



Responsible Care®
OUR COMMITMENT TO SUSTAINABILITY

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

Responsible Care

Report **2011**



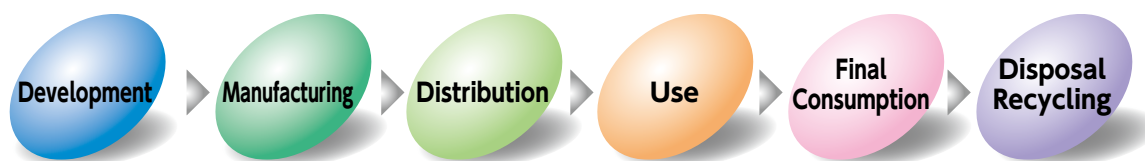
Do You Know about Responsible Care?

What Is Responsible Care?

Chemical substances are 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 comprehensively protect health, safety and the environment, 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 its performance in these areas. These initiatives are called "Responsible Care."



Responsible Care was initiated in Canada in 1985, and the establishment of the International Council of Chemical Associations (ICCA) took place in 1989. A total of 55 countries and regions around the world now implement Responsible Care (as of October 2011). 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. In May 2010, the JRCC was reorganized into the JCIA's Responsible Care (RC) Committee. As of December 2011, the RC Committee comprises 87 corporate members.

The Responsible Care Logo

The logo, depicting a pair of hands cradling a model of a molecule, expresses the key message of 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 and by member companies of its RC Committee (hereinafter simply referred to as "Members" in this report).



Responsible Care Implementation Items

The RC Committee and Members take collective action in five principal areas:

- Environmental protection (protecting nature and health globally)
- Process safety and disaster prevention (working to prevent disasters at industrial facilities and implementing measures against natural disasters)
- Occupational health and safety (protecting the health and safety of workers)
- Chemicals and product safety (clearly identifying the properties and methods of handling chemical products and protecting health, safety and the environment of all persons who handle these products, including customers)
- Distribution safety (preventing accidents and disasters at the distribution stage)

The RC Committee and Members publicly report the results of these efforts to promote the following:

- Dialogue with society

These efforts are spearheaded primarily by the Steering Committee and four working groups (Report WG, Dialogue WG, Member Relations WG and Progress Management WG*) established under the RC Committee.

*The Progress Management WG is an organization under the GPS/JIPS Promotion Subcommittee, which the RC Committee jointly manages with the Chemicals Management Committee.

For details, refer to the JCIA website: <http://www.nikkakyo.org/>

Table of Contents

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

Responsible Care Report 2011

Do You Know about Responsible Care?	2
Message from the Chairman	4
The JCIA Guiding Principles for Improvement of Environmental, Health and Safety Conditions	4
Topics for Responsible Care Report 2011	5
Management of the RC Committee	6
The RC Committee Program of Activities and Progress Status	7
● Environmental Protection	8
Energy Conservation and Anti-Global Warming Measures /	
Industrial Waste Reduction / Chemicals Emissions Reduction	
● Process Safety and Disaster Prevention	16
● Occupational Health and Safety	18
Measures to Prevent Occupational Accidents / Safety Awards and Symposiums	
● Distribution Safety	20
● Investment in Environmental Protection and Safety	21
● Members' Management System	22
● Chemicals and Product Safety	23
● Members' Dialogue with Society	28
● RC Committee Activities	30
Dialogue with Society	
● Interaction among Members	32
● International Activities	33
● Responsible Care Verification	33
Our Expectations for Responsible Care	34
The RC Committee Members	35

Message from the Chairman



Kenji Fujiyoshi
Chairman of the
Japan Chemical Industry Association

It has already been 10 months since the Great East Japan Earthquake struck on March 11, 2011, and now the afflicted areas are exposed to the winter cold. To these areas, members of the JCIA have been making monetary and in-kind donations while also providing a range of additional support through volunteer and other activities. I wish for the earliest possible recovery of the affected areas.

We continue to face a severe business situation due to stagnant production and a tight power supply caused by the earthquake, as well as to the rapid rise of the yen. Nonetheless, the Japanese chemical industry has been implementing Responsible Care (RC) activities proactively and has consistently achieved excellent results, as detailed below.

Regarding chemical substance management, the JCIA is fostering the Japan Initiative of Product Stewardship (JIPS) on a full scale as its Global Product Strategy (GPS) domestic activity. Additionally, we have produced great results with the Long-range Research Initiative (LRI), an activity launched more than 10 years ago for the purpose of researching the adverse effects of chemical substances on human health and the environment. Some

of these results have been adopted internationally. For example, the risk assessment model developed from a research project commissioned under the LRI is now used by the United States Environmental Protection Agency (EPA).

Regarding problems associated with global warming, the JCIA published a report entitled "Innovations for Greenhouse Gas Reductions: Life Cycle Analysis of Chemical Products in Japan" to demonstrate the contributions of chemical products to the reduction of CO₂ emissions by showing specific examples related to renewable energy, energy conservation and weight reduction.

Moreover, to enhance the technological ability of the chemical industry, the Association launched a program to develop the chemical industry's human resources and held its first symposium in September 2011 to help graduate schools improve curricula for their doctoral students. We are additionally publicizing chemistry-related topics and developing more human resources, who will become the next generation of chemists. In 2011, the International Year of Chemistry, we held the annual Children's Chemical Experiment Show on a wider scale and also participated in the Eco-Products 2011 exhibition.

On the international front, we participated in the Asia Pacific Responsible Care Conference (APRCC) held in Indonesia, and gave seminars in Asian countries on supporting the expansion and improvement of RC activities in the Asia-Pacific region.

The chemical industry can play an essential role in helping the world solve various problems such as food and water shortages, and global warming. The industry can also function as a "mother industry" to help to create new industries and societies. RC activities provide the industry with the foundation to address a range of issues, and indeed support its very existence. It is my great hope that this report will help readers deepen their understanding of the chemical industry's efforts and safeguards and I would ask for your continued support in our activities.

January 2012

A handwritten signature in black ink that reads "K. Fujiyoshi". The signature is written in a cursive, flowing style.

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

1. To continuously improve the environmental, health and safety performance over the entire life cycle of our products, from research and development to waste disposal, and to openly report our performance to society
2. To manage our business activities so as to avoid harming people and the environment, as well as to guarantee that our products pose no threat to the environment, health and safety, during their transportation, storage and disposal
3. To promote the conservation of resources and energy, to minimize waste emissions 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 providing relevant information disclosure and participating in dialogue to promote proper understanding of the issues
5. To ensure 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 and meet voluntary initiatives for improving the environment, health and safety
7. To actively support the national and global Responsible Care governance process in order to ensure accountability in the 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 promotion of the environment, health and safety

Topics for Responsible Care Report 2011

• Progress of the medium-term plan (fiscal 2009 to 2011)

The plan has been steadily implemented for each of the priority issues specified in the medium-term plan formulated in fiscal 2008. →P7

• Reduction in 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.” The intensity further decreased from 85% in fiscal 2009 to 83% in fiscal 2010, which was the midpoint of the target period. →P8

• Target for the amount of industrial waste sent to final disposal sites not achieved

In fiscal 2010, JCIA members achieved an 85% reduction compared to the fiscal 1990 level in the amount of industrial waste sent to final disposal sites, but were unable to achieve the fiscal 2010 target (88% reduction). The members are continuing to implement reduction measures to achieve the newly-set target. →P10

• Increase in the emissions of chemical substances specified by the PRTR Act

The number of substances designated by the PRTR Act increased from 354 to 462 due to revision of the ordinance, and in fiscal 2010, emissions of the designated substances were reduced by 64% compared to the baseline year (fiscal 2000), and compared to a 76% reduction in fiscal 2009. →P12

• Measures implemented after the mega-earthquake

The Great East Japan Earthquake did not seriously damage any Members' factories, thanks in part to anti-seismic measures they had previously implemented. The earthquake did, however, reveal a number of problems regarding such measures. The Members will therefore review and enhance these measures systematically. →P17

• Number of occupational accidents remains constant

The frequency rates of occupational accidents for Members and their affiliated companies have been lower than those of the entire manufacturing and chemical industries. The average severity rate of Members' affiliated companies has remained at the same level since its substantial improvement in fiscal 2009. →P18

• Increased investment in environmental protection, safety, and process safety and disaster prevention

Although the amounts of investments in environmental protection, safety, and process safety and disaster prevention decreased in fiscal 2009 due to severe economic conditions, all saw increases in fiscal 2010, with investments in safety and process safety and disaster prevention in particular proactively pursued. →P21

• Risk assessment of chemical substances and provision of more information concerning their level of hazard and safety

In order to minimize the adverse effects of chemical substances on human health and the environment by 2020, measures to manage chemical substances based on their risk assessment and across the supply chain have been pursued on a global scale. →P24

• Expansion of biodiversity conservation measures

In fiscal 2010, the number of Members who implemented biodiversity conservation measures and who were planning or examining such measures increased from 29% to 35% and from 15% to 19% year on year, respectively. →P28

• Continuous dialogue with society

The RC Committee has been actively holding dialogue meetings with society, including with local communities, consumers, students and teachers. →P30

• Responsible Care commendation program

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

• Responsible Care verification

In fiscal 2010, a total of 14 companies undertook Responsible Care verification. →P33

• Expert opinions

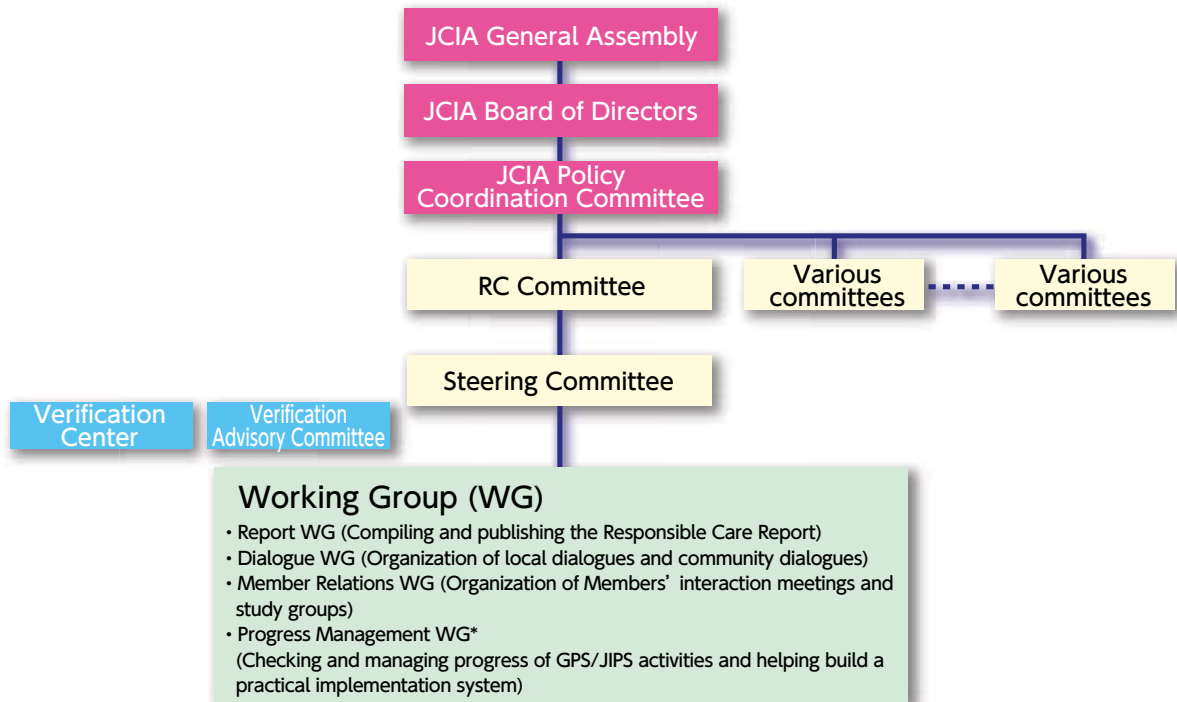
Ms. Kaori Yamane, President of the Housewives' Association (Shufuren) and Mr. Nobuyuki Kawashima, Executive Director of the Chemical Society of Japan commented on our Responsible Care activities. →P34

Management of the RC Committee

In May 2010, the Japan Responsible Care Council (JRCC), which was established as an independent organization by the JCIA in 1995, was reorganized into the Association's Responsible Care (RC) Committee as the first step toward the full integration of the JRCC with the JCIA in 2012. During the transition period, the name "JRCC" will continue to be used alongside the "RC Committee."

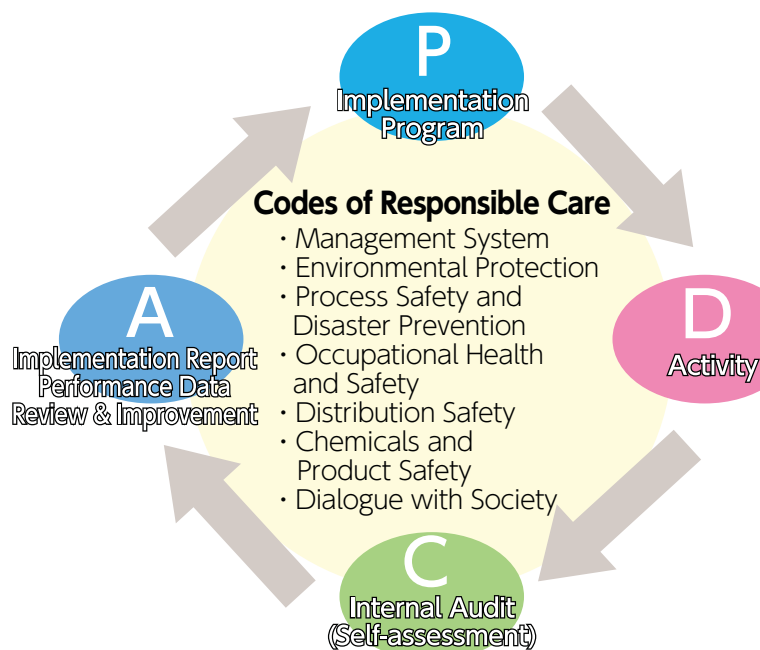
At present, Responsible Care activities are promoted mainly by the Steering Committee and the four working groups (WGs) established under the RC Committee, which also establishes ad-hoc task forces as necessary.

Organizational Chart of the RC Committee



* The Progress Management WG is an organization under the GPS/JIPS Promotion Subcommittee, which the RC Committee jointly manages with the Chemicals Management Committee.

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 work to implement the PDCA cycle themselves.

Members prepare their implementation program (Plan), perform their activities (Do), conduct self-assessments with an internal audit (Check), prepare the Implementation Report and Performance Data to be submitted to the RC Committee, 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. 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:	Somewhat satisfactory
Less than 2.5:	Not satisfactory

The RC Committee Program of Activities and Progress Status

Based on the policies described in the medium-term plan (for fiscal 2009 to 2011) formulated in fiscal 2008, the RC Committee has been conducting activities focusing on the following key issues.

