



**Responsible Care**<sup>®</sup>  
OUR COMMITMENT TO SUSTAINABILITY

The Chemical Industry's Initiative to Protect the Environment and to Promote Safety and Health

# Responsible Care Report 2008



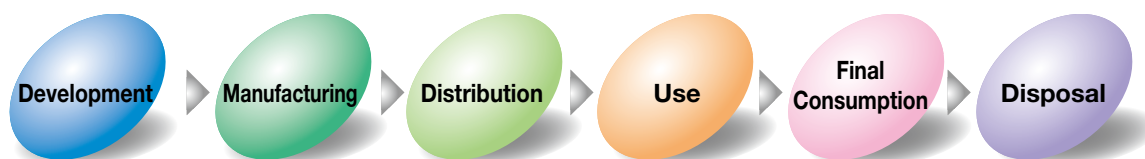
# Do You Know about Responsible Care?

## What Is Responsible Care?

Chemical substances are vital and indispensable to our daily lives. However, if they are improperly handled, they can be hazardous and can damage human health and the environment.

Concerns about health, safety and the environment are increasing due to the escalation of global environmental problems, the expansion of industrialization and new problems arising from technological developments. It is no longer possible to ensure environmental and human health and safety through legislation, and all parties who deal in or manage chemicals are required to take initiatives to protect health, safety and the environment.

The global chemical industry is working voluntarily to protect health, safety and the environment through every process from the development of chemical substances, their manufacture, distribution, use and final consumption to disposal as well as engaging in dialogue and communication with the public by openly disclosing performance. These initiatives are called "Responsible Care."



Responsible Care was initiated in Canada in 1985 and 1990 marked the establishment of the International Council of Chemical Associations (ICCA). Fifty-three countries around the world now implement Responsible Care (as of October 2008). In 1995, the Japan Responsible Care Council (JRCC) was established within the Japan Chemical Industry Association (JCIA) by 74 corporations, primarily companies engaged in manufacturing and handling chemical substances. With the establishment of the JRCC, the environment, safety and health activities of each company were harmonized and further intensified to promote public understanding of the chemical industry. As of October 2008, the JRCC comprised 100 corporate members.

## The Responsible Care Logo

The logo, depicting a pair of hands and a model of a molecule, expresses the key message in handling chemical substances with care, and the ICCA has adopted the logo as an international mark to be used by corporations and associations that implement Responsible Care. Permission to use the logo has been granted to chemical industry associations in all ICCA member countries, as well as the respective members of those associations.

In Japan, the Responsible Care logo can be used only by the JCIA, the JRCC and the JRCC members.



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## Responsible Care Implementation Items

The JRCC and its members collectively take action in five principal areas:

- Environmental protection (protecting nature and health globally)
- Process safety and disaster prevention (striving to prevent disasters at industrial facilities)
- Occupational safety and health (protecting the safety and health of workers)
- Chemicals and product safety (clearly identifying the properties and handling methods of chemical products and protecting health, safety and the environment of all persons who handle these products, including customers)
- Distribution safety (preventing accidents during the transportation of chemicals and protecting human health, safety and the environment)

The JRCC and its members publicly report the results of these efforts to promote the following:

- Interaction/communication with the public

These efforts are spearheaded primarily by the Planning and Management Committee. Under the committee are the Steering Committee and four working groups, which are responsible for annual reports, dialogue, member relations and product stewardship.

\* Refer to the JRCC web site: [http://www.nikkakyo.org/organizations/jrcc/top\\_e.html](http://www.nikkakyo.org/organizations/jrcc/top_e.html)

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# Message from the Chairman



**Hiromasa Yonekura**  
Chairman  
The Japan Responsible Care Council

We are now facing a range of global challenges, including environmental problems such as global warming, energy security, natural resources and food security and problems related to poverty. The international community should make concerted efforts to solve these problems to ensure the sustainable development of all human societies.

The chemical industry has been creating a variety of useful new products and technologies through continuous innovation with the aim of minimizing its impact on the global environment and making effective use of limited resources, and has been contributing to bettering people's lives and furthering the development of industries. I believe that these technologies and innovations of the chemical industry are becoming increasingly essential as we endeavor to solve the problems that are growing ever worse on a global scale.

Against this backdrop, the Japan Responsible Care Council (JRCC) and its member companies together have been playing a leadership role in Responsible Care activities in Japan and in Asia. Specifically, the JRCC has been promoting and enhancing product stewardship to provide information about the safety of chemical products more

appropriately and ensure the safe use of chemical products. The Council is also implementing its capacity building project to promote Responsible Care activities over the Asian region. The International Council of Chemical Associations (ICCA), which represents chemical manufacturers all over the world, regards Responsible Care as one of its three priority issues. Major Japanese chemical companies have already signed the Responsible Care Global Charter launched by the ICCA, and are further stepping up their Responsible Care activities. Thanks to their strong commitment, the high environmental and safety awareness of the Japanese chemical industry is now globally recognized.

Responsible Care is a voluntary initiative led by the chemical industry to ensure environmental protection, safety and human health throughout the lifecycles of their chemical products, from manufacture to disposal, and to earn and maintain the trust of society by communicating effectively with all stakeholders. With this report, we in the chemical industry would like to communicate an update of our efforts more widely to the public and listen to the voice of those concerned in order to bring our Responsible Care activities to higher levels. We will continue to commit ourselves to the sustainable development of society, and we would appreciate your further understanding and support for our industry.

November 2008

米倉弘昌

## The JCIA Guiding Principles for Improvement of Environmental, Health and Safety Conditions

1. To improve continuously the environmental, health and safety performance, over the entire life cycle of our products, from research and development through to waste disposal, and to report openly the performance to society
2. To manage our business activities so as to avoid harm to people and the environment as well as to guarantee that there is no threat to the environment, health and safety, during the transportation, storage and disposal of our products
3. To promote the conservation of resources and energy and to minimize waste emission and to recycle waste efficiently
4. To address the concerns of government officials and the public regarding the influence of our products and operations on the environment, health and safety, while disclosing relevant information to and having dialogues with them for proper understanding
5. To enhance risk characterization and risk management based on sound scientific information in order to reinforce product stewardship within the chemical industry and with customers throughout the chain of commerce. To improve transparency, including ways to make relevant product stewardship information available to the public
6. To cooperate with governments and organizations in the development and implementation of effective regulations and standards, and to promote voluntary initiatives for improving the environment, health and safety in addition to meeting them.
7. To support actively national and global Responsible Care governance process in order to ensure accountability of implementation of Responsible Care for the environment, health and safety
8. To extend local, national and global dialogue processes to address expectations of stakeholders worldwide for the promotion of the environment, health and safety



# About the Responsible Care Report 2008

This report was prepared as a summary of the individual activities of the JRCC member companies, as well as the JRCC overall activities.

The activities are presented quantitatively based on the performance data submitted by member companies and qualitatively by using member companies' responses to a questionnaire survey and the 2007 Responsible Care Implementation Report/Plan.

For the Responsible Care Report 2008, we use data provided by JCIA members on performance data items that can be tabulated.

This is the 13th publication since 1996.

## Topics

### • Progress regarding the JRCC medium-term plan (fiscal period 2006-2008)

The JRCC set out a program of activities for each of the priority issues specified in the medium-term plan formulated in fiscal 2005, and has steadily been implementing programs since then. → P7

### • The setting of a new target for energy intensity

The chemical industry had set a goal of reducing its average energy intensity to 90% of the fiscal 1990 level by fiscal 2010. Nonetheless, in response to an increase in the production index and in energy consumption, the industry revised the fiscal 2008-2012 target to 80% of the fiscal 1990 level. The energy intensity came to 83% in fiscal 2007. → P8

### • A steady decrease in the amount of industrial waste for final disposal

The amount of industrial waste for final disposal from the member companies in fiscal 2007 was about 260,000 tons, representing a decrease of 2,000 tons from fiscal 2006, and this indicated an 85% decrease from fiscal 1990. → P10

### • A steady reduction in VOC emissions

The JCIA has been implementing measures to reduce the emissions of volatile organic compounds (VOCs). In fiscal 2007, the Association achieved a 47% reduction from the level in the baseline year (2000). → P13

### • More measures to deal with the REACH regulation

The JCIA has established a new in-house group in response to the enforcement of the new regulation on chemical substances, called REACH in Europe, through which the Association provides relevant information and prepares and publishes manuals to support its members. → P22

### • Information exchange within the supply chain

It is increasingly required to manage risks related to chemical substances across the entire supply chain, and in response to this global trend, the JCIA has been fostering information exchange with user industries and others. → P22

### • Record-breaking investment in process safety and disaster prevention

Our investment in process safety and disaster prevention totaled about 76.1 billion yen in fiscal 2007, reaching a record high. The ratio to sales also came to a record-breaking 0.39%. → P24

### • Continuous dialogue with society

The JRCC has been holding active dialogues with society, namely with local communities, consumers and students. → P28

### • Promotion of capacity building

In order to disseminate Responsible Care in ASEAN countries, the JRCC has been holding seminars there to promote capacity building activities for human resources development and capability improvement. → P30

### • Responsible Care commendation program

To further encourage its members to engage in Responsible Care activities, the JRCC established a program to commend individuals and groups that have contributed to Responsible Care activities in fiscal 2006. In fiscal 2007, the second year of the program, the Association awarded commendations to the winning candidates. → P32

### • Eighteen companies underwent Responsible Care verification in fiscal 2007

In fiscal 2007, a total of 18 companies underwent verification, representing a decrease of three companies from the preceding year. → P33

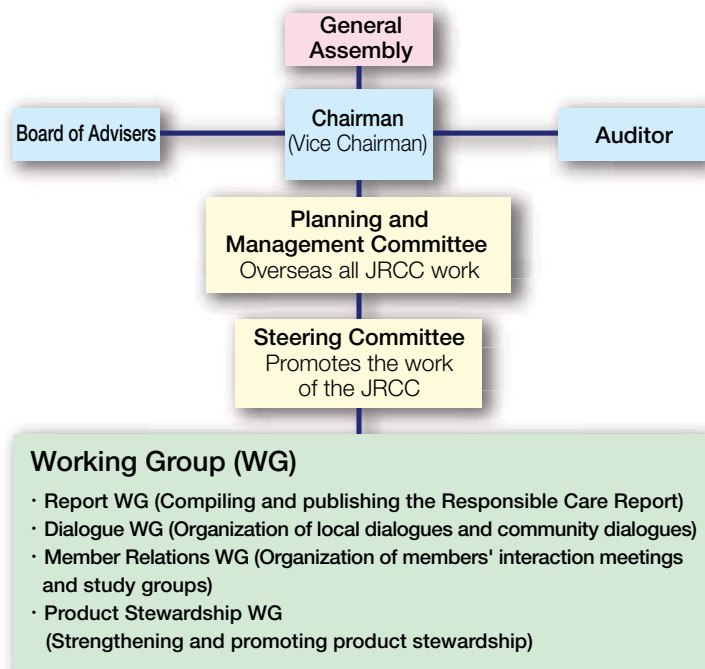
### • Expert opinion

Ms. Yoshiko Arita of the Japan Housewives' Association and Professor Takehiko Murayama of Waseda University commented on our Responsible Care activities. → P34

# JRCC Management

The JRCC was established within the JCIA in 1995. Responsible Care is being implemented by the Steering Committee under the JRCC Planning and Management Committee, with four working groups as the focal point. Task forces may be temporarily created as necessary.

## Organizational Chart of the JRCC



### JRCC Directors for Fiscal 2008

**Chairman:** Hiromasa Yonekura, President of Sumitomo Chemical Co., Ltd.

**Vice Chairman:** Kenji Fujiyoshi, President & CEO of Mitsui Chemicals, Inc.

**Auditor:** Masatoshi Matsuzaki, Director & Senior Executive Officer of Konica Minolta Holdings, Inc.

**Auditor:** Tatsuo Segawa, Director of Tokuyama Corporation

**Chief of the Secretariat:** Tetsuo Nishide, Director General of the Japan Chemical Industry Association

## Member Activities



When members engage in the practice of Responsible Care, they abide by the seven Codes of Responsible Care, which provide for the basic implementation items, and strive to implement the PDCA cycle themselves.

They prepare their implementation program (Plan), perform their activities (Do), conduct self-assessment by an internal audit (Check), prepare the Implementation Report and Performance Data to be submitted to the JRCC, and at the same time perform reviews and suggest improvements (Act) for adoption into the next program.

The Internal Audit Assessment Matrix is a checklist based on the respective Codes of Responsible Care, which makes use of a ranking from 1 to 5, with 5 being the highest. The collated results are presented as graphs and are illustrated in this report as "Members' Self-Assessment."

### Self Assessment Scores and Categories

Higher than 4.5: Completely satisfactory

3.5 to 4.5: Nearly satisfactory

2.5 to 3.5: In the process

Less than 2.5: Need to adopt

# The JRCC Program of Activities and Progress Status

In fiscal 2005, the JRCC prepared its medium-term plan (fiscal period 2006-2008), and has since been conducting activities based on the policies contained in the plan, by focusing on the following key issues.

## JRCC Policies

To strive for dissemination of the Responsible Care Global Charter in cooperation with the JCIA, in accordance with the JCIA's Guiding Principles for Improvement of Environmental, Health and Safety Conditions

### Key Issues in the JRCC medium-term plan

- ① Further enhancement and promotion of product stewardship\*<sup>1</sup>
- ② Promotion of continuous improvement and dissemination of Responsible Care activities
- ③ Fulfillment of accountability by improvement of verification activities
- ④ Further recognition of Responsible Care activities by society
- ⑤ Promotion of capacity building\*<sup>2</sup> in ASEAN countries
- ⑥ Enhancement of the functions of the JRCC Management System

\* 1. Product stewardship (PS): Refer to p. 20.

\* 2. Capacity building: Refer to p. 30.

