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

Responsible Care Report 2002

The Japan Responsible Care Council

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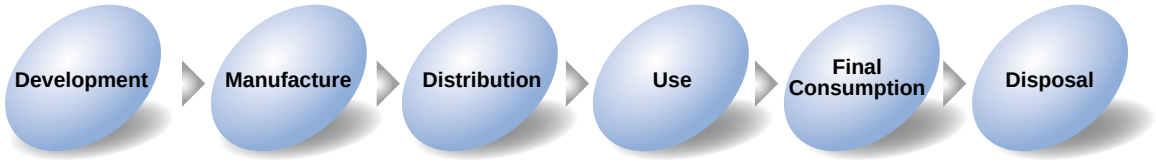
C O N T E N T S

Do you know Responsible Care ?

What Is Responsible Care?

Chemical substances are now an indispensable part of our livelihood. However, when improperly handled, they are also latently hazardous substances that threaten human health and environment.
Although concerns over the health, safety and environment have become widespread as a result of the expansion of global environmental problems and the growth of industrialized regions, technological developments continue to face new dilemmas. Given these circumstances, chemical substances regulations have become limited in their capacity to fully preserve the health, safety and environment. Presently the public call for handlers of chemical products to take responsible and voluntary action to protect the health, safety and environment is greater than ever.
In response, the global chemical industry, comprising a multitude of corporations that handle chemical substances the world over, is working voluntarily to preserve the health, safety and environment in every process, from the development of chemical substances through their manufacture, distribution, use, final consumption and disposal as well as conducting dialogue and discussion with the public by openly disclosing the results of these efforts. These efforts are known collectively as Responsible Care.



Responsible Care was initiated in Canada in 1985. The year 1990 marked the establishment of the International Council of Chemical Associations (ICCA). The 47 countries around the world initiate Responsible Care (as of August 2002). In 1995, the Japan Responsible Care Council (JRCC) was established within the Japan Chemical Industry Association (JCIA) by 74 corporations, primarily manufactures and handlers of chemical substances. With the JRCC's establishment, corporate efforts to address environmental and safety concerns were united and intensified, and the goal of enhancing public understanding was undertaken. As of October 2002, the JRCC comprised 114 corporate members.

The Responsible Care Logo

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

Responsible Care Implementation Items

The JRCC and its member companies collectively take action in four principal areas:
- Environmental preservation (protecting the global nature and the health)
- Process safety and disaster prevention (striving to prevent disasters at industrial facilities)
- Occupational safety and health (protecting the safety and health of workers)
- Product stewardship (clearly identifying the properties and handling methods of chemical products and protecting the health, safety and environment of all persons who handle these products, including customers)

The JRCC and its members also maintain
- Dialogue with the community

by publicly reporting the results of these efforts.
These efforts are spearheaded primarily by the Planning and Management Committee. Under the committee, there are the Steering Committee and six working groups, which are responsible for annual reports, dialogue, international affairs, verification, PRTR (Pollutant Release and Transfer Register) promotion and education, and member experience exchanges.

★ Refer to the JRCC's web site, http//www.nikkakyo.org/organization/jrcc/index.html.

Message from JRCC Chairman

Hiroyuki Nakanishi
Chairman
Japan Responsible Care Council

Since UN Conference on Environment and Development held in Rio de Janeiro in 1992, the industries' environment and safety activities have been promoted by seeking for the harmonious coexistence of mankind and global environment. The chemical industry has contributed to form rich society by providing useful chemicals, which have the potential risks of giving harmful influence on health and environment during their life cycle of production, use and disposal, if they are handled improperly. It is the mission of the chemical industry toward the "development of sustainable society", to maximize the merits of chemical substances and minimize potential risks, and thereby to result in winning the public trust.

JRCC has strived to promote the Responsible Care activities for some 7 years since its establishment in April 1995. The number of member companies increased to 114 from the starting membership of 74 companies. The fundamental principles of the voluntary management and self-responsibility have taken deeper roots among the member companies year by year owing to the efforts of people concerned.

Followings are the brief outline of our current activities.

1. The JRCC member companies have continued their efforts to enhance initiatives for environment, safety, health and communication with the society and have marked steady improvement. The voluntary improvement has been made in the environmental performances like the reduction of air pollutants and the reduction of industrial waste, aiming at the achievement of their goals.
2. The Responsible Care verification system, which aims to enhance transparency of initiatives, has officially started since April 2002, after having gone through a pilot verification. Future repletion and wider implementation of the system are expected.
3. As for the safety assessment of existing chemicals of the High Production Volume Chemicals Initiative (HPV) conducted internationally under the ICCA, the assessment meeting of OECD highly acknowledged its steady progress and reliability. As for Long-range Research Initiative (LRI) on the effects of chemical substances on human health and the environment, the JRCC continues its research with much expectation of Europe and USA.

In the "World Summit on Sustainable Development" held in Johannesburg in August-September this year, initiatives for Responsible Care, HPV and LRI were highly evaluated for achieving progress toward sustainable development. In the ICCA board of directors meeting held in Ireland in October, lively discussions were made on the current status and future of Responsible Care initiatives among the countries participated. The importance of these initiatives was re-confirmed.

I sincerely hope that the JRCC Responsible Care Report 2002 will enhance communications with you and also your understanding about the JRCC's Responsible Care initiatives. I wish to take this opportunity to ask for your further support of the JRCC.

November 2002

H. Nakanishi

Board Members of Japan Responsible Care Council

Chairman	**Hiroyuki Nakanishi**	Chairman, Japan Chemical Industry Association, President, Mitsui Chemicals, Inc.
Vice Chairman	**Tadasu Tachi**	Counselor, Kaneka Corporation
Vice Chairman	**Minoru Ohnishi**	Chairman, Fuji Photo Film Co., Ltd.
Auditor	**Takanori Yoneyama**	Advisory Director of the Board, Konica Corporation
Auditor	**Akira Ohira**	Chairman, Mitsubishi Gas Chemical Company, Inc.
Director General	**Masami Tanaka**	Director General, Japan Chemical Industry Association

Message from JRCC Advisory Board Chairman

Hiroyuki Yoshikawa
Chairman
Japan Responsible Care Council Advisory Board

Many state representatives put emphasis on the need of technologies at WSSD (World Summit on Sustainable Development) held in September 2002 in Johannesburg. As already reported by media, Plan of Implementation was not necessarily adopted due to unsolved confrontation between advanced countries and developing ones, in spite of the Summit's slogan being “Making it Happen”. However, it should be specially noted that the existence of the scientist community grew big in the international politics for the first time, as an article in the science magazine, “Science”, emphasized.

In the remark as a state representative, for example, French President Chirac, Jacques Rene, mentioned “The world is like a burnt-down house, which requires new knowledge to reconstruct, and that is nothing but scientific knowledge.” Poverty and abundance are mixed in Europe and Africa. In the area of abundance, BSE is a menace and in the area of poverty AIDS is. The American continent is facing unstable economy. Asia enjoys fast economical growth, but environmental problems are barriers to its growth. These are symbolic phenomena representing difficulties of sustainable development to aim at structuring abundant society, while maintaining the global environment. French President Chirac, Jacques Rene, pointed out these were the problems of the modern times caused by the activities of mankind.

Being chairman of ICSU (International Council of Scientific Unions), I was invited to WSSD by United Nations and had an opportunity to speak at WSSD on behalf of scientists in the world, which unexpectedly answered the questions raised by French President Chirac, Jacques Rene and many other state representatives.

I stated “Science has made great contributions to enriching mankind, but contributions through industries have caused new menace that mankind never faced in the past. The search for new scientific knowledge and proper use of scientific knowledge are indispensable for the solution of this menace. Scientists are now prepared to tackle these problems.”

The international conference on “Endocrine Activated Substances” to be held in Yokohama at the end of November under the joint auspices of SCOPE under ICSU and member's IUPAC (International Union of Pure Applied Chemistry). The conference meets the basic policy of ICSU. This subject is probably the biggest global environmental issue next to the global warming, that was sensationally reported by mass-media as an issue of endocrine disrupters. The most important is, however, to give a piece of calm and neutral advice to the policy decision makers and the public at large, and the Yokohama conference is expected to lay foundation for it.

This scientists’ spirit is implied in the meaningful term of Responsible Care. In reality, the morale and responsibility of the people concerned with production and consumption or producers and consumers are deeply related. However, it must be remembered that there is scientific spirit as a common base of those people concerned.

H Yoshikawa

Members of Japan Responsible Care Council Advisory Board

Hiroyuki Yoshikawa	President, National Institute of Advanced Industrial Science and Technology
Kazuo Akita	Professor Emeritus, University of Tokyo
Yoichi Uehara	Professor Emeritus, Yokohama National University
Katsutoshi Kato	President, Japanese Federation of Chemical Workers Unions
Masaomi Kondo	Director General, Energy and Chemistry Evaluation and Research Institute, Japan
Haruhiko Sakurai	Executive Director, Japan Industrial Safety and Health Association; Head of Occupational Health Research and Development Center.
Tadao Terao	Chairman, Society of Japanese Pharmacopoeia
Hiroyuki Torii	Professor, Research Laboratory for Nuclear Reactors, Tokyo Institute of Technology
Motoo Nakahigashi	Adviser, UBE INDUSTRIES, LTD.
Keiko Nakamura	Deputy Director General, JT Biohistory Research Hall
Nagaharu Hayabusa	President, The journalist workshop for global citizens
Miyoko Hyodo	Vice President, Japan Housewives’ Association
Akio Yamamoto	Professor Emeritus, Tokyo Institute of Technology

JRCC Activity Plan and Its Implementation Status

It has passed eight years since the JRCC was established in April 1995. It has achieved meaningful results as originally planned at the time of its establishment. However it must be recognized that the public in general evaluates severely the chemical industry and chemical substances. It is also necessary to enhance communication with the public, as the recognition of Responsible Care is still at low level.
The JRCC has been conducting its activities for four priority targets set in its middle term plan (2001-2005). The following table shows the activity plan for the fiscal year of 2001 and its implementation status, and also its plan for the fiscal year of 2002.

Priority Targets in the JRCC Middle Term Plan

①Increase the transparency of Responsible Care activities and encourage information disclosure and communication with the public.

②Promote adoption of Responsible Care.

③Play a leadership role in Asian nations.

④Improve its performances continuously.

	Plan for Fiscal 2001	Implementation Status in Fiscal 2001	Plan for Fiscal 2002
Information Disclosure	• Drafted and published reports in response to PRTR system • Supported members publish Responsible Care reports	• Drafted JRCC's Responsible Care Report • Held an annual report meeting in Osaka and in Tokyo • Held workshop about RC report for members	• Draft and publish reports
Outreach	• Kept local communities informed through dialogue-style forums (at 8 locations including new locations) • Conducted dialogues with consumer organizations	• Held dialogue-forums at 5 locations. Start dialogue forums at new locations • Held dialogue forums with student organizations in addition to consumer representative groups	• Prepare a guidebook for dialogue with local communities • Implement dialogue with local communities and consumers organizations including new ones
Promote Responsible Care activities	• Expanded membership	• Achievement in 2002 (6 new members)	• Expand membership by 10% • Support affiliates' activities
International Activities	• Supported RC initiatives in Asian countries • Supported Responsible Care activities of Japanese companies operating in Asia	• Dispatched experts to Thailand • Started studies to enhance understanding of current status	• Support Asian countries • Support Responsible Care activities of Japanese companies operating in Asia
Chemical product safety	• Investigate needs of the chemicals user industries	• Conducted dialogue with the electrical machinery industry at the report meeting on Responsible Care	• Dialogue with the chemicals user industries
Support Responsible Care activities of members	• Staged experience exchange meetings and workshops meetings for members	• Staged two exchange meetings and two workshops meetings for members	• Hold experience exchange meetings in line with the needs of members
Promote adoption and understanding of PRTR system	• Reeducate members • Supported PRTR training of nonmembers	• Held training seminars in Osaka and Tokyo • Dispatched lecturers to external training seminars	• Revise the guidebook • Conduct seminars
Responsible Care verification	• Set up suitable systems	• Implemented a pilot verification	• Conduct full scale verification at more than 10 companies

Summary of the Responsible Care Report 2002

This is the JRCC's seventh annual report.

Features of the Responsible Care Report 2002:

- In accordance with the basic policies regarding its publication, this report is an overview and summary of the year spanning April 2001-March 2002 and focuses primarily on the individual activities of 114 JRCC members.
- The quantitative presentation of Responsible Care activities has been compiled on the basis of performance data supplied by JRCC member companies, while the qualitative presentation of Responsible Care activities has been compiled based on written reports of fiscal 2001 JRCC activities, including surveys carried out among JRCC member companies.

Summary

Environmental Preservation

★Surveys regarding industrial waste, energy consumption, CO_2 emission volumes, and PRTR activities have been integrated into JCIA surveys.

- In its voluntary environmental action plan, the Japanese chemical industry has set the target to achieve the reduction of final waste treatment volume by 80% in fiscal 2010 against the fiscal 1990 level. JRCC member companies reduced waste disposal volumes by 74% in fiscal 2001 compared with the fiscal 1990 level.
- In its voluntary environmental action plan, the Japanese chemical industry has set the target for unit energy consumption levels of 90% of those for fiscal 1990, to be achieved by fiscal 2010. JRCC member companies achieved 92% of fiscal 1990 levels in fiscal 2001.
- Regarding PRTR activities, as the "Law Concerning Reporting, etc., of Release of Specific Chemical Substances to the Environment and Promotion of the Improvement of Their Management" went into effect in April 2001, content regarding government-designated substances has been included in this report. In addition, information has also been included on the Japanese chemical industry's efforts regarding 12 toxic air-polluting substances, which correspond to its Second Term Voluntary Action Plan (the targets of which are 13~71% reductions compared with figures for fiscal 1999 to be achieved by fiscal 2003).
- The emission of SOx (sulfur oxides), NOx (nitrogen oxides), Soot and COD (chemical oxygen demand) has been maintained at low levels.

Investment in Environmental Preservation

- Investments in environmental preservation measures amounted to \67.8 billion, or 0.45% of net sales.

Process Safety and Disaster Prevention

- The number of accidents occurred in the member companies slightly fluctuated during the last several years however has been kept almost at the same level. Measures are being taken to assess the aging condition of equipment and to implement the necessary investments. Investments in process safety and disaster prevention are on an upward trend.

Occupational Safety and Health

- The lost time injuries rate (number of lost time injuries / million working hours) at member companies was 0.37, and the severity rate (lost days / thousand working hours) was 0.08. Both figures increased compared with the previous year but the member companies have maintained the overall frequency and severity rates well below those of the whole manufacturing and chemical industries.

Product Stewardship

- More than 95% of member companies have safety assessment guidelines in place, and also issue Material Safety Data Sheets (MSDSs) for even those chemical substances that are not specified by laws. However, it has come to our attention that MSDSs do not always reach the end users. This situation is yet to be resolved.

Research for Chemical Safety

- As in the previous fiscal year, this report discusses the state of efforts aimed at the High Production Volume (HPV) Chemicals initiatives and the Long-range Research Initiative (LRI) both in Japan and around the world.

Self-Assessment of Responsible Care Implementation Items and Action

- In compliance with the full-fledged implementation of the PRTR system, internal database compilation and involvement in risk communication are growing steadily. The self-assessments by member companies have become increasingly stringent, as illustrated by their review of Responsible Care systems and objectives.

Communication with Communities

- Member companies' efforts to communicate with their respective communities through surveys and case studies are presented with photographs.

Member Company Activity Survey

- This report introduces the current state of member companies' Responsible Care reports (or environmental reports), which are valuable tools for the dialogue with the public and local communities.