The RC Committee's Policies

Promote activities in line with the policies of the Responsible Care Leadership Group (RCLG) of the International Council of Chemical Associations (ICCA)

Key Issues from the Medium-Term Plan

- ① Further enhancement and promotion of product stewardship
- ② Promotion of Responsible Care activities in partnership with the RCLG
- ③ Fulfillment of accountability by improving verification activities
- ④ Promotion of continuous improvement and dissemination of Responsible Care activities
- ⑤ Further recognition of Responsible Care activities by society

Fiscal 2010 Program of Activities/Progress Status and Fiscal 2011 Implementation Plan

	Fiscal 2010 Program of Activities	Fiscal 2010 Progress Status	Fiscal 2011 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 73 Members 	<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 • Skillful selection of the themes for dialogue meetings with citizens, and the organization of continuing dialogue meetings with teachers • Making the individual dialogues support system widely known to Members and further improving the system • Continuous provision of risk communication training 	<ul style="list-style-type: none"> • Held dialogue meetings with local communities in six areas • Held dialogue meetings with consumers in Tokyo and Osaka • Held dialogue meetings with junior high school science teachers • Supported two companies under the individual dialogues support 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 examination of RC-related teaching materials at 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 member registration as a group 	<ul style="list-style-type: none"> • Number of companies that registered as a group: 168 New registrations: 19 companies Cancelled registrations: 5 companies 	<ul style="list-style-type: none"> • Conducting activities for the complete integration of the JRCC and the JCIA
International Activities	<ul style="list-style-type: none"> • Fulfillment of the role of Chair of the Asia Pacific Responsible Care Organization (APRO) • Participation in RCLG's annual meeting in Dubai • Support for Asia 	<ul style="list-style-type: none"> • Fulfilled the role of Chair of the Asia Pacific Responsible Care Organization (APRO) • Participated in RCLG's annual meeting in Dubai • Provided support to Myanmar in RC 	<ul style="list-style-type: none"> • Fulfillment of the role of Chair of the APRO Supporting Indonesia in hosting the APRCC in Bali • Participation in RCLG's annual meeting in Bali
Chemicals and Product Safety	<ul style="list-style-type: none"> • Further enhancement and promotion of PS Production of a Japanese version of the PS guidance 	<ul style="list-style-type: none"> • Published a Japanese version of the PS guidance • Held PS/GPS workshops under the ICCA in Thailand and Taiwan 	<ul style="list-style-type: none"> • Further enhancement and promotion of PS Checking and managing progress of GPS/JIPS activities and supporting the creation of a practical implementation system
Support for Members' Responsible Care Activities	<ul style="list-style-type: none"> • Organizing interaction meetings and study meetings • Implementing the Responsible Care commendation program 	<ul style="list-style-type: none"> • Held interaction meetings for Members in Fukuoka as well as in Osaka and Tokyo, and also held a study meeting • Awarded a fifth commendation under the program 	<ul style="list-style-type: none"> • Organizing interaction meetings and study meetings • Implementing the Responsible Care commendation program
Responsible Care Verification	<ul style="list-style-type: none"> • Employing more verifiers • Improving the skills of verifiers 	<ul style="list-style-type: none"> • Conducted verification in 14 companies (an increase of two compared to the preceding year) • Held a total of three training sessions for verifiers • Conducted open recruitment of verifiers 	<ul style="list-style-type: none"> • Employing more verifiers • Improving the skills of verifiers

Meeting of the Board of Advisers

The 13th meeting of the Board of Advisers, chaired by Hiroshi Komiyama, was held on February 2, 2011. At the meeting, participants offered their opinions and comments on such issues as the promotion of RC activities, JIPS activities, and anti-global warming measures from an outside viewpoint.

Environmental Protection (Energy Conservation)

In fiscal 2010, which was the third year and midpoint of the first commitment period for the Kyoto Protocol (from fiscal 2008 to 2012), the Japanese chemical industry made further efforts to conserve energy and prevent global warming based on the Nippon Keidanren Voluntary Action Plan on the Environment. This resulted in a further decrease in the industry's energy intensity from the fiscal 2009 level, and a recovery trend for the production index. Moreover, the chemical industry achieved its lowest ever CO₂ emission levels of greenhouse gases. Thus, efforts made by chemical companies to conserve energy and prevent global warming are clearly bearing fruit. The industry will further strive to achieve its environmental targets through the sharing of information concerning improvement measures.

The JCIA has been publicizing the chemical industry's contributions to anti-global warming measures and the importance of related chemical technologies in joint proposals made with other Japanese industrial associations, including the proposal concerning the cabinet's decision on the basic draft law for anti-global warming measures (made in October 2010), the initial proposal on COP16 and related issues (made in November, 2010) and the urgent proposal on COP16 (made in December, 2010). The JCIA will continue to make proposals on the government's policies as necessary, to ensure that essential anti-global warming measures will be implemented in Japan.

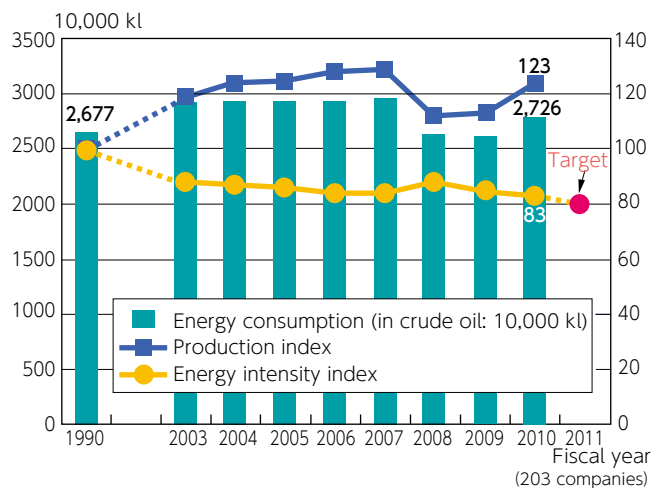
Energy Conservation Targets and Performance

In fiscal 2007, the JCIA set a higher target in its voluntary environmental action plan and has since been working to reduce the average energy intensity for the period from fiscal 2008 to 2012 to 80% of the fiscal 1990 level.

In fiscal 2008 (the first year of the plan), the energy intensity index stood at 88, mainly attributable to influence by the economic downturn, but decreased to 85 in fiscal 2009. In fiscal 2010, the production index increased by eight points, while the energy intensity index decreased two points from the previous fiscal year to 83.

By sharing more information on improvement measures, making more investments in energy-efficient equipment and fostering the development of new technologies, JCIA members will achieve their energy conservation targets while at the same time responding to socioeconomic changes, including those caused by the March 2011 mega-earthquake.

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

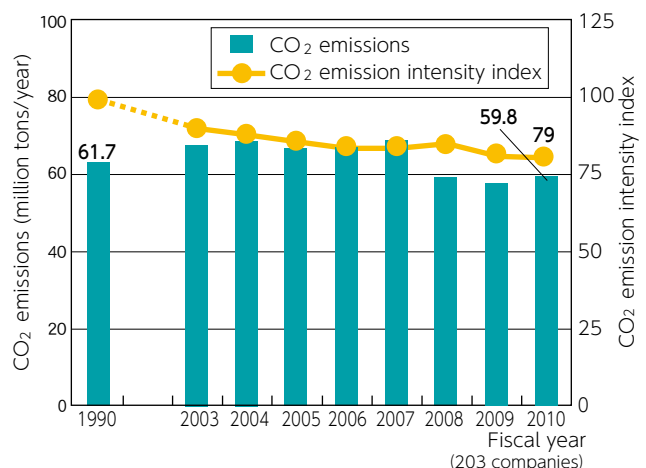


Reduction in Greenhouse Gas Emissions

In fiscal 2010, the CO₂ emission intensity index of JCIA Member companies decreased by three points year on year to 79, while total CO₂ emissions increased by 3.1% due to a year-on-year increase in production levels.

In comparison to the baseline year (fiscal 1990), the production index increased by 23 points, however, CO₂ emissions dropped by 3.1% as a result of efforts by Member companies.

CO₂ Emissions and Emission Intensity Index (JCIA data)



International Measures

Prior to the 16th session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 16) held in Cancun, Mexico, nine Japanese industrial associations, including the JCIA, made a joint proposal on November 24, 2010, followed up by an urgent proposal December 9 that same year. Subsequently, the Cancun Agreements were adopted at COP16 for the early formulation of a post-Kyoto Protocol anti-global warming framework, in which major emitters, such as the United States and China, would also participate. The JCIA participated in the panel discussion that the International Council of Chemical Associations (ICCA) held on December



Panel Discussion held by the ICCA

3 concurrently with COP 16, and reported on the progress of the initiatives taken by Japan's chemical industry.

Examples of Members' Initiatives

The Aron Soil agent helps reduce CO₂ emissions from soil-cement wall construction

Toagosei Co., Ltd.

Aron Soil is a chemical agent used in the construction of underground structures such as subways and bridge foundations. In the past, excavated surfaces were covered with expensive steel sheet panels in order to prevent their collapse. To replace this costly method, the soil-cement wall construction method was developed, in which soil, cement and water are mixed and injected into the excavated ground to form walls that are impermeable to water, thereby preventing collapse of the excavated surfaces.

The use of the Aron Soil agent, which is a highly efficient cement dispersant, in soil-cement wall construction helps maintain the liquidity of the soil-cement mix, allowing a reduction in the amount of cement used and injected without compromising quality. The generation of construction sludge can therefore be cut almost in half. By using Aron Soil in the excavation work ("ECO-MW construction method"), CO₂ emissions from soil-cement wall construction are expected to be reduced by about 43%.



The Aron Soil A agent is delivered in an environment-friendly returnable container



Conventional method (sticky) and ECO-MW method (non-sticky) implemented in the excavation work

Transparent conducting oxide (TCO) sputtering targets for solar cells (ITO and AZO)

Tosoh Corp.

The aluminum zinc oxide (AZO) and indium tin oxide (ITO) TCO targets developed by Tosoh are used to make transparent electrodes for solar cells. For thin film silicon-based solar cells and copper indium gallium selenide (CIGS)-based solar cells, the targets have contributed to improving their conversion efficiency by 1% (absolute value) or more compared with conventional materials. Given that improvements in the conversion efficiency of solar cells are generally measured in 0.1% units, a 1% increase represents an impressive contribution to solar cell performance.

Thin films made using the AZO and ITO targets permeate a range of light wavelengths, including the infrared wavelength region, and have a higher heat and humidity resistance. Moreover, by using the AZO targets, thin films can be easily textured in an ideal manner (concavo-convex) to efficiently trap and use the sunlight that reaches the solar cells.



Reduction Program

According to the Japanese Ministry of the Environment's Annual Report on the Environment, the Sound Material-Cycle Society and Biodiversity in Japan 2011, the total amount of industrial waste generated in Japan has remained constant in recent years, whereas at the end of fiscal 2007, the remaining lifespan of Japan's industrial waste disposal sites slightly improved to 8.5 years on a national average thanks to a decrease in final disposal waste volumes. Nonetheless, the remaining lifespan of existing industrial waste disposal sites is only 3.6 years in the Tokyo metropolitan area, where it is difficult to establish new sites. It is therefore

important to continue reducing waste toward the realization of a recycling society.

In compliance with Nippon Keidanren Voluntary Action Plan on the Environment, the JCIA implemented measures to achieve the target of reducing the fiscal 2010 final disposal waste volume by 88% from the fiscal 1990 level. Of 96 JCIA member companies surveyed, 48 achieved this target. The JCIA will continue implementing measures to achieve the new target set in line with the Action Plan, which is to reduce the fiscal 2015 final disposal volume by around 65% from the fiscal 2000 level.

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

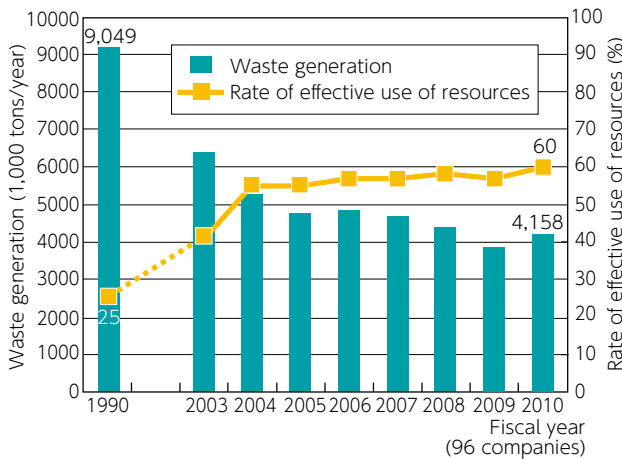
JCIA member companies have taken various initiatives to reduce industrial waste at the source. These include the drastic sorting of waste, the installation and improvement of waste disposal equipment and the recovery and reuse of waste in the manufacturing process. In fiscal 2010, Member companies generated 54% lower industrial waste than in fiscal 1990 (although the level was 6.3% higher than in fiscal 2009). Furthermore, the companies were active in recycling resources, which resulted in an increase in the rate of the effective use of resources (ratio of the amount of resources effectively used to the amount of waste generated)

from 25% in fiscal 1990 to 60% in fiscal 2010.

The final disposal amount for the JCIA members totaled 285,000 tons in fiscal 2010, down 5,000 tons from the fiscal 2009 level, and 85% lower than the fiscal 1990 level. The JCIA target was thus not achieved (as shown in the table below). In addition to measures to reduce final disposal amount, year by year the JCIA members have also been enhancing measures to dispose of waste in appropriate ways, including the proper issuance, recovery and verification of industrial waste manifests and visits to actual disposal sites.

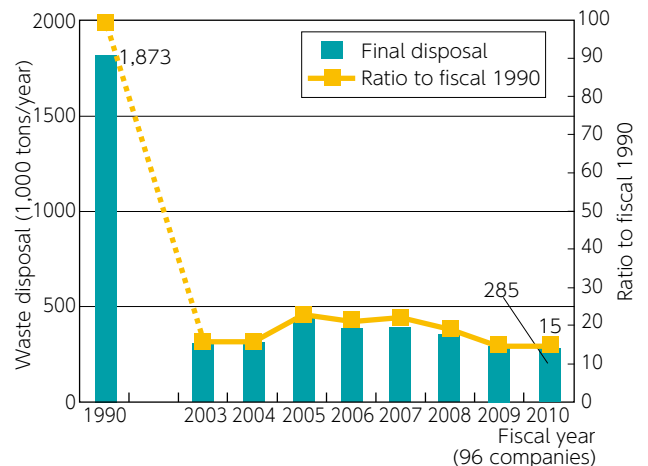
Item (fiscal 2010)	Relative to fiscal 1990	Relative to fiscal 2009
Industrial waste generation	Reduced by 54%	Increased by 6.3%
Rate of effective use of resources	Improved by 35 points	Improved by 4 points
Final disposal by JCIA members	Reduced by 85%	Reduced by 1.7%

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 weight of sludge after drying has been measured since fiscal 2004.

Final Disposal Volume (JCIA data)



Waste Reduction

Creating a Recycling Society

Other than voluntarily reducing the volume of waste, Members also accept waste generated externally, contributing to the creation of a recycling society using its own recycling technologies. Examples of recycling include the use of discarded tires for fuel, use of sludge for raw material in cement, recovery

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

Examples of Members' Initiatives

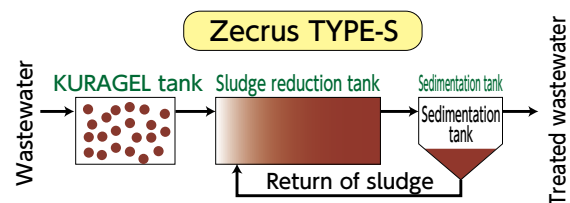
Sludge reduction wastewater treatment system

Kuraray Co., Ltd.

Kuraray focuses on the development of technologies and systems to solve environmental problems. The conventional wastewater treatment method called the "activated sludge method" employs microorganisms to break down organic matter contained within wastewater. This method requires spacious facilities and generates a significant amount of "excess sludge" (due to the excessive proliferation of microorganisms), which is difficult to dispose of.

