Production (Pollution Prevention)

The Ricoh Group established RECSIS (Ricoh Environmental and Chemical Safety Information System) to control the chemical substances contained in products and used in the manufacturing process. RECSIS categorizes substances that fall under Japan's PRTR* Law as well as substances that are regulated in other parts of the world according to whether they are to be prohibited, reduced, or controlled. In line with its severe self-regulation policies, the Ricoh Group endeavors to control as well as to re-duce the amount used, emitted, and disposed of. The Group is striving to establish a system that will provide answers to inquiries from customers, original equipment manufacturers (OEMs), and civil organizations regarding their usage of chemical substances.

The Ricoh Group has also dealt with soil pollution caused by chloric organic solvents through the use of surveys, improvement planning (since 1992), and the subsequent publication of the *Ricoh Group Soil Improvement Manual* in 1999, which outlines stricter self-regulation measures than the environmental standards set by the Japanese government. The Group is currently conducting surveys and carrying out improvements at Ricoh Group production and research and development sites.

* Under the PRTR (Pollutant Release and Transfer Register) system, the release of potentially harmful environmental pollutants into the air, water, and soil; product contents; and the transfer of waste are assessed by business, among others. The results are totaled and released by a third-party organization. Member countries of the Organization for Economic Cooperation and Development (OECD), such as the United States, Canada, the U.K., the Netherlands, and Japan, have adopted this system. The PRTR Law in Japan was based on this system.
In fiscal 1997, Ricoh participated in the PRTR system that Keidanren (the Federation of Economic Organizations) independently started prior to its legislation by giving it a summary of the PRTR data of all Ricoh business sites. We continued to report the PRTR data of all Group companies in fiscal 1998 and thereafter began reducing the consumption and emission of PRTR substances.

Survey Results on PRTR Substances[1] in the Ricoh Group

(tons/year)

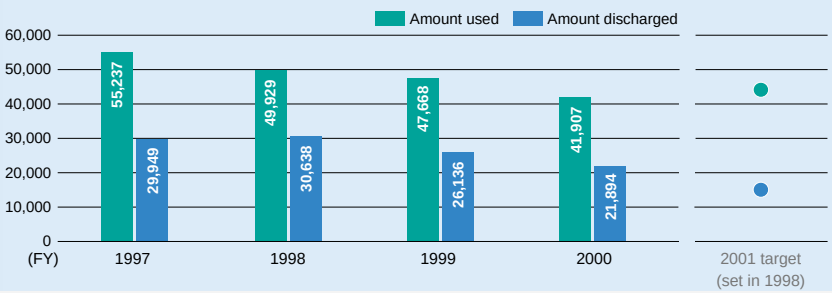
Substance*	Environmental impact coefficient[3]	Amount	Emission into air	Amount consumed	Amount reduced	Amount transported (waste taken off-site)	Amount recycled
Zinc oxide[2]	1	99.8	—	96.9	—	0.8	2.1
Zinc chloride[2]	10	38.2	—	36.3	—	—	1.9
Antimony oxide[2]	100	12.4	—	11.6	—	0.0	0.7
Xylene (mixture)	10	16.4	14.4	0.0	0.2	—	1.8
Dichloromethane	100	199.7	165.7	2.0	—	0.1	32.0
N, N-dimethylformamide	100	24.3	1.3	—	—	—	22.9
Tetrachloroethylene	100	4.2	0.3	—	—	—	3.9
Copper I oxide[2]	10	2.4	—	2.4	—	0.0	—
Copper II oxide[2]	1	76.2	—	73.6	—	0.8	1.8
Toluene	10	1,250.9	291.7	95.4	363.6	1.1	499.2
Nickel sulfate[2]	100	29.5	—	17.5	—	2.9	9.1
Barium sulfate[2]	1	2.4	—	2.2	—	0.1	0.1
4, 4-isopropylidenediphenol	1	23.7	—	21.0	—	—	2.7
Ethylene glycol monoethyl ether	100	7.3	0.6	—	4.6	—	2.2
Glyoxal	10	23.3	0.1	21.2	—	—	2.0
Cellosolve acetate	100	6.6	0.4	—	—	6.2	—
1.3-dichloro-2-propanol	100	9.9	9.9	—	—	—	—
Tetrahydrofuran	10	135.9	54.7	—	25.9	—	55.3
Tetrafluoromethane	100	1.7	1.2	0.5	—	—	—
Hexafluoroethane	100	2.9	2.0	0.9	—	—	—
Lead solder	100	36.8	—	23.3	—	0.9	12.6

* Substances listed are those amounting to at least 1 ton per year. "—" indicates no entry.
Substances discharged into public waterways and sewage systems are not listed because they amounted to less than 0.1 ton annually.

