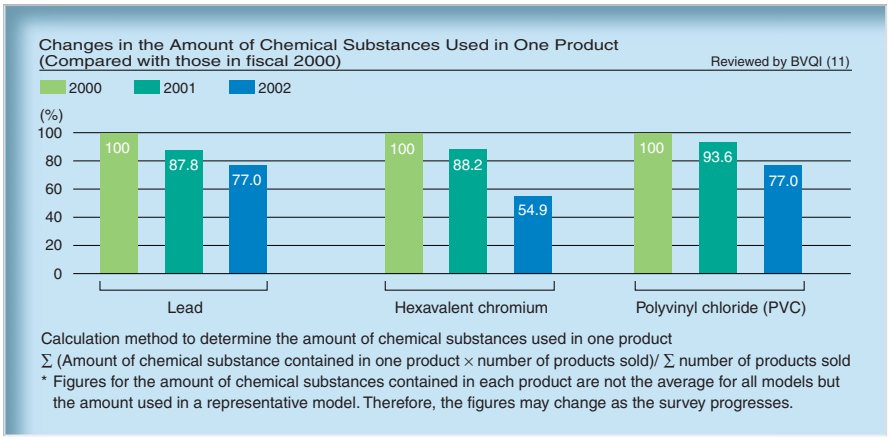
Environmental Technologies and Products Development (Pollution Prevention)

Aiming to reduce the impact on the global environment, particularly at the end-user stage, the Ricoh Group is tackling important issues, specifically reduction of environmentally sensitive substances contained in its products and reduction of noise, ozone, dust, and styrene emissions at the end-user stage. To reduce the amount of environmentally sensitive substances in products, the Ricoh Group worked together with suppliers in adopting lead-free solder, reducing the use of hexavalent chromium in steel plates, and reducing the use of PVC in wire coating, with the goal of completely eliminating these substances by the end of fiscal 2004. Environmentally sensitive substances do not affect the environment when customers use them properly, but they may cause harm when they are mined or improperly disposed of. Reducing the use of these substances will ultimately lessen recycling costs as well as the environmental impact a product has during its life cycle. The Ricoh Group has taken on these challenges as part of its sustainable management activities. The imagio Neo 601/751 series multifunctional copiers marketed in Japan in December 2002 significantly reduced lead, hexavalent chromium, and PVC content. They ranked the first[1] in the copier division of Green Purchasing Network (GPN)[2] in Japan.

1. As of end of March 2003
2. GPN provides information on eco-friendly products to promote green-purchasing approaches. http://www.gpndb.jp (Japanese only)



Calculation method to determine the amount of chemical substances used in one product

Σ (Amount of chemical substance contained in one product $\times$ number of products sold)/ Σ number of products sold

* Figures for the amount of chemical substances contained in each product are not the average for all models but the amount used in a representative model. Therefore, the figures may change as the survey progresses.

Reducing the Amount of Environmentally Sensitive Substances Contained in Office Equipment (Japan) (As of end of March 2003)

Products	GPN Database Rating		Use of chromate-free steel plates (in parts designed by Ricoh)
	Lead-free Soldering	Use of PVC in wire coating	
imagio Neo351/451 Series	A	II	90% or more
imagio Neo600/750 Series	A	II	85% or more
imagio Neo601/751 Series	A	II	85% or more
imagio Neo900Pro/1050Pro	A	II	60% or more
imagio Neo220/270 Series	A	III	90% or more
imagio Neo C380	A	II	70% or more
imagio Neo C240/320 Series*	B	II	95% or more
IPSiO CX7200/8200	A	II	70% or more
IPSiO NX650S/750/850	A	III	95% or more
IPSiO Color 6000/6500	C	IV	100%
RIFAX SL3400	A	II	20% or more
RIFAX ML4600	A	II	80% or more

* Usage rate of chromate-free steel plates in model 765 is approximately 90%.

Reducing the Amount of Environmentally Sensitive Substances Contained in Office Equipment (outside Japan) (As of end of March 2003)

Products	Classification according to GNP standards in Japan		Use of chromate-free steel plates (in parts designed by Ricoh)
	Lead-free Soldering	Use of PVC in wire coating	
Aficio 2035/2045 Series	A	III	95% or more
Aficio 1060/1075 Series	C	IV	85% or more
Aficio 2090/2105	A	II	60% or more
Aficio 1022[1]/1027[2]/1032 Series	A	III	90% or more
Aficio 1224C/Aficio 1232C Series	B	IV	90% or more
Aficio CL7000	A	II	70% or more
Aficio 1013/RICOH FAX3310L Series	C	IV	100%
RICOH FAX4410L/4410NF	A	II	100%
Aficio CL5000	C	IV	100%
RICOH FAX 5510L	A	III	80% or more
RICOH FAX 5510NF	A	III	80% or more

1. Measures not taken for products sold in the North American and European markets.
2. Measures not taken for products sold in the European market.

