



Environmental Report 2000

2000



annual report



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## Profile of the Company

Established on March 3, 1947

Domestic Affiliates 212 companies

Overseas Affiliates 27 companies

### Business Indices

(Sekisui Chemical Co., Ltd. & 101 companies consolidated in fiscal year 1999)

Annual Turnover ¥920 billion

Number of Employees 19,748

(Sekisui Chemical Co., Ltd. only, in fiscal year 1999)

Annual Turnover ¥599 billion

Capital ¥100 billion

Number of Employees 4,851

## Business Areas of Sekisui Chemical Co.,Ltd.



### ● Housing Business

- Steel-structured modular house, "Heim"
- Wooden-structured modular house, "Two-U Home"
- Lot Development
- Remodeling



### ● Urban Infrastructure & Environmental Products

- |                              |                             |
|------------------------------|-----------------------------|
| <b>Pipes and Ancillaries</b> | <b>Building Materials</b>   |
| • Plastic pipes              | • Roofing shingles, Gutters |
| • Lined steel pipes          | • Sanitary units            |
| • Valves                     | • Septic tanks              |
| • Synthetic lumber           | • Electric hot water units  |



### ● High-performance Plastic Products

- |                                     |                                 |
|-------------------------------------|---------------------------------|
| <b>Chemicals</b>                    | <b>Industrial Supplies</b>      |
| • Inter-layer film for safety glass | • Adhesive tapes                |
| • Plasticizers                      | • Engineered fine parts         |
| • Adhesives                         | • Foam polyethylene             |
| • High-performance resins           | • Packaging & agricultural film |
|                                     | • Plastic containers            |
|                                     | • Marking film                  |



- Medical Products**
- Vacuum blood tubes
  - Medical tapes
  - Diagnostics



- Daily Living Goods**
- Plastic home products for kitchen, bathroom, cleaning, toiletry goods
  - Home chemicals, soaps, bath fragrance, deodorants



### ● New Businesses

- Fire-proof & sound insulation boards
- Solar cell generation systems
- Nursing units for the elderly





## Message from the President

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The year 2000 is the bridge to the 21st century, in which the importance of environmental conservation activities is greater than ever. Sekisui Group of Companies ranks response to environmental issues at the foremost of management policy and is promoting environmental conservation programs. In April, 1999, we launched our Environmental Middle Term Plan, "STEP-21" to become an environmentally creative enterprise, holding up three policies: Environmental Conservation, Environmental Creation and Information Disclosure. Results have already appeared, e.g., 5 facilities attained "zero emission" and 34 sites, including 3 research laboratories have acquired the ISO 14001 Certification. However, there are still many projects to which we must pay more effort, such as collection/recycling of disposed products, severe control/reduction of polluting effluents, nature conservation linking with local communities and more. In addition, we, the whole Group, intend to promote Environmental Accounting, Green Purchasing and Biotopes. I believe we have to take a unique and highly polished approach to environmental issues in order to be valued as a "reputable enterprise." Every employee is to recognize Environmental Conservation and Environmental Creation, as it is relevant to Sekisui, and therefore be able to participate in the development of our company as an environmentally creative organization. In this report, we summarize the elaboration and the results of the 1999 fiscal year activities of Sekisui Chemical Group. By reading this report, we hope you will have a deep understanding of our efforts, and will give us any comments and advice.

*Naotake Okubo*  
President





### CORPORATE POLICY ON THE ENVIRONMENT AND SAFETY

Acknowledging environment and safety as paramount important issues of our corporate management, we are committed to serving the community by placing priority on the following in the management and activities of our corporation:

- 1) We have utmost concern for the environment and safety of all our products throughout their entire life, from the stages of research and development, through production, distribution and to disposal, and comply precisely with all and every requirement on the issue.
- 2) We constantly improve our operations to utilize effectively, reclaim, and reuse limited resources, thereby doing everything within our power to reduce the burden on the environment.
- 3) We not only observe laws and regulations, but set our own objectives and targets to do our utmost to ensure a better environment and improved safety.

By acknowledging the importance of and implementing the above stated policy, all our employees including all contractors fully meet with the confidence that society places in us.

July 1, 1999

  
President

### History of Our Environmental Conservation Activities

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Sep. 1972	Start of company-wide elaboration for pollution control. Start of Environmental Management Dept.
Apr. 1980	Start of company-wide elaboration for energy saving. Change of name to Environment & Energy Management Dept.
Jan. 1991	Implementation of Environment Audit System in response to the current global environmental issues. Start of Environmental Management Committee and Section of Safety & Environment Management Dept.
Oct. 1992	Start of the Environmental Technology Project for development of recycling and energy saving technologies.
Oct. 1993	Implementation of Voluntary Environmental Plan.
Apr. 1995	Start of Responsible Care Activities. Joined in JRCC (The Japan Responsible Care Council).
Apr. 1996	Announcement of Top Management Policy for Environment and Safety.
Feb. 1998	Start of Zero Emission Activities.
Apr. 1998	Publication of the Leaflet on Environmental Affairs.
Apr. 1999	Start of Environmental Middle Term Plan, "STEP-21"
Jul. 1999	Publication of Environmental Report 1999.
Mar. 2000	Achievement of zero emission at 5 facilities.
Jul. 2000	Publication of Environmental Report 2000.



Responsible Care

Responsible care is the voluntary management of chemical substances through their life cycles, starting from development and continuing through manufacture, use and disposal by the manufacturers or distributors, to ensure safety and environmental conservation. Such management requires planning, annual activity/control, publication of results and continued efforts for improvement on the part of the participating firms.



# Activity Guidelines

## 1. Energy/Resources Saving

Effective utilization of the limited resources/energy and introduction/development of energy saving technologies.

### ● Promotion of energy saving:

To promote energy saving in the production processes and reduce carbon dioxide emission

- Introduction of co-generation/fuel shift
- Introduction of energy-saving cars
- Save-energy campaign at Headquarters/Res. Lab.

### ● Promotion of simplified packaging:

Review of purchasing specs on packaging, utilization of commuting containers, larger lots of package, reduction of throw-away package, etc. Simplified product packaging with full functions retained

### ● Development/improvement of products towards energy saving

## 2. Reuse/Recycling

Reduction of waste in production processes and promotion of reuse/recycling. Effort to collect and recycle the disposed products. Development of reusable/recyclable products.

### ● Reduction of waste, and reuse and recycle:

Attainment of zero emission at 30 facilities by 2002

### ● Resource recreation by establishing recycle systems for major products:

- Building material refuse
- PVC pipe, LP pipe, FRP bath tub, rain gutter
- Agricultural PE film

### ● Development/designing of recyclable products and recycling technology

## 3. Safety Assurance for Chemicals

Survey and research for effects on the environment of products and materials in use. Positive steps to ensure chemical safety and environmental safety.

### ● Abolition of ozone layer destroyers:

- Abolition of freon substitutes

### ● Severe control of polluting substances:

- Abolition of organic chloro-solvents
- Reduction of emission/transport of PRTR chemicals

### ● Consideration of environment, safety and health in the processes of production, transportation, use and disposal, and emergency measures:

- Material Safety Data Sheets
- Emergency Yellow Card

## 4. Harmonization with the Community

Devotion to environmental conservation and human safety/health, paying attention to scientific progress and governmental concerns.

### ● Assurance of human safety and health

### ● Consideration of local environment:

- Pollution control (air, water, noise, vibration, etc.)
- Promotion of green environment, etc.

### ● Participation/support in nature protection activities:

- Support of overseas nature protection activities
- Support of domestic nature protection activities
- Company-wide application of our Nature Study Course

## 5. Education and Enlightenment

Absorption of international and national information, correct understanding of environmental effects of products and business activities and appropriate education both internally and community-wise.

### ● Prior assessment of effect of products and of investments on the environment

### ● Establishment of the environmental management system (EMS):

- Attainment of ISO 14001 Certification by 2002 by 78 sites including house sales and construction companies

### ● Disclosure of information:

- Practice of Environmental Accounting and its disclosure
- Issuance of Environmental Report



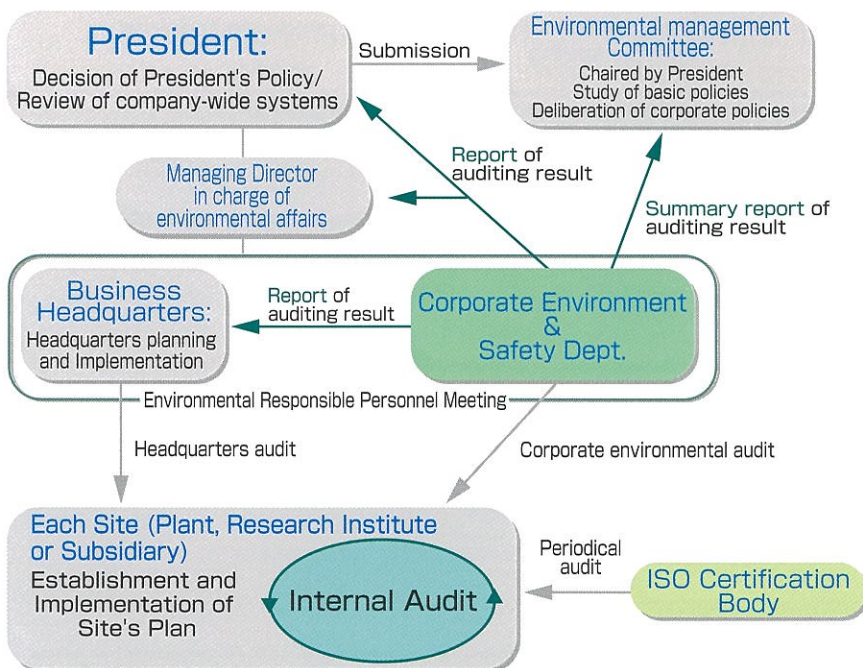
# Organization and Arrangement for Environmental Management and Conservation

We provide a consistent auditing system covering the whole group.

## Company-wide arrangement for Environmental Management and Auditing Systems

The president's policy and directions are strictly transmitted to all sites so that the environmental management plan may be properly established and implemented. Periodical self auditing and the corporate environmental auditing are

provided to assess the effectiveness and progress of the environmental management system. Periodical audits by ISO Certification bodies further improve the system.



Audit results of 1999 (March 31, 2000)

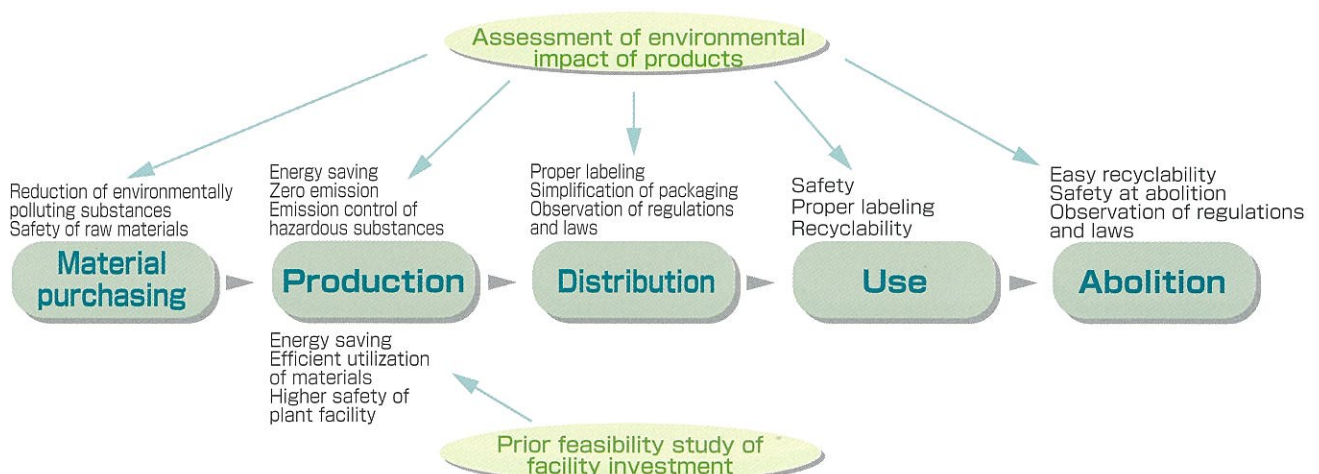
		Number of checked cases	Correction completed	Cases continuing
EMS audits by Certification Body	Instruction	54	48	6
	Observation	217	172	45
	Total	271	220	51
Corporate Environmental Audit	Instruction	250	172	78
	Observation	45	28	17
	Total	295	200	95
Internal Audit	Instruction	359	351	8
	Observation	392	364	28
	Total	751	715	36

Corrections are made on all cases except those which take time, such as facility investment, and those pointed out near the end of the fiscal year.

## Arrangement for environmental consideration in product development and facility investment

In consideration of reduction of environmental load during product development, the environmental impacts are assessed at every stage of R & D and

feasibility study of investment, paying attention to the environmental, safety and health aspects and effects of the product during its life cycle.






# Educational Activities for Environmental Conservation

## Environmental education is available to all employees.

Various educational activities are available to all employees in order to promote the environmental conservation effectively. Starting in 1999, basic technical training on environmental matters is available to all engineers early in their careers, so that they will pay attention to the environment during the


course of development work. Lectures are invited from both outside and inside of the company. From May, 2000, the environmental conservation information has become available on our Intranet.



**Educational Activities for all employees**


- New Employees Training
- Basic Training in Environmental Technology
- EMS\* Internal Auditor Training Course
- EMS Construction Leader Training Course

- Company journal
- Lectures/Seminars
- Kaizen Reporting Conference for Safety and Environment



New Employees training

Sekisui's Nature Study Course for Conservation Leaders



Company journal carrying articles on environmental conservation.

