



Responsible Care[®]
OUR COMMITMENT TO SUSTAINABILITY

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

Responsible Care Report 2009



Japan Responsible Care Council

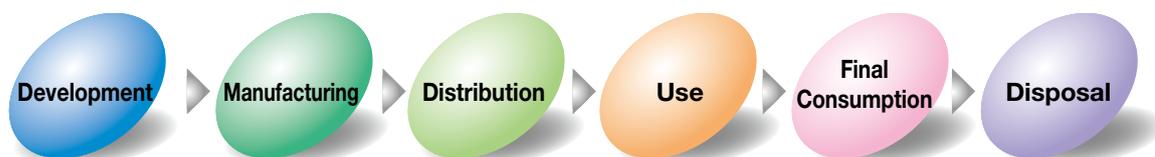
Do You Know about Responsible Care?

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 2009). 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 2009, 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.



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:

- Dialogue with society

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 reports, dialogue, member relations and product stewardship.

* Refer to the JRCC web site: <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

Responsible Care is implemented in 53 countries and regions across the world, and has been praised by former UN Secretary General Kofi Annan who described it as "an inspiring model of self-regulation that other industries should consider following." Currently, Responsible Care comprises an important part of the chemical industry's contribution to the United Nations' Strategic Approach to International Chemicals Management.

At the second session of the United Nations International Conference on Chemicals Management (ICCM-2) held this May, the International Council of Chemical Associations (ICCA), of which Japan is an influential member, gave a report on behalf of the world's chemical industry. Specifically, the Council reported on the progress and achievements made under the Responsible Care Global Charter and the Global Product Strategy. These two voluntary initiatives aimed at the sustainable development of society were launched publicly by the ICCA at ICCM-1 held in 2006, and subsequently at ICCM-2, the Council received a SAICM Bronze Award in recognition of its great contribution to the progress made in the management of chemical substances across the supply chain; to higher transparency across the chemical industry; and to the global spread of Responsible Care, which provides the basis for the former two.

I am very pleased that the Council has won this award. It means that the chemical industry is recognized by the international community as a reliable partner who will help achieve the target agreed at the World Summit on Sustainable Development (WSSD) held in 2002. At this conference, the

international community agreed to make efforts to "ensure that by 2020 chemicals are used and produced in ways that minimize the significant adverse effects on human health and the environment."

The chemical industry's contribution to global warming, a problem whose solution is a prerequisite to sustainable development around the world, has become outstanding, and this encourages public expectations towards solving the problems.

This July, the ICCA published a report on the carbon life cycle assessment of chemical products. This report describes the analysis results throughout the life cycle of chemical products, including the procurement of materials and the manufacture, use and disposal of the products. According to the report, which is highly transparent because it includes a third-party quantitative analysis and is verified externally, double or triple the amount of direct and indirect emissions from the chemical industry in 2005 were saved by using products manufactured by the chemical industry, and the industry says it is committed to increasing its contributions in the future.

The chemical industry also supplies essential components and materials for solar power and wind power generation, technologies that are being promoted worldwide as part of anti-global warming measures. The industry is expected to make greater contributions to the common problems the world is facing and to grow by developing products that incorporate breakthrough technologies and give a dramatic reduction in greenhouse gases.

We are committed to increasing the expectations and trust people place in the chemical industry through continuous technological innovation, the provision of a wide range of products and through Responsible Care. Our contribution to the development of a range of industries including the clothing, food and housing industries is designed to bring more fulfillment to people's lives and to bring about sustainable development. We ask for your support in bringing this about.

November 2009

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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

Topics for Responsible Care Report 2009

- **Progress regarding the JRCC medium-term plan (fiscal 2006 to 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. The Council also formulated a medium-term plan for fiscal 2009 to 2011. → P7

- **Increased energy intensity**

The chemical industry revised its reduction target for average energy intensity during the period from fiscal 2008 to 2012 to "80% of the fiscal 1990 level." However, in fiscal 2008, as a result of production levels decreasing with the economic downturn, the intensity increased, achieving 87% of the fiscal 1990 level. → 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 2008 was about 235,000 tons, representing a decrease of 22,000 tons from fiscal 2007, and this indicated an 86% 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 2008, thanks in part to a decrease in production levels at member companies, the Association achieved a 58% reduction from the level in the baseline year (2000). → P13

- **Steady implementation of anti-air and anti-water pollution measures**

Member companies have been implementing measures to reduce their emissions of air pollutants such as SO_x, NO_x and dust, as well as measures to reduce COD levels and prevent emissions of water pollutants including total nitrogen and total phosphorous, with a view to steadily decreasing both total emissions and emission intensity. → P14

- **Enhanced product stewardship**

The JRCC has reorganized its Product Stewardship Working Group (WG) to start new activities in cooperation with the JCIA that will foster product stewardship. → P22

- **Record-breaking investment in environmental protection, process safety and disaster prevention**

Our investment in environmental protection came to 112.4 billion yen and the investment in process safety and disaster prevention totaled about 79.4 billion yen, both reaching record highs. The ratio to sales also showed a record-breaking percentage. → P24

- **Continuous dialogue with society**

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

- **Promotion of capacity building**

In order to disseminate Responsible Care in the ASEAN region, the JRCC has been dispatching experts to the region to promote capacity building activities for human resources development and capability improvement. → P30

- **Organization of the Asia Pacific Responsible Care Conference (APRCC) in Tokyo**

The APRCC is an international conference organized by the Asia Pacific Responsible Care Organization (APRO), which is composed of 12 Asia-Pacific countries and regions. The 11th APRCC was held in Tokyo. → P31

- **Responsible Care commendation program**

To further encourage its members to engage in Responsible Care activities, the JRCC has been implementing a program to commend individuals and groups that have contributed to Responsible Care activities. → P32

- **Twenty-one companies underwent Responsible Care verification in fiscal 2008**

In fiscal 2008, a total of 21 companies undertook verification, representing an increase of three companies from the preceding year. → P33

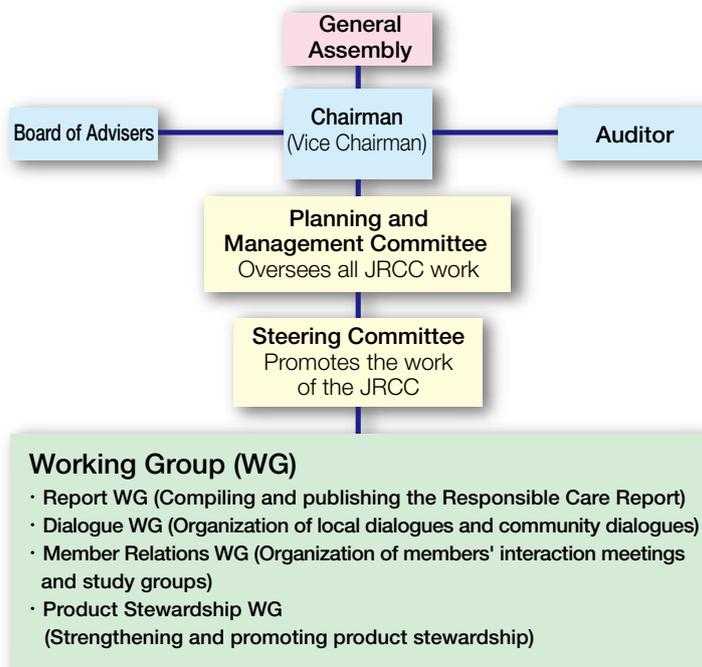
- **Expert opinion**

Ms. Takayo Tanaka of Shodanren (Consumers Japan) and Honorary Professor Yoshio Ono of the Tokyo Institute of Technology 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 2009

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

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

Auditor: Hiroshi Ishiko, 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 by 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 2008, the JRCC prepared its medium-term plan (fiscal period 2009-2011), and has since been conducting activities based on the policies contained in the plan, by focusing on the following key issues.

JRCC Policies

To conduct activities focusing on promoting activities in line with the policies of the Responsible Care Leadership Group (RCLG) of the International Council of Chemical Associations (ICCA)

Key Issues of the JRCC medium-term plan

- ① Further enhancement and promotion of product stewardship (PS; refer to p. 22)
- ② Promotion of Responsible Care activities in partnership with the RCLG
- ③ Fulfillment of accountability by improvement of verification activities
- ④ Promotion of continuous improvement and dissemination of Responsible Care activities
- ⑤ Further recognition of Responsible Care activities by society

Fiscal 2008 Program of Activities / Progress Status and Fiscal 2009 Implementation Plan

	Fiscal 2008 Program of Activities	Fiscal 2008 Progress Status	Fiscal 2009 Implementation Plan
Information disclosure	<ul style="list-style-type: none"> • Preparation and publication of the Responsible Care Report 	<ul style="list-style-type: none"> • Prepared the Report • Held report briefings in Tokyo and Osaka • Responsible care reports published by a total of 74 member companies 	<ul style="list-style-type: none"> • Preparation and publication of the Report
Communication	<ul style="list-style-type: none"> • Continuation of dialogue meetings with local communities • Increase in the number of dialogue meetings with citizens, and the organization of similar meetings with teachers • Continuous provision of risk communication training 	<ul style="list-style-type: none"> • Held dialogue meetings with local communities in eight areas. • Held dialogue meetings with consumers in Tokyo and Osaka. • Held dialogue meetings with junior high school teachers of science. • Established a new system to support individual dialogues, and supported three companies under the system. • Held a risk communication training seminar. 	<ul style="list-style-type: none"> • Continuation of dialogue meetings with local communities • Skillful selection of the themes for dialogue meetings with citizens, and the organization of continuing dialogue meetings with teachers • Making the individual dialogue support system widely known to members and further improving the system • Continuous provision of risk communication training
Dissemination of Responsible Care Activities	<ul style="list-style-type: none"> • Encouragement of group registration by members 	<ul style="list-style-type: none"> • Number of companies that registered as a group: 162 (increased by 12 compared with the preceding year) 	<ul style="list-style-type: none"> • Active promotion of group registration by members
International Activities	<ul style="list-style-type: none"> • Participation in RCLG's annual meeting in Morocco • Exhibition at India Chem 2008 • Support to Asia 	<ul style="list-style-type: none"> • Japan selected as the chair of the Asia-Pacific Responsible Care Organization (APRO) (Term of service: two years). • Participated in RCLG's annual meeting in Morocco. • Exhibited at India Chem 2008. • Gave support to Indonesia and other Asian countries. 	<ul style="list-style-type: none"> • Hosting the Asia Pacific Responsible Care Conference (APRCC) in Tokyo in October • Participation in RCLG's annual meeting in Moscow. • Support to Asia
Chemicals and Product Safety	<ul style="list-style-type: none"> • Further enhancement and promotion of PS • Restructuring of the PS Working Group and the formulation and implementation of new plans 	<ul style="list-style-type: none"> • Restructured the PS Working Group • Held a study meeting on PS in cooperation with the JCIA. 	<ul style="list-style-type: none"> • Further enhancement and promotion of PS • Organization of a PS workshop of the ICCA concurrently with the APRCC
Support for Members' Responsible Care Activities	<ul style="list-style-type: none"> • Organization of interaction meetings and study meetings • Implementation of the Responsible Care commendation program 	<ul style="list-style-type: none"> • Held interaction meetings for members in Osaka and Tokyo, held a study meeting and also organized a study tour of related facilities. • Awarded a third commendation under the program. 	<ul style="list-style-type: none"> • Organization of interaction meetings and study meetings • Implementation of the Responsible Care commendation program
Responsible Care Verification	<ul style="list-style-type: none"> • Increase in the number of members undergoing verification • Higher credibility for Responsible Care activities through verification • Improvement of training provided to verifiers 	<ul style="list-style-type: none"> • Conducted verification in 21 companies (Increased by three companies compared with the preceding year). • Held a total of three training sessions for verifiers. 	<ul style="list-style-type: none"> • Employment of more verifiers • Enhancement of training for verifiers

Organization of a meeting of the Board of Advisers

The 11th meeting of the Board of Advisers, chaired by Hiroshi Komiyama, was held on December 19, 2008. All members of the board, including three new members, participated in the meeting, where they gave their opinions and comments on issues that included the necessity for publicizing the activities of the chemical industry and the importance of school education (in particular primary education) from an outsider's viewpoint.

Environmental Protection (Energy Conservation)

In fiscal 2008, the starting year of the first commitment period for the Kyoto Protocol (from 2008 to 2012), the Japanese industrial community made further efforts to conserve energy and prevent global warming.

