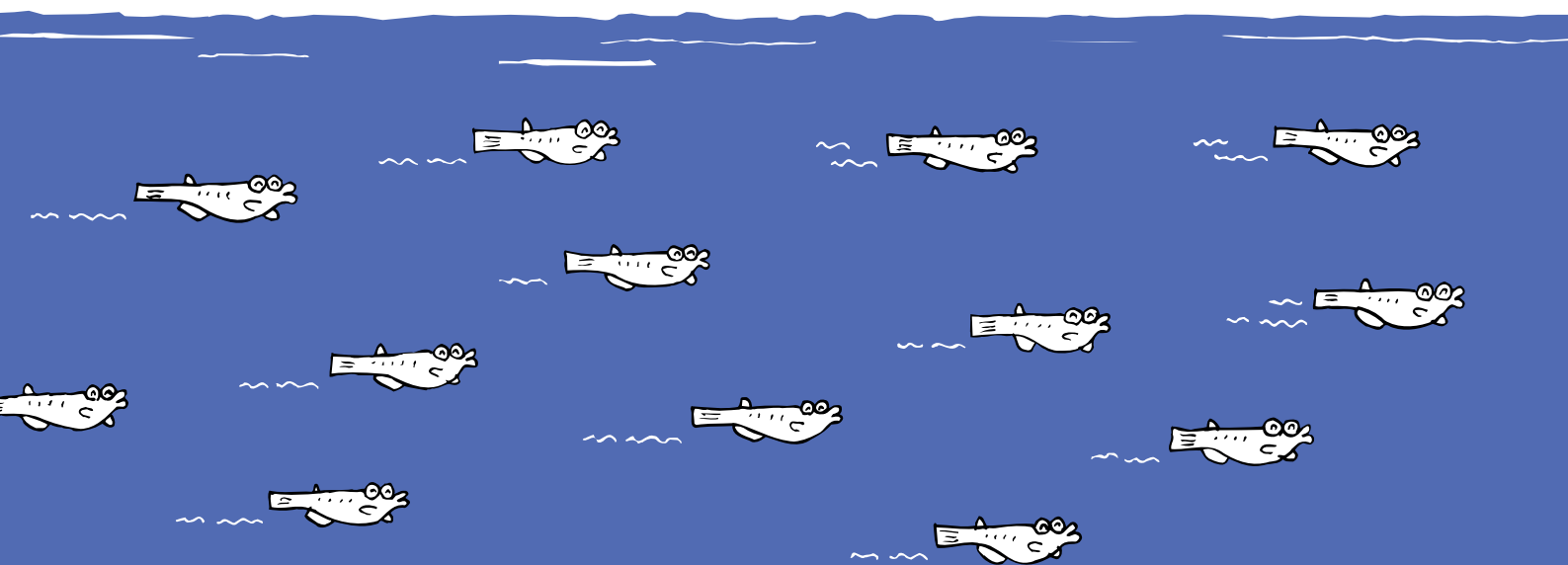
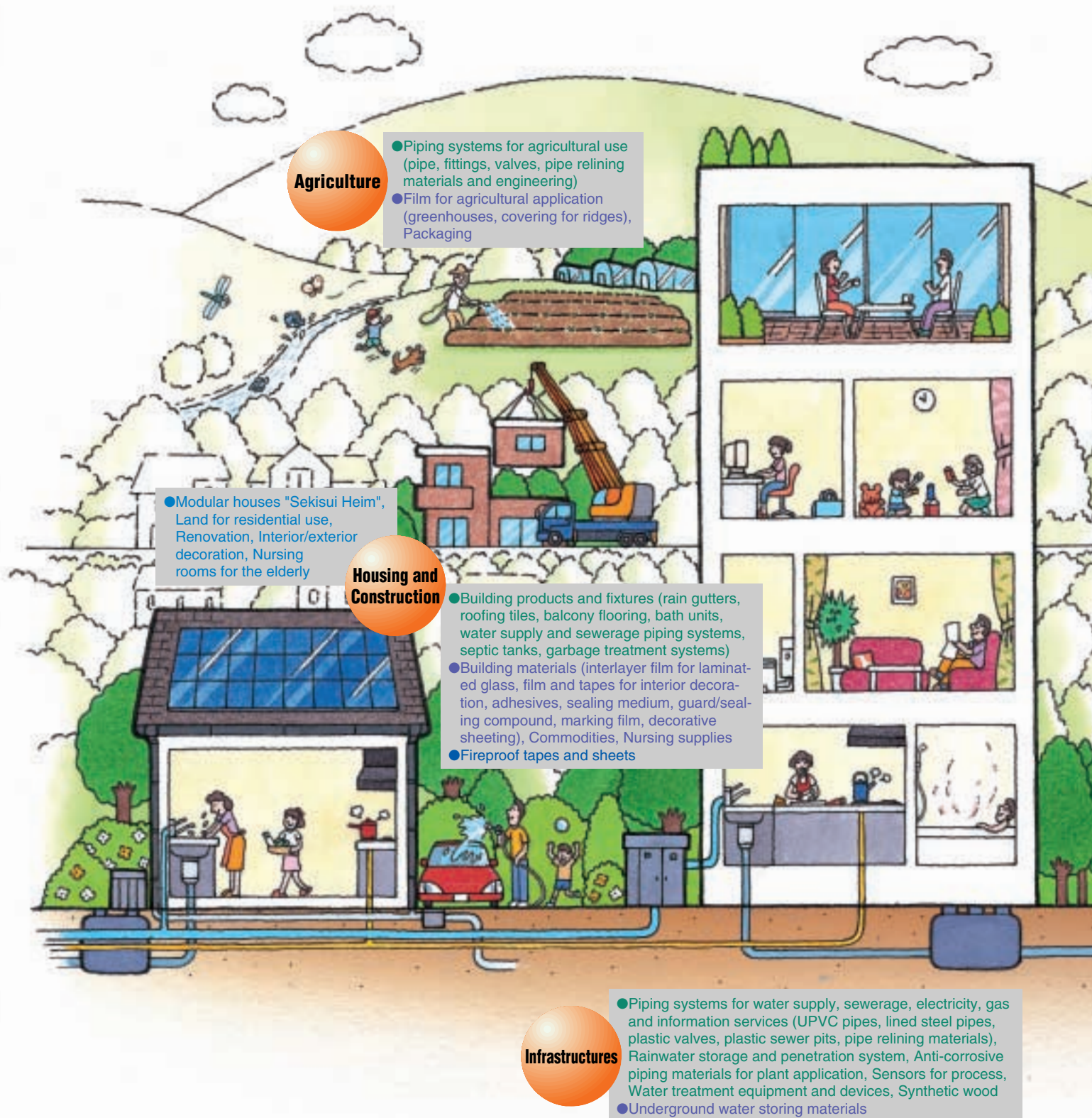


ENVIRONMENTAL REPORT 2004



Business Areas of Sekisui Chemical Group and Profile of the Company

The products of Sekisui Chemical Group are widely used in various fields of daily living.



■Profile of the Company

(as of March 31, 2004)

Established: March 3, 1947
 Capital: ¥100.0 billion
 Domestic Subsidiaries: 163 companies
 Overseas subsidiaries: 39 companies
 Main Business Indices (FY2003 in consolidation)
 Consolidated Subsidiaries: 134 companies
 Annual Turnover: ¥814.9 billion
 Number of Employees: 16,987

Fig.1 Annual Turnover

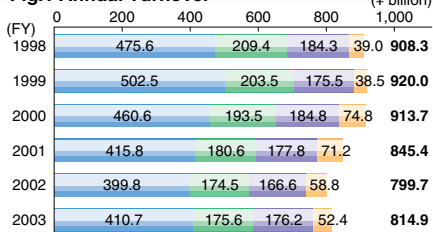
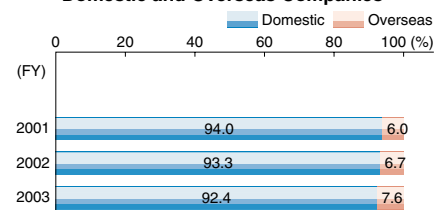
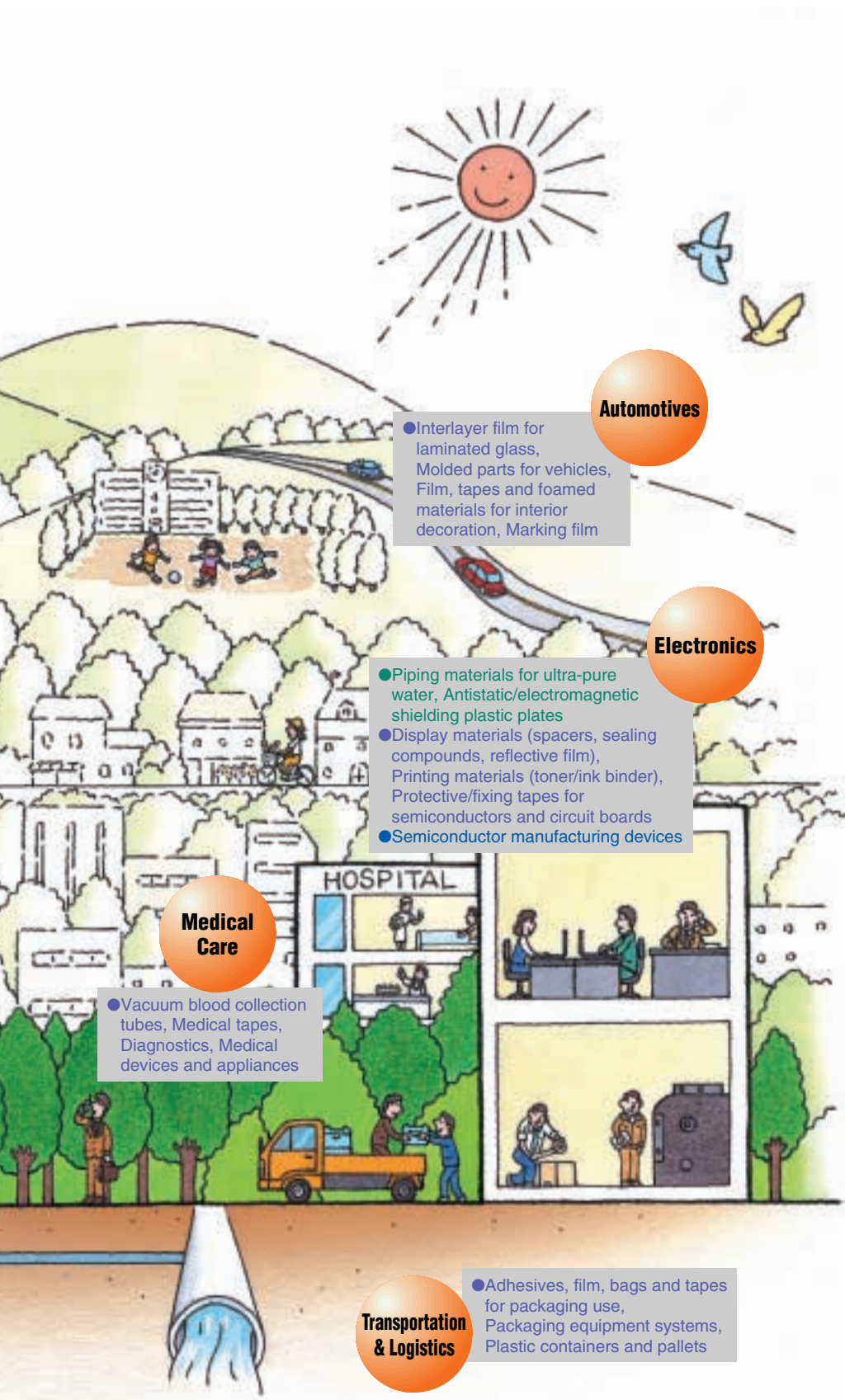


Fig.2 Ratio of Annual Turnover between Domestic and Overseas Companies





● Interlayer film for laminated glass, Molded parts for vehicles, Film, tapes and foamed materials for interior decoration, Marking film

Automotives

● Piping materials for ultra-pure water, Antistatic/electromagnetic shielding plastic plates
● Display materials (spacers, sealing compounds, reflective film), Printing materials (toner/ink binder), Protective/fixing tapes for semiconductors and circuit boards
● Semiconductor manufacturing devices

Electronics

Medical Care

● Vacuum blood collection tubes, Medical tapes, Diagnostics, Medical devices and appliances

Transportation & Logistics

● Adhesives, film, bags and tapes for packaging use, Packaging equipment systems, Plastic containers and pallets

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Product names are color-coded according to the colors in the table of contents.

Fig.3 Consolidated Number of Employees (persons)

(FY)	0	5,000	10,000	15,000	20,000
1998					19,870
1999		10,835	3,450	3,511	1,952 19,748
2000		10,685	3,242	3,520	1,778 19,225
2001		9,364	3,254	3,986	1,795 18,399
2002		9,198	2,925	3,704	1,502 17,329
2003		8,949	2,930	3,903	1,205 16,987

Fig.4 Produced Quantity (Simple Total) of Object Workplaces (FY)

(FY)	0	200	400	600	800	1,000	1,200	1,400 (tons)
1998		554	408	163	131			1,256
1999		573	390	181	131			1,275
2000		485	376	189	120			1,170
2001		405	345	180	121			1,051
2002		379	339	187	110			1,015
2003		384	305	206	111			1,006

Housing Company Urban Infrastructure & Environmental Products Company High Performance Plastics Company Other Businesses + H.Q.s'



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. Sekisui Chemical Co., Ltd. has been a member of the Japan Responsible Care Council since its start in 1995, and has been continuing the responsible care activities progressively.

Message from the President

The reformation of our corporate management has our utmost concern for the environment as the central pillar.

The environment is an increasingly important value among corporations and therefore we deeply focus on the role we have to play in society in this regard as we enter the 21st century. The activities of Sekisui Chemical Group are closely related to human lifestyles through the manufacture and supply of houses and of products and systems based on plastics, all of which are fundamental to the daily life of modern society. Therefore response to the environmental requirements is one of the most important issues in our corporate management.

In this situation, I came upon the idea to place the environment as the key pillar in our corporate management and to reform our management by doing so. In our Mid-term Management Vision "GS21-Premium 600", which started in fiscal 2003, our concern for the environment is at the center of our business perception. We envisage our future identity as being that of a "premium company", achieving eminence in technology and excellence in profitability, through our all-out consideration for the environment, and becoming an environmentally creative organization, whose existence is desired and supported by society.

First and foremost, a manufacturer's total environmental consideration must be embodied in all its products, and, I believe, that through appreciation of this we will receive our customers' respect and support. As a business index, we have established a target to increase our sales of environment-friendly products by 100 billion yen in a three year period. Now that the first year has passed, we have achieved a sales increase of our environment-friendly products by 50 billion yen, with such unique products as our zero-energy-cost houses, our "Reuse System House" incorporating the characteristics of modular houses and our "SPR Method" that enables no-dig restoration of aged pipes. These results are proving that environmental consideration leads to the extension of business.

Environmental concern in the course of production is of the greatest importance as well. A manufacturer can not produce goods without creating some environmental loads. As a manufacturer and supplier of modular houses we are working on construction sites throughout Japan. In 2003, we attained zero emission at all our house construction sites, realizing zero landfill and zero simple incineration at both the production and construction stages. These zero emission activities have produced waste reduction effects leading to cost reduction. Furthermore, the shifting of fuels and the introduction of a co-generation system result in both the reduction of carbon dioxide emission and of energy cost. I am firmly convinced that such all-out environmental consideration in the production processes brings business effectuation leading to the strengthening of corporate management.

Additionally, our direct environmental contribution activities take into consideration the long term sustenance of the environment. Through Nippon Keidanren Nature Conservation Fund, we are supporting nature protection activities conducted by environmental NGOs. We are promoting various activities together with local communities, such as the making of biotopes that restore the nat-

ural conditions of local areas and taking care of Sekisui Forest where local people can enjoy observing wild birds and insects. It is our cherished hope that our activities will make possible a wonderful natural environment in the future and, with this in mind, we are promoting our environmental contributions through such activities as Sekisui Chemical Co., Ltd. Research Fund for the Development of Technologies from Nature for the support of the development of environment-friendly future technologies, and our House Making Course for Children in which school students, using miniatures of Sekisui Heim, enjoy constructing while learning about environmental and barrier-free issues.

We fully disclose all information related to our environmental activities in order to keep in close communication with our five stakeholders comprising customers, stockholders, employees, local communities and the global environment. It is our firm belief that, by so doing, our Group is an organization which can fully meet with the expectations and trust of society as a whole.

We understand that the awards we received in fiscal 2003, namely the Grand Prize for the Global Environment Award: the Japan Industrial Journal Award, and the Green Reporting Award: the First Prize, are the result of society's recognition of our environmental activities. We continue to promote all-out environmental corporate management based on our dedicated environmental consideration and aim at being an environmentally creative organization which takes a prominent role in environmental issues.

It is our hope that this report will be a valuable means of communication with you, and that it will give you a deep understanding of the environmental conservation activities of our Sekisui Chemical Group. We look forward to receiving your comments and advice.

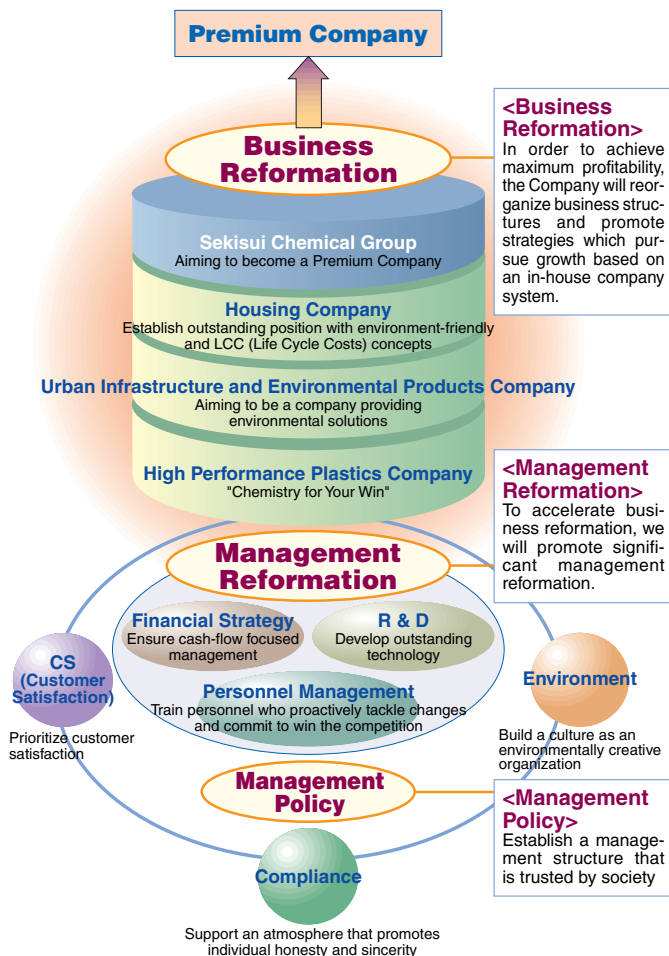
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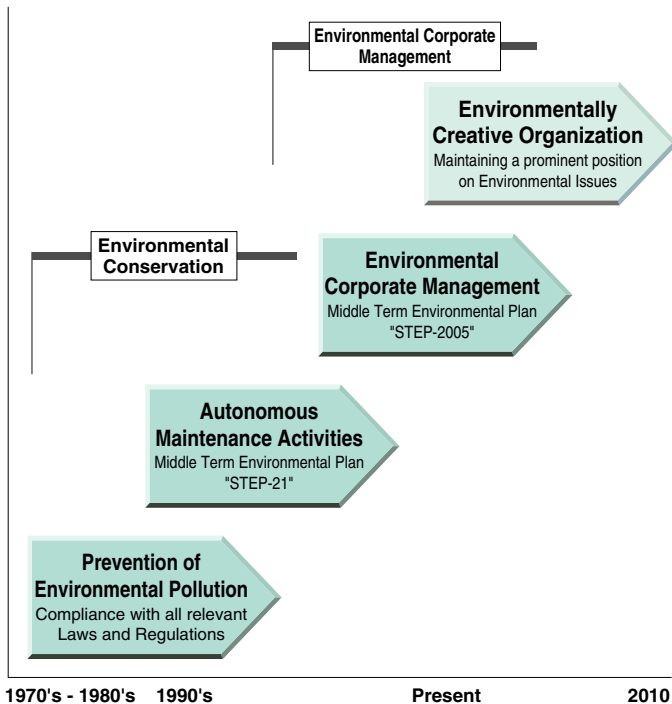
Naotake Okubo

Naotake Okubo
President

●Outline of our Mid-term Management Vision
"GS21-Premium 600"



●Step-up to an Environmentally Creative Organization



Corporate Policy on the Environment and Safety

[Philosophy]

We, Sekisui Chemical Group, recognize that there can be no sustainable development without our total commitment to issues of environmental protection and safety. We are dedicated to the creation of a better environment by continually promoting environment and safety activities, enabling the structuring of a recycling-based society and global environmental protection through our businesses, products and contribution to society.

[Basic Policies]

It is our conviction that focus on the environment holds the key to our continued growth into the future, and therefore we are aiming to become an "environmentally creative organization", with a corporate culture based on our environmental concerns, in order to meet the expectations society has placed on us.

1. We have utmost concern for the environment and safety of all our products and business activities from the stages of research and development through procurement, production, sales, use, and to disposal of products, and comply precisely with all requirements on the issue.
2. We promote effective utilization, reuse, and recycling of limited resources to reduce the environmental loads.
3. We enhance positively the environmental performance and safety in handling chemical substances and minimize chemical risks.
4. We not only comply with international and national laws and regulations, but also proactively set our own objectives and targets to promote continual improvements and also to enhance environmental concern through the education of all our staff.
5. We endeavor to secure accountability in cooperation and collaboration with local communities and society as a whole and with governmental and industrial organizations through close communication with them.

Naotake Okubo

April 1, 2003
Naotake Okubo
President

Activity Guidelines

1. Environmental Corporate Management

- ① We enhance and extend our environmental corporate management systems on a global scale.
- ② We implement our environmental corporate management and assess the effects continually.
- ③ We create businesses for improvement of the environment which are supported by the market.

2. Environmental Consideration for our Products

- ① We continue to develop technologies, always having concern for safety and environmental issues, and to supply products which meet environmental demands throughout their entire life cycles.
- ② We are dedicated to recycling and therefore make efforts to collect as many used products as possible.

3. Reduction of Environmental Loads and Risks in Production

- ① We promote reduction, reuse, and recycling of wastes at our plants and house construction sites.
- ② We promote energy saving and reduction of greenhouse gas emission.
- ③ We exercise appropriate management of chemical substances, and prevent chemical risks.

4. Environmental Consideration in Distribution and Sales

We reduce environmental loads.

5. Environmental Conservation in Offices

We enhance effective utilization of resources and promote energy saving.

6. Contribution to the Environment and enhanced Communications with the Public

- ① We participate in global environmental conservation activities in cooperation and collaboration with local communities and NPOs/NGOs.
- ② We ensure that information we distribute is fully understandable, and we constantly pursue excellent communications with the public.

7. Education and Enlightenment

We enhance the environmental awareness of all staff through our pertinent educational activities.

April 1, 2003

Environmental Corporate Management of Sekisui Chemical Group

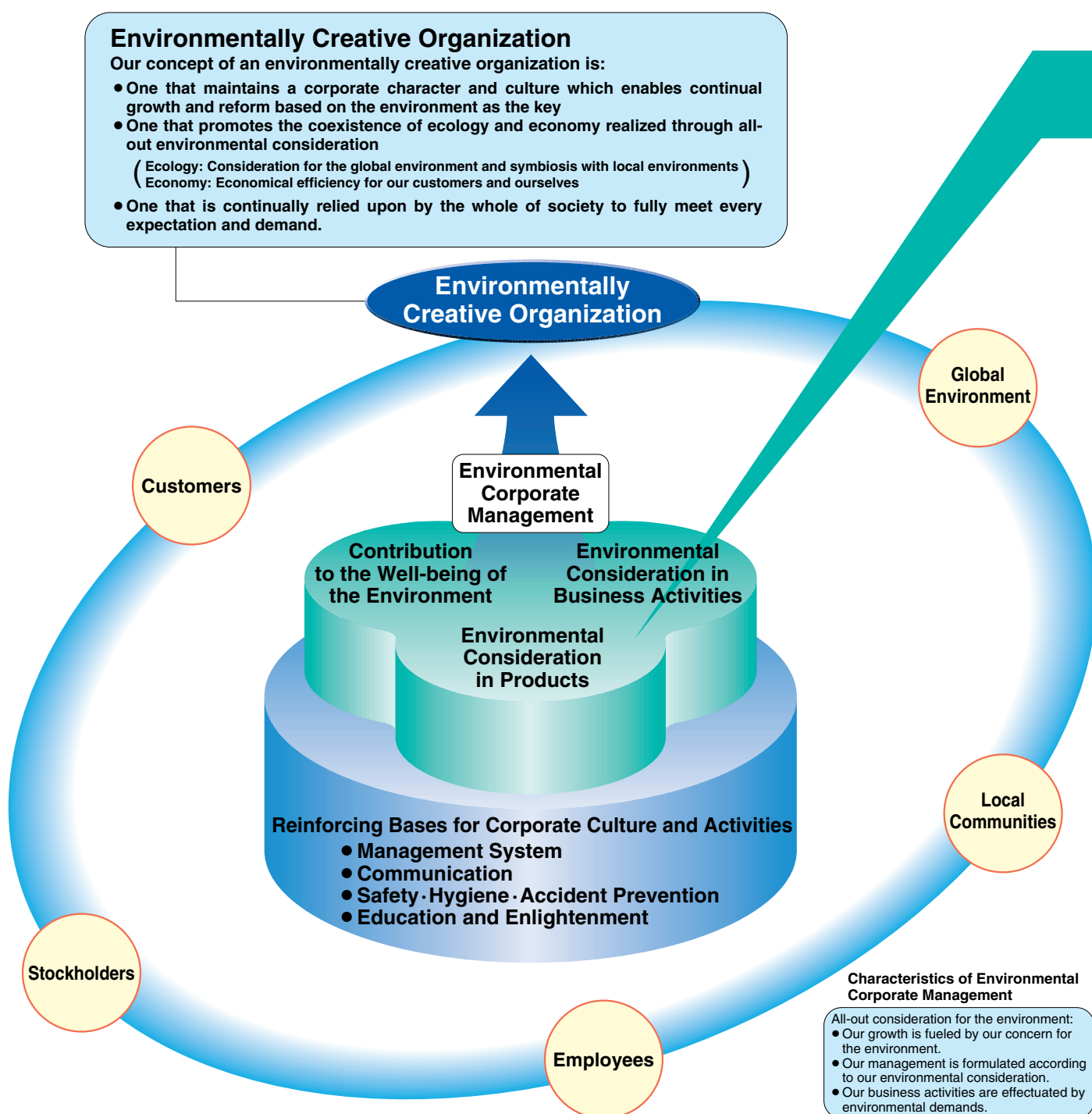
We are progressively promoting **environmental corporate management** which seeks continual growth based on the environment as the key, and aiming at being an **environmentally creative organization** that maintains a prominent position on environmental issues.

We, Sekisui Chemical Group, are aiming at becoming an environmentally creative organization that maintains a prominent position on environmental issues and seeks continual growth based on the environment as the key, by enabling the coexistence of ecology and economy. We think that our activities for becoming an environmentally creative organization constitute exactly the environmental corporate management of Sekisui Chemical Group.

In order to realize "the structuring of a recycling-based society and global environmental protection through our businesses, products and contribution to society" as we declare in our environmental philosophy, and to meet with the expectations of our stakeholders, we are reinforcing the bases for our cor-

porate culture and activities. Our environmental concern prevails in every aspect of our activities and in all our products. Furthermore we make positive contributions to the well-being of the environment through such activities as our nature protection programs.

Sekisui Chemical Group operates in a wide range of markets and is engaged in a variety of businesses including housing, building materials, civil engineering and industrial intermediate materials. Accordingly, related environmental issues and areas for improvement also vary. Each internal company is promoting environmental consideration in accordance with its respective products and business characteristics.



●Environmental Consideration at each Step of a Product's Life Cycle

Business Activities

- Environmentally considered design
- Green procurement

Development
Procurement



Business Activities

- Energy saving
- Zero emission
- Waste reduction
- Reduction of chemical substance release

Production
Installation



Business Activities

- Environmental conservation in offices
- Environmental consideration in distribution and sales

Sales
Distribution



Use

Products

- Energy saving
- Energy creating
- Long life
- Reduction of hazardous chemical substances
- Reduction of noise and vibration

Products

- Reuse and recycling of used products
- Use of recycled raw materials

Recycling



Products

- Easy recycling

Disposal

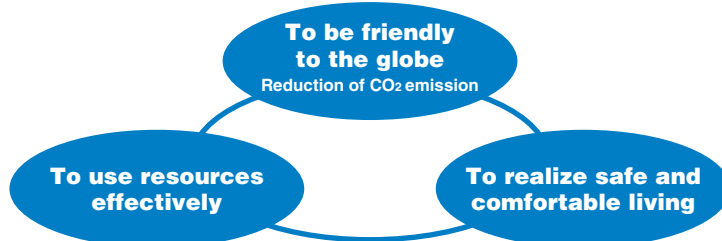
Implementation by each Internal Company

(in accordance with its respective products and business characteristics)

Housing Company

A Leading Company in Environmental Conservation (PP31-40)

- Highest CO₂ emission rate occurs during household use over the long life cycle of these products.
- Voluminous waste is generated during assembly and disassembly.
- Products are used as space for daily living.

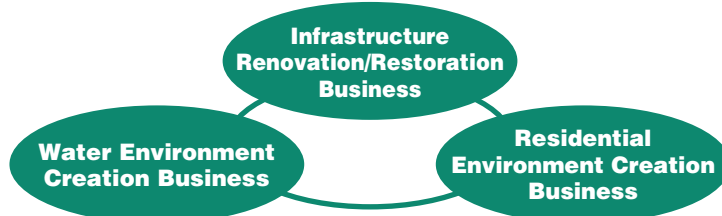


Urban Infrastructure and Environmental Products Company

An Environment-Solution Company (PP41-50)

- Products and systems are closely related to living environments, such as physical infrastructure and water environments.

Contribution to Environmental Creation, Friendly to Human Beings and the Earth, through our Environment-Solution Businesses



High Performance Plastics Company

"Chemistry for Your Win" (PP51-60)

- We supply intermediate materials for industrial use.
- Large environmental loads (CO₂, waste, chemical substances) are generated in production processes.



Results of Main Environmental Activities in Fiscal 2003

We have summarized the results of our main environmental activities implemented in fiscal 2003 as follows:

Middle Term Environmental Plan, "STEP-2005"

●Results in the First Year (P9):

We achieved **29 out of 32 items targeted in fiscal 2003**, among which **6 items had been planned for achievement in fiscal 2005**.

(Ratio of environment-friendly products, energy saving in R&D institutes, reduction of PRTR substances release and transfer, use of environment-friendly company cars, energy saving in head offices, environmental contribution activities in local communities)



Targets will be upgraded.

Environmental Corporate Management

●Environmental Management Systems (P11):

Two workplaces acquired ISO 14001 certification, bringing the total to 81.

Started official deployment of EMS to clerical staff, sales staff and overseas workplaces.

●Environmental Accounting (P13):

9.5 billion yen for environmental conservation expenditure, and 8.9 billion yen for economical effects.

10 house sales subsidiaries added to the summation. (Total 14 subsidiaries)

Calculation of Eco-Efficiency by JEPIX method

Eco-efficiency improved by 9% over the previous year. (¥11.0 → ¥12.0/EIP)

Promotion of 3R's in Plants and at House Construction Sites

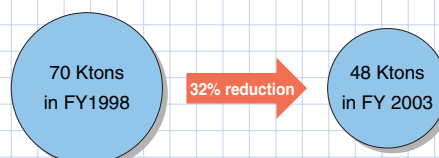
●Zero Emission:

Achievement of zero emission reached by all house construction sites. (P18 & P37):



Zero emission in new house building (from plant to construction sites) **completed**

●Quantity of Wastes generated (P17):



Reduction by 14.9% in production unit (compared to that of FY1998)

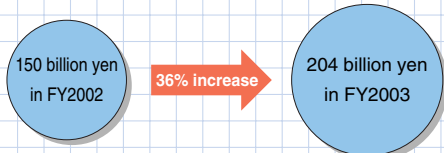
●Recycling Ratio of Waste from House Disassembly and Demolition (P18):

Recycling ratio of the specified construction materials was 96.3%.

(Recycling ratio of total waste from disassembly and demolition: 83.7%)

Environmental Consideration for Products

●Sales Amount of Environment-friendly Products (P16):



Ratio in consolidated sales amount: 25% (The target for FY2005 already attained)

●Housing Company (PP31-40):

Houses equipped with photovoltaic generation systems
Zero-energy-cost houses, Reuse System House

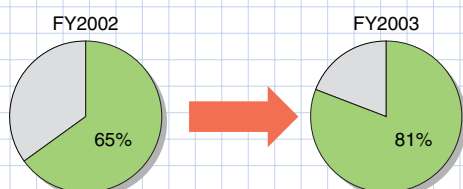
●Urban Infrastructure and Environmental Products Company (PP41-50):

Aged pipe restoration systems, Eslon 3-layer Pipe, Eslon Neo Lumber FFU, etc.

●High Performance Plastics Company

Heat insulation interlayer film, Recycled containers, Modified silicone sealant, etc.

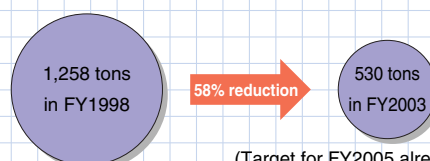
●Green Procurement Ratio (P15):



(based on monetary value)

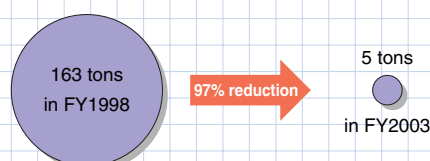
Reduction of Chemical Risks

●Release and Transfer to the Environment (P21): (specified as Class 1 in the Japanese PRTR Law)

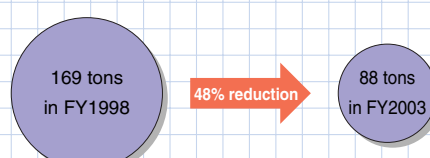


(Target for FY2005 already attained)

●Dichloromethane used in Processes (P21):

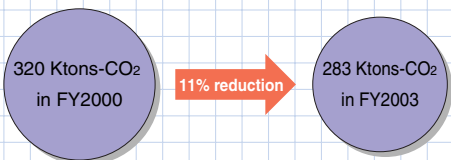


●HCFCs (Substitute Flons) (P21):

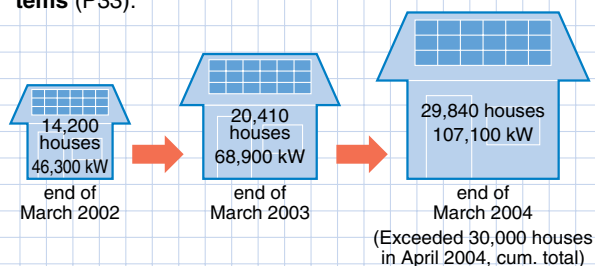


Energy Saving and Reduction of CO₂ Emission

●CO₂ Emission from Plants (P19):

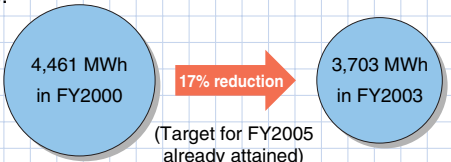


●Houses equipped with Photovoltaic Generation Systems (P33):



●Reduction Effect of CO₂ Emission in Households (P34): 60 Ktons approx. (Cum. total of the annual conversion since/incl. FY1999)

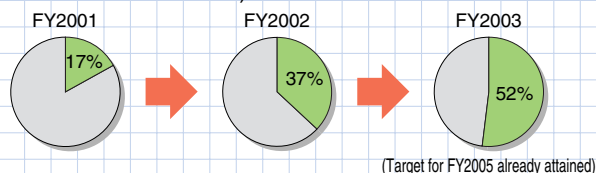
●Energy Consumption in R&D Institutes (office rooms) (P19):



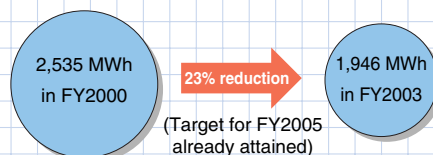
Implementation in Sales/Distribution and Offices

●Environment-friendly Company Cars (P25):

(Ratio of environment-friendly company cars meeting with the Green Taxation Plan)



●Energy Saving in Head Offices (P25):



Education of Employees, Environmental Contribution and Communication

●Sekisui Chemical's Nature Study Course (P26):

63 participants in FY2003. A follow-up training started.

●Support for Environmental NGOs' Nature Protection Activities continued (P27)

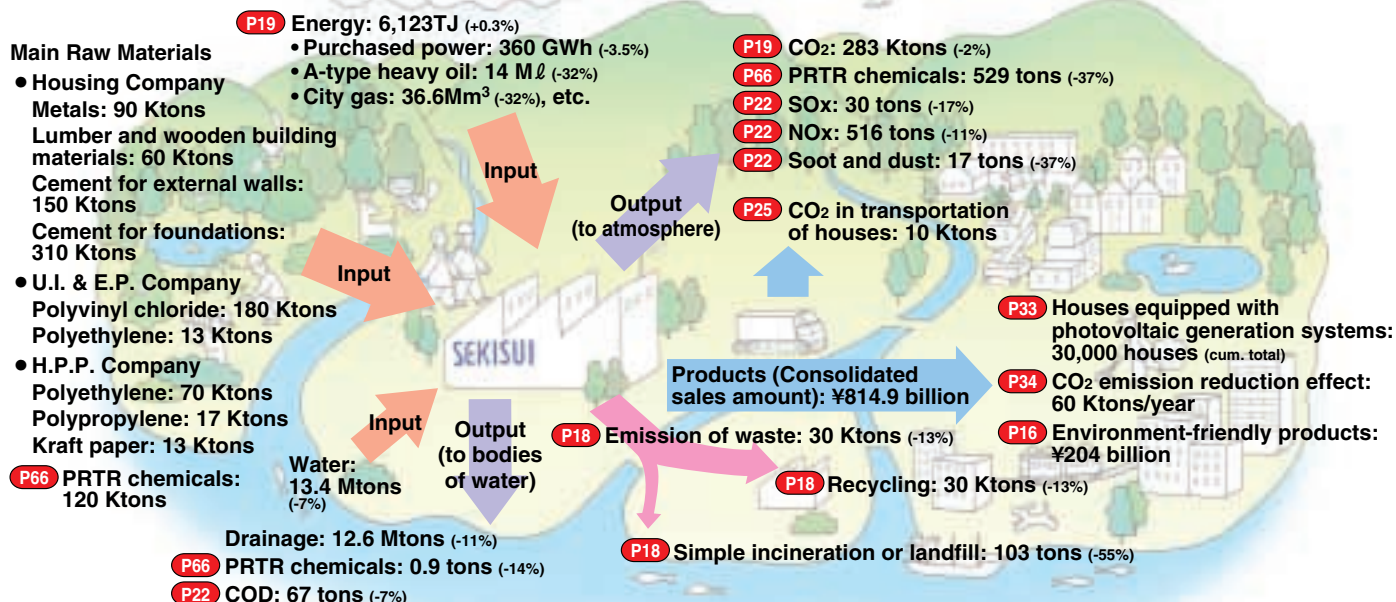
●Nature Protection Activities and Biotope Making at Workplaces extended (PP27-28): The number of activity points: 44 (Target for FY2005 already attained)

●Social Contributions in Educational and Training Areas continued (P28):

- Sekisui Chemical Co., Ltd. Research Fund for the Development of Technologies from Nature The first forum held.
- House Making Course for Children Held in 22 schools with about 500 participants in total

■Annual INPUT and OUTPUT in FY 2003

(±%): Ratio against FY 2002



Progress of our Middle Term Environmental Plan, "STEP-2005"

In fiscal 2003, the first year of our Middle Term Environmental Plan, "STEP-2005", we successfully carried out its promotion by attaining 29 items out of 32 in total.

The first year of our Middle Term Environmental Plan, "STEP-2005", scheduled to be completed in fiscal 2005, has passed and its progress is shown in the table below.

The sales amount of our environment-friendly products, which is an index of our environmental corporate management which aims at business extension with all-out environmental consideration, increased by 50 billion yen compared to that of fiscal 2002, with a ratio of 25.3% against the total turnover, largely exceeding the yearly target. We consider that this is partly attributable to our zero-energy-cost houses which have been welcomed by the market. As regards emission of carbon dioxide and chemical substances, we established and have more than achieved our targets for their total volume. This was realized by our continued implementa-

tion of such measures as shifting of fuels, introduction of a co-generation system and adoption of a non-solvent using process for adhesive tapes. Further, we assess that zero emission achieved at our house construction sites is also a major contributor to our achievements. With respect to the target-attained items, we will continue further improvements by upgrading our targets. Our energy saving at plants improved by 2% per production unit compared to that of fiscal 2002, which was only a 0.4% reduction against that of fiscal 2000. We will seek more energy saving themes by utilizing ESCO business (P20). We are studying methods to provide our customers with environmental information pertinent to our products by environmental labeling. In fiscal 2004, 9 workplaces are issuing their site reports.

