

R I C O H G R O U P
E N V I R O N M E N T A L
R E P O R T **1999**

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Message from the President

The rich resources of our planet Earth have given birth to many forms of life and have supported the broad-ranging and ambitious activities of mankind. Nevertheless, recent human activities that have exceeded the healthy limits of resource usage have adversely impacted this life-sustaining ability of the Earth. Not only does this pose a threat to our coexistence with other life on Earth but it also threatens the future of the human race itself.

In order to bequeath a strong and bountiful Earth to future generations, each of us must reduce the environmental impact of our activities.

For that to happen, nations and companies, as well as individuals must be aware of the environmental impact that we cause and actively seek to reduce it. We believe that mutual consultation and cooperation are also critical to efficient environmental conservation.

For the Ricoh Group, safeguarding this precious planet Earth is one of our corporate missions, and the environmental conservation activities of the entire Group are a part of our management philosophy. It is essential to set high goals and adopt a pioneering stance rather than having a “do it if we can” attitude. Specifically, we believe that the following three ideas are crucial: (1) we must minimize the environmental impact of all of our corporate activities, from product development, through production, sales, and service; (2) we must recover products from our customers and recycle them into raw materials; and (3) we must provide proper disclosure so that our customers understand that we are pursuing appropriate environmental conservation activities. Through these activities, we will actively help build a society that recirculates resources, which is essential to environmental conservation, and contribute to the continued existence of mankind.

This report, which is publicly available, summarizes the details and results of our environmental conservation activities during fiscal 1998, the year ended March 31, 1999. We hope it will allow you to see the remarkable improvements we have made throughout the year. We also welcome your views to further enhance our efforts.

Masamitsu Sakurai
President
Ricoh Co., Ltd.

桜井正光



This report describes our activities in fiscal 1998 to reduce the environmental impact of the Ricoh Group as a whole. The report covers only fiscal 1998*; however, it does include such fiscal 1999 information as targets. The environmental impact data has been gathered from Ricoh's main bases and manufacturing subsidiaries, including some overseas entities.

Japan: Ricoh, Tohoku Ricoh, Hasama Ricoh, Ricoh Unitechno,
Ricoh Optical Industries, Ricoh Keiki, Ricoh Microelectronics,
Ricoh Elemex

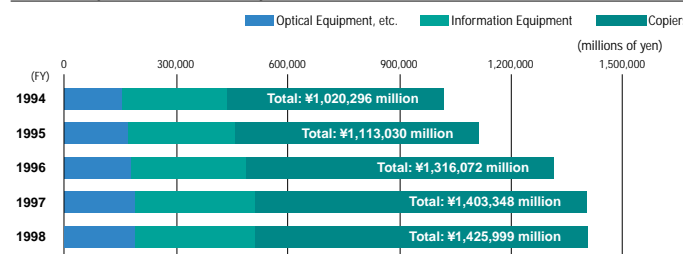
Overseas: Ricoh Electronics, Inc. (North America), Ricoh UK
Products Ltd. (UK), Ricoh Industrie France S.A. (France),
Ricoh Asia Industry (Shenzhen) Ltd. (China),
Taiwan Ricoh Co., Ltd. (Taiwan)

Others: Semiconductors, printed circuit boards, optical disks, and others

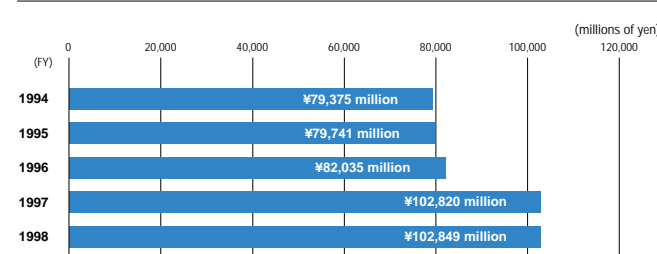
(■ Production and R&D Bases ● Sales/General Offices)



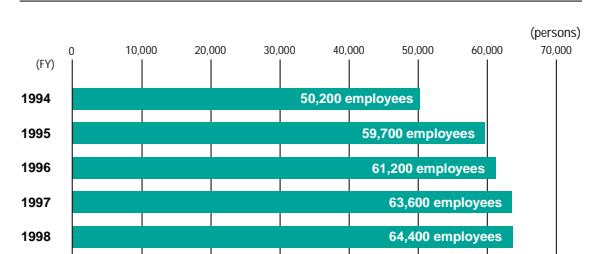
Ricoh Group's Sales Classified by Business



Shift in Ricoh Group's Capital



Shift in Ricoh Group's Number of Employees



【Basic Policy】

[Action Guideline]

5. Through environmental education, we strive to raise awareness of all our employees in order to develop a social viewpoint that enables them to conduct environmental activities under their own responsibility.

The Ricoh Group is helping build a society that recirculates resources through its environmental conservation activities. Our concept for this is the Comet Circle™. In order to conduct more efficient manufacturing activities with fewer resources and less environmental impact, we must first clarify the amount of environmental impact that occurs at each level of our corporate activities. We are striving to reduce the use of natural resources, energy, and chemicals as well as emissions into the air, water, and soil. We also promote the organization of recycling and repeated recycling while aiming to make the loops of resource recirculation smaller within the company and closer to the core of the Comet Circle.

The diagram illustrates the circular economy model, showing the flow of materials and products between various stakeholders. The central node is the **User** (orange circle). The flow is as follows:

- User** (orange circle) connects to **Dealer** (green circle) and **Recovery center** (green circle).
- Dealer** connects to **Product manufacturer** (green circle).
- Product manufacturer** connects to **Parts manufacturer** (green circle) and **Materials manufacturer** (blue circle).
- Parts manufacturer** connects to **Materials manufacturer** and **Materials supplier** (blue circle).
- Materials supplier** connects to **Materials manufacturer**.
- Materials manufacturer** connects to **Parts recycling center** (green circle) and **Materials recycling company** (teal circle).
- Parts recycling center** connects to **Parts manufacturer** (labeled "Reuse of parts") and **Parts recycling center** (labeled "Closed loop materials recycling").
- Materials recycling company** connects to **Materials manufacturer** (labeled "Closed loop materials recycling") and **Materials recycling company** (labeled "Open loop materials recycling").
- Materials recycling company** connects to **Oil recovery company, smelting company** (teal circle).
- Oil recovery company, smelting company** connects to **Thermal energy recovery company** (blue circle) and **Final disposal company** (grey circle).
- Thermal energy recovery company** connects to **Final disposal company** (labeled "Energy recovery (Energy, CO₂)").
- Final disposal company** connects to **Landfill** (grey circle).
- Recovery center** connects to **Recycling center** (green circle) and **Shredder company** (teal circle).
- Recycling center** connects to **Product recycling center** (green circle) and **Shredder company** (labeled "Crushing of products").
- Product recycling center** connects to **Product manufacturer** (labeled "Reuse of products") and **Product recycling center** (labeled "Private reuse").
- Product recycling center** connects to **Product recycling center** (labeled "Maintenance company, private recycling machine").
- Product recycling center** connects to **Product recycling center** (labeled "Sorting and disassembly").
- Product recycling center** connects to **Product recycling center** (labeled "Shredder dust").
- Product recycling center** connects to **Product recycling center** (labeled "Landfill").

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Repeated recycling to the furthest extent possible (i.e., multitiered recycling) reduces new resource consumption and waste generation. Our goal is to reduce waste in landfills to zero.

Inner Loop Recycling
Products of greatest reuse potential are recycled in inner loops of the Comet Circle. The aim of this is to reduce the resource and energy costs necessary to return these used products to a state in which can be used by customers.

Cost-Benefit Recycling

To realize a society that recirculates resources, it is necessary to establish an economically rational recycling system, integrating various kinds of recycling activities for every type of used product. To efficiently recover, disassemble, sort, and recycle products, we are making efforts to establish a nationwide network for a comprehensive recycling system as well as promoting recyclable designs.

Environmental Conservation Partnership

We consider all the material suppliers, Ricoh product users, and other companies working together on recycling activities as "green partners." Together we endeavor to minimize the environmental impact at every product stage, from materials and parts procurement, through manufacturing, transportation, use, recovery, and recycling.

Basis and Range of Environmental Conservation Activities

Environmental Management System

This is the basis for environmental conservation to satisfy the targets set in each region (resource conservation and recycling, energy conservation, and pollution prevention). The environmental management system consists of the following five parts.

● Environmental Management Information System..... p. 9
This is an information system for effectively assisting activities to reduce the environmental impact of the Ricoh Group as a whole.

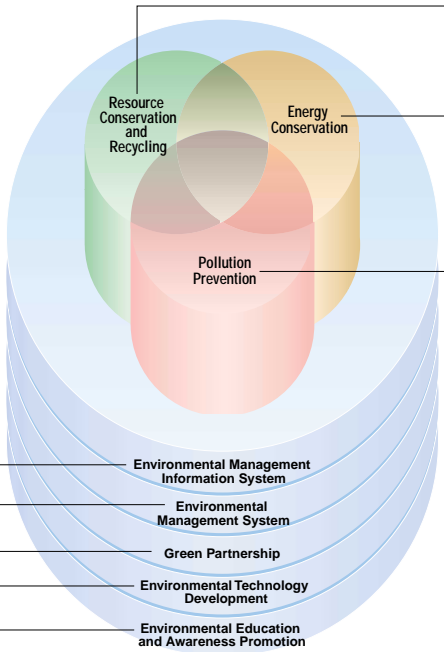
● Environmental Management System..... p. 9
We are constructing an environmental management system that complies with ISO 14001 and permits us to continue making environmental improvements.

● Green Partnership..... p. 11
We are cooperating with our partners to recognize all the stages of the Comet Circle for more efficient reduction of environmental impact.

● Environmental Technology Development..... p. 12
We are developing technologies to reduce the environmental impact of our products and business sites.

● Environmental Education and Awareness Promotion..... p. 12
We are educating our employees on environmental issues. We are also promoting awareness towards environmental conservation both inside and outside the Ricoh Group through diverse information sources.

Five Foundations and Three Pillars for Environmental Conservation



● Resource Conservation and Recycling (Products)..... p. 15
We are developing products based on recyclable designs. We are also constructing a recycling system and manufacturing products using recycled parts.

● Resource Conservation and Recycling (Business Sites)..... p. 19
To achieve maximum results with minimum resources, the Ricoh Group is promoting a "zero waste" movement (100% resource recovery rate).

● Energy Conservation (Products)..... p. 21
To prevent global warming, we are developing and selling various energy-saving products.

● Energy Conservation (Business Sites)..... p. 22
We are promoting the efficient use of energy based on the belief that energy is also a resource.

● Pollution Prevention (Products)..... p. 23
We are promoting the proper management of the chemicals used in our products to reduce and eliminate toxic substance use.

● Pollution Prevention (Business Sites)..... p. 25
In manufacturing, the Ricoh Group strives to reduce toxic substance use, emissions, and waste.

Environmental Action Plan

In order to promote progressive environmental conservation acts through our global business activities, the Ricoh Group has established the following environmental action plans and is striving to implement them.
(See the text from page 9 for more details.)

Environmental Management System

- Construct an environmental management information system by the end of fiscal 2000.
- Construct an environmental impact information system in the fields of copiers, facsimiles, and laser printers by the end of fiscal 2000 and construct such a system for other product lines by the end of fiscal 2001.
- Acquire ISO 14001 certification for domestic and overseas business bases in addition to production bases by September 2000 for Ricoh and by the end of fiscal 2001 for the Ricoh Group.*

Resource Conservation and Recycling (Products)

- Establish a recovery and recycling system for products and supplies, especially toner cartridges, in Japan, Europe, the Americas, China and Taiwan, and Asia-Pacific by the end of fiscal 2001.
- Increase the resource recovery rate for copiers, facsimiles, and laser printers, including toner cartridges, to over 90% by the end of fiscal 2001.

Resource Conservation and Recycling (Business Sites)

- Reduce final waste by 90%, compared with that in fiscal 1992 by the end of fiscal 2001.
- Achieve a 100% resource recovery rate (zero waste) at all domestic production sites by the end of fiscal 2000.
- Achieve a 70% resource recovery rate at all domestic nonproduction sites by the end of fiscal 2000.
- Achieve a 100% resource recovery rate at all overseas production sites by the end of fiscal 2001.

Energy Conservation (Products)

- Reduce the energy consumed in manufacturing by 30%, compared with that in fiscal 1996, on a per product basis by the end of fiscal 2001.
- Increase the scope of use for recycled paper and increase the speed of dual-sided copying to promote the efficient use of paper thus reducing the amount of CO₂ during paper manufacturing.

Energy Conservation (Business Sites)

- Reduce CO₂ emissions by at least 15% by the end of fiscal 2001 on a per sales volume basis, compared with those in fiscal 1990.
(Domestic and overseas production sites other than Ricoh's have set numeric goals of 15% or more each.)

Pollution Prevention (Products)

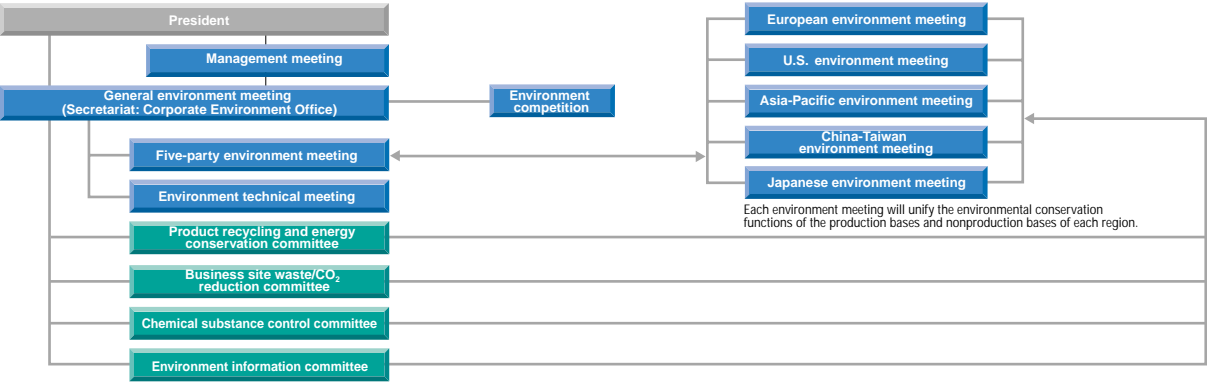
- Reduce the volume of specified chemical substances, such as lead and PVC, at least 50% on a per product basis in all products developed after fiscal 2001, compared with products introduced in fiscal 1997.
- Reduce the level of noise emitted at least 2 dB and emissions of ozone and other by-products at least 20% for all copiers, facsimiles, and laser printers developed fiscal 2001, compared with products introduced in 1997.

Pollution Prevention (Business Sites)

- Reduce the use of substances subject to PRTR (Pollutant Release and Transfer Register) by at least 20%, emissions more than 50%, compared with those in fiscal 1997, and totally eliminate landfill waste in all domestic and overseas business sites by fiscal 2001.
- Completely eliminate the use of trichloroethylene and tetrachloroethylene in all domestic and overseas business sites by fiscal 2001.

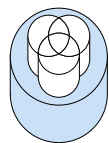
*Modifications have been made from the 1998 environmental report.

Ricoh Group Environmental Conservation System



Each committee prepares technical standards and an infrastructure common to the Ricoh Group.

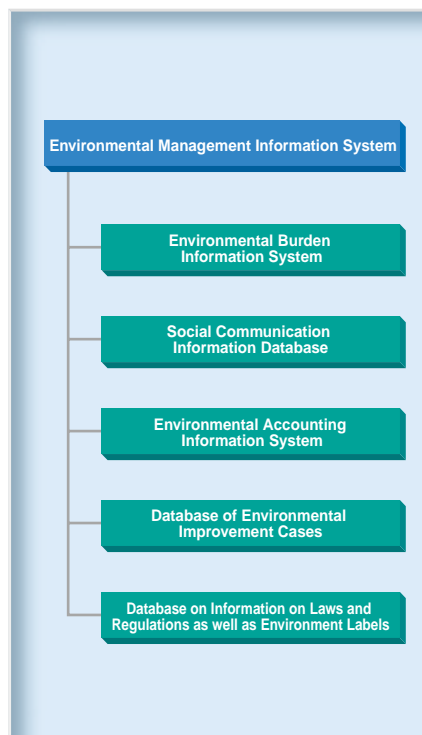
Each environment meeting will unify the environmental conservation functions of the production bases and nonproduction bases of each region.



