Pioneer sound.vision.soul

ENVIRONMENTAL REPORT 2003

Caring for our Customers while caring for our world

Editorial Policy

- This report has been prepared for general readers to promote Pioneer's environmental preservation activities in the global community. We aim to play our part as a responsible corporation, with reference to opinions and criticism from the public.
- It carries on the practice of the 2002 report, being prepared for publication in accordance with GRI* "Guidelines for sustainability reporting" and the "Guidelines for environmental reporting" laid down by Japan's Ministry of the Environment. We will continue to follow these guidelines in future reports, as we strive for greater accuracy.
- The GRI Guidelines call for companies to include economic, environmental and social aspects in their reporting. In this report, coverage of social aspects is limited to environment-related social activities. Other social activities are reported on the "Corporate citizen" web site. Economic aspects are presented in detail in the annual report, and in IR material on the homepage.

Pioneer and Information Disclosure

Information concerning economic and social conditions can be found in the corresponding report or on the web.

- Based on the results of questionnaires, we have prepared this report for the general readers, reducing the number of pages where possible without omitting essential information. As a further environmental consideration, we have printed the report on thin, recycled paper to save weight.

HP This logo indicates sections for which more detailed information is available on the web.

http://www.pioneer.co.jp/environment/e/

- Third-party feedback has not been included in the Environmental Report 2003 as an appropriate format had not been determined at the time of publication.

*GRI (Global Reporting Initiative) is an international organization established to improve the quality of enterprise communications so as to realize sustainable development.

We would be most grateful if you would complete and return the questionnaire that you will find in the final pages of this report.

Environmental impact data included in this report

- Period:FY2003 (April 2002 – March 2003)
- Data included is as presented in the map below, unless stated otherwise.
  - Environmental impact data is included for all companies and facilities in the map below.
  - Environmental accounting is included for all companies and facilities in the map below, other than 18 (SPS) and 19 (PSG).
- Expansion of the range of data in Japan and abroad, and further scrutiny of figures has caused some changes from figures released last year.

Japan

1 Towada Electronic Corporation
- Towada Pioneer Corporation
- Towada Tech Corporation

2 Tohoku Pioneer Corporation (Headquarters, Yonezawa Plant, Tendo Minami Plant)
- Mogami Electric Corporation
- To-Pi Electronic Corporation
- T.P.A. Corporation
- Biotech Corporation
- T.S.E. Corporation

3 Pioneer Communications Corporation

4 Pioneer Precision Machinery Corporation

5 Pioneer Corporation
- Headquarters (Meguro, Tokyo)
- Tokorozawa Plant
- Kawagoe Plant
- Ohmori Plant
- Corporate R&D Laboratories

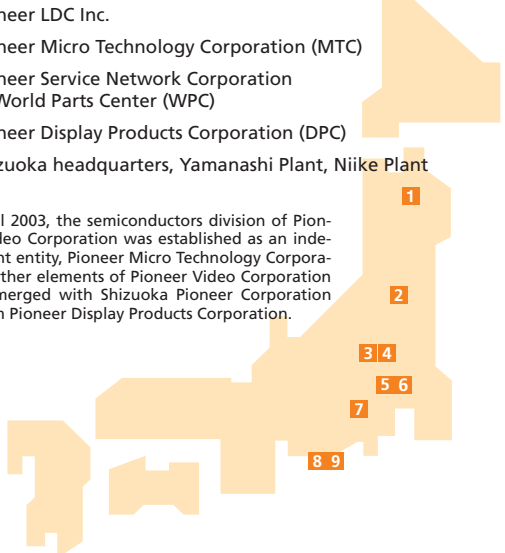
6 Pioneer LDC Inc.

7 Pioneer Micro Technology Corporation (MTC)

8 Pioneer Service Network Corporation
World Parts Center (WPC)

9 Pioneer Display Products Corporation (DPC)
Shizuoka headquarters, Yamanashi Plant, Niike Plant

In April 2003, the semiconductors division of Pioneer Video Corporation was established as an independent entity, Pioneer Micro Technology Corporation. Other elements of Pioneer Video Corporation were merged with Shizuoka Pioneer Corporation to form Pioneer Display Products Corporation.