JRCC Activities

- This report presents JRCC activities as implemented by the six working groups (WGs), which are composed of the member companies.
- This report introduces the safety awards and safety symposiums organized jointly by JCIA and JRCC. This report also introduces "25 Year History of Safety Awards", which was published as the summary of the past safety awards.
- In the column of "Dialogue with the Public", this report presents the community dialogue held in each part of Japan, and also the dialogue meetings with consumers' group and student organizations.
- In an effort to raise the quality of Responsible Care activities and improve reliability, the JRCC has established a third-party verification system, which has been implemented officially since April 2002.
- In addition to the regular members' meetings to exchange their experiences, JRCC has started workshops, which was organized by "Environmental Accounting Study Group."
- Participation in the Asia-Pacific Responsible Care Conference and support for Responsible Care in Thailand are reported as the international activities.

Plan for Reduction of Industrial Waste

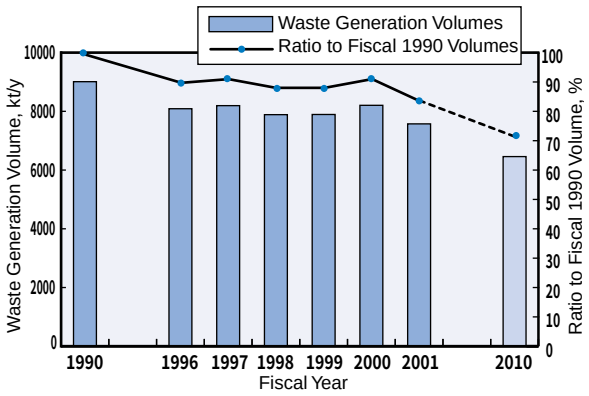
Since its foundation, the JRCC has worked to reduce industrial waste by setting regulations that integrate waste reduction into each member company's annual and long-term plans.
Each JRCC member company strives to reduce final waste treatment volumes through various initiatives aimed at reducing, reusing, and recycling waste. The social responsibility of especially manufacturers for these activities has been increasingly heavier in recent years.
Concurrently, in line with the Keidanren's Voluntary Action Plan on the Environment, the JCIA is working to attain the goal of reducing final waste treatment volumes by approximately 80% compared to fiscal 1990 levels by fiscal 2010 (plans were amended in fiscal 1999).
As manufacturers and handlers of chemical substances, JRCC member companies have also adopted the JCIA's target and have implemented a number of projects aimed at reducing waste.

Current Progress and Programs for Waste Generation

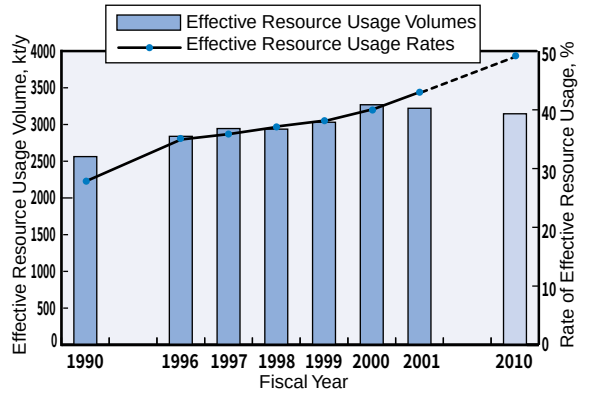
Reduction of Waste Generation Volumes

Generated volumes of industrial waste in fiscal 2001 represented a 16% decline compared to the fiscal 1990 volumes generated. Industrial waste generation in fiscal 2001 declined slightly against the previous year due to the general decline of production, but actual waste volumes stayed at approximately the same level over the past several years.
Although further technological breakthroughs are required to reduce waste generation volumes, the JRCC members are studying various plans to reduce waste and to make efficient use of sludge in line with revisions to the Waste Disposal and Public Cleaning Law and the Law for Promotion of Effective Utilization of Resources.
JRCC member companies' collective plans target a reduction of 28% by fiscal 2010 compared with waste generation volumes in fiscal 1990.
JRCC member companies have implemented a variety of concrete measures to reduce waste generation.
In implementing their waste reduction plans, many companies cited an increase of number of the facilities that successfully achieved zero emission. They generally tried to achieve both waste reduction and economical effect at the same time by establishing a system to properly treat wastes, exercising thorough risk control, or recycling by 100% to reduce actual landfill volumes.
This activity is quite difficult and time consuming but JRCC member companies are tackling this problem with patience.

Industrial Waste Generation Volumes



Effective Resource Usage Volumes



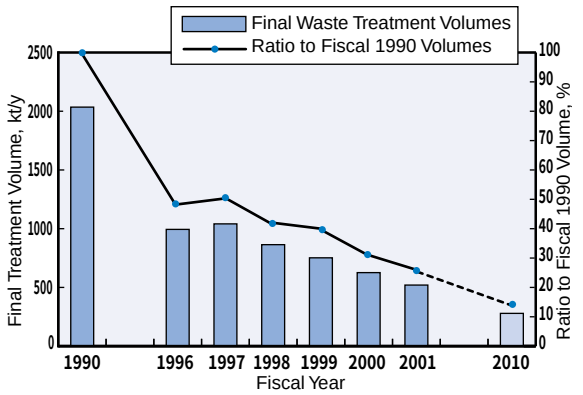
Effective Resource Usage Rates

The rate of effective resource usage (ratio of effective use volumes to generated waste volumes) in fiscal 1990 was 28%. In fiscal 2001, this rate was raised to 43%, and the targeted rate for fiscal 2010 is 49%.
Each JRCC member company has been actively promoting recycling activities. The search for and use of recycling companies as well as utilization and circulation of recyclable resources in and out of the member companies have become major tasks for all member companies.

Final Waste Treatment Volume

The volume of final waste treatment for fiscal 2001 was approximately 520,000 tons and the target for fiscal 2010 is 280,000 tons (both figures derived from 92 member companies). These figures represent a 74% and 86% reduction, respectively, compared with figures for fiscal 1990, and the JRCC's fiscal 2010 reduction target is higher than that of the JCIA, which is approximately 80%.

Final Waste Treatment Volumes



Eco-Town Scheme

The eco-town scheme was created jointly by the Ministry of International Trade and Industry and the Ministry of Health and Welfare (current the Ministry of Economy, Trade and Industry and the Ministry of the Environment) for the purpose of realizing the zero emission conception. Its objectives are the followings, i.e. ①Economic promotion of local communities by environmental industries utilizing their industrial accumulation ,②Structure of a social system of material circulation, in which industries, public sectors and consumers in the community participate.
As of May 2002, there were 16 eco-towns in Japan. Each local municipality is promoting its own measures against waste issues. For instance, in Kita-Kyushu City, "Environmental Complex" is being built centering such recycling plants for PET bottles, domestic electrical appliances, vehicles, etc. in the complex. In Yamaguchi Prefecture, a new raw material recycling system is being structured, based on the existing basic material industries as chemical, cement and other industries.
The JRCC member companies participate in the eco-town scheme and strive further to make effective use of resources, aiming at the formation of a recycling and circulation type society.

Case Studies of JRCC Member Companies' Industrial Waste Reduction Efforts

Company A

Company A collects used toner containers and consumable parts of copying machines at 7 locations in Japan. The company has achieved 92% of recycling rate by promoting reuse and material recycling. The company has adopted, for instance, "reusable standard parts" for its motors, which can be used in the next generation model.

Company B

In production of cement, a variety of industrial wastes are used. Company B recycled 1,820 thousand tons of wastes and by-products, out of which 1,770 thousand tons were materially recycled and 50 thousand tons were thermally recycled. The wastes materially recycled included sewer sludge, etc. and the representative items that thermally recycled were used tires from abolished vehicles. The cement industry has been undertaking the treatment of waste meat and bones, which is currently a big issue for BSE (Bovine Spongiform Encephalopathy).

Company C

Company C, a manufacturer of pharmaceutical products, chemicals, agricultural chemicals and so forth, has been recycling used papers from its offices completely within the local community, by making good use of community circle activities. It is called "Used Paper Complete Recycling System within the Region". A collection company transports to paper manufacturers used papers (high quality paper, news paper, cardboard, magazines, etc.) that are properly separated at each facility, and the paper manufacturers produce a variety of recycled paper products (mainly stationery with the circle's trademark) as specified by the community circle members. The community circle members purchase such products and use them. This circulation has firmly rooted in the community with excellent results.

Environmental Preservation (Energy Saving, CO_2

Based on the Keidanren's Voluntary Action Plan on the Environment, the JCIA is currently striving to reduce unit energy consumption to 90% of that in fiscal 1990 by fiscal 2010. Each JRCC member company has drawn up medium-term plans to achieve this goal and continues to extend efforts to conserve energy.

The accompanying graphs are based on data collected from 90 member companies. Unit energy consumption has been improving steadily since fiscal 1990. However in fiscal 2001, unit energy consumption increased by 1% compared with fiscal 2000 due to decline of production (Production index declined by 6%.)

Although production in fiscal 2001 was 115% of that of fiscal 1990, CO_2 emissions were kept to 108.6% due to improved unit energy consumption.

(Unit energy consumption is based on the energy required for manufacturing divided by production volume. A production index is a comparison of figures to their fiscal 1990 counterparts made to determine annual energy consumption based on the presumption that unit energy consumption will have not improved.)

Energy consumption volumes and CO_2 emission volumes have increased since fiscal 1990. However, these figures have started to level off or to decline slightly since fiscal 1997 after JRCC was established. It is still expected for JRCC member companies to continue their efforts to reduce them. It was decided that energy consumption volumes in cement production were to be compiled by the Japan Cement Association in compliance with the Keidanren's Voluntary Action Plan on the Environment, therefore they were deleted from the JRCC's data retroactively to 1990. As a result, the energy consumption volumes and CO_2 emission volumes were reduced compared with the volume in Report 2001.

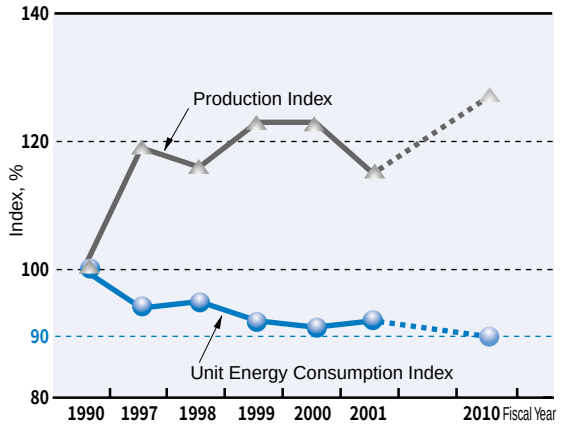
＜Factor Analysis of CO_2 emission volume Increase＞

Although unit energy consumption decreased by 8% in 2001 compared with 1990, CO_2 emission volumes increased by 8.6% in 2001 compared with 1990. Its main factors can be analyzed as follows.

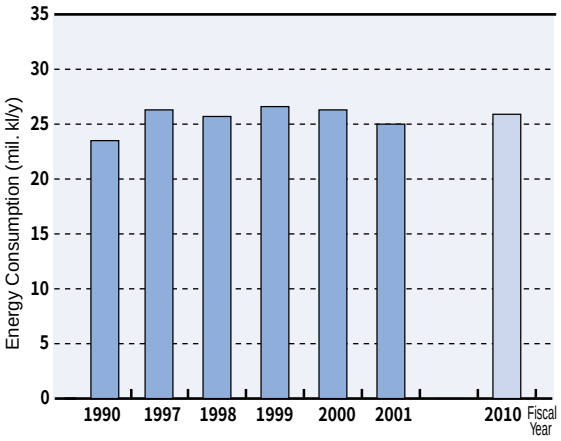
Increase by expansion of production	**15.1%**
Save energy efforts by JRCC members	**−5.2%**
Improvement by purchased power unit	**−1.3%**
Change in CO_2 emission volumes	**8.6% (Increase)**

(Reference) It was decided at the COP3 conference (the 3rd Session of the Conference of the Parties to the UN Framework Convention on Climate Change), held in December 1997, that all countries would reduce their volumes of greenhouse gas emissions (including Carbon dioxide, Nitrogen Monoxide, Methane, Hydrofluorocarbons, Perfluorocarbons and Sulfur hexafluoride. In line with this decision, it was decreed that Japan would reduce its overall emissions of these greenhouse gases by 6% compared to 1990 levels in the commitment period of 2008 to 2012. "Outline of Countermeasures against Global Warming" was adopted at the Cabinet in March 2002 in preparation for the ratification of Kyoto Protocol to the United Nations Framework Convention on Climate Change, and it stipulated targets for each sector (industries, transportation, civil) in order to attain the reduction of volumes of greenhouse gas emissions by 6% compared to 1990 levels as a whole nation. The industrial sector has already made considerable efforts for reduction of emissions but more efforts will be required as the industrial sector is responsible for 40% of the total emission volumes of the whole country. In May 2002, the Kyoto Protocol was ratified in the diet as proposed. At the same time Revised Global Warming Countermeasure Promotion Law (brief name) was promulgated and enforced, commencing practical move toward attaining the goal set by the Kyoto Protocol.

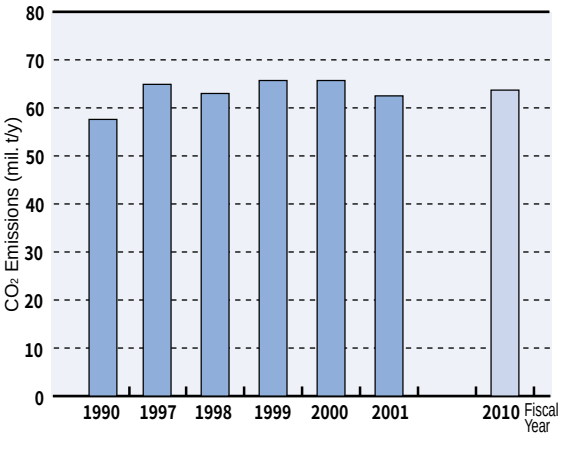
Trends and Forecasts in Unit Energy Consumption Index and Production Index



Energy Consumption (as crude oil)



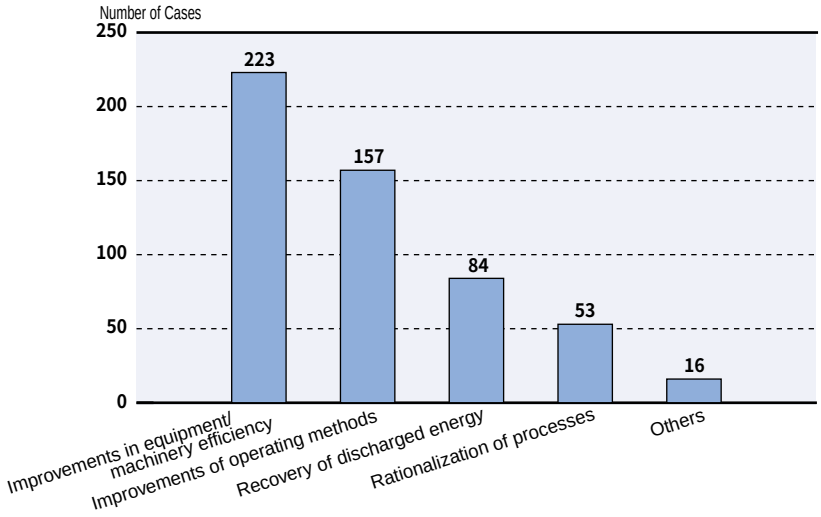
CO_2 Emissions



Emission Control)

Energy-Saving Achievements

Actual measures taken by JRCC member companies for energy-saving in fiscal 2001 are shown in the following graph as a result of compilation of JCIA's "Voluntary Save-Energy Action Plan for Environmental Conservation", in which most of JRCC member companies are participating. The total reduction of energy consumption in terms of crude oil reached 268 thousand KL on a yearly basis.



