



# Responsible

Putting chemistry to work for our future

# Care 2001

Report on Responsible Care



**Basic Policy**

As a member of the Japan Responsible Care Council, Tokuyama Corporation carries out Responsible Care activities that protect the environment and preserve safety and health throughout the entire chemical cycle from development to manufacturing, distribution, use, final consumption and disposal. Our social mission is to aggressively tackle and solve environmental issues in particular, which will in turn, drive sustainable corporate development. Based on this recognition, we are promoting environmental management, which is a management method that emphasizes the environment, in all of our business activities, including development, manufacturing and sales.

**Action Objectives**

1. To promote environmental protection.
  - To employ environmental management systems in accordance with ISO14001 and reduce environmental impact.
2. To faithfully observe laws and regulations.
  - To faithfully observe international rules, domestic laws and regulations, and industry standards.
  - To thoroughly practice internal export control rules.
3. To promote energy conservation and curb global warming.
  - To achieve the lowest unit energy consumption in the industry for all of our products.
  - To reduce 1990 unit energy consumption by 15% by 2005.
4. To promote resource recycling and work toward reduction and proper management of waste materials.
  - To promote material recycling and thermal recycling of resources.
  - To promote office paper reduction.
  - To increase effective waste utilization ratio to 91% by 2005.
5. To promote safety, disaster prevention, and workers' health and safety.
  - To aim for zero accidents and disasters based on the principle of personal safety and personal responsibility.
  - To ensure a comfortable work environment and preserve safety and health.
6. To ensure strict product safety standards.
  - To provide products that have little impact on the environment and can be used safely.
  - To provide appropriate information on how to use products properly, precautions, etc.
7. To deepen our trusting relationship with society.
  - To disclose information regarding Tokuyama's activities in the areas of safety measurements.
  - To actively carry out dialogue with local communities.

Responsible Care (RC) is a self-management activity to implement and improve measures concerning health and safety and the environment. It is an activity of a corporation producing or handling chemical substance that pledges in its management policy to protect the "environment" and to ensure health and safety throughout the entire chemical substance life cycle, from development, manufacturing, distribution, use, and final consumption, to disposal based on the principle of self-determination and self-responsibility.

**Contents**

- 2 Responsible Care Promotion Organization
- 4 Recent Responsible Care Activities
- 6 Environmental Accounting
- 7 Preventing Global Warming
- 8 Toward the Reduction of Environmental Impact
- 10 Recycling Waste
- 13 Safety Measures
- 14 Total Safety Management of Chemical Products
- 16 Environmental Activities with the Community



*Passing a better environment to the next generations is Tokuyama's important business concern. We are willing to implement Responsible Care (RC) activities and make great efforts to solve a variety of issues. Now, let me introduce what we have done and what we have achieved this past year.*



Companies in the chemical industry have long been providing essential products for sustaining and enriching our lives. On the other hand, consideration to prevent the occurrence of environmental and human health problems over the entire chemical substance life cycle, from distribution to use, recovery and disposal, is imperative to our business activities.

**Promoting environmental management to establish a corporate presence in the recycle-oriented society to come**

From this viewpoint, Tokuyama has participated in the Japan Responsible Care Council since its inauguration in 1995. We pledged to adopt Responsible Care, and have initiated aggressive Responsible Care activities that extend beyond conventional environmental and health issues.

The concept of "Environmental Management" that emphasizes environmental protection is at the core of the managerial strategies in our mid-term plan, which began in FY1999. We regard restructuring our business approach, which encompasses all of our business activities, including research and development, the manufacturing process, and sales, to protect the environment as our social mission, which in turn will enhance our company's value and drive our continuous development.

The White Paper on the Environment of FY2000 says that the 21st century is "the century of the environment," which makes it necessary to establish a sustainable and recycle-oriented society. The Basic Law for Promotion of the Creation of a Recycle-Oriented Society, the Law for Promotion of the Effective Utilization of Resources, the Containers and Packaging Recycling Law, the Home Appliance Recycling Law, and the Green Purchasing Law have already been enacted and put into force. In addition, the Government of Japan will put the Food Waste Recycling Law and the Construction Waste Recycling Law into effect.

Japan is in the process of making a swift transition to a recycling-oriented society. At Tokuyama, our goal is to play a vital role in such a society.

Toward this goal, our corporation established a Recycling and Environmental Business Department in FY2000. Our corporation has been accepting waste and has utilized it for cement manufacturing. In the future, we aim to make the cement business a core entity to recycle a large amount of waste, to play a vital role in recycle-oriented society, and to establish a strong presence as part of this society.

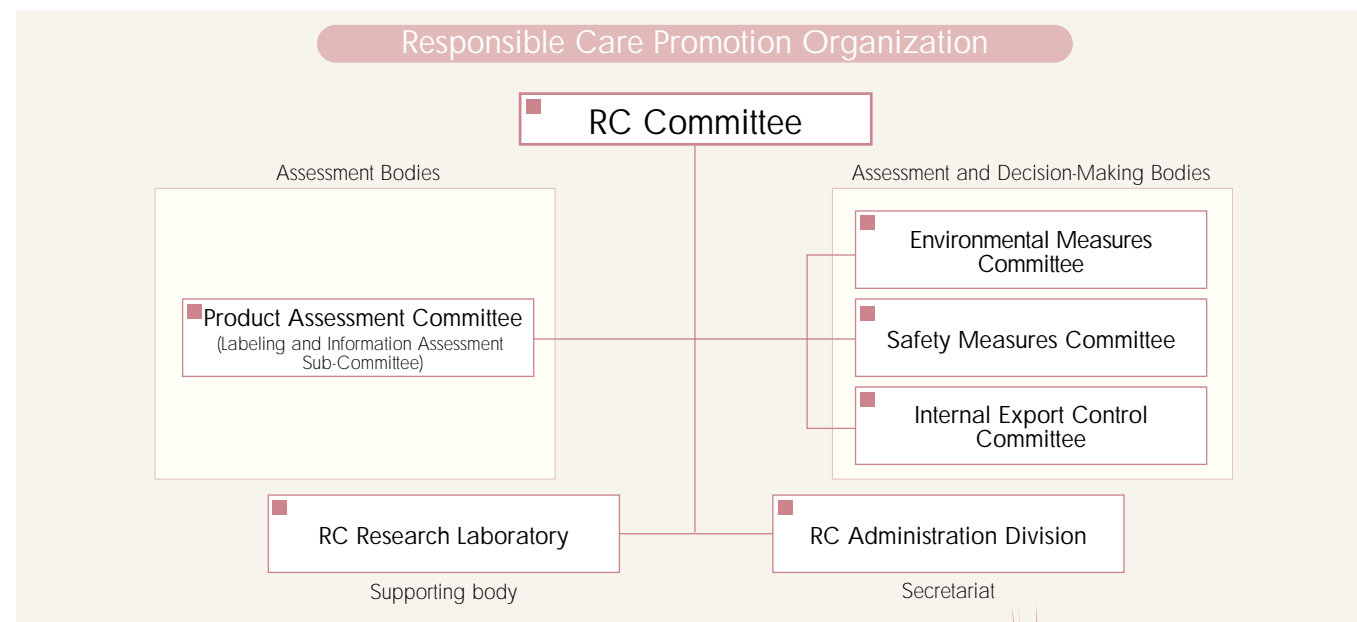
We regard that it is important to actively disclose information on Responsible Care and our measures toward environmental protection. With each year, we intend to make the contents of such information fuller and more detailed, reflecting both our deepening commitment to environmental issues and our growing expertise. We hope that your interest in, and understanding of our programs will increase with this report, and we welcome your opinions and comments.

