



# CSR Report 2010



# Comments on CSR 2009 from Inside and Outside the Company

### Feedback and Comments Received via Survey (Excerpt)

- I think that from CSR perspective, it is important for the content to be deep, but I would like you to differentiate the booklet version from web version, as we can see similar and more detailed information on your website.
- The description of CSR is nothing but things that you would expect anyway, like legal compliance. I would like you to make more active commitment to social and environmental activities. To me, chemical products bring to mind things like petroleum-derived products that impact the environment. I think it will be a major challenge to change that image.
- I think it is good that you conduct business while considering environmental issues, as any corporate has a social responsibility. I hope you will make a commitment to resolving environmental issues through reducing CO<sub>2</sub>, in particular.

### Third-party Comments on CSR Report 2009 (Summary)

#### Karl-Heinz Feuerherd (Professor, Kobe Yamate University)

- Booklet and web versions segregated, reduced page count makes it more readable
- Rate highly that you noted the fact that you have not met your targets for occupational injuries or health and safety, and your remorseful attitude
- Important to meet targets under worsening economic conditions
- For three-axis management, it is vital to grasp the needs of society and customers, and respond to them through action

#### Eiichiro Adachi (Research Chief, Head of ESG Research Center, The Japan Research Institute, Limited)

- Hope to see progress reports on CO<sub>2</sub> fixation, biosynthesis, and other technologies in the coming fiscal years as well
- Must describe responses to challenges of occupational safety in detail
- Must have long-term GHG-reduction scenarios
- Must make future predictions and have strategy for enhancing chemical quality control and utilization of non-fossil raw materials
- Must disclose initiatives at overseas consolidated subsidiaries

## We will use your feedback as a reference for improving this report

### Editorial Policy for CSR Report 2010

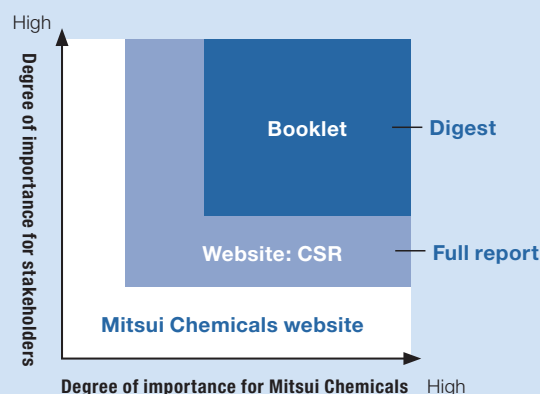
#### We report the CSR activities of the Mitsui Chemicals Group, taking advantage of the unique features of print and web media.

This report was edited with reference to the internal and external feedback we have received, and under the following editorial policy.

The purpose of this report is to maintain a dialog with our stakeholders. This report showcases the main CSR initiatives of the Mitsui Chemicals Group from three perspectives (economy, environment, and society), with a focus on environmental and social initiatives (see our Annual Report for information from the economic perspective).

The main layout is as follows. The report pages consist of three parts: Management and CSR; Relationship with Society; and Relationship with the Environment. The special features focus on key innovative technology, showcasing the progress made on innovative technologies described in our CSR Reports until now, as well as new developments. The Web version contains more detailed information, while the booklet is the digest

version and focuses on readability, key targets and prioritization. This report highlights our initiatives relating to occupational safety, environmental protection, and chemical safety in particularly great detail. Please see our website in conjunction with this document.



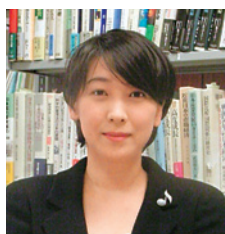
### Third-party Comments on CSR Report 2010

We received third-party opinions on CSR Report 2010 from Mr. Eiichiro Adachi and Ms. Mika Takaoka. They will be published on our website. (Scheduled for July 2010)



**Eiichiro Adachi**

Research Chief  
Head of ESG Research Center  
The Japan Research Institute, Limited



**Mika Takaoka**

Professor  
College of Business  
Rikkyo University

### Scope of the Report

#### ■ Period

In this report, FY (XX) indicates the fiscal year starting from April 1 of (XX-1) and ending at March 31 of (XX). For example, FY 2009 indicates the fiscal year from April 1, 2008 to March 31, 2009. Some data includes activities subsequent to April 2010.

#### ■ Data

The data in this report is generally for Mitsui Chemicals, Inc. When data pertains to affiliates or subsidiaries, it is noted in the body of the text.

#### ■ Guidelines Referred to in Preparing the Report

Global Reporting Initiative (GRI)  
Sustainability Reporting Guidelines 2006  
Environmental Reporting Guideline 2007 of Japan's Ministry of the Environment  
Environmental Accounting Guideline 2005 of Japan's Ministry of the Environment

#### ■ Date of Issue

July 2010 (next issue scheduled to be released in July 2011)



#### CSR website

<http://www.mitsuichem.com/csr/index.htm>

\* Content on the website, such as CSR News, is updated as necessary.

#### CSR >> CSR Site Map

CSR Site Map on the website for a list of content, including related content from the booklet

#### CSR >> Feedback from Inside and Outside the Company

Third party views of our CSR Report

#### CSR >> GRI Guidelines Cross-reference List

Cross-reference list of GRI guidelines related to environmental, social, and economic topics

## CONTENTS

About CSR Report 2010 .....	2
-----------------------------	---

Contents .....	3
----------------	---

Message from the President .....	4
----------------------------------	---

Report on Accident at Production Facilities at Shimonoseki Mitsui Chemicals, Inc. ....	6
---	---

Profile of the Mitsui Chemicals Group .....	8
---	---

The Mitsui Chemicals Group's Environment-friendly Products .....	10
---	----

### Special Feature: Microorganisms Make Chemicals

Creating a Sustainable Society with Next-generation Fermentation Technologies .....	12
---	----

### Progress Report 1: Chemical CO<sub>2</sub> Fixation

A Step Closer to the Ultimate Form of Recycling .....	14
--	----

### Progress Report 2: Plant-derived Polyurethane

World's First Commercial "Eco-car" Materials .....	15
---	----

### Management and CSR

Toward New Growth Trajectory .....	16
CSR at the Mitsui Chemicals Group .....	18
Management System .....	20

### Relationship with Society

Together with Our Stakeholders .....	22
Activities Contributing to Society .....	25
Commitment to Safety and Security .....	26

### Relationship with the Environment

Business Activities and Environmental Impact ..	28
Commitment to Environmental Impact	
Reduction .....	29
Effective Utilization of Resources .....	31

Materiality Report .....	32
--------------------------	----

Results of CSR Report 2009 Survey/ Editor's Notes .....	33
--	----

# Our group is united in its essential to society



*T. Tanaka*

**Toshikazu Tanaka**

President & CEO  
Mitsui Chemicals, Inc.

## Making Doubly Sure That Safety Has Top Priority

On November 4, 2009, a fire caused an explosion at our group company Shimonoseki Mitsui Chemicals, Inc. (located in the city of Shimonoseki, Yamaguchi Prefecture) (Please see P6 for details of the accident including causes and status). I offer my deepest apologies to everyone who was injured by this accident, and all those with nearby homes and other property that was damaged directly, as well as to the local community, the government authorities, our customers, and society as a whole.

After we failed to reach our target for reducing occupational injuries in fiscal 2009, in fiscal 2010 we revamped our vision for establishing safety at a fundamental level. We are shamed that this accident has occurred despite these efforts.

An absolute commitment to the safety is essential for a manufacturer. To reduce the potential for reoccurrence of accidents, preventive measures should be addressed not only at the manufacturing sites, but also at each layer of the group. That is, every employee should seriously think of accidents, recognizing that accidents are relating to all of us, and look into the direct and indirect causes to prevent recurrence. With this in mind, we earnestly strive to achieve our target of zero accident at the group-wide level.

## Three-axis Management and Fiscal 2010 Results

Our group sets long-term objectives along the three axes of economy, environment, and society, in order to achieve the sustainable development and growth of society and our company.

On the economic axis, although we made it through the second year of the worst business climate we have ever faced through our efforts to thoroughly reduce costs and make sales, and achieved a profit in the

## We support the UN Global Compact

In January 2008, we signed the UN Global Compact. We joined the Compact because we support its mission of overcoming global challenges as a responsible corporate citizen. Moving forward, we will strengthen our commitment to maintain the 10 principles of the Global Compact, and our consideration for the environment and human rights.





# commitment to remain

second half of the year, our initiatives to return to a growth trajectory are still incomplete as of fiscal 2010.

While we were left with a huge safety challenge on the social axis, on the environmental axis we continued our steady efforts to revise our production processes in order to reduce greenhouse gases (GHG) and industrial waste, and after achieving our targets in fiscal 2009, we again achieved them in fiscal 2010.

## We Have Positioned Fiscal 2011 as Our Crucial Year, and We Will Aggressively Tackle Our Challenges

We must establish a solid economic axis in order for our group to remain essential to society. We are confident of achieving a profit in fiscal 2011, through a strategy of out-competing our rivals in Japan, and expanding our businesses internationally.

We have positioned fiscal 2011 as our “crucial year”: the platform for our launch into a new growth trajectory by overcoming the severe fluctuations in the business climate, and following the strategy we laid out at the end of 2009. We will tackle the challenges facing us swiftly and aggressively.

In fiscal 2011, we have also identified three key CSR challenges: thoroughly instilling a culture that places top priority on safety; enhancing environmental management initiatives; and enhancing communication with society and our customers. We will advance powerful initiatives to meet these challenges, and strengthen our unified group-wide CSR promotion system (see P18, CSR at the Mitsui Chemicals Group).

## Enhancing Environmental Management Initiatives by Leveraging Our Core Competence in Chemistry

One of our group's key CSR challenges for fiscal 2011 is enhancing environmental management initiatives. We will continue to carry out highly creative activities,

leveraging our strengths as a chemical company in order to achieve this.

Our business structure produces large volumes of carbon dioxide and other greenhouse-gas emissions, but we are also confident that we have a wealth of potential to resolve these issues at a broad and fundamental level, through such means as catalysts and biotechnology that use non-fossil raw materials.

We have already successfully run experiments in fiscal 2010 to validate a method for synthesizing methanol by fixing carbon dioxide, and we are steadily piling up successes in our initiatives to create a new sound sustainable society with next-generation fermentation techniques using biotechnology.

We are also responding to worldwide trends in chemical regulations, such as REACH, with active efforts to achieve harmony with the global environment. Starting in this fiscal year, we will build a system to comprehensively manage chemical substances, and the entire group is fully committed to this task.

## Communication with Society and Our Customers

We have positioned our CSR Report 2010 as a vital medium for meeting one of our key CSR challenges for fiscal 2011: enhancing communication with society and our customers.

I believe strongly that good communication with society and our customers is only possible if every employee in the group listens seriously to them, and responds to this feedback with their full ability. All employees, from executive management to front-line employees, are united in their commitment to this goal.

Your frank views, no matter how critical, are what sustain our growth. Please do not hesitate to send us your feedback.

### ■ The 10 principles of the UN Global Compact

#### (Human Rights)

Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights; and  
Principle 2: make sure that they are not complicit in human rights abuses.

#### (Labour Standards)

Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;  
Principle 4: the elimination of all forms of forced and compulsory labour;  
Principle 5: the effective abolition of child labour; and  
Principle 6: the elimination of discrimination in respect of employment and occupation.

#### (Environment)

Principle 7: Businesses should support a precautionary approach to environmental challenges;  
Principle 8: undertake initiatives to promote greater environmental responsibility; and  
Principle 9: encourage the development and diffusion of environmentally friendly technologies.

#### (Anti-Corruption)

Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.

# Report on Accident at Production Facilities at Shimonoseki Mitsui Chemicals, Inc.

Mitsui Chemicals, Inc. (“MCI”) and Shimonoseki Mitsui Chemicals, Inc. (MCI’s wholly owned subsidiary, “SMCI”) once again extends sincerest apologies to all those who suffered injuries, the residents of the local community and all other parties concerned and affected by the November 4, 2009 accident at the filling area of the nitrogen trifluoride (NF3) production facility (Line F3/F4) at Shimonoseki Mitsui Chemicals, Inc.

Although investigations by the authorities and related government agencies have still not been concluded, the “Joint Committee for Investigation” (comprising of personnel from MCI, SMCI and external academic experts) has compiled their investigation report on the causes and necessary countermeasures. This report has been filed and accepted by the proper authorities. Accordingly, MCI and SMCI are releasing this information on the probable cause of the accident and countermeasures that will be taken to prevent recurrence in this public statement.

Recognizing the gravity of this accident, both MCI and SMCI will work together to reinforce safety management and focus all efforts on implementing countermeasures to prevent recurrence and improving the safety awareness of all employees.

## 1. Outline of the accident

### (1) Name of facility

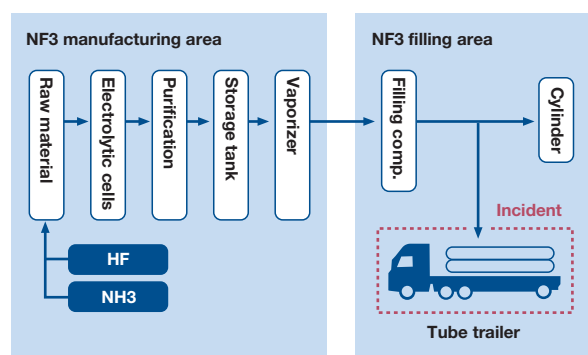
Nitrogen trifluoride (NF3<sup>\*1</sup>) production facility line F3/F4 filling area  
(SMCI has nine lines in its NF3 production facility. The current accident involved two of these lines.)

※ The filling area where the accident occurred is a facility for filling tube trailers<sup>\*2</sup> and tubes with NF3 gas produced in the production process.

<sup>\*1</sup> **Main application of NF3:** NF3 is used to clean the Chemical Vapor Deposition Chamber.

<sup>\*2</sup> **Tube trailer** is a vehicle with multiple large gas cylinders (called tubes) used in transporting gas. The tubes are connected using manifolds.