### Fiscal 2007 Program of Activities/Progress Status and Fiscal 2008 Implementation Plan

	Fiscal 2007 Program of Activities	Fiscal 2007 Progress Status	Fiscal 2008 Implementation Plan
<b>Information Disclosure</b>	<ul style="list-style-type: none"> <li>Preparation and publication of the Responsible Care Report</li> </ul>	<ul style="list-style-type: none"> <li>Prepared the Report</li> <li>Held report briefings in Tokyo and Osaka</li> <li>Responsible care reports published by a total of 74 member companies</li> </ul>	<ul style="list-style-type: none"> <li>Preparation and publication of the Report</li> </ul>
<b>Communication</b>	<ul style="list-style-type: none"> <li>Continuation of dialogue meetings with local communities</li> <li>Review of the details of the dialogue meetings with citizens and implementation of the meetings</li> <li>Continuous provision of risk communication training</li> </ul>	<ul style="list-style-type: none"> <li>Held dialogue meetings with local communities in six areas</li> <li>Held dialogue meetings with consumers (in Tokyo and Osaka)</li> <li>Participated in an environmental event held by an organization of students</li> <li>Held the 4th risk communication training</li> </ul>	<ul style="list-style-type: none"> <li>Continuation of dialogue meetings with local communities</li> <li>Increase in the number of dialogue meetings with citizens, and the organization of similar meetings with teachers</li> <li>Continuous provision of risk communication training</li> </ul>
<b>Dissemination of Responsible Care Activities</b>	<ul style="list-style-type: none"> <li>Encouragement of group registration by members</li> </ul>	<ul style="list-style-type: none"> <li>Number of companies that registered as a group: 150 (Increased by six compared with the preceding year)</li> </ul>	<ul style="list-style-type: none"> <li>Active promotion of group registration by members</li> </ul>
<b>International Activities</b>	<ul style="list-style-type: none"> <li>Participation in the ICCA Responsible Care Leadership Group's (RCLG's) annual meeting in Paris</li> <li>Participation in the 10th Asia Pacific Responsible Care Conference (APRCC 2007) in Malaysia</li> <li>Support to Asia</li> </ul>	<ul style="list-style-type: none"> <li>Participated in RCLG's annual meeting in Paris</li> <li>Participated in APRCC 2007 in Malaysia (Refer to p. 31)</li> <li>Gave support to Asian countries, including Vietnam and Indonesia</li> </ul>	<ul style="list-style-type: none"> <li>Participation in RCLG's annual meeting in Morocco</li> <li>Exhibition at India Chem 2008</li> <li>Support to Asia</li> </ul>
<b>Chemicals and Product Safety</b>	<ul style="list-style-type: none"> <li>Further enhancement and promotion of product stewardship (PS)</li> <li>Promotion of specific measures at the Production Stewardship WG in cooperation with the JCIA</li> </ul>	<ul style="list-style-type: none"> <li>Supported the JCIA in creating the Japanese version of the GPS guidelines and formulating a plan to foster related activities</li> <li>* The Global Product Strategy (GPS) is a strategy for voluntary activities to be conducted for the comprehensive management of chemical products.</li> </ul>	<ul style="list-style-type: none"> <li>Further enhancement and promotion of PS</li> <li>Restructuring of the PS Working Group, and the formulation and implementation of new plans</li> </ul>
<b>Support for Members' Responsible Care Activities</b>	<ul style="list-style-type: none"> <li>Organization of interaction meetings and study meetings</li> <li>Implementation of the Responsible Care commendation program</li> </ul>	<ul style="list-style-type: none"> <li>Held interaction meetings for members in Osaka and Tokyo and a series of study meetings (three meetings) in Tokyo</li> <li>Awarded a second commendation under the program</li> </ul>	<ul style="list-style-type: none"> <li>Organization of interaction meetings and study meetings</li> <li>Implementation of the Responsible Care commendation program</li> </ul>
<b>Responsible Care Verification</b>	<ul style="list-style-type: none"> <li>Increase in the number of members undergoing verification</li> <li>Higher credibility for Responsible Care activities through verification</li> <li>Improvement of training provided to verifiers</li> </ul>	<ul style="list-style-type: none"> <li>Conducted verification in 18 companies (Decreased by three companies compared with the preceding year)</li> </ul>	<ul style="list-style-type: none"> <li>Increase in the number of members undergoing verification</li> <li>Higher credibility for Responsible Care activities through verification</li> <li>Improvement of training provided to verifiers</li> </ul>

### Organization of a meeting of the Board of Advisers

Under the new chairman Hiroshi Komiyama, President of the University of Tokyo, the 10th meeting of the Board of Advisers was held on December 21, 2007. At the meeting, participants gave their opinions and comments on how to publicize Responsible Care activities as well as on such issues as human resources development, education, dialogue with society, international activities and Responsible Care verification from an external viewpoint.

# Environmental Protection (Energy Conservation)

In fiscal 2007, which was only one year before the start of the first commitment period for the Kyoto Protocol (from 2008 to 2012), the industrial community made further efforts to conserve energy and prevent global warming. The JCIA as well revised its environmental targets and reviewed its conventional activities.

Specifically, based on the Nippon Keidanren Voluntary Action Plan on the Environment, the Association revised its target for energy intensity, strengthened its activities to encourage corporate employees to save energy both in the workplace and at home, and urged developing countries to save energy by preparing a collection of energy conservation and environment-related technologies possessed by Japan's chemical industry.

The JCIA also endeavors to reduce the emission of greenhouse gases by implementing voluntary action plans, not only for reducing CO<sub>2</sub> emissions from fossil fuel consumption through energy conservation activities, but also by reducing emissions of CFC substitutes (HFC, PFC and SF<sub>6</sub>). Through international cooperation with the ICCA, the JCIA also began examining measures to evaluate the degree of contribution that the chemical industry—an industry supplying materials that would facilitate energy conservation in the automobile, electric home appliance and housing industries—can make for the sake of society, from the viewpoint of LCA.\*<sup>1</sup> In addition, the Association is now examining the standardization of energy conservation levels with the use of benchmarks,\*<sup>2</sup> which will help the chemical industry save more energy.

\*1 Life cycle assessment (LCA) is a method to comprehensively measure the environmental impact of a product throughout its life cycle, from manufacturing, transport, marketing, use and disposal to reuse.

\*2 Benchmarks here mean energy efficiency indicators set for each product and process in the chemical industry.

## New Energy Conservation Targets and Performance

Despite an increase in the production index and energy consumption, the JCIA set a higher voluntary target for energy intensity in 2007. Specifically, the Association revised the average energy intensity index for the period from fiscal 2008 to 2012 from 90% to 80% of the fiscal 1990 level as a non-bidding target.

In fiscal 2007, the energy intensity index came to 83% of the fiscal 1990 level.

## Energy Conservation Measures

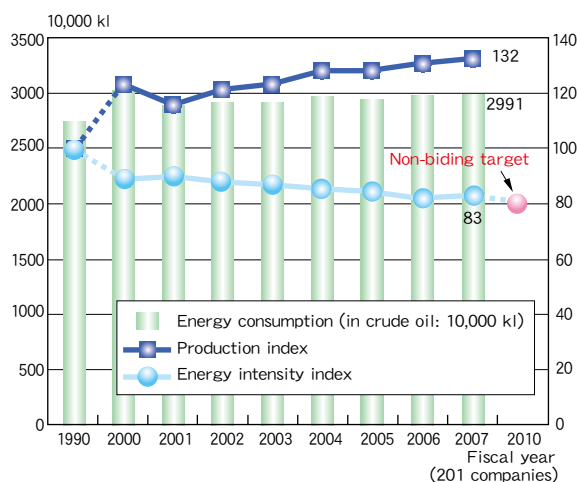
The JCIA fiscal 2007 performance survey of its member companies shows that there were 428 cases of energy conservation and CO<sub>2</sub> reduction, with investments amounting to about 43 billion yen. From fiscal 2008 onwards, as much as 118 billion yen will be invested for improvements in equipment/machinery efficiency. This will result in reductions in energy consumption amounting to 600,000 kl in crude oil equivalent.

## Reduction in Greenhouse Gas Emissions

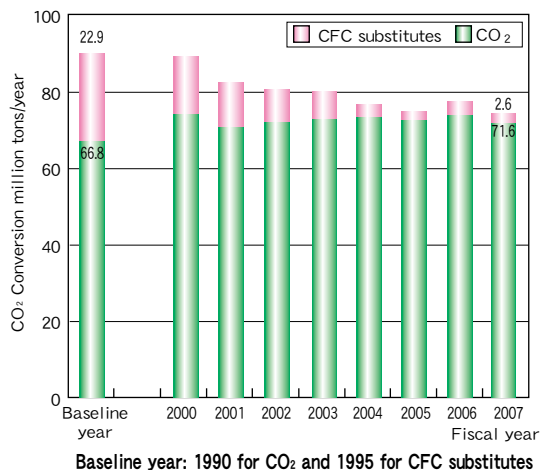
The volume of CO<sub>2</sub> emission by the JCIA was reduced by 2.02 million tons from the previous fiscal year, though it increased by 7.0% in comparison to the baseline year level. However, if a reduction in the emission of chlorofluorocarbon replacement materials, achieved in cooperation with the Japan Fluorocarbon Manufacturers Association, is taken into account, greenhouse gas emissions were reduced by 17% from the baseline year level.

Moreover, many chemical companies have private power generation facilities. At some of these facilities, wood

## Energy Consumption, Energy Intensity and Production Index (JCIA data)



## Greenhouse Gas Emissions (JCIA data)



Baseline year: 1990 for CO<sub>2</sub> and 1995 for CFC substitutes

biomass is used in combination with fossil fuels to reduce CO<sub>2</sub> emissions from fossil fuel combustion.



# and Global Warming Preventive Measures)

## Global Initiatives

In October 2007, the International Council of Chemical Associations (ICCA) included policies on energy and climate change among its priority issues and established a new Energy & Climate Change Leadership Group. Japan acts as the chair of this Group and coordinates between the chemical industries of each country. In May 2008, the Group launched four task forces on policies, PR and advertising, LCA, and benchmarks through cooperation between the JCIA, the European Chemical Industry Council and the American Chemical Council, with an eye to the chemical



Second meeting of the ICCA Energy & Climate Change Leadership Group held in Tokyo (in May 2008)

industry making proposals related to energy and climate change that contribute to society from a global viewpoint.

## Examples of Member Companies' Initiatives

Reducing greenhouse gas emissions by improving productivity through the introduction of a new aluminum melting furnace

### Showa Denko K.K.

In January 2007, Showa Denko's Oyama Plant began updating its molding facilities to improve the working environment and safety, and the updating was completed in June 2008.

At the melting and molding facilities of the Oyama Plant, billets are manufactured for use within the Showa Denko Group, a manufacturer that molds aluminum and processes it into products. The company has been providing customers with products that are manufactured under strict quality control, including the careful selection of materials.

As part of the updating, the existing melting furnace was replaced with one that uses environmentally friendly LNG as the fuel instead of heavy oil. The burner was also replaced with the most advanced type, which recovers waste heat. As a result, greenhouse gas emissions were reduced by 11,000 tons from about 26,000 tons in 2006 to 15,000 tons in 2007 in CO<sub>2</sub> equivalent.



Biomass diesel fuel (BDF)

### Sekisui Chemical Co., Ltd.

Sekisui Chemical's Shiga-Ritto Plant uses biomass diesel fuel (BDF) made from waste edible oil as fuel for forklifts. Plant-based fuel contributes to a reduction in CO<sub>2</sub> emissions and the use of waste oil also represents one measure that makes effective use of resources. The Plant uses 100% BDF fuel in five forklifts, and in fiscal 2007, it used 16,800 liters of BDF, which accounted for 23% of the fuel used for forklifts at the site.



Environmental protection through the use of carbon fiber

### Toray Industries, Inc.

Toray Industries contributes to the protection of the global environment through its carbon fiber named TORAYCA. Use of this material helps reduce the weight of aircraft and automobiles. As a result of weight reduction through the use of TORAYCA, CO<sub>2</sub> emissions from an aircraft can be reduced by 27,000 tons and emissions from an automobile can be reduced by 5 tons over a life cycle of 10 years.



Laundry detergent with a higher content of plant materials

### Lion Corp.

In Lion's laundry detergent named "Top," carbon-neutral plant-based materials account for about three-quarters of all the materials used in it. Compared with a 1990 product made mainly from oil-based materials, CO<sub>2</sub> emissions per laundry are reduced by 47%.



# Environmental Protection (Industrial Waste Reduction)

## Reduction Program

According to the Annual Report on the Environment and a Sound Material-Cycle Society in Japan 2008, the total amount of industrial waste generated in Japan has remained on the same level in recent years, whereas at the end of fiscal 2005, the remaining lifespan of Japan's industrial waste disposal sites was slightly extended from the previous fiscal year level to 7.7 years as a national average thanks to a decrease in final disposed waste volumes. However, this does not change the fact that it is still important in creating a recycling society to continue reducing industrial waste. In compliance with Nippon Keidanren's Voluntary Action

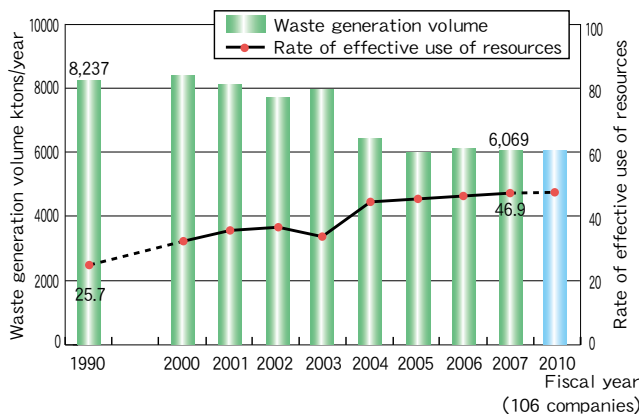
Plan on the Environment, the JCIA has accepted a target of an 88% reduction in final disposed waste volume from the fiscal 1990 level, by fiscal 2010. Since its foundation, the JRCC has also been encouraging its members to establish voluntary targets that incorporate annual and long-term targets for the reduction of the volume of industrial waste based on the standards set by the Council. In response, JRCC members have been setting targets and conducting activities to reduce industrial waste in efforts to attain the targets.

## Status and Performance: Waste Generation Volume, Rate of Effective Use of Resources and Final Disposal Volume

JCIA members have taken various initiatives to reduce industrial waste at source, such as the improvement of production yields by reviewing raw materials and production processes, and the recovery and reuse of waste in the manufacturing process. The industrial waste volume in fiscal 2007 was reduced by approximately 26% from the fiscal 1990 level (by about 1.3% from the fiscal 2006 level). Further, members actively engage in recycling sludge into raw material for cement and reusing solidified waste plastics. The rate of the effective use of resources (ratio of the volume of resources effectively used to the generated volume) was approximately 26% in fiscal 1990. The rate improved to approximately 47% in fiscal 2007. The final disposed volume of waste generated by members

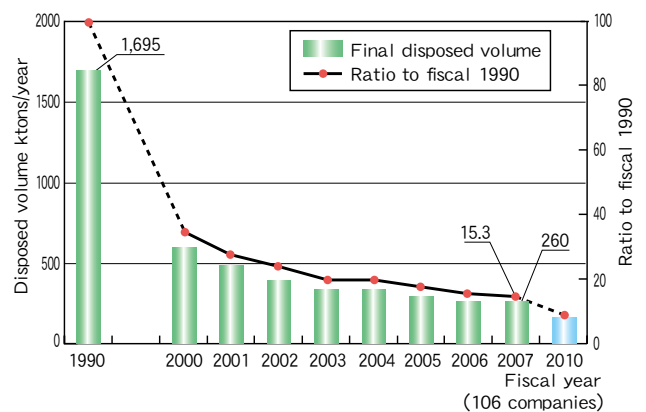
in fiscal 2007 was approximately 260,000 tons, 2,000 tons less than in fiscal 2006. This is a reduction of approximately 85% from the fiscal 1990 level. The final disposed volume for fiscal 2010 is predicted to be an approximately 90% reduction from the fiscal 1990 level. According to the questionnaire survey conducted targeting members, about 60% of respondents answered "achieved zero emission completely" or "achieved zero emission partially" in the production sector, 30% in the R&D sector, and 10% in the office sector, respectively. Reduction in the final disposed volume and appropriate disposal management are strengthened every year. Verification of recovery of industrial waste manifests and local patrolling of the final disposal area are being performed.

**Industrial Waste Generation and the Rate of Effective Use of Resources (JCIA data)**



Based on the Act on the Promotion of Effective Utilization of Resources, the volume of sludge has been computed after drying since 2004.

**Final Disposed Volume (JCIA data)**



## Creating a Recycling Society

Other than voluntarily reducing the volume of waste, JRCC member companies also accept waste from outside, contributing to the creation of a recycling society by using its own recycling technologies. Examples of recycling include the use of waste tires for fuel, the use of sludge for raw material in cement, the recovery and reuse of waste

aluminum cans and plastics, the recycling of waste metal, the recycling of chlorine and bromine from waste solutions, the reuse of television glass, the chemical recycling of chemical fibers and the recycling and reuse of packaging materials.