Yuichi Miura President  
September 1, 2001

# Responsible Care Promotion Organization

*Tokuyama has established the "Environmental Measures Committee" to integrate and manage environmental measures throughout the corporation to have a system in place to promote our activities more effectively.*

*The RC Committee, consisting of our top managerial executives, is the highest decision-making body for RC activities in our corporation. This committee not only decides policies for our entire corporation, but also establishes measures on safety, environmental protection, and quality of products. In addition, we have established various committees on safety, environment, product safety, and other topics as sub-organizations, and each committee discusses concrete plans for activities, makes reports on implemented plans, assesses products, and executes other activities.*

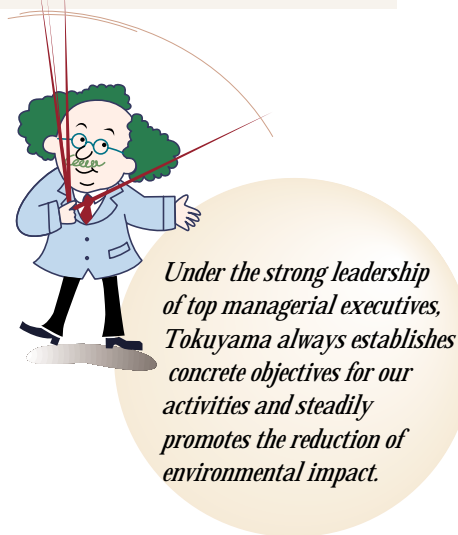


## Operation of ISO 14001 Environmental Management Systems

We obtained the ISO 14001 environmental management systems certificate for our Tokuyama factory and Kashima factory. Each place of business has established its own environmental policy and environmental objectives, and has made efforts to reduce environmental impact, to save energy, to diminish waste, and to implement resource recycling and other activities. The Tokuyama factory incorporates all the related corporations within the factory into the environmental management system, and implements comprehensive environmental management throughout the factory.

## Operation of ISO 9000s Quality Management System

We obtained the ISO 9001 quality management systems certificate for our Tokuyama factory and Kashima factory. We have made efforts to secure the quality and safety of products that our customers demand by operating the quality management systems.



## Objectives for Reducing Environmental Impact and Its Assessment in FY2000

As for activities geared toward reducing environmental impact and their achievements, please see below.

In order to grasp and manage our accomplishments in detail, each place of business reviews its target for reducing environmental impact. In addition, both main and branch offices establish objectives for saving energy, separating and collecting waste, implementing green procurement, and other activities. Our corporation, as a whole, has implemented these activities.

## Environmental Management Activities, FY2000

Item	Objective	Contents of Activities	Achievements of Activities
Pollution Control	Air	Reduction of SOx, NOx, and dust	We installed wet electrostatic precipitator facilities in the boiler of our own electric power station. We plan to install denitration facility in the cement calcinations furnace. Operations will begin in FY2001.
	Water	Reduction of COD	
Global Environmental Protection	Energy Saving	15 percent reduction of unit energy consumption (FY2005)	We made efforts to operate our plants more effectively. 11 percent (in comparison with FY1990)
Reduction of Waste	Recycle	91 percent increase of effective utilization of waste (FY2005)	We installed a filtration facility to separate solid material from discharged water. We are implementing a program to effectively use this solid material as cement raw material for cement manufacturing. 91 percent
PRTR	PRTR		We implemented measures to reduce the discharge of substances of PRTR. 31 percent reduction (in comparison with FY1997)
	Reduction of discharge of harmful air-polluting substances		We implemented measures to reduce the discharge of harmful air-polluting substances. 49 percent reduction (in comparison with FY1995)

# Recent RC Activities

*Tokuyama is promoting RC activities throughout the organization, and is also promoting their adoption in our affiliated companies. We also positively support the development of recycling technology and the application of such technology in our own plant.*

*Tokuyama is a member of the Japan Responsible Care Council, and acts positively in the development of RC programs. Environmental protection, in particular, we regard to be a vital managerial theme, and highlight it in our managerial strategies. In terms of environment-related technological innovation, we have developed technology that can be used to recycle polyvinyl chloride. At the cement factory, we are developing techniques for recycling waste plastic as fuel.*

### Green Procurement: Start with Office Supplies

Green procurement aims to contribute to global environmental protection by actively purchasing environment-friendly products. In the past, each section used to follow its own procedures; but now, after the establishment of the "Green Procurement Standard", the whole corporation has adopted the same policy. As a preliminary step, we have just started the green procurement of office supplies in our offices. In addition, we are striving to adopt a paperless operation and to recycle waste in the office.

### Green Products Mizutori Zosan 550 (Eco-mark approved)

The 550ml model of our Mizutori Zosan line of dehumidifiers (Mizutori Zosan 550) received the Eco-mark certification as a product made with due consideration given to the environment.

This model uses recycled resin for the main unit's plastic case, thereby contributing to resource recycling. It also differs from conventional types in its refill design, in which the desiccant and the case can be separated, thereby contributing to reduction of household trash.



Mizutori Zosan 550

### Plants for Recycling Waste Plastic into Fuel

Tokuyama has long exploited the advantage of having cement kilns in our chemical factory by reusing waste materials and byproducts as raw materials and fuel for manufacturing cement. At the first recycled waste plastic fuel plant (disposal capacity: 15,000 tons per year) completed in August 1999, we have been recycling waste plastic that had previously been disposed as waste in landfills, as raw material and fuel for cement factories. In June 2001, the second recycled fuel plant began operation, which enabled us to dispose of 45,000 tons per year, together with the first plant. We plan to expand this further in the future.



Waste Plastic-to-Fuel Recycling Plant



Waste polyvinyl chloride recycling plant

### Waste Polyvinyl Chloride Recycling Plants

From April 1998, in concert with three other organizations\*, Tokuyama initiated the development of new recycling technologies for waste polyvinyl chloride. A prototype test plant for recycling was built at the site of the Tokuyama factory in July 1999, where we implemented prototype tests on many kinds of waste polyvinyl chloride. This plant has a system in which waste polyvinyl chloride is degraded in order to reuse recovered hydrochloride in the vinyl chloride monomer manufacturing process, and to utilize the residue as raw fuel for cement kilns. We finished our prototype tests by establishing the necessary technology in FY2000, but we are continuing tests at this plant in FY2001, commissioned by the three relevant organizations, and aim for practical application of the results in the early part of the twenty-first century.

\*the Vinyl Environmental Council, the Plastic Waste Management Institute Japan, and the Japan PVC Environmental Affair Council

### Obtaining the Certificate for Safety

In September 2000, our corporation obtained the certificate for safety inspection of the polypropylene production facilities that allows us to implement our own safety inspection based on the High Pressure Gas Safety Law at the Tokuyama factory. Our safety inspection capabilities meet the standard for recognition of management for safety, facility, and operation, and is certified by the Minister of Economy, Trade and Industry. In the future, we plan to expand certified facilities gradually. In addition, in April 2001, all our privately owned electrical power facilities at the Tokuyama factory were given the certificate for the safety management inspection system that allows us to implement regular self-imposed inspections based on the Electric Utility Law.