Education conducted in the fiscal year 1999



Name of education course	Target			Month	Number of attendants	Accumulated number	Remarks
	New employees	Intermediate	Management				
New Employees Training				May	14	—	
Basic Training in Environmental Technology				1st & 2nd halves	36	36	Started in 1999
EMS Auditor Training	in-comp.			Aug., Oct., & Nov.	80	186	Started in 1997
	ex-comp.			Arbitrary	39	85	
EMS Construction Leader Training	in-comp.			June	32	83	Started in 1996
	ex-comp.			Arbitrary	10	21	
Nature Study Course				May, Sept., & Nov.	30	124	Started in 1997
Company Journal, Seminars				Arbitrary	—	—	Quarterly Journal
Kaizen Reporting Conference				Nov.	50	300	Started in 1995

Publicly Certified Specialists (March 31, 2000)

Field		Certified Number in 1999	Accumulated number
EMS Auditor	Lead Auditor	3	3
	Auditor	3	5
	Prov. Auditor	2	5
Pollution Control Manager	Air	4	50
	Water	2	106
	Noise	3	59
	Vibration	2	24
Environmental Surveyor		0	2
Energy Manager (Heat, Electricity)		16	49
High Pressure Gas Safety Manager		18	259
Advisory Specialist for Consumers' Affairs		10	35

\*EMS...Environmental Management System(s)

**EMS Internal Auditor Training Course**



# Implementation of Environmental Accounting

We disclose the amount of expenditure and investment and their effects on environmental conservation.

In March 1999, the Environment Agency of the Japanese government introduced a white paper titled "A guideline for gathering and disclosing the cost of environmental conservation: establishing the environmental accounting (an intermediate summary report)." On this occasion, we started to implement environmental accounting.

Prior to this, we were totaling approximate amounts spent for environmental conservation and the related R & D. However, in this age of environmental management, we feel it is very important to

know exactly the amount of expenditure and investment and their effect on environmental conservation, in order to conduct more efficient environmental conservation activities. The "Study Group for the Environmental Accounting" was created in September 1999 and the "Environmental Accounting Manual" was completed in February 2000, on which our implementation is based. In May 2000, the Environment Agency introduced another paper titled "Guideline for Introduction of Environmental Accounting (2000 edition)" and we accordingly disclose the accounts to interested parties.

## Principles of summation:

Extraction of expenditure and investment was based on the Environment Agency' "Guideline (2000 edition)." Effects were also based on the same paper, though supplemented by our own ideas. Following are the principles:

- Totaling was made in thousands of yen at the level of workplaces, and in millions of yen at the corporate level.
- Depreciation amounts were the same as those of financial accounting.
- Investment amounts were based on approvals of budget during the fiscal period.
- Items that contain environmental participation were pro-rata distributed by 10% increments.
- In summation of effects, we added, to the net gain, the environmental conservation contribution portion of the added value and the contribution portion of environmentally conceived new product sales.

**Summation sections:**

Corporate HQ	Housing HQ	: 9 affiliates+1 lab.+HQ
	Urban Infrastructure & Environmental Products HQ	: 5 plants +1 lab.+HQ
	High Performance Plastics HQ	: 4 plants +1 lab.+HQ
	New Business HQ	: 1 lab.+HQ

**Fiscal Period** April 1, 1999 to March 31, 2000

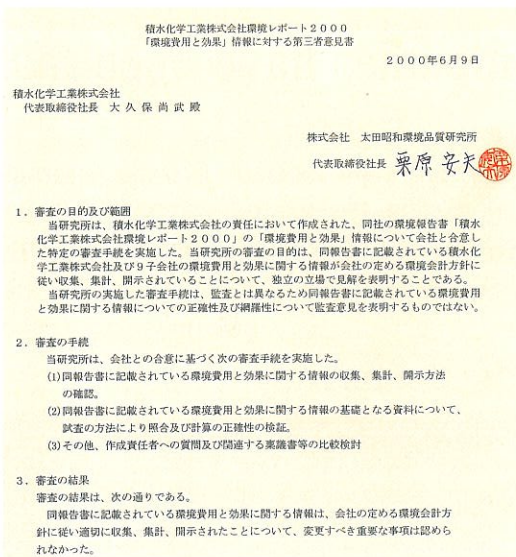
**Unit** Yen one million

Category	EC* Cost		
	Main projects	Expenditure	Investment
(1) Cost within operational premises: EC cost to reduce environmental load generated by production and service activities within the operational premises	Reduction of environmental ill effects from inside to out		
Pollution prevention cost	Prevention of air, water and noise pollution, etc.	2,140	810
Global environmental conservation cost	Prevention of greenhouse effect (Save-energy)	850	390
Resource recycling cost	Reduction of waste, recycling, treatment, etc.	150	170
(2) Up/downstream cost: EC cost to reduce environmental load generated by production and service activities either upstream or downstream of the premises	Reduction of environmental load in packaging, Dues from industrial association, Price difference caused by Green Purchasing.	1,140	250
(3) Management cost: EC cost in management activities	Employee education, EMS establishment and implementation, Monitoring of environmental load, Payroll for environmental assignments, etc.	100	200
(4) R & D cost: EC cost in R & D	R&D of EC contributing products, energy saving in production processes, zero emission evaluation, etc.	830	—
(5) Social cost: EC cost in social activities	Support for Keidanren Nature Conservation, support for local community activities, contribution to environmental NGO's, disclosure/publication of environmental information, etc.	2,830	460
(6) Compensation cost: EC cost of compensation for environmental damages	nil	1,980	10
		—	—
<b>Total</b>		<b>7,880</b>	<b>1,480</b>

Items	Amount (Yen one million)	Remarks
Total amount of investment in this fiscal period	17,960	EC cost portion is 8% of the total investment.
Total amount of R&D Expenditure in this fiscal period	28,560	EC cost portion is 10% of the total R&D expenditure.

\*EC...Environmental Conservation





Company obtained a third party opinion to secure the reliability of the disclosed information.

English translation

Third party opinion on the disclosed information:  
"Environmental Expenditure and Its Effect" of  
the Environmental Report 2000 of Sekisui Chemical Co., Ltd.

June 9, 2000

Mr. Naotake Okubo,  
Representative Director and President,  
Sekisui Chemical Co., Ltd.

(Signature) Yasuo Kurihara  
Representative Director

Ota Showa Environmental Management and Quality Research Institute

1. Purpose and scope of examination:

This institute has conducted an examination of the disclosed environmental information of Sekisui Chemical Co., Ltd., which was titled "Environmental Expenditure and Its Effect" and consisted a part of "Environmental Report 2000 of Sekisui Chemical Co., Ltd." under the conditions and procedures mutually agreed. The purpose of the examination by this institute was to express an independent opinion on the conformity of the actual work of summation of environmental expenditure and its effect, to the corporate environmental accounting policy, which was established for and implemented in Sekisui Chemical Co., Ltd. and its 9 affiliated companies.

The examination procedure employed was different from auditing and, therefore, it was not the purpose to assure the accuracy and the comprehensiveness of the information on environmental expenditure and its effect.

2. Procedure of examination

This institute employed the following procedure of examination which was in agreement with the Company:

- (1) Verification of the methods of collection, summation and disclosure of the environmental expenditure and its effect that appear in the above mentioned report.
- (2) Verification of properness, by inspection, of the references and gatherings of the base information for the environmental expenditure and its effect that appear in the report.
- (3) Questioning to the responsible reporter, identification of draft proposals and sanctions, etc.

3. Result of examination

This institute expresses its opinion below as the result of examination:

The information of environmental expenditure and its effect described in the above-mentioned report has been properly collected, summed and disclosed in accordance with the company's environmental accounting policy and nothing important is required for revision.

(end)

EC Effect Category	Environmental Load Indices (Absolute Volume)					Reference Indices (per ¥1Mil. sales)				
	Item	(Unit)	Net in '98	Net in '99	Difference (99-98)	Item	(Unit)	1998	1999	
(1) EC effect within operational premises (Premise Effect)	CO <sub>2</sub> generation in production	Tons	247,839	252,879	5,040	CO <sub>2</sub> generation per unit (production + incineration)	Tons per ¥1Mil. sales	0.545	0.544	Acceptable
	CO <sub>2</sub> generation in incineration	Tons	20,892	18,335	-2,557		Energy consumption per unit (power + fuel)	kL per ¥1Mil. sales	0.298	0.301
	Fuel consumption	Mwh	435,928	443,509	7,581	Water consumption per unit		¥1Mil. sales	26.94	25.91
	Water consumption	kL	64,616	66,053	1,437		Waste per unit	Tons per ¥1Mil. sales	0.152	0.161
	Waste generated	Tons	10,756,904	10,563,395	-193,509	Treated outside per unit		¥1Mil. sales	0.041	0.036
	Treated outside	Tons	60,645	65,741	5,096		Recycled outside per unit	¥1Mil. sales	0.076	0.090
	Recycled outside	Tons	16,187	14,810	-1,377	Pollutant emission per unit			0.0028	0.0022
(2) EC effect of up/down stream (Off-premise effect)	CO <sub>2</sub> reduction attributed to products	Tons		1999 products 4,694	-4,694	(1) 3,785 crude oil equivalent KL fuel reduction & 5,985 tons CO <sub>2</sub> generation reduction were achieved in the fiscal year 1999. (2) Zero emission was achieved at 5 facilities for the first time in the company. (3) Approx. 4,700 tons CO <sub>2</sub> generation reduction was achieved by solar energy houses sold by the company.				
(3) Other EC effects	EMS Certifications	Certified number	20	34	14					
	Zero emission attained	Number	0	5	5					

Remarks: EMS Certifications and zero emission data include the resin processing affiliates which are not included elsewhere in this report. CO<sub>2</sub> and Energy data also includes the resin processing affiliates.

Economical effects induced by the EC measures		
Category of effect	Amount (Yen one million)	Source
Expenditure reduction by energy saving	150	
Expenditure reduction by water saving	30	
Sales of recyclable material	30	Sorting and recycling of waste
Saving in packaging	200	Simplified packaging of materials and products
Subtotal	410	
EC contribution portion of the added value	5,100	Added value of Plants excluding the item below
Contribution portion of environmentally conceived new product sales	3,480	Environmentally conceived new product sales x Ratio of environmental R&D expenditure to total R&D expd
Subtotal	8,580	
Total	8,990	

Promotion hereafter:

- To construct more effective systems according to the Guideline of the Environment Agency.
- To extend environmental accounting to more subsidiaries, especially consolidated subsidiaries with heavy environmental loads.
- Continue to take third party examinations to secure the reliability and properness of the disclosed information.



# Our Middle Term Environmental Plan "STEP-21" and Its Progress Status

## Based on "STEP-21", Sekisui group companies have been making

In line with the corporate activity guidelines laid down in 1996, and to elevate the level of our environmental conservation activities, we established our Middle Term Environmental Plan "STEP-21" defining our concrete objectives and targets, which we have been

implementing since April 1999.

Based upon this plan, Sekisui Chemical group companies, including the related companies, have been actively promoting environmental conservation activities.

### STEP-21: Sekisui Total Environment Plan for the 21st Century

The policy and objectives of our Middle Term Plan	Implementation Items	
<p><b>POLICY</b> <b>1</b> <b>Environmental Conservation</b> Zero Emission Establishment of Environmental Management Systems</p>	Waste reduction	To achieve zero emission To reduce total waste quantity
<p><b>POLICY</b> <b>2</b> <b>Creation of a Good Environment</b> Collection and Recycling of the Marketed Products Development of new environmentally friendly products</p>	Establishment of Environmental Management Systems	
<p><b>POLICY</b> <b>3</b> <b>Information Disclosure</b> Tackling environmental problems Nature conservation activities Information disclosure</p>	Establishment of a collection and recycling system	
	Development of new environmentally friendly products	
	Reduction of the carbon-dioxide emission	To reduce the carbon-dioxide emission To save energy
	Control on environment pollutants	Methylene dichloride Substitute Freon Gasses A group of materials to be reduced voluntarily
	Houses causing sickness	Formaldehyde
	Nature conservation activities	To support nature conservation activities overseas Voluntary activities at our workplaces Personnel education and training Biotope at our workplaces
	Green Purchasing: purchase of environmentally friendly products from environmentally friendly enterprises	
	Information disclosure	Environmental Report Environmental Accounts



## steady progress.

In the fiscal year 1999 we made achievements as shown in the following table. In the fiscal year 2000 we are proceeding with Green Purchasing, Biotopes and so forth. We will also review our activity items and targets and carry out our activities based on an improved middle term plan.

