



### Basic Policy

Mitsubishi Chemical carries out Responsible Care (RC) activities,<sup>1</sup> which are self-initiated activities in the chemical industry for ensuring environmental conservation, health and safety. In line with the Mitsubishi Chemical Holdings Group Charter of Corporate Behavior and with the aim of realizing KAITEKI, we implement RC activities based on the five pillars of process safety and disaster prevention, occupational safety and health, environmental conservation, chemical and product safety, and logistics safety.

<sup>1</sup> Responsible care activities: Voluntary activities undertaken by companies that handle chemical substances to protect the environment, health and safety across all related processes, from the development of such substances to their manufacturing, distribution, use, final consumption and disposal. These activities also encompass the publishing of the results of such efforts and dialogue and communication with society.

## Implementation Framework

Mitsubishi Chemical (MCC) has designated departments responsible for promoting each of the five pillars of its Responsible Care (RC) activities. These departments work together to carry out RC activities. The designated departments draft annual RC action plans that are then deliberated by the Environmental and Safety Promotion Committee, comprising the director in charge of RC, representatives of the business domains and plant general managers, before being discussed by the Executive Management Committee and then going to the President for final approval. The director quickly informs employees of the approved plans and orders the creation of action plans for plants and business domains based on said plans. The departments responsible for implementing RC activities monitor the action plans of the plants and business domains and their implementation status and provide support and instruction aimed at improvement, thereby helping to improve the RC activities of the MCC Group as a whole.

RC activity pillar	Implementation departments
Process safety and disaster prevention	Environment & Safety Dept.
Occupational safety and health	
Environmental conservation	
Chemical and product safety	Chemicals Management Dept., Quality Assurance Dept.
Logistics safety	Logistics Dept.

# Environment and Safety

## Basic Policy

Mitsubishi Chemical (MCC) has established the Environment and Safety Principles as well as Policies Related to Environment and Safety, and it implements activities related to process safety and disaster prevention, occupational safety and health, and environmental conservation.

### Environment and Safety Principles

1. Safety lies at the foundation of the company's very existence, and ensuring safety is the company's social responsibility.
2. The company has an obligation to conserve and improve the environment and become an entity that is friendly to both people and the planet.

### Policies Related to Environment and Safety

1. We will comply with social rules and standards, including corporate ethics in addition to applicable laws.
2. We will pursue zero accidents and zero occupational injuries.
3. We will reduce our environmental impact to prevent global warming and protect the natural environment.
4. We will educate our employees about the environment and safety so that they can act with awareness of their own responsibilities.
5. We will communicate closely with society to enhance understanding and trust.
6. We will continue making improvements by utilizing the latest technologies and available internal and external information.

Based on the above environment and safety principles and policies, every year, MCC creates a Group environment and safety action plan. The plan reflects the results of the previous year's plan and audits and lays out yearly targets, policies and key measures.

The fiscal 2017 plan included the annual targets of zero serious process safety incidents, zero serious occupational accidents, zero environmental incidents and contribution to the global environment. The annual policy under the plan was to effectively understand workplace weaknesses and steadily make improvements. In line with this plan and the status of each workplace, we carried out environment and safety activities.

## Audits of Environment and Safety Activities

MCC conducts safety audits and environmental audits covering 16 plants, one R&D center and 88 domestic and overseas Group company sites.

In fiscal 2017, MCC conducted safety audits of 15 plants and 20 Group company sites as well as environmental audits of nine plants and one Group company site. Through the audits, MCC checked and evaluated the workplaces' PDCA cycles based on audit subjects designated in the fiscal 2017 audit plan and provided guidance related to needed improvements.

MCC checks to confirm that audited plants and Group companies are working to make necessary improvements by, for example, improving their facilities or reviewing their standards in response to guidance provided as a result of such audits.

	FY2017 audits performed	Total issues identified	FY2017 audit plan audit subjects
Safety audits by MCC	<ul style="list-style-type: none"> <li>• MCC: 15 plants</li> <li>• Group companies: 20 sites</li> </ul>	165	<ul style="list-style-type: none"> <li>• Implementation of action plans</li> <li>• Implementation of measures to prevent occupational accidents, other incidents and their recurrence</li> <li>• Compliance with safety laws</li> </ul>
Environmental audits by MCC	<ul style="list-style-type: none"> <li>• MCC: 9 plants</li> <li>• Group companies: 1 site</li> </ul>	45	<ul style="list-style-type: none"> <li>• Compliance with environmental laws</li> <li>• PDCA cycles for environmental conservation activities</li> </ul>

# Process Safety and Disaster Prevention, Occupational Safety

## Basic Policy

Mitsubishi Chemical (MCC) creates action plans comprising annual targets, annual policies, and key measures reflecting the status of activities and results of the previous fiscal year and uses said plans to carry out process safety and disaster prevention and occupational safety activities. In fiscal 2017, we implemented activities in line with the annual goals of zero serious process safety incidents and zero serious occupational accidents as well as the annual policy of effectively understanding workplace weaknesses and steadily making improvements.

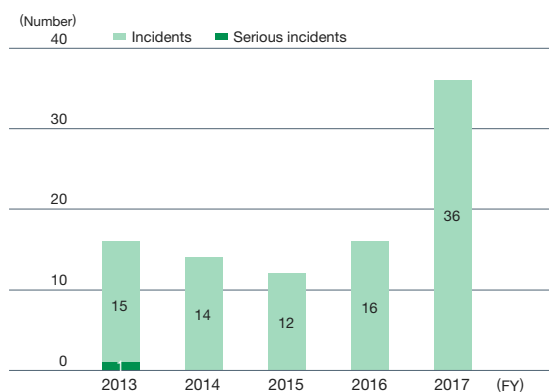
## Preventing Process Safety Incidents and Occupational Accidents, Key Measures

In fiscal 2017, there were 14 incidents, including small fires and leaks of hazardous materials, as well as 22 chlorofluorocarbon gas leak incidents. In particular, the number of such gas leak incidents increased substantially year on year, up by 17 from fiscal 2016.