### NF3 manufacturing process



## (2) Timeline

- November 4, 2009:** Worker filling the 17 cluster tube trailer completed work during the morning.
- 13:20:** To conduct shipping analysis of the filled NF3, the worker began releasing tube valves of the tubes<sup>\*3</sup> on the 17 cluster tube trailer at which time he was struck by a blast of hot air resulting in injury.
- 13:23:** The fire alarm and gas detector were triggered and the accident was confirmed by the central control room which contacted concerned divisions.
- 13:24:** The in-house fire squad was called in and an emergency response team was formed. The filling compressor was terminated and the company commenced reporting the accident to concerned government agencies.
- 13:45:** An explosion in the filling area sent debris (slate, insulation, tube pieces, etc.) outside the confines of the Works, causing serious damage to surrounding areas. (Subsequently it was determined that the explosion originated from the 8 cluster tube trailer which was stored in the same filling area and not from the 17 cluster tube trailer itself. Debris found outside the Works was from this 8 cluster tube trailer.)
- 13:50:** A second explosion occurred in the filling area.

<sup>\*3</sup> **The tube valve** of a tube is that which is used to cut off each tube on the tube trailer from the manifold.

## 2. Injuries and damages

(As of April 22, 2010)

We extend sincerest apologies to the residents of the local community and all parties concerned for the injuries and damages listed below which resulted from this accident.

### (1) Injuries

- Nine local residents suffered bruises, cuts, sore throats, tinnitus, dizziness, etc.
- One subcontractor employee suffered first degree burns on hands and face, and bruises
- One employee suffered abrasions, sprains, and rib hairline fracture

**Current status:** Treatment has been completed for eight persons. Three local residents continue to receive out-patient treatment.

### (2) Damages

- Damage to homes and buildings: 100
- Damage to automobiles: 36

**Current status:** All repairs and reimbursement have been completed for damages to homes, buildings, and automobiles.

## 3. Probable cause of accident

The “Joint Committee for Investigation” has determined the probable cause of the accident and proposes countermeasures to prevent recurrence.

### (1) Cause of fire

After filling the 17 cluster tube trailer, the worker simultaneously released the main valves of all tubes to conduct NF3 gas analysis. It is probable that the differential pressure between the tubes caused high density, high volume NF3 to flow through the tube valve. The flow friction caused the temperature of the tube valve to rise. The rise in the tube valve temperature caused hot molten metal from the fusible plug<sup>\*4</sup> to burst out with NF3 gas which was heated in the tube valve. It is assumed that the molten metal became a combustible source igniting the surrounding vinyl chloride curtains (flame retardant) to start the fire.

※ NF3 is an oxidizing gas that is stable at room temperature but becomes active when exposed to heat or electricity.

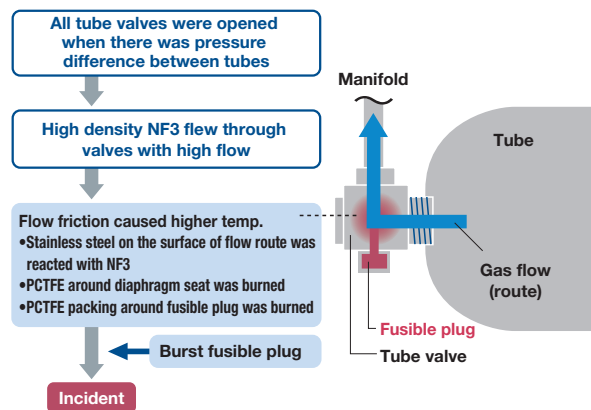
<sup>\*4</sup> **Fusible plugs** are safety devices that release contents of a tube when internal pressure rises due to high temperatures by melting the enclosed fusible alloy and triggering the device.

### (2) Cause of tube explosion and scattering of debris

It is probable that fire occurring in the 17 cluster tube trailer spread to the tire of the 8 cluster tube trailer that was stored in the same filling area, heating the tube directly above the tire. This raised temperature inside the tube causing a reaction between NF3 and

material of the tube. The pressure inside the tube increased rapidly and mechanical strength of the tube decreased causing the tube to explode.

### Mechanism of the fusible plug failure



## 4. Measures to prevent recurrence

The following countermeasures will be made to the seven lines other than lines F3 and F4 in consideration of the probable cause of the accident. Separate measures for lines F3 and F4 where the accident occurred, including the installation location, are being studied.

### (1) Prevention of fires

- Changes to filling procedures for the 17 cluster tube trailer such as simultaneous filling to avoid generating differential pressure among tubes will be made.
- Reinforcement of emergency shutdown system in the event of an anomaly
- Reinforcement of monitoring systems for early detection of anomalies

### (2) Prevention of spreading of fires

- Compartmentalization of filling area and removal of flammable materials
- Installation of sprinklers at the tube trailer filling facility

We will provide details of these specific measures to the local residents to gain understanding as well as request directives from regulatory authorities to receive approval before resuming operations at the facility.

In addition to the abovementioned, MCI and SMCI will reinforce efforts to improve safety awareness of employees and workers by revising work guidelines to reflect the countermeasures including full explanation of the causes of the accident and training with regard to countermeasures.

# Profile of the Mitsui Chemicals Group

In order to enrich people's lives, the Mitsui Chemicals Group is constantly pursuing innovation and materializing dreams with the wonder of chemistry.

## Globalization of Our Business Operations

### India

#### Incorporating a local subsidiary in India

In April 2008, we incorporated a local subsidiary in Delhi, India. High growth is expected in the Indian market, and business opportunities there are growing, especially in the automotive field. The company is actively cultivating markets for our performance materials and products, with a focus on elastomer products used in the automotive and industrial materials fields. Our group company Prime Polymer has also built a compound works as a facility for automotive polypropylene. The works began operation in June 2009.



Mitsui Prime Advanced Composites India Pvt. Ltd.

### China

#### Enhancing Partnership with China Petroleum & Chemical Corp. (Sinopec)

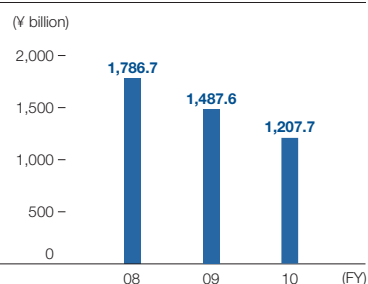
In December 2009, we entered into two agreements with China Petroleum & Chemical Corp. (Sinopec): a Memorandum of Understanding Regarding New Projects relating to phenols and acetone, and a Memorandum of Understanding Regarding a Feasibility Study to Promote Joint Ventures relating to ETP (ethylene, propylene, ethylene-propylene-diene terpolymer).

The construction of a new plant for phenols and acetone by our company and Sinopec will achieve one of the world's top phenol and acetone complexes, with competitive strength all the way from raw materials to derivative products (e.g. bisphenol A). Meanwhile, demand for EPT in China is expected to grow massively due to the rapid growth of the nation's auto industry, and we will together strive to establish an internationally competitive EPT joint venture that leverages each of our strengths, in order to meet this demand.

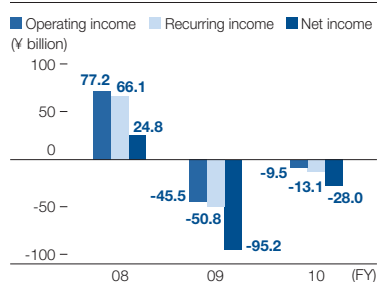


Signing ceremony with Sinopec

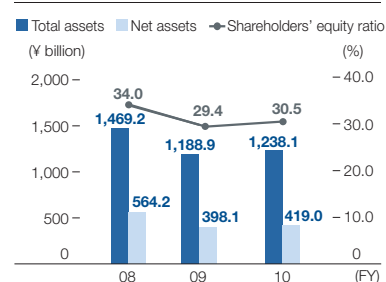
### Net sales



### Operating income, recurring income, and net income



### Total assets, net assets, and shareholders' equity ratio





## Corporate Profile

**Company Name** Mitsui Chemicals, Inc.  
**Head Office** Shiodome City Center, 1-5-2, Higashi-Shimbashi, Minato-ku, Tokyo, Japan 105-7117  
**President & CEO** Toshikazu Tanaka  
**Paid-in Capital** ¥125,053 million  
**Employees** 12,892 (Consolidated) (as of March 31, 2010)

**Domestic Manufacturing Sites** Kashima Works, Ichihara Works (including Mobara Branch Factory), Nagoya Works, Osaka Works, Iwakuni-Ohtake Works (including Tokuyama Branch Factory), and Omuta Works  
**R&D Laboratory** Sodegaura Center  
**Domestic Sales Offices** Head Office and three branches (Nagoya, Osaka, and Fukuoka)  
**Overseas Office** Beijing Office  
**Subsidiaries and Affiliates** Consolidated subsidiaries (domestic: 29, overseas: 37)  
 Non-consolidated subsidiaries and affiliates (domestic: 21, overseas: 9)

### Japan

#### Agreement on Joint Operation of Ethylene Complex with Idemitsu Kosan Co., Ltd.

Mitsui Chemicals and Idemitsu Kosan Co., Ltd. had been considering the joint operation of the two companies' ethylene complexes as the first step in the optimization of production in Chiba agreed to in May 2009. In April 2010, the two companies incorporated a limited liability partnership (LLP) through equal contributions.

Moving forward, we will pursue synergies thoroughly, including optimizing the selection of raw materials and operation of facilities, adding value to distillates, and joint investment in streamlining. We are committed to forming an ethylene center with the top level of competitiveness in Japan. Our partnership will also not stop at this integration of the operation of our ethylene complex. We will also consider expanding the domain of production optimization, including refineries, and strive to maximize the benefits from streamlining.



LLP signing ceremony

### South America

#### Incorporating a local subsidiary in Brazil (March 2010)

Brazil's economic growth continues to be remarkable even among the emerging economies. In particular, Brazil is the world's largest exporter of meat and agricultural products, and the world's sixth-largest producer of automobiles. Major business opportunities are expected there, especially in the fields of packaging materials and automotive materials.

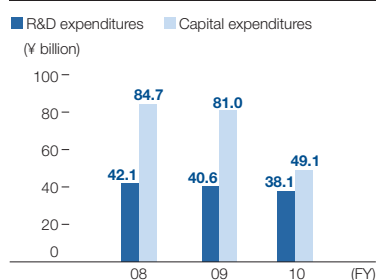
Our group has one of the top shares of the world markets for polypropylene automotive materials and ADMER™, a high-performance plastic used mainly in packaging materials and automotive materials. We will strive to expand our sales in South America, and in Brazil in particular.

We will not only strive to expand sales of our existing products, but will also conduct market surveys in order to uncover new business opportunities in South America, including Brazil's booming biotech industry.

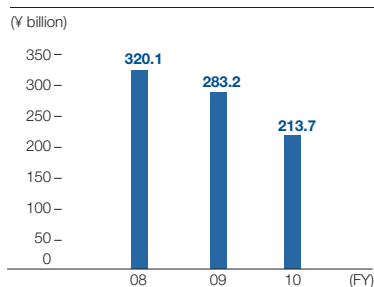


New office building

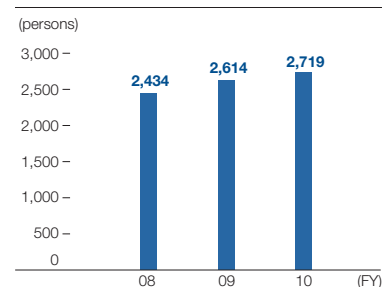
### R&D and capital expenditures



### Net sales of overseas consolidated subsidiaries



### Number of employees of overseas consolidated subsidiaries



# The Mitsui Chemicals Group's Environment-

We showcase the features of the Mitsui Chemicals Group's major environment-friendly products and their environment-friendly aspects.

## 1 Materials that make automobiles lighter



### AURUM™

It contributes to making automatic transmissions lighter as a metal substitute.



### ADMER™

By combining with the barrier resin, it contributes to preventing leakage from a fuel tank and making fuel tanks lighter.



### TAFMER™

With improved shock resistance of automotive plastic materials, it contributes to making automobile components lighter as a metal substitute.



### MILASTOMER™

It is used for automobile interior materials (door trims, instrument panels, etc.) and contributes to making automobiles lighter.



## 2 NOx reducer for heavy diesel automobiles



\* AdBlue™ is a registered trademark of the VDA (Verband der Automobilindustrie)

**AdBlue™** (200-liter plastic drum)  
It is used in Urea SCR System that treats NOx (nitrogen oxide) from diesel automobiles such as trucks and buses, and contributes to energy-saving and the prevention of environmental pollution.

## 3 Plastic packaging materials contributing to environmental preservation



### EVOLUE™, EVOLUE™ H

With EVOLUE™ and EVOLUE™ H, a reduction in CO<sub>2</sub> emissions by a total of 40 to 50% compared to our conventional products is achieved: by 30% during the manufacturing process and by 10 to 30% due to a reduction in the quantity of the materials used, which is made possible by the improved strength and reduced thickness of bottles.



### Palseal™ CB

Use of different kinds of biodegradable resin helps smooth degradation in a composting processor. Kitchen garbage can be collected in the Palseal™ CB bag, which then can be put directly into the composting processor, for sanitary and easy processing.

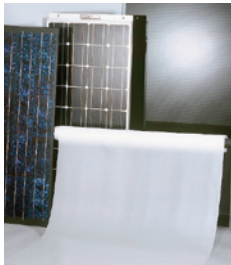
# friendly Products

## 4 Solar-cell Materials



### Monosilane



It is used as a raw material for amorphous silicon solar cells and contributes to the utilization of natural energy.



### SOLAREVA™

It is used as highly durable plastic sheet covering the entire substrate in order to protect solar cells.



-  Energy-saving
-  Prevention of environmental pollution
-  Reduce
-  Non-fossil resources
-  Natural energy



## 5 Polyurethane made from plant-derived raw materials



### Econykol™

It is polyurethane made from plant-derived raw materials and used for furniture, bedclothes, and automobile seat cushions. (See P15; Progress Report 2: Plant-derived Polyurethane)

## 6 Materials used for wind turbines, etc.



### LUCANT™

It is used for lubricant of automobiles and contributes to improving fuel efficiency and achieving longer drain intervals of the lubricant; also, helps achieve longer drain intervals of wind turbine gear base oil, thereby contributing to reducing environmental load.