To deal with this problem, Kuraray has independently developed a biocarrier named "KURAGEL," which is used in the Zecrus sludge

reduction wastewater treatment system for the efficient treatment of BOD and nitrogen. Using the Zecrus system, the generation rate of excessive sludge, which is typically 40 to 50%, can be reduced to almost zero. The system also allows the reuse of wastewater and requires only a relatively small installation space.



Environmentally-friendly ammonia

Showa Denko K.K.

Showa Denko's Kawasaki Plant makes effective use of waste plastic to manufacture and sell environmentally-friendly ammonia under the trademark of ECOANN™. Plastic is composed mainly of hydrogen and carbon and can be thermally decomposed into hydrogen and carbon dioxide gases. The plant uses the hydrogen obtained from decomposition of waste plastic to make ammonia, which is then used to make synthetic resins (nylon, acryl, melamine, and others), pharmaceuticals, agricultural pesticides and fertilizers. The carbon dioxide gas that is generated from waste plastic



is liquefied and effectively used for soft drinks, industrial gas and dry ice production. ECOANN™ is indeed a suitable product for green procurement. The plant has recycled a total of 300,000 tons of waste plastic (as of the end of 2010).

Replacing wooden containers used to transport synthetic rubber products with metal box pallets

ZEON Corp.

As part of its efforts to protect forests, ZEON has implemented the replacement of wooden containers used to transport its synthetic rubber products with metal box pallets. This replacement plan has already been completed for its export containers. Additionally, the company initiated replacement of wooden transport containers used within Japan in fiscal 2005 and with few exceptions, all were replaced with metal box pallets by the end of fiscal 2010. ZEON recovers the pallets and repairs them as necessary for reuse, which makes effective use of metal resources as well. In fiscal 2010, reused containers accounted for more than 80% of all metal box pallets used by the company.



Compliance with the PRTR Act

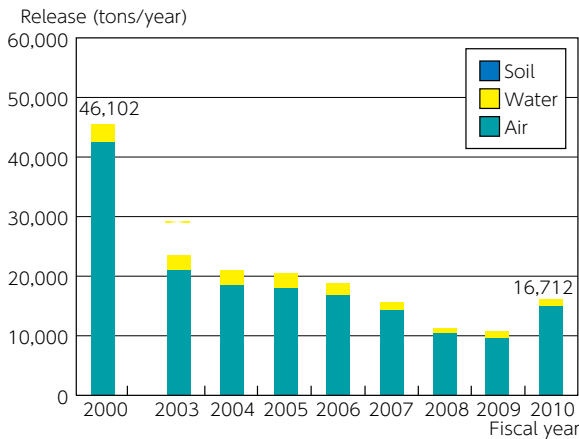
The Pollutant Release and Transfer Register (PRTR) is a system the government uses to identify, tabulate and publicly disclose the amounts of hazardous chemical substances released into the environment from different sources (companies, households, automobiles, and others), and the amounts of such substances that are transferred in waste from company premises to the outside. Companies are obliged to determine the amounts of chemical substances subject to the PRTR Act that they have released into the environment (air, water and soil) and transferred outside their premises, and notify the government. The government tabulates the results obtained from the companies and discloses the tabulated data with the estimates on the released amount of chemical substances from households, automobiles, and other sources to the public. Since the launch of a pilot study on the pollutant release in 1992, the JCIA gradually increased the number of target substances in its voluntary investigation to a total of 284 in 1998. Since 2000, the Association has voluntarily conducted investigations on 480 substances, including 354 substances specified by the PRTR Act, and one substance group (hydrocarbon chains containing four to eight carbon atoms). Following revision of the

PRTR Act, however, the number of substances subject to the law increased from 354 to 462, and companies began to produce notifications for all 462 substances in fiscal 2011 (on emissions in fiscal 2010). In response, the JCIA reviewed its own list of substances subject to its voluntary investigations.

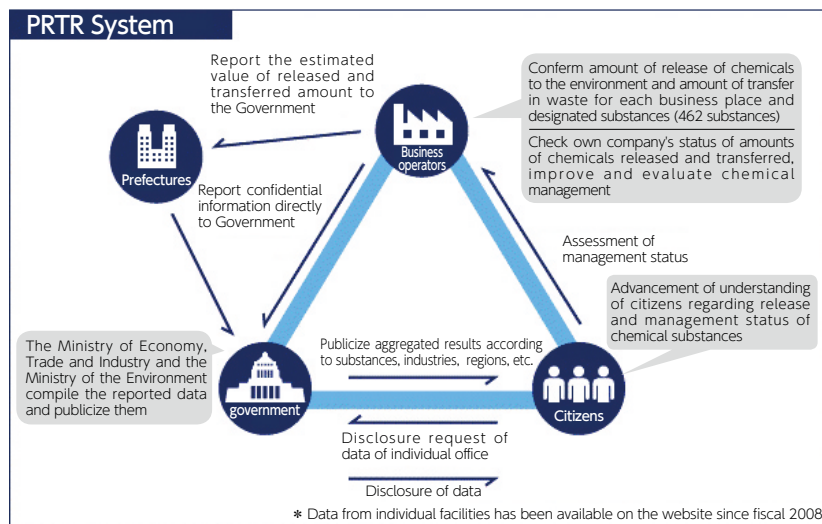
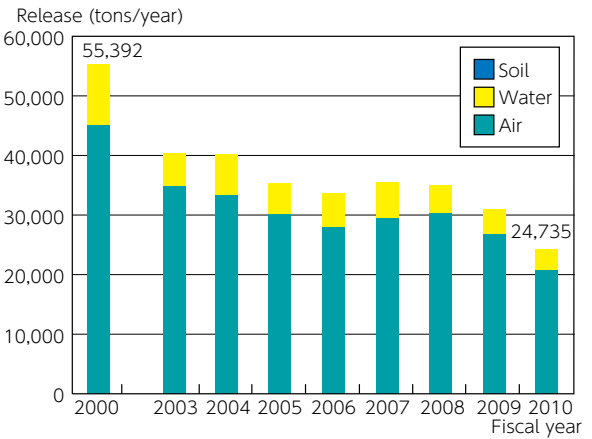
Total release of substances specified in the PRTR Act amounted to 16,712 tons in fiscal 2010, down about 64% from the fiscal 2000 level. Release of substances into the air, water and soil accounted for 92.4%, 7.5% and less than 0.1% of the total, respectively.

Total release of substances subject to JCIA voluntary investigations (105 substances and one substance group composed of four to eight carbon atom-containing hydrocarbon chains) amounted to 24,735 tons in fiscal 2010, down about 55% from the fiscal 2000 level. Release of substances into the air, water and soil accounted for 86.1%, 13.9% and less than 0.1% of the total, respectively. Members are working to reduce environmental emissions by actively implementing measures to prevent the leakage of hazardous substances, improve the recovery/recycling rate and introduce the use of alternative substances.

Release of Substances Specified in the PRTR Act (JCIA data)



Release of Substances Subject to Voluntary Investigations (JCIA data)



Created based on information provided at the website of the Ministry of Economy, Trade and Industry

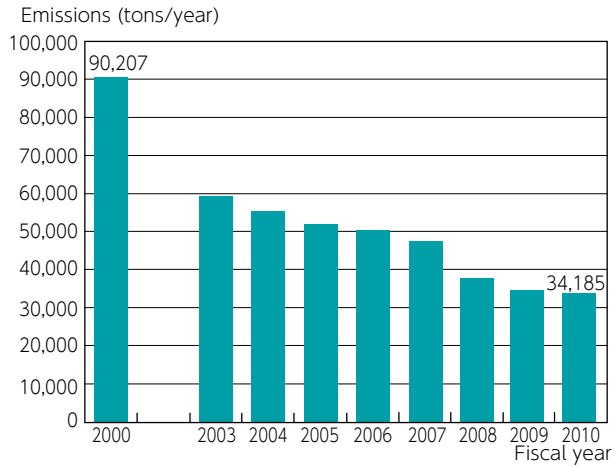
Emissions Reduction

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 emissions of VOCs into the air should be reduced by about 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.

In fiscal 2010, the JCIA implemented measures to reduce VOC emissions by 52% (based on accumulated numerical targets set by member companies voluntarily) from fiscal 2000 (baseline year) levels. According to investigation results, JCIA member companies emitted a total of 34,185 tons in fiscal 2010 and achieved a 62% reduction relative to the baseline year. These figures are believed to reflect the efforts of member companies, including installation of VOC emission control facilities and making process improvements.

VOC Emissions (JCIA data)



Volatile Organic Compounds (VOCs)

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

Examples of Members' Initiatives

Reducing emissions of VOCs into the air

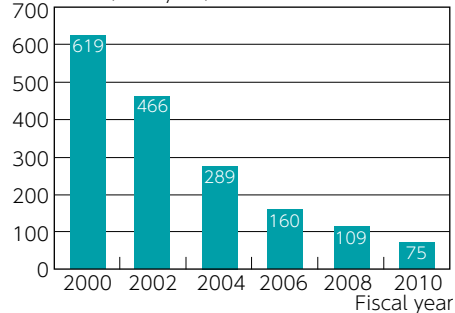
Denki Kagaku Kogyo K.K.

Denki Kagaku Kogyo has strived to reduce its airborne chemical substance emissions into the air, nearly 90% of which occur at its factory in Chiba.

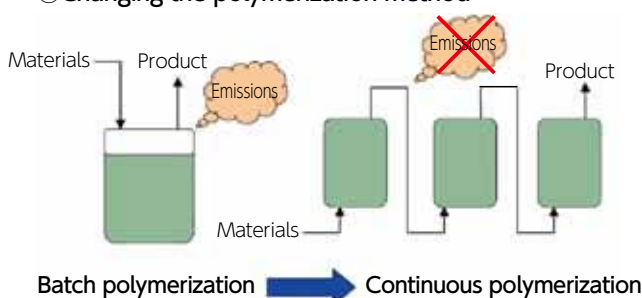
To this end, the factory implemented the following measures:
 ①change the polymerization method for polystyrenes;②reduce emissions into the air from the storage tank (by replacing the fixed roof of the benzene tank with an internal floating roof and by continuing to install condensers to tanks for styrene monomers, and others);③continue the shift from a toluene-based adhesive solution to a water-based solution for polyvinyl chloride tapes;④ introduce a regenerative thermal oxidizer (RTO) for the combustion and detoxification of low-concentration VOCs such as acrylonitrile. Implementation of these measures at the factory resulted in an approximately 88% reduction in emissions in fiscal 2010, compared to the fiscal 2000 level.

In 2008, the factory received a commendation from the Ministry of the Environment recognizing its achievement in reducing VOC emissions, and has continued its voluntary activities with the aim of further reducing chemical substance emissions, including VOCs.

Chemical Substance Emissions into the Air at the Chiba Factory

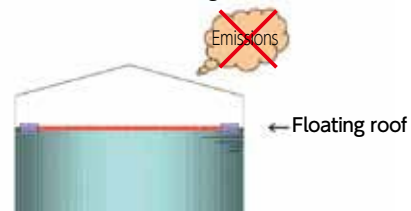


① Changing the polymerization method



② Installing an internal floating roof

Installation of a floating roof inside the tank

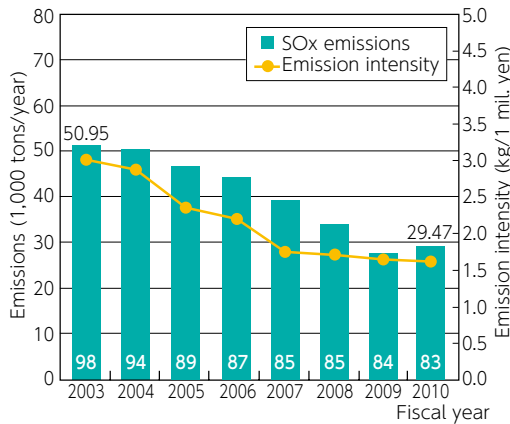


Efforts to Prevent Air and Water Pollution

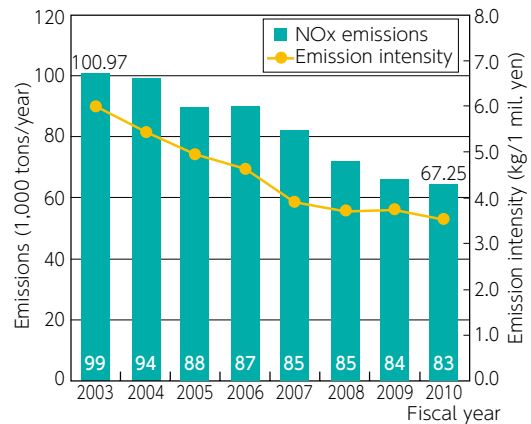
Chemical companies in Japan have significantly reduced air and water pollutant emissions. In particular, Members have established voluntary management criteria that are more stringent than the regulatory standards. Also, by complying with local government agreements, Members are working to further reduce emissions. Moreover, in June 2011, the Minister of the Environment decided on the basic policies for the seventh total water pollutant

load control scheme. According to the policies, and as in the sixth scheme, companies are required to take continuous measures to improve the water environment in Tokyo Bay, Ise Bay and Osaka Bay and to prevent degradation of water quality in the Seto Inland Sea, excluding the Osaka Bay area. In response, Members will continue their efforts to reduce the total emission and emission intensity of water pollutants.

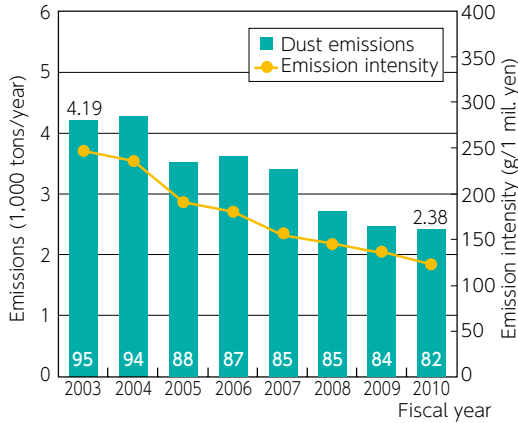
SOx Emissions



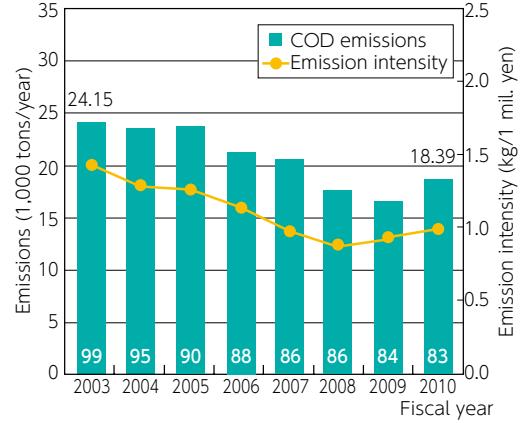
NOx Emissions



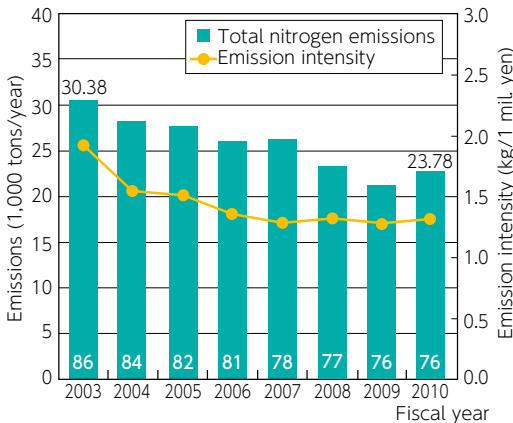
Dust Emissions



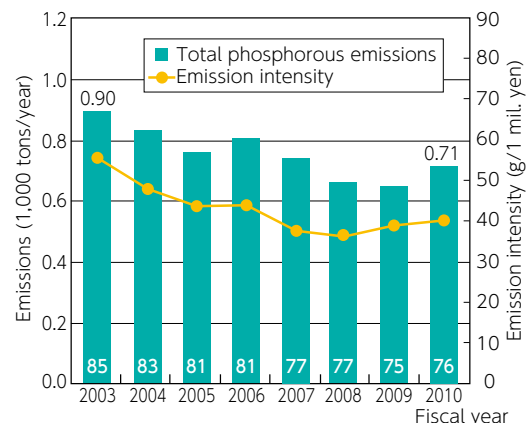
COD Emissions



Total Nitrogen Emissions



Total Phosphorous Emissions



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

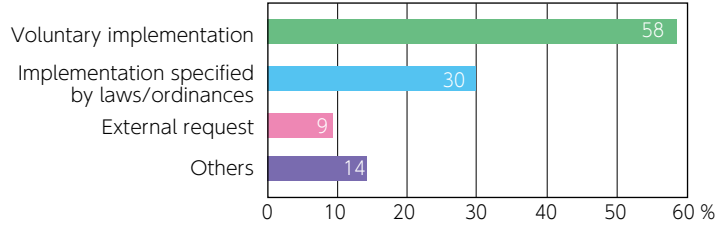
Emission intensity: Since Members' businesses are varied and no single common production unit can be specified, the index is designed to show emissions per sales (in millions of yen).

