

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

Responsible Care

Report
2001



The Japan Responsible Care Council



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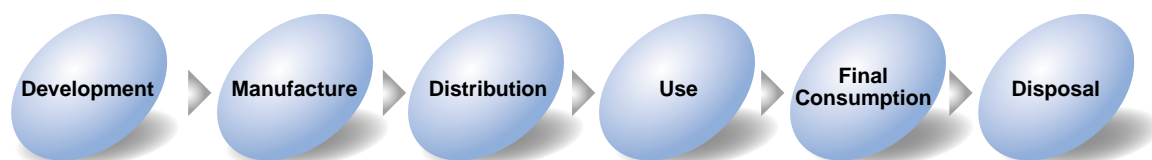
Do you know Responsible Care ?

What Is Responsible Care?

Chemical substances are now an indispensable part of our livelihood. However, when improperly handled, they are also potentially hazardous substances that threaten human health and the 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 substance 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 over the world, is working voluntarily to preserve the health, safety and environment in every process, from the development of chemical substances through their manufacture, distribution, use, and 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 foundation of the International Council of Chemical Associations (ICCA). 46 countries around the world initiate Responsible Care (as of April 2001). In 1995, the Japan Responsible Care Council (JRCC) was founded within the Japan Chemical Industry Association (JCIA) by 74 companies, primarily manufactures and handlers of chemical substances. With the JRCC's foundation, company efforts to address environmental and safety concerns were united and intensified, and the goal of enhancing public understanding was undertaken. As of April 2001, the JRCC comprised 109 member companies.

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 RCLG member countries as well as the respective members of those associations.

In Japan, use of the Responsible Care logo is limited to the JCIA, JRCC, and JRCC member companies.



Responsible Care Implementation Items

The JRCC and its member companies collectively take action in following 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 employees)
- 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

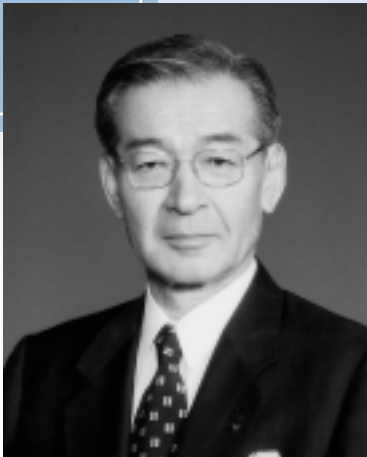
by publicly disclosing the results of these efforts.

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.

<http://www.nikkakyo.org/organization/jrcc/index.html>



Message from the Chairman



Akio Kosai
Chairman
Japan Responsible Care Council

It is my great pleasure to present JRCC's Responsible Care Report 2001. This report represents a summary of the Responsible Care activities of the 109 member companies of JRCC during the fiscal year 2000 ending March 31, 2001.

Responsible Care is a voluntary initiative undertaken by the chemical companies. The thrust of such initiative is to pay attention to environment, health, and safety throughout the entire life cycle of chemical substances from development through disposal in a self-responsible and self-determined manner. At the same time, Responsible Care seeks to make the findings available to the public and maintain communication therewith.

With a view to presenting a report with the content which is more easily comprehensible, we have made the following improvements following the Environmental Reporting Guidelines of Japan's Ministry of the Environment:

To present plans and achievements in environmental preservation in easily comprehensible terms.

To add information on specific illustrative examples of efforts made in order to reduce the environmental impact and of implementation of the Pollutant Release and Transfer Register (PRTR).

To give more detailed account of member companies' business activities in terms of both quality and quantity.

Some of the significant achievements of JRCC during fiscal 2000 are following:

- 1) Steady improvement in performance was made in all areas, including environmental preservation. With respect to industrial waste disposal reduction and energy saving, compared to the targets of 80% and 10% from 1990 through 2010, which were set forth by JCIA based on Keidanren's Voluntary Action Plan on the Environment, actual results in 2000 were 69% and 6%, respectively. Furthermore, with respect to reduction of hazardous air pollutants, JRCC achieved target levels in 11 out of the 12 chemical substances identified under its voluntary control program for fiscal 1999 (the final year of the program's first stage). We plan to continue to implement such voluntary program. Since the second stage of the voluntary program was already set forth for fiscal 2003 (the final year), we are working hard to achieve our voluntary reduction targets.
- 2) JRCC recommended that each member company issue a Responsible Care Report (or an environmental report). The number of the companies which issued such reports increased by approximately 10 companies a year over the past few years. As a result, more than 60 member companies published their reports for fiscal 2000.
- 3) After the enforcement of the PRTR Law in April 2001, dialogue with local communities became more important than before. JRCC held biannual town meetings in nine districts where petrochemical complexes were located, and also in Toyama/Takaoka and Osaka/Kobe districts. Furthermore, we held newly meetings for dialogue with student organizations in addition to the current ones with two consumer groups.
- 4) JRCC has been pursuing international collaboration in the High Production Volume (HPV) initiative and the Long-range Research Initiative (LRI) which have been promoted by the ICCA.

It has been 10 years since the global environmental summit was held at Rio de Janeiro in 1992. In September 2002, which marks the tenth anniversary, the World Summit on Sustainable Development is scheduled in Johannesburg.

In the 21st century which is often referred to as a century of environment, all of the JRCC member companies recognize their social responsibility and intend to intensify their efforts to promote the cause for "environment, safety and health", and "dialogue with the public" based on the idea of Responsible Care, in the hope to contribute to realizing sustainable society. I sincerely hope that this report will help you deepen understanding of JRCC's activities and its member companies, and look forward to comments and constructive advice from you.

November 2001

Board Members of Japan Responsible Care Council

Chairman	Akio Kosai	Chairman, Japan Chemical Industry Association, Chairman, Sumitomo Chemical Co., Ltd.
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 the NAP (National Advisory Panel)



Jiro Kondo
Chairman

Japan Responsible Care Council Advisory Board

The Pollutant Release and Transfer Register (PRTR) was inaugurated in March 2000 and finally went into effect in April 2001. As repeatedly stated, Responsible Care initiative by the Japanese chemical industry was of enormous assistance in the legislation of the PRTR program. Several sections in this report are devoted to this topic. It is very delightful to see that the new legislation has been steadily implemented.

Awareness and concern regarding endocrine disruptors has grown steadily stronger in recent years. As stated in “Our Stolen Future”, 1996 by Theo Colborn, Dianne Dumanoski, and John Peterson Myers, reproductive abnormalities have begun to appear in such living organisms as birds, reptiles, and other vertebrates due to the effects of chemicals like PCB, DDT, and dioxins. The book is a sort of scientific detective stories, warning that many species are in fact threatened with extinction. Like Rachel Carson’s “Silent Spring”, 1962, this book created a sensation since the time of the publication. It is generally said that any release of endocrine disruptors into the environment will affect some reproductive functions, regardless of volume.

Dr. Horiguchi of the National Institute for Environmental Studies uses tanks that holds up to 100 tons of ocean water to conduct research on the occurrence of imposex (the superimposition of male genital organs on females) in certain gastropods (*Thais clavigera*) due to endocrine disruptors. In this research, Dr. Horiguchi cultivates the gastropods in two tanks of ordinary ocean water and of pure ocean water to compare their growth. Since ordinary ocean water contains trace amounts of organic tin, non-polluted pure ocean water needs be produced artificially by mixing salt into fresh water to enable proper comparison. Thus, studying the effects of endocrine disruptors requires the careful and cautious research work on previously absent chemical substances in the event that they are found in the ecosystem, no matter how minute their amounts.

There are currently more than 100,000 different artificially synthesized chemical substances. Among them, plastics and nylon are examples of chemicals which enhance the quality of our lives with completely safe and inexpensive mass-production. Some chemicals, however, cause effects on ecosystems when present in the environment for long periods of time or remain undetected until several years later. Extra attention has to be paid on bioaccumulation in particular, because certain substances reach high concentrations within ecosystems through the food chain.

The 2001 Nobel Prize for chemistry was awarded to Dr. Noyori, Professor of the University of Nagoya, following Dr. Shirakawa’s receipt of the award last year. There are many excellent chemists who are engaged in extremely high-caliber research works in Japan. I hope that these excellent researchers will continue to achieve such superb outcome. There are two aspects in the development of science and technology, namely positive and bright aspect and negative and dark aspect. It is of key importance to keep balance in research works, ensuring that such tragic incidents as Minamata disease never occur again.

Responsible Care is an initiative developed and adopted by the chemical industry to continually improve environmental, health and safety performance of the operation and products in a manner responsive to the concerns of the public. In other words the chemical companies are led in ethical ways that increasingly benefit society, the economy and the environment. I hope this report will be recognized as addressing these issues.

Members of Japan Responsible Care Council Advisory Board

Jiro Kondo	: Professor Emeritus, University of Tokyo	Tadao Terao	: Chairman, Society of Japanese Pharmacopeia
Kazuo Akita	: Professor Emeritus, University of Tokyo	Hiroyuki Torii	: Editorial Writer, Nihon Keizai Shimbun Inc.
Yoichi Uehara	: Professor Emeritus, Yokohama National University	Motoo Nakahigashi	: Chairman, The Society of Chemical Engineers, Japan
Katsutoshi Kato	: President, Japanese Federation of Chemical Workers Unions	Keiko Nakamura	: Deputy Director General, JT Biohistory Research Hall
Masaomi Kondo	: Director General, Chemicals Evaluation and Research Institute, Japan	Nagaharu Hayabusa	: President, The journalist workshop for global citizens
Haruhiko Sakurai	: Executive Director, Japan Industrial Safety and Health Association; Head of Occupational Health Research and Development Center.	Miyoko Hyodo	: Counselor, Japan Housewives' Association
		Akio Yamamoto	: Professor Emeritus, Tokyo Institute of Technology

Basic Policies for the Publication of the Responsible Care Report 2001

Preface

The Japan Responsible Care Council (JRCC) compiles and discloses the results and achievements of council and each member company's activities in an annual report, which it has been publishing annually since the year following its establishment in April 1995.

Immediately following the publication, the annual report meetings are held in Tokyo and Osaka. These meetings are attended not only by JRCC members, but also government officials, trade unions, companies and organizations from other industries and the media. These meetings have come to serve as an opportunity for both the disclosure of the essential contents of the annual report and the exchange of opinions from the participants. Reactions and opinions regarding the report are also gathered through questionnaires at the meetings, and the JRCC has continued to strive in numerous other ways to improve both its report and its activities.

Along with the 1998 report, the JRCC issued a digest version to make the content of the report more easily understood by the general public.

Furthermore, in fiscal 2000, the JRCC published the brochure "Do You Know Responsible Care?" as a tool to enhance the general public's understanding of chemical products and awareness of Responsible Care and raise the JRCC's public profile. English versions of each annual report are also issued along with their Japanese language counterparts to inform other countries that are active in Responsible Care of the state of activities in Japan.

Despite these numerous efforts, certain JRCC member companies have indicated that the contents of these annual reports are insufficient or are too difficult to understand.

Concurrently, the Ministry of the Environment drafted and publicized its "Environmental Reporting Guidelines" (Fiscal 2000 Version). Hence, for the Responsible Care Report 2001, the sixth annual report, the JRCC strove to improve its content along the following policy lines.

Basic Policies

Environment Reporting Guidelines (Fiscal 2000 Version) will be applied.

Efforts will be made to produce easily understandable content.

Efforts will be made to clearly illustrate member efforts to improve activities and include specific examples wherever possible.

Applicable Content

The preceding basic policies have been applied to the following content in the compilation of the Responsible Care Report 2001.

The following items provided by 109 member companies:

Responsible Care implementation reports and planning reports

Results of internal auditing and the overall assessment of Responsible Care activities

Results of activities for the four principal areas of activity: environmental preservation, process safety and disaster prevention, occupational safety and health, and product stewardship

Communication and dialogue with the public based on the disclosure of activity results

Activities of the JRCC, which comprise the collective partnership of JRCC members.

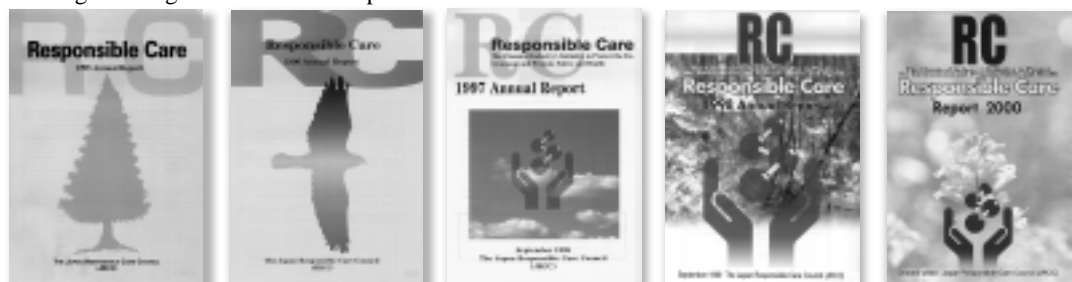
* Activity results comprise primarily those for fiscal 2000 (April 1, 2000 to March 31, 2001).

* As of fiscal 2000, items for which JCIA assessment performance indicators are identical to JRCC's will be integrated into JCIA assessment results. Consequently, certain items will differ in content from the previous year (energy saving, industrial waste, survey on PRTR, and others).