Specifically, based on the Nippon Keidanren Voluntary Action Plan on the Environment, the JCIA made more efforts to achieve its revised target for energy intensity. The Association also urged developing countries in Asia, including China to save energy by preparing a collection of energy conservation and environment-related technologies possessed by Japan's chemical industry. The first study meeting on chemicals was also held at the Japan-China Energy Conservation Forum.

On the international front, the ICCA publicly announced the contribution made by the chemical industry to global reductions in greenhouse gas emissions. The Council commissioned McKinsey & Company to make a life cycle analysis of CO₂ emissions from the products of the chemical industry throughout their life cycles from the materials procurement to product disposal, and companies in the chemical industry cooperated in preparing the report by submitting fiscal 2005 data on 102 chemical products in eight fields, including transportation, construction materials, and packaging. The analysis results underwent third-party verification by the Öko Institut, a German research institute. This revealed that the abatement in greenhouse gas emissions achieved by using chemical products used in heat-insulating materials, lighting equipment and solar power and wind power generators was about triple the total emissions for the chemical industry, including emissions from the extraction of materials and the manufacture and disposal of chemical products.

Energy Conservation Targets and Performance

The JCIA set a new voluntary target for energy intensity in fiscal 2007. Specifically, the Association has set the target of reducing the average energy intensity index for the period from fiscal 2008 to 2012 to "80% of the fiscal 1990 level" and has been implementing measures to achieve this target. In fiscal 2008, energy consumption sharply decreased because of a substantial decrease in the production of chemical products due to the economic downturn triggered by the Lehman shock, but the energy intensity index increased to 87% of the fiscal 1990 level.

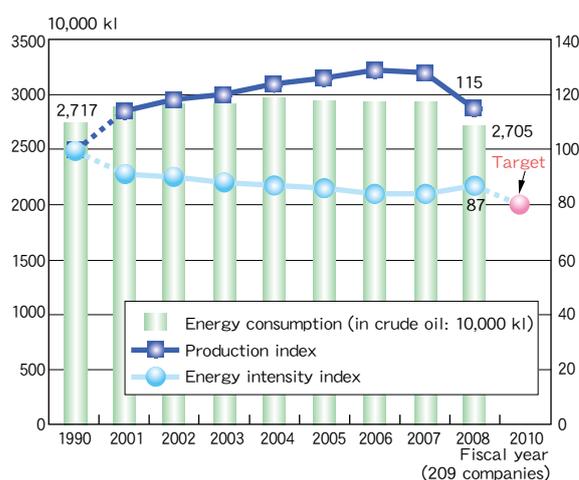
Energy Conservation Measures

The JCIA fiscal 2008 performance survey of its member companies shows that there were 367 cases of energy conservation and CO₂ reduction, with investments amounting to about 35.5 billion yen. In fiscal 2009 onwards, as much as 182.5 billion yen will be invested for improvements in equipment/machinery efficiency. This will result in reductions in energy consumption amounting to 490,000 kl in crude oil equivalent.

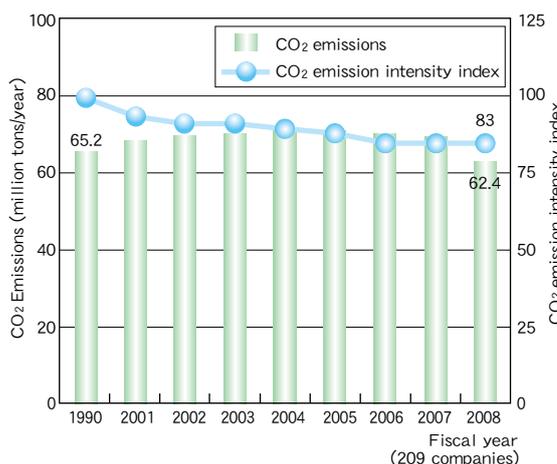
Reduction in Greenhouse Gas Emission

The volume of CO₂ emission by the JCIA was reduced by 6.7 million tons from fiscal 2007, and decreased by 4.0% in comparison to the baseline year (fiscal 1990) level. Although this was partially due to the economic recession, the fact that the CO₂ emission intensity index remained on the same level (83%) as in fiscal 2007 suggests that the efforts made by member companies also contributed to this reduction. Moreover, many chemical companies have private power generation facilities. At some of these facilities, wood biomass is used in combination with fossil fuels to reduce CO₂ emissions from fossil fuel combustion.

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

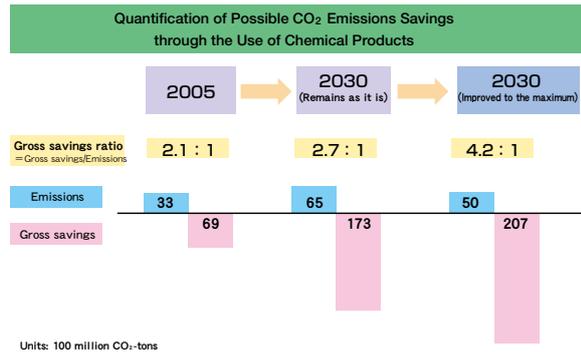


CO₂ Emissions and Emission Intensity Index (JCIA data)



Life Cycle Analysis

McKinsey & Company was commissioned by the ICCA to make a life cycle analysis of 102 products in eight fields in which chemical products were used. Specifically, the company calculated equivalent CO₂ emissions over the entire life cycle of the products, including the extraction of materials, production, use and disposal phases. It then compared these emissions with emissions from non-chemical industry alternatives to identify the total contribution of the chemical products to reducing CO₂ emissions. The "gross savings" in the figure on the right represent CO₂ emissions from non-chemical alternatives. According to the results of analyzing the fiscal 2005 results given in the report, emissions savings achieved with the



use of chemical products was 2.1 times the emissions from the products themselves. It is predicted that this ratio will increase to 2.7 times in 2030 if the technology level remains as it is and up to 4.2 times if the technology level is improved to the maximum.

Examples of Member Companies' Initiatives

Electrolysis tank using a gas diffusion electrode

Toagosei Co., Ltd.

Toagosei has been developing gas diffusion electrode technology, which is the next generation of salt electrolysis technology, with the New Energy and Industrial Technology Development Organization (NEDO). Using a gas diffusion electrode, which was made by applying fuel cell technology to the negative electrode in the electrolysis tank used to manufacture caustic soda and chlorine, electricity consumption can be reduced to two-thirds of the conventional consumption levels because no hydrogen is produced at the negative electrode. Thanks to the use of this gas diffusion electrode, CO₂ emissions will be reduced by 0.5 ton per one ton of caustic soda, which will in turn help prevent global warming.



Chemical recycling of acryl resin products

Mitsubishi Rayon Co., Ltd.

Mitsubishi Rayon contributes to a recycling-based society by chemically recycling some of the resin wasted in the production of acryl resin products into MMA monomers at its Toyama Production Center. Thanks to this recycling, CO₂ emissions have been curtailed to about one-fifth of emissions from manufacturing MMA monomers from crude oil. Mitsubishi Rayon received a prize at the general meeting of the Research Association for Feedstock Recycling of Plastics, Japan held in June 2009 in recognition of this highly advanced recycling technology.



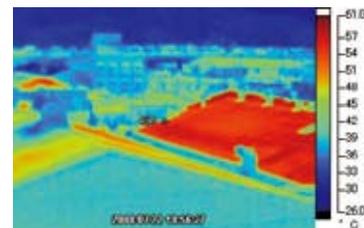
Heat insulating and radiating paint used to improve the energy efficiency of buildings

Sekisui Aqua Systems Co., Ltd.

Sekisui Protect Coat is a heat-insulating and radiating paint made using a special heat radiating materials with strong heat exchange performance. The paint radiates most of the heat from sunshine and hence restricts the rise in temperature on the painted surface. This in turn restricts the rise in temperature inside the building. According to the results of tests conducted on the paint in a container house, the power used for cooling in summer was reduced by about 15% and almost the same for heating in winter compared with the use of ordinary building paints.



Blue roof with the heat-insulating coat applied



Distribution of heat on the roof shown in the photo on the left (The temperature on the coated roof is about 10°C lower.)

Environmental Protection (Industrial Waste Reduction)

Reduction Program

According to the Japanese Ministry of the Environment's Annual Report on the Environment and the Sound Material-Cycle Society in Japan 2009, the total amount of industrial waste generated in Japan has remained on the same level in recent years, whereas at the end of fiscal 2006, the remaining lifespan of Japan's industrial waste disposal sites was slightly improved from the previous fiscal year level to 7.2 years on a national average thanks to a decrease in final disposed waste volumes. However, 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

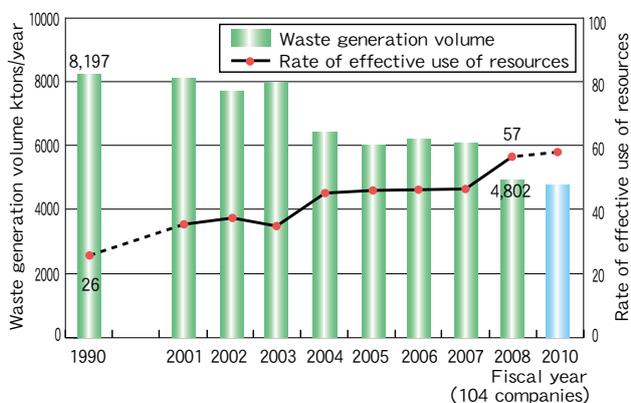
JCIA members have taken various initiatives to reduce industrial waste at source. These initiatives include the drastic sorting of waste, the installation and improvement of waste disposal equipment and the recovery and reuse of waste in the manufacturing process. The industrial waste volume in fiscal 2008 was reduced by 41% from the fiscal 1990 level (by about 21% from the fiscal 2007 level). Further, members were active in recycling resources, and as a result, the rate of the effective use of resources (ratio of the volume of resources effectively used to the generated volume), which was 26% in fiscal 1990, improved to 57% in fiscal 2008.

The final disposed volume of waste generated by members in fiscal 2008 was 235,000 tons, 22,000 tons less than in fiscal 2007. This is a reduction of 86% from the fiscal 1990

level. The final disposed volume for fiscal 2010 is predicted to be a 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. Seventy percent or more of JCIA members have set their own definition of "zero emissions" relative to the final disposal rate and recycling rate.

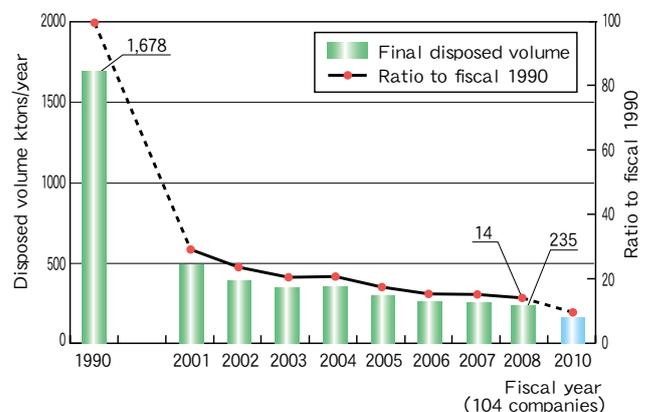
Reduction in the final disposed volume and appropriate disposal management are strengthened every year. Verification of recovery of industrial waste manifests and local patrolling of the final disposal area are being performed.

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 fiscal 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 discarded 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

Chemical recycling technology for phenolic resins

Sumitomo Bakelite Co., Ltd.

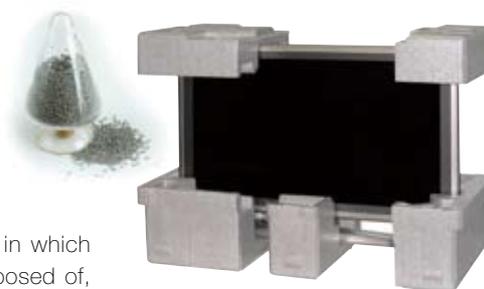
Sumitomo Bakelite's chemical recycling technology for phenolic resins makes use of supercritical fluid technology, which enables three-dimensionally cross-linked phenolic resin products to completely decompose in a very short reaction time of 10 to 20 minutes. The decomposed products can be recycled into resins for use as raw chemicals with a high yield. Products manufactured using these recycled resins have properties and performance equivalent to products manufactured using virgin resins. The company constructed a demonstration plant that can treat several hundred tons of phenolic resins per year within its Shizuoka Plant and is now preparing to mass produce products using these recycled resins and to put chemical recycling technology into early practical use towards full commercialization. The company has given presentations on this technology at academic conferences. The technology has received high praise and multiple awards that include an encouragement prize and a poster prize.