Environmental Management Information System

Goals and Progress

- **Construction of an Environmental Management Information System**
A system is being constructed, and is scheduled for completion by the end of fiscal 2000, to collect and provide information on environmental accounting, environmental improvement examples, laws and regulations, environment labels, and customers.
- **Construction of an Environmental Impact Information System**
An environmental impact information system for all copiers, facsimiles, and laser printers is to be constructed by the end of fiscal 2000 and for other product lines by the end of fiscal 2001.
▶ We are also developing diverse types of information systems. We plan to integrate fiscal 1999 environmental accounting data into our accounting system.
The environmental impact information system is in partial operation with the specifications for its data and system near completion.



Environmental Management Information System

By building databases on examples of environmental improvement, customer opinions, and information on our community, beginning with the construction of the environmental impact information system for Ricoh's overall activities, the Ricoh Group will improve the effectiveness of its environmental impact reduction activities.

Environmental Impact Information System

To efficiently reduce environmental impact and realize a society that recirculates resources, we have introduced an Eco Balance system and are constructing a system to assess environmental impact throughout the entire product life cycle, from materials procurement and parts and products manufacturing to transportation, use, and recycling.

Social Communication Information Database

We receive numerous inquiries on Ricoh's environmental conservation activities from our customers and various organizations inside and outside Japan. In order to respond promptly to such inquiries, we are currently building a database. The opinions of our customers are also incorporated in our business management.

Environmental Accounting Information System

This is a system designed to clarify costs as well as the effects our activities have on the

environment and to ensure the efficient use of management resources for environmental conservation. Based on the Eco Balance system, the Environmental Accounting Information System is being constructed to enable us to understand the environmental effects of all activities of the Ricoh Group.

Database of Environmental Improvement Cases

Various unique environmental conservation activities are being implemented at the business bases of the Ricoh Group.

In order to share this know-how and achievements within the Group, we are building a database on the improvements that have been made.

We shall use this database to make further achievements and publicize the activities of the Ricoh Group in the future.

Database of Information of Laws and Regulations as well as Environment Labels

This database allows Group companies to share requirements and information on the latest revisions of domestic and overseas environmental laws and regulations as well as environmental label standards.

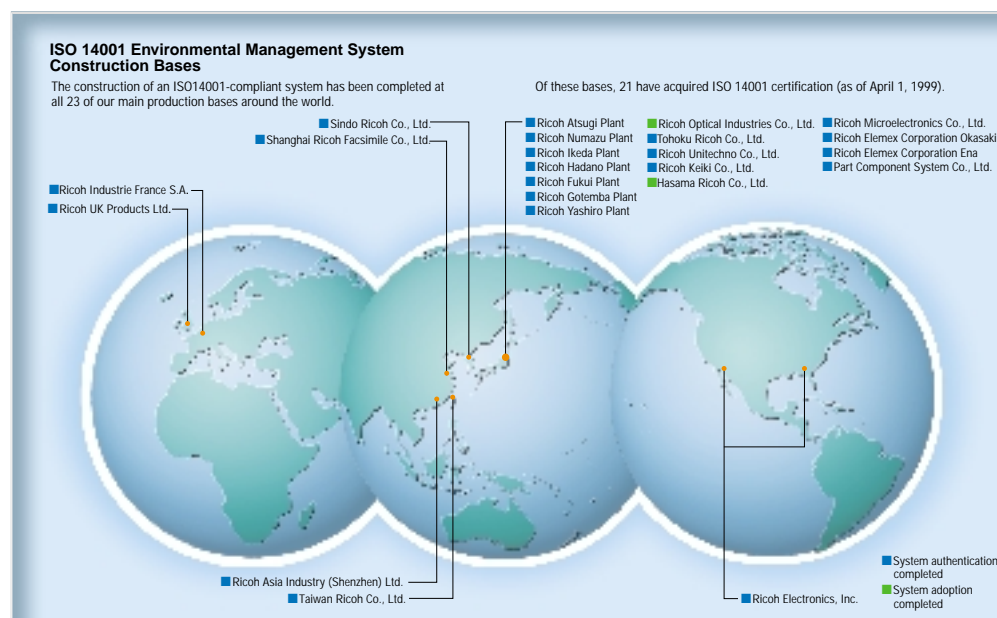
The Ricoh Group will make use of this database for future product development and running business sites in the future.



Environmental Management System

Goals and Progress

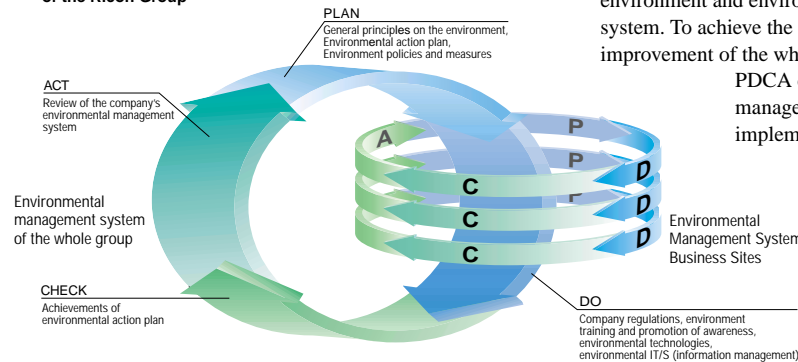
- To promote continuous environmental improvement, plans call for acquiring ISO 14001 certification for domestic and overseas business bases in addition to production bases by September 2000 for Ricoh and by the end of fiscal 2001 for the Ricoh Group.
▶ The system is being established at Ricoh's 11 nonproduction sites. Training of in-house environmental auditors is completed.



Construction of an Environmental Management System

The Ricoh Group will establish a system for environmental conservation and promote continuous environmental improvement activities. In such activities, the environmental management system serves as the basis of corporate activities. The environmental management system will be updated continually in the PDCA (Plan-Do-Check-Act) cycle.

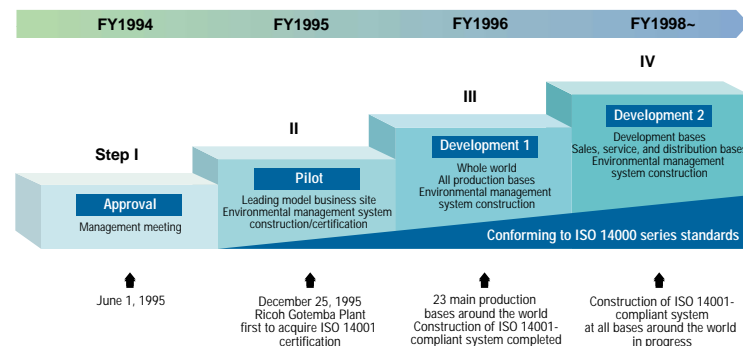
Environmental Management System of the Ricoh Group



Environmental Management System of the Ricoh Group

The Ricoh Group is a global entity that operates on an international scale. It respects the ISO 14001 environmental management system, which has received worldwide recognition, and is constructing an environmental management system that complies with this system. While horizontally expanding its know-how throughout the 21 production bases that have already obtained certification, the Ricoh Group is also planning to obtain ISO 14001 certification at its business bases.

Plans and Achievements in Establishing an Environmental Management System for the Ricoh Group



Acquisition of First ISO/DIS 14001 Certification from a Japanese Certification Organization

Recognizing the importance of environmental conservation activities even in its global activities, the Ricoh Group started working towards acquiring ISO 14001 certification from an early stage. The Ricoh Gotemba Plant, one of our core production sites for OA (office automation) equipment, acquired ISO/DIS 14001 in December 1995, thus becoming the first Ricoh base to receive certification from a Japanese certification organization.



Winner of BSI QA Environmental Management Award

Since it acquired ISO 14001 certification in July 1996, Ricoh UK Products Ltd. has worked to enhance the level of its environmental management system. Its efforts were recognized with the awarding of the BSI QA Environmental Management Prize in June 1997. Ricoh UK Products Ltd.'s advanced computer-based partner corporate management and environmental management database was recognized as the "best practice" in the United Kingdom.

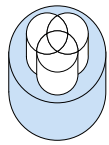


Explaining environmental policies to a partner

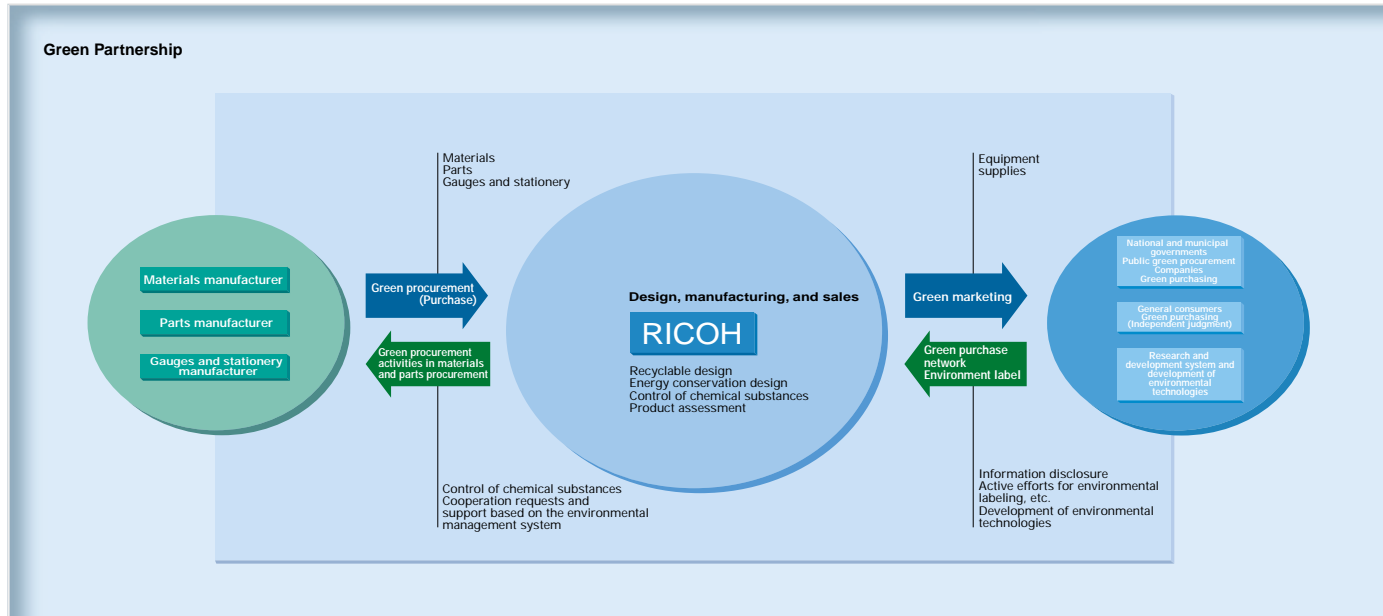
Ricoh's Environmental Conservation Activities Win Worldwide Acclaim

In a survey conducted by a German environmental survey specialist organization, Ökom GmbH, Ricoh was evaluated as B- on the whole, ranking it number one of the 11 companies surveyed in the electric and electronics industry. Ökom is an organization that ranks and assesses companies that are ecologically outstanding. In that survey, the companies were assessed in the three areas of environmental management system, eco-friendly products and services, and environmental performance.





Green Partnership



◎ Concept of a Green Partnership

To reduce environmental impact in all corporate activities, it is important to purchase materials that have minimum environmental impact as well as sell such products. The Ricoh Group, based on the Comet Circle, views its materials suppliers, customers, and contracted recycling companies as green partners, carefully choosing the materials to be purchased and marketing environmentally conscious products to minimize the environmental impact produced by those partners. For more effective recycling, we are also improving the level of recyclable design.

Green Procurement of Materials

To procure materials that have less environmental impact, the Ricoh Group has issued *Green Procurement Guidelines* and has sought the support of all suppliers. Together, we are working to clarify the chemical content in parts and materials, with improvements in this area already underway. Ricoh is also working with partners and suppliers in other ways, including



providing advice on obtaining ISO 14001 certification, supplying environment information, and improving individual products and parts. We plan to expand this activity to affiliates and overseas bases in the future.

Green Procurement of General Purchases

Ricoh is also choosing OA equipment, consumables, stationery, giveaways, and gifts that have less environmental impact. Led by the Green Procurement Promotion Council, preparations of an ecology-conscious product list and the establishment of an eco-product automatic ordering system are underway. We plan to expand this activity to affiliates and overseas bases in the future.

Management of Chemical Substances

Ricoh constructed a chemical substance management system called RECSIS* in 1996, which is used for the input and output management of chemical substances for the Ricoh Group. With this system, Ricoh's design division is now able to select materials, easily taking into account environmental hazards and laws and regulations. Similarly, production bases can now grasp in real time types of chemical substances, purchase amount, use, and stocks and

implement appropriate measures when necessary. Since laws and regulations and revised information related to chemical substances can be announced to our sales divisions, business can now be implemented smoothly around the globe.

*Ricoh Environmental and Chemical Safety Information System

Green Marketing

In order to reduce the environmental impact generated at the customer's site, the Ricoh Group is actively developing products that are certified with such labels as the Blue Angel Mark, Nordic Swan Mark, and International Energy Star Mark, and selling energy-saving products, easy-to-recycle products, and products made of recycled parts and materials.

Disclosure of Environmental Impact Information of Products

The Ricoh Group not only discloses such product information as government parts procurement lists and green purchase networks but handles this information in a sophisticated manner.

● International Environment Labels and the Ricoh Group Efforts

Eco Mark / Japan



Eco Mark is a labeling system the Japan Environment Association has been using since 1989, with the extension of applications to OA equipment, such as copiers, under consideration. Ricoh's recycled paper, Shigen, is an example of a product that is certified with this mark.



Blue Angel Mark (BAM)/Germany



BAM certification standards are specified in detail by the German Federal Environment Agency throughout production processes, from manufacturing to the disposal of applicable products. Most Ricoh products sold in Germany are BAM certified.



Nordic Swan Mark / Scandinavia



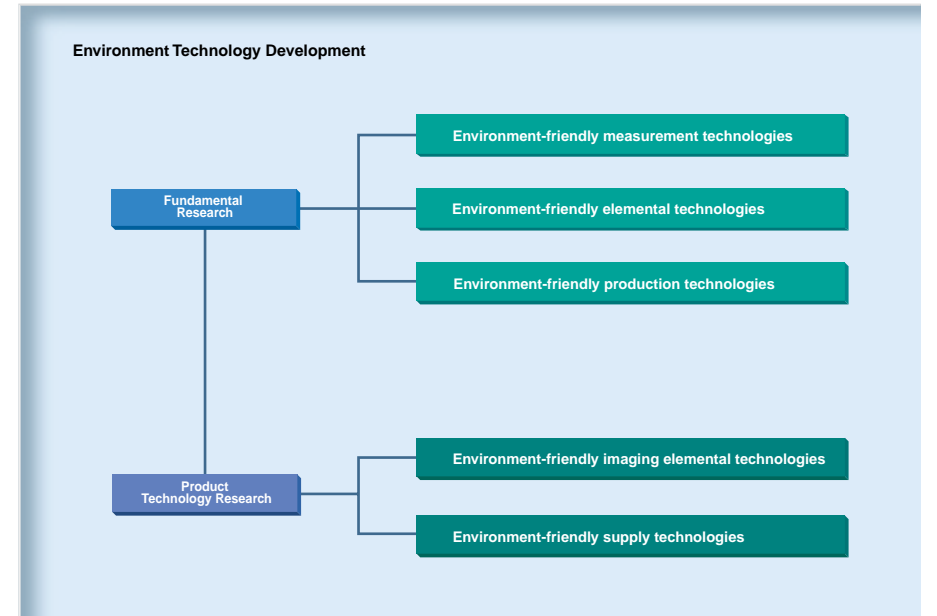
The Nordic Swan Mark is an eco-label system used by the five Scandinavian countries of Norway, Sweden, Finland, Iceland, and Denmark since 1989. In 1997, seven Ricoh copier machines were awarded the label.