Other Global Warming Countermeasures

(1) Contributions to civil and transportation sectors (through the effects of products and services)

- Through the promotion of solar power generation systems (integrated with roofing tiles or materials), the conversion of solar energy into electricity and heat energy is to be extended. In addition, by adopting heat insulation materials for new houses, it is planned to reduce annual energy consumption by 10,000 kilo-liters in terms of crude oil.
- Development of coupling materials for green tires and carbon black, and also development of synthetic rubber for light duty tires/green tires, thereby achieving reduction of fuel consumption (Green tires make a 5-6% better mileage than ordinary tires.)
- Supply of clothing material that is excellent in sweat absorption, thereby making it comfortable to stay in a mildly cooled room or that is quick in drying, thereby giving dry and cool feeling in summer. Supply of such clothing material with hollow fibers containing much air that makes it possible to stay in a mildly heated room in cold winter.

(2) Countermeasures against Greenhouse Gases other than CO_2

The following initiatives are being implemented to restrict emissions of HFC and other greenhouse gases:

- Development of alternatives to HFC and other greenhouse gases
- Reuse of recovered gases and development of disposal technologies for non-reusable gases in concert with the industries in which they are used
- Sealing of plants and facilities and intensification of equipment inspections for preventive and protective measures against leakage from plants. Exclusive use of filling lines.
- Increase of container size and recovery of left-over gas in gas cylinders to return.

Progress of Environmental Preservation Measures in Overseas Business Activities

In overseas business activities of JRCC member companies, laws and regulation on "Environment, Safety and Health" of respective country must of course be observed, and JRCC member companies are endeavoring to transfer the latest energy-saving and environment preservation technologies, processing technologies and high-efficiency machinery.

Environmental Preservation (The PRTR System

PRTR (Pollutant Release and Transfer Register) is a system that enterprises for themselves assess and compile quantitative data on many kinds of chemical substances potentially harmful to human beings and ecological systems that are released into the environment (air, water and soil), whether they are contained in wastes or otherwise transported out of business facilities, and the enterprises report the data to the Government, which estimates, complies and publish the released quantities and transported quantities based on the data submitted by the enterprises and its estimation.

PRTR is expected to have versatile significances as follows.

(1) Improvements in voluntary control on chemical substances by enterprises

(2) Data for administration to make priority judgment on measures to be taken to control chemical substances.

(3) Enhancement of understanding about release and control situation of chemical substances through information disclosure to the people.

(4) Basic data for environmental conservation

(5) Acknowledgement of effects and progress of environmental conservation activities concerning chemical substances.

The publication of information can be useful in assessing danger levels and identifying latent dangers to people and the environment by clearly stating volumes and sources of release or transfer to the environment of specified substances. PRTR has been legalized in the USA, Holland, etc. OECD (Organization for Economic Cooperation and Development) advised the member countries to legalize PRTR in 1996. In Japan the Law Concerning Reporting, etc., of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management (the PRTR Law) was issued in July 1999 and went into effect on March 30, 2000. Assessment of the volumes of the 354 chemical substances specified by the law was commenced in fiscal 2001. Data reporting started in fiscal 2002 and government disclosure will be conducted in future.

History of JCIA Voluntary PRTR Efforts

The JCIA has long considered the reduction of emissions into the environment essential to the chemical industry's gaining of public trust. In 1992 the JCIA conducted survey on PRTR programs in other countries and started a pilot survey on 13 chemical substances in Japan. In 1994, JCIA established survey guidelines, compiled basics of calculation methods to commence survey, and announced the survey results at the Chemical Product Council. The object chemicals for survey increased gradually and reached 284 substances in 1998. JCIA disclosed for the first time the top 5 substances of the greatest emission volumes in each prefecture in 1998. The object substances for survey have reached 480 kinds since 2000, including 354 chemical substances specified by the PRTR Law without counting double such substances specified by both PRTR and JCIA.

The JRCC also conducts surveys to assess the emission and transfer volumes not only of chemical substances specified by the PRTR Law, but also of those chemical substances specified by the JCIA of its own volition. Based on these data the JRCC will proactively promote such actions as leakage prevention, the improvement of waste collection and recycling rates, and the conversion to alternative substances.

Selected PRTR Survey Results

The first table in the next page shows a compilation of the actual emission volumes and externally treated volumes of the 10 legally specified substances for JRCC member companies in fiscal 2001. These listed substances are the top 10 chemicals that exceeded 1000 tons in their emission volumes in fiscal 2000.

The majority of emission volumes are emissions into the air. The future challenge is to further reduce the emission volumes into the air.

Summing up all the 480 survey substances, the total emission volumes in fiscal 2001 were about 87,400 tons, which is a reduction of about 5.4% compared with that in fiscal 2000. As detailed in the table, about 83% were emitted into air, about 17% into waters, and about 0.08% into soil in fiscal 2001.

Emission volumes into soil in fiscal 2001 substantially increased compared with those in fiscal 2000 in the table. However, this is not because actual emission volumes increased but the reporting system was changed from fiscal 2001 to include such internal landfill volumes that had properly been treated in conformity with relevant regulations.

Selected PRTR Survey Results

Upper Line: Fiscal 2001 (Tons/Year)
Lower Line: Fiscal 2000 (Tons/Year)

1. Emission Volumes and Externally Treated Waste Volumes of Major PRTR Substances

Substance	Emission Volumes(T/Y)				Externally Treated Waste Volumes			Number of Handlers (Companies)
	Air	Water	Soil	Total	Volume Transferred	Volume Recycled	Total	
Toluene	6,032	67	12	6,111	5,989	3,718	9,707	67
	5,640	196	0	5,836	4,700	9,160	13,860	67
Dichloromethane	3,309	4	0	3,313	1,173	610	1,783	52
	4,030	7	0	4,037	928	540	1,468	47
Chloromethane	2,077	1	0	2,078	65	5	70	23
	2,730	20	0	2,750	50	0	50	26
Carbon disulfide	858	2	0	860	3	0	3	10
	2,010	7	0	2,017	0	0	0	10
Vinyl acetate	1,148	12	0	1,160	751	948	1,699	30
	1,610	48	0	1,658	2,450	738	3,188	33
Xylene	1,334	8	0	1,342	2,102	850	2,952	63
	1,570	33	0	1,603	2,250	2,860	5,110	66
Dimethylformamide	1,114	154	2	1,270	2,086	1,240	3,326	43
	1,430	156	0	1,586	1,250	1,680	2,930	44
HCFC-142b	872	0	0	872	0	0	0	7
	1,560	0	0	1,560	0	0	0	6
Styrene	966	4	0	970	639	310	949	47
	1,350	188	0	1,538	1,210	1,060	2,270	48
HCFC-22	878	2	0	880	0	0	0	10
	1,340	73	0	1,413	3	0	3	10

●Listed are those which exceeded 1000 tons/year in their emission volumes of the JRCC member companies in fiscal 2000 out of PRTR specified substances.

2. Totals of Emission Volumes and Externally Treated Volumes of PRTR Specified Substances (354 Substances)

	Emission Volumes(T/Y)				Externally Treated Waste Volumes(T/Y)		
	Air	Waters	Soil	Total	Volume Transferred	Volume Recycled	Total
PRTR Substances	**27,590**	**2,739**	**32**	**30,361**	**39,246**	**15,624**	**54,870**
	36,560	**3,585**	**0**	**40,145**	**33,651**	**33,737**	**67,388**

Totals of Emission Volumes and Externally Treated Waste Volumes of JRCC Survey Substances (480Substances)

● Chemical substances of high emission volumes, that are not specified by PRTR, are methanol, n-hexane, acetone, ammonium and so forth.

(Unit: Tons/Year)

Fiscal Year	Emission Volumes				Externally Treated Waste Volumes		
	Air	Waters	Soil	Total	Volume Transferred	Volume Recycled	Total
2001	67,300	7,685	70	75,055	88,406	80,699	169,105
2000	78,070	12,567	1	90,638	65,524	94,915	160,439

The JRCC conducted such a compilation for the first time in fiscal 2001, but it will be implemented on a continual basis. The JRCC will continue its efforts to restrict the emission of chemical substances to the environment. Furthermore, the JRCC will promote communication with the community and strive to create “a highly transparent chemical industry.”

Environmental Preservation (Air Pollutants Control)

The JRCC member companies are pushing forward with voluntary measures to reduce their emissions of 12 substances of harmful air pollutants.

Reference

The 12 substances were selected from the list of 22 harmful air pollutants compiled by the Central Environmental Council (set in Ministry of the Environment, managing important issues concerning environmental preservation, etc.,). The substances selected are deemed potentially carcinogenic, are produced or imported in quantities above a specified amount, have inspection data available regarding the amount of said substance in the environment, and are voluntarily managed by businesses. The chemical industry has replaced nickel compounds with ethylene oxide.

◆Voluntary Management Plan (First Term)

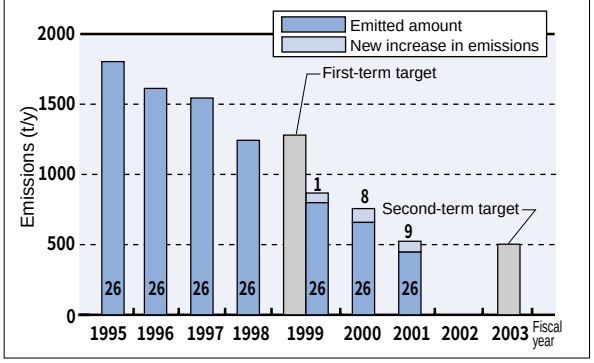
The chemical industry centering the JCIA drew up a voluntary management plan (first term). The JRCC also set a reduction target for each substance to be achieved in fiscal year 1999 on the basis of the criteria year of 1995.
As a result of JRCC members' efforts to decrease emissions, as of 1999, the final year of the first term of the JCIA plan, reduction targets for 11 of the 12 substances were surpassed excluding chloroform.

◆Voluntary Management Plan (Second Term)

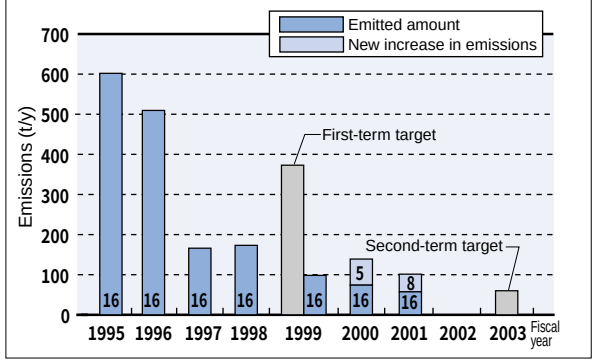
Advisory panels of the Japanese Ministry of Economy, Trade and Industry and Ministry of the Environment highly evaluated the efforts made by the chemical industry during the first term of the JCIA plan but also stated that voluntary emission reduction efforts had to be continued and further emission reductions were necessary.
In response, the JRCC laid out a second-term voluntary management plan※ which designated 2003 as its final year. As shown in the following graphs, JRCC member companies are pushing forward with voluntary measures to attain the targeted second-term emission reductions (13～71% reductions compared with figured for fiscal 1999 to be achieved by fiscal 2003) and are making good progress.

※The second-term voluntary management plan designates emission reduction targets for each of the 12 substances to be achieved in fiscal 2003, based on 1999 levels as the criteria, by the JRCC member companies that submitted reports in fiscal 1999.