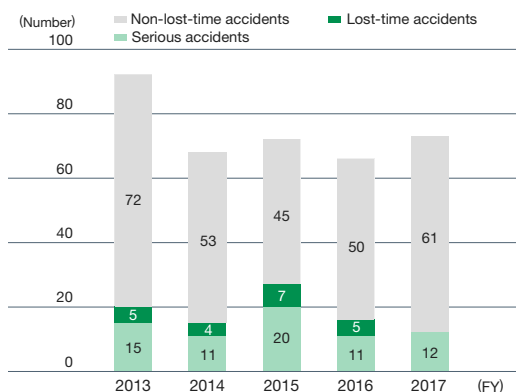
The main causes of the incidents were the corrosion and degradation of facilities and insufficient inspection and checking. Behind these factors, however, were management problems, including delays in response to facility degradation, insufficient knowledge and insufficient education.

In fiscal 2017, 12 serious occupational accidents resulting in four or more days of lost work occurred in Japan. These accidents included such incidents as getting caught or entangled in machinery and falls on level surfaces and from high places. The main causes of these occupational accidents were lack of competency in basic practices and operations and inadequacies in work procedures. Behind these factors were management problems, including insufficient education and training, insufficient safety activities, and insufficient risk assessment.

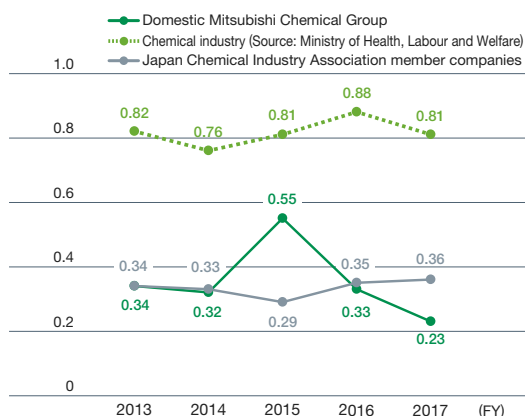
Mitsubishi Chemical Group Process Safety Incidents in Japan



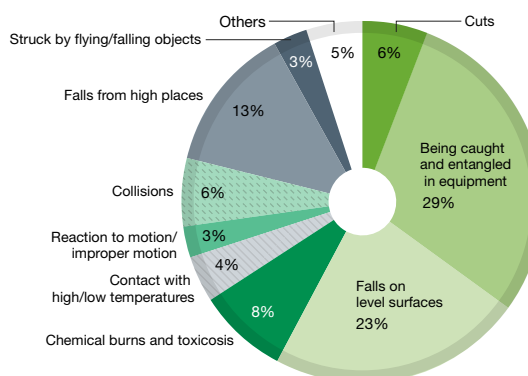
Mitsubishi Chemical Group Occupational Accidents in Japan



Lost-Time Injury Frequency



Mitsubishi Chemical Group Lost-Time Accidents by Classification (FY2013–2017)



\* Data for fiscal 2016 and earlier are the totals of the figures for the previous Mitsubishi Chemical, Mitsubishi Plastics and Mitsubishi Rayon and their respective domestic group companies.

# Process Safety and Disaster Prevention, Occupational Safety

In light of the problems underlying these process safety incidents and occupational accidents, in fiscal 2018, we are implementing the following key measures.

### ■ Thoroughness and Continuation of Safety Management Activities

In addition to efforts to thoroughly ensure safe practices and operations, we are working to qualitatively enhance safety activities through such means as risk prediction and near-miss reporting as well as to enhance risk assessments and effectively utilize information to prevent the recurrence of incidents and occupational accidents as well as the occurrence of similar incidents and accidents.

### ■ Thoroughness and Continuation of Facility Management

We systematically inspect, diagnose and repair aging facilities while steadily performing regular monitoring to ensure that signs of irregularities in facilities are quickly detected and dealt with appropriately.

### ■ Human Resources Training

We strive to train people who can think for themselves, have good judgment, and take action. For inexperienced employees, we carry out education on not only operational procedures, but also basic practices and operations and following rules about prohibited behaviors. Furthermore, to enhance risk assessments, we are proactively developing human resources with specialized knowledge and analytical skills.

### ■ Accident and Natural Disaster Response

To minimize and contain harm should an accident or natural disaster occur, we have in place systems for dealing with the areas around our sites and conduct training accordingly. We have in place robust earthquake and tsunami countermeasures and carry out related drills. In addition, we are advancing measures to deal with natural disasters caused by extreme weather due to climate change.

### ■ Focus: Process Safety Evaluations

Aiming to accurately understand and improve its process safety capabilities, since fiscal 2014, MCC has commissioned process safety evaluations from an external organization (the Japan Society for Safety Engineering Process Safety Enhancement Center). These evaluations highlight weaknesses at plants and specific divisions, helping us advance improvements and continuously improve process safety.



Process safety evaluation by an external organization

## Risk Assessment

MCC implements robust risk assessments of processes, operations and chemicals, striving to prevent process safety incidents and occupational accidents. In these risk assessments, we use creative techniques to comprehensively identify and evaluate risks related to process safety, occupational accidents and health. For example, when assessing processes related to product processing, we identify not just occupational accident risks, but process safety risks related to operations and risks related to unsteady conditions, and then take action to reduce the risks thus identified. Furthermore, to effectively reduce risks related to changes, we use mechanisms for identifying all changes and conduct safety assessments under the supervision of expert technicians.

## Use of Past Incident/Accident Information

MCC uses shared information about past process safety incidents and occupational accidents at the company and other companies to help prevent the occurrence of similar issues. When incidents or occupational accidents do occur, we determine the root causes using such analytical tools as VTA<sup>1</sup> and explanation-oriented analysis, then implement countermeasures without fail. Furthermore, regarding occupational accidents that are likely to have serious consequences, such as being caught or entangled in machinery and falls, we carry out company-wide countermeasures, endeavoring to prevent their occurrence.

<sup>1</sup> Variation Tree Analysis: A method of determining the causes of incidents by mapping irregular actions, operations and decisions that lead to incidents in time-series flow charts for people, things and organizations.

## Human Resource Development Initiatives

MCC implements human resource development using educational plans tailored to specific types of work and levels of seniority.

We carry out education and drills for employees who conduct operations at manufacturing sites to ensure that they can correctly carry out basic practices and operations and follow rules about prohibited behaviors. We also use creative techniques to help employees apply the knowledge gained through education at actual work sites. Furthermore, we carry out experiential education using facilities that provide simulated experiences of process safety incidents and occupational accidents to increase employees' sensitivity to danger.