Environmental Technology Development

Ricoh has been successful in developing numerous environmental technologies, such as its BL110 hybrid facsimiles with power consumption while idling cut to 1/20 of previous levels and its recycle label Compatible Sheet, which can be recycled with the plastic of copiers.

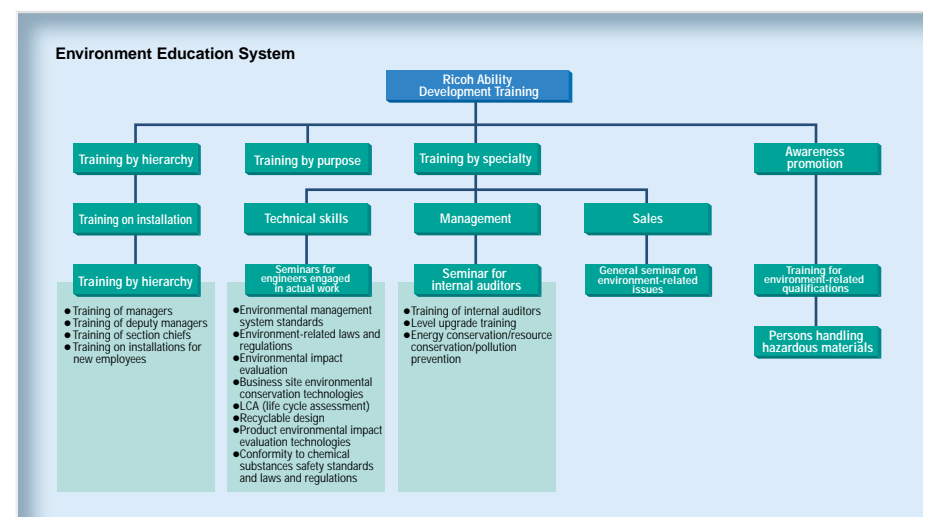
Ricoh's cutting-edge environmental technologies hold tremendous significance for the company's business as well. The Ministry of International Trade and Industry reinforced the Energy Conservation Law to reduce CO₂ emissions and incorporated the top runner method for electric goods, including OA equipment. With these efforts, Class 1 energy-saving performance or above must be realized within a certain period of time. This means that outstanding environmental technologies will be used by numerous companies, establishing a de facto standard. Based on its own research center group concept, the Ricoh Group is conducting fundamental research and product technology research on environmental technologies.



Environmental Education and Awareness Promotion

Environmental conservation activities cannot proceed without a change in the awareness and behavior of each and every employee. The Ricoh Group has established a system to enhance the knowledge of environmental conservation professionals that includes new employee training, training of design engineers, and seminars for internal auditors of the environmental management system.

Ricoh also helps its employees acquire pollution prevention administrator and work environment measurement engineer qualifications and has an in-house award system for employees who contribute to environmental conservation. In addition, company-wide environment competitions, environmental conservation newsletters and pamphlets, employee environmental awareness questionnaires, and a web site help Ricoh further promote environmental awareness both inside and outside its group.



International Energy Star Mark / Japan, America, Europe, etc.



Only products whose power consumption while idling is below a certain standard can be sold with the International Energy Star Mark. Ricoh has been awarded this mark for all of its applicable products.



RESY Mark / Germany



The RESY Mark certifies that product packaging for shipping satisfies RESY technical standards. It also guarantees that shipping packaging paper will be collected in Germany. Ricoh's packaging material designs have been meeting RESY standards since 1993.

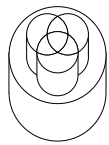


DSD (Green Point) Mark / Germany



The DSD mark certifies product packaging materials collected by DSD-designated companies for reuse and recycling. Ricoh has been awarded this mark for its cameras.





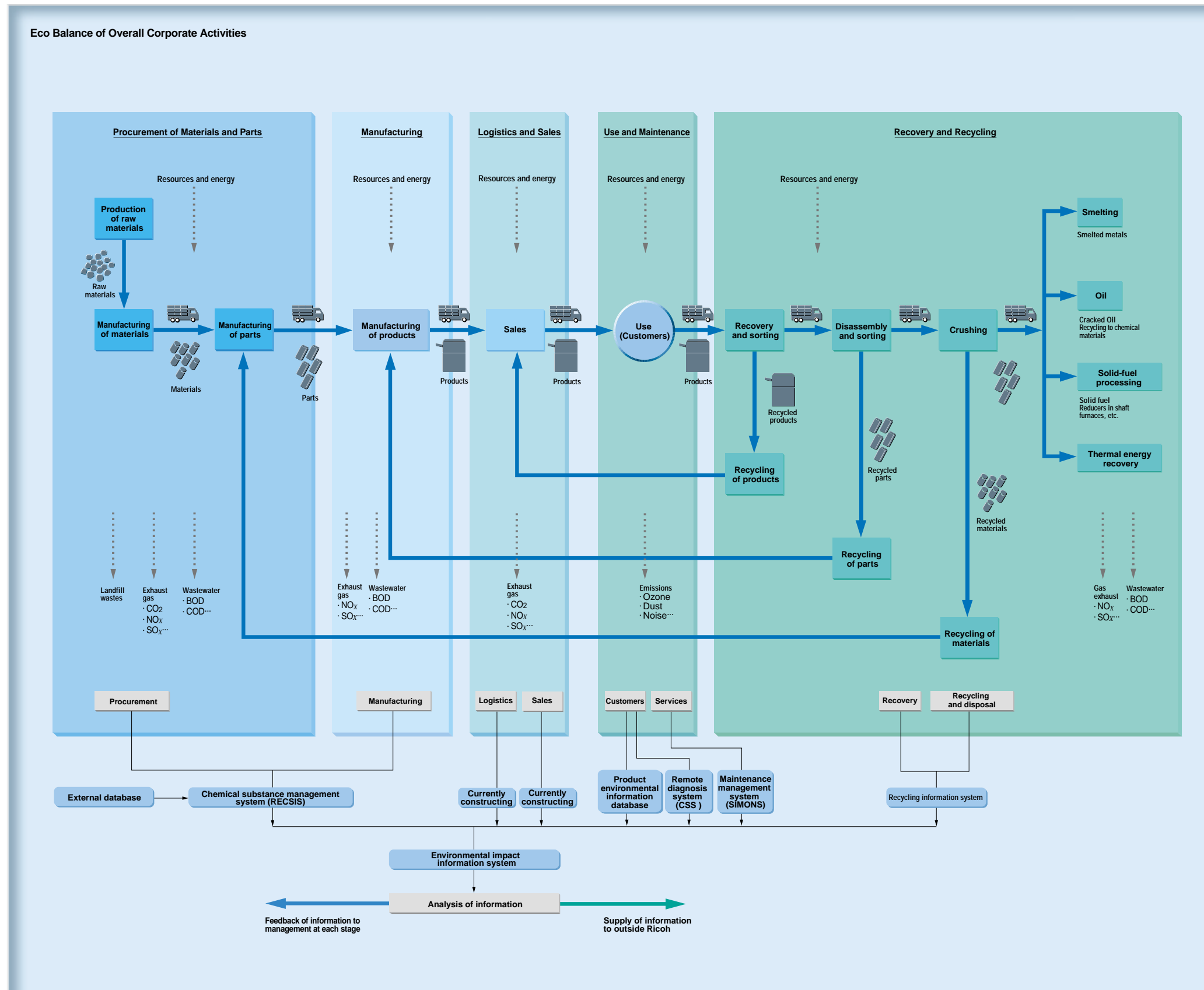
Introduction of Eco Balance

◎ Concept of Eco Balance

The Ricoh Group, based on the Comet Circle concept, promotes the reduction of total environmental impact by assessing how much is generated in each of its activities. Eco Balance is a compilation of environmental impact input and output data and is a means of quantitatively measuring, assessing, and reporting the environmental impact generated by a company. This method facilitates the overall implementation of LCA* for corporate activities. LCA helps to determine total environmental impact (total level of impact), identify areas of need (what is wrong), assess quantitative improvements (how much has been done), and carry out effective environmental measures. The Ricoh Group has constructed an environmental impact information system for its overall corporate activities to reduce impact and to disclose this information.

A Type III Environment Label is also being prepared to quantitatively assess environmental impact generated through the entire product life cycle, from parts procurement, manufacturing, and use to recovery and recycling, and for disclosure under third party certification.

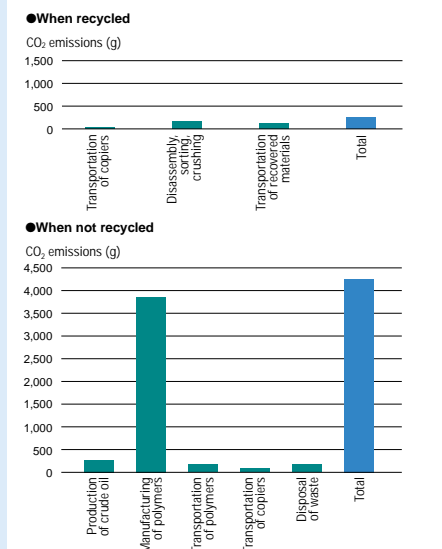
* LCA (life cycle assessment) is a means of quantitatively determining the level of environmental impact generated throughout a product's life cycle; in other words, from resource procurement to manufacturing, processing, distribution, sales, consumption, use, recycling, and disposal.



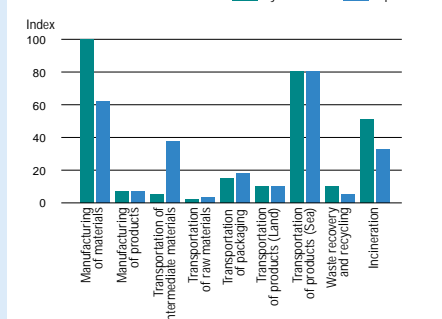
Example of LCA Research

From an early stage, the Ricoh Group has implemented various measures to reduce the environmental impact by recycling plastic materials and developing eco-packages. The Group also implements LCA to determine how effective these measures are.

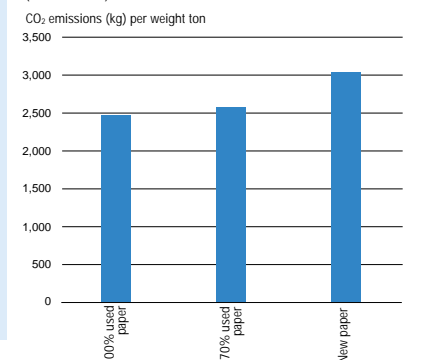
LCA in the Material Recycling of Resins for External Copier Cabinets
Announced at Eco Balance International Symposium (November 1998)



LCA of Buffers (Emission by CO₂ Process)
Announced at RECY '94 (October 1994)

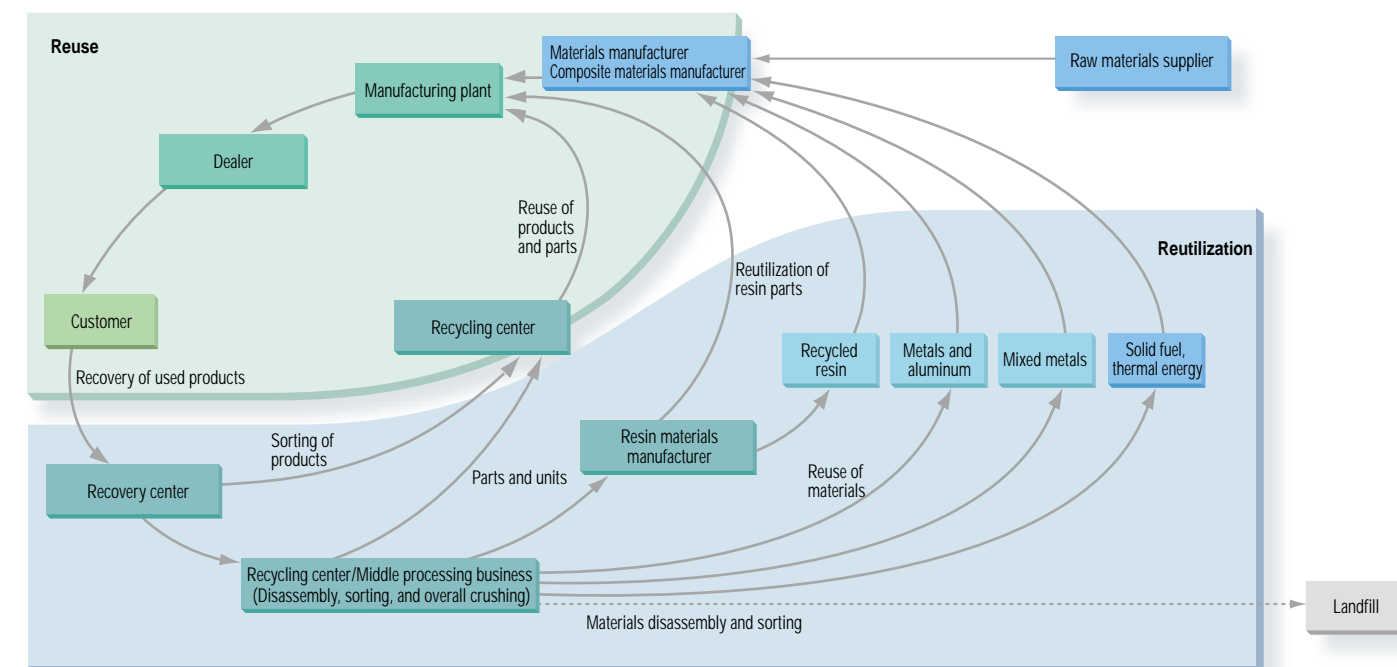
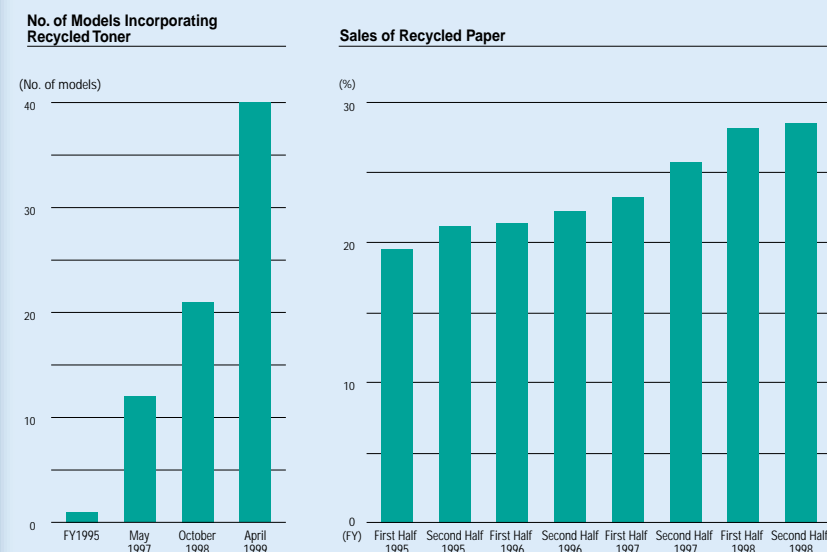


LCA of Copier Paper
Announced at Electronic Photograph Seminar/Japan Hard Copy '97 Fall (November 1997)



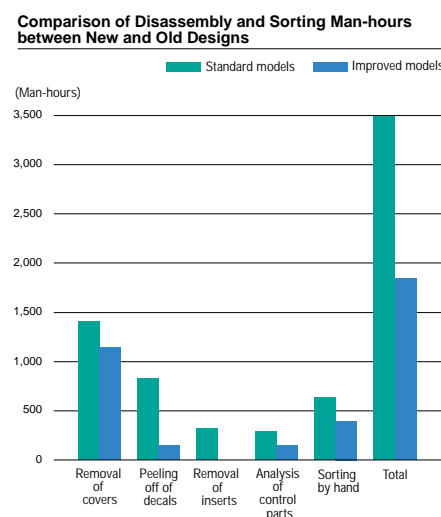


- A recovery and recycling system for products and supplies, especially toner cartridges, is to be established by the end of fiscal 2001 in Japan, Europe, the Americas, China and Taiwan, and the Asia-Pacific region.
- ▶ Recycling centers are currently operating in Japan, in northern and southern Kanto as well as in Kyushu, and are part of the establishment of a nationwide recycling system. An overseas system is underway.
- Plans call for increasing the resource recovery rate for copiers, facsimiles, and laser printers, including toner cartridges, to over 90% by the end of fiscal 2001.
- ▶ As of June 1999, we had reached 79% of the resource recovery rate for copiers in Japan.