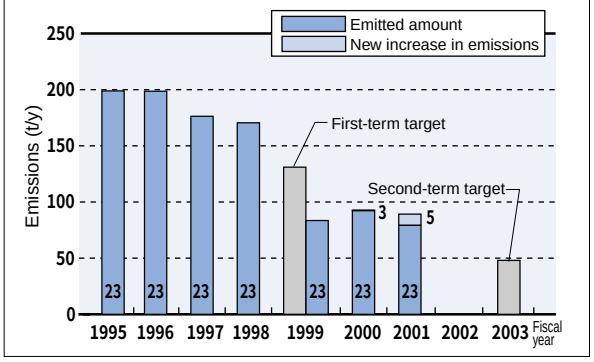
Acrylonitrile



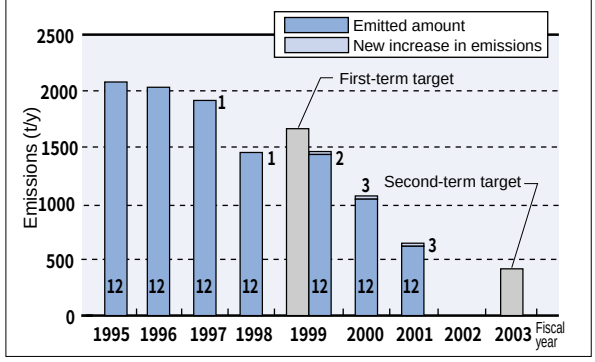
Acetaldehyde



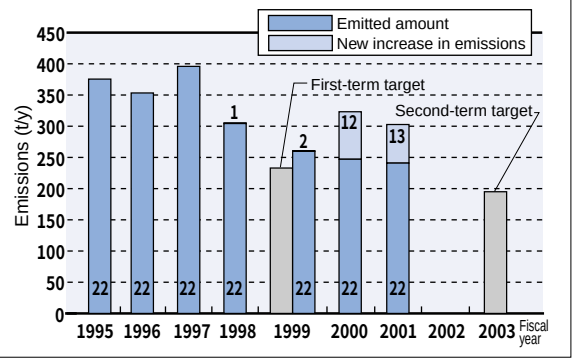
Ethylene oxide



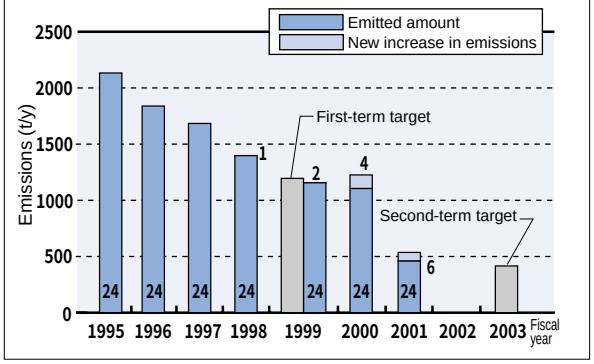
Vinyl chloride monomer



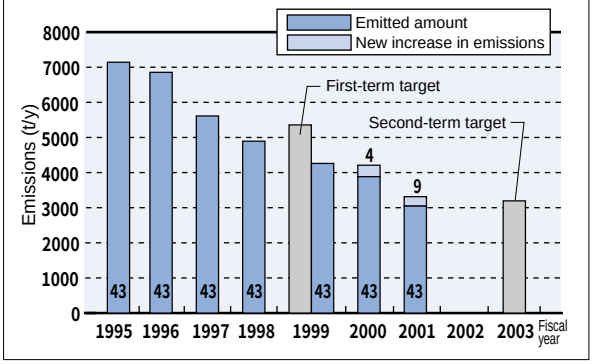
Chloroform



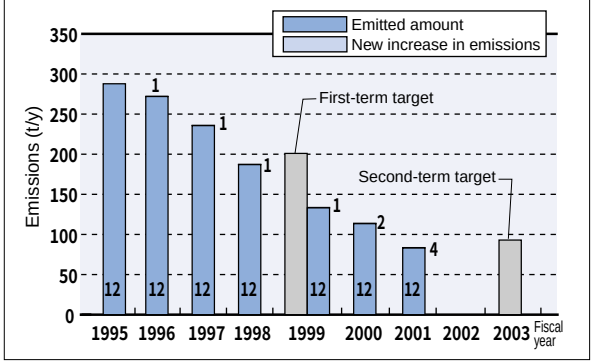
1, 2-Dichloroethane



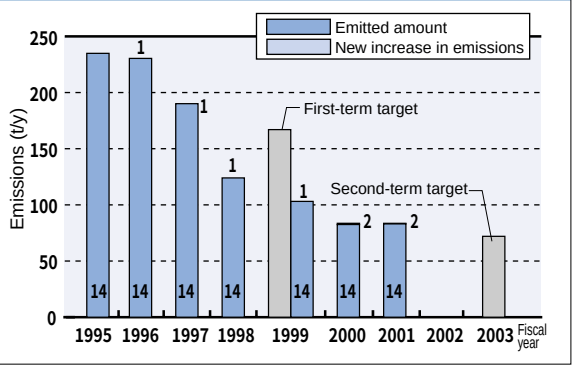
Dichloromethane



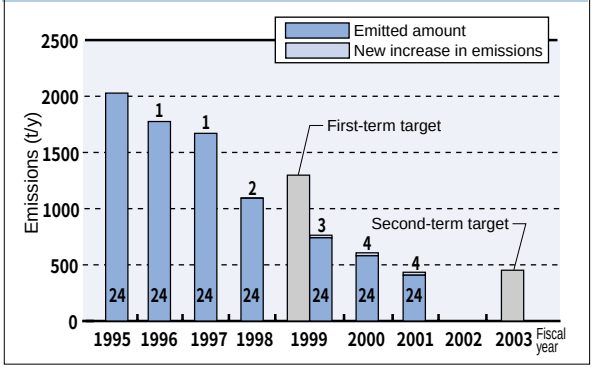
Tetrachloroethylene



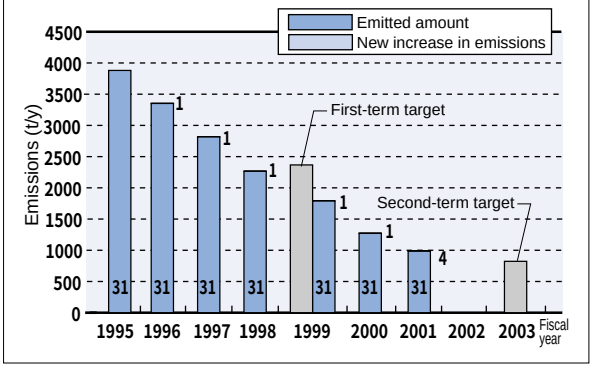
Trichloroethelyne



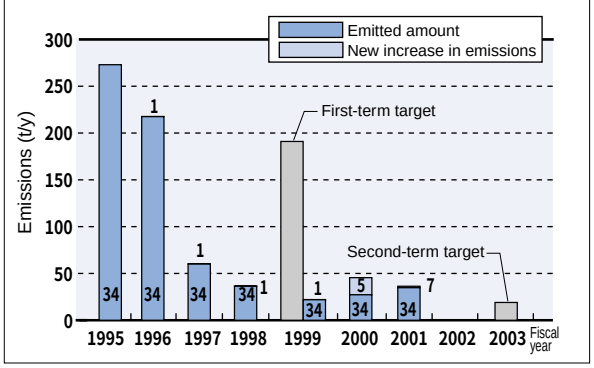
1,3-Butadiene



Benzene



Formaldehyde



Emission volume is based on reported data for 1995. Increases in emissions thereafter are shown as “New increase in emissions.”

∗Numbers in the central portion of the bar graph indicate the number of member companies reporting data for fiscal 1995.
∗Numbers in the upper portion of the bar graph indicate the increase in the number of member companies reporting data compared to 1995.

Environmental Preservation (Air and Water Quality)

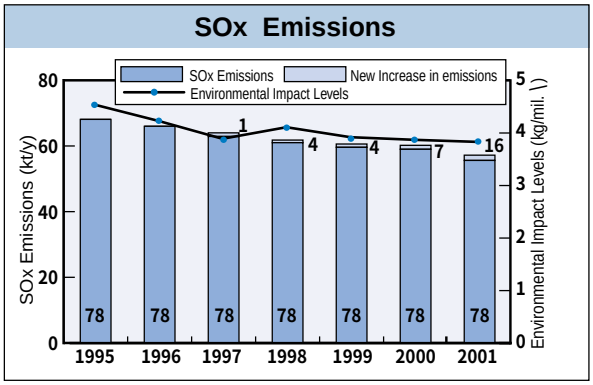
During the 1970s, the chemical industry strove to prevent pollution and achieved substantial reduction of air and water pollutants emission. Since 1995, the chemical industry has continued to strive to maintain lower emission levels than official standards by complying with agreements with local governments and its own standards set forth by member companies.
Although increases in production volumes and expansion in JRCC membership have some effects, total annual emission volumes have either remained generally on the same level or slightly lower level, owing to the efforts of the member companies.

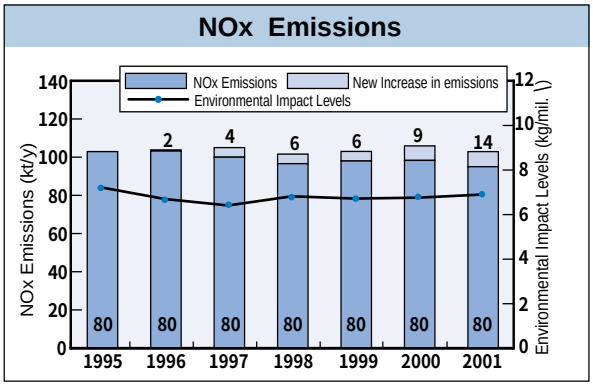
◆Air

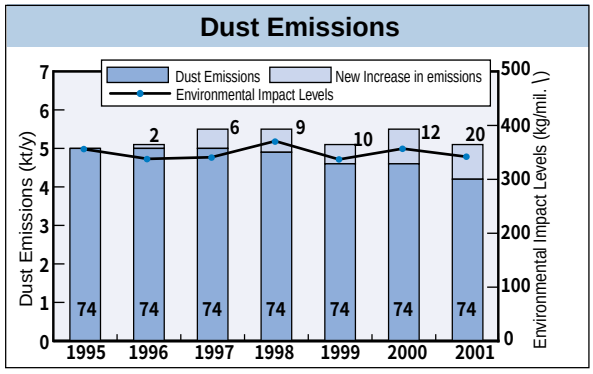
SOx (sulfur oxides), NOx (nitrogen oxides), soot and dust are generated when fuels or other materials are combusted. These substances could be harmful to human health, and incurred many cases of pollution problems in the past.
The chemical industry has achieved the reduction of emissions at a high rate from the world standards by complying with national and local governments and its own standards set forth by member companies and also by improving combustion equipment, adopting removal devices of harmful substances and so forth.

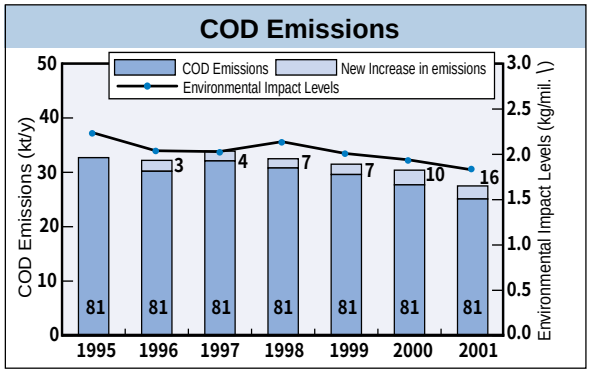
◆Waters

COD (chemical oxygen demand) is an indicator of water pollution by organic substances. Waste water from manufacturing plants is released into rivers and seas only after these organic substances have been reduced through the activated sludge process or adsorption.
Other indicators of water pollution are concentration levels of phosphorus, nitrogen, and suspended substances. JRCC members companies' levels for all of these indicators are below standards stipulated by legal restrictions and local government protocols.
To prevent water pollution in Tokyo Bay, Ise Bay, and the Inland Sea, the Ministry of the Environment has implemented four total emission controls of COD since 1979. Now it plans to implement a fifth total emission control, which designates 2004 as its final year. Under this new control, not only will COD emission be more reduced, but new total emission controls will also be placed on nitrogen and phosphorus compounds.
The JRCC started survey on emission volumes of total phosphorus and total nitrogen designating fiscal 2001 as its first year, which are newly added to the items to be reported in this report. The emission volume of total phosphorus was 1,734 tons in fiscal 2001 and that of total nitrogen was 29,945 tons. (Both are based on data from 74 companies.)
In relation to this, the JRCC has started survey on water resource utilization volumes since fiscal 2001.









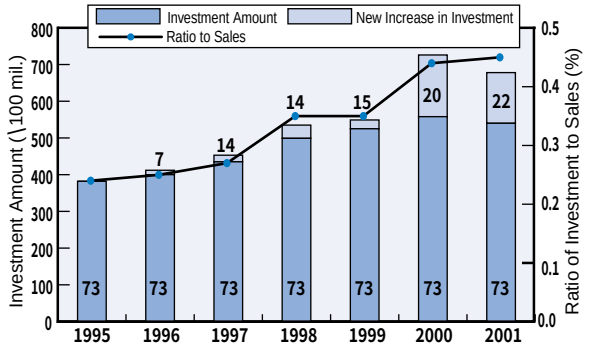
Emission volumes are based on reported data for fiscal 1995. Increases in emissions thereafter are shown as "New increase in emissions".

* Numbers in the central portion of the bar graph indicate the number of member companies reporting data for fiscal 1995.
* Numbers in the upper portion of the bar graph indicate the increase in the number of member companies reporting data compared to fiscal 1995.
* Environmental Impact Levels: Business fields of member companies vary so much that environmental impact levels could not be expressed by the same production volume unit, therefore they were compiled by sales amounts (million yen).

Investment in Environmental Preservation

The JRCC Member companies have invested aggressively for environmental preservation. The amount of investment and the ratio of investment to sales are generally rising every year, although increase was restrained in fiscal 2001 due to dull economic situation.

Investment in Environmental Preservation

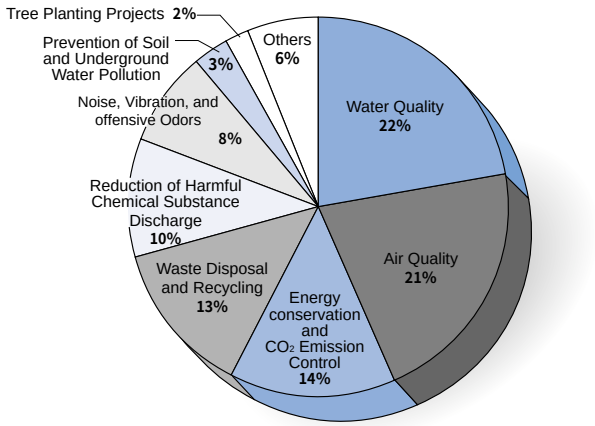


Investment Amount is based on reported data for 1995. Increases in investment amount thereafter are shown as "New Increase in Investment".

∗Numbers in the central portion of the bar graph indicate the number of member companies reporting data for fiscal 1995.
∗Numbers in the upper portion of the bar graph indicate the increase in the number of member companies reporting data compared to fiscal 1995.

The breakdown of environmental investment by member companies in 2001 spans a great variety of fields as shown in the graph.
There were no major changes compared to the previous years. All areas have shown steady improvement.
Investment for such conventional pollution prevention as those for the improvement of water quality, air quality, noise, vibration, and offensive odors made up approximately 50% of environmental investment. Steady investments have been made for such latest issues as waste disposal reduction, prevention of global warming, measures for harmful substance emission and so forth.
This report started to compile the investment for prevention of soil and underground water pollution.

Investment in Environmental Preservation for 2001



Environmental Accounting

The purpose of environmental accounting is to efficiently and effectively conduct environmental preservation activities while striving for the sustainable development of companies and maintaining good relations with the public. Environmental accounting is a means to quantify, analyze, and disclose information regarding costs and benefits of business activities with regard to environmental preservation.
The Ministry of the Environment has provided guidelines for environmental accounting, which are meant to be utilized generally by any industry, but the chemical industry requires such guidelines that are easier for the chemical industry to use. Therefore, the JRCC has started activities by a working group on environmental accounting to prepare easier guidelines.
The JRCC distributed a questionnaire survey of the environmental accounting practices to its members from fiscal 2000. The results in fiscal 2001 show the following. (Figures in parentheses are of fiscal 2000.)

●Members that have already introduced environmental accounting: 52% (45%)
●Members considering introducing environmental accounting: 4% (7%)

Total: 56% (52%)

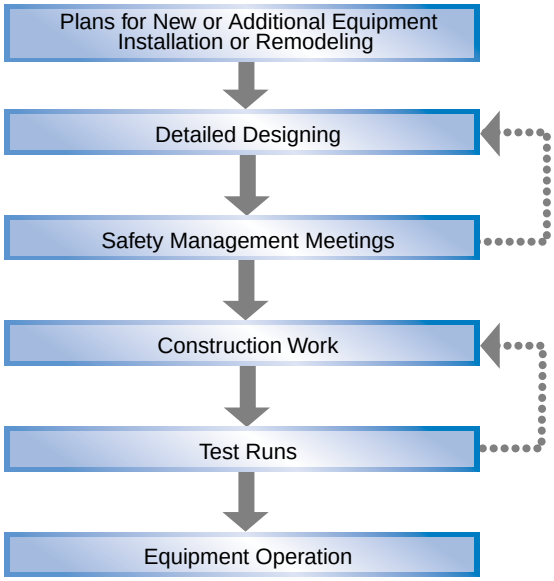
According to a survey by the Ministry of the Environment, the companies that have already introduced environmental accounting are only 23% of listed companies. These figures show that the chemical industry has made a marked advance in implementation of environmental accounting.

Process Safety and Disaster Prevention

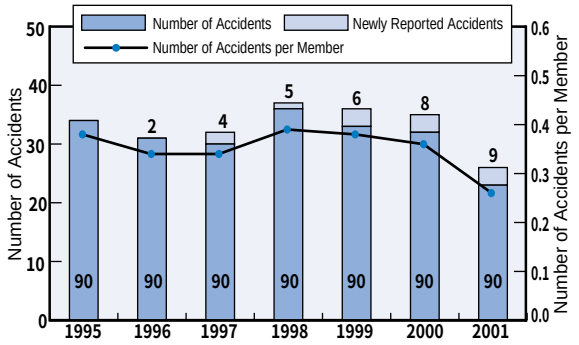
The number of accidents per a member company remained generally unchanged for these several years although there were some small fluctuations.
Investment by members in process safety and disaster prevention has increased over the past several years and, in fiscal 2001, totaled \55.3 billion.
To insure operations safety, JRCC members are implementing the following safety measures appropriate to each company's system.

[Prior Facilities Management and Assessment]

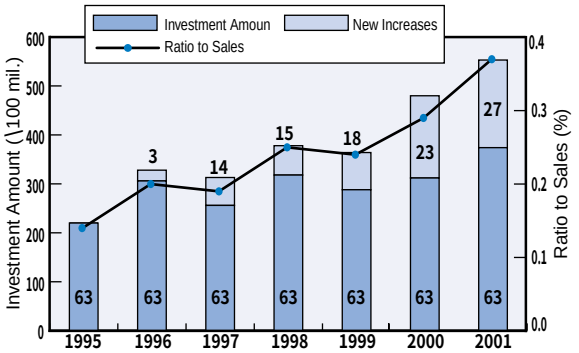
In case of installing new or additional equipment or of remodeling equipment, safety management meetings are held to implement a prior check system to eliminate or minimize any dangers or latent dangers.