Activity Guidelines		Implementation Items		Targets for FY2005
1. Environmental Corporate Management	①Extension of our environmental corporate management system to our international operations	1. Expansion of EMS structuring and its maintenance		EMS restructuring by staff of Headquarters and internal companies, extension to plants
	②Implementation of environmental corporate management and continuous assessment of its effect	2. Extension to overseas subsidiaries		Grasp of actual environmental status and execution of implementation plan (12 plants)
		1. Establishment of assessment system for business results		Introduction as internal company assessment
		2. Extension of environmental accounting within our Group		Extension to house sales companies
2. Environmental Consideration for Products	①Development of technologies and supply of products which are in full compliance with safety and environmental requirements throughout their life cycles	1. Elevation of environment-friendly product sales ratio		Minimum 25% against consolidated sales amount (*)
		2. Sale of environment-friendly products		Minimum 30 product items (cum. total) during the 3 fiscal years
		3. Countermeasures against sick house syndrome		Attainment below the guideline level designated by the Ministry of Health, Labour and Welfare at the time of handover to customers
		4. Implementation of green procurement system		Minimum 80% green procurement ratio
		5. Development of environmental conservation and recycling technologies		Completion of 15 development themes by the end of fiscal 2005
	②Collection and recycling of used products	6. Introduction of LCA		Implementation of LCA for environment-friendly products
Structuring and implementation of collection and recycling systems for used products		PVC pipe, LP	Contribution to elevation of recycling ratio in collaboration with the relevant industrial associations	
		House modules	Application of the reuse system to apartment houses and to extensions on individual houses	
3. Reduction of Environmental Loads and Risks in Production	①Promotion of reduction, reuse, and recycling (3R's) of waste from plants and house construction sites	1. Reduction of waste generation from production processes in plants		Minimum 15% reduction of waste generation in Unit against fiscal 1998
		2. Increase of number of zero emission workplaces		Achievement of zero emission at 5 more workplaces
		3. Zero emission at new house construction sites		Attainment of zero emission at all house sales subsidiaries (fiscal 2003)
	②Promotion of energy saving and reduction of greenhouse gas emission	4. Promotion of recycling of waste from demolished houses		Minimum 90% recycling ratio of designated building materials
		1. Reduction of carbon dioxide emission from plants		Maximum 304 thousand tons of carbon dioxide emission from energy consumption
		2. Energy saving in plants		Minimum 5% reduction of heat converted energy Unit against fiscal 2000
	③Appropriate management of chemical substances and reduction of chemical risks	3. Energy saving in R&D institutes		Minimum 5% reduction of power consumption in offices against fiscal 2000 (*)
		1. Reduction of release and transfer of chemical substances specified as Class 1 in the PRTR Law		Maximum 760 tons of release and transfer (*)
		2. Total abolition of substitute flons (HCFCs)		Total abolition of HCFCs
		3. Total abolition of chlorine solvent for use in production processes		Achievement of total abolition for use in production processes
4. Environmental Consideration in Sales and Distribution	①Reduction of environmental loads	4. Measures for soil contamination by chemical substances		Completion of soil contamination survey at object workplaces
		1. Promotion of green distribution		Establishment of a system to grasp carbon dioxide emission volume
5. Environmental Conservation in Offices	①Enhancement of resources and energy saving	2. Increase of use of environment-friendly cars		Minimum 50% of the company cars leased from Sekisui Lease Co., Ltd. (*)
		1. Achievement of zero emission in offices		Achievement of zero emission in Osaka and Tokyo head office buildings
6. Contribution to the Environment and enhanced Communications with the Public	①Participation in global environmental conservation activities with communities and NPOs/NGOs	2. Energy saving in head offices		Minimum 5% reduction of power consumption against fiscal 2000 (*)
		1. Support for nature protection activities of NPOs/NGOs		Continuous support for NPOs'/NGOs' projects through Keidanren Nature Conservation Fund
	②Distribution of information in understandable manner and promotion of better communications	2. Contribution to environmental protection activities of local communities		Minimum 10 Activity Points (cum. total) (*)
		1. Introduction of environmental labels		Introduction in fiscal 2005
7. Education and Enlightenment	①Enhancement of environmental awareness	2. Publication of site reports		Publication by workplaces and house sales subsidiaries with ISO 14001 certification
		Education of employees on Sekisui Chemical's Nature Study Course		Minimum 200 new participants (cum. total) on Nature Study Course during the 3 fiscal years Minimum 40 participants (cum. total) on follow-up courses

*: These items to have targets upgraded

■Sekisui Chemical Group's Environmental Targets for fiscal 2010

Carbon dioxide emission (Total volume)	13% reduction at the plants against fiscal 2000 (equivalent to 7% reduction against fiscal 1990 as the benchmark year)
Waste	50% reduction of waste generation per ex-godown Unit from production processes against fiscal 1998
	Zero emission at head offices, branches and R&D institutes
	100% recycling of wastes from demolition, construction and renovation

Toshiyasu Kobayashi

Executive Director in Charge of the Environmental Management of Sekisui Chemical Group, and General Manager of the Environmental Management Department



Targets for FY2003	Actual Results in FY2003	Evaluation	Page	Targets for FY2004
Formation of the EMS master plan for Headquarters' and internal companies staff	Decision of the EMS restructure at Headquarters, internal companies, branches and shared services subsidiaries. Formation of master plan	○	12	Setting up and promotion of environmental themes for each object department and section
Survey and grasp of actual environmental status in overseas subsidiaries	Summation of data from the questionnaire to overseas plants. Environmental survey at our plants in the U.S.A.	○	12	Collection of environmental data
Introduction of an assessment system based on environmental activities and results	Adoption of the award system; decision on indices and rules	○	12	Implementation of assessment based on the rules
Extension of house sales subsidiaries; announcement of environmental accounting results	Extended to 10 sales subsidiaries and 1 workplace; results publicized in this Environmental Report	○	13	Increase of the model targets. Study of effect indices.
Minimum 20% of consolidated sales amount	25.0% (¥204 billion)	◎	16	Minimum 23% (*)
Minimum 27 product items	48 product items	◎	16	Cum. total: minimum 54 product items
Measures for formaldehyde, toluene and xylene	Autonomous guidelines (in conformity with the standards of the Japanese Ministry of Health, Labour and Welfare) attained for the 3 substances	○	38	Maintenance of autonomous guidelines
Green procurement ratio: minimum 70%	81%	◎	15	Maintenance of minimum 80%
Systematic promotion	Promotion according to plan	○	16	Promotion according to plan
Establishment of assessment methodology	Formulation of means to introduce the methodology	○	15	Setting up required for the introduction
Contribution to elevation of recycling ratio in collaboration with the relevant industrial associations	Extension of collaboration and elevation of recycling ratio (PVC pipe: 52% LP pipe: increase of collecting centers)	○	16	Extension of collaboration with industrial associations; elevation of recycling ratio
Securing of business growth in detached houses and study to apply know-how to apartment houses	Detached houses: 3 times increase over the previous year; Apartment houses: Basic studies completed	○	16	Promotion on individual houses and start on apartment houses
Minimum 11% reduction per production Unit	14.9% reduction	◎	17	Minimum 13% reduction
Start of zero emission activities at 5 workplaces	Zero emission activities started at 4 R&D institutes and 1 plant	○	18	Promotion according to plan
Attainment of zero emission at all house sales subsidiaries	Attainment completed (September 2003)	◎	18	Promotion of renovation business
Survey of recycling status of waste from demolished houses	Recycling ratio: 96.3% (83.7% of total waste from demolished houses)	○	18	Improvement of recycling ratio
Total emission volume: maximum 314 Ktons	283 Ktons	◎	19	Maximum: 294 Ktons
Minimum 3% reduction per Unit	0.4% reduction	×	19	Minimum 4% reduction
3% reduction of electric power consumption	17% reduction	◎	19	Minimum 4% reduction (*)
Maximum 900 tons of release and transfer	530 tons	◎	21	Maximum: 545 Ktons
Formation of a plan for total abolition	Formation of an implementation plan Cross-linked Lightlon: shifting to hydrocarbon completed	○	21	Promotion according to the abolition plan
Formation of a plan for total abolition and study on alternative materials	Formation of an implementation plan Alternative adhesives under study	○	21	Study of alternative adhesives
Completion of survey at 3 workplaces	Survey at 3 workplaces completed	○	21	Survey at 1 workplace
Grasp of current status at model workplaces and establishment of data collection system	Decision of data summation and assessment methodologies	○	25	Extension of object product groups
Minimum 40% of company cars	52%	◎	25	Maintenance of minimum 52% (*)
Start of zero emission activities in Headquarters' office buildings	Grasp of current status of waste. Formation of a zero emission activities implementation plan	○	25	Trial implementation of zero emission activities
Minimum 3% reduction of electric power consumption	23% reduction	◎	25	Minimum 4% reduction (*)
Continuous support to projects	Support to 5 projects (Total contribution: ¥10 million). Continued assignment of one of our staff to work full time with Nippon Keidanren Committee on Nature Conservation	○	27	Continuation of support to the projects
Minimum 3.5 points in activity indices	44 points	◎	27	Minimum 7 points (*) in cumulative total
Decision on introduction methodology	Under review, including the marketing strategy	×	—	Decision on the direction
Publication by model workplaces	Decision on model workplaces by each internal company	×	29	Publication by 9 workplaces
Minimum 60 participants on Nature Study Course; Minimum 10 participants on follow-up courses	Held 4 times, and 63 employees participated. 10 employees participated in the follow-up courses.	○	26	Minimum 130 in cumulative total for Nature Study Course and minimum 25 in cum. total for the follow-up courses

Evaluation Standards ◎-Target well achieved ○-Target mostly achieved (minimum 90%) ×-Target not achieved

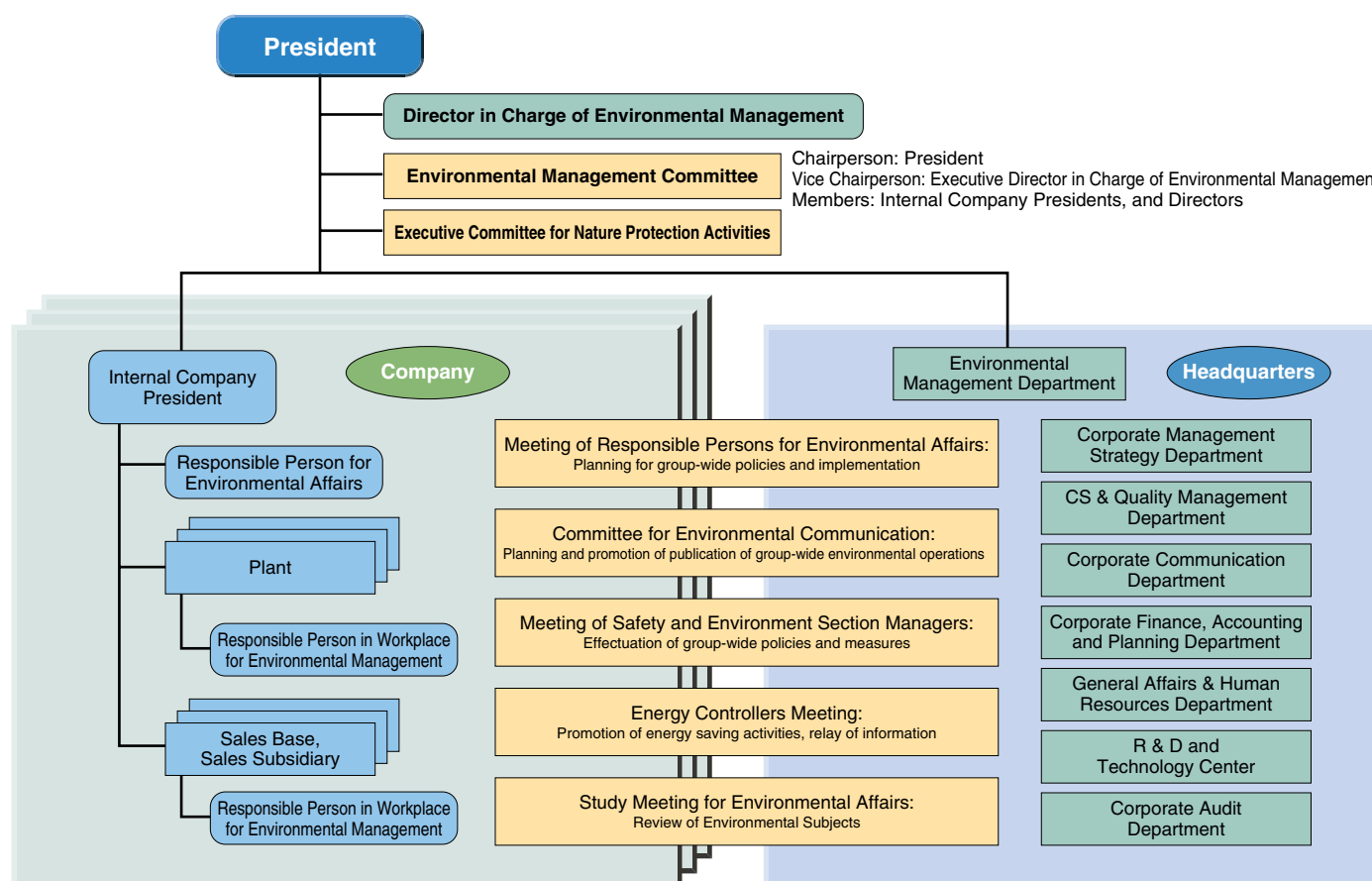
Environmental Corporate Management

In order to promote environmental corporate management, we have established the Environmental Management Committee under direct control of the top management, by which we are implementing deployment of our policies in respective sections in order to upgrade and accelerate our activities through horizontal meetings.

■Promotion Systems and Roles of Environmental Corporate Management

The group-wide policies and measures for environmental corporate management are studied and decided by the Environmental Management Committee, chaired by the President. The policies and measures thus decided are forwarded through respective internal companies to their workplaces for deployment and implementation. The issues related to the entire group and internal companies are deployed and implemented by the Headquarters in accordance with the functions of respective sections.

Also, we hold horizontal meetings for issues between Headquarters and internal companies, as well as between Headquarters and workplaces to upgrade and accelerate our activities in the study of environmental measures, information exchange and horizontal deployment of our activities. The Environmental Management Department, established in the Headquarters in April 2003, assumes the role of deployment, implementation and promotion of these policies and measures, and, summation, review and reporting of the activities to the top management.



■Structuring and Extension of Environmental Management Systems

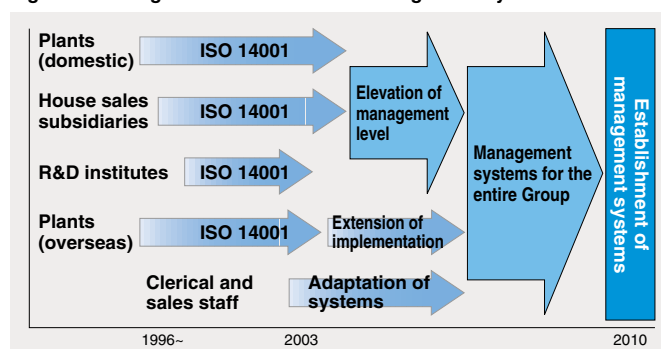
We, Sekisui Chemical Group, started activities in the early 1970's to deal with individual environmental issues such as public pollution and later, energy saving. Further, in order to structure environmental management systems for effectively implementing autonomous prevention of environmental pollution and continual improvement activities, we have been promoting ISO 14001 acquisition progressively since 1996. Almost all of our plants with heavy environmental loads, house sales subsidiaries responsible for the construction sites, and R&D institutes promoting environmental consideration in the products have acquired ISO 14001 certification (Table 1).

Table 1: Number of our workplaces with ISO 14001 certification

Plants	House Sales Subsidiaries	R&D Institutes	Total
39 (including 5 overseas plants)	38	4	81

To spread environmental corporate management to all sections and all employees of Sekisui Chemical Group, we started the extension of our environmental management systems to clerical and sales staff and to overseas plants in fiscal 2003.

Fig.1 Structuring of our Environmental Management Systems



●Extension to clerical and sales sections

In order for environmental corporate management to be firmly established as the activities performed by all of our staff, we revised our Activity Guidelines in April 2003 to clearly express the items to be implemented by clerical and sales staff (P4). In fiscal 2003, we formed a master plan to extend our environmental management systems not only to the staff of Headquarters and internal companies but also to branches and shared services subsidiaries. As the first step, we set up environmental themes and targets for the important implementation items in each section, and have started their operation in fiscal 2004.

●Extension to overseas plants

As the sales ratio of our overseas operations was not high in the past, our overseas plants were excluded from the object of the entire Group's environmental management or the summation of performances. However, as the sales ratio increased in recent years (P1, Fig.2), we started to include them in the object of our management and summation. In fiscal 2003 we monitored by correspondence the outline of environmental performances at 14 overseas plants, and visited 4 plants located in the U. S. A. to carry out a survey of their actual status. We will summate environmental performances at our overseas plants by regularly monitoring their actual status, and promote their activities based on improvement targets set up according to the situations of each respective plant.

■Introduction of Environmental Achievements Evaluation System

We are introducing an environmental achievements evaluation system as an incentive measure to establish environmental corporate management among all of our employees. Since fiscal 2004, our former environmental award system has been revised to a target achievement based system, whereby divisions or plants will receive awards according to the degree of achievement. As indices, we have set up the sales amount of environment-friendly products for divisions, and the volumes of waste generated and carbon dioxide emitted for the plants, which will be incorporated in the achievements evaluation of internal companies.

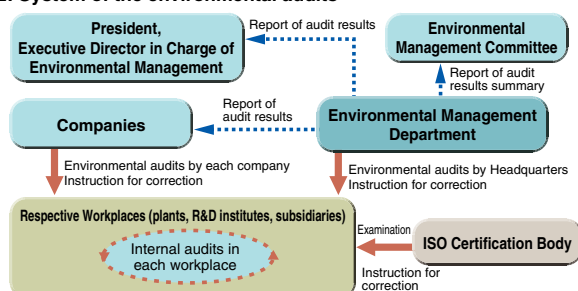
■System and Results of the Environmental Audits

In order to enhance continual improvement of their management systems and environmental performance, our plants and R&D institutes are subjected to environmental audits by our Headquarters, in addition to their internal audits and audits by the external auditing bodies in accordance with ISO 14001 (Fig.2).

●Environmental audits conducted by Headquarters

The environmental audits by the Headquarters focus on compliance with relevant laws and regulations, improvement of performance and future planning. The results of these audits are relayed to the top managements. Also, the Headquarters point out any malfunctions in these plants and R&D institutes, and give advice and guidance for immediate correction.

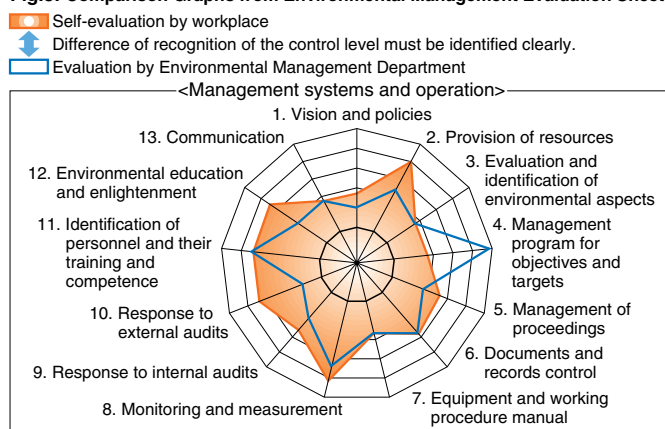
Fig.2: System of the environmental audits



●Introduction of Environmental Management Evaluation Sheets

For the purpose of quantitative evaluation of the management level and activities at respective workplaces, we introduced the Environmental Management Evaluation Sheets in fiscal 2003 and use them for the environmental audits by the Headquarters. On 76 items in the three areas of management systems, response to environmental risks and improvement of performance, the upside and downside of each workplace are clearly expressed by point-rating at 4 levels, with the minimum level required for acquiring ISO 14001 certification (0 point), and the level that Sekisui Chemical Group should realize (3 points). By the help of self-evaluation, each workplace can now grasp its management level and subjects for improvement.

Fig.3: Comparison Graphs from Environmental Management Evaluation Sheets



●Results of the environmental audits

Our audit results for fiscal 2003 are shown in Table 2 below. In our recent audits, the ratio of pointed items requiring immediate correction has been decreasing (Fig.4), which, we understand, indicates the environmental management level at our respective workplaces is on the rise.

Fig.4: Transition of pointed items in the environmental audits

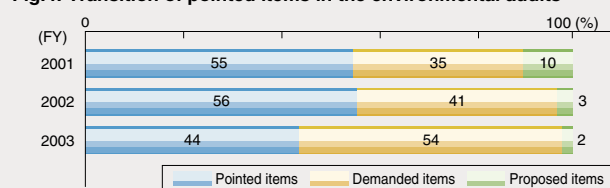


Table 2: Audit results in FY2003 (plants and R&D institutes, as of March 31, 2004)

		Number of cases	Correction completed	Correction in progress
Environmental Audits by Headquarters <Note 1> (34 workplaces)	Pointed items	176	136	40
	Demanded items	217	129	88
	Proposed items	10	4	6
	Total	403	269	134
Examination by External Bodies	Renewal (11 workplaces)	Not in conformity (major)	0	0
		Not in conformity (minor)	11	9
		Matters to be observed	63 <Note 2>	43
		Total	74	52
	Surveillance (27 workplaces, 30 audits)	Not in conformity (major)	0	0
		Not in conformity (minor)	12	7
		Matters to be observed	131 <Note 2>	86
	Total	143	93	43
Internal Audits in Workplaces (35 workplaces, 39 audits)	Not in conformity (major)	0	0	0
	Not in conformity (minor)	134	126	8
	Matters to be observed	467	434	33
	Total	601	560	41

Note 1: Classification of instructions in the Headquarters' environmental audits:

Pointed items: Immediate improvement required

Demanded items: Improvement within 1 year required

Proposed items: Review of improvement recommended or advised

Note 2: The figures include the items that have been regarded as inappropriate, so are greater than the total number of items for correction completed and correction in progress.

Environmental Accounting

In fiscal 2003, our Environmental Conservation Expenditure was ¥9.5 billion (Table 1), and the Economical Effects ¥8.9 billion (Table 3). We have calculated the Eco-Efficiency by using JEPIX^(Note 1) which integrates environmental loads into one single index.

■Environmental Accounting of Sekisui Chemical Group

We, Sekisui Chemical Group, are aiming at becoming an environmentally creative organization with eminence in environmental issues, by progressively promoting environmental corporate management for continual growth based on the environment as a key pillar. As environmental accounting enables the grasp of expenditure and effects related to environmental conservation activities, we are of the opinion that we can make use of this in order to promote environmental corporate management effectively and to fulfill our accountability. Our summation was conducted according to the Environmental Accounting Guideline issued in March 2002 by the Japanese Ministry of the Environment. As regards estimated economical effects and economical merits in favor of customers, we have added our own concepts.

■Environmental Accounting for fiscal 2003

- (1) The scope of summation of fiscal 2003 extends from that of fiscal 2002, by the addition of 11 companies (10 house sales subsidiaries and 1 plant of a manufacturing subsidiary).
- (2) As the index for environmental corporate management, we have applied eco-efficiency developed by JEPIX^(Note 1) which enables integration of environmental loads into one single index.
- (3) In line with the target setting in our Middle Term Environmental Plan, "STEP-2005", we have changed our performance indices (Table 2) to production Unit and total volume.

■Summation of Environmental Accounting

- (1) Summation Period: April 1, 2003 to March 31, 2004
- (2) Scope of Summation: 34 targeted plants (as listed on P67) + 4 R&D institutes + Headquarters + internal company head offices + 14 house sales subsidiaries
- (3) Principle of Summation:
 - Depreciation amounts are the same as those of financial accounting.
 - Investment amounts are based on approvals of budget during the summation period.
 - Expenditure and investment that contain other than environmental conservation activities are pro-rata distributed by 10% increments.

■Our Activities and Effects in fiscal 2003

- (Table 1) Our environmental conservation cost totaled ¥8.45 billion for expenditure (including ¥3.02 billion by house sales subsidiaries) and ¥1.06 billion for investment (no investment by house sales subsidiaries) respectively. By adding 10 house sales subsidiaries to the object of summation (total 14 house sales subsidiaries), expenditure amounts, mainly waste disposal charges, increased. Excluding these house sales subsidiaries, however, the capital investment amounts were reduced by approx. ¥100 million compared to that of fiscal 2002. The capital investment amounts, exceeding those of the previous year by approx. ¥100 million, were used mainly for the capacity increase of the waste water treatment facility in Shiga-Minakuchi Plant (¥250 million) and for the recycling equipment for cuttings from synthetic wood "FFU".
- (Table 2) As regards the environmental conservation effects [physical quantity], improvement for each environmental performance index progressed favorably, while energy consumption showed slight increase in quantity. CO₂ reduction effects steadily increased, thanks mainly to photovoltaic generation systems, reaching 60,000 tons in cum. total.
- (Table 3) We calculate that the actual economical effects totaled ¥8.87 billion, comprising ¥1.33 billion (including ¥32 million for 14 house sales subsidiaries) as the actual economical effects and ¥7.54 billion as the estimated effects, both related to the environmental conservation measures. The major parts of the cost reduction arose from our energy saving activities such as the introduction of a co-generation system and waste reduction activities including resources saving.
- (Table 4) In fiscal 2002, we started to include electric power saving effect by our houses equipped with photovoltaic generation systems (reduction of electricity purchase from power companies) in our calculation. The economical merit for the customers by this effect increased further. We have evaluated that 99,344 MWh of electricity generated in one year by our photovoltaic generation systems achieved a CO₂ reduction effect of 36,000 tons, which equals the volume of CO₂ when 15 million liters of kerosene is burnt.

■Future Proceedings

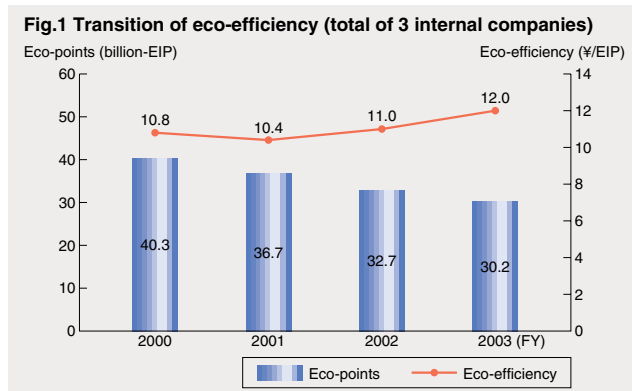
- (1) We will extend the scope of summation centering on house sales subsidiaries.
- (2) We will review evaluation indices for judging the level of environmental corporate management by adopting data in environmental accounting and methodologies in eco-efficiency.

■Evaluation of Environmental Corporate Management by JEPIX^(Note 1)

- In 2002, we started to calculate eco-efficiency as an index to evaluate environmental corporate management. For fiscal 2003, we calculated eco-efficiency in three environmental loads individually (CO₂ emission volume, quantity of waste generated and environmental pollutants emission volume). As these three cross each other, however, we thought it was necessary to conduct evaluation by an integrated index. This is the reason we have adopted the JEPIX index to calculate eco-efficiency. In calculating eco-points, we have applied the quantity used of main raw materials, energy consumed, hazardous chemical substances used, and wastes incinerated or disposed of as landfill.
- Transition of eco-points and eco-efficiency is shown in Fig.1. The lower the eco-points, the lighter the environmental impacts. It is clear that environmental impacts are being reduced steadily. The indices express the results of our environmental load reduction activities, such as effective utilization of wastes (P17), including zero emission activities, shifting of heavy oil to city gas and environmental pollutants reduction activities. Eco-efficiency is calculated by Formula 1. It means, the greater the numerical value is, the better the efficiency is. (As environmental loads are reduced, the economical values are increased simultaneously.) In fiscal 2001, the degree of reduction in produced sales amounts was so large that eco-efficiency worsened slightly. After fiscal 2002, environmental load reduction effects have contributed to improvement of eco-efficiency.

$$\text{(Formula 1) Eco-efficiency} = \frac{\text{Produced sales amounts (in ¥)}}{\text{Eco-points (EIP*)}}$$

*EIP: Environmental Impact Point



(Note 1) JEPIX stands for Environmental Policy Priorities Index for Japan. It is an environmental evaluation system by one single index, developed in Japan, to calculate overall environmental impacts by one single numerical value. This is part of The 21st Century COE Project sponsored by the Japanese Ministry of Education, Culture and Science, which is promoted by International Christian University, Japan and we have participated in the JEPIX Forum held for implementing the JEPIX methodology since October 2003.

■Table 1: Environmental Conservation Expenditure

(Unit: ¥1 Mil.)

Items		Housing Co. (Note 2)		U.I. & E.P. Co.		H.P.P. Co.		Entire Company (Note 3)	
Category	Main projects	Expenditure	Investment	Expenditure	Investment	Expenditure	Investment	Expenditure	Investment
1) Within workplaces	Prevention of air pollution, water contamination, noise	665	10	305	54	326	446	1,298	510
	Prevention of global warming (energy saving)	20	43	18	74	70	26	108	144
	Waste reduction, recycling, disposal, treatment	2,311	24	497	25	469	14	3,331	70
2) Up/downstream	Reduction of environmental loads in containers and packaging. Payment difference by green purchase	3	0	85	0	46	0	141	0
3) Management activities	Environmental education, EMS maintenance, information disclosure, personnel	681	11	267	17	282	3	2,260	31
4) R&D	Research and development	109	18	507	176	387	98	1,205	301
5) Social activities	Contribution to society	24	0	36	0	20	0	104	0
6) Environmental damages	Restoration of nature	0	0	0	0	0	0	0	0
Total		3,813	106	1,715	346	1,600	587	8,447	1,056

Items		Housing Co. (Note 2)		U.I. & E.P. Co.		H.P.P. Co.		Entire Company (Note 3)	
		R&D cost	Investment	R&D cost	Investment	R&D cost	Investment	R&D cost	Investment
Total amount of R&D costs and investments in the fiscal period		4,888 (Note 4)	1,606	5,402 (Note 4)	3,820	8,761 (Note 4)	9,739	23,701 (Note 4)	16,004
Ratio of amount related to environmental conservation activities to the total (%)		2.2	6.6	9.4	9.0	4.4	6.0	5.1	6.6

(Note 2) 14 house sales subsidiaries are included. (Note 3) The 3 internal companies and Headquarters (Note 4) R&D cost is the total of that of all consolidated companies.

■Table 2: Environmental Conservation Effects [Physical Quantity]

Category of effect		Indices representing environmental conservation effects (comparison to FY 2002)						Environmental indices (production unit or total quantity)			Evaluation
		Classification	Housing Co.	U.I. & E.P. Co.	H.P.P. Co.	Entire Company (Note 3)	Page	Items	FY 2002	FY 2003	
Within workplaces	Input of resources	Power consumption (TJ) (Note 5)	-16.2	-30.3	-76.3	-127.5	19	Energy consumption (power + fuel) (GJ/Tons) (Note 5)	1.99	1.95	○
		Fuel consumption (TJ) (Note 5)	11.3	-32.0	159.1	133.0	19				
	Environmental loads/waste	CO ₂ generation (Ktons) (Note 6)	0.1	-2.8	-2.4	-5.8	19	CO ₂ generation (Ktons) (Note 7)	288.6	282.8	○
		Pollutant emission (Tons) (Note 8)	-2.0	-151.5	-154.3	-309.9	21	Pollutant emission (Tons)	839.7	529.8	◎
		Waste generated (Ktons) (Note 9)	-2.0	0.2	-2.3	-4.3	16	Waste generated (kg/Tons)	51.0	47.2	○
		Outside disposal (Ktons) (Note 10)	0	-0.1	-0.02	-0.1	16	Outside disposal (kg/Tons)	0.226	0.103	◎
Up/downstream	Goods and services	CO ₂ emission reduction (Tons)	19,000	—	—	19,000	33	CO ₂ emission reduction (cum. tons)	42,000	61,000	◎
Other environmental conservation effects		No. of workplaces with ISO 14001	New	1	0	1	2	No. of workplaces with ISO 14001 (cum. number)	79	81	○
			Renewed	13	2	6	19				
		No. of zero emission sites (Note 11)	18 (Note 12)	0	0	18	17	No. of zero emission sites (cum. number) (Note 11)	54	72	◎

(Note 5) Coefficients are officially announced by the Japanese Ministry of Economy, Trade and Industry in calorific value conversion. (Note 6) Emission from production

(Note 7) Coefficients are officially announced by the Japanese Ministry of the Environment in CO₂ conversion. (Coefficients of FY2000 are used for calculation.)

(Note 8) Chemical substances specified as Class 1 in PRTR Law (Note 9) Emission + volume of saleable materials + internal incineration (Note 10) Simple incineration + landfill

(Note 11) A workplace belonging to more than one company is calculated as one. (Note 12) The number of all new house construction sites of house sales subsidiaries that achieved zero emission

■Table 3: Economical Effects Related to Environmental Conservation Measures [Monetary Unit]

(Unit: ¥1 Mil.)

Category of effect		Housing Co.	U.I. & E.P. Co.	H.P.P. Co.	Entire Company (Note 3)	Sources
Income	Income from sales of valuable materials	10	20	67	97	Segregation and recycling of waste
Cost reduction	Cost reduction from package saving	1	6	0	7	
	Cost reduction from energy saving activities	11	33	435	479	
	Cost reduction from waste reduction	45	107	592	744	Including resource saving activities
Sub-total (actual effect)		67	166	1,094	1,327	
Contribution portion of environmental conservation activities (Note 13)		698	2,098	3,255	6,051	(Note 14)
Contribution portion of R&D of environment-friendly new products (Note 13)		614	553	325	1,492	(Note 15)
Sub-total (estimated effect)		1,312	2,651	3,580	7,543	
Total		1,379	2,817	4,674	8,870	

(Note 13) Excluding 14 house sales subsidiaries (Note 14) (Added value of plants excluding e-f new products) × ((cost within plants + management activities cost) ÷ (total production cost except materials cost))

(Note 15) Environment-friendly new products sales × ratio of environmental R&D expenditure to total R&D expenditure.

■Table 4: Economical Effects Related to Environmental Conservation Effects [Monetary Unit]

(Unit: ¥1 Mil.)

Category of effect	Effect		Sources
Power saving effect in houses equipped with photovoltaic generation systems	Annual power generation	Amount saved	Annual generated power in houses equipped with photovoltaic generation systems (= reduction of purchased power charges) is converted to monetary unit. The power unit price is based on the calculation standard for energy saving effect set by The Energy Conservation Center, Japan.
	99,344MWh	2,285	
Total		2,285	

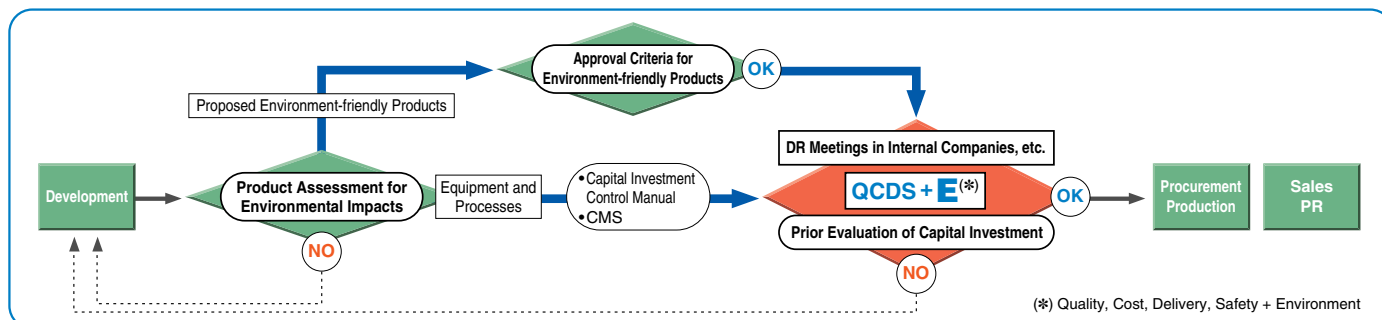
Environmental Consideration in Products

Sekisui Chemical Group is reducing environmental loads associated with our products by means of our all-out environmental consideration. In fiscal 2003, the sales ratio of our environment-friendly products reached 25% against consolidated sales amount and we put 48 environment-friendly new products on the market, greatly exceeding our targets in both.

■Evaluation Flow of Environment-friendly Processes and Products

We are conducting business based on the policy of paying environmental consideration to all our processes and products. To realize this policy, we evaluate processes and products by the evaluation tools that have been specified by the

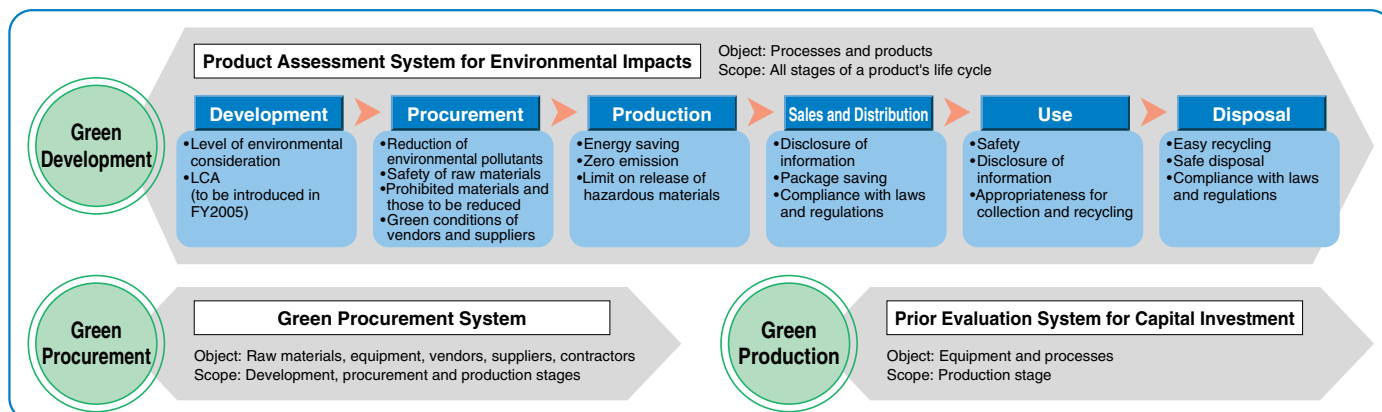
development sections in our R&D institutes and plants. Based on the evaluation results, we review and decide such matters as the approval of environment-friendly products and their transfer to their next stage at the DR (design review) meetings of the internal companies and other sections.



■Three Green Activities and Environmental Impacts Evaluation System

We are aiming at realizing environment-friendliness in our processes and products by three green activities carried out at the development stage, the procurement stage and the production stage, all of which are upstream in a product's life

cycle. As evaluation measures, we have established and are operating such systems as Product Assessment for Environmental Impacts, Green Procurement and Prior Evaluation of Capital Investment. The following chart shows the relations between our three green activities and evaluation systems.



●Green development (Product Assessment System for Environmental Impacts)

In order to realize green development which is most important to reduce the environmental impacts in processes and products, we have been operating our Product Assessment System for Environmental Impacts since fiscal 1993. The objective of this system is the supply of products with the lowest possible environmental loads, by evaluating environmental impacts at all stages of a product's life cycle in the development of all processes and products. Since the introduction of this system, we have realized the upgrading of our environmental consideration, such as the specification of substances to be reduced or prohibited, and the establishment of Green Procurement Standards and Approval Criteria for our Environment-friendly Products.

The introduction of LCA in fiscal 2005 will make this system capable of assuring more precise environmental consideration. We are also fulfilling our accountability to our customers through disclosure of information regarding our products. Issuance of MSDS's is an example (P29).

<Introduction of LCA>

Our Housing Company has already introduced LCA and utilizes it for product design (P33). In fiscal 2005, LCA will be applied to the development of environment-friendly products by the entire Group. Studies are now under way to make up the infrastructure for the smooth operation of this system after its introduction, such as the study of LCA methodology, and collection and accumulation of inventory data.

●Green procurement (Green Procurement System)

Since fiscal 2001 we have been operating our Green Procurement System to realize green procurement in the entire Sekisui Chemical Group. In this system, raw materials and equipment, vendors, suppliers and contractors are the objects of our evaluation.

At present we are operating this system targeting at minimum 80% of green procurement ratio in monetary value in fiscal 2005. The result in fiscal 2003 was 81% against the targeted 73%.

●Green production (Prior Evaluation System for Capital Investment)

The capital investment items that are planned and made up in accordance with our Group's internal rules, such as our Capital Investment Control Manual and CMS (Construction and Maintenance Standards), are evaluated from the environmental aspects under the prior evaluation system for capital investment, in order to secure processes with minimal environmental loads. The results and case examples in fiscal 2003 of our capital investment related to the environment are given below.

Capital investment items	36	Case examples of capital investment	Estimated effects
		Introduction of motorized injection molding machines (Kyushu Sekisui Industry Co., Ltd. and Tokyo Plant)	Reduction of electric power consumption by 40% approx.
Invested amount (¥ million)	840	Introduction of photovoltaic generation system (Tokyo Sekisui Industry Co., Ltd.)	Reduction of electric power consumption by 20MWh approx. per year

Note: Summation of items of ¥10 million or more

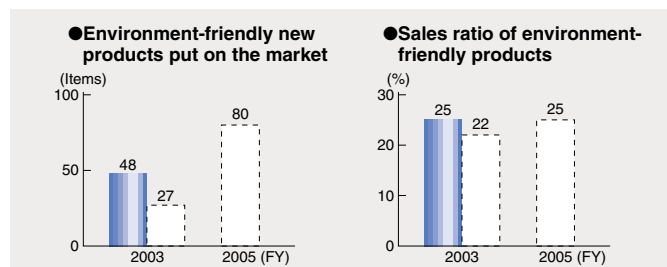
■Results of Supply of Environment-friendly and Safe Products and of Technological Development

Having set up the targets in our middle term environmental plan ending in fiscal 2005, we are promoting the development of environment-friendly products, environmental consideration for our houses in use such as measures against sick house syndrome, and collection and recycling of used products.

●Results of environment-friendly products sales

	FY2005 targets	FY2003 targets	FY2003 results
Ratio against total sales	Minimum 25%	Minimum 22%	25% (¥204 billion)
Number of items put on the market	Minimum 80 items	Minimum 27 items	48 items

As a result of our efforts, the indices in two categories far exceeded the targets for fiscal 2003. Based on these results, we will continue our further efforts to achieve higher targets. The table below shows our approval criteria for environment-friendly products.



●Approval criteria for environment-friendly products

Classification	Approval Criteria			Standard Value
Products to achieve or support environmental conservation, and to reduce environmental loads or environmental problems	Products to save resources, to utilize recycled raw materials, to reduce environmental loads, to utilize natural energy, to dispose of waste, to promote recycling, to use previously unutilized water, or to promote composting			Fundamental functions of products
Products approved or registered as environment-friendly by independent institutions	Products with the Eco Mark. Products commended for energy saving. Products approved or registered by relevant NGOs or consumer associations			Registration or approval
Products contributing to landscape conservation and a green environment	Products and methods to contribute to conservation or improvement of landscape or green scenery			Direct effects of products
Products that meet a minimum of one item of the standard values in the right column, compared to the status-quo of our conventional products or other manufacturers' similar products, or products already publicly known to be of acceptable standards	Attention to production process	Reduction of environmental loads	Reduction of emission of environmental pollutants or chemical substances hazardous to ecological systems, as specified by relevant laws or by industrial associations' autonomous regulations	Min. 50% reduction
			Reduction of raw material use (thinner, smaller, repackaging)	Min. 30% reduction
	Fundamental attention	Resources saving	Possibility of repeated use	Min. × 2
			Extension of life	Min. × 2
		Use of recycled materials	Use of recycled raw materials or components	Min. 40% use
	Attention to installation and use	Reduction of environmental loads	Reduction of emission of environmental pollutants or chemical substances hazardous to ecological systems, as specified by relevant laws or by industrial associations' autonomous regulations	Min. 50% reduction
			Reduction of energy use	Min. 20% reduction
			Reduction of noise and/or vibration	Min. 20% reduction
			Reduction of waste generation	Min. 30% reduction
		Utilization of natural energy	Utilization of renewable energy e.g. solar, wind	Incorporation in product design
	Attention to disposal	Easy treatment and disposal	Reduction of emission of environmental pollutants during incineration, as specified by relevant laws or by industrial associations' autonomous regulations	Min. 50% reduction
			Reduction of use of hazardous chemical substances as specified by relevant laws or by industrial associations' autonomous regulations	Max. 50% use
		Easy recycling	Structure and design for easy separation or decomposition	Incorporation in product design
			Structure and design for easy segregation	Incorporation in product design
			Reduction of use of composite materials	Max. 50% use

●Results of environmental and recycling technologies

The development of environmental and recycling technologies is one of the most important factors to realize environment-friendliness of products. Sekisui Chemical Group is developing core and applied technologies with the target of completing 15 themes in fiscal 2005. Our technologies completed in fiscal 2003 and the products to which they are applied are shown in the table on the right.

●Results of our implementations for our houses including measures against sick house syndrome

As houses have heaviest environmental loads during use, we regard environmental consideration of utmost importance for our houses at the household stage. Our Housing Company is implementing various measures according to the basic concept of its environmental policy: "We contribute to the society with our environment-friendly residential houses that can be lived in safely and comfortably for at least 60 years." Some of the case examples are shown below.

Subjects	Examples of measures	Page
Energy saving	Next generation energy-saving heat insulation specifications	33
Reduction of CO ₂ emission	Increase of the capacity of photovoltaic generation systems	33
Structuring of recycling-based housing system	Longer life components, 60 years and long term support system	35
Measures against sick house syndrome	Conformity with our guidelines	38

●Results of our implementation in collection and recycling of used products

We, Sekisui Chemical Group, are developing and applying systems to reclaim cutoffs and used products from customers for recycling to raw materials. As regards PVC, we are implementing recycling in collaboration with relevant industrial associations. Some of the case examples are shown below.

Companies	Examples of recycling systems	Page
Housing	Reuse System House	36
Urban Infrastructure and Environmental Products	PVC products recycling system	49
	FFU (synthetic wood) recycling system	49
High Performance Plastics	Plastic containers recycling system	54

Companies	Technologies	Products and systems to which technologies are applied	Page
Housing	Passive ventilation technology	Passive ventilation heat-blocking system	34
	Ventilation system	Air Studio	38
Urban Infrastructure and Environmental Products	FFU cutoffs recycling technology	Railway sleepers	49
	FFU cuttings recycling technology	Soil supporting boards	49
High Performance Plastics	Sandwich injection molding technology	Recycled plastic containers	54
	Nano-dispersion technology	Environment-friendly "Paroi (non-flammable)"	56

Reduction of Environmental Loads and Risks in Production ① 3R's in Plants and at House Construction Sites

We are effectively utilizing resources by controlling waste generation and by zero emission. In fiscal 2003 we achieved zero emission at all our house construction sites.

■3R's in Plants and at House Construction Sites

We manufacture and send out products to the market. In so doing we utilize resources and generate a volume of wastes at the production stages (in plants and at house construction sites). It is our mission to achieve maximum reduction, reuse and recycling of all wastes generated, thereby realizing the most effective use of resources.

Internally: Reduction of waste generation

We aim at fullest utilization of resources internally.

- We use our resources to the optimum for our products. Otherwise resources are reused and recycled internally whenever possible.

In cooperation with external concerns: Effective utilization of waste generated

We aim to have all our resources put to use.

- Any part of our resources which can not be made use of internally are delivered to external concerns in such a form (e.g. segregated) that they can be easily utilized.

■Reduction of Waste Generation

●Activities for waste reduction in plants

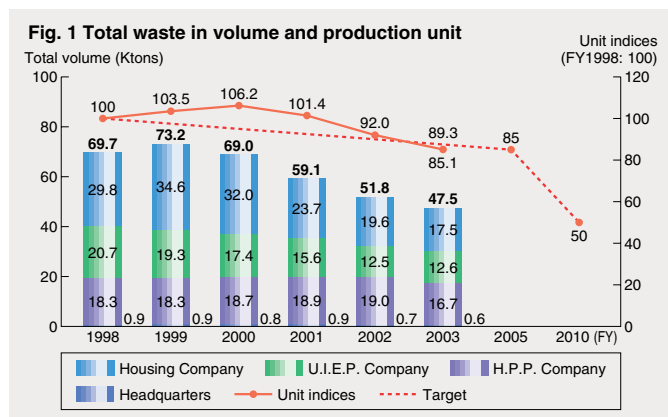
Production unit of waste generation (Benchmark: FY1998)

FY2005 target	FY2003 target	FY2003 result
Reduction of min. 15%	Reduction of min. 11%	Reduction of 14.9%

The reduction of waste generated in manufacturing the same quantity of products results in effective utilization of resources, and leads to the effectuation of our business activities which is one of the aims of our environmental corporate management. Therefore, in our Middle Term Environmental Plan, "STEP-2005", we have set up our reduction target, not by total volume, but by production unit.

$$\text{Production unit} = \frac{\text{Waste generated}}{\text{Produced amount}}$$

In fiscal 2003, the production unit was reduced by 14.9% compared to that of fiscal 1998, nearly reaching the target level for fiscal 2005. (Fig.1)



We understand that this result is attributable to steady efforts made at respective plants (Table 1), such as improvement of production efficiency (reduction of cut-offs generation), waste reduction in transporting materials, reuse of cut-offs as raw materials after securing sufficient quality, in addition to producing RPF from cut-offs (P58).

Table 1: Case examples of waste reduction (after FY2002)

Improvement of production efficiency	Reduction of cut-offs by revising the length and width of raw sheets Reduction of runner size in injection molds Other improvements for production efficiency
Waste reduction in transporting materials	Package saving for delivered components Use of returnable carton cases or repeated use of containers by changing the material to plastics for products and parts packaging Utilization of discarded wooden frames as crosspieces for transportation usage
Reuse of cut-offs as raw materials	Laminated timber from short-sized lumber or cut-offs Resins left in runners and rejects crushed to be used as raw material Cut-offs converted to RPF (solid fuel) as a product (P58) Cut-offs of "FFU" crushed for recycling into products
Others	Waste reduction by implementing measures to prevent spilling of powder/particle products Waste reduction by conducting low-pressure and intermittent painting to preventing paints from splattering

●Waste reduction activities at house construction sites

As more than 80% of our modular house "Sekisui Heim" is made in the plant, it has the characteristics that waste generation at the construction site is comparatively small. However cut-off generation from interior decoration on site is unavoidable, so our house sales subsidiaries and our house manufacturing subsidiaries are collaborating on this issue (P37).