Emissions Reduction

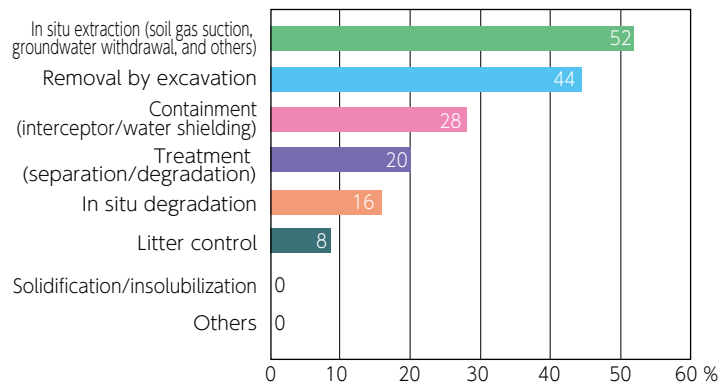
Initiatives on Soil and Groundwater Contamination

Members are carrying out their own voluntary investigations in addition to those specified in the Soil Contamination Countermeasures Act. If soil contamination is detected, appropriate measures are implemented. Of the 86 companies who responded to the questionnaire survey, 43 investigated contamination of soil/groundwater at 85 sites in fiscal 2010. As reasons for implementing the investigation ranked first, accounting for 58%, while implementation according to the law or ordinance accounted for 30%. Substances other than those specified by law were also examined in 13 investigations. Of the above 43 companies, 19 detected contamination at 35 sites that exceeded the environmental standards. In fiscal 2010, a total of 25 companies implemented countermeasures against contamination at 46 sites, including sites where contamination had been detected prior to that fiscal year. For chemical substances, decontamination methods have already been established, and Members are regularly performing a range of measures such as in situ extraction, excavation, and containment.

Reasons for Implementing an Investigation (Multiple answers allowed)



Countermeasures against Contamination (Multiple answers allowed)



PCB Initiatives

Of the 86 companies that responded to the questionnaire, 66 (77%) retained waste containing PCBs at high concentrations*¹ and 71 (83%) retained waste containing trace levels of PCBs*². In fiscal 2010, the number of Members that partially disposed of PCB waste according to the scheme for the appropriate treatment of PCB waste established and promoted by the Japanese government totaled 41 Members (62%) for waste containing high concentrations of PCBs and 54 Members (76%) for waste containing trace levels of PCBs. Moreover, two companies completed disposal of waste containing trace levels of PCBs.

The Act on Special Measures Concerning the Promotion of the Proper Treatment of PCB Waste mandates companies to notify the relevant

prefectural governor of their current situation concerning the storage and disposal of PCB waste and to dispose of all PCB waste appropriately within 15 years of the date that the law came into force (July 15, 2001). Accordingly, Members will continue to dispose of their PCB waste in a consistent manner in line with the governmental guidelines.

(*1) Waste containing PCBs at high concentrations: Electrical appliances, such as transformers and capacitors, that were manufactured before PCB use was prohibited (in 1972) and in which PCBs were used in insulating oil at concentrations ranging from about 50% to 100%

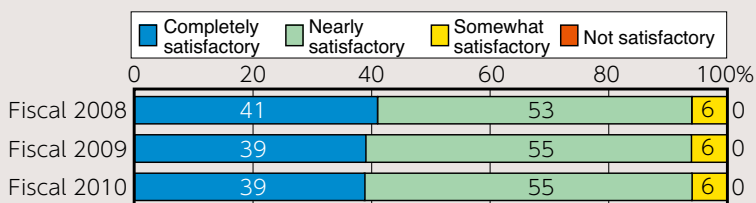
(*2) Waste containing trace levels of PCBs: Electrical appliances manufactured after PCB use was prohibited, which unintentionally contain trace amounts (0.5 ppm or more) of PCBs

Members' Self-Assessment

Environmental Protection

Overall rating of nine self-assessment items, including "Policy," "Plan," "Communication," and "Check/monitoring"

The percentage of companies that answered "Completely satisfactory" or "Nearly satisfactory" has been 90% or higher. Regarding individual items, there were increases in the percentages of companies satisfied with their results on "Education/training" and "Check/monitoring."

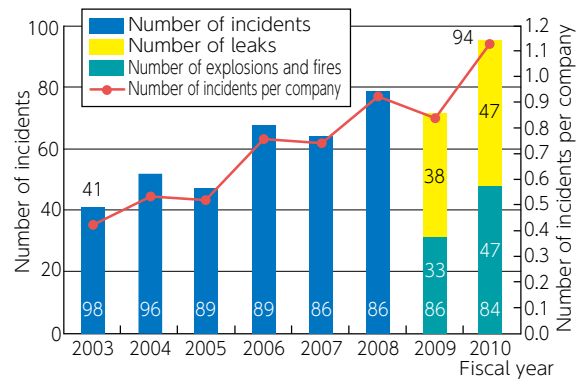


Process Safety and Disaster Prevention

Number of Incidents at Facilities

In fiscal 2010, the total number of incidents at Members' facilities and the number of facility incidents per company both increased relative to fiscal 2009. Members continue to regard process safety and disaster prevention as an important management mission and since fiscal 2002 they have been investing more money to fulfill that mission. In fiscal 2010, Members invested a total of 79.3 billion yen for this purpose (refer to the "Investment in Environmental Protection and Safety" section). The JCIA has been collecting information from its members on the incidents that took place at their facilities in order to foster detailed information-sharing regarding such incidents and to identify preventive measures. By examining measures developed based on the information collected, the Association works to help the members prevent similar incidents from recurring.

Incidents at Facilities (Explosions, fires, leaks, and other)



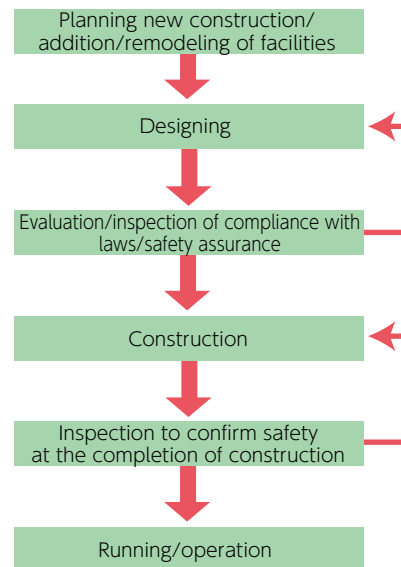
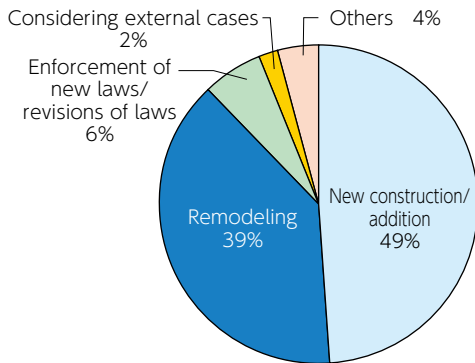
From fiscal 2009 onwards, the breakdown of the number of incidents is indicated by the number of leaks, explosions and fires. The figures in the bars indicate the number of companies that submitted data.

Prior Facility Evaluation and Management

Of Members who responded to the questionnaire, 98% conduct prior evaluations of their facilities. As the reason for this, 88% 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 confirm that the safety measures installed in the design phase remain after completion of the construction work. Thus, they carry out risk assessments at each phase to confirm safety and prevent incidents from occurring at facilities.

Reasons for Conducting Prior Facility Evaluations

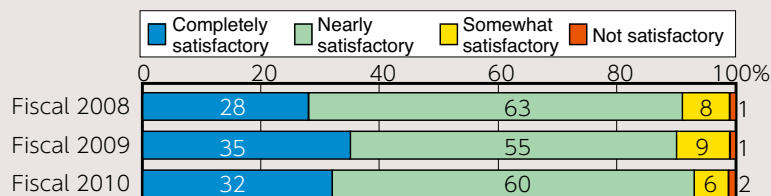


Members' Self-Assessment

Process Safety and Disaster Prevention

Overall rating of nine self-assessment items, including "Policy," "Plan," "Communication," and "Check/monitoring"

The percentage of companies that answered "Completely satisfactory" or "Nearly satisfactory" has been 90% or higher. For individual items, specifically, "Communication," the percentage of companies that answered "Not satisfactory" or "Somewhat satisfactory" increased from 39% in fiscal 2009 to 46%. This implies that Members place importance on dialogue with local communities.



Countermeasures for Major Earthquakes

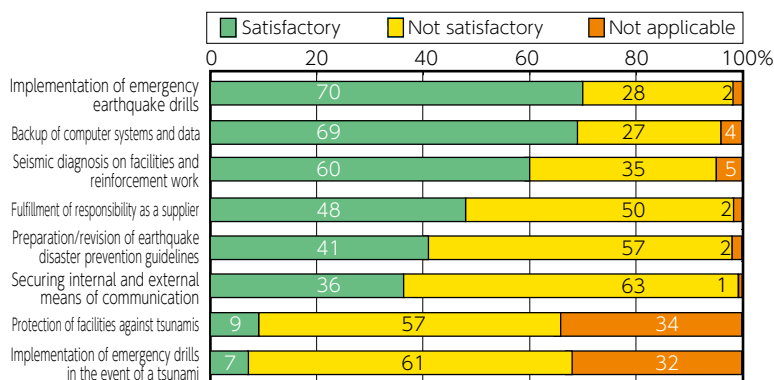
The Great East Japan Earthquake, which occurred in March 2011, impacted the factories of 46 Members located in the affected region (representing 53% of all Members), causing damage to buildings and facilities, emergency stoppage of facilities brought about by earthquake detection devices and temporary suspension of factory operations due to blackouts and damage to infrastructure. However, no Member factories caused any serious secondary disasters thanks to implementation of fail-safe anti-seismic measures. Members who suffered damage made an all-out effort to recover, resulting in minimal hindrance to their production activities.

Of 88 Members who responded to a questionnaire survey conducted after the March disaster, many answered that they had taken sufficient measures concerning the "Implementation of emergency earthquake drills," "Backup of computer systems and data," and "Seismic diagnosis on facilities and reinforcement work." Of the Members that suffered damage from the disaster, 74% and 57%, respectively, answered that the "Implementation of emergency earthquake drills" and "Seismic diagnosis on facilities and reinforcement work" had proven very useful. Some Members also answered that the emergency food and water reserve for employees proved useful. However, the results of this survey also revealed some measures that Members felt they did

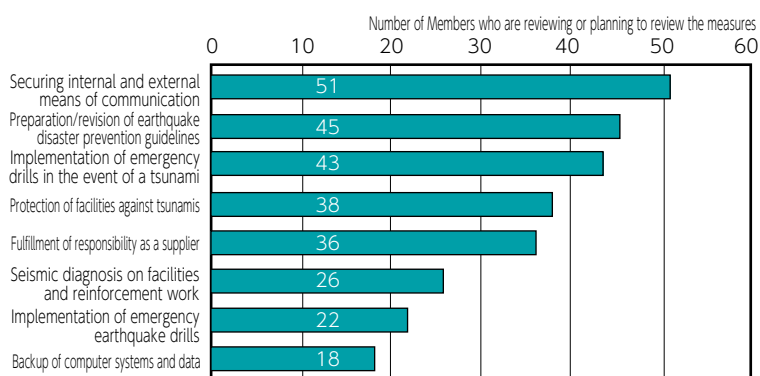
not implement sufficiently.

In particular, for "Securing internal and external means of communication," "Preparation/revision of earthquake disaster prevention guidelines," and "Implementation of emergency drills in the event of a tsunami," Members believe that it is necessary to consistently review and improve their response measures.

Self-Evaluation on Emergency Measures



Measures Deemed Insufficient by Members



Example of Measures Implemented against the Great East Japan Earthquake

Mitsubishi Chemical Corp.

The Great East Japan Earthquake on March 11, 2011 measured at an intensity of lower six on the Japanese seismic intensity scale in the Kashima area, however, it did not cause any serious damage to Mitsubishi Chemical's Kashima Plant thanks to anti-seismic measures that were effectively taken by the plant. Specifically, all plant operations were safely terminated by safety equipment that automatically engaged as the earthquake struck, and no serious damage occurred to the earthquake-resistant facilities. Although the tsunami flooded the pier, deformed the pipes and damaged the revetment, the plant was able to maintain employee safety and there were no industrial or occupational accidents such as leakage of flammables.

The plant established an emergency headquarters immediately after the earthquake to collect information, coordinate with stakeholders and provide necessary instructions. For the recovery process, the plant placed first priority on securing industrial water, electricity, nitrogen and other materials to ensure safety operations,

in cooperation with the head office's emergency headquarters and related governmental agencies. After inspecting and repairing the facilities, implementing a recovery plan across the chemical complex and confirming safety, the plant promptly resumed operations in order to minimize any adverse impact on its products' supply chains. The plant will incorporate the experience and lessons learned from the disaster into its future response measures in order to further improve its process safety and level of disaster prevention.



Damage to the berth from the disaster

Occupational Health and Safety (Measures to Prevent Occupational Accidents)

Preventing occupational accidents is a major industry-wide commitment. All Members constantly work to improve their safety levels to eliminate occupational accidents.

The frequency rates of occupational accidents for Members and their affiliated companies have been below those of the manufacturing sector and the chemical industry. The severity rate and number of fatalities of Members and their affiliated companies have remained constant, following a substantial improvement from the previous year in the latter group.

Thorough investigations of the causes of all occupational accidents were jointly conducted by the Members involved and their affiliated companies and measures have been taken to prevent any such reoccurrences.

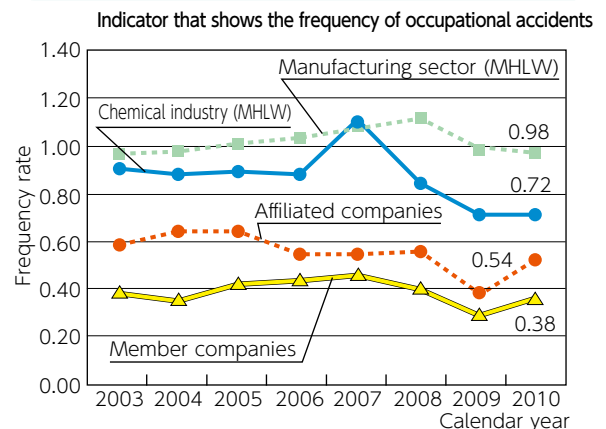
Members will continue to improve their safety levels to achieve zero occupational accidents.