Managing Director in  
charge of the Environment and  
Safety Department  
Katsuro Shinoda



Targets of "STEP-21"	Results in FY 1999	Valuation*	Details on Page
By FY 2002, 30 of the Sekisui Group facilities shall achieve zero waste disposal outside the plants (reclamation and incineration).	5 facilities achieved zero emission ahead of the schedule.	◎	10
By FY 2002, total waste quantity from the production lines shall be reduced by 25% per unit as compared with FY 1998.	3.5% per unit increased over FY 1998.	×	11
By FY 2002, 34 sites, house sales companies and construction companies shall obtain the ISO14001 Certification.	14 sites obtained the certification. 31 sites in total sum (Domestic)	○	15
By FY 2000, a system shall be established in model districts. (PVC pipe and fittings, LP pipe, FRP bathtubs, rain gutters, PE film for agriculture, building material waste).	A system was established nationwide for PVC pipe and LP pipe and for FRP bathtubs in Osaka district	○	16
By FY 2002, more than 70 items shall be put on the market.	105 items were put on the market	◎	18
By FY 2002, sales amount of new environmentally friendly products shall be 30% + of all new product sales.	36.5%	◎	18
By FY 2002, CO <sub>2</sub> emission from production activities to be reduced by 4% + per unit as compared with FY 1998.	0.2% reduction per unit as compared with FY 1998	○	20
By FY 2002, energy consumption shall be reduced by 4% + per unit as compared with FY 1998.	1% increase per unit as compared with FY 1998	×	21
Complete elimination of usage in production process (aiming at FY 2005).	27 tons usage reduction as compared with FY 1998	○	22
Complete elimination of usage in production process (aiming at FY 2005).	14 tons usage increase as compared with FY 1998	×	22
By FY 2002, release and transfer of Environment Agency's PRTR pilot materials to the environment shall be reduced by 30% + as compared with FY 1998.	20.8% reduction per unit, 260 tons usage reduction as compared with FY 1998	◎	22
To be measured before our houses are handed over to customers.	Implemented for Shin-Parfait	○	28
Continuous support tying up with Keidanren Nature Conservation Fund.	8 projects, 30 million yen	○	26
By FY 2002, all facilities shall obtain valuation points of 10 +.	19 facilities obtained more than 10 points	◎	27
By FY 2002, all employees of Sekisui group shall participate in the activities.	Participation rate of 70% (of 6,698 employees)	◎	27
In FY 2000, 200 + employees to become nature conservation leaders.	30 employees received training courses and in total 124 leaders	○	26
By FY 2002, to be constructed mainly by employees at model plant.	Establishment of basic concept and implementation plans	○	27
By FY 2000 for office supplies/equipment. FY 2001 for raw materials/parts.	Establishment of the basic policy and purchasing standards	○	28
To be issued annually and also on the homepage.	Issuance in July 2000	○	28
To publicly be announced annually (from FY 1999).	Announcement in July 2000	○	6

\*Valuation Standard

◎...Achieved the target

○...Almost achieved the target

×...Fell short of the target



## 5 facilities achieved zero emission earlier than scheduled.

We established the corporate policy that all 30 facilities of Sekisui Group would achieve zero emission by the fiscal year 2002 and our activities were

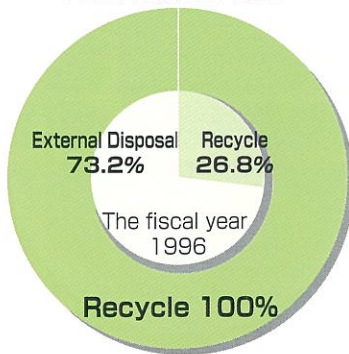
started in the fiscal year 1998 towards our targets. As a result 5 facilities achieved zero emission one to two years earlier than the schedule.

### The zero emission schedule and the targeted facilities

Group	1998	1999	2000	2001	2002	The Targeted Facilities
<b>Model Facilities</b>						Shiga-Minakuchi Plant, Kyushu Sekisui Industry Co., Ltd., Sekisui Film Nishi-Nihon Co., Ltd. Taka Plant
<b>The 2nd Group Facilities</b>						Shiga-Ritto, Gunma, Nara, Nitta, Amagasaki, Musashi, Sakai plants, Okayama Sekisui, Tokyo Sekisui, Kanto Sekisui, Kansai Sekisui, Nishinihon Sekisui Industry Co., Ltd., Kitanihon Sekisui, Higashinihon Sekisui, Kanto Sekisui, Chubu Sekisui, Chugoku Sekisui Industries Co., Ltd.
<b>The 3rd Group Facilities</b>						Hokkaido Sekisui Industry, Toto Sekisui, Sekisui Techno- Seikei, Tokuyama Sekisui Industry, Shikoku Sekisui Industry, Sekisui Film Hokkaido, Sekisui Film Higashinihon, Sekisui Film Kyushu, Sekisui Kako Co., Ltd.

#### Model Facilities

As of March 2000

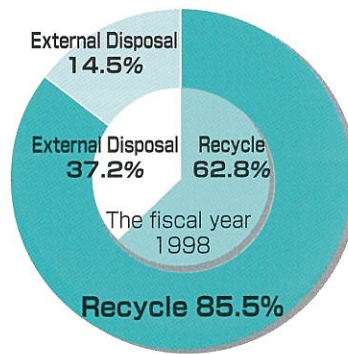


**The model facilities achieved zero emission one year earlier. (March 2000)**

We originally planned to achieve zero emission in three years but successfully achieved it in two years by a project team promotion. As to methods of recycling 75% was of material recycling and 25% thermal recycling.

#### The 2nd Group Facilities

As of March 2000

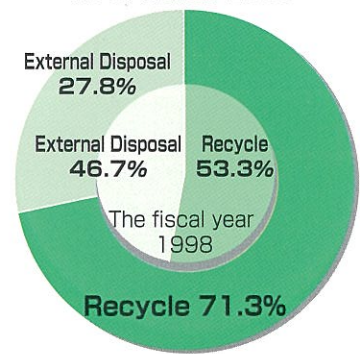


**Musashi Plant and Nishinihon Sekisui Industry Co., Ltd. achieved zero emission two years earlier.**

By utilizing successful experiences at the model facilities, and by sharing the common tasks, these two facilities achieved zero emission two years ahead of the schedule. 7 facilities of the house production companies are aiming at achieving it in September 2001, and others by March 2002.

#### The 3rd Group Facilities

As of March 2000



**The zero emission activities started in April 2000.**

6 facilities of resin fabrication companies and 4 of film production companies will achieve zero emission by March 2002 by utilizing experiences at the model facilities and at the 2nd group facilities.



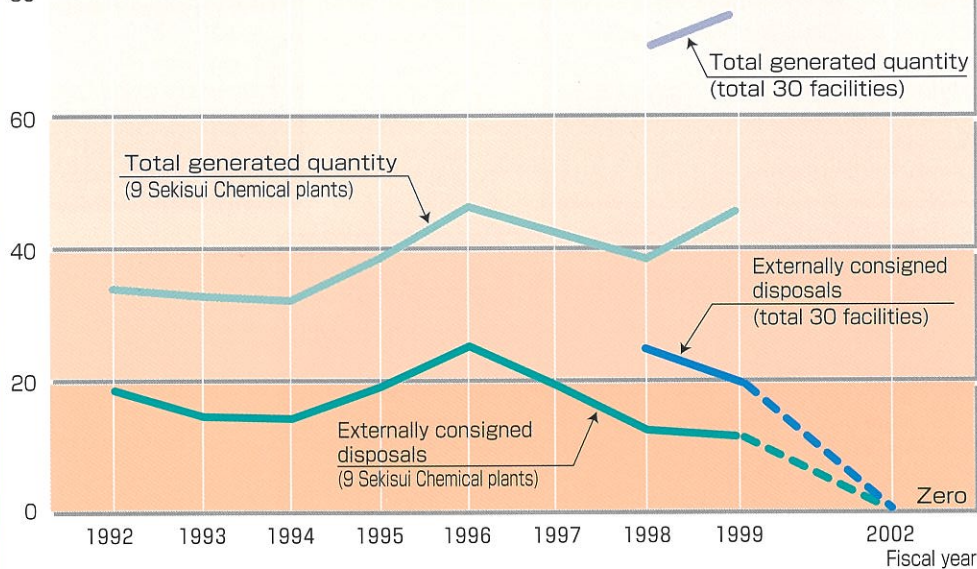
## The trend of the externally consigned disposal quantity and the total generated waste quantity

The total generated waste quantity increased to our regret in the fiscal year 1999 but the externally consigned disposal quantity decreased by our zero emission activities. We have been making

efforts to achieve the targets of "STEP-21", that total generated waste quantity per turnover unit shall be reduced by 25% by the end of fiscal year 2002, as compared with the fiscal year 1998.

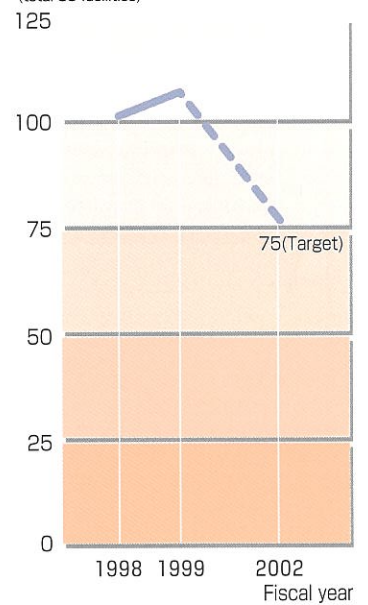
### The trend of the total generated waste quantity and the externally consigned disposal

Thousand Tons



\*The target at the end of the fiscal year 2002:  
The externally consigned disposals shall be zero.

### Total generated waste quantity per turnover unit



\*In the fiscal year 1998:100

## Sekisui Group's conception of zero emission

### 1) Definition of zero emission

All waste discharged out of our workplaces shall be recycled.

#### (Our criteria of zero emission achievement)

- ① There shall be no outside incineration other than thermal recycling, and no external nor internal reclamation.
- ② Methods of the recycling and recycling contractors must clearly be identified and relevant contracts must be concluded.



Exhibition of zero emission activities



Separate waste bins for different materials

### 2) Object waste of zero emission

Not only waste from production processes but also everything from our offices and other welfare facilities are the object of zero emission.

#### (Examples)

- Production process: Faulty products, packaging materials for raw materials, cut ends of products, etc.
- Offices: Used fluorescent tubes, waste papers, etc.
- Welfare facilities: Garbage from dining rooms, empty soft drink cans, etc.
- Others: Cut pieces of products or used products received from users.



## Introduction of our facilities that have achieved zero emission

### Kyushu Sekisui Industry Co.,Ltd.



Production items : PVC pipe and fittings, Manhole covers, Small scale household septic tanks, etc.

Generated waste : About 200 tons per year quantity

Main waste : FRP family 49%, PVC family 15%, Wood, Garbage, Papers, etc. 36%

Recycling methods were successfully developed for PVC and FRP family waste. By a device in waste segregation, recyclable items increased.

#### Examples of main waste recycling

- \***PVC/FRP compounded waste**: Reuse for road base material and synthetic wood
- \***Expanded polystyrene**: Reuse as heavy oil after liquefaction
- \***Raw material bags**: Reuse as core paper of cardboards
- \***Mercury lamps/fluorescent tubes**: Specialty manufacturers separate them into metal, glass and mercury which are each recycled.
- \***Garbage**: After composting, it is fed to plants on the premises.

### Sekisui Film Nishinohon



#### Examples of main waste recycling

- \***Waste plastics**: Posts for green houses, Road pavement materials, Raw materials for tiles
- \***Metals**: Metal products after melting
- \***Wood**: Chips for fuel, Decorative boards, etc.
- \***Glass**: Raw materials for glass bottles
- \***Papers**: Toilet paper
- \***Oil stained cloth**: Fuel for cement production

### Nishinohon Sekisui Industry Co.,Ltd.



Production items : Sekisui Heim and Two-U Homes (Housing)

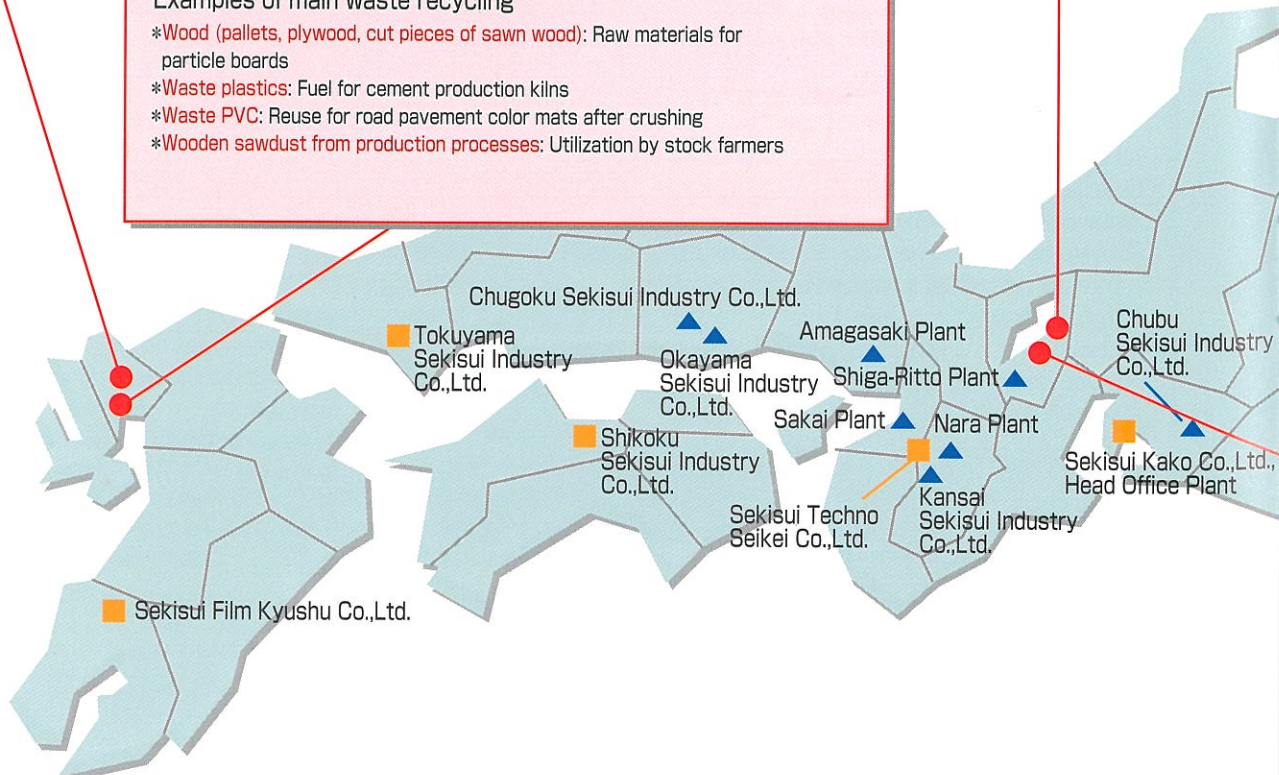
Generated waste : About 1,800 tons per year quantity

Main waste : Wood 61%, Waste plastics 8%, Waste plaster boards 8%, Papers 16% and others

This plant achieved zero emission for the first time in the prefabricated house industry.