* To equalize as much as possible the number of members providing data for each year when addressing results from years past, 1995-the year of the JRCC's establishment-will be used as the standard for comparison.

* When presenting rates of environmental impact reduction (which the Ministry of the Environment defines as an indicator of a business' environmental performance), figures will be presented in correlation to each ¥ million of net sales because member companies encompass a variety of industry segments and it is not always possible to present all figures according to a single common unit of production volume.

Past
annual
reports



Summary of the Responsible Care Report 2001

This is the JRCC's sixth annual report.

Features of the Responsible Care Report 2001:

- In accordance with the basic policies regarding its publication, this report is an overview and summary of the year spanning April 2000-March 2001 and focuses primarily on the individual activities of 109 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 2000 JRCC activities, including surveys carried out among JRCC member companies.

Summary

Environmental Preservation

Surveys regarding industrial waste, energy consumption, CO₂ emission volumes, and PRTR activities have been integrated into JCIA surveys.

- In its voluntary environmental action plan, JCIA has set the target for final waste disposal volumes of 80% of those for fiscal 1990, to be achieved by fiscal 2010. JRCC member companies reduced wasted disposal volumes to 69% of fiscal 1990 levels in fiscal 2000.
- In its voluntary environmental action plan, JCIA 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 94% of fiscal 1990 levels in fiscal 2000.
- 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-specified substances has been included in this report. In addition, information has also been included on JCIA's efforts regarding 12 toxic air-polluting substances, which correspond to its Second Term Voluntary Action Plan (the target of which is a 43% average reduction compared with figures for fiscal 1999 to be achieved by fiscal 2003).
- Low levels of SO_x (Sulfur Oxides), NO_x (Nitrogen Oxides), Dust and COD (Chemical Oxygen Demand) have been maintained.

Investment in Environmental Preservation

- Investments in environmental preservation measures amounted to ¥74 billion, or 0.46% of net sales.

Process Safety and Disaster Prevention

- Although the number of accidents at the member companies increased by seven compared with fiscal 1999, this includes the incidents occurred repeatedly as a result of the aging of equipment. Measures are being taken to assess the condition of equipment and implement the necessary investments. Investments in process safety and disaster prevention are on an upward trend.

Occupational Safety and Health

- The rate of occupational injuries (number of injured persons /millions of hours actually worked) at member companies was 0.19, and the severity rate of injuries (lost days/ thousand hours actually worked) was 0.03. Both figures are well below the overall frequency and severity rates for the 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 required by law. However, it has come to our atten-

tion that MSDSs do not always reach to the end user. This situation makes member companies work further.

Research for Chemical Safety

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

Self-Assessment of Responsible Care Implementation Items and Action

- With the full-fledged implementation of PRTR system, internal database compilation and involvement in risk communication are growing steadily. The company self-assessments have become increasingly stringent, as illustrated by member companies' revision 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 presents the current state of member companies' Responsible Care reports (or environmental reports) which are valuable tools for maintaining dialogue with the public and local communities as well as efforts to solve such recent environmental problems as dioxin emissions.

JRCC Activities

This report presents the JRCC activities as implemented by the six working groups (WGs), which are composed of member companies.

- A new workshop has been formed in addition to the existing member experience exchange meeting.
- In effort to raise the quality of member Responsible Care activities and improve reliability, the JRCC is working to create a verification system, which it plans to implement officially in fiscal 2002.
- Regular community dialogue meetings were held again in three districts and new dialogue sessions were held in an additional district. During fiscal 2001, the JRCC will continue to work to transform these sessions from primarily explanatory meetings to interactive dialogue sessions. In addition to continuing dialogue with citizens and consumer groups, dialogue with university students has also commenced.
- Participation in the Asia-Pacific Responsible Care Conference and support for Responsible Care in Thailand are among the international activities presented in this report.
- Safety awards and symposiums as well as PRTR promotion and education efforts are presented in this report. This report also contains information on the JRCC Medium-Term Strategic Plan, which was enacted with the aim of achieving new growth for Responsible Care efforts.



Environmental Preservation (Reduction of Industrial Waste)

Plan for Reduction of Industrial Waste

Since its foundation, the JRCC has worked to reduce industrial waste by setting guidelines that integrate waste reduction into each member company's annual and long-term plans.

Each the JRCC member company strives to reduce final waste disposal volumes through various initiatives aimed at reducing, reusing, and recycling waste.

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 disposal 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, the JRCC member companies have also adopted the JCIA's target and have implemented a number of projects aimed at reducing waste.

Current Waste Reduction Progress and Programs

Reduction of Waste Volume

Industrial waste volumes for fiscal 2000 represented a 10% decline compared to fiscal 1990 volumes, with actual volumes hovering at approximately the same level over the past five years.

Although further technological breakthroughs are required to reduce waste volumes, the JRCC members are studying various plans to reduce waste and 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.

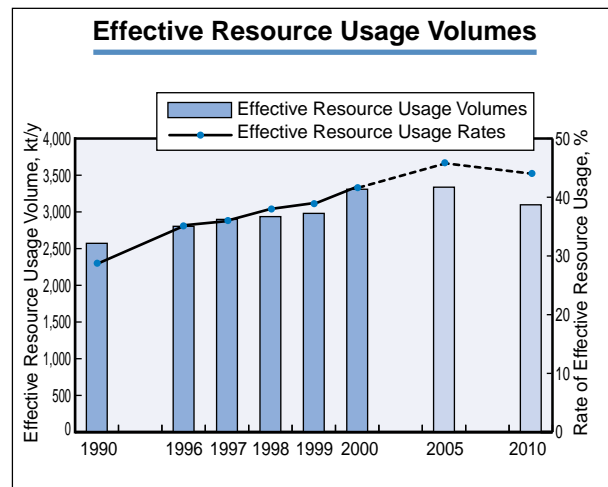
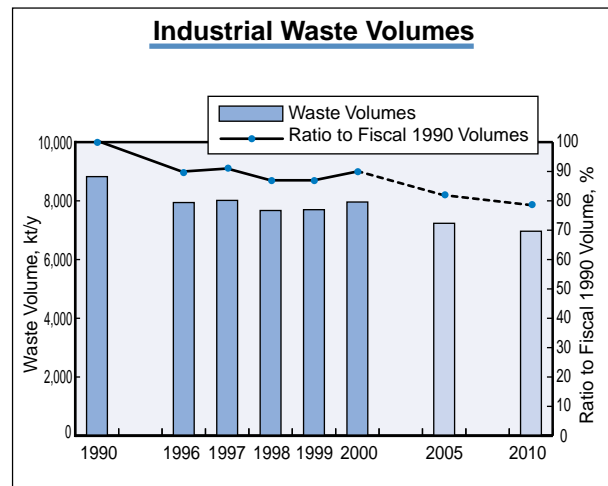
The JRCC member companies' collective plans target a reduction of 21% compared with waste volumes for fiscal 1990 by fiscal 2010, and many companies have implemented measures specifically aimed at sludge reduction.

The reason for this is that the majority of waste is occupied by sludge (both organic and inorganic) in the chemical industry. Organic sludge (which is mostly excess sludge from the active sludge treatment of wastewater) has 80-95% water content. The JRCC member companies have implemented means to remove this water content during secondary processing. Hence, actual sludge volumes cannot be accurately deduced based solely on the volume of sludge.

Effective Resource Usage Rates

The rate of effective resource usage (ratio of effective use volumes to waste volumes) in fiscal 1990 was 29%. In fiscal 2000, this rate was raised to 42%, and the targeted rate for fiscal 2010 is 44%.

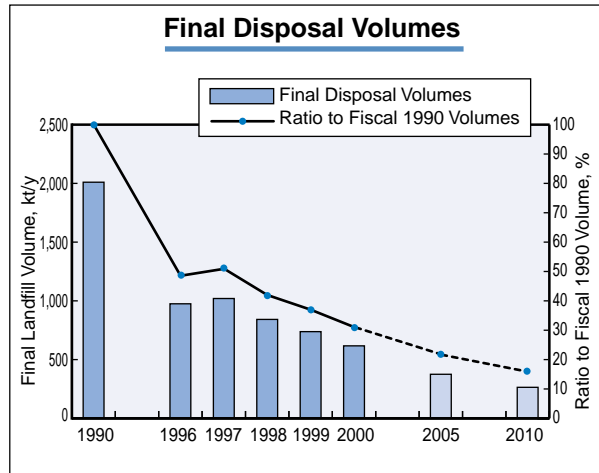
Promoting the effective use of resources through the sorting



of waste products and the search for and use of recycling companies as a means of managing processing costs have become major tasks for all member companies, including those whose ultimate objective is zero emissions.

Final Disposal Volumes

The volume of final waste disposal for fiscal 2000 was approximately 620,000 tons and the target for fiscal 2010 is 330,000 tons (both figures derived from 74 member companies). These figures represent a 69% and 84% 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%.



Establishing “Wa-no-kuni” -an eco-society through partnership-

Japan promulgated the “Basic Law for Establishing the Recycling-based Society” in 2000 as the inaugural year of its drive to establish a recycling-based society. To orient individual laws toward a recycling-based society, the Japanese government also revised the “Waste Disposal and Public Cleaning Law” and is promoting other laws for the recycling of various items (resources, construction material, food, container and packaging, electric household appliance and green purchasing). Discussion on this topic is promoted in the Conference for establishing “Wa-no-kuni” -an eco-society through partnership- in the 21st Century, which was begun in March 2001.

JRCC member companies limit industrial waste generation volumes through such efforts as improving production yields. Waste is recycled into such usable materials as cement base, oils, and blast furnace reducers, while waste is converted into energy sources for blast furnace and cement manufacturing (heat recovery) or refuse-derived fuel (RDF). Through these efforts, JRCC member companies strive to make effective use of resources and reduce environmental impact.

<Note> The term “Wa-no-kuni” is intended to convey a “recycling-based society which emphasizes simplicity, quality and sustainability” rather than the society of “mass production, mass consumerism and mass disposal” which characterized the 20th century. further information ; <http://www.kantei.go.jp/foreign/policy/wanokuni/summary-e.html>

Case Studies of JRCC Member Companies’ Industrial Waste Reduction Efforts

Company A Company A strives to make efficient use of resources by applying its unique proprietary “Double Recycling” system, a highly efficient combination of material recycling and thermal recycling. Under this system, the company produces and markets textile products derived from recycled PET bottles. Used recycled textile products are collected, combined with plastic scrap gathered from external sources, and converted into solid fuels, which are then used in place of coal at the company’s facilities, thereby making efficient use of thermal energy. Sales in fiscal 2000 comprised 1,000 tons of recycled textile products, 12,000 tons of solid fuels, and 3,700 tons of ash sold as a soil conditioner.

Company B Company B goes beyond merely increasing its rate of resource recycling and reducing its rate of final disposal. It strives to achieve zero emissions while still emphasizing economic efficiency. In one example, the diversity of the company’s business operations results in the generation of a wide variety of emissions. Hence, in fiscal 2000, the company held an emissions exhibition, the aim of which was effective use of emitted substances within the company’s consolidated group. Some 150 items from 15 business facilities spanning the entire group were displayed, for which effective application methods were enthusiastically discussed by the 300 participants.

Company C Company C strives to achieve zero emissions by fiscal 2002 year-end for its incineration and landfill waste. It has established “the Zero Emissions Promotion Committee” within its Responsible Care Committee, through which it strives to achieve the goal of recycling all waste generated during business activities and eliminate landfill and simple incineration disposal. Company C’s Plant D strives to reduce waste under the slogan “0-100,” which signifies zero landfill and incineration disposal and 100% resource recycling, and by applying the 5R philosophy: Reject (use no packaging), Reduce, Reuse, Repeat, and Recycle. Under this strategy, the plant utilizes a stringent separation and sorting system for refuse that hitherto had been disposed of by incineration. As a result, in March 2001, the plant achieved zero emissions for all types of wastes.



Environmental Preservation (Energy Saving, CO₂ Emission Control)

Based on the Keidanren's Voluntary Action Plan on the Environment, the JCIA is currently striving to reduce unit energy consumption to 90% of those for 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.

Principal initiatives in this area include:

- Improvement of equipment and machinery efficiency through improvements to machinery functioning and installation of high-efficiency equipment,**
- Process improvements through streamlining and adoption of newer manufacturing methods,**
- Energy recovery through utilizing the thermal or cryogenic properties of emissions, and**
- Improvement to operating methods through reuse, recycling and fine tuning in conditions for such items as pressure, temperature, and flow volumes.**

The accompanying tables are based on data collected from 88 out of 109 JRCC member companies.

Unit energy consumption has been improving steadily since fiscal 1990 and, in fiscal 2000, was reduced to 94% of 1990 levels. Although fiscal 2000 production was 118% that of fiscal 1990, due to improved unit energy consumption, CO₂ emissions were kept to 111%.