North America

1 Pioneer North America, INC. USA (PNA)
2 Pioneer Industrial Components, INC. USA (PIC)
3 Pioneer Electronics Technology, INC. USA (PET)
4 Pioneer Manufacturing de Mexico, S. A. de C. V. Mexico (PMM)
5 Pioneer Speakers, S.A.DE C.V. Mexico (PSSA)

Europe

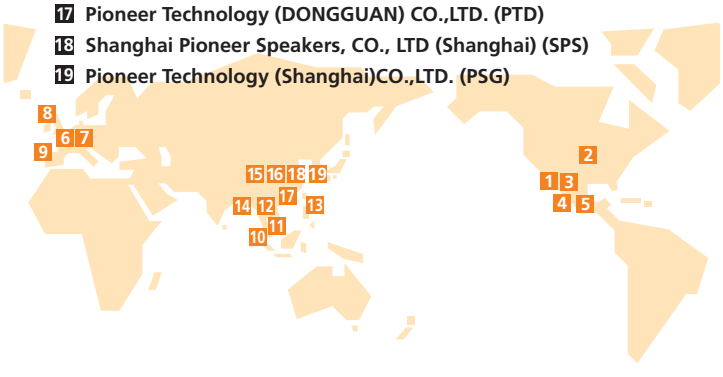
6 Pioneer Europe NV Belgium (PEE)
7 Pioneer Technology Belgium NV Belgium (PEM)
8 Pioneer Technology UK LTD. UK (PTK)
9 Pioneer Technology Portugal S. A. Portugal (PEP)

Asia

10 Pioneer Electronics Asiacentre PTE. LTD. Singapore (PAC)
11 Pioneer Technology (MALAYSIA) SDN.BHD. Malaysia (MPT)
12 Pioneer Manufacturing (THAILAND) CO., LTD.Thailand (PTM)
13 Pioneer Electronics (TAIWAN) CORP. Taiwan (PTW)
14 Tohoku Pioneer (THAILAND)CO., LTD.Thailand (TPT)

China

15 Pioneer China Holding CO.,LTD. Shanghai (PCH)
16 Pioneer Electronics Manufacturing (Shanghai) CO.,LTD.(PSM)
17 Pioneer Technology (DONGGUAN) CO.,LTD. (PTD)
18 Shanghai Pioneer Speakers, CO., LTD (Shanghai) (SPS)
19 Pioneer Technology (Shanghai)CO.,LTD. (PSG)



Highlights of FY2003

These are some of the highlights of the Pioneer Group's environmental preservation activities in FY2003.

The First World Environment Conference

→Details on p. 29

The first World Environment Conference took place at Pioneer Group headquarters in May 2002. It brought together environment-related staff from five zone headquarters (Japan, North America, Europe, Asia and China) for a lively exchange of views.

Regional headquarters and Chinese production corporation acquire ISO14001 certification

→ Details on p. 28

Pioneer North America (PNA) and Pioneer Electronics Asiacentre PTE. LTD. (PAC) have acquired ISO14001 certification, as has Pioneer Technology Dongguan (PTD), our newly-established production company in China.

PAC (Singapore)

Zero emissions achieved within Yamanashi prefecture

→ Details on p. 25

Pioneer Display Products Corporation (DPC) Yamanashi Plant and Pioneer Micro Technology Corporation (MTC) have achieved zero emissions, producing no waste at their facilities.

DPC (Yamanashi Plant)

The AVIC-DR2500 car navigation system won a special prize in the Japan Packaging Competition 2003

→ Details on p. 20

The AVIC-DR2500 DVD Raku Navi system was highly rated for its environment-friendly non-styrene packaging, winning a special prize.