Epsrem ERX: expandable polystyrene beads made using recycled plastics

Sekisui Chemical Co., Ltd.

Sekisui Chemical has been actively recycling waste foamed polystyrene for the last 39 years and has finally established a technology to manufacture expandable polystyrene beads using plastic recycled from waste consumer electronic products such as TVs and refrigerators. The company named the beads "Esprem ERX" and succeeded in using the beads as packaging material for consumer electronic products. Esprem ERX has contributed greatly in establishing a closed recycling system in which consumer electronic products delivered to consumers are disposed of, sent to recycling facilities, processed into Esprem ERX, and used again in consumer electronic products. This product has helped to reduce CO₂ emissions by 20% compared with the use of virgin foamed polystyrene, and won the Chairman's Prize from the Clean Japan Center.



Environmentally benign THF polymerization process using solid acid catalysis

Mitsubishi Chemical Corp.

Mitsubishi Chemical has been developing highly efficient catalysts and manufacturing processes aimed at conserving energy and resources in petrochemical processes.

Development of the environmentally benign THF polymerization process using solid acid catalysis represents one of the company's achievements.

This process is used in manufacturing polyoxy tetramethylene glycol (PTMG), a raw material used in the production of elastic fibers for which demand has been rapidly increasing. This technology will reduce the waste generated by 0.15 kg per production of one-kilogram of PTMG, an effect that has already been proven from the commercial production launched in 2000.



Environmental Protection (Chemicals Emissions)

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

In 1992, the JCIA started conducting a pilot study 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.

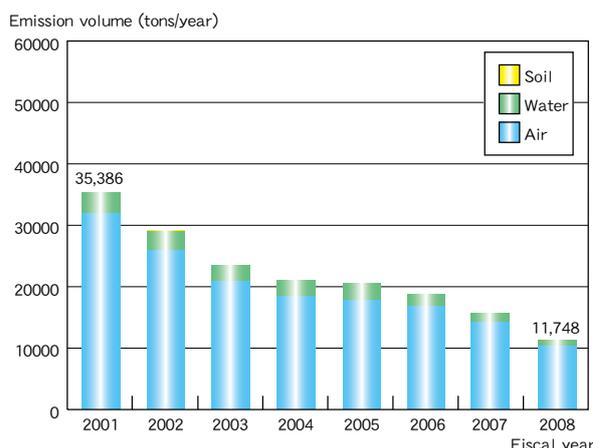
Total emissions of the 354 substances specified by the PRTR Act were 11,748 tons in fiscal 2008, representing a 75% reduction from the fiscal 2000 level. Emissions into the air, water and soil accounted for 88.5%, 11.4% and less than 0.1%, respectively.

The total emissions of the substances subjected to JCIA voluntary investigations (126 substances: those specified

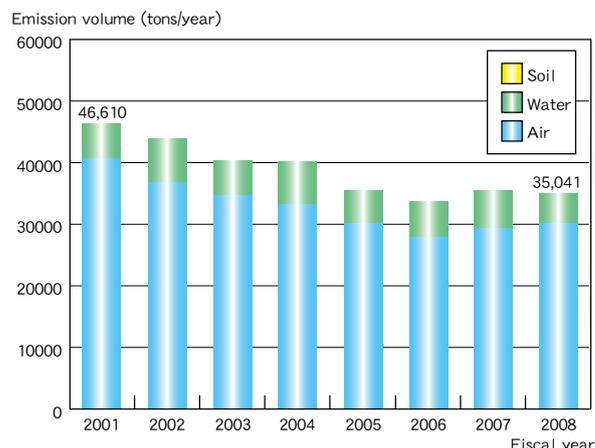
by the Act were excluded from the 480 substances) were 35,041 tons in fiscal 2008, down 37% from the fiscal 2000 level. Emissions into the air, water and soil accounted for 85.8%, 14.2% and less than 0.1%, respectively. Member companies have examined the results of the investigation and have attempted 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 was partially revised, and the number of substances specified by the Act will be increased from current 354 to 462 in fiscal 2011 (for emissions in fiscal 2010 onwards). 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/jrcc/report/2009/data.html>

Efforts to Reduce Toxic 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 fiscal 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 2008, the total volume of the 12 substances was 2,056 tons, which represents an 86% reduction from the fiscal 1999 level.

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

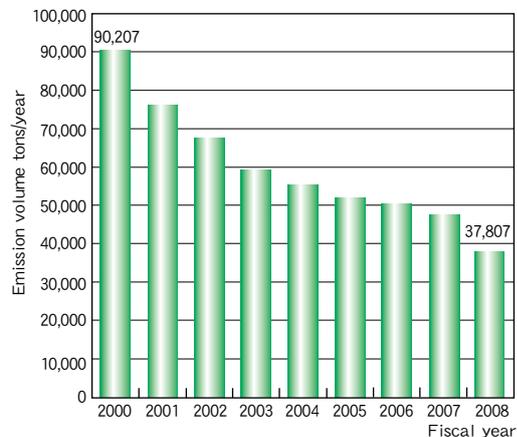
Efforts to Reduce Volatile Organic Compounds (VOCs)

The Air Pollution Control Act, 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 2008, JCIA member companies emitted a total of 37,807 tons of VOCs and achieved a 58% 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, in addition to the impact of a decrease in the production amount.

VOC Emissions (JCIA data)



Volatil 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

Reducing the emissions of benzene and butadiene

Ube Industries, Ltd.

The Ube Group treats benzene, butadiene, acrylonitrile, 1,2-dichloroethane, chloroform, and dichloromethane among the 12 hazardous air pollutants. In particular there is concern over the harmfulness of benzene and butadiene, and the Group implemented drastic measures to reduce their emissions, achieving respective reductions of 98% and 91% from the 1995 levels. The principal measures the Group has taken to reduce their emissions include introduction of a closed emission system for benzene, replacing its use as a solvent with an alternative, and the installation of exhaust gas combustion equipment for butadiene.



Butadiene exhaust gas combustion equipment

Decomposing and purifying VOCs

Tosoh Corp.

Tosoh has been selling its own developed decomposing agents for VOCs: MA-W200 and MA-W100. These agents have high reducing and decomposing abilities and take effect quickly. They are also highly responsive and durable at low temperatures and allow significant purification of contaminated soil. These agents have enabled the decomposition and purification of highly contaminated soil and underground water within a short period. In addition, they are environmentally friendly agents that have an extremely small impact on the soil because they can be used for in-situ purification and only need small amounts to be effective.



In-situ mixing method

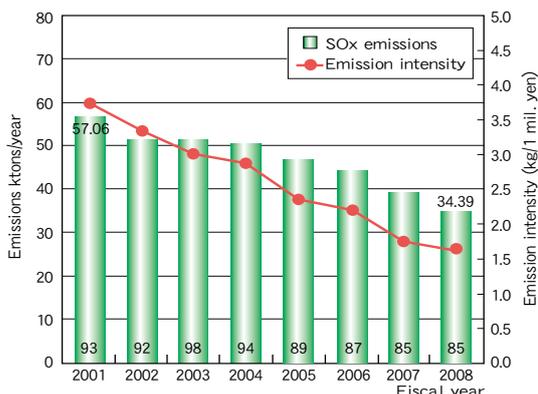
Environmental Protection (Chemicals Emissions)

Efforts to Prevent Air and Water Pollution

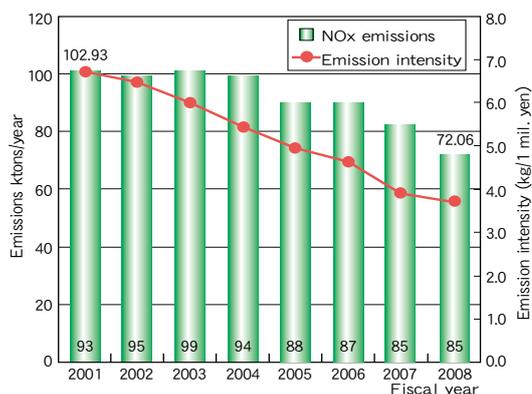
Domestic chemical companies have reduced emissions of air and water pollutants significantly. JRCC member companies have established voluntary management standards more stringent than those provided for by law. By complying with agreements with local governments,

members are working to further reduce emissions. As a result, emissions have been reduced year on year and there have also been steady improvements made on emission intensity.

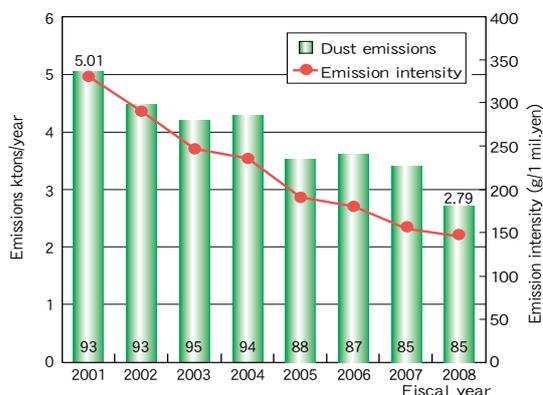
SOx Emissions



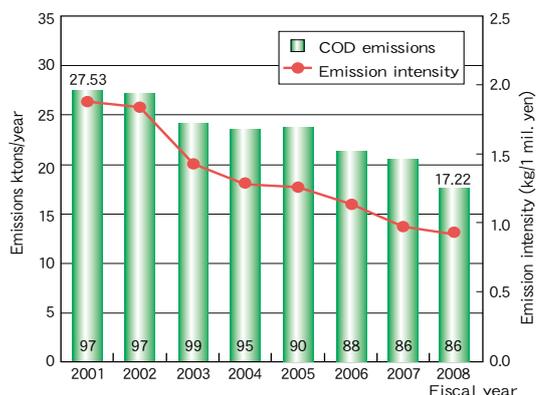
NOx Emissions



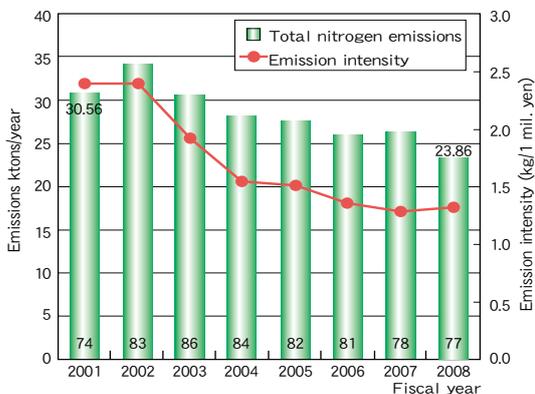
Dust Emissions



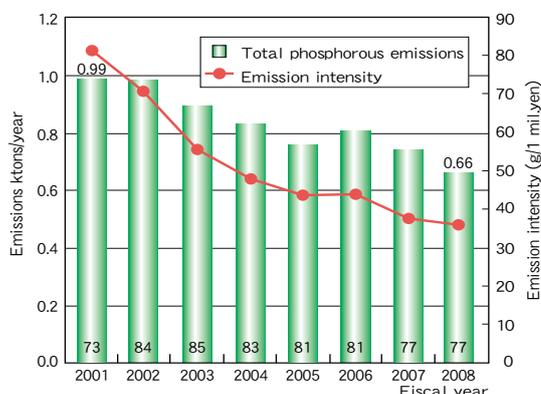
COD Emissions



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 no single common production unit can be specified, the index is designed to show emissions per sales (in millions of yen).

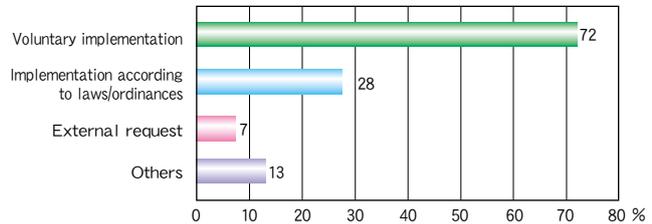
Initiatives on Soil and Groundwater Contamination

JRCC member companies promote voluntary investigations/countermeasures, as well as regulatory investigations/countermeasures according to the Soil Contamination Countermeasures Act. Of the 91 companies who responded to the questionnaire survey, 46 investigated contamination of soil/groundwater at 91 sites in fiscal 2008. Twenty-five of the 46 companies detected contamination that exceeded environmental standards at 46 sites. The reasons for implementing the investigation were also queried in the survey. Voluntary implementation of the investigation ranked first and accounted for 72%, while implementation according to the law or ordinance accounted for 28%. Substances other than those specified by law were also examined in 19 investigations.

