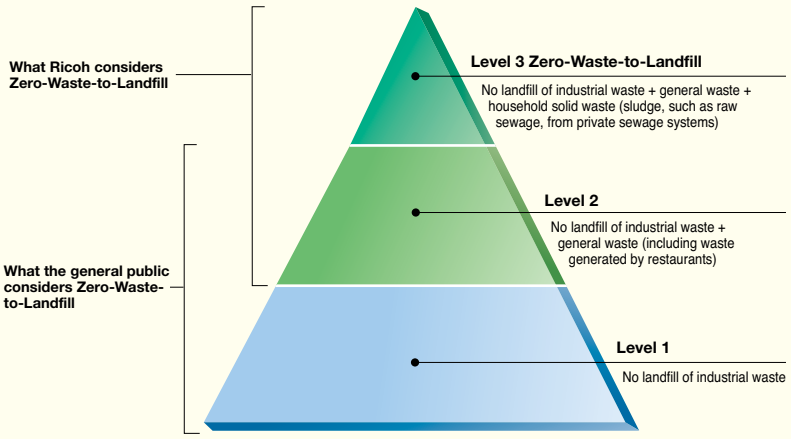
We promote Zero-Waste-to-Landfill Activities Worldwide while Reducing Waste and Costs

● Concept

The Ricoh Group is globally working to maximize resource productivity, primarily limiting the production of waste, reducing water consumption, and reducing paper consumption. The Ricoh Group promotes Zero-Waste-to-Landfill* activities as a part of its sustainable environmental management system by efficiently using resources, improving production efficiency, reducing waste disposal costs, and improving corporate quality by promoting employee awareness of environmental conservation. In fiscal 2001, the Ricoh Group achieved Zero-Waste-to-Landfill at its major global production sites. These activities are now promoted at non-production sites and sales companies at home and abroad. Meanwhile, in addition to waste reduction, proper waste processing and cost reduction are also important. From fiscal 2005, we review and enhance the auditing of waste disposal.

* Zero-Waste-to-Landfill means a 100% resource recovery rate and no waste used as landfill.

Definition of Zero-Waste-to-Landfill Levels by the Ricoh Group



● Targets for Fiscal 2007

◎ Reduce generated waste by at least 3% (Ricoh and manufacturing subsidiaries in and outside of Japan, compared to fiscal 2000 figures).

◎ Reduce generated waste by the ratio calculated by multiplying the number of years from the base fiscal year to fiscal 2007 by the yearly rate (2%) (non-manufacturing subsidiaries in Japan; the base fiscal year is set at each company).

◎ Improve the waste recycling rate to at least 95% (non-manufacturing subsidiaries in Japan).

◎ Reduce water consumption to a level that is below the results of fiscal 2000 (Ricoh production sites and manufacturing subsidiaries in and outside of Japan).

◎ Reduce paper consumption by at least 10% (Ricoh, manufacturing and non-manufacturing subsidiaries in Japan, and manufacturing subsidiaries outside of Japan, compared to fiscal 2002 figures).

● Review of Fiscal 2005

In fiscal 2005, nonmanufacturing subsidiaries in Japan set goals for waste reduction and took initiatives to both improve the recycling rate and reduce waste. On the other hand, waste reduction at production sites improved marginally, by 0.5%, due to the larger production of supplies and an increase in packaging materials used associated with the expanded production of machines (see graph ❶). In terms of water consumption, our continued efforts have contributed to a 9.1% reduction over the fiscal 2000 level (see graph ❷). Also, we achieved a 1.2% reduction in paper consumption compared with the fiscal 2002 level.

● Future Activities

The amount of waste generated is expected to increase substantially in the years to come because it largely depends on production volume. To respond to this trend, we will promote waste reduction mainly in the upstream production process, such as development and design. At the same time, by clarifying how waste is generated and identifying problems, we will improve the yield rate by eliminating losses and developing efficient packaging materials.