Number of Fatalities from Occupational Accidents

	2003	2004	2005	2006	2007	2008	2009	2010
Member companies	2	1	1	2	1	2	2	2
Affiliated companies	3	2	2	5	6	5	1	1
Chemical industry (MHLW)	25	22	22	25	17	28	19	11
Manufacturing sector (MHLW)	293	293	256	268	264	260	186	211

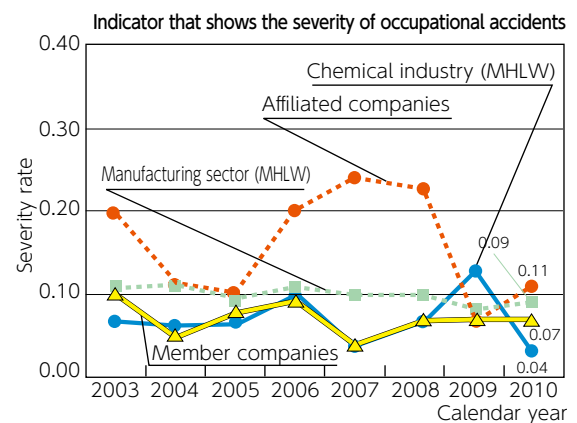
Change in the Frequency Rate

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



Change in the Severity Rate

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



Examples of Members' Initiatives

Increasing the safety awareness of operators by providing an opportunity to experience risks virtually

Daikin Industries, Ltd.

Because the number of occupational accidents at the company has been decreasing due to the effective implementation of safety measures, the number of operators who have never experienced a safety incident or safety-related trouble has been increasing.

In deciding that it is important to provide these operators with firsthand opportunity to experience risks that they might face in their jobs, several years ago the company initiated a safety education program that is based on virtual experience. In the program, some experienced operators serve as lecturers and teach participants what risks are lurking in their workplaces by referencing a list of 11 risk items created based on accidents that actually occurred within the company in past years. Participants can virtually experience these risks using handmade simulators. This educational program, by allowing operators to virtually experience risk, is very effective in increasing safety awareness, although traditional theoretical safety instruction is also required.

Thus, by consistently providing this safety education program to new employees as well as to middle-rank employees in Japan and by expanding the program to its sites outside Japan, the company is engaged in global improvement of operator safety awareness.



Experience the risk of liquid breakouts



Hydrogen explosion



Ignition caused by adiabatic compression



Equipment broken due to depressurization

Occupational Health and Safety <Safety Awards and Symposiums>

As a means to encourage companies in the chemical industry to implement measures for process safety and occupational health, the JCIA gives awards to exemplary companies that conduct excellent safety activities, and holds an annual safety symposium in which the award winners report on their safety assurance activities.

In fiscal 2009, the JCIA renamed its Safety Award the "Grand Prix Safety Award" and its Safety Effort Award the "Safety Award." The Association also established a "Special Safety Award" to commend small plants and research institutes of chemical companies that have achieved zero occupational accidents and disasters continuously over many years.

In fiscal 2010, a total of 11 chemical company sites participated in the awards, of which 4 were selected by the JCIA's Safety Awards Council as winners in recognition of their excellent safety records. Mitsui Chemicals' Omuta Works, which won the Grand Prix Safety Award, has recorded no occupational accidents in six million work hours with its 2,200 employees. Based on the ISO/OHSAS-compliant management system, Omuta Works makes an annual plan and executes a PDCA cycle to continue its safety activities taking into account its characteristics, present risks and challenges. As part of its process safety and disaster prevention activities, Omuta Works also conducts drills in cooperation with local communities.

Grand Prix Safety Award:

Omuta Works, Mitsui Chemicals, Inc.

Special Safety Award:

Showa Titanium Co., Ltd.

Sakai Works, Tanaka-Kiko Co., Ltd.

Safety Award:

Sakaide Plant, Toagosei Co, Ltd.

The directors of the winning plants subsequently reported on their safety management activities at the safety symposium which was held on October 21, 2011 and in which 110 people participated.

At the panel discussion, held as the second part of the symposium, the directors discussed the theme of how to maintain a zero occupational accident record. The panelists introduced safety measures taken at their respective plants, including those implemented at the time of the mega-earthquake, and reaffirmed their commitment to safety.



Directors of the award winning plants and the Chairperson of the Safety Awards Council



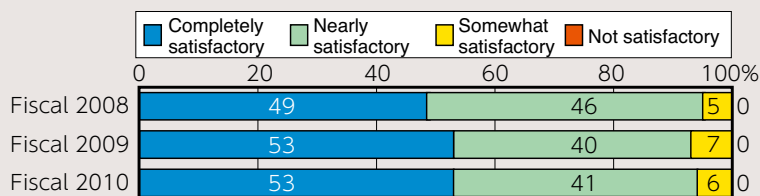
Omuta Works, Mitsui Chemicals, Inc.

Members' Self-Assessment

Occupational Health and Safety

Overall rating of eight self-assessment items, including "Policy," "Plan," "Communication" and "Check/monitoring"

The percentage of Members who answered "Completely satisfactory" or "Nearly satisfactory" has been 90% or higher.



Distribution Safety

Members conduct a range of activities to reduce environmental and safety risks in the transportation of chemicals. They assess the impact of chemicals and evaluate the safety of transportation facilities to prevent accidents, while implementing emergency drills so that employees involved in the transportation of chemicals can cope immediately with emergency situations such as leaks. In addition, they prepare Yellow Cards and ensure that the transporters carry these cards to ensure that all those involved can get the information needed in case of emergency.

Preparation of a Yellow Card/Container Yellow Card

Transporters are required to carry official transportation documents for chemicals covered by the Poisonous and Deleterious Substances Control Act and the High Pressure Gas Safety Act. Considering the possibility of unpredictable accidents during transportation of substances that are not controlled, the JCIA promotes the use of emergency contact cards that describe the necessary emergency 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.

When a range of chemicals are transported in containers simultaneously, multiple Yellow Cards will be carried with the chemicals. For such cases, the JCIA recommends to use label-type Yellow Cards (Container Yellow Cards), which are placed on the containers of the

chemicals so that they can be identified promptly and accurately and so that the people involved can respond quickly in an emergency.

Use of Yellow Cards

Of Members supplying products for which Yellow Cards are used, 94% answered that the cards were always carried by the transporters of their products.

Introduction of Container Yellow Cards (label-type cards)

Container Yellow Cards were introduced in fiscal 2002 and 92% of Members supplying products for which Yellow Cards are used have completely or partially adopted these label-type cards. Even after the introduction of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), these cards will continue to be used to provide the people who have to handle emergency situations with the information they need.

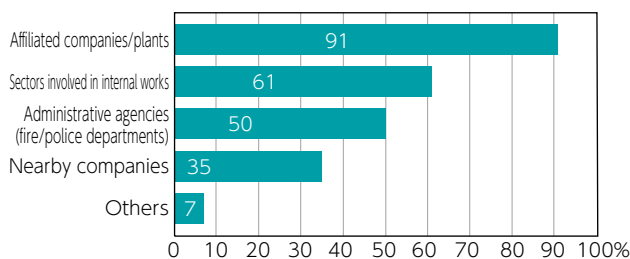
Measures for Emergencies

Almost all Members have prepared their own emergency response manuals and 97% have established their own around-the-clock contact networks.

Also, 86% 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), and 73% of Members have implemented emergency drills with mutual support partners, including communication training and desktop/field training.

Mutual Support Partners for Emergencies (multiple answers allowed)



Emergency Drills with Mutual Support Partners (Number of Companies Implementing the Drills)

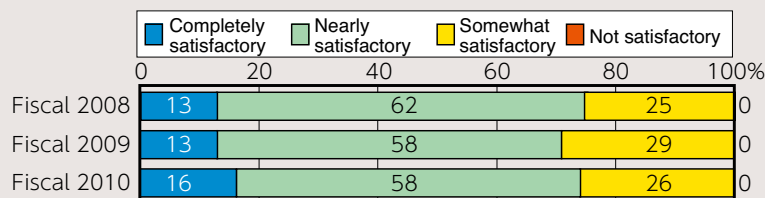
Mutual support partners	Type of training		
	Communication training	Desktop training	Field training
Administrative agencies	24	11	24
Nearby companies	21	11	18
Affiliated companies/plants	42	17	38
Sectors involved in internal works	38	20	37

Members' Self-Assessment

Distribution Safety

Overall rating of 10 self-assessment items, including "Policy," "Plan," "Communication," and "Check/monitoring"

Nearly 30% of respondents answered "Not satisfactory" or "Somewhat satisfactory." For individual items, specifically, "Coping with emergency situations," which included promoting dialogue with local inhabitants as part of the measures to cope with accidents that occur during transportation, almost half of the respondents answered "Not satisfactory" or "Somewhat satisfactory."



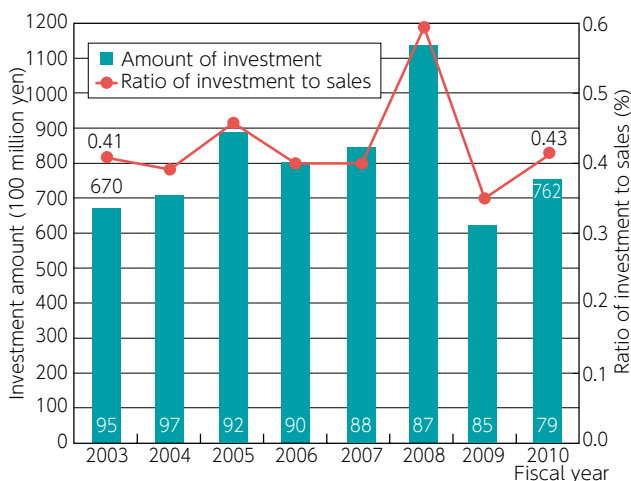
Investment in Environmental Protection and Safety

Trends in Investment in Environmental Protection

Members recognize the importance of environmental protection and continue to invest in environmental measures. In fiscal 2010, they invested a total of 76.2 billion yen (up 24% year on year) in the construction and maintenance of environmental facilities to save energy and reduce CO₂ emissions

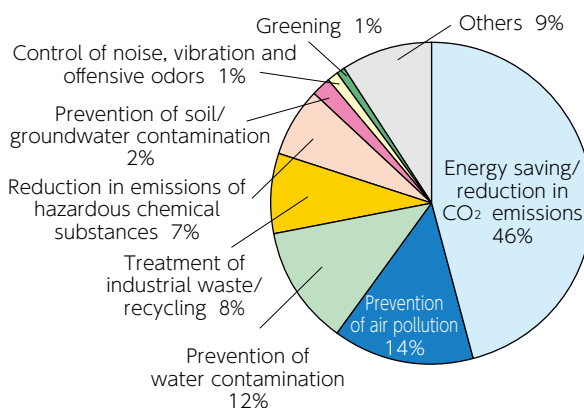
as well as in the development of environmentally-friendly technologies and products. The ratio of investment to sales was 0.43%, up 32% from the fiscal 2009 level. Members have thus continued to invest in environmental measures to steadily improve their environmental performance.

Investment in Environmental Measures



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

Categories of Investment in Environmental Measures in Fiscal 2010

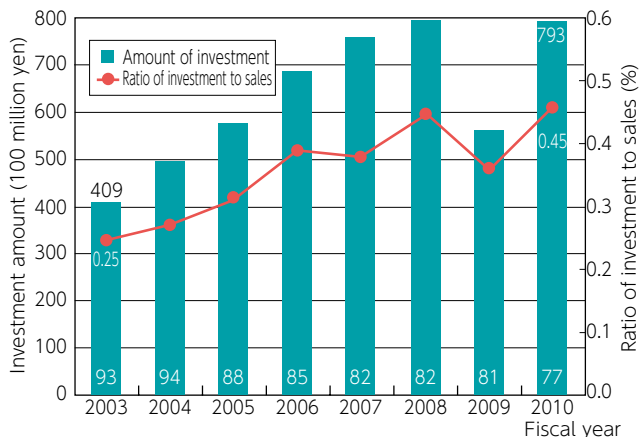


Trends in Investment in Process Safety and Disaster Prevention

Based on the recognition that the prevention of occupational and facility accidents is a major industry-wide commitment, Members have been continuing to invest in both equipment and management measures to ensure process safety and prevent disasters. In fiscal 2010, they invested

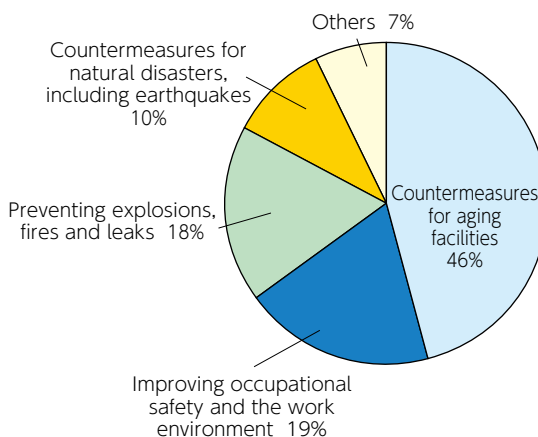
a total of 79.3 billion yen, up 42% year on year, and the ratio of investment to sales was 0.45%, up 25% from the fiscal 2009 level. Members have thus been proactively making investments to ensure process safety and to prevent disasters.

Investment in Process Safety and Disaster Prevention



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

Categories of Investment in Measures for Process Safety and Disaster Prevention



Members' Management System

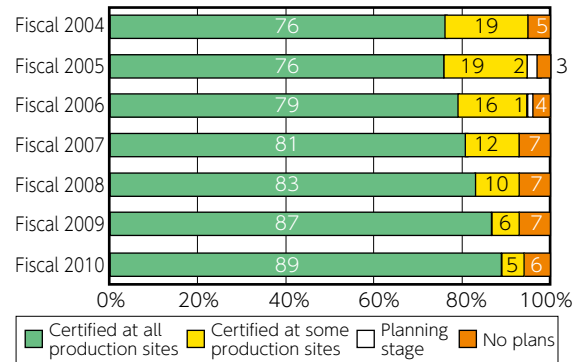
Responsible Care entails the implementation of the Plan, Do, Check and Act cycle (the so-called PDCA cycle). As a tool to implement this cycle, an increasing number of organizations are introducing ISO 14001-based and other environmental management systems (EMSs) as well as occupational safety and health management systems (OSHMSs).

Status of Members' Adoption of Management Systems

Environmental Management Systems (EMSs)

Companies use EMSs to set their environmental policies and targets and implement measures to achieve the predefined goals. According to the results of a Member survey, of 86 respondents, 89% acquired certification for their EMSs, such as ISO 14001 certification, at all their production sites (plants). An increasing number of companies are introducing EMSs.

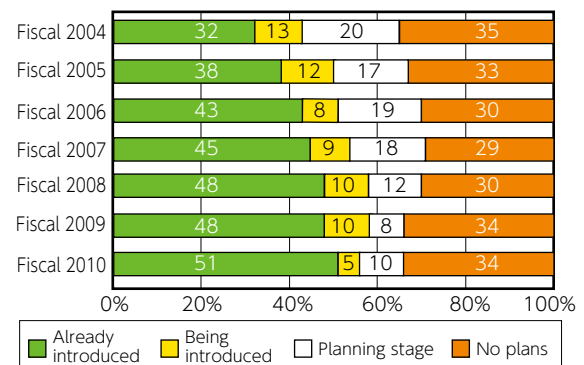
Status of EMS Certification



Occupational Safety and Health Management Systems (OSHMSs)

An OSHMS is designed to support companies to voluntarily and continuously conduct activities for occupational safety and health management. The system helps reduce latent risks and raise health and safety standards in the workplace, which will in turn help achieve zero occupational accidents. A gradually increasing number of companies are introducing this system. In the questionnaire, of 86 respondents, 56% have introduced OSHMSs and have verified their systems by external certification, such as OHSAS 18001 or by internal audit.

