6 | 835.8 |
| Up or down stream cost | | | Retrieval and reuse of product containers; yellow card management | 0.0 | 106.6 |
| Management activity cost | | | Maintaining green spaces; maintaining environment management systems | 34.3 | 437.8 |
| R&D cost | | | Research and development of energy-saving technologies and environmentally friendly products | 212.1 | 2,818.1 |
| Social contribution cost | | | Greening of surrounding areas; support for environmental conservation organizations | 0.0 | 8.2 |
| Environmental damage cost | | | Compensation for environmental preservation | 0.0 | 87.5 |
| **Total** | | | | **595.7** | **8,300.1** |

**Compliance with the Ministry of the Environment's Environmental Accounting Guidelines 2005**
Period: From April 1, 2013 to March 31, 2014
Scope: MGC only
Methods: Investments are proportionally related to the approved or enforced amount of capital expenditure to environmental preservation. Expenses are proportionally related to the ratio of environmental preservation and include depreciation allowance.





# RC Activities at Business Sites

## Niigata Plant

Address: 3500 Matsuhama-cho, Kita-ku, Niigata-shi, Niigata 950-3121, Japan Tel: +81-25-258-3474
**ISO 14001 certification:** June 1998 (certification body: DNV)

### Message from the Niigata Plant Manager

The Niigata Plant is situated on the Echigo plain which offers rich resources that include the abundant waters of the Agano River and Niigata's own natural gas reserves. Blessed with these resources, the Niigata Plant closely roots itself in the community and, through comprehensive improvement activities and RC activities based on the total productive maintenance (TPM) regimen started in 2011, we are working to be a safe and open plant in harmony with its surroundings. We will strive to supply even better quality products through our production activities and contribute to the growth of society.

Masato Inari
Executive Officer
Plant Manager

**Main products**

- Methanol, Ammonia, and their derivatives
- m-Phenylenebis (methylamine)
- MX Nylon
- Bio-related products

**Environmental impact data (FY 2013)**

| | |
|---|---|
| Water consumption (1,000 $m^3$) | 9,999 |
| GHG emissions (1,000 tons-$CO_2$) | 436 |
| SOx emissions (tons) | 0 |
| NOx emissions (tons) | 425 |
| Total drainage volume (1,000 $m^3$) | 9,608 |
| BOD emissions (tons) | 38 |
| Waste transferred offsite (tons) | 1,448 |
| Final landfill (tons) | 48 |

| PRTR substances | Emissions (tons) | Transfers (tons) |
|---|---|---|
| Ethylene oxide | 2.3 | 0 |
| Butyl alcohol | 1.4 | 1.3 |
| Methyl methacrylate | 0.3 | 0.4 |

New Disaster Prevention Center

## Niigata Research Laboratory

Address: 182 Tayuhama Shinwari, Kita-ku, Niigata-shi, Niigata 950-3112, Japan
Tel: +81-25-259-8211

### Message from the Research Laboratory Director

The Niigata Research Laboratory is situated in the north part of Niigata City where we carry out research activities for the development of new products with environmental protection and safety in mind. Collaborating with the Niigata Plant, which sits adjacent to us, we promote enhanced communication and RC activities involving all employees that maintain the goals of zero accidents, zero occupational injuries and environmental preservation. Our goal is to be a business site that contributes to society through the development of new products and technologies that are eco friendly.

Yoshikazu Shima
Laboratory Director

**Main research themes**

- Process development
- Catalysts
- New energy-related research
- Biotechnology
- Life science

Comprehensive disaster reduction drill

Visit by students

## RC Activities at Business Sites

### Mizushima Plant

Address: 3-10 Mizushima Kaigan Dori, Kurashiki-shi, Okayama 712-8525, Japan Tel: +81-86-446-3822
**ISO 14001 certification:** May 2000 (certification body: JCQA)

#### Message from the Mizushima Plant Manager

We are pursuing various initiatives at the Mizushima Plant under the slogan, “Striving for environmental preservation, safety, and stable operations!” We are actively working to optimize the efficiency of energy usage at the entire industrial complex, minimize substances that impact the environment, pursue process safety and disaster prevention, and follow through with our responsibility as one corporation dedicated to reducing atmospheric, water, and industrial waste emissions.