We also carry out initiatives to ensure that technical staff obtain specialized knowledge about risk assessment and analytical methods. These initiatives include specialized education in such areas as chemical engineering and mandatory participation in safety assessment in their respective divisions.

### Focus: Experiential Education

Experiential education is a form of training that provides employees with simulated experiences of process safety incidents and occupational accidents resulting from fires, explosions and other incidents that could really occur in chemical plants. This first-hand experience helps raise employees' sensitivity to danger and motivate them to maintain safe practices and operations.



Experiencing work in high places



Experiencing being caught in machinery



Experiencing a fire and explosion



Experiencing a liquid blast

# Process Safety and Disaster Prevention, Occupational Safety

## Accident and Natural Disaster Response

MCC has in place a range of countermeasures to minimize and contain harm due to accidents and natural disasters. In fiscal 2017, we particularly evaluated the external effects, such as those on neighboring areas, of worst-case accidents at our plants, decided what to do for relevant stakeholders in the event of a disaster at a plant, and reflected these decisions in training.

### Earthquake-Resistant High-Pressure Gas Equipment

MCC uses earthquake resistance design standards to evaluate the earthquake resistance of such facilities as spherical storage tanks with welded steel pipe braces and high-pressure gas facilities designated as vital in terms of earthquake-resistant design. Based on such evaluation, MCC has drawn up plans to improve facilities where necessary and is advancing earthquake countermeasures in line with said plans.

(1) Spherical storage tanks with welded steel pipe braces

We have completed earthquake countermeasures for eight of the nine tanks found to require them. The installation of earthquake countermeasures for the remaining tank is currently under way and expected to be completed in fiscal 2019.

(2) High-pressure gas facilities designated as vital in terms of earthquake-resistant design

We have completed earthquake countermeasures for 17 of the 28 facilities found to require them. Earthquake countermeasures for the remaining 11 facilities are expected to be completed in fiscal 2020.

### Focus: Comprehensive Disaster Drill

On October 23, 2017, the Mizushima Plant and the Kurashiki City Mizushima Fire Bureau held a joint drill based on a fire due to a high-pressure gas leak. In addition to confirming the plant's internal disaster prevention framework and drilling evacuation and firefighting procedures, this comprehensive disaster drill included coordination with the local authorities and practice contacting neighboring residents.



Joint firefighting drill with the public fire bureau and company firefighting team

# Environmental Conservation

## Basic Policy and Key Measures

Aiming to contribute to the global environment, Mitsubishi Chemical (MCC) proactively works to reduce its greenhouse gas emissions, conserve resources and energy, prevent contamination of the air, water and soil, limit waste generation, encourage reuse and recycling, engage in activities and develop technologies that help conserve the natural environment, and develop and produce environmentally friendly products. In these ways, MCC strives to reduce its environmental burden at every level of its business activities.

In addition, to ensure legal compliance, we carry out training on environmental laws and regulations, conduct environmental audits and hold twice annual liaison meetings at which MCC Group managers in charge of environmental issues exchange the latest information about legal amendments and other issues.

In fiscal 2017, we set the annual targets of zero environmental incidents and contributing to the global environment and implemented the following key measures

### ■ Reducing Environmental Risk

We are implementing legal education and environmental audits to ensure compliance with environmental laws and regulations and systematically reducing environmental risk by implementing risk assessments.

### ■ Reducing Environmental Impact

We are working to reduce our environmental impact through such means as cutting greenhouse gas emissions, saving resources and energy, and reducing emissions of pollutants.

### ■ Coexisting Harmoniously with Local Communities

We are letting local communities know about our environmental conservation initiatives and promoting harmonious coexistence through communication.



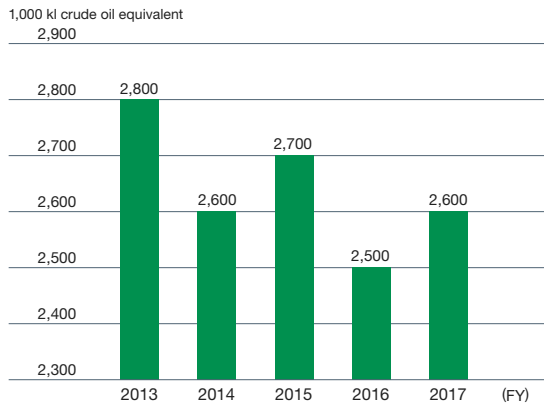
# Environmental Conservation

## Addressing Climate Change

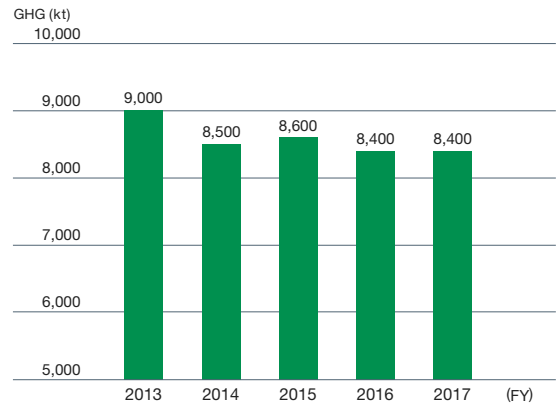
In line with the target set by Mitsubishi Chemical Holdings (MCHC) of reducing greenhouse gas emissions at least 17% compared with fiscal 2005 levels by fiscal 2015, MCC worked to cut its greenhouse gas emissions and achieved the fiscal 2015 target. We have maintained emissions at this lower level since fiscal 2016.

Going forward, we will expand the range covered by this measure to include overseas Group companies and advance initiatives to further reduce greenhouse gas emissions as we aim for the targets of the MCC Group medium-term management plan.

### Energy Consumption



### Greenhouse Gas Emissions



\* Environmental data for fiscal 2016 and earlier are the totals of the figures for the previous Mitsubishi Chemical, Mitsubishi Plastics, Mitsubishi Rayon, and their respective domestic group companies.

\*\* Since fiscal 2015, energy consumption and GHG emissions have been calculated based on the GHG Protocol. Energy consumption is given as the total of that for the three previous companies before the formation of the current Mitsubishi Chemical but does not include their domestic group companies.