### Examples of Member Companies' Initiatives

#### Fiber reinforced plastics (FRP) recycling system

##### Hitachi Chemical Co., Ltd.

Hitachi Chemical's FRP recycling technology, which uses tripotassium phosphate as a catalyst and benzyl alcohol as a solvent, involves melting FRP for about 10 hours at 200 degrees centigrade under ordinary pressure. FRPs are readily separated into glass fibers, fillers, resins and other components, which together are reprocessed into FRPs at a low cost. This technology is unique in that it requires neither the pretreatment (crushing, etc.), the facilities nor the energy for the pressurization. This technology also helps to reduce processing costs while ensuring health and safety. Moreover, the relatively long glass fibers can be recovered, which can be reproduced in recycled FRPs with about 70% of the tensile strength of virgin FRPs. In recognition of this recycling technology, the company won the Environmental Merit Award at the 34th Environment Awards.\*

\*The Environment Awards is awarded jointly by the Hitachi Environment Foundation and The Nikkan Kogyo Shimbun, Ltd., under the auspice of the Japanese Ministry of the Environment.



FRP recycling demonstration plant

#### Waste acid and sludge recycling activities

##### Shimonoseki Mitsui Chemicals, Inc.

Shimonoseki Mitsui Chemicals recycles waste acids, waste alkalis and sludge, and this recycling contributes to the formation of a recycling-based society. The waste sulfuric acid, phosphoric acid, fluoric acid, alkalis and sludge received from our customers are treated using the closed system, which integrates equipment for producing fluorine-based products, purified phosphoric acid and gypsum with a wastewater treatment unit. This system converts the calcium, phosphorus, fluorine and sulfuric acid contained in the waste into industrial products. In recognition of these activities, the company received a prize from the chairman of the Clean Japan Center.



Waste acid, waste alkali and sludge recycling facilities

#### Plastic recycling activities

##### Kyowa Hakko Bio Co., Ltd.

The Hofu Plant of Kyowa Hakko Bio's Yamaguchi Production Center began recycling more industrial waste to discontinue the use of the industrial waste incinerator located within its premises. The Plant began sorting the waste plastics that had been incinerated without being sorted according to the degree of staining or by material. Waste plastic bags, drum cans and pallets are sold as valuable materials to be recycled and other plastic wastes are also recycled as materials for solid fuel. Moreover, the Plant steadily increased the use of drum cans made entirely from fibers. Through these efforts made by all employees, the Plant successfully discontinued use of its in-house incinerator, which previously had incinerated up to 270 tons of industrial waste annually, in 2007.





# Environmental Protection <Chemicals Emissions

## Introduction of a System of Pollutant Release and Transfer Register (PRTR)

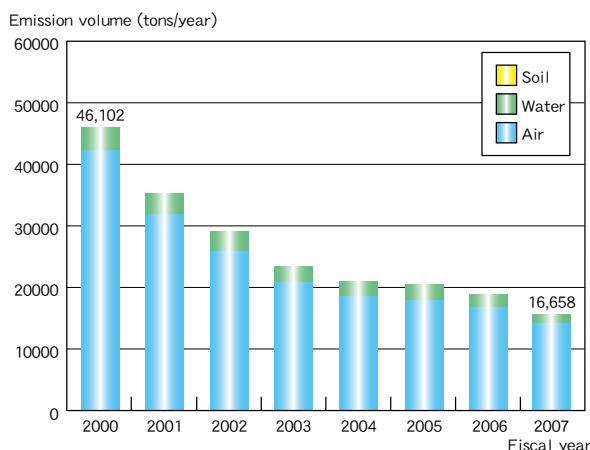
In 1992, the JCIA started conducting a pilot study on 13 substances in Japan. Subsequently, the number of substances subjected to investigation was gradually increased and reached 284 substances in 1998. Since 2000, a total of 480 substances, including 354 substances specified by the Act on Confirmation, Etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof ("PRTR Act"), have been investigated. Total emissions of the 354 substances specified by the PRTR Act were 16,658 tons in fiscal 2007, representing a 65% reduction from the fiscal 2000 level. Emissions into the air, water and soil accounted for 89.5%, 10.3% and 0.2%, respectively.

The total emissions of the substances subjected to JCIA voluntary investigations (126 substances: those specified by the Act were excluded from the 480 substances)

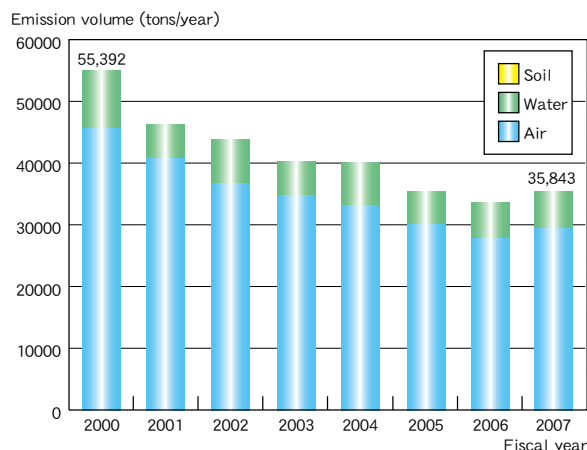
were 35,843 tons in fiscal 2007, up 2,000 tons from the fiscal 2006 level due to the expansion of the scope of data collection, but down 35% from the fiscal 2000 level. Emissions into the air, water and soil accounted for 84%, 16% and less than 0.1%, respectively. Member companies have examined the results of the investigation and have attempted to achieve further reductions in emissions into the environment by actively promoting various programs such as the prevention of the leakage of hazardous substances, improvements in recovery/recycling and the introduction of alternative substances.

The PRTR Act is under revision by the related governmental agencies as of 2008, and some substances will be added to and others removed from the list of specified substances in the future. In response, the JCIA is now reviewing its own list of substances subject to voluntary investigations.

### Emission of Substances Specified by the PRTR Act (JCIA data)



### Emission of Substances Subjected to Voluntary Investigation (JCIA data)



Data for ten major substances appear on the following website:  
<http://www.nikkakyo.org/organizations/jrcr/report/2008/data.html>

## Efforts to Reduce Hazardous Air Pollutants

The JCIA carried out a voluntary management program for two terms from fiscal 1995 and tried to reduce the 12 substances designated as priority target substances. In the second program, which started in fiscal 2001, the total volume of the 12 substances was reduced from 12,393 tons in the 1999 baseline year to 4,918 tons in fiscal 2003, representing a high reduction rate of 60%, although the

mean target reduction rate for the 12 substances was set at 30% in fiscal 2003.

Since fiscal 2004, continuous efforts have been made to reduce the 12 priority target substances within the framework of PRTR activities. In fiscal 2007, the total volume of the 12 substances was 3,011 tons (a 76% reduction) and efforts for further reductions have been made.

### 12 Priority Target Substances

The Central Environment Council designated 22 substances as priority target substances among hazardous air pollutants. Of these, the following 12 substances were selected according to the following criteria: carcinogenic potential, amount of production /importation and detection in the environment.

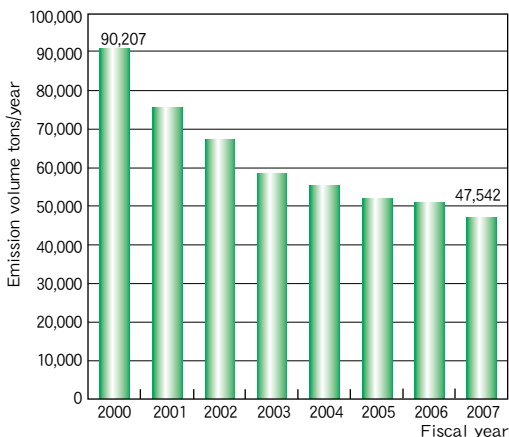
- ① Acrylonitrile, ② Acetaldehyde, ③ Ethylene oxide, ④ Vinyl chloride monomer, ⑤ Chloroform, ⑥ 1,2-dichloroethane, ⑦ Dichloromethane, ⑧ Tetrachloroethylene, ⑨ Trichloroethylene, ⑩ 1,3-butadiene, ⑪ Benzene, ⑫ Formaldehyde

## Efforts to Reduce Volatile Organic Compounds (VOCs)

The Air Pollution Control Law, revised and enforced in April 2006, provides for the control of emissions of volatile organic compounds (VOCs). The law specifies that emission of VOCs into the air should be reduced by approximately 30% from the fiscal 2000 level (baseline year) by fiscal 2010 by means of the best mix of regulatory control and voluntary initiatives by industry. The law aims to prevent the adverse effects of photochemical oxidants.

The JCIA has accumulated members' numerical targets and estimates that it can reduce VOC emission by 51% in fiscal 2010, compared with the fiscal 2000 level. According to the result of the investigation in fiscal 2007, JCIA member companies emitted a total of 47,542 tons of VOCs and achieved a 47% reduction compared with the level of the baseline year. It is estimated that these figures reflect member companies' efforts that include the installation of VOC emission control facilities and process improvements.

VOC Emissions (JCIA data)



### Volatile Organic Compounds (VOCs)

VOC is the generic term used to refer to organic compounds that are volatile and become gases in the air. Major VOCs are used in paints, printing ink, adhesives, and cleaning agents as organic solvents. There are about 200 substances classified as VOCs, including toluene, xylene and ethyl acetate.

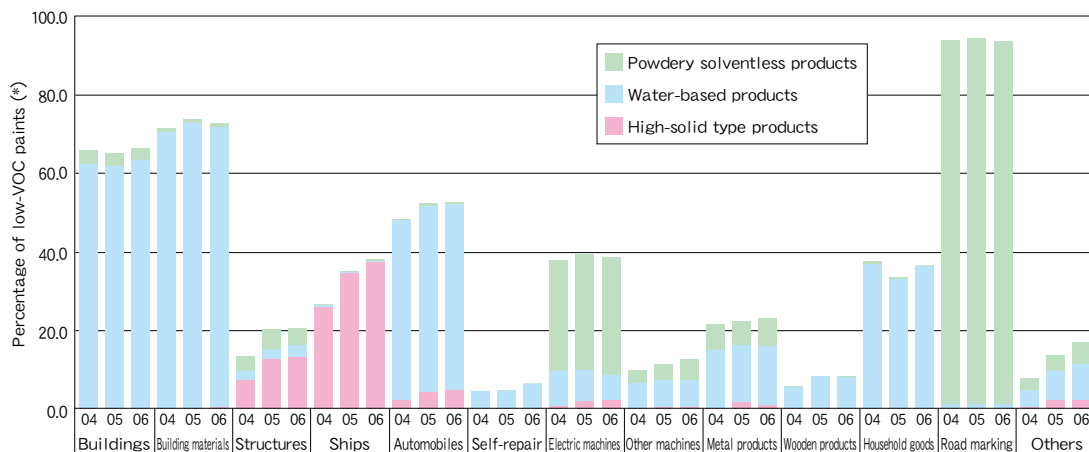
## Examples of Member Companies' Initiatives

### VOC emission reduction by introducing low-VOC paints

#### Japan Painting Contractors Association

The Japan Painting Contractors Association implements voluntary measures to reduce emissions of VOCs. These measures are taken to reduce (1) VOC emissions during the manufacture of paints and (2) VOC emissions during paint application. VOC emissions from the latter are larger than the former, and in the following, the percentage of paints replaced with products containing less VOCs is described for each of the application fields for the period from fiscal 2004 to 2006. The surfaces to be painted and the painting environment differ by application field, and so the percentage of replacement also differs by field. Replacement is advancing favorably in the following four application fields: road marking, buildings, building materials and automobiles, and the percentage accounted

for by low-VOC paints exceeds 50% in these fields. The composition of low-VOC paints also differs by field, and water-based products are frequently used for buildings, building materials, automobiles, metal products and household goods, whereas high-solid type products are frequently used for structures and ships, and powdery solventless products for electrical machines and road marking. Manufacturers of painting machines and equipment, and those of paints and their users all need to implement more measures to reduce VOC emissions in consideration of the special character of the application fields. To this end, the Association will continue to implement voluntary measures.



\* Low-VOC paints include powdery solventless products, water-based products (as classified in the Chemical Industry Statistics compiled by the Japanese Ministry of Economy, Trade and Industry) and solvent high-solid type products (as classified by the Japan Painting Contractors Association). Extracted from the summary of estimated VOC emissions from paints (for fiscal 2006, compiled by the Japan Painting Contractors Association)

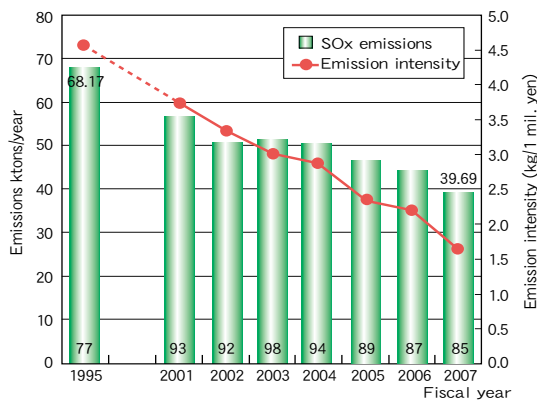


## Efforts to Prevent Air and Water Pollution

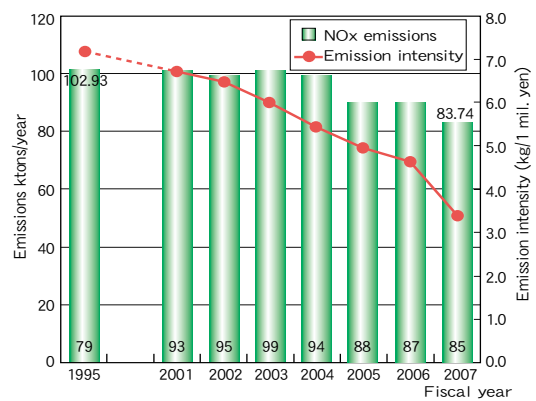
Domestic chemical companies have reduced emissions of air and water pollutants significantly. Since 1995, JRCC member companies have established voluntary management standards more stringent than those provided for by law.

By complying with agreements with local governments, members are working to further reduce emissions. Member companies have achieved a remarkable reduction in all substances, compared with the levels of the baseline year.

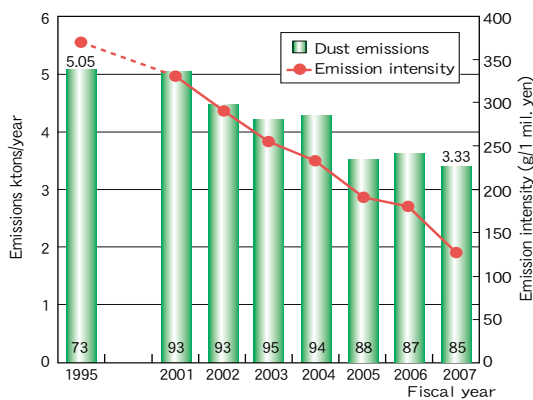
### SOx Emissions



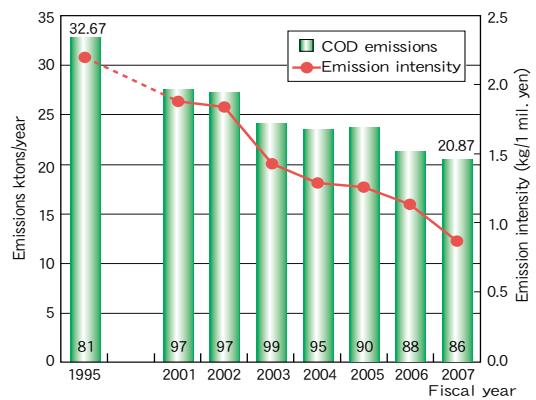
### NOx Emissions



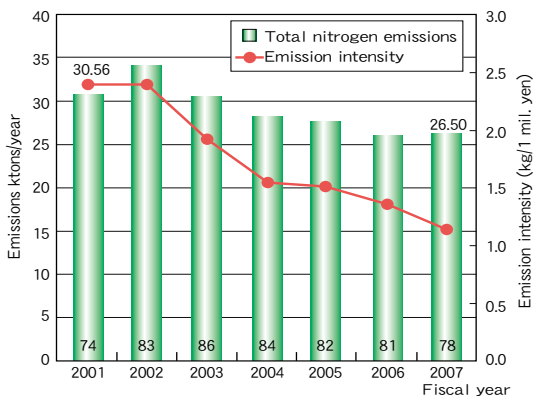
### Dust Emissions



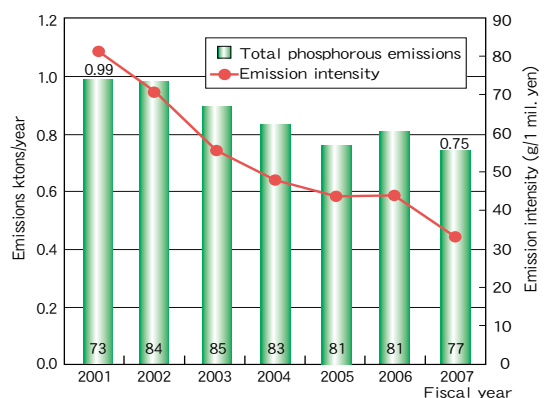
### COD Emissions



### Total Nitrogen Emissions



### Total Phosphorous Emissions



\* The figures in the bars indicate the numbers of companies that submitted data.

