The Ricoh Group is engaging not only in control and reduction of the amount of chemical substances used and discharged, but also in prevention and remediation of soil contamination.

Concept

The Ricoh Group categorizes and controls chemical substances that are regulated in various countries around the world according to whether they are to be prohibited, reduced, or controlled. As for chemical substances classified as those to be reduced, the Ricoh Group is engaged in reduction based on a concept of risk management. This is a method to reduce chemical substances whose environmental impact is serious. The environmental impact is determined by calculating the amount of chemical substances used/discharged and the environmental impact potential*. The Ricoh Group also endeavors to reduce the amount of chemicals used and emitted by setting goals to reduce dichloromethane and ozone-depleting substances. Additionally, the Group sets a standard to prevent environmental risk from occurring. Based on the standard, each business site thoroughly controls the amount of chemicals used, emitted, discharged, and disposed of in order to prevent percolation or outflow to the environment. The Group also conducts surveys on soil and underground water contamination based on the recorded use of chemical substances and restores plants where pollution occurs.

* The environmental impact potential is set by Ricoh, taking toxicity, carcinogenicity, and the possibility of ozone depletion into consideration.

<The Entire Ricoh Group>

Amount of Environmentally Sensitive Substances Used and Emitted in Fiscal 2003

❶ The Ricoh Group (production)

Units: tons

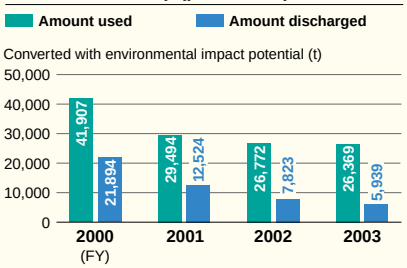
Substance	Environmental Impact Potential	Amount used[1]	Amount emitted[1]	Amount treated	Amount consumed	Amount emitted[2]	Amount transported	Amount disposed of	Amount recycled
Toluene	10	14,035	1,258	1,526.1	122.5	125.8	0.0	643.3	634.4
Dichloromethane	100	5,623	3,579	61.0	4.7	35.8	0.0	0.0	20.5
N, N-dimethylformamide	100	2,931	109	29.3	0.0	1.1	0.0	0.0	28.2
Nickel sulfate	100	242	0	5.9	3.5	0.0	0.0	0.0	2.4
Chrome trioxide	1,000	101	0	0.1	0.0	0.0	0.0	0.1	0.0
Xylene	10	99	75	9.9	0.0	7.5	0.0	0.1	2.3
Sodium cyanoacetic	1,000	97	0	0.1	0.0	0.0	0.0	0.1	0.0
Ethyl cellsolve acetate	100	50	8	0.6	0.1	0.1	0.2	0.0	0.2
Chlorodifluoromethane	100	29	29	0.3	0.0	0.3	0.0	0.0	0.0
Ethylene glycol	1	28	2	287.3	259.8	1.7	0.0	2.1	23.7
Formaldehyde	1,000	24	19	0.0	0.0	0.0	0.0	0.0	0.0
Lead chromate	1,000	18	0	0.0	0.0	0.0	0.0	0.0	0.0

* Environmentally sensitive substances that are regulated by the Ricoh Group include all substances to which PRTR is applied. Substances listed are those of large amount used per year (converted with environmental impact potential). The amount of metal compounds is converted into metal.

1. The amount of the Ricoh Group's target substances for reduction used and discharged is calculated by using the following formula.
   Amount used = Σ {(amount – amount consumed) × environmental impact potential}
   Amount discharged = Σ {(amount emitted into air + amount discharged into public water supply + amount discharged into soil) × environmental impact potential}
2. Amount emitted = amounted emitted into air + amount discharged into public water supply + amount discharged into soil

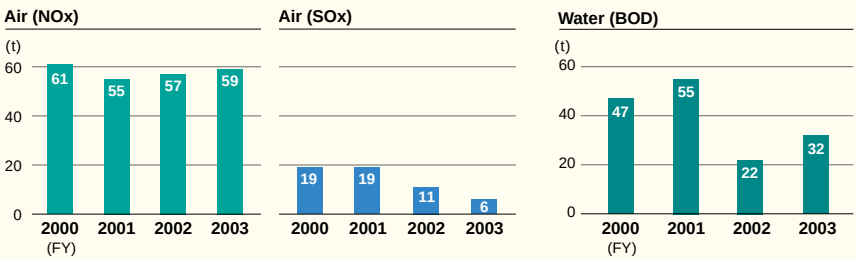
Changes in the Amount Used and Discharged of Ricoh Target Substances for Reduction

❷ The Ricoh Group (production)



Changes in the Amount of Nox, SOx and BOD

❸ The Ricoh Group (production)



* The Ricoh target substances for reduction are defined as the PRTR substances designated by four Electric/Electronic Industrial Associations in Japan between fiscal 1998 and fiscal 2000. Coverage of chemical substances by Ricoh may differ slightly from those provided by the PRTR Law.