■Wastes Targeted for Reduction in our Middle Term Environmental Plan, "STEP-2005"

Conventionally all wastes generated from our plants were the target for reduction. In STEP-2005, however, we have reviewed the definition of wastes targeted for reduction and

modified it to refer to those related to production, so that waste reduction indices will lead to effective utilization of resources and effectuation of business activities (Table 2).

Table 2: Wastes targeted for reduction in STEP-2005

	Wastes targeted for reduction	Reasons
Items included in generated quantity	Wastes excluding items mentioned below and items sold	Items sold are not products with any value added and they are not always saleable due to changes in market conditions.
Items excluded from generated quantity (*)	Generated from materials received from outside, including used products, e.g. replacement parts in Reuse System houses (P35)	Effective utilization of used products as resources is very important, and it must be extended.
	Left-over from work conducted at workplaces (except house construction sites), or those associated with renewal or abolishment of OA and other equipment	Use for a long period is necessary. However, renewal of equipment is inevitable for efficient implementation of business activities.

(*) Items excluded are the object of zero emission activities (100% recycling), except that their treatment and disposal are designated by relevant laws and regulations.

Effective Utilization of Wastes Generated

	FY2005 targets	FY2003 targets	FY2003 results
Zero emission at house construction sites	Scheduled to be met in FY2003	To achieve at all bases	Achieved at all bases
Zero emission at workplaces	To achieve at 5 workplaces	Start of activities	Activities started
Recycling ratio of specified construction materials	Minimum 90%	Survey of actual status	96.3%

Materials and substances which are wastes to us can be utilized as resources by other manufacturers or industries. Since 1998, we have been promoting zero emission activities to recycle all wastes from our plants and house construction sites.

Zero emission achievement criteria of Sekisui Chemical Group

- ① All outside incineration must include thermal utilization, and no landfill outside or inside of facilities (Recycling ratio 100%).
- ② If waste is a small quantity, recycling methods must be made precise and relevant contractors must be specified.

We have also established uniform evaluation criteria named "The Zero Emission Achievement Evaluation List". In addition to the above standards, we conduct our internal examination according to this list on strict compliance with relevant laws and regulations, complete rules and systems for waste segregation as well as clearly legible signs, adequate facilities for waste treatment and planning for and control of waste reduction. The list obliges us to conduct inspection of outside contractors and to clarify treatment routes in order to enhance the management system through these activities.

Zero emission at house construction sites (P37) Construction and renovation

As regards house construction sites, all of our house sales subsidiaries have now achieved zero emission as all of the remaining 18 house sales bases accomplished it in September 2003, in addition to the 22 bases that had already achieved it in fiscal 2002. In 2004, we started zero emission activities in the repair and renovation fields.

Disassembly and demolition

As for wastes from disassembly and demolition, the recycling ratio of specified construction materials was 96.3% in fiscal 2003. We are further promoting our activities toward achieving 100% recycling of construction wastes targeted for fiscal 2010.

Extension of zero emission workplaces

By the end of fiscal 2002, our 32 plants including those of subsidiaries had achieved zero emission. In fiscal 2003 we newly added 4 R&D institutes and 1 plant to the target, and started our activities to achieve zero emission at these by the end of fiscal 2005.

Fig.2: Results of zero emission activities and future plans

FY	1998	1999	2000	2001	2002	2003	2004	2005	~2010
Plants									
House construction									
House construction sites									
Renovation									
Disassembly and demolition									
R&D institutes									
Head offices (P24)									

Effective utilization of wastes in plants

The status of waste treatment in fiscal 2003 is shown in Fig.3. Two plants, which were not included in the object of our Middle Term Environmental Plan, "STEP-21", have been added to the object of summation in fiscal 2003. Therefore, the quantity of outside treatment was 103 tons.

Fig.3: Status of waste treatment in FY2003 (34 plants)

(±%): Ratio against FY2002 <±%>: Ratio against total volume of generation

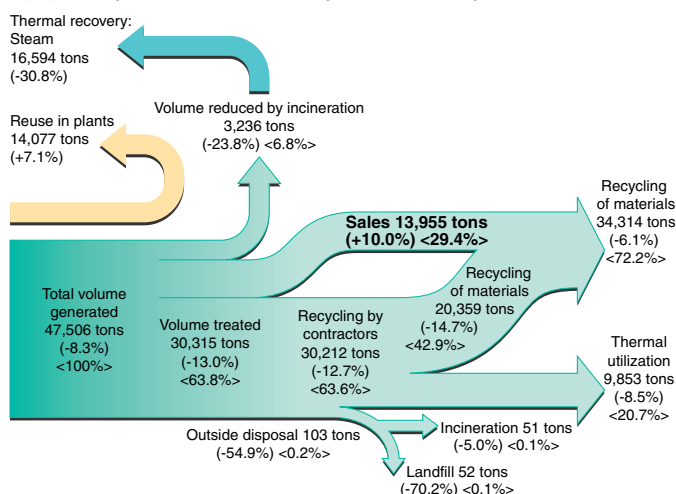
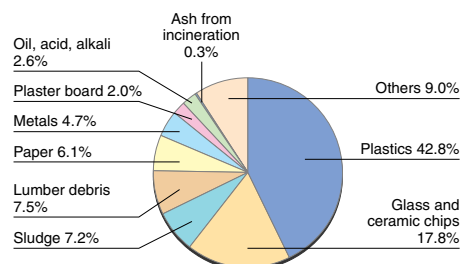


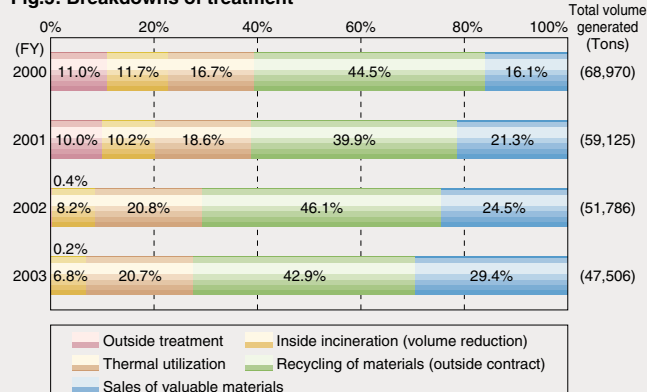
Fig.4: Breakdown of total volume generation



While the total volume was reduced by 8.3%, sales of wastes increased by 10% against fiscal 2002 respectively. As a result of all-out segregation and search for purchasers by each plant, the ratio of sales has been increasing year by year (Fig.5).

Our activities to shift from contracted outside treatment to sales of valuable materials lead to not only cost reduction but also to the elevation of the utilization value of resources. Placing priority on waste reduction, we will continue these activities for effective utilization of resources.

Fig.5: Breakdowns of treatment



We reduced carbon dioxide gas emission at the production stage by 11% compared to that of fiscal 2000. This equals approximately 5% reduction against fiscal 1990 which is the standard year of the Kyoto Protocol.

■Promotion of Reduction of Carbon Dioxide Emission and Energy Saving at the Production Stage

As manufacturer and supplier of products to society we consume fossil fuels which results in the production of carbon dioxide, the cause of global warming. It is our mission to reduce energy consumption and carbon dioxide emission at the production stages.

●Reduction of carbon dioxide emission

FY2005 target	FY2003 target	FY2003 result
Maximum 304 Ktons (Reduction of minimum 5%)	Maximum 314 Ktons (Reduction of minimum 2%)	283 Ktons (Reduction of 11%)

Having reached the fiscal 2005 target, our result for carbon dioxide emission in fiscal 2003 was a reduction of approximately 5% compared to that of fiscal 1990 which is the standard year of the Kyoto Protocol.

The measure that has brought us the greatest effect was the shifting of boiler fuel from A-type heavy oil to city gas, at Shiga-Minakuchi Plant (P20, P59). By further promotion of fuel shifting and other energy saving measures as described in the following, we will implement improvement to achieve our target for fiscal 2010.

Fig.1: Carbon dioxide emission at the production stage

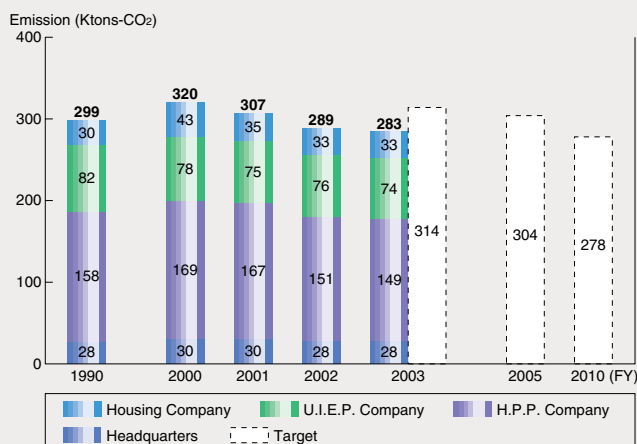
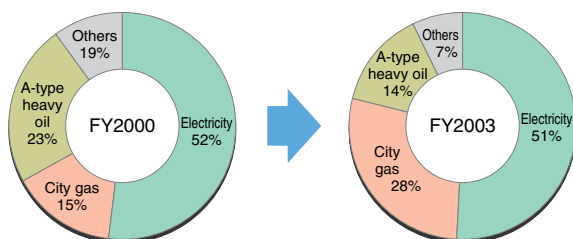


Fig.2: Ratio of carbon dioxide emission according energy type



■Carbon Dioxide Emission Coefficient

In calculating emitted and reduced volume of carbon dioxide, the conversion coefficients mentioned below, which were indicated in The General Report of Reviews Related to Calculation of Greenhouse Gases Emission (August 2002, The Japanese Ministry of the Environment: The Review Meeting for Calculation Methodology of Greenhouse Gases Emission), are commonly used in our respective workplaces. Accordingly, the conversion coefficient of purchased electric power is the average of all power supply sources.

Purchased electric power	0.378 ton-CO ₂ /MWh	Gasoline	2.31 tons-CO ₂ /kl
A-type heavy oil	2.77 tons-CO ₂ /kl	LPG	3.02 tons-CO ₂ /kl
Kerosene	2.51 tons-CO ₂ /kl	City gas	2.15 tons/Km ³
Diesel oil	2.64 tons-CO ₂ /kl		

●Promotion of energy saving

Production unit of energy consumption (Benchmark: FY2000)

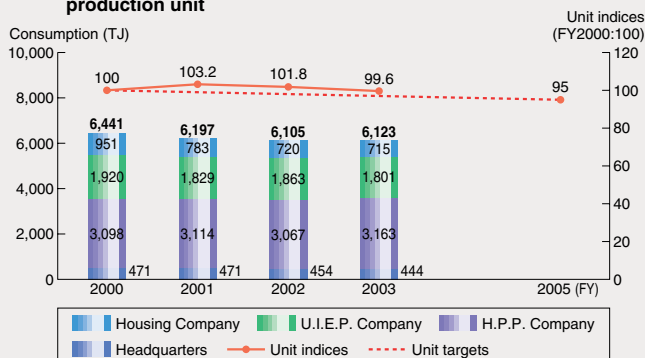
FY2005 target	FY2003 target	FY2003 result
Reduction of minimum 5%	Reduction of minimum 3%	Reduction of 0.4%

We have set up our target for the energy consumption amount per production unit, so that the increase of produced amount does not cause an increase of carbon dioxide emission.

Our result in fiscal 2003 was only a 0.4% reduction compared to that of fiscal 2000, but it is more than a 2% reduction against fiscal 2002. The improvement over fiscal 2002 is attributable to the effect of the gas co-generation system which was newly introduced to Shiga-Minakuchi Plant. Also, we implemented the introduction of energy-saving type injection molding machines after completing their evaluation over a long period of time (P20).

To achieve our target for fiscal 2005, we will promote further introduction of co-generation systems and the planning and implementation of energy saving measures in collaboration with ESCOs (P20).

Fig.3: Energy consumption at the production stage and production unit



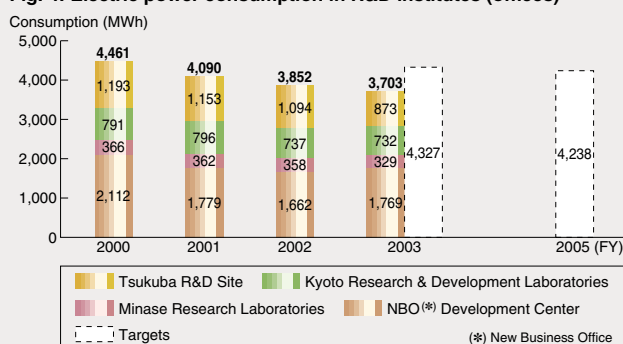
■Energy Saving Activities in R&D Institutes

Electric power consumption in offices

FY2005 target	FY2003 target	FY2003 result
Reduction of minimum 5%	Reduction of minimum 3%	Reduction of 17%

Our R&D institutes are also promoting energy saving activities setting targets in their offices. In fiscal 2003 they greatly exceeded the fiscal 2005 target, which will, therefore, be upgraded.

Fig. 4: Electric power consumption in R&D institutes (offices)

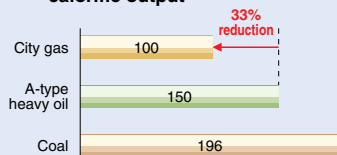


■Case Examples of Activities in Plants for Reduction of Carbon Dioxide Emission and Energy Saving

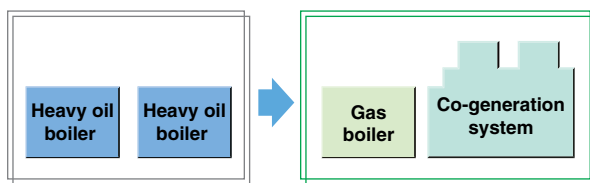
●Shifting of fuel

City gas, being mainly composed of natural gas, generates much less carbon dioxide during burning compared to other fuels.

Fig.5: Ratio of CO₂ for the same calorific output

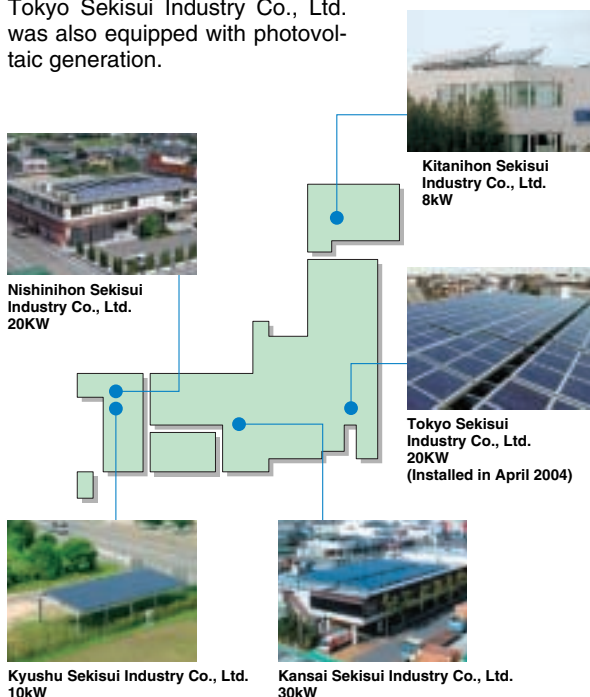


Previously, two sets of boilers fueled by A-type heavy oil were used in Shiga-Minakuchi Plant. The boiler fuel has been shifted to city gas, and also a co-generation system using city gas as the fuel has been introduced. This resulted in a reduction of more than 6,000 tons (9% approx.) of carbon dioxide emission while the production amount increased nearly 30% (P59). Also, emission of SO_x has been greatly reduced (P22).



●Utilization of photovoltaic generation

Photovoltaic generation is clean renewable energy. Four of our plants in Japan are installed with photovoltaic generation equipment for energy supply to the offices, generating a total of 61MWh (600GJ) in fiscal 2003. In April 2003 Tokyo Sekisui Industry Co., Ltd. was also equipped with photovoltaic generation.



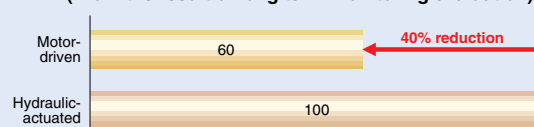
●Introduction of energy-saving type injection molding machines

Previously, hydraulic-actuated injection molding machines were used for making PVC pipe fittings in Kyushu Sekisui Industry Co., Ltd., to which motor-driven machines, having excellent performance for energy saving, were introduced in fiscal 2003.

Motor-driven injection molding machines sold in the general market are not applicable to PVC resin due to insufficient torque and to corrosion problems. Jointly with a machine manufacturer, Kyushu Sekisui Industry Co., Ltd. has continued long term monitoring evaluation and design improvement since fiscal 2001, and has succeeded in putting into practical use motor-driven injection molding machines that are applicable to PVC resin. Compared to conventional hydraulic-actuated machines, electric power consumption was reduced by 40%, together with a significant reduction of noise and vibration.

Motor-driven injection molding machines were also introduced to Tokyo Plant in fiscal 2003. We will extend their introduction to our other plants.

Fig.6: Comparison of electric power consumption required per 1kg of product (From the result of long term monitoring evaluation)



●Collaboration with ESCOs

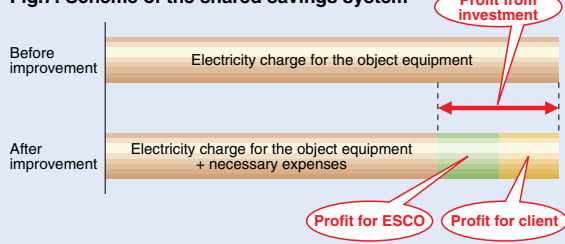
As a result of our energy saving activities since the 1980's, themes excellent in investment profitability decreased and capital investment for the purpose of energy saving was gradually placed in a difficult position. Under such circumstances, we studied utilization of the ESCO (Note 1) business. In fiscal 2003, Okayama Sekisui Industry Co., Ltd. concluded a contract under the shared savings system (Note 2), the first time in Sekisui Chemical Group. In this case, it proceeded studies with an ESCO on the compressed air system, and implemented measures to reduce power consumption used for the compressors by half (corresponding to a 7% reduction of the power consumption of the entire workplace).

Note 1 ESCO (Energy Service Company): Enterprises engaged in comprehensive services for energy saving including diagnosis and appropriate measures and equipment introduction

Note 2 Shared savings system: Capital investment is made by ESCO on the equipment for energy saving.

The balance, which is the difference between the reduced amount of energy charge and the necessary expenses such as depreciation and maintenance fees, is distributed to the ESCO and the client as profit (Fig.7).

Fig.7: Scheme of the shared savings system



Reduction of Environmental Loads and Risks in Production ③ Reduction of Chemical Risks

We are implementing activities to reduce environmental pollution which is associated with our business activities. The release and transfer of chemical substances specified as Class 1 in the Japanese PRTR Law was 530 tons in fiscal 2003, nearly half that of fiscal 1998.

■Reduction of Risks by Chemical Substances

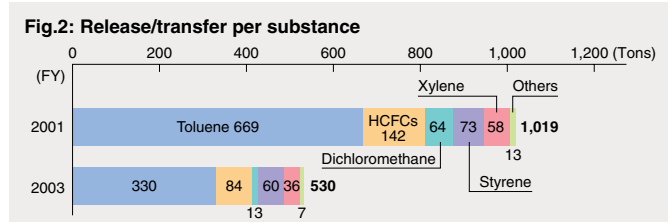
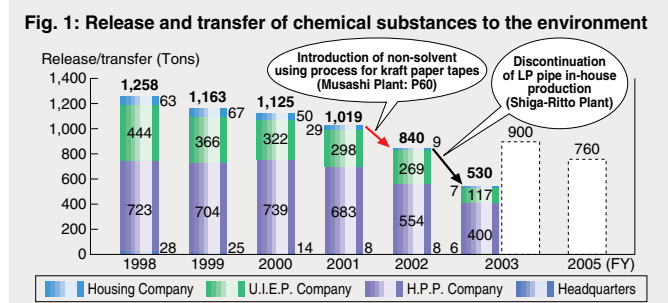
As we are using a large variety of chemical substances, it is of utmost importance that we manage them in stringent ways for the prevention of environmental pollution and for the reduction of environmental loads. Therefore, we have set up

●Reduction of release and transfer of chemical substances to the environment

Release and transfer of chemical substances specified as Class 1 in PRTR Law		
FY2005 target	FY2003 target	FY2003 result
Maximum 760 tons	Maximum 900 tons	530 tons

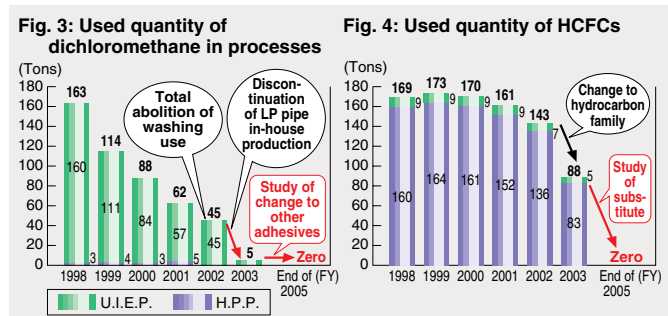
We target the chemical substances specified as Class 1 in the PRTR Law. Our fiscal 2003 result exceeded the target greatly, due to our implementation of a number of measures. It includes the large excess of reduction effects by the non-solvent using process in kraft paper adhesive tapes production, which was introduced in fiscal 2002 (Musashi Plant: P60), and the discontinuation at Shiga-Ritto Plant of LP pipe in-house production in which steel pipe is lined with PVC pipe (Fig.1).

Based on this result, we are reviewing our middle term target in order to upgrade it. The quantity of targeted substances we used in fiscal 2003 was 121,000 tons (P66). Release and transfer of each substance is shown in Fig.2.



●Total abolition of targeted substances

By the end of fiscal 2005, we will have totally abolished dichloromethane use in our production processes, except that which is used as the raw material for our adhesives, and HCFCs used as foaming agents for our foamed products. We obtained steady results in fiscal 2003, as shown in Figs. 3 and 4.



autonomous targets and are implementing activities to reduce the release and transfer of chemical substances, to attain total abolition of targeted substances, and to carry out surveys for soil contamination inside our facility sites.

●Survey of soil contamination at our facility sites

Realizing environmental corporate management, we are implementing a variety of activities systematically for the reduction of environmental loads and environmental risks that are associated with our business operations. As a part of such activities, we are implementing autonomous surveys for soil contamination at our facility sites. We conducted surveys at three workplaces in fiscal 2003.

Results of surveys

Based on our survey plan, we conducted surveys in fiscal 2003 at Nitta Plant, Plant No. 2 of Kansai Sekisui Industry Co., Ltd. and Kanto Plant of former Sekisui FFU Industry Co., Ltd., on all substances specified in the Japanese Soil Contamination Counter-measures Law in accordance with the survey methods stipulated in the same law. The outline of the results of our surveys is shown in the table below, and the results of our surveys have been reported to the relevant administrative bodies.

In Nitta Plant, the elution of fluorine and chromium(VI) from the soil was found to be more than the standard at one measuring point, but did not exceed the content standard and the underground water standard at any measuring point.

As the point where fluorine exceeds the standard was the storage site for dehydrated sludge generated in the production process, it is considered the cause was a fluorine compound which was used as an additive to products in the past. As regards chromium(VI) we have no record of having used it and cannot specify the cause.

For the present, production has been discontinued at this plant. The point where these two substances exceed the standard is inside the building, under concrete flooring and at a maximum of 2 meters below ground level which is less than the underground water level i.e. 5 meters below ground level. In view of these facts, it is unlikely an extension of the contamination by rainwater would occur.

However, for emergency, we have set a monitoring well at each of the points where the standards are exceeded, to check the underground water quality regularly.

Future plans

We continue autonomous surveys systematically. In fiscal 2004 we are carrying out surveys at one plant, the results of which are to be disclosed.

Survey Items		Nitta Plant (area: 80,000m ²)	Plant No. 2 Kansai Sekisui Industry Co., Ltd. (area: 20,000m ²)	Kanto Plant Sekisui FFU Industry Co., Ltd. (area: 7,000m ²)
Chemical substances specified as Type 1	Content	Zero/106	Zero/29	Zero/39
	Chromium (VI)	1/171 Concentration: 3 times approx. of standard Scope: area 175m ² approx. depth 2m approx.	Zero/29	Zero/39
	Fluorine	2/171 Concentration: 2 times approx. of standard Scope: area 10m ² approx. depth 1m approx.	Zero/29	Zero/39
	Others	Zero/171	Zero/29	Zero/39
	Chemical substances specified as Type 3	Zero/171	Zero/29	Zero/39
Measure		Checking by the monitoring wells	No contamination	No contamination

Described data: Number of points exceeding standard / Number of primary measuring points

●Air pollution control

By our proper maintenance of every facility and periodic checking, we are steadily meeting with all legal requirements for air pollution control, and making efforts to further reduce air pollutants emission. In fiscal 2003, we cleared all legal requirements related to air pollution.

Emission of NO_x, SO_x and soot and dust were all reduced from the level of fiscal 2002 (Figs. 5-7).

This is attributable mainly to the abolition of the incinerator at Tokyo Sekisui Industry Co., Ltd., and to the reduction of A-type heavy oil use at Shiga-Minakuchi Plant by the shifting of boiler fuel to city gas and the introduction of a city gas fueled co-generation system.

Fig.5: Emission of nitrogen oxides

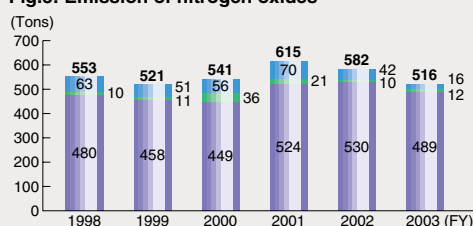


Fig.6: Emission of sulfur oxides

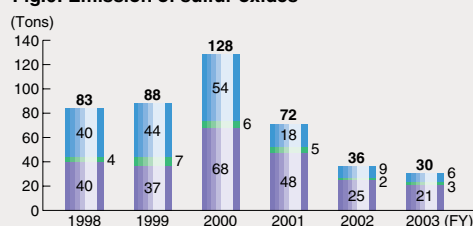
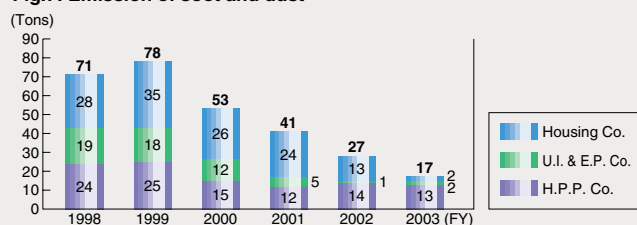


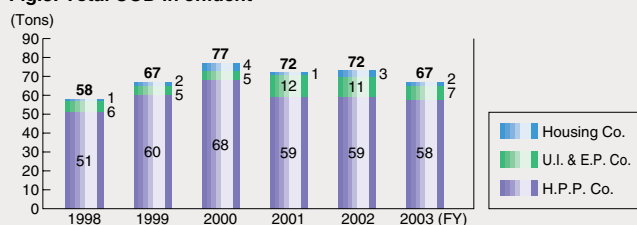
Fig.7: Emission of soot and dust



●Water pollution control

In fiscal 2003, one plant reported pollutant emission above the maximum limits set in the relevant prefectural regulations (P62). This was caused by a septic tank management contractor's negligence in removing contained sludge. Having verified that the limits were not exceeded after the removal of the sludge, the plant submitted the countermeasure report to the relevant administrative bodies and had it approved. In another plant that is not the object of legal requirements, there was a case of excess above its autonomous control limits (P63). It has been verified that a measure was implemented and contamination was reduced to within the control limits.

Fig.8: Total COD in effluent



●Abolition of incinerators

At present only two of our plants are operating incinerators, Shiga-Minakuchi Plant and Tokuyama Sekisui Industry Co., Ltd., and they are exerting all-out maintenance and control of the facilities. Dioxins emission to air, and situations compliant with laws and regulations related to air and water pollution are described on PP64 – 66.

●Use and storage of apparatus containing PCB

There is apparatus containing PCB stored in 16 of our plants, e.g. transformers, and 2 plants use fluorescent lamp stabilizers, all of which we strictly control. We will continue to keep them under strict guard and seek proper treatment methods as soon as possible.

●Emergency management

For prevention of environmental contamination and its expansion in cases of accidents or natural disaster, each workplace trains designated employees for proper response.

The number of main training sessions held in fiscal 2003 is shown below.

●Supposed state of emergency and response training

Supposed state of emergency	Number of training sessions
Leak/outflow of oil, etc.	30
Solvent emission to atmosphere	1
Fire	74
Earthquake	10
Notification of emergency	14

■Environment-related Complaints (and Mishaps)

No mishaps in fiscal 2003. Complaints were received regarding noise from three plants and regarding odor emitted from one plant.

●Complaints and countermeasures

Classification	Contents	Countermeasures
Noise	Steam leakage from a valve	The valve was repaired immediately. The situation was then reported at the group leaders' meeting of the local community, and accepted.
	Noise from plants during nights	Noise occurring when factory doors and windows were closed was measured. It was lower than general sound pressure. We will pay fullest attention to the closing of doors and windows during nights. This proposal was accepted by all concerned.
	Abnormal sound from an air blower	Poor maintenance was found. The air blower was checked and repaired immediately.
Odor	Odor from the waste water treatment equipment (Continued from fiscal 2002)	A project team for environmental risks reduction was set up in fiscal 2003. It is now engaged in specifying odor generation sources, analysis of odor substances and study of adequate countermeasures including equipment improvement. The current activities were reported to the relevant administrative bodies and approved.

Occupational Health and Safety · Accident Prevention

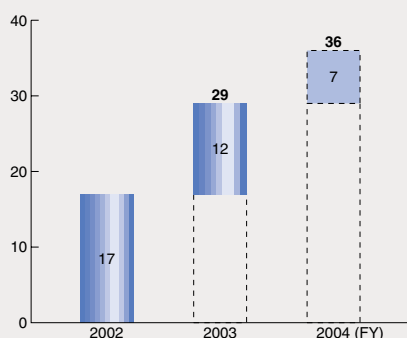
We are steadily proceeding with structuring OHSMS (Occupational Health and Safety Management System). All staff at our workplaces are heightening their sensitivity to danger to maintain and improve our OHSMS.

In order to realize zero danger at our workplaces, we have been promoting activities for structuring OHSMS in each plant and R&D institute since fiscal 1999. The targeted structuring in 36 plants and R&D institutes is scheduled to be completed during fiscal 2004.

■Promotion of OHSMS Structuring

Following fiscal 2002, we promoted activities for "OHSMS Structure and its Operation" as our most important subject in Sekisui Chemical Group. In fiscal 2003, we promoted activities targeting the completion of the structure at 13 workplaces. 12 completed the structuring and started OHSMS operation (Fig.1) and one of the workplaces was dissolved by business reorganization. The structuring is scheduled to be completed at all of our plants and R&D institutes during fiscal 2004.

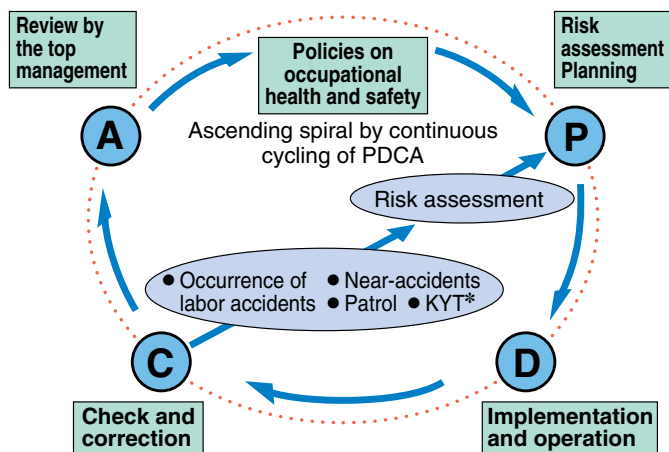
Fig.1: Number of workplaces with OHSMS structure



*Examination of the structuring is carried out according to our internal examination standards. Only the workplaces that pass both the paper test and the implementation test are accredited.

●Operation of OHSMS

Based on the structured system, activities are implemented by cycling P (Planning) → D (Implementation and Operation) → C (Check and Correction) → A (Review). The status of the system is examined by Headquarters' health, safety and accident prevention audits conducted once a year in principle.

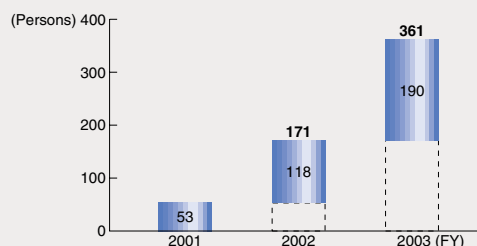


*Risk awareness and prevention training

●Training for OHSMS internal auditors

We are systematically implementing training for OHSMS internal auditors who check whether the OHSMS structured in the workplace is practiced and operated in appropriate ways. Up to the present 361 internal auditors (cum. total) have received such training (Fig. 2), about 10 internal auditors per workplace, and they are engaged in auditing at respective workplaces.

Fig. 2: Number of OHSMS internal auditors



■Health, Safety and Accident Prevention Audits

To realize our corporate policy on the environment and safety, our Headquarters performs health, safety and accident prevention audits at our 37 plants and R&D institutes once a year in principle (Fig. 3 & Table 1).

Each workplace sets up and declares its policy on health, safety and accident prevention. In order to check on the smooth cycling of PDCA and the health and safety status of our workplaces, audits are performed quantitatively according to our own Health, Safety and Accident Prevention Evaluation Sheet that comprises 88 evaluation items in total.

Fig.3 System of the audits

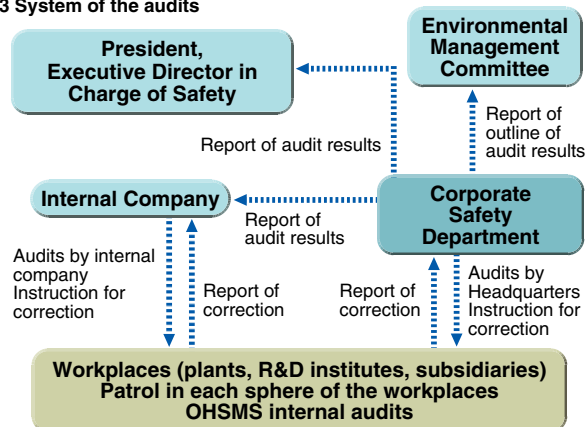


Table 1: Audit results in FY2003 (plants and R&D institutes, as of March 31, 2004)

		Number of cases	Correction completed	Correction in progress
Health, Safety and Accident Prevention Audits by Headquarters (37 workplaces)	Pointed items	271	198	73
	Demanded items	118	66	52
	Proposed items	3	2	1
	Total	392	266	126

Pointed items: Immediate improvement required
Demanded items: Improvement within 1 year required
Proposed items: Review of improvement recommended or advised

■Results of Health, Safety and Accident Prevention Activities

Aiming at the realization of zero danger in the workplace, we promoted activities under Sekisui Chemical Group's fiscal 2003 catchphrase: "Let's reinforce our safety management system and aim at the elimination of any occurrence of danger!" We will steadily operate our OHSMS and cycle PDCA continuously for the improvement of safety performance.

●Labor accidents

In 2003, our frequency rate result moved sideways (Fig.4), while our severity rate was greatly reduced (Fig. 5) compared to that of 2002. We are promoting our activities for the reduction of the frequency rate in 2004.

Fig.4: Frequency rate (Death and injury by labor accidents/total labor hours) x 1,000,000

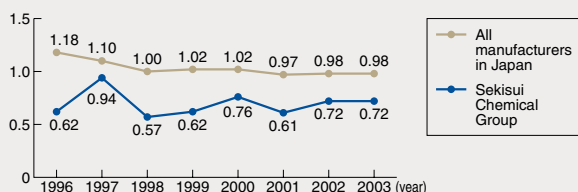
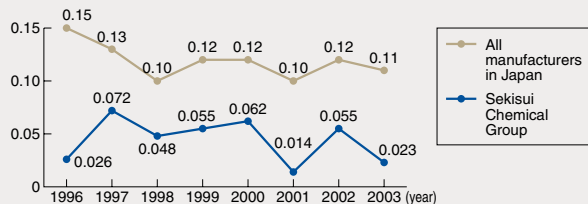


Fig. 5: Severity rate (Workdays lost/total work hours) x 1,000



- Source of data on all manufacturers in Japan: "Trend Survey of Labor Accidents" issued by the Japanese Ministry of Health, Labour and Welfare
- Source of data on Sekisui Chemical Group: Results in 35 plants and 3 R&D institutes

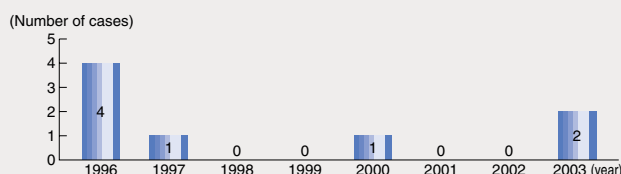
●Equipment incidents

Two minor equipment incidents were recorded in 2003 (Fig. 6). Should there be fire attributed to equipment or any leakage of chemical substances, serious danger could occur not only to employees but also to people in the surrounding communities. This would result in loss of trust in an enterprise and endanger its business activities.

In fiscal 2004, we will take the following measures in order to eliminate any equipment incident:

- ① All-out daily management of equipment and operations
- ② Implementation of risk assessment in equipment introduction and improvement (at each stage from design to use)
- ③ Implementation of risk assessment in changing process conditions

Fig. 6: Equipment incidents

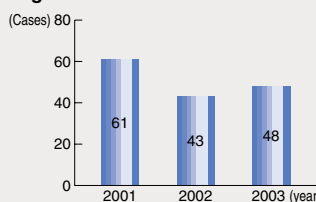


- *Definition of equipment incidents (Sekisui Chemical Group's criteria): Incidents to which either one or more of the following apply.
- Human injury: Absenteeism of 30 or more days
 - Equipment/material damage: ¥10 million or more
 - Opportunity loss: ¥20 million or more

●Commutation accidents

The number of accident cases slightly increased compared to 2002 (Fig.7). We enhance our activities aiming at achieving safe commutation, such as the utilization of danger awareness guidelines for commutation routes.

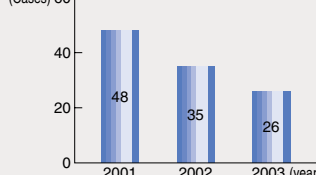
Fig.7: Commutation accidents



●Long term absenteeism due to sickness

Long term absenteeism has been decreasing these years. In 2003, it decreased by 26% compared to 2002 (Fig. 8). This is attributable to regular and specialized health check-ups followed by implementation of necessary medical treatment.

Fig.8: Long term absenteeism due to sickness



■Commendations, Awards and Prizes for Health, Safety and Accident Prevention by External Bodies

2003 Commendation by the Minister of Health, Labour and Welfare to Foremen for Excellency in Safety:

Yasuo Takeda (Higashihon Sekisui Industry Co., Ltd.)

Commendation by Director General of the Fire and Disaster Management Agency for Excellent Workplace regards the Handling of Dangerous Materials: Tokuyama Sekisui Industry Co., Ltd.

■Health, Safety and Accident Prevention Accounting

Based on the concept of environmental accounting, we have calculated since fiscal 2002 expenditures and investments and effects with respect to health, safety and accident prevention (Table 2).

Table 2: Health, Safety and Accident Prevention Costs (¥1 million)

Category	Items	Sekisui Chemical Group (Note 1)	
		Expenditures	Investments
1) Within workplaces	Health and safety measures, rescue, protectors, measurement to assess working environment conditions, health care, labor accident insurance, etc.	690	640
2) Management activities	OHSMS structuring and operation, education on health and safety, personnel expenses, etc.	962	0
3) Others	In-company commendations, awards, etc.	5	0
Total		1,657	640
Entire Group's total investment during the corresponding period		—	15,659
Ratio of investment in health, safety and accident prevention against total investment (%)		—	4.1
Amount lost (Note 2)		173	

(Note 1): The scope of summation is that of summation in environmental accounting (P13) minus house sales subsidiaries.

(Note 2): Amount lost by expenditures for labor accidents and equipment incidents, and by man-hours lost due to labor and commutation accidents and long term absenteeism.

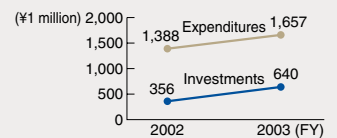
●Activities and effects (safety results) in fiscal 2003

- (1) The costs related to health, safety and accident prevention activities were a 19% increase in expenditures and a 78% increase in investments compared to those in fiscal 2002 respectively.
- (2) Safety results were as described above. The amount lost increased by 7% over fiscal 2002.
- (3) We are taking countermeasures against labor accidents and equipment incidents that have occurred by means of improvement of equipment and work procedures and by relevant education in order to prevent their reoccurrence.

●Future proceedings

With respect to effects, we continue reviewing items and calculation methods.

●Transition of costs



Environmental Consideration in Sales and Distribution, and Environmental Conservation in Offices

We are dedicated to maintaining environmental consideration in the transportation and sales of our products and in our offices.

■Environmental Consideration in Sales and Distribution

In order to achieve all-out environment-friendliness at every stage of our business activities, Sekisui Chemical Group is aggressive in promoting environmental consideration in sales and distribution. The two main pillars of our activities are Green Distribution, reducing emission of carbon dioxide in transportation of products, and Green Cars, shifting of company cars to energy saving/low polluting cars.

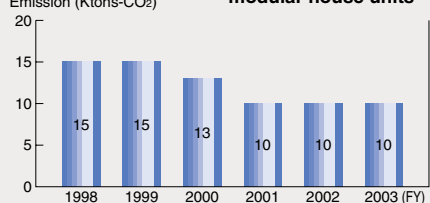
●Green distribution

Sekisui Chemical Group entrusts the transportation of all products to outside dispatch agents. In case of our houses, they are transported in modular units from the plant to the construction sites by trucks used exclusively for this purpose. As the transportation form is comparatively direct, we have estimated the emitted volume of carbon dioxide and in fiscal 2003 we estimated it to be 10,000 tons approx. We are carrying out a study on the shifting of these trucks to low polluting vehicles in order to promote the reduction of carbon dioxide emission.

However, transportation of our other products is more complex in that: frequently they are contained in the same truck as products from other manufacturers, many distribution bases complicate the transportation channels and the number of shipping cases is enormously large.

In fiscal 2003, therefore, we selected model workplaces and products for study in order to grasp the situation of carbon dioxide emission in transportation regards the products shipped from the plants and distribution bases. Then we decided on specific methods for collecting data and calculating the carbon dioxide emission volume associated with the model workplaces and products. In future we will establish a calculation method for our main products and set up a scheme for collecting data accurately and effectively.

Fig.1: Carbon dioxide emission in transporting modular house units



●Green cars

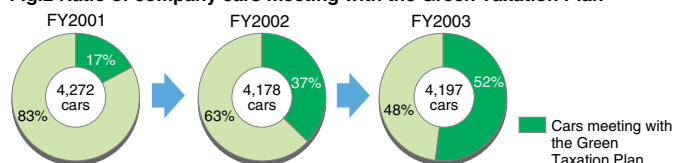
Ratio of cars meeting with the Green Taxation Plan against the total company cars.

FY2005 target	FY2003 target	FY2003 result
Minimum 50%	Minimum 40%	52%

Shifting of company cars, including commercial vehicles, to energy saving cars and low polluting cars is part of environmental consideration in our business activities. We have been promoting introduction of cars meeting with the Green Taxation Plan set forth by the Japanese Ministry of Land and Transportation with respect to company cars managed by Sekisui Lease Co., Ltd.

Approx. 93% of our company cars renewed in fiscal 2003 meet with the Plan. As a result their ratio exceeded the target for fiscal 2005 by reaching 52% of the total company cars (Fig.2). Therefore, we are going to upgrade the target value.

Fig.2 Ratio of company cars meeting with the Green Taxation Plan



■Environmental Conservation in Offices

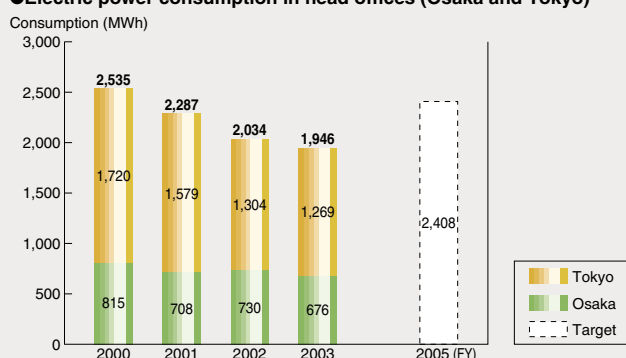
●Energy saving activities in Headquarters

Electric power consumption (Benchmark: FY2000)

FY2005 target	FY2003 target	FY2003 result
Minimum 5% reduction	Minimum 3% reduction	23% reduction

Not only in our plants and R&D institutes but also in our head offices we are promoting energy saving activities. The total reduction of Osaka and Tokyo head offices was as high as 23% against fiscal 2000. The achievement greatly exceeded our middle term target of fiscal 2003. Therefore we are going to upgrade the target.

●Electric power consumption in head offices (Osaka and Tokyo)



●Zero emission activities in head offices

Targeting on all departments and sections in our Osaka and Tokyo head offices, we are promoting zero emission activities to achieve 100% recycling of wastes. In order to make environmental consideration our corporate culture, all employees in all sections are making efforts to realize zero emission by the end of fiscal 2005.

