

Having achieved Zero-Waste-to-Landfill at our global sites, we are making every effort to reduce discharged matter and alleviate wastage of resources.

### ■ Concept

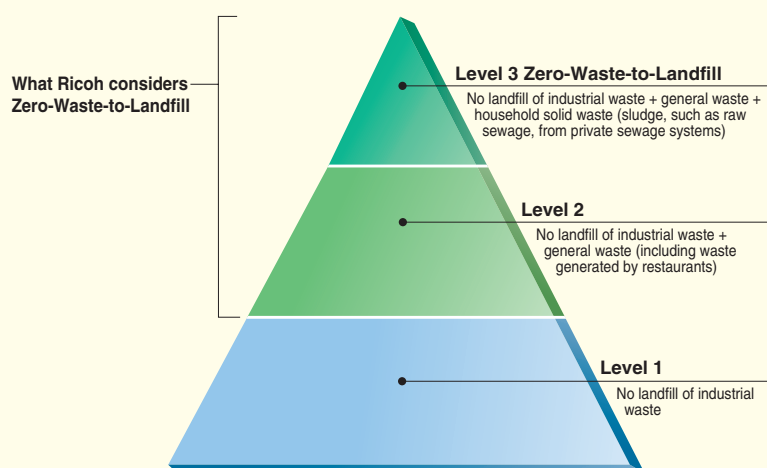
The Ricoh Group is working globally to maximize resource productivity, primarily by limiting the amount of matter generated that will be discharged, reducing water consumption, and reducing paper consumption. The Ricoh Group promotes Zero-Waste-to-Landfill\* activities as a part of its sustainable environmental management system by efficiently using resources, improving production efficiency, reducing discharged matter 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 subsidiaries worldwide. Furthermore, since fiscal 2008, new reduction efforts focusing on resource waste alleviation in the thermal media business, discharged matter generated during the production of polymerized toners, and packaging materials used in production and for transportation between sites inside and outside of Japan have been promoted. In addition, an audit system for waste disposal service providers was introduced in Japan, aiming to upgrade and expand proper waste disposal methods.

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

### ■ Targets for Fiscal 2010

- Reduce the amount of discharged matter in the thermal media business by 10% from the level in fiscal 2006.
- Reduce the amount of discharged matter from packaging materials by production volume in the production of imaging systems in Japan by 30% from the level in fiscal 2006.
- Reduce the amount of discharged matter per production volume in production of polymerized toners by 17% from the level in fiscal 2007.

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



### ■ Review of Fiscal 2008

Although the Ricoh Group's amount of discharged matter increased overall (see graph ① on [Page 39](#)), some improvement has been achieved in the three priority areas. Discharged matter in the thermal media business was reduced by 8.0% over fiscal 2006. As for packaging material waste from production of imaging systems, we introduced various measures aiming to achieve the targets in fiscal 2010, after visualizing the current condition and detecting reduction potential. Discharged matter from polymerized toner production fell by 2.2% per production volume compared to the level of fiscal 2007.

### ■ Future Activities

As for discharged matter in the thermal media business and polymerized toner production, the production, development, and design divisions will co-operatively select improvement themes and continue to make efforts to reduce wastage of resources. As for packaging materials used in production, steady efforts will be made to implement the introduced measures.

Segment environmental accounting of recycling activities at business sites  
(The Entire Ricoh Group)

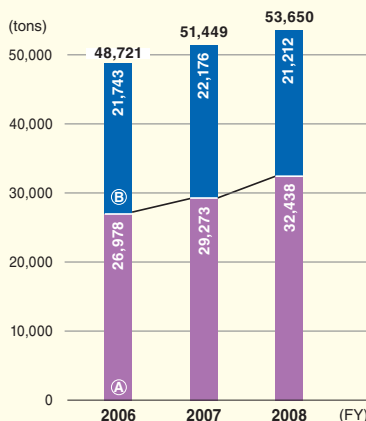
Costs			Effects			
Item	Main cost	Costs	Economic benefits		Effect on environment conservation	
			Items	Benefits	Reduction item	Amount
Business area cost	Resource circulation cost	¥1,460.8 million	Reduction in discharged matter disposal costs	~¥70.9 million	Final amount of discharged matter disposal (reduction amount)	-159.4 tons
			Proceeds from sale of valuables	¥299.6 million		

### <The Entire Ricoh Group>

#### Total amount of waste generated

##### ① The Ricoh Group (Production)

● Japan ● Outside Japan

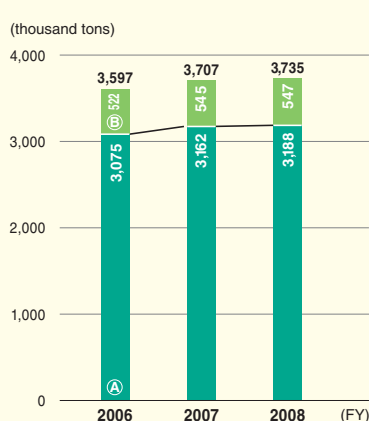


\* As for sludge, the volume after drying is considered as its volume.