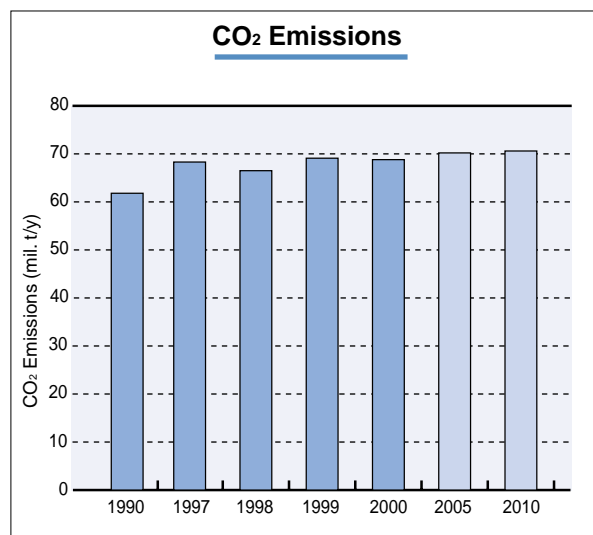
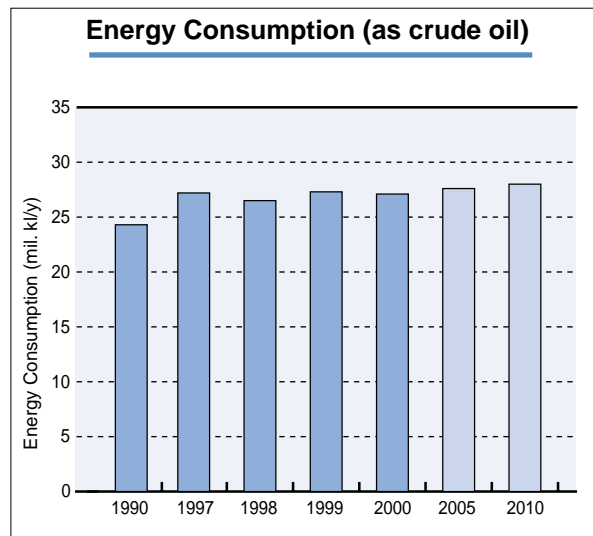
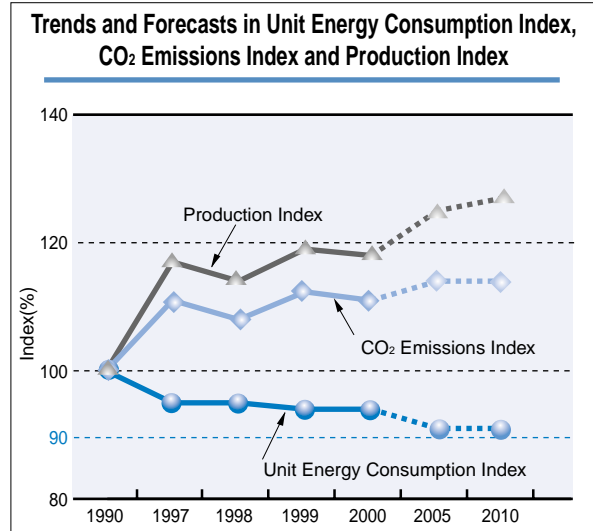
(Unit energy consumption is based on the energy required for manufacturing divided by production volume. A production index is a comparison of figures to their fiscal 1990 counterparts made to determine annual energy consumption based on the presumption that unit energy consumption will have not improved.)

Energy consumption volumes and CO₂ emission volumes have increased since fiscal 1990. However, these figures began to level off after fiscal 1997.

Increases in CO₂ emission volumes are due to the effects of such factors as improved product quality, small production batches, and the shift toward high-energy-consuming products. From now on, member companies will need to work to achieve further reductions in response to such causes of increased emission volumes.

[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 Kyoto in December 1997, that all countries would reduce their volumes of greenhouse gas emissions (including Carbon dioxide (CO₂), Methane (CH₄), Nitrous oxide (N₂O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs) and Sulfur hexafluoride (SF₆)). 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 2008 to 2012.



Energy-Saving Achievements and Future Projects

Improvement of Operating Methods	<ul style="list-style-type: none"> Process improvements Revision of parameters for such items as pressure, temperature, flow and reflux ratio Reduction in the number of operating equipment units Improvements to production programs Long-term continuous operation, extending life span Shortening operating times Implementation of high-level controls, stronger controls, and more precise computers
Recovery of Emitted Energy	<ul style="list-style-type: none"> Use and recovery of emitted thermal energy and cryogenic waste Combustion of waste fluids, waste oil, and exhaust gases
Process Streamlining	<ul style="list-style-type: none"> Rationalization of processes Conversion to newer manufacturing methods Conversion to superior formulae and catalysts
Improvement of Equipment and Machinery Efficiency	<ul style="list-style-type: none"> Improvements to machinery functioning Efficiency improvements through replacement of older machinery and materials Installation of cogeneration equipment Installation of equipment with greater efficiency

Other Global Warming Countermeasures

- (1) **Contributions to civil and transportation departments** (through the effects of products and services)
 - Reduction in annual crude oil consumption by 5,600 kiloliters through the promotion of solar power generation systems.
 - Supply of synthetic rubber, coupling materials, and carbon black to high fuel efficiency tires, thereby achieving a 5-6% reduction in fuel consumption, equal to a CO₂ reduction of approximately 2 million tons annually.
 - Efforts to reduce the use of plastic and packaging materials and achieve more lightweight transportation by making more compact products, implementing thinner and lighter weight containers, and adopting reusable bottles.
- (2) **Countermeasures against Greenhouse Gases other than CO₂**

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

 - Sealing of plants and facilities, intensification of equipment inspections, preventative and protective measures, prompt cleanup in the event of leakage
 - Establishing exclusive container filling lines, increasing container size, developing optimum filling schedules
 - Using check-valves to prevent backward flows, recovering left-over gas in gas cylinders, increasing amounts filled, adopting exclusive-use containers
 - Reuse of recovered gases and development of disposal technologies for nonreusable gases in concert with the industries in which they are used
 - Development of alternatives to HFC and other greenhouse gases and of gases with less significant greenhouse effects

Progress of Environmental Preservation Measures in Overseas Business Activities

- The JRCC member companies are endeavoring to transfer energy-saving and environmental preservation technologies (adoption of new processes, upgrades to energy-saving processes, adoption of high-efficiency machinery, and other measures) in their overseas business activities as well as contributing to the CO₂ restriction initiatives of developing countries.



レスポシブルケア

Environmental Preservation (The PRTR System and Industry Efforts)

PRTR (Pollutant Release and Transfer Register) is a system for assessing, compiling, and publicizing data on the many kinds of potentially harmful chemical substances, from what sources, and to what extent they are released into the environment, whether they are contained in waste products or otherwise transported out of business facilities.

This system holds promise for the publication of information that 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. Similar efforts of major countries in this regard are described below.

Examples of National Efforts

Country	System	No. of Specified Substances	Targeted Facilities	Handling of Reported Data	Year Commenced
United States	Toxics Release Inventory (TRI)	Approx. 620	Primarily manufacturers (specified by industry type and classified by no. of employees and annual usage volumes)	Both individual data and compiled data are made public.	1986
Canada	National Pollutant Release Inventory (NPRI)	268	Primarily manufacturers (specified by industry type and classified by no. of employees and annual usage volumes)	Both individual data and compiled data are made public.	1993
Australia	National Pollutant Inventory (NPI)	90	Manufacturers (classified by annual usage volumes)	Both individual data and compiled data are made public.	1998
United Kingdom	Pollutant Inventory (PI)	Approx. 150	Primarily manufacturers (industry type enumeration; classified by annual usage volumes)	Individual data is made public.	1990
The Netherlands	Individual Emissions Inventory (IEI)	Approx. 170	Facilities requiring permission under environmental management laws	Compiled data is made public (with optional listing of individual data).	1974
Japan	PRTR	354	Primarily manufacturers (industry type enumeration; classified by no. of employees and annual usage volumes)	Compiled data is made public (individual data available upon request).	Assessment and estimation of emission volumes commenced in April 2001.

The above information was obtained from the Results of Fiscal 2000 Pilot Businesses (published by the Ministry of the Environment, Japan), a public guidebook for understanding PRTR data.

The “Law Concerning Reporting, etc., of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management” (so-called 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 and government disclosure will be conducted in fiscal 2002.

The JRCC has long considered the reduction of emissions

into the environment essential to the chemical industry’s gaining of public trust and has proactively promoted such action as leakage prevention, the improvement of waste collection and recycling rates, and the conversion to alternative substances. 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.

History of JCIA Voluntary PRTR Efforts

1992	<ul style="list-style-type: none"> • Studies of overseas PRTR programs • Pilot survey (13 substances)
1993	<ul style="list-style-type: none"> • Pilot survey (28 substances)
1994	<ul style="list-style-type: none"> • Establishment of survey guidelines • Basics of calculation methods compiled
1995	<ul style="list-style-type: none"> • 1st survey (55 substances) • Results for 43 substances presented at the Chemical Product Council (Jan. 1997)
1996	<ul style="list-style-type: none"> • 2nd survey (151 substances) • Results for 103 substances presented at the Chemical Product Council (Jan. 1998)
1997	<ul style="list-style-type: none"> • 3rd survey (286 substances) • Results for 192 substances presented at the Chemical Product Council (Apr. 1999)
1998	<ul style="list-style-type: none"> • 4th survey (284 chemical substances) • Results for 200 substances presented at the Chemical Product Council (Apr. 2000) • First disclosure of the five substances with the greatest emission volumes according to individual prefecture
1999	<ul style="list-style-type: none"> • 5th survey (284 chemical substances)
2000	<ul style="list-style-type: none"> • 6th survey (both the JCIA's 284 substances and the PRTR Law's 354 substances)

Selected PRTR Survey Results

Substance	Emission Volume (t/y)				Managed Off-site Emission Volumes (t/y)			Number of Handlers (Companies)
	Air	Water	Soil	Total	Volume Transfer	Volume Recycled	Total	
Toluene	5,640	196	0	5,836	4,700	9,160	13,860	67
Dichloromethane	4,030	7	0	4,037	928	540	1,468	47
Chloromethane	2,730	20	0	2,750	50	0	50	26
Carbon disulfide	2,010	7	0	2,017	0	0	0	10
Vinyl acetate	1,610	48	0	1,658	2,450	738	3,188	33
Xylene	1,570	33	0	1,603	2,250	2,860	5,110	66
Dimethylformamide	1,430	156	0	1,586	1,250	1,680	2,930	44
HCFC-142b	1,560	0	0	1,560	0	0	0	6
Styrene	1,350	188	0	1,538	1,210	1,060	2,270	48
HCFC-22	1,340	73	0	1,413	3	0	3	10

This table is a compilation of the emission volumes and managed off-site emission volumes of the 10 legally specified substances with the greatest emission volumes for the JRCC member companies in fiscal 2000.

The majority of emission volumes are emissions into the air. The future challenge is to further reduce the emission volumes. Also, some substances are recycled more than 50% of managed off-site emission volumes. This figure shows that the member companies are thoroughly engaged in recycling efforts.

This was the first year for the JRCC to conduct such a compilation, but it will be implemented on a continual basis from now on as the council strives 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.

Voluntary Management Plan (First Term) Measures

As shown in the following charts, the JRCC members are pushing forward with voluntary measures to reduce their air-borne emissions of 12 substances. The JCIA voluntary management plan (first term) called for a reduction of 20-44% (31% on average) from 1995 levels by the end of 1999.

As a result of the 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 (excluding chloroform) were surpassed (reductions of 30-92% and an average reduction of 48%). In addition, reduction efforts have continued in 2000 for all substances. (As a result of further surveys reflecting an increase in the number of companies submitting data, emissions have increased compared to 1999.)

term of the JCIA plan but also stated that voluntary emission reduction efforts must be continued and further emission reductions are necessary.

In response, a second-term the JCIA voluntary management plan which designates 2003 as its final year has been drawn up. Emissions for this second term are to be evaluated based on 1999 levels, and new emission reduction goals have been set for each of the 12 substances (reductions of 13-71% and an average reduction of 43%).