### Implementation of Safety and Environmental Inspection of Affiliated Companies

This is the fifth year of our RC activities and we are mak-

ing efforts to expand these activities to the affiliated companies of Tokuyama. We began to implement safety and environmental inspection for the affiliated companies both at home and abroad in FY2000, and have been making efforts to strengthen our management system of safety and environmental protection further. We plan to implement safety and environmental inspections of several affiliated companies every year and expand the RC activities. Increasingly the affiliated companies have obtained ISO14001 and ISO9000s.

### Participation in "Yamaguchi Zero Emission"

Yamaguchi Prefecture promotes "Yamaguchi Zero Emission" in which people, the local government, and businesses cooperate to create a recycling society with sustainable development, utilizing technologies and foundations of basic material industries that are characteristic of Yamaguchi. Tokuyama participates in this scheme and has developed the recycling technology to utilize incinerator ash discharged from municipal garbage incineration facilities for raw materials and waste plastics disposed of by households for raw fuel for cement manufacturing. Our corporation plans to start recycling incinerator ash discharged from the garbage incineration facilities of all the municipalities in the prefecture as an eco-town business in 2002.



Safety and environmental inspection at a factory abroad

# Environmental Accounting

We have been implementing the company-wide operation of environmental accounting since FY2000, with the goal of more effective environmental investments.

Although some of our sections previously counted environmental investment and expenditures, according to the environmental accounting guidelines of the Ministry of the Environment, we have begun to implement company-wide accounting. Consequently, we could more clearly grasp our environmental investments and expenditures. In the future, we will utilize this environmental accounting system to make environmental investments more effective by continuing to assess environmental protection costs and effectiveness.

## Major Environmental Investment in FY2000

We installed a wet electrostatic precipitator in the boiler, filtration equipment to separate and collect solid material from discharged drainage water, equipment to recover waste heat from incinerators, in order to reduce environmental impacts and to save energy.

In addition, in terms of environment-related technical development, we are involved with the development of waste disposal technology and polyvinyl chloride recycling technology.

As our investment in the environment increases, the cost-benefit perspective becomes more and more important. Tokuyama has introduced an "environmental accounting" system and is making efforts to implement more effective environmental investments. In the future, we plan to examine its economic effect.



## Environmental protection costs

Category of environmental protection costs	Major contents of activities	Investment amount (unit: million yen)	Total expenditure (unit: million yen)	
Cost within business area	Pollution control	Installation of wet electrostatic precipitator and dust filters	905	3,390
	Global environmental protection	Installation of heat recovery system and improvement of cooler heat efficiency	55	6
	Resource recycling	Installation of comprehensive waste water treatment equipment (collecting solid substance)	828	1,362
Upstream/downstream cost		Container recycling	0	
Management activities cost		Installation of analysis equipment	39	307
Research and development cost		Development of polyvinyl chloride recycling and waste disposal technologies	0	255
Social activities cost		Maintenance of green areas	29	51
Environment damage cost		Management of vacant areas	0	238
<b>Total</b>			<b>1,855</b>	<b>5,610</b>

\*According to the "Guideline for Introduction of Environmental Accounting System" by the Ministry of the Environment  
 \*Applied within all of our places of business

# Preventing Global Warming

As a measure towards the prevention of global warming, Tokuyama is changing its refrigeration equipment to that which uses alternatives to chlorofluorocarbons; and we are striving to reduce energy consumption in the production process.

In particular regard to the emissions of greenhouse gases, such as chlorofluorocarbon gas and carbon dioxide gas, Tokuyama has been adapting refrigeration machines and other equipment to use alternatives to chlorofluorocarbon gas. The production of caustic soda, cement, and other materials does consume a large amount of energy, but Tokuyama is actively engaged in energy saving to improve its unit energy consumption ratio.

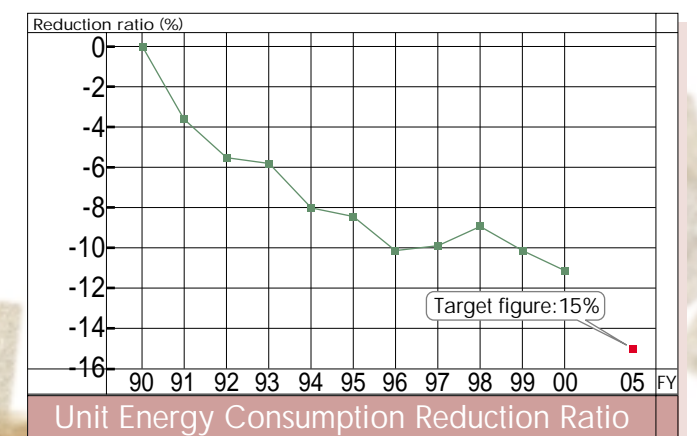
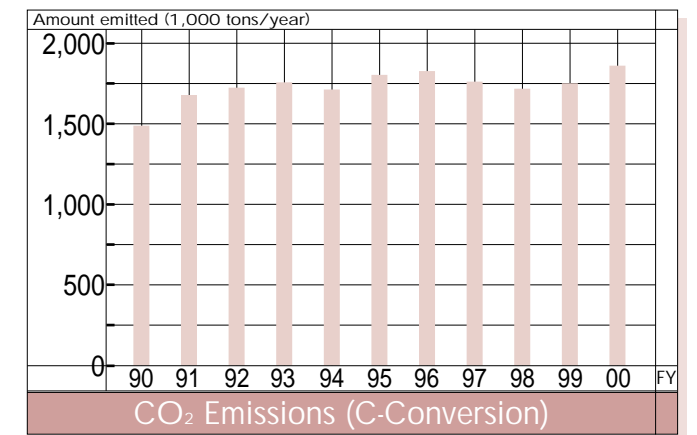
## Trends in Reduction of CO2 Emissions

CO<sub>2</sub> emissions are mainly from power plants and the cement kilns. However, despite our rising production output, Tokuyama has been keeping CO<sub>2</sub> emission levels steady for the past several years, due to our efforts to reduce unit energy consumption.

## Reducing Unit Energy Consumption

The Tokuyama factory, our main production facility, has been promoting energy conservation programs with the goal of reducing unit energy consumption to 85% of 1990 levels by 2005.

A reduction ratio of 11% was achieved in FY2000.



# Toward the Reduction of Environmental Impact

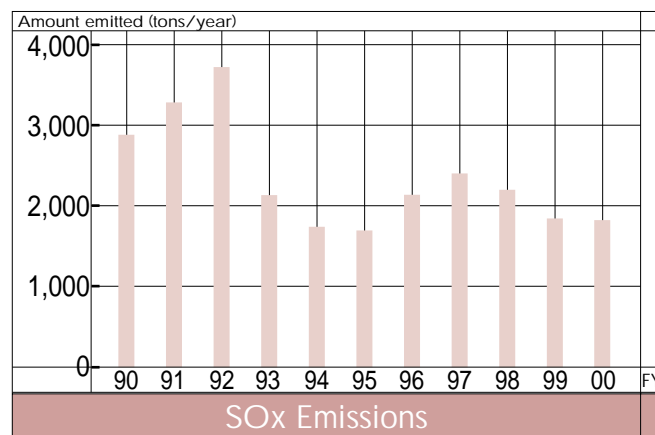
We set targets to reduce our environmental impact.