The Ricoh Group achieves a high resource recovery rate (i.e., reuse) of its products and undertakes recycling activities as part of its business. In 1993, Ricoh set up recycling design policies and a product assessment system, promoting recyclable manufacturing from an early stage. While receiving external support, Ricoh has mainly worked to create mechanisms of disassembling, sorting, cleaning, and recycling the products that are recovered.

Recycling begins not at recovery but from the product design stage. The Spirio 2700 series, introduced in 1994, was the first copier designed to reduce the disassembly time following recovery as well as the time needed for sorting materials to facilitate low-cost recycling. Specifically, the number of screws used was reduced for easier disassembly, materials were standardized to enable the recycling of plastics, and decals were developed that could be melted with the plastic to eliminate removal time. Currently, the Ricoh Group is extending its efforts on recyclable designs and product assessment to all its copiers, facsimiles, and laser printers. Moreover, recycling was further enhanced with our introduction of level 4 design in June 1999.



In October 1997, Ricoh marketed a copier called the Spirio 5000RM. The remanufactured copier is a copier developed using recycled parts. The Spirio 5000RM reuses more than 60% (weight percentage) of the parts of the RICOPIY FT5500 series that was marketed in 1993 and uses recycled parts in all units produced. It also uses recycled plastic for the inner cover. This recycled plastic is made using a technique which removes impurities from recovered plastic parts and mixes it with virgin plastic to deliver the same properties as new plastic. Performance was also enhanced by making the liquid crystal panel easier to see.

Following this, Ricoh has marketed a total of seven recycled copier models, including the Spirio 105BB, Spirio 7210RM series, and 8210RM.



About 20% of the weight of OA equipment such as copiers consists of plastic parts. In the past, most of these plastic parts were neither disassembled nor sorted but crushed and disposed of with the product. This is because quality drops when different materials or grades of plastic are mixed, and as such plastic materials can not be reused for copier parts, they are difficult to recycle.

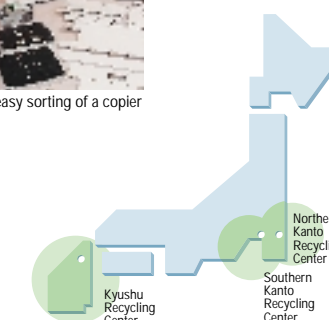
For this reason, since 1994, Ricoh has standardized the plastic materials it uses, indicating the kind of material and grade of each part to enable recovered plastic parts to be sorted by grade.



The Ricoh Group has been making efforts to establish a new mechanism for recycling. For instance, unlike newspapers and aluminum cans, no mechanism for recycling plastic has been established in the communities in which we operate. Thus, we have formed a network with recovery centers, recycling centers (disassembly and sorting), recycled equipment manufacturers, and plastic material manufacturers and created a mechanism by which recovered materials are reproduced as parts for Ricoh products. There are currently recycling centers in operation in Japan in northern and southern Kanto and in Kyushu. These centers handle about 90–100% of recovered copiers (mass ratio) as resources, and plans call for expanding this mechanism nationwide.



The easy sorting of a copier



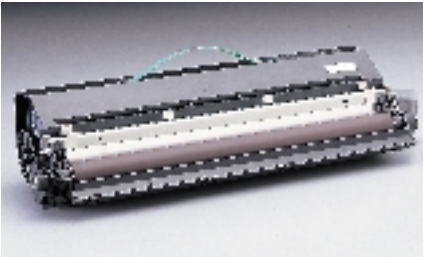
The Ricoh Group has set up company standards on recyclable designs, reuse rate of parts, recovery system, resource recovery, and environmental safety. We attach the Ricoh recycle label to those products shipped that satisfy these standards. As of November 1998, the Spirio 5000RM/7210RM series/8210RM and Spirio 105BB copiers have been sold with this recycle label. Ricoh plans to expand its product range bearing this label to printers and facsimiles in the future.

1. Satisfies Ricoh's recyclable design standards
2. Products should be made using 40% or more (mass ratio) reused* parts.
3. Cartridges used in products should be of a recyclable design, and a system for recycling should be established.
4. A system for recovering and processing used products should be established. At the same time, a system for recovering used cartridges and containers must also be established.
5. At least 90% of products (mass ratio) must be recyclable for resource recovery in Ricoh's recycling system.
6. Consideration must be given to the environmental safety set in the standards.



* Reuse means to use something for the same purpose in its original form.
Reuse rate = Maximum mass of reused part/mass of product (×100)

Recovery and Recycling of Copier Toner Cartridges
While full-scale recovery of all products, including used cartridges, started in 1998, Ricoh's positive efforts on product recovery and recycling began even earlier. Today, a recovery and recycling system is being established for used cartridges both in Japan and overseas. Moreover, simulations to achieve cost-effective recycling of toner magazines for certain products (Type A) have been carried out with good results.



Type A copier toner cartridge

Recycling of Photosensitive Drums
Ricoh's production-related subsidiary in the United Kingdom, Ricoh UK Products Ltd., has since an early stage undertaken the recycling of products. In particular, its multilayer recycling system for reusing the main part of the copier—the photosensitive drum—has received high acclaim, winning it the Queen's Award in 1993 and the European Industrial Environment Prize in 1994.



Recycling of products at Ricoh UK Products

Recycling Aluminum: Photosensitive Drum Material
Tohoku Ricoh recycles the aluminum used in photosensitive drums. These drums are collected all over the country and melted and molded into aluminum ingots that are sold mainly for use in automobile parts.



Aluminum ingots manufactured at Tohoku Ricoh

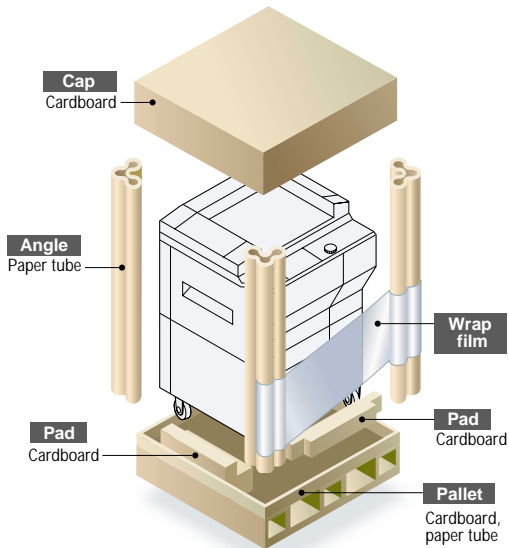
Recycling of Printed-Circuit Boards
In recycling OA equipment, the reuse of printed-circuit boards is important. Ricoh's production-related subsidiary in France, Ricoh Industrie France S.A., carries out parts replacement and inspection of printed-circuit boards and reuse to conserve resources and reduce waste.



Recycling of printed-circuit boards in Ricoh Industrie France

Eco-Packaging
In the past, the packaging of products such as copiers was made of composite materials, such as wood, cardboard, and styrene foam, and was difficult to disassemble and sort. Therefore, most of the disposed material was either burnt or buried. Eco-packages no longer use these composite materials and are instead made of 98% recyclable materials composed mainly of cardboard and are easy to disassemble and sort. By 1997, Ricoh had already packaged 187,200 copiers using this eco-packaging and shortened the transportation routes in Japan. This has helped cut CO₂ emissions produced in the burning of packaging and transportation by half. In terms of CO₂ emissions caused by heavy-oil burning, there was a reduction of 9,330 barrels (2001) equivalent of CO₂.

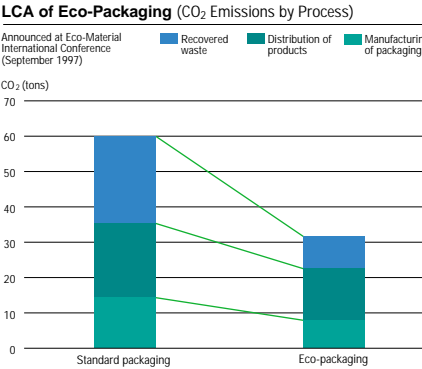
Ricoh is investigating the usage of eco-packaging worldwide.



Eco-Packaging
Realizing 98% Recycling Rate of Packaging Material



Eco-packaging (left) and standard packaging



Development of New Packaging
Ricoh has succeeded in developing a new recyclable paper packaging with outstanding shock absorption features, contributing to the overseas shipping of precision devices. The wooden pallet used in transportation of products is chipped by specialist firms and reused as the paper liner of external cardboard.



Paper packages with less environmental impact

Strength Tests of Products and Packaging Materials
Even though packaging materials with little environmental impact have been developed and have simplified packaging, it is important to ensure that the products themselves are strong enough to withstand damage during shipping. Based on Ricoh's recyclable design policies, product strength tests are mandatory. The evaluation tests for this purpose are implemented at the P.R.E. Laboratory (Product Resistance Evaluation Laboratory), which is equipped with the latest test devices, such as a horizontal shock tester and vibration tester. Ricoh's P.R.E. Laboratory was the first developed by a Japanese manufacturer facility to have been officially recognized by the ISTA (International Safe Transit Association). Measurements obtained here are internationally recognized.

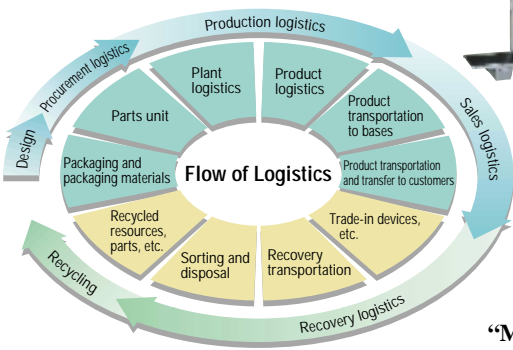


Strength tests on packages (vibration)



Strength tests on packages (shock)

Recovery Logistics System
Ricoh's Logistics System handles the logistics of product recycling and recovery. All the used copiers recovered from 670 dealers throughout Japan are sent to 17 recovery logistics bases. Photosensitive drums are sent to the Tohoku Ricoh recycling facility, while the main bodies are recycled according to the Comet Circle and parts and materials are reused.



Paper Recycling and Sales of Recycled Paper
Ricoh uses a "Risapost" cabinet in its recovery system for used office paper within the company and recommends its use to customers to promote the recovery and recycling of used paper. Ricoh also manufactures and sells Shigen recycled copier paper, which is made from used office paper.



Risapost

Shigen

Recycle Packer
The Recycle Packer shreds confidential documents into tiny pieces using a shredder and packs these into bags for use as buffers. The system thus addresses both issues of information security and the conservation of resources.



Recycle Packer

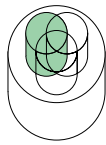
"Multi Ribbon"
Ricoh's multi ribbon has achieved the epoch-making resource conservation of ribbons used in color printers. Printing can now be performed using only 1/15 the amount of ribbon used previously. That technology is expected to be used for printing in the medical field, in video printers, and for telephone and ID cards.



Development of Recyclable Media
The TC card is a recyclable media that can be written on and then erased by applying heat. Both magnetic and printed information can be written onto the card and then erased. The TC card can also be used as a recyclable prepaid card.



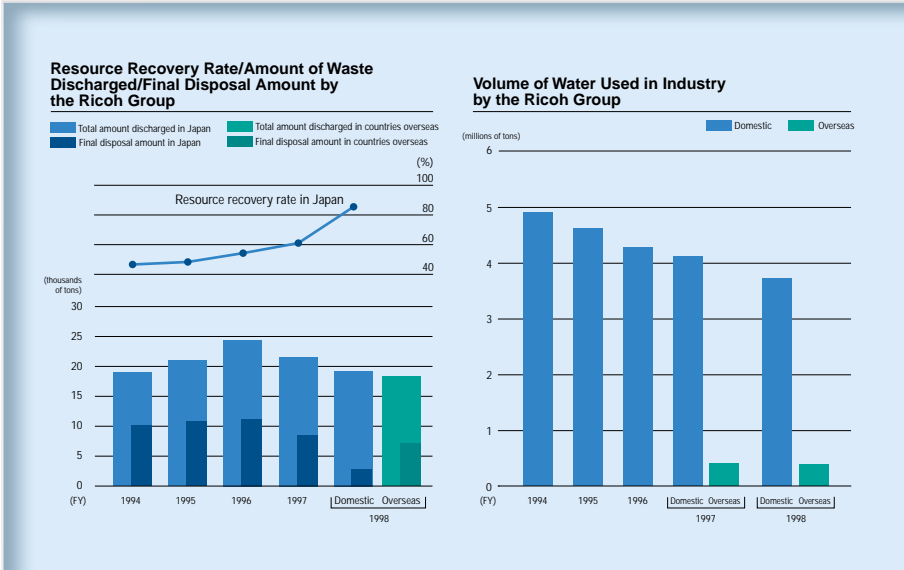
TC cards



Resource Conservation and Recycling (Business Sites)

Goals and Progress

- Plans call for reducing final waste 90%, compared with that in fiscal 1992, by the end of fiscal 2001.
- ▶ We reduced waste 87% at all Ricoh offices.
- A 100% resource recovery rate (zero waste) has been targeted for all domestic production sites by the end of fiscal 2000.
- ▶ Ricoh Fukui and Ricoh Numazu achieved zero waste.
- A 70% resource recovery rate has been targeted for all domestic non-production sites by the end of fiscal 2000.
- ▶ We achieved 51% resource recovery rate in fiscal 1998.
- Plans call for a 100% resource recovery rate (zero waste) at all overseas production sites by the end of fiscal 2001.
- ▶ Resource recovery activities are already under way.



◎ Concept of Zero Waste

The Ricoh Group classifies zero waste (100% resource recovery rate) into level 1 (industrial waste), level 2 (industrial waste + general waste), and level 3 (industrial waste + general waste + household solid waste). Generally, in the context of zero waste, *waste* implies level 1. The group's definition, however, includes that for level 2 as well as waste to be incinerated. Our aim is to eliminate the stricter level 3 in the future.

Zero Waste Plants

Ricoh Fukui and Ricoh Numazu achieved zero waste in October 1998 and February 1999, respectively. These efforts were made to realize zero production losses, i.e., zero waste. In addition, costs incurred by production losses and the proper disposing of wastes were eliminated as well. Ricoh Numazu, for example, was able to reduce costs by ¥50.33 million.*

* See page 27.

Database on Recycling Businesses

To achieve recycling smoothly and the proper disposal of waste in the Ricoh Group, the Group has constructed a database on recycling businesses which allows each Ricoh site to search for recycling businesses, their contact number, and the type of waste handled using a PC-based network.



Resource sorting station and "recycling road" in Ricoh Fukui

◎ Concept of the "Minimum Resource Plant"

As the age of mass production, mass disposal, and mass recycling draws to an end, a new age that values the maximum use of minimum resources is dawning. To achieve the "minimum resource plant," which produces maximum effects with minimum resources, the Ricoh Group is conscientiously working to conserve resources in principle by using purchased resources effectively and without waste. We also value electrical energy and water as resources and are trying to minimize their use and recycle such resources.

◎ Five Rs for Realizing the Minimum Resource Plant

Reject→Return→Reuse→Reduce→Recycle. Based on these five Rs, the Ricoh Group is building "Minimum Resource and Zero Waste" plants with the support of other companies.

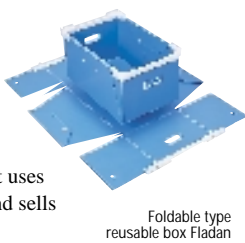
1. Reject (Avoid buying anything that may become waste)

Minimum resource usage is encouraged both on the Ricoh side and the delivery business side. Such efforts are undertaken based on the awareness that "what is being sold is the content and function and not the container and packaging" by both sides. Such efforts also help reduce costs.

At the Ricoh Numazu Plant, all 3,600 types of packaging for purchased items are checked, and numerous improvements are being made, such as changing the method of delivering solvents from using drums to tankers. Many branches are carrying out similar activities, such as buying 100% recycled toilet paper that comes with neither packaging nor core.