#### Volume of industrial water used

##### ② The Ricoh Group (Production)

● Japan ● Outside Japan



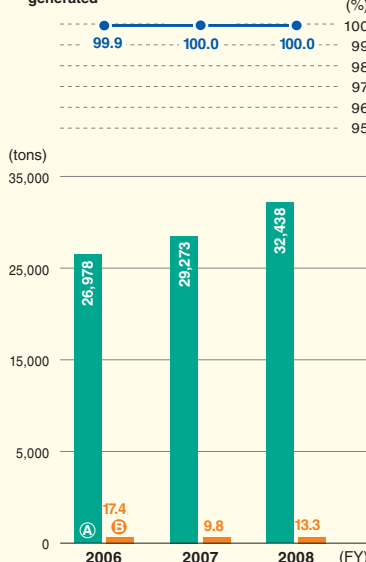
### <Japan>

Resource recovery rate of discharged matter/  
Total amount of discharged matter generated/  
Final amount of discharged matter disposal

##### ③ The Ricoh Group (Production)

● Resource recovery rate of discharged matter

● Total amount of discharged matter generated ● Final amount of discharged matter disposal



Resource recovery rate of discharged matter:  
Amount of resource recovered/amount discharged  
Total amount of discharged matter:  
Amount of discharged matter generated at business sites  
Final amount of discharged matter disposal:  
Amount of discharged matter used in landfills and incinerated

\* The graphs ① to ③ include data for Ricoh's non-production sites.

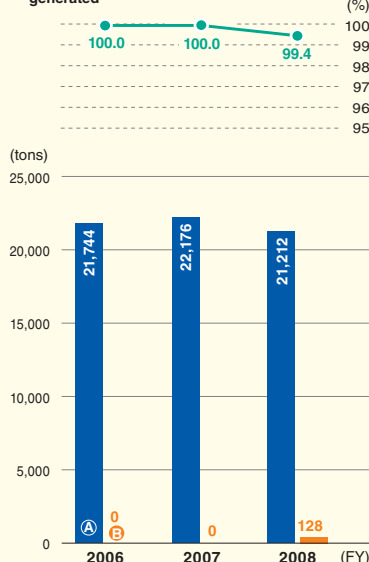
### <Outside Japan>

Resource recovery rate of discharged matter/  
Total amount of discharged matter generated/  
Final amount of discharged matter disposal

##### ④ The Ricoh Group (Production)

● Resource recovery rate of discharged matter

● Total amount of discharged matter generated ● Final amount of discharged matter disposal



\* Final amount of discharged matter disposal consists of sludge in the private sewerage systems of Shanghai Ricoh Digital Equipment Co., Ltd. used in landfills and part of sludge used in landfills as a result of Ricoh Thermal Media (Wuxi) Co., Ltd. coming on line.

### Auditing waste disposal service provider

#### <Ricoh (Japan)>

Ricoh has been making efforts to enhance the audit of waste disposal service providers since 2005, so that waste generated by Ricoh will be disposed of properly and appropriately by reliable partners. In the past, because each business site audited these service providers individually, evaluations were sometimes inconsistent due to differences in the knowledge and experience of the auditors. To address these issues, Ricoh established uniform audit standards for the Ricoh Group, conducted auditor training for employees engaged in waste disposal at respective business sites, and certified them as auditors. Ricoh then audited all the service providers that have business relations with the Group's production sites. Any service providers where any incongruity was detected were given directions and requested to make improvements, and after a few days, a confirmation audit was completed. In fiscal 2008, Ricoh strove to raise the audit level by improving the efficiency of audits and promoting an auditor rotation system as well as follow-up education. The Ricoh Group will continue making efforts to ensure even more reliable and efficient waste disposal.



Auditing of a waste disposal service provider

## INTERVIEW

ECO KEIKAKU CO., LTD.