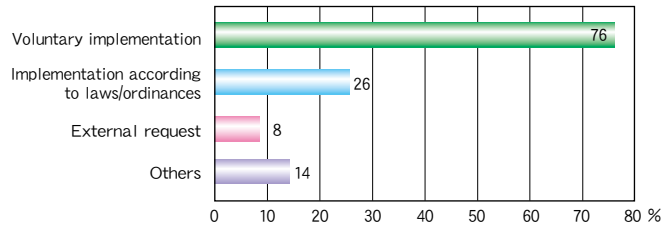
\* Emission intensity: Since members' businesses are varied and the production unit cannot be indicated as one, the index is designed to show emissions per sales (in millions of yen).

\* Collection of data for total phosphorous and nitrogen emissions started in fiscal 2001.

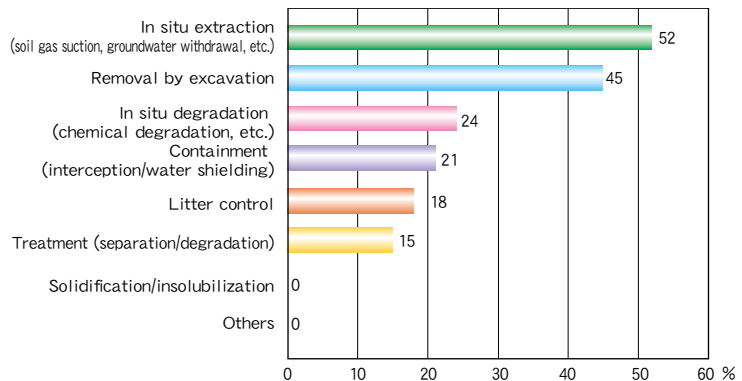
# Initiatives on Soil and Groundwater Contamination

JRCC member companies promote voluntary investigations/countermeasures, as well as regulatory investigations/countermeasures according to the Soil Contamination Countermeasures Law. Of the 90 companies who responded to the questionnaire survey, 50 investigated contamination of soil/groundwater at 107 sites in fiscal 2007. Twenty-nine of the 50 companies detected contamination that exceeded the environmental standards at 45 sites. The reasons for implementing the investigation were also queried in the survey. Voluntary implementation of the investigation ranked first and accounted for 62%, while implementation according to the law or ordinance accounted for 21%. Substances other than those specified by law were also examined in 18 investigations. In fiscal 2007, 33 companies carried out contamination countermeasures at 54 sites, including sites where contamination had been detected before. In addition to removal by excavation, contamination is being addressed by in situ extraction, containment, in situ degradation and various other methods.

## Reasons for Implementing an Investigation (multiple answers allowed)



## Countermeasures against Contamination (multiple answers allowed)



# PCB Initiatives

Of the 91 companies that responded to the questionnaire, 80 (88%) retain PCB waste (PCB waste or discarded devices containing PCB). In fiscal 2007, thanks to the scheme for the appropriate treatment of PCB waste established by the Japanese government, the number of JRCC members that disposed of PCB waste appropriately increased from nine in the previous fiscal year to 17.



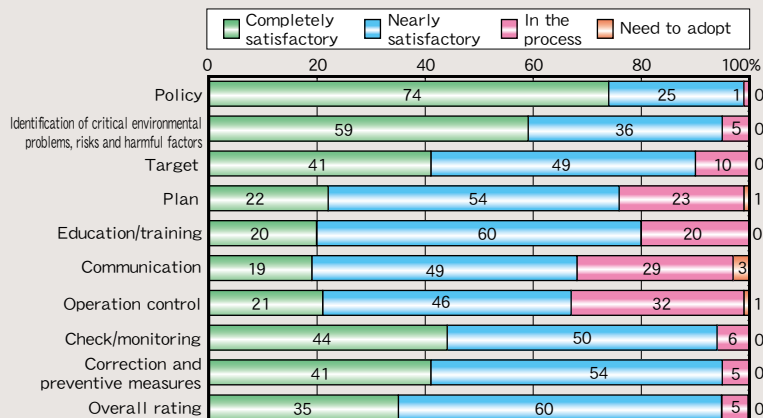
PCB waste treatment facility (Tokyo Facility of Japan Environmental Safety Corporation)

## Members' Self-Assessment

### Environmental Protection

In the checklist, a variety of activities are required for the "Plan," "Education/training," "Communication" and "Operation control" items,

such as the communication of information relating to the emission of wastes and chemical substances and extensive activities covering design, development and procurement for operation control. In fiscal 2007, the percentage of companies that answered "Need to adopt" and "In the process" decreased, which implies that more extensive measures are being implemented by JRCC members.



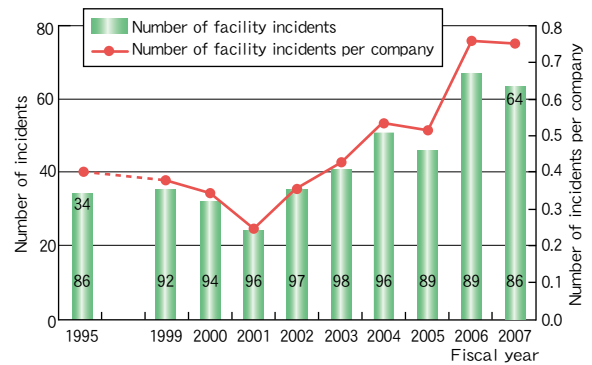
# Process Safety and Disaster Prevention

In 2004, the Coordinating Committee for Industrial Accidents was established to include members of the chemical industry, and through this Committee, a concerted effort has been made by both the public and private sectors to prevent industrial accidents. Specifically, information on accidents is shared across industries, and information is exchanged on the roles of management, methods of transmitting skills, and facility risk management. Nevertheless, the number of serious accidents is still increasing.

The number of facility incidents per JRCC member reached its lowest level in fiscal 2001, and then began to increase. In fiscal 2007, however, the number remained on the same level as for previous fiscal year. Many recent facility incidents were caused by aging facilities, including liquid leakage from pipes, and JRCC member companies are inspecting all their facilities to prevent such incidents.

Member companies regard security and disaster prevention as an important management mission and, despite severe economic conditions, are investing aggressively in process

## Facility Incidents (Explosion, Fire, Leakage, etc.)



The figures in the bars indicate the numbers of companies that submitted data.

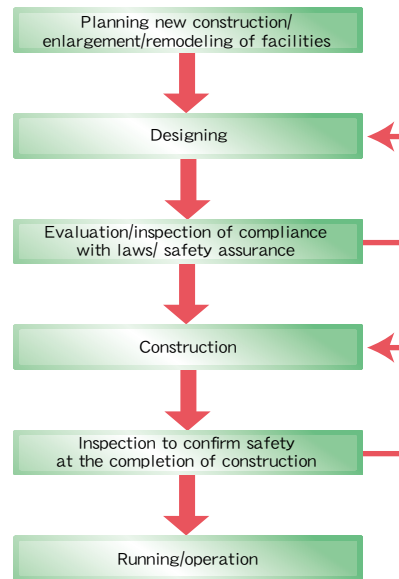
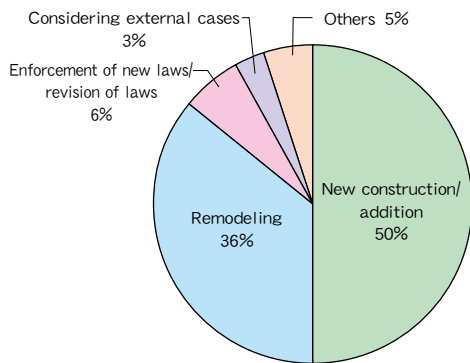
safety and disaster prevention. Last year, this investment reached a record high of 76.1 billion yen, up more than 10% from the previous year. (Refer to page 24.)

## Prior Facility Evaluation and Management

To prevent accidents, it is important to conduct risk assessment. One of the forms of risk assessment is the prior evaluation of facilities. More than 98% of the members who responded to the questionnaire conduct prior evaluations of their facilities. Upon construction of new facilities and

enlargement or remodeling of facilities, member companies conduct a comprehensive inspection of their facilities prior to operation. As illustrated by the flowchart on the right, safety is confirmed from various perspectives in the design and construction phases to eliminate or mitigate risks.

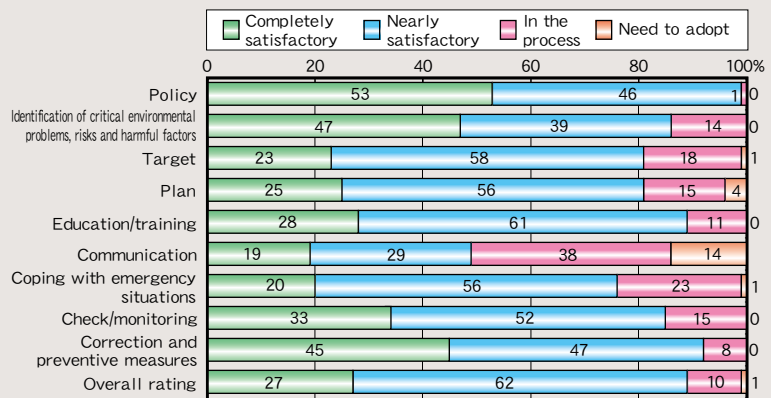
### Reasons for Conducting Prior Facility Evaluation



### Members' Self-Assessment

#### Process Safety and Disaster Prevention

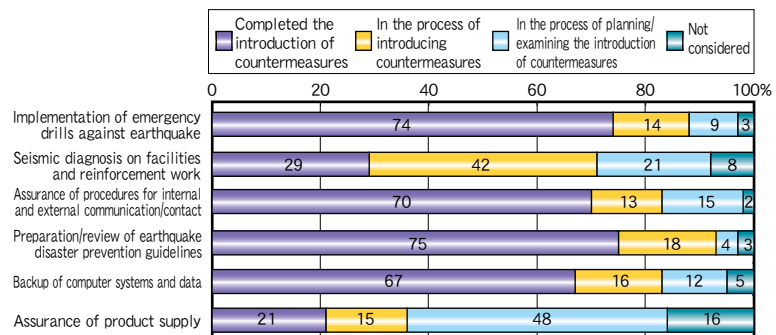
Generally, the percentages for the separate ratings are almost the same as the previous year, although for some items, the percentage of companies responding "Need to adopt" decreased. Regarding "communication" under which dialogue with residents is required in the checklist, improvements still need to be made although the percentage of companies responding "Need to adopt" decreased by five points from the previous year's level.



## Countermeasures for Large-scale Earthquakes

Since 1990, earthquakes have occurred frequently in fault zones that were thought to be safe, and the general public has taken a keen interest in how companies respond to earthquakes. According to member companies' responses to the questionnaire, more than 80% of them have completed or are in the process of introducing the following countermeasures: emergency drills against earthquakes; assurance of internal and external emergency communication/contact measures; preparation/review of earthquake disaster prevention guidelines; and backup of computer systems and data. Meanwhile, 50% of members are still planning or examining measures to assure continuing product supply in the event of a large-scale earthquake, and they need to implement these measures as quickly as possible.

### Responses to Questionnaire on Earthquake Countermeasures in Fiscal 2007



## Emergency Measures

Member companies systematically conduct disaster prevention drills and implement anti-seismic measures in preparation for emergencies.



Comprehensive disaster prevention drill conducted in cooperation with the local fire station (Daihachi Chemical Industry Co., Ltd.)



Drill for dealing with gas leaks (Takaoka Plant, Nippon Soda Co., Ltd.)



Offshore containment boom deployment training (Sakai Plant, Central Glass Co., Ltd.)

The Plant conducts training on the deployment of oil spill containment booms to prevent the spread of oil and protect the marine environment in the event of an oil spill due to an accident or disaster.



Soil improvement work to improve earthquake resistance (Chiba Plant, JSR Corporation)

The plant conducts seismic diagnosis on facilities and systematic reinforcement works.



# Occupational Health and Safety (Measures to Prevent Occupational Accidents)

The Prevention of labor accidents is a major industry-wide commitment.

Each JRCC member company constantly works to improve its safety levels, aimed at the complete elimination of occupational accidents.

With occupational accidents, both the frequency rate and severity rate of JRCC member companies are lower than the rates recorded by the manufacturing sector and the chemical industry as a whole. Compared with the previous fiscal year, the frequency rate slightly increased while the severity rate and the number of fatalities decreased.

The average frequency rate for companies affiliated to JRCC members is lower than those for the manufacturing sector and the chemical industry as a whole, but the average severity rate is higher. Compared with the previous fiscal year, the average frequency rate remained on the same level while the average severity rate and the number of fatalities increased.

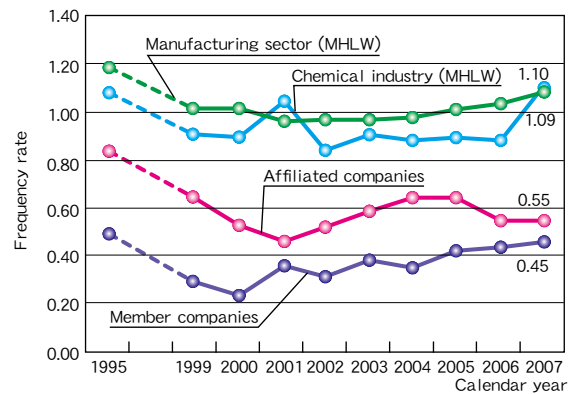
The causes of occupational accidents were thoroughly investigated in each of the companies involved. They have taken measures to prevent such accidents from recurring. Member companies continue to improve safety levels, both at their own sites and at those of affiliated companies, aiming at enhanced safety and the elimination of accidents.