We are implementing various measures to realize this goal.

Reduction of environmental impact is one of the most important themes for our corporation. We have made efforts to reduce environmental impact for many years, primarily in electric power plants and cement plants. Recently, we have been actively engaging in the reduction of Pollutant Release and Transfer Registers (PRTR), the emission of air-polluting chemical substances, and measures against dioxins.

## 1 . SOx Emissions

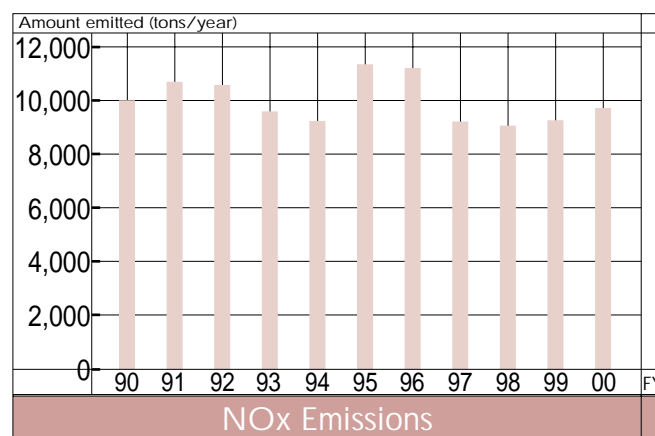
SOx is emitted from boilers, kilns and dryers when heavy oil and coal are burned. Plant boilers are the primary producers of SOx emissions. Tokuyama is working to reduce these emissions by installing exhaust gas desulfurizers at each power plant. We efficiently use gypsum produced by exhaust gas desulfurization as raw material for cement.



## 2 . NOx Emissions

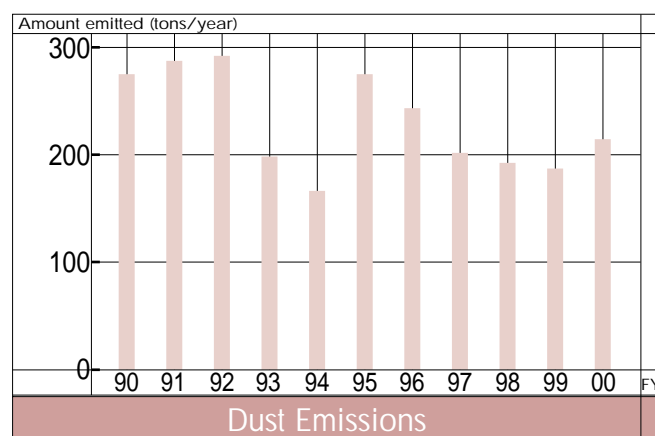
NOx is also emitted from boilers, kilns and dryers when heavy oil and coal are burned. The primary producers of NOx emissions are power plant boilers and cement kilns.

Tokuyama has constructed power plant boilers equipped with exhaust gas denitrizers. In FY2000, we installed denitrizers in the cement kilns.



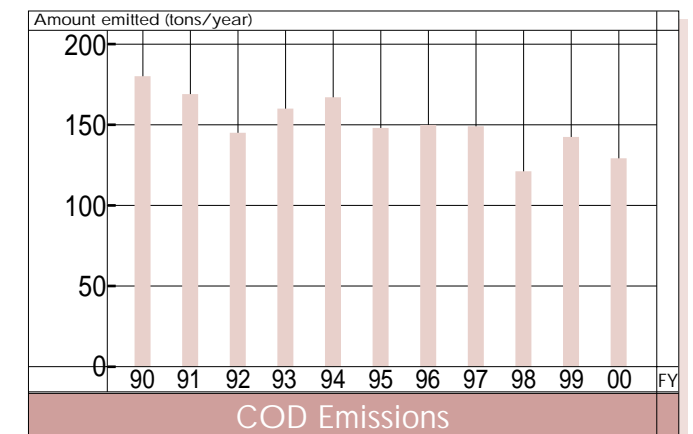
## 3 . Dust Emissions

Dust emissions result from fuel combustion at power plants and cement kilns. Tokuyama works to reduce emissions by equipping these facilities with electrostatic precipitators. In FY2000, we upgraded the electrostatic precipitator of cement plants.



## 4 . COD Emissions

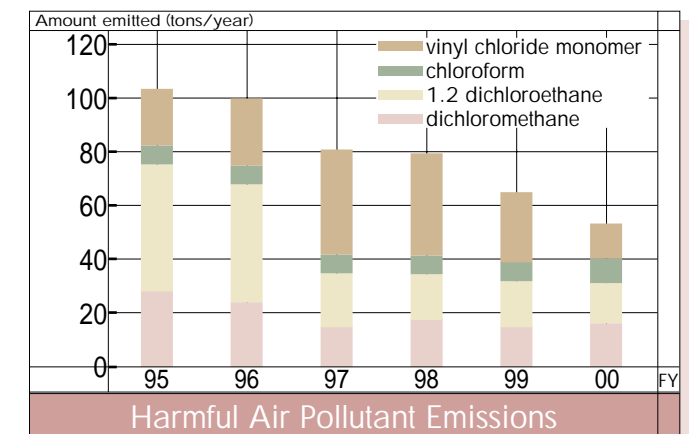
Tokuyama works to prevent the pollution of factory drainage water. Tokuyama is reducing chemical oxygen demand (COD) emissions through various measures, including activated sludge processing equipment for industrial drainage water containing organic substances.



## 5 . Programs for Reducing Harmful Air Pollutants

By the voluntary efforts to reduce emissions of 12 types of harmful air pollutants, more reductions than previously planned have been achieved, and each industrial community has decided to continue with further efforts for reduction. Tokuyama will also continue implementing the reduction measures.

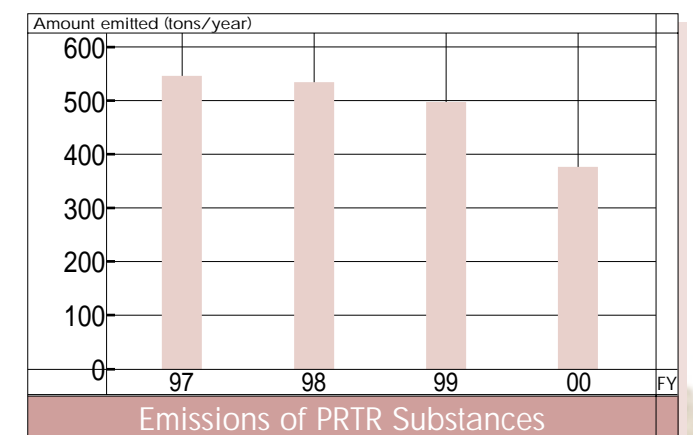
Four of these substances are produced by Tokuyama: vinyl chloride monomer, chloroform, 1,2 dichloroethane and dichloromethane.



## 6 . Pollutant Release and Transfer Registers (PRTR)

Tokuyama participates in PRTR surveys conducted by the Japan Chemical Industry Association, which is carried out annually, with making efforts to reduce PRTR substances. Since the PRTR Law came into effect in 2001, we have also included legally regulated substances in the survey.