The DVD Mini Rakura DVD player won the Resource Recycling Technology and Systems Award

→ Details on p. 14

The DVD Mini Rakura DVD Player, Pioneer's Eco Champion model, won the incentive award from the Resource Recycling Technology and Systems Award for 2002.

Contents

Message

Caring for our customers while caring for our world
Integration between environmental preservation activity and corporate activity

There is a Doomsday Clock*1 representing the approach of a crisis in international peace, and there is also an Environmental Doomsday Clock*2 which represents the crisis for continuation of the human species posed by the deterioration of the global environment. The time for the whole world on the latter clock was announced as 9:05, representing an 'extremely concerned' state for the second consecutive year. The time for Japan is 9:18, 13 minutes beyond the world as a whole. The hands of the clock have undoubtedly been advanced by us. We have created an economic society of mass production, mass consumption and mass wastage, and now the alarm bells are ringing.

Our products are no exception, as their production and use have the potential to advance the hands of the clock, but if it is the human who push the hands forward, it is also the human who can push them back. The time is coming when companies will have to recognize protecting the environment as one of their most important missions, and all pull together to carry out that mission.

Pioneer adopted environmental preservation principles in 1992, addressing the company as a whole to the task of protecting the environment. In 1997 we chose "Move the heart and touch the soul" as the shared group concept for corporate activity, which we have followed ever since. Now the vision for the environmental preservation activity we should aim for is one of environmental management that integrates environmental preservation and corporate activity, rather than merely trying to reconcile them. We believe environmental management is a vital challenge we must overcome to turn back the hands of the Environmental Doomsday Clock.

To that end, we must change the way we think, by bringing environmental preservation activities into the range of core corporate functions. For example, measures such as clearly stating design specifications that consider the effective use of resources at the design stage, reduction of the number of processes and improvements in yield deliver benefits in cost and quality. Beyond that, they lead to energy saving and waste reduction, while proper inventory management saves resources at the distribution stage. All these aspects and more must be considered. Environmental preservation activities are no longer optional extras in business.

The customers are the most important consideration for any business. When we treat the world as we do our customers, we naturally regard the environment with more care, and environment preservation activity will emerge spontaneously and necessarily within our corporate activities that are the core of our business. That perception has led us to adopt "Caring for our customers while caring for our world" as the environmental motto for our group as a whole. If we follow through on that perception, we should be able to force back the hands of the clock. Recovering our beautiful and irreplaceable Earth will move people in ways that bring us closer to realizing our group philosophy.

We aim to build on the results of our past work in further integrating our environmental preservation and corporate activities. To that end, this report states what we have achieved so far and what specific targets we have set for the future. We hope this report explains our environmental preservation activities and their position as a core element of our business, and we look forward to hearing your frank opinions.

July 2003

Kaneo Ito
President and Representative Director

★1 Doomsday Clock: The Bulletin of the Atomic Scientists, an organization of US scientists, publishes an annual time representing the proximity of nuclear war.
★2 The Environmental Doomsday Clock announces the findings of a questionnaire put by the Asahi Glass Foundation to experts in environmental issues from around the world.

Corporate Philosophy and Environmental Policies

Pioneer's Group Charter for Corporate Operations, which regulates the scope of the group's actions, defines ongoing activities for environmental preservation activities. Those activities are reflected and implemented in the corporate philosophy for environmental preservation, and in the basic corporate policies for environmental preservation, which state more specific activity guidelines.

Charter for corporate operations

As the Pioneer Group works towards its group concept of "Move the heart and touch the soul," we, the entire group and all its directors and employees, will move forwards as leaders in the creation of new markets, and in doing so we will earn the trust and respect of society through our actions as highly ethical, good corporate citizens.

- We will provide products and services that are useful, reliable and safe.
- We will operate our corporate activities fairly.
- We will continue efforts to conserve materials and energy, and reduce impact on the Earth's environment.
- We will strive for fair disclosure of information about our corporate activities.
- We will undertake effective risk management to deal with unforeseen incidents as quickly and sincerely as possible.
- We will properly manage and protect our assets and rights.
- We will endeavor to contribute to society from a global perspective.
- We will aim to pursue our corporate activities, always with respect for humanity.