## Life Cycle Assessments

Life cycle assessment (LCA) is an approach that enables the quantitative evaluation of the environmental burden generated by a product or service over its entire life cycle (from resource collection through raw material production, product manufacturing, distribution, consumption, disposal and recycling) or at specific stages of said life cycle. The evaluation of the environmental impact of MCC's products and services over their entire life cycles better enables the company to develop environmentally friendly products and services and provide them to society.

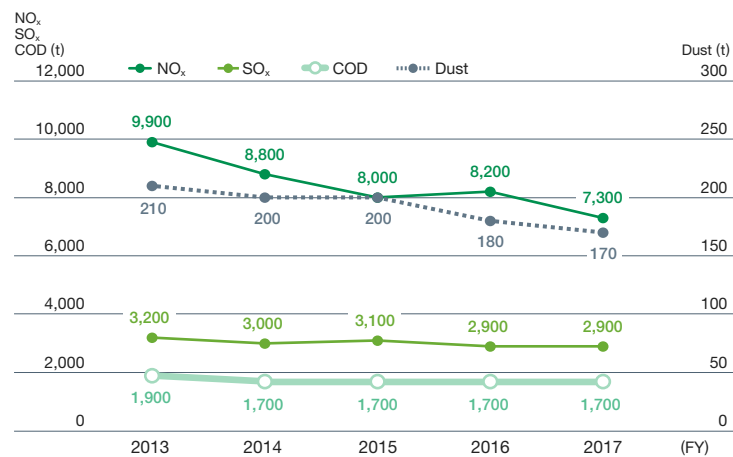
## Preventing Air, Water and Soil Pollution

MCC handles a wide range of chemical substances and therefore maintains ongoing measures to reduce emissions of hazardous air pollutants and of pollutants into public bodies of water through such means as installing and improving emission gas and wastewater treatment facilities.

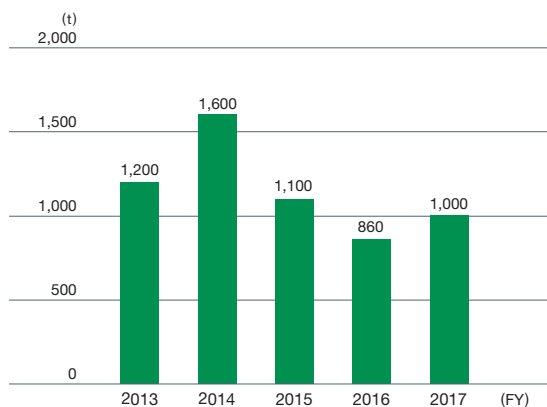
We have been reducing or maintaining at a steady level the environmental burden our businesses place on atmospheric and water quality, as measured by NO<sub>x</sub>, SO<sub>x</sub> and dust emissions as well as chemical oxygen demand (COD). In fiscal 2017, we reduced emissions of NO<sub>x</sub> 900 tons due to structural reorganization and other factors. MCC's emissions of PRTR-regulated substances<sup>1</sup> and VOCs<sup>2</sup> rose due in part to increased production volume.

- 1 Pollutant Release and Transfer Register (PRTR): A system for filing notifications of the amounts of chemical substances released and transferred. This system enables the identification, aggregation and publishing of data on the types, sources and amounts of hazardous chemical substances that have been released into the environment or transferred outside facilities as waste.
- 2 Volatile organic compound (VOC): Typical substances include toluene and xylene. These compounds became subject to regulation by the amended Air Pollution Control Act of 2006 as source substances of photochemical oxidants (photochemical smog).

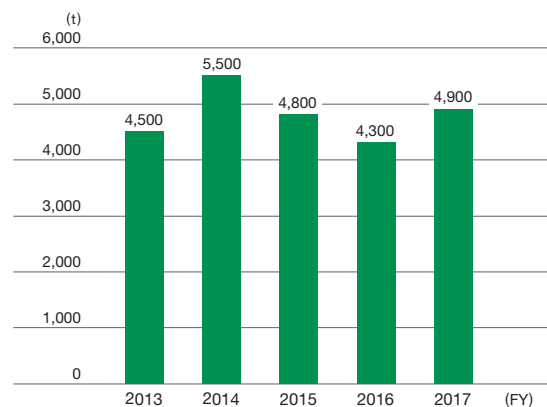
### Reducing Our Environmental Burden on the Atmosphere and Public Water Sources



### PRTR-Regulated Substance Emissions



### VOC Emissions



# Environmental Conservation

## Focus: Tackling Marine Plastic Debris

MCC is actively working to tackle the problem of marine plastic debris. We joined the Japan Plastics Industry Federation's declaration on solving the problem of marine plastic debris. Each plant, of course, strives to prevent emissions of pellets and resins into rivers and oceans. In addition, each plant also promotes volunteer efforts to clean the coastal areas of nearby rivers and oceans.



Volunteers cleaning the beach near the Sakaide Plant

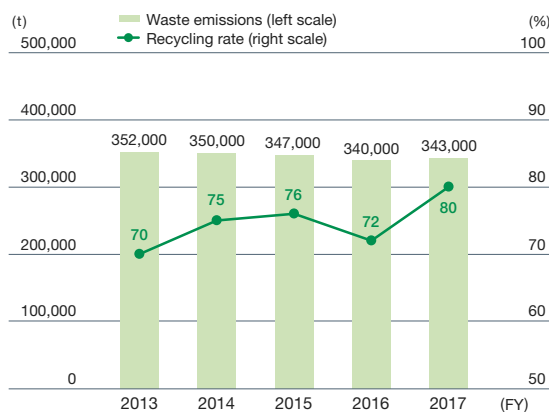


Beach cleaning volunteers from the Toyama Plant

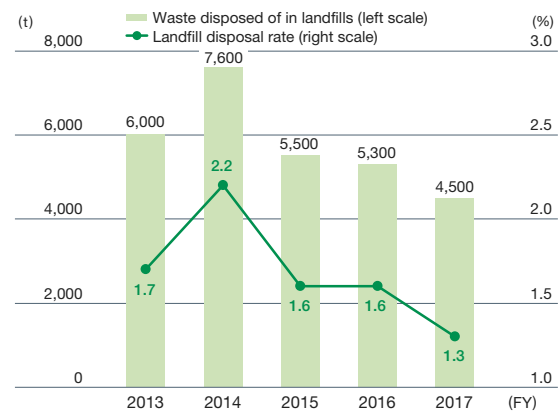
## Waste Reduction and Recycling

MCC is advancing 3R activities (reduce, reuse, recycle) in an effort to reduce its industrial waste. As a result of such efforts, although there have been fiscal years in which, due in part to increased construction waste, waste disposed of in landfills increased, we have put the generation of said waste back on a downward track by promoting recycling. Going forward, we will continue working to improve the recycling rate of industrial waste by strictly enforcing sorted collection and strengthening coordination with disposal contractors.