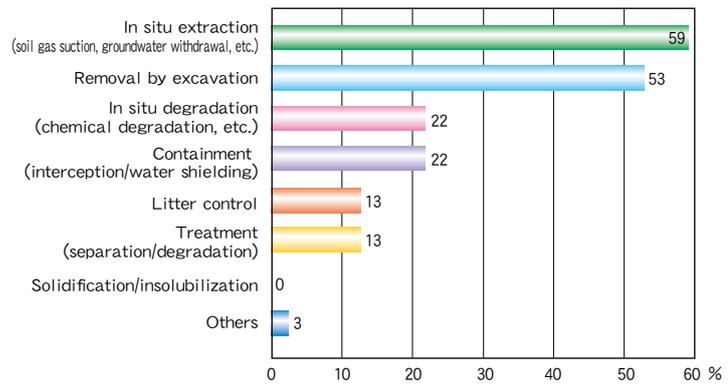
In fiscal 2008, 32 companies carried out contamination countermeasures at 50 sites, including sites where contamination had been detected before.

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 89 companies that responded to the questionnaire, 79 (89%) retain PCB waste (PCB waste or discarded devices containing PCB). In fiscal 2008, thanks to the scheme for the appropriate treatment of PCB waste established by the Japanese government, the number of JRCC members that partially disposed of PCB waste appropriately increased from 17 in the previous fiscal year to 22, but there were no companies that had completed the disposal.

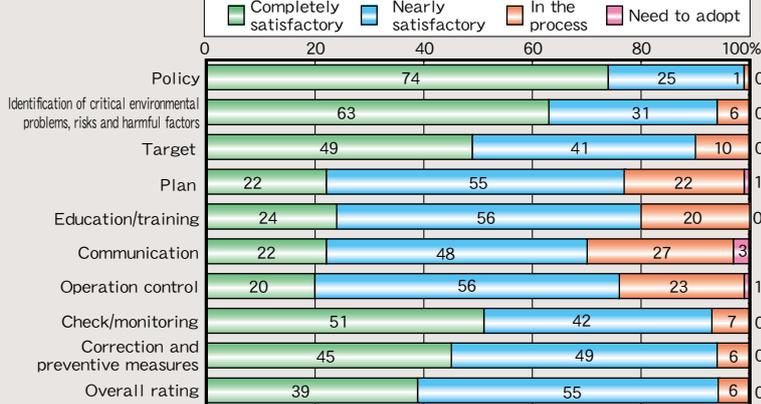
The Act on Special Measures Concerning the Promotion of

the Proper Treatment of PCB Waste mandates companies to notify their current situation with the storage and disposal of PCB waste to the relevant prefectural governor and to dispose of all their PCB waste appropriately within 15 years of the date that the law came into force (July 15, 2001). Accordingly, JRCC members will continue to dispose of their PCB waste in a consistent manner in line with governmental guidelines.



Environmental Protection

The percentage of companies that answered "Need to adopt" and "in the process" decreased while the percentage of companies that answered "Completely satisfactory" increased. In the checklist, a variety of activities are required for the "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, which implies that more extensive measures are being implemented by JRCC members.

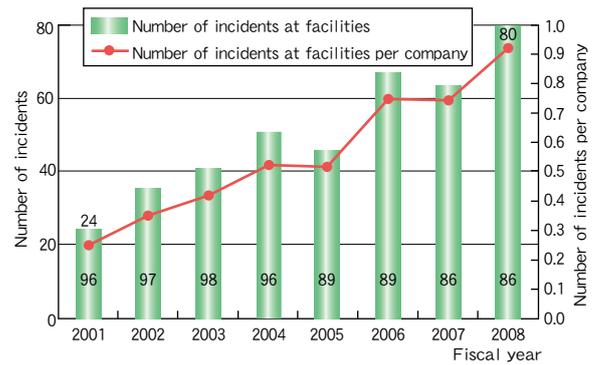


Process Safety and Disaster Prevention

In fiscal 2008, both the total number of facility incidents and the number of facility incidents per JRCC member increased. However, there were no serious incidents that had adverse effects on the neighboring areas or that were dangerous to humans. Instead, relatively small incidents, such as leaks, have been increasing, partly because facilities are aging. Industrial circles, including the chemical industry, have been continuously sharing information on industrial accidents and examples of measures to prevent them across the industry mainly through the Coordinating Committee for Industrial Accidents and in close cooperation with the government. JRCC members are fostering relevant measures in recognition of the need to further improve training for process safety and facilities management.

Member companies continuously regard security and disaster prevention as an important management mission and have been investing more money in process safety and disaster prevention since fiscal 2002. Despite severe economic conditions, they have been investing more in

Incidents at Facilities (Explosions, fires, leaks, etc.)



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

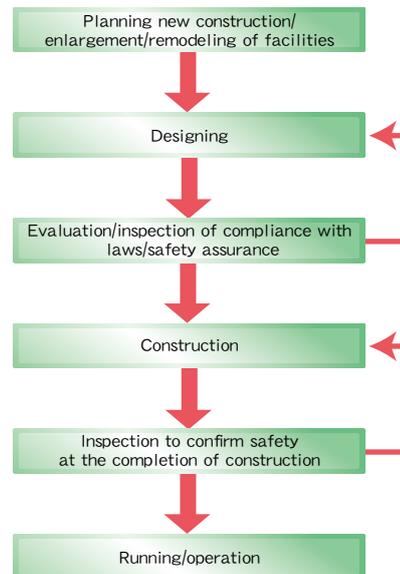
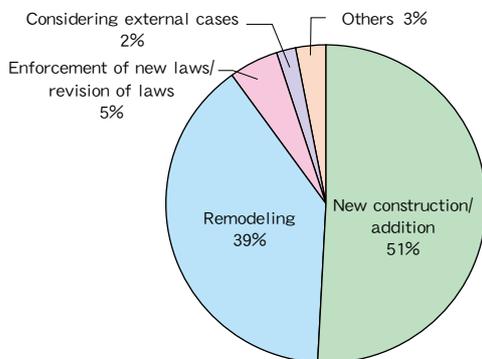
process safety and disaster prevention year on year, and in fiscal 2008 this investment reached a record high of 79.4 billion yen, up more than 4% from fiscal 2007 (refer to page 24).

Prior Facility Evaluation and Management

Of the JRCC members who responded to the questionnaire, 91% conduct prior evaluations of their facilities. As the reason for this, 90% of respondents answered "for new construction/addition" and "for remodeling." As illustrated in the flowchart, many members examine the safety of their

new facilities at the design phase and also check that the safety that was built in at the design phase is still there after completion of the construction work. They thus carry out risk assessments at each phase to confirm safety and prevent incidents at facilities.

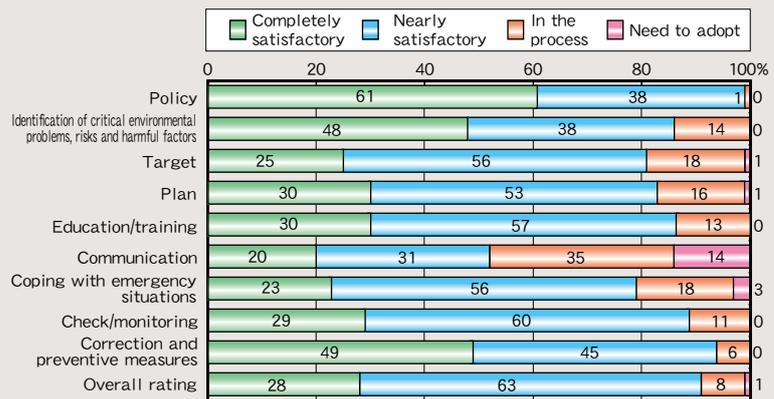
Reasons for Conducting Prior Facility Evaluation



Members' Self-Assessment

Process Safety and Disaster Prevention

For all items, the percentage of companies responding "Need to adopt" or "In the process" slightly decreased. Regarding "Communication," the performance level steadily improved as a whole, but improvements still need to be made to "dialogue with residents" and other requirements on the checklist.

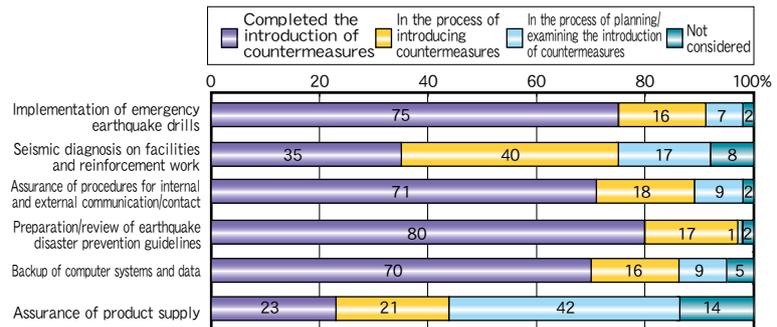


Countermeasures for Major Earthquakes

Japan experienced a total of seven earthquakes with a seismic intensity of 6-lower or greater over the past five years, including the Iwate-Miyagi Inland Earthquake and the Niigata Chuetsu-Oki Earthquake, 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 for earthquakes; seismic diagnosis on facilities and reinforcement work; assurance of internal and external emergency communication/contact measures; preparation/review of earthquake prevention guidelines; and backup of computer systems and data. Meanwhile, 56% of members are still planning or examining measures that will assure a continuing supply of products

in the event of a major earthquake, for which they need to cooperate with companies in other industries, such as transportation companies. Further improvements must be made in the future, but compared with fiscal 2007, steady progress has been made in all six items.

Responses to Questionnaire on Earthquake Countermeasures in Fiscal 2008



Emergency Measures

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



Desktop earthquake drill (Sanyo Chemical Industries, Ltd.)



Comprehensive disaster prevention drill conducted by the leadership of Toyama Prefecture at a petrochemical complex (Nissan Chemical Industries, Ltd.)



Offshore containment boom deployment training (Tonen Chemical Corp.)



Drill for dealing with gas leaks conducted jointly with a public firefighting team (Central Glass Co., Ltd.)

Occupational Safety and Health (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.

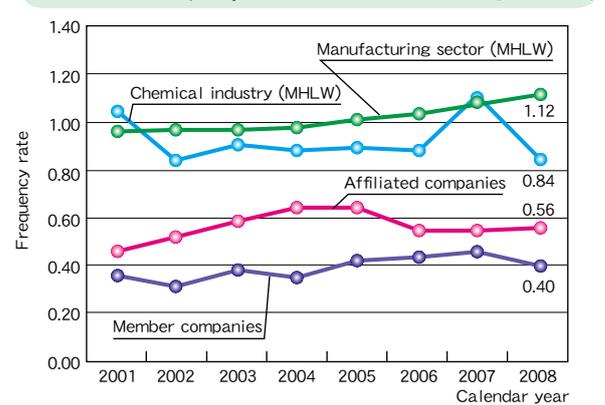
With occupational accidents, both the frequency rate and severity rate of JRCC member companies are lower than the rates recorded for the manufacturing sector and the chemical industry as a whole. Compared with fiscal 2007, the frequency rate decreased while the severity rate and the number of fatalities slightly increased. The average frequency rate for companies affiliated to JRCC members is lower than for the manufacturing sector and the chemical industry as a whole, but the average severity rate is higher. Compared with fiscal 2007, the average frequency rate slightly increased while the average severity rate and the number of fatalities slightly decreased. The causes of occupational accidents were thoroughly investigated jointly by the companies involved and their affiliates. 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.

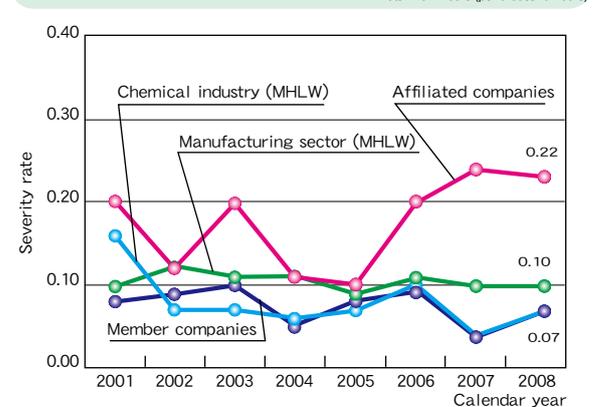
The Number of Fatalities from Labor Accidents

	2001	2002	2003	2004	2005	2006	2007	2008
Member companies	1	1	2	1	1	2	1	2
Affiliated companies	3	1	3	2	2	5	6	5
The chemical industry (Ministry of Health, Labour and Welfare: MHLW)	24	22	25	22	22	25	17	28
The manufacturing sector (MHLW)	326	275	293	293	256	268	264	260

Transition in the Frequency Rate



Transition in the Severity Rate



Examples of Member Companies' Initiatives

Learning by experience

Nippon Shokubai Co., Ltd.

