

# Efforts are being made on a global scale to reduce the amount of chemical substances used/discharged, based upon the idea of risk management.

## ■ Concept

The Ricoh Group is engaged in risk management of chemical substances by applying a risk evaluation method in compliance with the Strategic Approach to International Chemicals Management (SAICM), to minimize the risk throughout the lifecycle of chemicals and to share related information. All the chemical substances used, discharged, and disposed of in the manufacturing processes of Ricoh products are controlled under this management. We will establish a global scheme by fiscal 2010, whereby chemical substances will be reduced and managed after risk evaluation considering the hazard levels<sup>1</sup> and exposure/used amount (or discharged amount), and information on such evaluation will be shared. As a measure against chemical substances contamination of business sites and underground water, we have established a system where respective sites make efforts for prevention in compliance with the uniform standards of the Group. In case of contamination, it can be promptly detected and purified under the system. As for soil and underground water contamination, PCBs, and asbestos,

the Group promptly makes efforts to understand environmental liabilities<sup>2</sup> that could affect its financial accounting.

1. Harmfulness to human beings and the environment
2. See page 44.

## ■ Targets for Fiscal 2010

- ◎ Establish a chemical substances risk management system on a global scale.
- ◎ Reduce use of environmentally sensitive substances by more than 30% compared to the fiscal 2000 level (Ricoh's production sites and manufacturing subsidiaries).
- ◎ Reduce the amount of environmentally sensitive substances discharged by more than 80% compared to the fiscal 2000 level (Ricoh's production sites and manufacturing subsidiaries).
- ◎ The environmental liabilities of PCBs and asbestos in land owned by the consolidated Group companies can be estimated.
- ◎ The environmental liabilities are reflected in the financial accounting of the Ricoh Group.
- ◎ Chlorine organic solvents used by the Group, including companies that

become new members of the Group, are completely eliminated.

## ■ Review of Fiscal 2008

We made further discussions about the scheme to assess risk management. The use of environmentally sensitive substances was reduced 69.9% from fiscal 2000, while the amount emitted decreased 80.3% from fiscal 2000 (Graph ①). As part of the environmental liabilities survey, we completed a global pre-survey of the Ricoh Group concerning PCBs and asbestos covering the consolidated companies and calculated environmental liabilities reflecting the results. As for chlorine organic solvents used, we formulated a plan to completely eliminate the use of such solvents and started activities to achieve the goal by fiscal 2010.

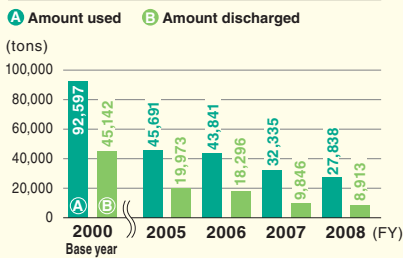
## ■ Future Activities

We will actively promote the establishment of a risk management system and its upgrading, aiming to realize new global management of chemical substances by the Ricoh Group.

### <The Entire Ricoh Group>

Changes in the amount used and discharged of environmentally sensitive substances<sup>1</sup>

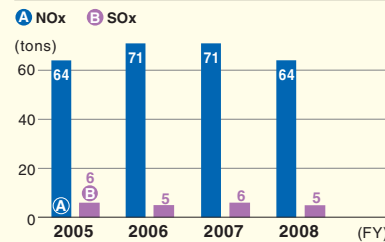
#### ① The Ricoh Group (Production)



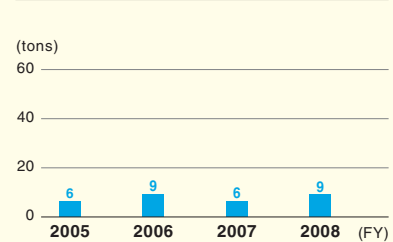
1. Data for the substances specified in the environmental action plan, which consists mainly of the substances covered by the PRTR Law and includes other chemical substances used by the Group in large quantities.  
 2. Represents total emissions directly released into public-use water areas.  
 \* Graph ② does not include data for Shanghai Ricoh Digital Equipment.