2. Return (Return what can be returned to suppliers)

Improving delivery containers by changing them into reusable types and returning them to suppliers not only uses less resources but also reduces costs. Many plants have changed to using Kayoibako (reusable box) reusable delivery containers. Ricoh Unitechno Co., Ltd., has also developed a foldable type of reusable box called Fladan, which it uses within the company and sells commercially.

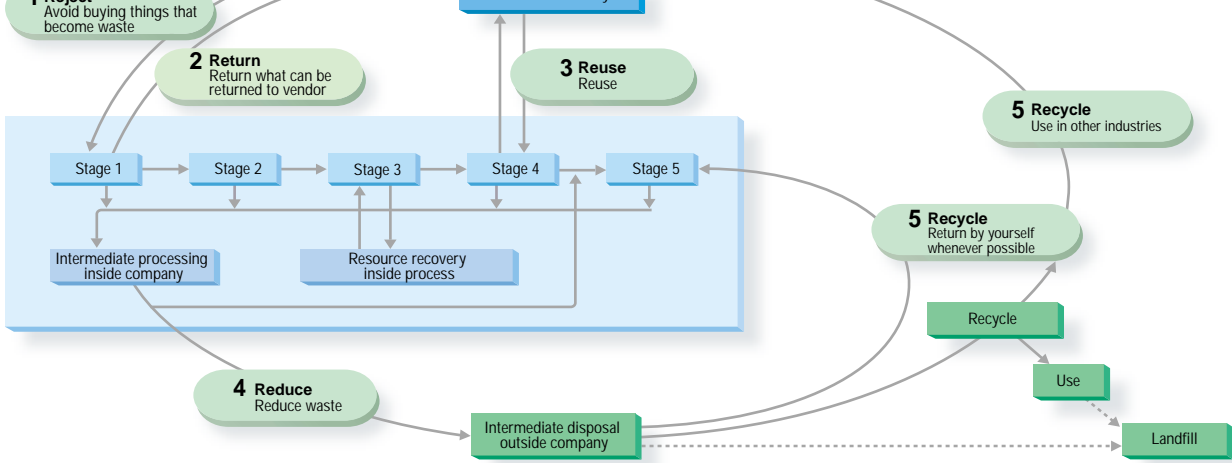


Foldable type reusable box Fladan

Circulatory Manufacturing Systems

Five Rs for realizing the Minimum Resource Plant

Reject→Return→Reuse→Reduce→Recycle



Recycling Examples (Some activities at the Ricoh Numazu, Ricoh Ikeda, and Ricoh Fukui plants)

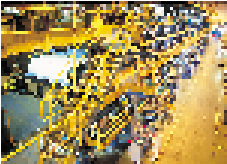
Classification	Type of Industrial Waste	Product	After Recycling
Level 3 (Industrial waste + general waste + household solid waste)	Level 1 (Industrial waste)	Unusable copier paper	Recycled copier paper, toilet paper
		Unusable thermal paper	Solid fuel
		Cardboard	Cardboard
		Wooden box	Chip
		Used pallet	Particleboard
		Drum, cutting powder, cutting scrap	Recycled metal
	Level 2 (Industrial waste + general waste)	Aluminum tube of photosensitive drum	Car part
		Fluoroboric acid waste liquid	Fluorite
		Ammonium sulfate	Raw material of paints (deep blue color)
		Acid solvent	Recycled oil
		Gas solvent	(No change)
		Sludge	Cement
	Level 3 (Industrial waste + general waste + household solid waste)	Toner waste	Dye for shoe sole
		Bags for raw materials and chemicals	Drying furnace firing agent
		Ribbon, film	Solid fuel
		Beads	Road-paving agent
		Flammables	Paper cups, cigarette butts, etc.
		Nonflammables	Bottles
			Cans
			Dry cell batteries
			Leftover food
			Household solid waste
			Raw sewage

Biological Processing of Sludge

Ricoh Atsugi's biological wastewater processing system for industrial and domestic sewage has reduced the 28 tons of sludge that used to be discharged and processed monthly to zero and achieved an annual savings of ¥1.2 million.

Minimum Use of Water Resources

To wash its thermal paper production line, Ricoh Industrie France S.A. required 30m³ of water daily in 1996. By 1998, it had cut this volume 50%, to below 15m³. Ricoh Atsugi, Ricoh Unitechno Co., Ltd., and Taiwan Ricoh Co., Ltd., have installed wastewater recycling systems to filter and reuse plant wastewater in their toilets. And the Ricoh Yashiro Plant has constructed a closed recycling system to achieve resource recovery of wastewater.



The thermal paper production lines in Ricoh Industrie France

3. Reuse

Reusing discarded products that had been used only once reduces resource usage and cost. At the Ricoh Ikeda Plant, customers are asked to cooperate in recovering trays and reels used for delivering ICs. The recovered trays and reels are inspected, reshaped, and reused. Currently, the reuse rate has reached 70%, which means that more than 100 tons of plastic materials are saved every year. Ricoh Fukui also reuses the paper core of thermal paper.



Reusing the paper core of thermal paper

4. Reduce (Reduce waste)

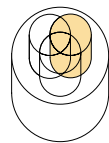
"Waste when mixed but resource when sorted." In order to increase the resource recovery rate, Ricoh is promoting the careful sorting of waste and the reduction of waste itself. At most production sites, the careful sorting of waste is now practiced. Ricoh Fukui, which has already achieved zero waste, is also implementing various detailed improvements, such as using nonwash rice in the company restaurant, thus producing no wastewater from the washing of rice, and using different rice bowl sizes to further reduce garbage. Several offices have also stopped supplying personal wastebaskets to reduce the amount of waste thrown away and promote the recovery of resources.

5. Recycle

In order to reuse waste discarded from Ricoh business sites as resources in every possible way, Ricoh is studying resource recovery methods and forming networks with other companies. Resource recovery consists of such methods as material recycling, which reuses materials as the same material again; chemical recycling, which reuses materials after changing it chemically; and energy recovery (thermal recycling), which recovers heat energy by burning materials.



Organic fertilizer made from leftover food from the company restaurant



Energy Conservation (Products)

Goals and Progress

- **Promotion of Energy Conservation**
Thirty percent reduction in per product energy consumption by the end of fiscal 2001, compared with that in fiscal 1996
- ▶ In fiscal 1998, energy consumption for hybrid machines and copiers reached 113%, compared to fiscal 1996, due an increased ratio of hybrid machines of greater energy consumption. On the other hand, energy consumption for facsimiles has decreased to 87%.
- **Efficient Use of Paper**
We are promoting the efficient use of paper, which discharges a significant amount of CO₂ at production, with the improved speed of duplex copiers as well as various paper types, including recycled paper.
- ▶ Copiers marketed in fiscal 1998 achieved a 90.5% increase in speed on average for duplex copying.* All the machines can use recycled paper.

* Duplex productivity = duplex copy speed (per page)/simplex copy speed (per page) × 100

◎ Concept of Conserving Energy on Products

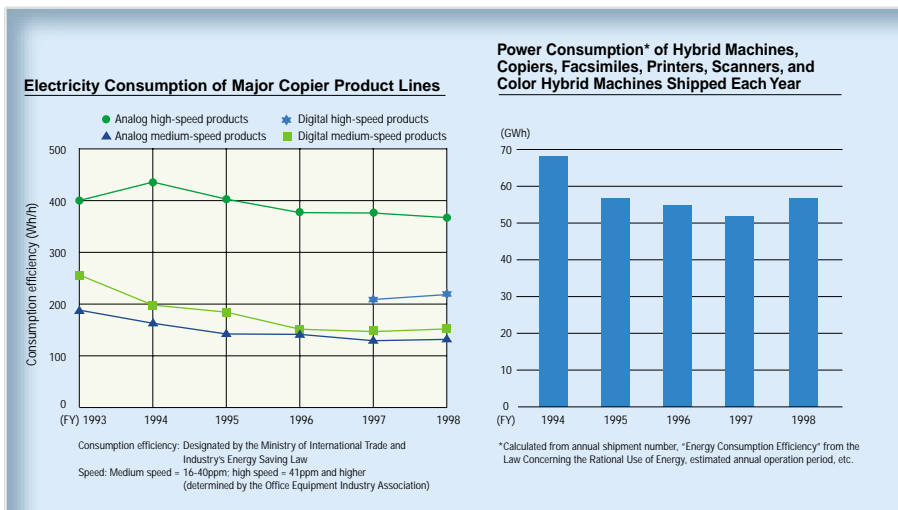
The purpose of environmental conservation is to reduce total environmental impact. The Ricoh Group, whose businesses include global product lines of OA equipment, such as copiers, facsimiles, and printers, is developing advanced energy conservation technologies as well as reducing the total amount of environmental impact caused by our products through using such equipment. Since much CO₂ is given off during the manufacturing process, we also consider the efficient use of paper to be included in the conservation of energy, and we are increasing the performance of duplex copiers.

Ricoh Corporation Receives International Energy Star Prize for Fourth Consecutive Year

Ricoh Corporation, a U.S. subsidiary, has won the International Energy Star Prize for four consecutive years since the prize was first given out in 1996. We have also obtained International



Energy Star certification for all products made since the system was implemented on January 1, 1995.



Reducing Electricity Consumption of Copiers and Printers

The development of energy conservation in copiers and printers can be summarized as the history of increasing the heat efficiency ratio. As copiers and facsimiles transfer the toner from the thermal drum to the paper and then heat the paper so that the toner does not rub off the paper, a considerable amount of electricity is used in the process. Ricoh is not only developing toner transfer technology but also increasing energy efficiency by installing appropriate wattage heaters for some products to improve performance and electricity consumption.

Idling Mode Energy Conservation Technology for Facsimiles

Generally speaking, all ordinary facsimiles used to be on permanent idling, or standby mode. Energy consumption during idling of Ricoh's RIFAX BL110 facsimile has been cut 95% from the 30 W consumption of previous Ricoh facsimiles with the aid of an energy-conserving CPU developed in-house that consumes approximately 1.4 W¹. There are now more than 400,000 facsimiles equipped with this technology operating around the world, and the total amount of energy thus saved² is calculated to be equivalent to the annual energy consumption of 150,000 households in Tokyo. Taking this enormous energy-saving effect into account, the RIFAX BL110 was awarded the Chairman's Prize of the Japan Machinery Industry Association, Outstanding Energy Conservation Device Award, for fiscal 1997.

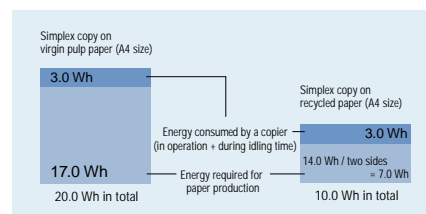
1. In energy-conserving idling mode
2. Calculated with a five-year average life of the product



RIFAX BL110

Improved Duplex Copying to Respond to Global Warming

Copying generates CO₂. Annual copier paper consumption in Japan is about 776,000 tons¹, equivalent to 2,328,000 tons of CO₂². These figures cannot be ignored from the viewpoint of global warming. If you copy on virgin pulp paper, about 20 Wh³ is consumed per page, including the energy to manufacture the paper. On the other hand, 100%-recycled paper reduces CO₂ generated during production. And duplex

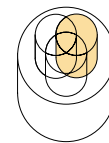


copying further reduces environmental impact by about half. Due to improved technologies, including Ricoh's paper feed method, the imagio MF 6550 has achieved high-speed duplex copying of 60 pages per minute⁴. Machine operation is made easy as well to facilitate use by as many people as possible.



imagio MF 6550

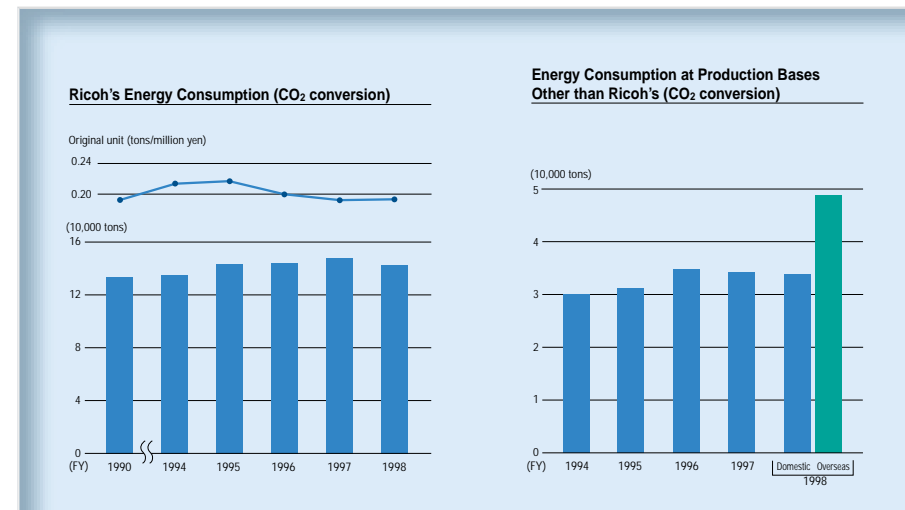
1. Source: Paper and Pulp Statistical Table, Ministry of International Trade and Industry.
2. Source: Ricoh's LCA examples announced at the 1997 meeting of the Japan Electrophotography Society (see page 14).
3. Calculated with specified machines under certain conditions; numerical values may be subject to change by machine type or conditions.
4. For simplex copying, 65 pages per minute for A4-sized paper (lengthwise)



Energy Conservation (Business Sites)

Goals and Progress

- Reduce CO₂ emissions by at least 15% by the end of fiscal 2001 on a per sales volume basis, compared with those in fiscal 1990.
- (Domestic and overseas production sites other than Ricoh's have set numeric goals of 15% or more each.)
- ▶ Ricoh's CO₂ emissions measured by sales unit for fiscal 1998 were 100.5%. We are promoting energy conservation activities to achieve our goal of 15% reduction.



◎ Concept of Energy Conservation at Business Sites

Considering energy as a resource, our aim is to yield the maximum effect with the minimum energy input to achieve the efficient use of energy.

Energy Conservation in Compressors

Many production sites of the Ricoh Group use compressed air to power devices on production lines. At Ricoh Fukui, a duct is attached to the air compressor to suck in the cooler outside air to reduce electricity usage.

Heat Insulated Roofs in Factories

At Ricoh Unitechno Co., Ltd., energy consumption for air-conditioning is reduced by installing insulators on the factory roof.

Introducing Eco-Ice

Eco-ice is the practice of making ice using night-time electricity and storing the negative heat energy to power air-conditioning systems during the day. It is also effective in cutting electricity expenses. Ricoh Unitechno Co., Ltd., and Ricoh Toda have already introduced this system.

Stopping the Idling of Engines within Grounds

We not only discourage the idling of vehicle engines on our grounds by our employees but also request our visitors and customers to cease the practice as well. This is just one of the specific efforts made at many of our sites to reduce CO₂ emissions.

Cogeneration Systems

The Ricoh Central Research Center self-generates approximately 50% of the power used daily (800 kWh) with a gas engine type cogeneration system. Since it uses natural gas, CO₂ emissions are low. Also, by using excess heat generated by the ventilation of clean rooms, total energy efficiency has been increased to 80%.



Gas cogeneration system at the Ricoh Central Research Center

Energy Conservation in Clean Rooms

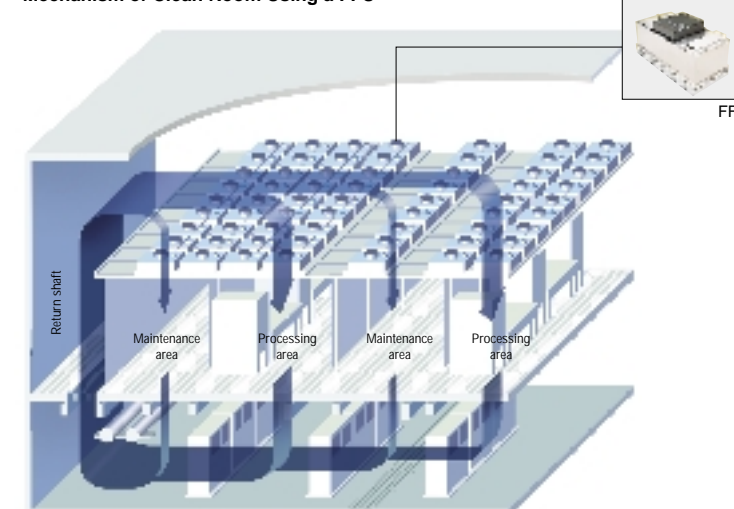
The manufacturing of highly integrated semiconductors requires exceptionally clean rooms. At the Ricoh Yashiro Plant, FFUs (fan filter units) help maintain a class 0.1 degree of cleanliness*. FFUs also contribute to appropriate spot cleaning as well as reducing energy consumption thanks to their variable density arrangement and because they can be switched on and off independently as necessary.