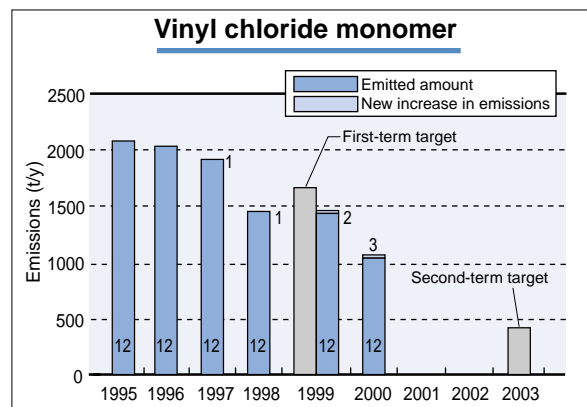
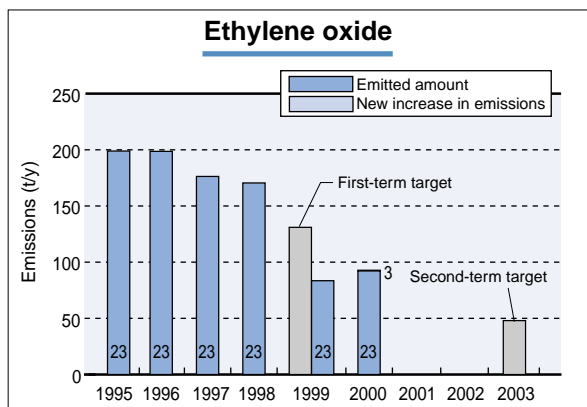
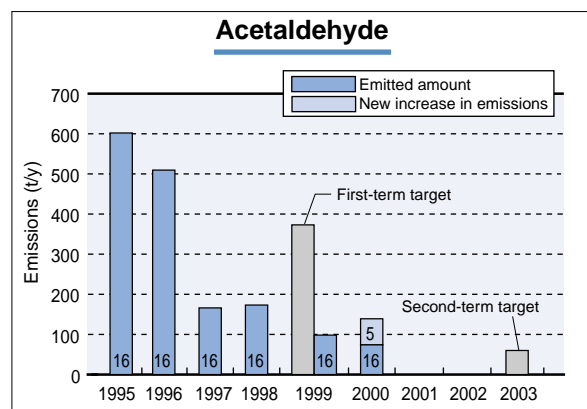
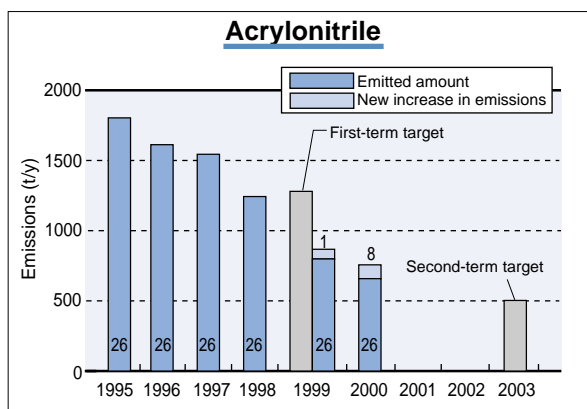
Members are pushing forward with voluntary measures to meet the targeted second-term emission reductions.

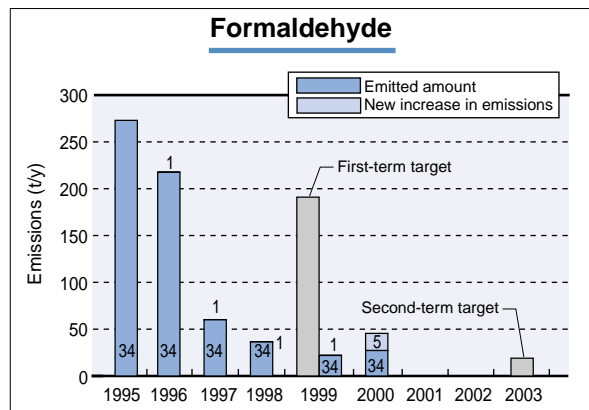
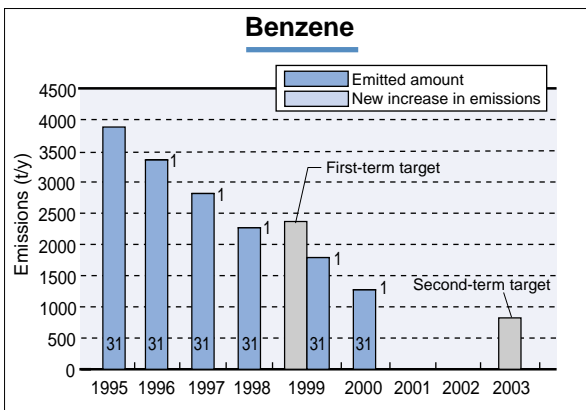
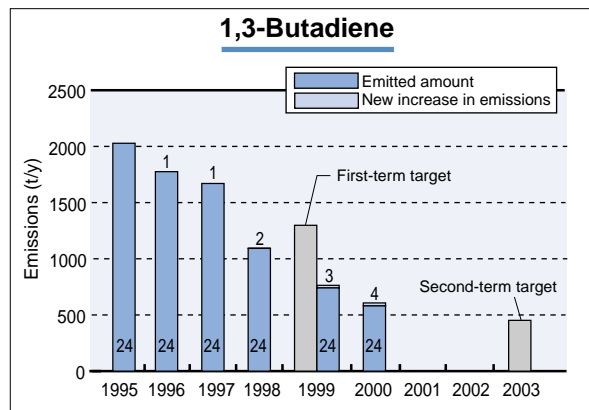
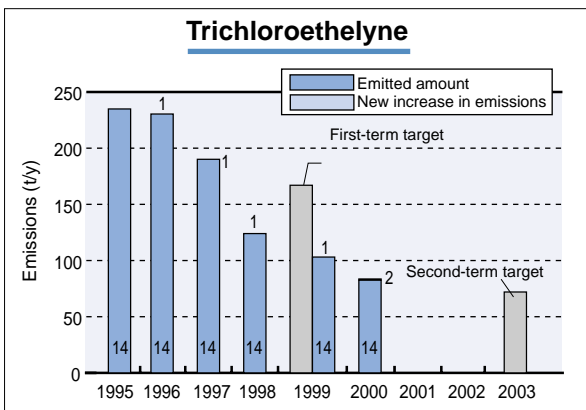
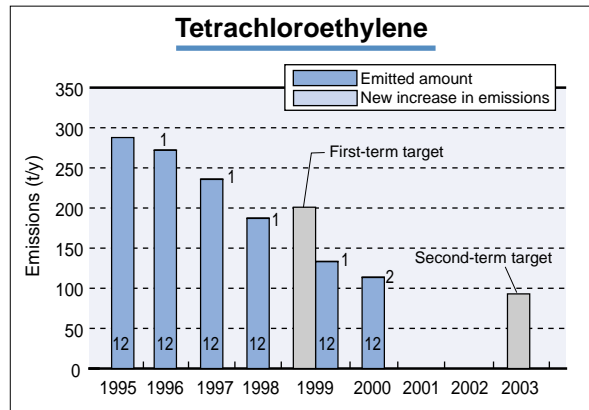
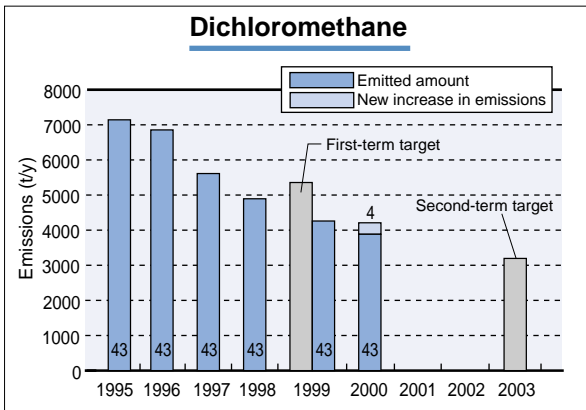
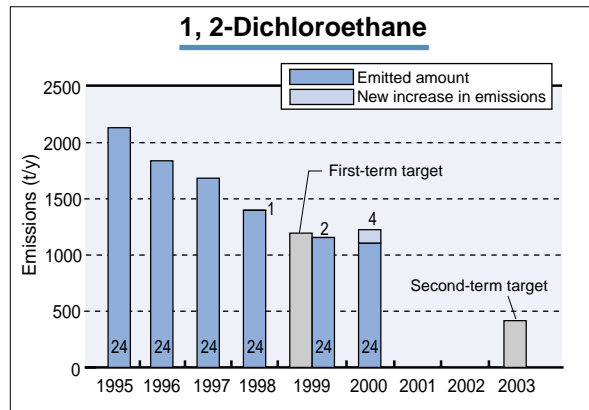
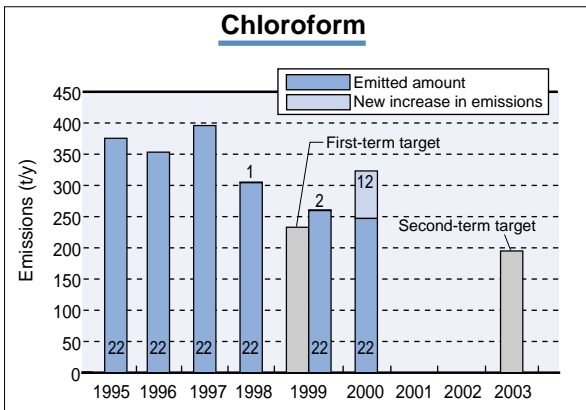
Future Environmental Preservation Measures

Advisory panels of the Japanese Ministry of Economy, Trade and Industry and Ministry of the Environment recognized the efforts made by the chemical industry during the first

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.





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 JRCC member companies reporting data for fiscal 1995.

* Numbers in the upper portion of the bar graph indicate the increase in the number of JRCC member companies reporting data compared to 1995.



レスポンシブル・ケア

Environmental Preservation(Air and Water Quality)

During the 1970s, the chemical industry strove to prevent pollution and achieved substantial improvement in efforts to preserve air and water quality. Since 1995, the industry has continued to strive to maintain emission levels that are lower than official standards by complying with agreements with local governments and its own standards set forth by the JRCC member companies.

Total annual emission volumes have either remained the same or risen due to increases in production volumes and expansion in JRCC membership.

Air

SOx is generated from the sulfur content of fuels that create electric power and steam. Harmful to respiratory organs, SOx was once the primary cause of pollution at petrochemical complexes. Its emission into the air is reduced by adoption of low sulfur content fuels and removal by use of exhaust desulfurization units.

NOx is generated by the oxidation of nitrogen in the air that occurs when fuel and waste products are combusted. It is said to be a cause of photochemical smog. Its emission into the air is reduced through adoption of boilers with improved fuel-to-air ratios and combustion temperatures that restrict NOx generation, optimized regulation of combustion conditions, and removal using exhaust denitration units.

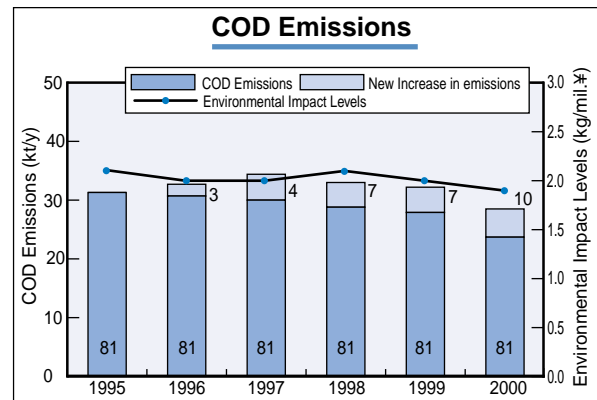
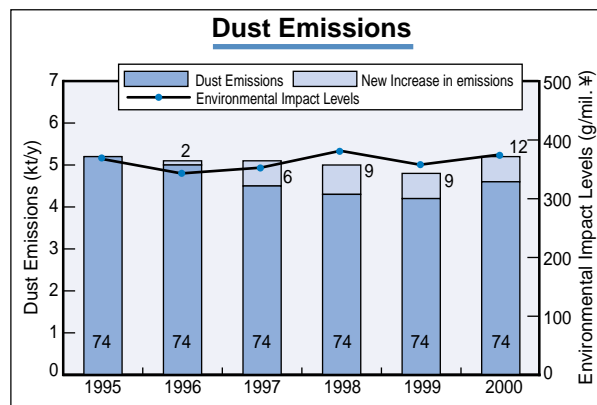
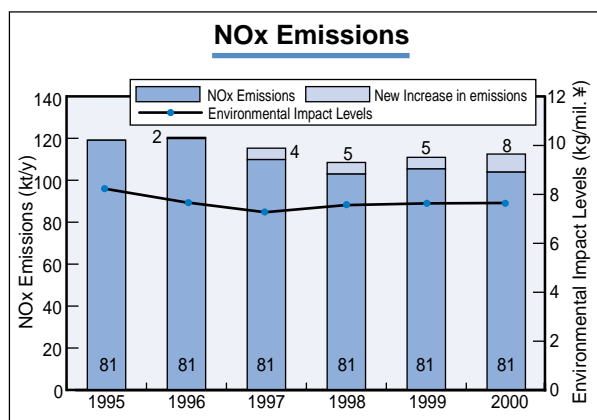
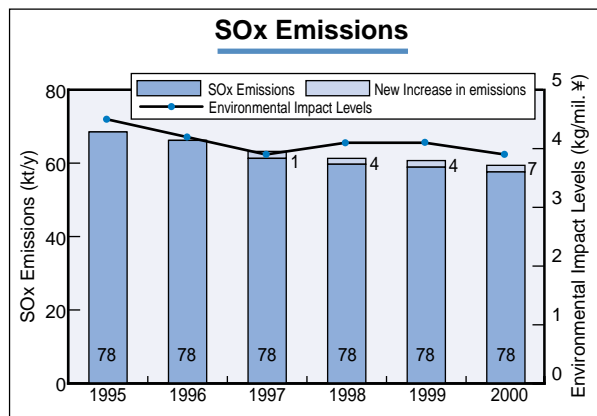
Dust emission into the air is reduced through the adoption of low dust boilers, optimized regulation of combustion conditions, and removal using exhaust dust collection units.

Water

COD is an indicator of water pollution due to 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. The 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.