In FY2000, the number of chemical substances for PRTR was 37.



## 7 . Dioxins Countermeasures

Since waste incinerators and other equipment are subject to dioxins emission regulations, Tokuyama monitors them with care. The densities of emission have resulted in levels below the regulated values. We will continue to measure and monitor dioxins emissions, and take measures toward their reduction.

# Recycling Waste in an Open Way

Our cement business that attempts to recycle waste materials contributes to the formation of a recycle-oriented society.

At our cement factory, we are recycling resources from many waste materials and byproducts collected both internally and externally. Cement is a substance composed of minerals such as limestone, clay, and silica. Since many of these minerals are contained in waste materials, and cement kilns are capable of sustaining intensely high temperatures between 1,000°C and 1,800°C, the non-mineral, combustible waste portions are completely incinerated. Thus, all components of waste materials can be effectively recycled into either thermal energy or raw materials for cement manufacturing. As a result, our cement factory is making an enormous contribution to the formation of a recycle-oriented society.

## Accepting Waste from Outside Sources

A Huge 1.61 Million Tons in FY2000

Since our cement business began in 1938, Tokuyama's cement plant has recycled large amounts of industrial waste and byproducts, generated both internally and externally. We receive slag from the steel industry, as well as coal ash, sludge and incinerator ash, which are used for material recycling, while used tires and waste plastics are used for thermal recycling. The total amount of recycled waste and byproducts in FY2000 was 1.85 million tons, which includes 1.61 million tons received from outside the company. We plan to continue increasing the quantity of waste we recycle.

## Accepting Various Types of Waste

Tokuyama's fuel recycling plant (with a processing capacity of 15,000 tons per year), which finely pulverizes waste plastics, began its operation in 1999 and is already in full operation. At the plant, plastics of various shapes and sizes are cut and crushed into 20-30mm blocks for incineration in cement kilns. From this point of view, we plan to further expand our acceptance of waste plastics.

## Recycling 9,000 Tons of Used Tires Annually

Tokuyama possesses facilities for receiving and loading cut tires into cement kilns, and is currently recycling at a rate of approximately 9,000 tons of used tires per year.

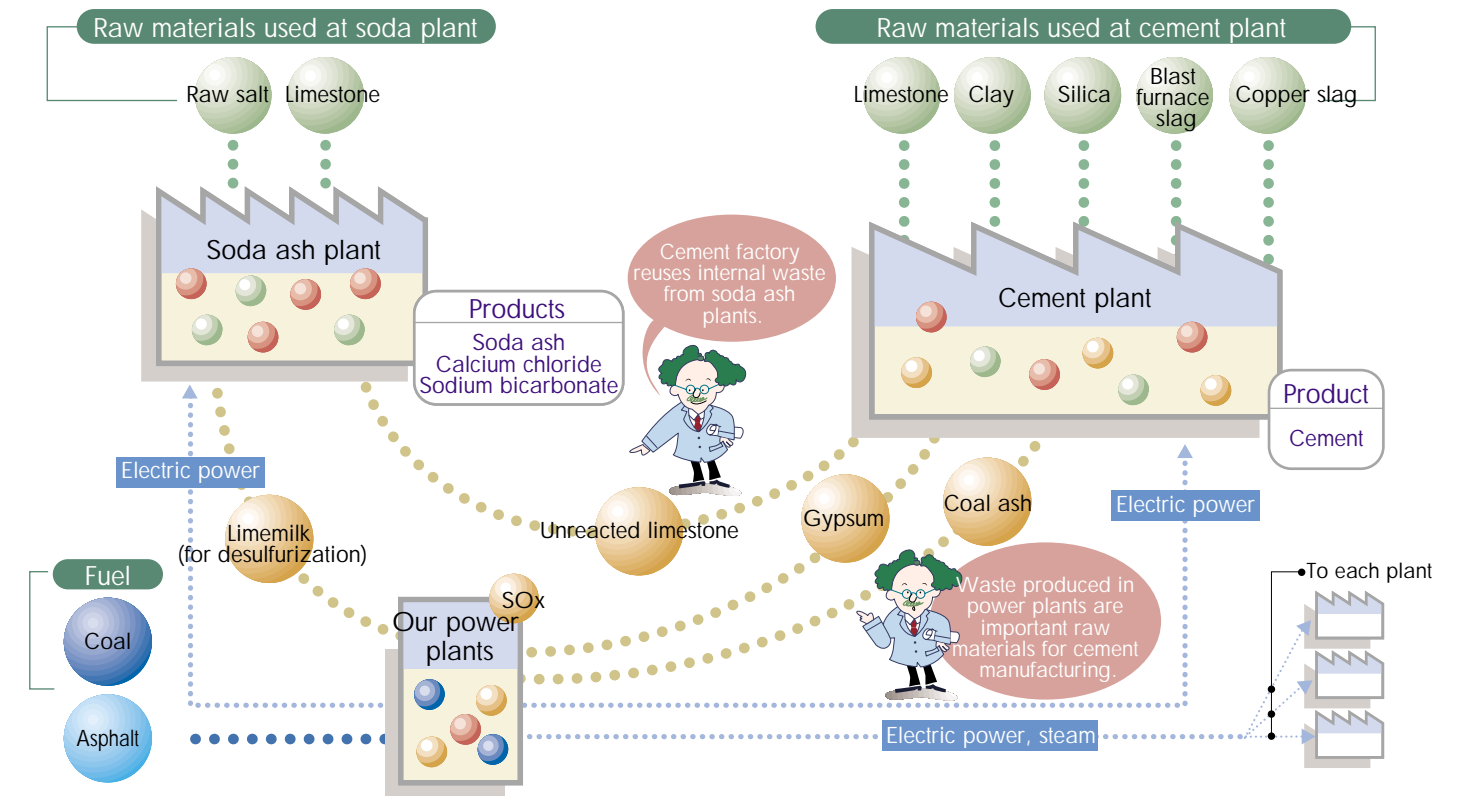
## Expanding the Coal Ash and Sludge Accepted for Recycling to 440,000 Tons

Tokuyama is increasing the amounts of coal ash and sludge it accepts. In FY2000, the volume of coal ash and sludge we received reached 440,000 tons.