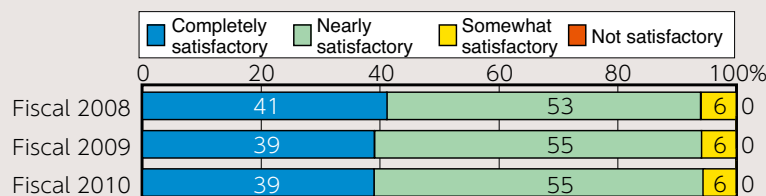
Trend in Adoption of OSHMSs



Management System

Overall rating of 16 self-assessment items, including "Policy," "Plan," "Communication," and "Check/monitoring"

Management systems such as ISO 14001-, OHSAS 18001- and ISO 9001-compliant systems have been regularly introduced to Members, and as high as 94% of respondents answered "Completely satisfactory" or "Nearly satisfactory."



Chemicals and Product Safety

Provision of Product Information

Preparing and Distributing Material Safety Data Sheets (MSDSs)

A MSDS is an instruction manual that is distributed by the supplier of chemical products to user companies. It provides them with the information necessary to handle chemical products safely and to prevent 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. 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, 80 of the 85 Members that responded to the questionnaire voluntarily issue MSDSs for additional substances (products) that are not subject to these laws, and distribute the sheets to their customers based on the concepts of Responsible Care and product stewardship.

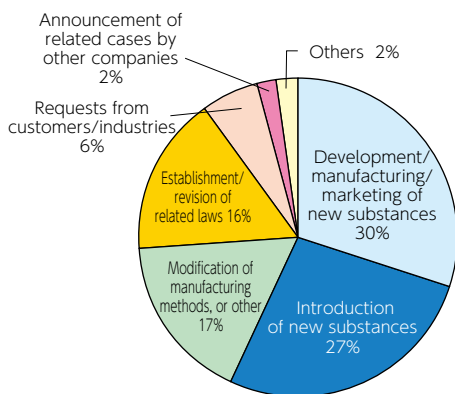
From a Responsible Care viewpoint, chemical products suppliers must know how their customers use or process their chemical materials and what products are eventually provided to consumers. Regarding the use of their products by customers, 70 of 85 respondents said that they collected information on the purpose of use for 80% or more of the products they supplied.

Prior Chemical Substance Safety Assessment

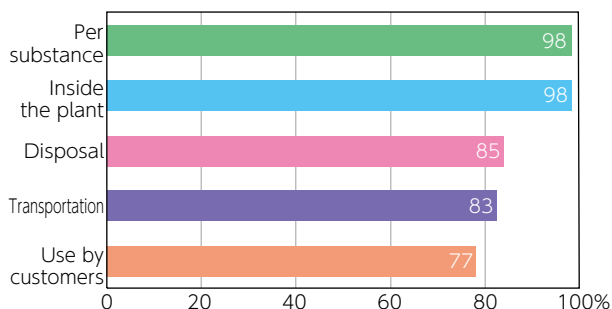
A Prior Chemical Substance Safety Assessment is conducted to identify the safety issues and concerns for chemical substances (explosiveness, inflammability, acute/chronic toxicity) and evaluate their effects on users' health and the environment. A Prior Chemical Substance Safety Assessment is conducted when a new substance is developed, manufactured and sold, when an existing substance

is newly introduced, and when the methods of manufacturing, transportation, use or disposal for existing substances are changed. This assessment can be introduced as an emergency response as well as for risk reduction. Of Members responding to the questionnaire, 98% have prior assessment standards.

Reasons for Implementing Prior Assessment



Application of Prior Assessment Standards (Multiple answers allowed)

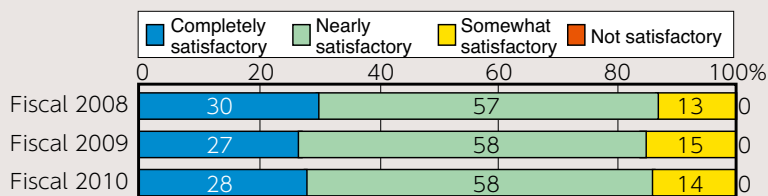


Members' Self-Assessment

Chemicals and Product Safety

Overall rating of nine self-assessment items, including "Policy," "Plan," "Communication" and "Check/monitoring"

Eighty-five percent or more of respondents answered "Completely satisfactory" or "Nearly satisfactory." The percentage of respondents who answered "Not satisfactory" or "Somewhat satisfactory" was rather high for "Risk management plans" and "Transferring technologies and giving overseas support" under "Operation control."



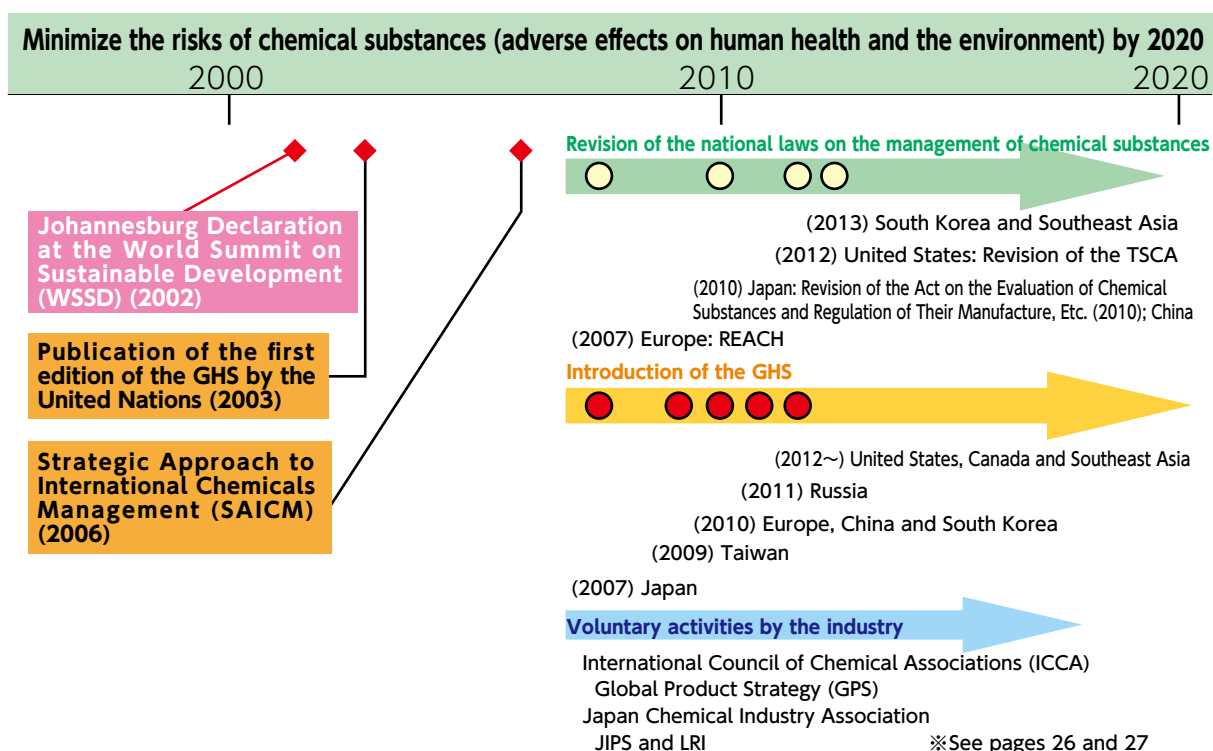
Chemicals and Product Safety

Risk Assessment of Chemical Substances and Provision of More Information on Their Hazard Level and Safety

Our lives are supported by a variety of chemical substances and we benefit in a number of ways from their use. However, these substances can become hazardous when treated inappropriately, and may even cause adverse effects on health and the environment. In a survey conducted by the Cabinet Office on chemical substances used in daily life, 69.7% of respondents regarded chemical substances as "something dangerous" because "there are so many different kinds, including those that are hazardous," and expressed opinions such as "I am not sure whether companies are treating chemical substances appropriately or not" and "The information labeled on chemical products is

difficult to read or understand or is insufficient." Problems concerning the treatment of chemical substances are prevalent around the world and persist throughout their life cycle, not only in the consumption stage but also in the manufacturing, processing and distribution stages. To solve these problems, efforts are being made to fully assess the risks of chemical substances and to communicate the results to users clearly and appropriately, including in the global initiative implemented to minimize the risks of chemical substances (adverse effects on human health and the environment) by 2020.

Flow for the management of chemical substances



Participants at the World Summit on Sustainable Development (WSSD) held in 2002 created the Johannesburg Declaration to demonstrate their commitment to creating compatibility between improving convenience in people's lives and protection of the global environment by reducing the risks posed by chemical substances. Subsequently in 2003, the United Nations published the first edition of the GHS and in 2006 the Strategic Approach to International Chemicals Management (SAICM) was adopted. In response, countries have been introducing ① regulations on the use of chemical substances based on their risk assessment (ordinances on the management of chemical substances) and ② systems to communicate information on chemical hazard levels based on the Globally Harmonized System of Classification and Labeling of Chemical Substances (GHS). The systems should be operated by chemical products suppliers, who are accelerating implementation of the measures in order to manage chemical substances appropriately and ensure they are used safely by users. With global efforts focused on achieving the 2020 target, both individual

companies and the industry itself are expected to play greater roles.

For new chemical substances to be released into the market, their hazard level and their effects following environmental and human exposure will be assessed, and based on the results, their usage, including the amount and place of use will be limited accordingly. Additionally, for substances already sold in the market, the national laws on the management of chemical substances have been revised to mandate suppliers to assess the hazard level and exposure risks and review the appropriate amount and place of use according to the results. Specifically, the REACH regulation was enforced in Europe in 2007, and the revised Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, Etc. was enforced in Japan in 2010. Also, in China, a new law on the management of chemical substances was enforced in 2010. In the United States, the revised Toxic Substances Control Act (TSCA) will be put into force in 2012 and similar measures will also be implemented in South Korea, Taiwan and Southeast Asia.

These new measures are taken to foster the management of chemical substances based on their risk assessments. The risks that chemical substances pose are assessed based on their hazard level and effects upon human exposure. Methods to use the

chemical substances safely will be determined and communicated to users according to the assessment results and also in consideration of the conditions under which the substances will be used.

Risk management Management of chemical substances based on their hazard level and effects upon human exposure

Risk = Hazard level x Exposure

Useful but very hazardous substances: Their risks can be reduced by minimizing exposure.
The risks of chemical substances that are not very hazardous increase as exposure increases.

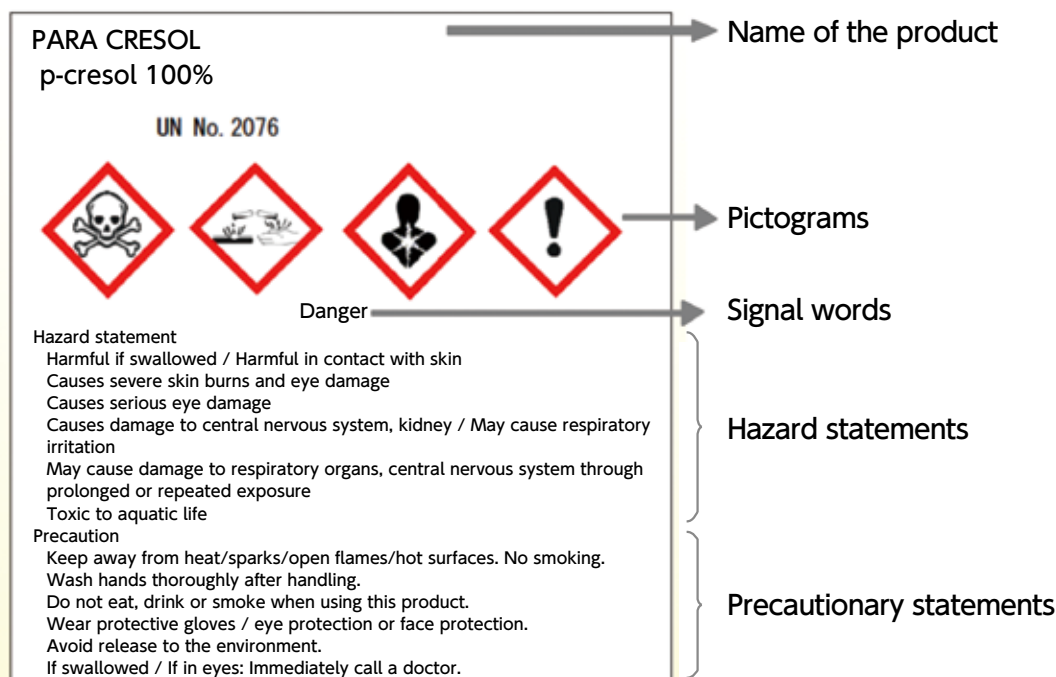
Hazard Level: Adverse effects of chemical substances on human health and other organisms living in the environment

Exposure: The amount (concentration) of chemical substances that human beings and other organisms in the environment are exposed to

Regarding the communication of chemical substance hazard levels and safety information, the United Nations proposed using the GHS for global standardization of the MSDS preparation method and labeling method, and countries around the world are implementing measures to proactively communicate information on the hazard level of

chemical substances to users based on the GHS. Following Japan's introduction of the GHS in 2007, Taiwan, South Korea, China and Europe also introduced the system. In and after 2013, the United States and countries in Southeast Asia will also introduce it.

Example of labeling based on the GHS: Globally standardized labeling method



As explained above, efforts are being made to globally manage chemical substances based on risk assessment and across the supply chain based on product stewardship*. In each country, the industry is beginning to take specific measures to ensure safe management of chemical substances on a full scale and in a voluntary manner. These measures will lead to the provision of safe usage, limitations

in the places of use, and replacement with less hazardous substances, which in turn will help to reduce the adverse effects of chemical substances on human health and the environment. The JCIA has been conducting a range of activities to support its members in meeting the challenges regarding these trends.

***Product stewardship (PS):** Activity conducted by product manufacturers to fulfill their mission, which is to assume responsibility for the impact of their products on the health and safety of people and the environment throughout the life cycle of the products and across the supply chain

Chemicals and Product Safety

Chemical Regulation Trends and Responses to Them

Revision of the Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, Etc.:

The revised law was enforced in two stages, with the first being launched in April 2010 and the second in April 2011. The first stage saw the inclusion of non-persistent chemical substances as targets for monitoring, and the launch of the prior confirmation system for polymers of low concern. The second stage saw adoption of obligatory notifications for the manufacture and import of general chemical substances. The JCIA worked to incorporate the industry's opinions into the measures implemented by the government by: discussing the development of screening and risk evaluation methods and the design and operation of a system to select priority assessment chemical substances, with the secretariat of the Ministry of Economy, Trade and Industry at study group meetings on the management of chemical substances and; by becoming a member of the council in order to examine screening and risk assessment methods.

GHS: For implementation of the GHS in Japan, the substances to be controlled were reviewed regarding revision of the Industrial Safety and Health Act, and introduction of GHS-based labeling to workplaces was discussed. It was decided to prepare MSDSs for and introduce labeling to all chemical substances subject to the GHS. Provisions of the PRTR Act were also being reviewed for the GHS, and the JCIA proposed consistent enforcement of revised laws, establishment of a transfer period, and enhancement of support measures for chemical companies.