Believing that it is important to increase workers' awareness of risk in order to help prevent labor accidents, Nippon Shokubai holds seminars to provide workers with opportunities to learn by virtual experience. In these seminars, which are held at the facilities of the individual companies, lecturers (from external educational institutions, retirees and employees of the company) allow participants to experience possible risks in their own workplaces (e.g. being stuck or caught in a machine or injury from exposure to spurting liquid, fires and explosions, falls and combustion in substances being handled), that are suited to the actual operations being conducted at the facilities.



Virtual experience of exposure to spurting liquids

Preventing similar accidents by creating a database of labor accidents that allows prompt notification of incidents

Daicel Chemical Industries, Ltd.

Daicel Chemical Industries implements occupational health and safety activities and executes the PDCA cycle according to the size of the manufacturing site and the processes used. In addition to continuing these activities, in fiscal 2008 the company completed a database of labor accidents to allow prompt notification through cooperation between labor and management, and trial use of the database began in August.

The database allows information on labor accidents that take place at any of the company's sites to be promptly and automatically communicated to all its sites. In addition, the company introduced the "why-why analysis*" method to identify the causes of these labor accidents and implement countermeasures. Jointly with the 3Ss (seiri, seiton and seiso: sorting, straightening and sweeping) that are conducted at all production sites, this method contributes to reducing labor accidents in the company. In fiscal 2009, the company continues to be committed to reducing labor accidents by expanding the database and making better use of it.

*Why-why analysis: a method in which the question "why" is repeatedly asked to identify and analyze the essential causes of labor accidents from the viewpoints of the 4Ms (management, method, man, and machine).

Occupational Safety and Health (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 an annual safety symposium in which the award winners report on their safety assurance activities.

In fiscal 2008, 17 companies participated in the awards competition, and the JCIA and JRCC selected five outstanding companies from among the competitors at their joint safety awards meeting. At Toray Industries' Ehime Plant, which received the Safety Award, employees have been conducting safety activities under the leadership of the director of the plant. These activities include Step-up 3Z activities for zero labor accidents and Ehime Keep Rule (EKR) activities to ensure observation of the basic rules. As a result, the plant has achieved zero labor accidents continuously since 2000.

A safety symposium was held in Tokyo on June 22, 2009 with the participation of 120 people. The directors of plants that won Safety Awards and Safety Effort Awards reported on their safety management activities.

At the panel discussion held in the second part of the symposium, the directors discussed on the theme of how they can achieve zero occupational accidents continuously and expressed their commitment to safety.

Safety Award: Ehime Plant, Toray Industries, Inc.
Safety Effort Award:
 Organic Chemistry Research Laboratory, Ube Industries, Ltd.
 Tatsuno Plant, Showa Highpolymer Co., Ltd.
 Showa Denko Electronics K.K.
 Mie Plant, Wako Pure Chemical Industries, Ltd.



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

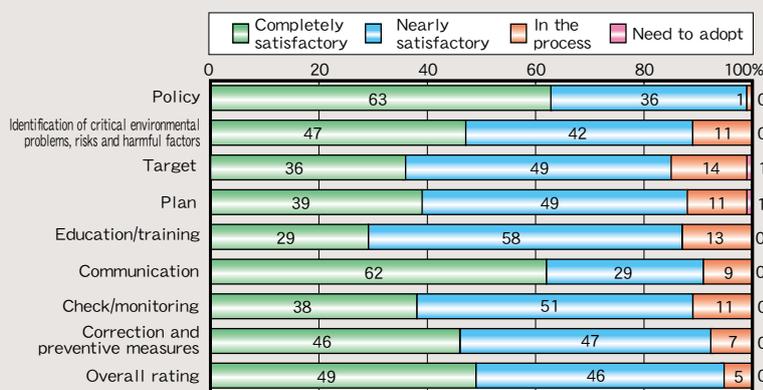


Ehime Plant, Toray Industries, Inc.

Members' Self-Assessment

Occupational Safety and Health

Only a few members answered "Need to adopt." Compared with fiscal 2007, the percentage of members who answered "Completely satisfactory" increased for all items, but the percentages of those who answered "In the process" and "Nearly satisfactory" remained at almost the same levels. Further improvements need to be made by these members toward eliminating labor accidents.



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. The JRCC restructured its Product Stewardship WG to further promote product stewardship through the product's supply chain in cooperation with the JCIA. Product stewardship activities are conducted to allow each manufacturer of a product to assume, through the product's supply chain, responsibility as a business operator for the user's health, safety in use, and environmental protection 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 51 chemicals and have already submitted assessment reports for the substances. Under the HPV initiative led by the ICCA, assessment reports are to be submitted for 1,000 substances. As of April 2009, commitments were made for 910 substances and assessment reports have already been submitted for 662 substances. The assessment results are disclosed on the OECD's Integrated HPV Database website.*¹

*1 <http://cs3-hq.oecd.org/scripts/hpv/>

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. A total of 645 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 2011, which is the reporting deadline. As of July 2009, it was confirmed that information had been collected for about 95% 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 long-range research initiative (LRI) is a joint research activity that the chemical industries in Japan, the United States and Europe are jointly conducting to examine the influences of chemical substances on human health and the environment with the following objectives:

- 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 to manage products
- To support governments in their science-based decision-making on public policies

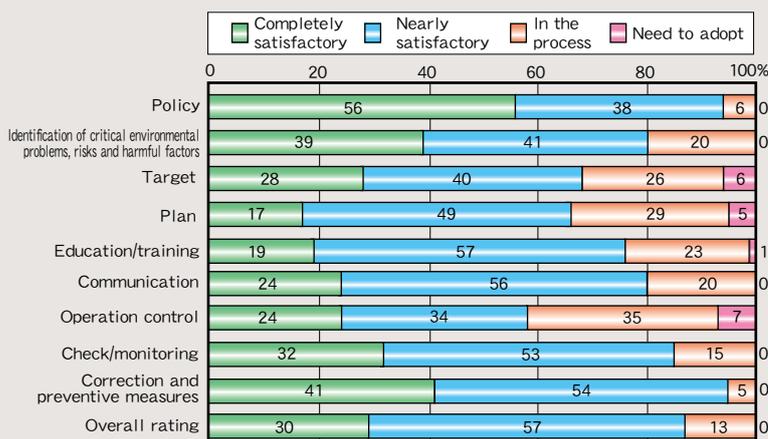
Using funds contributed by member companies, the JCIA supports research initiatives, taking into account the unique situation in Japan, focusing on themes of special importance to the chemical industry in the following five fields: endocrine disruptors; neurotoxicity; chemical carcinogenesis; immunotoxicity; and improvement to the precision of existing assessment approaches, including predicting what products will be generated from decomposed chemical substances and consideration of the biokinetics of chemical substances. The last theme was added to the former four in fiscal 2007. The JCIA annually invites researchers to propose research themes and the results of the research are disclosed to the public. In fiscal 2008, the results of research conducted to improve the precision of existing risk assessment approaches were reported at an ICCA workshop and attracted much attention. All the research results are compiled into an annual report and representative results are presented at a briefing session held every year. 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 fiscal 2007, except for "Operation control," the percentage of "Need to adopt" and "In the process" generally decreased while the percentage of "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, including the harmful impact of the products on human health and the environment, flammability, explosiveness and other properties, cautions for use and emergency measures. 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 Act and the Poisonous and Deleterious Substances Control Act, 84 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.

From the viewpoint of Responsible Care, suppliers of chemical products 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, 75 companies said that they collected information on 80% or more of the products they supplied.

Provision of Information to User Sectors

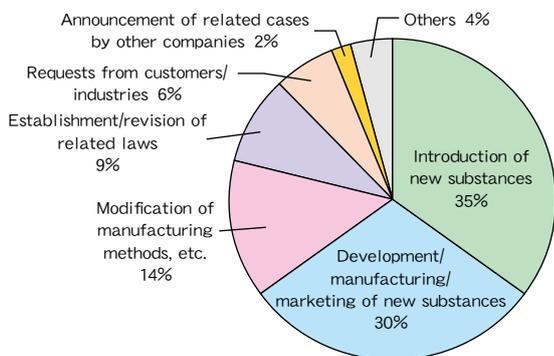
An increasing number of customers recognize the importance of investigating "green procurement" and request suppliers to submit a report on the management of chemical substances and a report detailing the contents of specified chemical substances in the supplied materials. This has had a significant impact on the chemical industry, which supplies raw materials and ingredients. Accordingly, the JCIA voluntarily examined a practical and effective method to disclose 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. Details are available on the JCIA's website.

Prior Chemical Substance Safety Assessment

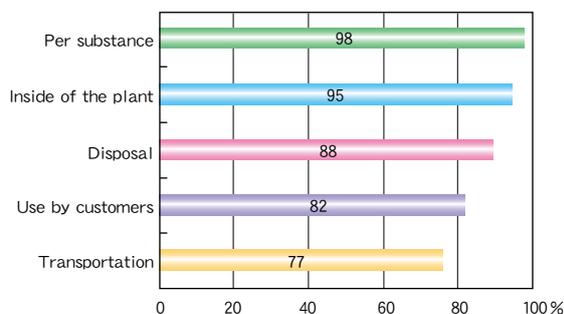
A Prior Chemical Substance Safety Assessment is conducted to identify the safety issues and concerns for chemical substances (explosiveness, inflammability, acute/chronic toxicity) and evaluate their effects on the users' health and the environment. In addition to new substances, existing substances 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 a measure for emergency response as well as for risk reduction. Of the companies responding to the questionnaire, 96% have prior assessment standards. With the application of prior assessment standards, 80% or more of respondents have applied the standards to most of the items, which demonstrates that the standards are being widely implemented.

Reasons for Implementing Prior Assessment



Application of Prior Assessment Standards (Multiple answers allowed)



Chemicals and Product Safety

Enhancing Product Stewardship Measures

Through its Product Stewardship WG, the JRCC has been implementing measures to enhance product stewardship (PS) activities in cooperation with the JCIA. Specifically, the JCIA clearly shows the detailed risk assessment rules and the JRCC shows the specific risk management methods in line with the rules, in order to further strengthen PS. To this end, the Council is now reviewing information communication

and risk management measures across the entire supply chain, while adopting the concept of risk assessment based on the PS guidelines published by the ICCA.

The WG is now composed of two sub-working groups. These groups, one for reviewing the Codes of Responsible Care and the other for information management across the supply chain, have already started their activities.

Preparing for REACH

The Regulation, Evaluation, Authorization and Restriction of Chemicals (REACH), a new European chemical substance regulation, came into force on June 1, 2007. The pre-registration period was over on December 1, 2008 and companies are now taking specific actions for full registration. In order to give more support to its member companies with the REACH regulations, the JCIA set up a REACH Task Force Team in April 2007 and has since been actively conducting activities through this team. Recent activities of the team include providing consulting services to members who have questions and inquiries on REACH registration and raising questions to relevant European authorities through the Japanese Ministry of Economy, Trade and Industry

and through the APEC Chemical Dialogue. Moreover, the Association has been giving technical support to the REACH-IT system and providing members with relevant information while exchanging information with the JAMP* and mid-stream and downstream industries. It also conducts activities to support individual industries and small- to medium enterprises.

***JAMP: Japan Article Management Promotion Consortium**
A cross-industrial organization designed to build and promote a concrete system to appropriately manage information on chemical substances contained in parts and molded products and to smoothly disclose and communicate that information across the supply chain

Measures for the Entire Supply Chain

Since 2002, the JCIA has been building systems to meet stricter regulations on chemical substances contained in products and to communicate that information on chemical substances across the supply chain. Moreover, the Association has been striving to foster communication with multiple industry associations belonging to the supply chain and to conduct specific activities in close cooperation with these associations. For example, the JCIA cooperates

with the Japan Automobile Manufacturers Association (JAMA) and the Japan Auto Parts Industries Association (JAPIA) in their efforts to implement a system for the Global Automotive Declarable Substance List. The Association also participates in a domestic committee and working group on the formulation of international standards led by the electrical and electronics industry and cooperates with the industry regarding the matter.