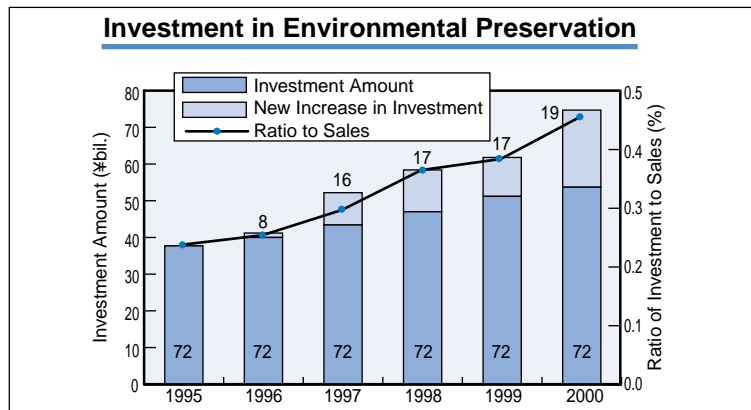
Emission volumes are based on reported data for fiscal 1995. Increases in emissions thereafter are shown as "New increase in emissions".

- * 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.



Investment in Environmental Preservation

As indicated in the accompanying table the JRCC member companies have invested aggressively for environmental preservation. The level of investment is rising year on year and, in fiscal 2000, exceeded ¥74 billion. Increasing of the ratio of such investment to sales shows that member companies are focusing on environmental protection.



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

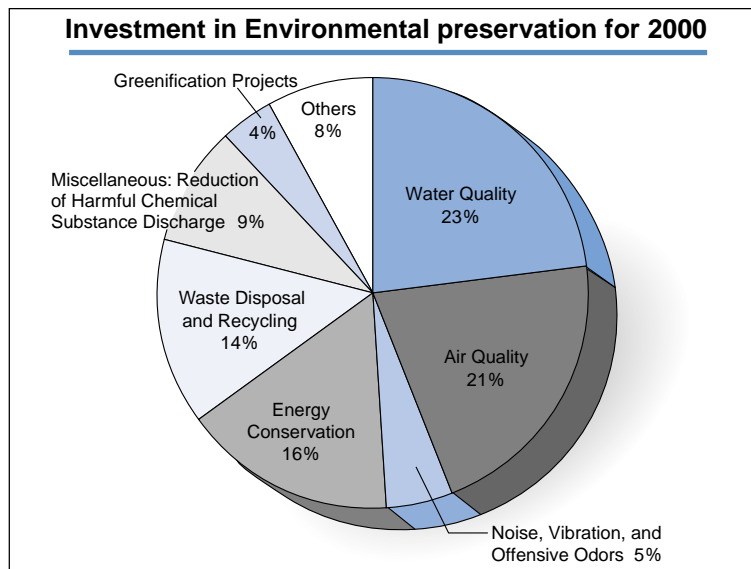
* Numbers in the central portion of the bar graph indicate the number of JRCC member companies reporting data for fiscal 1995.

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

The breakdown of environmental investment by the JRCC member companies in 2000 spans a great variety of fields.

There were no major changes compared to the previous year. All areas have shown steady improvement.

In 2000, 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. Waste disposal reducing and prevention of global warming have attracted substantial attention of late, accounting for 30% of total environmental investment.



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.

Environmental accounting has the internal function of improving the effectiveness and efficiency of investment through the analysis of the cost efficiency of environmental preservation activities. It also has the external function of influencing the decisions of stakeholders, for example influencing governmental environmental policies and investors' decisions.

Due to the guidance given by guidelines and guide-

books published by the Ministry of the Environment, companies conducting environmental accounting and disclosing results have been increasing every year.

The JRCC distributed a survey of the environmental accounting practices to its members this year. The results show the following.

Members that have already introduced environmental accounting	: 45%
Members considering introducing environmental accounting	: 7%
Total	: 52%

The total of these figures is approximately the same as that for listed companies (17% and 34% respectively, for total of 51%) according to a survey by the Ministry of the Environment.



Process Safety and Disaster Prevention

The number of accidents per the JRCC member remained unchanged for these several years. However, because accidents due to superannuation of facilities increased in 2000, such measures as the augmentation of inspections have been implemented.

Investment by members in process safety and disaster prevention has increased over the past six years and, in fiscal 2000, totaled ¥43.8 billion.

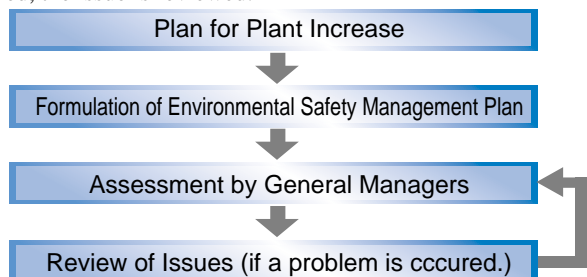
To ensure operations safety, the JRCC members are implementing the following safety measures appropriate to each company's system.

- Engineering safety measures
 - Prior safety assessment
 - Facility automation
 - Improvement of working environment
 - Earthquake-proofing measures
- Administrative safety measures
 - Preparation of safety manuals
 - Education of employees on safety issues
 - Thorough instructions and directions
 - Hazard prediction
 - Regular internal auditing

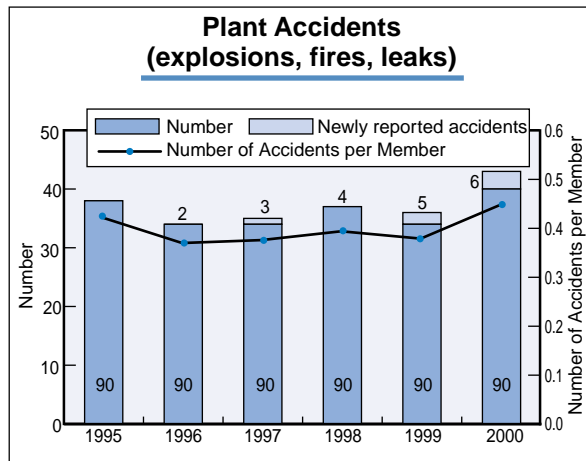
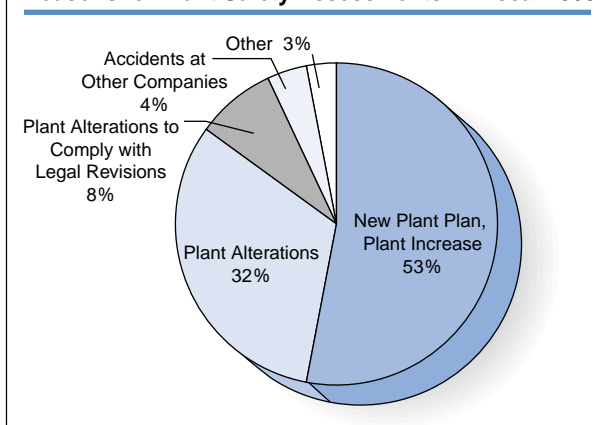
[Prior Facilities Management and Assessment]

Example of Implementation at a Member Company

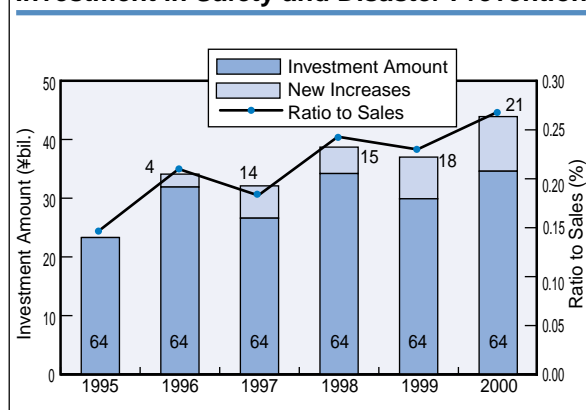
A prior check system was implemented for planning a new business or for any large-scale plant increase to assure that there are no problems in the areas of process safety and disaster prevention, environmental preservation, product safety, or occupational health and safety. If a problem is discovered, the issue is reviewed.



Reasons for Plant Safety Assessments in Fiscal 2000



Investment in Safety and Disaster Prevention



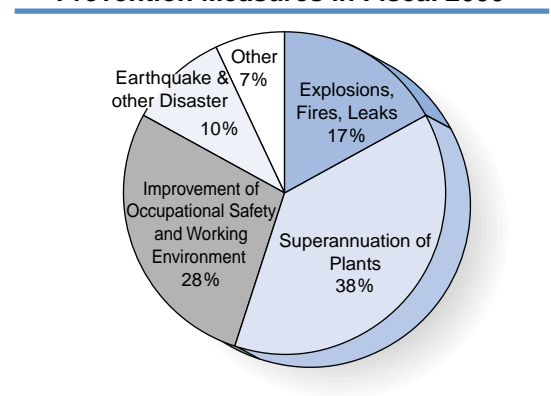
Numbers of Accidents and Investment for Safety are based on data presented for 1995.

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 JRCC member companies reporting data for 1995.

* Numbers in the upper portion of the bar graph indicate the increase in the number of JRCC member companies reporting data compared to 1995.

Investment in Process Safety and Disaster Prevention Measures in Fiscal 2000





Occupational Health and Safety

The lost time injuries rate of the JRCC member companies and the member companies' contractors has been generally lower than the manufacturing industry average since fiscal 1995. In addition, an Occupational Health and Safety Management System (OHSMS) aimed at reducing latent dangers and improving safety and health levels is being introduced.

Number of Fatalities

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

MHLW=Ministry of Health, Labour and Welfare

Number of fatalities also declined during these several years.

Introduction of Occupational Health and Safety Management System (OHSMS)

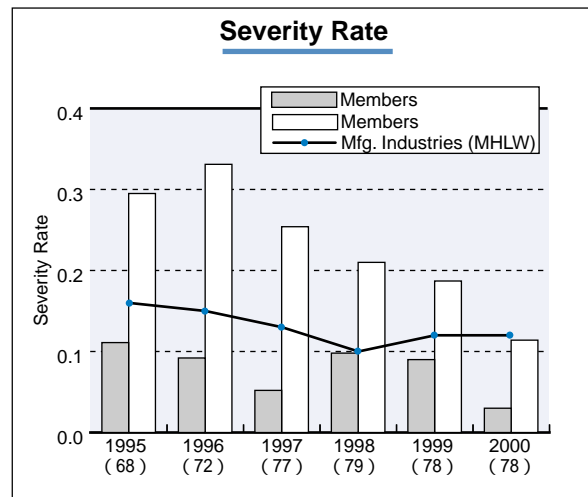
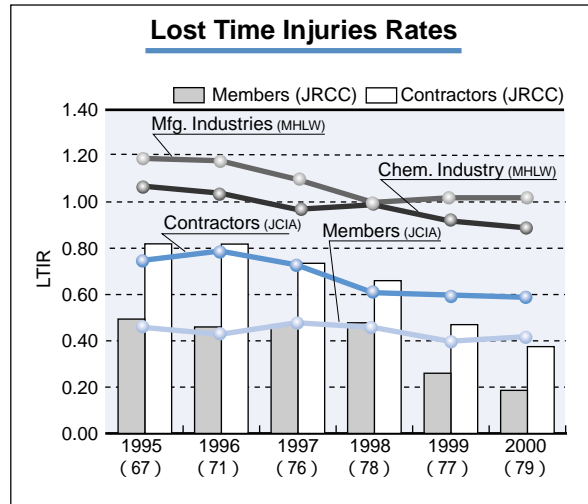
The results of efforts to eliminate injuries are apparent with the introduction of OHSMS. It promotes continuous, independent health and safety management through the repetition of the PDCA (plan, do, check, and act) cycle, consequently latent dangers are reduced and safety and health levels are raised.

Results of a survey show that only 8% of the JRCC member companies have implemented some kind of OHSMS. However, 45% of the member companies have responded that they are currently in the process of introducing OHSMS or have plans to introduce it in the future.

Rate of OHSMS Introduction in Businesses in Fiscal 2000

Type of Business Facility	Introduced	Plan to Introduce
The Member Companies	8	45
All Businesses Facilities	10.1	19.1

(For All Businesses Facilities data, a sample of 12,000 businesses with more than 10 regular employees was used. Source: 2001 Basic Survey of the Ministry of Health, Labour and Welfare.)



* Number of companies surveyed shown in parentheses

$$\text{Frequency Rate} = \frac{\text{Number of lost time injuries}}{\text{Million working hours}}$$

$$\text{Severity Rate} = \frac{\text{Lost days}}{\text{Thousand working hours}}$$

Promotion of Enactment of the New Occupational Health and Safety Management Guidelines

Seminars were held in Tokyo and Osaka in July 2000 to help promote and put into effect the New Occupational Health and Safety Management Guidelines published by the JCIA in May 2000.