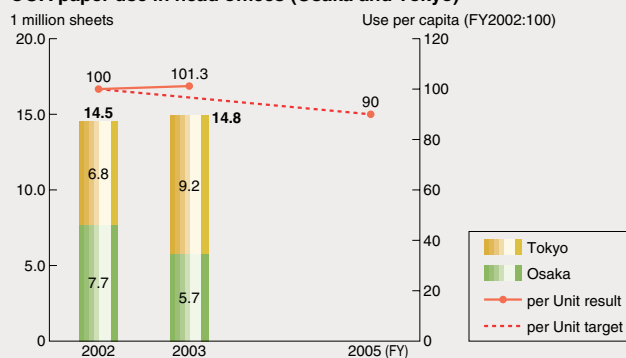
●OA paper reduction activities in head offices

Use of OA paper per capita (Benchmark: FY2002)

FY2005 target	FY2003 target	FY2003 result
Minimum 10% reduction	Minimum 3% reduction	1.3% increase

We are making efforts to reduce the volume of OA paper used per capita/annum. In fiscal 2003, however, it increased by 1.3% against fiscal 2002. In future, we will seek improvement in such a way as electronic documentation.

●OA paper use in head offices (Osaka and Tokyo)



Education and Enlightenment

Through the education and training of our employees, we are actively enhancing a company culture that cherishes the environment.

■Education of Employees

Various education activities are available to all employees in order to promote the environmental conservation effectively. For example, the Basic Training in Environmental Technology Course is available to engineers early in their careers, so that they will pay attention to the environment during the course of development work. The EMS Internal Auditor Training Course is available to responsible persons of environmental management at individual facilities or offices. In addition, information is distributed to the whole of Sekisui Chemical Group on the intranet and utilized by every workplace for its own environmental education programs.

●Environmental education and enlightenment conducted in fiscal 2003

Courses	Available to:	Month	Number of attendants	Cumulative number
New Employee Training	New employees	May	26	135
Basic Training in Environmental Technology	Intermediate staff	—	—	62
EMS Internal Auditor Training, in-company	Management / intermediate staff	4 times / year	81	503
EMS Internal Auditor Training, ex-company	Management / intermediate staff	As needed	2	83
Sekisui Chemical's Nature Study Course	All in Sekisui Chemical Group	4 times / year	63	372
Company Journal, Lectures / Seminars	All in Sekisui Chemical Group	As needed	All in Sekisui Chem. Grp.	—
OHSMS Internal Auditor Training	Management / intermediate staff	4 times / year	190	361

●Environmental education and enlightenment conducted in fiscal 2004

	Fields	Staff certified in FY 2003	Total certified staff
CEAR* Registered Examiner	Chief Examiner	1	4
	Examiner	0	1
	Assistant Examiner	0	9
Pollution Controller	Air Pollution Classes 1 to 4	5	40
	Water Contamination Classes 1 to 4	3	96
	Noise	0	44
	Vibration	0	28
	Dioxin	0	4
	Energy Controller (Heat, Power)	7	57
	High Pressure Gas Safety Controller, Classes 1 to 3	7	308
	Certified Environmental Measurer	0	4
	Odor Judgment Technician	0	0
	Environmental Counselor	0	2
	Advisory Specialist for Consumer Affairs	5	64

*Center of Environmental Auditors Registration (CEAR) in Japan Environmental Management Association for Industry

To contribute to the directors' knowledge of environmental subjects, a seminar was held by a visiting environmental expert at a board meeting. Similar seminars will be held periodically at future board meetings.

■Sekisui Chemical's Nature Study Course (Leadership Training for Nature Protection)

Cumulative number of attendants since FY2003			
	FY2005 targets	FY2003 targets	FY2003 results
Sekisui Chemical's Nature Study Course	200+	60+	63
Special Leader Training Course	40+	10+	10

In order to educate leaders at our workplaces with wide-ranging knowledge of nature and to promote their nature protection activities in their respective local communities, we have periodically held the environmental education and training course, "Sekisui Chemical's Nature Study Course" since 1997. By the end of fiscal 2003, the course had been held 26 times and attended by a cumulative total of 372 employees.

The 2-day-1-night courses give participants the opportunities not only to acquire basic knowledge of ecology and to learn management know-how of volunteer activities, but also to participate in such outdoor activities as bird watching, miscellaneous tree planting and so forth, in their neighboring natural surroundings. On these courses the attending employees enjoy nature and realize the importance of nature conservation. As a development we have set up a theme of enhancement of communications with children living near our workplaces whereby we encourage their participation in our nature conservation volunteer activities.

●Nature Study Course at Nishinohon Sekisui Industry Co., Ltd. (Tosu city, Saga pref.)

Saga prefecture is famous for its many varieties of dragonflies. One activity of our Nature Study Course was the observation of insects in Dragonfly Park with 17 members of Kayakata-cho boys' baseball club and we enjoyed learning about the rich local nature with them.



●Nature Study Course at Higashinohon Sekisui Industry Co., Ltd. (Watari-cho, Miyagi pref.)

At the area called "the bird sea" near our workplace, we held an observation session on the beach, with the participation of 13 children from Shimogohri Children's Club. Each of the course attendants paired with a child and looked up the names and studied the characteristics of the birds in ornithological books.



Hiromi Tanaka
Quality Assurance Section
Technology Department
Kansai Sekisui Industry Co., Ltd.

"Sekisui Chemical's Nature Study Course afforded me a precious experience. With local children I looked up in a reference book details of insects which I had normally overlooked. Making most of this opportunity to be aware of and to learn about nature, I will take part in environmental conservation activities as much as I can to the best of my ability."

●Special Leader Training Course of Sekisui Chemical's Nature Study Course

Following on from our Nature Study Course, a Special Leader Training Course is made available. The attendants study the practical know-how of plan-making for nature protection activities, so that they can operate proactively in their local communities.

We started this Special Leader Training Course in fiscal 2003 and a total of 10 leaders from 5 workplaces attended the first session, where they set out plans suitable to their respective workplaces by enhancing information exchange.



Environmental Contribution and Communication

As a responsible corporate member of society, we are engaged in a variety of social contribution activities, centering on nature protection activities.

■Nature Protection Activities

Local communities and the global environment are very important stakeholders of Sekisui Chemical Group. We proactively engage in nature conservation not only in our

business activities but also in our social contribution activities both domestically and internationally, which are promoted by our "Executive Committee for Nature Protection".

●Nature protection activities in local communities

One of the wishes of Sekisui Chemical Group is to grow with local communities. We regard helping local communities through social contribution activities as an important role. In each workplace, we are proactively promoting such nature protection activities by entering into discussions on the importance of nature with local people and engaging in volunteer activities to conserve woods and water, and other such activities. We will foster our corporate culture, setting the highest value on the environment, and promoting nature protection and social contribution activities rooted in local communities through voluntary participation by our employees.



◀ Our employees have been cleaning the bank of the Tonebetsu River to secure a clean space for the native birds and fish there.
(Sekisui Chemical Hokkaido Co., Ltd., Iwamizawa city)



◀ Making use of the woods on the slope on the plant premises, we are carrying out environmental education for local children and our employees by tree planting and other woodland maintenance activities.
(Tokyo Plant, Asaka city)

Children who took part in the tree planting at Tokyo plant sent us some pictures they had drawn to express their appreciation.



◀ With the local "Osaki School District Children's Club", we organized a wild bird observation session on the beach, after which we cleaned up the beach, collecting a lot of garbage.
(Chubu Sekisui Industry Co., Ltd., Toyohashi city)



◀ Our employees and their families participating in the plantation activity of the local NPO, "The Society to Conserve Beeches and Waters of ZAO".
(Higashinihon Sekisui Industry Co., Ltd., Watari-cho, Miyagi pref.)



◀ Tokuyama Sekisui utilizes a woodland of Shunan city as our Sekisui Forest where we carry out such forestry management activities as tree planting and periodic thinning, providing a place for local residents to visit and experience nature.
(Tokuyama Sekisui Industry Co., Ltd., Shunan city)



◀ We organized a nature observation gathering with local residents in the nearby hills in order to observe forestry ecology and the coexistence of natural animal life.
(Amagasaki Plant, Amagasaki city)

●Support to NGOs' nature protection activities

In cooperation with Nippon Keidanren Nature Conservation Fund, a charitable trust, we have been supporting nature protection activities in the Asian-Pacific region and in Japan conducted by environmental NGOs since 1997. The nature protection projects we have supported since 1997 amount to 46 in cumulative total. We also continued the assignment of one of our staff to work full time with Nippon Keidanren Committee on Nature Conservation, a trustee of Nippon Keidanren Nature Conservation Fund.

We hold conferences to hear from the NGO representatives the progress reports of their activities, and aggressively participate in workshops sponsored by NGOs.

As Chairperson of Nippon Keidanren Committee on Nature Conservation, Mr. Okubo, President of Sekisui Chemical Co., Ltd., proactively promotes nature conservation activities inside and outside Japan, playing a leading role in nature conservation in business circles, visiting overseas project sites and giving speeches at their workshops.

●Projects we supported in fiscal 2003

Areas	Projects	NGOs
Indonesia	Leveraging lessons learned from Komodo National Park to create a resilient network of marine protected areas at priority sites in the Flores and Banda Seas Eco-Region	The Nature Conservancy, USA
Mongolia	Empowerment of Wildlife Conservation Management in Mongolia	Wild Bird Society of Japan
China	Construction of a Model of Reforestation with Diversity Country of Project Site	Green Earth Network, Japan
Greater Asia	Asian Wetland Initiatives	Ramsar Center Japan
Japan	Further Creation of "the Nature Study Garden" at the site of Fukushima-gata into one more richer in nature and life, and to further promote the conservation of Fukushima-gata	Network Fukushima-gata, Japan

Tree planting in ▶
Datong city, China



◀ Conservation of the coral reefs of Tukang Besi Islands, Indonesia



Mr. Okubo, President, making a speech as Chairperson of Nippon Keidanren Committee on Nature Conservation

Making a Biotope, Space for Wild Fauna and Flora

In order to realize environmentally symbiotic plants integrating both environmental conservation activities and nature protection activities, we have promoted the establishment of biotopes and miniature sanctuaries. The model biotope of Kyushu Sekisui Industries Co., Ltd. has grown up along with the local elementary school children who have participated in the tree planting and other activities and it provides a natural enrichment to the area. It is now established as "Home Town Woods" of the local community. Activities to develop new biotopes are being initiated in other workplaces by the volunteer participation of our employees.

●Kyushu Sekisui Industry Co., Ltd.

Growth of the Biotope



Before development (2000)



At the time of opening (2001)



At present (2004)

It has been four years since we started developing the biotope, and it has become a home to wild fauna and flora, where over five hundred trees grow. Elementary school children are invited to take part in our tree planting activities and some of the trees that were planted by children at the beginning have grown to the height of over four meters. These children, who have now become junior high school students, still come and visit Home Town Woods. We are moved when we see children develop along with the growth of nature in our biotope. We will continue our biotope activities in our local community so that our biotope will become a "Home Town of the Heart", where we can be touched by seeing such natural life as wild flowers, birds, fish and insects.



Naoyuki Kuga
Planning and
Control Dept.
Kyushu Sekisui
Industry Co., Ltd.

●Chubu Sekisui Industry Co., Ltd.

We are developing a biotope, forming a link in the chain of our activities to promote tree planting and nature conservation. The biotope was built voluntarily by many of our employees, utilizing their days off work during the period from the end of March to the middle of May 2004, during which time its outline was completed. Our employees planted trees and arranged stones by hand, using a machine only for the excavation of the pond. The biotope site is rectangular in shape, about 550 square meters in area, and in its center there is the gourd-shaped pond, into which we have a stream flowing. Right after the pond was filled with water we were pleasantly surprised by the arrival of a variety of water insects, like pond skaters, which started to live in the pond. We look forward to observing future natural changes in the biotope, combined with the growth of plants there.



Masahiro Katsuura
Environment and
Safety Dept.
Chubu Sekisui
Industry Co., Ltd.

■Support for Future Generations

"Development of Technologies from Nature"

In fiscal 2002 we started a program, "Sekisui Chemical Co., Ltd. Research Fund for the Development of Technologies from Nature", to financially assist the research of technologies that utilize natural functions such as biomimetics, biotechnology, and materials science which utilizes recyclable resources, and their related technologies.

● Research grants awarded in fiscal 2003

In 2002, we aided 13 themes out 124 applications. In 2003, we received 215 applications, out of which we aided 13 themes.

● Forum

We organized a forum in our Kyoto R&D Laboratories in October 2003 to enhance mutual communications among researchers in this field. The total number of participants were 197, consisting of 79 from universities and public research institutes, 61 from private enterprises and the general public, and 57 from Sekisui Chemical Group. In the forum, the researchers and engineers could enhance communication through presentations on 22 themes including the 13 aided in fiscal 2002.

Poster session by aided researchers
Active communication among participants



Professor Fumio Shimura,
Shizuoka Institute of Science
and Technology, who made the
keynote speech



"Development of
Technologies from Nature"
A leaflet (in Japanese) published
by Sekisui Chemical Co., Ltd.

"House Making Course for Children"

For the school curriculum of "comprehensive learning" introduced in fiscal 2001 for junior high school students, Sekisui Chemical Co., Ltd. started a house making course by using a miniature of Sekisui Heim.

We newly added a program of house making for senior high school students in fiscal 2003, and implemented the course in 22 schools with the participation of about 500 students.

We will continue our activities to contribute to society through our businesses.



A brochure
(in Japanese);
"Children's Miniature
House Making Contest"



Learning the basic knowledge of housing
through our House Making Course

In order to let our company be better known as an environmentally concerned organization to interested bodies and to the public, we are providing our knowledge of environmental affairs through various activities and community events.

■Communication with Local Communities

●Guided plant tours

In fiscal 2003, we invited many people to our guided plant tours, to whom we also explained our environmental activities.

- Our environmental activities at our plants
..... 8 occurrences: 65 visitors
- Field social studies by students of all ages
..... 52 occurrences: 2,782 visitors
- Plant and production processes
..... 426 occurrences: 3,260 visitors



◀ Elementary school students visiting Tokyo Plant as part of their Social Studies course

●Interaction with local communities

We actively participate in community events, such as citizens' festivals.

- Hasuda City Marathon (Tokyo Sekisui Industry Co., Ltd.)
- Toyohashi Flower Fiesta
(Chubu Sekisui Industry Co., Ltd.)
- Summer Festival Dance at our Tokyo Plant
- Cooperation with the New Year fire-brigade parades
(Minase Research Laboratories and others)

●Site reports by workplaces

No site report was issued in fiscal 2003 but 9 workplaces will publish their site reports in fiscal 2004.

■Communication with Interested Persons Regarding Environmental Activities

●Exhibitions

We participated in the Eco-Products 2003 event in December in Tokyo, where many people visited our booth every day and showed keen interest in our activities to structure a recycling-based society.



Our booth at Eco-Products 2003

■Communications on our Products and Business Activities

●Product information presentation

●MSDS (Material Safety Data Sheet)

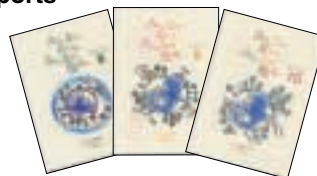
This paper explains the hazards and toxicity of products and sets out precautions for their handling. 292 MSDS's, both revised and new issues, were sent out in fiscal 2003.

●Yellow Card

This paper describes emergency measures for accidents during transportation of hazardous products and is handed to truck drivers at the time of shipping.

■Interaction with the General Public

●Publications of brochures and reports



Sekisui Heim Environmental Series
(10 volumes) (Japanese language only)



Environmental Report 2003

The English versions of our environmental reports from the second edition (2000) to that of 2003 can be accessed at our website:

<http://www.sekisui.co.jp/general/english/eco/> (Available free of charge)

●Lectures on the environment

Seminar to mark the 3rd Anniversary of the ATC(*) Green Eco Plaza: June 2003 (* ATC: Asia & Pacific Trade Center in Osaka)

Course Lecture at Doshisha University, Kyoto: October 2003

■External Commendations, Awards and Prizes

The environmental conservation activities and environment-friendly products of Sekisui Chemical Group were awarded the following commendations and prizes in fiscal 2003.

The 13th Grand Prize for The Global Environment Award, the Japan Industrial Journal Award: Sekisui Chemical Co., Ltd.

Green Reporting Award, The First Prize: Environmental Report 2003

Environmental Report Awards, Environmental Report Excellence Prize: Environmental Report 2003

Energy Conservation Grand Prize, Energy Conservation Center Chairman's Prize: Hot Water Unit with CO₂ Medium Heat Pump

The 5th Technical Development Prize by Japan Institute of Construction Engineering: SEW Work Method (Shield Earth Retaining Wall System)

The 2nd Japan Environmental Management Grand Prize, Environment Frontier Sector, Original Environmental Project Prize: Housing Company (Reuse System House)

Commendation for Valuable Activities by Chairman of the Reduction, Reuse and Recycle Promotion Council: (Total 6 plants and 22 house sales subsidiaries): Ohta Plant of Toto Sekisui Co., Ltd., Chiba Plant of Vantec Co., Ltd., Head Office Plant of Sekisui Techno-Seikei Co., Ltd., Sendai Plant and Shinshu-Takato Plant of Sekisui Film Co., Ltd., Sekisui Film Kyushu Co., Ltd., Tohoku Sekisui Heim Co., Ltd., Fukushima Sekisui Heim Co., Ltd., Sekisui Heim Tokyo Co., Ltd., Sekisui Heim Kanagawa Co., Ltd., Sekisui Heim Chiba Co., Ltd., Sekisui Heim Saitama Co., Ltd., Ibaraki Sekisui Heim Co., Ltd., Tochigi Sekisui Heim Co., Ltd., Gunma Sekisui Heim Co., Ltd., Sekisui Heim Shinetsu Co., Ltd., Nagoya Sekisui Heim Co., Ltd., Gifu Sekisui Heim Co., Ltd., Mie Sekisui Heim Co., Ltd., Sekisui Heim Keiji Co., Ltd., Sekisui Heim Osaka Co., Ltd., Sekisui Heim Hanna Co., Ltd., Sekisui Heim Sanyo Co., Ltd., Kitakinki Sekisui Heim Co., Ltd., Okayama Branch of Sekisui Heim Chugoku Co., Ltd., Kagawa Sekisui Heim Co., Ltd., Kyuseki Sekisui Heim Co., Ltd., Kumamoto Sekisui Heim Co., Ltd.

Nara City Global Environment Award: Kansai Sekisui Industry Co., Ltd.



Grand Prize for The Global Environment Award, Awards Ceremony



Green Reporting Award, Awards Ceremony

Opinions and Comments on our Environmental Report 2003 and our Responses

We received opinions and comments on our Environmental Report 2003 in the Third Party Examination Report by the Wild Bird Society of Japan, and also in the replies to our questionnaire accompanying the Japanese language edition and at a follow-up meeting (PP69-70). Below are our responses to the main opinions and comments.

■Opinions Expressed in the Third Party Examination Report (summarized)

Opinions and Comments Received		Our Response
Summarized Results of examination	Regarding the items in the middle term environmental plan whose targets were not achieved, a more concrete analysis of the causes and specification of countermeasure are necessary.	Regarding our failure to achieve the targeted energy saving in fiscal 2003, we did not detail the causes as they were an accumulation of very many small causes, but our countermeasures are explained.
	The definition of "zero emission" is no emission at all of any harmful substance, including not only waste, but also waste water and waste gas, inside and outside of workplaces.	We are developing our concept of what constitutes "a prominent company" in relation to our environmental responsibility. We are studying our zero emission activities, the enhancement of environmental consideration in our products, our positive influence on our supply chains and every aspect within our scope.
	Environmental activities should also be conducted outside of workplaces and in overseas operations.	As for our overseas operations, we have set up a policy to enhance their environmental activities, and started with a survey of their actual status.
	Importance should be attached to communication with customers, consumers, related NGOs and the general public, and it should be stated in the Environmental Reports.	In our Environmental Report 2004, each of our internal companies has given as much information as space allows on our communication with customers and consumers. We also held a follow-up meeting with some respondents to our questionnaire.
Opinions and comments from each Committee member	[S. Teranishi, Chairman] Environmental accounting should be reviewed as a tool to show to the general public "accountability from the environmental aspects". It is necessary to review the concept and positioning of eco-efficiency.	Our review on environmental accounting is not sufficient, but we will continue our efforts to express more clearly the effects on the general public. The eco-efficiency was computed by using JEPIX method, which is an aggregated index to evaluate integrated environmental performances. We will study how to make the best use of it in future based on the results obtained this time.
	[M. Seto, Committee Member] I hope Sekisui will take the leadership for "structuring of a sustainable society" from the long term and wide range viewpoints. Sekisui should analyze causes and find solutions for what an enterprise can not do, and communicate this to the general public.	In developing our concept of what constitutes "a prominent company" in relation to our environmental responsibility, we are concentrating on how we can develop our role as a leader in structuring a sustainable society and the means to communicate to the general public the role that an enterprise has to take in structuring a sustainable society and problems related to its achievement and their solutions.
	[S. Hara, Committee Member] In order to make the Environmental Reports enhance communication, more should be reported on communications with customers and consumers, and on such items as PVC, formaldehyde of sick house syndrome, and other issues associated with Sekisui.	In the internal company sections of this report, we reported on communications with customers and consumers as much as space allows. We also held a follow-up meeting with respondents to our questionnaire. We will continue our efforts to convey information on PVC and other issues associated with Sekisui on our websites, and by pamphlets and others.
	[O. Kobayashi, Committee Member] Care should be taken in using in-company terms and in explaining items that can not be shown in figures. It is necessary to clarify that the costs for environmental conservation will benefit the corporate management as well as the global environment in the long term.	The Environmental Report 2003 was compiled on the principle that the main readership would be our customers and it and the presentation of our activities made to them by our staff would be complementary. Therefore many terms pertaining to particular products were used. In this 2004 Report, we have used familiar expressions wherever possible and will do so in future reports. We have been promoting our activities with full confidence that thorough environmental consideration will result in benefiting the corporate management and the global environment, and one of its examples is our Zero-energy-cost House (P33).

For details of the Third Party Examination Report, please refer to our Environmental Report 2003, PP66-67. (http://www.sekisui.co.jp/eco/report2003_e/index.html)

■Opinions and Comments Arising from our Questionnaire and Follow-up Meeting

We received replies to our questionnaire from 42 readers, 11 of whom gave us opinions and comments asking for improvement. As many opinions and comments were in common with those given in the follow-up meeting (PP69-70), we show our responses to both below.

Opinions and Comments Received	Our Response
<ul style="list-style-type: none"> ● I had the impression that the report was over-informative. ● Too much information. Could it be more comprehensive? ● At a first glance it looked rather too complex to understand. 	The environmental issues relating to us are numerous and varied, as are the activities which are carried out under our environmental management. In order to have them well understood, a great volume of information is required. However we will make efforts to present the information as understandably as possible.
<ul style="list-style-type: none"> ● There are many terms beyond the understanding of a layman. ● Although suitable for a professional readership, the information seems too technical for general readers. ● Professional terms used in the internal company sections are difficult for general readers to understand. 	The Environmental Report 2003 was compiled on the principle that the main readership would be our customers and it and the presentation of our activities made to them by our staff would be complementary. Therefore many terms pertaining to particular products were used. In this 2004 Report, we have used familiar expressions wherever possible and will do so in future reports by adding some explanation to such terms. This year we issued "eco Life Book 2004" (Japanese language) for general readers.
<ul style="list-style-type: none"> ● It seems that the way of thinking of the internal companies is not quite unified. ● It is a little difficult to comprehend the relations among the companies. 	Our internal companies have the same principle that environmental consideration is to be given to products at each stage of their life cycles, as shown on page 6, Environmental Report 2004. However, as the products and business structure of each company are unique, the main themes of each company differ.
<ul style="list-style-type: none"> ● Your serious consideration towards consumers was not adequately conveyed in this report, e.g. quality assurance. 	In order to describe our products from the environmental aspects, we did not present their quality aspects explicitly. In this report we endeavor to present our relations with customers and the quality aspects of our products.
<ul style="list-style-type: none"> ● Your Middle Term Environmental Plan presentation is too wordy and complex. ● Explanations about the achievement rates against the targets are insufficient. ● The points of differentiation from products of other companies are not clearly described. 	In order to present all our activities, targets and results in one spread, we believe that words are the only appropriate means. However, in this report we show the summary by illustrations (PP7-8). We endeavor to give our achievement rates and points of differentiation as precisely as possible.



Tomohiko Yasuda

President
Housing Company

Housing Company is contributing to environmental conservation by persevering in the reduction of environmental loads both in the manufacturing and construction stages and in the household phase.

Environmental load reduction in manufacturing and construction

Following the attainment of zero emission at our plants in 2001 and at our construction sites in September 2003, we started, in 2004, a plan to attain it at all our renovation sites. However, this project might face management problems similar to those faced at our construction sites, given that the sites are scattered and that the method of waste recycling is an issue. Also, as the generated waste is of small quantities, there is a problem with the efficiency of transportation of waste. Despite these difficulties we are challenging to take the initiative in zero emission in the renovation industry, and are doing our utmost to attain it.

In 2004, we are promoting the application of our Reuse System House which is a unit-reuse system in which 85% by weight of a used house is incorporated in a rebuilt house. This system, which proves the advantage of the unit structure and which is the first of its kind in the world, is an example of what should be done in the field of house construction in the future. As the 21st century has been called the "century of the environment", we are dedicated to developing our system to its fullest extent.

Environmental load reduction in the household phase

The post-war high growth period in Japan can be divided into three stages as regards housing development. During the first stage (1965-1980) the demand was simply "to own a living space". In the second stage (1980-2000) the aim was "to own as wide a living space as feasible". In the present stage (2000 and on) the demand is "for housing with comfort and amenities".

The average floor area of newly built houses is now 140 sq. meters, which is generally accepted as a sufficiently large space for family living unless the lifestyle changes drastically. In my opinion, the housing market is now focused on the degree of comfort and the level of amenities and interest in achieving a comfortable thermal environment is becoming a dominant theme in the market. Judging by the fact that the heating energy consumption of a residential house in Japan is at present one fifth that of a residential house in Germany, and one third that of one in Italy, where the climate is not greatly different from Japan, it is anticipated that energy consumption and CO₂ emission will increase as

the indoor thermal environment is improved.

Housing Company will apply its cutting-edge technologies and products to attain reduction of environmental loads and CO₂ emission while offering improved comfort and amenities in our residential houses. As can be seen by the development of our Zero-energy-cost house, we have taken the initiative in adoption of environment-friendly equipment and parts such as the photovoltaic generation systems and Eco-Cute hot water system, and have succeeded in environmental loads reduction. We have also accumulated a wide variety of technologies in architecture and construction, to which our expertise in physics, chemistry, electronics and systems engineering are applied. We are devoted to providing society with environmental-load-reducing houses of the highest quality by applying our foremost technologies and sophisticated equipment and parts.

In so doing, it is our hope that we will answer the demand for improved household lifestyle and also contribute to maintaining a healthy natural environment.

Policy on the Environment

Our Basic Concept

Our Housing Company contributes to the society with our environment-friendly residential houses that can be lived in safely and comfortably for at least 60 years.

Activity Guidelines

1. To offer houses with low environmental loads:

We are dedicated to the continual improvement of the durability and the comfort of our houses and to the utilization of natural energy and materials with low environmental loads, so that we can supply residential houses with healthy conditions which have minimum impact on the environment.

2. To build resources/energy saving houses:

We pay full attention to achieving the most effective use of resources and energy, to the promotion of waste reduction and material recycling and to the development of a Resource-recycling Housing System.

3. To supply houses that best suit their surrounding communities:

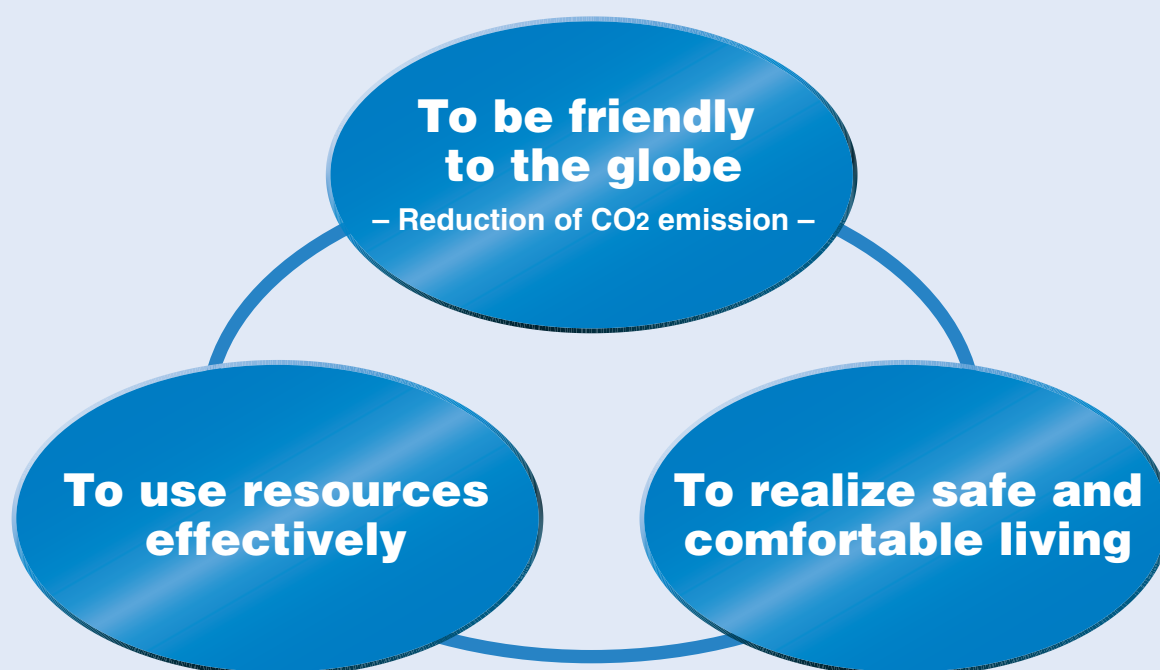
We minimize the environmental impacts of construction and development on residential areas and fully observe all laws, paying efforts to develop excellent relations with local communities.

Tomohiko Yasuda
President, Housing Company

April 1, 2004

A Leading Company in Environmental Conservation

Eminent technology to minimize environmental loads through the life cycle of houses
 As a leader in environmental conservation, we are dedicated to realizing:
 Reduction of CO₂ emission, resources saving and total consideration
 for the surrounding environment.



To be friendly to the globe – Reduction of CO ₂ emission –	during household	<ul style="list-style-type: none"> Reduction of CO₂ emission attributed to energy for housekeeping <ul style="list-style-type: none"> ①Reduction of energy consumption ②Shift of fossil fuel to renewable energy <p>Zero-energy-cost House provides comfort, environmental conservation and economy. Leading in sales of houses equipped with photovoltaic generation systems</p>
	during production & construction	<ul style="list-style-type: none"> Reduction: Decreased need of repair/longer life cycle of building →Longer life of components and parts (e.g. tiled exterior wall, stainless steel roofing, etc.) and long term after-sales support system Reduction: Waste reduction in production and at house construction sites →Zero-emission 3R Project Reuse: Reuse of disassembled Heim components →Reuse System House Recycling: Resources from production waste and disassembling waste →Zero-emission 3R Project
To use resources effectively	during household	<ul style="list-style-type: none"> Improvement of indoor atmospheric environment (Sick house countermeasures, etc.) Design for optimum suitability
	during construction	<ul style="list-style-type: none"> Consideration of site neighbors
To realize safe and comfortable living	during household	<ul style="list-style-type: none"> Improvement of indoor atmospheric environment (Sick house countermeasures, etc.) Design for optimum suitability
	during construction	<ul style="list-style-type: none"> Consideration of site neighbors

To Be Friendly to the Globe – Reduction of CO₂ Emission

We substantially contribute to the reduction of the CO₂ emission during the household phase of our houses.

■Efforts to Reduce CO₂ Emission from Households

As seen in Table 1 which shows the breakdown of the CO₂ emission in Japan, a reduction of emission from residential sources has not been attained.

Table 1: CO₂ emission in Japan

(Unit: 1 million tons)

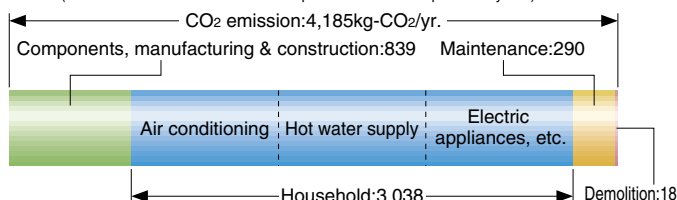
Category	1990	2002	Difference
Residential	126	166	+29%
Commercial	144	197	+37%
Industrial	476	468	-2%
Transportation	217	261	+20%

Data from the Japanese Ministry of the Environment (May 2004)

70% of the CO₂ emission from residential houses during their 60-year life cycle is attributed to energy consumption for daily life (Fig.1). We, a maker of residential houses, put emphasis on the reduction of CO₂ emission from households.

Fig. 1: Life cycle assessment of a detached house

(LCCO₂ based on a model house of April 2000 with a life span of 60 years)

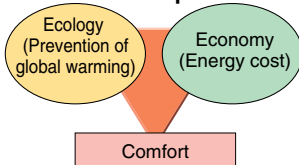


- Photovoltaic generation system
- Thermal insulation of the next generation specifications for energy saving
- Highly efficient hot water unit (Eco-Cute)
- Comprehensive all-electric living

Zero-energy-cost house

In December 2002, we started to market Zero-energy-cost houses which, while ensuring very comfortable living environments, achieve reduction of environmental loads by reducing the energy consumption for living and the energy costs for the residents. In fiscal 2003 all the detached houses we marketed had a Zero-energy-cost option (Fig.2) and 10% of signed contracts included this option.

Fig. 2: Models of Zero-energy-cost house Concept



Two-U Home (wooden structured) since April 2003



Domani (steel structured) since November 2003



Parfait (steel structured) since April 2003

■Projects in Fiscal 2003

In fiscal 2003 all the detached houses we marketed had a Zero-energy-cost option and we developed the following projects for improvement:

- ① Increase of solar cell capacity per house and adoption rate,
- ② Development of passive ventilation heat-blocking system,
- ③ Energy saving lighting equipment,
- ④ Proposals to energy saving households by utilizing energy cost simulation.

① Increase of solar cell capacity per house and adoption rate

It is necessary to provide a large capacity system of about 5 kW, to attain zero energy cost. A wider area of solar cell installation and a higher efficiency of generation are required. In fiscal 2003 we improved the mounting method so that the entire roof area could be covered by cell units (Fig. 3). Also we employed single crystal modules of higher energy conversion rate, seeking higher generation efficiency. As a result, the average capacity increased to 4.0 kW in fiscal 2003 (Fig. 4).

Fig. 3: Examples of expanded installation of solar cell units

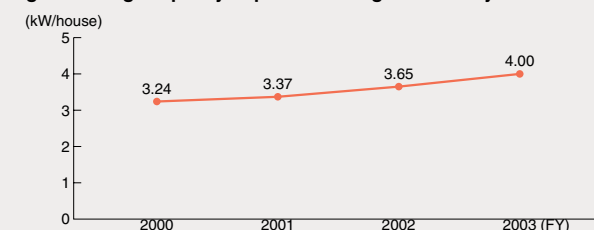


Flat roof



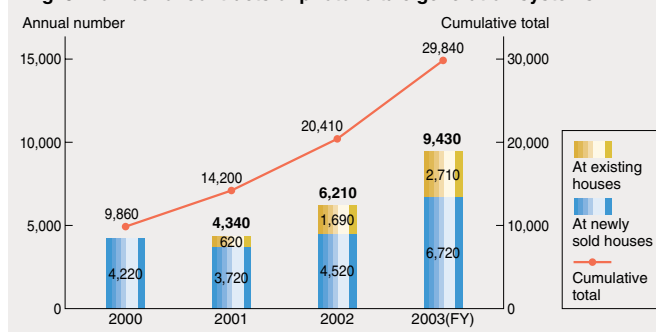
Slanting roof

Fig. 4: Average capacity of photovoltaic generation system



We have recommended to our former customers the installation of a photovoltaic generation system through remodeling the houses they have bought from us. The total number of contracts of this system, including new house customers and former customers, was 9,430 in fiscal 2003 (Fig.5), bringing the cumulative total to 30,000 in April 2004.

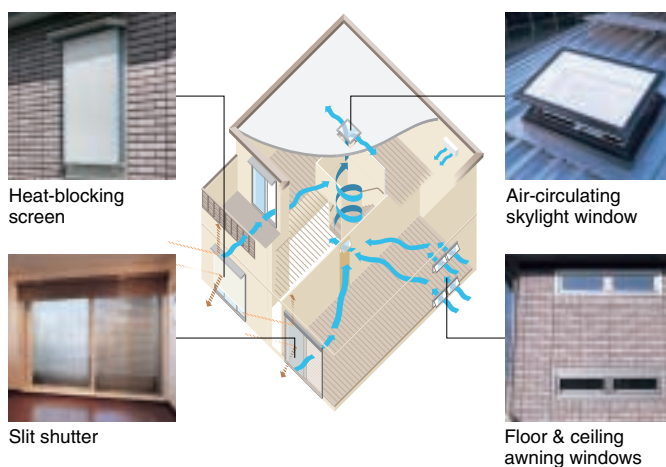
Fig. 5: Number of contracts of photovoltaic generation systems



②Development of passive ventilation heat-blocking system

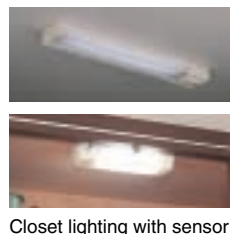
The system has been developed to ease the hot and humid conditions inside our houses during summer, decreasing the need for air conditioner use. This is especially effective at night time because it combines slit shutters which can be opened without losing security, floor & ceiling awning windows, heat-blocking screens which let breezes through and an air-circulating skylight window which opens vertically for continuous heat dissipation (Fig. 6). The system lowers room temperature by at least 3°C and allows a breeze of minimum 0.1 m/sec. Decreased hours of air conditioning in our model calculation brought an energy saving of 547 kWh/yr per house, which is equivalent to 197 kg-CO₂ emission.

Fig. 6: Passive ventilation heat-blocking system



③Energy saving lighting equipment

Switching to fluorescent lamps for bathroom and powder room lighting has been promoted for the purpose of energy saving. Entrance lighting and closet lighting are controlled by sensors.



④Proposals to energy saving households by utilizing energy cost simulation

As an eco-minded house maker, we regard it as our responsibility to assist our customers in achieving a low cost energy life style. We provide information to guide them in their decision making regarding purchases of appliances.

We explain the importance and the economical advantages of energy saving, using simulation software of energy cost calculations or other tools such as illustrated leaflets of actual energy savings. For the customers of our Sekisui Heim, we also provide a website, "ZERO-CLUB", for supplying pertinent information to accomplish zero-energy-cost (P39).

■Results of Fiscal 2003

Many of our customers understand the importance of energy saving and energy generation, such as in our Zero-energy-cost houses, through our promotion activities.

Now in newly-built Heims, adoption rates of energy saving design/equipment (such as next-generation specifications for energy saving and Eco-Cute) and energy generating equipment (photovoltaic generation systems) are higher than ever (Fig. 7). And the cumulative total capacity of photovoltaic generation systems now exceeds 100 thousand kW (100 MW) (Fig. 8).

Fig. 7: Adoption rates of energy saving/generating design and equipment in new detached houses

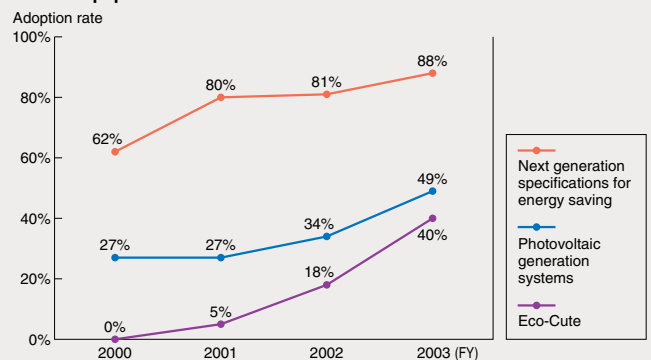
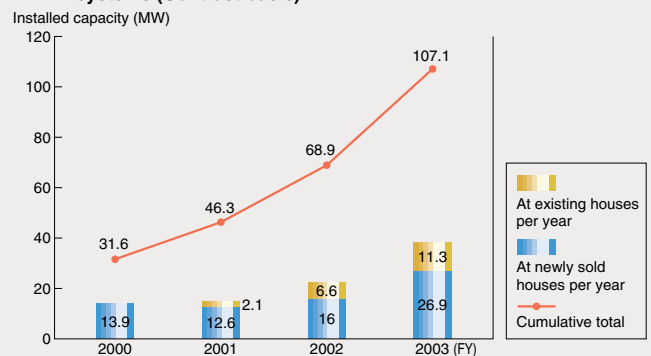
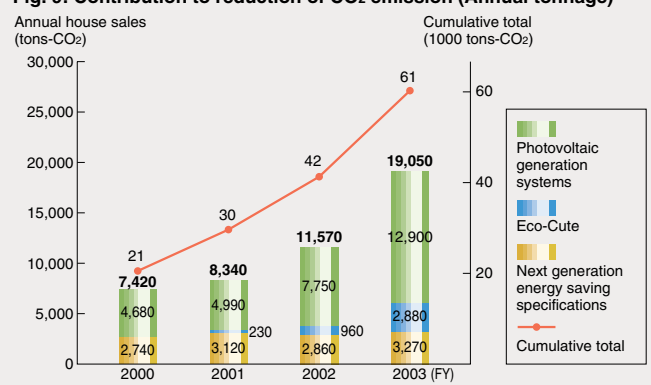


Fig. 8: Cumulative installed capacity of photovoltaic generation systems (Contract basis)



The reduction of CO₂ emission brought by energy saving/generating equipment and specifications of the houses we sold totaled 19 thousand tons in fiscal 2003 (about 60% over that of fiscal 2002) and has reached the cumulative total of 61 thousand tons since fiscal 1999. This equals the CO₂ absorption by 4,350 ha. of Japanese forest.

Fig. 9: Contribution to reduction of CO₂ emission (Annual tonnage)



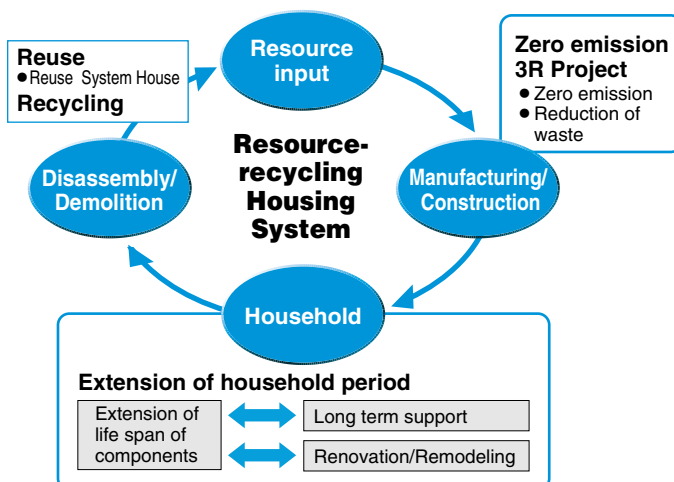
To Use Resources Effectively – Longer Life Span and Reuse

We are promoting our resource-recycling housing system by developing components which will elongate the life span of our houses, by operating our maintenance/renovation systems and by reusing frame structures and other materials.

■Structuring of our Resource-Recycling Housing System

Previously in Japan, when a house became too old for comfortable living or no longer suited to the needs of the residents, it was demolished and a new house was built in its place. The demolition waste of a house totals about 40 tons on average. In order to reduce waste and conserve limited resources, we are promoting our resource-recycling housing system based on the following concepts:

- ①Extension of habitability Long life components,
- ②Maintenance for habitability Long term support,
- ③Reuse of components Rebuilding system,
- ④Minimum waste Reduction of waste in the manufacturing process and at house construction sites,
- ⑤Recycling of such minimal waste Zero emission.



■Long Life Components

We adopt durable, long lasting components for the essential parts, i.e. the frames, the exterior walls and the roofing materials.

●Corrosion resistant stainless steel roof

For flat roofs, we use SUS445 stainless steel which is one of the most durable stainless steels available.

●"ZAM", anti-corrosive dip-plated steel

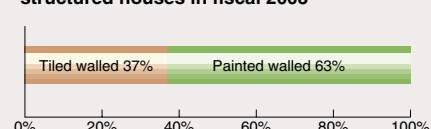
"ZAM" is highly durable, dip-plated steel of Zinc/Aluminum/Magnesium alloy and we use it in the unit frames of steel-structured Heim. "ZAM" has 2 to 3 times as much corrosion resistance as the conventional zinc plated steel.



●Tiled exterior wall

Porcelain tiles are adopted on the exterior walls providing a dignified appearance and durability. They do not deteriorate or become discolored by UV rays and are durable against scratching and cold weather, contributing to the extension of the house life. As they do not require painting, the maintenance and waste are lessened. The quality is assured since the tiles are applied at our plants. Porcelain tiles were adopted for one third of our steel-structured detached houses in fiscal 2003.

●Exterior wall design of detached steel-structured houses in fiscal 2003



●Proof of the long life of our houses – "Sekisui Heim M1" was included in the "100 Modern Movements of Japan"

In 2003, our very first type of house, "Sekisui Heim M1", introduced to the market in 1970, was included as one of the "100 Modern Movements of Japan" sponsored by DOCOMO(*) Japan, which conducts surveys and conservation of buildings and their surroundings related to the Modern Movement, and by the Architectural Institute of Japan. Sekisui Heim M1 as the representative mass-produced house, symbolic of the period of 1921-1970, was included with the works of Frank Lloyd Wright and Bruno Taut, and the Kasumigaseki Building, the first high-rise building in Japan.