In April 2014, our high pressure gas certification completion/safety test implementer applied for renewal of the certification, and onsite screening has been carried out. Also, we renewed our open test peripheral certification for boilers and Class 1 pressure vessels, carried out operational maintenance in accordance with relevant regulations, and strived to maintain safe and stable operations on a daily basis.

Tsuguji Kawabata
Plant Manager

**Main products**

- Xylene isomers
- m-Xylene derivatives
- Specialty aromatic products
- Polyols

**Environmental impact data (FY 2013)**

| | |
|---|---|
| Water consumption (1,000 $m^3$) | 11,983 |
| GHG emissions (1,000 tons-$CO_2$) | 761 |
| SOx emissions (tons) | 75 |
| NOx emissions (tons) | 197 |
| Total drainage volume (1,000 $m^3$) | 10,665 |
| COD emissions (tons) | 104 |
| Waste transferred offsite (tons) | 1,878 |
| Final landfill (tons) | 20 |

| PRTR substances | Emissions (tons) | Transfers (tons) |
|---|---|---|
| Xylene | 9.8 | 5.2 |
| Isobutyraldehyde | 11.5 | 0 |
| Acetone | 4.7 | 0 |
| n-hexane | 4.1 | 0 |

Practicing stacking sandbags

### Hiratsuka Research Laboratory

Address: 6-2 Higashiyawata 5-chome, Hiratsuka-shi, Kanagawa 254-0016, Japan
Tel: +81-463-21-8600

#### Message from the Research Laboratory Director

The Hiratsuka Research Laboratory carries our research and development primarily on synthetic resins and resin processing technologies. As part of our efforts to give back to the local community, we take part in cleanup activities along the nearby Sagami River and host visits by local schools. In terms of safety, we pursue our research and development after ensuring safe operating conditions through “near miss” vigilance and proper risk assessment. It is our aim to be a laboratory that contributes to society by our research and development of new products and technologies related to resins.

Shojiro Kuwahara
Laboratory Director

**Main research themes**

- Specialty plastics
- Packaging materials
- High heat-resistant film
- Resist bottom layer materials

Firefighting drill

Planting grass in a park along the Sagami River

### Yokkaichi Plant

Address: 4-16 Hinagahigashi 2-chome, Yokkaichi-shi, Mie 510-0886, Japan Tel: +81-59-345-8800
**ISO 14001 certification:** August 1999 (certification body: JQA)

#### Message from the Yokkaichi Plant Manager

The area in which the Yokkaichi Plant sits was once characterized by the image of a polluted area with “Yokkaichi asthma.” However, the natural environment of the area has been greatly improved by the local government’s basic ordinance on the environment and the execution of an environmental plan. Our plant follows a philosophy of safety and security, identical to the local administration’s policy of environmental conservation, and goes about business in a way that garners trust from local residents for our RC and environmental risk assessment activities. In 2013, we served as the presiding company of the Yokkaichi Industrial Complex Region's Disaster Prevention Council. Going forward, we will take the lead in the local community and promote RC activities.

Motoyoshi Onobori
Executive Officer
Plant Manager

**Main products**

- Hydrogen peroxide, other industrial chemicals
- Polyacetal plastics

**Environmental impact data (FY 2013)**

| | |
|---|---|
| Water consumption (1,000 $m^3$) | 6,881 |
| GHG emissions (1,000 tons-$CO_2$) | 94 |
| SOx emissions (tons) | 2 |
| NOx emissions (tons) | 19 |
| Total drainage volume (1,000 $m^3$) | 6,248 |
| COD emissions (tons) | 53 |
| Waste transferred offsite (tons) | 688 |
| Final landfill (tons) | 0 |

| PRTR substances | Emissions (tons) | Transfers (tons) |
|---|---|---|
| 1,2,4-Trimethylbenzene | 125 | 0 |
| Hydrazine | 7.1 | 0 |
| Methyl ethyl ketone | 32 | 0.3 |

Disaster assessment drill led by the Yokkaichi fire department

### Yamakita Plant

Address: 950 Kishi, Yamakita-machi, Ashigarakami-gun, Kanagawa 258-0112, Japan Tel: +81-465-75-1111
**ISO 14001 certification:** May 2000 (certification body: JQA)

#### Message from the Yamakita Plant Manager

The 81-year old Yamakita Plant lies near the Sakawa River, in a verdant and fertile area west of the Tanzawa mountains and east of Mt. Fuji. Because of this special location, our plant places the highest priority on environmental preservation and the trust of the local community as we go about our daily business. In addition to our commitment to continue safety and environmental preservation efforts in our plant, we also participate in local festivals, cleanup and beautification activities, etc. We strive to be a plant that continuously wins the trust and affinity of our regional community.