## The Number of Fatalities from Labor Accidents

	1995	1999	2000	2001	2002	2003	2004	2005	2006	2007
Member companies	2	3	2	1	1	2	1	1	2	1
Affiliated companies	4	4	1	3	1	3	2	2	5	6
The chemical industry (Ministry of Health, Labour and Welfare: MHLW)	35	28	26	24	22	25	22	22	25	17
The manufacturing sector (MHLW)	417	344	323	326	275	293	293	256	268	264

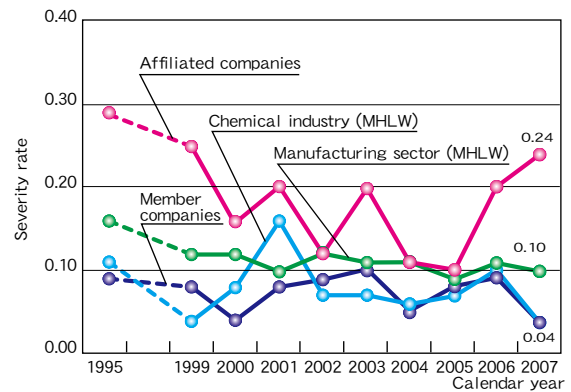
## Transition in the Frequency Rate

$$\text{Frequency rate} = \frac{\text{Number of lost-time injuries}}{\text{Total work hours (per million hours)}}$$



## Transition in the Severity Rate

$$\text{Severity rate} = \frac{\text{Lost days}}{\text{Total work hours (per thousand hours)}}$$



## Examples of Member Companies' Initiatives

### Kaneka Corp.

#### Simulation learning to improve awareness of potential risks

In order to prevent occupational accidents, it is necessary to reduce potential risks in the workplace. To this end, it is essential to conduct activities to reduce potential risks through risk assessment and to improve awareness of such risks, which will help predict and avoid actual accidents. Based on this recognition, Kaneka's Takasago Plant has been providing its employees with simulation learning opportunities for more than 10 years. At present, these opportunities are also offered to the members of other companies in the Kaneka Group. In simulation learning, employees experience simulated occupational accidents. Through this experience, they consider specific attitudes and behaviors that might result in such accidents and how they can avoid them, thereby improving their awareness of potential risks and safety awareness.



Equipment to simulate "getting caught in machinery"

### Tosoh Corp.

#### Training for safe operation

It is necessary for the company to ensure the safe, stable and continuous operation of its plants in the face of the retirement of large numbers of experienced operators. To achieve this, it attributes importance to the transfer of operational skills from the older to younger generations.

At its education and training center, Tosoh provides employees with technical training using simulation equipment that teaches them how to operate the plant machinery and improve their awareness of safety. The focus of the training is on helping employees raise their safety awareness by experiencing the importance of safety. By expanding the facilities, equipment and technical training curricula of the center, Tosoh is determined to expedite human resource development and raise its technical levels.



Plant operation training



# Occupational Health and Safety <Safety Awards and Symposiums>

As part of measures to encourage companies operating in the chemical industry to implement voluntary measures for process safety and occupational health, the JRCC and the JCIA jointly give awards to exemplary companies that have conducted excellent safety activities, and hold a safety symposium in which the award winners report on their safety assurance activities.

In fiscal 2007, 12 companies participated in the awards competition, and the JCIA and JRCC selected four outstanding companies from among the competitors at their joint safety awards meeting. At Tonen Chemical Corp.'s Kawasaki Chemical Plant, which won the Safety Award, safety activities are conducted daily based on the Operations Integrity Management System (OIMS), which covers safety, health and the environment, in harmony with traditional Japanese-style safety activities. In addition, the Plant has been continuously achieving zero occupational accidents since 2000 by implementing a loss prevention system, self-assessment training for safe operations and safety observations during operation.

A safety symposium was held at Hatsumeikaikan in Toranomon, Tokyo on June 19, 2008 with the participation of 95 people. The directors of the Safety Award- and Safety Effort Award-winning plants reported on their safety management activities, and at the panel discussion held in the second part of the symposium, the directors acted as panelists in discussing the theme of how to achieve a continuous zero occupational accidents, focusing on the roles played by top executives.

For details, please visit the JCIA website or see JRCC News (2008 summer edition).

JCIA website:

(General page) "Environmental Safety" → "Safety Assurance Measures" → "Safety Symposium"

<http://www.nikkakyo.org>

JRCC News:

[http://www.nikkakyo.org/organizations/jrcc/news/index\\_50.html](http://www.nikkakyo.org/organizations/jrcc/news/index_50.html)

<b>Safety Award:</b>	Kawasaki Chemical Plant, Tonen Chemical Corp.
<b>Safety Effort Award:</b>	Shiojiri Plant, Showa Denko K.K. Isogo Plant, Tokyo Liquefied Oxygen Co., Ltd. Oita Plant, Japan Elastomer Co., Ltd.



Directors of the award winning plants and the chairperson of the safety award meeting

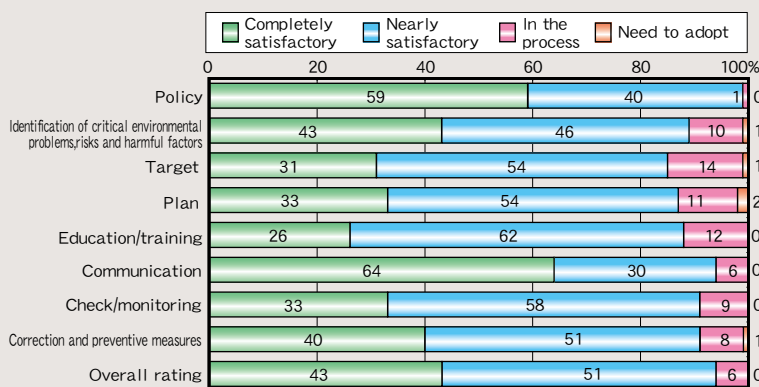


Kawasaki Chemical Plant, Tonen Chemical Corp.

## Members' Self-Assessment

### Occupational Health and Safety

Only a few members answered "Need to adopt." Nevertheless, it is necessary to ensure occupational health and safety to reduce occupational accidents, and members need to improve their measures for "Identification of critical environmental problems, risks and harmful factors," "Education/training" and "Check/monitoring" to the "Completely satisfactory" level.



# Chemicals and Product Safety

As a responsible supplier of chemical products, the JRCC clearly explains the properties of their products and handling procedures and engages in activities that preserve the environment and assure and protect the safety and health of persons who handle these products, including customers. Based on the concept of product stewardship, and in cooperation with the JCIA, the JRCC organized a working group to promote its activities in promoting the concept of product stewardship. This involves the manufacturer of a product in assuming, through the product's supply chain, responsibility as a business operator for the user's health, safety in use, and environmental preservation throughout the life cycle of the product.

## Investigation/Research on the Safety of Chemical Substances

**HPV:** The Organization for Economic Cooperation and Development (OECD) has instituted a data gathering and testing project to assess chemical hazards for approximately 4,800 high production volume chemicals (HPV chemicals, the annual production of which is above 1,000 tons, or one million pounds in the United States). The JCIA expressed its decision to participate in the project in 1998 and encouraged its members to join. Currently, approximately 120 Japanese chemical companies take part in the project. Japanese companies have been involved in the initiative as the leading companies for 50 chemicals and have already submitted assessment reports for the substances. Under the HPV initiative led by the International Council of Chemical Associations (ICCA), assessment reports are to be submitted for 1,000 substances. As of October 2008, commitments were made for 907 substances and assessment reports have already been submitted for 641 substances.

**The Japan Challenge Program:** In 2005, this industry-government collaboration program was established as a framework for collecting safety information about chemical substances and disseminating the collected information widely to the public. About 650 substances that are produced or imported annually in Japan in quantities exceeding 1,000 tons are selected as priority substances for information collection. The safety information is now being collected in line with similar overseas programs, and data collection is scheduled to be completed by the end of fiscal 2008. At the meeting held for interim assessment in June 2008, it was confirmed that information had been collected for about 94% of the targeted substances. The information thus collected has been compiled by the government into a database ("J-CHECK") which is available to the public.

**LRI:** The chemical industries in Japan, the United States and Europe cooperate to conduct long-term voluntary research on the influences of chemical substances on human health and the environment (LRI: long-range research initiative).

The LRI aims to fulfill the following goals through research:

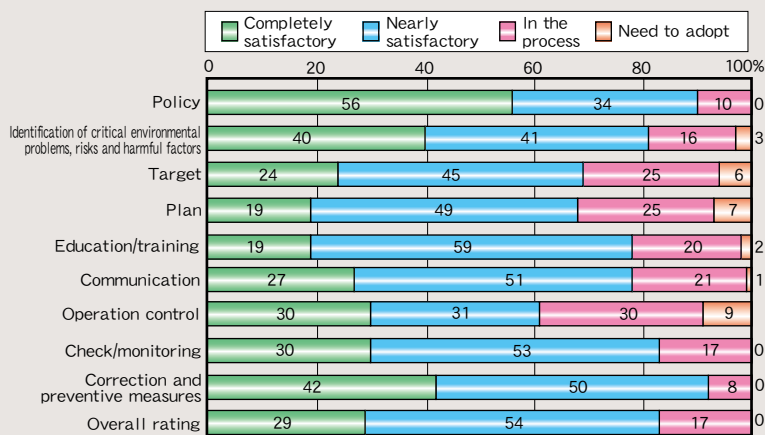
- To expand scientific knowledge on chemical substances and their impact on health and the environment
- To develop new testing and screening methods to enhance the chemical industry's capabilities of managing products
- To support governments in their science-based decision-making on public policies, thereby fulfilling part of the industry's responsible care tasks

Using funds contributed by member companies, the JCIA supports long-range research initiatives, taking into account the unique situation in Japan, focusing on themes of special importance to the chemical industry, such as endocrine disruptors, neurotoxicity, chemical carcinogenesis and immunotoxicity. In fiscal 2007, a new research field was included in the support target. Specifically, support began to be given to research conducted with the aim of improving the precision of existing risk assessment approaches, including predicting what products will be generated from decomposed chemical substances and consideration of the biokinetics of chemical substances. The JCIA, together with experts, selects the research themes to be actually supported from among those submitted by applicants and asks the applicants who have submitted the selected themes to actually conduct research on the themes. The results of the research thus conducted are presented at a briefing session and compiled into an annual report. For details, please visit the LRI website operated by the JCIA (<http://www.j-lri.org/>).

### Members' Self-Assessment

#### Chemicals and Product Safety

Compared with the previous year, the percentage of companies responding "Need to adopt" and "In the process" generally decreased while the percentage of companies responding "Nearly satisfactory" and "Completely satisfactory" increased. For "Operation control," the requirements on the checklist for the setting of quantitative targets, risk management plans, transfer of technology and support to overseas are yet to be met.



## The Provision of Product Information

### Preparation and Distribution of Material Safety Data Sheets (MSDSs)

An MSDS is an instruction manual to be distributed by the supplier of chemical products to user companies. It provides them with the information necessary for the safe handling of chemical products and prevention of accidents. MSDSs are revised as necessary when a related law is revised, new information about toxicity is obtained or related information is provided by manufacturers.

Although substances for which MSDSs are to be submitted are specified in the PRTR Act, the Industrial Safety and Health Law, and the Poisonous and Deleterious Substances Control Law, 86 of 91 JRCC member companies that responded to the questionnaire voluntarily issue MSDSs for substances (products) which are not subjected to these laws and distribute these to their customers, based on the concepts of Responsible Care and product stewardship.

Suppliers of chemical products should advise their customers on how to handle such products safely. For this purpose, from the viewpoint of Responsible Care, they must know how their customers use or process the chemical materials, what commercial products are made from such materials, and what products are provided to consumers. As

to what a chemical product is used for, of the 91 companies, 78 companies said that they collected information on 80% or more of the products they supplied. As to how a final product is used, 45 companies indicated they obtained information on 80% or more of the products they supplied.

### Provision of Information to User Sectors

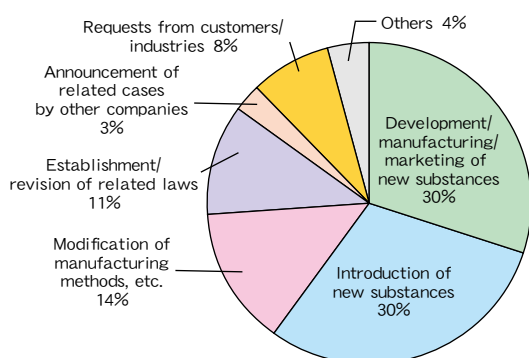
An increasing number of customers recognize the importance of investigating "green procurement" and request suppliers to submit a report on the management of chemical substances and a report detailing the contents of specified chemical substances in the supplied materials. This has had a significant impact on the chemical industry, which supplies raw materials and ingredients. Accordingly, the JCIA voluntarily organized a working group to discuss a practical, effective method for disclosing information and proposed the use of MSDSs and information sheets on the contents of specified chemical substances. Member companies have adopted the method, as these sheets provide their customers with the information the customers most need.

## Prior Chemical Substance Safety Assessment

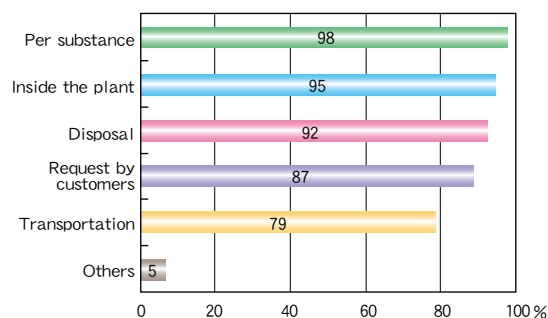
A Prior Chemical Substance Safety Assessment is conducted to identify the safety issues and concerns for chemical substances (explosiveness, inflammability, acute/chronic toxicity) and evaluate their effects on the users' health and the environment. In addition to new substances, existing substances are also subjected to this assessment. A Prior Chemical Substance Safety Assessment is

conducted when a company develops, manufactures and sells a new substance or when a company introduces a new substance into its manufacturing process. This assessment can be introduced as an emergency response measure as well as for risk reduction. Of the companies responding to the questionnaire, 95% have prior assessment standards.

### Reasons for Implementing Prior Assessment



### Application of Prior Assessment Standards (Multiple answers allowed)



# Chemicals and Product Safety

## Preparing for REACH

The Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), a new European chemical substance regulation, came into force on June 1, 2007. In order to make preparations for the regulation, the JCIA set up a REACH Task Force Team within its secretariat on April 1, 2007. Through this team, the Association has been supporting its member companies in dealing with the REACH regulation. Specifically, the team is conducting activities to meet the various requirements of the regulation, focusing on the fostering of bidirectional information communication among companies including midstream companies, the implementation of measures for users, and the provision of technical support for REACH-IT systems.

Furthermore in April 2008, a subgroup on REACH began activities under the JCIA's Policy Coordinating Committee. This subgroup deliberates on and examines measures for the REACH regulation, provides information on the regulation and exchanges opinions with related organizations through its subordinate organization named the REACH Information Liaison Group.



Workshops on REACH

In addition, as part of its PR activities on the REACH regulation, the JCIA proactively sends emails to provide its members with the latest information on the regulation, disseminates relevant information on its REACH website, provides a manual for the REACH regulation, holds seminars, lectures and press conferences on REACH, and gives interviews.

## Measures for the Entire Supply Chain

In recent years, the REACH regulation and the RoHS Directive have become de-fact international standards for chemical products. The REACH regulation is intended to control the risks related to chemical substances across the entire supply chain and the RoHS Directive is intended to regulate the contents of chemical substances in products. In response, the JCIA has organized a new Supply Chain WG, through which the Association exchanges more information with user sectors to ensure compliance with the REACH regulation.

In Japan, the JCIA cooperates closely with various organizations including the Japan Automobile Manufacturers Association (JAMA), the Japan Electronics and Information Technology Industries Association (JEITA), the Joint Article Management Promotion Consortium (JAMP) and other supply

chain-related organizations. The Association discusses the desirable information exchange tools and systems with these organizations, and makes proposals and gives support as required. In March 2008, the Association held a seminar inviting lecturers from the automobile industry and electrical and electronics industry, at which JCIA members exchanged opinions with lecturers. The Association will continue to examine desirable information exchange for chemical substances in cooperation with both domestic and overseas companies and industrial associations.