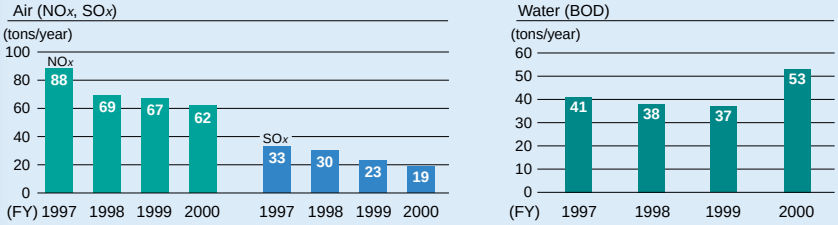
1. PRTR substances are those designated by four electric/electronic organizations surveyed. Technical terms used are also pursuant to guidelines set by the aforementioned organizations. Substances listed may differ slightly from those provided by the PRTR Law.
2. The amount of metallic compounds are converted into metal.
3. The environmental impact coefficient is set by Ricoh taking toxicity, oncogenicity, and ozone destroying possibility into consideration.

The amount of PRTR substances used and discharged is calculated using the following formulas:
Amount used = Σ {(amount – amount consumed) × environmental impact coefficient}
Amount discharged = Σ {(amount treated emitted into the air + amount discharged into water + amount discharged onto the soil) × environmental impact coefficient}

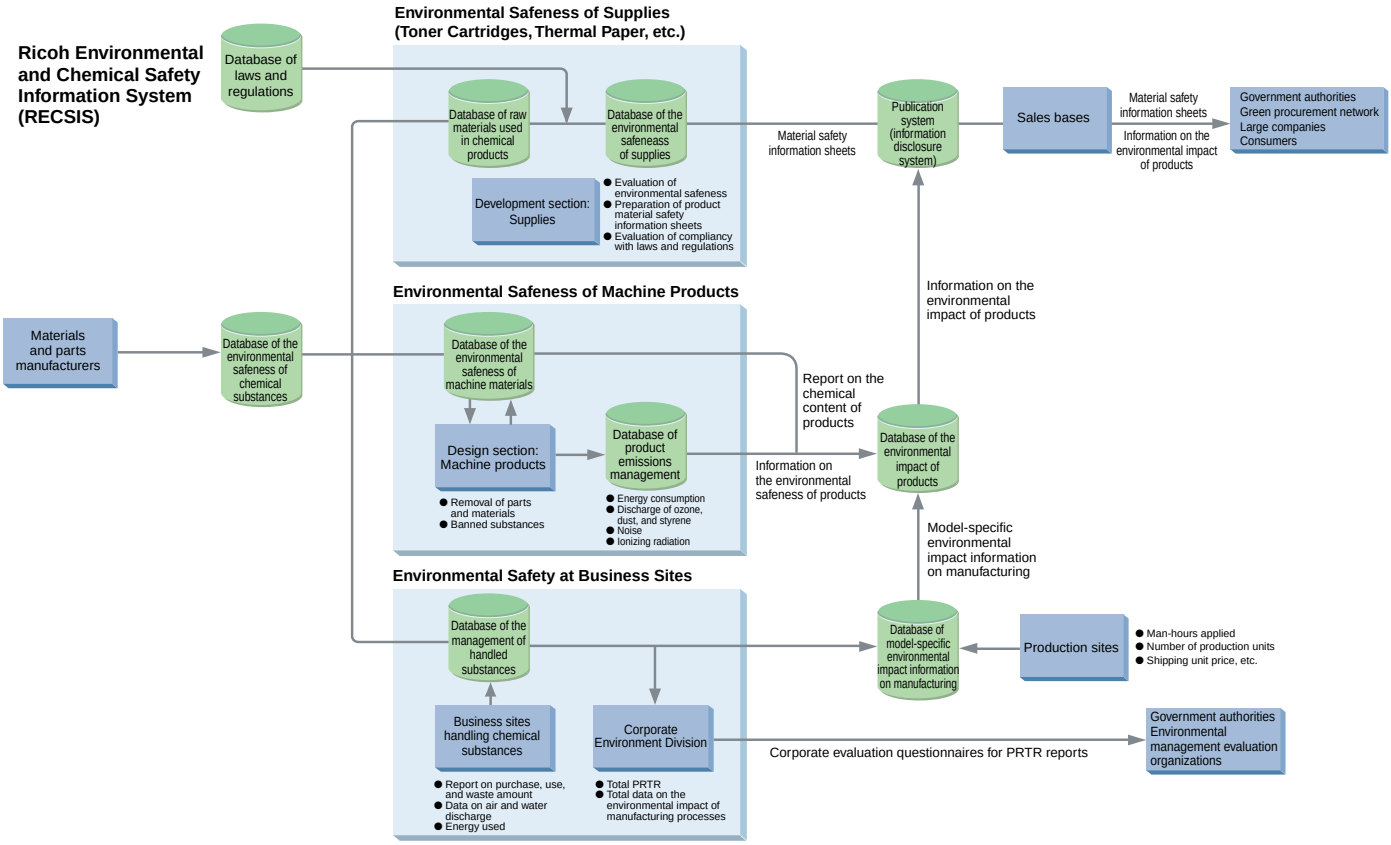
Changes in the Amount of PRTR Substances Used and Discharged by the Ricoh Group