## 7 Environment-friendly miticide



### KOROMITE™, MILBEKNOCK™

KOROMITE™ and MILBEKNOCK™ are environment-friendly miticide for horticultural use that contains no halogen in its chemical structure, and are effective at low dosage. Being produced by microbial fermentation, they are excluded from the count of the number of times chemosynthetic pesticides were used on specially cultivated agricultural products.

# Creating a Sustainable Society with Next-generation Fermentation Technologies



One of the pillars of Mitsui Chemicals' Grand Design is the development of technologies that will allow us to utilize non-fossil resources. What we want to do is to switch from using finite fossil resources as raw materials to using renewable raw materials. The keys to achieving this rest with the development of biocatalysis and next-generation fermentation technologies involving microorganisms.

## Technologies to Use Living Microorganisms as Catalysts

Cheese, yogurt, beer, wine... Many of the foods and drinks that enrich our diets are made through the action of microorganisms called fermentation. Using genetic modification techniques involving microorganisms and fermentation, it is now possible not only to efficiently produce food and drinks but also to produce a wide range of chemical products.

"Catalysts are essential for the chemical industry," explains Mitsufumi Wada of the Catalysis Science Laboratory's Biocatalysis Unit. "They are a tool for efficiently making the kinds of things that you might want. Biocatalysis is the concept of using microorganisms' fermentation ability as a catalyst. The biocatalysis that we are working on has the properties of selectively producing just the chemicals you are after, as well as producing chemicals that could not be made using conventional catalysts." Mitsui Chemicals has been working on biotechnology using genetic modification and other techniques since 1976, and thus far has successfully produced eight commercial products. Through this experience we have built our biocatalysis technologies.

There are two methods regarding biocatalysis. The enzyme method, which until now was the norm, uses enzymes (proteins) made by *Escherichia coli* and other microorganisms as catalysts. Mitsui Chemicals commercialized a technology for producing acrylamide via the enzyme method some time ago. In contrast, the fermentation method uses living microorganisms themselves as catalysts. For example, ten enzymes work inside a cell to convert glucose into ethanol. Complex processes like this one are difficult to perform using the enzyme method. With the fermentation method, living microorganisms multiply in a culture solution while feeding on glucose, and produce the desired chemicals.

"Couldn't we use the power of microorganisms to efficiently make things other than ethanol?" asks Wada. "Unfortunately, it is difficult to find such microbes in nature. The concept of next-generation fermentation technology is that if we can't find them in nature, then let's change the microorganisms themselves and use genetic modification technology to create microorganisms that will efficiently make

chemicals that couldn't be produced using conventional fermentation methods."

## Forming a Bio-Consortium

Next-generation fermentation requires four fundamental technologies. The first is a technology for finding microorganisms with genes for making useful enzymes; the second is a technology for inserting the useful genes extracted from these microorganisms into *E. coli*, while deleting unnecessary genes; the third is a technology for improving the performance of the useful enzymes; and the final one is a technology for optimizing the fermentation conditions within the fermenter. "Having these four completes the technology. Our company is particularly strong in the second and third of these," says Wada.

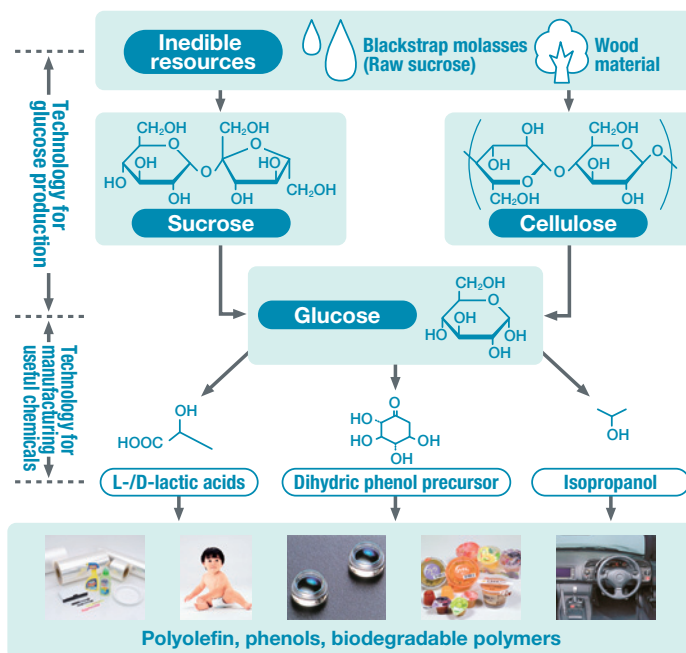
In 2007, Mitsui Chemicals founded a bio-consortium that promotes joint research and development between universities, research institutes, and corporations



**Mitsufumi Wada**

Senior Researcher  
Biocatalysis Unit  
Catalysis Science Laboratory

## Strategy to develop technologies for utilization of non-fossil resources







both in Japan and internationally. The consortium's aim is to develop biocatalysis and next-generation fermentation technologies through broad collaboration with outside parties.

"One of the pillars of the Grand Design we created in 2007 was the development of technologies to utilize non-fossil resources," says Wada. "We currently use petroleum and other fossil resources as the raw materials for some of our chemical products, and some day these will run out. The bio-consortium was founded for the end-to-end development of the technologies needed to make these chemical products without relying on fossil raw materials. Biocatalysis technologies have a vital role here; their purpose is to manufacture useful chemicals from non-fossil, inedible resources."

## Raw Materials Derived from Cellulose That Do Not Compete with Food

Sakurako Kimura, also from the Biocatalysis Unit, is researching processes for making glucose from plant-derived cellulose. Glucose is used as a base for making a wide range of chemicals. It is possible to avoid competition with food by using wood material and other inedible raw materials. "This technology uses the enzyme method," says Kimura. "The topic of our research is extracting and combining enzymes taken from microorganisms that make cellulose hydrolyzing enzymes (cellulase), and then adjusting the conditions to make glucose efficiently."

Cellulose is made by fixing CO<sub>2</sub> from the air using solar energy. When chemical products are made from glucose produced by breaking down this cellulose, burning the products after use only returns this CO<sub>2</sub> to the atmosphere. The amount of CO<sub>2</sub> in the atmosphere does not increase. "Not only that: while the chemicals are being used, that CO<sub>2</sub> is trapped in the chemicals, which helps to reduce the CO<sub>2</sub> that is causing global warming," says Wada.



**Sakurako Kimura**

Biocatalysis Unit  
Catalysis Science Laboratory

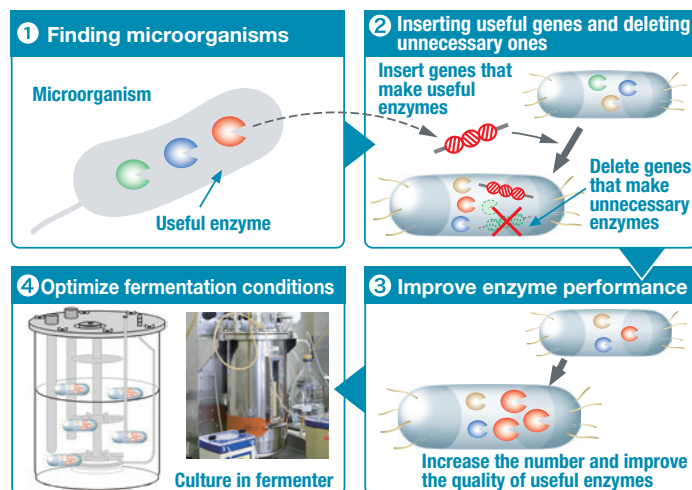
## Racing for the Lead in Achieving a Sound Sustainable Industry

"We are one of the world's leading companies for next-generation fermentation technologies," says Wada. "But we still face many challenges before these technologies can be commercialized, such as refining and wastewater-treatment technologies. Another challenge is finding a stable supply of resources. In order to meet these challenges, we need the cooperation of the Process Technology Center and many other divisions. We're currently conducting medium-scale testing using the Bio-Engineering bench (testing equipment) at Mobara in order to scale up. We want to commercialize our

technologies as soon as possible." Wada then spoke about the fact that *E. coli* has hidden capabilities: "*E. coli* is a smart little creature. I feel that we still have a lot to discover in nature. The power of science is in finding it. It's a lot of pressure, because the expectations on us are so high, but we have a really great atmosphere here at work, and I think that this has a positive effect."

Kimura continues: "These microorganisms are too small to see with the naked eye, but they have powers that we can't even imagine. Every day, I find something to surprise me; and every day I learn something new. The chemical industry now uses finite resources, but we will evolve into a sustainable industry by using biocatalysis technologies. This motivates and inspires me."

### The four foundations of biocatalysis technologies



# A Step Closer to the Ultimate Form of Recycling

**We are turning CO<sub>2</sub> into methanol, which is a raw material for chemicals. We have been running a pilot plant for a year, with the goal of commercializing this new technology that turns the common wisdom on its head. We have made a big step toward achieving the ultimate in recycling, and have found new challenges that need to be tackled.**

## Clearing One Hurdle on the Road to Commercialization

Mitsui Chemicals participates in the Project for Chemical CO<sub>2</sub> Fixation & Utilization by the Research Institute of Innovative Technology for the Earth (RITE), and has continued to develop catalysts to synthesize methanol from CO<sub>2</sub> and hydrogen. In 2009, we built a pilot plant in our Osaka Works, and we have begun operation with the aim of commercializing a technology for synthesizing methanol using CO<sub>2</sub> contained in exhaust gas as a raw material.

One of the goals of the pilot project was to use actual factory exhaust, rather than pure CO<sub>2</sub>. We are using CO<sub>2</sub> that is separated and purified from exhaust containing a wide range of constituents such as NO<sub>x</sub>. Another goal was to create a catalyst that could stand up to industrial levels of use.

"We were very nervous about whether we would really get methanol out, but we got the expected quality. I think that we have just cleared one of the hurdles," says Tatsumi Matsushita, senior researcher at the Process Technology Center, which oversees the construction and operation of the pilot plant. But this doesn't mean that the experiment went smoothly by any stretch. At first, they had one problem after another, and for a while they were getting anxious because they could not get the pilot to run stably for continuous periods. At the same time, they also found new challenges. "It uses more electricity and steam than we expected," says Matsushita. "The process itself will not be viable unless we can reduce total CO<sub>2</sub>, in terms of the energy budget as well. But the conditions for achieving this have also become clear."

## In 2010 We Will Design Industrial Processes and Consider Business Models

"In order to overcome these challenges," says Matsushita, "in fiscal 2011 we plan to add even more

innovative technologies to our existing technologies, and advance energy conservation. The other thing is getting hydrogen. We're currently refining hydrogen generated as a by-product in our Works' emissions, but we're going to work to expand our sources of hydrogen, starting with using hydrogen produced as a by-product of coke furnaces and other sources directly."



**Tatsumi Matsushita**

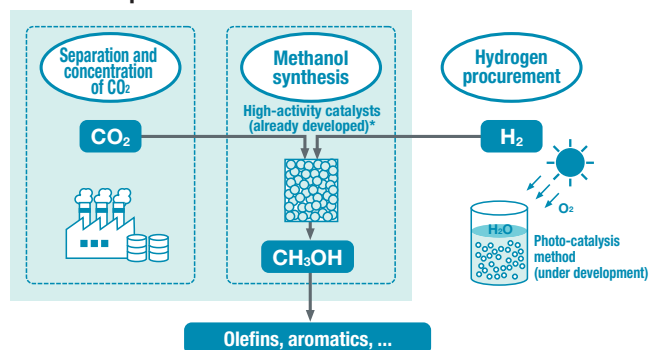
Senior Researcher  
Chemical Process Unit  
Process Technology Center  
Production & Technology Center

Our future target is to use sunlight and other natural energy to get hydrogen by splitting water. To this end, we are developing photocatalysts and other technologies. This will enable us to make methanol from CO<sub>2</sub> and water. Matsushita continues: "This process produces methanol and water. If we can make hydrogen from that water, we will have achieved the ultimate form of recycling: carbon plus water. This would be truly revolutionary, because it means that even when we run out of fossil fuels, we'll still be able to make chemical raw materials and fuel."

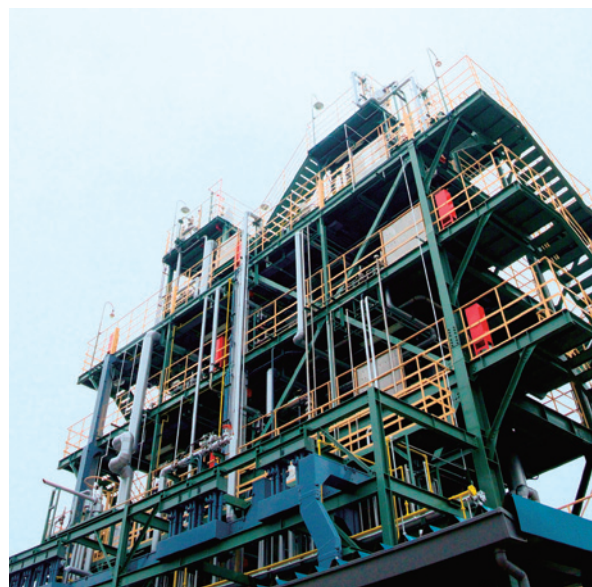
There has been a massive reaction since the announcement in 2009, and requests to come and observe are pouring in, including from overseas.

"Fiscal 2011 will be our 'crucial year' for commercialization," says Matsushita. "I think you can say that the technologies we've developed so far are ready, but we are going to add another round of improvements. At the same time, we will start designing an industrial process capable of handling hundreds of thousands of tons." Will a place with a CO<sub>2</sub> source be best? Or a place with a hydrogen source? Or will it be a place with a wealth of natural energy? A wide range of divisions at Mitsui Chemicals are working together, and starting to consider business models for the ultimate form of recycling.