### Industrial Waste Emissions and Recycling Rate



### Waste Disposed of in Landfills and Landfill Disposal Rate



## Biodiversity Conservation

Based on MCHC's Biodiversity Conservation Policy, MCC pursues initiatives that contribute to the global environment and thus conserve biodiversity. Through these initiatives, we work to reduce environmental risk and impact and thereby lessen our business activities' impact on biodiversity. In addition, we strive to conserve the natural environment by cleaning up neighboring areas and coastal areas and protecting our plants' green areas.

## Environmental Accounting

MCC uses environmental accounting, based on the Ministry of the Environment's guidelines, to better understand the costs and effects of its environmental burden reduction and conservation efforts.

In fiscal 2017, MCC invested ¥2.7 billion in such areas as reinforcing wastewater management and air pollution prevention and incurred ¥31.4 billion in expenses, including those for the operation and maintenance of pollution prevention equipment and proper waste disposal. Meanwhile, such positive factors as revenue from the sale of valuable materials and savings from energy use and lower waste disposal costs totaled ¥2.6 billion.

### Investment and Expenses Related to Environmental Conservation and Process Safety

Environmental conservation costs				(Millions of yen)	
Category		Main initiatives	FY2017		
			Investment	Expenses	
Costs within business areas	1. Pollution prevention costs	Air pollution prevention, dust countermeasure reinforcement, dust collection system replacement, water pollution prevention, activated sludge consolidation, wastewater management reinforcement, response to deterioration of wastewater facilities and pipes, etc.	1,353	17,693	
	2. Global environmental conservation costs	CO <sub>2</sub> emissions reduction, operational improvement, etc.	952	1,231	
	3. Resource-recycling costs	Industrial waste reduction, proper waste disposal, resource conservation, energy conservation, etc.	264	6,359	
Upstream/downstream costs		Waste reclamation, green purchasing, etc.	0	0	
Environmental conservation costs in management activities		Operation of units to address environmental conservation, ISO 14001 compliance and renewal, national exams, environmental education, etc.	0	1,564	
Environmental conservation costs in R&D activities		R&D for increased productivity	0	3,370	
Environmental conservation costs in social contribution activities		Construction and upkeep of factory green spaces	118	460	
Costs of dealing with environmental damage		Cleanup of contaminated soil, etc.	18	43	
Other environmental conservation-related costs			0	687	
<b>Subtotal</b>			<b>2,706</b>	<b>31,406</b>	
Positive economic effects				(Millions of yen)	
			FY2017		
(1) Income from recycling				1,611	
(2) Energy cost savings				323	
(3) Income from resource conservation				693	
<b>Subtotal</b>				<b>2,626</b>	

# Product Stewardship

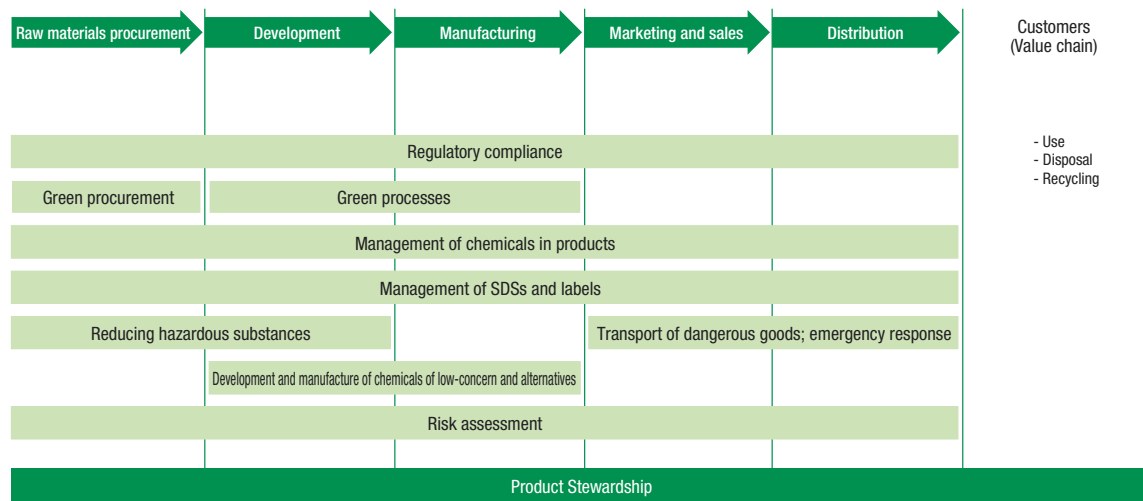
## Basic Policy

Based on a product stewardship approach, the Mitsubishi Chemical (MCC) Group strives to minimize the adverse effects of its products on human health and safety and the environment. To this end, we evaluate and share information on risks related to product safety throughout product life cycles (raw materials procurement, development, manufacturing, marketing and sales, distribution, use, and disposal and recycling), working with stakeholders to proactively advance initiatives to secure the safety and wellbeing of society at all stages of the value chain.

These initiatives are in line with the Strategic Approach to International Chemicals Management (SAICM).<sup>1</sup> Along with process safety and disaster prevention, occupational safety and health, environmental conservation, chemical and product safety, and logistics safety, these initiatives are aimed at realizing KAITEKI through risk-based chemicals management across product life cycles.

<sup>1</sup> Strategic Approach to International Chemicals Management (SAICM):  
A strategic approach to international chemicals management adopted by the International Conference on Chemicals Management (ICCM) and the United Nations Environment Programme (UNEP) in 2002.

## Mitsubishi Chemical's Product Stewardship Initiatives



# Chemicals Management

## Management System and Regulations

Mitsubishi Chemical (MCC) maintains a system that ensures the rigorous management of chemicals in all its business domains.