Implementation of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

To meet the United Nation's recommendation that each member country adopt the GHS by 2008, countries have been implementing measures to introduce the GHS more proactively. Following the revision of the United Nation's GHS document in July 2007, the JCIA completed the revision of its GHS compliance guidelines for MSDS and labeling in October 2008.

In Japan, the GHS classification project and the preparation

of a classification manual are being studied. The JCIA set up a committee to prepare a draft for the inclusion of the GHS in the Japanese Industrial Standards (JIS). Subsequently the Association submitted the draft, and a revised version of the JIS was promulgated in October 2009.

In the future, the JCIA will proceed with the revision of the JIS for MSDS and labeling and review its guidelines in line with the revision.

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, such as leaks and other incidents during transportation. 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 Act and the High Pressure Gas Safety Act, transporters are required to carry official transportation documents. Considering the possibility of unpredictable 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, police officers and others involved. Because these important measures are printed on highly visible yellow paper, 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 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 90% out of 89 members answered "Yes."

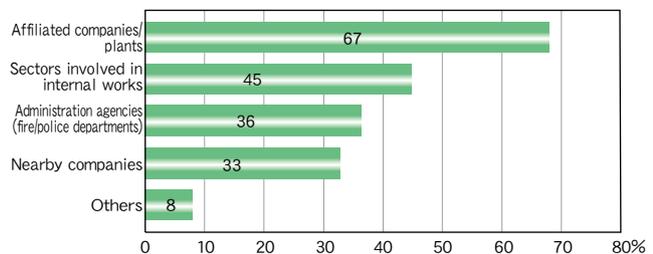
Implementing Container Yellow Cards (label type)

Container Yellow Cards were introduced in fiscal 2002, and 76% of members have introduced or started to introduce Container Yellow Cards. After the introduction of the GHS system, these labels are to be always used to provide important information for persons who have to handle emergency situations.

Measures for Emergencies

Ninety-two percent of member companies have prepared their own manuals for emergency situations and 94% have established their own around-the-clock contact networks. Also, 87% 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, 83% have implemented emergency drills with their support partners.

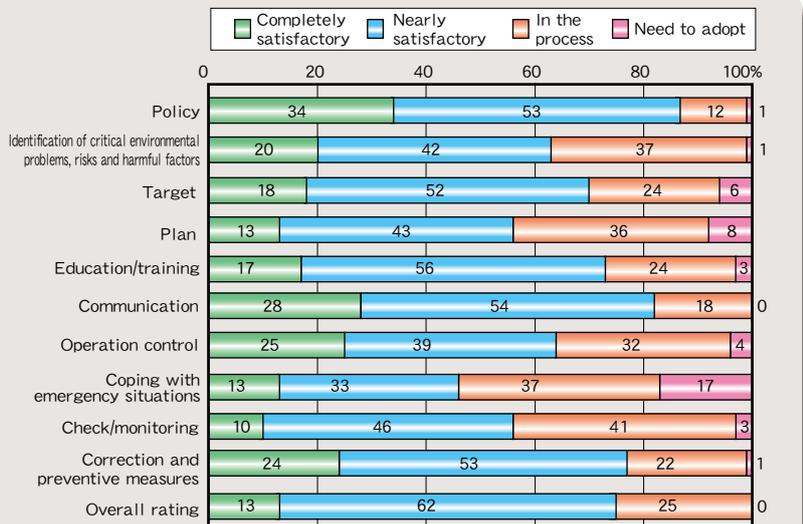
Sectors/Agencies that Member Companies Mutually Support in the Event of Accidents (multiple answers allowed)



Distribution Safety

Generally, the percentages of companies who answered "In the process" and "Need to adopt" continued to decrease.

The evaluation for "Coping with emergency situations" is generally low because the checklist requires dialogue with local residents, support with drills performed by suppliers, and setting and enhancing targets for carrying out drills, in addition to creating emergency response manuals and organizations.



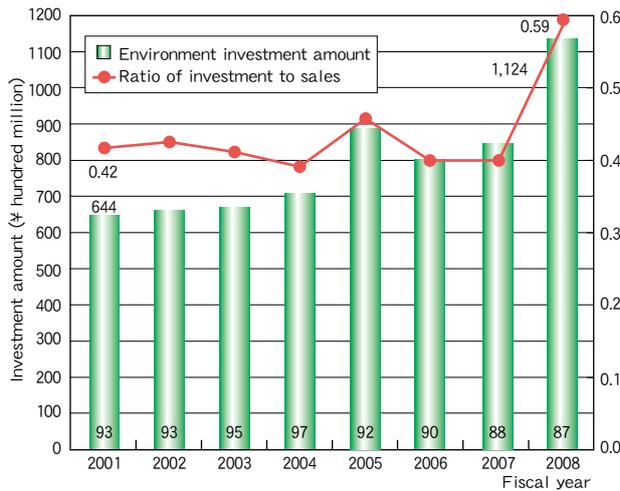
Investment in Environmental Protection and Safety

Trends in Investment in Environmental Protection

JRCC member companies recognize the importance of environmental protection and continue to invest in environmental measures. In fiscal 2008, the total investment in environmental measures came to 112.4 billion yen (a 33% increase from the previous fiscal year), due to investment in the construction of new environmental facilities and in the development of environmentally compatible products and

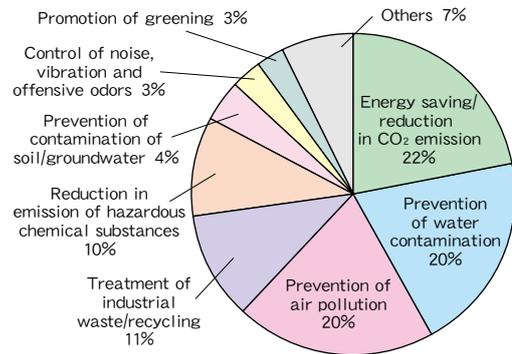
technologies. The ratio of investment to sales increased to 0.59%, up 50% from the previous fiscal year, and so both the investment amount and the percentage reached a record high. Member companies have been spending a total of more than 80 billion yen for environmental measures per year since fiscal 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 2008

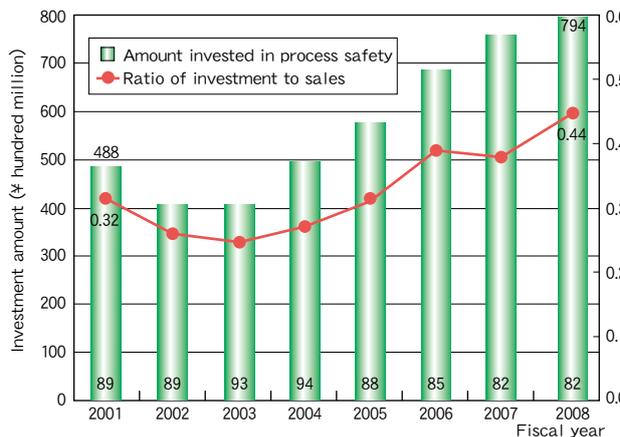


Trends in Investment in Process Safety and Disaster Prevention

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 2008, the total investment

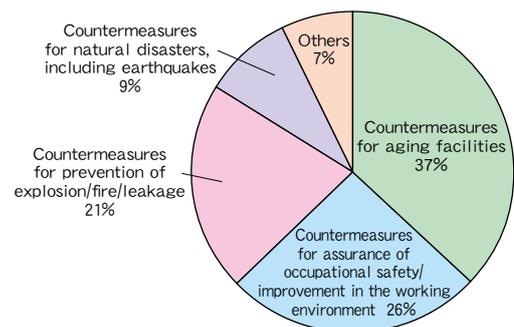
in measures for process safety and disaster prevention reached 79.4 billion yen (up 4% from the previous year). Moreover, the ratio of investment to sales also increased to 0.44% (up 13% from the previous year). Both the investment amount and the ratio thus reached a record high. This demonstrates the 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

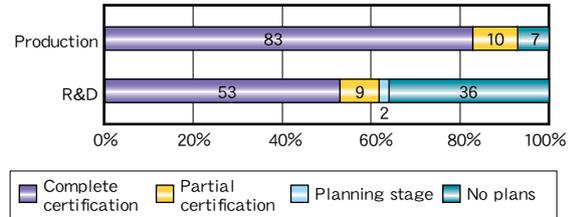
Responsible Care entails the implementation of the Plan, Do, Check, and Act cycle (the so-called PDCA cycle). As an implementation tool, an increasing number of organizations are introducing environmental management systems (EMSs), including those based on ISO 14001 and occupational safety and health 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, 83% 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 53% of 80 respondents have acquired some certification for their EMSs at all their R&D sites.

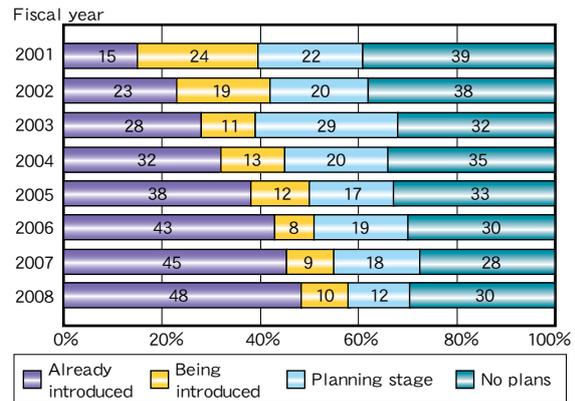
Status of EMS Certification



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, 58% 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

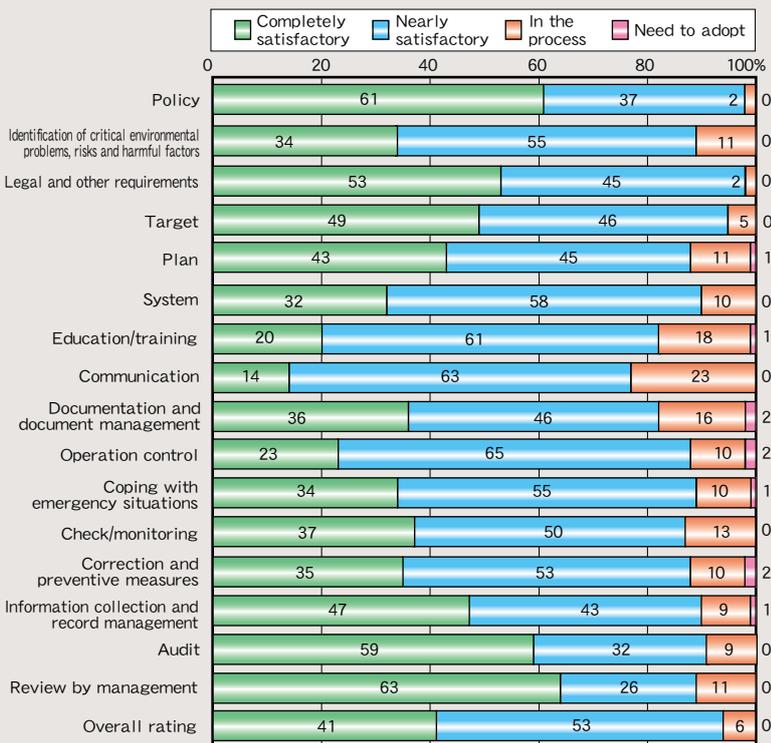


Members' Self-Assessment

Management System

The adoption of management systems, such as ISO 14001, ISO 9000s and OHSAS 18001 management systems, is advancing, and the percentage of members responding "Nearly satisfactory" or "Completely satisfactory" exceeds 80% 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, but the percentage of members who answered "Completely satisfactory" steadily increased even for these items, implying that the overall management level has been improved.