* Less than one particle of dust greater than 1/10,000 mm in diameter per 10 ft².

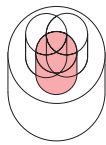


Energy-conserving clean room maintained by FFUs

Mechanism of Clean Room Using a FFU



FFU



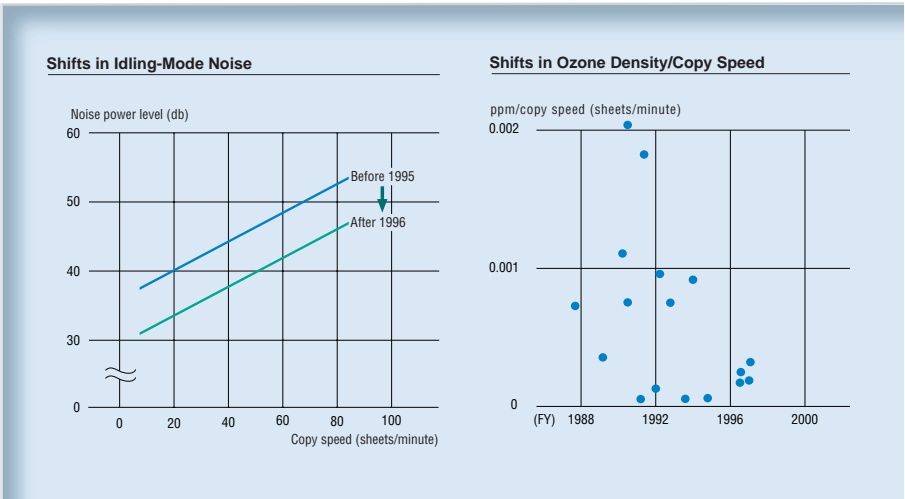
Pollution Prevention (Products)

Goals and Progress

- **Contamination Rate of Chemical Substances**
Plans call for reducing the volume of specified toxic substances, such as lead and PVC, used by at least 50%, compared with products introduced in fiscal 1997, on a per unit product basis for all products developed after fiscal 2001.
▶ We have been promoting the assessment of the volume of chemical substances contained in products as well as starting the development of a project to reduce the use of certain substances, including lead solder.
- **Emissions of Chemical Substances and Noise**
Plans call for reducing the noise level emitted more than 2 dB and emissions of ozone and other gases by at least 20%, compared with products introduced in fiscal 1997, for all copiers, facsimiles, and laser printers developed after fiscal 2001.
▶ Activities are underway to expand areas of assessment and improve technologies that reduce emissions of our products.

© Concept of the Prevention of Pollution by Ricoh Products

Environmental certifications, such as Germany’s BAM or Scandinavia’s Nordic Swan Mark, set high standards for chemicals contained in and emitted by products. Yet, we have set up an environmental certification that is even more stringent than either of the above in order to minimize the use and emissions of chemicals that are hazardous to the environment and we are manufacturing products that meet those levels. We also control the chemicals contained in our products and the flow of chemicals in the manufacturing process using RECSIS. And we are developing a system that will provide the timely disclosure of information on the use of chemical substances as requested by our customers and OEM partners.



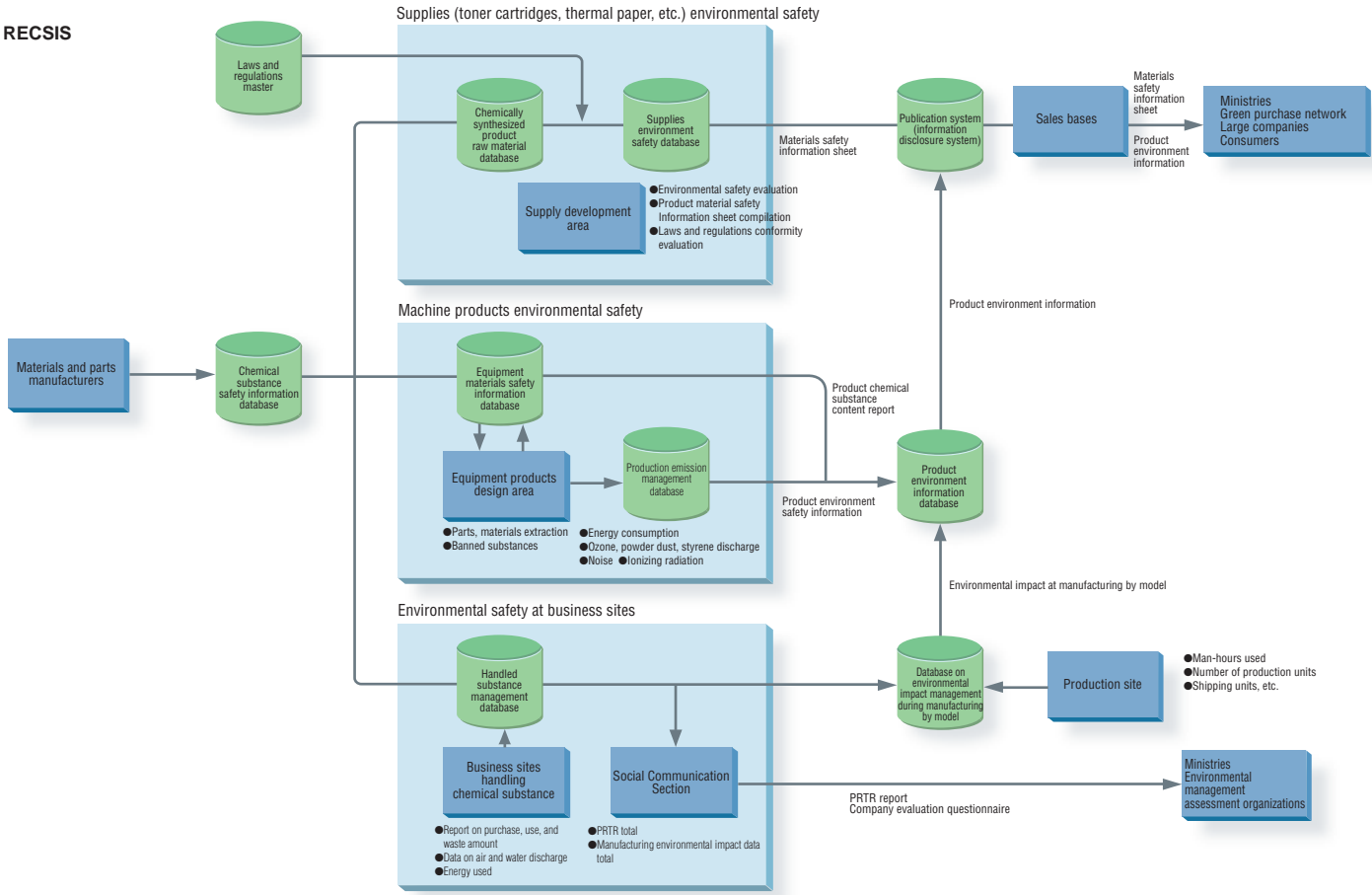
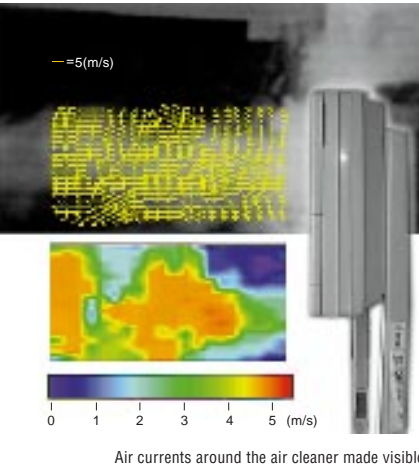
RECSIS

There are many substances that, while useful for a product’s manufacturing process, have undesired side effects on the environment. The flow of these substances needs to be controlled so that those substances can be phased out, recovered, or properly disposed of. RECSIS contains 164 data types based on such ISO standards as those regarding basic database of more than 2,000 types of chemical substances, environmental hazards, toxicity, and emergency procedures. It also covers laws and regulations and their amendments concerning those chemicals in various countries.

We have also begun collecting data on the chemical contents of the parts and materials we purchase as well as the use and volume of waste from chemical substances at parts manufacturing factories. With this database, it has now become possible to improve our products and business sites to achieve our pollution prevention targets.

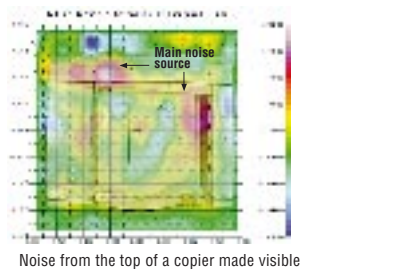
Technology to Make Air Currents Visible

Since setting standards on the noise level of our products in 1979, Ricoh has been raising those standards and improving the technology of noise reduction. The reduction in the noise level of fans had been a particularly important issue since fans are a major source of noise while in standby mode. But reducing fan speed will increase the temperature inside the equipment and also affect the performance of the filters used to limit ozone and dust emissions. Ricoh has therefore developed a technology to make air visible to help reduce heat, noise, and ozone emissions. By using this technology, we can design products for optimum layout for ventilation and use ventilation more efficiently.



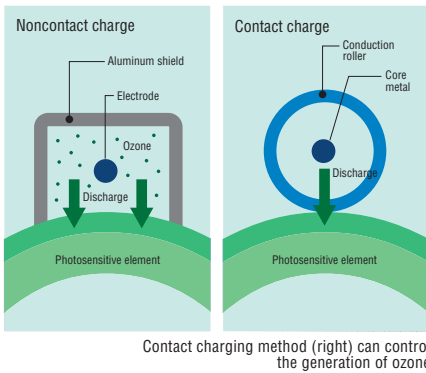
Noise Reduction Technology

The noise visualization system measures how much noise is emitted by which part of the product and makes possible quick design changes. Setting copier and printer functions so that fans and engines automatically stop after a certain period of disuse and supply electricity only to the part of the controller that is waiting in standby mode for data helps reduce noise emissions and conserve energy.



Ozone-Free Designs

Existing copiers and printers generate ozone from the reaction of oxygen with the electrode between the thermal unit and the electric coil when the thermal drum is charged. This environmentally hazardous ozone has to be removed with ozone filters. Contact charging methods, such as the moving-belt method and the charging of the thermal drum while closely touching the rubber conduction roller, control the generation of ozone since charging can take place without the electrode coming in contact with oxygen.

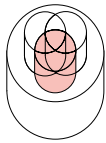


Acquisition of International Certification at Noise Testing Center

Currently, the disclosure of the environmental impact information of companies and products is being demanded, and various issues are arising concerning the reliability of data and test centers. Ricoh’s Noise Testing Center acquired certification based on ISO standards in September 1998. This certification certifies the technical ability of the test center and the reliability of the test results reported. Ricoh is the first in Japan to have acquired certification by NIST (National Institute of Standards and Technology) on noise testing.



Noise Testing Center in Ricoh Omori



Pollution Prevention (Business Sites)

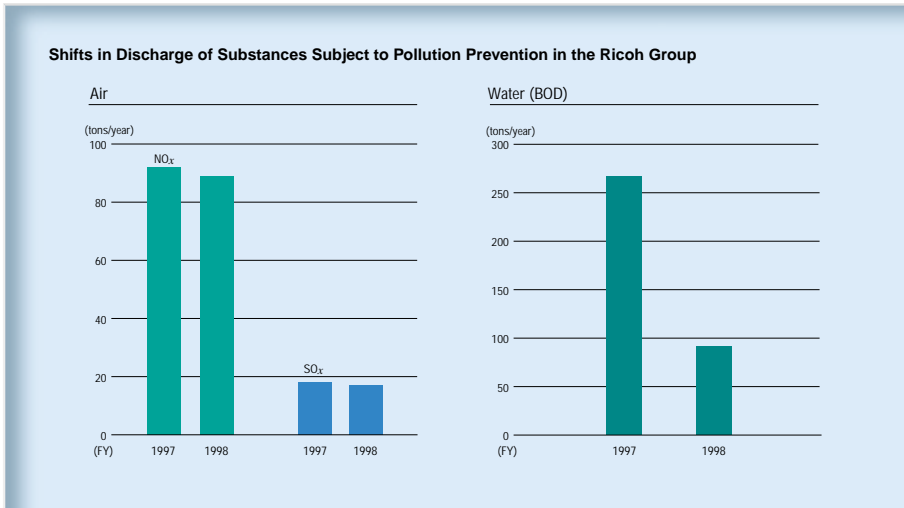
Goals and Progress

- Plans call for reducing the use of substances subject to PRTR (Pollutant Release and Transfer Register) at least 20%, emissions more than 50%, compared with those in 1997, and totally eliminate final landfill waste in all domestic and overseas business sites by fiscal 2001.
- ▶ Activities are underway to achieve those goals and fully establish the PRTR system throughout the Ricoh Group.
- Plans also call for completely eliminating the use of trichloroethylene and tetrachloroethylene by fiscal 2001.
- ▶ Some of our business sites have already completely eliminated the use of trichloroethylene and tetrachloroethylene.

◎ Concept of Pollution Prevention at Business Sites

OECD (Organization for Economic Cooperation and Development) member countries, such as the United States, Canada, England, the Netherlands, and Japan, have adopted PRTR. Under this system, the release of potentially harmful environmental pollutants into the air, water, and soil, and the transfer of waste are assessed by businesses, among others, and totaled and announced by a third party organization. In Japan, the Keidanren (Japan Federation of Economic Organizations) has started to implement PRTR. Ricoh has totaled the PRTR data for all its business sites in fiscal 1997 and reported the figure to Keidanren. Ricoh began spreading this system to all companies in the Ricoh Group in fiscal 1998 and promoting the reduction of the use and emission of PRTR substances in fiscal 1999.

Furthermore, we have been conducting surveys to improve the chlorine organic solvent problem since fiscal 1993. In July 1999, we completed the *Ricoh Group Soil Improvement Manual*, which includes self-imposed regulations that are stricter than other environmental quality standards as well as outlines to conducting surveys to improve the Ricoh Group's production and research and development facilities.



Zero Discharge of Plant Effluent into Public Water

The Ricoh Yashiro Plant worked together with Kajima Corporation and Ricoh Engineering to develop a closed system to process and reuse effluent produced at the plant, saving water and totally eliminating effluent. This innovative method, departing from the traditional approach of discharging wastewater after purification, is helping to better conserve the environment.

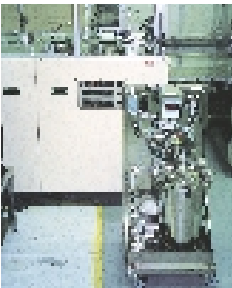
Total Elimination of Such Specified Organic Solvents as Chlorofluorocarbons

Ricoh stopped using all chlorofluorocarbons for washing such parts as photosensitive elements in December 1993, two years ahead of the deadline set by the Montreal Protocol. Tohoku Ricoh conducted an extensive review of the washing process of printed-circuit boards and switched to nonwashing and extensive water washing methods to completely stop the use of specified chlorofluorocarbons and trichloroethane. Ricoh Numazu, on the other hand, improved the washing process of photosensitive elements in 1996 and switched from using tetrachloroethylene to water-washing to eliminate the use of 20 tons of tetrachloroethylene per year. Tohoku Ricoh and

Ricoh Numazu have requested related parts manufacturers and processing companies to install the washing device they developed to help improve the washing method. The Disk Media Group of Ricoh Electronics reviewed the washing process of injection-molded disks and

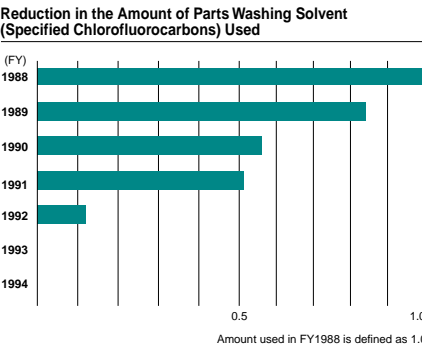


Washing device developed by Ricoh



Disk-washing device made by U.S.-based Ricoh Electronics

switched from isopropyl alcohol washing to water washing in 1998 to eliminate the use of 800 pounds of isopropyl alcohol per month.



