# Production (Pollution Prevention)

**A global approach to identifying and reducing the use and emissions of chemical substances is being taken.**

The Ricoh Group established the Ricoh Environmental and Chemical Safety Information System (RECSIS), which categorizes substances that fall under Japan's Pollutant Release and Transfer Register (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 self-regulation policies, which are more severe than those set by most countries, the Ricoh Group endeavors to control as well as reduce the amount of chemicals used and emitted. By fiscal 2004, the entire Ricoh Group is to reduce such ozone depleting substances 60% compared to fiscal 2000 levels. The Group succeeded in eliminating the use of chloric organic solvents except dichloromethane, which is used in manufacturing photosensitive materials, by the end of fiscal 2001. The Group is to eliminate the use of dichloromethane by fiscal 2004. 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.

* Under the PRTR 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 other criteria. The results are totaled and released by an independent 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 a summary of the PRTR data of all Ricoh business sites. We started to supply the PRTR data of all Ricoh Group companies in fiscal 1998 and began reducing the consumption and emission of PRTR substances in 1999.

**Survey Results of PRTR Substances in the Ricoh Group in Fiscal 2001[1]** (Reviewed by BVQI [9])

(tons/year)

| Substance No. | Substance* | Environmental impact coefficient[3] | Amount | Amount emitted into air | Amount discharged into public water supply | Amount transported into sewers | Amount transported out of plants | Amount consumed | Amount treated[4] | Amount recycled |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Zinc chloride[2] | 10 | 36.9 | — | — | — | — | 35.0 | — | 1.9 |
| 25 | Antimony trioxide[2] | 100 | 11.1 | — | — | — | 0.2 | 10.4 | — | 0.5 |
| 29 | 4, 4-isopropylidenediphenol | 1 | 9.6 | — | — | — | — | 9.0 | — | 0.6 |
| 43 | Ethylene glycol | 1 | 322.4 | 2.4 | 0.0 | — | — | 289.5 | 1.9 | 28.6 |
| 45 | Ethylene glycol monomethyl ether | 1 | 3.9 | 0.0 | — | — | — | 1.3 | — | 2.2 |
| 63 | Xylene | 10 | 13.2 | 11.8 | — | — | 0.1 | 0.0 | 0.1 | 1.2 |
| 65 | Glyoxal | 10 | 13.6 | 0.0 | 0.0 | — | — | 10.3 | — | 3.3 |
| 101 | 2-ethoxyethyl acetate | 100 | 1.6 | 0.3 | — | — | 0.8 | 0.0 | — | 0.5 |
| 134 | 1,3-dichloro-2-propanol | 100 | 8.7 | 8.6 | 0.1 | — | — | — | — | — |
| 145 | Dichloromethane | 100 | 104.3 | 76.5 | — | — | — | 6.8 | — | 21.1 |
| 172 | N, N-dimethylformamide | 100 | 28.9 | 2.2 | — | — | — | — | — | 26.7 |
| 181 | Thiourea | 1 | 32.1 | — | — | — | — | 31.1 | — | 1.0 |
| 200 | Tetrachloroethylene | 100 | 4.5 | 0.1 | — | — | — | — | — | 4.4 |
| 227 | Toluene | 10 | 1,225.4 | 272.1 | — | — | 1.8 | 93.1 | 344.4 | 514.0 |
| 230 | Lead | 100 | 11.6 | — | — | — | 0.0 | 7.2 | — | 4.5 |
| 232 | Nickel sulfate[2] | 100 | 5.0 | — | — | — | — | 2.9 | — | 2.1 |
| 243 | Barium sulfate[2] | 1 | 2.7 | — | — | — | 0.1 | 2.5 | — | 0.1 |

* Substances listed are those amounting to at least 1 ton per year. "–" indicates no entry.

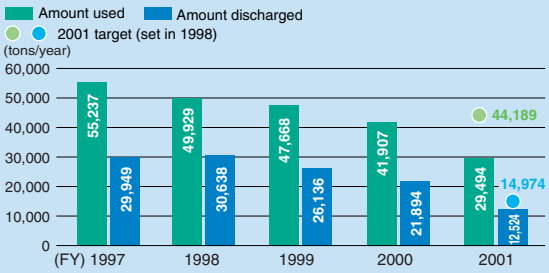
1. Pursuant to the PRTR Law
2. The amount of metallic compounds is converted into metal.
3. The environmental impact coefficient is set by Ricoh, taking toxicity, carcinogenicity, and the possibility of ozone depletion into consideration.
4. Amount treated into non-PRTR substances, i.e. thermal decomposition, catalic decomposition, etc.

The amount of Ricoh Group's target substances for reduction used and discharged is calculated using the following formula.