Sekisui Heim M1 was unique in that it was made by the then pioneering Unit Method which enabled 90% completion or more in the factory; it had excellent earthquake resistance and durability; it was appointed with then state-of-the-art equipment; it was designed from the concept of functional beauty which meant artistic expression with minimum ornamentation.

More than 30 years have passed since the introduction of Sekisui Heim M1 and more than 12,952 houses were still in use as of March 31, 2003. For remodeling and expansion demands, we still periodically produce M1 units. One Sekisui Heim M1 which had actually been lived in for years was disassembled and re-constructed for long term display in the grounds of our Tsukuba R&D Site in April, 2004 (see picture).

*DOCOMOMO: The DOcumentation and CONservation of buildings, sites and neighborhood of the MODern MOVement



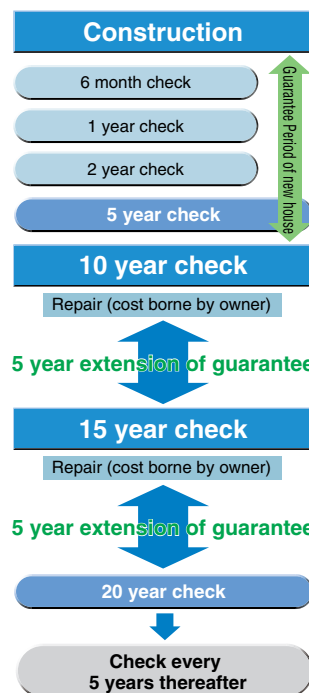


■60 Year Long Term Support System

The longer the life of a house, the greater its contribution to resource saving, waste reduction and environmental conservation. However, for the house to remain as a comfortable and safe living space, planned and regular maintenance and care are necessary. Our Sekisui Heim is a long lasting house for which we provide our unique 60 year long term support system providing our customers with planned maintenance management to ensure that they will enjoy the benefits of comfortable living and that the steady real estate value of the house will be preserved.

●Long-term checking system

This is a service to thoroughly check the condition of both the interior and the exterior of the house every 5 years after hand-over until the 60th year. Any problem found at the periodic check is diagnosed and informed to the residents, along with professional advice regarding the necessary repairs.



●Long-term guarantee system

In Japan, 10 years is the mandated guarantee period for structural components and for water proofing. However, confident of the quality and durability of Sekisui Heim, we offer to extend this period by 10 years, during which we will carry out any necessary work according to the customer's agreement to bear the cost.

●Communication with customers

We are dedicated to maintaining constant communications with our customers after hand-over such as having our professional staff visit them from time to time, supplying them with information leaflets quarterly and providing an interactive website (P39).

■Renovation System

We contract to do renovation work on our Heims, which can include removal of stains and signs of wear, repair/replacement of aged equipment and exterior walls, installation of a photovoltaic generation system and an Eco-Cute system, and adjustments for the needs of elderly residents. We can offer various plans and flexible ideas for renovation, because our Unit Technology uses steel structural frames of high endurance, the walls and interiors of which can be replaced.



■Reuse of Used Houses: Reuse System House

In the Reuse System House, customers may partly trade in their used Sekisui Heim for a new Sekisui Heim or a Two-U Home. The used Sekisui Heim will be disassembled and returned to the plant, inspected, repaired as necessary and rebuilt into new modules. It is a very important system to complete the circle of our resource-recycling housing system. Steel structural components, lumber, plaster board and glass panes are reused resulting in a substantial reduction of waste, while the roofing, the installations and the interior fixtures and decorations will be renewed. 2 years have passed since the start of this system and we have pursued the following improvements:

●Increase of component reuse rate

More than 85% by weight of the building body is now reusable, including the reuse of flooring underlay boards.

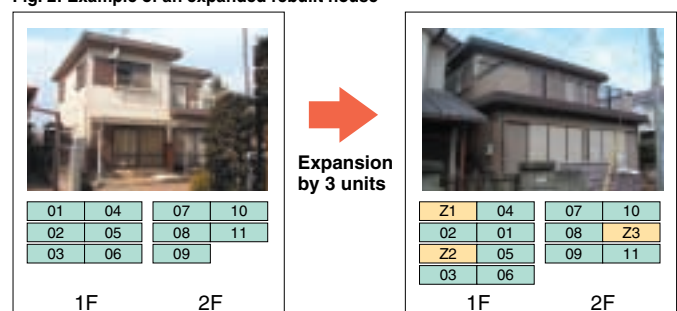
●Weight percentage of reused components in a rebuilt house (An actual example in 2003)

Original house	Building 24 tons (50.2%)	Foundation (to be recycled) 23 tons (49.8%)
Rebuilt house	Reused components 20 tons (85%)	New foundation
	Structural components, Exterior/interior walls, Flooring underlay, etc.	New material (15%) roofing, equipment, interior decorations, etc.

●Increase of Rebuilding contracts

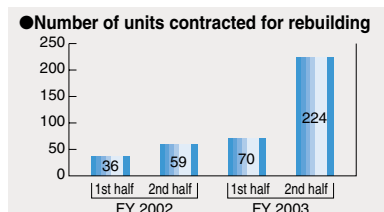
Previously, construction time and space constraints slowed down the growth of this business. However, recently these problems have been overcome by the storing of returned units at the plants and increasing the design options (Fig. 2) for the rebuilt house, and this has resulted in the increase of contracts.

Fig. 2: Example of an expanded rebuilt house



●Actual number of contracts

In fiscal 2003, the number of units contracted for rebuilding reached 389 cumulative total. We are anticipating a growth in this business and are devoting our efforts to reduce waste from disassembly of houses. This system is highly evaluated domestically and internationally and it was given a special award at the 31st Conference of the International Association of Housing Science held in 2003.



To Use Resources Effectively – Zero Emission 3R Project at Plants and Construction Sites

Waste management is based on information common to plants and sites.

■Zero Emission 3R Project

We are conducting comprehensive, company-wide Zero Emission 3R (reduce, reuse or recycle waste) Project to use resources most effectively in our plants and at all our construction sites. These activities include zero emission (i.e. recycling of all wastes), the reduction of waste generation and vigilance that all treatment of any wastes we generate is carried out in total compliance with all relevant laws and regulations.

●History and plan of our zero emission activities

We attained total zero emission in September 2003 when zero emission at all construction sites was attained. We are now trying to further reduce the quantity of waste generated at the construction sites and to attain zero emission at renovation sites (Fig. 1).

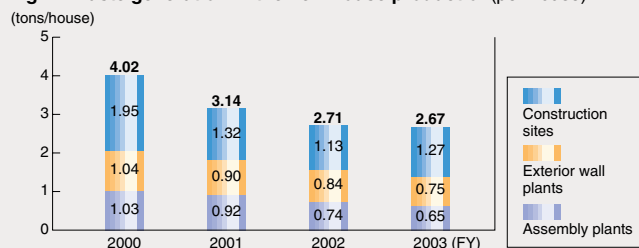
Fig. 1: History and plan of Zero-emission

Fiscal year	1999	2000	2001	2002	2003	2004	2005
Plants	All plants			Attained zero emission in plants and at construction sites			
Construction sites			All house sales bases				
Renovation sites						All bases	

●Waste reduction in new house production

By our continued efforts, we succeeded to reduce the waste generated in manufacturing and construction by 34% (1.35 tons per house) in fiscal 2003 compared to fiscal 2000 (Fig. 2). We will continue our efforts for waste reduction.

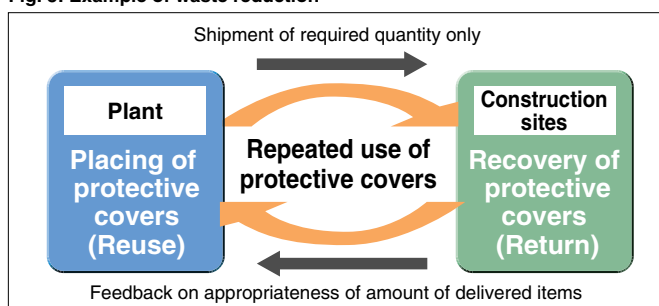
Fig. 2: Waste generation in the new house production(per house)



●Cooperation between plants and construction sites for waste reduction

Liaising on waste management, the plants and the construction sites can cooperate to reduce excess supplies of parts and to save packaging materials. For example, the protective covers for components during transportation used to be removed and discarded when the components arrived at the site. During the construction work they were protected by new covers. Now the protective covers to be used during construction work are placed on the components at the plant before shipment, therefore protecting the components both during transportation and construction, and they are recovered for reuse (Fig. 3).

Fig. 3: Example of waste reduction



Protective covers for treads and risers of stairway



Protective covers for kitchen sink and tops

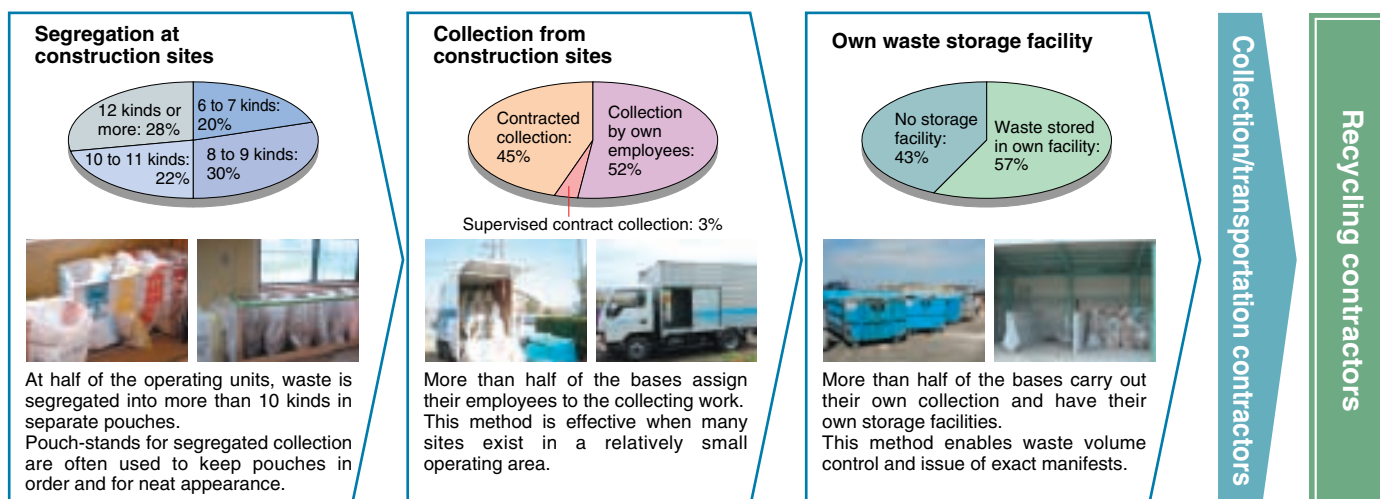


Protective covers for window frame



Recovery bag for protective covers

●Waste handling at the construction sites of the 40 bases that attained zero emission



Our process of waste control, including collection from sites, control at the storage facility, issue of manifests and educational activities, was merited with an introduction in the "Manual for Voluntary Waste Control" published by Kanagawa prefecture.

To Realize Safe and Comfortable Living

We are taking measures to provide a safe, comfortable and healthy home life.



■Healthy and Comfortable Indoor Environment

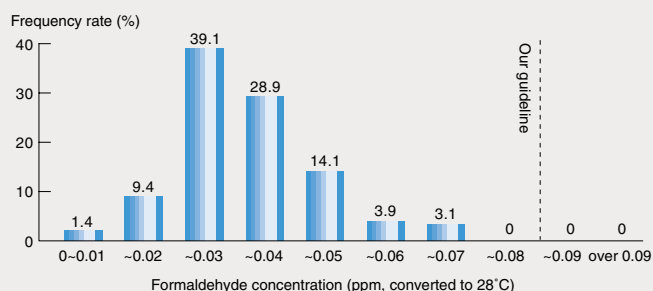
●Sick house countermeasures

Sick house syndrome caused by volatile organic compounds (VOC) in newly built houses has been a prominent issue in recent years but we started early to take countermeasures so we provide a healthy indoor environment. We have set our own guidelines for the 3 highly hazardous compounds, i.e. formaldehyde, toluene and xylene. By our revising specifications of components and parts to be used in the house and that of the air ventilation systems, our houses meet the requirements of the amendment to Building Standard Law of 2003 on Sick House Issues. We also conduct actual surveys to detect the presence of VOC in newly built houses to verify compliance with the guidelines.

<Our guidelines>
At normal living temperature, VOC concentration shall be below the guideline of the Japanese Ministry of Health, Labour and Welfare.

(Figures converted to 28°C)
Formaldehyde: 0.08 ppm (100µg/m³)
Toluene: 260 µg/m³
Xylene: 870 µg/m³

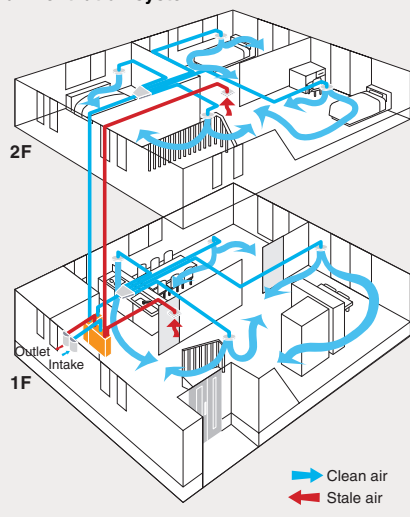
●Formaldehyde concentration (Actual data of fiscal 2003)



●"Air Studio"

As our houses are manufactured in plants, they achieve a high degree of thermal insulation and air tightness. Furthermore "Air Studio" is an air ventilation system that can complement the air-tightness of certain of our house models to maintain a good indoor atmospheric environment around the clock by not allowing the intrusion of polluted outdoor air and by controlling the air ventilation of all rooms. It also removes moisture of wet weather or of indoor origin and filters dust, soot and more than 80% of NOx gases. The adopted filter, called "Alleru-Buster", inactivates caught allergens such as pollen almost completely.

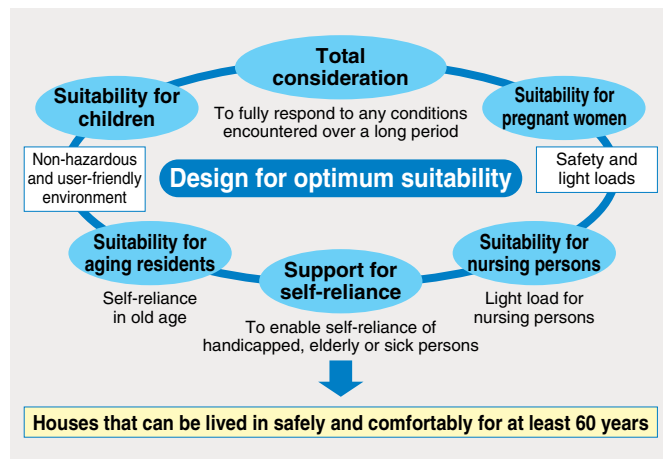
●Concept diagram of controlled air ventilation system



■Barrier-free Designs

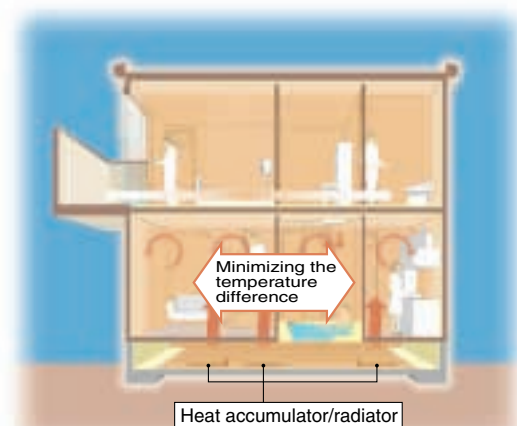
●Design for optimum suitability

In accordance with the demographic trend of the aging society, we have long been engaged in designing houses to provide a safe, obstacle-free home environment to meet all needs. Our interiors ensure that there are no impediments to smooth movement (e.g. elimination of level difference between rooms, and stairs designed for easy use) nor to operation of facilities (e.g. installation of power shutters).



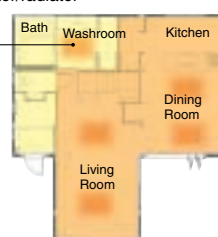
●Thermal barrier-free system

In winter, moving from a well-heated living room to a much colder section of the house may cause heart attacks or cerebral infarction. To reduce this risk, we offer an option, "Barrier-free Heating", utilizing a heat accumulator/radiator, with which the under-floor heating is distributed more widely to minimize temperature differences in the house.



Example of "Barrier-free Heating"

Under-floor heat accumulator/radiator



Conventional floor heating

Cold section



Communication with Customers

In order that our customers can put complete confidence in us, we maintain constant communication with them.

■Information Diffusion to Customers

●Website ZERO-CLUB(*), a supportive information source for zero-energy-cost living

This website ([URL: https://www.zero-club.net/index.htm](https://www.zero-club.net/index.htm)) is provided for our customers to practice energy-saving living or further zero-energy-cost living. It introduces energy-saving information for households, actual energy cost data and examples of zero-energy-cost living. We limit the member registration for use of our mail magazine and information exchange to the residents of photovoltaic generation system equipped Sekisui Heims, but the energy saving information is accessible to anyone.

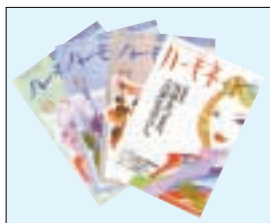
We wish to popularize the concept of environment-friendly living and housing by offering the website to as many people as possible.



●Information magazine

HARMONATE(*)

HARMONATE is a quarterly information magazine distributed to the residents of Sekisui Heims. It carries seasonal housekeeping ideas and useful hints as well as examples of remodeling and expansion.



HARMONATE Magazine

●Pamphlets(*)

To those who are planning to have a house built, we provide pamphlets containing housing information such as environmental consideration, life cycle cost (LCC) and home management.



◀Eco-Heim Book



◀Examples of zero-energy-cost houses



◀LCC-minded housing



◀"new life imaging book"

* : Japanese language only

■Seminars on the Environment

From now on, the essence of house building is not only to provide suitable housing in answer to customer demands but also to pay attention to environmental concerns. To achieve this two-fold aim, builders need the understanding and cooperation of their customers. For this reason, we hold seminars on the environment for our customers. In fiscal 2003 we received about 2,000 participants, whom we enlightened about the importance of global environmental issues and the use of natural energy.



A seminar (lecture hall)



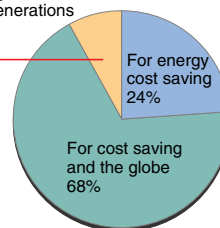
A seminar (model house)

■Surveys on the Impact on Users of Photovoltaic Generation Systems

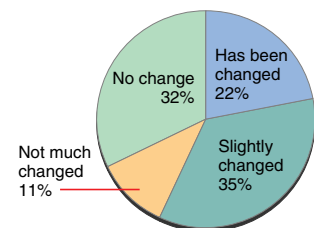
We carried out a survey in July and August 2003 by sending questionnaires to the residents of houses of more than 1 year old, equipped with photovoltaic generation systems. The responses showed us that by utilizing a photovoltaic generation system many customers had become conscious of energy saving, and therefore our understanding of the importance of energy saving was renewed.

●Reasons for adoption of photovoltaic generation systems

For the globe & for future generations
8%



●Change of attitude to energy saving



In another survey which we carried out in April 2004 among customers who have a zero-energy-cost household, more than 70% of them reported a change in their attitude to energy saving and mentioned the following facts besides the direct energy saving:

- ① The family stays together in one room as much as possible.
- ② The family tries to watch one TV together.
- ③ The family members take baths soon after one another.
- ④ Parents play with their children outdoors, or read books with their children, avoiding TV watching.

We intend to keep close contact with our customers to obtain necessary data for the improvement of our houses and for our enhanced contribution to environmental conservation.

Communication with Local Communities

We do our utmost to prevent any disturbance to the areas neighboring our construction sites.



■Consideration to Neighboring Areas of our Construction Sites

Each of our house sales subsidiaries pays careful consideration to the neighbors of our construction sites so as to minimize disturbance.

Consideration is incorporated in the detailed procedures of ISO 14001 Environmental Management System.

Examples of procedures:

- Limitation of daily working hours,
- Control of vehicle parking,
- Rental of adjacent land, as needed,
- Prevention of dirt efflux, if foreseen,
- Measures to direct efflux of exhaust fan or hot water unit etc. from the newly built house away from the neighboring house.

Examples of measures taken at construction sites:



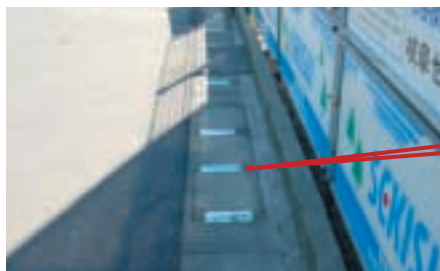
Discharged washing water channeled to one drainage point



Radio & cassette music played in attenuation box to contain sound



Building under construction contained in pleasant looking barrier



Temporary blocking of road side ditch



(enlarged)

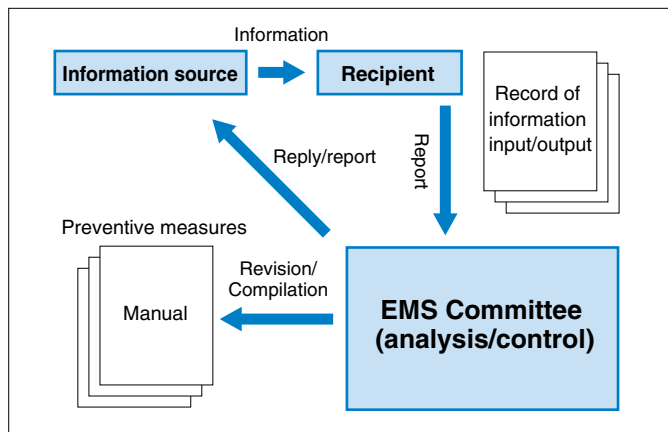


Posting of voluntary control standards

■Acquisition of Environmental Information and Steps to Better Management

We are constantly on the alert for any environment-related comment in order that we may take remedial action and file the information in the record of information input/output of our environmental management system in accordance with ISO 14001, as shown below.

An individual file contains the information source, content, environmental impacts, analysis/test result and countermeasures orderly set out which are fed back to the information source as required. It is used for revision of or addition to management procedures to improve the manual and to prevent the occurrence of similar problems.



●Example of issued Environmental Conservation Manual

環境保全手帳		環境保全手帳	
区画	区画	区画	区画
1	環境保全手帳	2	環境保全手帳
3	環境保全手帳	4	環境保全手帳
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Toyoo Manabe

President
Urban Infrastructure &
Environmental Products Company

As is expressed by the name of our company, our target markets are those of the "Environment" by which society is surrounded and of "Infrastructure" by which society is supported. Therefore we are developing businesses which are intimately related to our total environment.

The general economic conditions lately show some signs of upturn, but public utility investments and the house construction market will remain difficult and our business climate will remain severe. Under such circumstances we aim at becoming an environment-solution company that creates higher added values in our businesses by implementing studied selection and focus, and by providing customers with environment solutions to meet their demands.

We are developing our new businesses with the two key words: "system" and "global". Abandoning the conventional business style of manufacturing and selling products only, we are producing and marketing "system products", by which we provide our customers with complete systems to reduce environmental loads and which include the design, installation and maintenance. We are promoting "global expansion" by making known our eminent environmental technologies throughout the world and extending our environmental businesses to overseas markets.

We aim at becoming an eminent environment-solution company, totally dedicated to the promotion of environmental conservation, by developing our three core businesses. These are the infrastructure renovation and restoration business by which aged pipelines are relined and renewed without digging, the residential environment business in which waste wood is recycled to produce building materials and which realizes a more comfortable residential environment, and the water environment business which aims at more efficient utilization of water resources.

Policy on the Environment

<Our Basic Concept>

Urban Infrastructure & Environmental Products Company will contribute, with our eminent technologies, to the creation of a living environment which is friendly to human beings and to the earth, through the manufacture of environment-friendly products and the structuring of systems.

<Activity Guidelines>

1. We aim at becoming an environment-solution company.

- We will solve environmental problems together with our customers and contribute to the structuring of a resource recycling-based society.
- We concentrate on promoting the environment-solution businesses in three main business fields: infrastructure renovation and restoration, residential environment and water environment.
- We respond to the expectations of society by creating new businesses based on our leading environment-friendly technologies.

2. We have utmost concern for the well-being of the environment and this concern permeates our research, development and production activities.

- We conduct research and development always from the standpoint of the environmental impacts and safety of our products through their entire life cycles.
- We are dedicated to reducing environmental loads derived from production activities through the promotion of energy saving and through the enhancement of zero emission for reuse and recycling of resources.
- We not only observe laws and regulations, but also proactively set our own objectives and targets based on our environment management systems, which result in the continual improvement of our environmental performance.

3. We promote activities for symbiosis with the environment.

- We work in close cooperation with communities and society and with administrative bodies and industry. By keeping in good communication with them, we maintain their trust.
- We participate in nature protection activities and keep in harmony with local communities.

Toyoo Manabe

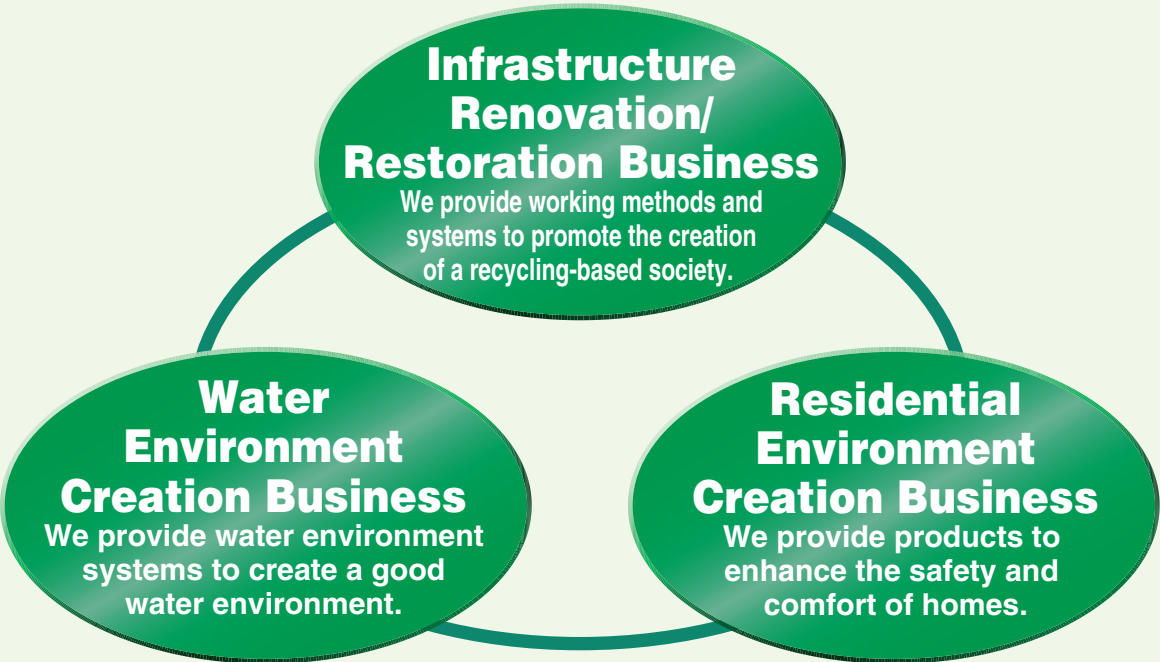
President
Urban Infrastructure & Environmental Products Company

April 1, 2004

Environment-Solution Company

Nurturing a society with ever-improving levels of safety and comfort

To contribute to the creation of a living environment which is friendly to human beings and to the earth, through our environment-solution businesses



Creation of a healthy environment
Research and Development

Minimum environmental loads
Production/Installation Technologies

Symbiosis with the environment
**Environment Management System/
Contribution Activities to Communities**

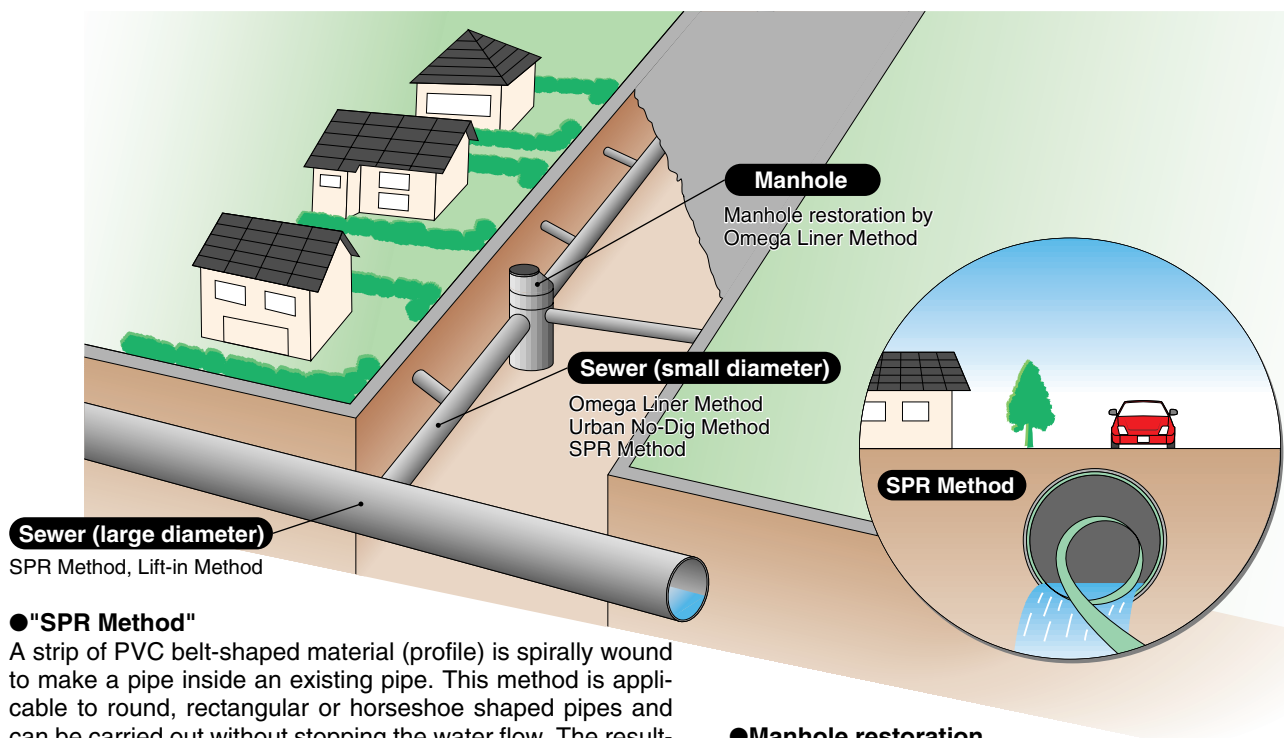
Infrastructure Renovation/Restoration Business

We renovate and restore to prime condition infrastructure for main utilities' service to enhance the safety and comfort of our living.

■Infrastructure Renovation/Restoration

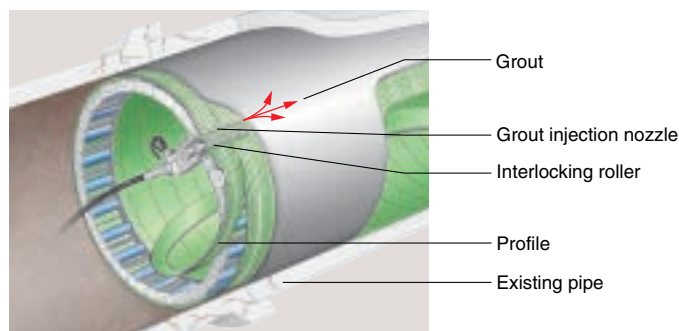
In recent years, aging of such infrastructure as public sewers and agricultural irrigation pipelines that are essential to our daily living has been an issue. The estimated total length of concrete pipelines that are over 50 years old has reached 7,000km throughout Japan. If these aged pipelines are reno-

vated or if pipelines are newly installed by the conventional open cut method, there will be problems of noise, vibration, smell, traffic congestion, generation of industrial waste, and so forth. However, our renovation/restoration method without digging will minimize such problems.



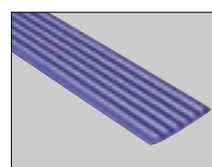
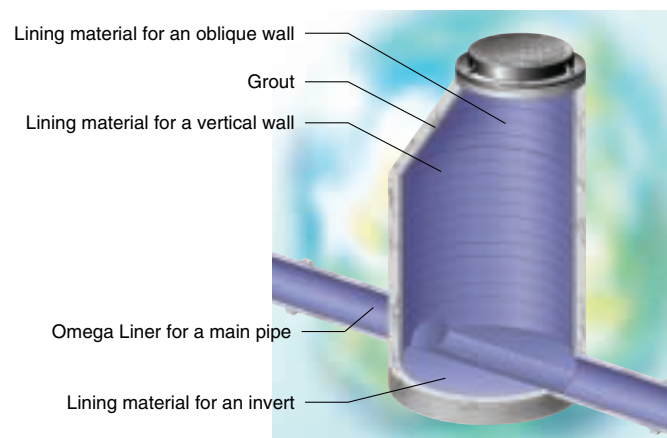
●"SPR Method"

A strip of PVC belt-shaped material (profile) is spirally wound to make a pipe inside an existing pipe. This method is applicable to round, rectangular or horseshoe shaped pipes and can be carried out without stopping the water flow. The resulting pipe is highly durable and is resistant to earthquakes, and stronger than the original pipe was when it was new.



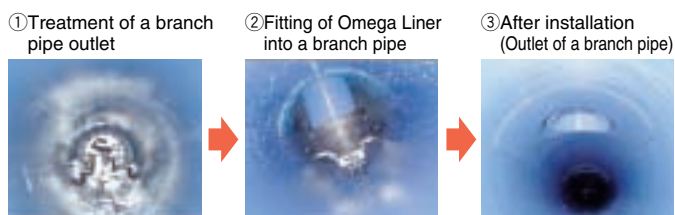
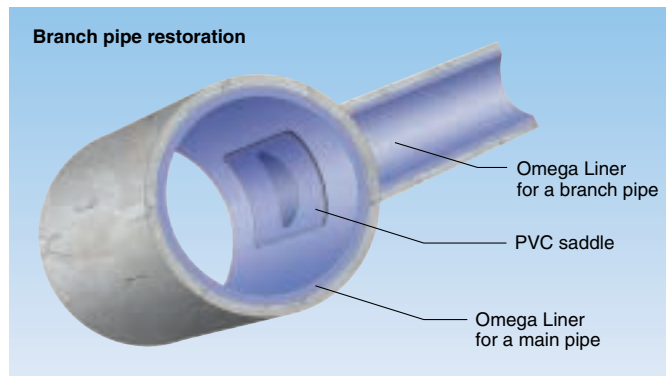
●Manhole restoration by the "Omega Liner Method"

An aged manhole can be restored with the same quality PVC as used for the restoration of aged pipelines. The complete restoration can be carried out by the no-dig method safely, speedily and perfectly by combining the profiles of the "SPR Method" and the property of shape memory of the "Omega Liner Method".



●"Omega Liner Method"

PVC pipe, that has the property of shape memory, is supplied by the plant folded in an Ω (omega) shape, and is pulled into an existing pipe at the site and it returns to a round shape when heated with steam. This method is applicable not only to main pipes but also to branch pipes. As no organic solvent is used in the work, there is no danger of odor or fire.

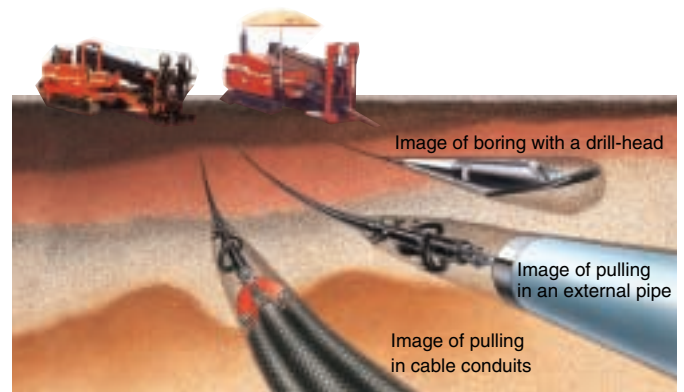


●"Urban No-Dig Method"

(Horizontal directional drilling method)

This method is applied mainly to the installation of polyethylene pipes in the construction of infrastructure pipelines carried out by the boring of a hole in the ground, instead of by the conventional digging method.

This is an environment-friendly method, which cuts the installation time by half, without causing traffic congestion or noise, and with minimal generation of earth from excavation.



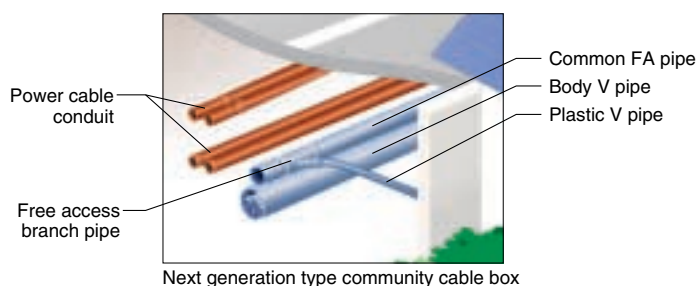
●"Lift-in Method"

We are contributing to the reduction of environmental loads by making use of this special installation method and of the properties of reinforced plastic composite pipe. By the "Lift-in Method", aged pipelines are renovated to a superior condition by using Esilon RCP pipe as a liner, which is light in weight, very strong, resistant to earthquakes, and highly resistant to corrosion.



●Various kinds of conduits for power and communication cables

In order to maintain safer and more pleasant cities, underground cables are desired to provide more space for traffic, to improve city views, and to avert secondary disasters from power failures owing to typhoons or lightning strikes. We contribute to the underground installation of cables by providing a variety of non-corrosive cable conduits.



C.C. Box



IT box

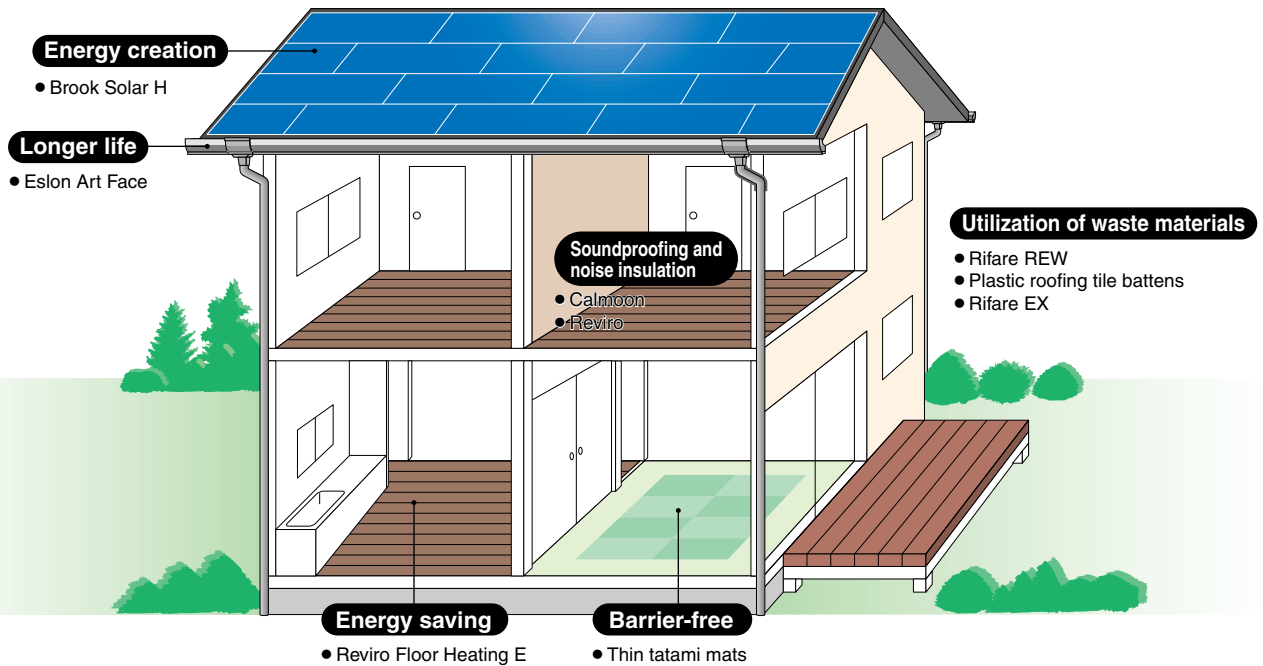
Residential Environment Creation Business

We are contributing to the enhancement of an advanced and comfortable residential environment which is in compliance with a recycling-based society, meeting with the increasing demands for a high quality of life in the aging society and for a healthy environment.

■Comfort and Convenience for Homes and Consideration for the Environment

In modern times, there is a growing demand among house dwellers for excellent soundproofing and for interiors that allow maximum mobility. Also, from the environmental point of view, there is

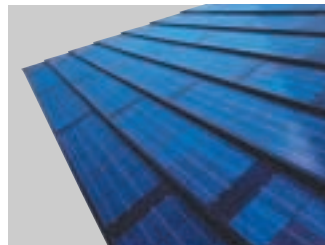
a demand for such measures as the reduction and recycling of waste generated from construction and demolition. Our eminent technologies provide "residential environment solutions" to create a safe and comfortable living environment inside homes, while paying careful attention to the natural environment as a whole.



■Support for Safe and Comfortable Living

●"Brook Solar H":Energy creation

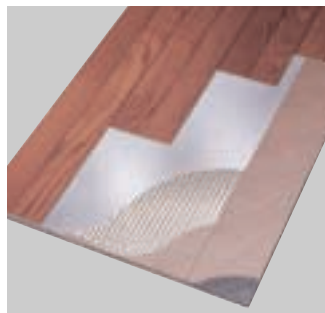
"Brook Solar H" is a roofing tile which is also a photovoltaic generation panel. In addition to its attractive appearance and its function as a roof tile, it utilizes sunlight to generate electricity.



"Brook Solar H"

●Flooring material/Floor heating system: Soundproofing between floors and energy saving

"Riviro" is a hybrid honeycomb foam which provides excellent sound insulation when applied to flooring material. In addition, when it is combined with a floor heating system, the excellent heat insulation property of the hybrid honeycomb foam prevents heat from escaping under the floor, contributing to energy saving.

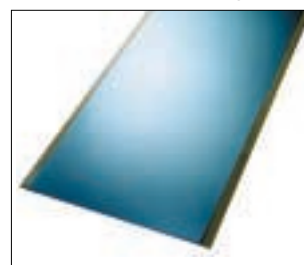


"Riviro Floor Heating E"

●"Calmoon" sheet: Soundproofing between rooms and noise insulation for e.g. air-conditioning ducts

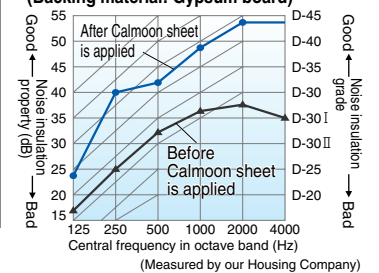
By applying "Calmoon", a vibration absorbing material, to interior walls, virtually no sound is leaked between rooms.

"Calmoon" sheet is used in place of conventional lead for noise insulation of air-conditioning ducts in large facilities e.g. concert halls and hospitals, where quietness is required.



"Calmoon" sheet

●Noise insulation property applied to partitions (Backing material: Gypsum board)



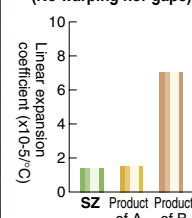
(Measured by our Housing Company)

●Thin tatami mat: Barrier-free

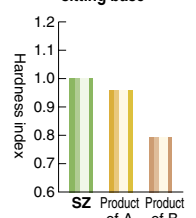
In order to eliminate the floor level difference between a room with tatami mat flooring and the standard floor level of a home, we provide thin tatami mats. "Z-lon" (rigid polyolefin foam) sandwiched by two sheets of "Forte" (extra-stretched polyolefin film) provides a thin base for tatami matting with no stretching nor warping. Moreover, it provides a comfortable walking base.



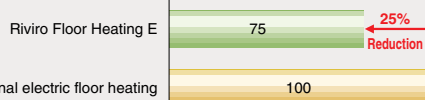
●Excellent dimensional stability (No warping nor gaps)



●Comfortable sitting base



●Comparison of Electricity Consumption



■Utilization of Waste Materials, and Longer Life of Parts

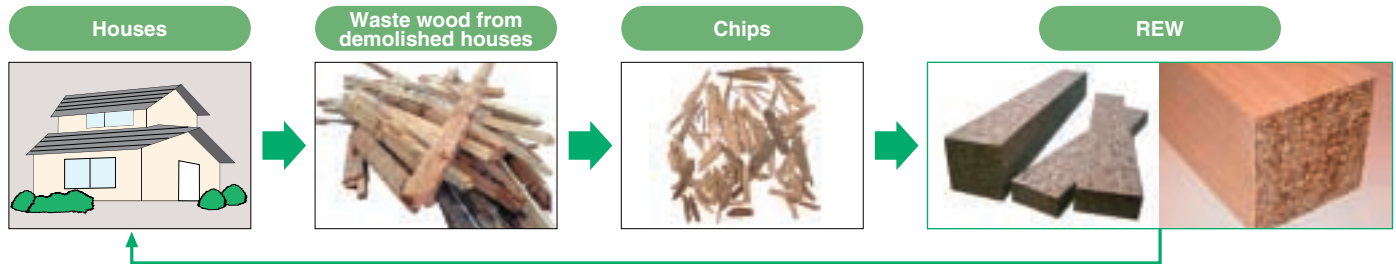
●"Rifare REW", structural material for houses:

Recycling of waste wood

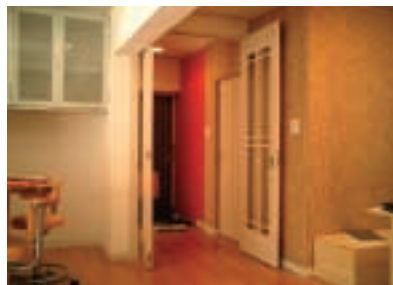
Much concern is now focused on the efficient recycling of waste wood from demolition.