Survey Results on Substances Subject to PRTR and the Self-Regulation of Exhaust Pollutants in the Ricoh Group

Substances subject to PRTR (including exhaust pollutants)
Data for substances amounting to at least one ton per year. (A dash indicates no entry.)

Substance	FY	Amount	Emission in air	Discharge into public water	Amount consumed	Amount reduced	Amount transported (waste taken out of sites)	Amount recycled	Landfill (control type)
Chloroform	1997	1.31	0.97	—	0.02	—	0.32	—	—
	1998	1.62	0.99	—	0.02	—	0.61	—	—
Dichloromethane	1997	235.38	150.71	—	—	0.00	3.57	81.09	—
	1998	249.70	153.96	—	—	—	2.17	93.57	—
Tetrachloroethylene	1997	15.66	1.42	—	—	—	—	14.24	—
	1998	8.10	0.14	—	—	—	—	7.96	—
Trichloroethylene	1997	36.18	30.84	—	—	—	0.90	4.44	—
	1998	19.51	16.57	—	—	—	—	2.94	—
Nickel sulfate	1997	9.54	—	0.06	0.72	—	8.76	—	—
	1998	3.33	—	—	0.39	—	1.90	1.03	—
Zinc chloride	1997	30.69	—	—	30.50	—	0.18	—	—
	1998	46.78	—	—	44.48	—	0.56	1.75	—
Zinc oxide	1997	226.76	—	—	223.06	—	3.11	—	0.60
	1998	178.41	—	—	176.69	—	—	1.22	0.50
Xylene (mixed form)	1997	21.95	18.78	—	0.16	0.08	1.65	1.29	—
	1998	12.21	8.89	—	0.70	0.08	0.40	2.14	—
N, N - dimethylformamide	1997	42.68	1.68	—	—	—	—	41.00	—
	1998	37.68	1.40	—	—	—	—	36.27	—
Copper II oxide	1997	136.09	—	—	133.88	—	2.21	—	—
	1998	101.11	—	—	100.29	—	0.82	—	—
Toluene	1997	1,245.68	808.80	—	0.15	8.50	20.95	407.28	—
	1998	1,376.28	788.57	—	0.65	97.72	0.32	489.02	—
4, 4 - isopropylidenediphenyl	1997	58.27	—	—	48.29	—	—	9.98	—
	1998	63.77	—	—	50.36	—	—	13.41	—
Ethylene glycol Monoethyl ether	1997	29.75	0.80	—	—	15.19	13.76	—	—
	1998	23.42	0.78	—	—	14.92	7.54	0.18	—
Tetrahydrofuran	1997	12.92	5.02	—	0.01	—	0.09	7.80	—
	1998	39.42	0.76	—	0.97	11.55	2.54	23.60	—
Lead solder	1997	24.26	—	—	14.09	—	0.01	10.17	—
	1998	23.98	—	—	16.25	—	0.01	7.72	—

Legend: Survey on self-regulation of exhaust pollutants (Green), Survey on substances subject to PRTR (Blue)

FY1997 data was not available for Ricoh UK Products Ltd.

Solvent Gas Recovery Device and Disposal Device

Ricoh Fukui uses a solvent gas recovery device to recover and recycle organic solvent gas generated in the manufacturing process. Using a direct solvent gas burner, it also reduces the amount and density of emitted gas and carries out such appropriate treatment as deodorization.



Direct solvent gas burner

Elimination of Exhaust Pollutants Using Scrubbers

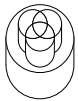
Chemical substances emitted into the air cause air pollution or soil contamination. Many production sites of the Ricoh Group, such as the Ricoh Yashiro Plant, absorb the chemical substances present in exhaust into water with pH control using scrubbers as well as recover and treat those substances in the water to prevent air pollution, soil contamination, and water contamination.

Monitoring of Environmental Impact

Ricoh Industrie France S.A., which is located in a scenic area, takes measures to conserve the environment and monitors the effects of their plant on the environment. Using four piezometers, the company tests the quality of underground water periodically and stores containers of used chemical substances in a specific area to prevent the risk of leakage of those substances during rain.



Ricoh Industrie France



Environmental Accounting

Environmental Accounting for FY1998								
Item	Costs		Effects				Environmental impact (total)	Eco-ratio ² (100 million yen/ton)
	Environmental costs	Main costs	Monetary effects	Category	Item	Environmental impact reduction	EE value ¹	
Direct environmental costs	¥1,320 million	Environment-related facility depreciation and maintenance costs	¥300 million	a	Energy savings and improved waste processing efficiency	CO ₂ 5,435t	116.6	CO ₂ 142,553t
			¥1,450 million	b	Contribution to value-added production			
			¥1,400 million	c	Avoidance of risk in restoring polluted environment; avoidance of lawsuits			
Indirect environmental costs	¥480 million	Costs for the division in charge of environmental measures; costs to establish and maintain the environmental management system	¥80 million	b	Improved efficiency in environmental education and the establishment of the environmental management system	NO _x -3.9t	-0.084	NO _x 56.4t
Environmental R&D costs	¥1,180 million	Research and development costs for environmental impact reduction	¥70 million	a	Cost reduction through eco-packaging	SO _x 0.2t	0.0043	SO _x 5.6t
			¥1,580 million	b	Contribution to value-added research and development			
Product recycling costs	¥1,560 million	Costs for recovery and reassembly for recycling used products	¥240 million	a	Sales of recycled products, etc.	Final waste disposal amount 3,279t	70.4	Final waste disposal amount 2,485t
Social activity costs	¥120 million	Costs for the preparation of environmental reports, advertisements, and exhibitions	¥20 million	b	Environmental advertising, etc.			
Other costs	—	Costs for the restoration of soil pollution and environment-related reconciliation	—	—	None	Water 456,000t	9,785	Water 3,137,000t
Total	¥4,660 million		¥5,140 million					0.00065

a = Substantial effect (actual gains from cost and energy reduction as well as sales of property, plant, and equipment)
b = Expected effect (amount to which the environmental measures contributed)
c = Incidental effect (amount of additional costs avoided stemming from such problems as pollution and lawsuits)

1. EE: eco-efficiency. EE value (unit: ton/100 million yen) = Environmental impact reduction amount/total amount of environmental costs
2. Eco-ratio (unit: 100 million yen/ton) = Total sales profit/total environmental impact amount
Cost classification complies with guidelines set by the Environment Agency, Government of Japan

Environmental accounting is very important for environmental management in making decisions on investments, evaluating themes, and disclosing information. To continuously and effectively pursue environmental conservation, we need to clarify the returns that can be obtained from our activities as well as disclose the details of such activities and effects of investment to our stakeholders (i.e., shareholders and clients). The Ricoh Group's environmental accounting is based on assessing the effects of environmental impact reduction and monetary returns in all investment areas to ensure the most effective environmental investment and project management. Information disclosed to our diversified stakeholders covers corporate environmental accounting for overall corporate activities and segment environmental accounting for individual activities. In terms of investment, while environmental conservation efforts are still regarded as prior investment, we have been working to realize greater results over the long term. Also, because no social standards have been established for returns accounting, the Ricoh Group maintains its own such accounting as well as clarifies standards and discloses information. Furthermore, along with continuous improvements in standards examination, we widely and actively solicit public opinion on standards themselves. Please visit our Web site* for details.

* See the back cover.

Cost-Effectiveness in Environmental Conservation Measures (Corporate Environmental Accounting)

In principle, the Ricoh Group has focused on returns from environmental conservation activities from two points of view: environmental impact reduction and economic effects. This is the concept behind the Eco Balance system and the reason we analyze the environmental impact generated in every stage of corporate activities.* Our environmental accounting information system is based on this approach, and through it we will continue to develop activities of high eco-efficiency and eco-ratio.

* See page 13.

FY1998 Environmental Accounting of Ricoh Numazu's Resource Recovery Activities

Costs			Effects (Compared to FY 1997)		
Item	Main costs	Costs	Monetary effects	Environmental impact reduction	Total environmental impact
Direct costs	Treatment cost of leftover food	0.42	27.01	Reduced waste disposal	265t
Indirect costs	Costs for waste disposal and control, personnel expenses, etc.	4.22	8.89	Profit from sales of assets	0t
			14.35	Cost reduction due to green procurement	
Total		4.64	50.25	Resource recovery rate	59.1% (End of FY 1997) → 100% (End of FY 1998)

Cost Balance of Recycling Activities (Segment Environmental Accounting)

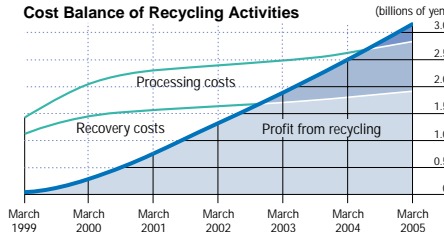
A recent trend is for manufacturers to take responsibility in recovering their own products. This is creating the vital issue of recycling costs in addition to environmental conservation. Ricoh has a past record of dealing with recycling issues and established its own recycling division in April 1998. We have developed recyclable designs, improved recovery channels, and established a product/parts recycling system. Those efforts have already led to the successful marketing of a recycled copier* with at least 40% (mass ratio) of the parts being taken from recovered copiers. The more used copiers are recovered the more we can expect to see production costs fall. In terms of parts recycling, we have also established a cost-effective system that thoroughly simulates the processes from recovery of toner cartridges of specified copiers, disassembly, and cleansing to reassembly and inspection.

* Ricoh establishes original standards (e.g., up to 40% recyclable parts [mass ratio]) and attaches a Ricoh Recycle Label to products satisfying them.

FY 1998 Environmental Accounting for Ricoh's Recycling Activities

Costs		Effects	
Product recycling costs	376	Sales	236
Resource recovery costs	1,182		
Total	1,558	Total	236

Cost Balance of Recycling Activities



Zero Waste Plant Achieves ¥50.33 Million Cost Reduction (Segment Environmental Accounting)

Ricoh Numazu reduced waste to zero in February 1999, saving ¥50.33 million¹. Other well-considered activities the plant is pursuing include switching to larger delivery containers (i.e., from 18-liter cans to drums), downsizing packaging forms, and using liquid waste discharged during manufacturing as cement material.

Broken down, we realized ¥14.35 million in savings with a “no-waste purchase campaign,” recorded a profit increase of ¥3.37 million² from sales of recovered resources properly disposed of as waste, and lowered disposal costs ¥32.61 million².

1. This figure represents a comparison between fiscal 1996 when the campaign started and fiscal 1998 when it was nearly over.
2. Compared to FY 1996

Environmental Facility Investment

	Total facility investment	Environmental facility investment
Ricoh Co., Ltd.	¥21,610 million (US\$180.1 million)	¥570 million (US\$4.8 million)
Ricoh Group	¥70,470 million (US\$587.3 million)	¥970 million (US\$8.1 million)

Penalties and Fines (Rico Group)

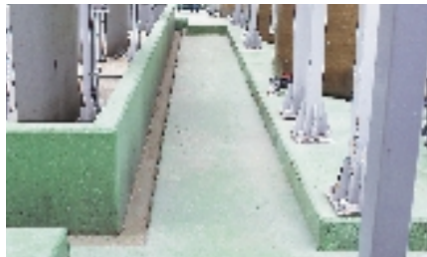
	FY1994	FY1995	FY1996	FY1997	FY1998
Number of cases	—	—	—	2	2
Amount (US\$)	—	—	—	5,000	4,171



Risk Management (Pollution and Disaster Prevention)

The Ricoh Group has acquired ISO 14001 certification at 21 of its main production bases around the world and has constructed a risk management system based on this at each business site. Our groupwide chemical substance management system, RECSIS, also defines the methods for dealing with accidents caused by chemical substances and makes those available to all business sites. All accidents are reported to the world's leading officials once proposals have been made at comprehensive conferences following decisions made at the world's environmental conferences.

- The Ricoh Yashiro Plant in particular, which manufactures LSIs, is involved in the following advanced and detailed risk management.



Acid or alkaline liquid waste disposal facility. Splash-prevention walls around waste tanks accommodate leaked liquid in case of emergency. Separate tanks used for acid or alkaline liquid prevent liquid waste mixing when not processing.



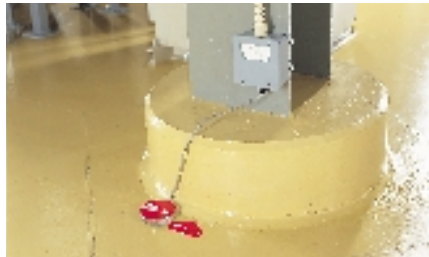
Fuel (e.g., oil) storage tank. Sandbags and shutters work quickly to prevent oil spill during replenishment or while flowing into a side ditch from leaking outside the plant.



Wires attached to FFUs installed on the ceiling of a clean room are designed to prevent collapse even when subjected to tremors equivalent to the Great Hanshin Earthquake.



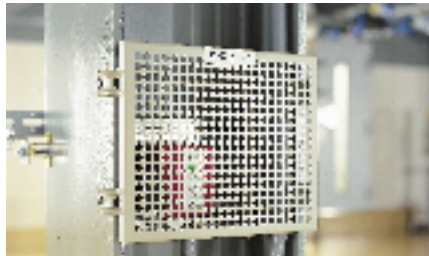
Gas sensor unit. This device is designed to detect gas leakage, with relevant data monitored constantly in a control room.



Leakage sensor unit. Sensor units are installed every several meters to constantly monitor possible water leakage.



Safety control room. This room monitors detection devices throughout a plant. In an emergency, appropriate instructions are immediately given from the control room, accompanied by an alarm and a warning on monitors.



Earthquake sensors installed at various places in the plant set off alarms at the slightest detection and automatically discontinue special material gas supply.



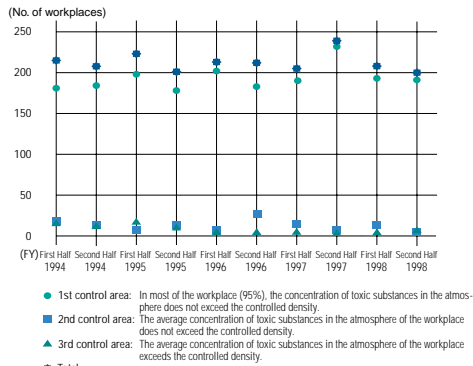
Piping for the most-dangerous chemical substances (e.g., strong acids) is equipped with transparent trays to allow the visual monitoring of leakage, even in small quantities. In case of large-scale leakage, floats in the cylinders indicate the degree of leakage.



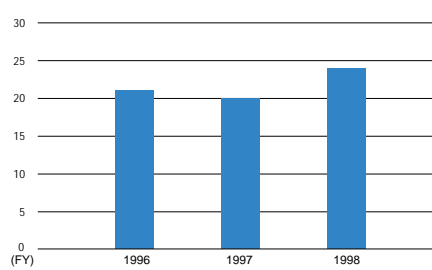
Safety and Health (Employee Health Management)

The Ricoh Group implements work environment measurements and health checkups to maintain a comfortable working environment and continuously improves the working environment. Ricoh Numazu and Ricoh Fukui are undertaking zero-accident activities as part of their TPM (Total Productive Maintenance) mission to realize zero production losses and waste.