#### Examples of main waste recycling

- \***Wood (pallets, plywood, cut pieces of sawn wood)**: Raw materials for particle boards
- \***Waste plastics**: Fuel for cement production kilns
- \***Waste PVC**: Reuse for road pavement color mats after crushing
- \***Wooden sawdust from production processes**: Utilization by stock farmers





### Co.,Ltd., Taga Plant

Production items : General packaging film, Sanitary film, Shrink film, etc.

Generated waste : About 760 tons per year quantity

Main waste : Waste plastics 79%, Metal and Wood 15%, Waste material from raw materials 3% and others

This plant was newly built in 1998. From the planning stage, it was designed to be a zero emission plant to make possible the recycling of the most waste that was generated in the production processes.

By a thorough segregation, internal and external recycling has been strongly promoted.

kilns

- The facilities that have achieved zero emission
- ▲ The facilities belonging to the second group
- The facilities belonging to the third group

Sekisui Film Hokkaido Co.,Ltd. ■ ▲ Kitanihon Sekisui Industry Co.,Ltd.  
■ Hokkaido Sekisui Industry Co.,Ltd.

### Musashi Plant



Production items : Adhesive tapes, Expanded polyolefin plastics, and so forth

Generated waste : About 7,000 tons per year quantity

Main waste : Waste plastics 86%, Waste oil 8%, Waste plaster, etc. 6%

This plant abolished incinerators in the fiscal year 1998 and tackled zero emission by the thorough separation and segregation of the waste which used to be incinerated.

#### Examples of main waste recycling

- \*PVC tapes: Pelletized after paper cores were removed. Pellets are used for desk mats, floor mats for cars, tiles, etc.
- \*Expanded plastics: Melted and liquefied to reuse as RDF
- \*Papers: Recycled for toilet paper by paper manufacturers for use in the plant

Higashinihon Sekisui Industry Co.,Ltd. ▲  
Sekisui Film Higashinihon Co.,Ltd. ■

### Shiga-Minakuchi Plant and Sekisui Board Co.,Ltd., Minakuchi Plant



Production items : Interlayer film for laminated glass, Micro-pearls for liquid crystal displays, Adhesives, Outside wall panels for houses, and so forth

Generated waste : About 10,000 tons per year quantity

Main waste : Sludge 60%, Waste plastics 16%, Outside wall panel waste 17%, Waste oil 4%, and others

This plant generates the most quantity and kinds of waste among our workplaces. About 1,200 kinds of waste are generated. In the first place, this plant made efforts to reduce the waste generation in each production process and recycle the waste from production processes.

#### Examples of main waste recycling

- \*Outside wall panel waste: After separating into wood and cement, wood is reused for outside panel production and cement as raw material for cement.
- \*Sludge and waste plastics: Reuse for thermal recycling on the premises
- \*Ashes after thermal recycling: Reuse for finished concrete cement such as blocks, etc.

Gunma Plant ▲ Nitta Plant ▲  
Toto Sekisui Co.,Ltd. ■ Ota Plant ▲  
Tokyo Plant ● Tokyo Sekisui Industry Co.,Ltd. ▲  
Kanto Sekisui Industry Co.,Ltd. ▲  
Sekisui Techno Seikei Higashinihon Co.,Ltd. ■



We have been promoting zero emission technology and waste usage development.

We are actively developing our own technology to achieve zero emission, not only relying on outside recycling contractors.

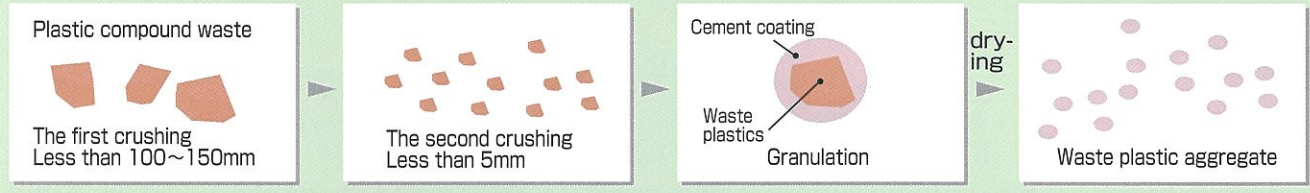
### Aggregate technology of waste plastics (PVC, etc.)

We introduced technology from Japan Road Corporation and Maruman Corporation Ltd. and are building a test facility in Shiga-Ritto Plant to produce aggregate for cement concrete,

utilizing waste plastics (capital investment for the facility is 190 million yen). We are promoting recycling technology and usage development of waste plastics.

#### Outline of waste plastics aggregate technology

##### Process



##### Application examples

**Soundproof walls for highways**  
Now under testing, soundproof walls with recycled plastic aggregate: much lighter with failure load satisfying requirements.



##### Exterior materials

Water penetration pavement material: lessens amounts of rain and sprinkled water splash and the accumulation of puddles on sidewalks and pathways.



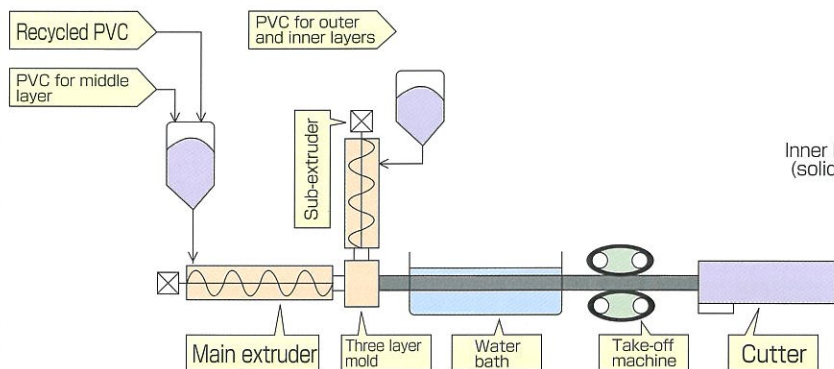
Water penetration blocks

### Material recycling verification plant for PVC pipe

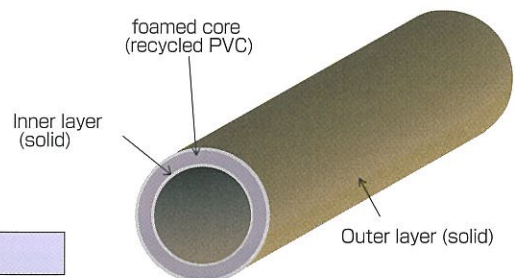
Under the consignment of The Clean Japan Center Foundation we introduced the plant to promote the material recycling of waste PVC

pipe, (capital investment 230 million yen). We started verification tests to produce PVC three layer pipe in a large quantity.

##### Process Diagram



##### Three layer foamed core PVC pipe





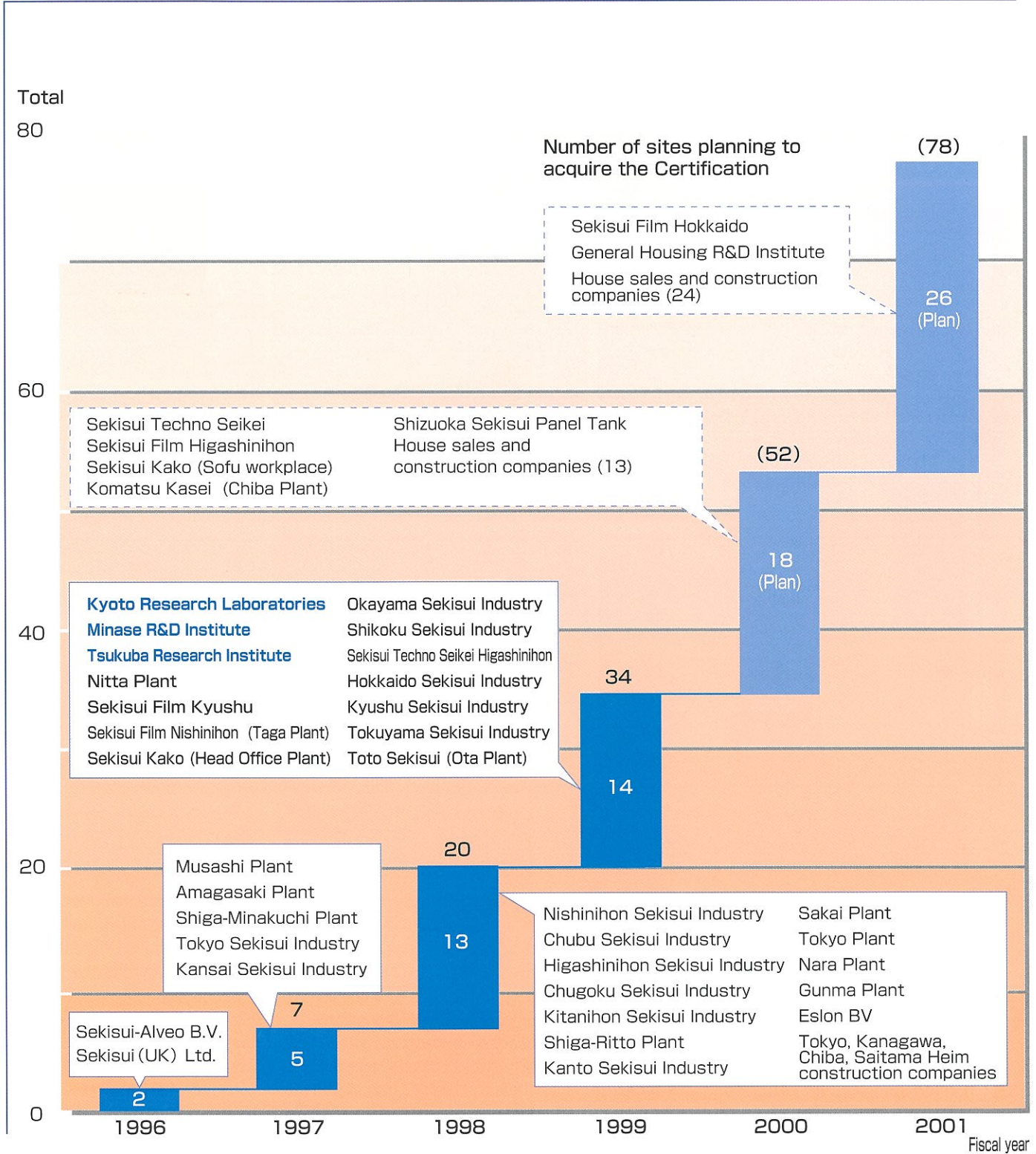
## We aim at acquiring the ISO Certification at our 78 sites.

34 domestic sites have been working on the ISO certification since 1996. In the fiscal year 1999, 3 laboratories for the first time for us and 11 sites obtained the certification, in total 31 sites.

78 sites of the Sekisui Group including 37 house sales

companies and construction companies will aim at obtaining the certification in the fiscal year 2001, advancing our original schedule. Our overseas subsidiary companies will also work on acquiring the Certification.