Hiroya Fujii
Plant Manager

**Main products**

- Derivatives of hydrogen peroxide
- Persulfates

**Environmental impact data (FY 2013)**

| | |
|---|---|
| Water consumption (1,000 $m^3$) | 6,580 |
| GHG emissions (1,000 tons-$CO_2$) | 41 |
| SOx emissions (tons) | 0 |
| NOx emissions (tons) | 3 |
| Total drainage volume (1,000 $m^3$) | 6,508 |
| COD emissions (tons) | 7 |
| Waste transferred offsite (tons) | 434 |
| Final landfill (tons) | 0 |

Fire hose drill carried out by the plant’s firefighting team

## RC Activities at Business Sites

### Kashima Plant

Address: 35 Higashi Wada, Kamisu-shi, Ibaraki 314-0102, Japan Tel: +81-299-96-3121
**ISO 14001 certification:** February 1999 (certification body: JQA)

#### Message from the Kashima Plant Manager

While endeavoring to be a plant that prevents occupational injuries and accidents, the Kashima Plant devotes its energy to developing environmentally conscious materials, products, and processes, which enables it to actively engage in initiatives to reduce our environmental impact, conserve resources and energy.

Now and in the future, in all of our business processes, we will create a harmonious coexistence with the environment, and work with the companies of the eastern Kashima industrial complex. Our goal is to be a plant that contributes to building an affluent society and a sustainable global future under a policy of cooperation with the local community.

Masamichi Mizukami
Executive Officer
Plant Manager

**Main products**

- Hydrogen peroxide
- Polycarbonate plastics

**Environmental impact data (FY 2013)**

| | |
|---|---|
| Water consumption (1,000 $m^3$) | 1,679 |
| GHG emissions (1,000 tons-$CO_2$) | 146 |
| SOx emissions (tons) | 0 |
| NOx emissions (tons) | 4 |
| COD emissions (tons) | 12 |
| Waste transferred offsite (tons) | 541 |
| Final landfill (tons) | 1 |

| PRTR substances | Emissions (tons) | Transfers (tons) |
|---|---|---|
| Dichloromethane | 62.6 | 3.3 |
| 1,2,4-Trimethylbenzene | 66.0 | 2.9 |

A safety assembly held during nationwide safety week

### Tokyo Techno Park

Address: 1-1 Niijuku 6-chome, Katsushika-ku, Tokyo 125-8601, Japan Tel: +81-3-3627-9411

#### Message from the Tokyo Techno Park General Manager

As the hub of MGC research and development, Tokyo Techno Park is constantly engaged in leading edge research activities for new businesses. We review the impacts of research results on safety and the environment, from basic research to commercialization and aim to create businesses that contribute to society. At the same time, we are also focused on developing human resources with a heightened awareness of safety.

In addition, we work with local governments to contribute to regional disaster prevention efforts, which include carefully managing our facilities and holding training for emergencies.

Takayuki Watanabe
Senior Managing Executive Officer
General Manager

**TTP internal organization**

- Management Center
- Oxygen Absorbers Techno Center
- Information & Advanced Materials Segment
  Research and Development Center
- Tokyo Research Laboratory
- MGC Chemical Analysis Center

Basic lifesaving training for new employees

The plant's booth at the Katsushika Environment and Greenery Fair





# 13 Member Companies of the MGC Group Environment and Safety Council

Thirteen 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 | 2014 RC Action Plan |
|---|---|
| ■ Expanding target Group companies for environmental and safety activities (support to include terminals, transport, etc.)<br>■ Promotion of the sharing of safety information with domestic and overseas Group companies | ■ Enhancement of the MGC Group Environment and Safety Council<br>■ Sharing and horizontal deployment of information on abnormal occurrences and occupational injuries (Member companies of Council, three additional companies, and a portion of overseas Group companies) |

## MGC Group Environment and Safety Council

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.