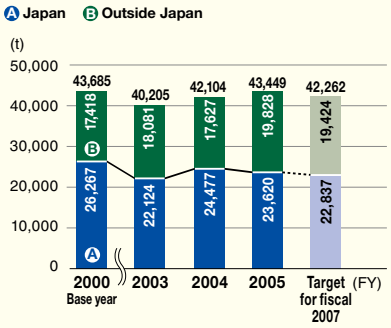
Segment Environmental Accounting of Recycling Activities at Business Sites (The Entire Ricoh Group)

Costs			Effects			
			Economic benefits		Effect on environmental conservation	
Item	Main cost	Costs	Items	Benefits	Reduction item	Amount
Business area cost	Resource circulation cost	¥1,068.0 million	Reduction in waste disposal expenses	¥–3.0 million	Amount of waste disposed/ reduced	549.1 (t)
			Proceeds from sale of valuables	¥1,327.6 million		

<The Entire Ricoh Group>

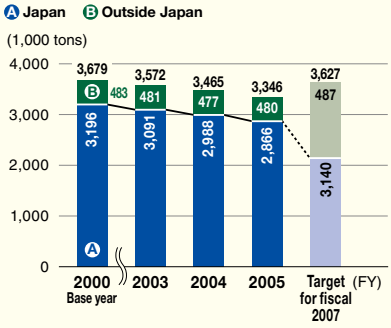
Total Amount of Waste Generated

❶ The Ricoh Group (production)



Volume of Industrial Water Used

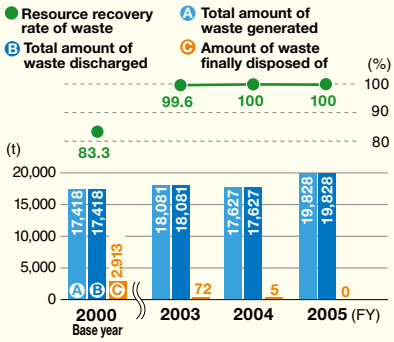
❷ The Ricoh Group (production)



<Outside Japan>

Resource Recovery Rate of Waste/Total Amount of Waste Generated/Total Amount of Waste Discharged/Amount of Waste Finally Disposed of

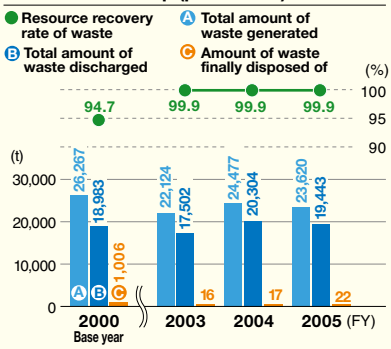
❺ The Ricoh Group (production)



<Japan>

Resource Recovery Rate of Waste/Total Amount of Waste Generated/Total Amount of Waste Discharged/Amount of Waste Finally Disposed of

❸ The Ricoh Group (production)



❹ The Ricoh Group (non-production)

	Resource recovery rate of waste (%)	Total amount of waste discharged (t)	Amount of waste finally disposed of (t)
Sales Companies	91.8	2,035	166
Maintenance and Services (Ricoh Technosystems)	98.4	1,935	30
Logistics (Ricoh Logistics System)	98.1	3,999	74
Finance (Ricoh Leasing)	95.6	70	3
General Services (Ricoh San-ai Service)	84.6	26	4

* At non-manufacturing subsidiaries, the amount of waste generated and the amount of waste discharged are the same, because waste is not processed at the business site. Therefore, only the total amount of waste discharged is listed.

Resource recovery rate of waste: Amount of resource recovered/amount discharged
Total amount of waste generated: Amount of waste generated at business sites
Total amount of waste discharged: Amount of waste discharged outside business sites (including the waste undergoing disposal processing inside the plants)
Amount of waste finally disposed of: Amount of discharged waste used in landfills and incinerated

* Data on Ricoh Printing Systems and Shanghai Ricoh Digital Equipment are not included in graphs ❶ through ❺. Waste generated from the manufacturing of polymerized toner at Ricoh's Numazu Plant is not included either. Data that include waste from these sources are shown on Page 77.