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

Costs			Effects			
			Economic benefits		Effect on environmental conservation	
Item	Main cost	Costs	Items	Benefits	Items	Amount
Business area cost	Pollution prevention cost	¥471.4 million	Reduction in social cost	¥274.0 million	NOx	7.4 (t)
			Amount of risk avoidance effect (incidental effect)	¥868.7 million	SOx	5.0 (t)
					BOD	–9.8 (t)
					PRTR substances (calculated with the conversion potential)	1,882.6 (t)

● Targets for Fiscal 2004

◎ Reduce environmentally sensitive substances (the Ricoh Group's target substances) to 8% of those used and 50% of those emitted (compared to fiscal 2000 figures).

◎ Completely eliminate the use of dichloromethane.

◎ Reduce emissions of ozone-depleting substances by 60% (compared to fiscal 2000 figures).

* Targets for Ricoh and the Ricoh Group's manufacturing subsidiaries in and outside Japan

● Review of Fiscal 2003

The amount of environmentally sensitive substances used was reduced by 37% as compared to fiscal 2000 figures and by about 400 tons as compared to fiscal 2002 figures[1]. The amount emitted was reduced by 73% as compared to fiscal 2000 figures and by about 1,880 tons as compared to fiscal 2002 figures[2]. (See graph ❷) The Ricoh Group also succeeded in development of a substitute solvent to eliminate the use of dichloromethane completely. Regarding ozone-depleting substances, the amount emitted was reduced by 80% as compared to fiscal 2000 figures and by 140ODP-kg as compared to fiscal 2002 figures[3]. Surveys and remediation of soil and underground water contamination were carried forward as scheduled.

1. and 2. Converted with environmental impact coefficient
3. Converted with ozone depletion potential

● Future Activities

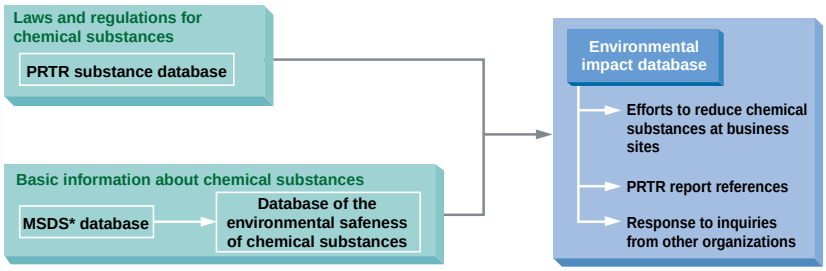
Regarding the use and emission of chemical substances, the Ricoh Group will continue to promote reduction. In order to eliminate the use of dichloromethane completely, the Ricoh Group will work to develop a production line where a substitute solvent can be used. Reduction in ozone-depleting substances emitted will continue to be carried forward. The Ricoh Group will start surveys on soil and underground water contamination of land belonging to the Group as well as its production sites.

Use of Ricoh Environmental and Chemical Safety Information System (RECSIS) and Information Disclosure

<Ricoh Group/Global>

The Ricoh Group established RECSIS to monitor data on chemical substances used, discharged, and disposed of at business sites. RECSIS is designed to promote reduction in the use of chemical substances, to prepare materials for PRTR reporting, and to speedily respond to inquiries from customers around the world, original equipment manufacturers, and citizens' groups. RECSIS, a part of the Ricoh Group's environmental impact information system, contains data on more than 2,000 types of listed chemical substances and environmental hazards.

Environmental and Chemical Safety Information System for Business Sites



* Material Safety Data Sheet

Aiming to Eliminate the Use of Dichloromethane Completely

<Ricoh Group/Global>

The Ricoh Group endeavors to eliminate the use of dichloromethane completely by the end of fiscal 2004 because it is a chemical substance whose environmental impact is one of the largest among chemical substances used in the Ricoh Group. Dichloromethane is used for manufacturing Organic Photo Conductor (OPC) for copiers. An alternative chemical substance with less environmental impact is now in use to manufacture Organic Photo Conductor (OPC) for copiers that are already on the market, however the problem was, howevers, that dichloromethane was indispensable for supplies for those copiers that had been marketed. At the end of fiscal 2003, the development of an alternative solvent was completed. The Ricoh Group will be engaged in improvement of the production process to realize complete elimination of dichloromethane. In order to reduce emission into the air, Ricoh UK Products Ltd., a manufacturing subsidiary in England, improved the dichloromethane recovery plant installed in the company to raise its efficiency. Additionally, it has reduced the amount of dichloromethane purchased by reusing collected dichloromethane.

Dichloromethane collector at Ricoh UK Products Ltd.

