Environmental Accounting

Environmental Accounting for FY1998

Item	Costs		Effects			Environmental impact reduction	EE value[1]	Environmental impact (total)	Eco-ratio[2] (100 million yen/ton)
	Environmental costs	Main costs	Monetary effects	Category	Item				
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	0.0144
			¥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	36.4
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	366.8
			¥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.				
Social activity costs	¥120 million	Costs for the preparation of environmental reports, advertisements, and exhibitions	¥20 million	b	Environmental advertising, etc.	Final waste disposal amount ···· 3,279t	70.4	Final waste disposal amount ···· 2,485t	0.827
Other costs	—	Costs for the restoration of soil pollution and environment-related reconciliation	—	—	None	Water ····· 456,000t	9,785	Water ····· 3,137,000t	0.00065
Total	¥4,660 million		¥5,140 million						

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

(millions of yen)

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

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.

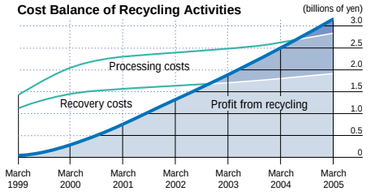
* Ricoh establishes original standards (e.g., up to 40% recyclable parts [mass ratio]) and attaches a Ricoh Recycle Label to products satisfying them.

FY 1998 Environmental Accounting for Ricoh's Recycling Activities

(millions of yen)

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 million[1]. 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 million[2] from sales of recovered resources properly disposed of as waste, and lowered disposal costs ¥32.61 million[2].

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)

US$1 = ¥120

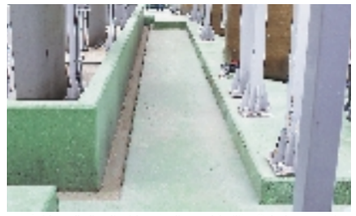
Penalties and Fines (Ricoh Group)

	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.

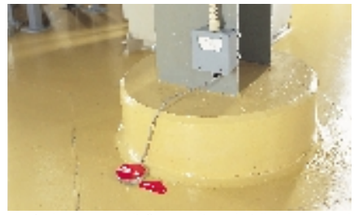


Acid or alkaline liquidwaste disposal facility. Splash-prevention walls around waste tanks accommodate leaked liquid in case of emergency. Separate tanks used for acid or alkaline liquid prevent liquid waste mixing when not processing.

Fuel (e.g., oil) storage tank. Sandbags and shutters work quickly to prevent oil spilt 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.

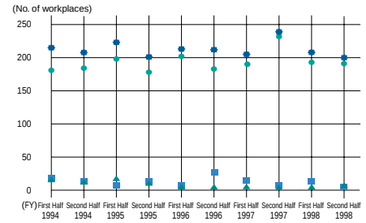
Earthquake sensors installed at various places in the plant set off alarms at the slightest detection and automatically discontinue special material gas supply.

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.

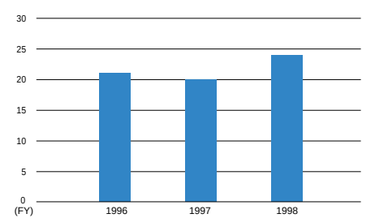
Safety and Health (Employee Health Management)

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.

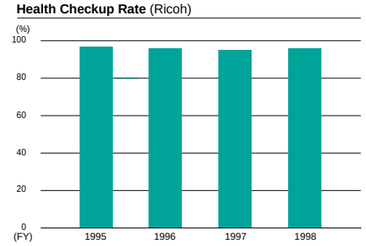
Work Environment Measurement (Ricoh and its affiliates in Japan)



No. of Occupational Hazards (Ricoh)



Health Checkup Rate (Ricoh)



Thorough Medical Checkup Rate (Ricoh)