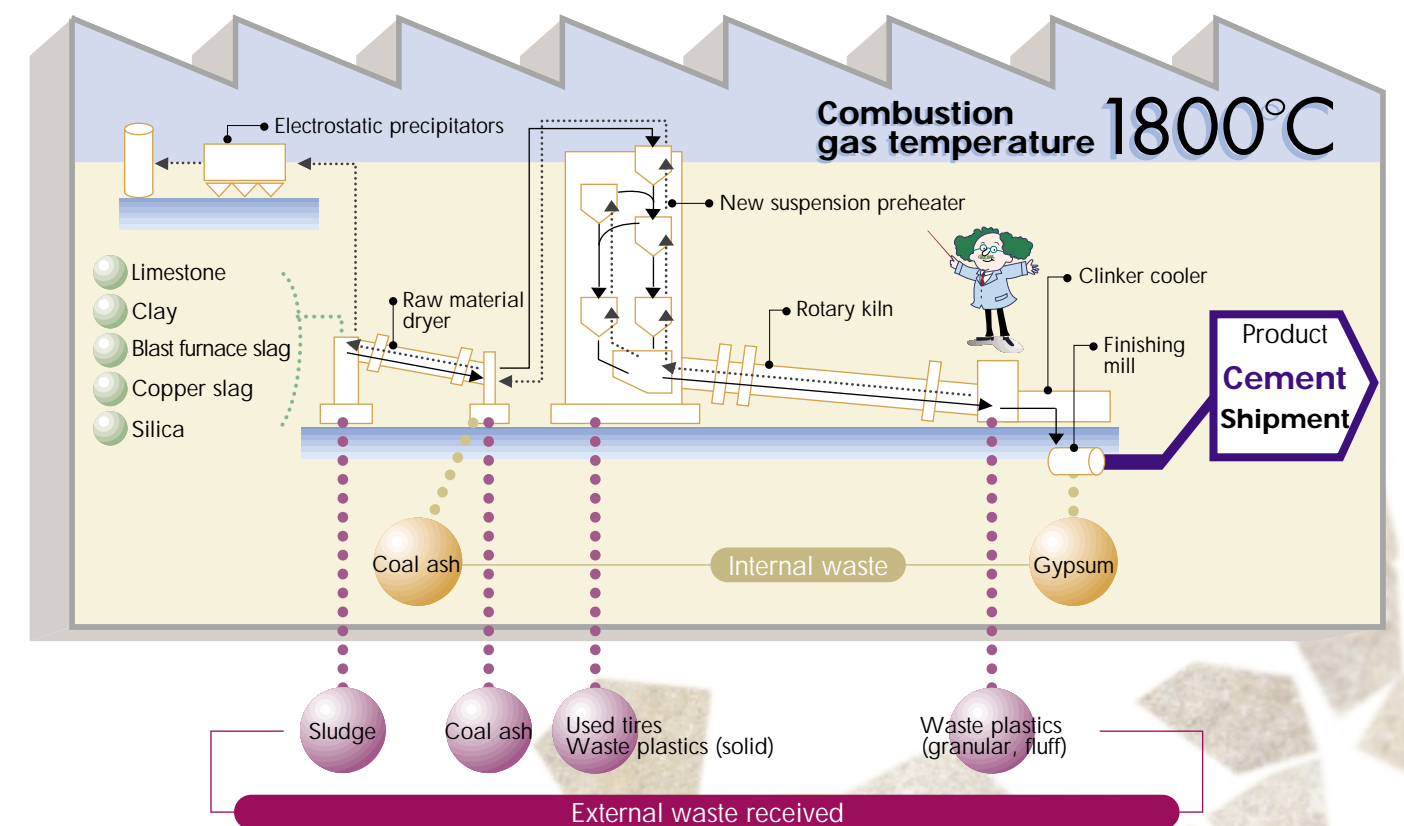


Chemistry plays an indispensable role in completing circles of recycling and reuse, and in expanding these circles to the entire society. Tokuyama contributes its power of chemistry to maintain a "sustainable society." Take Tokuyama's cement business as an example. We exhibit characteristic features of a cement factory, accepting industrial waste such as waste plastic, used tires, and sludge generated externally as well as internally, and efficiently using these elements as raw materials and fuel for cement manufacturing.

## Recycling of Internally Generated Waste



## Recycling Waste into Resources and Fuel

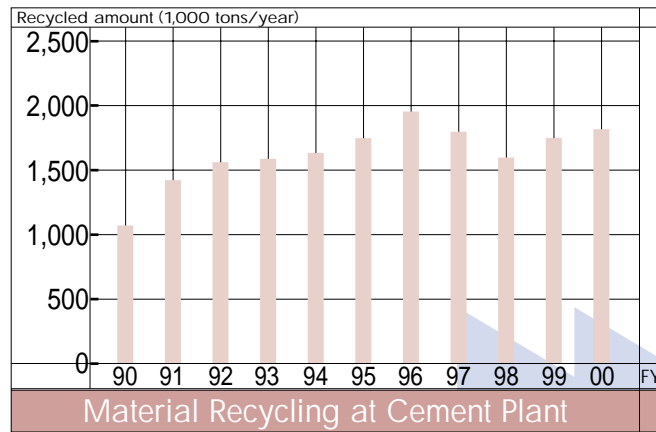


# Safety Measures

We carry out safety and environmental inspections for all of our places of business to evaluate whether our safety management activities are being implemented properly.

Based on the Philosophy that "Ensuring Safety is the First Step in Becoming a Good Corporate Citizen," Tokuyama is carrying out activities aimed at eliminating accidents and disasters. Based on our corporate philosophy, "Safety is the foundation of our activities, and ensuring safety is the first step in becoming a good corporate citizen," Tokuyama creates a safety management plan every year and is vigorously carrying out activities aimed at eliminating accidents and disasters.

## Effective Use at Cement Plant

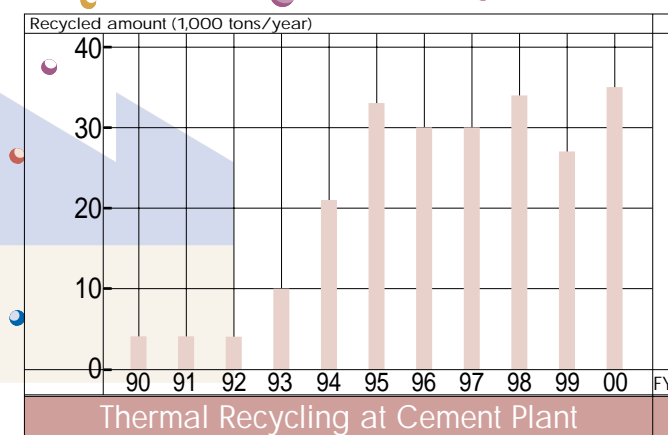


## Material Recycling

Material recycling is the reuse of waste and byproducts as raw materials. Tokuyama recycles slag, coal ash, sludge and incinerator ash generated internally and externally.

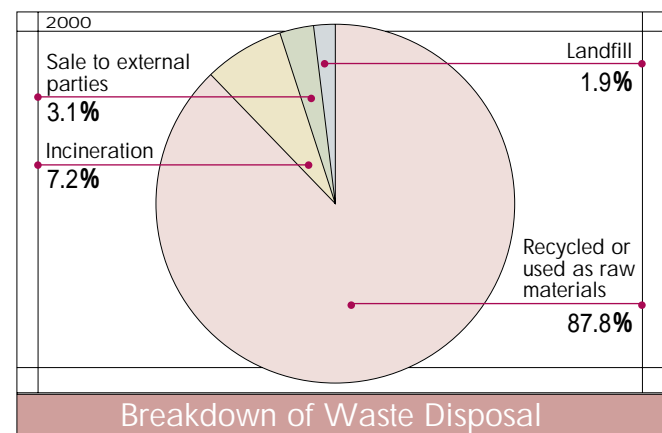
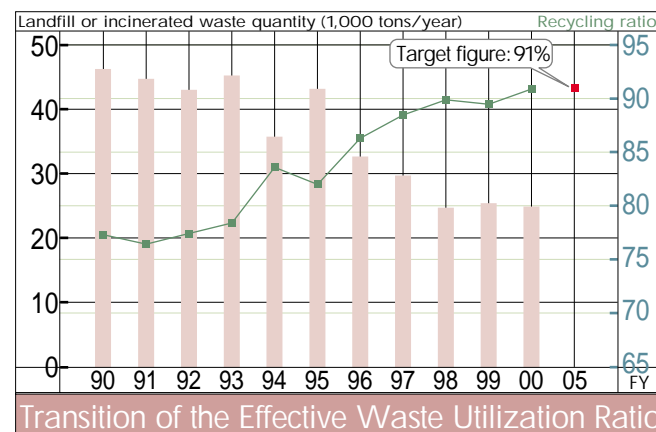
## Thermal Recycling

Thermal Recycling is the reuse of waste as a heat source. Tokuyama receives large amounts of waste plastics, used tires, etc., which we reuse as fuel.