**Restriction of Hazardous Substances Directive (RoHS):** Directive formulated by the European Parliament and Council, which restricts the use of specific hazardous substances in electrical and electronic equipment

## Implementation of the (GHS)

To meet the United Nation's recommendation that each member country adopt the GHS by 2008, the Industrial Safety and Health Act was revised in Japan. Also, discussions are being held on the PRTR Act as well as on the Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, Etc. Moreover, the GHS classification project and its inclusion in the Japanese Industrial Standards (JIS) are being studied. In response, the JCIA has organized a JIS Committee, and formulates draft plans and gives its opinions on the GHS through this

committee.

After the revision of the United Nation's GHS document in July 2007, the JCIA created a manual for the GHS and is now revising its GHS compliance guidelines for MSDS and labeling. The revision will be completed within 2008.

**Globally Harmonized System of Classification and Labeling of Chemicals (GHS):** A system that aims at an internationally harmonized approach to classification and labeling of chemical substances

# Distribution Safety

The JRCC conducts a variety of activities to reduce environmental and safety risks involving the distribution of chemicals. The JRCC evaluates the influence of chemical products and transportation facilities to prevent accidents and implements emergency drills so that those involved in distribution can promptly cope with emergency situations. In addition, the JRCC encourages related parties to prepare and carry Yellow Cards to provide emergency response crews with chemical information.

## Preparation of a Yellow Card/Container Yellow Card

For chemicals covered by the Poisonous and Deleterious Substances Control Law and the High Pressure Gas Safety Law, transporters are required to carry official transportation documents. Considering the possibility of unexpected accidents during transportation of substances other than controlled substances, the JCIA encourages its member companies to utilize emergency contact cards containing the necessary measures to be taken by tanker drivers, firefighters and police officers and others involved. Because these important measures are printed on a yellow card, the contact card is called a Yellow Card.

Chemical products may be put into containers for transportation and a large variety of chemical products may be transported simultaneously. In this case, several Yellow Cards may be carried by one transporter. In view of this possibility, the JCIA has prepared a label (Container

Yellow Card) to identify the product concerned promptly and accurately, so that the people involved can respond quickly in emergency situations. It encourages those involved in distribution to paste Container Yellow Cards on the containers of chemical products.

### Carrying Yellow Cards

Member companies were asked whether they could confirm that Yellow Cards are carried and 91% out of 90 members answered "Yes."

### Implementing Container Yellow Cards (label type)

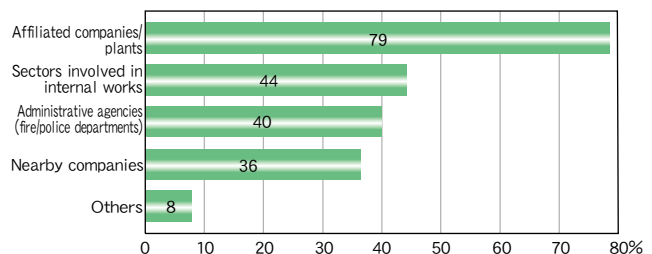
Container Yellow Cards were introduced in fiscal 2002. About 76% of members have introduced or started to introduce Container Yellow Cards.

After the introduction of the GHS system, these labels are always used to provide important information for persons who have to handle emergency situations.

## Measures for Emergencies

Ninety-three percent of member companies have prepared their own manuals for emergency situations and 96% have established their own around-the-clock contact networks. Also, 88% of member companies have established mutual support systems for emergencies involving combustible solids/liquids/gases, high-pressure gases, corrosive substances and acutely toxic substances. Mutual support partners include affiliated companies/plants, the sectors involved in internal works and administrative agencies (fire/police departments). Of the companies who have established mutual support systems, 85% have implemented emergency drills with their support partners.

Sectors/Agencies that Member Companies Mutually Support in the Event of Accidents (multiple answers allowed)

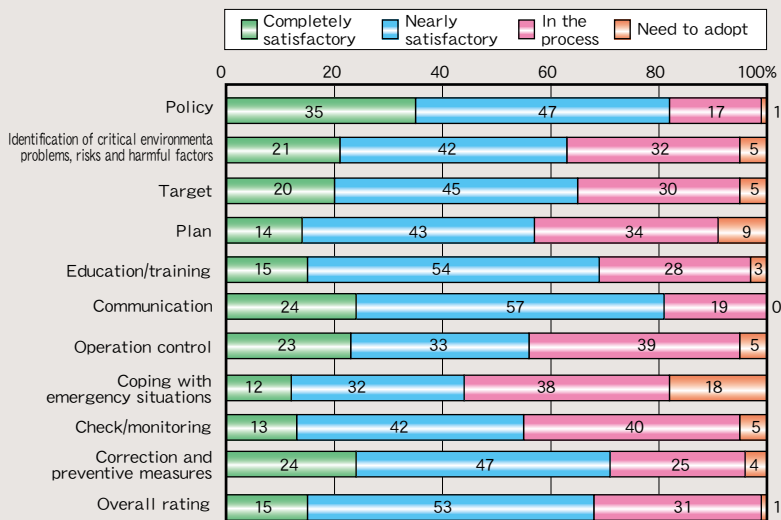


### Members' Self-Assessment

#### Distribution Safety

Generally, the percentage of companies responding "Need to adopt" decreased.

As described above, member companies have been creating emergency response manuals and organizations, but the evaluation for "Coping with emergency situations" is generally low because the checklist also requires dialogue with local residents, support with drills performed by suppliers, and setting and enhancing targets for carrying out drills.





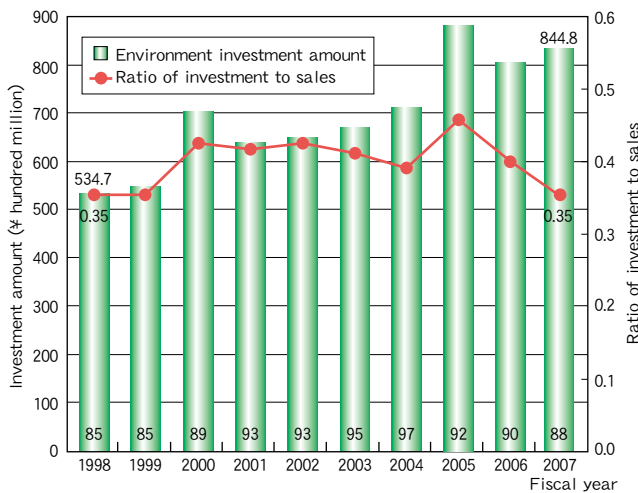
# Investment in Environmental Protection and Safety

## Trends in Investment in Environmental Protection

JRCC member companies recognize the importance of environmental protection and continue to invest in environmental measures. In fiscal 2007, the total investment in environmental measures came to 84.5 billion yen (a 4.7% increase from the previous year). The ratio of investment

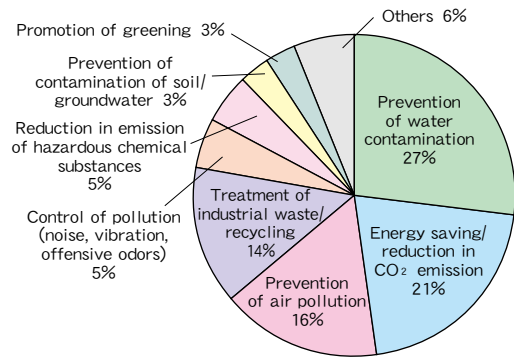
to sales decreased year on year, but member companies have been spending a total of more than 80 billion yen for environmental measures per year since fiscal 2005, which has resulted in a steady improvement in their environmental performance.

### Investment in Environmental Measures



The figures in the bars indicate the number of companies that submitted data.

### Categories of Investment in Environmental Measures in Fiscal 2007

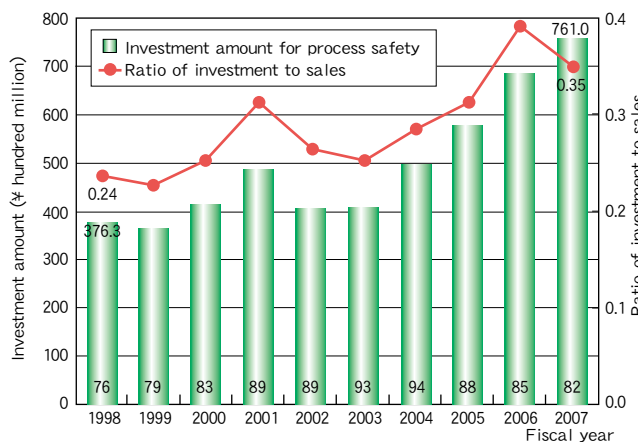


## Trends in Investment in Process Safety and Disaster Prevention

The prevention of occupational and facility accidents is a major industry-wide commitment to be fulfilled. Each member company continues investing extensively, not only in the hardware aspect of the measures, including the improvement of facilities, but also in the work-related aspect of environmental measures, such as measures for

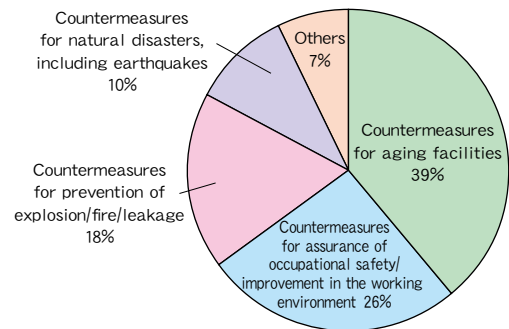
safety management. In fiscal 2007, the total investment in measures for process safety and disaster prevention reached a record high of about 76.1 billion yen (up 10.7% from the previous year). This demonstrates the strong commitment of member companies to the prevention of accidents.

### Investment in Process Safety and Disaster Prevention



The figures in the bars indicate the number of companies that submitted data.

### Categories of Investment in Measures for Process Safety and Disaster Prevention



# Members' Management System

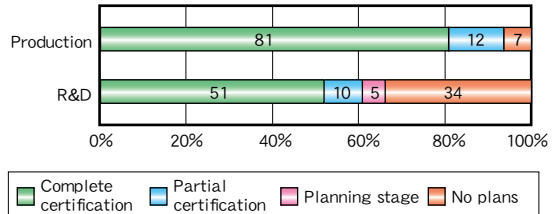
Responsible Care entails the implementation of the Plan (program), Do (perform), Check (evaluate), and Act (improvement) cycle (the so-called PDCA cycle). As an implementation tool, an increasing number of organizations are introducing environmental management systems (EMSs), including those based on ISO 14001 and occupational safety and health management systems (OSHMSs).

## Status of Members' Adoption of Management Systems

### Status of Adoption of Environmental Management Systems (EMSs)

According to the results of a survey targeting JRCC members, 81% of 90 respondents have acquired some certification for their EMSs, such as ISO 14001 certification, at all their production sites (plants). This figure is up two points from the previous year, and 51% of 79 respondents have acquired some certification for their EMSs at all their R&D sites, which remains on the same level as the previous year.

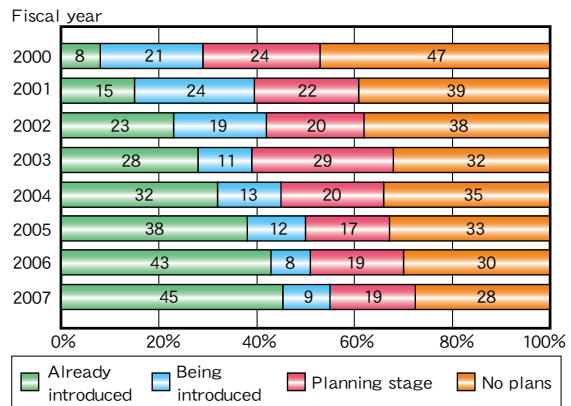
### Status of EMS Certification



### Occupational Safety and Health Management Systems (OSHMSs)

An OSHMS is designed to reduce latent risks and raise health and safety standards in the workplace, which will in turn help achieve zero occupational accidents. An increasing number of companies are introducing this system as an effective way of managing occupational safety and health. In the questionnaire, 54% of 91 respondents have introduced OSHMSs and have verified their systems by external certification, such as OHSAS 18001, or internal audit.

### Trend in OSHMS Adoption

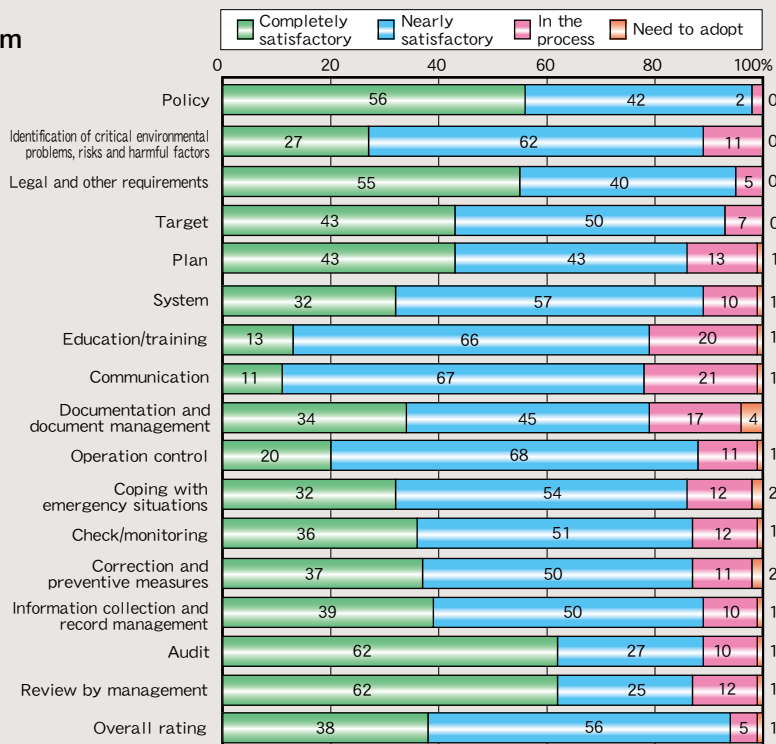


### Members' Self-Assessment

### Management System

The adoption of management systems, such as ISO 14001, ISO 9000s and OHSAS 18001 management systems, is advancing, and the proportion of companies with each rating remains almost the same as for the previous year, except for the fact that the percentage of companies that answered "Need to adopt" has steadily decreased for most of the items.

The percentage of respondents who answered "Completely satisfactory" is relatively low for "Education/training," "Communication" and "Operation control," because there are so many procedures and criteria to be followed on the internal audit checklist, and even members who have introduced management systems cannot meet all the requirements.



# Members' Dialogue with the Public <Responsible Care Report>

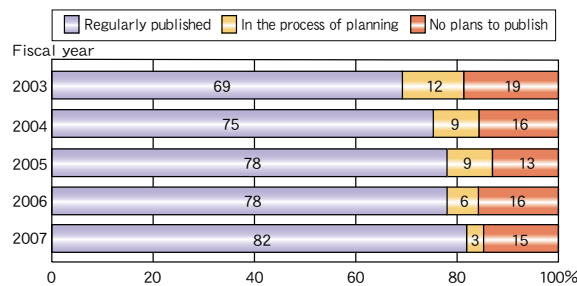
JRCC member companies publicly disclose their specific Responsible Care activities and results in their Responsible Care reports as part of their efforts to increase public awareness of their contributions to society.