#### Changes in the amount of NOx, SOx and BOD

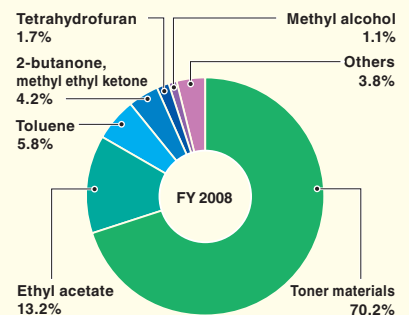
#### ② The Ricoh Group (Production) Air



#### ③ The Ricoh Group (Production) Water (BOD)<sup>2</sup>



#### ③ Breakdown of the use of environmentally sensitive substances The Ricoh Group (Production)



### Segment environmental accounting of pollution prevention activities at business sites (The Entire Ricoh Group)

Costs			Effects	
Item	Main cost	Costs	Economic benefits	Effect on environmental conservation
Business area cost	Pollution prevention cost	¥269.7 million	Reduction in social cost	¥107.1 million
			Amount of risk avoidance effect (incidental effect)	¥2,077.2 million
			Environmentally sensitive substances...	428.7 tons (calculated with the conversion potential)
			NOx	-5.3 tons
			SOx	0.3 tons
			BOD	-2.8 tons

Chemical Substance Control

Establishment of chemical substance risk management system

<Ricoh Group (Global)>

The Ricoh Group is promoting the establishment of a chemical substance risk management system on a global scale based upon the concept of risk management. The risk management system the Ricoh Group aims to establish will satisfy the following four requirements: (1) safety data will be available for all the chemical substances used in the manufacturing processes of Ricoh products and discharged/emitted into the environment, and the amounts used and discharged in respective processes can be confirmed and managed; (2) the risks of chemical substances on the employees/local residents and the environment, as well as the global environment, will be evaluated; (3) efforts for management and reduction will be made to eliminate risks exceeding acceptable levels; and (4) information on risks based on the results of such evaluation will be shared with the related parties through good communication, and agreements reached. We aim to establish such a system by fiscal 2010.

Chemical substance control and information disclosure

<Ricoh Group (Global)>

The Ricoh Group uses its chemical substance control system to monitor data on chemical substances used, discharged, and disposed of at business sites. The system is designed to promote reduction in the use of chemical substances, to prepare materials for PRTR reporting, and to speedily respond to inquiries

Schedule of activities for establishment of risk management system

- March 2009 • Material balances of processes are made clear for chemical substances used in large quantities.
- March 2010 • A risk management system covering human beings and the environment is established and put into operation.
- March 2011 • Risk management and reduction activities are being carried out through the introduction of green and sustainable technology.  
• Information on risks is shared with the related parties through good communication.

Hazard indicator	Hazard classification in GHS <sup>1</sup>
Evaluation method	Risk = hazard class x exposure amount x amount (used or emitted into the environment)
Evaluated substances	All the chemical substances (whether they are harmful or not, risks should be judged based upon amounts used, emissions into the environment, exposure amounts, etc.)
Managed group	Global (Ricoh Group)
Action	Clarification of material balances (PRTR calculation method) Registration of MSDS (including GHS hazard classification) Risk evaluation Risk management/reduction Realization of risk communication

1. GHS (Globally Harmonized System of Classification and Labeling of Chemicals): classification of chemical substances in compliance with the internationally standardized rules according to their types of harmfulness and degrees.

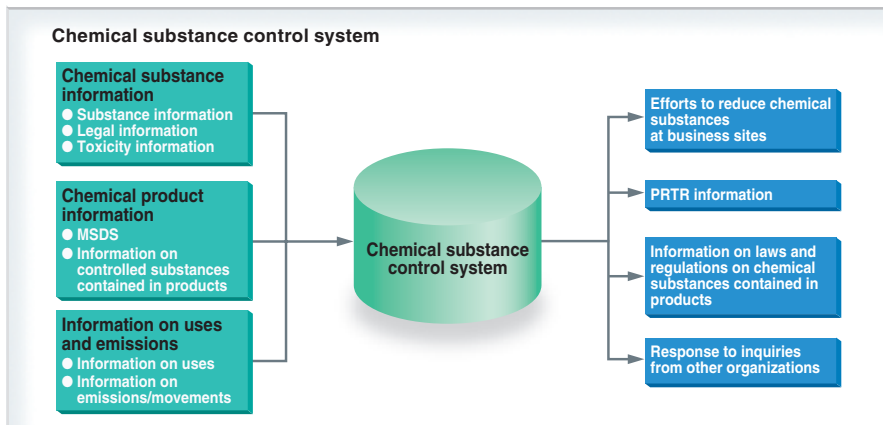
from around the world concerning the amount of chemical substances used.

