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Mitsubishi Rayon Co., Ltd.
Environmental and Safety Report
2003

For an Abundant Future



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Environmental and Safety Report 2003

Mitsubishi Rayon Co., Ltd., has been issuing environmental and safety reports on an annual basis since 1998 to promote deeper understanding of its work in environmental protection and safety management among customers and suppliers, shareholders and investors, governments and citizens of its neighboring communities as well as to enlighten its own employees. Looking forward, the Company will continue to do its utmost for improvement based on the guidelines of the GRI* and Japan's Ministry of the Environment.

Report Time Frame: Covered in the report are the state of Mitsubishi Rayon's environmental and safety efforts from April 1, 2002, to March 31, 2003, as well as its projects for fiscal 2003 onward.

Report Scope: This report covers Mitsubishi Rayon and companies of the Mitsubishi Rayon Group whose primary operations are manufacturing and construction as follows.

- Fully consolidated Group companies within the offices and facilities of Mitsubishi Rayon (four companies)
- Equity-method subsidiaries within the offices and facilities of Mitsubishi Rayon (four companies)
- Fully consolidated companies in Japan designated external to the offices and facilities of Mitsubishi Rayon (10 companies): represented as off-premise Group companies

* The GRI, the Global Reporting Initiative, was established in 1997 to formulate international guidelines for sustainability reporting. The GRI issued its first guidelines in June 2000.

Message from the President



“Building Trust through Environmental Management”

Yoshiyuki Sumeragi
President

A handwritten signature in black ink, reading 'Y. Sumeragi'. The signature is written in a cursive style.

The fundamental environmental and safety policy of the Mitsubishi Rayon Group's three-year medium-term vision (fiscal 2002–fiscal 2004) is “building trust through environmental management.” While the Company's goal is to earn returns through its business activities, if this is not tempered with a social conscience, the Company's genuine corporate value is diminished. We believe the most important foundations for future corporate activities are those related to the environment and safety.

Particularly with regard to the environment, spurred in part by the Earth Summit, 1992, the concept of “sustainable development” came into being, and numerous undertakings related to this concept were carried out around the world.

The Mitsubishi Rayon Group is working to effectively utilize resources, reduce the environmental burden during manufacturing, and develop and provide technologies and products that contribute to alleviating the environmental burden. In this way, we seek to contribute to sustainable development as a member of the international community. Of course, these and our other business activities must be carried out in a transparent manner.

Our social duties and responsibilities in the global community—compliance with laws—must of course be upheld, and basic human dignity must be prized as well.

In Japan, corporate social responsibility (CSR) and socially responsible investment (SRI) have been becoming important factors in determining corporate value. We believe that, by properly carrying out the aforementioned corporate activities, we can fulfill our social responsibilities.

This basic thinking and the foundations of corporate activities must be fully recognized and reflected in the actions of not only the employees of the Mitsubishi Rayon Group but also the many people at companies with whom we have a working relationship. We have created a company system to increase individual awareness and improve our environmental activities, continuing efforts this very day with concrete goals.

This report describes fiscal 2002 environmental and safety activities and our plans for future activities for the Mitsubishi Rayon Group. The frank views of stakeholders have created a solid basis for our future activities to enable us to further enhance public trust.

September 2003

Interview with the Executive Officer in Charge of Safety, Environment, & Quality Assurance

Mitsubishi Rayon

■ Striking a Balance between Reducing Environmental Burdens and Improving Profitability

Please describe the relationship between Mitsubishi Rayon and the environment.

Mr. Noriyuki Tajiri: Mitsubishi Rayon is a chemical manufacturer, and, as such, it places various kinds of burdens on the environment through its work processes. On the other hand, we also make products that contribute to easing the pressure on the environment.

Our attention to environmental burden is focused on the energy and water used in production processes as well as the emission of chemicals and carbon dioxide that accompany the use of energy and chemicals. For all of these, we have set medium- and long-term plans to reduce emissions. After several years of sustained efforts, we have produced visible results. (See Chapter 02.)

How are environmental efforts positioned within corporate management?

Mr. Tajiri: We position environmental management among the most important management issues, and we are actively moving forward with related efforts. At Mitsubishi Rayon, environmental management is equated with Company activities consistent with the construction of a recycling-based society whereby sustainable growth is possible while working to preserve the environment and reduce burdens on it.

A company must meet the demands of society or its existence serves little meaningful purpose. Calls for the reduction of the environmental burden and for the improvement of the environment grow louder every day. We believe that carrying out efforts with a sense of personal responsibility is the basic foundation of environmental management consistent with these demands. However, because we are a public company, we must be profitable to survive. Therefore, it is important that we strike a balance between reducing our environmental burden and increasing profitability.

What particular initiatives are receiving special attention?

Mr. Tajiri: We are actively working on many issues, but one area of particular emphasis is reducing the volume of chemicals discharged into the environment and their volume of transfer. This is because chemical manufacturers emit and transfer a large volume of chemicals in comparison to other industries. In production processes, we are working to increase the rate of reaction of component chemicals included in the product to reduce emission volumes into the atmosphere during distribution.

■ Using Existing Technologies to Develop Eco-Friendly Products

What kinds of products do you have that contribute to relieving the burden on the environment or are otherwise eco-friendly?

Mr. Tajiri: I would like to introduce a few representative products. For example, we have Dianal LP, an acrylic powder for plastisols. This is primarily used as a substitute material for PVC in such applications as undercoats, body sealants, and other automotive uses as well as base materials for tile carpeting (the rubber-like part on the backs of carpets). As a key technology area created several years prior as a part of our measures to phase out chloride, we developed Dianal LP in collaboration with our customers, and, in fiscal 2002, we started full-fledged sales of Dianal LP. Dianal LP is suited for application in low-temperature membranes, and expanded development of its application in molding material and sheet material is anticipated.



CNG Tank and Bus



ECORNA-Y Cross-section and Jersey

Executive Officer in Charge of Safety, Quality Assurance

and the Environment

Thermoplastic MMA resin, because it is so easy to recycle, can also be thought of as eco-friendly. MMA resin is made by adding a polymerization initiator to a liquid resin that is primarily composed of methacrylic monomer. It can perform polymer caking even at normal temperatures. MMA resin is widely used for sheet materials and as a molding compound and can be recycled to its raw material through heat treatment. At Mitsubishi Rayon, we have established MMA resin recycling facilities and use them to restore finished products to their original state. With regard to technology and costs, after being returned to its original state, MMA is remarkable in that it can be reused indefinitely.

Representative of eco-friendly products in the area of fibers is the recycled polyester fiber ECORNA-Y. ECORNA-Y is a polyester fiber that uses recycled PET bottles as a raw material, earning the authorized ECO-MARK. ECORNA-Y is characterized by fiber with a Y-shaped cross-section, creating a large external surface area. Fabrics using the fiber have wide spaces between individual fibers. For this reason, they are excellent for absorbing sweat and drying quickly, which is ideally suited to one of their primary uses—lining for sportswear. Using Mitsubishi Rayon's original spinning technology, we were first able to produce the recycled continuous Y-shaped polyester fibers and began marketing this product in fiscal 1999.

In the area of specialty products and engineering, we have our CLEANSUI home water purifiers. Using a hollow-fiber membrane, these purifiers are designed to eliminate microorganisms, rust, impurities, and other undesirable substances from water, and Mitsubishi Rayon was the first company in the world to create a water purifier using this kind of membrane. In addition to the membrane, activated carbon is used to reduce odors.

Water purifiers using adsorbents can eliminate lead and trihalomethane found in tap water. Furthermore, Mitsubishi Rayon also markets products related to the treatment of wastewater and tap water that use the same hollow-fiber membrane.

From what products do you expect strong growth in the future?

Mr. Tajiri: Natural gas is known as a new type of automotive fuel because reserves are plentiful and pollutant emission levels are lower than existing fuel gas. However, it is necessary for the reservoir tank to be light and strong when utilizing compressed gas in a vehicle. In the area of specialty products and engineering, we manufacture carbon fibers for reinforcement of compressed natural gas (CNG) tanks, and we have taken an equity stake in the Canadian fuel tank manufacturer, Dynetek Industries Ltd., the company whose CNG tanks are widely used in the automobile market.

We are also working to develop carbon fibers for fuel cells. They are to be used as the gas diffusion layer (GDL), which is the heart of a fuel cell. Mitsubishi Rayon's GDL can be utilized in fuel cells for both the household and automobile, and it is receiving considerable attention from manufacturers developing fuel cells. If fuel cells increase in popularity in the future, we believe that it may be a boon to the growth in our business as well.

Aside from these products, we are developing eco-friendly products in every area. Our fiber-forming technology for ECORNA-Y, hollow-fiber membrane technology for CLEANSUI, and carbon fiber technology for CNG tanks are representative examples of this.

In the future, market demand for eco-friendly products is expected to continue to increase. We will work to meet market demand through the development of eco-friendly products while applying our strengths and existing technologies.



Acrylic Powder (Application: Undercoat)



CLEANSUI Water Purifier



Clothing Using ECORNA

Business Philosophy, Basic Policies, and Action Guidelines on Safety, the Environment and Quality Assurance

Business Philosophy

—Best Quality for a Better Life—
We, Mitsubishi Rayon and Mitsubishi Rayon Group companies, will contribute to a more comfortable future for humanity through the pursuit of “Best Quality”

Basic Policies on Safety, the Environment, and Quality Assurance

In accordance with our Business Philosophy, Mitsubishi Rayon and Mitsubishi Rayon Group companies have adopted the following basic policies on safety, the environment, and quality.

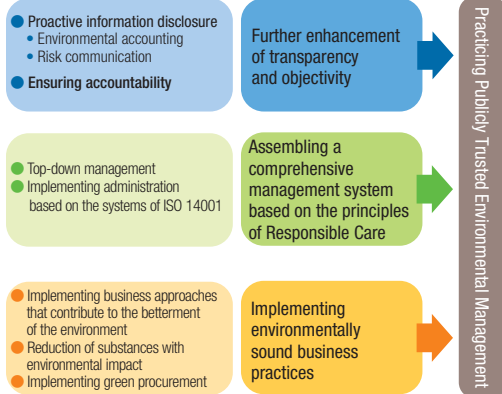
- Top priority shall be placed on safety and the environment in all business activities, as these are essential for corporate existence.
- We shall supply our customers with satisfactory, safe, and reliable products.