REACH¹ regulation in Europe: Regarding the REACH regulation, applications for registration were made by the first deadline on November 30, 2010 for about 3,400 existing substances (total of 4,300, including new substances), including those that were manufactured in or imported to Europe at a level of 1,000 tons or

more per year, and CMR² substances. Also, pursuant to the CLP³ (European GHS), classification and labeling of substances began to be mandated in December 2010, and about 3.11 million notifications (for about 110,000 substances) were made to the ECHA by the January 3, 2011 deadline. The JCIA has been providing the latest information on the REACH to its members through its website and via other media while taking on problems related to registration and notification under the REACH.

The United States TSCA⁴: A bill to revise the law was submitted to both Houses of Congress in April 2010, however, it was abolished in the 111th session of Congress (2009 to 2010) due to political changes resulting from midterm elections. The bill, however, will be resubmitted at the 112th session (2011 to 2012). At the same time, to enhance the effects of the present law, various documents have been prepared, including the action plan for the regulation of existing chemical substances and the Inventory Update Reporting Rule Modifications. The JCIA has provided its members with recent information concerning these trends in the United States.

Regulations in Asian countries: China has revised its law on the environmental administration of new chemical substances and Taiwan revised its industrial safety and health law, while Malaysia is now establishing new chemical product laws. The Japanese Ministry of Economy, Trade and Industry is supporting these movements based on its new growth strategies under the Asian Sustainable Chemical Safety Plan. In response, the JCIA jointly launched a study group on the management of chemical substances in Asia with the Ministry's Chemical Management Policy Division, while conducting onsite surveys on the management of chemicals in ASEAN countries and working to have the industry's opinions incorporated in the government's measures.

Participation in and Promotion of ICCA Activities

The ICCA formulated and announced the risk assessment guidance in June 2010 and built and opened an online portal for the disclosure and sharing of relevant information in October that same year. At this portal website, more than 1,000 safety summaries have been registered and disclosed by world leading companies, including those from Japan. To promote the GPS/JIPS in Japan, the JCIA and the Responsible Care Committee created the risk assessment guidance and the product stewardship (PS) guidance, respectively, for JIPS in December 2010. One month prior to this, in November 2010, the GPS/JIPS Promotion Subcommittee and its working groups were established under the Committee for the full-scale launch of the initiative. Moreover, to disclose information about JIPS and support related activities, the JCIA has also opened an online portal (GPS/JIPS portal⁵).



LRI⁶ Activities

The JCIA supports research into the adverse effects of chemical substances on humans and the environment in five fields: endocrine disruptors, neurotoxicity, chemical carcinogenesis, immunotoxicity and improvements to the precision of existing assessments. In August 2010, the Association held an international symposium at Keidanren Kaikan Hall, inviting about 300 experts from

industrial, governmental and academic organizations in Japan and overseas to celebrate the 10th anniversary of the launch of LRI's activities. The symposium presented 10-year results of the activities and the latest trends of overseas research to participants. The Association has already begun to examine future directions of the LRI activities for the next decade.

Cooperation with International Organizations

OECD: According to results of the 46th joint meeting of the OECD's Chemicals Committee and Environment Policy Committee held in November 2010, the JCIA has been collecting information and implementing measures to meet urgent challenges related to chemical substances, such as the development of new testing methods that are more considerate to test animals, development of test guidelines and nanomaterials, and the effects of chemicals on children's health. In revising the OECD test guidelines, the Association carried out scientific verifications for the industry, which led to the inclusion of developmental neurotoxicity and immunotoxicity as additional evaluation options. Also, the Association updated the biomonitoring Q&A collection in preparation for the Japanese Ministry of the

Environment's national survey on children's health and the environment.

United Nations (UNEP⁷/SAICM⁸): In 2012, the "Rio + 20"⁹ conference will be held to review the progress made after the Rio Earth Summit (1992) and the WSSD¹⁰ (2002), and to examine measures to meet future challenges. Three months after the organization of the "Rio + 20" conference, the ICCM-3 will also be held to focus on the four Emerging Policy Issues adopted at the ICCM-2. Here, proposals for an international political framework or treaty that are more severe than SAICM may be made. The ICCA will establish the Rio + 20 Planning Group to examine its measures for the Rio + 20 and ICCM-3, and the JCIA will proactively cooperate with the ICCA on this issue.

Measures for Users

The management of chemical substances has shifted to risk-based regulations on their use, and management of chemical substances is now required across the entire supply chain, including with customers and consumers. In response, the JCIA is making efforts to facilitate the appropriate management of chemical substances based on closer cooperation across the supply chain. For example, the JCIA sends its members to the Japan Automobile Manufacturers Association's substance list examination working group and to the Japan Auto Parts Industries Association's regulation of chemical substances study group. Moreover, the JCIA is

participating in activities of the GASG¹¹, an international organization of automakers established for the voluntary management of chemical substances. Representing the chemical industry, the Association is playing a central role in the activities by supporting the maintenance and management of the GADSL¹² and by exchanging information and promptly responding to trends in the international regulations. Also, the Association is maintaining cooperative relations with the electrical and electronics industries mainly through the Joint Article Management Promotion-consortium.

Abbreviations

¹ REACH : Registration, Evaluation, Authorisation and Restriction of Chemicals
² CMR : Carcinogenic Mutagenic or Toxic to Reproduction
³ CLP : Regulation on Classification, Labeling and Packaging of substances and mixtures
⁴ TSCA : Toxic Substances Control Act of the United States
⁵ GPS/JIPS Portal : An online portal built by the JCIA to support the JIPS program, from which substantial information about JIPS can be obtained
⁶ LRI : Long-range Research Initiative
⁷ UNEP : United Nations Environment Programme
⁸ SAICM : Strategic Approach to International Chemicals Management
⁹ Rio +20 : Officially, the United Nations Conference on Sustainable Development, which is a follow-up of the Earth Summit held in Rio in 1992, where the results of 20-year activities and future challenges will be examined
¹⁰ WSSD : World Summit on Sustainable Development
¹¹ GASG : Global Automotive Stakeholders Group
¹² GADSL : Global Automotive Declarable Substance List

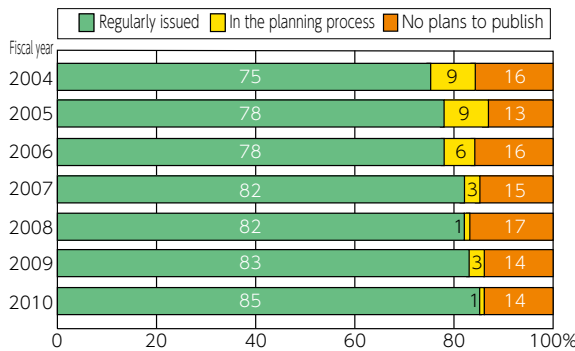
Members' Dialogue with Society

Publication of Responsible Care Reports

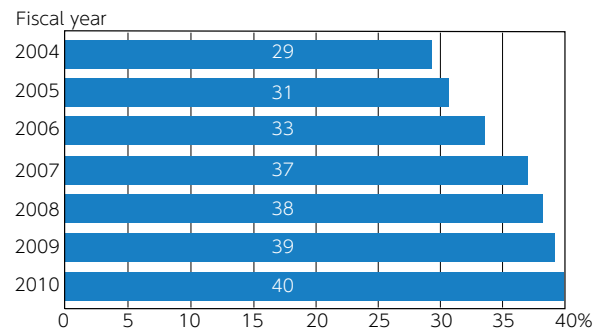
In fiscal 2010, the percentage of Members who had published Responsible Care reports increased from the fiscal 2009 level to 85% (73 companies). This percentage rises to 95% (82 companies) if it includes companies that did not publish their own

reports but were introduced in reports published by their parent companies. The percentage of Members who published local site reports also increased from the fiscal 2009 level to 40% (33 companies).

Publication of Responsible Care Reports



Publication of Site Reports



Content of Reports

As in fiscal 2009, 67% of Members referred to 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 their Responsible Care reports. In particular, in the questionnaire, nearly 100% of the companies who

published their reports answered that in them they provided data on energy conservation, prevention of global warming, industrial waste, and air and water quality with regard to environmental protection, in order to improve their accountability in response to increased social concerns over global environmental problems.

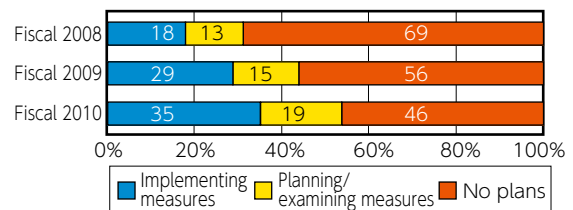
Measures for Biodiversity Conservation

In time for the 10th meeting of the Conference of the Parties to the Convention on Biological Diversity (COP10), Nippon Keidanren (the Japan Business Federation) and others launched an initiative named "the Japan Business and Biodiversity Partnership." More than 30 Members are participating in this initiative.

The percentage of Members who answered "Implementing measures (to conserve biodiversity)" increased year on year from 29% to 35%, while the percentage who answered "Planning or examining measures" increased from 15% to 19% year on year; these percentages will continue to increase. Seventeen companies answered that they were implementing measures related to the procurement of materials. Members are also taking measures to

conserve forest resources by planting trees, conserve river and ocean resources, restore ecosystems in their neighborhoods and other places, create biotopes at green spaces in factories, conserve water resources and protect endangered species.

Measures to Conserve Biodiversity

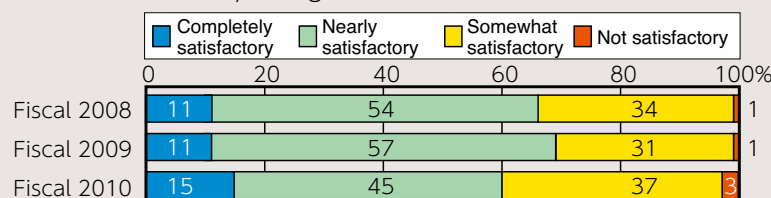


Members' Self-Assessment

Dialogue with Society

Overall rating of six self-assessment items, including "Policy," "Plan," "Communication" and "Check/monitoring"

The percentage of companies who answered "Not satisfactory" or "Somewhat satisfactory" increased to 40%. These negative responses are mainly related to the "training for dialogue and information disclosure" and the "understanding of evaluations from local communities and society at large."



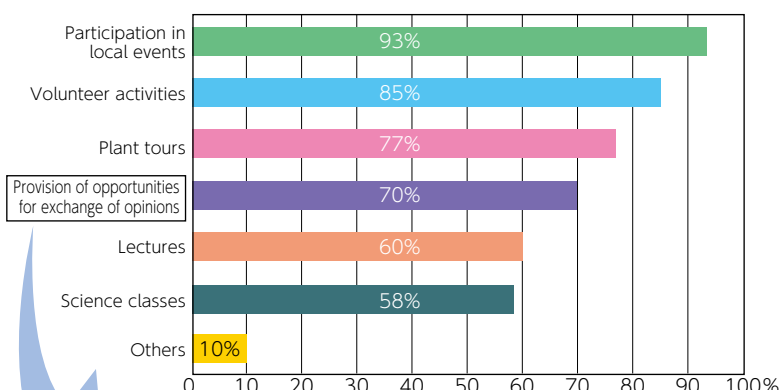
Dialogue with Society

In working to promote communication with local community residents, Members 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 2010, 70% of Members provided opportunities for local residents to exchange opinions with them and held a total of 404 dialogue meetings with local residents in 122 areas.

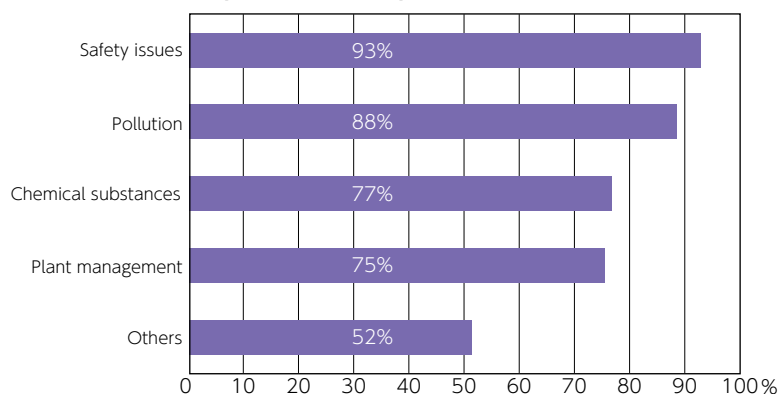
At these meetings, participants primarily discussed the following issues, which were closely related to their community: safety issues, including countermeasures for occupational accidents and other disasters, pollution, issues concerning chemical substances, and plant management issues including the addition of facilities and changes of land use. All of the above activities demonstrate the commitment of Members to promoting communication with local communities concerning their business operations.

The percentage of Members engaged in educational activities, such as organizing science classes, increased by six percentage points to 58% year on year, reflecting the growing hope that children, from whom the next generation of leaders will emerge, will have an increased interest in chemistry and science.

Means of Communication (Multiple answers allowed)



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



Activity to protect local forests
(Dai-ichi Kogyo Seiyaku Co., Ltd.)



Disaster volunteer activity (Sekisui Plastics, Co., Ltd.)



Dialogue meeting with local residents
(Nippon Chemical Industrial Co., Ltd.)



Provision of a special class by employees (NOF Corp.)

RC Committee 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 RC Committee supports these activities through its Dialogue WG and holds training sessions for Members to improve their skills in communicating with local communities. The RC Committee itself also discloses the results of its activities in its quarterly journal titled JRCC News, and in this Responsible Care Report as well as at briefings on the report's contents.

Dialogue with Local Communities

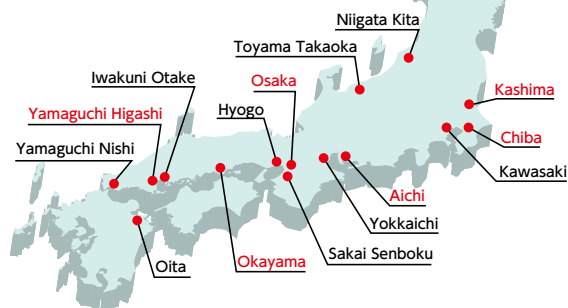
Companies located within the same chemical complex district or in a specified area jointly hold dialogue meetings with people living in the neighborhood of their facilities and with environmental NPOs. In the meetings, the companies first provide a briefing on the measures they implement for environmental protection, process safety and disaster prevention, and occupational safety and health, followed by answering any questions raised by the participants. The companies also improve their activities in the community by incorporating the opinions offered by the participants. Companies aim to enhance mutual understanding with local residents and NPOs through these dialogue meetings.

The dialogue meetings, which began in 1996, are presently held biennially in 15 areas across Japan. In fiscal 2010, the meetings were held in six areas (Kashima, Chiba, Aichi, Osaka, Okayama and Yamaguchi Higashi). Hosting companies begin making preparations for the meetings about one year in advance and devise measures to encourage people to participate in them. For example, prior surveys are conducted to identify themes of interest to local residents, survey results are incorporated into the meeting program, and experts are invited to lecture at the meetings. Plant tours are also often organized as part of the dialogue meetings. A number of participants who participated in such tours commented that the tour had helped them understand what products the local plant was making and what activities the company was conducting, which in turn made them feel closer to the plant. Also, the dialogue meetings are often held by inviting "advisors," who are able to brief participants on the meanings of complex chemical terms in an easy-to-understand manner.