## We Recycle More Than 90% of Our Internal Waste

Tokuyama generates a total of about 270,000 tons of internal waste per year. We are continuing to work to reduce waste materials to achieve the goal of increasing our effective waste utilization ratio to 91% by 2005. Most of the waste generated from our plants is used as raw material or fuel for cement manufacturing. A portion of our waste is sold to external parties as valuable materials. The remainder becomes landfill or is incinerated, but the amount of the remainder is decreasing as we promote recycling activities. In FY2000, the effective waste utilization ratio became 91 percent.



## Extensive Accident and Disaster Prevention Activities

The Tokuyama factory is fully equipped for disaster prevention. It is home to an altitude water cannon carriage, chemical fire engines, an ambulance and oil fences. We have formed a special organization for defense against various accidents and disasters, and we conduct comprehensive disaster drills every year. In FY2000, in addition to normal fire drills, we conducted drills using oil fences to prepare for an oil-leaking disaster.

## Safety Programs for Zero Accidents

We cannot maintain stable production activities without safety. The safety and health of each individual results in prosperity for our corporation. We strive for a safety program that results in zero accidents for each work place. As concrete measures, we will create "high awareness in the work place" not to overlook unsafe actions and conditions, and promote "thorough assessments of safety" before each individual takes action. In addition, we are making efforts to assure safety through various activities such as work place safety meetings, KYT activities, and safety patrols.

## Safety and Environmental Assessments

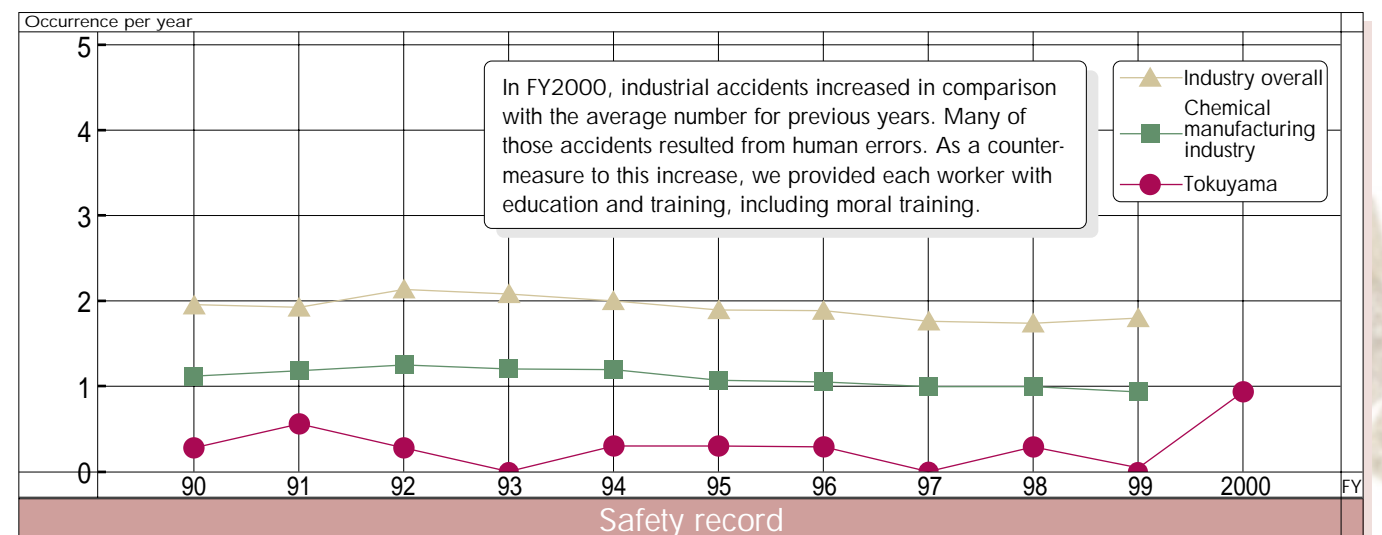
Before a facility is newly built, expanded, or remodeled, safety and environmental assessments are implemented. These assessments evaluate safety of facility design, safety of substances handled, readiness for abnormal situations, compliance with laws and regulations, environmental protection, and other factors, with the goal of building facilities that are easy to maintain and free of accidents.

## Plant Safety and Environmental Surveillance

We carry out plant safety and environmental surveillance of all of our places of business to evaluate whether our safety management activities are being implemented properly. In addition, we point out inappropriate operation to further strengthen our management system.



Plant safety and environmental surveillance





# Total Safety Management of Chemical Products

*We keep a keen eye to ensure environmental and human safety based on accurate information gathered throughout the entire product life cycle.*

*Tokuyama gathers product safety information that is used as a basis for conducting safety and environmental assessments of facilities, product safety assessments and product labeling assessments. In addition, we investigate the impact of chemicals on the surrounding environment by running simulations on the dispersion of emitted chemical substances. Moreover, we provide our customers and dealers with instructions and training regarding the proper handling of hazardous chemical products.*

## Chemical Substance Dispersion Simulations

We run simulations to investigate how emitted chemicals are dispersed, with the goal of evaluating their impact on human health and the environment. Through simulations, we can estimate how the emitted chemicals are spread and where there is possibility of impact.

The results of these simulations are of use in formulating measures aimed at reducing environmental impact through improving facilities, setting our target values to be attained, and other ways.

## Product Safety and Labeling Assessments

From research and development of new products to facility design and their market release, Tokuyama carries out many kinds of assessments from various angles to secure product safety. In FY2000, we carried out 27 product safety assessments and 152 labeling assessments.

## HPV Program

Tokuyama announced its participation in the high production volume (HPV) program and is implementing safety assessment initiatives as a member of the international consortium. Tokuyama assesses 18 materials.

\*The HPV program is an initiative by which chemical corporations and industrial organizations throughout the world assess safety of high volume chemicals that are produced in quantities exceeding 1,000 tons per year in two or more countries, and summarize their basic hazard information by 2004.

## Promoting Safety Management at the Distribution Stage

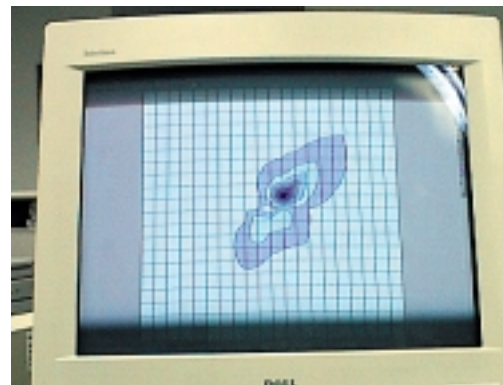
Based on MSDS, Tokuyama educates transporters on our products' chemical properties and handling methods. We also require their drivers to carry a Yellow Card that describes emergency procedures to ensure that they can respond quickly with the appropriate measures in the event of an accident during transportation.