Action Guidelines on Safety and the Environment

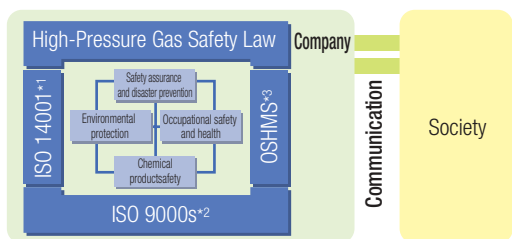
Mitsubishi Rayon and Mitsubishi Rayon Group companies have adopted the following action guidelines on safety and the environment.

1. All laws and regulations shall be observed, with additional measures stricter than what is legally required adopted when deemed necessary.
2. All actions shall be taken with a strong sense of responsibility so that any and all types of accident are prevented.
3. All actions shall be rooted in the spirit of self-accountability and autonomous management.
4. All business activities shall be carried out under careful consideration to the environment.
5. Every possible effort shall be made to uphold safety and reduce environmental burden throughout the entire life cycle of each product.
6. Education shall be used to improve consciousness of safety and the environment, with the results put to practical use at the workplace.
7. Active communication shall be maintained with international and local communities to raise the level of corporate transparency.
8. Scientific and technical means shall be utilized to make improvements on a constant step-by-step basis.

Three-Year Vision for Environmental Action Plan (Fiscal 2002 to 2004)



Responsible Care Based Management



*1 Environmental management system enacted by the ISO (International Standards Organization)

*2 Quality management system enacted by the ISO

*3 Occupational safety and health management system

Environment and Safety Are Positioned as Matters Essential to Our Viability as a Company

Please tell me about your policies to promote environmental management.

Mr. Tajiri: We working on environmental and safety activities like a single unit. In 1998, Mitsubishi Rayon established its policies regarding safety, the environment, and quality. This policy is: “Top priority shall be placed on safety and the environment in all business activities, as these are essential for corporate existence.”

Additionally, we also stipulated: “We shall supply our customers with satisfactory, safe, and reliable products,” which is meant to indicate the safety of a product’s component chemicals as well as its environmental friendliness.

With this basic policy in mind, Mitsubishi Rayon established the “Action Guidelines on Safety and the Environment” in 1998. In 2001, we added the clause: “All business activities shall be carried out under careful consideration to the environment.”

Active Disclosure of Information to Improve Transparency and Objectivity

Have you formulated specific plans for disclosure?

Mr. Tajiri: Yes, we have. We established the Three-Year Vision for the Environmental Action Plan (fiscal 2002—fiscal 2004). To achieve this vision, we have established three activity goals with the slogan: “Building Trust through Environmental Management.”

These three activity goals are: (1) further enhancement of transparency and objectivity, (2) assembling a comprehensive management system based on the principles of Responsible Care, and (3) implementing environmentally sound business practices.

To improve objectivity and transparency, we will proactively conduct disclosure through environmental accounting, risk communication, and others. Environmental accounting for fiscal 2002 is presented on page six. This presentation has been prepared in accordance with guidelines set by Japan’s Ministry of the Environment.

With regard to risk communication, Mitsubishi Rayon regularly holds explanatory meetings and plant tours to ensure communication with local communities. In addition, we are working to respond appropriately to inquiries concerning environmental and safety activities.

Creation of a Management System Based on Responsible Care

What is “the creation of a total management system based on the principles of Responsible Care?”

Mr. Tajiri: We have developed an ISO 14001 based management system centered on voluntary management, which is based on the principle of Responsible Care. With this system as the framework, we regard the management and operations structure—which requires various standards and rules as indicated in the bottom left chart and is implemented in an integrated manner as a top-down system—as a total management system, and we will promote its creation.

We began to introduce our ISO 14001 based management system in each production center in fiscal 1999, and, by March 2001, all of them had obtained ISO 14001 certification. With regard to Group companies not located in a production center, one in Japan and one overseas have already obtained ISO 14001 certification.

Activity Policies and Management System

Specific targets to reduce environmental burden have been established in two groupings: overall Company goals and goals of each production center. Through the using of a management system based on ISO 14001, results are steadily emerging in such areas as chemical emission reduction, energy conservation, waste reduction, and environmental accident prevention.

In the future, we plan to expand the introduction of the management system to cover foreign and domestic Group companies. Two of the nine domestic Group companies have already started preparations for the introduction of the management system. We are improving internal auditing and striving for an even higher level of activity.

Under what kind of a system are safety and environmental activities being operated?

Mr. Tajiri: Mitsubishi Rayon Group initiatives and policies on safety, environment, and quality are discussed and determined by the Safety, Environment, & Quality Assurance Committee chaired by the Company president. These initiatives and policies are then communicated to all employees in keeping with corporate organizational lines and administered in a top-down framework.

In the execution of the policies and initiatives discussed and decided at the Safety, Environment, & Quality Assurance Committee, each office and business unit creates systems in which each division's Safety, Environment, & Quality Assurance Committee draws up their own specific action plans, clearly delineates responsibility and authority, and puts the plan, do, check, act (PDCA) cycle into motion.

Is it correct that you have introduced a system of various types of audits?

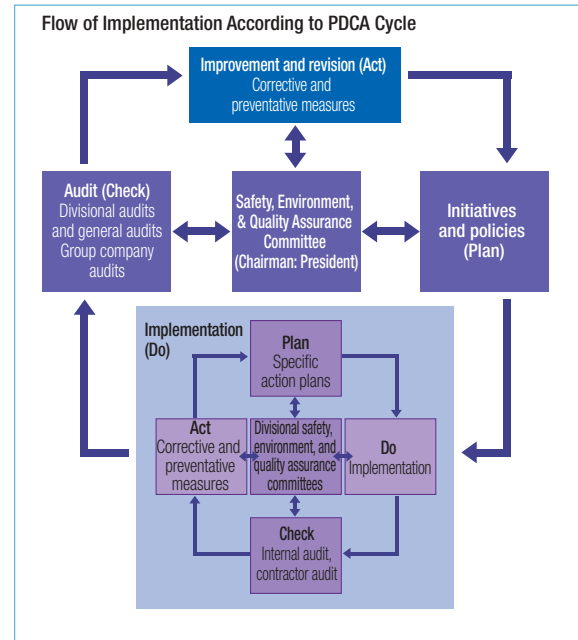
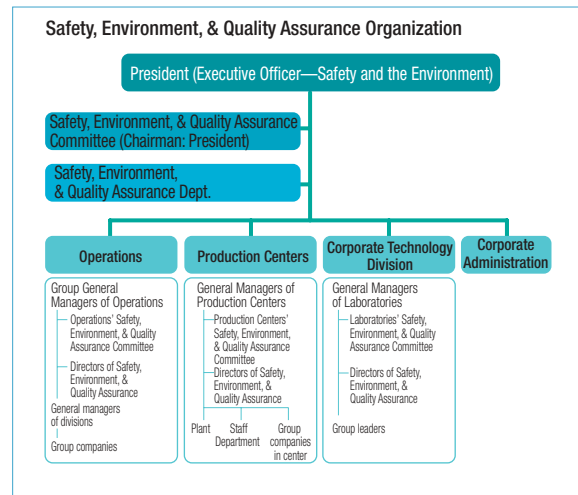
Mr. Tajiri: To confirm the implementation of initiatives and measures in each business unit, we are conducting various types of audits. There are eight principal varieties of audits—from audits by head management to audits conducted by business units. These are: (1) general audits, (2) departmental audits, (3) special audits, (4) product liability and quality assurance audits, (5) Group company audits, (6) operating division audits, (7) internal production centers division audits, and (8) official audits.

The results of the audits are reported to the Safety, Environment, & Quality Assurance Committee, and areas slated for improvement are monitored for progress the following year. The audit results are reflected in the measures and policies for the following year.

How do you respond to unexpected accidents?

Mr. Tajiri: Mitsubishi Rayon faces a wide variety of risks, including fires in its production facilities, complaints about products, the inability to collect debt, and terrorism. In the event of such crises, we must respond in a responsible manner to protect our stakeholders' interests and minimize damage or the existence of the Company could be endangered.

For this reason, in fiscal 2001, we established our Risk Management Policy. If a crisis should occur, information must be gathered and verified within the organization and then promptly released to stakeholders via the Public and Investor Relations Office.



Name of Audit	Type of Audit
General Audit	Audit of management conducted by the Safety, Environment, & Quality Assurance Committee
Departmental Audit	Detailed audit of selected departments designed to supplement the general audit
Special Audit	Audit conducted in the event of a serious accident or disaster, as deemed necessary by the chairman of the Safety, Environment, & Quality Assurance Committee
Product Liability and Quality Assurance Audit	Comprehensive audit endorsed by the Safety, Environment, & Quality Assurance Committee, that covers each stage from production to sales
Group Company Audit	Audit of Group companies' management endorsed by the Safety, Environment, & Quality Assurance
Operating Division Audit	Audit conducted by all the operating divisions
Internal Production Centers Division Audit	Environmental and quality audit based on ISO
Official Audit	Audit conducted by corporate auditors

Environment-Related Costs (Fiscal 2002/Unit: ¥Mil.)

Category		Capital investment	Maintenance cost
Breakdown	Cost of pollution control	777	1,565
	Cost of global environmental protection	330	80
	Cost of resource recycling	94	1,376
Cost of reduction of upstream and downstream environmental load		—	—
Environmental cost of managerial activities		14	543
Environmental cost of social activities		1	79
Cost of environmental damage		0	123
Total		1,216	3,766

Economic Effects (Fiscal 2002/Unit: ¥Mil.)