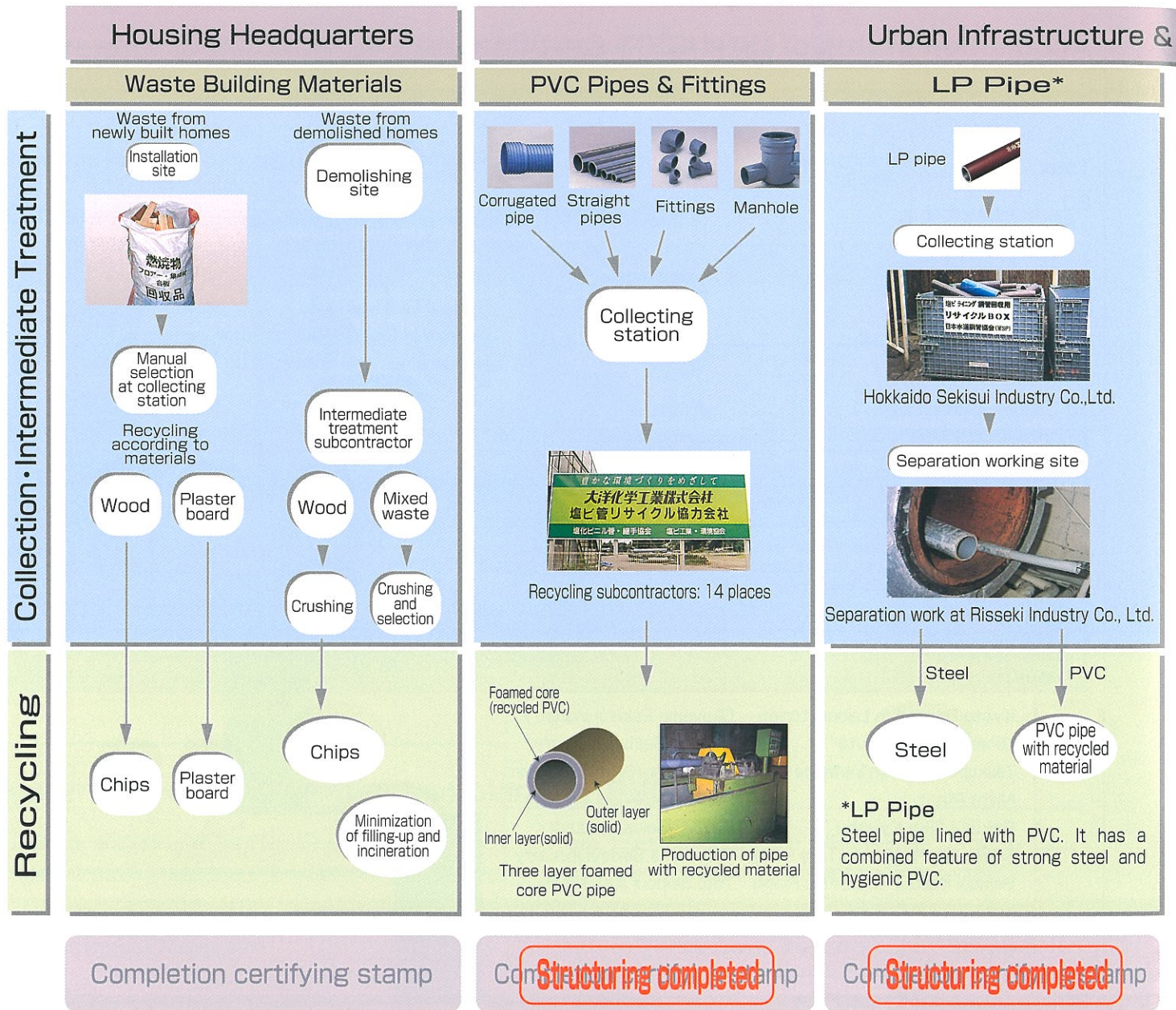
### Acquisition status of ISO14001 Certification





We collect and recycle our products after disposal.

**Collection of Targeted Products and Positions of Recycling System Structuring**



In 1999, we focused our efforts on building the foundation. For waste from newly built homes, we started a test operation for our target of zero emission. For waste from demolished homes, we intend to complete a nation-wide system in conjunction with the ISO-14001 Certification obtaining activities of our home sales and home construction subsidiaries.

We established a nation-wide system in December 1998, in collaboration with The Japan PVC Pipe & Fittings Association. In fiscal 1999, we achieved a 40% recycling rate, by extending the targeted products and rearranging the intermediate collection sites. For utilizing recycled material in our Shiga-Ritto plant, we introduced the equipment producing 3-layer foam pipes.

We established a nation-wide system in October 1999, in collaboration with The Japan Water Steel Pipe Association. For collection and separation work, Hokkaido Sekisui Industry Co.,Ltd. and Risseki Industry Co.,Ltd. are cooperating with us. Our recycling rate was about 10% and we are making continuous efforts to increase it.



# Activities of our Products after Disposal

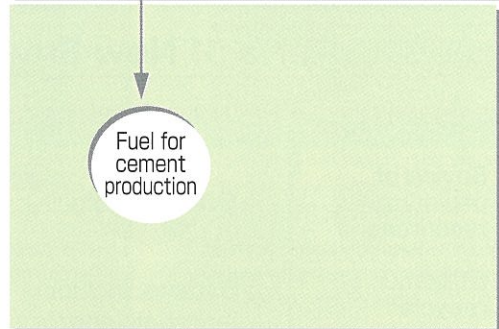
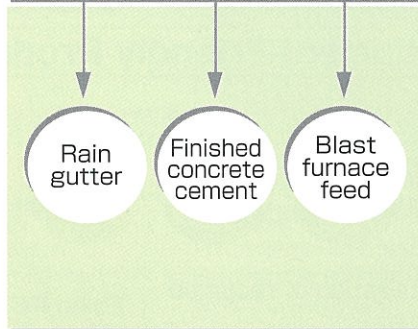
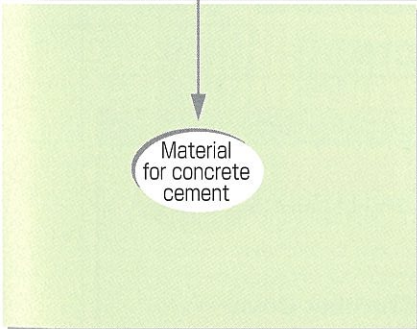
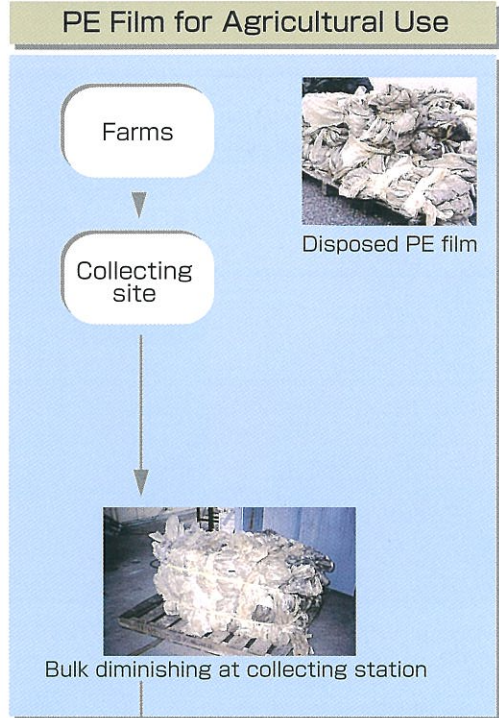
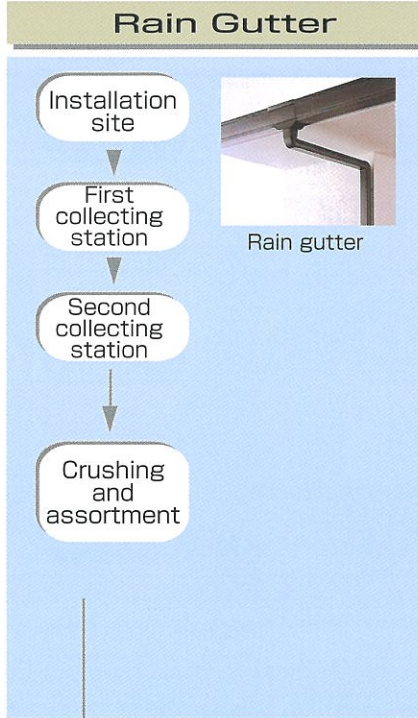
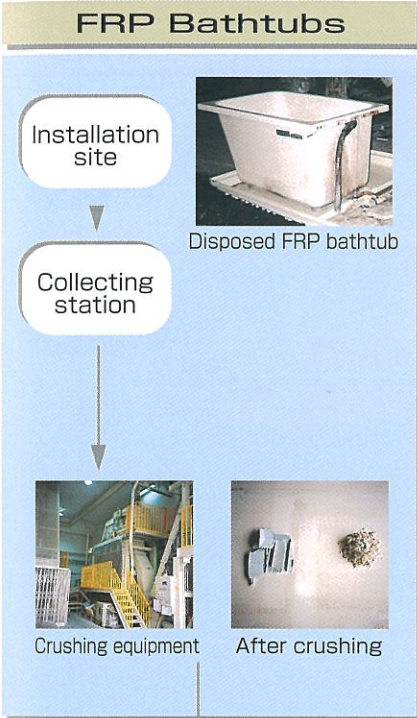
Based on STEP-21, which is our Middle Term Environmental Management Plan, we are structuring a collection and recycling system targeting our six main product items.

As a result, we have completed a nation-wide system for PVC Pipes and Fittings and LP Pipes

in collaboration with business circles, and our own for FRP Bathtubs in the Osaka area. We are not only structuring systems for the rest of the six items, but also extending the structured systems from local to a nation-wide scale at a more substantial level.

## Environmental Products Headquarters

## High Performance Plastics Headquarters



Completion certifying stamp

Completion certifying stamp

Completion certifying stamp

We completed structuring our system in the areas surrounding Osaka in March 2000. After its verification we are extending the system in the Osaka area. In the Tokyo area we have started system structuring in collaboration with The Japan Reinforced Plastic Society.

In 1999 we proceeded a system structuring on the same route as FRP bathtubs. Now we are structuring a system in the Tokyo area in collaboration with the PVC Rain Gutter Association, which we expect to complete at the end of fiscal 2000.

In fiscal 1999, we participated as a PE film manufacturer in The Council for Appropriate Treatment of Waste Plastics of Shiga Prefecture, which we supported for system structuring by indication of film contents and making informative pamphlets. We also tested the recycling system and confirmed its effective functioning.



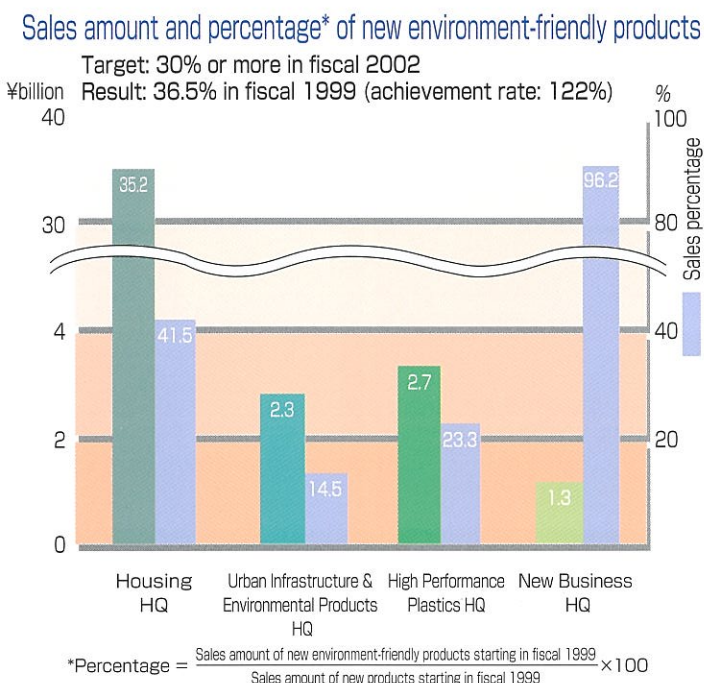
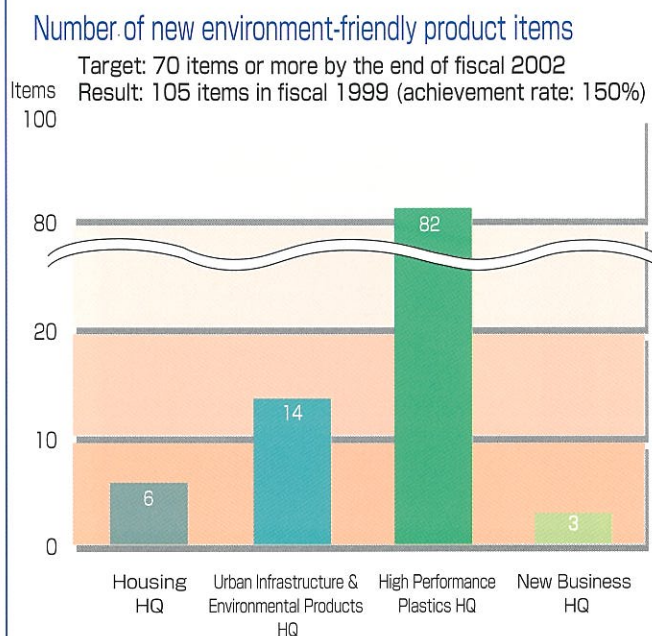
We are developing new products that have very minimum environmental load.

Based on STEP-21, our middle term environmental management plan, we have newly defined our company-wide criteria and management indices (number of items put on the market and the percentage of their sales against the total sales turnover) of new environment-friendly products,

that we are developing.

We achieved our target largely in fiscal 1999. We intend to elevate the percentage and the level of judgment criteria to develop products having little environmental load and/or products contributing to the load reduction.