A meeting held at the MGC headquarters

A meeting at Fudow Co., Ltd.'s Fujinomiya Plant

## Sharing Safety Information across the MGC Group

If an accident or occupational injuries occur at an MGC Group company, both in Japan and abroad, 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 three or four domestic and two or three overseas environmental and safety audits each year in support of the Group companies' environment and safety activities.

In FY 2013, the seven companies below were audited.

- JSP Corporation, Kanuma 1st Plant
- Fudow Co., Ltd., Fujinomiya Plant
- Toyo Kagaku Co., Ltd., Headquarters Plant
- Japan U-PiCA Co., Ltd., Mine Factory
- PT PEROKSIDA INDONESIA PRATAMA (Indonesia)
- MGC PURE CHEMICALS SINGAPORE PTE. LTD. (Singapore)
- BRUNEI METHANOL COMPANY SDN.BHD. (Brunei)

JSP Kanuma 1st Plant audit

BMC (Brunei) audit

In domestic companies other than those above, we hold discussions between managers in charge of the environment and safety as well as provided detailed support.

Also, affiliates with overseas operations receive assistance not only in terms of technical guidance, but also for environmental and safety issues as well.

KYT (danger detection training) led by a Kashima Plant manager at Mitsubishi Gas Chemical Engineering-Plastics (Shanghai) Co., Ltd.

### A.G. International Chemical Co., Inc. Manufacture of purified isophthalic acid (PIA)

Address: 3-580 Okaga, Matsuyama, Ehime, 791-8057 Japan Tel: +81-89-953-5143
URL: http://www.agic.co.jp/e_agic/index.html

Yoshihiro Yamane
President & CEO

A.G. International Chemical will close its doors in January 2015 after 47 years in the business, and in advance of this the company shut down production at its Matsuyama Plant in November 2013. Presently, we have stepped up our patrols and safety assessments to ensure there are zero accidents and zero occupational injuries during the time before our closure. Problems found from this work are shared in regular meetings and improvements undertaken. Employees are working closely together on dismantling work while being fully considerate of the surrounding community and environment.

Demolition work at the Matsuyama Plant

## 13 Member Companies of the MGC Group Environment and Safety Council

### 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 is contributing to energy conservation activities such as lighter weight and insulated products through its provision of chemical blowing agents and related products. The company has reinforced its sales sites in the United States and Thailand and is seeking to expand globally. At the same time, we are also working hard on environmental and safety activities at home to maintain our core domestic production front.

Fire fighting training

### 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

MGC Filsheet's Tokorozawa Plant is situated near the Sayama hills, home to the Totoro forest, while the Osaka Plant is located by the Kanzaki River which once flourished as a canal. At both sites, the company continues its business activities rooted in the local community that include the production of functional sheet films. The company is working hard to roll out activities aimed at achieving the goal of zero accidents and zero occupational injuries. These activities include enhanced training programs as well as safety inspections and risk assessments performed voluntarily by each workplace.

Disaster reduction training at the Osaka Plant (lifesaving training)

### 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

Yuh Miyauchi
President & CEO

MGC Electrotechno has returned to the basics through its 5S and ABC (faithfully carrying out regular and routine activities without disregarding) activities. We are also working hard on safety management and environmental preservation efforts across a wide area of business processes, from chemical processes to machinery processing and clean room operations. Working closely with the newly launched MGCETT (Thailand), our goal is to become the world's most foremost supplier of copper clad laminate and the most trusted partner of our customers.

The agricultural studies class from a local high school setting up a green curtain

### 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/

Kozo Tsukamoto
President & CEO

JSP Corporation's goal is to carry out business activities that satisfy and fulfill the trust of stakeholders as an internationally competitive foamed plastic manufacturer fully cognizant of safety and environmental matters. Our foamed plastic products are being used for energy conservation, resource conservation and environmental preservation in many parts of our daily lives. Going forward, we will strive to contribute to society as we continue to pursue environmentally friendly foamed plastic technologies.