Results	Amount
Proceeds from recycling activities	202
Expense reductions due to energy conservation	217
Expense reduction due to resource conservation	31
Total	450

Basic Data

Overall Environmental Accounting

- Survey Focus: Cost and results of activities undertaken for environmental and safety-related purposes
- Survey Scope: Mitsubishi Rayon (non-consolidated)
- Survey Period: Fiscal 2002 (April 1, 2002–March 31, 2003)

Total Environmental and Safety-Related Cost

- Scope/category: In compliance with the report "The Establishment of an Environmental Accounting System (2000)"
- In the event that accurate information cannot be obtained, calculations will be conducted using a rational standard, such as a proportional calculation method.
- Costs include personnel costs.
- Depreciation costs of plant and equipment investments are included.

Economic Effects

- As a result of environmental and safety-related activities, the results achieved in fiscal 2002 (limited to the results that can be rationally calculated)
- Contributions to revenues: Proceeds from the sales of materials with resale value, transactions involving scrap materials, etc.
- Conservation benefits: Energy-related savings (raw materials), cost savings on waste disposal

Strengthening Bonds with Stakeholders

What kinds of efforts were made in fiscal 2002?

Mr. Tajiri: We devoted ourselves to responding to customers' inquiries and communication with local residents.

The Company actively tries to communicate with local communities to establish better relationships with them. In fiscal 2002, we held a total of 17 plant tours in our production centers and 381 people participated. Through plant tours of power plants, wastewater treatment facilities, and other plants related to the environment, we explained efforts to ensure safety and preserve the environment as well as the products we offer.

At briefings, we explained our efforts for keeping safety and preserving the environment. At some production centers, we also issued a report on the environment and safety.

I understand that employees also participate in volunteer activities.

Mr. Tajiri: That is correct. These efforts are being made as a part of communication with local communities. For example, at the Toyohashi Production Center in Toyohashi, Aichi Prefecture, employees participated in a regional group called the Asakura River Living Water Forum. This forum was launched in cooperation with citizens, companies, and administrative authorities and cleans the Asakura River, which runs through the city, plants trees on its banks, and conducts other activities. The Toyohashi Production Center actively cooperates in the forum's activities and approximately 70 employees participate in each activity.

Employees are also working to enhance communication with local residents through clean-up operations in the vicinity of other production sites.

What kind of activities are you conducting to respond to customers?

Mr. Tajiri: Based on our basic policy of "we shall supply our customers with satisfactory, safe, and reliable products," we are offering various services to satisfy our customers. For example, we established a special open laboratory for the GENOPAL fiber DNA chip. It is being used as a forum to introduce products and offer consultation and discussion regarding products to better respond to customer needs.

We have also set up a toll-free dial service center at our CLEANSUI division, which is responsible for marketing and other matters for our home water purifier CLEANSUI. By listening to our customers, we can quickly respond to any complaints they might have. In addition, we have created a membership organization called the CLEANSUI CLUB to offer services and information through a bulletin and on the Company Web site.

Achievements in Reductions to Chemical Emissions with Steady and Diligent Efforts

What kinds of progress have you seen in reducing environmental burden?

Mr. Tajiri: We are seeing steady results in chemical emission reduction, energy conservation, and the reduction of the volume of waste sent to external landfills.

For example, with regard to chemicals, with fiscal 1999 as a base, we formulated the Second Period Voluntary Reduction Program for fiscal 2003, and efforts are being conducted Companywide. Chemicals being targeted are acetaldehyde, toluene, and seven others. We were able to reduce emissions of the nine chemicals from the prior fiscal year. (Refer to page 12 for selection criteria and reductions in fiscal 2002.)

What specific measures did you take to reduce emissions?

Mr. Tajiri: It was not so much that we took any particular measures to succeed, but rather success was achieved through steady effort. Specifically, we dedicated ourselves to: (1) uncovering the source of waste gas that contains harmful chemicals and placing priority on rendering them harmless, (2) thoroughly checking and repairing leaks in chemical equipment, and (3) revising the operational conditions of equipment used to collect waste gas that contains

harmful chemicals more efficiently. Processes to render exhaust gas harmless included incineration and adsorption utilizing activated carbon.

The goals of our voluntary reduction program, which is to run through fiscal 2003, have nearly been achieved. We will determine target substances and reduction goals in fiscal 2004 and beyond in the Safety, Environment, & Quality Assurance Committee.

■ Steady Decrease in Energy Consumption per Unit of Production and Landfill Waste

What kind of results have you achieved in energy conservation?

Mr. Tajiri: With regard to energy conservation, in line with the Japan Business Federation (Nippon Keidanren) voluntary action plan, we are working to achieve our goal of making the energy consumption per unit of production requirement to 90% or less of fiscal 1990 levels by fiscal 2010 in line with the Nippon Keidanren voluntary action plan. In fiscal 2002, our energy consumption per unit of production was 91% of fiscal 1990 levels, a level approaching our target (details on page 10).

Specifically, we have been able to conserve energy through our commitment to: (1) reducing steam consumption through reconstruction of a distillation tower used to purify products, (2) reusing waste heat from the carbon fiber production process, (3) conserving electricity through the improvement of pumps, and (4) reducing electricity and steam through rationalizing production.

In the future, we plan to bolster employee awareness of energy conservation and strengthen development of energy conservation technologies. We are considering adopting a new auditing system, a development incentive system, and other measures to promote technological development. In addition, the entire Group plans to determine the volume of and set goals for greenhouse gas emissions.

What about waste?

Mr. Tajiri: We have set a goal of reducing external landfill industrial waste to 35% of fiscal 1991 levels by fiscal 2005 and to 25% by fiscal 2010. In fiscal 2002, the level was approximately 39% of the fiscal 1991 levels. Our rate of recycling (value against the volume of industrial waste, excepting power plant ash), including thermal recycling, is gradually improving and is approximately 80% (details on page 11).

We plan to steadfastly pursue an increase in the yield of production work while reducing waste, thermally recycling waste that cannot be recycled in raw form, and other 3R (reduce, reuse, recycle) initiatives. Furthermore, we are focused on the development of easy-to-recycle products, the promotion of technologies to restore acrylic resin waste to raw material monomers, and the development of other technologies.

Whether it is waste or chemicals, our ultimate goal is not to process all waste produced but rather to minimize waste produced. For this reason, we seek to take appropriate measures early in work procedures. As an example of efforts to reduce chemical waste emissions, through increasing the rate at which chemicals contained in certain products react, the volume of by-products released into the atmosphere has been cut in half. Even with defective products, residue, and other types of waste, we are working to reduce loss in work operations.

If yield increases, chemical and waste emissions will drop. Boosting yield also raises profitability, improves product quality in some cases, and incurs many other benefits. These initiatives will require capital investment and technological development and will take time, but, with ongoing diligent efforts, we will work to steadily reduce the burden on the environment.



Noriyuki Tajiri
Executive Officer in Charge of Safety, Environment,
& Quality Assurance

"Through steady effort..." These are the words that left the most lasting impression from my conversation with Noriyuki Tajiri, an Executive Officer of Mitsubishi Rayon. According to Mr. Tajiri, Mitsubishi Rayon's steady efforts, including the inspection of leakage points in chemical facilities and work to eliminate chemical emissions, have been effective in reducing environmental impact.

Exhibiting a substantial ripple effect on industry and society, the environmental efforts of the materials and chemicals industries, which stand at the forefront of industry today, have resulted in increasing demands from society. In response to these demands, I hope that Mitsubishi Rayon, together with these industries, will continue to play the role of a silent force behind the scenes in the steady advancement of environmental protection efforts.

Haruko Tsuchiya,
Environmental journalist



		Fiscal 2002–fiscal 2004 medium-term plan	Fiscal 2002 targets
Policies		Strengthening of the Mitsubishi Rayon Group's environmental management	(1) Obtaining ISO 14001 certification for Group companies (2) Firmly comprehending and perfecting management of overall Group safety and environmental performance Promoting creation of systems to unify understanding and management of Group company performance data
		Strengthening safety and health management through adopting essentials of OSHMS	Adoption of OSHMS substantially
		Chemical risk management (1) Complying with laws and regulations (2) Designing a system to show due consideration to the environment as a part of business activities	(1) Response to legal regulations ① Compliance with dioxin exhaust regulations for incinerators (Law on Waste Disposal and Cleaning) ② Compliance with the Law Concerning the Appropriate Decomposition of PCB Waste ③ Compliance with the Water Pollution Control Law, amendment 5 (emission of nitrogen and phosphorous) (2) Determining the environmental burden from distribution
		Strengthening emergency capabilities and securing/improving society's trust in Mitsubishi Rayon	Promoting implementation and ongoing operation of crisis management systems
Environmental management	Means for reducing the burden on the environment	Energy-saving measures Energy consumption per unit of production (ECP) Reduce to 90% of fiscal 1990 levels by fiscal 2010	(1) Improving performance through PDCA within current framework (2) Reviewing present framework in fiscal 2005
		Elimination of harmful chemical substances Air • Regulated harmful air pollutants (five substances) Reduce by 55% of fiscal 1999 level by fiscal 2003 • Voluntary elimination of four substances Reduce by 35% of fiscal 1999 level by fiscal 2003	In process of implementation
		Waste products External landfill volume Reduce by 65% of fiscal 1991 level by fiscal 2005	In process of implementation
		Systemization and efficient use of environmental accounting	Systematizing and effectively using environmental accounting ① Effectively using system for in-house management ② Expanding scope of items covered ③ Announcing results concerning fiscal 2001 data in fiscal 2002 Environmental and Safety Report
		Adopt green procurement widely throughout operations	Establishing system for green procurement ① Widespread enforcement of green procurement for office supplies ② Considering expanding scope of green procurement
Safety management		Eradication of serious accidents and work-related injuries	Expanding and carrying out Companywide risk assessment for accident prevention Reviewing risk assessment by end of fiscal 2004 and then creating plans for development of measures
		Improving safety and health management system at Group companies	Assist off-premise Group companies to improve safety and health management system (targeted for fiscal 2004)
		Improving management of chemicals	Publicizing Material Safety Data Sheets (MSDSs) for products using the Company Web site and other means
Occupational health management system		To prevent occupational illness, efficient use of data through cataloging results of medical examinations and special medical examinations	Preventing occupational illness through effective use of databases
		Continuing to promote systemization of occupational health management (encourage on-site middle managers to obtain national occupational health management qualifications)	Continuing to promote systemization of occupational health management
		Establish Mitsubishi Rayon mental health care guidelines in cooperation with administrative divisions	Establishing, implementing, and conducting awareness training for Mitsubishi Rayon Mental Health Care Guidelines