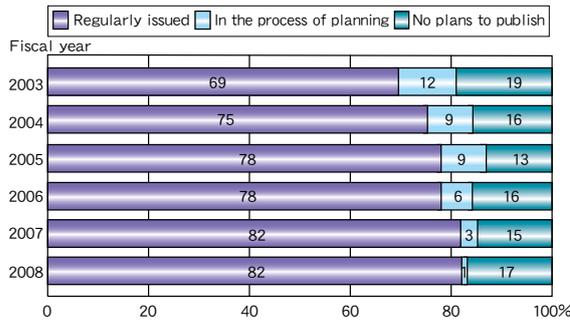
Member's Dialogue with the Society (Responsible Care Report)

Publication of Responsible Care Reports

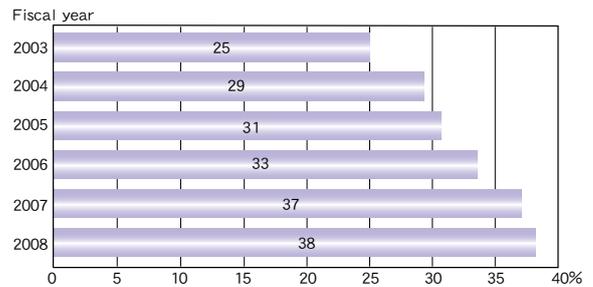
In fiscal 2008, as in fiscal 2007, a total of 74 member companies (82% of the respondents to the questionnaire survey) published Responsible Care reports. Also, the number of companies who publish reports on local sites has been steadily increasing year by year. In fiscal 2008,

34 companies, accounting for 38% of the respondents to the questionnaire, issued site reports. 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 in fiscal 2007, 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 dialogue with society). In particular, 97% of the reports provided data on energy conservation, carbon dioxide, waste and air

pollution in response to increased social concerns over global environmental problems. In addition, compared with fiscal 2007, the percentage of reports that referred to human rights and employment and to contributions to local communities and society in the section on social measures remarkably increased from 58% to 68% and from 76% to 87%, respectively.

Measures for Biodiversity Conservation

The Convention on Biological Diversity was adopted at the Earth Summit held in 1992 and in May 2009, the Japanese Ministry of the Environment announced its Guidelines for Private Sector Engagement in Biodiversity. Along with this trend, companies are increasingly expected to implement measures for biodiversity conservation.

Members who are implementing biodiversity conservation measures account for 18% and those planning or examining

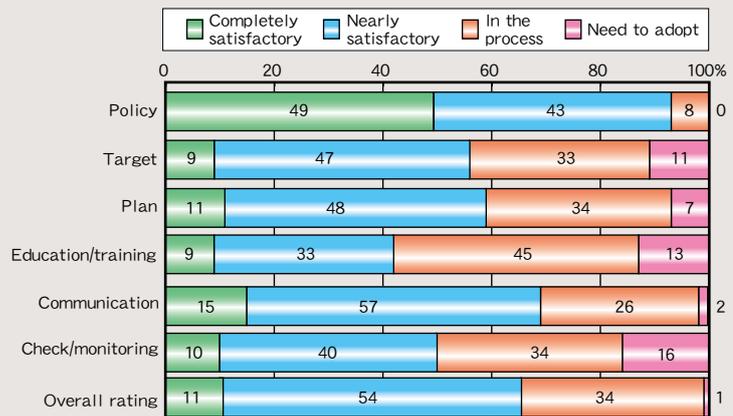
such measures account for 13%. In total, these members account for 31%, and this percentage will increase in the future.

Specific measures taken by members include the establishment of a biotope, voluntary forestation activities such as "corporate forest" activities, protection of endangered species, and donations to nature conservation organizations.

Members' Self-Assessment

Dialogue with the Society

The level improved slightly, but among the seven Codes of Responsible Care, member companies' self-ratings are still the lowest for Dialogue with the Society." Although the number of areas where dialogue meetings are held and their frequency are steadily increasing, it is still necessary to make improvements to meet the requirements on the checklist for "education/training," "check/monitoring," and other items.



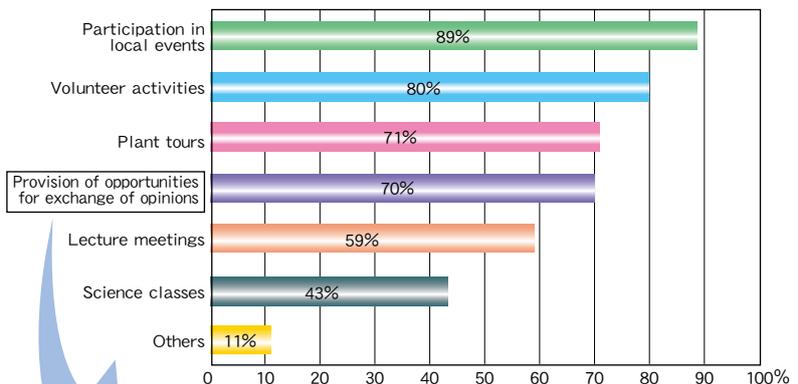
Member's Dialogue with the Society (Communication with the Community)

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 2008, 70% of member companies provided opportunities for exchanges of opinion to promote communication with local residents and had a total of 535 dialogue meetings with local residents in 134 areas.

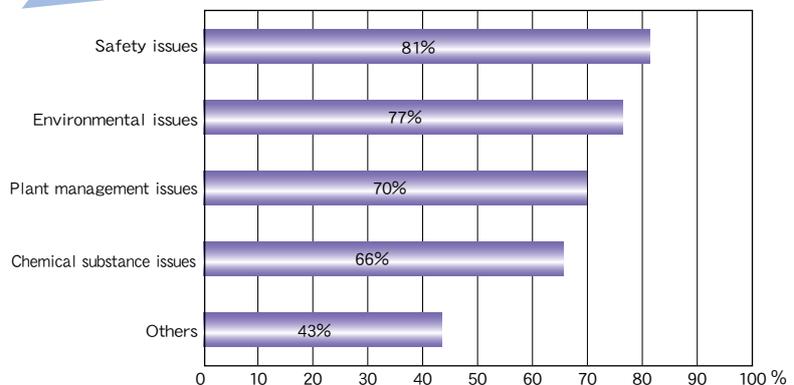
At these meetings, the participants discussed mainly the following issues which were closely related to their community: environmental issues; safety issues including countermeasures against occupational accidents and other disasters; plant management issues including addition of facilities and changes 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.

Moreover, 43% of member companies conduct educational activities, including the organization of science classes to stimulate interest in chemistry and science, in the hope of nurturing children who will be the next generation of leaders.

Means of Communication (multiple answers allowed)



Issues Discussed in Meetings for Exchange of Opinions (multiple answers allowed)



Facilities tour organized by the Oita Complex for a local group of women (held jointly with SunAllomer Ltd.)



Planting trees with local elementary school pupils in the Lion Forest in Yamanashi (Lion Corp.)



Scientific experiment class held for children (Kyowa Hakko Kirin Co., Ltd.)



Small dialogue meeting on RC (NOF 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 through its quarterly journal JRCC News and this Responsible Care Report as well as at briefings on the report's contents.

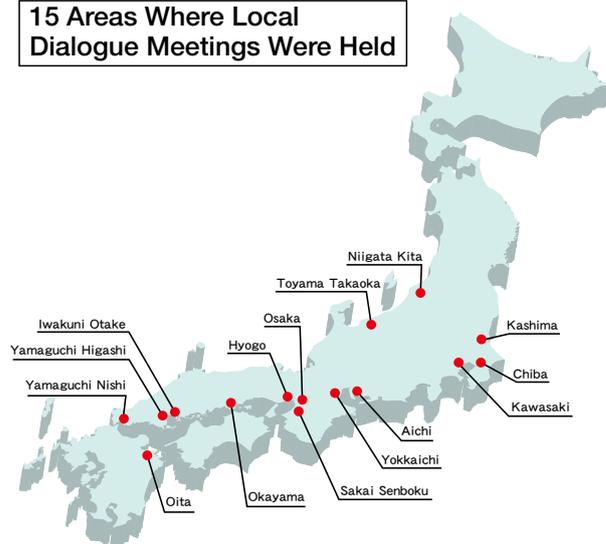
Dialogue with Local Communities

The JRCC has been holding dialogue meetings with local communities, the first of which was held in 1996, from the second year of the 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 member companies and a range of their stakeholders such as community residents, local government officials, school teachers, and citizen organizations. These meetings have played an important role in promoting mutual understanding.

Member companies in each of the areas deem it important to continue these dialogues. Accordingly, they devise measures to encourage more local residents to participate in the meetings. For example, they include encouraging local residents to show interest in the questionnaires on the themes for the meetings, organizing factory tours as part of the meetings, and increasing the time for direct dialogue through panel discussions and Q&A sessions. Moreover, members are committed to giving easy-to-understand explanations to their stakeholders at the meetings that avoid the use of technical terms as far as possible and making more use of photos and diagrams as reference materials. At the meetings, participants began to raise hard-to-answer questions and make difficult requests because they expected more improvement to be made on specific matters, and it was apparent that mutual understanding has deepened as hoped.

In fiscal 2008, the JRCC held local dialogue meetings in eight areas (Yamaguchi Higashi, Okayama, Hyogo, Osaka, Aichi, Chiba, Kashima and Niigata Kita), 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.

15 Areas Where Local Dialogue Meetings Were Held



Also, with the aim of supporting member companies who participate in these local dialogue meetings, the JRCC has been holding annual risk communication training seminars for the last five years to enable participating members to improve their communication skills so that they can give intelligible explanations at local dialogue meetings. Furthermore, the Council holds a meeting of representatives of the local dialogue meetings twice a year, at which participants share the problems identified in each area and relevant improvement methods. These biannual meetings are expected to help improve the quality of the dialogues.

In fiscal 2008, the JRCC established a system to support the individual facilities that hold dialogue meetings in areas other than the 15 areas. In the fiscal year, a total of three facilities used this system.



Local dialogue meeting held in the Kashima area



Local dialogue meeting held in the Chiba area

Dialogue with Citizens

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

On November 19, 2008, the Council held a dialogue meeting with consumers in Osaka on information communication on chemical substances. A total of six consumers from three consumer organizations participated in this meeting, which was intended to show participants what kind of information companies were trying to communicate to consumers by their basic product stewardship activities, and in what way.

The Council held a dialogue meeting on May 20, 2008 in Tokyo with the participation of four consumers from consumer organizations and another four general consumers invited through a magazine. Participants first had a tour of the plastic waste recycling plant within Showa Denko's Kawasaki Plant and then discussed around a theme of the recovery and recycling of waste. Subsequently on January 21, 2009, the Council held a dialogue meeting on climate change inviting 15 consumers from eight consumer organizations.

On March 15, 2009, the JRCC held a dialogue meeting with teachers of science at junior high schools in Tokyo. At this second meeting, following the one held in fiscal 2007, participants discussed climate change and actively raised questions in the Q&A session. This meeting seems to have established itself as an annual event.



Plastic waste recycling plant at the Kawasaki Plant of Showa Denko K.K.

Report Presentation

The JRCC has been holding meetings to present the contents of its Responsible Care Report in Tokyo and Osaka every year. 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 9 and in Osaka on December 17, 2008. These meetings were attended by 130 and 95 people respectively, including those from government agencies, consumer groups, labor unions, universities and mass media companies.

At each of the meetings, after the JRCC outlined its Responsible Care Report, a special lecture was given on the theme of creating a low-carbon society, specifically on carbon footprints and life cycle assessment, by Mr. Tahara of the National Institute of Advanced Industrial Science and Technology in Tokyo and by Associate Professor Itsubo of the Musashi Institute of Technology (present Tokyo City University) in Osaka. Also, five member companies on the Council (Showa Denko K.K., Toray Industries, Inc., Lion Corp., Hitachi Chemical Co., Ltd. and Shimonoseki Mitsui Chemicals, Inc.) introduced case studies on the measures they are implementing for energy conservation, and

reductions in CO₂ emissions and waste.

According to the results of the questionnaire targeting participants at the meetings, as many as 88% of respondents answered that their understanding of Responsible Care "greatly improved" or "improved." As for the theme of the meetings (creating a low-carbon society), which is one of the topics that are attracting the attention of society now, nearly all the respondents answered that it was of interest to them.



Report presentation in Osaka

International Activities

Capacity Building (Dissemination of Responsible Care to ASEAN Countries)

The JRCC has been implementing a capacity-building program (for human resources development and skills upgrading in developing countries) for ASEAN countries since 2001. As part of this program, the Council has been fostering Responsible Care in the countries within the framework that the Japan External Trade Organization (JETRO) has established to support developing countries in building the necessary systems.

The Council has been formulating multi-year plans for the targeted countries and giving support to them by dispatching experts to the countries for two weeks once or twice a year (refer to the following table). The specific details of the support given to each of the countries are determined according to their situations.

For three years since fiscal 2006 to 2008, the JRCC supported Indonesia in building a verification system for Responsible Care and supported Myanmar in establishing a Responsible Care organization.