We have successfully developed technology to produce

recycled wood, which is excellent in strength and is dimensionally stable, utilizing waste wood generated from demolished houses. "Rifare REW" can be used for structural materials, such as pillars and joists, and also for wall panels.



Structural material



Application example to wall panels



Application example to floor material

●Plastic roofing tile battens: Recycling of plastics and waste wood

This is a product made from recovered plastics and powdered wood (waste wood). Its main body is made of polystyrene, which is highly resistant to termites and corrosion.



Recovered plastics



Waste wood



●"Rifare EX": Recycling of sawdust

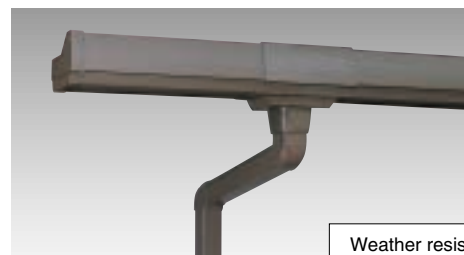
"Rifare EX" is a synthetic outdoor balcony flooring material produced by the effective utilization of sawdust generated in the wood sawing process.

This product exhibits excellent property against fading and corrosion. It also contributes to the conservation of wood resources.



●"Eslon Art Face": Longer life span

The outer face of rain gutters and their fittings are treated with special resin to make them more durable and weather resistant in response to the longer life span of houses. The replacement interval for discoloration has been extended by 3 times that of conventional products, contributing to the conservation of wood resources.



"Eslon Art Face"

Weather resistant treatment ensures longer color quality.



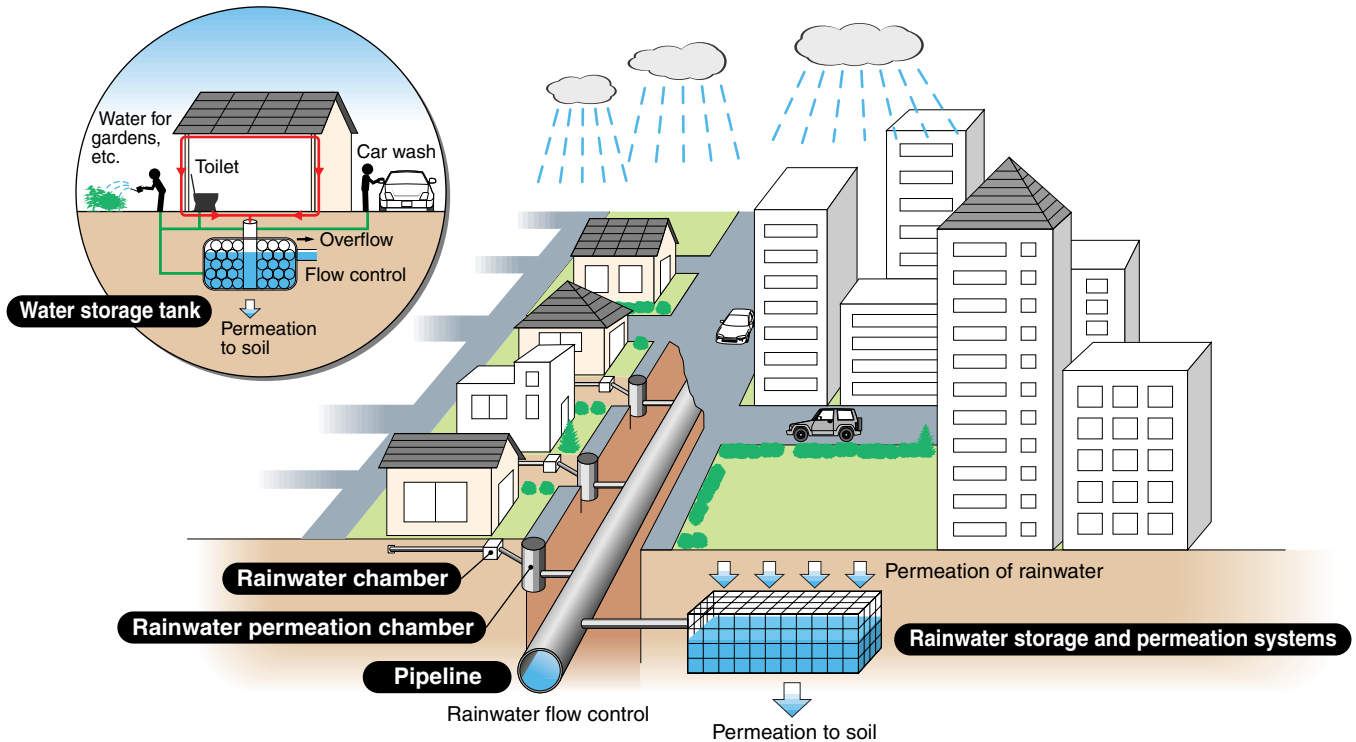
Water Environment Creation Business

We contribute to the construction and creation of a safe and plentiful water environment, taking measures to overcome related problems.

■Circulation of Water Resources in Households and Communities: Flood control and water utilization

In recent years, due to extensive urban development, rainwater now generally flows into sewage works or rivers instead of being retained in the soil as groundwater. Consequently we suffer from a water shortage in summer time and

during periods of torrential rain the treatment capacity of sewage works is insufficient, and rivers are caused to flood. Our "water environment solutions" provide piping systems that control the flow volume of rainwater, by collecting it and storing it for un-potable use or allowing it to permeate to the soil.



■Storage and Permeation of Rainwater

●"Rain Station": A large scale storage facility

By controlling the flow of rainwater through sewers, the loads to sewers and sewage works are reduced. By means of the original plastic sections we have developed, more than 90% of the space provided by the facility can be utilized for water storage, and the maintenance and operation of this system are easy as sand and such are caught in the sand sedimentation section.



●Rainwater storage tanks for detached houses

Rainwater can be effectively utilized for use in an emergency for firefighting, and so forth, and also for watering gardens.



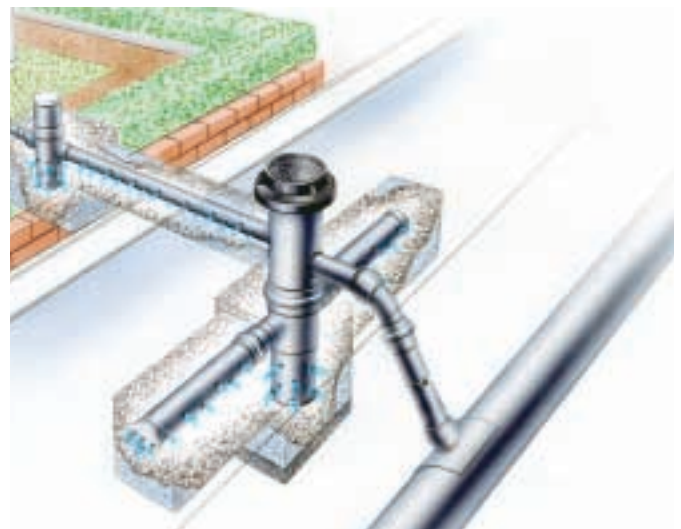
Rainwater circulation storage tank (under development)



Esilon rainwater storage tank

●Rainwater permeation facilities

The installation of rainwater permeation facilities including chambers under roads and sidewalks and the surrounding areas of buildings, contributes to the maintenance of the natural circulation of water including groundwater, and provides defense against flooding in urban districts.



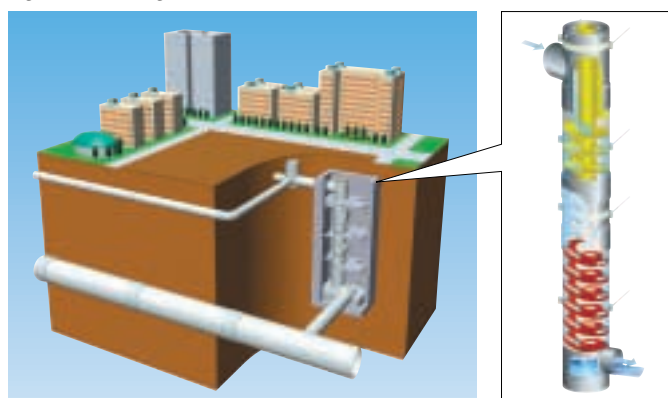
Chamber for permeating rainwater to soil

Water Flow Control

In a pipeline with a deep fall or a sharp decline, various problems occur because the pipeline can be easily deteriorated due to the force of water. The proper control of water flow contributes not only to the greater durability of such a pipeline but also to the solution of the noise and odor problems.

●"Eslon Dropshaft": A System to solve the problems of a deep fall by spirally guiding sewage flow

Sewer manholes with a deep fall always posed problems with the deterioration of their concrete walls or with the generation of noise and odor owing to the splash of sewage. "Eslon Dropshaft" solves these problems by spirally guiding sewage flow along the wall of the manhole.



Sewerage systems constructed on sharp slopes

To reduce the flow speed of sewage in sewers on a sharp decline, the installation of a large number of manholes is usually required. Our system, which has excellent abrasion resistant properties, is environment-friendly as it needs fewer manholes and a shallower burial depth.



Water Purification

As clean water is essential for the healthy life of our world, contaminated water and sewage must be purified before it is returned to nature.

●"Eslote": For industrial waste water
"Eslote" treats waste water by making use of bacterial membranes attached to 3-D fret contactors. This equipment has a three-fold capacity per unit area over the conventional type.



●Sewage and waste water septic tank: For domestic waste water
This septic tank can treat sewage and domestic waste water at the same time, to lighten the burden of domestic waste water on the environment.



Environmental Impact Reduction Activities at Plants

●Zero emission activities and current status



Hiroaki Kozai

Manager
Composite Materials Production Department, Shiga-Ritto Plant

Since we achieved zero emission in February 2002, we have given the highest priority to the elimination of waste generation, and also endeavored to improve our production efficiency and yield rate.

However there was still the generation of cut-offs and of sawdust of composite material of glass fiber and thermosetting plastic resin, and we had no other choice than to use them for concrete aggregate or for thermal recycling. We therefore continued our studies to utilize such cut-offs and sawdust in our plant, and we finally have succeeded in developing a technology to reuse RCP cut-offs as raw materials and to use FFU sawdust and cut-offs to produce a completely new product. These activities have led to cost reduction and sales increase. We will continue our innovative zero emission activities by the combination of our efforts to eliminate waste generation and of our new technology development activities to effectively utilize all wastes.



Takahiro Ishihira

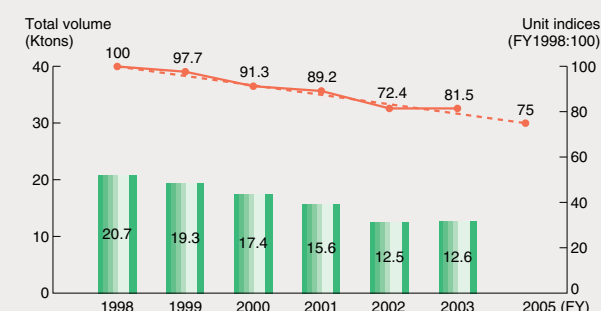
Manager
Building Materials Production Section
Building Materials Production Department, Tokyo Plant

In the production process of rain gutters, we have endeavored to increase the recycling ratio of any substandard items produced in the plant. We collect such items and segregate them by color for reuse as raw materials. We also collect substandard products of such colors that are seldom produced or of mixed colors that are produced at the time of a color change in production. If we reuse the waste of such colors for raw material as it is, a problem of color mismatch may occur. Therefore, in such a case, we use the collected waste for the inner layer of two-layer extruded products or for such injection-molded parts that are invisible in ordinary use. We have our customers' approval for using recycled material in such applications owing to their good understanding of environmental conservation.

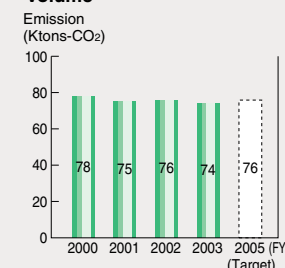
Production activities with the minimum of environmental loads

Each workplace has continued its efforts to reduce waste generation, CO₂ emission, and so forth, steadily achieving better results.

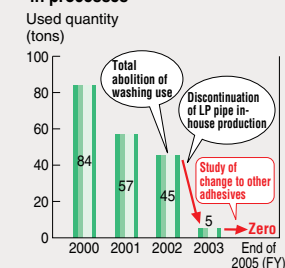
●Waste generation and production unit



●Carbon dioxide emission volume



●Used quantity of dichloromethane in processes



Recycling of Used Products

Used products are recycled as precious resources.

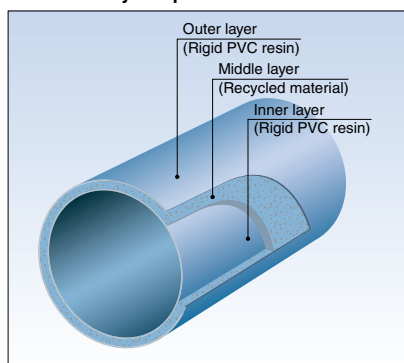
■Recycling of Used PVC Products

PVC is a resource saving type of plastic that does not consume a great quantity of oil resources compared to other plastics.

The main component of PVC is equal to 57% of the components in total, and this is derived from industrial salt. In the production of resin and its fabrication, PVC consumes relatively little energy, and in addition, PVC products have many excellent properties, e.g. durability and heat insulation, contributing to the reduction of energy consumption and CO₂ emission.

Sekisui Chemical Group uses PVC material mainly for producing consumer durables making the best use of its features. We also endeavor to recycle used PVC products for effective utilization of resources.

●"Eslon 3-layer Pipe"

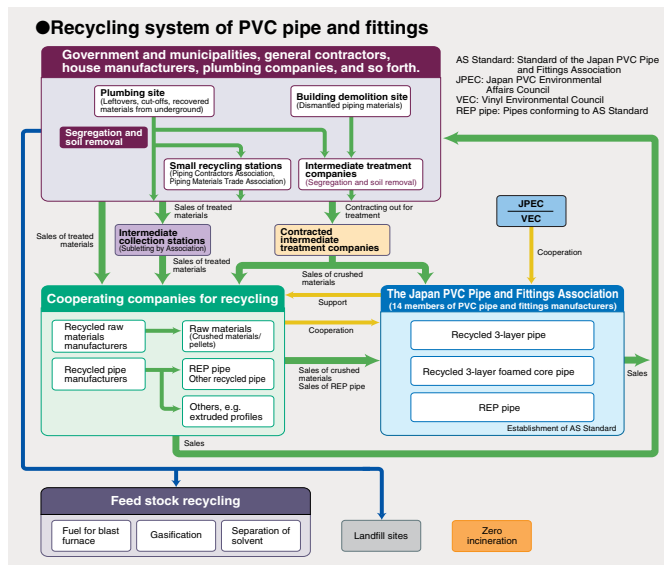


This is a 3-layer pipe, the middle layer of which is made from used PVC products. There are two types of 3-layer pipe; one has a foamed middle layer and the other has a non-foamed middle layer. Both are designated as special procurement items in the Law on Promoting Green Purchasing.

■Expansion of Recycling Systems

An important subject in the recycling of used products is the reduction of collection costs and convenience of disposal. We have been promoting through the industry the improvement of collection systems that can be easily utilized in disposal.

As to LP pipe, we have greatly increased the number of collection stations. For PVC pipe and fittings, we are promoting the structuring of a system to execute segregation and collection at lower cost by employing recycling contractors.



"Eslon Neo Lumber FFU" corresponds to the requirements of 3R's.

Reduce Reduction of waste by longer life

"Eslon Neo Lumber FFU", foamed plastic, is a synthetic lumber, which is corrosion resistant, light in weight and excellent in workability, having a wooden texture.

It has been effectively used for a variety of applications, such as railway sleepers, water treatment tank covers, and such that require a corrosion resistant material.



Railway sleeper



Water mill



Floating pier

Reuse Extension of life cycle by reuse

"FFU" contributes to the reduction of replacement costs and of waste in two ways. The need for replacement is minimized due to its excellent durability and it can adapt to any changes in site requirements for bridge reinforcement and so forth, due to its excellent in workability.



Original use (Designed load 100kg/m²)



Reuse (Designed load 360kg/m²)

Recycle Activities to recycle waste materials

We have established the technology to produce structural materials by using cut-offs generated in the plants and used products, the strength of which is virtually equivalent to those made of new raw materials. This technology is already being put to practical use.



Soil supporting boards from recycled FFU



Railway sleeper from recycled FFU

Environment-Solution Communication Center *For You Plaza*

Shiga-Ritto Plant operates under the slogan, "For You". We are promoting our activities to give greater satisfaction to our customers. We have evaluation and testing facilities for pipelines in our plant, where our customers from municipalities, engineering companies, construction companies, and so forth, visit almost every day to study by observation or to attend the tests.

The idea of **For You Plaza** was proposed while we were examining our plan to build a new center to receive a large number of visitors at one time. The **For You Plaza** building is equipped with 23 kinds of environment-friendly products and facilities, so that we can utilize them in explaining our environmental activities as well as presenting the "environment solutions" we provide.

The products adopted in this building are such representative ones of Sekisui Chemical Group as recycled 3-layer pipe (P49), "Calmoon" sheet (P45), a rainwater storage system (P47), "Rifare EX" (P46), all of which are products of Urban Infrastructure and Environmental Products Company, as well as a laminated glass with Sekisui's heat and sound insulation interlayer film (P55), a photovoltaic generation system (P34), and others.

In our slogan, "For You", we are referring to our customers and the environment. According to this slogan, we propose to our customers, through our **For You Plaza**, environment solutions that will contribute to the creation of an environment that is friendly to people and the globe. Furthermore, we are dedicating great efforts to ensure that our plant is symbiotic with the environment.



Yoshinobu Iwata

Manager
Facility, Environment and Safety Section
Shiga-Ritto Plant



For You Plaza

●Test equipment and facilities at Shiga-Ritto Plant



Eslon Tower
(Test equipment for pipelines for buildings)



Pipeline Renovation Training Center
(Training in "SPR Method")

Environmental Activities in Logistics

Our company has been proactively taking a variety of measures on environmental problems in cooperation with a partner company in logistics in order to prevent air pollution caused by transporting our products. We are, for example, promoting the introduction of the latest low polluting cars that are categorized as low emission vehicles, the introduction of equipment to reduce exhaust emission and shifting the fuel for the forklifts in our plant to LPG.

Moreover, collaborating with another company in the PVC pipe business, we have reorganized the production plants and distribution bases of both companies.

1) We have reduced vehicles' distribution distances by producing PVC pipe at a plant nearest to the destination, and also have reduced energy consumption by using larger vehicles (trailers).

2) Since fiscal 2002, we have promoted joint distribution with our collaborating company to reduce the total number of vehicles used at our PVC pipe plants. For instance, Kyushu Sekisui Industry Co., Ltd. in Kyushu and the Chugoku plant of the collaborating company mutually produced PVC pipe in place of the other party, in order to supply products from a nearer plant. Thus we could minimize the transportation between Kyushu and Chugoku areas (reduction of 100km by average vehicle's running distance).



A vehicle approved as a low emission vehicle



Gen Endo

President
High Performance Plastics Company

We, High Performance Plastics Company, fully utilize our cutting-edge technologies for the development of products to support our customers in their environmental consideration. We are dedicated to the minimization of environmental loads in our production processes.

Company Concept

Through our long history we have built up technologies which are second to none, and we regard our role as being a provider of the most appropriate solutions to our customers, supplying them with products which are developed from our technology packages to exactly meet their needs in the successful operations of their businesses, according to the sentiment expressed in our slogan, "Chemistry for Your Win". In a wide range of fields, for example, electronic and IT materials, medical supplies, vehicle parts and functional building materials, we are confident that our products will give our customers the competitive edge to "win" in their respective markets.

Our Measures for Environmental Corporate Management

We have set up the following two major policies to accomplish environmental corporate management:

1. To support customers' environmental consideration

We provide our customers with comprehensive solutions based upon our technologies with lighter environmental loads, utilizing the core technologies of materials, processing and evaluation that we have accumulated and developed. Through our technology packages, such as nano-dispersion, adhesion control, photo-chemistry, precision synthesis, micro-particle preparation, polyolefin functioning, nano-fabrication and surface treatment, and evaluation/analysis, all of which are based on our core technologies, we supply intermediates and functional parts to support our customers in their development of environment-friendly products.

2. To reduce environmental loads in our production processes

We pay utmost attention to minimizing environmental loads in all our operations, from material selection to production, transportation and recycling of wastes. We devote our efforts to reduce wastes, to save energy, to reduce CO₂ emission in production, and to properly control chemical substances and their release in accordance with ISO 14001.

Recent Results

Achieving the above-mentioned objectives, in fiscal 2003 we successfully supplied the following environment-friendly products to customers in order to support their environmental consideration:

- "S-lec Solar Control Film" (heat insulation interlayer film) made by fine particle dispersion technique, that contributes to energy saving,
- "Recycled Containers" made by precision multi-layer injection molding, enabling resource recycling in cooperation with our customers.

We also succeeded in reducing environmental loads in production processes. In the production of kraft paper adhesive tape, we achieved a substantial reduction of pollutants release by changing the production process to a non-solvent method. Furthermore, we achieved a substantial reduction of CO₂ emission by shifting boiler fuel from heavy oil to city gas and introducing co-generation.

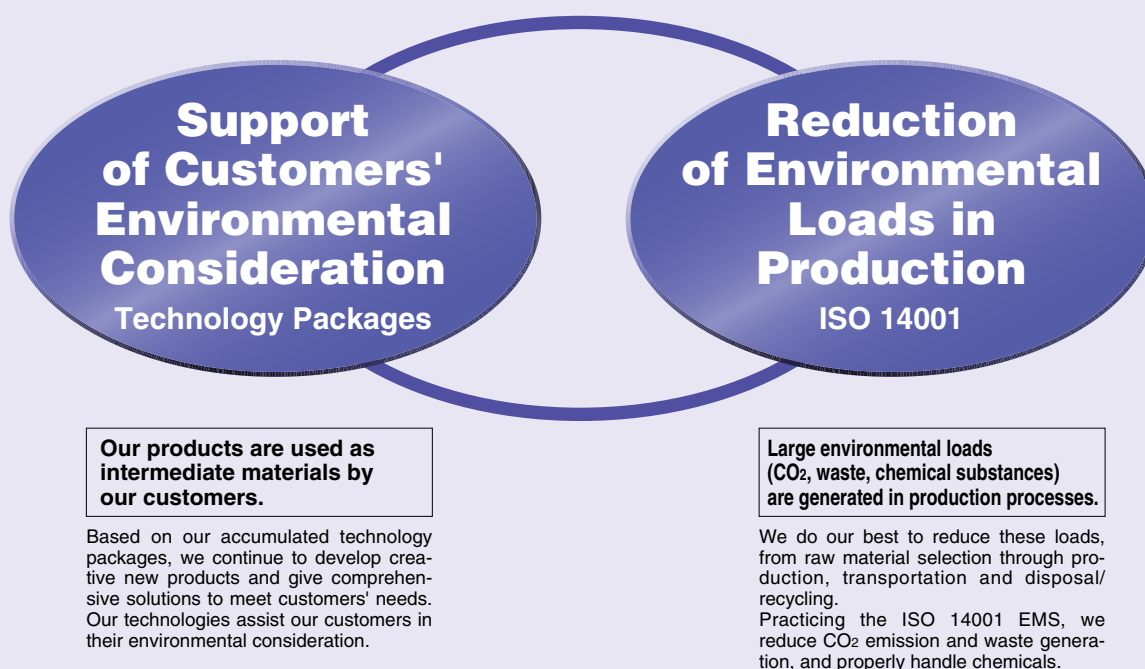
Coexistence of Ecology and Economy

Our environmental corporate management is based on the parallel themes of support of customers' environmental consideration and the reduction of environmental loads. The perfect conducting of these two themes enables us to successfully pursue the coexistence of ecology and economy as an environmentally creative organization.

Chemistry for Your Win

We offer creative products based on our accumulated technology packages, which will supply winning power to our customers.

Parallel themes enable us to maintain the coexistence of ecology and economy



	Support of customers' environmental consideration	Reduction of environmental loads in production
Effective and efficient utilization of resources	<p>"Recycled Container" produced by precision molding and evaluation technologies</p> <p>▶ Resource recycling</p> <p>"Cross Wave" produced by precision molding technology</p> <p>▶ Utilization of water</p>	<p>Conversion of scrap to solid fuel (RPF) Waste reduction from 7,300 tons to 5,100 tons at Musashi Plant</p>
Energy saving and prevention of global warming	<p>"S-lec Solar Control Film" (Heat insulation interlayer film) produced by nano-dispersion and evaluation technologies</p> <p>▶ Energy saving</p>	<p>Boiler fuel shifted from heavy oil to city gas Introduction of co-generation Reduction of CO₂ emission from 68,000 tons to 61,000 tons at Shiga Minakuchi Plant</p>
Measures against environmental pollutants	<p>Modified silicone produced by precision synthesis, nano-dispersion and adhesion control technologies</p> <p>▶ Sick house countermeasures</p> <p>Acquisition of Fire-Retardant Certification for "Environment-friendly Paroi" produced by nano-dispersion and polyolefin functioning technologies</p> <p>▶ Minimization of hazardous chemicals</p>	<p>Change of Kraft tape production process to non-solvent Elimination of toluene release from 200 tons to zero in Kraft tape production</p> <p>Elimination of substitute flons in PE foam production Substitute flon release from 150 tons to zero (by the end of fiscal 2004)</p>

Support of Customers' Environmental Consideration

"Chemistry for Your Win"

We are supporting our customers' environmental consideration, supplying products produced from our environmental-load-reducing technologies.

■Chemistry for Your Win

"Chemistry for Your Win" is the slogan of High Performance Plastics Company. Being the partner of our customers and offering our accumulated high-level technology packages, we are confident that our support will provide a "win" for all of our customers against their competitors.

In order to support our customers' environmental consideration, we apply our technology package of fine particle dispersion and adhesion control, to produce the heat insulation "S-lec Solar Control Film" for large windowpanes of buses and recreational vehicles. Also we apply another technology package of polyolefin functioning and nano-dispersion, to produce the interior wall decoration sheet, "Environment-friendly Paroi (with approved fire-retardation)".

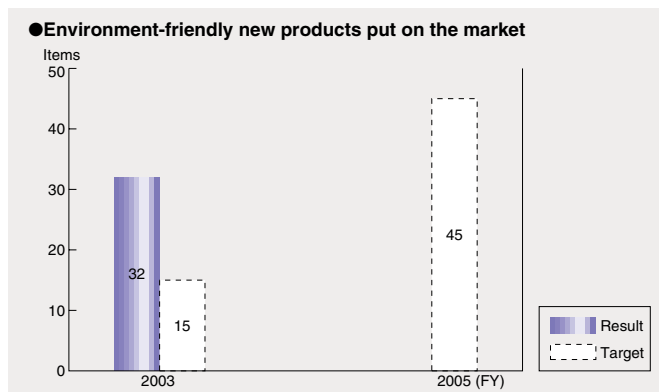
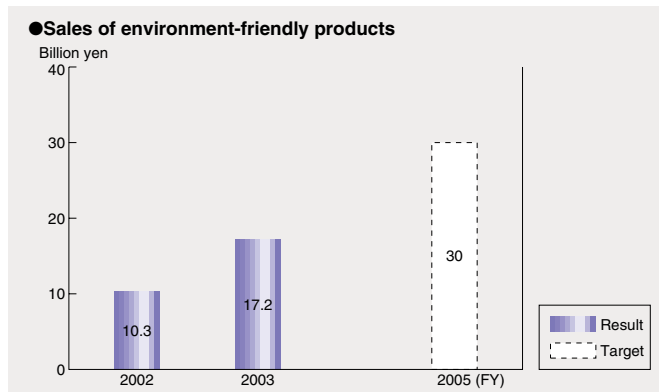
We will continue to support our customers' environmental consideration by fully using our basic material technology, process technology and evaluation technology and by applying new technology packages of surface treatment, precision synthesis, nano-techniques, photochemistry, adhesion control and others, to provide solutions for our customers' requirements and to support their power to win in the competitive environment.

■Development of Environment-friendly New Products

In the development of new products, our company conducts DR (design review) at each stage of survey and planning, development, trial mass production and commencement of full scale production. In addition to the assessment of the functionality, performance, and economic features of the products, we also conduct environmental assessment based on our corporate criteria, "Product Assessment of Environmental Impacts", to confirm the level of pollutant emission, environment-friendliness and safety in production and in use.

■Marketing of Environment-friendly Products

We have successfully introduced 32 new environment-friendly products to the market in fiscal 2003. The sales of them totaled 17.2 billion yen to comprise 9.8% of all sales.



■Environment-friendly Products of High Performance Plastics Company

Product group	Electronic and IT materials	Medical supplies	Vehicle parts	Functional building materials	Miscellaneous
Measures					
Effective and efficient utilization of resources		"Meditrance Tape" Lumbago patch	"DST III" car ceiling Rigid laminate foam "Recycled Containers"	"Cross Wave" Gas pipeline marking tape Mirror scatter-proofing tape	Segregation Dustbins 'Earth' products "Ecora Pac Kraft Tape" Cloth tape of recycled PET "Polybucket" with the Eco-mark Garbage dispenser "e-Container" Bathroom products from recycled materials Plastic bags from recycled materials
Energy saving and prevention of global warming			"S-lec Solar Control Film" (Heat insulation interlayer film)	Protective tape with strong adhesion Shape recovery foam Heat accumulating fine particles	
Measures against environmental pollutants	"S-lec K" "S-lec KW" "S-lec P-199W" "Micropearl SOL" "Micropearl SOL Lead-free Type"	Polyolefin medical equipment	Hollow particles (Cleaning of diesel engine exhaust)	Reactive hot melt adhesives Toluene-free double faced tape "Hanayaka" and "Sukoyaka" agricultural film Sealants/adhesives with modified silicone "Sekisui Bond for house interior use" (Sick house countermeasure) "Eco-Palette Tack-Paint" "Eco-Palette Haru-Color" "Environment-friendly Paroi (with approved fire-retardation)" Foamed particles Cushioning floor underlay	Kraft tape "Supreme Tape" Polyolefin can sealing tape "CS Film" "Sopra" shrink film Polyolefin wrapping film

■Products that Contribute to the Effective and Efficient Utilization of Resources

"Recycled Container"

Recycling system for plastic containers in cooperation with our customers

Plastic containers are often used for in-plant handling of parts and pre-assembled parts, or for storage and transportation. Local governments also use them for segregated collection and recycling of waste/garbage. Our environmentally concerned customers use plastic containers because they can be used repeatedly. When the life cycle of the containers is finished they are usually disposed of in landfills or by incineration. However recycling of their material is desirable for the effective use of resources and waste reduction.

There are two methods to recycle the material of containers:

- Pelletize the collected plastic containers and use for the molding of plastic products,
- Mix the recovered pellets with new material and use in molding.

However, the cost of pelletization, the color problem and the product quality problem hinder the recycling.

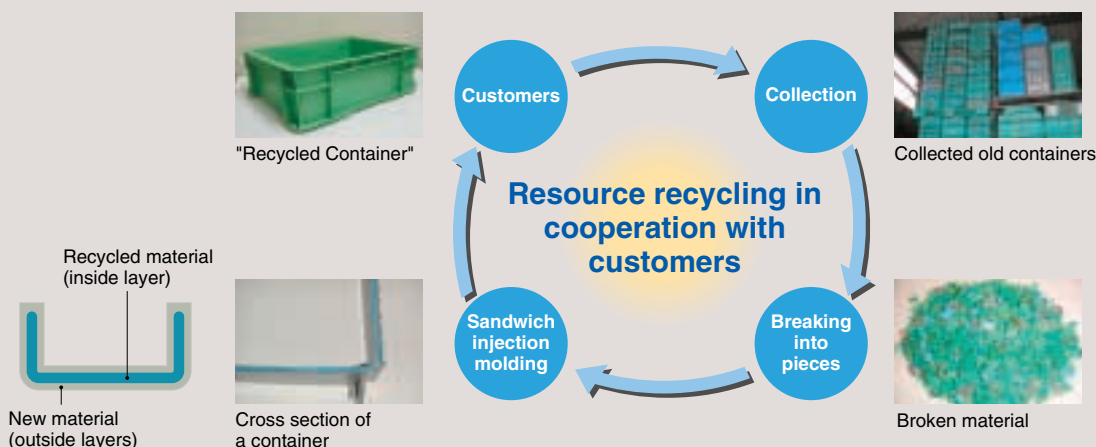
We have developed a molding method in which the recycling material forms the core layer and is sandwiched by layers of new material. The materials are fed to the mold in such a way that the new material forms surface layers to make a three-layered product. This technology enables "container to container" recycling, regardless of the colors of the containers undergoing recycling. By this system, our "Recycled Containers" are composed of as much as 40% to 50% recycled material by weight.

In this case of "Recycled Container", we applied the technology package of precision multi-layer molding and evaluation/analysis technology to realize efficient use of resources. We can now collect the used containers from our customers and convert them to new containers.

Advantages of this method are:

- Crushed chips of collected containers can be used without pelletization,
- Despite containing recycled material any color demand can be met,
- These "Recycled Containers" have the same appearance and strength as the all-new-material containers. They can be printed on and card racks can be mounted on them.
- The "Recycled Containers" can be recycled.

One of our important customers, DENSO CORPORATION, previously disposed of their used containers by thermal recycling which was not cost-free. They have now adopted this recycling method in cooperation with us in order to pay more consideration to the environment for less cost. We cooperate with some local governments in recycling plastic containers used in segregated waste collection. It is our intention to contribute to the establishment of a resource-recycling society by promoting this recycling in cooperation with our customers.



■"Cross Wave": Effective Utilization of Water

"Cross Wave" is water holding elements for rainwater accumulation in underground reservoirs. More than 90% of the space provided can hold water. "Cross Wave" is suitable for water collection and storage under parking lots and roads, and to form reservoirs to supply industrial and agricultural water as well as unpotable water for households. When set under parks or playgrounds they are effective in times of natural disasters, e.g. to prevent floods after heavy rain, or to provide an emergency water supply when water is urgently demanded. "Cross Wave" is a polypropylene product made by precision injection molding and is light weight, and water and chemical

resistant. The "Cross Wave" reservoir is approved by the Association for Rainwater Storage and Infiltration Technology, as an effective method for water recycling and flood control.



Example of installation
(Flood control reservoir, 4,000 m³)



"Cross Wave"

■Products that Contribute to Energy Saving

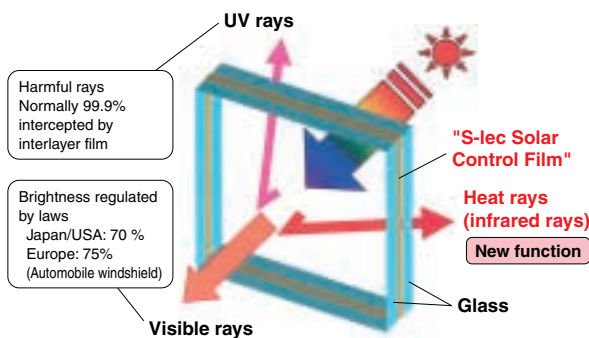
●"S-lec Solar Control Film" (Heat insulation interlayer film)

The interlayer film, "Sekisui S-lec Film", is used worldwide to make laminated safety glass for automobiles and buildings. The basic property of laminated glass provides safety and security, however, in the recent trend of environmental consideration and need for comfort, we have developed a film to include a heat insulation property, "S-lec Solar Control Film".

● About the heat insulation property

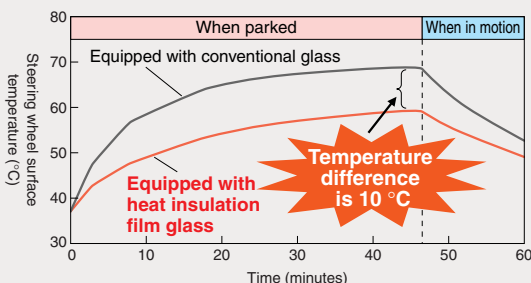
In an automobile, there is a large inflow of heat through the windshield which burdens the air conditioning system. If the heat inflow is reduced, the air conditioning usage will be less and air conditioners can be smaller in size and capacity resulting in reduced load to the engine and better fuel efficiency. Similarly reduced heat inflow through the windows of buildings results in decreased need of air conditioning.

Due to the excellent UV cutting property of our standard film, when applied to laminated glass it allows UV rays to be cut by almost 100%, but it allows much of the heat energy through. Now our new heat insulation film has the additional property to shut out infrared rays (heat rays) almost com-

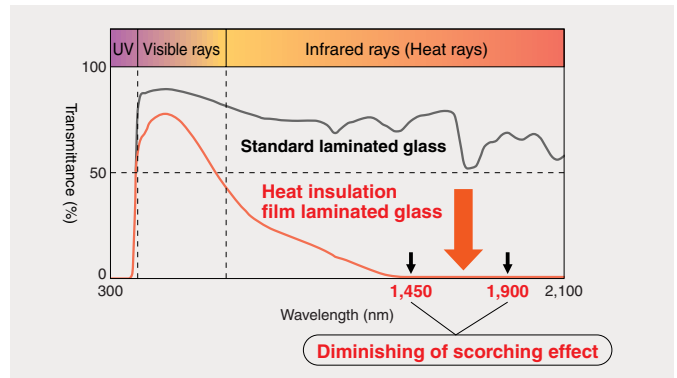


When the heat insulation interlayer film is applied to windshield glass, the steering wheel temperature and the nearby air temperature will be lowered by 10 °C.

●Temperature difference of steering wheel by actual measurement



Infrared rays of 1450 nm and 1900 nm wavelengths are strongly absorbed by human skin, giving a scorching effect. Our heat insulation interlayer film cuts the penetration of rays of such wavelengths, thus diminishing the possibility of scorching.



Conventional heat reflecting glass reflects electric waves and it sometimes causes problems, for example, in ETC (Electronic Toll Collection Systems). However, our heat insulation interlayer film allows all IT waves to pass through, therefore there is no hindrance to radio reception or mobile telephone communication.

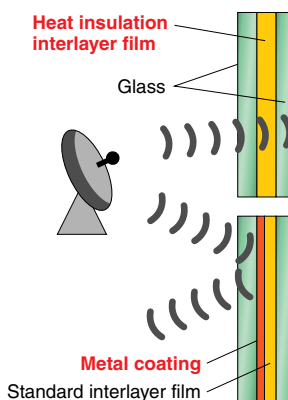
●ETC (Electronic Toll Collection System)



No reflecting metal layer, no communication hindrance

ETC device set in vehicle

●Mobile telephone



To assure the safety of laminated glass, S-lec Film is designed to have excellent adhesion to glass, using our adhesion control technology, and formed by our multi-layer extrusion technology. Furthermore in our heat insulation film, the heat shielding fine particles are evenly dispersed using our nano-dispersion technology. This kind of technology package contributes to high product quality ensuring safety and energy saving.



■Measures against Environmental Pollutants in Products

●Modified silicone sealant/adhesive

"Sekisui Silicone" is modified silicone sealant/adhesive that does not contain any solvent or other hazardous chemicals such as formaldehyde. This product meets the formaldehyde requirement of the Building Standard Law and does not contain any volatile organic compound as regulated by the Indoor VOC Concentration Guidelines of the Japanese Ministry of Health, Labour and Welfare.

The modified silicone is an elastic adhesive that can not be peeled off by vibration or shock and which prevents squeaking of floors when used in adhesion of flooring material. It has twice as much weather resistance as conventional silicone adhesive and is resistant to discoloration by UV, staining, cracking and deformation. These properties are created by our technology package of precision synthesis, nano-dispersion and adhesion control technologies.

Such non-hazardous, weather-resistant and resilient features give this product a wide range of applications in building and construction. For example in outdoor application it is used to adhere roofing materials, exterior walls and tiles, and in joints. In indoor application it is used to adhere ceiling materials, interior walls, doors, stairways, flooring, etc. and in bath rooms and kitchens.

The modified sealant/adhesive is supplied in a cartridge contained in an applicator gun and refills for the cartridge are available to ensure waste reduction and easier waste control at construction sites.

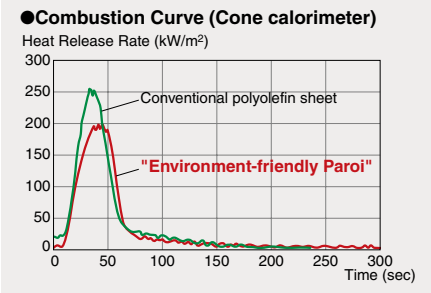


■"Environment-friendly Paroi (fire-retardant)"

●Acquisition of fire-retardant certification for Paroi

"Paroi", an interior decorative sheet, has been widely used for building interior applications owing to its decorative features and easiness of installation. In recent years we received strong requests for polyolefin based decorative sheets from users and contractors. To respond to these needs, we have developed and introduced "Environment-friendly Paroi", a certified fire-retardant polyolefin sheet, that does not contain halogenated or phosphorus compounds, using our technology package of nano-dispersion, functional modification of polyolefin and evaluation analysis technologies.

"Paroi" has acquired the Fire-Retardant Certification of the Japanese Ministry of Land, Infrastructure and Transport (Fire-Retardation Certification Numbers: NM-0403 and NM-0613), which requirement is difficult to meet for non-halogen or non-phosphorus compositions. When fire-retardant board is covered with fire-retardant "Paroi" the finished work is deemed fire-retardant. Furthermore, owing to the nature of polyolefin, "Paroi" does not give any stretching problem during summer installation nor brittleness during winter installation.



"Paroi" in use

●"CS Film"

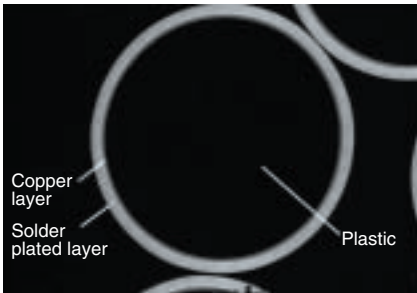
"CS Film" (clear soft film) is a general purpose multi-layer polyolefin film, developed by our polyolefin functioning technology. It has excellent features of gloss, clearness, softness, flexibility, and comfort to the touch as well as being easy to fabricate and not affected by changes in temperature or humidity.



An apron made of "CS Film" ▶

●"Micropearl SOL"

These are spherical fine particles of plastic plated with solder, which are used as parts to mount IC chips on substrates. They were developed by our technology package of precision synthesis, fine particle preparation and evaluation analysis technologies. They have the excellent property of stress relaxation, containing uniform plastic cores. They reduce the heavy metal volume of soldering compared to the conventional solder particles, minimize cracking and maintain even gaps. We also supply a lead-free type in response to customers' environmental considerations.



Microscopic cross section of "Micropearl SOL"

Reduction of Environmental Loads in Production

We are taking thorough measures to reduce waste generation, CO₂ emission and the release of pollutants in our business operations.

■Reduction of Environmental Loads in Production

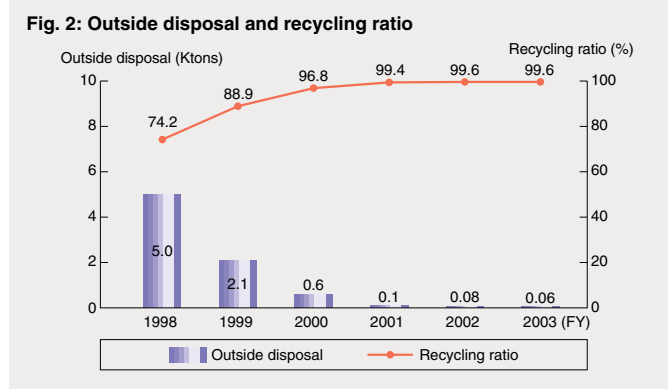
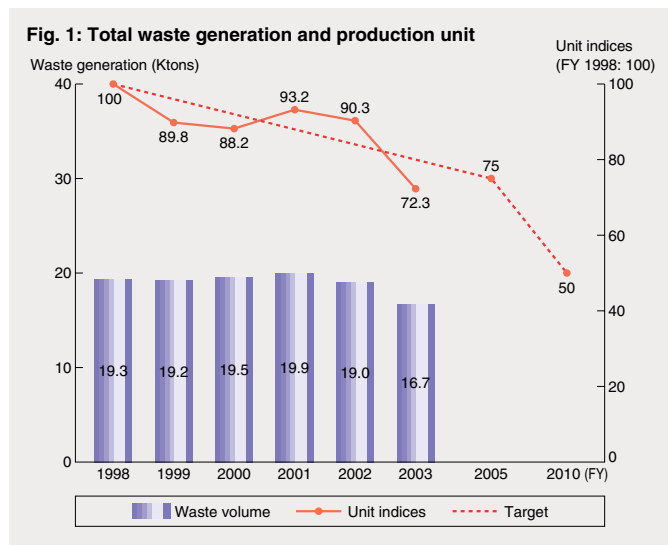
Among Sekisui Group companies, High Performance Plastics Company generates a relatively larger volume of waste and consumes more energy in the production of high performance resins, the fabrication of such plastic goods as adhesive tapes, films, foams and precision molded goods, and the production of medical goods. We also handle a variety of chemical substances. Consequently we emit a substantial volume of CO₂.

The reduction of environmental loads in production, such as CO₂ emission, waste generation and chemicals release, is of utmost importance to us.

■Reduction of Waste and its Reuse and Recycling

In fiscal 2003 waste generation was reduced by 12% over the previous year in spite of the production volume increase of 10%. Thus waste generation per production unit was reduced by 20% compared to fiscal 2002 (28% compared to fiscal 1998).