### The concept of chemical fixation of CO<sub>2</sub>



\*Results from "Project for Chemical CO<sub>2</sub> Fixation & Utilization (1990-1999; supported by NEDO)," with RITE.





# World's First Commercial “Eco-car” Materials

One of the products of Mitsui Chemicals' initiatives to develop non-fossil, inedible raw materials is the commercialization of a seat cushion made from plant-derived polyurethane in Toyota Motor Corporation's environmentally friendly Prius and other vehicles.

## High Quality Attained through Repeated Strict Human Sensory Assessments

Polyurethane is used in a wide range of applications, including car seat cushions and interiors, insulator, and bedding.

Polyurethane is made from polyols and isocyanates. A seat cushion made from polyurethane in which some of the polyols were replaced with castor oil derivatives (made from castor seeds) was adopted for use in the driver's seat of the 2009 model Prius.



**Kazuto Usaka**  
Manager  
Polyurethane Development Division  
Polyurethane Business Sector

This plant-derived seat cushion was jointly developed by Toyota Motor Corporation, Toyota Boshoku Corporation, and Mitsui Chemicals. The policy for mounting driver's seats in the next-generation Prius was published in 2006, and the subsequent year was “extremely busy,” says Kazuto Usaka, who develops plant-derived polyurethane in the Polyurethane Business Sector.

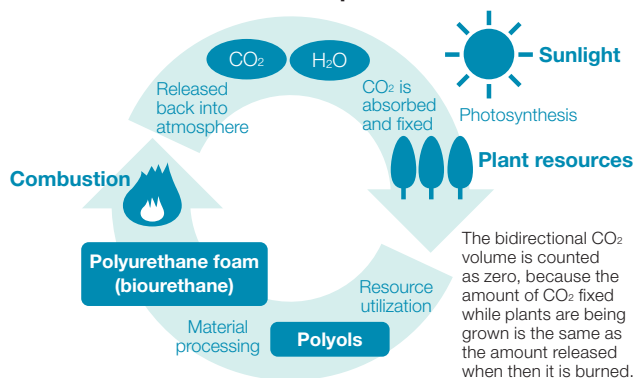
“Plant-derived polyurethane has lower resilience than the petroleum-derived type,” says Usaka, “but seat cushions need to be highly resilient as well as highly durable, and pass ‘human sensory assessments.’ A human sensory assessment relates to riding comfort, and some of the items are quite hard to express clearly with numerical value, but after repeated testing, we were able to add improvements. The human sensory assessment gradually improved,” says Usaka. “And ultimately, we got a very high assessment. They told us that this seat was more comfortable than any before. And with that, we had overcome this challenge.”

## We Are Also Working on a 100% Plant-derived Material, and Are Expanding Applications as Well

“We were the first in the world to commercialize a car seat cushion made from plant-derived polyurethane,” says Usaka. “The plant-derived portion is still about 15%, but we plan to increase this ratio. In the future, if we can also make plant-derived isocyanates, then we will have a 100% plant-derived, recyclable polyurethane that is carbon-neutral.”

The castor oil used as a raw material is inedible, so it does not pose any problems in terms of competition with food. “Castor oil is an easy-to-use material. It is stable and has low variability,” says Usaka. “It drew our attention because it has long been used in paints and adhesives.”

## The carbon-neutral concept



Mitsui Chemicals is committed to developing applications other than seat cushions. This material has promise in bedding that makes use of low resilience, and in insulator for buildings, refrigerators, etc. “If we can make plant-derived insulating material that contributes to energy saving,” says Usaka, “then we can also contribute to the environment when using it. Although it still costs more than the petroleum-based equivalent, if we can expand the applications and increase the production volume, then we will be able to offer it more cheaply.”



## VOICE

Toyota Motor is committed to reducing CO<sub>2</sub> —a major cause of global warming— by using eco-plastics. Due to the characteristics of car seats, it is difficult to introduce plant-derived constituents while satisfying the demands for functionality and safety. But Toyota Motor jointly developed biourethane with Mitsui Chemicals and Toyota Boshoku, succeeding at making a car seat cushion that is 15% plant-derived. This is the world's highest ratio of plant-derived material in a car seat cushion. In fiscal 2010, this seat cushion was used in the Prius, LEXUS HS250h, and SAI, and the company plans to expand its usage as it brings down the cost. Although the business climate surrounding automakers is growing increasingly severe, we have expectations that material manufacturers will develop products that can delight customers, through the development of materials that are friendly to both people and the environment.



**Kiyoshiba Mase**  
General Manager  
Organic Material Department  
Vehicle Material Engineering Division  
Toyota Motor Corporation

# Toward New Growth Trajectory

We are actively committed to overcoming the drastic changes in our business climate in order to achieve our “Grand Design” long-term vision.

In 2007, we laid out a long-term vision named the Grand Design. In order to achieve our Grand Design, we have revised our major strategies in response to the worldwide financial crisis and economic recession since late 2008, in order to emerge victorious in Japan and expand our businesses internationally.

## Grand Design

Grand Design is the basic framework for the management of the Mitsui Chemicals Group and consists of our Corporate Vision, Business Plan, and Action Guidelines.

Our Corporate Vision indicates our corporate group philosophy and corporate targets, and our Business Plan sets concrete targets for financial goals (economic axis), environmental goals (environmental axis), and social goals (social axis). Meanwhile, through our Action Guidelines, we are committed to acting in good faith, valuing people and society, and creating dream-inspiring innovations.

We are committed to continued corporate growth through management that balances the three axes of economy, environment, and society, in accordance with our Grand Design.

## Grand Design of the Mitsui Chemicals Group (Basic management framework)



Website

About us

Related Information >> Management Plan (Grand Design)



## Initiatives for New Growth Trajectory

At the end of October 2009, we revised our major strategies in order to overcome the severe business conditions since late 2008, restore profitability through a speedy response to changes in business conditions, and steer in a trajectory of new growth.

These revised strategies include a new growth strategy, reinforcing our business foundation, and improving our marketing capabilities. With these strategies, we are united to turn our crisis into an opportunity.



## Management Challenges for Fiscal 2011

Fiscal 2011 is our launching pad for reaching a trajectory of new growth. We are committed to establishing a solid foundation of profitability to survive our current situations.

We are fully committed to overcoming our key challenges in the three management axes of economy, environment, and society.

### Key challenges in Three-axis Management

<b>Economic axis</b>	<ul style="list-style-type: none"> <li>Establish solid foundation of profitability</li> </ul>
<b>Environmental axis</b>	<ul style="list-style-type: none"> <li>Improve GHG Intensity Index</li> </ul>
<b>Social axis</b>	<ul style="list-style-type: none"> <li>Eliminate accidents and injuries</li> <li>Build comprehensive chemical management system</li> </ul>

### Progress on Three-axis Management

	Fiscal 2010 Results	Fiscal 2011 Plan	Grand Design (around 2015)
<b>Economic axis</b> (financial goals)	<ul style="list-style-type: none"> <li><b>Operating income:</b> - ¥ 9.5 billion</li> </ul>	<ul style="list-style-type: none"> <li><b>Operating income:</b> ¥ 35 billion</li> </ul>	<ul style="list-style-type: none"> <li><b>Operating income:</b> ¥ 150 billion or more</li> <li><b>ROA:</b> 10% or more</li> </ul>
<b>Environmental axis</b> (environmental goals)	<ul style="list-style-type: none"> <li><b>Improve GHG*<sup>1</sup> Intensity Index</b> <ol style="list-style-type: none"> <li>Reduce GHG emissions by 260,000 tons via energy-saving measures</li> <li>GHG Intensity Index: 90</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li><b>Improve GHG Intensity Index</b> <ol style="list-style-type: none"> <li>Reduce GHG emissions over 50,000 tons via energy-saving measures</li> <li>GHG Intensity Index: ≤ 83</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li><b>GHG Intensity Index:</b> No more than 90 (compared to fiscal 1991 level)</li> <li><b>Amount of landfilled industrial waste:</b> No more than 1% (minimization)</li> <li><b>Other:</b> Develop technologies to utilize non-fossil resources</li> </ul>
<b>Social axis</b> (social goals)	<ul style="list-style-type: none"> <li><b>Occupational injury frequency rate*<sup>2</sup>:</b> 0.37 (DAFWC) 2.3 (DAFWC + RWTC + MTC)</li> <li><b>Compliance with laws and regulations:</b> Zero violations</li> </ul>	<ul style="list-style-type: none"> <li><b>Occupational injury frequency rate:</b> No more than 0.15 (DAFWC) No more than 1.8 (DAFWC + RWTC + MTC)</li> <li><b>Build comprehensive chemical management system:</b> Develop a basic plan</li> </ul>	<ul style="list-style-type: none"> <li><b>Occupational injury frequency rate:</b> The world's highest level of occupational safety</li> </ul>

\*<sup>1</sup> GHG: Greenhouse Gas (gases which produce a greenhouse effect whereby the heat from the sun is trapped within the atmosphere, thereby warming the earth's surface). The Kyoto Protocol defines greenhouse gases as CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFC, PFC, and SF<sub>6</sub>.

\*<sup>2</sup> Occupational injury frequency rate: Number of occupational injuries x 1 million hours / total hours worked by all employees



Website

CSR ▶ Management and CSR ▶ Toward New Growth Trajectory

Related Information >> Initiatives for New Growth Trajectory >> Progress on Three-axis Management

# CSR at the Mitsui Chemicals Group

We are committed to being a Good and Trustworthy Company. In order to achieve this, we must continually think about what society demands of a Good and Trustworthy Company, and act in this manner. This is how we at the Mitsui Chemicals Group practice CSR.

## Our approach to being a Good and Trustworthy Company



## Good and Trustworthy Company

### Workplace-driven "Two-way Communication Discussion" activities

Discuss what we should do, and act

## Aims of CSR

At the Mitsui Chemicals Group, our goal in promoting CSR is to be a Good and Trustworthy Company. We want to be a company that society trusts and needs. We also want to be a company that our employees are proud to work at. Our approach to CSR is to continually think and act in ways that will enable us to be a Good and Trustworthy Company.

We are committed to achieving management targets in the economic, environmental, and social axes, for the sustainable development of society and our company. (See P17, Progress on Three-axis Management)

## Identifying Key CSR Challenges

Starting in fiscal 2011, we have highlighted the issue of identifying what we should do to be a Good and Trustworthy Company as one of our key CSR challenges, and the entire company is working together on this challenge.

### 1. Thoroughly Instilling a Culture that Places Top Priority on Safety

We have been working to achieve our objective of reaching the world's highest level of occupational safety, but in fiscal 2010 we unfortunately fell significantly short of our objective due to accidents and occupational injuries.

Safety is the foundation of a Good and Trustworthy Company, and we cannot win the trust of society without it. The entire company is united in its commitment to eliminating accidents and injuries. (See P6, Report on Accident at Production Facilities at Shimonoseki Mitsui Chemicals, Inc. and P26-27, Commitment to Safety and Security)

### 2. Enhancing Environmental Management Initiatives

We are aware that while the chemical industry has a large impact on the environment, including CO<sub>2</sub> emissions, there are also worldwide expectations on us as a company with technologies to solve these issues in a fundamental way.

We are focusing on initiatives that leverage our strengths as a chemical company to reduce environmental impact through our products, and develop and establish low-carbon technologies that utilize chemical technologies. (See P10-11, The Mitsui Chemicals Group's Environment-friendly Products, and P14, Progress Report 1: Chemical CO<sub>2</sub> Fixation)

### 3. Enhancing Communication with Society and Our Customers

In order for us to be the company that our customers and society demand, it is vital that we fully grasp what our stakeholders demand of us. Communication is fundamental to this effort, and we are reexamining this as the entire company works to earn trust.



Website

CSR ▶ Management and CSR ▶ CSR at the Mitsui Chemicals Group

Related Information >> Aims of CSR >> Identifying Key CSR Challenges

## Promotion System for Creating a Good and Trustworthy Company

Our CSR Committee (chaired by the president) creates and reviews policies and plans relating to the promotion of CSR, such as our key CSR challenges, by the Mitsui Chemicals Group. Every line organization at the company creates plans based on these key CSR challenges, and takes action to achieve them.

We have also created a Responsible Care Committee and Risk & Compliance Committee under the CSR Committee. These committees supervise and optimize activities in their respective fields across the company.

We have set up departments in charge of CSR at our operating sites, branch offices, and affiliates, and work to promote CSR taking advantage of the unique characteristics of each site, while strengthening collaboration in the group.

We have eliminated our Social Activities Committee and Corporate Social Responsibility Center, in order to achieve organizational action that responds more rapidly to changes in the business environment. Social contribution activities are now line duties of our CSR Promotion Division, and we continue to advance activities that leverage our unique qualities. (See P25, Activities Contributing to Society)

## A Good and Trustworthy Company is the Summation of Good Workplaces: Two-way Communication Discussion

The vision of a Good and Trustworthy Company is achieved through the summation of the performance of each business organization. Our group holds “Two-way Communication Discussion” sessions, led by each line organization, in order to discuss and act on what each organization should do to make ours a Good and Trustworthy Company.

Each organization also appoints a CSR supporter, whose role is to facilitate frank, two-way communication between line managers and subordinates, and between coworkers, without regard to hierarchical relationships. Communication within an organization tends to become one-way, as memos or instructions from line managers. CSR supporters are communication leaders who help to ensure that communication within the organization is two-way. Over 400 employees have been selected as CSR supporter and they are assigned to each of our group’s work places.



Two-way Communication Discussion at  
Hokkaido Mitsui Chemicals

## CSR promotion system



## The three pillars of our Group Action Guidelines

### The three pillars of the Mitsui Chemicals Group Action Guidelines

Every officer and employee of the Mitsui Chemicals Group will act in accordance with the action guidelines to enhance the sustainable development of society and the company by making contributions to each of our stakeholders. The three pillars of the action guidelines are described in the following:

**We will always act in good faith.**

**We will have a high regard for people and society.**

**We will aim for the “Dream-Inspiring Innovation.”**



Website

CSR ▶ Management and CSR ▶ CSR at the Mitsui Chemicals Group

Related Information

>> Promotion System for Creating a Good and Trustworthy Company

>> CSR Supporters

# Management System

The Mitsui Chemicals Group considers enhanced corporate governance to be its important management foundation in order to win the trust of its shareholders, customers, local communities, and other stakeholders, and fulfill its corporate social responsibility.