Reduction in Ozone Depleting Substances

<Ricoh Hatano Plant/Japan>

Ricoh Hatano Plant completely eliminated the use of an alternative CFC, H-CFC-225 which had been used in the process to assemble printed circuit boards, by introducing lead-free technology to the production process. As the result, the amount of ozone-depleting substances emitted (ozone depletion coefficient x amount emitted into air) was reduced from 46ODP-kg*/year to 1ODP-kg/year.

* Converted with ozone depletion potential

Printed Circuit Board Assembly Line at Hatano Plant

Examination and Purification of Soil and Underground water

<Ricoh Group/Japan>

Thinking it important to address the problems of soil and underground water pollution, the Ricoh Group started to examine and purify soil and underground water at our production sites in Japan in 1992. Subsequently, in 1999 a committee linking employees directly with the management teams of Ricoh and other Ricoh Group companies was established. At all production sites and R&D facilities in Japan, we looked for possible soil and underground water pollution by such substances as chlorine organic solvents and heavy metals. In locations where soil/underground water pollution was detected, we reported our findings to the relevant municipal government, submitted an improvement plan, and began purification activities. We conducted our first examination for chlorine organic solvents in 1992 to ascertain the quality of the soil and underground water and have been voluntarily conducting similar examinations ever since, including one based on guidelines published in 1999 by the former Environment Agency. For heavy metals, we voluntarily conduct field surveys on our premises that may be polluted, based on the results of examinations on the past use of heavy metals. The table below shows the results of an underground water examination conducted in April 2004. At the six production sites where pollution was detected, detailed examinations and purification activities are now conducted.

Pumping equipment developed at Tohoku Ricoh Co., Ltd. for purification purpose

❶ Survey Results of Underground Water Pollution and Purification Efforts at Ricoh Production Sites and the Ricoh Group's Manufacturing Subsidiaries in Japan (As of April 2004)

Business site	Pollutant (Japan's environmental standard)	Survey result	Measures in implementation	Measures implemented
Ricoh Hatano Plant	Chlorine organic solvents	Cleaning completed	—	Soil was removed.
	Heavy metals, etc.	No pollution		
Ricoh Numazu Plant, North Plant	Chlorine organic solvents	Cleaning completed	—	The neutralization of gas and purification of underground water were completed.
	Heavy metals, etc.	No history of use		
Ricoh Numazu Plant, South Plant	Chlorine organic solvents	Cleaning completed	—	Soil was removed.
	Heavy metals, etc.	No pollution		
Ricoh Ohmori Office	Cis 12 dichloroethylene (0.04mg/L)	0.105mg / L	• Purification of underground water • Regular monitoring	Soil was removed. The neutralization of gas and purification of underground water were completed.
	Trichloroethylene (0.03mg/L)	0.183mg / L		
	Tetrachloroethylene (0.01mg/L)	0.0227mg / L		
	Heavy metals, etc.	No pollution		
Ricoh Optical Industries	Trichloroethylene (0.03mg/L)	0.114mg / L	• Regular monitoring • Survey of pollution source	
	Heavy metals, etc.	No pollution		
Hasama Ricoh	Chlorine organic solvents	Cleaning completed	—	Soil was removed.
	Heavy metals, etc.	No pollution		
Tohoku Ricoh	Cis 12 dichloroethylene (0.04mg/L)	0.29mg / L	• Purification of underground water • Regular monitoring	Soil was removed. The neutralization of gas and purification of underground water were completed.
	Trichloroethylene (0.03mg/L)	0.48mg / L		
	Heavy metals, etc.	No pollution		
Ricoh Elemex, Okazaki Plant	Trichloroethylene (0.03mg/L)	9.2mg / L	• Containment and purification of underground water • Purification of underground water • Regular monitoring	
	Cis 12 dichloroethylene (0.04mg/L)	0.20mg / L		
	Hexavalent chromium (0.05mg/L)	4.2mg / L		
	Cadmium (0.01mg/L)	0.20mg / L		
	Lead (0.01mg/L)	0.14mg / L		
Ricoh Elemex, Ena Plant	Trichloroethylene (0.03mg/L)	4.6mg / L	• Containment and purification of underground water • Neutralization of gas, Purification of underground water • Regular monitoring	
	Cis 12 dichloroethylene (0.04mg/L)	0.54mg / L		
	Hexavalent chromium (0.05mg/L)	0.21mg / L		
Ricoh Keiki	11-dichloroethylene (0.02mg/L)	0.292mg / L	• Purification of underground water • Regular monitoring	Soil was removed.
	Heavy metals, etc.	No pollution		

• No pollution: No pollution was detected where pollutants were used.
• The areas surrounding all business sites, including the above-mentioned sites, are not affected by pollutants.
* All information, including business sites with no history of pollution, is shown on the Web site (http:/www.ricoh.com/environment/data/survey.html).