### Achievement in Fiscal 1999



### Judgment Criteria of New Environment-Friendly Products

Environmental Keywords	Judgment Criteria	Product Examples
<b>Fundamental Consideration</b>	Saving of depleting resources	•5 items, including "long life" Art Face T and H Series
	Utilization of recycled materials	•5 items, including "utilization of recycled materials and/or parts" Eslon PET Chamber Cover
<b>Consideration of Use</b>	Reduction of environmental load	•7 items, including "effective utilization of water" Eslote Bath Water Recycling System
	Utilization of natural power	•4 items, including "use of clean energy and natural materials" Sekisui Heim Shin-DOMANI, Two-U Home EARTHIA, Sekisui Heim Shin-Parfait, Photo voltaic-thermal hybrid system, Safe-Care
<b>Consideration of Disposal</b>	Easy treatment and disposal	•6 items, including "acceleration or support of treatment and disposal" Vegitalon-Hanayaka 5-compartments Dustbin #120 Environment-Friendly Tack Paint
	Easy recycling	•8 items, including "acceleration or support of easy recycling"



## Our Main New Environment-Friendly Products

### Housing Business



**"Sekisui Heim DOMANI®"**  
Home equipped with photo-voltaic generation system reducing CO<sub>2</sub> emission by about 2.2 tons a year

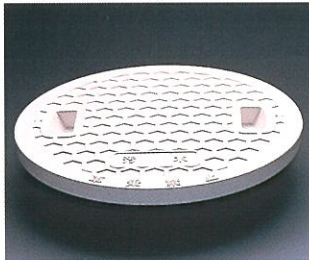


**"Sekisui Two-U Home EARTHIA®"**  
Home equipped with photo-voltaic generation system reducing CO<sub>2</sub> emission by about 2.4 tons a year



**"Sekisui Heim Parfait®"**  
Home equipped with photo-voltaic generation system reducing CO<sub>2</sub> emission by about 2.0 tons a year

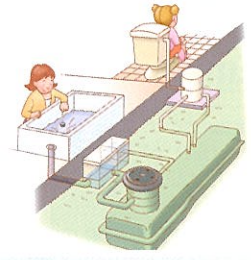
### Urban Infrastructure & Environmental Products Business



**Eslon® PET Chamber Cover**  
Using 100% recycled PET



**"Eslote"**  
Water treatment equipment with a three-fold capacity per unit area over the conventional type



**Bath Water Recycling System**  
66 tons of water can be saved a year in a four-member family (Water saving rate: 15~20%)

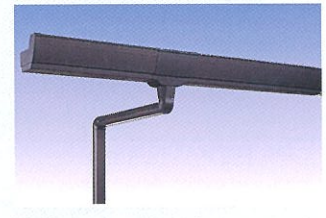
### High Performance Plastics Business



**Environment-Friendly "Tack Paint"**  
Marking tape made of special polyolefin emitting negligible quantity of environment polluting substances when burning



**"Vegetalon Hanayaka"**  
Polyolefin film for agricultural use, emitting little environment polluting substances when burning



**Rain gutter series**  
Surface discoloration properties of rain gutter improved by 3 times extends durability to 10-15 years

### New Businesses



**Photo Voltaic-Thermal Hybrid System**  
About 2,300 kWh electric power can be saved a year in a standard home in the Tokyo district



**"Safe Care®"**  
Totally biodegradable products for home use, made of 100% vegetable materials



**5-compartments Dustbin# 120**  
Household rubbish and garbage can be assorted in 5 kinds maximum



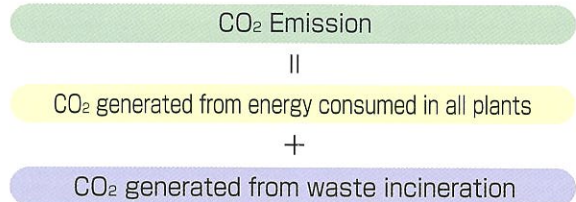
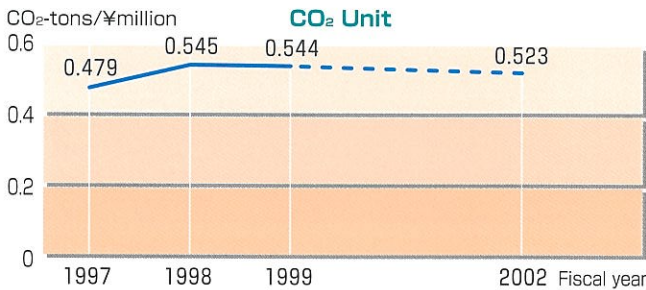


## We are making efforts to reduce CO<sub>2</sub> emission and save energy.

We are promoting our activities to reduce CO<sub>2</sub> emission, having set our target on more than 4.0% reduction in terms of Unit (tons/per million yen sales) by the end of

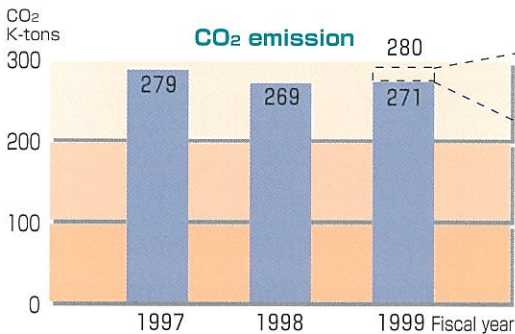
fiscal 2002 over the actual figure in fiscal 1998. In fiscal 1999, CO<sub>2</sub> emission was reduced by 0.2% per Unit, but increased by 0.9% in emission volume compared with those in fiscal 1998.

### CO<sub>2</sub> Emission per turnover Unit

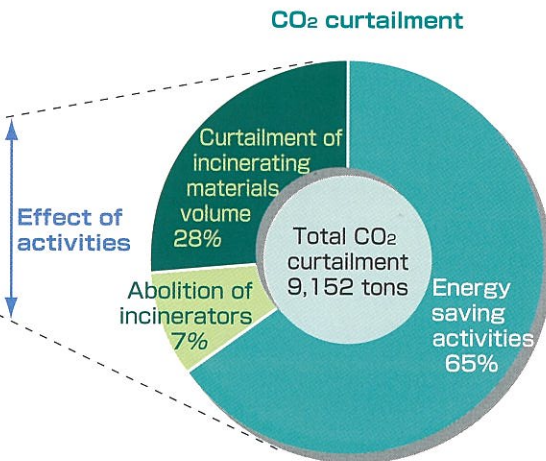


### CO<sub>2</sub> Emission

A 4.3% increase in CO<sub>2</sub> emission had been forecast in fiscal 1999 over that of the previous year in view of production increase. But its actual increase was suppressed to 0.9%, by the energy saving activities, abolition of incinerators and curtailment of incinerating materials implemented at our plants.



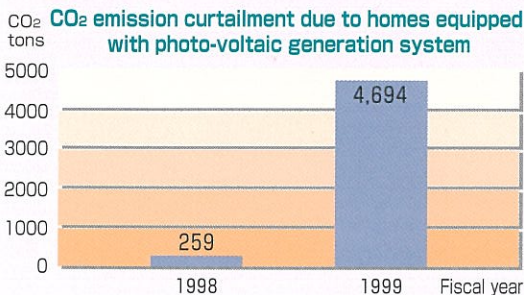
\* Figures announced publicly by respective electric companies are used for CO<sub>2</sub> emission originating in electricity.



### Our Activities outside Production

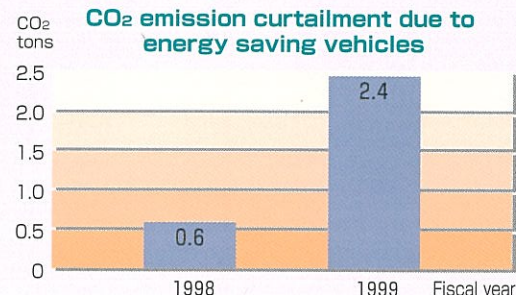
#### Deployment in Housing

Due to the equipment of our homes with the photo-voltaic generation system, CO<sub>2</sub> emission was curtailed by about 4,700 tons in fiscal 1999. We are developing a more efficient photo voltaic-thermal hybrid system and deploying it in our housing business.



#### Use of Energy Saving Vehicles

In fiscal 1999 we employed 6 hybrid cars, and 28 cars equipped with direct-injection engines for our company use.



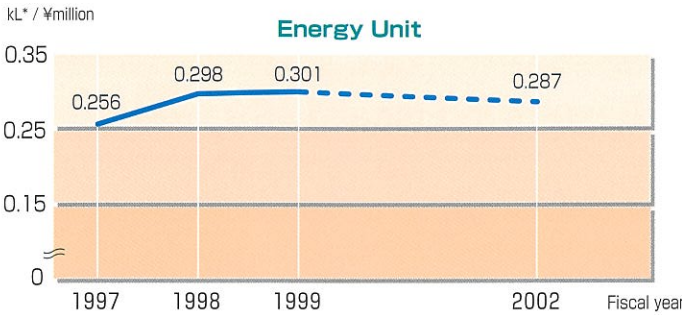


# Energy Saving Activities

We are promoting energy saving activities with a target of more than 4.0% reduction in terms of Unit of our energy use in fiscal 2002 compared to that in fiscal 1998. In fiscal 1999, we saved 3,744 kL of our energy use in terms of crude oil.

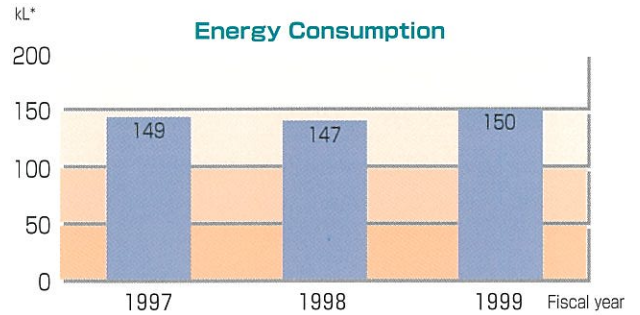
But the Unit per sales amount increased by 1.0% due to lowering of sales prices, and the consumption volume increased by 2.1% due to production volume increase compared to fiscal 1998 respectively.

## Energy consumption per turnover Unit



\*kL...in terms of crude oil

## Energy Consumption



## Energy Saving Activities at Our Plants

### ① Implementation of Capital Expenditure Assessment

When applications are made for a new plant building or capital expenditure for facilities and equipment, we are strictly reviewing energy saving with our "Energy Check Sheet".

課名	消費電力 (kWh)	消費熱量 (kJ)	消費水量 (m³)	消費ガス (m³)	消費空気 (m³)
生産課	281,750	1,019,470	1,210,000	1,210,000	1,210,000
検査課	264,500	920,000	1,100,000	1,100,000	1,100,000
倉庫課	66,960	235,000	280,000	280,000	280,000
事務課	410,548	1,430,000	1,700,000	1,700,000	1,700,000

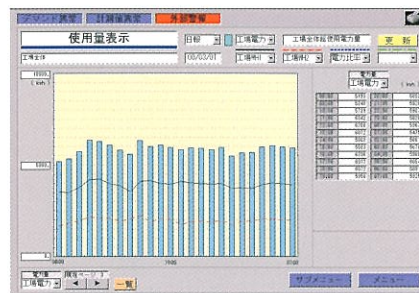
Energy Check Sheet



Resin factory extension (Shiga-Minakuchi Plant)  
Adopting specifications for energy saving such as use of highly efficient motors, rotation control by inverters, etc.

### ② Development of Energy Control System

Accurate data understanding and analysis are required to steadily promote energy saving activities. We have developed our own unique system for energy saving based on the Energy Control System we are implementing.

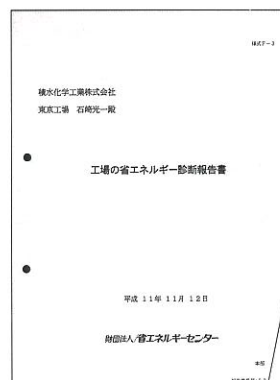


Energy Control System (Building materials production line, Tokyo Plant)

### ③ Development of Energy Saving Themes in Diagnoses by External Bodies

We are progressively utilizing the energy saving diagnoses conducted by external bodies such as The Energy Conservation Center and equipment manufacturers to develop effective themes.

Diagnosis papers





## We are promoting activities to prevent pollutants from being emitted or released to the environment.

Based on STEP-21 which is our Middle Term Environment Plan, we have been making efforts to reduce release or emission and transfer of our targeted substances, that are specified as research objectives in the PRTR pilot project of

the Environment Agency.

As a result, we could achieve the target in fiscal 1999. We extend the substances of our target and continue our activities to prevent them from being released or emitted to the environment.

### Activity Examples

In fiscal 1998 we extended our research on release, emission, and transfer of environmental pollutants, to 30 workplaces. In view of their types, use patterns and production processes, we are striving for improvement, by making catalytic incinerator and absorption tower facilities, shifting to alternatives, and changing work methods according to each respective cases.

The reduction of waste transfer is implemented in liaison with zero emission activities at our workplaces. We are implementing dual activities for waste reduction and recycling.