Plant Accidents (explosions, fires, leaks ,etc.)



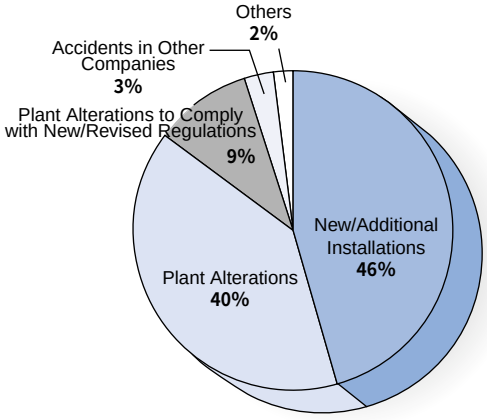
Investment in Safety and Disaster Prevention



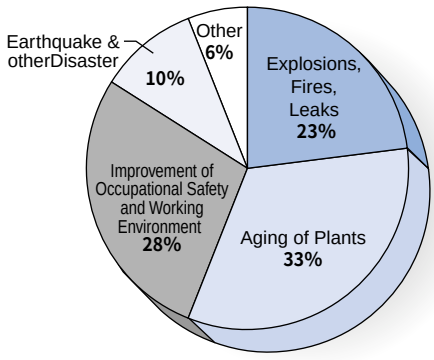
Numbers of Accidents are based on data presented for 1995. Subsequent increases are added on as the section of the bar graphs labeled newly reported accidents.

- ✶Numbers in the central portion of the bar graph indicate the number of member companies reporting data for 1995.
- ✶Numbers in the upper portion of the bar graph indicate the increase in the number of member companies reporting data compared to 1995.

Reasons for Plant Safety Assessments in Fiscal 2001



Investment in Process Safety and Disaster Prevention Measures in Fiscal 2001



Occupational Health and Safety

The lost time injuries rate of the JRCC member companies and member company contractors has been generally unchanged, being lower than the manufacturing industry average since fiscal 1995. In addition, the JRCC member companies strive to introduce an Occupational Safety and Health Management System (OSHMS), aiming to reduce latent dangers and improve safety and health levels.

◆Number of Fatalities

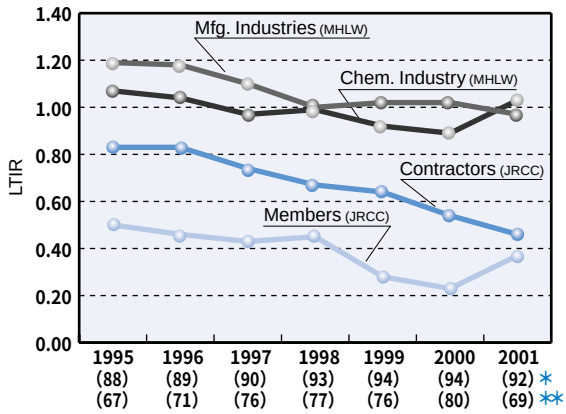
	1995	1996	1997	1998	1999	2000	2001
Member Companies (JRCC)	2	3	4	3	3	2	1
Member Company Contractors (JRCC)	4	6	5	9	4	1	3
Chemical Industry (MHLW)	35	39	34	30	28	26	24
Manufacturing sector (MHLW)	417	405	351	305	344	323	326

MHLW=Ministry of Health, Labour and Welfare
Number of fatalities also declined during these several years.

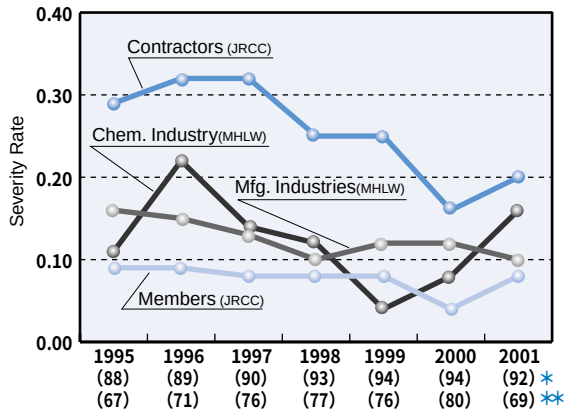
◆Introduction of Occupational Safety and Health Management System (OSHMS)

The results of efforts to eliminate injuries are apparent with the introduction of OSHMS. It promotes continuous, independent health and safety management through the repetition of the PDCA (plan, do, check, and act) cycle, consequently latent dangers are reduced and safety and health levels are raised.
Results of a questionnaire survey show that 15% (8% in the previous fiscal year) of member companies have implemented some kind of OSHMS. However, 46% (45% in the previous fiscal year) of member companies have responded that they are currently in the process of introducing OSHMS or have plans to introduce it in the future.

Lost Time Injuries Rates



Severity Rates



*Figures in parentheses show the number of member companies.

**Figures in parentheses show the number of contractors surveyed.

Frequency Rate = Number of lost time injuries / One million working hours

Severity Rate = Lost days / One thousand working hours

Chemical and Product Safety

To fulfill its responsibility to take health, safety and environmental issues into consideration at all stages from product development through disposal, the JRCC strives to implement comprehensive voluntary safety management of chemical substances. Central to these efforts are safety assessments, MSDS compilations, and the issuing of Yellow Cards.

Examples of Environmental and Safety Efforts

✳**Providing Information** : Provision of MSDSs. Carrying of Emergency Response Cards (Yellow Cards). Use of product labels.
- Dispatched JCIA speakers to the Japan Industry Safety and Health Association's Nationwide Chemical Manager's Training from Sept. 2000 to Mar. 2001. Provided text materials from part of the New Occupational Health and Safety Guidelines
- Updated version of the Material Safety Data Sheet Guidelines issued in October 2001

✳**Data Analysis** : Emission volumes and data analysis of chemical substances, based on "the JCIA's Environmental Preservation Program Follow-up Survey", "JRCC's Performance Indicators Management Chart Guidelines" and "Survey Charts"

✳**Safety Assessments** : Conducting prior safety assessments of chemical substances and production facilities. Development and Training of Risk Assessment System.
- " Chemical Substance Risk Assessment Manual for the Prevention of Laborer Health Impairment" published in July 2001, followed by explanatory lectures in September and October 2001
- " Chemicals Risk Management Study Group" was launched in May 2002.

✳**Safety Management** : Promotion of voluntary plans for air pollutant control. Promotion of risk management and risk reduction plans. Promotion of disaster prevention measures
- Safety Awards handed out by JCIA and JRCC in May 2000. (yearly.)
- " New Occupational Health and Safety Guidelines" issued in May 2000, in conjunction with explanatory lectures in July 2000.
- " Chemical Substance Safety Measures Circulation Manual" issued in January 2001. (A contract with the Japan Small and Medium Enterprise Corporation)
- " Chemical Substance Emission Volume Calculation Manual (Chemical Industry Section)" issued in January 2001
- " Emergency Response Guidelines" issued in February 2001 for application to container yellow cards (labels). (JCIA)
- " 25-Year History of Safety Awards" issued in June 2002.

Results of Chemical Substance Safety Assessments

・Motives for Safety Assessments:

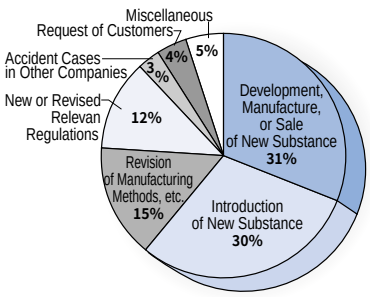
Chemical substance safety assessments, which are applied to existing products as well as new chemical substances, focus on specific hazards (explosion, fire, acute and chronic toxicity, etc.) posed by chemical substances to the people handling them and to the environment, based on " the JCIA's Guiding Principles for the Improvement of Environmental, Safety and Health Conditions".

These safety assessments are useful not only for risk reduction measures but also for preparation for quick response in emergencies.

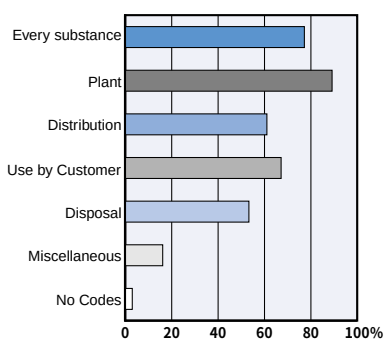
・Implementation of Safety Assessments:

More than 97% of JRCC member companies have their own safety assessment codes. The objects and bases of assessments are shown in the following graphs.

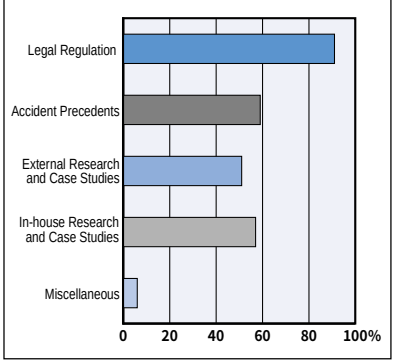
Motives for Conducting Safety Assessments



Objects of Safety Assessments (Plural Replies)



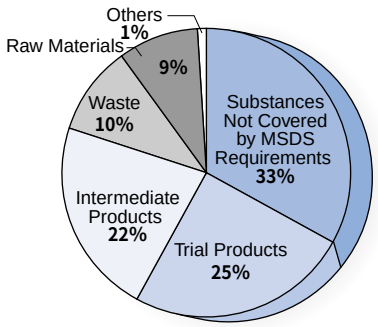
Basis of Safety Assessment (Plural Replies)



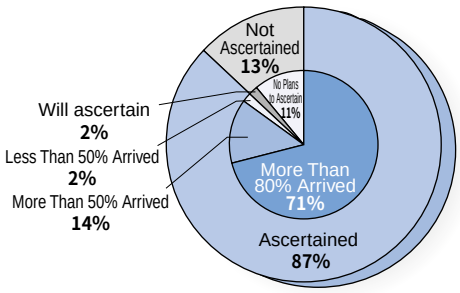
Material Safety Data Sheet (MSDS)

- **Regulatory Legal Requirements of MSDS Distribution**
  Regulations have been introduced requiring that MSDSs be attached to extremely hazardous substances and distributed to people handling such substances.
  Applicable Laws : * Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management (Pollutants Release and Transfer Register - PRTR Law)
  * Industrial Health and Safety Law
  * Poisonous and Deleterious Substances Control Law
- **MSDS for all Legally Regulated Toxic and Dangerous Substances**
  MSDSs are prepared also for a variety of substances, trial products, and intermediate products not covered by MSDS requirements and those with low toxicity.
- **Contents of Revised MSDS**
  The revisions of MSDS include a wide range of revisions of laws and toxicity information, etc.
- **Reasons for MSDS Revisions**
  The main reasons for MSDS revisions are the acquisition of new data, changes in data, new laws, and revisions of laws.
- **Arrival of MSDS at Customers**
  80 of JRCC member companies traced and ascertained arrivals of MSDS at customers.
  Results of Tracing
  Over 80% arrived : 65 member companies ascertained arrival.
  Over 50% arrived : 13 member companies ascertained arrival.
  Less than 50% arrived : 2 member companies ascertained arrival.

MSDS Substances Other than Those Covered by MSDS Requirements



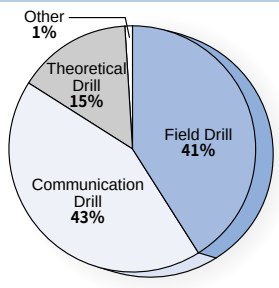
Arrival of MSDS at Customers



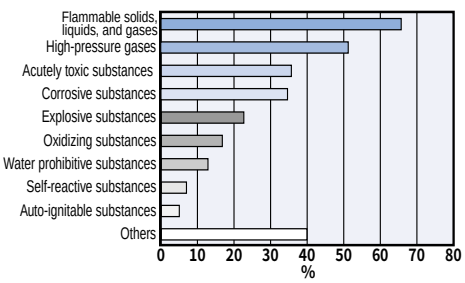
Emergency Response Cards and Other Transportation Safety Measures

- **What is an Emergency Response Card (Yellow Card)?**
  This is the name given to a card that contains information on appropriate measures to take should an accident occur during the transportation of chemical substances and high-pressure gases. This information is useful for truck drivers and other people who may be required to respond to an accident, such as a fire department and police.
- **Response Measures against Accidents during Transportation**
  90% of members possess emergency response manuals.
  85% of members maintain joint accident response services.
- **Emergency Drills**
  83% of members conduct emergency drills.

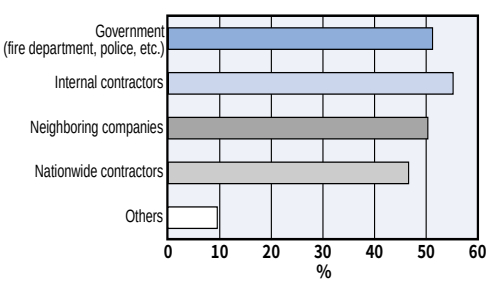
Emergency Drills



Substances for which Joint Accident Response Services are provided



Counterparts Jointly Respond to Accidents



ICCA - HPV Initiative

Out of those chemical substances that are lacking in basic safety data (SIDS: the Screening Information Data Sets) among currently circulating chemical substances (existing chemical substances), the ICCA (International Chemical Council Association) is cooperating with OECD (Organization for Economic Cooperation and Development) to accelerate the implementation of the OECD program undertaken to prepare SIDS and initial hazard assessments on HPV chemicals (High Production Volume Chemicals), whose annual production volume exceeds 1,000 tons. This is a voluntary initiative of the chemical industry and one of the Responsible Care activities conducted by ICCA.

Progress of ICCA Initiatives

At the ICCA Conference in Prague in October 1998, members agreed to complete assessments on 1,000 HPV chemicals by 2004 and so far 66 HPV chemicals have been assessed. The JCIA announced its intention to cooperate in these initiatives as a member of the ICCA in April 1999, and requested all JCIA members to actively participate in the initiatives. The activities have continued for the past three-and-a-half years. The following is a summary of recent activities.

1. JCIA's activities to promote ICCA Initiatives

A domestic workshop was held to promote HPV activities this year, too, and the report to be submitted to the Government was reviewed in advance by experts.

2. The Status of Global commitments

- Substances for which there are commitments: 816
  [Substances participated from Japanese companies: 319, Participating companies: 94]
- Substances for which commitments are being prepared: Approximately 259

3. Submission of SIDS Initial Assessment Reports (SIAR) to OECD

The ICCA submitted a total of 66 assessment reports (SIARs), on 11, 6, 29, and 20 substances during the last few years, to SIDS Initial Assessment Meetings (SIAMs) of OECD. Japanese companies were responsible for 13 of these 66 SIARs. In addition, 28 SIARs are expected to be submitted to the next SIAM. Japanese companies will be responsible for 6 SIARs of these 28.

The data and assessment reports submitted by the ICCA have been highly evaluated in their quality and adequacy to be equal to those prepared and submitted by each Government.