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. Majors of 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
 - JCIA speaker at the Japan Industry Safety and Health Association's Nationwide Chemical Manager's Training (Sept. 2000 to Mar. 2001), portions of text materials provided from 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 based on the JCIA's Environmental Preservation Program Follow-up Survey, the JRCC's Performance Indicators Management Chart Guidelines and Survey Charts
- * **Safety Assessments:** Conducting 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 in conjunction with explanatory lectures in September and October 2001
- * **Safety Management:** Promotion of voluntary plans for air pollutant control, Promotion of risk management and risk reduction plans, Promotion of disaster prevention measures
 - Education and training programs held on the PRTR Law in April and June 2000 and similar programs held at the request of Japan Small and Medium Enterprise Corporation
 - "New Occupational Health and Safety Guidelines" issued in May 2000
 - "Chemical Substance Safety Measures Circulation Manual" issued in January 2001 (production of which was contracted to the Japan Small and Medium Enterprise Corporation)
 - "Chemical Substance Emission Volume Calculation Manual (Chemical Industry Section)" issued in January 2001
 - Annual JCIA/JRCC Safety Awards held in May 2001

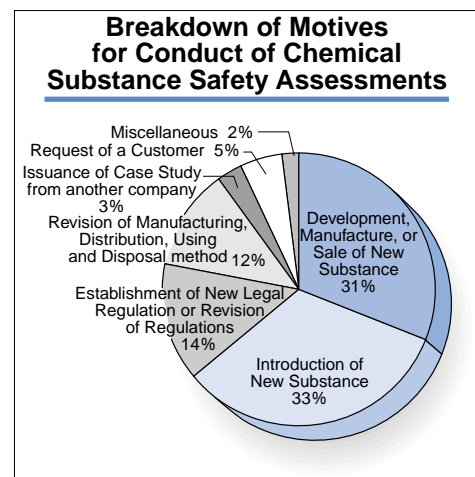
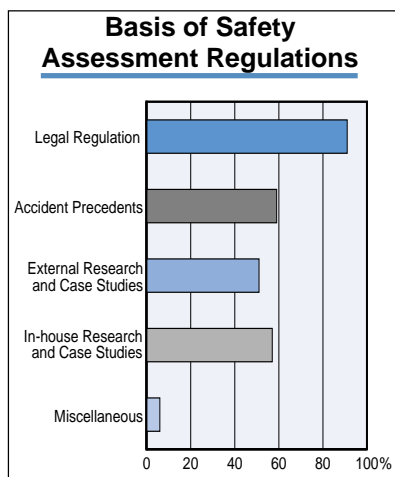
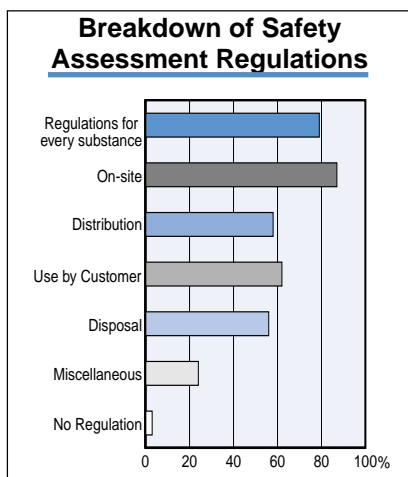
Results of Chemical Substance Safety Assessments

• Motives for Safety Assessments:

Chemical substance safety assessments, which are applied to established 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 the environment based on the JCIA's Guiding Principles for the Improvement of Environmental, Safety and Health Conditions.

• Implementation of Safety Assessments:

More than 95% of the JRCC member companies have their own safety assessment codes.



Material Safety Data Sheet (MSDS)

- Regulatory Requirements of MSDS Distribution**
 Regulations have been introduced requiring that MSDSs be attached to extremely hazardous substances and distributed to people handling the substances.

- MSDSs for all Regulated Toxic and Dangerous Substances**

MSDSs are prepared not only for many substances covered by regulatory requirements, but for those with low toxicity.

- Contents of Revised MSDSs**

The revisions of MSDSs include revisions of laws and toxicity informations, 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.

- Ascertaining of customer use of chemical products supplied**

Ascertainment of utilization by primary users

Ascertain for majority of products : 90% of members

Ascertain for half of products : 8% of members

Ascertain for only a few products : 2% of members

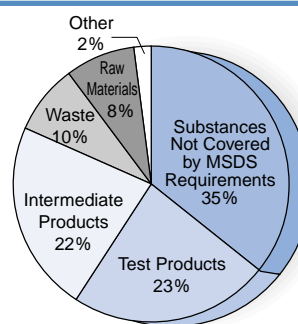
Ascertainment of utilization through final product

Ascertain for majority of products : 54% of members

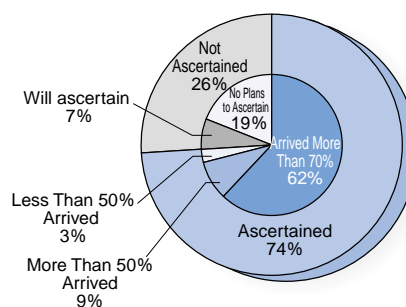
Ascertain for half of products : 34% of members

Ascertain for only a few products : 12% of members

MSDS Substances Other Than Those Covered by MSDS Requirements



Arrival of MSDS at End User



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 when an accident occurs at 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, residents at accident sites, fire department personnel, and police.

- Response Measures against Accidents at Transportation**

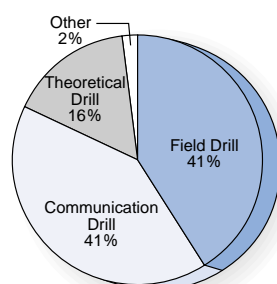
98% of members maintain 24-hour emergency service contact systems.

84% of members maintain joint accident response services.

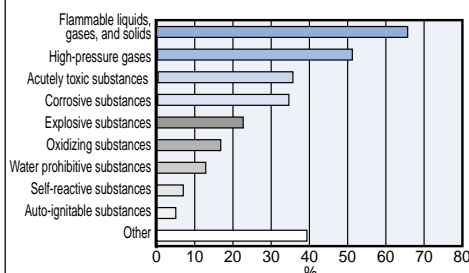
- Emergency Drills**

80% of members conduct emergency drills.

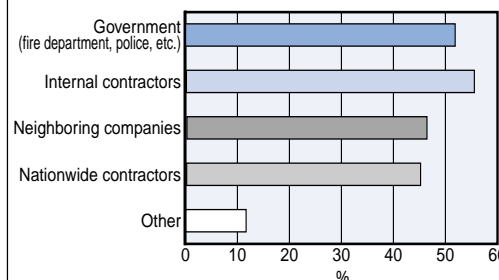
Emergency Drills



Substances for which Accident Response Services are provided



Accident Response Staff





Chemical and Product Safety (Surveys and Re

ICCA - HPV Initiative

The ICCA is cooperating with OECD to accelerate the implementation of an HPV program undertaken to prepare the Screening Information Data Sets (SIDS) and initial hazard assessments on HPV (High Production Volume) chemicals, whose annual production volume exceeds 1,000 tons.

At the ICCA Conference in Prague in October 1998, members agreed to form international consortia and implement the program on 1,000 HPV chemicals by 2004. This is one of the Responsible Care activities conducted by ICCA as a voluntary initiative.

Progress of ICCA Initiatives

- 1 Commitment of participation by Companies
- 2 Formation of international consortia
- 3 Identification of the consortia Lead Company (or Focal Point)
- 4 Input of commitment of participation in ICCA Tracking System
- 5 Identification of OECD sponsor country
- 6 Identification of possible data gaps and agreement on testing
- 7 Agreement of sharing of responsibilities and cost burden
- 8 Completion and evaluation of SIDS
- 9 Preparation of SIAR (SIDS Initial Assessment Reports) Draft
- 10 Submission to sponsor country

Contents of SIDS

- Physical-chemical Properties : Water solubility, etc.
- Environmental Fate : Biodegradability, etc.
- Ecotoxicity : Acute toxicity to Fish, Acute toxicity to Daphnia, etc.
- Toxicological Data : Acute toxicity, Repeated dose toxicity, reproduction toxicity, etc.

Activities as of July 2001

The JCIA has announced its intention to cooperate in these initiatives as a member of the ICCA and, as of April 1999, requested that all JCIA members actively participate in the initiatives. The activities have continued for the past two-and-a-half years. The following is a summary of activities in the past year.

1. JCIA's activities to promote ICCA Initiatives

- June 2000 : Hold a short course for preparing SIAR to be submitted to OECD
- August : Held prereview meeting within the JCIA regarding SIAR draft
- September : Held review meeting with four governmental bureaus
- April 2001 : In an official communique, the ICCA Chairman requested that all country committees and members make further efforts to promote the ICCA HPV Initiative.
- July : Held domestic workshop to promote HPV

2. The Status of Global commitments

- Substances for which there are commitments: 650
[Substances participated from Japanese companies: 332, Participating companies: 89 (52 of which are JRCC members)]
- Substances for which commitments are being prepared: Approximately 270
- Consortia which have registered their establishment: 149

3. Submission of SIDS Initial Assessment Reports (SIAR)

For the SIDS Initial Assessment Meetings (SIAMs), the ICCA has dedicated itself to providing at least 50 assessment reports (SIARs) to the OECD in 2001. A total of 10 SIAR were submitted to SIAM-11 (January 2001) and 6 to SIAM-12 (June 2001). Japanese companies were responsible for three of these SIARs. In addition, over 35 SIARs are being prepared for submission to SIAM-13 (November 2001). Six of these are expected to be submitted by Japan.

Future Activities

The ICCA has promoted to identify companies and consortia to take the charge of the ICCA HPV list of 1,000 chemicals. 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. The JCIA will continue to promote these activities with the understanding of, and assistance from, member companies.

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 measures.

* 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 disruptors 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, and both the United States and Europe expect the JCIA to contribute to such efforts.

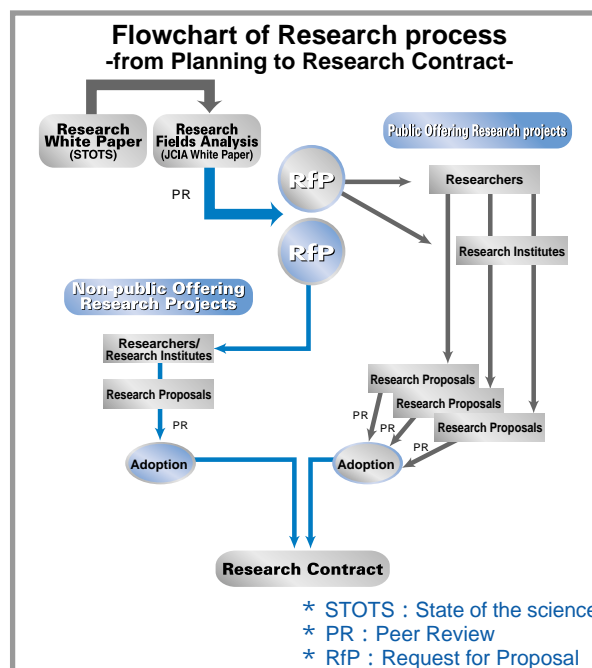
In October 1998, the JCIA announced its participation in the LRI, and at a general meeting of the ICCA, Japan, the United States, and Europe completed a basic agreement, signaling the start of the LRI.

In November 1999, JCIA decided to carry out LRI research in Japan by outsourcing projects to independent organizations.

In fiscal 2000, seven research topics in the fields of chemical carcinogenesis and hypersensitivity were chosen and were researched for a period of one year beginning in September 2000.

Publicity and Adoption of Fiscal 2001 Research

Using the ICCA's "State of the Science (STOTS) White Paper" as its basis, the JCIA has issued its own "JCIA White Paper (2001)," which outlines the needs and state of Japan's chemical industry, and created "Request for Proposals" for fiscal 2001 research applicants.



The JCIA compiled essential research topics in the fields of endocrine disruptors, carcinogenesis, and hypersensitivity and received 26, 23, and 23 applications, respectively, to conduct research in each area. Consideration of the applicants through a review of submitted documents and interviews was followed by an adoption meeting, at which the final selection of 9, 8, and 7 topics, respectively, was made.

(For detailed descriptions of the selected research topics, please refer to LRI News, No. 8.)

JCIA Operating Procedures and Guideline for LRI Activities

To oversee LRI activities with clarity and fairness, as well as to ensure smooth procedures, the JCIA has created LRI guidelines to which it adheres in its LRI operations.

LRI News

To expand the sphere of understanding of LRI activities beyond JCIA members and companies to the general population, we have been producing LRI News and published our eighth issue in September 2001. LRI News can be viewed on the JCIA's Web site : <http://www.nikkakyo.org/>



Responsible Care Initiatives of JRCC Members

The JRCC Members introduce the direction of their Responsible Care initiatives and recent activities in their plans and reports for each fiscal year.

In the three years following the inception of Responsible Care activities, companies primarily concerned themselves with the establishment of a Responsible Care management system, improved performance, preparing MSDSs and yellow cards, surveys of 150 chemical substance emissions, and the acquisition of ISO 9001 certification. Since 1998, the 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, the contents of the Responsible Care reports have been enriched.

As recent activities, establishing database for management of chemicals, developing environment-friendly products, participating in the HPV and LRI programs internationally, and responding to the endocrine disrupter issue are tackled with high importance. Responsible Care management systems as well as education and training undergo reassessment every year for further enhancement. OHSMS and environmental accounting have also been initiated by some companies. Responsible Care reports are issued by over half of the JRCC member companies, some of whom make the reports available on their Web sites. Some companies have commenced Responsible Care activities overseas. Most JRCC members have obtained ISO 14001 certification or are in the process of certification. With introduction of the PRTR, interest in risk communication has grown, and some JRCC members initiated preparation.

This table shows the new working items started in each year.