## Our Approach to Corporate Governance

To earn the trust of society and fulfill our corporate responsibilities to society, we are committed to continually improving the transparency of management. We have established a system for broad discussions through conferences created in accordance with company regulations when making key decisions, while building an internal control system through the selection of outside directors and emphasizing on the roles of corporate auditors.

We are actively committed to external IR and public relations activities, and we ensure the validity of our corporate governance by disclosing information to our shareholders, the media, and others in an appropriate and timely manner.

## Risk Management System

At our group, we are committed to thoroughly managing all risks that threaten our business activities, in order to earn the trust of our shareholders, customers, local communities, and other stakeholders, and fulfill our corporate responsibilities to society.

## Compliance Training

In order to promote compliance, it is necessary and essential that each and every employee be completely aware of the need for compliance and have full knowledge of the laws and regulations that must be observed. Our group thoroughly practices four different methods to promote this: awareness-raising training to increase awareness of compliance and to hold workplace discussions on case studies of legal and regulatory violations; training on observance of laws and regulations to advance knowledge of compliance; and a compliance guidebook, which employees can refer to at any time.

### Workplace Discussions on Case Studies of Legal and Regulatory Violations

At our group, with an aim to raise employee awareness to observe laws and regulations and to improve communication between superiors and subordinates, each workplace discusses case studies of compliance violations at our company and other companies, focusing on the causes, measures to prevent recurrence, and whether the same kind of violation could occur at their workplace.

### Training on Observance of Laws and Regulations

We provide training on observance of laws and regulations. The training is divided into 15 subjects that cover key laws and regulations that our employees must know. The subjects that each employee must take are determined by his or her duties to ensure that he or she has the latest knowledge on required subjects. In fiscal 2010, a cumulative total of about 12,600 people have undergone training.

Our compliance awareness-raising training program includes not only lectures, but also real-world content including discussion of specific case studies in a group.



Awareness-raising training



Website

CSR ▶ Management and CSR ▶ Management System

Related Information

>> Corporate Governance

>> Risk Management System

>> Compliance Training



## RC Management System

Our group positions RC<sup>\*1</sup> as a pillar of our business management philosophy and is promoting it in all areas, from environmental protection, process safety and disaster prevention to occupational health and safety, chemical safety, quality, safe transport, and social communications.



Until now, we have focused our response on environmental protection, process safety and disaster prevention, occupational health and safety, and quality, but moving forward, there is a trend in Japan and internationally toward stricter regulations on environmental protection and chemical safety, and it is possible that we will face increased external risk related to new technologies and businesses. We particularly need to enhance our management system and mechanisms for chemical safety.

Since fiscal 2010, we have thus been building a comprehensive chemical management system (see P22, Mitsui Chemicals' goal for comprehensive chemical management) that goes beyond the bounds of chemical safety.

## RC Audits

Our group is committed to improving our RC activities through the PDCA cycle<sup>\*2</sup>. We hold yearly RC Audits at our domestic manufacturing sites and research centers, and at our worldwide subsidiaries and affiliates, in order to objectively evaluate whether RC activities are being carried out, and to provide guidance on these initiatives. The business divisions at our subsidiaries and affiliates eligible for responsible-care support in Japan and internationally, and our Responsible Care Division and Human Resources Division collaboratively perform evaluations using an Environment, Safety, and Health Management Checklist, and check relevant documents and worksites, in order to track the status of RC activities and provide guidance, as well as improve the level of our RC activities through the knowledge of the entire group.

In fiscal 2010, we conducted RC Audits at six Works of our domestic manufacturing sites, research centers, and 44 worldwide subsidiaries and affiliates. These audits raised the level of our RC activities, and confirmed that there were no major legal violations.

We are actively committed to legal compliance, and have identified it as one of our key group-wide challenges. In order to ensure thorough compliance with the law, we perform audits of major laws and regulations affecting Works operations (such as the High Pressure Gas Safety Act, Fire Service Act, and Poisonous and Deleterious Substances Control Act). We are also committed to voluntary safety measures, and have inspection management organizations audit the inspection management of our high-pressure gas certifications.

In fiscal 2010, we began new legal-compliance audits relating to chemical safety management. All of the audits confirmed that there were no major legal violations.

## Basic Policy Regarding the Environment, Safety, Occupational Health, and Quality

The Mitsui Chemicals Group is developing business activities based on a corporate mission which states: "Contribute broadly to society by providing high-quality products and services to customers through innovations and creation of materials and products while keeping in harmony with the global environment."

We conduct our business and manufacturing activities within the spirit of the Mitsui Chemicals Group Action Guidelines, with a high regard for customers recognizing that complying with laws and regulations and securing environmental preservation and safety are fundamental to corporate management. We are implementing this basic policy in relation to the environment, safety (disaster prevention, product safety, and occupational safety), occupational health and product quality.

### 1. The Environment

- Contribute to environmental preservation by developing new products and technologies.
- Assess and reduce the environmental impact of products through their entire life cycles, from product research and development to final disposal.

### 2. Safety and Occupational Health

- Give priority to securing safety, and aim for accident-free and injury-free operations.
- Promote the formation of an appropriate work environment and support for health enhancement of employees.
- Implement safety measures and procedures in handling chemical substances to prevent injury or harm to people connected with our activities, i.e., customers, employees and others involved in construction and logistics.

### 3. Quality

- Supply high-quality products and services that earn the trust and satisfaction of customers so that customers feel confident when using products for their intended applications.

### 4. Promoting Self-management

- Strive for continuous improvement in measures by way of self-management related to the environment, safety, occupational health and product quality, beginning with compliance with all applicable laws and regulations based on the principles of RC.

Established: October 1, 1997  
Revised: April 1, 2006

<sup>\*1</sup> **RC:** Responsible Care encompasses all those activities implemented by manufacturers of chemical substances, of their own accord and out of a sense of responsibility, in order to avoid pollution of the environment through the entire product life cycle with self-management and responsibility. These activities include improvements to methods and processes undertaken in order to protect the environment or the health of the general public, to protect employees' health, and to prevent damage to facilities. For further details, please visit the website of the Japan Responsible Care Council (JRCC).

[http://www.nikkakyo.org/organizations/jrcc/top\\_e.html](http://www.nikkakyo.org/organizations/jrcc/top_e.html)

<sup>\*2</sup> **PDCA cycle:** Plan, Do, Check, and Action cycle



Website

CSR ▶ Management and CSR ▶ Management System

Related Information >> Responsible Care >> RC Management System

# Together with Our Stakeholders

At the Mitsui Chemicals Group, we aim at achieving the sustainable development of society and our company, and take our relationships with our stakeholders into consideration when conducting business activities.

## Outline of the quality management system



## Together with Our Customers

### Product Quality Assurance

At the Mitsui Chemicals Group, our Quality Assurance Division at our head office and each of our Works' Quality Assurance Groups unite to work for quality assurance, in order to offer products and services that satisfy our customers.

In fiscal 2010, our Quality Assurance Division added company regulations necessary for quality management, and built additional workflow systems. These actions have several benefits, including creating a common group-wide system that clarifies customer requirements based on a delivery specification, and ensuring that quality-related changes are managed in operations.

The division also conducts activities to raise our level of quality management through audits and guidance in our group, both in Japan and internationally. In fiscal 2010, we revised our audit program, enabling improvements to be advanced at the group-wide level.

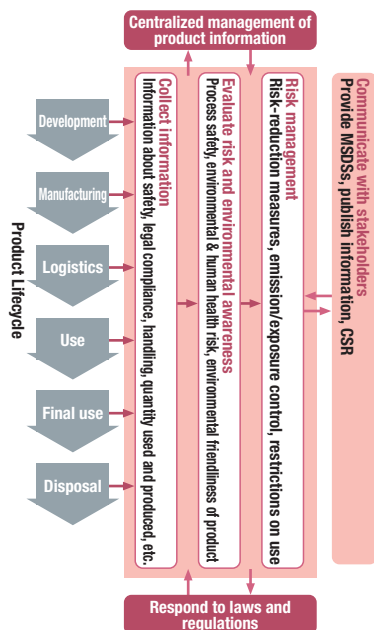
We also advanced education on quality relating to quality management, quality-management methods, and compliance, and the creation of a database for managing information on chemicals contained in our products.

### Responding to Customer Complaints

The Quality Assurance Division plays a central role in preventing occurrence and recurrence of complaints by creating a system for collaboration between the relevant departments at the head office and Works, speeding up the handling process of complaints, identifying the cause, and deploying countermeasures laterally within the entire group.

In fiscal 2011 we have begun to make improvements to our method for managing complaints. This will allow us to make sure that each site can conduct the process, further to reduce problems on quality issues, and thereby improve customer satisfaction.

## Mitsui Chemicals' goal for comprehensive chemical management



## From Chemical Safety to Comprehensive Chemical Management

In August 2008, we announced our support for the Responsible Care Global Charter published by the International Council of Chemical Associations, and we are advancing our chemical safety management more strongly than ever.

In fiscal 2010, we began preparing to build a new system for "comprehensive chemical management" that goes beyond the bounds of chemical safety. Our goal for comprehensive chemical management is to offer our customers safe and secure products, through appropriate management of product risks throughout the lifecycle, from development to disposal.

In fiscal 2011, we will create a long-term basic policy for comprehensive chemical management to realize our sustainable growth. We are also planning to actively promote visualization of our products' environmental friendliness and the disclosure of information about chemical safety as well as initiatives to enhance mutual understanding with our stakeholders.



Website

CSR ▶ Relationship with Society ▶ Together with Our Customers

Related Information >> Product Quality Assurance >> Ensuring the Safety of Chemicals and Chemical Products

## Together with Our Suppliers

### Purchasing Policy

Based on our recognition that all our suppliers are good partners of the Mitsui Chemicals Group, we are committed to fair and good-faith purchasing activities with the goal of our mutual growth. In April 2006, we created the Mitsui Chemicals Group Purchasing Policy, in order to gain our suppliers' cooperation with our purchasing activities, in accordance with our promotion of CSR.

### CSR Procurement (Guidance on Improvements for Suppliers)

We gave all our suppliers feedback on their scores from our supplier surveys conducted in fiscal 2008 and 2009, and subsequently conducted another survey of suppliers with scores below 10 out of 20 points.

### Green Purchasing

In October 2008, we began operating the new PRECS\* purchasing system company-wide to implement green purchasing of office supplies and equipment. We are expanding our purchasing of office supplies bearing the Eco Mark, as part of our efforts to protect the global environment.

## Together with Local Communities

### Community Meetings at Our Works

The residents around our Works are valuable stakeholders, and each of our Works creates various opportunities for communication with these residents. One of these opportunities is the community meetings we hold on our environmental and safety initiatives. We describe the Works' initiatives, and enhance mutual understanding by listening to the community residents' views.

On October 7, 2009, our Omuta Works held a community meeting, inviting 14 residents of four nearby school districts, as well as several people from the Omuta City Environmental Affairs Division, Industrial Promotion Department, and Fire Prevention Division. After providing an overview of the Works and a description of our safety and environmental initiatives, and other activities including a chance to see an experiment with urethane foam, the visitors were given a tour of the Works. They gave us a great deal of valuable feedback afterward.



Community meeting at the Omuta Works

## Mitsui Chemicals Group Purchasing Policy

The purchasing sectors of the Mitsui Chemicals Group consider every supplier to be a good partner for the Mitsui Chemicals Group in conducting purchasing activities that contribute to increasing the corporate value of our member companies. We understand the importance of fair competition and we trade in good faith seeking mutual sustainable development of corporate activities. We conduct purchasing following the Purchasing Policy stipulated below.

### 1. Legal Compliance

We will strictly observe laws and social norms in conducting purchasing.

### 2. Equal Opportunity and Transparency

We will be open to suppliers, both domestic and abroad, and provide equal opportunities for fair trade in good faith.

### 3. Harmony with the Global Environment

We will endeavor to purchase goods and materials with less impact on the global environment.

### 4. Choosing Suppliers from the Viewpoint of CSR

Seeking to build better partnerships, we will preferentially choose those companies that satisfy the following requirements:

- (1) Strictly observe laws and social norms.
- (2) Respect human rights and emphasize considerations for the labor environment.
- (3) Be proactive in environmental preservation and safety assurance.
- (4) Practice sound management.
- (5) Provide appropriate quality, prices, delivery deadlines, etc. and strive to maintain and improve them.

\* **PRECS**: It stands for "Procurement," and four key words necessary for procurement activities; "Rigidification (i.e. strict compliance)," "Efficiency," "Control," and "Standardization." It was decided through an in-house call for suggestions.

## Staff Comment

One of my seniors with a lot of experience at the company told me really sticks with me: "If you don't deal with your suppliers in good faith, they won't be there for you when the chips are down." I am all the more aware of the need to deal fairly and in good faith because I am in a position where it is easy to mistakenly think that being the buyer makes you superior.

**Natsuko Hiraiwa**

Purchasing Div.



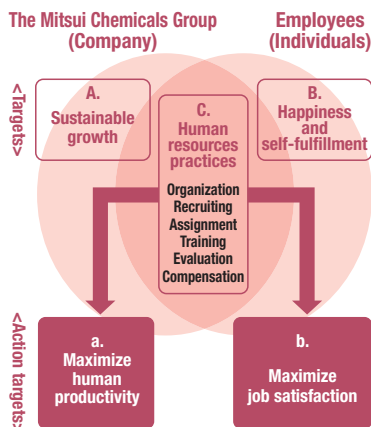
Website

CSR ▶ Relationship with Society

Related Information

>> Together with Our Suppliers >> Together with Our Shareholders >> Together with Local Communities >> Together with Industry and Academia

## Perspective on human-resource management: relations between companies and individuals



## Key action items and results for fiscal 2010

- 1. Create a working environment that facilitates balance of childcare/family care with work**  
Improved employees' understanding of a system to support childcare and family care, and programs under this system
- 2. Create time for relaxation**  
Changed awareness and promoted reforms to operations to improve penetration of programs to eliminate overtime and ensure annual leave is taken

## Staff Comment

With the cooperation of my workplace, I took one month of childcare leave immediately after my wife's maternity leave ended. Caring for a child is more difficult than I had expected. But this makes it all the more endearing when my baby sends a smile my way. With the increase of nuclear families in Japan, it is becoming increasingly vital for fathers to be involved in childcare. I think that all employees, and especially executives and managers like me, must promote a work/life balance.