To effectively utilize the favorable properties of its chemical raw materials, MCC collects and shares within the company information on all substances related to its products, including that on chemical hazards, applicable domestic and international regulations, and the results of risk assessments. In addition, we have built a support structure to better enable the business domains to implement proper chemicals management.

Because chemical regulations vary by country and region, MCC has appointed persons responsible for overseeing chemicals management at the regional headquarters<sup>1</sup> to reinforce the global management system.

We have laid out the essentials of chemicals management in our Chemicals Management Regulations, Standards for the Safe Management of Chemicals and Standards for Product Safety Management. Furthermore, we have formulated guidelines and manuals that provide concrete methods for working within regulations, authoring and issuing SDSs,<sup>2</sup> and implementing voluntary chemicals management. These efforts help ensure proper management.

1 Regional headquarters: Companies established to accelerate Mitsubishi Chemical's overseas business development by supporting business and revenue growth in key regions.

2 Safety data sheet (SDS): A document for providing information on the properties, hazards and toxicity, safety measures and emergency responses concerning chemical substances when transferring or providing chemicals to other business entities.

## Compliance with Chemical Regulations

### 1. Japanese Laws and Regulations

MCC complies with wide-ranging laws concerning chemicals, including the Chemical Substances Control Law (CSCL), the Industrial Safety and Health Act's requirements concerning filing new chemical substance notifications, and the Poisonous and Deleterious Substances Control Law's requirements concerning the registration and management of manufacturing, importing and sale businesses as well as record maintenance. To ensure that such compliance is thorough and comprehensive, MCC has established internal guidelines and rules related to compliance with domestic laws and carries out centralized management using a database of notifications filed. In fiscal 2017, we launched guidelines for our chemicals management that will enable each business domain to verify the name and inventory status (new or existing chemical) for each substance in accordance with the CSCL. In fiscal 2018, we are reinforcing measures to promote awareness within the Company and related training.

### 2. Overseas Laws and Regulations

In the run-up to 2020, the target deadline for achieving the goals of SAICM,<sup>3</sup> countries around the world (including China, South Korea, Taiwan, Thailand, the United States and Turkey) are enacting and amending legal regulations on chemicals. In particular, the mandatory registration of all existing chemicals, begun under REACH<sup>4</sup> in Europe, will soon be adopted in South Korea and Taiwan. To respond to these changes, we are working with the regional headquarters and local Group companies to collect the latest information on legal requirements in each region or location and develop a system to ensure a more accurate response to regulations. In fiscal 2017, we systematically implemented and completed the registration of chemical substances produced or imported in quantities of less than 100 tons annually under REACH in Europe and measures to comply with the inventory reset rule under the U.S. TSCA.<sup>5</sup> In fiscal 2018, we are focusing efforts on preparations for the full-fledged enforcement of new standards expected going forward, namely registration under K-REACH<sup>6</sup> in South Korea and TCSCA<sup>7</sup> in Taiwan.

3 Strategic Approach to International Chemicals Management (SAICM):

A strategic approach to international chemicals management adopted by the Governing Council of the United Nations Environment Programme in 2002.

4 Registration, Evaluation, Authorization and Restriction of Chemicals (REACH):

European Union regulations regarding the registration, evaluation, approval and restriction of chemical substances.

5 TSCA: Toxic Substance Control Act

6 Korea REACH (K-REACH): A law concerning the registration and evaluation of chemical substances.

7 TCSCA: Toxic Chemical Substance Control Act

# Chemicals Management

## Voluntary Chemicals Management Initiatives

### 1. Participation in Initiatives in and outside Japan

MCC contributes to the Global Product Strategy (GPS)<sup>8</sup> activities advanced by the International Council of Chemical Association (ICCA) on an ongoing basis. MCC actively works with the ICCA as a CP&H LG<sup>9</sup> member to plan and hold educational programs and workshops aimed at advancing capabilities in developing countries in order to achieve the goals of SAICM. We actively participate in the Japan Chemical Industry Association (JCIA) as an activity-promoting member of JIPS.<sup>10</sup>

### 2. Mitsubishi Chemical's Voluntary Initiatives

As part of its GPS activities, the MCC Group evaluates the risks of its chemical products, compiles the results as GPS Safety Summaries,<sup>11</sup> and publishes these summaries via a portal page (available in Japanese only) on the MCC website as well as on the ICCA website.

Furthermore, to prevent the theft and/or abuse of chemicals, MCC has established its own list of MCC specified chemicals, which includes voluntarily designated substances in addition to legally designated or restricted substances. We have established safety management guidelines for managing these substances at plants and laboratories, during logistics operations and during transfer to customers. In this way, we are working to reinforce the management of such substances.

These voluntary activities, launched in 2015, were recognized in May 2018 with MCC being granted the 12th annual JCIA Responsible Care Outstanding Award, receiving particular praise for its focus on supply chain management.



8 Global Product Strategy (GPS):

A voluntary initiative wherein companies appropriately manage and conduct risk assessments of their chemical products in order to minimize risks posed by chemical substances throughout the supply chain.

9 Chemical Policy and Health Leadership Group

10 Japan Initiative of Product Stewardship (JIPS):

A voluntary initiative promoted by the Japan Chemical Industry Association aimed at reinforcing risk-based chemicals management at companies.

11 GPS Safety Summary (sometimes abbreviated as GSS):

Documents that clearly explain methods for handling chemical substances and other information in detail that cannot be fully included on SDSs. These summaries are used in risk management-based chemicals management.



## Providing Reliable Chemical Substance Information: SDS Management

We use comprehensive chemicals management systems (for example, K-Mates<sup>12</sup>), to support our expert staff in the proper provision of information to customers and supply chain operators as well as reliable chemicals management within the company.

The systems comprise databases of the chemical substances and components of products handled by MCC, their hazardous properties, relevant domestic and international laws and regulations, and other information. The system is capable of performing the GHS<sup>13</sup> classification of chemical substances, determining the applicability of laws and regulations, and producing SDSs and labels in line with the laws and standards of a wide range of countries and regions, including Japan, Europe, the United States, and East Asian and ASEAN countries for review by expert staff. The system uses highly reliable data that is carefully reviewed by experts at Mitsubishi Chemical Research, an MCC Group company, to generate GHS classifications. Furthermore, we are implementing proactive management using a function of the system that enables users to search chemical substances and products in the MCC database that may be subject to anticipated legal or regulatory amendments.