Item/FY	1995-1997	1998-1999	2000	2001 objectives
Performance	Reduced environmental impact and improved energy & resource conservation and reduced industrial wastes	Recycling	Separation and recovery; VOC's reduction; groundwater and soil pollution surveys	Use of waste heat, Zero emissions
Chemical product safety management (Product stewardship)	MSDSs, Yellow Cards	Enhanced Product Stewardship, including Yellow Cards; hazard and risk assessment	Enhanced product stewardship, including transport accident-prevention measures; database; development of low environmental impact products, reassessment of procedures, containers for safe transport, measures on endocrine disrupters issue, participation in HPV programs, introduction of life cycle assessment	Expansion of database
Chemical substance emission survey	151-286 substances	284 substances	480 substances, PRTR survey	480 substances, PRTR
Management system	Establishing Responsible Care management system		Reassessment of system and regulations, establishment of new targets, enhanced education and training, study on environmental accounting, implementation of OHSMS	Development of Responsible Care at whole company
ISO certification	Certification to ISO 9000 Study ISO 14000	Certification to ISO 14000		
Chemical safety in R&D		Hazard and risk assessment	Standards for R&D, environmental impact assessment	
Improvement of social credibility	RC reports	Environmental reports and policies on Web sites; community dialogue; environmental and safety management in international business; green procurement; volunteer activities	Commencement of Responsible Care at overseas business sites, environmental action (planting kenaf trees, creating a biotope), risk communication	



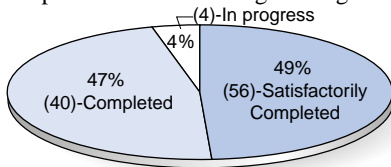
Responsible Care Management Systems

Every year, the JRCC member companies submit to the JRCC Responsible Care reports, along with plans for the upcoming year. The member companies also submit a self-assessment of their Responsible Care management systems based on their internal audits. The member companies are reviewing their management systems and targets to reflect changes in both their organization and society in the six years since the start of Responsible Care activities. New members have

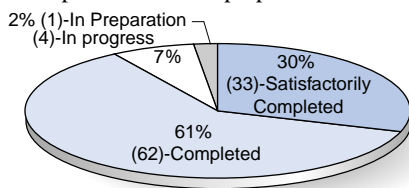
acted quickly to establish Responsible Care management systems.

The graphs below represent the self-assessments of 94 companies. Figures in parentheses are the percentage of companies of 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.

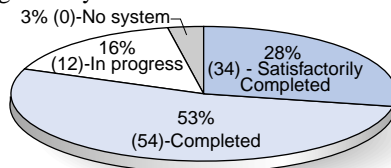
1 Management systems and targets
96% (96) of reporting member companies have achieved or nearly achieved their targets, and 4% (4) are in the process of establishing the targets.



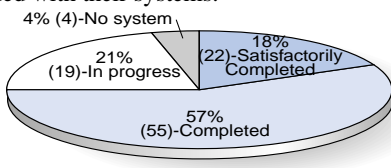
2 Implementation
91% (95) of reporting member companies have completed implementation, while 9% (5) are in the process of implementation or preparation.



3 Internal self-auditing
81% (88) of reporting member companies have completed, while 19% (12) are in the process of establishing audit systems.



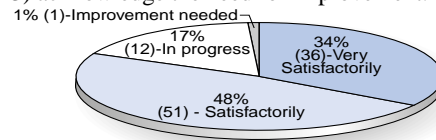
4 Education systems
75% (77) companies have established education systems, while the remaining 25% recognize the need for improvement. Only 18% of members are fully satisfied with their systems.



The major reasons of the "Satisfactorily" rate decrease

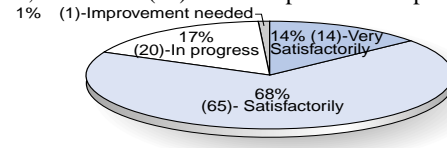
change of the membership by admission and withdrawal review of the management system and the targets by responding to the surroundings

5 Implementation plans and reporting
Approximately 82% (87) of reporting member companies are satisfied with their Responsible Care implementation plans and reports, while the remaining 18% (13) acknowledge the need for improvement.

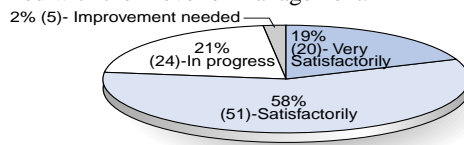


6 Environmental and safety management of production, handling, distribution, use and final consumption, and disposal
Production and handling : 82% (88) satisfied, 18% (12) in the process of improving
Distribution : 83% (83) satisfied, 17% (17) in the process of improving
Use and final consumption : 84% (85) satisfied, 16% (15) in the process of improving
Disposal : 86% (89) satisfied, 14% (11) in the process of improving

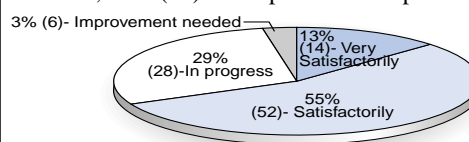
7 Environmental and safety management regarding R&D and new businesses
82% (79) of reporting member companies are satisfied, while 18% (21) are in the process of improving.



8 Environmental and safety management regarding international operations
77% (71) of reporting member companies are satisfied with their level of management.



9 Earning public trust
While 68% (66) of reporting member companies are satisfied, 32% (34) 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 from the communities.

The activities listed below are based on the surveys among the JRCC member companies.

Participation, cooperation, contributions and open facilities for local events-90%

Participation, cooperation and open facilities for local volunteer activities-70%

Agreement on antipollution, environmental, safety, and other with communities-60%

Plant and site tours for local citizens-60%

Establishment of a forum for communication with local citizens, either regularly or occasionally-60%

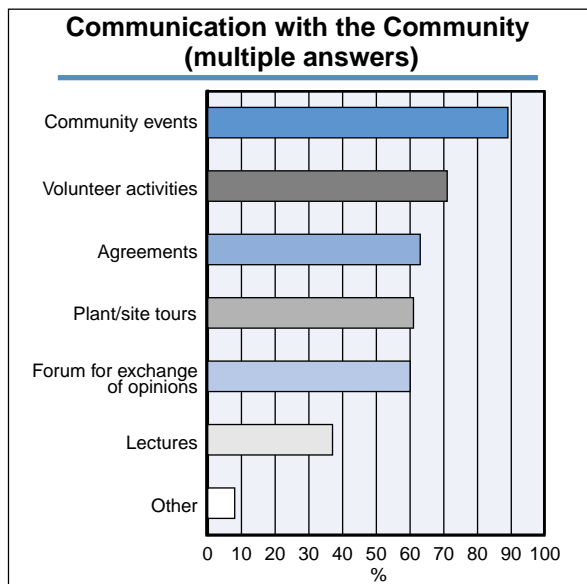
Other

a) Ongoing chemistry lessons for local elementary school students

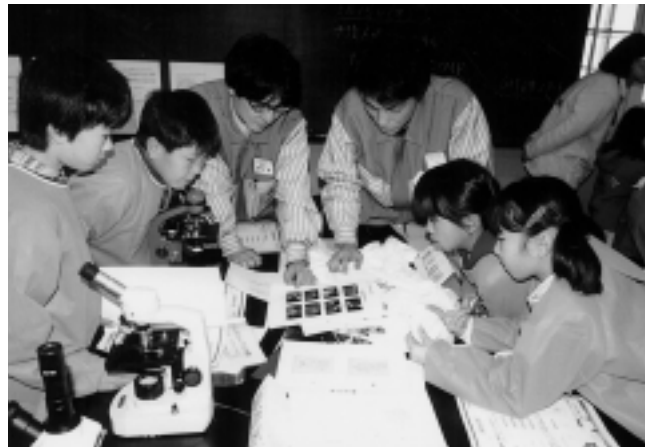
b) Summer Evening Festival,” to invite local citizens



Tour for elementary school students



Agreements and forums for exchange, antipollution agreements and antipollution meetings are very common, and briefings on periodic maintenance are also common practice. Some companies have established Responsible Care community Dialogue meetings and forums to exchange ideas with the community.



Chemistry lesson



Friendly Community Festival with 15,000 attendees



Planting kenaf trees



Paper making with kenaf



Opening of plant grounds to the public



Plant tour for elementary school students



Opening ceremony of a biotope



Plant tour for elementary school students



Site tour for employee family members



Fire emergency training for local citizens



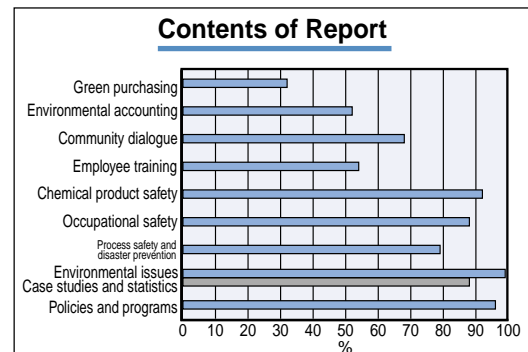
Surveys of JRCC Member Activities

On Responsible Care Reporting

Dialogue with the public and local communities is an essential element of Responsible Care, and “Responsible Care Reports” (or equivalent “Environmental Reports”) issued by individual member companies have increased in recent years as tools for dialogue. The JRCC conducted a survey among member companies on report publication.

1. Number of companies issuing reports: 56
Number of companies planning to issue reports: 25
2. Report format (including companies planning to issue reports):
Independent booklet only: 27 companies
Reports on Web site only: 10
Both booklet and Web site reporting: 35
Reported as part of company brochure: 9
3. Number of companies issuing local (offices, sites) reports: 13
Number of companies planning to issue local reports: 21
4. Third-party report verification
Number of companies obtaining third-party verification of report: 6
Number of companies planning to obtain third-party verification of report: 6
Number of companies with no current plans to obtain third-party verification of report: 44
5. Opinions and reactions concerning reports
Number of companies including questionnaires in reports: 21
Number of companies stating inquiry contact informa-

- tion: 31
Other (e.g. on-line questionnaires): 3
6. Report distribution
Primary recipients: Customers, suppliers, and other business partners: 55%; employees: 36%
Secondary recipients: Employees: 32%, customers: 23%, local residents and organizations: 16%.
7. Report content



Current Environmental Topics

As concerns surrounding environmental issues grow stronger, environment-related topics have come to be featured in newspapers and other media on virtually a daily basis. Of particularly strong focus are such issues as dioxins, endocrine disrupters, PCBs, the “sick house” phenomenon, and other chemical-related issues. The JRCC conducted a survey of these issues, the results of which are as follows.

1. Incinerator dioxins

Approximately 30% of the JRCC member companies already have dioxin countermeasures in place with on-site incinerators or are planning to implement countermeasures. These measures include installing medium to large incinerators on-site capable not to generate dioxins.

Approximately half of the JRCC member companies have plans to eliminate on-site incinerators and outsource waste disposal. Many members own both type (capable/incapable) of incinerators, and they are planning to eliminate small incinerators and to outsource waste disposal.

The remaining members either do not own incinerators and outsource waste disposal or do not generate such wastes.

2. Endocrine disrupters

The JRCC member companies who belong to the JCIA or other organizations (approximately 30%) are conducting studies and countermeasures together with those organizations.

Approximately 50% of the member companies have stopped using the substances and replaced them with alternative substances or have plans to do so.

Other members are collecting data, carefully monitoring global movements, or studying countermeasures.

3. PCBs

The majorities of manufacturing sites keep PCBs under strict storage and handling procedures. Disposal within 15 years is mandated by special enforcement ordinances.

4. Chemical hypersensitivity

The JRCC members that handle such substances are conducting studies and implementing countermeasures together with industrial associations and their customers. Countermeasures include the establishment of industry standards, marketing devices that remove such substances, developing improved or alternative substances, and reduction of solvent usage.

JRCC Activities

The JRCC, in conjunction with its member companies, implements member information exchanges to enhance the quality of Responsible Care activities. The JRCC also reports the results of its activities and enhances communication and dialogue with the public for the purpose of promoting the general understanding of Responsible Care.

[Member Experience Exchange Meetings and Workshop]

Spearheaded by the Member Exchange Working Group, the JRCC conducts member experience exchange meetings annually and semiannually as forums for information sharing and member experience exchanges. These meetings tend to consist of two sections, a main meeting which consists primarily of a lecture by a guest speaker and sessions focusing on current topics.

The JRCC's seventh member exchange meeting was held in Tokyo, July 2000 and was attended by 130 individuals.

- Lecture: Current Environmental Issues, by Professor Itaru Yasui of the University of Tokyo.
- Sessions :
 - Transportation and distribution environmental and safety issues.
 - PRTR/MSDSs
 - Communication (dialogue with communities and NGOs)
 - The state of member information exchange
 - Responsible Care reports, environmental reports and environmental accounting
 - Verification programs of advanced nations in Responsible Care and the methods targeted by the JRCC member companies



Member Experience Exchange Meetings



Work shop

In fiscal 2001, in addition to the member exchange meeting, the Member Exchange Working Group has undertaken the holding of a workshop on information that is mutually sought after by the JRCC members. The first workshop was held in August 2001, and the topic of study was environmental reports. The workshop's content included a lecture about the environmental reporting guidelines by a representative from the Ministry of the Environment as well as presentation on good practices from the JRCC member and company from other industries.

Through these member exchange meetings and workshop, the JRCC member companies gain best practices ideas for enhancing their Responsible Care activities by gaining insight into the activities of other companies.

[Verification Program]

As the Responsible Care activities are voluntary, the "C" for "Check" in the PDCA cycle is crucial, and activity results are compared against their objectives, with the outcomes of these comparisons reflected in the planning of future activities. Hence, the JRCC member companies implement internal auditing on an annual basis to verify the results of the activities of each of their facilities and present activity implementation reports and plans to the JRCC.