Fiscal year Supported country	2001	2002	2003	2004	2005	2006	2007	2008
Thailand	Basic education	Building an MS						
The Philippines		Basic education	Building an MS		Establishing a verification system			
Vietnam					Basic education		Building an MS	
Indonesia						Establishing a verification system		
Myanmar						Support for the establishment of a Responsible Care organization		

MS: Management system

Supporting Indonesia in Building a Verification System

In Indonesia, performance examinations based on the Codes of Responsible Care had already been conducted and about 10 verifiers were already appointed. As the next step, the JRCC endeavored to introduce to the country

"how-to" examinations conducted in Japan to examine how the activities are conducted, so that it can eventually build a verification system unique to Indonesia.

In fiscal 2008, the Council provided training to 11 candidate verifiers and one trainer belonging to the KN-RCI (the RC association in Indonesia). The trainer was very eager to learn and evaluated the "how-to" examinations conducted in Japan very highly.



APRCC 2009

The Asia Pacific Responsible Care Conference (APRCC) is an international conference held biennially by the Asia Pacific Responsible Care Organization (APRO) composed of 12 countries and regions in the Asia-Pacific region.* APRO gives support to Responsible Care activities in the Asia-Pacific region. Japan is appointed as the chair of the organization for two years from 2008, and hosted the 11th APRCC held in Tokyo in October 2009.

* Japan, South Korea, Taiwan, China (AICM), Thailand, Malaysia, Singapore, the Philippines, Indonesia, India, New Zealand and Australia

Following the APRO conference held in the evening of October 18, the 11th APRCC was held from October 19 to 20 with the participation of 47 people from outside Japan and 174 people from inside the country.

After the opening speech and keynote speeches, including one given by Director Takada of the Chemicals Division of the Manufacturing Industries Bureau at the Japanese Ministry of Economy, Trade and Industry, the following sessions were held in which the activities conducted and problems faced by participating countries were presented by the delegates to the conference. This was followed by a lively Q&A session.

- ① Communication with the Public
- ② Process Safety
- ③ Occupational Safety and Health
- ④ Responsible Care & RC Management
- ⑤ Greenhouse Gas Reduction
- ⑥ Chemicals and Product Safety

Subsequently on October 21, an ICCA workshop on product stewardship was also held at the venue.



Speech by JRCC Chairman and Chairman of Sumitomo Chemical Hiromasa Yonekura



Conference venue



Q&A session



Presenters

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. This award is intended to increase the motivation of those engaged in Responsible Care activities and to further encourage these activities. The following table shows the award winners for fiscal 2008, which is the third year of the award.

Award Winner	Reason for Commendation
Yoichi Uenida, Teruyuki Shikiishi and Kazumi Matsuda Nobeoka Branch, Asahi Kasei Corp.	Continuous implementation of multiple communication activities and local contribution activities in the major production area (Nobeoka City, Miyazaki Prefecture)
Susumu Miura, Hitoshi Oohira and Tetsuo Nagashima Corporate R&D Center, Showa Denko K.K.	Provision of public access to the R&D Center to improve communication with local communities and to present the activities that the Center is conducting to reduce its environmental impact with a view to increasing local environmental awareness
Akira Murata, Masato Nii and Toshitaka Yamaguchi Osaka Works, Sumitomo Chemical Co., Ltd.	Promoting communication on environmental protection between students and trainees from overseas countries

The commendation ceremony was held as part of the interaction meeting hosted by the JRCC for its members in Osaka on July 16, 2009, where the members looked back on the first half of fiscal 2009. Five 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 on the long-term activities were all very useful for other companies.



Responsible Care Award winners

Interaction among Member Companies

The Member Relations WG holds interactive and study meetings every year to promote information exchange and the upgrading of skills among members.

The WG held interactive meetings in Osaka on July 2, 2008, and in Tokyo on February 12, 2009, to review the first and second halves of the year, respectively. At each of these meetings, 60 participants exchanged opinions in small groups of about 10 people for in-depth discussions, and they actively debated the theme of their choice, including "global warming problems," "management of chemical substances," "occupational safety," "process safety and disaster prevention," "compliance" and "dialogue with society." 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 study meetings on product stewardship (PS) on November 18, 2008 and January 26, 2009. At these meetings, the background to the development of PS and the ICCA's PS guidelines were explained and actual examples of PS activity were introduced.

On September 30, 2008, the WG held a facilities tour,

on which participants visited the Tokyo Super Eco Town, where a lot of recycling facilities are located. Specifically, they visited the PCB waste treatment facilities of the Japan Environmental Safety Corporation in Tokyo and the thermal recycling facilities for waste plastics and infectious medical waste of Tokyo Waterfront Recycle Power Co., Ltd. Both companies gave participants detailed explanations on their facilities, followed by lots of questions to the companies. The facilities tour was evaluated highly by the participants.



Responsible Care Verification

Responsible Care Verification for Fiscal 2008 (April 2008 to March 2009)

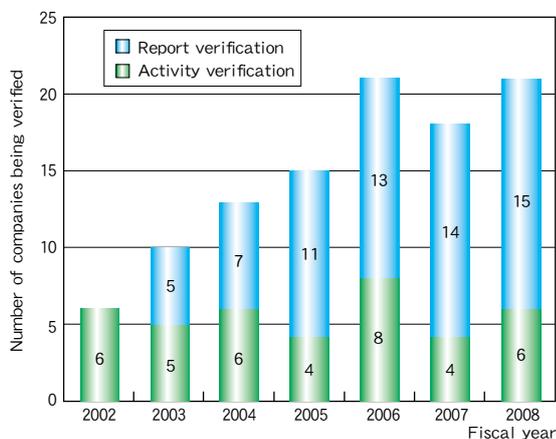
Activity verification (six companies): Nihon Nohyaku Co., Ltd., Sumitomo Seika Chemicals Co., Ltd., Kureha Corp., Shin-Etsu Chemical Co., Ltd., Hokko Chemical Industry Co., Ltd. and NOF Corp.

Report verification (15 companies): Kao Corp., JSR Corp., Sanyo Chemical Industries, Ltd., Daicel Chemical Industries, Ltd., Asahi Kasei Corp., Kaneka Corp., Nippon Shokubai Co., Ltd., Showa Denko K.K., Toagosei Co., Ltd., Ube Industries, Ltd., ZEON Corp., Shin-Etsu Chemical Co., Ltd., DIC Corp., Kyowa Hakko Kirin Co., Ltd. and Denki Kagaku Kogyo K.K.

The number of JRCC member companies undergoing RC verification has stabilized over the years, and in fiscal 2008, RC verification was conducted for a seventh time. Specifically, since the start of verification in fiscal 2002, the number of members undergoing verification totals 104 companies (with 39 companies undergoing activity verification and 65 undergoing report verification), and the number has remained at around 20 for the last two to three years.

Activity verification focuses on occupational health and

safety from viewpoints that are different from those used in the verification activities for ISO certification. In this verification, the following important evaluation items are examined: the series of processes that start with a search for the fundamental causes of occupational accidents and managers' awareness of occupational health and safety. Companies can review their occupational health and safety activities through RC verification, which will help them to provide employees with a safer and more comfortable workplace.



Responsible Care Report 2009

This report outlines the individual activities of JRCC member companies and also describes the activities conducted by the JRCC as a whole. The JRCC published its first Responsible Care Report in 1996 and this is the 14th report.

We have created this report based on the fiscal 2008 performance data submitted by members, and have also referred to the collective data provided by the JCIA for some items.

This report contains several difficult topics, and in order to make it more concrete and intelligible, we have tried to reduce the use of technical terms and inserted more diagrams and photos. We value any comments that you may have on this report.

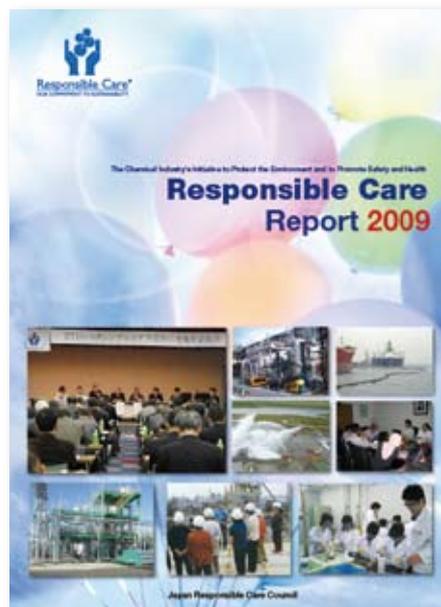
Contact for this report:

Secretariat of the Japan Responsible Care Council (JRCC)

Tel.: 81-3-3297-2578

Fax: 81-3-3297-2615

http://www.nikkakyo.org/organizations/jrcc/top_e.html



Our Expectations for Responsible Care



Takayo Tanaka
Shodanren (National Liaison
Committee of Consumers
Organizations)

At the United Nations Summit on Climate Change held in September 2009, Prime Minister Hatoyama announced that Japan would work to curtail its greenhouse gas emissions by 25% from the fiscal 1990 levels by 2020. There are both pros and cons to this medium-term reduction target in Japanese industrial circle. The target has also made Japanese consumers recognize that climate change, an environmental problem that does not seem to have a direct impact on where we live, might in fact actually have an impact on our own household budgets.

To achieve the reduction target, the Japanese industrial community is now required to make even more efforts to reduce their greenhouse gases, while consumers are expected to change our lifestyles to make them more environmentally friendly. Under these circumstances, it is no exaggeration to say that the industrial and consumer sectors must cooperate in solving the global environmental problem by taking more interest in mutual activities arranged between partners. To this end, communication between the parties needs to be improved.

Since the target has been announced, people are paying more attention to the activities of the industrial community and it is now time for Responsible Care, which publicizes corporate results, to play an even more important role in fostering dialogue and communications among companies and between consumers and companies.

The JRCC has been working on holding local dialogue meetings with members of the public, and to encourage a wider range of consumers and other people to participate in the meetings, the Council needs to develop a range of different ways to communicate in addition to its website. It is also important that Council makes its website easier to access interesting data and easier for people to retrieve the information they want. This will help to educate consumers on the meaning of Responsible Care.

The JRCC also needs to be proactive in inviting more companies to join the Council.

The Responsible Care dialogue meetings provide companies and consumers with important opportunities for mutual exchange. I hope that the JRCC continues to foster dialogue meetings and gives them a more solid foundation.



Yoshio Ono
Honorary Professor,
Tokyo Institute of Technology

I have a high opinion of the constant range of activities that the JRCC holds. I hope that the Council continues to foster communication with local communities and consumers, increases the safety of chemical products and spreads the concept of Responsible Care.

I think that articles in the JRCC News on the individual activities of member companies account for an excessively large part of the journal. It might be better to include more articles that explain the efforts made by the whole chemical industry for Responsible Care, including articles on resources and energy that give a comprehensive analysis of the current global situation. For example, the journal could include articles that explain the process conversion achieved through the development of new catalysts, the importance of developing new materials, and cases where Japanese environmental technologies have been transferred overseas. If the journal is restructured from one that simply reports the activities of member companies to one that informs its readers about Responsible Care activities, the Council would be able to highlight more the concept of Responsible Care and the chemical industry's contribution to society at large. I believe that the journal could provide an additional way for the Council to publicize its Responsible Care activities.

Prime Minister Hatoyama announced the ambitious goal of reducing Japan's CO₂ emissions by 25%, and this was well received by the international community. However, I feel that he should have formulated specific plans to achieve this target before announcing it to the world. The Prime Minister is said to be something of an idealist, and this is his way of doing things. Regardless of whether a 25% reduction is really possible or not, people in Japan are looking to see how industrial circles respond to this target. Since the formulation of the Kyoto Protocol, the chemical industry has been making strenuous efforts for energy conservation and process conversion, but has not yet succeeded in reducing their own emissions, because of the increase in their corporate activities in the relatively good business environment that currently surrounds the chemical industry. Looking forward from here, however, they cannot justify their activities merely by saying "Our energy intensity has been steadily decreasing." In other words, they can no longer stick to the conventional energy conservation approach if they want to encourage growth in their industry and reduce CO₂ emissions. To attain these dual goals, they need to cooperate beyond corporate and industrial boundaries. And what is the best concept (for reform) to achieve this? For the future of the world, I hope that the chemical industry will set new numerical targets and work processes as soon as possible to achieve these targets.

The JRCC Members List

100 companies as of October 2009

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.
DNP Fine Chemicals Co., Ltd.
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 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 Nippon Synthetic Chemical Industry Co., Ltd.
Toagosei Co., Ltd.
Tokuyama Corp.
Tonen Chemical Corp.
Toray Industries, Inc.
TOSOH Corporation
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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