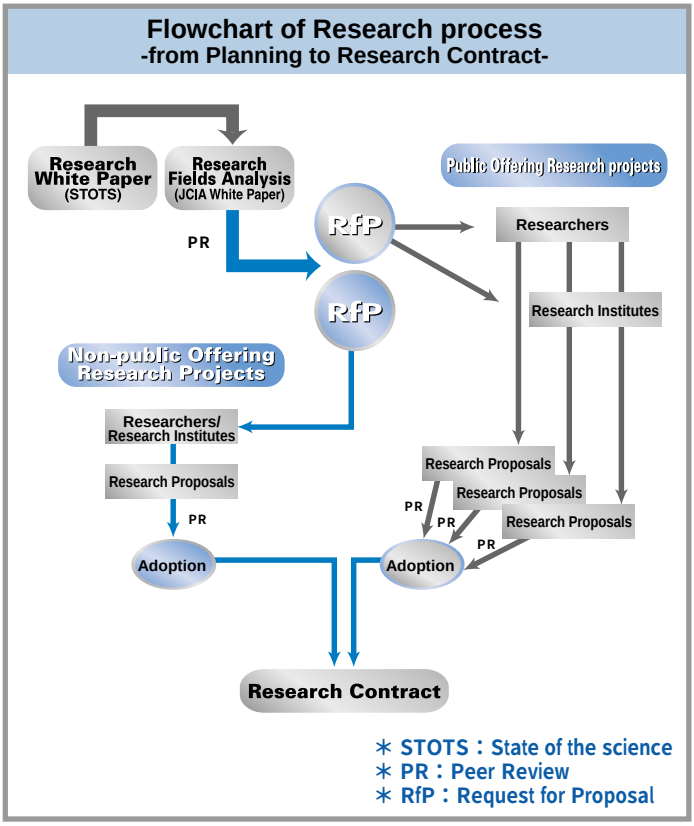
Future Activities

The issues of obtaining and assessing hazard data of chemical substances are of interest to the general public and the importance of these activities has been growing. Early completion of SIARs are needed especially on the substances listed in the Industrial Health and Safety Law and PRTR law, and the JCIA will continue active promotion of these activities.

The Long-range Research Initiative (LRI)

The LRI comprises long-term research on the effects of chemical substances on human health and the environment in cooperation with the chemical industries of Japan, United States, and Europe (the JCIA, ACC*, and CEFIC**, respectively) and is one of the ICCA's Responsible Care activities.

* ACC: American Chemistry Council
**CEFIC: European Chemical Industry Council



The ICCA's LRI Objectives

- The LRI aims to expand knowledge related to the effects of chemical substances on health and the environment, develop testing and screening methods, and promote the safe use of chemical substances.
- The LRI provides highly scientific information that aids in the creation of public policy, thereby promoting Responsible Care.

The JCIA's Participation in the LRI

- Amid increasing corporate globalization, such pressing issues facing the entire world as endocrine disrupters cannot be solved by individual companies; rather, it is necessary for the world chemical industry to take collective measures under the auspices of the ICCA.
- In fiscal 2000, seven research topics in the fields of chemical carcinogenesis and hypersensitivity were chosen and LRI research was commenced. In fiscal 2001, 27 research topics in the three fields of endocrine disrupters, chemical carcinogenesis and hypersensitivity were selected and researches were carried out.
- Some of the LRI researches have been presented in the relevant societies and some research papers have been contributed to specialty journals. The 1st JCIA LRI Science Forum was held in August 2002.

Publicity and Adoption of Fiscal 2002 Research

- The JCIA compiled essential research topics in the 4 fields of endocrine disrupters, neurotopicity, chemical carcinogenesis and hypersensitivity, and received a total of 85 applications from universities, research institutes and so forth. Careful consideration was made through a review of submitted documents application form and interviews. Finally 37 topics was selected for the fiscal 2002 research.

(For detailed description of the selected research topics, please refer to LRI News, issue 12.)

LRI News

To expand the sphere of understanding of LRI activities beyond JCIA members to the general population, we have been issueing LRI News and our 12th issue was published in September 2002. LRI News can be viewed on the JCIA's web site:
http://www.nikkakyo.org/organizations/lri/index.php3.

Responsible Care Initiatives of JRCC Members

The direction of JRCC Members' Responsible Care initiatives and recent activities in their plans and reports for each fiscal year are introduced here.
For the first three years following the Responsible Care activities launched in 1995, member companies primarily concerned themselves with the establishment of the Responsible Care management system, improved their performance, preparing MSDSs and Yellow Cards, surveys of 151 chemical substance emissions, and the acquisition of ISO 9001 certification. Since 1998, companies have voluntarily and proactively implemented Responsible Care initiatives, adding recycling, product stewardship, hazard and risk assessment, and the acquisition of ISO 14001 certification to the other activities, and have initiated a dialogue with their communities, and at the same time, started to issue their Responsible Care reports.
Recent activities of the JRCC members include promotion of effective use and saving of resources through recycle and reuse, measures for the ozone layer and global warming problems, establishment of database for management of chemicals, development of environment-friendly products, participation in the HPV and LRI initiatives internationally, and response to the endocrine disrupter issue. Responsible Care management systems as well as education and training undergo reassessment every year for further enhancement. OSHMS and environmental accounting have also been initiated by some companies. Responsible Care reports are issued by over half of JRCC member companies, some of whom make the reports available on their web sites and issuance of site reports are also increasing. Some companies have commenced Responsible Care activities in their overseas operations. 85% of JRCC members have obtained ISO 14001 certification and 10% are in the process of obtaining the certification. With introduction of the PRTR law, interest in risk communication has grown, and some JRCC members initiated preparation.

The following chart describes responsible care initiatives by the JRCC member companies during the fiscal years shown in the chart.

Item/FY	1995-1997 Results	1998-2000 Additional Results	2001 Additional Results	2002 Plan (Additional)
Performance	Reduce environmental impact Conserve energy & resources Reduce industrial wastes	Recycling Reduce VOC Survey on soil and underground water contamination	Measures on global warming issue Abolition of incinerators Reinforce control on wastewater release (nitrogen, phosphorus, etc.)	Zero VOC Create new energy saving methods Noise and vibration measurement Measures on soil contamination Material recycling of byproducts
Chemical product safety management (Product stewardship)	MSDS, Yellow Cards	Enhance Product Stewardship to respond to accidents during transportation, etc. Develop low environmental impact products PL warning labeling Measures on endocrine disrupters issue	Introduce HAZOP Submit HPV data Introduce electronic systems / management for MSDS Produce risk management guidelines Draw up emergency response manual and training Prepare master plan for risk reduction	Review warning label guidelines Extend implementation of transportation safety management direction Company-wide implementation of HAZOP
Chemical substance emission survey	151-286 substances	480 substances Survey on and prepare for PRTR	Survey and report on PRTR Study on PRTR calculation systems Report on dioxins measurements	Reinforce measures to reduce emission volumes Manual to respond to external parties Introduce compilation soft ware
Management system	Establish RC management system	Review systems and regulations Enhance and review audit Study on environmental accounting Introduction of OSHMS	Review guidelines of disaster prevention assessment Enrich audit systems Implement RC initiatives in overseas plants	Review risk management rules RC initiatives in overseas operations
ISO certification	Certification to ISO 9000	Certification to ISO14000	Revision of ISO (upgraded version in quality control)	Introduce to clerical departments
Chemical safety in R&D		Hazard and risk assessment Draw up development criteria Assess environmental effects	Safety assessment (verification) systems Measures on green purchase law Develop alternatives for environmental hormone-disturbing substances	
Improvement of social credibility	RC reports	Dialogue with local communities Environmental and safety management in overseas operations Green purchase Volunteer activities Risk communication	Issue local magazines for public relations with communities Explain RC to customers Third party verification Observe prior export approval systems	Complete and reinforce risk communication Organize teams to promote communication with local communities.

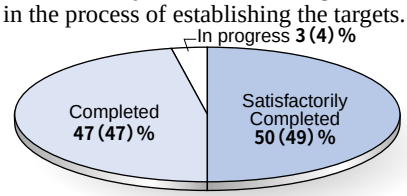
Responsible Care Management Systems

Every year, member companies submit to the JRCC Responsible Care reports, along with plans for the upcoming year. Member companies conduct a self-assessment of their Responsible Care management systems based on their internal audits. In the eight years since the start of Responsible Care activities, member companies restructure their management systems to reflect the changes in social environment, and strive to achieve higher targets. New members are expected to have acted quickly to establish Responsible Care management systems.

The graphs below represent the self-assessments of 93 companies. Figures in parentheses are the percentage in the previous year. Self-assessments are based on a five-point system in which 5 points=very satisfied, 4 points=satisfied, 3 points=in progress, and 2 points or 1 point=improvement needed.

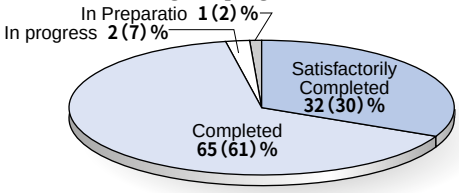
1 Management systems and targets

97% (96) of reporting member companies have achieved or nearly achieved their targets, and 3% (4) are in the process of establishing the targets.



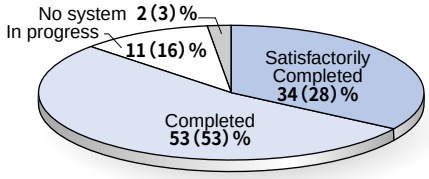
2 Implementation

97% (91) of reporting member companies have completed implementation, while 3% (9) are in the process of implementation or preparation. 85% of member companies have obtained ISO14001 and 90% have obtained ISO9001. New member companies also have made good progress.



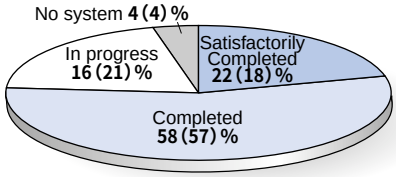
3 Internal self-auditing

87% (81) of reporting member companies have completed, while 13% (19) are in the process of establishing audit systems.



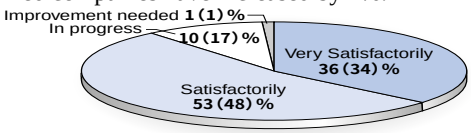
4 Education systems

80% (75) companies have established education systems, while the remaining 20% (25) are in the process of education systems. Many member companies recognize the need for improvement, acknowledging its importance and more companies are completing their education systems.



5 Implementation plans and reporting

Approximately 89% (82) of reporting member companies are satisfied with their Responsible Care implementation plans and reports, while the remaining 11% (18) acknowledge the need for improvement. Satisfied companies have increased by 7%.



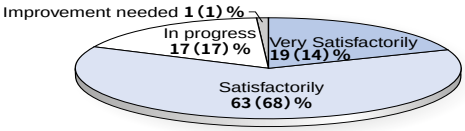
6 Environmental and safety management of production, handling, distribution, use and final consumption, and disposal (common items)

Improvement has been made in every item.

- **Production and handling** : 88% (82) satisfied, 12% (18) in the process of improving
- **Distribution** : 85% (83) satisfied, 15% (17) in the process of improving
- **Use and final consumption** : 91% (84) satisfied, 9% (16) in the process of improving
- **Disposal** : 90% (86) satisfied, 10% (14) in the process of improving

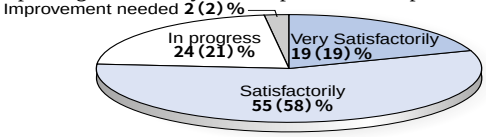
7 Environmental and safety management in R&D and new businesses

82% (82) of reporting member companies are satisfied, while 18% (18) are in the process of improving.



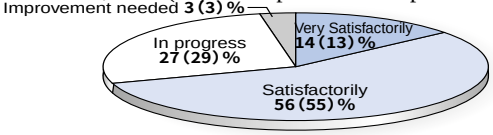
8 Environmental and safety management in international operations

74% (77) of reporting member companies are satisfied with their level of management, while 26%(23) are in the process of improving. Companies in the process of improving increased by 3% compared with the previous year.



9 Earning public trust

While 70% (68) of reporting member companies are satisfied, 30% (32) are in process of improvement.

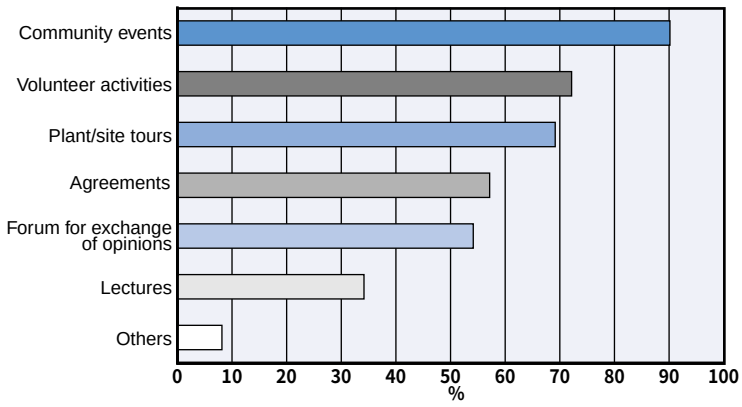


Communication with the Community

The JRCC member companies recognize the importance of harmony with local communities and proactively take various initiatives to earn the trust of the communities.

Member companies have continued their efforts to contribute to their local communities through participation in local events, cooperation and opening the facilities at local events, volunteer activities for cleaning campaign, and so forth. Member companies strive proactively to enhance communication with local communities by exchanging views in forums on pollution prevention and environmental safety, organizing plant visits, giving chemistry classes to local elementary and junior high school students, and so forth.
More member companies are now issuing their own local site reports and are integrating articles on activities conducted by each local facility in their corporate Responsible Care reports.

Communication with the Community (multiple answers)



Plant tour for local residents

Participation in local environment conservation activities

Firefighting training at a facility in a complex

Installation of street lights by solar and wind power generation

Surveys of JRCC Member Activities

●On Responsible Care Reporting

The JRCC member companies proactively strive to enhance communication with the public and local communities to gain further trust from them. As one of the communication tools, Responsible Care reports (or environmental reports) have been issued by individual member companies, disclosing their corporate environmental policies and activities.
The JRCC conducted a survey among member companies on report publication from 1998 on.

1. Number of companies issuing Responsible Care reports

Number of companies issuing Responsible Care reports is yearly increasing, and in fiscal 2001, 58 members issued Responsible Care reports.

2. Report format

Most of Responsible Care reports are in the form of independent booklets or pamphlets.

3. Number of companies issuing local (offices, sites) reports

Number of companies issuing local site reports is steadily increasing. 7 members issued them in 1998 and 18 members in 2001.

4. Contents of Responsible Care reports

Columns on “Security and Disaster Prevention” and “Communication with Local Communities” have increased, while others remained unchanged.

5. Third-party report verification

7 member companies underwent third-party report verification, while 11 are in the process of planning.

6. Opinions and reactions concerning reports

Member companies include questionnaires in their reports or facilitate a section to accept opinions and reactions

7. Report distribution

●Primary recipients

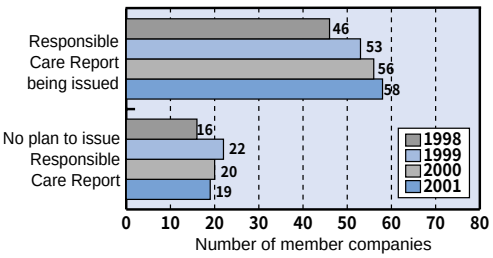
① Customers and other business partners (55%)
② Employees (32%) ③ Shareholders (6%)

●Secondary recipients

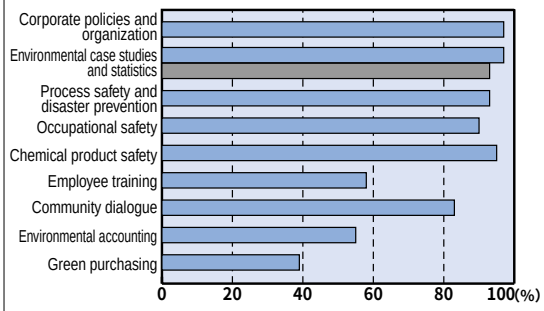
① Employees (37%)
② Customers and other business partners (21%)
③ local residents in the neighborhood of facilities (17%)

• Order of distribution. The percentage in parentheses is almost same as that in last year.