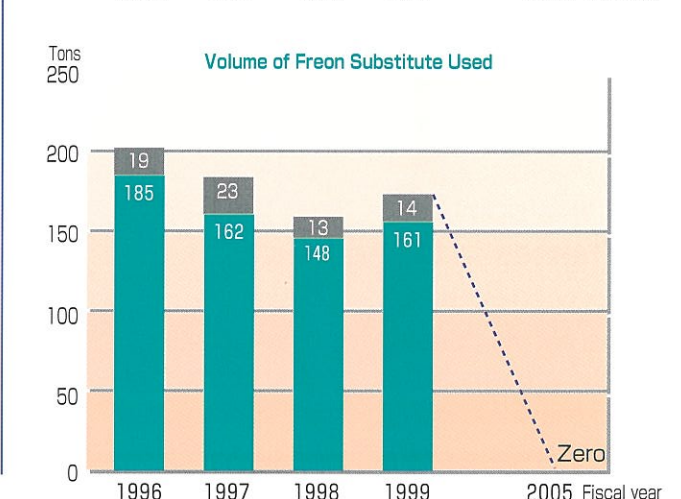
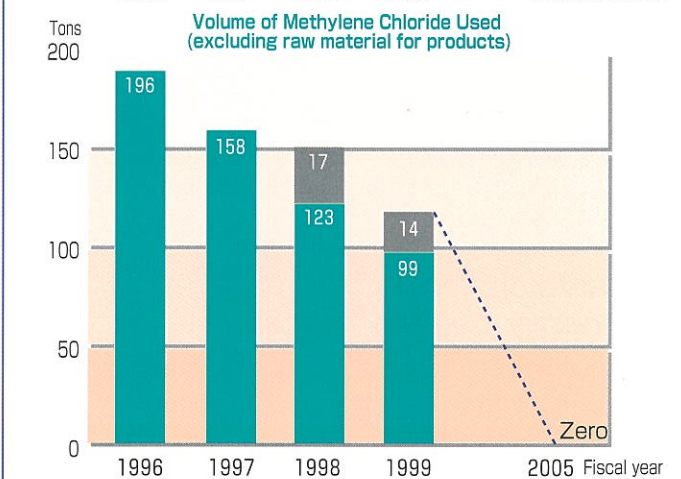
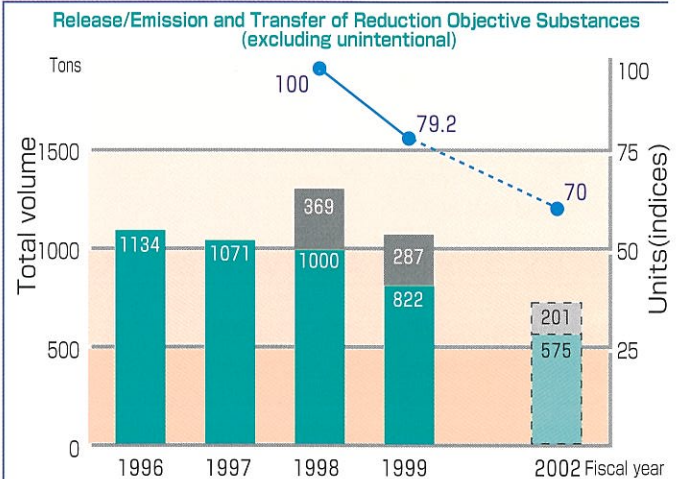
#### ● Actual cases of improvement

Chemical substances	Improvement methods and measures	Facilities
methylene chloride (cleaning use)	Change to alternative solvents	Shiga-Ritto Plant Okayama Sekisui Industry
	Change to water	Tokyo Plant
	Change of working method	Sekisui Techno Seikei Higashinohon
toluene xylene (compounding ingredients in sealer)	Change to water sealer	Kitanihon Sekisui Industry Higashinohon Sekisui Industry Kanto Sekisui Industry Tokyo Sekisui Industry Chubu Sekisui Industry
	Change of solvent types	Kansai Sekisui Industry Chugoku Sekisui Industry Nishinohon Sekisui Industry
acrylic acid	Setup of catalytic incinerator	Musashi Plant



Package-type Catalytic Incinerator (Musashi Plant)

### Results in Fiscal 1999



We are developing substitutable technology for freon substitutes. Their usage increased in fiscal 1999, due to production increase.



## Results of Release/Emission and Transfer in Fiscal 1999 (Total 30 facilities)

Unit: tons

Object substances	Used volume (Produced volume)	Releases/Emissions			Transfer (recycling excluded)	Total	Innocuous treatment/Recycling		Total
		to air	to drain water	to land			Internal	External	
zinc compounds	56.9	0	0	0	5.3	5.3	0	0.02	0.02
acrylamide	0.9	0	0	0	0	0	0	0	0
acrylic acid (monomer)	67.3	0	0	0	0	0	0	1.3	1.3
ethyl acrylate (monomer)	14.4	0	0	0	0	0	0	0	0
acetaldehyde	232.0	0.2	0	0	0	0.2	69.5	0	69.5
antimony compounds	13.8	0	0	0	0	0	0	2.0	2.0
vinyl chloride (monomer)	127,996.0	18.4	0	0	0	18.4	0	0	0
barium compounds	8.6	0	0	0	0.6	0.6	0.4	0.1	0.5
xylene	129.4	57.0	0	0	0	57.0	0	3.6	3.6
cobalt compounds	1.7	0	0	0	0	0	0	0	0
methylene dichloride	795.2	103.0	0	0	0	103.0	0	21.8	21.8
methylene-bis (4-phenyl-isocyanate)	35.0	0	0	0	0.7	0.7	0	0	0
N,N-dimethylformamide	11.2	0	0	0	0	0	0	0	0
4,4-diaminodiphenylmethane	0.2	0	0	0	0	0	0	0	0
styrene (monomer)	3,543.9	95.3	0	0	1.0	96.3	7.0	97.0	104.0
toluene	2,053.1	809.3	0	0	0	809.3	4.2	18.5	22.7
lead compounds	938.4	0	0	0	8.1	8.1	18.9	3.1	22.0
fluorine compounds	2.8	0	0	0	0	0	0.2	0	0.2
formaldehyde	2.8	0	0	0	0	0	1.6	0	1.6
bis (2-ethylhexyl) adipate	9.1	0	0	0	0.1	0.1	0	0	0
vinyl acetate (monomer)	3,577.9	1.6	0	0	0	1.6	0	0	0
bis (2-ethylhexyl) phthalate	69.6 (432,260.0)	2.0	0	0	4.6	6.6	0	0.3	0.3
dibutyl phthalate	269.0	0	0	0	0	0	0	0	0
dimethyl phthalate	34.5	0	0	0	0	0	0	0	0
tetrahydrofuran	138.4	2.0	0	0	0	2.0	0	0	0
aluminum compounds	22.3	0	0	0	0	0	9.0	13.3	22.3
2,6-di-t-butyl-4-methylphenol	33.4	0	0	0	0	0	0	0	0
<b>Total</b>	<b>572,317.8</b>	<b>1,088.8</b>	<b>0</b>	<b>0</b>	<b>20.4</b>	<b>1,109.2</b>	<b>110.8</b>	<b>161.0</b>	<b>271.8</b>

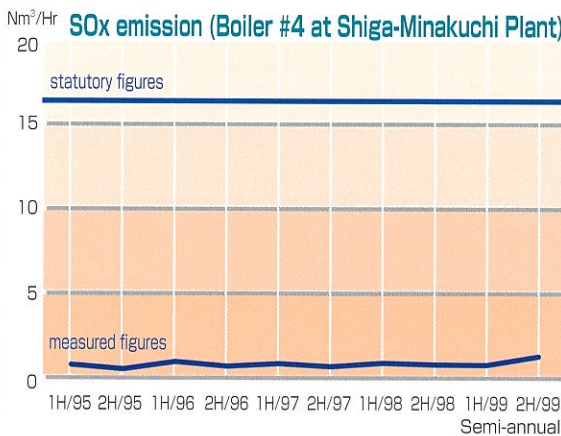
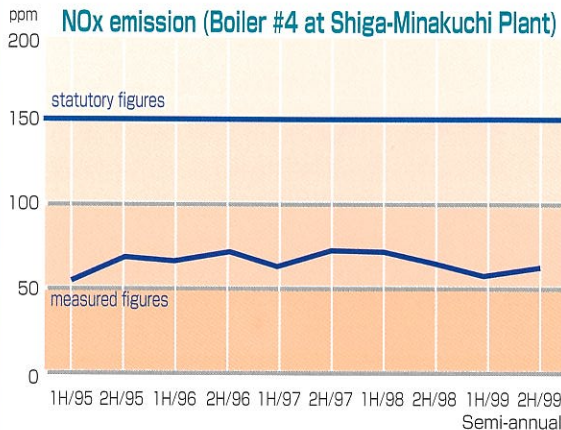


## We are controlling emission and release of pollutants to the air and to drains.

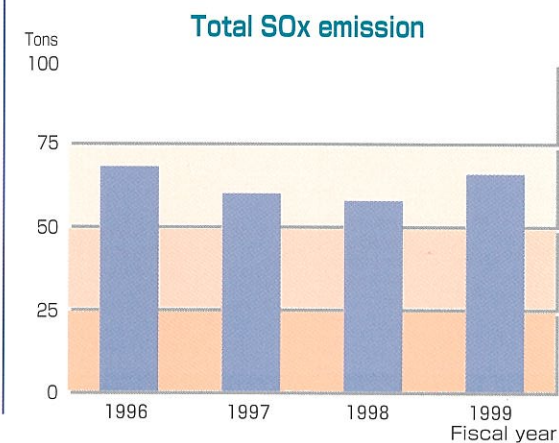
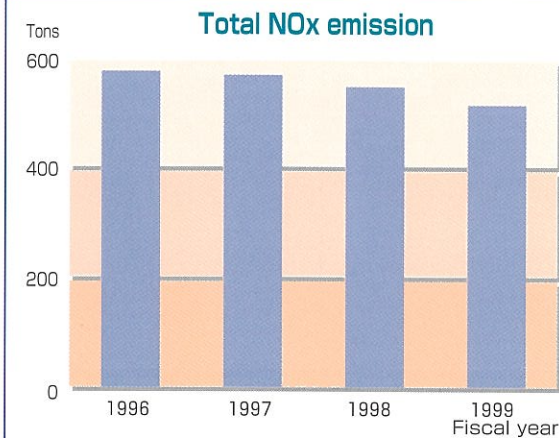
We are implementing the control at a level far lower than the statutory figures, by adequate maintenance of the facilities and periodical measurement.

The total SOx emission increased by 12% due to production increase.

### Air Pollution Prevention Activities

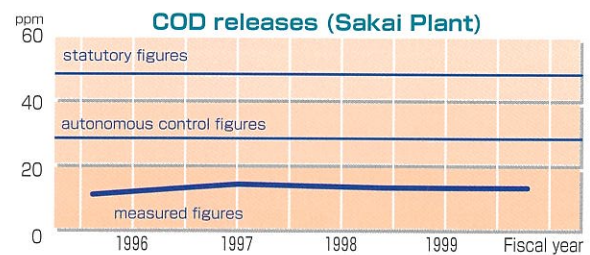
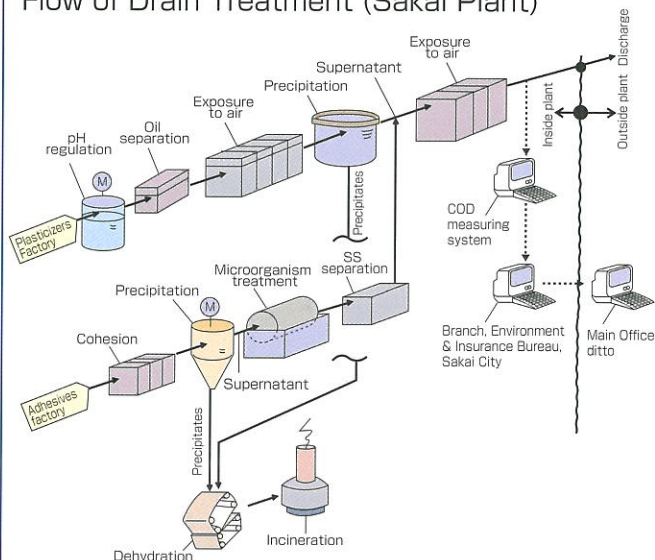


### NOx and SOx emissions in overall company

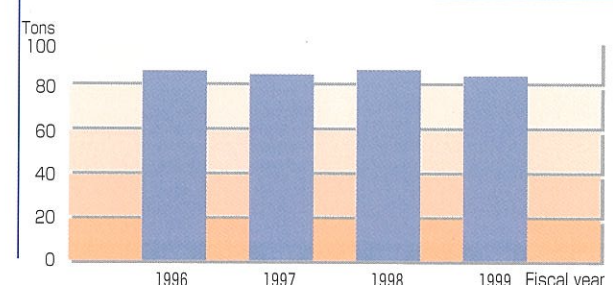


### Water Contamination Preventive Activities

#### Flow of Drain Treatment (Sakai Plant)



### COD releases in overall company





## We are fully prepared for emergency cases.

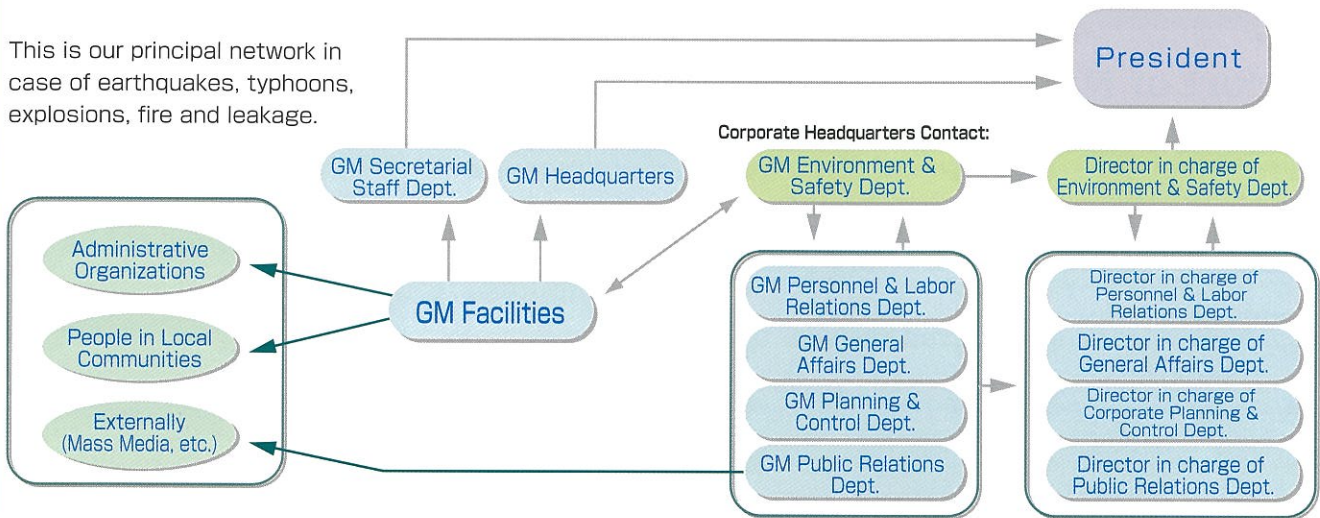
In order to secure the safety and health of employees and people of local communities, it is necessary to establish a system by which appropriate responses

can be taken in emergency cases. We have established our information and liaison system by which we can contact internally and with administrative organizations and people in the neighborhood.