Integrated Auditing of Waste Disposal Service Providers and Creating an Auditor Recognition System

<Ricoh (Japan)>

Ricoh has been working on integrating the auditing of waste disposal service providers and creating an auditor recognition system in order to ensure proper waste disposal and reduce related costs. In the past, because each business site audited service providers individually, such problems as different evaluations of the same providers and duplication of audit operations have emerged. To address these issues, Ricoh created an auditor training curriculum and recognition system targeting its production sites and manufacturing subsidiaries in Japan in fiscal 2005. The company also began sharing information on waste disposal service providers within the Ricoh Group. From fiscal 2006 onward, Ricoh will conduct audits by the Group's certified auditors and implement an audit rotation system among business sites and companies to further improve the audit level and ensure proper waste disposal.

Auditor training

INTERVIEW

Employee Interview | Reuse of fine waste toner (U.S.)

Ricoh Electronics, Inc. has successfully developed technology that reuses fine waste toner generated in toner production lines and effectively reduced production cost by 50%.

Dilip Potnis
Director
New Business Development, Reprographic Supply Group
Ricoh Electronics, Inc.

Ricoh Electronics, Inc.'s Santa Ana plant started toner production in 1983. Toner is a plastic powder used in copiers, laser printers, etc. Fine waste toner particles are smaller in diameter than usual toner particles. During the production of toner, these fine particles are generated and they are usually known as waste and cannot be used. Normally this fine waste toner is stored in toner factories and later it is sent for energy recycle. The North American market is considered to be extremely cost competitive for toner products, especially those not covered by Ricoh's business. Due to the competitive North American market, we started considering ways of utilizing fine waste toner of one product into another type of toner. After conducting studies on production processes based on the idea of introducing fine waste toner and changing the original toner formulation, we succeeded in our idea of reusing fine waste toner and produced new toner at a cost that is 50% less than the conventional cost.

By applying reuse of fine waste toner technology groupwide has contributed a lot in reduction of waste.

By the end of fiscal 2005, we reused 120 tons of fine waste toner through a newly developed production method. Previously, fine waste toner was recycled as fuel for energy resources. By recycling fine waste toner as a new material, "we prioritized recycling products in the inner loops of the Comet Circle*". As a result, we achieved production with less environmental impact and greater economical gain. Reusing 120 tons of fine waste toner saved Ricoh Electronics $600,000 for material cost reduction. REI started collecting fine waste toner from other factories including Numazu and Fukui plants in Japan and also from Ricoh Industrie France S.A. and in the process helped the Ricoh group to reduce waste. With our activities, we contributed in reducing environmental impact within all of the Ricoh family group.

*See page 14.

Reducing Waste by Developing a New Method of Producing Thermal Paper

<Ricoh Electronics, Inc. (United States)>

Thermal paper is used in making bar code labels for perishable food, parcels, etc. The Ricoh Group supplies such thermal paper to label manufacturers, etc. by the roll. The rolls are originally very large, being several meters wide and several hundreds of meters long, and are cut into different sizes according to customer specifications before delivery. As a result, thermal paper that does not meet specifications is left with Ricoh. Traditionally, if this material violated the splice rule of the customer, then that material had to be recycled. If the customer allowed the splice, then it would be constructed with a non-printable vinyl tape and the customer had to remove it at the process stage. Nevertheless, the number of splices per roll was sometimes restricted for the benefit of the customer's productivity. As a result, many short pieces of thermal paper that could not be reprocessed into rolls remained. The Georgia Plant of Ricoh Electronics, Inc., Ricoh's American production company, developed a new production method called Run-a-Splice™, which joins thermal paper together without the use of vinyl tape. As a result, short pieces of thermal paper that previously could not be reprocessed can be now incorporated into rolls. The advantage of this Run-a-Splice is that the end user can actually use the splice as a label with barcode and printing. This results in a reduction in costs of approximately $20,000 per month and that of waste by about 1,000 kg.