**We are making efforts for appropriate disposal of waste, establishing voluntary standards which are even higher than the legal standards.**

### Ricoh's audit standards boost our level of management

Our waste disposal operation was audited by the Ricoh Group in June 2006. We are engaged in comprehensive recycling business to handle all the processes from the collection/transportation and intermediate processing to final disposal at four bases in Saitama and Gunma prefectures. Our company has disposed of various types of waste generated by the Ricoh Group including toner cartridges for about 10 years. Our company has acquired ISO14001 certification and is the only private company in Japan that has been certified as a designated facility in compliance with the Law for Improvement of Designated Facilities for Industrial Waste Disposal. We have set voluntary standards which are stricter than the legal standards, so we are confident that we can be audited by any prefectural organization or any company at any time. We were, however, rather surprised by Ricoh's audit. Ricoh selected items to be checked from a viewpoint similar to that of waste disposal service providers, rather than that of companies consigning waste disposal. Their audits gave us some hints for improving the level of our management. While audits did not reveal any particular problems with our management, they advised us to check more closely the service providers handling part of our business on consignment. In response, we immediately introduced measures for improvement.



**Mr. Michihiro Bouyama**  
General Manager,  
Planning and Marketing  
Section, Environmental  
Contribution Division

**Mr. Tsunataka Inoue**  
President

**Mr. Sadao Aoki**  
Director, Eco-  
Space Ranzan;  
Environmental  
Contribution Division

### We have developed safe original toner cartridge recycling technology

In 2007, our company developed toner cartridge disposal technology using steam from incineration to cope with dust. Waste to which toner adheres could cause a dust explosion. Because of this, only a few service providers handle such waste, and this technology has helped not only the Ricoh Group but also several other manufacturers. We have engaged ourselves in community-based business for the 39 years under the slogan "We have borrowed the Earth from our children." Accordingly, we regard leaving a good global environment to the next generation as our social responsibility. Even waste can be considered important goods consigned by our customers. We will take good care of it and continue to realize appropriate management. As a company contributing to the environment, we would like to contribute to the realization of a resource-recirculating society.

### Efforts for reducing packaging materials used in production

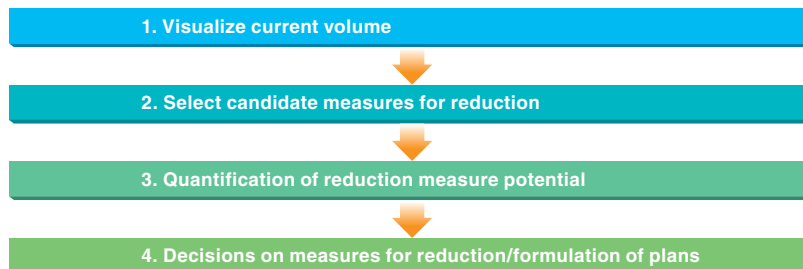
#### <Ricoh Group (Global)>

Packaging materials used for transportation among production bases both inside and outside Japan tend to increase, reflecting the global expansion of the production network, which is imposing increased environmental and cost impacts. Packaging materials used in production refer to those used for the procurement of parts or transportation of half-finished goods, instead of those used for the delivery of products to our customers. The Ricoh Group aims to reduce packaging materials used in production of imaging products in Japan by production volume by 30% from the fiscal 2006 level by fiscal 2010, and is making efforts for the achievement of this target. The shipper packs the items but it is the business site that accepts the items that disposes of the packaging materials. This makes it necessary for business sites to co-operate in order to effectively reduce

packaging material waste. To do so, first of all, it is necessary to visualize the volume and details of packaging materials used for transportation among bases and come up with ideas to reduce them. Then, numerical targets should be set after considering to what level they can be reduced, which should be followed by the

implementation of related measures. In fiscal 2008, meetings for exchanging information for reducing packaging materials used in production were held with the participation of the related sections at three bases. At the meetings, the current volume of such materials was visualized and plans for reduction were mapped out.

#### Steps to reduce packaging materials used in production



### Reducing packaging waste in transportation between global production sites

#### <Ricoh Asia Industry (Shenzhen) Ltd. (China)/ Ricoh Elemex Corporation (Shenzhen)/Ricoh Gotemba Plant (Japan)>

All the parts and half-finished goods transported from Ricoh Asia Industry (Shenzhen) Ltd. (RAI) to manufacturing subsidiaries and production sites throughout the world used to be placed in corrugated cardboard boxes, which were then carried in containers. Waste materials are recycled by the business sites accepting the goods as corrugated cardboard, but recycling does cause some environmental impact and wastage of resources, which ultimately made it necessary to reduce used packaging materials. In light of this, returnable racks that can be used repetitively were introduced in fiscal 2007 for the transportation of some parts including scanner units from RAI to the Ricoh Gotemba Plant. In fiscal 2008, such racks were introduced for the transportation of ADF units from Ricoh Elemex Corporation (Shenzhen) to the Ricoh Gotemba Plant. At the same time, efforts were also made to improve the load-carrying efficiency, which led to the simultaneous realization of an annual reduction of packaging material waste by an annual amount of about 105 tons and a ¥13.7-million cost decrease.