Issuance of Responsible Care Report

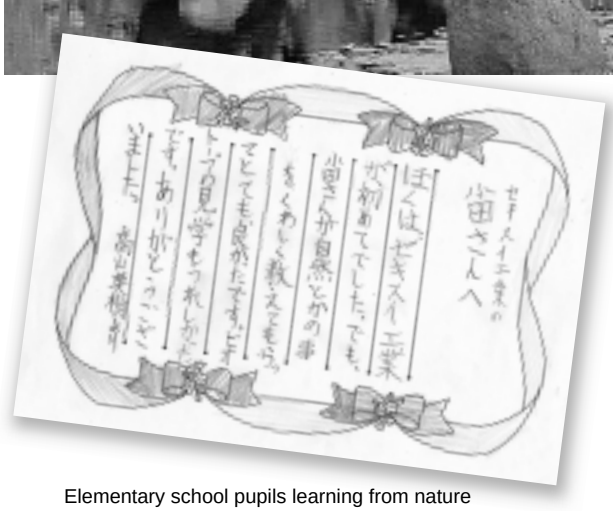


Report Contents



Chemical experiment class at an elementary school

Plant tour for children



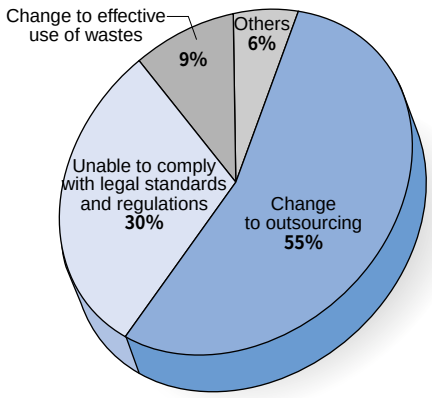
Elementary school pupils learning from nature

1. Incinerators for Waste Combustion

As of December 1997, 80% of the JRCC member companies were in possession of 7 incinerators in average, but 62% of the incinerators have been abolished or planned to be abolished by November 2002. The remaining 38% of the incinerators have been successively used since December 2002. Reasons for abolishment are shown in the following graph.

30% of the JRCC member companies have newly installed or remodeled (including those under planning) their combustion facilities since December 1997, the reasons for which are compliance with legal standards and regulations (79%) and collection of valuable contents or increase of incineration capacity (21%).

Reasons for Abolishment of Incinerators



2. Endocrine Disrupters
(So-called environmental hormones)

Regarding the chemical substances specified in " Strategic Plan for Environmental Endocrine Disrupters - SPEED '98"

1) 70% of the JRCC member companies answered that they were related with those substances in their own products (39%), purchased products (36%) and both (25%)
2) More than 50% of those member companies being related with those substances support JCIA's LRI (the Long-range Research Initiative) conducting basic studies on this subject., by contributing research funds to the JCIA to conduct survey and research work on endocrine disrupters which need further clarification.

3. PCBs

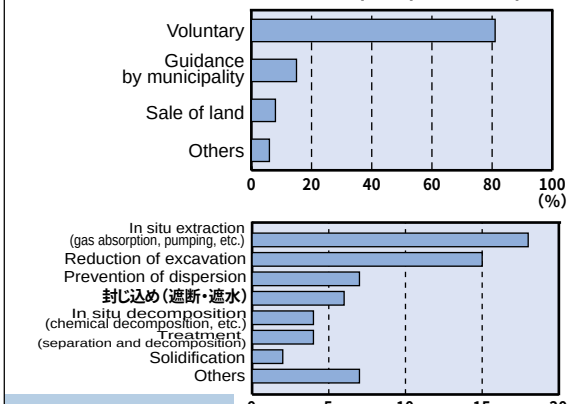
82% of the JRCC member companies keep PCBs or equipment containing PCBs in their facilities.

Disposal within 15 years is mandated by special enforcement ordinances but due to delay in facilitating treatment plants, 23% of those member companies that keep PCBs have plans for treatment (11% by own plants and 89% by outsourcing).

4. Soil and Underground Water Contamination

82% of the JRCC member companies have conducted investigation on soil and underground contamination. Motives for investigation are as shown in the following graph. Voluntary investigation in particular occupies 81% of the motives. Of the companies conducted investigation, 38% of them took anti-pollution measures as detailed in the graph below.

Motives for Conducting Investigation on Soil Contamination (multiple answers)



Anti-pollution Measures

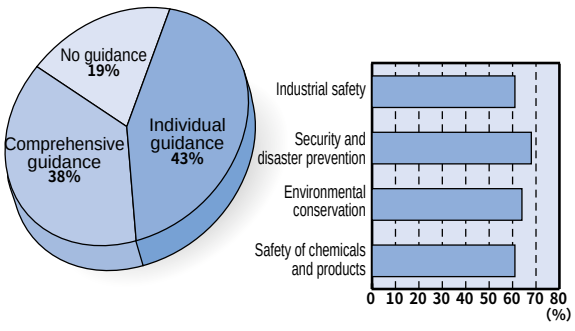
5. Support for Responsible Care Activities in Overseas Affiliates

2/3 of the JRCC member companies have their affiliated companies in Asia, out of which 44% belong to relevant local industrial organizations.

81% of the member companies having overseas affiliates extend to them guidance on their responsible care activities in some form. (Refer to the following graph.)

41% of those local affiliates undergo responsible care audit with the frequency of once a year (38%), once two years (16%) and others (46%).

Guidance to Affiliates in Asia



Items of Individual Guidance (multiple answers)

JRCC Activities (Safety Awards and Symposiums)

In 2000, the JRCC, jointly with the JCIA, began organizing "safety awards" and also "safety symposiums" based on case studies by winning companies.

〔Safety Awards and Safety Symposiums〕

A system was originally set up in 1977 by the JCIA, as part of efforts to encourage independent safety and hygiene improvement at chemical companies after a spate of accidents around 1973 and 1974 in chemical industry complexes. Since that year, awards have been made annually to factories whose excellent safety records make them models for others. The May 2002 awards marked the 26th time since the contest had been held.
It is firmly considered that when a factory wins an award, there is a beneficial influence both on other plants within the company and on safety measures throughout the industry.

It is worthy of a special note that an overseas affiliate company received the honor of Safety Award for the first time since R&D institutes and overseas affiliates were qualified for awards in 1995.

- **Safety Award**
  Saudi Methanol Company (AR-RAZI)
- **Safety Effort Award**
  Ube Research Laboratory, Corporate Research and Development, Ube Industries, Ltd.
  Osaka Factory, Dai-ichi Kogyo Seiyaku Co., Ltd.
  Mizushima Plant, Chisso Corporation
  MCC - Group Science & Technology Research Center, Tsukuba, Mitsubishi Chemical Corporation

140 people including those who did not belong to the JRCC attended " Safety Symposium" held at Invention Assembly Hall on 25 June 2002. They eagerly listened to detailed presentations on the winners' safety activities and also to the panel discussion entitled "How to Continue Zero Accident".

Followings are winners' brief outline and their safety records.

★Saudi Methanol Company (AR-RAZI)

Saudi Methanol Company located in Al Jubail, Saudi Arabia was established in 1979 as a joint venture company between Saudi Arabia Basic Industries Corporation and Japan-Saudi Arabia Methanol Co., Ltd., and commenced its production in 1983. It produces industrial methanol from natural gases,

Saudi Methanol Company (AR-RAZI)

having the production capacity of 3 million tons a year, which is one of the largest in the world as a plant. It employs 412 people and has continued zero accident for the last 12 years and some.

★Ube Research Laboratory, Corporate Research and Development, Ube Industries, Ltd.

Ube Research Laboratory commenced its research and development work in 1951. It acquired ISO14001 certification in 1999. Its major research fields are medicines, agricultural chemicals, high functional materials, organic synthesis, and so forth. It employs 212 researchers and has continued zero accident over 10 years.

★Osaka Factory, Dai-ichi Kogyo Seiyaku Co., Ltd.

Osaka Factory started its operation in 1933 named as Takatsuki Plant, changing its name to Osaka Plant in 1964. It produces mainly injections (60 items) and solid medicine (1 item) with 194 employees, continuing its zero accident record over 16 years and some. This plant also won the JCIA' Safety Effort Award in 1981.

★ Mizushima Plant, Chisso Corporation

Mizushima Plant commenced its operation in 1970, producing mainly PVC resin with the current production capacity of 68,000 tons a year. It employs 32 and has continued its zero accident for 25 years and some.

★MCC - Group Science & Technology Research Center, Tsukuba, Mitsubishi Chemical Corporation

In 1968 this center started its research and development work in the fields of mainly battery functional materials, fine chemicals and functional polymers, currently employing 114 researchers. It has continued to record zero accident for 21 years and some. It was honored with the JCIA's Safety Effort Award in 1996.

※The details of presentations by each winner appear in "News" of the JRCC's home page.
http://www.nikkakyo.org/news/index,php3

※Taking the opportunity of organizing Safety Symposium this year, "25-Year History of Safety Awards" was published as a commemoration publication of the 25th anniversary, compiling records of discussion meetings and symposiums attended by representatives of winner companies, presentations on winners' safety activities and so forth.
This booklet is full of suggestive and informative articles on safety issues, which are useful not only for the chemical industry but also for other industries.
JRCC takes pleasure in offering this booklet for your reference.
(Contact the secretariat of JRCC: Tel : 03-3519-2125)

JRCC Activities (Dialogue with the Public)

One of the most important Responsible Care activities is to ensure clear understanding of society through disclosing the activities to the public and communication with society.
Each JRCC member company has been promoting dialogues with society for this object in view. Through JRCC's Dialogue Working Group, the JRCC has organized dialogue meetings as mentioned below.
The dialogue meetings with consumer groups are also held repeatedly in small groups, and, in fiscal 2001, the JRCC commenced dialogues with student organizations on environmental conservation.

〔Community Dialogue〕

At the 11 districts throughout Japan, including the 9 major petrochemical complex districts, the JRCC organizes "Community Dialogue Meetings", which are participated in by the representatives of local municipalities and the residents of each community.
In 2001, however, the JRCC converted these meetings from explanatory style to discussion forums based on the JRCC's strategic plan, aiming at promoting mutual dialogues.
The third regional dialogue meetings were held in 5 petrochemical complex districts of Kawasaki, Yokkaichi, Sakai/Senpoku, Oita, and Iwakuni/Otake. The JRCC organized panel discussions inviting outside panelists in these regional dialogue meetings as a device to further promote communication with communities.

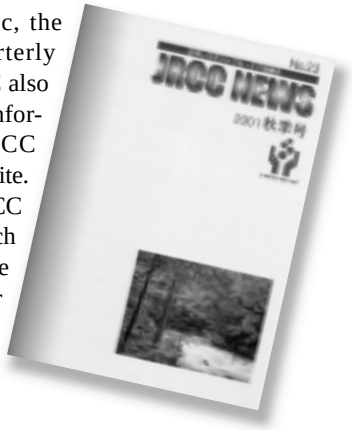
〔Dialogue Meetings〕

The fifth dialogue meeting with the "Consumers. Japan" was held without designating a specific theme, aiming to enhance "risk communication" with consumers
Although participants from the "Consumers. Japan" vary at each meeting, the atmosphere of these meetings has grown more steadily by frank discussion. A greater mutual trust has been built up year by year.
There was an opinion of expectation that enterprises were to more proactively listen to public opinions and accept public participation, as the JRCC advocates "opened industry", although the common attitude of enterprises used to be "no disclosure of industrial secrecy."

As for dialogue with Consumers' Science Foundation, the JRCC delivered a lecture on dioxins at "Consumers' University" organized by Consumers' Science Foundation., followed by questions and answers, and opinion exchanges.
Furthermore, in fiscal 2001, the JRCC commenced in Tokyo and Osaka "environmental dialogue and interaction" with the students having deep concern about environmental issues, who belonged to the Japanese branch of the International Association of Students in Economics and Business Management (AIESEC), the world largest student organization.

〔Public Relations Activities〕

To have the activities and achievements of the JRCC, its members and members' facilities known to its members as well as the general public, the JRCC publishes the quarterly JRCC News, and the JRCC also makes Responsible Care information, reports, and JRCC News available via its web site.
In early fiscal 2001, the JRCC updated its web site, in which "Information Pages" have been instituted to deliver information to its members more promptly.



JRCC Activities (Responsible Care Verification)

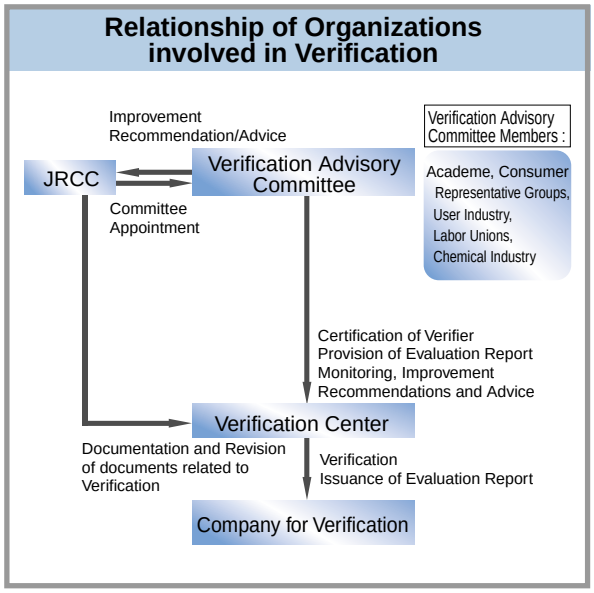
JRCC has formally started the long-intended, much studied Responsible Care verification in April 2002. JRCC is looking at having all member companies to undertake this verification within the next 3~5 years.

1. Objective of the Verification

The Responsible Care Verification aims to elevate the quality of Responsible Care activities of companies by having these activities objectively assessed by audit, and utilizing these results by applying the PDCA cycle for the succeeding activities. It further aims to improve the transparency of internal audit activities which up until now have been deemed inadequate.

2. Verification Organization

JRCC has established the Responsible Care Verification Center which is commissioned to conduct the verification function. Further, a Verification Advisory Committee composed of interested parties such as academe, consumer groups, and user groups has been established, which monitor the verification activities conducted by the Responsible Care Verification Center and recommend improvements.



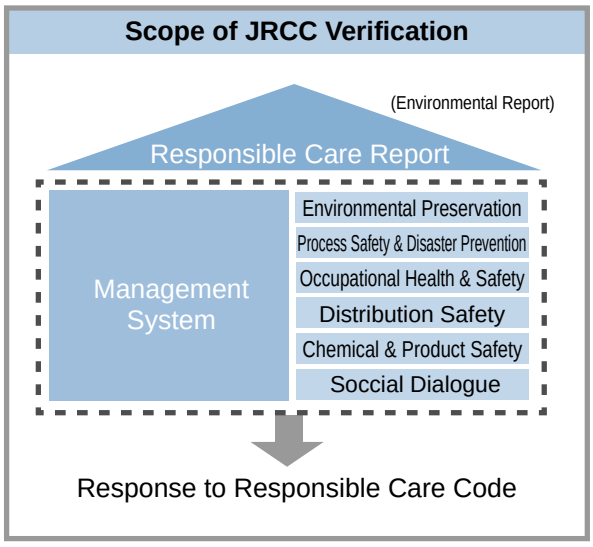
3. Features of the Verification

◇ Establishment of the Responsible Care Code which becomes the standard for Responsible Care activities. This will be used further as the standards for the quantitative evaluation of activities. The evaluation results will be incorporated as Evaluation Documents, composed of the Opinion and the Report, to be provided to the Company being verified.