However, since transparency cannot be sufficiently ensured through internal auditing alone, the JRCC is working through its Verification Working Group to configure a verification program. With several trials by the member companies, the JRCC establishes its verification systems between fiscal 2000 and fiscal 2001 and implement them in fiscal 2002.

Through the verification, the JRCC will grasp the level of its members' Responsible Care activities and identify areas for improvement.

JRCC Activities (Dialogue with the Public)

Responsible Care regards it significant that the efforts of chemical substances manufacturers and handlers to preserve the health, safety and environment are understood through disclosure of activity results to the public and the communication with society.

Specifically, through its Dialogue Working Group, the JRCC holds dialogue meetings in 11 districts throughout Japan, including the nine major petrochemical complex districts. These meetings are participated in by the representatives of local governments and the citizens of each community.

The dialogue meetings with consumer groups are also held, and in fiscal 2001, the JRCC commenced dialogue with student organizations.

[Community Dialogue]

In fiscal 2001, second regional dialogue meetings were held in the Yamaguchi (July) and Kashima (November) districts, and the third Chiba district meeting (January) was also held. A regional dialogue meeting was also instigated in the Osaka-Kobe district (March) as the second non-petrochemical complex district, following the Toyama-Takaoka district.

In the past, these meetings were referred to as “Regional explanatory meeting” in which business facility activities were explained. However, it was the JRCC’s strategic plan in fiscal 2001 to convert these meetings from an explanatory to a discussion-style forum. Determined to promote dialogue with the local communities, the JRCC thus updated the name of these meetings to “Community dialogue meeting”.

[Dialogue Meetings]

The fourth dialogue meeting with “Consumers. Japan” was held with the topics about the PRTR and risk communication. Although the atmosphere of these meetings has grown steadily more conducive of free exchange of opinion, it is still painfully apparent how difficult it is for corporations to see at the same standpoints as consumers. However, they are united in the opinion that it is crucial to continue to maintain such dialogue.

In fiscal 2000, dialogue with the Joint Conference on Consumers’ Science Foundation was newly established.

Furthermore, in fiscal 2001, dialogue and interaction with The International Association of Students in Economics and Business Management (AIESEC) was commenced.



[JRCC Fifth Anniversary Ceremony]

In April 2000, the JRCC celebrated the fifth anniversary of its foundation. Hence, in November 2000, under the designation of The Fifth Anniversary Dialogue and Interaction Conference, the past five years of JRCC activities were reflected upon and opinions were exchanged concerning the JRCC’s outlook for the next five years.

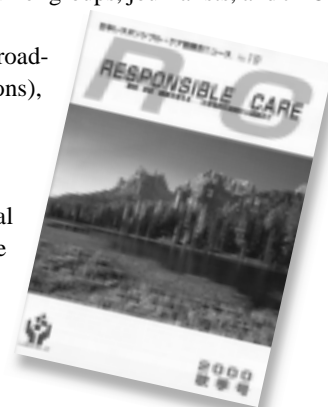
Revolving around the topic “Gaining Further Trust from Society: Expectations of the Chemical Industry,” lively and meaningful dialogue was held, including an opening speech from the chairman of the ICCA’s Responsible Care Leadership Group (RCLG), and featured a panel discussion, the wide-ranged membership of which consisted of the Responsible Care Chairman of the European Chemical Industry Council (CEFIC), representatives of consumer groups, journalists, and JRCC members.

CEFIC Responsible Care Chairman’s advice was summarized by three key words: “Broadcast” (wide-ranged disclosure of information), “Listen” (taking heed of external opinions), and “Dialogue” (maintaining open communication).

[Public Relations Activities]

To improve awareness of the JRCC’s roles among its members as well as the general public, the JRCC publishes the quarterly JRCC News as well as makes Responsible Care information, reports, and JRCC News available via its Web site.

In fiscal 2001, the JRCC worked to enhance its Web site and its Responsible Care introductory pamphlets. “RC Net” plans to deliver information by E-mail to the members more promptly.





JRCC Activities (International)

Responsible Care Initiatives are being promoted throughout the world under the auspices of the Responsible Care Leadership Group (RCLG) of the ICCA. At the Mexico meeting of the RCLG at the end of August 2001, the admission of Israel and the withdrawal of Zimbabwe were approved, leaving total membership unchanged at 46 countries.

Twelve countries in the Asia-Pacific region are members. Respected for its advanced level of Responsible Care implementation, Japan is expected to take on a leadership role. At the same time, there are many things that Japan can learn from Europe and North America.

The following international activities are being pursued under the auspices of the International Working Group of the JRCC.

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

At the annual international APRC conferences, countries report 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 sixth APRC conference, for 2000, was held in November in Singapore and was attended by over 300 people including 16 from Japan, of whom four reported on activities at secondary sessions. The seventh APRC conference was held in October 2001 in Bali, Indonesia.

In future, Japanese companies which have set up operations in Asia will need to involve themselves more vigorously in local Responsible Care initiatives if Japan is to show leadership in this arena.



[Support for Responsible Care Activities in Thailand]

In Thailand, Responsible Care activities took off in 1996 under the auspices of Thailand's Chemical Industry Club. In September 1998, the country's membership in the RCLG was approved. At the moment, 67 Thai companies signed Responsible Care commitments, but observers feel that they are not yet in a position to meet them fully, noting that Responsible Care activities are not deeply rooted in Thailand, and self-evaluation is hampered by the primitive state of performance indicators and communication channels with the public. Exchanges of information among participating companies have also been considered inadequate.

Accordingly, a request has been made through Japan's Ministry of Economy, Trade and Industry for dispatch of experts to Thailand to offer objective appraisal of the current status of Responsible Care programs and advice regarding future activities. Two experts from the JRCC Secretariat were sent to Thailand in 2 weeks between February and March 2001, with financial support from the Overseas Development Assistance budget of the Japanese government.

After attending general meetings and visiting various government agencies, they reviewed the seven companies' factories with Responsible Care programs, giving advice and suggesting future activities. There is a plan to offer a second package of assistance to Thailand.



[ICCA RCLG Activities]

The ICCA RCLG's fiscal 2000 conference was held in Lisbon, Portugal, with the participation of 57 experts from 26 countries, including four from Japan. The conference approved the membership of the Republic of Korea, a recipient of Japanese assistance. The ICCA RCLG adopted the following principal strategies:

Mission

Advance Responsible Care practices and principles worldwide while protecting the credibility and integrity of the initiative

Priority Policies

- Global understanding of, and commitment to, a universal Responsible Care ethic
- Improve the quality of association Responsible Care initiatives worldwide
- Effectively communicate and dialogue with internal and external stakeholders

The ICCA Responsible Care Status Report 2000 is now available, at <http://www.icca-chem.org/rcreport/>

JRCC Activities (Awards and Training)

Protecting the health and safety of employees is regarded as one of the most important Responsible Care activities. This report has already covered data relating to workplace accidents on page 19. Below is an introduction to the JCIA and JRCC's safety awards designed to spur member companies' efforts to reduce accidents to zero.

While the PRTR system entered full effect in April 2001 and is expected to reduce environmental emissions of chemical substances deemed to be hazardous. Our activities to spread awareness of this system among member companies and other parties are centered around the Working Group for Promoting Adoption and Understanding of PRTR.

[Safety Awards and Safety Symposiums]

In 2000, the JRCC, jointly with the JCIA, began organizing "Safety Awards" and "Safety Symposiums" based on case studies by the winning companies.

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 2001 the awards marked the 25th time since the contest had been held.

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.

The winners in 2001 were:

Safety Award

Asahi Glass Co., Ltd. Chiba Factory

Safety Effort Award

Kuraray Co., Ltd. Kurashiki Plant

Sumitomo Chemical Co., Ltd. Misawa Woks

Toray Industries, Inc. Ishikawa Plant



Stone placard commemorating Asahi Glass' Chiba Factory's receipt of the Safety Award

Notable features of this year's "entries" were increased emphasis on safety awareness at the individual employee level and the use of digital photographs in operation manuals and for portraying hazardous areas and activities.



Explaining a case history



Panel discussion

[Promoting Adoption and Understanding of the PRTR]

In April 2000, the JCIA and JRCC published a set of guidelines titled "Controlling Environmental Emissions of Specified Chemical Substances and Improving Their Management (Approaches to Conforming with the PRTR Law)". Seminar meetings were held in Tokyo and Osaka with the goal of promoting the adoption and understanding of the PRTR.

After that, the JRCC joined forces with Japan Small and Medium Enterprise Corporation and sent out PRTR instructors and organized training programs at the request of local authorities. In fiscal 2000, the instructors were sent to join such programs in 20 Japanese prefectures, other administrative units and one ordinance-designated town. Similar initiatives aimed at promoting the adoption and understanding of the PRTR. The seminars were undertaken at the request of other industrial groups, too.

The JRCC plans to publish revised guidelines in June, fiscal 2001, when the law comes into full effect. The JRCC will continue to promote the adoption and understanding of the PRTR in partnership with smaller businesses.



JRCC Activities (Medium-Term Strategic Plan)

In April 2000, the JRCC marked its fifth anniversary. In addition to undertaking a review of the past five years in the latter half of fiscal 2000, the JRCC considered future issues and appropriate policies for Responsible Care in Japan.

Looking back over the past five years, the JRCC decided that the achievements for the past five years generally matched initial plans at its founding. However, when the JRCC looked more closely at the pollution, safety and health situation, it became apparent that issues of major concern remain notably in the relation to chemical industries and chemical substances. It also became clear that recognition of the Responsible Care concept is low. Further efforts to disclose information and reach out to the public are needed.

In response, the JRCC is implementing a medium-term Responsible Care Strategic Plan covering issues and policies for the next five years.

[Medium-Term Responsible Care Strategic Plan: Issues and Policies for 2001-2005]

A plan to promote greater social acceptance of the Responsible Care Initiatives by expanding Responsible Care activities

Priority Issues	Policy
1 Increase transparency of Responsible Care activities and encourage disclosure and dialogue with society	Develop and implement verification system Work to increase the number of members that publish a Responsible Care report and support disclosure activities in line with PRTR requirements Encourage dialogue and expand outreach channels
2 Promote adoption of Responsible Care	Expand membership Work to introduce Responsible Care activities at industrial groups that handle chemical products Encourage Responsible Care activities at members' affiliates
3 Take on a leadership role in Asia	Pursue Responsible Care programs and provide leadership in localities where overseas subsidiaries are sited Support Responsible Care activities in Asian countries through the dispatch of experts
4 Continuously improve performance	Member companies should fulfill their voluntary action plans or be positioned to enable fulfillment. Encourage product stewardship in partnership with industries that use chemical products

Based on this plan, we have drawn up the following action plan for fiscal 2001.

Fiscal 2001 Action Plan			
Further encourage disclosure and outreach (conformity with PRTR system and work through dialogue format)			
Promote adoption of Responsible Care			
Disclosure	<ul style="list-style-type: none"> Draft and publish the Report 2001 in response to PRTR system Help members draft Responsible Care reports 	Support Responsible Care activities of members	<ul style="list-style-type: none"> Stage two exchange meetings and two workshops meetings for members Expand functions of consultation service
Outreach	<ul style="list-style-type: none"> Keep local communities informed through dialogue-style forums, staged at least eight locations (including one new location) Continue dialogue with consumer groups 		Promote adoption and understanding of PRTR system
Promoting Responsible Care activities	<ul style="list-style-type: none"> Expand membership 	Responsible Care verification	
International activities	<ul style="list-style-type: none"> Support Asian countries' Responsible Care Support Responsible Care activities of Japanese companies with a presence in Asia 		Public relations
Chemical product safety	<ul style="list-style-type: none"> Research needs of chemicals user industries 		



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, water 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 NO₂

SOx (Sulfur Oxides)

Toxic substances contributing to air pollution, consisting major component of Sulfur Dioxide(SO₂), with trace amount of Sulfur Trioxide (SO₃), and are noted as SOx.

OHSMS (Occupational Health and Safety 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

Hazard Risk Assessment

A methodology for quantitatively assessing the inherent hazards of chemical substances and their exposure to health and the environment

LCA (Life Cycle Assessment)

A concept and a methodology to evaluate the environmental effects of a product or activity holistically, by analyzing the entire life cycle of a particular material, process, product, technology, service, or activity

PLP (Product Liability Prevention)

Preventive measures (MSDS, labels, etc.) taken to secure product safety during design, manufacture and sale and protective measures (recalls, etc.) in the event of an accident

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.

The "Sick House" Phenomenon (chemical hypersensitivity)

A condition in which the human body becomes hypersensitive to formaldehyde and other chemicals used in the construction of housing interiors following prolonged exposure, resulting in reaction to even trace amounts of such substances and symptoms including skin irritations

JRCC Members List

Total: 109 companies (in alphabetical order, December 2001)

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



レスポンシブル・ケア[®]

You can access for further information :

The Japan Responsible Care Council (JRCC)

Kazan Building, 2-4, Kasumigaseki 3-chome, Chiyoda-ku, Tokyo 100-0013, Japan

TEL: 81-3-3519-2125 FAX: 81-3-3580-0970

URL: <http://www.nikkakyo.org/>