• MSDS: Material Safety Data Sheet
Materials describing essential information in detail including the name of the substance and provider, classification, hazard risks, safety precautions, and emergency measures to ensure that chemical products are handled safely

Environmental, and Quality Goals for 2004 and Actual Results for Fiscal 2002

Assessment: ○—target achieved, △—actively working but have not yet achieved, ×—efforts inadequate

Actual results for fiscal 2002	Assessment	Targets for fiscal 2003	Reference page
(1) Two companies conducting preparations for ISO 14001 requirements (2) Completed construction of database system and precisely determined performance data of domestic Group companies	(1) △ (2) ○	(1) Create priority sequence and expand sequential acquisition of ISO 14001 (2) More precisely grasp safety and environmental performance of overseas Group companies	4, 5
Develop Companywide accident risk assessment centered on OSHMS	○	Carry out risk assessment activities for industrial accidents	4, 5 18, 19
(1) Compliance with laws and regulations ① Eliminate incinerators that cannot easily comply with regulations ② Compliance to the Law Concerning the Appropriate Decomposition of PCB Waste ③ Promote compliance measures to target full compliance in fiscal 2003 (2) Start to determine the volume of carbon dioxide emissions during transport	(1) ○ ① ○ ② ○ ③ ○ (2) △	(1) Continue compliance with laws and regulations ① Continue efforts toward compliance for Water Pollution Control Law, amendment 5 (emission of nitrogen and phosphorous) ② Fulfill compliance to the Law Concerning the Appropriate Decomposition of PCB Waste ③ Comply with pertinent laws including the revised Law Concerning the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (2) Dialogue with stakeholders regarding emissions and transfer volumes of chemical substances and other information (3) Promote understanding of carbon dioxide emissions during transport and changing methods of transportation	6, 7 10~14
Continue to promote our crisis management system	△	Strengthening the system of communication between operational sites and Company headquarters to enhance crisis response	4, 5 (16~19)
(1) Reduce energy consumption per unit of production by 91% compared with fiscal 1990 levels (2) Start to consider measures in fiscal 2003 leading to the creation a revised framework in fiscal 2005 and beyond	(1) ○ (2) ○	(1) Continue energy saving activities to reach quantitative targets (2) Start designing specific details of measures beyond fiscal 2003	10
Making progress in achieving fiscal 2003 targets	○	Implementation toward achieving the planned targets	12, 13
Making progress in achieving fiscal 2003 targets	○	Implementation toward achieving the planned targets	11, 15
Effective use of systematized environmental accounting ① Improve tabulation methods ② Environmental accounting to include only the parent Mitsubishi Rayon Company ③ Public disclosure in the fiscal 2002 Environmental and Safety Report	① △ ② × ③ ○	① Systemization and effective use for internal Company use ② Expand scope ③ Publicly disclose fiscal 2002 tabulated data in fiscal 2003 Environmental and Safety Report	6
Currently implementing our green procurement system ① Improve procurement rate of target goods from previous fiscal year ② Deliberations resulted in decision to maintain current scope of focus for time being	○	Continue to implement green procurement	14
All divisions of all businesses are carrying out activities	○	Continue to improve methods and effectiveness to ensure all employees participate in safety activities	18
Start to redesign systems for safety and health management at off-premise Group companies	○	Assist off-premise Group companies in redesigning safety and health management systems and steadily improve through auditing	18
Postponed until the next fiscal year	×	Efforts for general disclosure of MSDSs for the Company's products on Company Web site	16, 17
Have started partial use	△	Implement effective use of Company database in all divisions	19
Continued implementation	○	Continue to implement systemization of occupational health management	18, 19
① Establishment of Mitsubishi Rayon Mental Health Care Guidelines ② Conduct briefings and workshops ③ Increase awareness through in-house reports	○	Increase awareness and strengthen implementation of mental health care	19

• OSHMS: Occupational Safety and Health Management System
System to reduce occupational accidents

1 Energy Conservation and Prevention of Global Warming

■ Mitsubishi Rayon's Efforts

Independent of the Kyoto Protocol—the international treaty to prevent global warming—the Company is carrying out energy-saving activities to contribute to the prevention of global warming for sustainable development on the earth.

The vast majority of the greenhouse gases Mitsubishi Rayon produces is accounted for by carbon dioxide from fuel sources, and so the Company is attacking this problem by increasing energy efficiency to reduce the volume of greenhouse gases produced, resulting in the prevention of global warming.

Specifically, we have set up Energy Conservation Committees at all production centers. We have established an energy-use reduction target, which we will strive to reach within the ISO 14001 system.

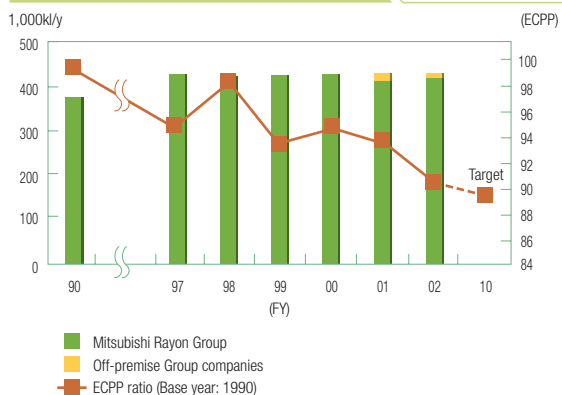
- (1) Reduce energy consumption per unit of production to 90% or less fiscal 1990 levels by fiscal 2010 (This target is in line with the Nippon Keidanren's voluntary action plan.)
- (2) Reduce energy consumption per unit of production by 1% or more per year at all factories (practices based on the revised Energy Consumption Law)

■ Some Examples of Fiscal 2002 Efforts

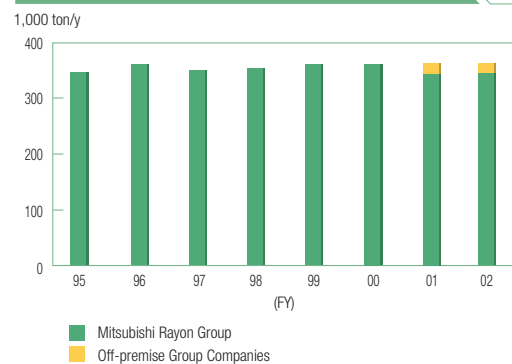
- (1) Reduce steam through restructuring of distillation towers used to purify products
- (2) Reuse waste heat through the carbon fiber production process
- (3) Save electricity through internal restructuring of pumps
- (4) Reduce electricity and steam through rationalizing production processes

In addition to continuing to improve equipment and technology, we plan to promote Groupwide activities including creating a new action plan for saving energy, which will take into account the trends in domestic initiatives accompanying the Kyoto Protocol taking effect.

Energy Consumption (crude oil equivalent)



CO₂ Emission Levels (including brought-in energy; carbon unit equivalent)



2 Reducing Industrial Waste

■ Plans for Waste Reduction

We have promoted the recovery of products discarded during production processes, restoring waste to raw material, external reuse, thermal recycling, and other measures to reuse materials leading to the effective use of resources. This has resulted in the rate of recycling (the proportion of the volume of waste recycled to the volume of all waste produced) increasing to 80%.

Because waste that cannot be effectively used is ultimately put in landfills, from fiscal 2001, to reduce the volume of external landfill waste, we are promoting reduction activities with the quantitative targets of reducing levels to 35% of 1991 levels by fiscal 2005 and to 25% by fiscal 2010. (These targets do not include power plant ash.)

■ Fiscal 2002 Activity Efforts

In fiscal 2002, Mitsubishi Rayon implemented the following activities to reduce waste:

● Activities Aimed at Recycling

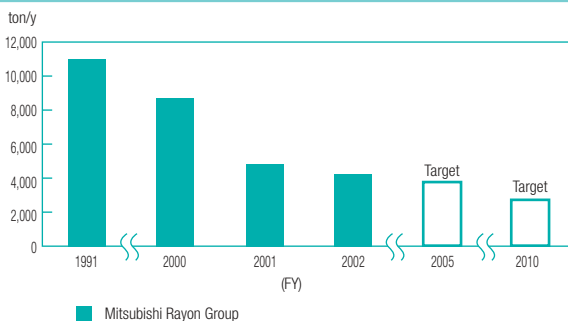
- (1) External reuse of plastic scrap and waste thread
- (2) External reuse of residue generated during manufacture of raw materials for food products
- (3) In-house thermal recycling of waste filter materials generated during manufacture of fibers

● Activities Aimed at Reducing Waste Generation

Mitsubishi Rayon's Standard Waste Unit (ratio of waste generation volume to production volume) was first adopted in fiscal 1999. We successfully attained our initial objectives for fiscal 2001 and have since continued to voluntarily implement ISO 14001 based activities at each production center. The following are specific examples of these activities.

- (1) Reduction of the amount of cleaner liquid used through changeover in waste gas processing methods (from adsorption to combustion)
 - (2) Reduction of cullent stuck on vessels through changeover in polymerization aids
 - (3) Reduction of thread breakage through use of cleaner dope for fibers
 - (4) Reduction of shavings from slitting of plastic films
- (Please refer to page 15 for further information on recycling activities.)

Reduction Plan of Volumes of Waste Sent to External Landfills (excluding power plant ash)



Chapter 02

3 Reducing Emissions

Reducing Chemical Substance Emissions

The Mitsubishi Rayon Group has investigated emission and transfer volumes of chemical substances since the PRTR*1 survey was carried out for the first time in 1995 by the Japan Chemical Industry Association. Our voluntary activities to reduce emission and transfer volumes have been implemented in line with our Chemical Substance Management Guideline under the PRTR Law*2, which is based on the ISO 14001 system.