The most important factor for the reduction was the recycling of tape and foam scraps to solid fuel pellets, started in Musashi Plant. The other plants paid efforts to raise the production efficiency that would reduce waste and to recycle more waste by segregated collection. We will continue to take these measures and reduce waste.



■Zero Emission

In 1998 we started our zero emission activities with the aim to recycle the entire waste of all 12 plants and 11 of them had attained the objective by fiscal 2002 and are maintaining it. The other one, which is a new plant, still has to complete the necessary procedures. At present it disposes of some of the waste as landfill or by simple incineration.

■Status of Waste Generation and Treatment

The status of waste generation and treatment in fiscal 2003 is shown in Fig. 3 below. A distinctive feature of our company is that the ratio of plastic waste is high (Fig. 4). In the course of our zero emission activities we will continue our efforts to reduce waste and at the same time to convert thermal utilization to material recycling. We have slowly but steadily increased the material recycling ratio.

Fig. 3: Status of waste generation and treatment in FY 2003 (at 14 plants* of the company)

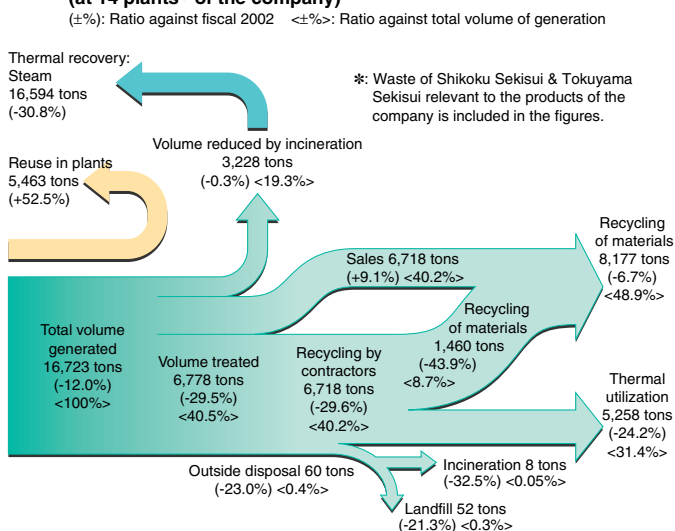
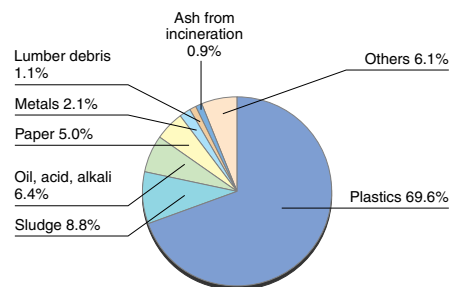


Fig. 4: Breakdown of total volume



Example of Efficient Utilization of Resources

Cut-offs of tapes, polyethylene foams etc. are recycled to produce solid fuel.

●Conversion of cut-offs to solid fuel

Our Musashi Plant produces adhesive tapes such as cellophane tapes and kraft paper tapes, and foamed polyethylene that are used for interior parts of cars and as components for building materials. Most of the products are manufactured in the form of rolls, which are then cut or punched to marketable sizes. Although we constantly pay utmost attention in designing and production to minimize the generation of cut-offs and to increase production efficiency, cut-offs of tapes and foamed polyethylene are still generated in a relatively large volume.

From the viewpoint of effective utilization of resources, it is important to reuse the cut-offs generated in the production processes in our plant as they are, or to separate them for recycling to materials. In fiscal 1999 we achieved 100% recycling of the waste generated in our plants, but the costs were high for thermal utilization. We have continued our efforts to increase material recycling in the course of promoting zero emission activities since fiscal 1998. However, it is very difficult to separate the materials in the cut-offs of adhesive tapes as they are a mixture of adhesive and paper, or cellophane or plastic films. Furthermore, in the case of foamed polyethylene,

the cut-offs are very bulky compared to their weight.

In order to solve these problems we started commercial production of RPF (Refuse Paper & Plastic Fuel) using a machine to make solid RPF, by which plastic waste is crushed and compressed under high pressure into small solid pieces, greatly reducing its volume. RPF made from the precisely segregated plastic waste is uniform in quality and has high calorific value. Therefore in recent years equipment to use RPF in place of coal and other fossil fuel has become more popular. We check and confirm the quality of our RPF, for such as water content, density and calorific value, and ship to companies that have facilities to use RPF.

●Change in waste volume

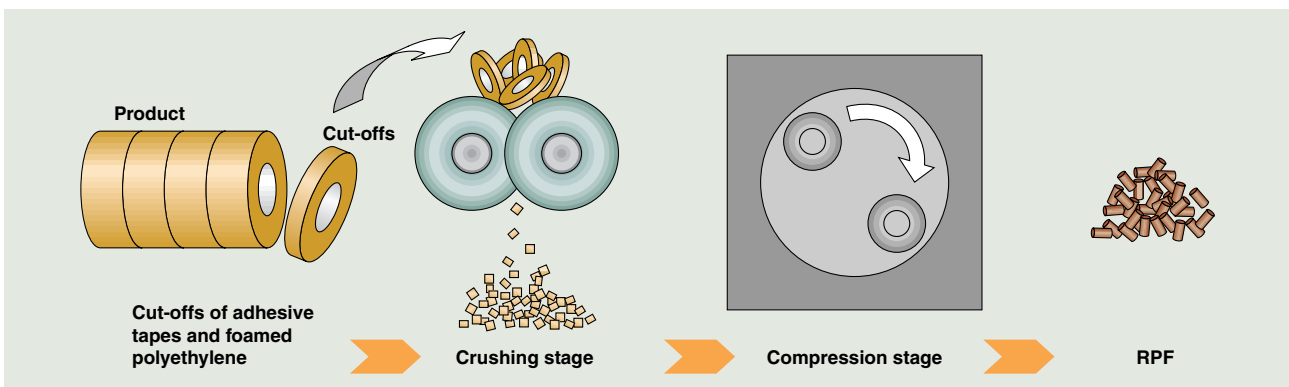
As a result of RPF conversion of plastic waste, the total waste generation of Musashi Plant in fiscal 2003 was reduced by 30% over the previous year in spite of the production volume increase of 12%. Thus waste generation per production unit (waste generated in manufacturing 1 ton of product) was down by as much as 37%.



RPF



RPF production equipment



■Energy Saving and Reduction of CO₂ Emission

High Performance Plastics Company, in fiscal 2003, attained the target figure of energy saving in terms of production unit owing to the higher energy efficiency induced from the fact that the production increase surpassed the energy consumption increase. Further we attained a reduction of 2,000 tons approx. in CO₂ emission which is attributed to the boiler fuel shifting and the start of gas co-generation in Minakuchi Plant.

●For the attainment of the FY 2010 target of CO₂ emission

Sekisui Chemical Group has established a group-wide and per company target for CO₂ emission in fiscal 2010 based on the figures of fiscal 1990. In fiscal 2002 the emission was reduced by 16,000 tons from the previous year, to which the closure of Sakai Plant and Fujisawa Plant of Sekisui Technol Molding East Japan Co., Ltd. contributed greatly. However, the recent production increase of functional resins and inter-layer film tends to increase energy consumption.

In order to attain the target figures while improving the production level, we plan:

- ①To use energy or fuel of smaller CO₂ emission,
- ②To save energy by reviewing the production processes and equipment.

Regarding ①, we have introduced co-generation systems in Musashi Plant and Minakuchi Plant in order to secure energy supply of high thermal efficiency. Shifting of boiler fuel to city gas from heavy oil was effected too.

Regarding ② we review the processes and the equipment for energy saving as part of our environmental corporate management that aims at the coexistence of ecology and economy. We are doing our utmost to increase production efficiency in our daily operations.

Fig. 1: Transition of CO₂ emission

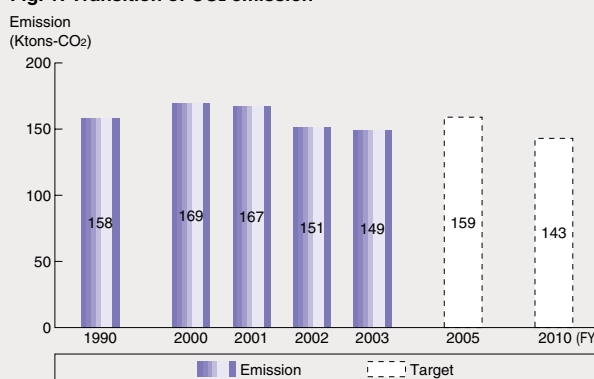
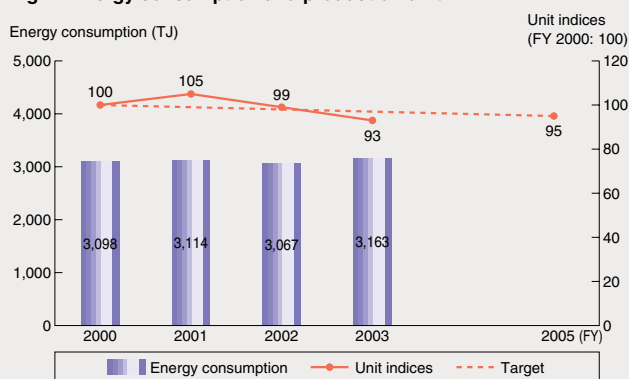


Fig. 2: Energy consumption and production unit



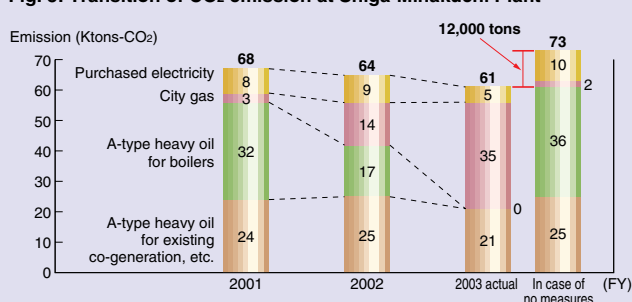
■Effort of Shiga-Minakuchi Plant in CO₂ Emission Reduction

Shiga-Minakuchi Plant manufactures safety glass interlayer film and various high performance resins, and is consequently the most energy consuming of all the plants of Sekisui Chemical Group. In fiscal 2001 its CO₂ emission was 40% approx. of the total emission of the company and to 22% approx. of all Sekisui Chemical Group. In addition it inherited some of the production of Sakai Plant in fiscal 2002.

To comply with the production increase, the boiler capacity had to be increased. Formerly the boiler fuel was A-type heavy oil but in December 2002 a shift was made to city gas which emits much less CO₂. Modification of the boiler was made for the capacity increase and the fuel change at the same time, to meet the middle term environmental plan for CO₂ emission reduction. The renewed boiler started operation in December 2002 and the newly introduced co-generation system has been in operation since May 2003.

By these measures Shiga-Minakuchi Plant reduced its CO₂ emission in fiscal 2003 by more than 6,000 tons or 9% compared to fiscal 2001. This was a great success because under the actual production increase of 29%, the emission would have been increased by 12,000 tons approx. if no measures had been taken.

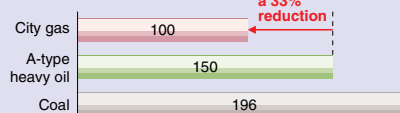
Fig. 3: Transition of CO₂ emission at Shiga-Minakuchi Plant



●CO₂ emission is reduced by the shift to city gas

City gas is mainly composed of natural gas, the main component of which is methane (CH₄). Methane contains less carbon than coal or petroleum fuel in any given weight, and methane generates more calories than the same amount of other fuels. To obtain the same calorific output, methane emits much less CO₂. City gas contains a very small quantity of sulfur (S) and nitrogen (N), therefore emission of SO_x and NO_x can be reduced to a large extent.

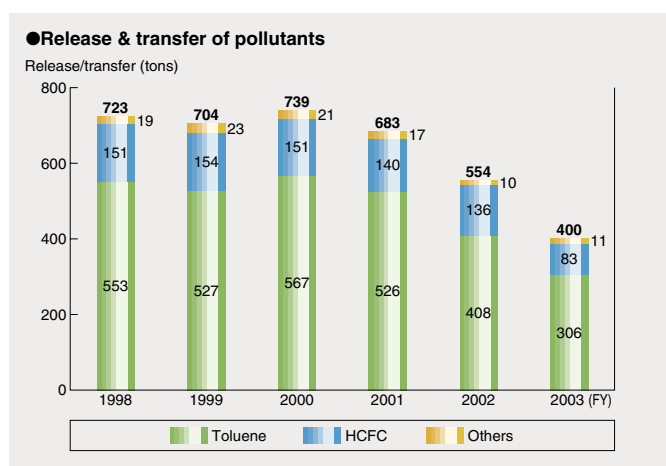
Fig. 4: Ratio of CO₂ for the same calorific output



■Reduction of Release/Transfer of Pollutants

Our company manufactures chemical products such as highly functional plastics and adhesives, which require a variety of chemical substances in their production processes. We also use a large amount of organic solvents in tape production and our release and transfer of these substances are quite large among Sekisui Chemical Group.

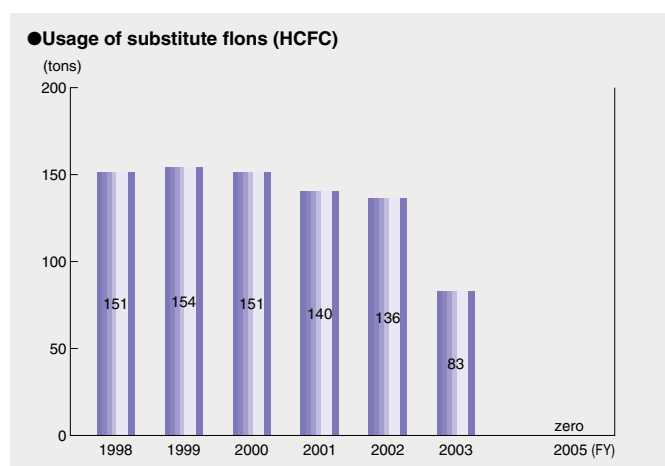
In fiscal 2003 the release/transfer of pollutants was reduced by 28 % from the previous year and 45% from fiscal 1998, due to the effects of the kraft paper adhesive tape process conversion to totally non-solvent coating and of the replacing of substitute flons by hydrocarbon in the polyethylene foaming process.



■Total Abolition of Substitute Flons (HCFCs)

Among our polyethylene foams for heat insulation application etc., there are certain grades that use substitute flons as foaming agents. The Montreal Protocol of 1987 stipulates that the use of substitute flons be abolished by 2014, and Sekisui Chemical Group aims at elimination of them by the end of fiscal 2005.

Having completed our studies on the change from flons to hydrocarbon, we gradually adopted the hydrocarbon foaming agent. We commenced the change in fiscal 2003, and achieved a 45% reduction in flon consumption against fiscal 1998. We are scheduled to complete the change by the end of fiscal 2004, thereby totally abolishing substitute flon consumption.

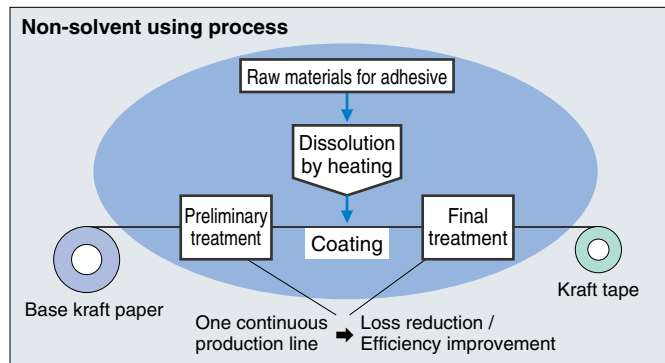
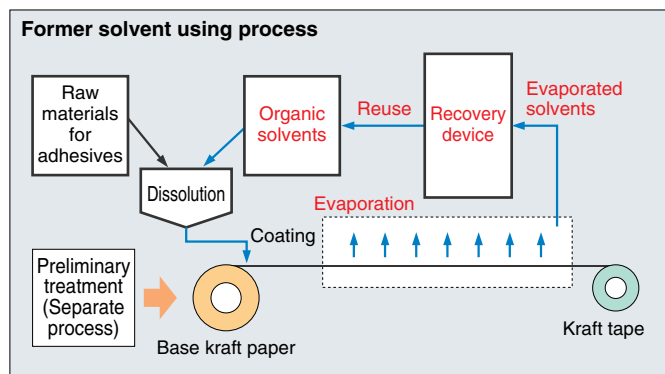


■Changeover to Non-solvent Method (Hotmelt Method) for Kraft Paper Tapes

Kraft paper adhesive tape is the most popular tape in Japan, used for carton sealing and so forth. Formerly we produced this tape by applying adhesive that had been dissolved in solvent to facilitate the coating on the kraft paper and drying the tape to remove the solvent, which was recovered for reuse.

We have introduced a new method whereby the adhesives are liquefied at a high temperature without prior dissolution in solvents and the liquefied adhesive is coated directly on the surface of the kraft paper. For the treatment of the non-adhesive surface of tapes, we have used non-solvent type material, resulting in a totally non-solvent tape. We are also reducing material losses by operating one line, from the preliminary treatment on the base paper to the final rolled products.

The release and transfer of toluene in the kraft paper tape production became zero and the all-company figure was down 25% from fiscal 2002, which is a 45% reduction from the figure of fiscal 1998.



Data of Each Workplace

Tsukuba R&D Site	32 Wadai, Tsukuba-shi, Ibaraki-ken
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ISO14001: Nov. 2002	Zero emission: FY 2005
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Emitted gasses and drained water qualities are given on P66 (NBO Development Center).

Kitanihon Sekisui Industry Co., Ltd.	4-142-4 Higashicho 2-jo, Iwamizawa-shi, Hokkaido	Staff no. 137
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Products: Sekisui Heim, Two-U-Home

ISO14001: Sept. 1998	Emitted gasses	Fan heater		
Zero emission: Mar. 2001		SOx	NOx	Soot and dust
Waste: 261 tons	Reg. V.	0.8	180	0.3
CO ₂ : 775 tons	Msd. V.	0.13	62	<0.01

Higashinihon Sekisui Industry Co., Ltd.	55 Aza Dannokoshi, Okumatazawa, Watari-cho, Watari-gun, Miyagi-ken	Staff no. 264
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Products: Sekisui Heim, Two-U-Home

ISO14001: Aug. 1998	Emitted gasses	Fan heater			Drained water	Drainage from plant		
Zero emission: Sept. 2001		SOx	NOx	Soot and dust		pH	BOD	SS
Waste: 927 tons	Reg. V.	0.65	180	0.3	Reg. V.	5.8-8.6	20	25
CO ₂ : 1,894 tons	Msd. V.	0.08	64	0.074	Msd. V.	7	14	11

Kanto Sekisui Industry Co., Ltd.	287 Kitayoshihara, Kasama-shi, Ibaraki-ken	Staff no. 200
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Products: Sekisui Two-U-Home

ISO14001: Oct. 1998	Emitted gasses	Paint drying chamber			Hot and chilled water generator			Drained water	Drainage from plant				
Zero emission: Sept. 2001		SOx	NOx	Soot and dust	SOx	NOx	Soot and dust		pH	BOD	COD	SS	Hex
Waste: 1,010 tons	Reg. V.	5.2	150	0.3	0.97	180	0.3	Reg. V.	5.8-8.6	120	120	150	30
CO ₂ : 1,943 tons	Msd. V.	0.003	42.5	0.022	0.033	93	0.007	Msd. V.	6.6	3	9	1	5
PRTR	Chemicals			Handled	To atmosphere	To water	Sewerage	As waste					
	Bisphenol A type epoxy resin (liquid)			4,690	0	0	0	0					

Tokyo Sekisui Industry Co., Ltd.	3535 Oaza Kurohama, Hasuda-shi, Saitama-ken	Staff no. 540
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Products: Sekisui Heim, Exterior walls for Sekisui Heim

ISO14001: Nov. 1997	Emitted gasses	Paint drying chamber 1			Paint drying chamber 2						
Zero emission: Mar. 2001		SOx	NOx	Soot and dust	SOx	NOx	Soot and dust				
Waste: 1,623 tons		Reg. V.	1.362	180	0.35	1.452	180	0.35			
CO2: 3,655 tons		Msd. V.	0.025	92	0.011	<0.042	81	0.013			
Drained water	Waste collection station drainage				Drainage to sewerage						
	pH	BOD	COD	SS	Temp.(°C)	pH	BOD	SS	Hex(M)	Hex(A)	
	Reg. V.	5.8-8.6	150	180	160	45	5.0-9.0	600	600	5	30
	Msd. V.	7.4	7.1	16	40	29	7.9	420	300	<1	24

Chubu Sekisui Industry Co., Ltd.	3-22 Akemicho, Toyohashi-shi, Aichi-ken	Staff no. 419
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Products: Sekisui Heim, Two-U-Home

ISO14001: June 1998		Emitted gasses	Boiler for paint dryer			Hot and chilled water generator			PRTR	Chemicals	Handled	To atmosphere	To water	Sewerage	As waste	
Zero emission: Mar. 2001			SOx (K Value)	NOx	Soot and dust	SOx (K Value)	NOx	Soot and dust		Xylene	1,104	1,093	0	0	0	
Waste: 1,797 tons			Reg. V.	2.34	260	0.15	2.34	100		0.15	Toluene	2,217	2,195	0	0	0
CO2: 3,444 tons			Msd. V.	0.098	83	0.0048	0.04	63		0.002						
Drained water	Drainage from plant	pH	BOD	COD	SS	Hex	Coliform	Nitrogen	Phosphorus	Drainage from septic tank	pH	BOD	COD	SS	Hex	Coliform
	Reg. V.	6.0-8.5	10	10	10	1	1,500	120	16	Reg. V.	6.0-8.5	20	20	30	1	1,500
	Water treatment facility outlet	7	6.2	1.6	1	0.5	30	0.5	0.01	Plant 2	7.1	4.4	19	4	0.5	30
	Drainage from Plant 1	7.5	2	3.8	1	0.5	30	0.5	0.02	Plant 1	7.9	7.8	19	2	0.5	30

Listed Items and Units

- Addresses: As of October 1, 2004
- Staff no.: The number of staff as of March 2003 including subcontractors in the plant
- Products: Main products in FY 2003
- ISO14001: The dates the ISO14001 certification was acquired. In case a merger or integration took place, the earliest month and year the certification was acquired are shown.
- Zero emission: The dates zero emission was attained
- Waste: Waste of object items (P17) generated in FY 2003
- CO₂: CO₂ generated by energy consumption in FY 2003
- Reg.V.: Values stipulated by laws/regulations
- Aut. con. V.: Autonomous control values if no regulation exists
- Msd. V.: The highest measured values
- Emitted gasses: The followings are the units, if none are given: SOx: Nm³/h, NOx: ppm, Soot and dust: g/Nm³, HCl: mg/Nm³, DXN=Dioxins: ng-TEQ/Nm³
- Drained water: The followings are the units, if none are given:
mg/l: BOD, COD, SS=Suspended substance, Phosphorus, Nitrogen, I2=Iodine consumption, Iron, Zinc, Lead, Hex=n-Hexane extract, Hex(M)=n-Hexane extract (mineral oil), Hex(A)=n-Hexane extract (animal/vegetable oil), Hg=Total mercury, Phenol, Boron, CCl₄=Carbon tetrachloride, Mn=Manganese, Cr=Total chromium, Cr(VI)=Chromium(VI), Cd=Cadmium, Formaldehyde, F=Fluorine, Res.Cl=Residual chlorine, Dis.O2=Dissolved oxygen, CN=Total cyanide, Arsenic
Others: Coliform=Coliform group number: pcs./m², Transparency: Degree, DXN=Dioxins: pg-TEQ/l
- PRTR: Chemical substances designated as Class 1 in Japanese PRTR law, handled quantities one ton and over in FY 2003 per workplace. The unit is kg except dioxins.
As waste: Transferred to outside for disposal or recycling
Release to soil and landfill within workplaces are omitted due to no applicable case.

Kansai Sekisui Industry Co., Ltd.	4-3-1 Nishikujocho, Nara-shi, Nara-ken	Staff no. 278
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Products: Sekisui Heim

ISO14001: Nov. 1997 Zero emission: Aug. 2001	Drained water	Drainage to sewerage					
		pH	BOD	SS	Hex	Nitrogen	Phosphorus
Waste: 765 tons	Reg. V.	5.0-9.0	1,500	1,500	5	240	32
CO ₂ : 1,722 tons	Msd. V.	— (*)	109	53	— (*)	— (*)	— (*)

(*) Nara City conducts the water quality tests, but did not test in FY 2003.

Chugoku Sekisui Industry Co., Ltd.	189 Kozujuku, Okayama-shi, Okayama-ken	Staff no. 245
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Products: Sekisui Heim (Head Office Plant), Two-U-Home (Kuban Plant)

ISO14001: Aug. 1998 Zero emission: Sept. 2001	Emitted gasses	Boiler for air-cooler (Head Office Plant)			Boiler for air-cooler (Kuban Plant)			Drained water	Drainage from septic tank			
		SOx	NOx	Soot and dust	SOx	NOx	Soot and dust		pH	BOD	SS	Hex
Waste: 1,124 tons	Reg. V.	1.09	150	0.25	1.09	150	0.25	Reg. V.	5.8-8.6	60	90	5
CO ₂ : 2,366 tons	Msd. V.	0.11	37	0.06	0.056	86	0.062	Msd. V.	7.6-7.9	120 (**)	18.5	N.D.

(**) Due to mismanagement of septic tank by subcontractor. After sludge removal, measurement was 35mg/ℓ. Countermeasure report was submitted to relevant administration and approved.

Nishinihon Sekisui Industry Co., Ltd.	1760 Todorokimachi, Tosu-shi, Saga-ken	Staff no. 218
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Products: Sekisui Heim, Two-U-Home, Exterior walls for Sekisui Heim

ISO14001: June 1998 Zero emission: Mar. 2000	Drained water	Drainage from plant			
		pH	BOD	SS	Hex
Waste: 816 tons	Reg. V.	5.0-9.0	600	600	30
CO ₂ : 1,890 tons	Msd. V.	7.2-6.6	388	20	9.4

Sekisui Board Co., Ltd. Minakuchi Plant	1259 Izumi, Minakuchicho, Koka-shi, Shiga-ken	Staff no. 199
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Products: Exterior walls for Sekisui Heim / Two-U-Home

ISO14001: Mar. 1998 Zero emission: Mar. 2000	Emitted gasses	Boiler		Drying chamber		Drained water	Water treatment facility outlet (to sewerage)						
		NOx	Soot and dust	NOx	Soot and dust		pH	BOD	SS	Hex(M)	Hex(A)	Nitrogen	Phosphorus
Waste: 3,883 tons	Reg. V.	150	0.1	230	0.1	Reg. V.	5.0-9.0	600	600	5	30	60	10
CO ₂ : 5,643 tons	Msd. V.	42	<0.01	1	0.01	Msd. V.	7.2	146	198	2.2	12	16	1.4
PRTR	Chemicals			Handled	To atmosphere	To water	Sewage	As waste					
	Bisphenol A type epoxy resin (liquid)			36,842	0	0	0	0					

Sekisui Board Co., Ltd. Gunma Plant	54 Shimofuchina, Sakai-machi, Sawa-gun, Gunma-ken	Staff no. 206
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Products: Exterior walls for Sekisui Heim / Two-U-Home

ISO14001: Mar. 1998 Zero emission: Sept. 2001	Emitted gasses	Boiler 3			Boiler 2			Drained water	Drainage from plant			
		SOx	NOx	Soot and dust	SOx	NOx	Soot and dust		pH	BOD	SS	Hex
Waste: 5,637 tons	Reg. V.	2.23	175	0.15	2.23	175	0.15	Reg. V.	6.5-8.5	10	10	3
CO ₂ : 9,320 tons	Msd. V.	0.101	170	0.005	0.102	140	0.008	Msd. V.	6.7	2	<1	<2
PRTR	Chemicals			Handled	To atmosphere	To water	Sewage	As waste				
	Bisphenol A type epoxy resin (liquid)			37,570	0	0	0	0				

Shiga-Ritto Plant	75 Nojiri, Ritto-shi, Shiga-ken	Staff no. 576
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Products: PVC pipe, RCP, PE composite pipe, synthetic wood

ISO14001: Oct. 1998	Emitted gasses	Boiler			PRTR	Chemicals					Handled	To atmosphere	To water	Sewage	As waste
Zero emission: Feb. 2002		SOx (K Value)	NOx	Soot and dust		Cobalt compounds					1,550	0	0	0	0
Waste: 4,734 tons	Reg. V.	8.76	150	0.1		Organic tin compounds					15,400	0	0	0	41
CO2: 19,562 tons	Msd. V.	<0.1	33	<0.02		Styrene monomer					1,561,000	42,000	0	0	0
						Lead compounds					160,070	0	0	0	518
						Bis (2-ethylhexyl) phthalate					2,520	0	0	0	1,260
Drained water		pH	BOD	COD		SS	Hex(M)	Hex(A)	Nitrogen	Phosphorus	Iron	Zinc	Lead	I2	
Drainage from plant	Reg. V.	6.0-8.5	15	15	20	3		8	0.5	7	0.7	0.1	—		
	Msd. V.	6.7-7.2	4.9	4.7	2.3	<0.5		2.7	<0.1	0.13	0.15	<0.01	—		
Drainage to sewerage	Reg. V.	5.0-9.0	600	—	600	5	30	60	10	5	0.1	220			
	Msd. V.	6.4-7.4	230	—	160	<0.5	14	56	4.1	1.6	0.2	<0.01	21		

Gunma Plant	54 Shimofuchina, Sakai-machi, Sawa-gun, Gunma-ken	Staff no. 175
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Products: PVC pipe & fabricated fittings, PE pipe & fittings

ISO14001: Mar. 1999 Zero emission: Oct. 2001	Drained water	Drainage from plant						PRTR	Chemicals		Handled	To atmosphere	To water	Sewage	As waste
		pH	BOD	SS	Hex	Lead	Coliform								
Waste: 433 tons	Reg. V.	6.5-8.5	10	10	3	0.1	1,000		Organic tin compounds		14,560	0	0.52	0	63
CO ₂ : 6,630 tons	Msd. V.	6.5-7.7	3	2	<1	0.02	<10		Lead compounds		91,350	0	3.1	0	358

Tokyo Plant	3-15-1 Negishidai, Asaka-shi, Saitama-ken	Staff no. 521
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Products: Plastic valves/fittings, pits and manholes, rain gutters

ISO14001: Oct. 1998		Zero emission: Feb. 2002				Waste: 1,454 tons		CO ₂ : 14,700 tons						
Drained water	Drainage to sewerage (No legal requirement: autonomous control)							PRTR	Chemicals	Handled	To atmosphere	To water	Sewage	As waste
	pH	BOD	SS	Hex(M)	Hex(A)	Lead	I2		Xylene	2,730	270	0	0	0
Aut. con. V.	5.5-8.8	600	600	4	25	0.05	110		HCFC-141b	5,180	780	0	0	130
Msd. V.	7.2-8.4	216	52	<2.5	12.5	0.03	22		Organic tin compounds	25,000	0	0	0	210
									Toluene	3,310	331	0	0	0
									Lead compounds	132,200	0.4	0	0.1	390

Data of Each Workplace

Kyoto R&D Laboratories	2-2 Kamichoshicho, Kamitoba, Minami-ku, Kyoto-shi, Kyoto-fu	Staff no. 503
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ISO14001: Jan. 2000	Zero emission: FY 2005															
Emitted gasses	Boiler		Hot and chilled water generator		Gas CGS		Drained water	Drainage to sewerage								
	NOx	Soot and dust	NOx	Soot and dust	NOx	Soot and dust		pH	SS	Hex(M)	Hex(A)	Hg	Phenol	Iron	Boron	CCl4
Reg. V.	150	0.1	150	0.1	150	0.1	Reg. V.	5.0-9.0	3,000	5	30	0.005	1	10	1	0.02
Msd. V.	54	N.D.	61	N.D.	43	N.D.	Msd. V.	6.7-8.3	41	<0.5	19	<0.005	0.02	0.36	0.1	0.002

Vantec Co., Ltd. Chiba plant	2082 Uruido, Ichihara-shi, Chiba-ken	Staff no. 166
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Products: PVC pipe & fittings, containers for clean rooms, pultrusion-molded FRP products

ISO14001: Oct. 2000			Zero emission: Feb. 2003			Waste: 570 tons			CO ₂ : 5,168 tons							
Drained water	Drainage from plant							PRTR	Chemicals		Handled	To atmosphere	To water	Sworage	As waste	
	pH	BOD	COD	SS	Hex	Nitrogen	Phosphorus		Organic tin compounds	2,350	0	0	0	62		
	Reg. V.	5.8-8.6	10	10	20	2	120		16	Styrene monomer	49,914	481	0	0	4,165	
	Msd. V.	8.3-8.4	1.6	1.3	2	N.D.	0.4		0.11	Lead compounds	71,022	0	0	3.1	601	

Sekisui Chemical Hokkaido Co., Ltd.	234 Higashicho, Iwamizawa-shi, Hokkaido	Staff no. 131
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Products: PVC pipe & fittings, plastic window frames

ISO14001: Feb. 2000	Emitted gasses	Fan heater			Drained water		Drainage from plant (No legal requirement: autonomous control)					
Zero emission: Feb. 2002		SOx	NOx	Soot and dust			pH	BOD	COD	SS	Hex	Lead
Waste: 165 tons	Reg. V.	1.6	180	0.3	Aut. con. V.	5.5-8.1	144	144	180	4.5	0.09	
CO2: 3,179 tons	Msd. V.	0.11	25	0.01	Msd. V.	7.1	7.5	1.2	4.3	N.D.	0.017	
PRTR	Chemicals		Handled	To atmosphere	To water	Swerage	As waste					
	Organic tin compounds		2,370	0	0	0	6.0					
	Styrene monomer		1,840	307	0	0	0.40					
	Lead compounds		60,810	0	0.060	0	147					

Toto Sekisui Co., Ltd. Ota Plant	231 Oaza Kanai, Nitta-cho, Nitta-gun, Gunma-ken	Staff no. 217
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Products: PVC pipe & fittings, PE pipe, balcony flooring, interior parts for housing

ISO14001: Apr. 2000	Drained water	Drainage from septic tank		PRTR	Chemicals		Handled	To atmosphere	To water	Sworage	As waste						
Zero emission: Jan. 2003		pH	BOD		Bisphenol A type epoxy Resin (liquid)		4,100	0	0	0	0						
Waste: 861 tons		Reg. V.	5.8-8.6		90	Dichloromethane		5,326	5,326	0	0	0					
CO ₂ : 5,159 tons		Msd. V.	6.5-7.7		28	Lead compounds		109,100	0	0	0	1,091					
Drained water	Release of drainage to sewerage (No restriction, autonomous control item)																
	pH	BOD	COD	SS	Hex	Phenol	Cu	Zinc	Iron	Mn	Cr	F	Cr(VI)	Lead	Cd	Coliform	Formaldehyde
	Aut. con. V.	5.8-8.6	25	25	50	5	1	3	5	10	10	2	15	0.05	0.01	0.01	3,000
Msd. V.	6.7-7.7	13	13	11	5	0.1	0.31	2.4	0.38	0.57	0.05	0.5	0.04	0.02	0.005	95,000(*)	1

(*) Septic tank usage exceeded capacity. Countermeasure taken by adjustment of usage to attain 2,500 pcs./ml.

Okayama Sekisui Industry Co., Ltd.	210 Kozujuku, Okayama-shi, Okayama-ken	Staff no. 189
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Products: Roofing tiles, bathroom parts, fireproof interior housing materials

ISO14001: Apr. 1999		Emitted gasses		Boiler			Drying chamber		Paint setting chamber 1		Preheating chamber 1		Drying chamber		Preheating chamber 3		Paint setting chamber 3	
Zero emission: Mar. 2002				SOx	NOx	Soot and dust	NOx	Soot and dust	NOx	Soot and dust	NOx	Soot and dust	NOx	Soot and dust	NOx	Soot and dust	NOx	Soot and dust
Waste: 3,107 tons		Reg. V.		2.2	180	0.3	230	0.2	230	0.2	230	0.2	230	0.2	230	0.2	230	0.2
CO ₂ : 8,149 tons		Msd. V.		0.053	58	0.011	56	0.001	45	0.002	20	0.001	21	0.001	42	0.008	42	0.001
Drained water	Drainage from plant	pH	BOD	COD	SS	Hex	Nitrogen	Phosphorus	PRTR	Chemicals		Handled	To atmosphere	To water	Swager	As waste		
	Reg. V.	5.8-8.6	60	60	90	5	120	16		Xylene		15,347	15,347	0	0	0		
	Msd. V.	6.4-8.6	<2.5	16	<10	<0.5	47	4.7		Styrene monomer		210,200	8,408	0	0	0		
	Drainage from septic tank			pH	BOD	Res.Cl	Transparency	Dis.O ₂		Terephthalic acid		83,829	0	0	0	0		
	Septic tank 1	Reg. V.	5.8-8.6	30	Detect	≥ 15	≥ 1.0	Toluene		17,657	17,657	0	0	0				
		Msd. V.	6.3	0.5	0.3	31	5.9	Nonylphenol		1,890	0	0	0	1,024				
	Septic tank 2	Reg. V.	5.8-8.6	20	Detect	≥ 20	≥ 1.0	Di-n-butyl phthalate		1,532	0	0	0	0				
		Msd. V.	6.3	2	2	31	2.7											

Shikoku Sekisui Industry Co., Ltd.	880 Himiotsu, Saijo-shi, Ehime-ken	Staff no. 172
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Products: PVC pipe, flooring material, balcony flooring, synthetic wood, PE foam

ISO14001: June 1999	Emitted gasses	Boiler			Drained water	Drainage from plant						
Zero emission: Mar. 2002		SOx (K Value)	NOx	Soot and dust		pH	BOD	COD	SS	Hex	Nitrogen	Phosphorus
Waste: 498 tons	Reg. V.	3.5	180	0.3	Reg. V.	5.8-8.6	160	160	200	5	120	16
CO ₂ : 5,848 tons	Msd. V.	0.61	110	<0.01	Msd. V.	7.0-7.4	9.7	12	5.7	<0.4	6.7	0.2
PRTR	Chemicals			Handled	To atmosphere	To water	Swerage	As waste				
	Bis (2-ethylhexyl) adipate			6,650	0	0	0	6.7				
	Bisphenol A type epoxy resin (liquid)			7,700	0	0	0	0				
	Xylene			16,910	16,910	0	0	0				
	Toluene			2,200	2,200	0	0	0				
	Lead compounds			8,473	0	0	0	21				
	Bis (2-ethylhexyl) phthalate			36,000	0	0	0	36				
	HCFC-142b			1,950	1,950	0	0	0				
	HCFC-22			1,050	1,050	0	0	0				
	Styrene monomer			23,760	24	0	0	0				
	Methacrylic acid monomer			34,260	0	0	0	0				
	Methyl methacrylate monomer			88,100	0	0	0	0				

Kyushu Sekisui Industry Co., Ltd.	225-1 Oaza Yanagishima, Chiyoda-cho, Kanzaki-gun, Saga-ken	Staff no. 148
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Products: PVC pipe & fittings, septic tanks

ISO14001: Mar. 2000		Zero emission: Mar. 2000		Waste: 275 tons		CO ₂ : 5,434 tons											
Drained water	Drainage from plant								PRTR	Chemicals		Handled	To atmosphere	To water	Swerage	As waste	
	pH	BOD	SS	Hex	Nitrogen	Phosphorus	Lead	Coliform		Organic tin compounds		2,400	0	0	0	38	
	Reg. V.	5.8-8.6	120	150	5	60	8	0.1		3,000	Styrene monomer		118,800	463	0	0	0
	Msd. V.	8.5	2.3	4.5	<0.5	1.83	1.25	<0.01		64	Lead compounds		58,200	0	1.6	0	156
			Chemicals		Handled		To atmosphere	To water		Sworage	As waste						
		Organic tin compounds		2,400		0	0	0	38								
		Styrene monomer		118,800		463	0	0	0								
		Lead compounds		58,200		0	1.6	0	156								

Ryuseki Jubi Industry Co., Ltd.	4-1-1 Sanjoohji, Nara-shi, Nara-ken	Staff no. 110
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Products: Bathtubs and interior walls for bath units

ISO14001: Dec. 1998		Emitted gasses	Boiler 1	Boiler 2	PRTR	Chemicals		Handled	To atmosphere	To water	Sworage	As waste
Zero emission: Mar. 2002			SOx	SOx		Styrene monomer		423,670	6,518	0	0	0
Waste: 721 tons		Reg. V.	17.5	17.5								
CO ₂ : 2,610 tons		Msd. V.	0.04	0.03								

Amagasaki Plant	5-8-6 Shioe, Amagasaki-shi, Hyogo-ken	Staff no. 290
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Products: Adhesive tapes, medical tapes, marking film

ISO14001: Oct. 1997		Emitted gasses	NOx (t/yr)	Boiler		Drying chamber		Drained water	Drainage to sewerage (No legal requirement)			
Zero emission: Mar. 2001				NOx	Soot and dust	NOx	Soot and dust		pH	BOD	SS	Hex
Waste: 1,562 tons		Reg. V.	15.95	48	0.1	50	0.1	Aut. con. V.	5.7-8.7	300	300	5
CO ₂ : 7,037 tons		Msd. V.	6.8	37	<0.002	49	<0.002	Msd. V.	8.3	39	27	<2
PRTR	Chemicals		Handled	To atmosphere	To water	Sworage	As waste					
	Xylene		46,118	0	0	0	4,300					
	Toluene		505,893	2,400	0	0	17,900					
	Nitroglycerin		1,106	0	0	0	386					

Musashi Plant	3535 Oaza Kurohama, Hasuda-shi, Saitama-ken	Staff no. 573
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Products: Adhesive tapes for industrial and packaging use, PE foam

ISO14001: July 1997		Emitted gasses	Gas CGS		Drained water	Drainage from plant						Drainage to sewerage					
Zero emission: Mar. 2000			NOx	Soot and dust		pH	BOD	SS	Hex	Nitrogen	Phosphorus	pH	BOD	SS	Hex	Nitrogen	Phosphorus
Waste: 5,133 tons		Reg. V.	70	0.05	Reg. V.	6.5-8.5	5	5	N.D.	18	1.5	5.0-9.0	600	600	30	120	16
CO ₂ : 39,469 tons		Msd. V.	64	— (*)	Msd. V.	7.9	3	4.6	N.D.	4	0.98	8.1	293	42	<2.5	11	2.1
PRTR	Chemicals		Handled		To atmosphere	To water	Sworage	As waste									
	Acrylic acid monomer		53,000		0	0	0	5,300									
	Antimony compound		28,000		0	0	0	3,400									
	HCFC-142b		52,000		52,000	0	0	0									
	HCFC-22		28,000		28,000	0	0	0									
	Decabromodiphenyl ether		69,000		0	0	0	8,300									
	Toluene		250,000		242,500	0	0	7,500									
	Bis (2-ethylhexyl) phthalate		9,200		1,400	0	0	280									

(*) Legal requirement for city gas fueled boiler soot and dust measurements to be made once in five years, therefore not applicable here.

Shiga-Minakuchi Plant	1259 Izumi, Minakuchicho, Koka-shi, Shiga-ken	Staff no. 540
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Products: Interlayer film for laminated glass, adhesives, functional resin, fine chemical products, sealing material, plasticizer for interlayer film

ISO14001: Maar. 1998			Emitted gasses	Boiler 4		Boiler 5		Gas CGS			Waste incinerator				Sludge incinerator 1	Sludge incinerator 2		
Zero emission: Mar. 2000				NOx	Soot and dust	NOx	Soot and dust	SO _x (K Value)	NOx	Soot and dust	SO _x (K Value)	NOx	Soot and dust	HCl	DXN	DXN	DXN	
Waste: 6,216 tons			Reg. V.	130	0.1	130	0.1	17.5	950	0.1	5.87	250	0.25	700	10	10	5	
CO ₂ : 61,408 tons			Msd. V.	55	— (*)	44	— (*)	0.39	891	0.055	0.73	99	<0.02	58	0.44	0.012	0.019	
Drained water	Drainage from plant										Drainage to sewerage							
	pH	BOD	COD	SS	Hex(M)	Hex(A)	Nitrogen	Phosphorus	Cr	Lead	DXN	pH	BOD	SS	Hex(M)	Hex(A)	Nitrogen	Phosphorus
Reg. V.	6.0-8.5	20	20	30	5	20	8	1	0.1	0.1	10	5.0-9.0	600	600	5	30	60	10
Msd. V.	7.2-8.1	17.5	13.1	14.4	<0.5	<0.5	1.5	0.1	<0.01	<0.01	1.1	5.8-7.8	403	188	1.3	9.3	24.1	2.8
PRTR	Chemicals					Handled		To atmosphere	To water	Sworage	As waste	(*) Legal requirement for city gas fueled boiler soot and dust measurements to be made once in five years, therefore not applicable here.						
	Acrylic acid monomer					3,500		0	0	0	0							
	Acetaldehyde					307,300		220	0	0	0							
	Bisphenol A type epoxy resin (liquid)					193,600		0	0	0	0							
	Ethylene glycol					2,300		0	0	0	0							
	Ethylene glycol monomethyl ether					8,900		6.0	8.0	0	812							
	Xylene					31,800		2.0	0	0	1.0							
	Dichloromethane					592,000		7,576	0	0	932							
	N,N-dimethylformamide					5,700		0	0	0	0							
	Styrene monomer					2,128,700		1,448	161	0	0							
	Toluene					1,005,100		3,577	212	0	12,007							
	Formaldehyde					10,300		0	0	0	0							
	Methyl methacrylate monomer					185,100		0	0	0	0							
Dioxins (unit:mg-TEQ)					—		25	8.1	0	39								

(*) Legal requirement for city gas fueled boiler soot and dust measurements to be made once in five years, therefore not applicable here.