### Emergency Information System

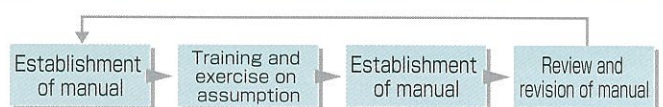
We have established a network to respond to emergency cases speedily and accurately.

This is our principal network in case of earthquakes, typhoons, explosions, fire and leakage.



### Measures in Emergency Cases

Each facility has established a manual for emergency preparedness. We are consolidating our system continuously rotating the PDCA circle, by regular training and exercise assuming emergency cases and correction of malfunctions.



Training for outflow prevention assuming oil leakage <Kyushu Sekisui Industry Co.,Ltd.>



① Outflow prevention by shutter-gate



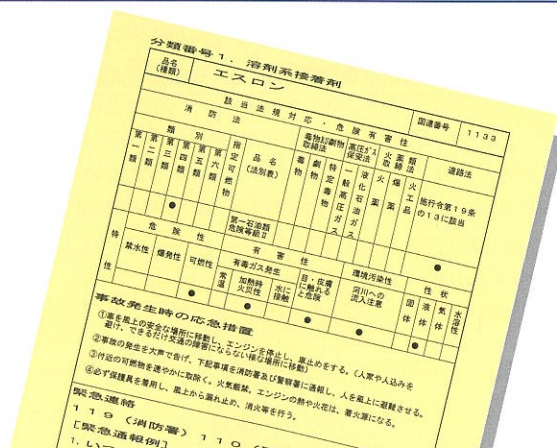
② Water inflow to oil separating tank in emergency



③ Prevention of contamination spread by soil

### Yellow Card (Emergency Contact Card) for Truck Drivers

Scrupulous care is required in handling hazardous chemical materials, not only in processing and use, but also in transportation. This yellow card specifies the nature of goods being transported and how to handle them, should accidents occur so that the drivers can securely take appropriate actions. So far 327 yellow cards in total have been delivered to truck drivers for emergency preparedness.



Yellow Card



## We are promoting nature protection activities by full employee participation.

Making our nature protection activities the main pillar of our social contribution activities, we have set up an internal body named "Executive Committee for Nature Protection Activities," and have been progressively promoting these works. Outside Japan, we support, in cooperation with Keidanren Nature Conservation Fund (KNCF), the nature protection activities implemented by the environment NGO's. Inside Japan, our

organizations in various districts are promoting the nature protection activities widely in respective local communities. We do not limit our activities to financial support of the nature protection activities. As a company, our final goal is to contribute to the local communities in which we operate through each individual's voluntary participation in these activities.

### Support of Nature Protection Activities outside Japan

In 1999, we supported a total of 8 projects, newly adding the breeding site survey of Middendorfibean geese migrating to Fukushima Bay every winter. To make our support more substantial, we regularly hold the NGO report meetings on their activities.

In August, Mr.Kaoru Hirota, our director and advisor, joined the site inspection visit, as vice chairman of KNCF.

#### Overseas Projects we supported in Fiscal Year 1999

Projects	Countries/Areas	Activity Bodies
Marine Resources Protection in Komodo National Park	Indonesia	The Nature Conservancy (USA)
Survey of Important Natural Environment with Wild Birds as the Indicator	East Asia	Wild Bird Society of Japan
Support of Afforestation Project in the Western Part of Fiji	Fiji	OISCA International
Recovery of Mangrove Trees in ex-Prawn Farms	Thailand	Research Association for Global Mangrove
Afforestation & Developmental Activity in the Upstream of the Chang-jiang River	China	International Good Neighborhood Association
Training Camp for Better Understanding of Forests	Thailand	Japan Environmental Education Forum
Eco-tourism for Protection of Diverse Creatures	Fiji	JANCPEC
Survey of Middendorfibean Geese Breeding Sites	Russia	Network Fukushima Bay



Afforestation in the upstream area of Chang-jiang River (China)



Report meeting on NGO activities



Middendorfibean geese migrating from Russia (Fukushima Bay)

### Sekisui Chemical's Nature Study Course: Education and Training of Activity Leaders

To promote nature protection activities in local communities, we have regularly held our unique Sekisui Chemical's Nature Study Course, with the cooperation of Wild Bird Society of Japan. In fiscal 1999, we held the course three times, resulting in 124 attendants in a cumulative total since its start in 1997.



Sekisui Chemical's Nature Study Course: educating and training activity leaders in our respective organizations



## Promotion of Nature Protection Activities inside Japan

In fiscal 1999, our workplaces in Japan progressively implemented nature protection activities together with their respective local communities.

Through activities such as cleaning the neighborhood of our workplaces, we are learning the importance of nature and a volunteer spirit.



Volunteer activity for flood control/Tokuyama Sekisui Industry Co.,Ltd.



Cleaning all-night lights at Tokaido-Yokota-watashi/Shiga-Minakuchi Plant



A nature observation event at Koya Pond/Amagasaki Plant



Cleaning activity together with local high school students/Nishinohon Sekisui Industry Co.,Ltd.

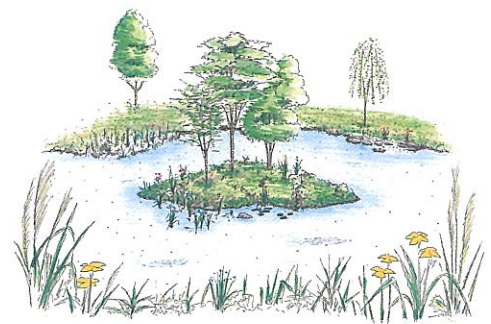
## Making a Workplace Biotope

Our employees in Kyushu Sekisui Industry Co., Ltd. selected as our model workplace, are developing a biotope.

### Its concept :

~To realize commensality of the plant and the environment by fusing zero emission and nature protection activities~

- We are making efforts to create an attractive environment system in which the plant, human beings and nature are finely fused.
- We wish to restore the original scenery of Saga prefecture by introducing creatures and plants that match the natural features of the region.
- We invite the local community to join our project to realize a hand-made biotope.



## Comment from The Nature Conservancy of USA

Sekisui Chemical Co., Ltd. has been furthering the Komodo marine conservation project for nearly four years, which makes Sekisui Chemical one of the most committed supporters of this project. This continuing support made Komodo one of the few, perhaps the only, coral reef area in Indonesia where the reefs are showing signs of recovery.

Famous as the last remaining habitat of the Komodo dragon *Varanus komodensis*, Komodo National Park was established as a National Park in 1980, and declared a Man and Biosphere Reserve and a World Heritage Site. At the request of the Indonesian Minister of Forestry, The Nature Conservancy, supported by Sekisui Chemical, assists the Komodo National Park Authority toward the ambitious goal of completely protecting the Park's marine ecosystem. The recent completion and ratification of Park's 25-year management plan was also made possible by the generous support of Sekisui Chemical. The management plan marks an important step in achieving the Park's objectives: to protect terrestrial and marine biodiversity, and to function as a resource for the local communities.

Rili H. Djohani  
Director, Coastal and  
Marine Program Indonesia  
The Nature Conservancy

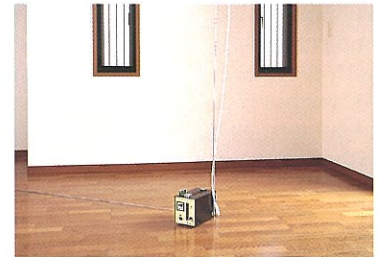


## Other Activities

### Counter - measures against the Sick House Syndrome

A matter of our primary concern in recent years is the sick house syndrome which is caused by chemical substances such as formaldehyde contained in building materials. We are implementing formaldehyde concentration measurement in newly built houses, while selecting formaldehyde-free building materials and taking such measures as 24-hour ventilation.

In fiscal 1999, we implemented formaldehyde concentration measurement with Sekisui Heim Parfait prior to delivery to customers.



Formaldehyde concentration measurement

### Green Purchasing

Aiming at total reduction of environmental load in business activities, we have started green purchasing, in addition to its reduction in our production activities and in our products. In fiscal 1999, we set up the principal policy and established the standards. We are starting the green purchasing of office supplies in fiscal 2000.

#### Assessment Standards (Office supplies and utensils)

1. Energy consumption is small in their resources procurement or when they are used.
2. Recycled materials and/or recycled parts and components are used.
3. They can easily be separated and selected.
4. They can easily be recycled.
5. Collection and recycling routes are secured for them.

#### Purchasing Standards (Office Supplies and Utensils)

Objects	Standards
OA forms	100% recycled paper content, and max.70% white chromaticity
Envelopes, notebooks, pamphlets, slips, name cards	Min.70% recycled paper content, or non-wood pulp paper
Toilet paper, paper towels	100% recycled paper content
Stationary, office supplies, OA equipment	Listed in manufacturers' eco-catalogs, or described in Environmental Data Book for Commodities Selection issued by the Green Purchase Network

### Environmental Publicity Activities (Environment and Housing)

As a part of our publicity works for general consumers, we have issued a brochure named "Environment and Housing", which has also been released on the Internet. It introduces Environment-Friendly Living, together with our response as a home manufacturer to the global environment and the living environment.

(Available only in Japanese)

URL:<http://www.harmonate.com/jouhou/environment/>



### Assessment by External Organizations

Ranked No.35 in the Manufacturing Industry The 3rd Environmental Management The Nihon Keizai Shimbun  
 Fiscal 1999 New Energy Grand Prize Director of Resources & Energy Agency Prize (Sekisui Heim Parfait EX)  
 Fiscal 1999 The Nihon Keizai Shimbun Excellent Product & Servicing Prize, Excellence Prize The Nikkei Sangyo Shimbun Prize <Environment>(Sekisui Heim Parfait EX)



# Objects of Report Making

## Period

April 1999~March 2000

## Facilities and Locations (30 production Facilities and 4 research institutes)

### 1. Sekisui Chemical's Plants

Shiga-Ritto Plant  
Ritto-cho, Shiga-ken

Gunma Plant, Sekisui Board Co.,Ltd., Gunma  
Sakai-machi, Gunma-ken

Nara Plant  
Nara-shi, Nara-ken

Tokyo Plant  
Asaka-shi, Saitama-ken

Nitta Plant  
Nitta-machi, Gunma-ken

Amagasaki Plant  
Amagasaki-shi, Hyogo-ken

Musashi Plant  
Hasuda-shi, Saitama-ken

Shiga-Minakuchi Plant, Sekisui Board Co.,Ltd. Minakuchi  
Minakuchi-cho, Shiga-ken

Sakai Plant  
Sakai-shi, Osaka-fu

### 2. Housing-Related Subsidiaries

Kitanihon Sekisui Industry Co.,Ltd.  
Iwamizawa-shi, Hokkaido

Higashinihon Sekisui Industry Co.,Ltd.  
Watari-cho, Miyagi-ken

Kanto Sekisui Industry Co.,Ltd.  
Kasama-shi, Ibaraki-ken

Tokyo Sekisui Industry Co.,Ltd.  
Hasuda-shi, Saitama-ken

Chubu Sekisui Industry Co.,Ltd.  
Toyohashi-shi, Aichi-ken

Kansai Sekisui Industry Co.,Ltd.  
Nara-shi, Nara-ken

Chugoku Sekisui Industry Co.,Ltd.  
Okayama-ken

Nishinihon Sekisui Industry Co.,Ltd.  
Tosu-shi, Saga-ken

### 3. Resin Processing-Related Subsidiaries

Toto Sekisui Co.,Ltd. Ota Plant  
Nitta-machi, Gunma-ken

Tokuyama Sekisui Industry Co.,Ltd.  
Shinnanyo-shi, Yamaguchi-ken

Hokkaido Sekisui Industry Co.,Ltd.  
Iwamizawa-shi, Hokkaido

Sekisui Techno Seikei Higashinihon Co.,Ltd.  
Fujieda-shi, Shizuoka-ken

Sekisui Techno Seikei Co.,Ltd.  
Ando-cho, Nara-ken

Okayama Sekisui Industry Co.,Ltd.  
Okayama-shi, Okayama-ken

Shikoku Sekisui Industry Co.,Ltd.  
Saijo-shi, Ehime-ken

Kyushu Sekisui Industry Co.,Ltd.  
Chiyoda-cho, Saga-ken

### 4. Film Manufacturing-Related Subsidiaries

Sekisui Film Hokkaido Co.,Ltd.  
Ishikari-shi, Hokkaido

Sekisui Film Higashinihon Co.,Ltd. Sendai Plant  
Watari-cho, Miyagi-ken

Sekisui Film Nishinihon Co.,Ltd. Taga Plant  
Taga-cho, Shiga-ken

Sekisui Film Kyushu Co.,Ltd.  
Izumi-shi, Kagoshima-ken

Sekisui Kakoh Co.,Ltd.  
Higashiura-cho, Aichi-ken

### 5. Sekisui Chemical's Research Institutes/Laboratories

General Housing R&D Institute  
Tsukuba-shi, Ibaraki-ken

Kyoto Research Laboratories  
Kyoto-shi, Kyoto-fu

Minase R&D Institute  
Shimamoto-cho, Osaka-fu

Tsukuba Research Institute  
Tsukuba-shi, Ibaraki-ken



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