12 KAITEKI-integrated System of Risk Management & Technical Information Supports on Chemicals

13 Globally Harmonized System of Classification and Labelling of Chemicals (GHS):

A system for classifying chemicals by the type and degree of their hazardous properties based on globally harmonized rules and communicating this information using labeling and the provision of SDSs.

## In-House Chemicals Management Training

In addition to basic chemicals management education, MCC hosts the Chemicals Management Seminar on a monthly basis at MCC Group headquarters. This seminar serves to teach Group company employees about increasingly stringent regulations in and outside Japan and how to address them. In fiscal 2017, a total of 708 employees participated. Furthermore, plants and R&D centers provided education on relevant laws and regulations as well as 21 practical training sessions on GHS classification and labeling methods, and reading and preparing SDSs.



In-house chemicals management training



# Quality Assurance

### Basic Policy

The Mitsubishi Chemical (MCC) Group believes that implementing thorough quality control (QC) is important to ensuring product safety and continuously improving quality so that MCC Group customers can use MCC Group products safely and with confidence.

As an integrated chemical company that provides a wide array of products and services to customers in a broad range of industries, it is MCC's duty to prevent quality and product liability issues while working to further increase customer satisfaction by offering safe, reliable products and services. We strive to fulfill this duty in line with the following basic policy.

- In order to realize KAITEKI for customers, we provide products and services that customers can use with confidence.
- We listen carefully to each customer's requests and respond rapidly and sincerely.
- In accordance with the basis of our responsible care activities, we strive to achieve continuous improvement in quality.

### Quality Assurance Initiatives

In order to ensure awareness of the basic policy throughout the company, the MCC Group established new rules and policies at the time of the merger that formed the new MCC in April 2017 and is implementing initiatives to reinforce quality assurance systems at its plants. Furthermore, we hold regular quality assurance meetings as part of efforts to share and effectively utilize information about quality within the Group. As a result, in fiscal 2017, there were no quality problems that caused major difficulties for customers.

### Product Information Disclosure

Around the world, corporations are facing growing demands to exercise proper management of chemical substances in products throughout the entire life cycle as well as to disclose information on such chemical substances. To accurately respond to these demands, MCC has established management standards for chemical substances in products and continues to contribute to the smooth operation of chemSHERPA<sup>1</sup> through the Joint Article Management Promotion-consortium (JAMP).<sup>2</sup> Furthermore, with regard to conflict minerals,<sup>3</sup> which present possible human rights issues, we have established a policy and strive to meet customer requests.

MCC is working with its business partners and customers to contribute to the creation of a social system capable of managing chemicals throughout the supply chain.

1 chemSHERPA: A new private-public information communication scheme aimed at standardizing communications about the chemicals included in products.

2 JAMP: A cross-industry organization that works to promote the appropriate management, disclosure and communication of information on chemicals contained in "articles" (parts and final products) throughout the supply chain.

3 Conflict minerals: Tantalum (Ta), tin (Sn), gold (Au), tungsten (W) and other minerals extracted in the Democratic Republic of the Congo and neighboring countries that are used to fund armed groups.

# Logistics

## Basic Policy

Mitsubishi Chemical (MCC) strives to put safety first and promote strict compliance, risk management, respect for human rights and communication with business partners in order to realize KAITEKI. Based on a product stewardship approach, we are promoting KAITEKI logistics to earn the trust of customers and society in logistics operations.

## Hazardous Materials Transport Initiatives and System to Prevent External Harm in Case of an Accident

MCC focuses considerable effort on ensuring the safe transport of hazardous materials.

MCC's business domains regularly hold responsible care meetings with logistics subsidiaries, maintaining close communication and implementing measures aimed at reducing problems, accidents and occupational injuries.

We work with logistics subsidiaries to ensure that all shipments are accompanied by yellow cards<sup>1</sup> and educate our business partners about the chemical properties of our products. In these ways, we work to enhance understanding of the products being transported and sensitivity to safety.

In addition to initiatives aimed at preventing accidents, we also conduct regular disaster drills with logistics subsidiaries and are taking steps to address the risk of a serious road accident through a contract with the Maritime Disaster Prevention Center. Furthermore, for products that present particularly high risk if stolen or lost, we have established our own management standards that we use in the transportation and storage of such products.

<sup>1</sup> Yellow card: A document that contains emergency safety procedures to be taken in the event of a transportation accident and contact information for MCC.

## Modal Shifts: Increasing Energy Efficiency

MCC is also aggressively working to save energy in logistics.

We are working with logistics subsidiaries to improve energy efficiency and reduce CO<sub>2</sub> emissions. Specifically, we are implementing such measures as increasing transport lot sizes and promoting weight reductions by utilizing ship propellers made with carbon fiber, an MCC product. MCC is also actively advancing modal shifts to rail transport. As a result of these initiatives, MCC has received Eco Rail Mark certification from the Ministry of Land, Infrastructure, Transport and Tourism in recognition of its efforts to promote environmentally friendly logistics.



Propeller made with carbon fiber



Eco Rail Mark

## Company Data (Environment and Safety)

### Mitsubishi Chemical Group Companies Promoting Responsible Care Activities

As of March 2018

#### Petrochemicals Business Domain

Japan Polychem  
Japan Polypropylene  
Japan Polyethylene  
Mitsubishi Chemical Indonesia

#### Carbon Business Domain

Kansai Coke and Chemicals

#### MMA Business Domain

Mitsubishi Chemical Lucite Group  
Huizhou MMA  
Suzhou Sanyouli Chemicals  
MCC Unitec  
Thai MMA  
Mitsubishi Chemical Polymer Nantong  
Suzhou MRC Opto-Device  
Diatec  
Ryoko  
Acry Sunday  
Diapolyacrylate

#### Advanced Polymers Business Domain

Mitsubishi Chemical Performance Polymers Europe  
Mitsubishi Chemical Performance Polymers  
Mitsubishi Chemical Performance Polymers (China)  
Japan Unipet  
RHOMBIC

#### High Performance Chemicals Business Domain

DIACHEM RESINS INDONESIA  
Toei Kasei  
Dianal America  
Japan Coating Resin  
Mitsubishi Chemical Analytech  
ARKEMA Yoshitomi  
Mitsubishi-Chemical Foods  
Nippon Kasei Chemical