First aid class led by an instructor from the local fire department

### 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.

Training on how to wear portable air tanks

### 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/

Masanori Shimuta
President & CEO

As a manufacturer of synthetic resins, Toyo Kagaku is carrying out safety and environmental activities to eliminate occupational injuries and promote resource conservation. In terms of safety, we identify and work to improve hazards uncovered in on-site patrols and we encourage traffic safety as part of the nationwide campaign for traffic safety held in Japan. In terms of the environment, we strive to reduce waste by improving our yield rate for materials, and to conserve energy by adopting energy-efficient machinery.

Fire extinguisher training

## 13 Member Companies of the MGC Group Environment and Safety Council

### 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/

Yasushi Hiramatsu
President & CEO

Shin Sanso Kagaku was established in Tomakomai city in 1987 and today we are the only manufacturer of eco friendly hydrogen peroxide in Hokkaido. Tomakomai is an important port city that is surrounded by verdant natural wonders, including Shikotsu-Tōya National Park and Ramsar Convention registered wetlands. With safety and the environment as our priority, we are endeavoring to ensure stable production with zero accidents and occupational injuries, achieved through risk assessments and continual improvements in our energy consumption intensity.

Disaster reduction training (lifesaving training for workers suffering from oxygen deficiency)

### Japan Circuit Industrial Co., Ltd.

**Manufacture and sale of printed circuit boards**

Address: 2-1236 Kamiike-cho, Toyoda-shi, Aichi 471-0804, Japan Tel: +81-565-88-3718
URL: http://www.jci-jp.com/

Koichi Yamabe
President & CEO

Japan Circuit Industrial is located nearly in the center of Toyota City in Aichi Prefecture, through which the Yahagi River flows traversing the prefecture. The company works together with local governments on a variety of initiatives to preserve the environment. In June 2014 we achieved 10 million working hours without a lost time injury thanks to risk assessments performed on safety and health. In addition, we are fulfilling our responsibilities to stakeholders through our BCP and compliance practices.


Cleanup activity in the community around the company's business site

### 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/

Yukio Sakai
President & CEO

Japan Pionics believes that a fundamental aspect of its CSR is achieving zero accidents and zero occupational injuries. With this in mind, we are fostering a culture of safety in which all employees share the goal of achieving zero occupational injuries through collective efforts and heightened awareness. Additionally, we carry out regular reviews to ensure our environmental management system is functioning properly and with continuity, and we make improvements when needed. We are also actively involved in the local community.

Initial fire fighting response training held at the Hiratsuka Headquarters Plant

### 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/e-index.html

Takahisa Furuya
President & CEO

Fudow is working toward full fixing of company-wide risk assessments and of S-KYT that utilized Hiyari-Hatto [near miss] activities. New employees that were hired in 2013 created a safety training video on their own and also won the fire fighting skills competition organized by the Fujinomiya City Fire Prevention and Safety Association. The company's plant is located in Fujinomiya City, Shizuoka Prefecture. We are carrying out environmental and safety activities that will help us to foster a limitless culture of safety on a daily basis.

Winner of the 22th Fujinomiya City Fire Fighting Skills Competition

### 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/

Kuniaki Ageishi
President & CEO

Japan U-PiCA carries out business activities under the philosophy of contributing to the realization of a more affluent society and comfortable living as a materials manufacturer. In terms of safety, we are working to eliminate human errors by strengthening communication, implementing 3S activities, and encouraging the method of pointing and calling out procedures. In terms of the environment, we are working to enhance our lineup of biomass-derived products and reduce our CO2 emissions rate through implementation of the project to double productivity.

A workshop held together with the contractor prior to regular maintenance

### 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

Yuh Miyauchi
President & CEO

Yonezawa Dia Electronics operates a system strongly mindful of preventing pollution in the verdurous Yonezawa area in accordance with the environmental and safety policies of the MGC Group. We will raise the bar of our environmental preservation activities by achieving zero emissions through the systematic upgrades and modifications to facilities. We will also achieve zero occupational injuries by heightening awareness of safety and health among employees through KYT, safety and health patrols, and 5S activities.

Earthquake evacuation training