Amount used = Σ {(amount - amount consumed) × environmental impact coefficient}

Amount discharged = Σ {(amount emitted into air + amount discharged into public water supply + amount discharged into soil) × environmental impact coefficient}

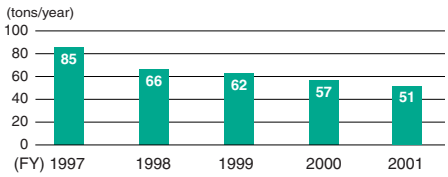
**Changes in the Amount of Ricoh Group's Target Substances for Reduction* Used and Discharged** (Reviewed by BVQI [10])



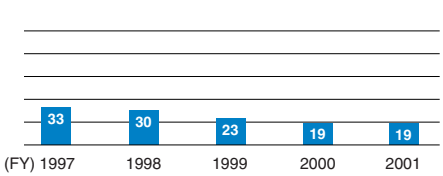

* Ricoh Group's target substances for reduction are defined as the PRTR substances designated by four Electric/Electronic Industrial Associations in Japan between fiscal 1998 and fiscal 2000. Coverage chemical substances by Ricoh may differ slightly from those provided by the PRTR Law.

**Changes in the Amount of Substances Discharged Following the Ricoh Group's Implementation of Pollution Prevention Measures** (Reviewed by BVQI [11])

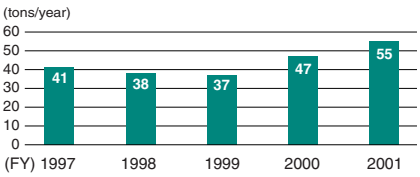
**Air (NO*x*)**




**Air (SO*x*)**

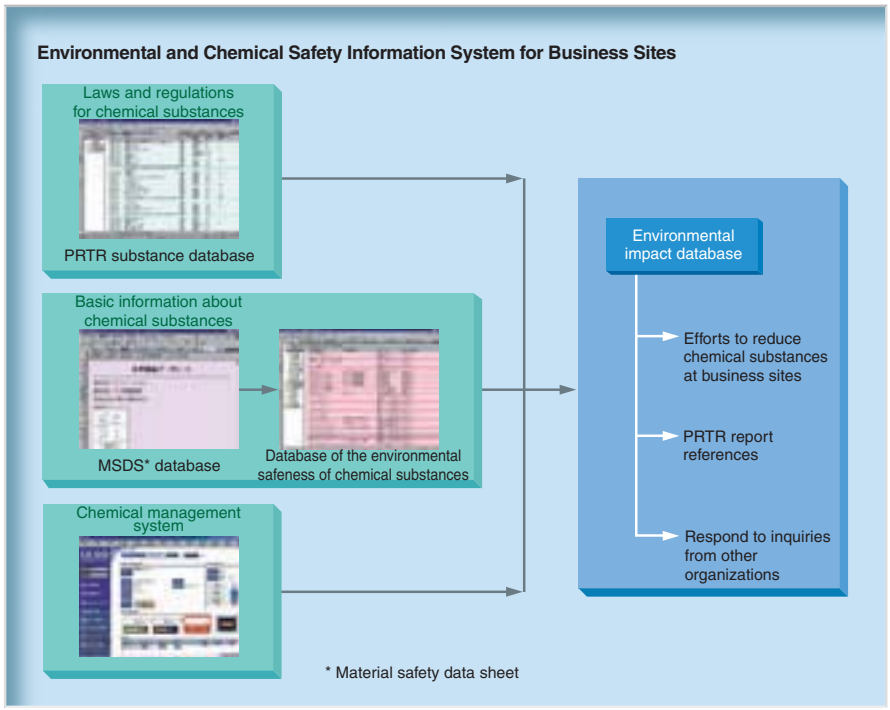



**Water (BOD)**



## Ricoh Environmental and Chemical Safety Information System (RECSIS)

There are many substances that, while useful in 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. The Ricoh Group established RECSIS as a part of its environmental impact information system to manage manufacturing processes and monitor data on chemical substances used, discharged, and disposed of at business sites. RECISIS contains data on more than 2,000 types of listed chemical substances, environmental hazards, and emergency procedures. RECSIS facilitates the preparation of documents required for application pursuant to the PRTR Law, which started in 2001.




## Soil Contamination Surveys and Improvements

All Japanese production and research and development sites of the Ricoh Group conducted surveys to detect the presence of chloric organic solvents in soil and underground water and reported their findings to relevant local governments. The 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. Heavy metal pollution surveys started in fiscal 2001.

**Response to Chloric Organic Solvent Pollution in Soil and Underground Water*** (Reviewed by BVQI [12])
* No pollution was discovered near the vicinity of the business sites listed below.

| | 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 |
| General Electronics R&D Center | ◯ | 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 the site was cleaned.
Cleaning underway: Pollution exceeding environmental standards was detected, and the site is being cleaned. However, the areas surrounding the business site were not affected.