Voluntary activities to reduce priority substances designated by revised law for the prevention of air pollution

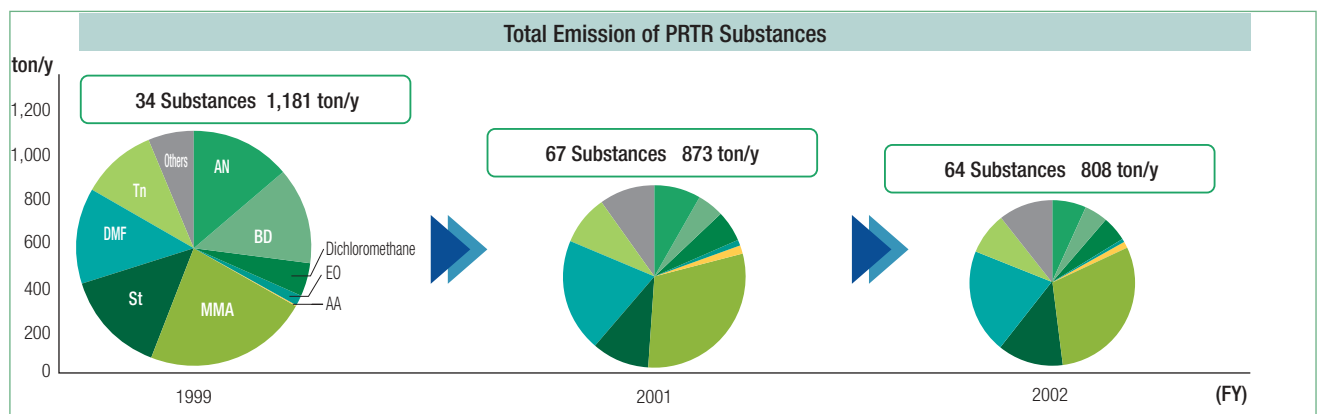
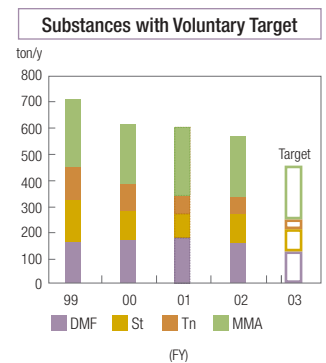
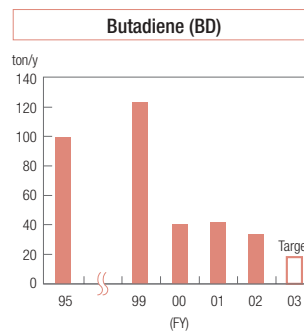
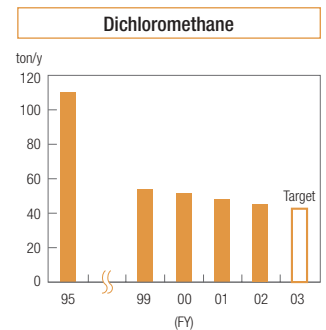
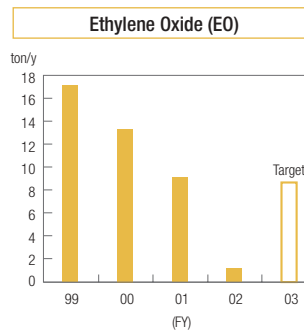
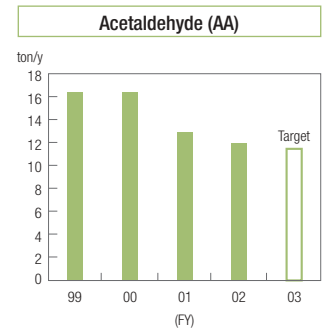
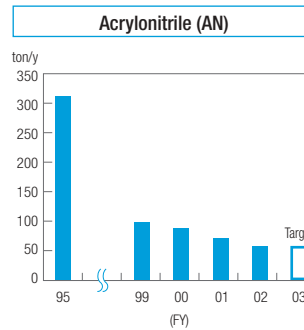
Following our First Reduction Action Plan from fiscal 1997 to fiscal 1999, which targeted acrylonitrile, butadiene, and dichloromethane using fiscal 1995 as the base year, we are currently implementing our Second Reduction Action Plan, which spans fiscal 2001 to fiscal 2003, with ethylene oxide and acetaldehyde added to the target scope for a total of five substances, using fiscal 1999 as the base year. In fiscal 2002, we succeeded in reducing emissions of these substances by 53% of those for the base year.

Activities to reduce voluntary elimination of substances

Of the chemical substances handled by Mitsubishi Rayon that are designated by the PRTR Law, substances that are emitted by the Company in significant volumes include methyl methacrylate (MMA), toluene (Tn), styrene (St), and dimethylformamide (DMF). We are currently working to reduce emissions of these substances by the end of fiscal 2003 using emission volumes from the base year, fiscal 1999. In fiscal 2002, we succeeded in reducing emissions of these substances by 19% of those for the base year.

In the months and years ahead, we will continue to set specific quantitative targets and persist in our efforts to reduce chemical substance emissions.

A total of 18 PRTR Law designated substances are handled by Mitsubishi Rayon's off-premise subsidiaries with an aggregate emission volume of 26 tons. (The graphs below represent data from the parent company only.)



*1 PRTR: Pollutant Release & Transfer Register

*2 PRTR Law: Law for promoting the assessment of volumes of emissions to the environment of specific chemical substances and improvement of their management

■ Reducing, SO_x, NO_x, Dust, and Other Pollutants

• Sulfur oxides (SO_x)

We are working to restrict SO_x emissions through such measures as the operation of exhaust gas desulfurization equipment for power station boilers and the use of low-sulfur fuels.

• Nitrogen oxides (NO_x)

We are working to restrict NO_x emissions through such measures as the use of low-NO_x burners and controlled combustion.

• Dust and other pollutants

To curb such emissions as dust, dioxins, and foul odors, we installed state-of-the-art incinerators at our Otake Production Center in fiscal 1999 and at our Toyohashi Production Center in fiscal 2000. At the same time, we removed incinerators that were not able to conform to emission reduction objectives (removed from our Yokohama Production Center in March 2000 and our Toyohashi and Toyama production centers in November 2002).

■ Reducing Water Pollutants

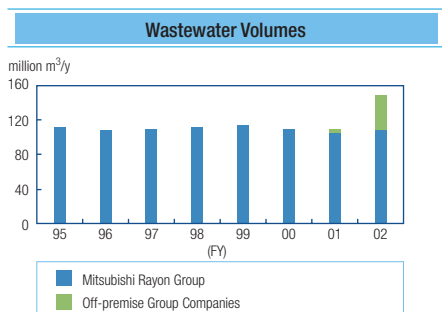
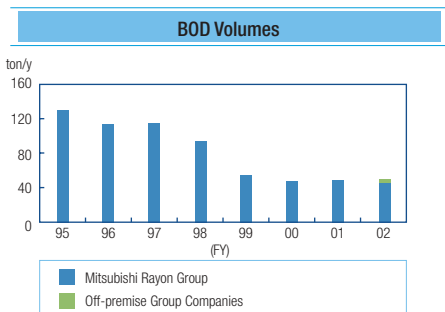
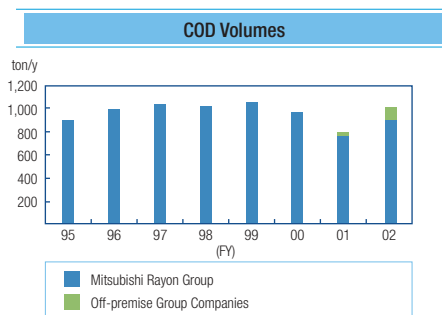
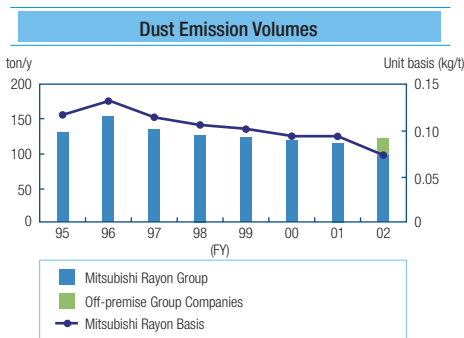
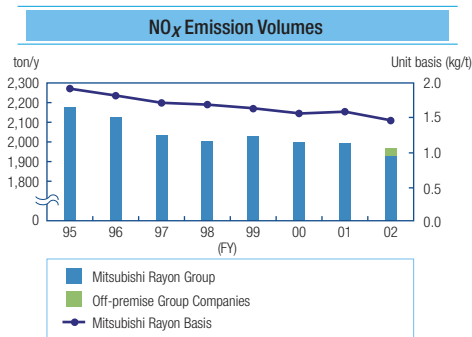
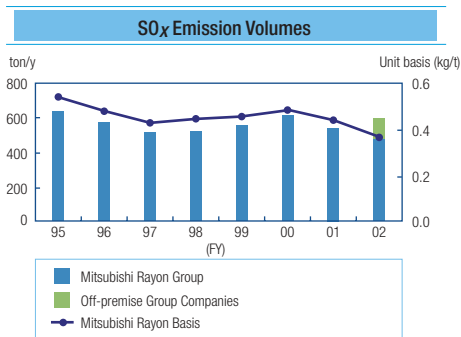
Wastewater emitted during manufacturing processes that contains pollutants is decontaminated using such treatment as activated sludge processing and chemical precipitation, and then is released to public waters. Water, such as that from cooling drains, that does not contain pollutants is recirculated and reused.

• Chemical oxygen demand (COD)

As part of our efforts to reduce COD volumes, in fiscal 2000, we expanded the wastewater treatment facilities of our Otake Production Center. We conjecture that the primary causes of the increase in COD volume compared with the previous fiscal year were fluctuation in the nature of pollutant content due to changes to the kinds of products produced and fluctuation in the volume of pollutant content as a result of changes in production volume. We will optimize the operation of our wastewater treatment facilities and continue to work to reduce COD volumes through improved management.