Data of Each Workplace

Minase Research Laboratories	2-1 Hyakuyama, Shimamoto-cho, Mishima-gun, Osaka-fu	Staff no. 223
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ISO14001: Mar. 2000				Zero emission: FY 2005														
Emitted gasses	Boiler			Drained water	Drainage from plant							Drainage to sewerage						
	SOx	NOx	Soot and dust		pH	BOD	COD	SS	Hex	Nitrogen	Phosphorus	pH	BOD	SS	Hex	Nitrogen	Phosphorus	
	Reg. V.	1.75	180		0.3	Reg. V.	5.8-8.6	65	65	110	20	60	4	9.0-5.0	600	600	30	240
Msd. V.	<0.01	31	0.002	Msd. V.	7.1-7.9	5	3.7	<5	1.3	2.3	<0.06	7.2-7.9	1.6	<5	0.7	7.4	<0.06	

Sekisui Technol Molding Co., Ltd. Head Office Plant	1135-5 Oaza Kubota, Ando-cho, Ikoma-gun, Nara-ken	Staff no. 132
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Products: Injection molded products: containers for industrial use, vehicle parts

ISO14001: Dec. 2000		Drainage from plant (No legal requirement)					
Zero emission: Oct. 2002	Drained water	pH	BOD	COD	SS	Hex(M)	Hex(A)
Waste: 30 tons	Aut. con. V.	5.8-8.6	70	70	100	5	
CO ₂ : 3,652 tons	Msd. V.	7.4	52.1	11.9	36.4	0.9	<0.5

Sekisui Technol Molding Co., Ltd. Nara Plant 2	4-1-1 Sanjoohji, Nara-shi, Nara-ken	Staff no. 117
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Products: Plastic household goods

ISO14001: Dec. 1998		Drainage from plant (No legal requirement)				
Zero emission: Mar. 2002	Drained water	pH	BOD	COD	SS	Hex
Waste: 97 tons	Aut. con. V.	6.1-8.3	20	130	80	4
CO ₂ : 3,190 tons	Msd. V.	6.9	2	4.5	1.7	<1

Sekisui Technol Molding Co., Ltd. Mie Plant	2701-2 Ano Furubayashi, Ano-cho, Age-gun, Mie-ken	Staff no. 102
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Products: Plastic vehicle parts

ISO14001: FY 2005	Zero emission: under study	Waste: 169 tons	CO ₂ : 1,439 tons
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Sekisui Technol Molding Co., Ltd. Oigawa Plant	864-1 Hanfuchi, Oigawa-cho, Shida-gun, Shizuoka-ken	Staff no. 58
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Products: Injection molded parts for vehicles

ISO14001: Sept. 1999		Drainage from septic tank (No legal requirement)		
Zero emission: Sept. 2002	Drained water	pH	BOD	SS
Waste: 97 tons	Aut. con. V.	6.0-8.5	8.0	100
CO ₂ : 1,714 tons	Msd. V.	7.3	2.2	<1

Sekisui Film Co., Ltd. Sendai Plant	1-1 Aza Tanako, Okumakoya, Watari-cho, Watari-gun, Miyagi-ken	Staff no. 137
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Products: Polyethylene films for agricultural use, heavy-duty packaging and food packaging

ISO14001: Mar. 2001	Emitted gasses	Boiler	Drained water	Drainage from plant			Drainage to sewerage					
Zero emission: Sept. 2002	SOx (K Value)	NOx		pH	BOD	SS	pH	BOD	COD	SS	Hex	Nitrogen
Waste: 467 tons	Reg. V.	17.5	Reg. V.	5.8-8.6	20	25	5.7-8.7	300	150	300	5	30
CO ₂ : 5,397 tons	Msd. V.	2	Msd. V.	6.9	1.7	1.5	7.5	6.6	8	5.9	0.5	0.32
PRTR	Chemicals	Handled	To atmosphere	To water	Sewerage	As waste						
	Toluene	2,391	2,391	0	0	0						

Sekisui Film Co., Ltd. Nagoya Plant	2-2 Aza Ichiubara, Ogawa, Higashiura-cho, Chita-gun, Aichi-ken	Staff no. 263
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Products: Laminated products, sanitary film, interior material for vehicles

ISO14001: Dec. 1999	Emitted gasses	Boiler			Drained water	Drainage from plant				
Zero emission: Mar. 2002		SOx (K Value)	NOx	Soot and dust		pH	BOD	COD	SS	Coliform
Waste: 1,542 tons	Reg. V.	1.75	180	0.3	Reg. V.	5.8-8.6	25	25	30	3,000
CO2: 7,016 tons	Msd. V.	0.35	54	0.007	Msd. V.	7.4-7.8	9.7	6.4	7	240
PRTR	Chemicals	Handled	To atmosphere	To water	Sewerage	As waste				
	Toluene	37,500	37,500	0	0	0				

Sekisui Film Co., Ltd. Shinshu-Takato Plant	2435-50 Oaza Kamiyamada, Takato-machi, Kamiina-gun, Nagano-ken	Staff no. 30
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Products: Laminated non-woven fabric with fibers in two or three directions, laminated products

ISO14001: Dec. 2000	Emitted gasses	Boiler			Drained water	Drainage from plant			
Zero emission: Mar. 2003		SOx	NOx	Soot and dust		pH	BOD	SS	Hex
Waste: 77 tons	Reg. V.	2.8	250	0.3	Reg. V.	5.8-8.6	160	200	5
CO2: 842 tons	Msd. V.	0.25	100	0.02	Msd. V.	7.0-7.7	<1	1.2	<1

Sekisui Film Co., Ltd. Taga Plant	510-5 Aza Suwa, Oaza Shide, Taga-cho, Inukami-gun, Shiga-ken	Staff no. 96
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Products: Polyethylene films for packaging and sanitary use

ISO14001: Dec. 1999	Drained water	Drainage to sewerage						
Zero emission: Mar. 2000	pH	BOD	COD	SS	Hex	Nitrogen	Phosphorus	
Waste: 899 tons	Reg. V.	5.0-9.0	600	600	600	30	60	10
CO ₂ : 4,550 tons	Msd. V.	8.4	13	8.8	6.8	5	9.7	0.55

Sekisui Film Kyushu Co., Ltd	485 Kamichishikicho, Izumi-shi, Kagoshima-ken	Staff no. 122
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Products: Polyethylene films for packaging and agricultural use

ISO14001: Oct. 1999 Zero emission: Mar. 2003	Drained water	Drainage from plant							PRTR	Chemicals	Handled	To atmosphere	To water	Sewerage	As waste
		pH	BOD	COD	SS	Hex	Nitrogen	Phosphorus		Toluene	17,470	17,470	0	0	0
Waste: 61 tons	Reg. V.	5.8-8.6	160	160	200	30	120	14							
CO ₂ : 3,219 tons	Msd. V.	7.5	0.8	1	1.5	<0.5	3.9	0.24							

NBO Development Center	32 Wadai, Tsukuba-shi, Ibaraki-ken	Staff no. 259
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ISO14001: Mar. 2000		Zero emission: FY 2005													
Emitted gasses	Boiler 4	Drained water	Rainwater drainage					Drainage to sewerage							
	NOx		pH	BOD	COD	SS	Hex(M)	pH	BOD	SS	Hex(M)	Hex(A)	Cd	CN	Arsenic
Reg. V.	180	0.3	Reg. V.	5.8-8.6	10	15	3	5.0-9.0	600	600	30	5	0.01	N.D.	0.01
Msd. V.	59	<0.005	Msd. V.	6.3-7.5	1.3	5.9	2.8	<1.0	7.0-8.7	170	280	15	<1.0	<0.002	<0.0005

Tokuyama Sekisui Industry Co., Ltd.	4560 Kaiseicho, Shinnanyo-shi, Yamaguchi-ken	Staff no. 339
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Products: PVC resin, functional polymers, vacuum blood tubes, medical treatment and examination equipment

ISO14001: Mar. 2000	Emitted gasses	Chlorination facility	Waste incinerator	Drained water	Drainage from plant					Drainage from septic tank			
Zero emission: Mar. 2002		Cl	DXN		pH	COD	SS	Nitrogen (kg/day)	Phosphorus	pH	Dis. O ₂	Transparency	Res. Cl
Waste: 619 tons	Reg. V.	30	10	Reg. V.	5.8-8.6	7	10	25.2	0.4	5.8-8.6	1.0<	20<	Detect
CO ₂ : 33,275 tons	Msd. V.	N.D.	1.6	Msd. V.	7.8	4.7	4.6	6.2	0.3	7.4	5.4	30<	0.2

PRTR	Chemicals	Handled	To atmosphere	To water	Sewerage	As waste
	Acrylonitrile monomer	18,728	65	0	0	0
	Vinyl chloride monomer	111,850,000	5,110	490	0	0
	Styrene monomer	2,440	1.4	0	0	1,240
	Methyl methacrylate monomer	2,010	9.9	0	0	0
	Methacrylonitrile	10,174	40	0	0	0
	Dioxins (unit:mg-TEQ)	—	0.68	0	0	1.2

Hinomaru Corp. Tosu Plant	9-4 Aza Wakazakura, Fujikinomachi, Tosu-shi, Saga-ken	Staff no. 151
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Products: Plastic food containers

ISO14001: Jan. 2003	Zero emission: FY 2005	Waste: 177 tons	CO ₂ : 1,515 tons
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■Summation results according to PRTR Law. Handled volume minimum 1 ton at each targeted workplace (34 plants and 4 R&D institutes)

*Specification No. **On the premises (Tons)

No.*	Chemicals	Handled Volume	Release				Transfer		
			To atmosphere	To water	To soil**	Landfill**	Sewerage	As waste	
								Disposal	Recycling
3	Acrylic acid monomer	56.5	0	0	0	0	0	0	5.3
7	Acrylonitrile monomer	18.7	0.065	0	0	0	0	0	0
9	Bis (2-ethylhexyl) adipate	6.7	0	0	0	0	0	0	0.0067
11	Acetaldehyde	307.3	0.22	0	0	0	0	0	0
25	Antimony compounds	28.0	0	0	0	0	0	0	3.4
30	Bisphenol A type epoxy resin (liquid)	285.9	0	0	0	0	0	0	0
43	Ethylene glycol	2.3	0	0	0	0	0	0	0
45	Ethylene glycol monomethyl ether	8.9	0.0060	0.0080	0	0	0	0	0.81
63	Xylene	116.2	36	0	0	0	0	0	4.3
77	Vinyl chloride monomer	111,850.0	5.1	0.49	0	0	0	0	0
84	HCFC-142b	54.0	54	0	0	0	0	0	0
85	HCFC-22	29.1	29	0	0	0	0	0	0
100	Cobalt compounds	1.6	0	0	0	0	0	0	0
132	HCFC-141b	5.2	0.78	0	0	0	0	0	0.13
145	Dichloromethane	597.3	13	0	0	0	0	0	0.93
172	N,N-dimethylformamide	5.7	0	0	0	0	0	0	0
176	Organic tin compounds	62.1	0	0.0005	0	0	0	0	0.42
177	Styrene monomer	4,520.3	60	0.16	0	0	0	0	5.4
197	Decabromodiphenyl ether	69.0	0	0	0	0	0	0	8.3
205	Terephthalic acid	83.8	0	0	0	0	0	0	0
227	Toluene	1,845.5	330	0.21	0	0	0	0	37.4
230	Lead compounds	691.2	0.0004	0.0048	0	0	0.0032	0	3.3
236	Nitroglycerin	1.1	0	0	0	0	0	0	0.39
242	Nonylphenol	1.9	0	0	0	0	0	0	1.0
270	Di-n-butyl phthalate	1.5	0	0	0	0	0	0	0
272	Bis (2-ethylhexyl) phthalate	47.7	1.4	0	0	0	0	0	1.6
310	Formaldehyde	10.3	0	0	0	0	0	0	0
314	Methacrylic acid monomer	34.3	0	0	0	0	0	0	0
320	Methyl methacrylate monomer	275.2	0.010	0	0	0	0	0	0
321	Methacrylonitrile	10.2	0.040	0	0	0	0	0	0
	Total	121,027.3	528.9	0.9	0	0	0.0032	0	72.7
179	Dioxins (unit: mg-TEQ)	—	25.7	8.1	0	0	0	0	40.2

Object of Environmental Report 2004

1. Object period: Summation period in each year is from April 1 to March 31 of the following year. (Labor accidents, equipment incidents, commutation accidents and long term absenteeism due to sickness given in P24 are summed in a calendar year.) The details of our activities are stated in principle for fiscal 2003, but some information pertaining to years other than fiscal 2003 which should be conveyed to readers, regarding such items as development of products and technologies, is also included.

2. Object of data summation: As shown on this page

3. Scope of themes: We take up mainly our environmental activities, and in addition our activities for occupational health and safety, and our social contribution activities as a part of our responsibilities to society as a whole. We referred to the following publications for compilation of this Report:

- "Environmental Reporting Guidelines" (fiscal year 2003 version) published by the Japanese Ministry of the Environment
- "Sustainability Reporting Guidelines 2002" published by GRI (Global Reporting Initiative)

Object Workplaces for Data Summation

◎: Sekisui Chemical Co.'s plants/R&D institutes ○: Consolidated subsidiaries ●: Subsidiaries to which the equity method was applied in consolidation
Dates in [] refer to ISO 14001 acquisition (Note 1).
Plants include their research and development departments and others.

Housing Company

Each department and branch of the company (Note 2): Each office, department, division, Kanto Sales Headquarters and Tokyo Sales Headquarters
R&D institute: ◎Tsukuba R&D Site [Nov. 2002]

Plants (all 10)

- | | | |
|--|--|--|
| ○Kitanihon Sekisui Industry Co., Ltd. [Sept. 1998] | ○Chubu Sekisui Industry Co., Ltd. [June 1998] | ○Sekisui Board Co., Ltd. Minakuchi Plant [Mar. 1998] |
| ○Higashinihon Sekisui Industry Co., Ltd. [July 1998] | ○Kansai Sekisui Industry Co., Ltd. [Nov. 1997] | Gunma Plant [Mar. 1998] |
| ○Kanto Sekisui Industry Co., Ltd. [Oct. 1998] | ○Chugoku Sekisui Industry Co., Ltd. [Aug. 1998] | |
| ○Tokyo Sekisui Industry Co., Ltd. [Nov. 1997] | ○Nishinihon Sekisui Industry Co., Ltd. [June 1998] | |

House sales office and subsidiaries (all 40 bases)

- | | | |
|---|---|--|
| ◎Crastina Sales Office | ○Gunma Sekisui Heim Co., Ltd. [Apr. 2001] | ○Sekisui Heim Chugoku Co., Ltd. Yamaguchi Branch [Jan. 2002] |
| ○Hokkaido Sekisui Heim Co., Ltd. [July 2001] | ○Sekisui Heim Shinetsu Co., Ltd. [Apr. 2002] | Hiroshima Branch [Oct. 2001] |
| ○Tohoku Sekisui Heim Co., Ltd. [Mar. 2002] | ○Nagoya Sekisui Heim Co., Ltd. [Mar. 2001] | Okayama Branch [Mar. 2001] |
| ○Fukushima Sekisui Heim Co., Ltd. [Oct. 2001] | ●Sekisui Heim Tokai Co., Ltd. | Sanin Branch [Oct. 2001] |
| ○Kitanihon Sekisui Heim Co., Ltd. [Mar. 2002] | ○Gifu Sekisui Heim Co., Ltd. [Oct. 2001] | ○Shikoku Sekisui Heim Co., Ltd. [Mar. 2001] |
| ○Sekisui Heim Nishitohoku Co., Ltd. [Apr. 2002] | ○Mie Sekisui Heim Co., Ltd. [Mar. 2001] | Tokushima Sekisui Heim Co., Ltd. [Mar. 2002] |
| ○Sekisui Heim Tokyo Co., Ltd. [Mar. 1999] | ○Hokuriku Sekisui Heim Co., Ltd. [Mar. 2002] | ●Kagawa Sekisui Heim Co., Ltd. [Apr. 2002] |
| ○Sekisui Heim Kanagawa Co., Ltd. [Mar. 1999] | ○Sekisui Heim Keiji Co., Ltd. [Mar. 2001] | ●Kochi Sekisui Heim Co., Ltd. [Jan. 2002] |
| ○Sekisui Heim Chiba Co., Ltd. [Mar. 1999] | ○Sekisui Heim Osaka Co., Ltd. [Feb. 2001] | ○Oita Sekisui Heim Co., Ltd. [Nov. 2001] |
| ○Sekisui Heim Saitama Co., Ltd. [Mar. 1999] | ○Sekisui Heim Hanna Co., Ltd. [Mar. 2001] | ○Nagasaki Sekisui Heim Co., Ltd. [Mar. 2001] |
| ○Sekisui Heim Yamanashi Co., Ltd. [Dec. 2003] | ●Sekisui Heim Sanyo Co., Ltd. [Oct. 2001] | ○Kyuseki Sekisui Heim Co., Ltd. [Mar. 2001] |
| ●Ibaraki Sekisui Heim Co., Ltd. [Oct. 2001] | ○Wakayama Sekisui Heim Co., Ltd. [Oct. 2001] | ○Kumamoto Sekisui Heim Co., Ltd. [May 2001] |
| ●Tochigi Sekisui Heim Co., Ltd. [Apr. 2002] | ○Kitakinki Sekisui Heim Co., Ltd. [Oct. 2001] | ○Fukuoka Sekisui Heim Co., Ltd. [Dec. 2001] |
| | | ○Kagoshima Sekisui Heim Co., Ltd. [Aug. 2001] |

Urban Infrastructure & Environmental Products Company

Each department and branch of the company (Note 2): Each department, division, Tokyo Sales Headquarters and Kinki Sales Headquarters
R&D institute: ◎Kyoto R&D Laboratories [Jan. 2000]

Plants (10)

- | | | |
|---|--|---|
| ○Shiga-Ritto Plant [Oct. 1998] | ○Sekisui Chemical Hokkaido Co., Ltd. [Feb. 2000] | ○Kyushu Sekisui Industry Co., Ltd. [Mar. 2000] |
| ○Gunma Plant [Mar. 1999] | ○Toto Sekisui Co., Ltd. Ota Plant [Apr. 2000] | (Including ○Sekisui Aqua System Co., Ltd. Kyushu Plant) |
| ○Tokyo Plant [Oct. 1998] | ○Okayama Sekisui Industry Co., Ltd. [Apr. 1999] | ○Ryuseki Jubi Industry Co., Ltd. [Dec. 1998] |
| ○Vantec Co., Ltd. Chiba plant [Oct. 2000] | ○Shikoku Sekisui Industry Co., Ltd. [June 1999] | |

Data up to the end of FY 2000 includes that of Nitta Plant where production is currently suspended.

High Performance Plastics Company

Each department and branch of the company (Note 2): Each department, division, project bases, Eastern Japan Sales Headquarters and Western Japan Sales Headquarters
R&D institute: ◎Minase Research Laboratories [Mar. 2000]

Plants (12)

- | | | |
|---|--|--|
| ○Amagasaki Plant [Oct. 1997] | ○Sekisui Technol Molding Co., Ltd. Head Office Plant [Dec. 2000] | ○Sekisui Film Co., Ltd. Sendai Plant [Mar. 2001] |
| (Including ○Sekisui Amagasaki Kako Co., Ltd.) | Nara Plant 2 [Dec. 1998] | Nagoya Plant [Dec. 1999] |
| ○Musashi Plant [July 1997] | Mie Plant | Shinshu-Takato Plant [Dec. 2000] |
| (Including ○Sekisui Musashi Kako Co., Ltd.) | Oigawa Plant [Sept. 1999] | Taga Plant [Dec. 1999] |
| ○Shiga-Minakuchi Plant [Mar. 1998] | | ○Sekisui Film Kyushu Co., Ltd. [Oct. 1999] |
| (Including ○Sekisui Minakuchi Kako Co., Ltd.) | | |

Data on relevant products of Shikoku Sekisui Industry Co., Ltd. and Tokuyama Sekisui Industry Co., Ltd. is included.

Data up to the end of FY 2000 includes that of Sakai Plant and Sekisui Technol Molding East Japan Co., Ltd. Fujieda Plant which have both been closed.

Companies under HQ's control

Head Office (Note 2): ◎Osaka Head Office, ◎Tokyo Head Office **R&D institute:** ◎NBO Development Center [Mar. 2000]

Plants (2): ○Tokuyama Sekisui Industry Co., Ltd. [Mar. 2000], ○Hinomaru Corp. Tosu Plant [Jan. 2003]

(Note 1) Other plants that acquired ISO 14001 certification: ○Sekisui Aqua System Co., Ltd. Shizuoka Plant [July 2000], ○Sekisui-Alveo B.V. [July 1996],
○Sekisui (U.K.) Ltd. Merthyr Plant [Jan. 1997], ○Eslon B.V. [June 1998], ○Kleerdex Company Bloomsburg Plant [Oct. 2001]
(Note 2) Object activities at the head office buildings in Osaka and Tokyo

History of Our Business and Environmental Activities

Fiscal Year	History of Main Business Activities	History of Environmental Activities
1947	Establishment of Sekisui Sangyo Co., Ltd. (Start of injection molding: first in Japan)	
1948	Change of the company name to Sekisui Chemical Co., Ltd. Establishment of Nara Plant (First plastic automatic injection molding business in Japan)	
1950	Start of cellophane tape production and sales, and of mass production of DBP plasticizer	
1952	New development of Kyoto Plant, started full scale production of PVC pipe ("Eslon Pipe")	
1953	Listing on Osaka Stock Exchange. Establishment of Amagasaki and Tokyo Plants	
1956	Development of plastic rain gutters ("Eslon Rain Gutters"), first in Japan	
1957	Increase of factories at Nara Plant (The largest plastic molding plant in Asia)	
1960	Establishment of Shiga-Ritto and Shiga-Minakuchi Plants	
1962	Establishment of Musashi Plant	Start of the "Movement for Cleaner Towns" by utilizing our plastic garbage bins ("Poly-Pail"), as a campaign commemorating the company's 15th anniversary
1963	Start of production of plastic bathtubs (first in Japan)	
1970	Completion of Sakai Plant for production of plasticizers and adhesives Exhibition of modular house ("Sekisui Heim") at the International Good Living Show in Tokyo	
1971	Start of production of "Heim M1" at Musashi and Nara Plants	
1972		Start of company-wide commitment to pollution control Start of original Environmental Management Dept.
1979	Awarded the Deming Prize for quality management	
1980		Start of company-wide commitment to energy saving
1981	Adoption of the two Headquarters system in Osaka and Tokyo, and establishment of Tokyo Head Office at Toranomon, Tokyo Start of production and sales of wooden structured modular house, "Two-U Home"	
1982	Establishment of Gunma Plant	
1987	Establishment of Applied Electronics Research Laboratory (Current NBO Development Center)	
1989	Establishment of Nitta Plant	
1990	Establishment of General Housing Research Institute (Current Tsukuba R&D Site)	Implementation of Environmental Audit System Start of Environmental Management Committee, and Environmental Management Section in the Safety & Environment Dept.
1991		Establishment of the Basic Policies on environmental issues
1992	Establishment of Kyoto Technology Center (Current Kyoto R&D Laboratories)	
1993	Start of Headquarters System (Pipe & Related Products, Building Materials, Chemicals, Techno-Products, Molded Products, Medical Products, and Housing Headquarters)	Introduction of Product Assessment System for Environmental Impacts Implementation of voluntary environmental plan
1994	Start of ISO 9000 series certification acquisition activities	
1996	Excess of paid-in capital of ¥100 billion Adoption of the new corporate logo	Announcement of Top Management Policy for Environment and Safety Start of ISO 14001 certification acquisition activities
1997	Creation of Women's Athletic Club	Start of supporting nature protection activities inside and outside Japan as one of our social contribution activities in cooperation with Keidanren Nature Conservation Fund, in commemoration of the company's 50th anniversary
1998	Institution of "Corporate Activity Guidelines"	Start of zero emission activities Publication of the Leaflet on Environmental Affairs
1999	Start of our Management Vision, "GS21" Concentration in three business domains of Housing, Urban Infrastructure and Environmental Products and High Performance Plastics	Start of Middle Term Environmental Plan, "STEP-21" Revision of Corporate Policy on the Environment and Safety Publication of Environmental Report 1999 (issued annually thenceforth) Achievement of zero emission at 6 plants
2001	Start of internal company system, i.e. Housing Company, Urban Infrastructure and Environmental Products Company and High Performance Plastics Company	Start of zero emission activities at the house construction sites Achievement of zero emission in all house production plants and all plants of Sekisui Chemical Co., Ltd. Commencement of green procurement
2002	Establishment of M&S Pipe Systems Co., Ltd., a production control company, a joint venture with Mitsubishi Plastics, Inc. in the PVC pipe business Closure of Sakai Plant, and Fujieda Plant of Sekisui Technol Molding East Japan Co., Ltd.	Revision of Corporate Policy on the Environment and Safety, and Activity Guidelines Revision of Middle Term Environmental Plan Achievement of zero emission at construction sites of 22 house sales subsidiaries Completion of zero emission at all targeted 33 plants
2003	Start of "GS21-Premium 600", our Mid-term Management Vision	Start of new Middle Term Environmental Plan, "STEP-2005" Start of Environmental Management Department Completion of zero emission at all house construction sites (40 house sales bases)

Dialogue with Our Readers

We invited some readers for a meeting on our Environmental Reports 2003/2004.

Since the first issue of our Environmental Report in 1999, we have endeavored to enhance the contents of each report and to facilitate readers' understanding of the information based on invaluable opinions we have received as responses to our questionnaires. In order to ascertain more specifically the comprehensibility of our reports and the expectations of our readers, we considered it necessary to listen directly to readers' opinions. Therefore, in June 2004 when our Environmental Report 2004 was under preparation, we invited seven respondents to our questionnaire of Environmental Report 2003.

■Meeting

Date: Sunday June 20, 2004 (13:00 to 16:30)
Venue: Meeting Room G607, Tokyo International Forum

■Merits and Demerits of Environmental Report 2003

We first asked for their opinions on Environmental Report 2003. Our responses to their opinions and our efforts made to reflect their opinions in this Environmental Report 2004 are given on P30, together with our responses to the answers to the questionnaire.

●Merits

- Environmental policies and activity guidelines were clear.
- All the matters that should be written in the report were included, showing relevant data willingly and objectively.
- The President's message clearly conveyed the company's philosophy.
- The sections of each internal company, the articles with employees' names and pictures and the description of PVC recycling were given in a concrete manner and were easy to understand.

●Demerits

- It is not clear for whom this report was intended. It is informative for professionals but may not be so for the general public.
- The Middle Term Environmental Plan presentation is too wordy and complex.
- It was difficult to grasp the reasons for the decline of Eco-efficiency as related to CO₂ emission in the environmental accounting.
- Explanations about the achievement rates against the targets were insufficient.
- Your serious consideration towards consumers was not adequately conveyed in this report.
- The points of differentiation from products of other companies were not clearly described.
- Professional terms used in the internal company sections were difficult for general readers to understand.

■Opinions on Sekisui Chemical Group Section of Environmental Report 2004

We asked them to read the group section of Environmental Report 2004, which was then under preparation, and to give us their opinions. "Responses" as stated below are the actions we took or our comments on their opinions. The opinions to which "Responses" are not stated remain to be answered in future.

Mr. Iwata: I think the illustrations on pages 1 and 2 have made it easier to understand the relations between the company and the society

Mr. Kinoshita: I think pages 1 and 2 are the most important pages for readers to understand.

Mr. Sogabe and Mr. Tokuda: It is necessary to show some photographs of representative products instead of just describing product names in words.

Mr. Arai: I think it would be better to indicate the environmental features of your products.

Response: We included illustrations that would symbolize and convey to readers the vast range and applications of our products. As the groups of products are so diverse, we used illustrations because we supposed that photographs would cause confusion to our readers.



Mr. Tokuda: I think pages 9 and 10 (Table of Middle Term Environmental Plan, "STEP-2005") show clearly the results of your activities and your implementation plan for the targets.

Mr. Fujihira: With regard to JEPiX on page 13, I am afraid your explanation is not sufficient to show why the three indices of CO₂, waste and environmental pollutants were selected and what weight you would attach to these indices.

Response: We used these three indices last year, but we changed our explanation this year, as we thought our explanation last year was inadequate. Lack of space prevented a full explanation.

■Attendants of the Dialogue Meeting (in random order, without titles)

●Readers:



Kazutoshi Fujihira
Consumer and environmental researcher, The Institute for Environmentalogy



Jiro Sogabe
Person in charge of environmental affairs in Yamauchi Corp.



Masami Kinoshita
Person previously in charge of environmental affairs in an enterprise



Kazuo Watanabe
Novelist



Tatsuhiko Iwata
Student
The Sanno Institute of Management



Keisuke Arai
Consultant
Arai Engineers Office



Susumu Tokuda
Sekisui's customer
Shoei Yakuhin Co., Ltd.

●Sekisui Chemical Co., Ltd., Environmental Management Dept. staff:

Toshiyasu Kobayashi (General Manager), Toshiro Aoto, Kazuhiko Shiratori and Seiichi Zenki

●Chairperson: Akiko Goshō, ChuoAoyama PwC Sustainability Research Institute

Mr. Watanabe: I think you do not have to pursue the balance between the costs and effects on page 14 (Environmental Accounting). I would like you to express your intention that you do what you believe good for the environment, even if it may be a little costly.

Mr. Arai: The figures on page 15 (Environmental Consideration in Products) are easier to understand than the last year's, but I still feel something lacking. Instead of explaining in long sentences, you could select fewer subjects and explain in shorter sentences.

Mr. Sogabe: I understood this report better than last year's as targets for activity items are mentioned on each page.

Mr. Iwata: On page 13 (Environmental Accounting), the effect brought by the reduction of CO₂ emission is expressed in terms of kerosene consumption, which was quite understandable as it gave a concrete image. Regarding the reduction of CO₂ emission mentioned on page 19, the target was achieved ahead of schedule. However I would like an explanation on the reason for this, for example, whether the target had been set too low or whether extraordinary efforts were made for the early achievement.

Response: We have given as much information as is available including that of other items.



■Expectations for Future Environmental Reports

Finally we asked for their expectations and requests for our future Environmental Reports.

Mr. Fujihira: I would like you to issue reports that give stronger impacts to readers.

Mr. Sogabe: I would like you to describe the corporate climate and culture that you have developed, and also to show your activities for CSR (Corporate Social Responsibility).

Mr. Watanabe: I would like you to issue reports of which your employees can be proud and that their families can understand.

Mr. Kinoshita: When a new law is established, it will be necessary to state in a report how you will comply with it.

Mr. Iwata: Your steady activities are good but you could develop a more ambitious outlook by, for instance, indicating the direction of your environmental management in the long term and setting goals for 100 years hence.

Mr. Arai: I think that although an "environmentally creative organization" is the desired state for an organization, there should be a further targeted state beyond this.

Mr. Tokuda: Explanations on an environmentally creative organization and related matters are still given in difficult expressions. Explanations should be given in such a way that they can appeal directly to readers' understanding. Readers must be interested in the sections that concern them, so I would advise putting the internal company sections first before the corporate section in order to attract readers' attention.

Chairperson's comment:

In the dialogue meeting, there were requests that environmental reports should include such fundamental subjects of corporate management as corporate culture, customer satisfaction, quality assurance, and so forth, which exceed the framework of environmental issues. It would be difficult to satisfy all such requests in an environmental report. However, through opportunities of communicating with stakeholders such as this meeting, I hope that Sekisui will appreciate and act on all advice and requirements, not only those regarding environmental issues, and will exercise correct judgment according to their importance.

Akiko Goshō

ChuoAoyama PwC Sustainability Research Institute

Dialogue with Readers

This was our first dialogue meeting with readers of our environmental reports. In Environmental Report 2004, we have described relations with our customers from environmental aspects. However, we have learned from our readers' comments at the meeting, that, along with the presentation of our environmental activities, our reports should include information on product quality and safety measures for our customers as well as on the corporate culture and social responsibilities of Sekisui Chemical Group.

I would like to leave a good environment for the coming generations and I would like our reports to exactly express the

endeavors of Sekisui Chemical Group to this end, sending out messages on our commitment to global environmental conservation and the fulfillment of our social responsibilities, our environmental philosophy and stance, and our placement of the well-being of humanity at the center of our concerns.

We are planning to hold further dialogue meetings with our readers, and by enhancing communications with our stakeholders as well as with the readers of our environmental reports, we will consider how our corporate management should be and how to best disclose its information.

Toshiyasu Kobayashi, General Manager, Environmental Management Dept.

A Third Party Opinion

Sekisui Chemical Co., Ltd. underwent a review by IEMA (Institute for Environmental Management Accounting) on our environmental activities and the reliability of this Environmental Report 2004.



July 1, 2004

Sekisui Chemical Co., Ltd.

Institute for Environmental Management Accounting

Katsuhiko Kokubu

Katsuhiko Kokubu

Professor, Graduate School of Business Administration, Kobe University

Eriko Nashioka

Eriko Nashioka

Director of IEMA and CPA

1. Purpose of Review

As a third party who has and has never had any business relationship with Sekisui Chemical Co., Ltd., we herein express the opinions and comments arising from our thorough assessment of the environmental performances as described in this Environmental Report 2004, in order to enhance its reliability.

2. Procedures Implemented

We have implemented procedures as mentioned below, in order to secure the reliability of information described in this Report. In order for us to understand how the environmental performance data that were the sources of disclosed information were planned, implemented and calculated within Sekisui Chemical Co., Ltd., and how these data were assessed and utilized in the company, we interviewed with Mr. Naotake Okubo, President of the company, had meetings with the personnel in charge and inspected the workplaces. In order to check whether actual works were carried out according to the designated systems, we conducted basic examinations on base data related to the flow taken from original vouchers by applying such methods as used in financial auditing.

The workplaces we visited were: Headquarters, the internal companies, Chubu Sekisui Industry Co., Ltd. (of Housing Company), Shiga-Ritto Plant (of Urban Infrastructure and Environmental Products Company) and Shiga-Minakuchi Plant (of High Performance Plastics Company).

3. Results

The top management has precisely proclaimed the policy that environmental conservation and corporate management are integrated, and ordered the promotion of environmental corporate management aggressively. Under the top management's direction, each internal company is taking a lead in environmental corporate management by making the most of its business characteristics. We are of the opinion that it is important to promote the Group-wide deployment of environmental corporate management more systematically in future, by appropriate assessment and integration of each internal company's environmental corporate management, including its overseas operations.

As regards calculation of environmental performance data, our sampling found only minor posting errors and entry slippages, therefore we conclude that there is no possibility which may cause error in the readers' judgment with respect to the contents that Sekisui Chemical Co., Ltd. maintains in this Environmental Report 2004.



Interview with Mr. N. Okubo, President



Inspection at Chubu Sekisui Industry Co., Ltd.



Inspection at Shiga-Ritto Plant



Inspection at Shiga-Minakuchi Plant

On Management of the Entire Group

Sekisui Chemical Co., Ltd. has been producing fruits steadily in aiming at achievement of the targets in its Middle Term Environmental Plan STEP-2005. We judge the level of the target setting is reasonable, as it is a level which cannot be reached without boosting the Group-wide environmental activities.

Each internal company is promoting and carrying out its environmental activities at the highest possible level under its own responsibility, with the supervision of Headquarters. We are of the opinion that taking advantage of the uniqueness of each internal company is especially effective in Sekisui Chemical Co., Ltd. which is engaged in such diverse business areas.

On the other hand, the summation formats used by Headquarters and the internal companies for the control of environmental information in the workplaces do not take into consideration the formats for environmental information management used by the respective workplaces. Therefore problems have occurred in the workplaces, such as errors caused by lack of understanding and increase of working loads arising from duplicated summation works. For better understanding and reduction of loads on the part of the workplaces, it is necessary for Headquarters and the internal companies to take appropriate measures, such as amendments of the management formats, and to carry out regular educational and information activities.

Greater efficiency of management must be secured. In order to achieve this, we would like to advise that the clarification of Headquarters' supervision of the internal companies and the responsibility of the internal companies for the supervision of workplaces be carried out.

We expect that the Group-wide drive for environmental activities will be further strengthened by effective utilization of an "environmental conscious corporate performance evaluation system", the introduction of which is currently under study by the Group (*P12: environmental achievements evaluation system*).

On Major Environmental Performances

1. Housing Company

It is highly evaluated that the company is promoting waste reduction from the shipping stage by feeding back to the plants the data of waste materials measured at the house construction sites, where a large volume of wastes is generated. It is also commendable that the company is promoting waste reduction in the plants by having structured good cooperative relationships with the contractors concerned such as waste disposers and parts/components suppliers. We are of the opinion that the company should aim to grasp the total picture of its supply chain by tackling such subjects as a further reduction of the life cycle cost of houses, promotion of information sharing between design/development sectors and parts/components manufacturing sectors, implementation of zero emission activities at house construction sites, including disassembly/demolition sites, in collaboration with house sales subsidiaries.

2. Urban Infrastructure and Environmental Products Company

Shiga-Ritto Plant, which we visited, maintains a policy to contribute to society through the production of environment-friendly products, and we could understand that the entire plant is following this policy as closely as possible from every aspect. We have recognized that waste is the subject for improvement in this company, such as ①ac-

tivities for reduction of waste generation in view of product life cycle, ②improvement of the material recycling ratio in total, as different plants show different ratios for the same wastes, ③improvement of the material recycling ratio of used products, and ④development and production of recycled materials from used products, enlightenment of the market for their distribution and market development by environmental labels. We highly evaluate the fact that the company is not promoting its activities in isolation, but in collaboration with the relevant industrial associations. We expect that the environmental stance will penetrate the entire business operations.

3. High Performance Plastics Company

We highly estimate the introduction of gas co-generation equipment to Shiga-Minakuchi Plant as the solution to the energy problem, as, based on environmental consideration, it was a strategic decision in capital investment. We think that establishment of investment effects indices and judgment criteria for capital investments, based on this investment as a model, will provide an effective system for the Group-wide deployment of environment-friendly capital investment. Waste management should be carried out not only in terms of volume, but also with regard to the cost factor. We are of the opinion that, in chemical substances management, it is also effective to incorporate the viewpoint of reduction of risks from chemical substances, in addition to the reduction of their volume.

On Environmental Accounting

The manner in which environmental accounting information for publicity was collected was not systematized but basically relied on manual input of data sent from workplaces. These data are summated by computer at Headquarters. We would hope that a system will be structured in future so that Headquarters conducts automatic summation and control of data sent from the workplaces in parallel with completion of the data collecting system in respective workplaces. Verification of collected information is also advisable.

Environmental cost is treated by ex-post calculation, but it should be included as the object of "management".

It is expected that the introduction of environmental management accounting be urged for the purpose of internal management and its further deployment be promoted in future. For example, the introduction of material flow cost accounting into production processes, analysis of expenditure vs. effects by budgeting the environmental expenditure, and the introduction of capital investment appraised for environment-friendly equipment are subjects which can be implemented at a comparatively early stage.

On Environmental Reports

Sekisui Chemical Co., Ltd.'s environmental reports are highly evaluated in that the targets and results are compared clearly and relevant information is disclosed in detail. As for the characteristics of this Environmental Report 2004, the information concerned with Headquarters is solid and the relationship between the information of Headquarters and of the internal companies is expressed precisely. It is important to deepen the mutual understanding with the stakeholders through full discussion with them regarding, not only the information described in the environmental reports, but also the adequacy of the environmental targets and the environmental corporate management system in future.

We have received valuable opinions from IEMA concerning our activities in environmental corporate management, our environmental management under the internal company system, reliability of descriptions in our environmental reports and so forth. Further, we appreciate that IEMA has indicated many issues we should enhance, such as globalization of our environmental corporate management, upgrading our response to environmental subjects proper

to respective internal companies and deepening the mutual understanding we have with our stakeholders. We greatly appreciate these opinions and will do our utmost to act on them in our environmental corporate management.

Toshiyasu Kobayashi

Executive Director in Charge of the Environmental Management of Sekisui Chemical Group, and General Manager of Environmental Management Department



SEKISUI CHEMICAL CO., LTD.

4-4 Nishitenma 2-chome, Kita-ku, Osaka 530-8565, Japan
URL <http://www.sekisui.co.jp>

●For further information contact:

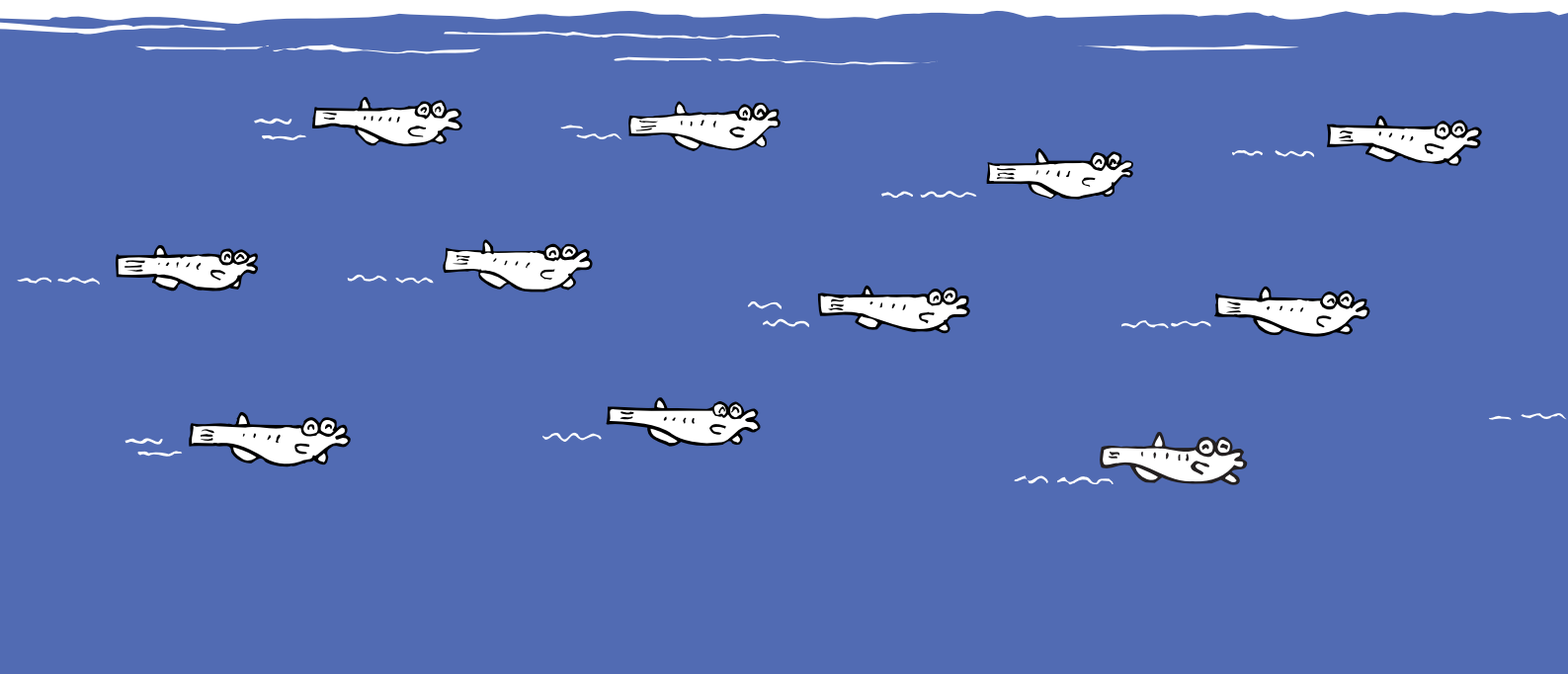
Environmental Management Department
Sekisui Chemical Co., Ltd.
2-3-17 Toranomon, Minato-ku, Tokyo 105-8450, Japan
FAX: +81-3-5521-0789
E-mail: kankyo@sekisui.jp

CS Promotion & Quality Assurance Department
Housing Company
Sekisui Chemical Co., Ltd.
2-3-17 Toranomon, Minato-ku, Tokyo 105-8450, Japan
FAX: +81-3-5521-0597

Technology & CS Promotion Department
Urban Infrastructure & Environmental Products Company
Sekisui Chemical Co., Ltd.
2-3-17 Toranomon, Minato-ku, Tokyo 105-8450, Japan
FAX: +81-3-5521-0599

Technology & CS Promotion Department
High Performance Plastics Company
Sekisui Chemical Co., Ltd.
2-3-17 Toranomon, Minato-ku, Tokyo 105-8450, Japan
FAX: +81-3-5521-0927

Customer Information & Consulting Services
Sekisui Chemical Co., Ltd.
4-4 Nishitenma 2-chome, Kita-ku, Osaka 530-8565, Japan
FAX: +81-6-6365-4383
E-mail: sekisui-cs@sekisui.jp



■Front Cover: Bring back the Medaka

The sketches on the front cover are of Medaka, fresh water killifish, which until recently could be seen in streams everywhere in Japan. They were so familiar that they feature in a Japanese children's song. Now decreasing in number, they have been designated a "Threatened Species (Category II)" (Red Data Book on threatened species by the Japanese Ministry of the Environment). Water quality degradation by agrochemicals and drainage from residential buildings, and a decrease in spawning areas due to concrete reinforcement of riverbanks, have been cited as causes. We are expressing by this illustration our strong desire and determination for restoring and creating an environment where Medaka can multiply and live vigorously. We are adding one Medaka fish each year to our 2001 version.



Environmental consideration is given to printing and bookbinding of this report as follows:

- ① 100% recycled paper of 70% white chromaticity (uncoated paper) is used.
- ② CTP (Computer to Plate) method is adopted in the plate making processes in order that no film remains as a waste material.
- ③ Soy ink is used in the printing processes because it generates little VOC (volatile organic compound) and is excellent in biodegradability and deinking property. Further, "waterless printing" is adopted that generates no hazardous waste liquid.
- ④ In the bookbinding processes glue that does not become an obstacle to recycling of paper is used.

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