### Risk Assessment

Tokuyama implements risk assessment for the transportation of dangerous materials to avoid transportation accidents. Thus, we are making efforts to improve transportation facilities and immediate measures for an accident. In addition, in cases where the risk is high, we implement drills for accidents.

### Product Stewardship Activities - MSDS

Tokuyama offers Material Safety Data Sheet (MSDS) to its users and clients, offering guidance on the proper handling of products for use and disposal. So far, we have published 440 MSDS.



Dispersion simulation



Yellow Card

## Education activities

### Courses on Product Handling

We carry out guidance or education on product handling and laws and regulations by holding lectures for dealers who handle our products.

### Educating Our Employees

In the course of employee training, Tokuyama provides education regarding RC and ISO. We also educate and enlighten our employees by notification of policies, goals and measures regarding RC programs through in-house newsletters and other means.

## Supporting Responsible Care:

### The RC Research Laboratory

The RC Research Laboratory supports the research aspect of Tokuyama's Responsible Care system. It is comprised of

- 1 Analysis and Evaluation Group
- 2 Environmental Analysis Group
- 3 RC Assessment Group

The Analysis and Evaluation Group offers analytical and evaluation support regarding product safety to research and development departments through conducting microanalysis and structural analysis with full use of state-of-the-art analysis equipment.

*Tokuyama encourages the affiliated companies, including those in foreign countries, to obtain the ISO9000s quality management system and the ISO14001 environment management system.*



Training in handling chemical substances



Transmission electron microscope (TEM)

## Safety and Environment Assessment Flowchart

Assessment Procedure	Product Safety Assessment	Safety & Environment Assessment	Labeling Assessment
▼ Research Start	▼ Research Laboratory General Manager (First Assessment)		
▼ Development Start	▼ Executive Managing Director (Second Assessment)		
▼ Feasibility Study	▼ Product Assessment Committee (Third Assessment)	▼ Safety & Environment Sub-committee (Basic Plan)	
▼ Facility Design		▼ Safety & Environment Sub-committee (Design)	
▼ Before Market Launch (Before Operation)		▼ Safety & Environment Sub-committee (Before Operation)	▼ Labeling Assessment Sub-committee
▼ After Operation		▼ Status Report (Environment)	

# Environmental Activities with the Community

*Tokuyama actively participates in community environmental activities.*

*In addition, we disclose information on RC activities to local communities.*

*For environmental activities, the cooperation of both residents around the factory and local authorities is indispensable. Tokuyama is making efforts to build mutual confidence with the local community by actively participating in various community activities. In addition, Tokuyama also participates in regional RC presentation meetings held in the local community so that the local residents can better understand our RC activities.*

## Participation in Green Volunteers

Forests protect the natural environment and fulfill the vital role of "green dams" that provide a stable supply of clean water. Protecting forest helps us to ensure safe and comfortable lives. With this in mind, we support the goals of the Green Volunteers\*, which is sponsored by the Yamaguchi Prefecture Agriculture and Forestry Office, and participate in their volunteer activities each year.

\*Green Volunteers: An event carried out each year by the Yamaguchi Prefecture Agriculture and Forestry Office that brings together persons involved in forestry in the upper reaches of the Nishikigawa river and persons using water in the lower reaches, with the goal of cultivating understanding and promotion of proper development of forests through forestry work experience, including pruning and thinning.



Regional Responsible Care Activity

## Clean-Up Campaign

Tokuyama City develops Clean Network Promotion with the motto, "we clean our own town." Our Tokuyama factory also actively participates in cleaning activities under the title of "Clean-Up Campaign." Our employees engage in clean-up activities for roads and parks around the factory once a month.

## Regional RC Presentation Meeting

In July, a regional RC presentation meeting was held in Yamaguchi. The objective of this presentation meeting was to explain RC activities to the local residents and this was the second meeting. Tokuyama made a report on RC activities with the emphasis on reusing waste as resources under the theme of "Recycling Open to Society." This was a very good opportunity for us to obtain the understanding of the local residents about our RC activities.

## Participation in the Dai Tokuyama Summer Festival

The Dai Tokuyama Summer Festival is a big event in which many corporations and citizens participate every year. Approximately 80 employees of our corporation participated in the "Great Parade of Portable Shrines," in

which people joined together to carry portable shrines. Our participation was highly regarded by citizens in Tokuyama City. At the 65th anniversary of the establishment of Tokuyama City in 2000, we won the Tokuyama Mayor Award.

## RC Audits

Tokuyama prepares an RC action plan every year and carries out internal audits and surveillance in the following three areas in order to evaluate whether RC activities are being implemented according to plan.

- 1 Environmental Audit
- 2 Plant Safety and Environmental Surveillance
- 3 Quality and Product Liability Audit

We also undergo external audits based on ISO14001 and ISO9000s for environmental and quality management.



RC Presentation Meeting



Dai Tokuyama Summer Festival

## Tokuyama's History of RC Activities

- 7/1991 ■ Global Environmental Issues Committee established
- 3/1993 ■ RC Committee established  
Voluntary plan for overall management of environment, safety and quality enacted
- 4/1994 ■ ISO9002 certification obtained for high-purity isopropyl alcohol
- 6/1994 ■ Arrangement for quality assurance system including product safety and labeling assessments
- 12/1994 ■ Internal Export Control Committee established
- 4/1995 ■ Participation in Japan RC Council
- 2/1997 ■ First edition of RC report issued
- 5/1997 ■ ISO9001 certification obtained for cement
- 4/1998 ■ ISO9001 certification obtained for dental materials
- 12/1998 ■ ISO9001 and ISO9002 certifications obtained for aluminum nitride, precipitated silica, etc.  
Tokuyama factory obtained ISO14001 certification
- 1/1999 ■ Kashima factory obtained ISO14001 certification
- 6/1999 ■ ISO9002 certifications obtained for inorganic chemicals, polypropylene, film, etc.
- 12/1999 ■ Ecological Management Initiative Dept. inaugurated  
ISO9002 certifications obtained for polycrystalline silicon, organic solvent, etc.
- 8/2000 ■ Recycling & Environmental Business Dept. inaugurated

*So, how was it? Tokuyama continues to do its best to promote Responsible Care activities toward the formation of a sustainable society.*

*Chemistry possesses the power to change the future of the earth. We want to discover and utilize this power. We will make even greater achievements in the future.*



## Company Profile

■ Established	February 16, 1918
■ Headquarters	Shibuya Konno Bldg., 3-1 Shibuya 3-chome, Shibuya-ku, Tokyo 150-8383 Japan
■ Business Locations	Tokuyama factory Kashima factory Tsukuba Research Laboratory
■ Capital (As of March 31, 2001)	JPY19.273 billion
■ Sales (FY2000)	JPY173.33 billion
■ Employees	2,425
■ Areas of Business/ Main Products (As of March 31, 2001)	Soda ash, inorganic and organic chemicals, cement, materials for civil engineering and construction, synthetic resins, ion exchange membrane and other highly polymerized compounds, fine ceramics, pharmaceutical and agrochemical intermediates, electronic instruments and parts and materials for them.