#### Information, Electronics & Display Business Domain

MC PET FILM INDONESIA  
Mitsubishi Polyester Film Suzhou  
Mitsubishi Chemical Converting Film Wuxi  
Tai Young High Tech  
Mitsubishi Chemical Infonics  
Shinryo  
Mitsubishi Chemical Media  
The Nippon Synthetic Chemical Industry

#### High Performance Films Business Domain

J-Film  
Tai-Young Film  
DiaPlus Film  
Mitsubishi Polyester Film (U.S.A.)  
Mitsubishi Polyester Film (Germany)

## Environment & Living Solutions Business Domain

Dalian Rayon Environmental Equipment  
Wuxi Rayon Membrane Technology  
Fengxin JDL Environment Protection  
Mitsubishi Chemical Aqua Solutions  
MCC KODA  
Mitsubishi Chemical Cleansui  
Wellthy  
Resindion  
Tai Young Chemical  
Mitsubishi Chemical Agri Dream  
Mikado Chemical M.F.G.  
Mitsubishi Chemical Infratec  
Astro  
DIATEX

## Advanced Moldings & Composites Business Domain

Quadrant  
Toyama Filter Tow  
Tosen  
Ryoko Sizing  
TK Industries  
Mitsubishi Chemical Carbon Fiber and Composites (U.S.A.)  
Challenge  
MCC Composite Products  
Aldila  
Wethje Carbon Composites  
Wethje Immobilien  
ALPOLIC  
Mitsubishi Chemical Composites America  
Ryobi Techno  
Shanghai Baoling Plastics  
Yuka Denshi  
Dia Molding

## New Energy Business Domain

MC Ionic Solutions UK  
MC Ionic Solutions US  
Qingdao Anode Kasei

## Corporate Domain

Mitsubishi Chemical Logistics  
Mitsubishi Chemical Engineering Corporation  
Ryoei  
MRM Otake  
MRM Toyohashi  
MRM Toyama  
Ryoko Tekunika  
Hokuryo Mold  
Mitsubishi Chemical High-Technica

## Company Data (Environment and Safety)

## Safety Data

Data for years prior to and including fiscal 2016 are the sums of the figures for the previous Mitsubishi Chemical, Mitsubishi Plastics, Mitsubishi Rayon and their respective domestic group companies before the formation of the current Mitsubishi Chemical.

## Mitsubishi Chemical Group Process Safety Incidents in Japan

Classification	FY2013	FY2014	FY2015	FY2016	FY2017
Incidents	15	14	12	16	36
Serious incidents	1	0	0	0	0

## Mitsubishi Chemical Group Occupational Accidents in Japan

Classification	FY2013	FY2014	FY2015	FY2016	FY2017
Non-lost-time accidents	72	53	45	50	61
Lost-time accidents	5	4	7	5	0
Serious accidents	15	11	20	11	12

## Mitsubishi Chemical Group Lost-Time Accidents by Classification

Classification	FY2013	FY2014	FY2015	FY2016	FY2017	Total
Cuts	2	1	1	6	1	11
Being caught and entangled in equipment	10	10	10	9	14	53
Falls on level surfaces	8	7	10	9	8	42
Chemical burns and toxicosis	2	2	3	6	2	15
Contact with high/low temperatures	2	1	3	2		8
Reaction to motion/improper motion	4		1			5
Collisions	2		3		5	10
Falls from high places	5	3	3	4	8	23
Struck by flying/falling objects		1	3	1		5
Others	1	1	2	2	4	10

## Environmental Data

Data for years prior to and including fiscal 2016 are the sums of the figures for the previous Mitsubishi Chemical, Mitsubishi Plastics, Mitsubishi Rayon and their respective domestic group companies before the formation of the current Mitsubishi Chemical.

### Mitsubishi Chemical Group Emissions of Pollutants into the Atmosphere and Water Systems (t)

Pollutant	FY2013	FY2014	FY2015	FY2016	FY2017
NO <sub>x</sub>	9,900	8,800	8,000	8,200	7,300
SO <sub>x</sub>	3,200	3,000	3,100	2,900	2,900
BOD	120	110	100	100	250
COD	1,900	1,700	1,700	1,700	1,700
Dust	210	200	200	180	170
Total phosphorus	70	60	50	60	50
Total nitrogen	5,700	5,700	5,500	5,700	5,800
VOCs <sup>1</sup>	4,500	5,500	4,800	4,300	4,900

<sup>1</sup> Includes PRTR-regulated substances.

### Mitsubishi Chemical Group Water Intake and Discharge Volumes (km<sup>3</sup>)

Type	FY2013	FY2014	FY2015	FY2016	FY2017	
Intake	Tap water	30,500	29,300	28,400	31,300	33,500
	Groundwater	26,500	24,200	22,300	23,200	25,500
	Industrial water	115,600	109,800	102,000	97,800	98,700
	Seawater	517,700	473,100	457,800	463,100	461,300
Discharge	Oceans	577,100	522,400	493,900	495,100	488,800
	Streams and wetlands	46,400	42,300	51,200	48,300	52,400
	Sewerage	3,900	3,300	3,500	3,600	3,300

### ISO 14001 Certified Mitsubishi Chemical Plants

Plant	Certification body	Registration date	Plant	Certification body	Registration date
Otake Plant	LRQA <sup>1</sup>	March 2016	Mizushima Plant	JCQA	March 2000
Kurosaki Plant	JQA <sup>2</sup>	July 2000	Kashima Plant	JCQA	March 2001
Nagahama and Azai Plants	JQA	December 1999	Sakaide Plant	LRQA	December 2000
Yokkaichi Plant	JCQA <sup>3</sup>	July 1999	Tsukuba Plant	JCQA	February 2000
Toyama Plant	LRQA	July 2016	Santo Plant	JCQA	December 2001
Hiratsuka Plant	JQA	March 2000	Tsurumi Plant	LRQA	October 2016
Toyohashi Plant	LRQA	July 2016	Ueda Plant	JCQA	October 2003

<sup>1</sup> LRQA: Lloyd's Register Quality Assurance Limited

<sup>2</sup> JQA: Japan Quality Assurance Organization

<sup>3</sup> JCQA: Japan Chemical Quality Assurance Ltd.

As of March 31, 2018