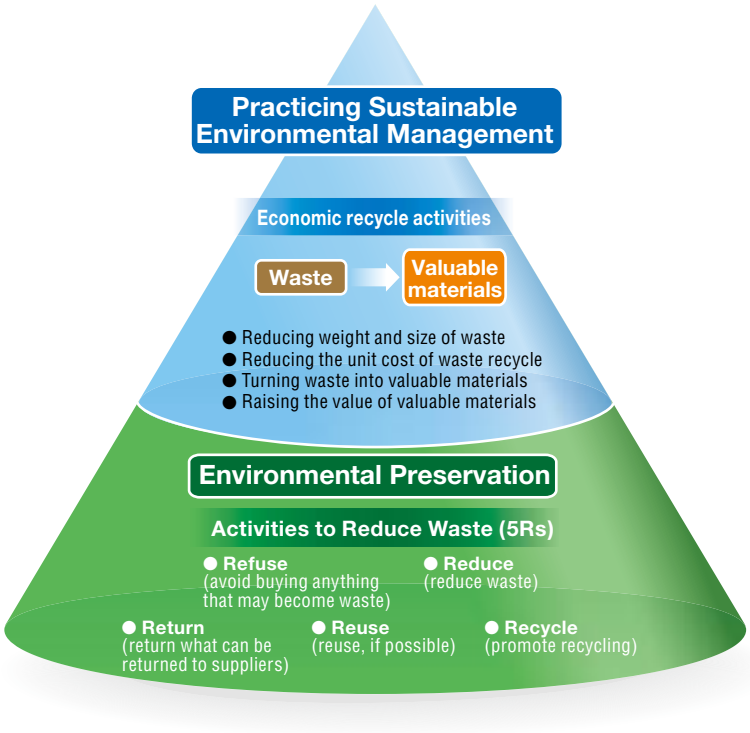
Joining the rolls

Raising the Level of Zero-Waste-to-Landfill Activities to Realize Sustainable Environmental Management

<Ricoh Numazu Plant (Japan)>

Because the volume of waste generated and the cost of waste disposal are likely to increase significantly after the new plant starts operation in December 2006, Numazu Plant started working on reducing waste by reviewing waste as a whole. Packages for materials and parts, waste oil, wastewater, and thermal sludge are major waste generated at Numazu Plant. Recycling routes have been established for all waste generated, and Zero-Waste-to-Landfill has been achieved through the 5Rs. An increase in the volume of waste generated, however, would lead to an increase in environmental impact in terms of recycling and cost. Therefore, the plant reviewed its activities from four points of view: reducing waste, reducing the unit cost of waste disposal, turning waste into valuable materials by reviewing sorting methods, and raising the value of valuable materials. Concrete examples include controlling the unit cost of waste disposal by reviewing the waste water disposal route, asking suppliers to collect waste oil, collecting and selling such waste oil, and turning plastic and film waste into valuable materials through efficient sorting. As a result, the plant succeeded in reducing costs by more than ¥70 million and waste volume by approximately 300 tons in fiscal 2005.

Ideas for Raising the Level of Zero-Waste-to-Landfill at Numazu Plant



Building Awareness and Turning Waste into Valuable Materials in Cooperation with Resource Recovery Companies

<Ricoh Numazu Plant (Japan)>

In December 2005, Numazu Plant held a meeting for managers from different production sites to study waste disposal. The meeting was aimed at building awareness among managers at production sites and ensuring that all waste is turned into valuable materials by reviewing how waste is sorted. Resource recovery companies were invited to the meeting, and they confirmed how actual waste generated during production was treated and discussed the best way to sort waste in order to realize the most economic means of disposal. "I didn't expect to get paid for such a thing" and "I once again realized the importance of sorting" were some of the comments made by participants. Thus, the meeting helped participants understand recycling better. Thanks to the meeting, of the 15 types of plastic waste that could not be previously turned into valuable materials, 10 could now be turned into valuable materials and 5, with some exception, could be turned into valuable materials by removing those that are dirty and further sorting the rest.