Efforts for complete elimination of chlorine organic solvents

<Yamanashi Electronics Co., Ltd. (Japan/Thailand)>

Chlorine organic solvents are chemical substances used for the production of organic photoconductors, or imaging components of copiers and printers. As they carry considerable risks for the environment and human beings, the Ricoh Group completed the elimination of chlorine organic solvents from all production processes for organic photoconductors in fiscal

2005, including those produced by companies outside the Group on consignment. Yamanashi Electronics Co., Ltd., however, which joined the Group in November 2006, still used chloroform and dichloromethane, which are chlorine organic solvents, in some of its lines for producing organic photoconductors. We have been striving to reduce the amounts of chlorine organic solvents used and discharged since the latter half of fiscal 2006. Furthermore since fiscal 2008, we have been working to develop a solvent formula that does not use chlorine organic solvents. In the production of organic photoconductors, formulation of solvents is an important skill that can cause delicate differences in quality, so it is necessary to let our business partners know if there are any changes. We set about the development of a new formula in fiscal 2008 and provided explanations for our suppliers on our plan for changes. In fiscal 2009, we plan to strive to establish a formula and change the structure of production lines by unifying formulas applied at two plants in Yamanashi and two plants in Thailand. Complete elimination of chlorine organic solvents at Yamanashi Electronics is expected to be realized by the end of fiscal 2010.



**Establishment of All-Site Soil Contamination Risk Management System/Efforts Concerning Asbestos and PCBs**

**Surveys of soil contamination completed at all sites**

**<Ricoh Group (Global)>**

If soil or underground water contamination goes unnoticed, it could affect the health of people in the neighborhood. Because of this, the Ricoh Group has worked hard to survey and purify major production sites since the 1990s, from the two viewpoints of corporate social responsibility and environmental risk management. The Ricoh Group has established Basic Policies Concerning Soil and Underground Water Contamination in the Standards for the Management of Risks Related to Soil and Underground Water Contamination. According to the policies, the Group started surveying the history of all Group business sites—including both the production and non-production sites of subsidiaries of Ricoh’s subsidiaries\*—in fiscal 2004, and this was completed in fiscal 2006. At present, efforts are being made for the maintenance and improvement of management of soil and underground water contamination risks while surveys of new business sectors acquired by Ricoh through M&A, etc. are being promoted.

\* See page 47.

**Asbestos and PCBs**

**<Ricoh (Japan)>**

As for asbestos used at Ricoh’s business sites and facilities, a survey was conducted on sprayed asbestos. Measures to prevent dispersal, such as containment and enclosure, have been taken at all relevant sites and the substance has been confirmed at a level that will not negatively affect human beings, people in adjacent neighborhoods or employees. We will continue our systematic efforts for improvement and removal of asbestos. In the meantime, Ricoh has surveyed all PCB-containing products held by Ricoh, and has managed them and completed notification in compliance with relevant laws and regulations. In fiscal 2008, related measures were introduced at three business sites. Ricoh plans to introduce similar measures at other sites successively and complete their disposal by fiscal 2016.

**Ricoh Group’s Basic Policies Concerning Soil and Underground Water Contamination**

- (1) Top priority is given to controlling impact on the living environment in the neighborhood.
- (2) Efforts will be made to carry out surveys and measures to cope with contamination caused by the Ricoh Group’s business activities.
- (3) Laws, regulations, and ordinances set by national and local governments shall be observed.
- (4) Efforts will be made to establish risk communication with local governments and residents.
- (5) Soil is checked for contamination when land is purchased/transferred or rented/returned.

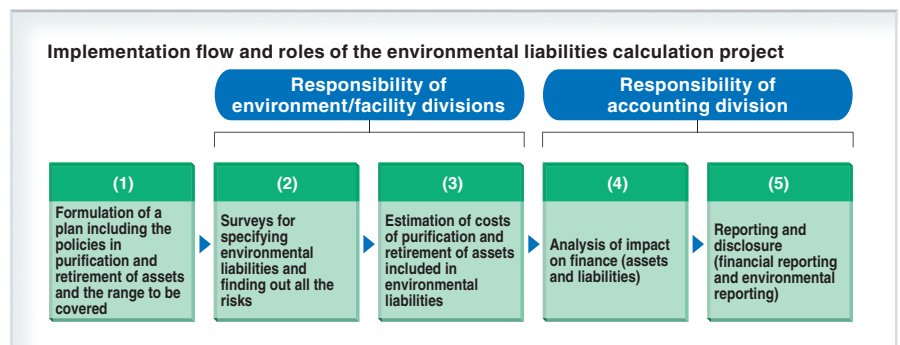
**Understanding environmental liabilities**