• Biochemical oxygen demand (BOD)

We are optimizing the operation of our wastewater treatment facilities and implementing continual measures to improve management.



4 Logistics and the Environment

■ Reducing Carbon Dioxide Emissions through Promotion of Modal Shifts

Mitsubishi Rayon is promoting shifts in modes of transportation so as to decrease energy consumption, exhaust emissions, and other such environmental burdens on the environment resulting from the transport of products.

In January 2003, Mitsubishi Rayon began calculating the volume of carbon dioxide emitted during the transport of products sold by the Company and a number of its subsidiaries. These calculations are derived from the method of transportation and distance from each production center to either the customer or a sales branch and are based on the unit of carbon dioxide emission from freight transport (kg-CO₂/t•km) announced by the Ministry of the Environment in 2001. These calculations have enabled us to quantitatively assess the effectiveness of our modal shifts. Total carbon dioxide emission volume from January to March 2003 was 12,600 metric tons.

• Some examples of modal shifts

- (1) Switch from use of trucks to railway ISO cargo containers.
- (2) Reduction of domestic transportation distances through expansion of direct exports from ports that are in close proximity to production centers.



Direct Exports from Toyama Port

5 Green Procurement

To increase environmental awareness on the part of Mitsubishi Rayon Group employees and contribute to the reduction of environmental impact, in November 2001, the Company formulated "green procurement guidelines" to be followed by the entire Group, and it is currently conducting green procurement even of such common items as stationery.

Criteria of green procurement guidelines

- (1) ECO-MARK-certified products
- (2) Goods listed on the environmental database for product selection by the Green Procurement Network
- (3) Goods meeting the requirements of the Basic Policy for the Promotion of Procurement of Eco-Friendly Goods and Services (revised annually), which is under the Law Concerning the Promotion of the Procurement of Eco-Friendly Goods and Services by the State and other entities (Law No. 100, year 2000)

Green Procurement (including corporate headquarters)

Category	Item	Green purchasing (%)* (As of January 2002)	Green purchasing (%) (As of January 2003)
Paper	Copying Paper	86	91
	Toilet paper	100	100
Stationery	Notebooks	91	93
	Ball-point pen	46	56
	Files	88	69
Electronic Equipment	Personal computers	98	100
	Printers	98	97
Other	Fluorescent lighting	28	31

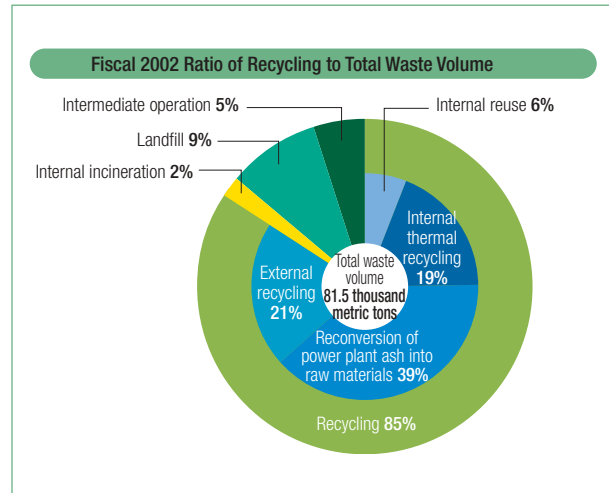
* Green purchasing %: the ratio of the above items that were purchased in accordance with Mitsubishi Rayon's selection guidelines (copier and other papers have been translated to A4 size for the purpose of calculation).

6 Recycling Activities

■ Efficient Use of Resources

Mitsubishi Rayon's ratio of recycling to its total waste volume in fiscal 2002 was 85%. As illustrated in the pie chart on the right, the breakdown of primary recycling initiatives for fiscal 2002 is as follows:

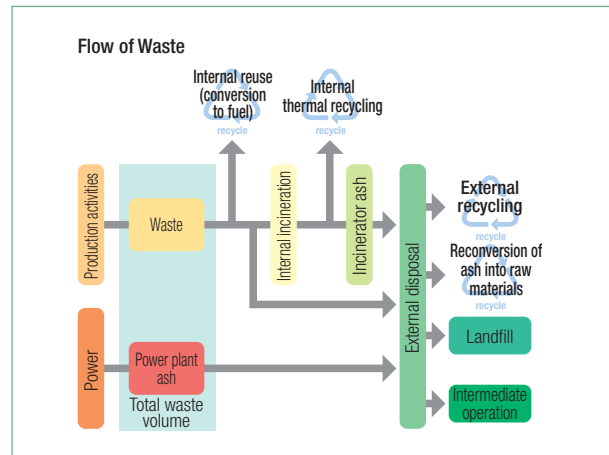
- (1) Increase rate of conversion of power plant ash to cement raw material
- (2) Reuse of waste methanol as power station fuel
- (3) Reversion to monomers from acrylic sheets wasted through production processes
- (4) External reuse of scrap plastic



■ Reduction and Recycling of Packaging Materials

With the cooperation of our customers, we have eliminated excessive packaging, converted to the use of returnable containers, and are working to enlarge product packing units. The following are some specific examples of our efforts:

- (1) Reuse of 200-liter drums
- (2) Conversion to returnable containers (1m³ or 2m³)
- (3) Enlarging product packaging units (from 300kg to 600kg)
- (4) Conversion from paper bags to recovered flexible containers (25kg paper bags to 1,000kg recovered flexible containers)



Returnable Containers for Plastic Products



Enlarged Packing for Acetate Tow Products

1 Ensuring Product Safety

Product Safety Initiatives

To provide products that our customers will feel secure about using, as illustrated in the flow chart below, we bring products to market only after the evaluation of product safety and deliberation of evaluation results based on our Product Safety Regulations, which we formulated in July 1995.

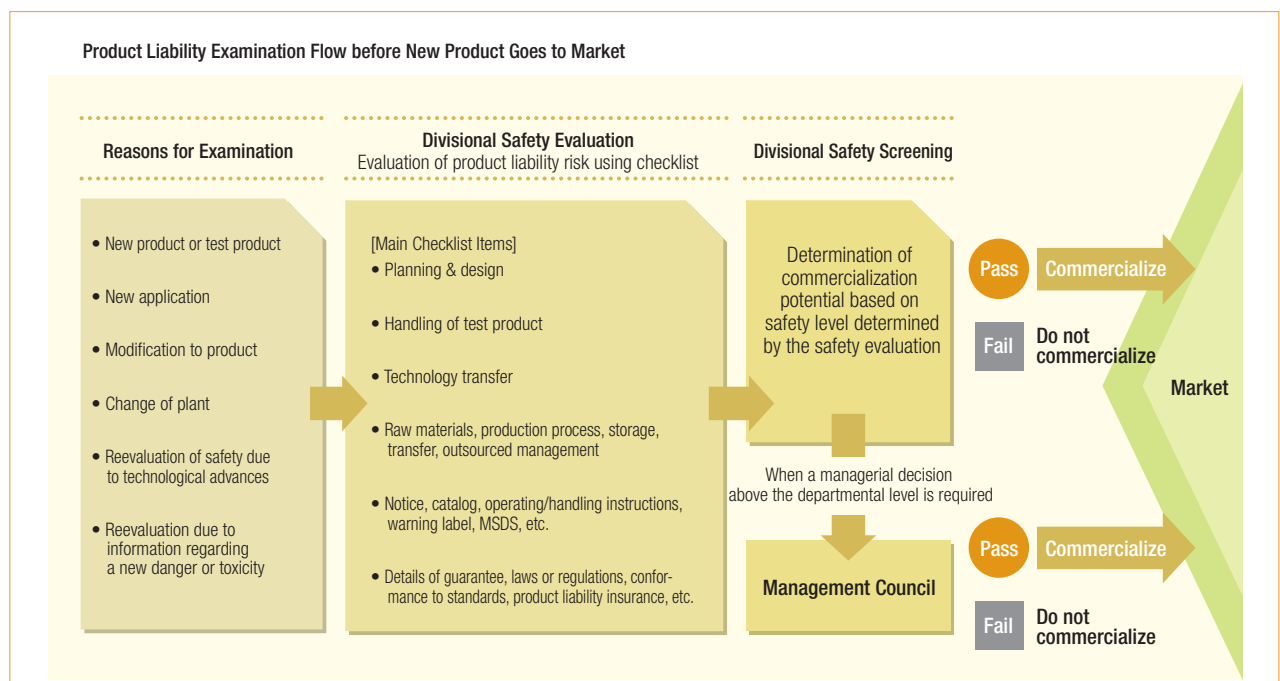
Only when safety and stable supply have been ensured does a product become one that our customers will feel secure about using. In the management of production, Mitsubishi Rayon operates ISO 9001 as a means to ensuring stable production. This level of management is undertaken by all Group companies.

Product Liability and Quality Audits

As part of its measures for quality assurance and product liability activities, each year Mitsubishi Rayon selects one sample division from each of its businesses for auditing. The principal content of these audit activities includes the state of production quality evaluation and screening, responsiveness to customers (information disclosure, response to claims, etc.), and clarification of authority.

Control of Commissioned Manufacturers

To ensure that our customers can rest assured in the use of all of our products, our quality audits extend to commissioned external manufacturers as well, and we work to ascertain the state of quality assurance as well as provide guidance for improvement.



■ MSDS

In the sale and delivery of chemical products, Mitsubishi Rayon provides information on the properties and proper handling of the products in the form of a material safety data sheet (MSDS).