GPN Standard

Lead-free Soldering		Use of PVC in Wire Coating	
• Solder used to fix parts onto printed wiring boards (solder contained in parts are excluded.) Lead-free rate = weight of lead-free solder/total weight of applicable solder		• PVC used to coat wires for copiers PVC replacement rate = weight of non-PVC wire coating/total weight of wire coating	
AA	100% lead-free	I	100% none use
A	50% or more is lead-free.	II	50% or more is replaced by other materials.
B	10% or more is lead-free.	III	Replacement rate is 10% or more.
C	Less than 10% is lead-free.	IV	Replacement rate is less than 10%.

* As of end of March 2003, there is no copier designated as AA or I.

Reducing Environmentally Sensitive Substances Contained in Personal Equipment

Caplio RR30 (Digital camera) 	• PVC and solder used for main PWB* have been reduced 99.9% and more than 45%, respectively, compared with those in fiscal 1999. Hexavalent chromium is not used. * Printed wiring board
MP-5125 A (disk drive) 	• Hexavalent chromium is reduced more than 65% compared with that in fiscal 1999. • Chromate-free steel plates are used for the first time in Ricoh drives manufactured in China.

Working Together to Reduce Environmentally Sensitive Substances in Components

Ricoh works with parts manufacturers to promote development of parts free of lead, PVC, and hexavalent chromium. These partnerships have earned Ricoh products a high rating on the GPN database in Japan, which promotes green-purchasing. Ricoh Group's overseas production sites are also a part of this effort.

● Lead-Free Solder

Ricoh and Orion Electric Company, LTD. worked together to develop a power supply device using lead-free solder, making use of Ricoh's technology and know-how in lead-free solder, as well as Orion's original production technology. There are about 600 products[1] registered in the copier division of the GPN database. Of the 54 products receiving an "A" rating,[2] 28 are Ricoh products. In the category of color copier, Ricoh imagio Neo C380 has received an "A" rating.

1. As of end of March 2003
2. See table at left.

● Reducing Use of PVC in Wire Coating

Ricoh and Kyoto Electric Wire Corporate LTD. jointly developed a power cable free of PVC and lead. The Company also worked with manufacturers of wire, connectors, and harnesses to develop PVC- and lead-free wire harness. All 28 products rated II* in the copier division of the GPN database are Ricoh products, including the Aficio 1224C/1232C (imagio Neo C240/320) series and imagio Neo C380 color copiers.

* See table at left.

● Reducing Use of Hexavalent Chromium in Steel Plates

Ricoh worked with JFE Steel Corporation (the former NKK) to develop galvanized steel plates free of hexavalent chromium. One product marketed in Japan and three overseas products use exclusively Chromate-free steel plates* in their manufacture.

* Refers only to parts designed by the Ricoh Group and does not include parts purchased from subcontractors.

Reducing Emissions of Noise and Environmentally Sensitive Substances

In order to make copiers or other machines more comfortable to use, the noise emitted from them must be reduced. These machines also emit ozone and dust, albeit in small quantities. Ricoh is improving its designs to reduce the emission of noise, ozone, and dust.

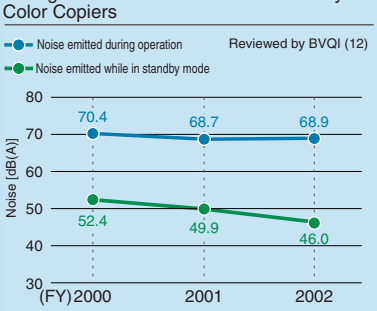
The Noise Measurement Laboratory Obtained ISO/IEC 17025 Certification

The noise measurement laboratory at Ricoh's Ohmori Office obtained ISO/IEC 17025 certification from the National Institute of Standards and Technology (NIST) in November 2002. ISO/IEC 17025 sets standards for laboratory performance, especially for advanced laboratory technologies used in laboratories, including traceability of measurement methods and error control. This certification guarantees the data on noise emissions by Ricoh products meets international standards.

imagio Neo C380 (with optional model 75 attached)

Changes in the Level of Noise Emitted by Color Copiers

Reviewed by BVQI (12)



Calculations are based on the weighted number of color copiers and color printers sold and converted into a copying productivity of 50 sheets per minute for all machines.

Achievement of Standards for Environmentally Sensitive Chemical Substances

Reviewed by BVQI (13)

	Models That Achieved the Standard*	Ricoh Standard (mg/m³)	Blue Angel Mark Standard (mg/m³)
Ozone	57/57	0.02	0.02
Dust	57/57	0.075	0.075
Styrene	57/57	0.07	0.07

* Figures show the number of models that achieved the standards out of 57 models (copiers, facsimiles, and printers) marketed in fiscal 2002.