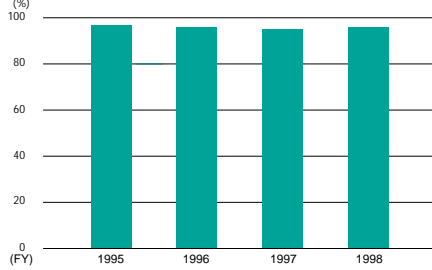
Work Environment Measurement (Ricoh and its affiliates in Japan)



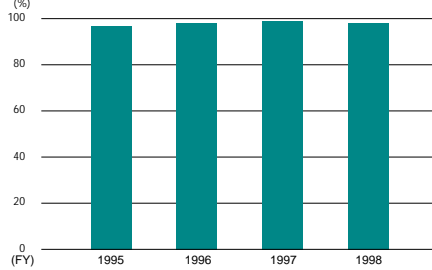
No. of Occupational Hazards (Ricoh)



Health Checkup Rate (Ricoh)



Thorough Medical Checkup Rate (Ricoh)





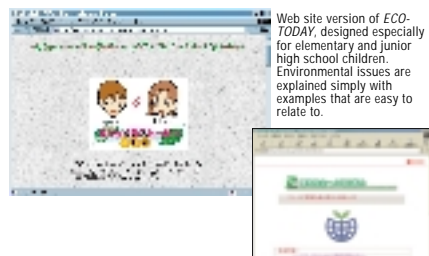
Activities Promoting Environmental Conservation

Information Disclosure

The Ricoh Group discloses information on the environmental impact of corporate activities, presents and exhibits successful examples of reduced impact and research papers, and provides information through its Web site and advertisements, all in a bid to lower the company's overall environmental impact. Such disclosure and sharing of information helps the public understand the Group's approaches and improves employee awareness on environmental conservation and the collecting of information. It is also indispensable for sales activities in focusing on the environment-oriented characteristics of our products.

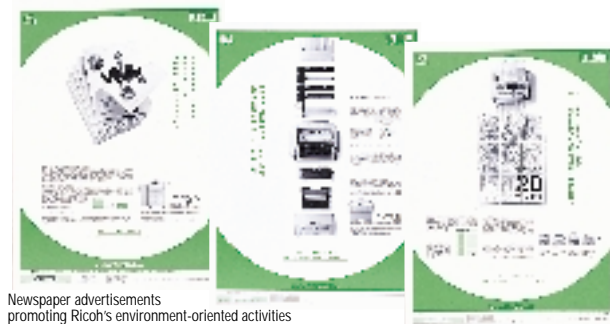


Ricoh Group's environmental information journal *ECO-TODAY*



Web site version of *ECO-TODAY*, designed especially for elementary and junior high school children. Environmental issues are explained simply with examples that are easy to relate to.

Web site



Newspaper advertisements promoting Ricoh's environment-oriented activities



Information disclosure advertisement for shareholders and investors



Information disclosure advertisement for company executives and businesspeople



Ricoh Environmental Report 1998 receives the top prize at the 2nd Environmental Report Awards



Exhibition of recycling activities at Ricoh Fukui

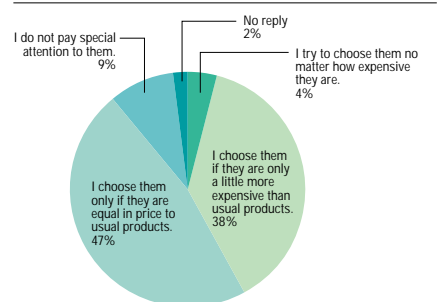


Exhibition of green procurement activities at Ricoh Numazu. Quite a few visitors, including officials from the Shizuoka Prefectural Government and Numazu City Government Authority seeking to obtain ISO 14001, visit Ricoh Numazu to study our approaches on environmental conservation.

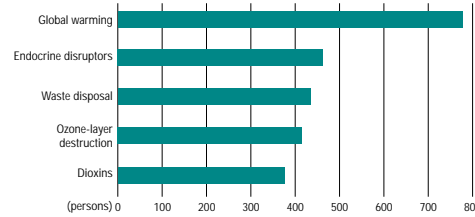
Awareness Survey

Ricoh has been positively engaged in activities to promote education and awareness on environmental conservation. These activities include holding the Company Environment Competition and nurturing environmental volunteer leaders. In the meantime, we conducted an employee awareness promotion survey and collected the most recent data of 1,266 employees. We will continue conducting this kind of survey to improve employees' awareness.

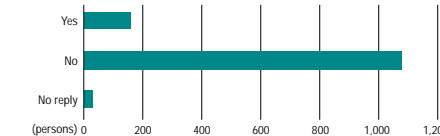
People's Awareness on Environment-Conscious Products in Their Personal Consumption



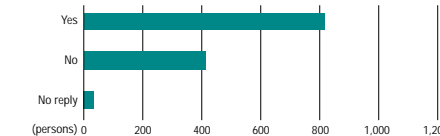
Environmental Matters that People are Interested in (Multiple answers available, top five answers)



Participation in Environmental Volunteer Activities



Are You Interested in Environmental Volunteer Activities?



Ricoh Group Environmental Proposal Award

To promote employee-led environmental conservation activities, we introduced the Ricoh Group Environmental Proposal Award in 1998. In response, we received 320 proposals in total (268 from domestic business sites and 52 from overseas sites), entered in 3 categories: (1) environmental technologies and environment-oriented products, (2) environmental business, and (3) environmental conservation activities that should be dealt with in offices, the home, or other social activities. Two of these were awarded best prizes. Encouraged, we will continue to solicit employee proposals.



Social Contribution

The Ricoh Group believes it is important for employees to act as corporate citizens as well as implement environmental conservation activities individually in voluntary ways both inside and outside the company. Through the Ricoh Community Contribution Club, the Group is involved in nurturing environmental volunteer leaders, organizing community-oriented volunteer activities, and encouraging employees to make donations of their own volition. Ricoh also actively participates in organizations, academic societies, and committees involved in environmental conservation and contributes by providing information and support to those entities. Cooperation is extended to environmental conservation meetings as well, including the Eco Partnership Tokyo Convention, by contributing and lending products and meeting venues.



Ricoh copiers on loan at the Eco Partnership Tokyo Convention

Nurturing Environmental Volunteer Leaders

In 1999, Ricoh launched a leader-training program to promote employee environmental volunteer activities. The program consists of training sessions (Ricoh nature seminars) and company meetings designed to produce 50 leaders annually. Following the training, each leader takes the initiative in developing environmental volunteer activities in close cooperation with relevant divisions or the community. Ricoh provides support in promoting these activities.



The first training session for environmental volunteer leaders



Afforestation activities in Nirazaki (Ricoh)



Cleaning up Enoshima Kaigan (Ricoh)



Cleanup operation (Ricoh Fukui)



Started aluminum can recovery activities in August 1998, leading to the purchase of three aluminum wheelchairs for donation to the Numazu City Government (Ricoh Numazu)



Restocking carp as a part of environmental cleanup activities (Ricoh Numazu)



Cleanup activities around the plant in cooperation with Kaihoku Elementary School (Ricoh Numazu)



Cleaning up after an oil spill (Ricoh Fukui)



Taking an advisory role in regional environmental conservation activities (Ricoh UK Products)

Regional Activities

- Contribution of a prize to Tokai University's Fiesta Ashitaka Earth-Friendly Competition
- Participation in Saitama Prefecture's environmental conservation meeting (Ricoh Unitechno)
- Cleanup activities around the plant (Ricoh Unitechno)
- Tree planting in city parks (Ricoh Unitechno)
- Afforestation and grass mowing (as part of the Protect Our Mountains Group project in Ikeda, Osaka) (Ricoh Ikeda)
- Cleanup activities around the plant (Ricoh Ikeda)
- Support of welfare activities at the social welfare corporation Home of Hasu (Ricoh Fukui)
- Cleanup following the Anzen Kigan Festival (pray for safety festival) on the first day of each month (Ricoh Fukui)
- Support of the Sakaicho Social Welfare Council (Ricoh Fukui)
- Participation in the cleanup of Teganuma Marsh (Ricoh)
- Release of the CD-ROM *Energy Star CD* for a training program and its disclosure on the web site (<http://www.energystarexperience.com>) (Ricoh Corporation)

Contributions to Organizations Engaged in Environmental Conservation Activities

- Nature Conservation Fund, Keidanren
- World Wide Fund for Nature (WWF)
- Wild Bird Society of Japan
- Nature Conservation Society of Japan
- Bangladesh Poush
- OISCA International
- Soft Energy Study Committee/Green Angels Subcommittee
- Nature Circle



Afforestation activities and support for environment-oriented education in Bangladesh

Ricoh Group’s
Environmental Conservation Activities

1976	Establishes Environmental Promotion Section
1978	Establishes Environment Measurement Center
1980	Starts manufacturing of aluminum ingots at Tohoku Ricoh as part of the recycling system
April 1989	Establishes the Committee to Address Chlorofluorocarbons
March 1990	Discontinues use of styrene foam plastic packaging material, including ozone-depleting substances
July 1990	Markets Shigen recycled paper in Japan
September 1990	Markets Ricoh Recycling Copy recycled paper in Germany
September 1990	Proposes used paper recovery and recycling system using Risapost (Ricoh in-house recovery system)
December 1990	Sets up Environment Administration Office
July 1991	Markets the imagio MF 530 Series copier with energy-saving features
February 1992	Establishes Ricoh’s General Principles on the Environment
March 1992	FT5570 copier awarded the BAM (initial version)
October 1992	Announces the Ricoh Environment Symbol
March 1993	Achieves total elimination of ozone-depleting substances (specific kinds of CFCs (chlorofluorocarbons), specific kinds of halon, carbon tetrachloride, etc.)
May 1993	Announces the recycled product design basic policy and implements recyclable design level 1
May 1993	Launches material labeling on plastic parts
May 1993	Ricoh UK Products’ copier photosensitive drum recycling technology receives the English Queen’s Award
September 1993	Ricoh UK Products’ Consumption Power Reduction Activities receives the Business Energy Award’s Grand Prize
December 1993	Ricoh Group achieves total elimination of ozone layer damaging substances (specific kinds of CFC, specific kinds of halon, carbon tetrachloride, etc.)
January 1994	Awarded the Kanto Trade and Industry Bureau Director’s Prize for activities to rationalize electricity use at Ricoh Gotemba
January 1994	Creates the Ricoh Environmental Management System Committee
March 1994	FT6655 copier awarded the BAM (second version)
May 1994	Copier photosensitive drum recycling technology of Ricoh UK Products receives European Better Environment Awards for Industry
August 1994	The Comet Circle concept is completed
October 1994	Presents a case of LCA of toner cartridge buffer material at RECY '94 in Germany
November 1994	Markets resource-saving and energy-saving copiers around the world (marketed as the Spirio 2700/3500 series in Japan)
November 1994	Implements labeling of materials and grade on plastic parts
November 1994	Implements recyclable design level 2
February 1995	Holds First Ricoh Company Environment Competition
February 1995	Ricoh Central Research Center receives Kanto Electricity Use Rationalization Committee Director Award for its cogeneration system
February 1995	Publishes first edition of <i>Ricoh Environmental Management System Guidelines</i>
March 1995	Ricoh environmental assessment and recyclable design promotion activities receive a Resource Recovery Development Business Commendation: the Minister of International Trade and Industry Prize
March 1995	Markets the FT4000/5000 Series resource-saving and energy-saving copier in Japan and Europe
June 1995	Holds First Tohoku Ricoh Environment Fair
August 1995	Wastewater treatment closed system starts operations at the Ricoh Yashiro Plant
October 1995	Announces International Energy Star certified products
December 1995	Ricoh Gotemba Plant acquires ISO 14001 certification
February 1996	Holds Second Ricoh Company Environment Competition
March 1996	Chemical substances management system RECSIS starts operations
June 1996	Ricoh Corporation, in the United States, wins Energy Star Office Equipment Prize
July 1996	Ricoh UK Products acquires BS 7750/ISO 14001 certification
November 1996	Implements recyclable design level 3
February 1997	Holds Third Ricoh Company Environment Competition
February 1997	Opens Ricoh Kanto Recycle Center
March 1997	Ricoh Corporation, in United States, wins Energy Star Copier Prize

Worldwide Trends

1971	Environment Agency set up / Ramsar Convention adopted
1977	United Nations Conference on Desertification held UNEP conference held
1987	Adopts Montreal Protocol
1990	London meeting (set phase-out of CFCs and HCFCs)
1991	Recycled Resource Use Promotion Law enacted
1992	UN Conference on Environment and Development (Earth Summit) held
1993	Energy Saving Law revised
1995	The First Conference of Parties to the United Nations Framework Convention on Climate Change (COP1) held Container Packaging Recycle Law implemented International Energy Star Program implemented
1996	ISO Environmental Auditing Standards of Environmental Management System established International Energy Star Award launched by EPA (United States) COP2 held
1997	COP3 held

Ricoh Group’s
Environmental Conservation Activities

June 1997	Ricoh UK Products receives UK BSI-Innovation in Environmental Management
June 1997	Sets 79 types of management chemical substances
September 1997	Announces eco-packaging LCA case at the Eco-Material International Symposium
October 1997	Six copier models awarded the Nordic Swan Mark (Scandinavian environmental label)
February 1998	Combined copier/facsimile device, RIFAX BL110 was acclaimed as a “superior device for saving energy” and received the Chairman’s Prize of the Japan Machinery Federation
March 1998	Ricoh Corporation wins Energy Star Imaging Device Prize
March 1998	Holds Fourth Ricoh Company Environment Competition
March 1998	Draws Ricoh Environmental Action Plan
April 1998	Reorganizes Environment Administration Office to Corporate Environment Office
April 1998	Ricoh establishes the Recycling Division
April 1998	Revises Ricoh’s General Principles on the Environment
May 1998	Issues <i>Ricoh Group Green Procurement Guidelines</i>
June 1998	Ricoh Atsugi recognized for its environmental conservation activities in Kanagawa Prefecture by Kanagawa Prefectural Environmental Conservation Council
September 1998	Ricoh Omori’s Noise Testing Center receives first NIST international certification in Japan
October 1998	Ricoh Fukui achieves 100% resource recovery rate (zero waste)
October 1998	Ricoh Numazu toner cartridge recycling system receives Westec Award Environment Agency Director-General Prize
October 1998	Starts Ricoh Recycle Label System
October 1998	Holds European Environment Conference sponsored by European region unification company Ricoh Europe B.V.
October 1998	Ricoh Microelectronics awarded 1998 Best Green Plant Award by Japan Greenery Research & Development Center
October 1998	Announces external cabinet plastic material recycling case
November 1998	Ricoh ranked top of the electric and electronics industry by German environmental survey specialist company Ökom GmbH
December 1998	Evaluated as number one in Second Corporate Environmental Management Level Survey by the <i>Nippon Keizai Shimbun</i> newspaper
January 1999	Issues the <i>Ricoh Group Environmental Report 1998</i>
January 1999	Holds the Fifth Ricoh Group Environment Competition
February 1999	Ricoh Gotemba receives the Director-General of the Agency of Natural Resources and Energy Award from the Minister of International Trade and Industry for promoting office energy savings
February 1999	Ricoh Numazu achieves a 100% resource recovery rate (zero waste)
March 1999	Ricoh and Tohoku Ricoh recognized by the director-general of the Industrial Location and Environmental Protection Bureau, Ministry of International Trade and Industry, for their development of a copier remanufacturing system
March 1999	Ricoh Fukui receives the Best Experience Prize for its 100% waste-recycling presentation at the QC Circle National Contest
April 1999	Ricoh Corporation receives the Energy Star Prize for the fourth consecutive year from the U.S. Environmental Protection Agency (EPA)
April 1999	The <i>Ricoh Environmental Report 1998</i> receives the top Environmental Report Award
May 1999	Ricoh Fukui receives the Fukui Environmental Activity Promotion Council’s Chairman Prize for environmental conservation promotion activities
May 1999	Receives the Environmental Protection Prize in the Ninth Corporate Contribution to the Society Survey held by the Asahi Shimbun Cultural Foundation
May 1999	Receives the Minister of International Trade and Industry Prize at the Eighth Global Environmental Awards held by the Japan Industrial Journal
June 1999	Implements recyclable design level 4
June 1999	The Ricoh Group hosts the America Environmental Convention
June 1999	Ricoh introduces its environmental volunteer leader training program
June 1999	Ricoh is awarded the superior prize for the Green Procurement Award organized by the Green Procurement Network
July 1999	Ricoh Hadano recognized by Kanagawa Prefecture as a superior plant with self-regulation for pollution prevention

Worldwide Trends

1998	COP4 held Eco Partnership Tokyo Convention held Law Promoting Countermeasures against Global Warming established
1999	Revised Energy Saving Law Enforced PRTR Law established



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