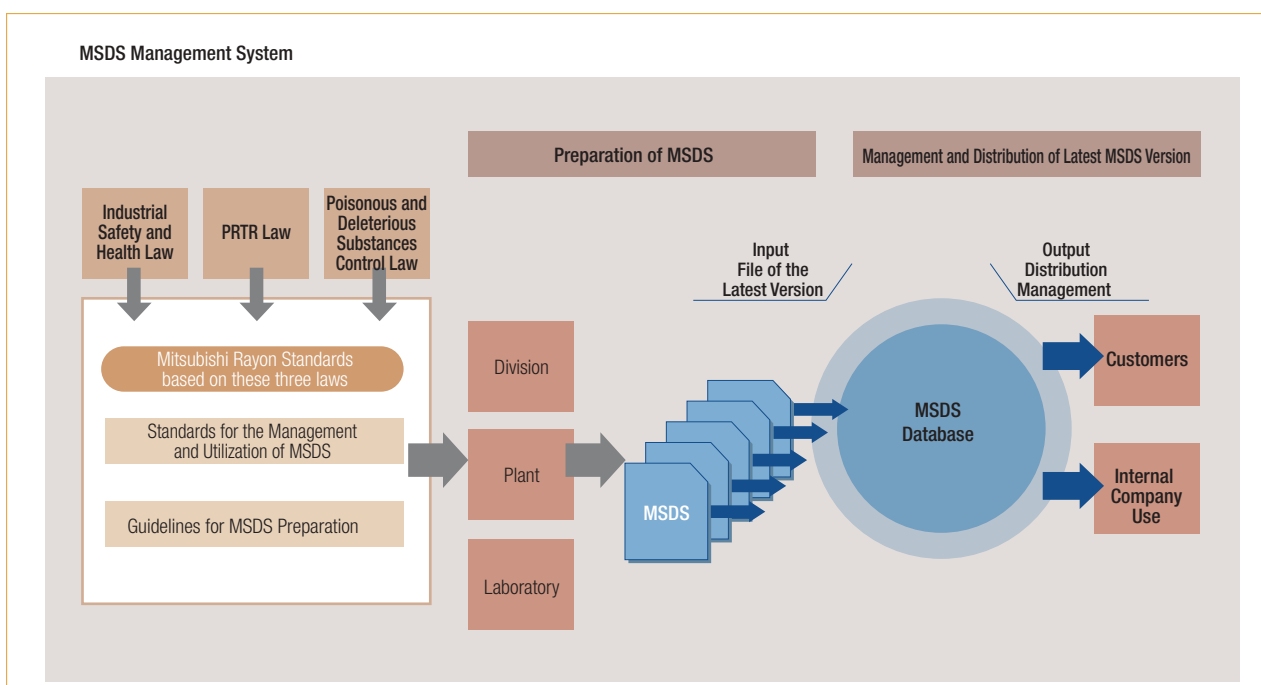
The provision of MSDS is required by the Industrial Safety and Health Law, the PRTR Law, and the Poisonous and Deleterious Substances Control Law. Although we drew up our own in-house MSDS standards in 1996, we further formulated our Guidelines for MSDS Preparation in 2001 as an independent standard based on legal requirements and the guidance of Japanese Industrial Standard Z7250 and the Japan Chemical Industry Association. We revised the guidelines in 2002. Furthermore, measures to keep our MSDSs up to date and keep track of their distribution are prescribed by our MSDS Maintenance, Administration, and Usage Standards and managed with the use of databases.

■ HPV Initiative*1

The ICCA*2 is currently working to collect safety data and make hazard assessments for 1,000 existing chemical substances. This collection and assessment project is conducted through international corporate cooperation, primarily among chemical product manufacturers. Mitsubishi Rayon has joined each consortium for the 21 chemical substances under the HPV initiative.

*1 HPV Initiative: Safety evaluation of high production volume (HPV) chemicals

*2 ICCA: International Council of Chemical Associations; inaugurated in February 1990 as an international nongovernmental organization comprising chemical industry associations from countries in Europe, North America, Oceania, and others



2 Safety and Health Activities

■ Safety Initiatives

● Basic philosophy on safety initiatives

The following three fundamental principles form the pillars of the Mitsubishi Rayon Group's efforts to improve safety management.

Each and every employee will renew his or her safety awareness.

- Mitsubishi Rayon Group employees must honor their commitments.
- Mitsubishi Rayon Group employees must make safety their top priority in all their activities.
- Managers in the Mitsubishi Rayon Group must take responsibility for safety assurance.

In carrying out these three fundamental principles, Mitsubishi Rayon strives to maintain workplaces that are free of accidents and disasters and capabilities to detect in the early state and respond quickly to accidents if they do occur and minimize damage. In other words, this shows the corporate faith that maintaining workplace safety is the foundation of a company flows throughout the Mitsubishi Rayon Group.

● Occupational safety

In comparison with the frequency of days away from work due to injury of other chemical companies during fiscal 2002, Mitsubishi Rayon displayed a low rate. However, we must still make a concerted effort to achieve our goal of zero accidents and zero injuries.

As was the case in the previous fiscal year, primary causes for on-the-job accidents during fiscal 2002 were getting pinched or caught and cuts or scrapes due to contact with machinery. Potential danger factors in such cases are generally of an obvious nature. Eliminating potential dangers requires not merely the avoidance of danger that relies on individual skill but a systemized approach with the participation of all employees that removes danger by increasing common awareness of danger factors.

● Systemized injury prevention measures

In addition to reporting practices for potential accidents, activities to detect potential dangers and safety promotion activities have long been important in Mitsubishi Rayon's history, and the Company also implements systemized risk assessments with the participation of all employees, the scope of which spans from the identification of danger factors through countermeasure proposals, action plans, and the inspection of implemented measures.

Under this risk assessment system, we identify risks stemming from operations and work methods for each task, determine whether the risk is acceptable to the workers performing the task, and take such measures to make risks acceptable as eliminating or altering certain tasks and removing danger factors. We have also taken action against unacceptable risks that were discovered to lie in common everyday tasks.

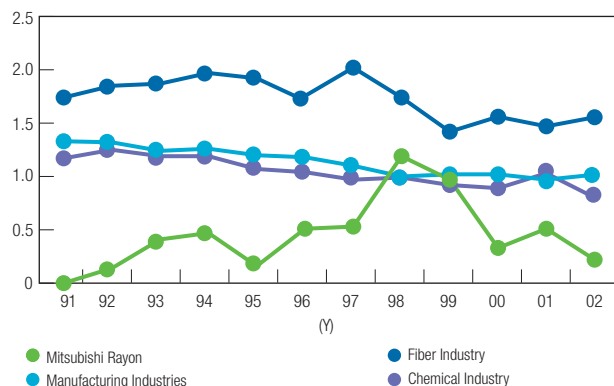
These activities also promote the on-site sharing of expertise and help foster the impart of technology and heightened safety awareness, and we are working to maximize these effects. We have also simplified the methodology of these activities for future application at our subsidiaries, some of which are already commencing trial runs.

● Disaster prevention

Fires, explosions, and chemical substance leakage have the potential for serious impact on the health and environment of communities surrounding production centers. To prevent such accidents as well as damage from earthquakes, typhoons, and other such natural calamities, we have established a system of safety evaluations to ensure the safety of newly constructed, added, upgraded, or reconstructed plants and/or equipment at every stage, from design through construction and operation, thereby securing the safety of equipment that has the potential to lead to serious accidents or disasters.

At the same time, we must be able to quickly identify and promptly as well as accurately correct accidents when they do occur, and, to this end, in addition to accident reporting and fire-fighting drills, we also conduct joint disaster prevention training with local fire departments and neighboring companies.

Frequency of days away from work due to injury



■ Occupational Health

Employees are a crucial asset to any company, and consideration must be taken to foster good mental and physical health.

To promote the upkeep of health, both mental and physical, Mitsubishi Rayon works to create a comfortable workplace. We undertake working environment management to monitor workplace environments (temperature, humidity, vibration, noise, concentration of chemical substances, etc.) and maintain proper conditions. We also undertake task management to prevent overburdening of our workers as well as health control, including regular medical examinations and mental health care.

• Mental health

Given the various changes to the structure of industry in today's challenging economic environment, workers are increasingly suffering from anxiety, worry, and stress related to their jobs and their workplace and lifestyles.

As part of its response to this issue, Mitsubishi Rayon has commenced priority education in fiscal 2003 for managers, who spearhead the implementation of mental health initiatives in the workplace. This education program is based on the Mitsubishi Rayon Mental Health Care Guideline, which we instituted in fiscal 2002.

• Physical health

Mitsubishi Rayon conducts a wide variety of fine-tuned management initiatives to care for the physical health of its employees. We follow up on the results of annual medical examinations to help prevent lifestyle-related diseases and otherwise check up on employee health and provide guidance for improvement. We also work to prevent occupation-related diseases by monitoring working environments and checking on and improving them through such measures as having industrial physicians conduct inspections and having leaders of each workplace and managers pay more attention to occupational health.

3 Safe Logistics

Logistics accidents affect the residents and environment of areas surrounding the accident site. Mitsubishi Rayon takes extra care to prevent fire outbreaks and the leakage of chemical substances during transport since the potential impact of these types of accidents is particularly serious.

To prevent the occurrence of serious accidents, Mitsubishi Rayon holds regularly scheduled working sessions with shipping agents and implements such programs as research into accident case studies, traffic safety promotion, and education on the physical properties of transported substances. When accidents do occur, we make sure that swift and appropriate action is taken by requiring all drivers to carry yellow cards, which list the proper procedures in the event of an accident (what action should be taken first, what methods should be employed, and to whom the accident should be reported).



Regular Conferences with Shipping Agents

1 Communication inside the Company

■ Employee Relations

● Education on safety and the environment

Mitsubishi Rayon's education programs on safety and the environment are composed primarily of the following courses.

- (1) Technical training implemented at each workplace
- (2) Different courses targeting different job classes to impart information regarding laws and regulations as well as technical knowledge
- (3) Skill certification and external courses

While the results of such education will not emerge immediately, raising each and every employee's awareness of safety and the environment is essential to implement the highest possible quality of safety and environmental management, and we will continue to invest time in conducting these educational programs.

● Safety awards system

Mitsubishi Rayon implements a system of awards for safety, production, and development activities applicable to all workplaces and subsidiaries. This system awards workplaces with outstanding safety records, such as those that continually maintain zero accident, zero injury status or that implement other exemplary safety programs, and includes such awards as the President's Award, Group General Manager's Awards, and General Manager's Award depending on activity content. Our awards system serves as a stimulus for safety activities as a means to affirm the safety of the workplace.