### Hiroshi Ishimoto

Agrochemicals Research Center  
Research & Development Div.  
Mitsui Chemicals Agro, Inc.



## Together with Our Employees

### Human Resources Management

At every group company worldwide, our fundamental human-resources practice is to achieve two goals: the sustainable growth of our group, and the happiness and self-fulfillment of our employees. In particular, as we accelerate our global growth, fostering and promoting the staff at our overseas affiliates has become a key issue. We are committed to improving our competitiveness throughout the entire group by providing training at the Mitsui Chemicals head office, supporting and building infrastructure for measures to foster human resources at each site, and focusing on hiring and training people capable of succeeding on the global stage.

We also continue to contribute to local communities through a wide range of initiatives, including: accepting visits from collaborative human-resource development programs between industry and academia in India; accepting interns from China and Singapore, with which we have strong relationships; and operating scholarship programs. We will continue to strengthen our partnerships with local communities, while focusing on fostering and hiring human resources with a global perspective.

### Building an Employee Friendly Working Environment

Our group believes that our employees are vital stakeholders for achieving our Corporate Mission. We hold it necessary to achieve the happiness and self-fulfillment of our employees along with the sustainable growth of our group. To this end, we have enhanced our support programs, including measures to reduce working hours, nursing care leave, and subsidies for babysitting and home nursing-care services.

Harmonizing our employees' work and private lives will become increasingly vital for realizing new value. Since fiscal 2009, we have been a member of the Work-Life Balance Project as a model enterprise, and we are accelerating our promotion of work-life balance.



### Respect for Diversity and Originality

In order to respect diversity and originality, we operate programs to promote the advancement of female employees, promote the hiring of people with disabilities, and provide second careers to older people.

In May 2006, we created a dedicated Promotion and Development of Women Team in order to promote the advancement of female employees. This team has focused on four key topics: (1) foment a corporate culture that actively leverages the diversity of employees; (2) support the career development of women; (3) support the creation of face-to-face networks; and (4) support a work-life balance. As part of our commitment to hiring people with disabilities, we have achieved the statutory hiring requirement (1.8% of workforce) for six straight years, since fiscal 2005. We will continue to promote the hiring of people with disabilities, while striving to build an accessible working environment. We introduced a program for providing second careers to older people in April 2006. This program supports a wide range of life plans, and provides opportunities for employees to utilize their advanced skills and abilities after their retirement.



Website

CSR ▶ Relationship with Society ▶ Together with Our Employees

Related Information

>> Personnel Advancement and Utilization

>> Building an Employee Friendly Working Environment

>> Labor Relations



# Activities Contributing to Society

We believe that leveraging Mitsui Chemicals' strengths and unique features as a chemical company is an effective approach for tackling societal challenges, and we are carrying out a wide range of activities that do so.

## Activities Contributing to Society at the Mitsui Chemicals Group

### Adventure Class in Wonder-Chemistry

We began the Adventure Class in Wonder-Chemistry from our desire to communicate the fun and infinite possibilities of chemistry to the next generation. We have offered this class in many forms since 2006, including sending instructors from each of our operating sites to schools, summer-vacation events and festivals, and laboratory classes when we invite children to our Works and research centers. In fiscal 2010, although the worldwide spread of the H1N1 virus and other factors reduced the number of classes, all 12 operating sites held classes a combined total of 18 times.



Foamy urethane experiment at Mobara Junior High School in Chiba Prefecture

### Desert Greening Activities

In mid-2007, we launched a desert greening project in China's Inner Mongolia Autonomous Region, based on the suggestion by one of our employees that we leverage our products and technologies to help mitigate the desertification ongoing on the Chinese mainland. Based on the results of on-site experiments conducted in 2008, and interviews with the local community about their needs, we set ourselves the target of restoring a salt affected (alkaline soil) area, which had been abandoned due inability to find effective greening methods.

In April 2009, we set up a test site in order to tackle this difficult challenge in the district of Baixingtu, in the outskirts of the city of Tongliao in the Inner Mongolia Autonomous Region. The test site made it possible to manage the experiment year-round, and we thus set about investigating three technical points: (1) selection of tree species; (2) utilization of our materials; and (3) soil-improvement technologies.

Our goal in searching for effective technologies is to utilize materials that can be procured cheaply and locally, in order to enable local residents to improve and utilize salt affected soil autonomously and sustainably.

### Disaster Relief Team

The MCI Disaster Recovery Team was created based on a suggestion from employees who wanted to help in times of earthquakes and other major disasters, by providing our company's products that would be of help to the victims. In fiscal 2010, after setting up a warehouse for storing relief supplies at our Iwakuni-Ohtake Works (Yamaguchi Prefecture), we set one up at our Mobara Branch Factory (Chiba Prefecture). This supply readiness, with one warehouse each in Eastern and Western Japan, stores such supplies as polyurethane mattresses and food wrapping films, and we have a system in place to send them at the request of local governments and others.

When torrential rains struck the Chubu and Northern Kyushu regions in July 2009, at the request of Yamaguchi Prefecture we sent polyurethane mattresses to the city of Yamaguchi and waterproof tarps to the city of Hofu. These materials were able to make a small but real improvement to the lives of people who were forced to evacuate their homes.

## Mitsui Chemicals Group Social Contribution Activities

The Mitsui Chemicals Group will make constant efforts to:

1. Contribute to society at large by using and innovating chemical technology;
2. Coexist with local communities through active communication with the public;
3. Conduct activities that help foster the next generation who are responsible for ensuring the wellbeing of the future of the earth;
4. Conduct activities for protecting the global environment;
5. Proactively act to promote international exchange and cooperation; and
6. Create a corporate environment that enables each employee to actively participate in social activities.

In April 2010, we checked how well the seedlings planted in the previous year had taken root. We then further narrowed the conditions, and conducted another experimental tree planting.



Activities at the local testing site

In times of disaster, we provide support in collaboration with our customers, victims, NPOs, and local governments, in accordance with the needs of victims.



Inside our Mobara Branch Factory warehouse



Website

CSR ▶ Relationship with Society ▶ Activities Contributing to Society

Related Information >> Nurturing the Next Generation >> Environmental Protection >> Disaster Recovery Support >> Support for Employees' Participation in Activities

# Commitment to Safety and Security

Safety is the very foundation of a “Good and Trustworthy Company”; without it, we cannot win the trust of the public.

We are thus united in our commitment to eliminating accidents and occupational injuries.

We are committed to improving our internal capability to prevent and mitigate disasters by conducting disaster prevention drills, holding discussions with local municipal fire departments, and participating in “firefighter for a day” programs at municipal fire departments, among other activities.



Disaster prevention drill at Iwakuni-Ohtake Works

**\*1 Occupational injury frequency rate:**

$$\text{Occupational injury frequency rate} = \frac{\text{Number of occupational injuries}}{\text{Total hours worked by all employees}} \times 1 \text{ million hours}$$

## Staff Comment

Ensuring safety is the foundation of production activities. At our Works, we envision a variety of risks, and take countermeasures to ensure that those risks do not manifest. As a Works SE<sup>\*2</sup>, I strive daily to utilize my technical expertise to make sure that our countermeasures are appropriate and effective, and prevent accidents and disasters in partnership with each worksite.



**Tomonobu Sasada**  
Safety & Environment Section  
Safety & Environment Dept.  
Iwakuni-Ohtake Works

**\*2 SE:** Abbreviation for “Safety Engineer”; a SE is the point of contact for resolving safety issues.

## Preventing Accidents and Disasters in Production

In fiscal 2010, we suffered a series of accidents, including a fire and explosion at Shimonoseki Mitsui Chemicals, Inc.

Recognizing that we are in a state of crisis that is shaking the company's very foundation, the Mitsui Chemicals Group has set the elimination of accidents and occupational injuries as its top challenge of fiscal 2011. We are united in our commitment to implement preventive measures, as a challenge common to both occupational safety, and process safety and disaster prevention.

### Policy for initiatives

- Ensure thorough, group-wide penetration of management policy of “Safety is the Top Priority”
- Advance group-wide support programs to enhance worksite capabilities

### Targets

- Zero abnormal phenomenon/accidents
- Occupational injury frequency rate<sup>\*1</sup>: DAFWC of 0.15 or lower; DAFWC + RWTC + MTC of 1.8 or lower

### Measures

1. Implement group-wide initiative to thoroughly identify causes of impediments to placing top priority on safety at the workplace
2. Continue to make necessary investments for ensuring safety
3. Share information about major accidents and occupational injuries throughout the group, and thoroughly identify causes and implement countermeasures
4. Accurately respond to accidents in fiscal 2010 (measures against common background causes)

## Safe Logistics of Products

### Safety Measures Using MSDS and Yellow Cards

Since we handle high-pressure gas, and many hazardous, toxic and deleterious substances designated by law, we practice great caution to ensure safety during product transportation.

In order to provide the logistics contractors with information about cautions they must take when handling and storing our products (e.g. danger or toxicity of products), we supply them with a material safety data sheet (MSDS). We also make it obligatory for the drivers or crewmen to carry a Yellow Card containing information on measures to take and information to be reported in the event of an accident when transporting our products.



Yellow Card



Website

CSR ▶ Relationship with Society

Related Information >> Commitment to Safety and Security

CSR ▶ Relationship with the Environment

Related Information >> Safe Logistics of Products

## Creating a Safe and Secure Workplace

One of the targets of Mitsui Chemicals' Mid-term Business Plan is to achieve the world's highest level of occupational safety. Our results for fiscal 2010 are as summarized below.

### Occupational injury frequency rate:

**DAFWC: 0.37 (target: 0.15 or lower)**

**DAFWC + RWTC + MTC: 2.3 (target: 1.8 or lower)**

Although we did not achieve our targets, in fiscal 2010 we focused our efforts on safety measures for highly dangerous tasks, and in particular on preventing injuries from contact with chemicals and heat. As a result, we reduced the number of victims of such injuries by 30% from fiscal 2009.

Meanwhile, however, as with fiscal 2009, there were also DAFWCs due to accidents, and occupational injuries caused by human error. In fiscal 2011, we will therefore focus on the following activities, with the objective of eliminating accidents and occupational injuries.

#### (1) Raise level of KY (hazard prediction) activities

- Continue activities closely tied to worksites, led by KY instructors at each Works
- Promote KY education through e-learning

#### (2) Laterally deploy measures to prevent similar occupational injuries

- Promote measures to prevent occupational injuries due to contact with phenols
- Confirm measures to prevent cuts at domestic affiliates with high rates of cutting injuries

#### (3) Make facilities inherently safe

- Continue to implement measures to prevent fall injuries

## Employee Health

We are committed to promoting the health of group employees, based on the fundamental principle that employee health is linked directly to corporate soundness. In fiscal 2010, we continued our efforts to prevent lifestyle-related illness, make early diagnoses of cancer, prevent mental-health ailments, and reduce hygiene risks, while also advancing countermeasures against new influenza virus.

As part of our efforts to reduce hygiene risks, in fiscal 2010 we implemented improvements on 20% of all local ventilation systems, and will continue implementing improvements in accordance with our plan, in order to meet our final target for fiscal 2014.

Additionally, as countermeasures against new influenza virus, we began using face masks and supplying disinfectant chemicals, took preventive measures, and thoroughly responded to infected individuals. As a result, we succeeded at holding the infection rate among our employees to about 45% of the infection rate of the general Japanese population.

### Staff Comment

Accidents and occupational injuries are eliminated through steady, daily safety activities.

I am confident that we can continue to improve our safety awareness and make step-by-step progress toward eliminating accidents and occupational injuries, by taking occupational injuries that occurred at other worksites seriously, taking measures to ensure that similar accidents are prevented, conducting pointing and calling, and repeating KY. As a Works SE, I will continue to support safety activities at the worksite.

#### Harumi Sato

Safety & Environment Section  
Planning & Cost  
Management Dept.  
Mobara Branch Factory



### Staff Comment

We advance occupational health and safety activities in order to enable our employees to remain healthy and active at work.

Staff with expertise in a wide range of fields work together in implementing measures for mental-health care, cancer prevention, and health promotion, as well as for the prevention of influenza and other infectious diseases, while properly controlling chemical substances to prevent them from causing adverse health effects.

#### Hiroshi Ide

Manager  
Health Care Section  
Iwakuni-Ohtake Works



Website

CSR ▶ Relationship with Society ▶ Commitment to Safety and Security

Related Information >> Creating a Safe and Secure Workplace >> Employee Health

# Business Activities and Environmental Impact

In addition to publishing its environmental accounts, the Mitsui Chemicals Group uses eco-efficiency to evaluate the relationship between its economic activities and the environmental impact arising from corporate activities, striving for sustainable development.