## Publication of Responsible Care Reports

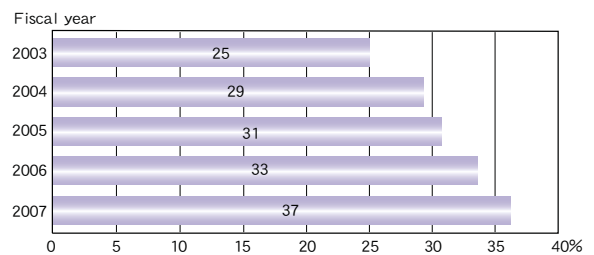
In fiscal 2007, two more companies than the previous year, namely a total of 74 member companies (82% of the respondents to the questionnaire survey) published Responsible Care reports. The number totals 84 companies (93% of respondents) including companies who did not publish their own Responsible Care reports but belong to corporate groups that have published a report. Also, the

number of companies who publish site reports for the areas where their plants are located has been increasing year by year. In the fiscal year, 32 companies, which account for 37% of the respondents to the questionnaire issued site reports, as compared to 28 companies (33%) in the previous fiscal year. This implies that companies are more committed to communicating with local residents.

### Publication of Responsible Care Reports



### Publication of Site Reports



## Contents of Reports

As in the case of the results for fiscal 2006, more than 70% of the reports included the six responsible care items (environmental protection, process safety and disaster prevention, occupational safety and health, chemicals and product safety, distribution safety and interaction/communication with the community). In particular, all the companies who issued Responsible Care reports provided substantial data on the prevention of global warming, prevention of air and water pollution and waste management in their reports.

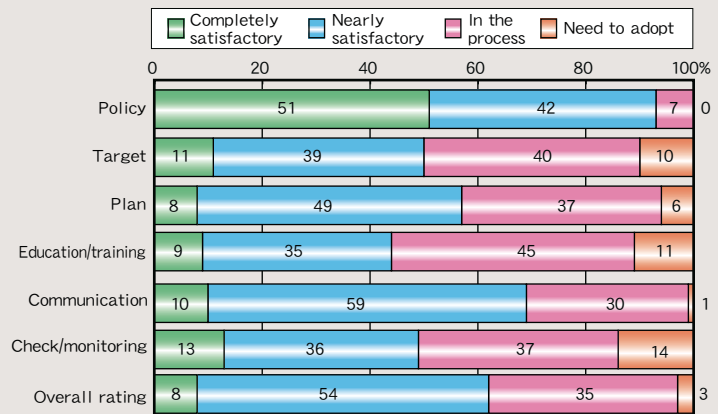
In fiscal 2007, the percentage of reports that referred to the safety assessment of chemical substances increased from the previous 61% to 69%. This indicates the recent trend toward the stricter management of chemical substances.



### Members' Self-Assessment

#### Interaction/Communication with the Public

As in the previous year, among the seven Codes of Responsible Care, member companies' self-ratings are the lowest for "Interaction/Communication with the Public." Nonetheless, the percentage of companies answering "In the process" has been decreasing for all the evaluation items. Many members seem to think that they should implement even more measures to meet the high standards set in the checklist, although the number of areas where and the frequency with which the necessary measures are being taken are steadily increasing.



# Members' Dialogue with the Public <Communication with the Community>

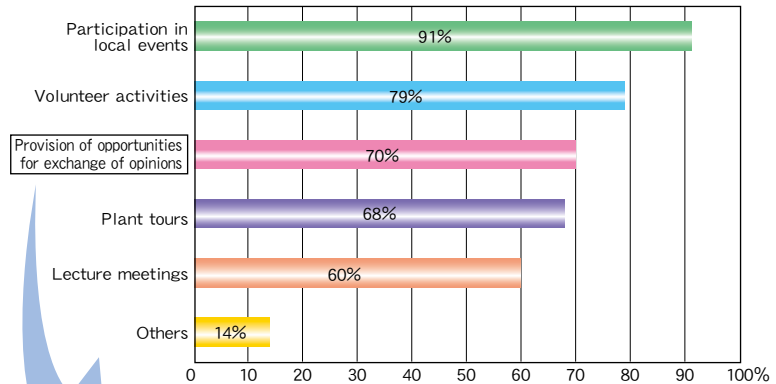
JRCC member companies recognize the importance of harmonization with local communities and promote various communication activities to establish trust with community residents.

In order to promote communication with local community residents, JRCC member companies participate in and support local events and voluntary activities, arrange plant tours for local residents and elementary/junior high school students and hold lectures in schools and at educational programs held for citizens. In fiscal 2007, 70% of member companies provided opportunities for exchanges of opinion to promote communication with local residents.

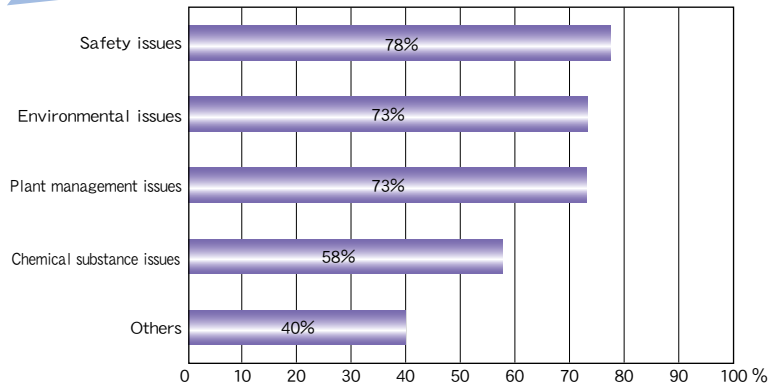
The number of areas in which meetings for exchanges of opinion were held by member companies increased from 127 areas in fiscal 2005, when the survey was started, to 131 areas in fiscal 2006 and then to 139 areas in fiscal 2007. There were 409 meetings in fiscal 2007, excluding meetings held repeatedly to give explanations and to report on the same occupational accidents.

At these meetings, participants discussed mainly the following issues which were closely related to their community: environmental issues; safety issues including countermeasures against occupational accidents and other disasters; plant management issues including addition of facilities and changes of land use; and issues concerning chemical substances, including matters related to the PRTR Act. All of the above activities demonstrate the commitment of the member companies to open communication with local communities about their business operations.

## Means of Communication (multiple answers allowed)



## Issues Discussed in Meetings for Exchanges of Opinion (multiple answers allowed)



Plant tour by the Ogaki City Children's Environmental Science Club (The Nippon Synthetic Chemical Industry Co., Ltd.)



Children participating in an experiment in a summer scientific class held for parents and children (Sumitomo Chemical Co., Ltd.)



Tree planting in The Asahi Woods of Life located inside the corporate premises (Asahi Kasei Corp.)



Dialogue meeting held to discuss the environment with local residents (FUJIFILM Corp.)



# JRCC Activities <Dialogue with Society>

Companies in the chemical industry are voluntarily implementing environmental protection, safety and health measures in their Responsible Care activities and communicating the results of these activities to the public, thereby improving mutual understanding with society. The JRCC supports these activities through its Dialogue WG and holds training sessions for its members to improve their skills in communicating with local communities. The JRCC itself also discloses the results of its activities in its quarterly journal JRCC News and this Responsible Care Report as well as at briefings on the report's contents.

## Dialogue with Local Communities

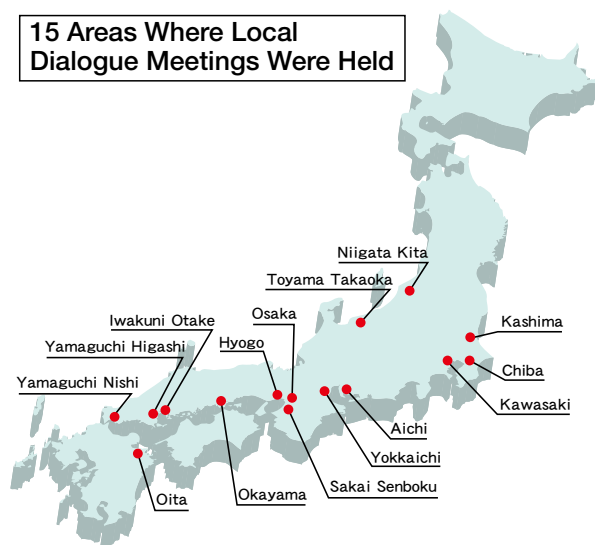
The JRCC has been holding dialogue meetings with local communities, the first of which was held in 1996, from the second year of establishment of the Council. To date, these meetings have been held in 15 areas across the country (refer to the figure on the right) with the participation of community residents and local government officials and have played an important role in promoting mutual understanding.

Although the Council did not initially have any experience of holding such local meetings, it now conducts a prior questionnaire, plant tour, panel discussion and other activities as part of the program for the local dialogue meeting, incorporating requests and opinions from participants.

In fiscal 2007, the JRCC held local dialogue meetings in six areas (Yamaguchi Nishi, Sakai Senboku, Iwakuni Otake, Toyama Takaoka, Oita and Kawasaki), which helped its member companies foster communication with local residents. Participants at these meetings now include representatives of local NGOs, school teachers, labor unions and fishermen's unions in addition to nearby residents. Thus the members' target for local communication is expanding.

Also, with the aim of supporting member companies who participate in these local dialogue meetings, the JRCC has been holding risk communication training seminars annually for the last five years, to enable participating members to improve their communication skills. In 2003 and 2007, the

15 Areas Where Local Dialogue Meetings Were Held



Council commissioned an external organization to study and evaluate the procedures for the local dialogue meetings and fed back the results (improvements made in the past and future challenges) to those in charge of organizing these meetings, hoping that the feedback would lead to further improvements.



Local dialogue meeting held in the Oita area



Local dialogue meeting held in the Toyama Takaoka area



## Dialogue with Citizens

The JRCC has also been actively organizing dialogue meetings with ordinary citizens, including consumers, teachers and students.

The Council held a dialogue meeting with consumers on product liability (PL) issues in Osaka on November 26, 2007. At the meeting, a representative of the JCIA Chemical Products PL Consulting Center discussed inquiries the Center had received and how the problems were solved, and then participants discussed how consumers could solve the problems caused by chemical products. The Council also held a dialogue meeting with consumers on the recycling of plastic containers in Tokyo on December 18, 2007. After explanations were made by a representative of the Plastic Waste Management Institute, participants discussed the recycling methods and related problems.

The JRCC also discussed environmental protection, energy conservation and other themes with students at an environmental event held in Japan by AIESEC, which is a student organization. The Council also invited students to participate in the local dialogue meeting held in the Kawasaki area.



Dialogue meeting with students

In addition, on March 16, 2008, it held a dialogue meeting with teachers of science at junior high schools located in Tokyo. This was its first dialogue meeting with teachers, at which teachers were asked to make requests to companies as an initial step in fostering mutual communication.

## Report Presentation

The JRCC has been holding meetings to present the contents of its Responsible Care Report in Tokyo and Osaka every year since 1997. The Council invites not only members, but also ordinary citizens to these meetings, and distributes a questionnaire among participants to incorporate their opinions into its future Responsible Care Reports and activities.

The Council held meetings in Tokyo on December 11 and in Osaka on December 20, 2007. These meetings were attended by 120 and 90 people respectively, including those from government agencies, consumer groups, labor unions, universities and mass media companies.

At the meetings, after the JRCC outlined its Responsible Care Report, Professor Kunio Iwatsuki, President of Biodiversity Network Japan gave a lecture on the present situation and problems concerning biodiversity. Also, three member companies of the Council (Asahi Kasei, Sekisui Chemical, and Lion) introduced their CSR activities as case studies.

\* For details, please refer to issue No. 48 of JRCC News (winter 2008 edition) and the following website:

<http://www.nikkakyo.org/organizations/jrcc/news/no48/d.html>

According to the results of the questionnaire targeting participants at the meetings, 85% of the respondents answered that their understanding of Responsible Care "greatly improved" or "improved." Some respondents highly evaluated the selection of biodiversity as the theme of the lecture given at the meetings, but others questioned it, saying biodiversity was not sufficiently familiar to them. The Council will continue to examine measures to improve its meetings, including details of the presentations.



Report presentation in Tokyo

# International Activities

## Capacity Building (Dissemination of Responsible Care)

The JRCC lists playing a leading role in Responsible Care in the Asian region as one of its priority issues. Since the beginning of 2000, the Council has been implementing a capacity-building program (for human resources development and skills upgrading in developing countries) in cooperation with the Japan External Trade Organization (JETRO) and the Association for Overseas Technical Scholarship (AOTS). As part of the program, the Council is committed to the dissemination of Responsible Care.

### Support for Responsible Care in Indonesia

The JRCC has been helping Indonesia establish a Responsible Care verification system, and fiscal 2007 was the third year from the start of this support. In the previous fiscal year, the Council visited local companies to investigate their Responsible Care activities. Based on the results of this investigation, the Council created a list of questions to be asked during local Responsible Care verification and subsequently gave on-the-job training (OJT) to 10 people to become verifiers. In the training provided at the companies to be actually verified, trainees used the list to ask questions to employees in charge of Responsible Care, and verification was carried out according to the JRCC verification method. The trainees were familiar with the examination procedures for ISO certification and carried out system and performance examinations without any problems, but they were confused by how to make the "how-to" examinations. KN-RCI (the RC association in Indonesia), however, has already appointed a local trainer who will give follow-up training to the trainees. The training is expected to be successful in the future.



### GHS Dissemination

The JRCC is also promoting the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) in its capacity building program. Specifically, the Council is giving support to Asian countries for the dissemination of knowledge on the GHS and for the development of human resources who are necessary to implement the system. First, support was given to five ASEAN countries (Thailand, the Philippines, Indonesia, Malaysia and Vietnam) but the support target has been recently expanded to include Cambodia, Myanmar and Laos (CML). At present, the Council is giving support to a total of eight ASEAN countries utilizing the schemes of both JETRO and AOTS. In fiscal 2007, with the use of the AOTS scheme, the Council held training seminars for CML in Bangkok, Thailand and for all the eight ASEAN countries in Japan.

Through its GHS dissemination activities and RC verifier training activities, the JRCC aims to help countries develop human resources with the commonly required abilities and experiences. It is expected that people trained through these activities will become an integral part of a human resource network in ASEAN countries and the Council itself will be regarded as a core organization in the network.



## Reorganization of the ICCA, and the CEO Summit

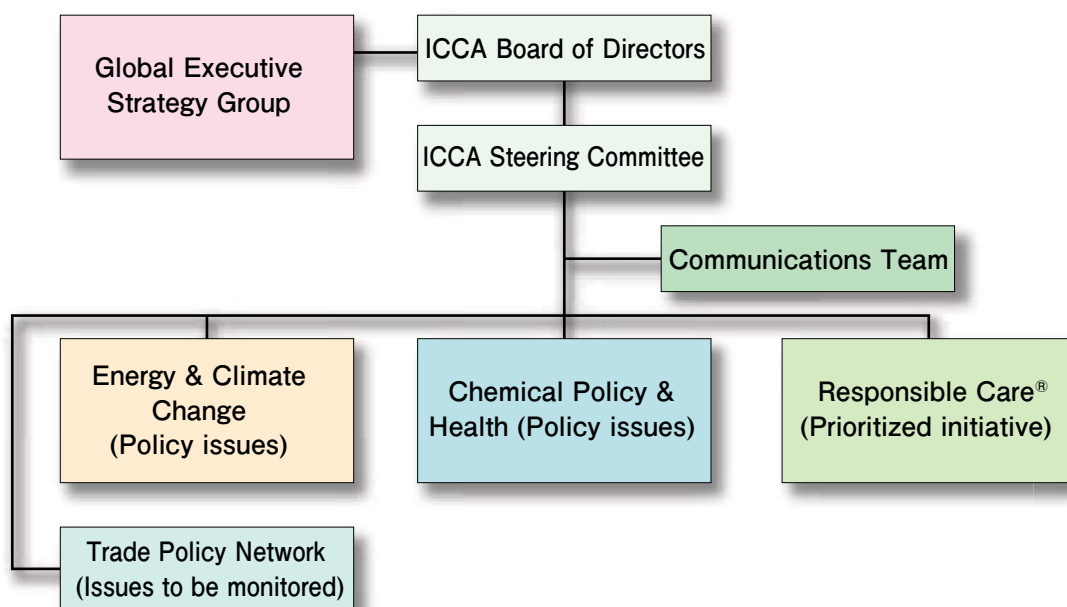
In 2007, the ICCA discussed reorganization and actually reorganized. The major changes were (1) establishment of the Global Executive Strategy Group, which comprises the top executives of member companies and directly gives opinions to the ICCA Board of Directors; and (2) the restructuring of the Leadership Groups into the following three: Energy & Climate Change, Chemical Policy & Health and Responsible Care Leadership Groups. These Leadership Groups have task forces (TFs) for specific purposes. Thanks to the reorganization, the opinions of the CEOs of member companies can be now directly incorporated into the activity policies of the ICCA, and member companies can more

actively participate in the ICCA activities through the TFs and other groups, which will in turn facilitate more speedy actions by the ICCA.