◇ The Responsible Care Code is composed of 7 codes, namely Management System, Environmental Preservation, Process Safety and Disaster Prevention, Occupational Safety and Health, Distribution Safety, Chemical & Product Safety, and Social Dialogue. The requirements for achieving the ideal state of the current status of each fields of activity are included in each Code.

◇ The company to be verified can freely choose the scope of verification from among 8 evaluation modules, i.e., any of the 7 codes and the documents, such as the "Responsible Care Report", which the company discloses and publishes for the public, the "Environmental Report", etc.

◇ In order to secure transparency of the verification system, the Responsible Care Code, the outline of the Verification System and a list of names of companies that have undertaken the verification shall be made available to the public on the JRCC homepage.



◇ Verification shall be conducted by a Verifier, an industry expert who possess adequate experience and knowledge on Responsible Care and who has satisfied the qualification requirements as stipulated in the regulations.

◇ Verification shall be conducted in two parts - by advanced Document Verification and basically, by the Actual Verification on site. In Document Verification, activities shall be assessed based on the answers to a questionnaire sent in advance, while in Actual Verification, verification of problem points arising from the Document Verification shall be conducted.

4. Status Overseas

The American Chemical Council (ACC) Board approved the plan to develop for mandatory third-party certification process for Responsible Care in 2001. Strict and transparent third-party verification is expected as the global trend.

JRCC Activities (Communication among Members)

The JRCC implements information exchanges, panel discussions and lectures by outside lectureas in Member Experience Exchange Meetings and Member Workshops among its members to improve the quality of Responsible Care activities.

[Member Experience Exchange Meetings]

Spearheaded by the Member Exchange Working Group, the JRCC conducts "Member Experience Exchange Meetings" as forums for information sharing and members' good practice exchanges. In fiscal 2001, these meetings were held in Tokyo and Osaka.

In the Tokyo meeting in July 2001, there were about 130 participants to the lecture on "Current Situation of Pollution by Chemical Substances" given by Dr. O. Nakasugi, Director, Research Center for Environmental Risk, The National Institute for Environmental Studies. The small group sessions had 4 topics, ①Risk Communication, ② Environmental Accounting, ③ Soil and Underground Water Contamination, and ④ Safety Management.

In the Osaka meeting in February 2002, about 90 people participated from the JRCC member companies in Kansai district. Mr. Yoichi Uehara, a member of JRCC Advisory Board and honorary professor of Yokohama National University, made a speech on "Process Safety". After the speech, the participants joined one of 6 group sessions to exchange opinions each other.

[Member Workshops]

In fiscal 2001, in addition to the member exchange meeting, the JRCC Member Exchange Working Group organized two workshops, to enhance and share the current topics among JRCC members.

The first workshop was held on the theme of "Environmental Reports of Enterprises" in August 2001 and attended by 102 JRCC members. Sekisui Chemical Co., Ltd., a JRCC member, made a presentation for its case study. Kirin Beer Co., Ltd., non-JRCC member, also made a presentation, followed by a panel discussion to promote a deeper understanding about the themes.

The second workshop was held in February 2002 on the theme of "Environmental Accounting" with 80 participants. The presentations made by Dainippon Ink & Chemicals, Incorporated, and JSR Corporation. As in the first workshop, a panel discussion was also organized. Taking this opportunity of the second workshop, 10 JRCC member companies joined to launch "Environmental Accounting Study Group."

Parallel Session of Member Experience Exchange Meeting(Tokyo)

Member Experience Exchange Meeting (Osaka)

Workshop for members

JRCC Activities (International)

Responsible Care Initiatives are being promoted throughout the world under the auspices of the Responsible Care Leadership Group (RCLG) of the International Council of Chemical Associations (ICCA). At the Johannesburg meeting of the RCLG in the middle of August 2002, the admission of Venezuela was approved, making the total membership of 47 countries.
In the Asia-Pacific region twelve countries are members. Recognized for its advanced level of Responsible Care implementation, Japan is expected to take on a leadership role.
The following international activities are being pursued under the International Working Group of the JRCC.

[The Asia-Pacific Responsible Care Conference (APRC)]

At the annual international APRC conference, member countries and companies report proactively on their Responsible Care programs at keynote speeches and at secondary sessions. The goal is pursuing and furthering Responsible Care activities in the Asia-Pacific region.
The seventh APRC conference, for 2001, was held in October in Bali, Indonesia, and was attended by 150 people including those from Indonesia.
Due to the simultaneous multiple terrorist attacks in USA right before the scheduled conference, it was once doubtful of the opening, but it was managed to be held although the number of participant decreased.
In the APRC conference, Mitsubishi Chemical Indonesia Company took the leading role in planning and administration as the secretariat, and played an active part for smooth steering of the conference.
APRC conference is to be held with the interval of 18～24 months in future, and the eighth APRC conference will be held in Korea in Nov. of 2003.

[Support for Responsible Care Activities in Thailand]

In succession to the first stage support to Thailand, the current status of Responsible Care programs were examined. JRCC dispatched two experts to Thailand through Japan Overseas Development Cooporation. From end February to early March, the two weeks second stage support aimed to assist the implementation of Responsible Care activities and Responsible Care management through workshops.
The experts from JRCC organized two workshops. The first one was held with the 23 participants from companies and Goverment in Bangkok. The second workshop had another 23 particiants from companies and municipalities in suburbs of Bangkok.
The themes for the workshop were risk assessment, Responsible Care verification and so forth. Participants successfully deepened their understanding about the themes owing to the workshop style studies.They showed proactive attitude towards Responsible Care activities, and answered the questionnaire that they were keen to know more examples of success as well as failure in Japan.
There are plans to offer an assistance to the Philippines and Vietnam.

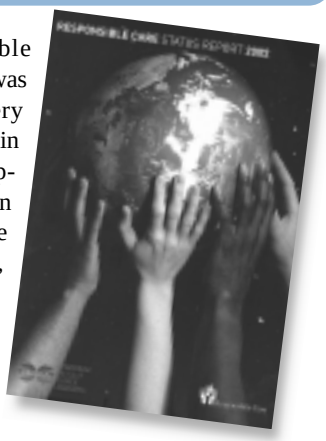
[ICCA and RCLG Activities]

ICCA has held international conferences with the director generals from major chemical associations in the world. There are two meetings a year in spring and autumn, to oversee the implementation of work plans and discuss and review strategic policies of the global chemical industries.
The spring conference in 2002 was held in Tokyo for two days on April 10 and 11. In this conference the following statement was approved to globally establish a common recognition on Responsible Care.

Statement on Responsible Care of the ICCA
Responsible Care is the voluntary initiative of the global chemical industry in which companies, through their national associates, commit to work together to :

- continuously improve their company's and the chemical industry's performance in protecting people and the environment throughout the life cycle of their products and processes;
- contribute to the sustainable development of local communities and of society as a whole;
- inform their publics of the risks and benefits of what they make and do, and about their performance, achievements and challenges;
- dialogue and work with their stakeholders at the local, national and international level to understand and address their concerns and aspirations;
- cooperate with governments and organizations at all levels in the development and implementation of effective regulations and standards, and to meet or exceed those requirements;
- extend Responsible Care to all those who manage chemicals.

The ICCA's "Responsible Care Status Report 2002" was issued in July 2002 (every two years) and distributed in "Environmental Development Summit" held in Johannesburg, which can be referred to in web site, http://www.icca-chem.org/rcreport/.



Glossary of Terms

- **ICCA** (International Chemical Council Association)
  An organization of the world's chemical industry groups, which, as of its establishment in 1990, has included the Japan Chemical Industry Association

- **JCIA** (Japan Chemical Industry Association)

- **JRCC** (Japan Responsible Care Council)
  An organization established within JCIA in 1995 for the promotion of Responsible Care in Japan

- **PRTR** (Pollutant Release and Transfer Register)
  A regulatory system which requires reporting of emission volumes of chemical substances into the air, waters and soil and transferred volumes of wastes. Data compiled to the government bodies are disclosed to the public.

- **Zero Emission**
  An environmental preservation activity that seeks to completely eliminate waste products and emissions

- **Greenhouse Gases**
  Gases that absorb and release heat emitted from the surface of the earth and that cause the earth's surface temperature to rise when their level of concentration increases

- **NOx** (Nitrogen Oxides)
  Toxic substances contributing to air pollution; calculated in units of NOx.

- **SOx** (Sulfur Oxides)
  Toxic substances contributing to air pollution, consisting major component of Sulfur Dioxide(SO_2), with trace amount of Sulfur Trioxide (SO_3), and are noted as SOx.

- **OSHMS**
  (Occupational Safety and Health Management System)
  A management system that establishes organization, responsibility, routine, procedure, process and managerial resources for reducing latent risks to occupational safety and health on a continual basis

- **MSDS** (Material Safety Data Sheet)
  A document that describes the health, safety and environmental hazards of a material and provides information on how the material can be safely handled, used and disposed

- **Green Procurement**
  The assigning of priority to items that take environmental concerns into consideration or have little impact on the environment in the purchasing and procurement of products and materials

- **VOC** (Volatile Organic Compounds)
  Volatile Organic Chemicals which have hazards to cause air pollution
  For example, Formaldehyde, Toluene and Benzene

- **Product Stewardship**
  A process to make health, safety and environmental protection an integral part of designing, manufacturing, marketing, distributing, using, recycling and disposal of products

- **Dioxins**
  General designation for the Polychlorinated Dibenzo-Para-Dioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) emitted from a wide range of sources, including waste incinerators and electric furnaces used in steel making. There are 75 different types of PCDDs and 135 different types of PCDFs. 2,3,7,8- chlorine substituted PCDDs are considered to be the most toxic.

- **Endocrine Disrupters**
  Chemical substances that interact with hormonal system of living organisms in ways that resemble natural hormones

- **PCB** (Polychlorinated biphenyl)
  Because it is decay resistant, PCB accumulates in the global environment and exerts adverse effects on living organisms. Its manufacture and use is currently prohibited.

- **Nerve Toxicity**
  Toxicity to nerve systems, causing motor paralysis, perceptual irregularity, anesthekinesia, and so forth. LRI is investigating especially on “the effects to children’ brain and nerve systems by exposure to chemical substances during their fetus periods”.

- **PDCA Cycle**
  PDCA is an abbreviation for Plan, Do, Check and Action, which is a basic way of thinking in management to make continuous improvements. It is a continuous process for improvement by a cycle of making a plan, carrying out the plan, checking and analyzing the results, taking actions to improve defects, and making a new plan for the next cycle.

JRCC Members List

Total 114 companies in alphabetical order as of October 2002

Air Products Japan, Inc.
Akzo Nobel K.K.
Asahi Denka Kogyo K.K.
Asahi Glass Co., Ltd.
ASAHI KASEI CORPORATION
BASF Japan Ltd.
Bayer Ltd.
Central Glass Co., Ltd.
ChevronTexaco Japan Ltd.
Chisso Corporation
Ciba Specialty Chemicals K.K.
Clariant (Japan) K.K.
Dai Nippon Toryo Co., Ltd.
Daicel Chemical Industries, Ltd.
DAIHACHI CHEMICAL INDUSTRY CO., LTD.
Dai-ichi Kogyo Seiyaku Co., Ltd.
Daikin Industries, Ltd.
Dainichiseika Color & Chemicals Mfg. Co., Ltd.
Dainippon Ink & Chemicals, Incorporated
DAISO CO., LTD.
Denki Kagaku Kogyo Kabushiki Kaisha
Dow Chemical Japan Limited
Dow Corning Toray Silicone Co., Ltd.
DuPont Kabushiki Kaisha
DuPont-Mitsui Fluorochemicals Company Limited
DuPont-Mitsui Polychemicals Co., Ltd.
Fuji Photo Film Co., Ltd.
Hitachi Chemical Co., Ltd.
Hodogaya Ashland Co., Ltd.
Hodogaya Chemical Co., Ltd.
Hokko Chemical Industry Co., Ltd.
Idemitsu Petrochemical Co., Ltd.
Ishihara Sangyo Kaisha Ltd.
Japan Acrylic Chemical Co., Ltd.
Japan Carlit Co., Ltd.
Japan Elastomer Co., Ltd.
JSR Corporation
Kanebo GOHSEN, LTD.
Kaneka Corporation
Kansai Paint Co., Ltd.
Kanto Denka Kogyo Co., Ltd.
Kao Corporation
Koei Chemical Company, Limited
Konica Chemical Corporation
Konica Corporation
Kuraray Co., Ltd.
Kureha Chemical Industry Co., Ltd.
KUREHA PLASTICS CO., LTD
Kyowa Hakko Kogyo Co., Ltd.
Lion Corporation
Maruzen Petrochemical Co., Ltd.
Mitsubishi Chemical Corporation
Mitsubishi Gas Chemical Company, Inc.
Mitsubishi Pharma Corporation
Mitsubishi Rayon Co., Ltd.
Mitsui Chemicals, Inc.
Mizusawa Industrial Chemicals, Ltd.
Nankai Chemical Industry Co., Ltd.
NIHON NOHYAKU Co., Ltd.
Nippon Bee Chemical Co., Ltd.
Nippon Chemical Industrial Co., Ltd.
Nippon Kayaku Co., Ltd.
Nippon Paint Co., Ltd.
Nippon Petrochemicals Co., Ltd.
Nippon Polyurethane Industry Co., Ltd.
Nippon Shokubai Co., Ltd.
Nippon Soda Co., Ltd.
Nippon Steel Chemical Co., Ltd.
The Nippon Synthetic Chemical Industry Co., Ltd.
Nippon Unicar Company Limited
Nippon Zeon Co., Ltd.
Nissan Chemical Industries, Ltd.
NOF Corporation
Ozeki Chemical Industry Co., Ltd.
Polyplastics Co., Ltd.
Rohm and Haas Japan K.K.
Sakai Chemical Industry Co., Ltd.
San Nopco Limited
Sanko Co., Ltd.
Sanyo Chemical Industries, Ltd.
Sekisui Chemical Co., Ltd.
Sekisui Plastics Co., Ltd.
Shell Chemicals Japan Ltd.
Shikoku Chemicals Corp.
Shin-Etsu Chemical Co., Ltd.
Showa Denko K.K.
Showa Denko Elastomers K.K.
Showa Highpolymer Co., Ltd.
Showa Tansan Co., Ltd.
Sika Japan Ltd.
Solutia Japan Limited
Sumika Bayer Urethane Co., Ltd.
Sumitomo Bakelite Co., Ltd.
Sumitomo Chemicals Co., Ltd.
Sumitomo Dow Limited
Sumitomo Seika Chemicals Co., Ltd.
SunAllomer. Ltd.
Takeda Chemical Industries, Ltd.
Taoka Chemical Company Limited
Tayca Corporation
Techno Polymer Co., Ltd.
Teijin Limited
The Inctec Inc.
The Nippon Synthetic Chemical Industry Co., Ltd.
Toagosei Co., Ltd.
Tokuyama Corporation
Tonen Chemical Corp.
Toray Industries, Inc.
Tosoh Corporation
Toyo Ink Mfg. Co., Ltd.
Toyo Kasei Kogyo Co., Ltd.
Tsurumi Soda Co., Ltd.
Ube Industries, Ltd.
UMG ABS
Wilbur-Ellis Co., (Japan) Ltd.

You can access for further information :

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