Fiscal 2002's award recipients included a workplace that recorded 35 consecutive years, or 1.4 million total hours, of zero accident, zero

injury status and a production center whose comprehensive safety programs resulted in 3 million total hours of zero accidents and zero injuries.

The safety activities of awarded workplaces are featured in our in-house magazine for the reference of every workplace.

■ Internal PR Activities

Mitsubishi Rayon's in-house magazine features a section devoted to safety and the environment. At the beginning of each new year, annual safety and environmental policies and objectives are explained and issued to all employees. Subsequent steps include features on the safety programs of individual workplaces as well as information on revisions to safety and environmental legislation and other current trends.

As a means of conveying information to our employees, we will continue to provide a variety of information on safety and the environment and work to see that safety and environmental issues are easily understood and familiar parts of everyday life.



President's Award Ceremony, Safety, Production, and Development Activity



Internal PR Activities

2 Our Relationship with Our Customers

The management philosophy of the Mitsubishi Rayon Group is to contribute to a more comfortable future for humanity through the pursuit of “Best Quality,” and we provide outstanding products and services in terms both of safety and quality.

■ Establishment of Special Open Laboratory for DNA Chips

Mitsubishi Rayon’s GENOPAL fiber DNA chip is manufactured using revolutionary manufacturing methods, combining its outstanding technologies in such fields as fibers, resins and plastics, biotechnology, and composite materials and delivers high reliability at a low cost. In addition to its use in genetic analysis and new drug development, GENOPAL is also expected to find wide application in water and microorganism testing and other such environmental fields. As a forum for information exchange and to encourage usage by the widest possible customer range, in April 2001, we established a special open laboratory for DNA chips within our Yokohama Research Laboratories. By operating this laboratory, we will work to create good relations with our customers and respond swiftly and accurately to the needs of society.

■ Technical Guidance for External Downstream Companies in Fiber Business

In its fibers business, Mitsubishi Rayon provides comprehensive technical services to downstream companies to ensure maximum utilization of the unique properties of fiber materials. Our services span from the introduction of new materials through thorough quality assurance technology, including the publication of technical manuals, dispatch of technicians, and maintenance of quality assurance databases. As part of our efforts to promote the reduction of environmental impact and improved safety, we also provide assistance with PRTR submission and supply MSDSs.

■ CLEANSUI Division Customer Interface

Mitsubishi Rayon’s CLEANSUI Division markets CLEANSUI home water purifiers, which provide high-quality water for household use. The division is one of the few that handles household products, and we have established a toll-free telephone service center to collect opinions directly from our customers as well as respond swiftly to claims. We have also created a membership organization called the CLEANSUI Club, which provides services via club newsletters and over the Internet. By implementing such services, we are working to reflect customer opinion in the development and improvement of our products.



Special Open Laboratory for DNA Chips



Environmental Education for Elementary School Students
(Otake Production Center)



Plant Tour for Local Elementary School PTA
(Toyama Production Center)



Responsible Care Dialogue Meeting in the Toyama-Takaoka District
(Toyama Production Center)

3 Our Relationship with Regional Communities

Plant tours

Each of Mitsubishi Rayon's production centers proactively conducts tours for local residents. While observing the various facilities of our production centers, we provide explanations of our environmental conservation programs and work to deepen understanding of our social contributions. We conduct plant tours for JICA (Japan International Cooperation Agency) trainees from developing nations at the Otake Production Center, thus contributing to international cooperation.

Community interaction

- Responsible Care dialogue meetings in fiscal 2002 were held in the Aichi and Toyama-Takaoka districts and were attended by both central and local governments. At the Toyama-Takaoka meeting, Mitsubishi Rayon reported on its Responsible Care activities as a member of the local companies. Participants expressed their high expectations for Responsible Care programs.
- We proactively engaged in information exchanges with our local government and neighboring companies, and the Otake Production Center sponsored the Otake District Gathering for Friendly Discussion of the Environment.

Volunteer activities

Each of Mitsubishi Rayon's production centers fully cooperates in the beautification of their surrounding communities and participates in zero litter campaigns and other such clean-up work. The Toyohashi Production Center provides PC tutelage to local elementary schools and undertakes such activities as tree planting as part of the Asakura River Living Water Forum. We highly value interaction with the residents of surrounding communities and engage in a wide variety of volunteer activities.

Disaster prevention drills

Mitsubishi Rayon cooperates with governments and local residents in conducting disaster prevention drills of varying scale. We work to prepare for the occurrence of disasters by anticipating a numerous contingencies, not merely fires and explosions but also earthquakes and leakage.



PC Tutelage at Local Elementary Schools (Toyohashi Production Center)



Tree Planting at the Asakura River Living Water Forum (Toyohashi Production Center)



Participation in the City of Toyama's Annual Fire Brigade Review (Toyama Production Center)



Earthquake Drills (Toyohashi Production Center)

Item	Content		Aggregate no. of events to date/ no. of participants
Tour groups	Students	Plant tours, explanation of environmental conservation programs, etc.	10/186
	Local residents		6/181
	Other		1/14
Community interaction	Local residents	Participating in Responsible Care dialogue meetings and community gatherings for friendly discussion	3
	Companies and governments	Information exchange between corporations and public administration	8
Volunteer activities	Clean-ups	Campaigns to clean up areas surrounding production centers and beautify rivers	6/approx. 340
	Tree planting	River walk tree-planting campaigns	1/approx. 70
	Other	PC tutelage and blood donation drives	15/approx. 250
Disaster prevention drills	Fires and explosions	Fire-fighting drills, etc.	6/approx. 220
	Earthquakes	Experience of quake by mobile earthquake simulator	1/approx. 100
	Leakage	Sea drills in anticipation of crude petroleum spillage	1/5

Chapter 05

Technologies and Products That Contribute to Safety and Environmental Protection

	Product name		Contribution*	Special features
Chemicals and plastics	Biodegradable chelating agents		1	These chelating agents, which are widely used in detergent and food additives, are biodegradable and leave no residual buildup in the environment. We are also developing a process based on enzymatic methods.
	Acrylic powder for plastisol products	DIANAL LP	1	This product is an alternative to PVC sols for coatings (undercoatings and body sealants). In addition to phasing out chloride, it also enables low deposition temperatures of 30–40°C.
	Tin-free ship bottom antifouling resin	DIANAL LR	1	This resin is a new ship bottom antifouling acrylic resin that uses no organic tin, a substance that is now subject to worldwide restrictions.
	Non-toluene-based paint resin	DIANAL LR	1	This is an acrylic paint and ink resin for interior finishing construction materials that contains no toluene.
	Acrylic films	ACRYPLEN	1	This film is an alternative to organic solvent-based paints and contributes to the prevention of air pollution by organic gases.
	Methacrylic resin sheets	ACRYLITE	2	ACRYLITE, which features outstanding transparency and durability, is a lightweight alternative to glass.
	Resin additives	METBLEN A-3000	2	An additive for use in resin forming, METBLEN A-3000 simplifies processes in the manufacture of wood particle/resin blend materials that use sawmill wood meal scrap from and improves the look of formed products.
Fibers	Polypropylene fibers	PYLEN	2	Polypropylene fiber is lightweight, durable, and highly resistant to soil. PYLEN, Mitsubishi Rayon's polypropylene fiber, is also easily recyclable and has enabled a new recycling system for chairs.
	Non-halogen-based polypropylene fiber with superior weatherability and flame-retardant properties	VALZER P-II	1	VALZER P-II is a fiber product with superior weatherability and flame-retardant properties that is non-halogen-based, making it especially well suited to recycling. VALZER P-II is finding increasingly wide application as a material for such items as netting and fabric for both indoor and outdoor use.
	Recycled polyester fibers	ECORNA-Y	2	Made from 100% recycled PET bottles, the Y-shaped cross-section of ECORNA-Y enables the material to absorb perspiration and dry quickly. It has also achieved ECO-MARK certification.
	Environment-friendly tile carpet	CONSENSUS	1	CONSENSUS is an environment-friendly tile carpet product commercialized by Mitsubishi Rayon Carpet Co., Ltd. Its backing material contains no PVC resins.
Specialty products and engineering, others	Composite roll		2	Composite roll made of carbon fiber could reduce machine total weight and save electrical energy because of higher stiffness and lower moment of inertia than that of aluminum
	Carbon fiber	Pyrofil CF tow	2	CNG tanks made of high-performance carbon fiber contribute to low-pollution next-generation vehicles.
	Non-organic solvent, cold cure carbon fiber prepreg	Pyrofil Prepreg #830	2	This prepreg can be formed at a low temperature (80°C) and contributes to energy saving and conserving resources at the time of processing with a reduction of environmental load.
	GDL (Gas Diffusion Layer) for fuel cell		2	This GDL made of carbon fiber was developed for fuel cells, which are expected to be a future source of clean energy for vehicle or home cogeneration power systems.
	Hollow fiber membrane for water treatment		3	Mitsubishi Rayon is leading the world in its development of a polyethylene hollow microporous fiber membrane. This unique environment-friendly material is used in the purification of drinking water, efficient wastewater treatment and recycling, and efficient water filtration for industrial use.
	Household water purifiers	CLEANSUI	3	Using a combination of a hollow fiber membrane and activated carbon filtration materials, CLEANSUI household water purifiers remove such impurities as microorganisms, rust, and sediment as well as odors from tap water. The lineup also features units that efficiently remove lead and trihalomethane.
	Wastewater treatment membrane unit	STERAPORE SUN	3	Whereas impurities have traditionally been removed from wastewater by using coagulants, STERAPORE SUN separates and removes such contents with the use of a hollow fiber membrane, thereby providing higher quality of water and reducing accumulation of sludge in comparison with methods that use coagulants.

*Note: 1. Products that are alternatives to substances that impact the environment
 2. Products that are used as components of environment-friendly products
 3. Products that provide environmental improvement effects