Following the reorganization, the ICCA held its CEO Summit in Davos in January 2008, and its Responsible Care Leadership Group (RCLG) set a target of making 85% of the world's leading chemical companies signatories to the Responsible Care Global Charter, which would contribute to achieving the SAICM target.

\*The Strategic Approach to International Chemicals Management (SAICM) is fostered by the United Nations Environment Programme (UNEP).

### New Organization of the ICCA



## Organization of the APRCC and Management of the APRO

The Asia Pacific Responsible Care Conference (APRCC) was launched in 1995 to boost Responsible Care activities in the Asia-Pacific region. European and American multinational companies that had bases in the region took the initiative in launching this conference and local Responsible Care associations in the region cooperated with the multinationals.

Subsequently in 2003, the Asia Pacific Responsible Care Organisation (APRO) was established as an entity to organize the APRCC. In 2007, the 10th APRCC was held in Malaysia, at which a representative of the JRCC gave a speech. The JRCC will host the APRCC in Japan in 2009.

# Interaction among Members

## Responsible Care Award

The JRCC initiated the Responsible Care Award in fiscal 2006 to commend individuals or groups of individuals who contributed to the promotion and improvement of Responsible Care activities. The following table shows the award winners for fiscal 2007, which is the second year from the initiation.

Award Winner	Reason for Commendation
Hajime Kamata, Kazue Shinotsuka, Masami Watanabe and Hideaki Uchida Kashima Factory, ADEKA Corp.	Recycling of waste white earth as a valuable resource
Kazuo Kamikawa, Yo Imaizumi, Hiroshi Ishizuka and Mariko Inoue Kawasaki Plant, Showa Denko K.K.	Acceptance of visitors by the Plant's plastic package recycling facilities with the aim of encouraging citizens to sort waste and improve their environmental awareness for the effective use of resources
Ryosuke Tamai, Kazuko Kimoto, Takashi Ikeda and Sachie Okumura Kinu- Ura Site, Dow Chemical Japan Ltd.	Contribution to the local community and implementation of RC communication measures

The commendation ceremony was held as part of the interaction meeting hosted by the JRCC for its members at Hotel Monterey Osaka on July 2, 2008, where the members looked back on the first half of fiscal 2008. Six award winners from the three companies listed above attended the ceremony. After receiving commendations from the Council's Planning and Management Committee, the winners gave presentations on the activities for which they won the awards. The presentations were all very useful for other companies.



Responsible Care Award winners

## Interaction Meeting for Member Companies

The Member Relations WG holds interactive and study meetings to promote information exchange and the upgrading of skills among members. The WG held interactive meetings in Osaka on July 4, 2007, and in Tokyo on February 14, 2008, to review the first and second halves of the year, respectively. At these meetings, participants exchanged opinions in small groups of about 10 people for in-depth discussions, and they actively debated the themes of their choices, including "global warming problems," "industrial waste," "dialogue with local communities," "from hazard-based management to risk-based management," "occupational safety" and "expansion from RC to CSR." In each of the groups, the person who proposed the discussion theme first introduced some specific examples. Then all the participants exchanged their frank opinions, listing the problems that their companies were actually facing and giving examples of activities that had proved to be successful.



The WG also held a series of study meetings on the risks of chemical substances. Specifically, three meetings were held from June to October 2007, inviting Mr. Hanai, who was a non-regular staff of the JCIA, as a lecturer. At the meetings, Mr. Hanai talked on the risks of chemical substances, teaching both basic and practical knowledge using a book that he had written. The meetings attracted much attention from JRCC members and a total of 100 people participated in them.





# Responsible Care Verification

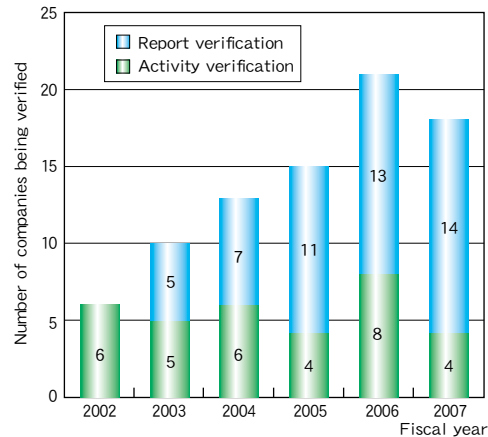
## Verification in Fiscal 2007 (April 2007 to March 2008)

**Activity verification (four companies):** Nippon Soda, Sumitomo Seika Chemicals, Hokko Chemical Industry and Shin-Etsu Chemical

**Report verification (14 companies):** JSR, Sanyo Chemical Industries, Daicel Chemical Industries, Kaneka, Asahi Kasei, Nippon Shokubai, Showa Denko, Ube Industries, Denki Kagaku Kogyo, Toagosei, Shin-Etsu Chemical, Kyowa Hakko Kogyo, DIC and ZEON

In fiscal 2007, RC verification was conducted for a sixth time, and the number of JRCC member companies undergoing this verification has stabilized over the years. For the past two to three years, the number of companies undergoing report verification has been around 15 each year. The rationale behind data gathering methods, the accuracy of the data and the appropriateness of report details are evaluated. The number of companies undergoing activity verification has been around five annually.

At the request of member companies, the Responsible Care Verification Center will, prior to the actual verification, give detailed explanations on questions to be asked to member companies during activity verification and the gist of the verification.



## Comment from a Company Undergoing Verification

As of fiscal 2007, Hokko Chemical Industry underwent activity verification for four years in a row. The company gave the following comment on the verification:

We had our activities for occupational safety and health mainly evaluated in the latest verification. It was meaningful for us to prepare answers to the questions given to us prior to the verification. We conduct our daily business operations according to predefined rules and systems, but it helped us a lot to review our operations in answering the questions based on well-organized indicators. In the process, we were able to understand the actual situation more precisely and recognize our problems more systematically. As a result of verification, it was revealed that we have to set more specific verifiable targets and implement the PDCA cycle across the company, including at the lowest-level organizations. These were pointed out as basic and important improvements to be immediately incorporated into the measures to be taken by our

factory.

We also received detailed explanations on Responsible Care and learned about its history and background. In particular, the explanation on the fundamental role of RC, which is to ensure ethical decisions, was quite persuasive.





# Our Expectations for Responsible Care

Ten years have passed since I first learned that Responsible Care activities are voluntary activities conducted by the chemical industry to ensure the environmentally friendly and safe management of their business. Initially, I was a participant in the dialogues meetings held on Responsible Care, and then I began to take part in these meetings as a member of the secretariat of a consumer organization. The dialogue meetings were held on PRTR, risk communications and other themes with the participation of a range of organizations, including the Ministry of the Environment. I remember my past prejudices against the chemical industry disappearing during the meetings, that indeed provided the industry and consumers with an opportunity to build mutual relationships of trust.

At the dialogue meetings held on the theme of what kind of studies companies were carrying out in commercializing their products, environmental assessment methods, measures to reduce the environmental impact of detergents, safety assessments made in the development of agricultural pesticides and other measures taken by companies were introduced, and I was able to learn that nearly 100% of JRCC member companies assess products to be released onto the market based on prior assessment criteria. This prior assessment is made to ensure the health and safety of people and to identify the impact the products have on the environment throughout their life cycle, including during the manufacture, storage, transportation, use by customers and disposal stages.

However, I also experienced some cases in which communication between companies and consumer organizations became difficult and was hindered by companies

who had never participated in dialogue meetings and continued to have prejudices against consumer organizations. These companies tend to think that for consumer organizations, all chemical substances are harmful and not good for health and all the related risks should be eliminated. These attitudes might

damage the mutual trust built up over long years. I expect JRCC member companies to acquire the abilities and skills to listen to the opinions of consumers and to communicate the necessary information. I want members to be committed to daily communication with consumers. Also, it is of course necessary for them to be accountable for safety, including the provision of information on accidents and on the use in their products of technologies that are becoming matters of concern, if they exist.

Japan is ranked No. 1 in the manufacture of chemical products in Asia and has experienced pollution caused by chemicals. I would like Japan to utilize this experience to spread Responsible Care policies throughout Asian countries; that is, to voluntarily act ethically in the management of chemical products throughout their lifecycles, to implement preventive measures and to respect citizens' right to know. I expect Japan to move forward toward this goal without taking a backward step.



**Yoshiko Arita**  
Chief of Environment Division  
Japan Housewives' Association

I have been given the chance to become involved in examining risk communication at local public entities in Saitama, Gifu, Tochigi and other prefectures and to serve as an intermediary in this kind of communication in real emergencies. I have identified some problems through my experience. One of them is the fact that neither companies nor citizens want to actively share information on chemical substances, in particular in normal times. In contrast, however, once accidents and pollutions had taken place and the facts were revealed to the public, serious discussions were conducted among those concerned in most past cases. More active discussion can naturally be held on more specific subjects, but there is a substantial difference between the quality of discussion conducted in normal times and discussions held during emergencies. I believe that measures taken in normal times help provide appropriate means and tips for communication in the event of an emergency and play important roles in creating better relationships between companies and local communities. The dialogue meetings held as part of the Responsible Care activities represent a good example of these measures.

In order to foster more dialogue meetings, I expect the following initiatives to be taken. First, in order to encourage participants at dialogue meetings to become more proactive, it is necessary to build a system to strengthen the horizontal links between multiple regions where dialogue meetings are held. In New Jersey where I stayed three years ago, slightly less than 20 community advisory panels (CAP) engaging in communication activities met together once a year to exchange their experiences. These activities provide a good

example of measures to improve the quality of communication. Second, I want Responsible Care activities to be expanded beyond the present scope to include companies operating in industries other than the chemicals industry, so that joint measures can be taken in a cross-industry manner. The activities of the Japan Responsible Care Council, which have been continuing since fiscal 1995, are highly evaluated as a

new form of activity to ensure the appropriate management of chemical substances. The Council's experience in leading the organization of local dialogue meetings will inspire companies in fields other than chemicals, which will in turn greatly contribute to the implementation of measures across entire regions. However, there seem to be some problems to be examined, including the boundaries between industries and relationships with local governments. Nevertheless, in view of the fact more than a few companies tend to hesitate to communicate with local communities although they are interested in that kind of communication, I expect the Council to play a greater role in fostering regional measures, by sharing its experience spanning more than 10 years with companies in other fields.



**Takehiko Murayama**  
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# The JRCC Members List

100 companies as of October 2008

ADEKA Corp.  
Air Products Japan, Inc.  
Asahi Glass Co., Ltd.  
Asahi Kasei Corp.  
BASF Japan Ltd.  
Bayer Holding Ltd.  
Central Glass Co., Ltd.  
Chisso Corp.  
Chugoku Kayaku Co., Ltd.  
Ciba Japan K.K.  
Daicel Chemical Industries, Ltd.  
Daihachi Chemical Industry Co., Ltd.  
Dai-ichi Kogyo Seiyaku Co., Ltd.  
Daikin Industries, Ltd.  
Dainichiseika Color & Chemicals Mfg. Co., Ltd.  
Dai Nippon Toryo Co., Ltd.  
Daiso Co., Ltd.  
Denki Kagaku Kogyo K.K.  
DIC Corp.  
Dow Chemical Japan Ltd.  
DuPont Kabushiki Kaisha  
DuPont-Mitsui Fluorochemicals Co., Ltd.  
DuPont-Mitsui Polychemicals Co., Ltd.  
Evonik Degussa Japan Co., Ltd.  
Flexis Co., Ltd.  
FUJIFILM Corp.  
Hitachi Chemical Co., Ltd.  
Hodogaya Chemical Co., Ltd.  
Hokko Chemical Industry Co., Ltd.  
Idemitsu Kosan Co., Ltd.  
Japan Acrylic Chemical Co., Ltd.  
Japan Carlit Co., Ltd.  
JSR Corp.  
Kaneka Corp.  
Kansai Paint Co., Ltd.  
Kanto Denka Kogyo Co., Ltd.  
Kao Corp.  
Koei Chemical Co., Ltd.  
Konica Minolta Holdings, Inc.  
Kuraray Co., Ltd.  
Kureha Corp.  
Kureha Plastics Corp.  
Kyowa Hakko Kirin Co., Ltd.  
Lion Corp.  
Maruzen Petrochemical Co., Ltd.  
Mitsubishi Chemical Corp.  
Mitsubishi Gas Chemical Co., Inc.  
Mitsubishi Rayon Co., Ltd.  
Mitsubishi Tanabe Pharma Corp.  
Mitsui Chemicals, Inc.  
Mizusawa Industrial Chemicals, Ltd.  
Nankai Chemical Industry Co., Ltd.  
Nihon Nohyaku Co., Ltd.  
Nippon Bee Chemical Co., Ltd.  
Nippon Chemical Industrial Co., Ltd.  
Nippon Kayaku Co., Ltd.  
Nippon Paint Co., Ltd.  
Nippon Polyurethane Industry Co., Ltd.  
Nippon Shokubai Co., Ltd.  
Nippon Soda Co., Ltd.  
Nippon Steel Chemical Co., Ltd.  
Nippon Unicar Co., Ltd.  
Nissan Chemical Industries, Ltd.  
NOF Corp.  
Polyplastics Co., Ltd.  
Rohm and Haas Japan K.K.  
Sakai Chemical Industry Co., Ltd.  
Sanyo Chemical Industries, Ltd.  
Sekisui Chemical Co., Ltd.  
Sekisui Plastics Co., Ltd.  
Shin-Etsu Chemical Co., Ltd.  
Showa Denko K.K.  
Showa Highpolymer Co., Ltd.  
Showa Tansan Co., Ltd.  
Sika Ltd.  
Sumika Bayer Urethane Co., Ltd.  
Sumitomo Bakelite Co., Ltd.  
Sumitomo Chemical Co., Ltd.  
Sumitomo Dow Ltd.  
Sumitomo Seika Chemicals Co., Ltd.  
SunAllomer Ltd.  
Takeda Pharmaceutical Co., Ltd.  
Taoka Chemical Co., Ltd.  
Tayca Corp.  
Techno Polymer Co., Ltd.  
Teijin Ltd.  
The Inctec Inc.  
The Nippon Synthetic Chemical Industry Co., Ltd.  
Toagosei Co., Ltd.  
Tokuyama Corp.  
Tonen Chemical Corp.  
Toray Industries, Inc.  
Tosoh Corp.  
Toyo Ink Mfg. Co., Ltd.  
Toyo Kasei Kogyo Co., Ltd.  
Tsurumi Soda Co., Ltd.  
Ube Industries, Ltd.  
UMG ABS, Ltd.  
Wilbur-Ellis Co., (Japan) Ltd.  
ZEON Corp.



**Responsible Care®**  
OUR COMMITMENT TO SUSTAINABILITY

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