**<Ricoh Group (Global)>**

Companies are responsible for environmental contamination and anything that can lead to environmental contamination, whether caused by their past, current, or future business activities, and they must therefore make efforts into the future to prevent contamination or its expansion, while at the same time take necessary measures such as purification and repair. In fiscal 2007, the Ricoh Group examined sites for soil/underground water contamination, asbestos, and PCBs as well as its responsibility to recover the original states, through cooperation among the accounting, environment, and facility divisions, in order to appropriately reflect the impact on corporate performance of fulfilling the obligation that should be assumed by companies (environmental liabilities) in financial accounting. In light of the survey results, the Group estimated (1) the amount of asset retirement obligations\* calculated in compliance with the accounting standards, (2) the amount that could become liabilities in financial accounting in the future in compliance with laws or contracts, and (3) the costs of purification and monitoring the Ricoh Group will carry out according to its own

policies, although such purification or monitoring is not required by laws or contracts. The estimated future expenditure of asset retirement obligations of the Ricoh Group recognized as of the end of fiscal 2008 was ¥1,050 million (¥300 million after discounts, calculated according to the accounting principles). Besides the liabilities in financial accounting, we also confirmed that ¥1,200 million could become liabilities in the future in compliance with laws and/or contracts, while ¥1,210 million could become necessary for purification and monitoring carried out as the Group’s voluntary efforts.

\* Payment obligation required by laws or contracts concerning future retirement of fixed assets. This obligation includes that for the retirement of harmful substances contained in fixed assets, as well. In Japan, the Accounting Standard for Asset Retirement Obligations will be introduced in fiscal 2010.



Survey results of underground water pollution and purification efforts at the Ricoh Group's production sites (Average for fiscal 2008)

Business site		Pollutant	Survey result (mg/l)	Standard value in Japan (mg/l)	Measures in implementation
Japan	Ricoh Ohmori Office	Trichloroethylene	0.052	0.03	• Regular monitoring
	Ricoh Optical Industries	Cis-1,2-dichloroethylene	0.10	0.04	• Pumping up underground water • Bioremediation • Regular monitoring
		Trichloroethylene	0.29	0.03	
		Tetrachloroethylene	0.67	0.01	
	Ricoh Elemex, Okazaki Plant	Trichloroethylene	0.96	0.03	• Pumping up underground water • Neutralization of soil gas • Regular monitoring
		1,1-dichloroethylene	0.18	0.02	
		Hexavalent chromium	2.5	0.05	
		Cadmium	0.076	0.01	
	Ricoh Elemex, Ena Plant	Cis-1,2-dichloroethylene	0.25	0.04	
		Trichloroethylene	2.2	0.03	
		Carbon tetrachloride	0.0055	0.002	
		Hexavalent chromium	0.52	0.05	
	Ricoh Keiki	Fluorine	5.5	0.8	• Pumping up underground water • Bioremediation • Regular monitoring
1,1-dichloroethylene		0.035	0.02		
Outside of Japan	Ricoh Electronics Inc., Irvine Plant (U.S.A.)	Cis-1,2-dichloroethylene	0.013	/	• Pumping up underground water • Regular monitoring • Neutralization of soil gas
		Trichloroethylene	0.010		
		Tetrachloroethylene	2.7		
	Ricoh Industrie France S.A.S. (France)	Tetrachloroethylene	0.22		• Pumping up underground water • Regular monitoring
	Ricoh UK Products Ltd. (U.K.)	Cis-1,2-dichloroethylene	0.9		• Pumping up underground water • Regular monitoring • Original regiochemistry oxidation • Oil removal
		Trichloroethylene	0.27		
		Tetrachloroethylene	5.7		
		Vinyl chloride	0.097		
	Total petroleum hydrocarbons (TPH)	8.8			

\* Contamination cases that seem to be attributable to natural causes are excluded.  
 \* The highest densities recorded at the monitored wells are shown in the above survey results.  
 \* The areas surrounding all business sites are not affected by pollutants.

**Detection of contamination of underground water**  
**<Ena Plant of Ricoh Elemex Corporation (Japan)>**

A new well for pumping water was installed in the process of purifying contaminated soil and underground water at the Ena Plant of Ricoh Elemex Corporation in July 2007, and analyses were carried out. As a result of the analyses, carbon tetrachloride, a toxic substance, of up to 0.051 mg/l (25.5 times higher than the environmental standard value of 0.002 mg/l) was detected in the underground water near the borderline of the site, although the Ena Plant has never used carbon tetrachloride. We carried out a close resurvey of underground

water and soil gas at the business site during the period from the detection of contamination to March 2008, but could not specify the source of contamination. We will continue to check for contamination by analyzing the quality of the water in the well, as well as purification work.

\* [http://www.ricohelemex.co.jp/news/2008/1218\\_2.html](http://www.ricohelemex.co.jp/news/2008/1218_2.html)