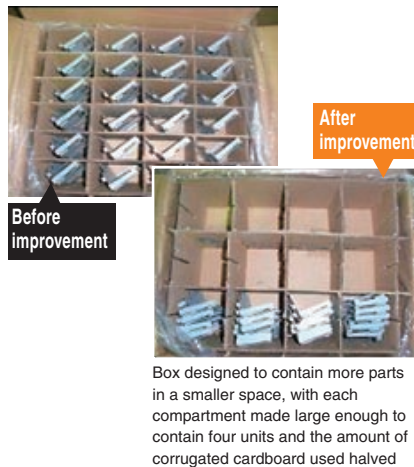
Transportation by returnable rack

### Reducing packaging materials in cooperation with suppliers

#### <Tohoku Ricoh Co., Ltd. (Japan)>

Packaging materials used in production tended to increase at Tohoku Ricoh Co., Ltd. Corrugated cardboard boxes from suppliers comprised a large percentage of these materials. In light of this, the weights of packaging materials used in production and disposed of by Tohoku

Ricoh, and the amounts of respective types of packaging material waste were clarified. Hundreds of types of parts are used for each product. The weights of corrugated cardboard boxes used for respective types of parts were clarified by product, and efforts for their collection/recycling as well as a shift to polyethylene containers, which can be reused or recirculated, were promoted in cooperation with suppliers. Analyses of packaging materials used for the procurement of parts of broad printers showed that more corrugated cardboard is used for their transportation from other countries to Japan compared with their transportation within Japan, where it is easier to introduce returnable racks and boxes. The analyses also revealed that packaging tended to be excessive in transportation outside Japan. We thus requested two suppliers outside Japan to cooperate with us in minimizing space in corrugated cardboard boxes so that each box could contain more parts and products, or they could be reduced in size, and we introduced measures accordingly.



Box designed to contain more parts in a smaller space, with each compartment made large enough to contain four units and the amount of corrugated cardboard used halved

### Activities to reduce packaging materials used in production

#### <Ricoh Elemex Corporation (Japan)>

Ricoh Elemex Corporation selects parts for which improvement measures should be taken after surveying delivery dates and weights of parts, and at the same time applies its accumulated know-how about the transportation of peripheral equipment. In January 2009, it introduced a trial system to reuse packaging materials for parts imported from China—materials that were previously disposed of—for transportation between Ricoh Elemex and a Japan-based supplier, in the same group as the Chinese supplier. In the future, efforts will be made to improve the bulk rate of boxes for imported parts and to introduce returnable containers.

### Developing and raising the level of Zero-Waste-to-Landfill activities

#### <Ricoh Group (Global)>

Zero-Waste-to-Landfill activities\* are carried out at Ricoh's sites all over the world. The Ricoh Group defines Zero-Waste-to-Landfill as a 100% resource recovery rate, or no waste used as landfill. Zero-Waste-to-Landfill was achieved at its major production sites in Japan in March 2001 and at production sites outside of Japan in March 2002. Thus, the Group achieved Zero-Waste-to-Landfill at all its major global production sites. Since then, these activities have been promoted at non-production sites worldwide and at companies that have newly joined the Group. At sites that have already achieved Zero-Waste-to-Landfill, efforts are being made to raise the level of Zero-Waste-to-Landfill, including controlling the volume generated and the conversion of waste into useful materials, under the concepts of sustainable environmental management.

\* See page 38.

### No-wastewater plant in China

#### <Ricoh Thermal Media (Wuxi) Co., Ltd. (China)>

In the Wuxi area of China, where many chemicals manufacturers are located, pollution of water in Lake Tai, a place of scenic beauty, by wastewater from plants has become a major issue. Ricoh Thermal Media (Wuxi) Co., Ltd. (RTM) in Wuxi, China, which started operation in July 2007 as a production site for thermal paper, has a facility for disposing of its wastewater on site and has emitted no wastewater since the beginning of its operation. In addition, it acquired ISO 14001 certification in March 2008, only eight months after the beginning of its operation. Furthermore, RTM applied a new production method which led to a reduction of energy consumption by about 60% compared to that used in conventional manufacturing processes. Thus, RTM is now attracting much attention as a leading player in addressing environmental problems.



Ricoh Thermal Media (Wuxi) (Wuxi, China)