## INPUT

Energy	
Total fuel heat (thousand GJ)	79,072
Purchased materials	
Raw materials (thousand tons)	6,729
Others (thousand tons)	28
Water resources	
Tap water (million m <sup>3</sup> )	0.6
Underground water (million m <sup>3</sup> )	1.2
Industrial water (million m <sup>3</sup> )	94
Seawater (million m <sup>3</sup> )	395

## Mitsui Chemicals (non-consolidated)

Material processing	
Chemical reaction/refinement	

## OUTPUT

Products, etc.	
Products shipped (thousand tons)	5,609
Atmospheric emissions	
CO <sub>2</sub> (thousand tons)	4,648
Fluorocarbons* (tons)	10
NO <sub>x</sub> (tons)	2,976
SO <sub>x</sub> (tons)	709
Hazardous air pollutants (tons)	56
Non-methane VOCs (tons)	2,362
Soot and dust (tons)	151
Industrial waste	
Total amount (thousand tons)	117
External recycling (thousand tons)	73
External landfill (thousand tons)	18
Water discharged	
COD (tons)	1,157
Total nitrogen (tons)	1,197
Total phosphorus (tons)	27
Effluent (million m <sup>3</sup> )	465

\* **Fluorocarbons:** Subject to the Act on Recovery and Destruction of Fluorocarbons

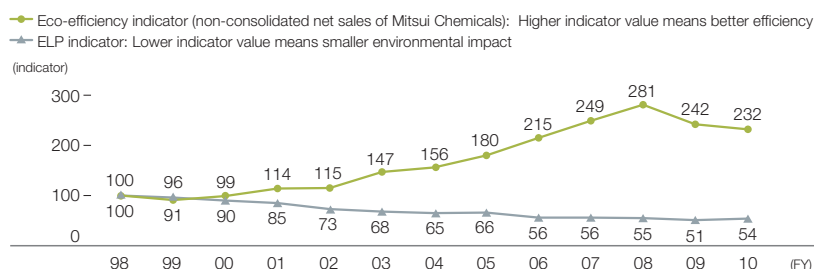
## Assessment of Environmental Impact

At the Earth Summit (1992), improvement of eco-efficiency was declared important from the standpoint of sustainable development. Eco-efficiency is an index for measuring how much of the environmental burden accompanies the provision of products or services.

Mitsui Chemicals continues to use eco-efficiency to evaluate the relationship between its overall corporate economic activities and environmental protection. To find the environmental load points (ELP) necessary to calculate eco-efficiency, we are using coefficients to assign appropriate weights to the chemical industry and Japan's environment, referring to the Panel Method developed by Professor Katsuya Nagata at Waseda University.

In fiscal 2010, we felt our business climate remained harsh, as the impact of the unprecedented economic crisis of fiscal 2009 still lingered, resulting in a weak net sales. Nevertheless, by continuing our efforts to reduce environmental impact, we greatly improved our ELP indicator to 54 and eco-efficiency indicator to 232, from fiscal 1998 which is the base year.

### Changes in eco-efficiency indicator and ELP indicator (FY 1998 level = 100)



## Environmental Accounting

We make necessary investments into responsible care (RC) initiatives, including environmental measures and occupational safety and health. We publish our environmental accounts, which are calculated in accordance with the Environmental Accounting Guideline 2005 of Japan's Ministry of the Environment.

In fiscal 2010, we invested approximately 5.3 billion yen in environmental protection and spent a further 19.7 billion yen to protect the environment. The investments were made for measures to save energy, reduce CO<sub>2</sub> emissions, prevent (water) pollution, and recycle industrial waste. Economic benefits accompanying environmental protection totaled about 7.5 billion yen, and included savings in resources and energy.

Investments concerning occupational health and safety and disaster prevention amounted to approximately 2.6 billion yen for measures to prevent explosion, fires, and leaks and measures to improve occupational safety and the working environment.



Website

CSR ▶ Relationship with the Environment ▶ Business Activities and Environmental Impact

Related Information >> Assessment of Environmental Impact >> Environmental Accounting >> INPUT → OUTPUT Data



# Commitment to Environmental Impact Reduction

The Mitsui Chemicals Group is working to protect the environment in two ways: reduction of the environmental impact of our business activities, and appropriate management of chemical substances.

## Commitment to Global Warming Prevention

### Greenhouse Gas Emission Reduction

Through its Mid-term Business Plan, the Mitsui Chemicals Group is committed to GHG emission reduction activities with the target of reducing its GHG Intensity Index to no more than 85 (compared to fiscal 1991 levels) at six domestic manufacturing sites and its domestic consolidated subsidiaries (18 companies) by fiscal 2012.

In fiscal 2010, our production sites found and implemented steady energy-saving ideas. We also reduced GHG emissions by 0.26 million tons through joint energy-saving projects with neighboring companies, including the installation of a high-efficiency gas turbine at Ichihara Works and a packaged boiler at Nagoya Works. We will most likely achieve the reduction targets of our Mid-term Business Plan. Overall, our GHG emissions decreased from fiscal 2009, by 0.21 million tons, to 4.93 million tons.

Our GHG Intensity Index was 90 (our Energy Intensity Index was 87). Although this failed to meet our mid-term targets, there was also impact from reduced production volume, and the reduction of our plant operation rate. We thus expect to reach our targets when the business climate recovers. Moving forward, we will work to make further investments in energy efficiency, and develop innovative processes that will help us greatly reduce our levels of GHG emissions, thereby contributing to a low-carbon society.

### Energy Saving Measures for Logistics

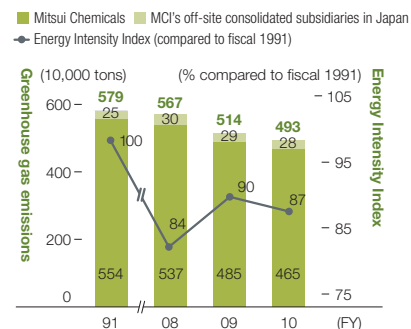
As a shipper of goods, we have been committed to changing our modes of transportation from trucks to rail and ships (modal shift) and improving our truck load efficiency, by actively involving ourselves in transportation plans. We have also promoted measures in partnership with our customers and transport companies, such as reducing the number of shipments and introducing larger vehicles by increasing delivery lot sizes.

Following the enforcement of the revised Energy Saving Act in 2006, it became obligatory not only to improve the fuel efficiency of automobiles themselves, but also to take energy saving measures in transportation activities. We will continue to advance green logistics, and work to utilize energy resources more effectively and mitigate global warming.

### Support for Declaration of Biodiversity by Nippon Keidanren

On January 22, 2010, we became a promotion partner of the Declaration of Biodiversity by Nippon Keidanren to express our support for the seven principles in the declaration, and our intention to take the initiative in our business activities to act in accordance with the declaration and its action policy. Moving forward, we will intensify our efforts to promote concrete initiatives to this end.

### Changes in greenhouse gas emissions and Energy Intensity Index



\* The number of domestic off-site consolidated subsidiaries was reduced by two in fiscal 2008, and our past data has been re-calculated accordingly.

### Staff Comment

At the Osaka Works, we are committed to reducing greenhouse gas emissions. We actively advance energy-saving efforts, and upgrade our equipment to make it more energy-efficient. We will continue to work steadily to make our Works friendly to the global environment.

#### Junji Kamitsuru

Planning Section  
Planning & Cost  
Management Dept.  
Osaka Works



### Declaration of Biodiversity by Nippon Keidanren

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



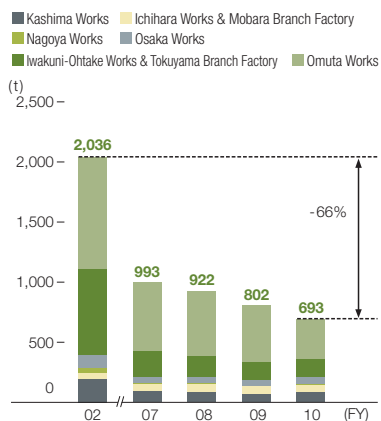
Website

CSR ▶ Relationship with the Environment ▶ Commitment to Environmental Impact Reduction

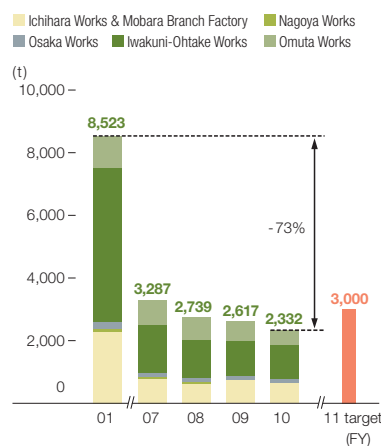
Related Information >> Commitment to Global Warming Prevention

# Commitment to Environmental Impact Reduction

## Changes in amounts released of substances subject to the PRTR Act



## Changes in amounts of VOCs released



\* PRTR: Acronym for Pollutant Release and Transfer Register

## Reduction of Releases of Chemical Substances

### Substances Subject to PRTR Act

In accordance with the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof (PRTR\* Act), Mitsui Chemicals reports to the Japanese government each year the amounts of the specific substances it produced or used which were released into the environment or transferred elsewhere.

Releases of substances subject to the PRTR Act have been steadily reduced over the last eight years, with the total amount released in fiscal 2010 reduced by 66% from that released in fiscal 2002.

## Prevention of Air Pollution

### Volatile Organic Compounds (VOCs)

Under the Air Pollution Control Act as amended in May 2004, release of volatile organic compounds (VOCs) is regulated. The government has set a goal of 30% reduction in amounts of VOCs released from non-mobile sources by fiscal 2011 in comparison with fiscal 2001.

Having already achieved in fiscal 2008 our voluntary target of 3,000 tons by fiscal 2011, we continued our efforts to reduce our emissions in fiscal 2010, reaching a level of 2,332 tons.

### Hazardous Air Pollutants

Mitsui Chemicals is currently making proactive attempts to reduce releases of priority substances with a high health risk among the hazardous air pollutants specified under the Air Pollution Control Act, in accordance with our own voluntary guidelines. In fiscal 2010, releases of these substances at our domestic manufacturing sites totaled 56 tons.

We track the risk of chemical substances that are released into the atmosphere due to our business activities, and manage these substances appropriately so that we can respond to risk communication concerning chemical substances.

Specifically we take necessary measures to ensure that levels of chemical substances released into the atmosphere do not impact human health, based on the toxicity of the substances and estimated concentrations at the boundaries of our Works.

We remain united in our company-wide commitment to reduce the environmental impact of VOCs and hazardous air pollutants.



Website

CSR ▶ Relationship with the Environment ▶ Commitment to Environmental Impact Reduction

Related Information

>> Reduction of Releases of Chemical Substances >> Prevention of Air Pollution >> Environmental Impact Reduction >> Measures against Soil Pollution

# Effective Utilization of Resources

The Mitsui Chemicals Group is advancing a plan to reduce the amount of landfilled industrial waste through the 3Rs, as part of its efforts to help build a sound sustainable society.

## Industrial Waste Reduction

The Mitsui Chemicals Group has set as one of its Grand Design targets the minimization of industrial waste\*<sup>1</sup> at domestic manufacturing sites and all production sites of domestic and overseas consolidated subsidiaries by fiscal 2016. Our 2008 Mid-term Business Plan has also set the target of minimizing industrial waste at all production sites in Japan, and reducing the average landfill rate of production sites outside Japan, to no more than 5%, by fiscal 2012.

In fiscal 2010, we achieved the minimization of industrial waste at five of our six domestic manufacturing sites (Kashima Works, Ichihara Works, Nagoya Works, Osaka Works, and Iwakuni-Ohtake Works).

At our Omuta Works, we carried out the first round of test operation of a rotary kiln to dispose solid industrial wastes in December 2009, in order to meet the target of minimization. This assured us that we would be able to treat industrial waste generated at the Works via incineration and to reduce the amount landfilled.

The average landfill rate of industrial waste for our worldwide subsidiaries\*<sup>2</sup> was 0.5% in Japan and 0.4% outside Japan, both showing year-on-year improvement from 1.0% and 6.1%, respectively. Moving forward, we will work to reduce the levels of industrial waste that we generate as well.

## 3R Initiatives

Our group is advancing the 3Rs (reduce, reuse, and recycle) for industrial waste, in order to achieve a sound sustainable society.

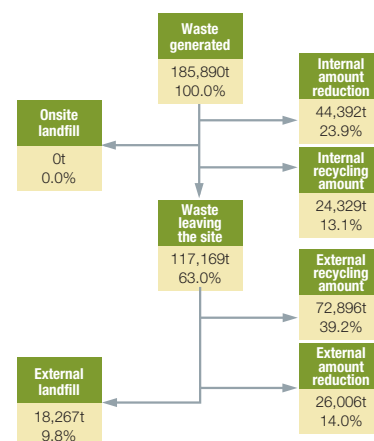
### Recycle — Siam Mitsui PTA Co., Ltd. (Thailand)

Nearly all the industrial waste produced by Thailand-based Siam Mitsui PTA Co., Ltd. is excess sludge generated in the wastewater treatment process, which used to make up a significant proportion of all sludge generated at our overseas affiliates in terms of quantity. The company has a system established to recycle this excess sludge in collaboration with a cement company in the Siam corporate group. In fiscal 2010, this recycling system worked throughout the year, sending no excess sludge to landfill. We were thus able to make great progress toward achieving industrial waste minimization at our overseas affiliates.



Siam Mitsui PTA Co., Ltd.

### Waste stream (Mitsui Chemicals)

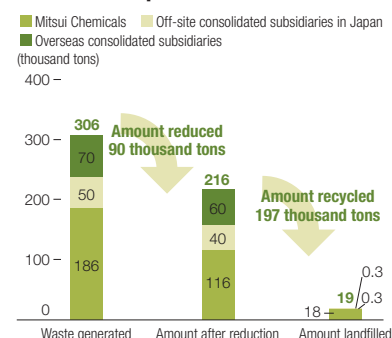


\* Internal amount reduction: Amount reduced as a result of waste plastic incineration and waste acid neutralization

\* Internal and external recycling amount: Value including waste plastic recycling and the fuel use of waste oil

\* Waste generated: Sum of sludge, waste plastics, soot and dust, etc. (The figures for sludge are based on dry weight.)

### Steps in reducing industrial waste disposal



\* The percentages do not add up perfectly due to rounding.

#### \*1 Minimization of industrial waste:

Maintaining a landfill disposal rate of 1% or less of industrial waste generated

#### \*2 Scope of worldwide subsidiaries for statistics:

Production sites of consolidated subsidiaries and target companies of RC support (25 in Japan, 19 overseas)



Website

CSR ▶ Relationship with the Environment ▶ Commitment to Effective Utilization of Resources

Related Information >> Industrial Waste Reduction >> 3R Initiatives

# Materiality Report

The Mitsui Chemicals Group conducts a number of social and environmental initiatives aimed at achieving the sustainable development of society and our company. Here, we report the challenges and results of our main activities for fiscal 2010, as well as our future initiatives.