Changes in the Amount of Substances Discharged Following the Ricoh Group's Implementation of Pollution Prevention Measures



Figures for NO_x and SO_x have been changed as a result of a minor revision to the calculation method. Therefore, the figures differ slightly from those in the 2000 report.



RECSIS

There are many substances that, while useful for a product's manufacturing process, have undesirable effects on the environment. The use of these substances needs to be controlled so that they can be properly disposed of, collected, or phased out. RECSIS contains data on 164 ISO-based items, such as those for the more than 2,000 types of chemical substances listed, environmental hazards, toxicity, and emergency procedures. RECSIS also covers laws and regulations, including amendments, concerning the use of these chemicals in other countries. In addition, we have begun collecting data on the chemical contents of parts and materials purchased by the Ricoh Group and managing data on the amount of chemicals used and discharged. We are also monitoring the chemical waste at the manufacturing sites of our suppliers. Through these efforts, we are now able to improve our products and business sites enough to achieve our pollution prevention targets.

Soil Contamination Surveys and Improvements

All domestic production and research and development sites of the Ricoh Group conducted surveys of the presence of chloric organic solvents in soil and underground water and reported their findings to relevant local governments. Business sites that needed improvement conducted more detailed surveys and cleanup activities. As a result, there were no problems in the surrounding areas of any site. Hasama Ricoh completed its cleanup activities in fiscal 2000. Heavy metal pollution surveys are currently underway and there will be detailed follow-ups and cleaning, if necessary.

Response to Chloric Organic Solution Pollution in Soil and Underground Water*

	History of the use of relevant substances	Current status
Gotemba Plant	—	—
Fukui Plant	—	—
Yashiro Plant	—	—
Ikeda Plant	○	No pollution
Atsugi Plant	○	No pollution
Research and Development Center	○	No pollution
Applied Electronics Laboratory	○	No pollution
Hatano Plant	○	Cleaning completed
Numazu Plant, South Plant	○	Cleaning completed
Numazu Plant, North Plant	○	Cleaning completed
Omori Office	○	Cleaning underway
Ricoh Unitechno	—	—
Ricoh Microelectronics	○	No pollution
Ricoh Optical Industries	○	Cleaning completed
Hasama Ricoh	○	Cleaning completed
Tohoku Ricoh	○	Cleaning underway
Ricoh Elemex, Okazaki Plant	○	Cleaning underway
Ricoh Elemex, Ena Plant	○	Cleaning underway
Ricoh Keiki	○	Cleaning underway

○ = Used — = Not used

No pollution: No pollution exceeding environmental standards was detected inside or outside the business site.
Cleaning completed: Pollution exceeding environmental standards was detected, and site was cleaned.
Cleaning underway: Pollution exceeding environmental standards was detected, and site is being cleaned. However the areas surrounding business sites were not affected.