It is important for companies to improve their communication skills and to provide simple explanations to local residents participating in the dialogue meetings. Technical terms need to be avoided as much as

15 Areas Where Local Dialogue Meetings Were Held

Areas where dialogues meetings were held in fiscal 2010 are shown in red



possible and visually appealing reference materials need to be used. The RC Committee has been holding risk communication training seminars annually since fiscal 2004 in order to help companies improve their communication skills both theoretically and practically at the dialogue meetings. The Committee also holds a meeting of local dialogue meeting representatives twice a year, at which participants from the 15 areas across Japan report on their local dialogue meetings and share problems identified in their areas as well as solutions to improve the quality of the meetings.

In fiscal 2008, the RC Committee established a system to support individual facilities or groups of facilities that hold dialogue meetings in areas outside the 15 designated areas. In fiscal 2010, two facilities held dialogue meetings under this system.



Local dialogue meeting held in the Yamaguchi Higashi area



Local dialogue meeting held in the Okayama area

Dialogue with Citizens

The RC Committee has also been holding dialogue meetings with ordinary consumers and consumer NPOs since fiscal 1998 based on the themes of safety and environmental impact of chemical products, which garner high interest with consumers as issues that are directly related to their daily lives. In fiscal 2010, the Committee held a dialogue meeting with consumers in Osaka (on November 19) and in Tokyo (on December 8). At the Osaka meeting, companies briefed participants on chemical substances contained in cosmetics and cleaners, and consumers introduced an initiative to dispose of waste fluorescent lamps appropriately, followed by an exchange of opinions between the two groups.

At the Tokyo meeting, three companies, respectively, presented explanations on agricultural chemicals, cosmetics and cleaners, and participants carried out a Q&A session, exchanging opinions very actively in small groups of about five people.

The Committee also began holding meetings with teachers from fiscal 2007, with the aims of exchanging opinions on RC activities with them and, through the teachers, increasing student awareness of companies' activities. In fiscal 2010, the Committee held its fourth dialogue meeting with junior and senior high school teachers at Toyama High School in Tokyo on February 27. The meeting introduced the history of chemistry to



Dialogue meeting with consumers held in Tokyo

participants, focusing on research results achieved by past chemistry Noble Prize winners, and copies of a brochure detailing the history of chemistry that was compiled by the JCIA were distributed. The brochure was evaluated very highly by participating teachers, who remarked that it could be an important supplementary teaching material that would increase students' interest in chemistry. The Committee will continue holding these meetings, seeing them as opportunities to help educate young people, who will be the future leaders.

Report Presentation

The RC Committee has been holding yearly public meetings in order to present the contents of its Responsible Care Report in Tokyo and Osaka with the aim of increasing awareness of RC activities not only among the Members but also among the mass media, universities and consumer NPOs. Copies of the report are also distributed widely to governmental agencies, libraries across Japan, universities, newspaper companies and NGOs.

In fiscal 2010, the RC Committee held public meetings in Tokyo (on December 7) and Osaka (on December 14), which attracted 94 and 65, participants, respectively. At the meetings, a lecture was initially given on JIPS activities, promoted by the JCIA as voluntary activities for the achievement of the SAICM. Subsequently, the Committee explained the Responsible Care Report 2010 and related data, followed by presentations by three Members; Asahikasei Chemicals on human resource development, Teijin on environmental protection and Mitsui Chemical on communication with local communities.

Typically, after the meetings, the Committee conducts a participant questionnaire survey and incorporates the results when organizing the next meeting. In the last survey, 85% of respondents

answered that their understanding of Responsible Care had either "improved" or "greatly improved" as a result of the meeting, which clearly provided many participants with a meaningful opportunity to learn about Responsible Care. Company presentations were also highly regarded as being both specific and easy to understand, although the JIPS activities lecture elicited high interest from some respondents as well as claims that it was too difficult to understand from others. The Committee will search for a solution to this complex situation at a later date.



Report presentation in Tokyo

Interaction among Members

Responsible Care Award

The Responsible Care Award was initiated in fiscal 2006 to commend individuals or groups of individuals who contributed to promoting and improving Responsible Care activities. This award is intended to increase motivation in those engaged in Responsible Care activities and encourage these activities. The following table shows the award winners for fiscal 2010, which is the fifth year of the award.

Award Winner	Reason for Commendation
Hideyuki Shimizu, Yasuhiro Murozono, Hiroaki Muroya and Hiroyuki Yahata Kawasaki Works, Asahi Kasei Chemicals Corp.	Reduced the environmental impact of its factory by using new wastewater treatment facilities (SEAS + MBR method)
Manzo Kaneda, Tatsuo Matsumoto, Shiro Tanaka Kao Corp.	Emission reduction activity of chemical substances
Shinichi Kaji Himeji Works, Sumitomo Seika Chemicals Co., Ltd.	Implemented measures to increase the safety of local communities in the Himeji area beyond corporate boundaries and achieved the expected results
Omuta Works, Mitsui Chemicals	For social contribution activities
Masami Asaoka, Katsuyoshi Miyauchi and Tsuneki Miyauchi Kashima Plant, Mitsubishi Chemical Corp.	Achieved zero waste emissions

The commendation ceremony took place as part of the interaction meeting held by the RC Committee on July 13, 2011. After receiving commendations from the RC Committee, the winners gave presentations on long-term activities that they had conducted. The presentations were all very useful for other companies.



Interactive Meetings for Members

The Member Relations WG holds interactive and study meetings to promote information exchange and to upgrade Members' skills.

In response to requests from certain Members, the WG held an interactive meeting in Kyushu (on October 29, 2010, with 35 participants) for the first time in five years, in addition to its usual two meetings in Osaka (on July 8, 2010, with 70 participants) and Tokyo (on February 15, 2011, with 58 participants). Participants exchanged opinions in small in-depth discussion groups of about 10 persons, and they actively debated the themes of their choice, including "global warming problems," "reducing industrial waste," "management of chemical substances," "occupational safety," "process safety and disaster prevention," and "Responsible Care activities." In each of the groups, the first person who proposed the discussion theme introduced some specific examples and then all participants actively exchanged their opinions, listing the problems faced by their companies and

giving examples of activities that had proved to be successful.

In fiscal 2010, the WG also held a study meeting on the basic theme of "safety culture;" specifically, "DuPont's safety culture—important lessons on leadership," on November 30, 2010, which was attended by about 60 people.



International Activities

Regarding the ICCA's RC activities, its RC Leadership Group (RCLG) discusses and determines the basic policies that are followed by ICCA members when conducting activities in their respective countries. In September 2010, the Gulf Petrochemicals and Chemicals Association (GPCA) joined the RCLG, increasing the total number of members to 54 countries and regions. The JCIA attends the RCLG biannual meetings (which were held in Miami and Dubai in fiscal 2010), while also participating in the monthly telephone meetings. In fiscal 2010, product stewardship (PS)/Global Product Strategy (GPS) activities were promoted in ICCA member countries as key activities for the fiscal year. At the JCIA, the RC Committee and the Chemicals Management Committee jointly established the GPS/JIPS Promotion Subcommittee in order to foster these activities and to organize workshops in Asian countries to support local PS/GPS activities. Moreover, Japan is leading RC activities in the Asia-Pacific region as the Chair of the Asia Pacific Responsible Care Organization (APRO), which is composed of associations from 12 countries and

regions. However, these activities need to be further improved. The JCIA supported the organization of the 12th Asia Pacific Responsible Care Conference (APRCC), held in Indonesia in fiscal 2011, while searching for opportunities to exchange opinions and discuss activity policies with other countries' chemical associations.



Meeting of the RCLG held in Dubai

Responsible Care Verification

Responsible Care verification is carried out by the Verification Center as an independent third party to objectively assess companies' Responsible Care activities. Companies that receive verification incorporate the results into their future activities through the PDCA cycle, thereby improving their quality. They can also improve the transparency of the activities, which would normally be difficult to achieve with internal audits.

Responsible Care Verification for Fiscal 2010

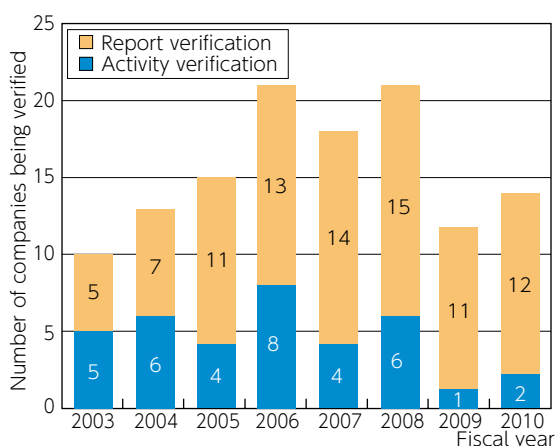
Activity verification (two companies) :Nihon Nohyaku Co, Ltd. and Hokko Chemical Industry Co., Ltd.

Report verification (12 companies): Sumitomo Seika Co., Ltd., Kao Corp, Sanyo Chemical Industries, Ltd., Daicel Corp., Kaneka Corp., Nippon Shokubai Co., Ltd., Asahi Kasei Corp., Ube Industries, Ltd., JSR Corp., DIC Corp., Denki Kagaku Kogyo K.K., and Shin-Etsu Chemical Co., Ltd.

Fiscal 2010 was the ninth year in which Responsible Care verification had been conducted since its inception in fiscal 2002, and verification has been performed on a total of 130 companies (activity verification for 42 companies and report verification for 88 companies).

The JCIA launched GPS/JIPS activities as new voluntary activities for the risk-based management

of chemical substances. At the ICCA CP&H meeting held in Davos in January 2011, participants basically agreed to introduce third-party verification to GPS within three years. The JCIA includes GPS/JIPS activities in its verifier training items in order to help them understand the new mechanism in comparison to the chemicals and product safety code used as Responsible Care verification criteria.



Our Expectations for Responsible Care



Kaori Yamane

President of the Housewives' Association (Shufuren)

Although efforts are being made across Japan toward recovery in the wake of the damage caused by the Great East Japan Earthquake, the problems caused by the accident at the Fukushima Daiichi Nuclear Power Station have not been solved and Japan remains in a critical situation. We have requested that the government implement appropriate measures for the earliest possible recovery from the disaster and radioactive contamination. However, the government has not

provided enough information or implemented sufficient measures, causing worry and increased mistrust. For us to act appropriately based on the correct understanding of risks, we need to obtain clear and adequate information on which we can base our decisions. In Japan, however, not enough education or training has been provided on how to disclose or receive necessary information, and there are not enough people or organizations who can serve as intermediaries between the information providers and information receivers, despite their long-recognized importance. It is now time for us to faithfully implement "risk communication," which is a term that is already well-known to us, so that we can accurately understand the risks surrounding us, share risk information, trust each other, and think together to deal with these risks. Now, a greater number of people are recognizing the importance of "consumer citizenship," meaning all individuals participate in society and think about its well-being as a whole.

In 2012, which falls on the 20th anniversary of the Earth Summit, the "Rio + 20" conference will be held in Japan, and the Shufuren will

be participating in its preparatory committee. Principle 14 of the Rio Declaration demands that "States should effectively cooperate to discourage or prevent the relocation and transfer to other states of any activities and substances that cause severe environmental degradation or are found to be harmful to human health." This principle very much applies to present-day Japan, which is facing a range of problems due to the March 11 disaster and nuclear power plant accident, and the conference will provide the country with an opportunity to communicate its ideas about true sustainability to the world. In 2011, which was the International Year of Chemistry, I believe that many children elevated their expectations of chemistry through various related events. We need to continue our efforts to increase safety in our society by giving more consideration to the global environment through learning and through dialogue. I expect that Responsible Care activities will be further developed for the present and future state of the Earth and for the benefit of all creatures living on it.



Nobuyuki Kawashima

Executive Director of the Chemical Society of Japan

In 2011, the Chemical Society of Japan and the Japan Chemical Industry Association jointly held a range of events to commemorate the International Year of Chemistry. In that year, a total of 1,372 commemorative events were held in 97 countries (as of December 16, 2011), of which 139 (the third largest number of events held by any country) were held in Japan with the likely participation of several hundred thousand people. One of the purposes of RC activities is

to foster communication with society, and I think we were able to play this role by holding these events during the International Year of Chemistry.

The JCIA announced the results of the LCA conducted on chemical products in Japan to showcase the role that the chemical industry could play in reducing greenhouse gas emissions. It is indeed very meaningful that the Association indicated the extent of contributions that the chemical industry could make to society in a specific and quantitative manner. It is essential for the Association to include more products and technologies in the LCA target and to continue conducting activities to increase the public's understanding of the industry.

In the January 6, 2011 issue of *Nature*, chemistry was deemed to be a "central science" which helps to create inventions and discoveries in other scientific fields. All chemists indeed regard chemistry as such; however, those outside the chemical field seem to regard chemistry as something that is just available upon request. The chemical industry, which also tends to be regarded as a mere procurement source or a supplier supporting the manufacturing industry is now required

to lead as a "central industry," with strong commitment and decisiveness.

Kofi Annan, the seventh Secretary-General of the United Nations, listed water, energy, health, agriculture, biodiversity and poverty ("WEHAB + P") as the priority issues to be tackled by humankind. In Japan, based on recognition that the ways of thinking and behaving have greatly changed since the March 11 disaster, scientists and engineers are fostering innovations to solve the problems faced by the country. Under these circumstances, the importance of RC activities will further increase, and it is needless to say that all those engaged in chemistry, including both academic and industrial associations, should cooperate together in these activities as a unified team.

The JCIA has been leading RC activities in Japan since 1995 and in order to prevent these activities from becoming outdated, we must always keep in mind their basic premise: "I am responsible, and I care." It is essential for individuals to conduct RC activities seriously and in cooperation with each other beyond industrial and corporate boundaries.

The RC Committee Members

87 companies as of December 2011

ADEKA Corp.
Air Products Japan, Inc.
Asahi Glass Co., Ltd.
Asahi Kasei Corp.
BASF Japan Ltd.
Central Glass Co., Ltd.
Chugoku Kayaku Co., Ltd.
Daicel Corp.
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.
FUJIFILM Corp.
Hitachi Chemical Co., Ltd.
Hodogaya Chemical Co., Ltd.
Hokko Chemical Industry Co., Ltd.
Idemitsu Kosan Co., Ltd.
Japan Carlit Co., Ltd.
JNC Corp.
JSR Corp.
JSP Corp.
Kaneka Corp.
Kansai Paint Co., Ltd.
Kanto Denka Kogyo Co., Ltd.
Kao Corp.
Koei Chemical Co., Ltd.
Kuraray Co., Ltd.
Kureha 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.
Nankai Chemical Co., Ltd.
Nihon Nohyaku 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 Tansan Co., Ltd.
Sika Ltd.
Sumika Bayer Urethane Co., Ltd.
Sumitomo Bakelite Co., Ltd.
Sumitomo Chemical Co., Ltd.
Sumitomo Seika Chemicals Co., Ltd.
Takeda Pharmaceutical Co., Ltd.
Taoka Chemical Co., Ltd.
Tayca Corp.
Teijin Ltd.
The Nippon Synthetic Chemical Industry Co., Ltd.
Toagosei Co., Ltd.
Tokuyama Corp.
Tonen Chemical Corp.
Toray Industries, Inc.
Tosoh Corp.
Toyo Ink SC Holdings Co., Ltd.
Tsurumi Soda Co., Ltd.
Ube Industries, Ltd.
Wilbur-Ellis Co., (Japan) Ltd.
ZEON Corp.



Responsible Care[®]
OUR COMMITMENT TO SUSTAINABILITY

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