Achievement scores (determined through self-evaluation): A: 95% or more; B: 70% or more, but less than 95%; C: less than 70%

	Category	Goals for Fiscal 2010	Fiscal 2010 Results	Achievement Score	Challenges for Fiscal 2011
Management and CSR	Risk & Compliance Management	<ul style="list-style-type: none"><li>Periodic review of each BCP (Business Continuity Plan)</li><li>Strengthening of education on the Antitrust Act and monitoring</li><li>Continued implementation of compliance training</li></ul>	<ul style="list-style-type: none"><li>Conducted annual review of each BCP</li><li>Provided education and performed audits relating to the Antitrust Act</li><li>Provided education on compliance with laws and regulations (provided to approx. 12,600 people)</li><li>Provided compliance-awareness training (provided to approx. 500 people)</li></ul>	A	<ul style="list-style-type: none"><li>Continue the periodic review of each BCP</li><li>Strengthening of education on the Antitrust Act and monitoring</li><li>Continued implementation of compliance training</li></ul>
	RC Management	<ul style="list-style-type: none"><li>Thorough compliance with safety and environment-related laws and regulations (zero violations)</li></ul>	<ul style="list-style-type: none"><li>Audited compliance with safety and environment-related laws and regulations, and found zero violations</li></ul>	A	<ul style="list-style-type: none"><li>Chemical safety management, and thorough compliance with safety and environment-related laws and regulations</li></ul>
Relationship with Society	Together with Our Customers	<ul style="list-style-type: none"><li>Enhance customer support relating to surveys of chemicals contained in products</li></ul>	<ul style="list-style-type: none"><li>Compiled a database of the results of surveys relating to chemicals contained in products based on requests from customers, and shared the database internally</li></ul>	A	<ul style="list-style-type: none"><li>Maintain and utilize the systems we have developed, so that requests from our customers can be responded to promptly</li></ul>
		<ul style="list-style-type: none"><li>Enhance ability of organization to respond to chemical safety regulations</li></ul>	<ul style="list-style-type: none"><li>Improved responsible-care support database, and began operation in October. Held briefings on Detailed Rules for Chemicals Contained in Products, and other topics.</li><li>Provided education to persons in charge of operations at affiliates. Began trial introduction of web-information service for providing news on regulations and other topics.</li></ul>	A	<ul style="list-style-type: none"><li>Build a comprehensive chemical management system</li><li>Ensure full REACH registration</li></ul>
	Together with Our Suppliers	<ul style="list-style-type: none"><li>Provide feedback on results of responses to survey to suppliers of materials, equipment, and indirect materials</li><li>Provided guidance on making improvements to suppliers with low scores (less than 10 out of 20 points)</li><li>Expand purchasing of office supplies with Eco Mark</li></ul>	<ul style="list-style-type: none"><li>Provided feedback on survey results and CSR Report 2009 to suppliers of materials, equipment, and indirect materials</li><li>Provided guidance on making improvements to suppliers with low scores</li><li>Included more products with Eco Mark in office-supply catalog (head office)</li></ul>	A	<ul style="list-style-type: none"><li>Conduct follow-up survey of suppliers with scores below 10</li><li>Conduct survey for new suppliers</li><li>Consider ways to streamline (outsource) procurement of office supplies and other general-purpose indirect materials</li></ul>
	Together with Local Communities	<ul style="list-style-type: none"><li>Expand communication through community meetings</li></ul>	<ul style="list-style-type: none"><li>Held community meetings with local residents in vicinities of all Works</li></ul>	A	<ul style="list-style-type: none"><li>Further expand communication through community meetings</li></ul>
	Together with Our Employees	<ul style="list-style-type: none"><li>Improve employees' understanding of a system to support childcare and family care, and programs under this system</li><li>Create time for relaxation. Change awareness and promote innovations in operations to improve penetration of programs to eliminate overtime and ensure annual leave is taken.</li></ul>	<ul style="list-style-type: none"><li>Improved employees' understanding of a system to support childcare and family care, and programs under this system</li><li>Encouraged male employees to take childcare leave (0 in FY 2008; 1 in FY 2009; and 36 in FY 2010)</li><li>Continued programs to eliminate overtime and ensure annual leave is taken</li></ul>	A	<ul style="list-style-type: none"><li>Continue to improve employees' understanding of a system to support childcare and family care, and programs under this system</li><li>Create time for relaxation. Continue to change awareness and promote innovations in operations to improve penetration of programs to eliminate overtime and ensure annual leave is taken.</li></ul>
	Activities Contributing to Society	<ul style="list-style-type: none"><li>Promote desert greening experiment activities</li></ul>	<ul style="list-style-type: none"><li>Created an experimental plot in China, preparing the infrastructure for establishing elemental technology. The results of the experiments are still insufficient for narrowing our focus on effective technologies (materials, soils, and tree varieties).</li></ul>	B	<ul style="list-style-type: none"><li>Narrow down elemental technologies by continuing and maintaining desert greening experiment program at testing ground</li></ul>
		<ul style="list-style-type: none"><li>Continue to carry out measures to foment a corporate culture that encourages employee involvement</li></ul>	<ul style="list-style-type: none"><li>Offered laboratory classes at the request of a wide range of stakeholders. Promoted measures enabling active participation by employees.</li></ul>	A	<ul style="list-style-type: none"><li>Raise employees' awareness of societal challenges and vitalize them by promoting social activities</li></ul>
	Commitment to Safety and Security	<ul style="list-style-type: none"><li>Improve process safety technology capabilities</li></ul>	<ul style="list-style-type: none"><li>Held a Process Safety &amp; Disaster Prevention Conference</li><li>Provided safety and disaster prevention education to Mitsui Chemicals group companies in Japan and overseas</li></ul>	A	<ul style="list-style-type: none"><li>Enhance capabilities of manufacturing sites</li><li>Enhance information on danger of handled substances, and ensure information is known and utilized</li></ul>
<ul style="list-style-type: none"><li>Eliminate accidents due to purge failures</li></ul>		<ul style="list-style-type: none"><li>Analyzed cause of purge failures of phenol and sulfuric acid, and considered technical measures for prevention</li></ul>	B	<ul style="list-style-type: none"><li>Ensure thorough compliance with work procedures</li></ul>	
<ul style="list-style-type: none"><li>Group-wide activities to promote the elimination of occupational injuries</li><li>Promote KY (hazard prediction) activities tied closely to work sites by KY instructors</li><li>Prevent accidents from falling and prevent injuries caused by contact with chemicals and heat</li></ul>		<ul style="list-style-type: none"><li>Occupational injury frequency rate: Failed to reach numerical targets; DAFWC was 0.37, and DAFWC + RWTC + MTC was 2.3</li><li>In the group, plant management continued programs to reinforce KY (hazard prediction) by leading by example, and we reduced the proportion of work-related accidents caused by insufficient KY</li><li>Focused on preventing injuries caused by contact with chemicals and heat, and fall accidents</li></ul>	C	<ul style="list-style-type: none"><li>Thoroughly identify causes of impediments to placing top priority on safety at the workplace</li><li>Continue to make necessary investments for ensuring safety</li><li>Share information about major accidents and occupational injuries throughout the group, and thoroughly identify causes and implement countermeasures</li><li>Accurately respond to accidents in fiscal 2010 (measures against common background causes)</li></ul>	
<ul style="list-style-type: none"><li>Continue to carry out comprehensive illness prevention measures</li></ul>		<ul style="list-style-type: none"><li>Although risk from lifestyle diseases was reduced, the number of days of work missed due to mental-health issues increased</li></ul>	B	<ul style="list-style-type: none"><li>Continue to carry out comprehensive illness prevention measures</li></ul>	
Relationship with the Environment	Commitment to Environmental Impact Reduction	<ul style="list-style-type: none"><li>Carry out energy-saving projects and find new ways to save energy</li></ul>	<ul style="list-style-type: none"><li>Reduced GHG emissions through energy saving: 220,000 tons</li><li>Reduced GHG emissions by finding new ways to save energy: 40,000 tons</li></ul>	A	<ul style="list-style-type: none"><li>Carry out a GHG emission reduction plan in order to meet goals of the 2008 Mid-term Business Plan, and develop a Mid-term Business Plan for GHG Emission Reduction</li></ul>
	Effective Utilization of Resources	<ul style="list-style-type: none"><li>Steadily execute a plan to minimize industrial waste, and resolve technical challenges</li></ul>	<ul style="list-style-type: none"><li>Achieved industrial waste minimization at five of our domestic manufacturing sites</li><li>Landfill rate of industrial waste for our worldwide subsidiaries: 0.5% in Japan, 0.4% outside Japan</li></ul>	A	<ul style="list-style-type: none"><li>Steadily execute a plan to minimize industrial waste</li></ul>



Website

## CSR

Related Information

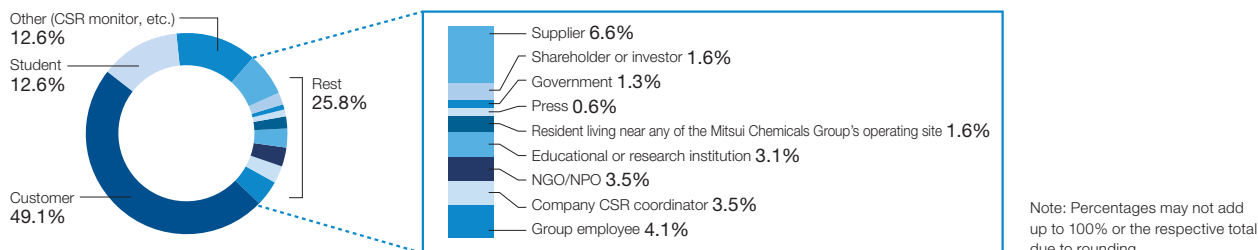
>> See "Goals and Results" under "Management and CSR," "Relationship with Society," and "Relationship with the Environment" sections.



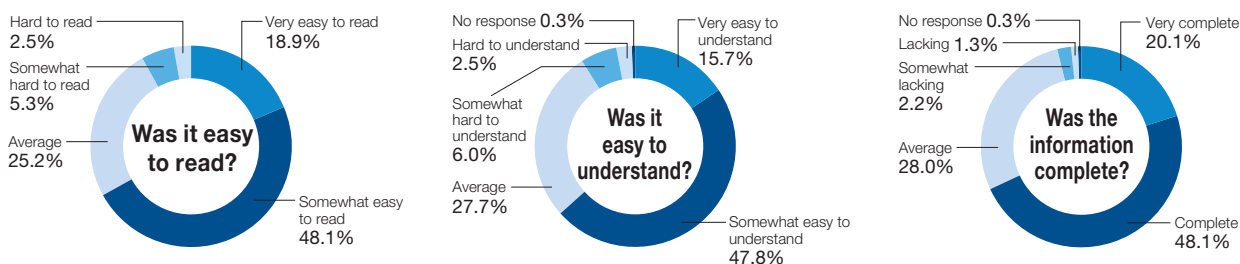
# Results of CSR Report 2009 Survey

The Mitsui Chemicals Group gathers feedback broadly from inside and outside the company through questionnaires, in order to reflect feedback in improvements to future activities and reports. As of March 31, 2010, we have received 318 responses to our CSR Report 2009 survey. We wish to thank everyone who took the time to send us their feedback. Please see our website for detailed survey results.

## Q1 What is your relationship to this report?



## Q2 What did you think of the report?



## Feedback from Outside the Company

- The description of CSR is nothing but things that you would expect anyway, like legal compliance. I would like you to make more active commitment to social and environmental activities. To me, chemical products bring to mind things like petroleum-derived products that impact the environment. I think it will be a major challenge to change that image. (Woman; 30s; office worker)
- There are fewer pages than in the last fiscal year's edition, but I still think that it is too much for an ordinary citizen who is not an expert in one of these fields. I think, however, that the use of color and layout made it easy to read. (Woman; 30s; homemaker)
- I was a little overwhelmed by the huge amount of text, but your serious commitment comes through loud and clear. Please keep it up. (Woman; 20s; educator)
- As a general chemical company, your industry faces the greatest demand to deal with the environment, so it is good that you have a variety of initiatives. In particular, I was the most surprised by your technology to make methanol from CO<sub>2</sub>. I hope that this becomes a global standard technology soon. (Man; 50s; educator)
- I was able to empathize with your proposal for two-way communication, rather than a one-way approach of corporation to consumers. I felt that it was a little long to read in order to answer the survey, but the summaries were clear, so I think that it expresses your company's approach and responsibilities well. (Man; 20s; student)

### Editor's Notes

As in fiscal 2010, we created a working group to expand and improve reported content, and make our reports more readable by taking advantage of the respective features of printed and web media, using the feedback from our stakeholders as a reference.

This report describes the main CSR activities of the Mitsui Chemicals Group. Please see our website for more detailed information.

We hope that this report can expand our dialog with our stakeholders.

URL: <http://www.mitsuichem.com/index.htm>

CSR Promotion Division



Website

CSR ▶ Feedback from Inside and Outside the Company ▶ Comments on CSR Report 2009

Related Information >> Results of CSR Report 2009 Survey >> Feedback from Outside the Company



Shiodome City Center, 1-5-2, Higashi-Shimbashi, Minato-ku,  
Tokyo, Japan 105-7117

For inquiries, please contact:

CSR Promotion Division

Tel.: +81-3-6253-2100

Fax: +81-3-6253-4245

<http://www.mitsuichem.com/index.htm>

**This report was prepared and printed in an environmentally friendly manner.**



This report was printed on FSC certified paper containing wood produced in an appropriately managed forest.



Paper used for pages 3 to 32 of this report contributes to forest thinning initiatives to restore forests and helps the effective use of wood thinned from forests.



This report was printed with 100% soy ink, which does not contain any petroleum derived volatile organic compound (VOC) solvents.



This report was printed using waterless printing, which does not produce toxic waste fluids.