Corporate Philosophy for Environmental Preservation

The Company will make efforts to always contribute to maintaining and realizing the rich and safe earth environment through our corporate activities, based on the general understanding that it is one of our corporate missions to maintain, improve and hand over the earth's environment to the next generation.

Basic Corporate Policies for Environmental Preservation

1 Compliance with Laws and Regulations

The Company will comply with all applicable laws and regulations in connection with environmental preservation, and if need be, establish standards to reduce the negative impact of its activities on the environment.

2 Preservation of the Environment

The Company will cease the use of, adopt substitute substances for, or restrain the discharge of substances which are harmful to the environment, such as those which contribute to the depletion of the ozone layer or global warming and other toxic chemicals.

3 Development of Environment-Friendly Products

The Company will introduce a Product Assessment System in the course of its research and development activities, and will develop new environment-friendly technologies to reduce the negative impact of such products and technologies on the environment.

4 Management based on Goals

The Company will establish goals in order to reduce the negative impact of its activities on the environment, such as natural-resource-saving, energy-saving, recycling, reduction of waste material, etc., and will make efforts to achieve those goals.

5 System to Promote Environmental Preservation

The Company regards environmental preservation as a common objective that should be focused on by all companies in the Pioneer Group, and thus, a company-wide system which contributes to the promotion of environmental preservation will be established under the leadership of the director in charge of environmental preservation.
For such purpose, each division of the Company will establish corresponding organizations as the need arises.

6 Training and Education

The Company will educate its employees with regard to environmental preservation, including notification of these policies. In addition, specialized training will be given to employees as circumstances demand.

7 Continuous Improvement

The Company will, on a continuous basis, review and update its environmental preservation activities. The Company will pay serious attention to the results of environmental audits, and will maintain and improve its environmental preservation activities accordingly.

8 Disclosure

The Company will disclose its Corporate Philosophy and Policies for Environmental Preservation to the public.

More friendly products for the globe

As we in the Pioneer Group pursue CS (Customer Satisfaction) management, we are constantly looking for ways to provide our customers with products and services that will move and satisfy them. We are also working in many ways to maintain and improve our irreplaceable world, as if it is another of our customers, so that we can pass it on to the next generation.

The motto we use to represent our environmental preservation work is "Caring for our customers while caring for our world."

Our policy keywords for implementing that motto are no negative input of harmful substances, no negative output of waste, and no negative use of resources and energy. We follow these principles in our activities in Japan and around the world.

Our production at centers in Southeast Asia and China is increasing, and the products manufactured there are exported for sale around the world. We aim to strictly observe the various regulations and laws that apply in the producer and consumer countries, and to provide products that care for the world.

Our involvement in worldwide production and marketing activities prompted us to hold our first world environment conference at Pioneer headquarters in May 2002. The conference brought together environmental managers from our production facilities and distribution companies around the world to announce the results of environmental preservation activities in their regions and engage in a lively exchange of opinions. We will hold a world environment conference every year from now on to provide a global perspective to support our environmental preservation work.

In June 2002 we launched the DVD Mini Rakura, our Eco Champion DVD player model, with industry-leading standby power consumption and lead-free solder on all circuit boards. It was well received by many of our customers. We aim to provide this kind of product more widely in future.

The Pioneer Group will keep a close watch on the environmental aspects of our products, production facilities and overall activities, so that we can care for the world as we care for our customers in following our pioneering spirit forward.

Satoshi Matsumoto
Managing director
Division of Environmental Preservation

Pioneer's History of Environmental Preservation

1989	Spring	Examination into substitutes for styrene foam packaging begins.
1990	December	Use of molded pulp (shock absorbing material made from recycled paper) for packing car stereo components begins.
1991	July	Company-wide Pioneer Environmental Conservation Committee is established.
1992	March	CFCs are completely eliminated from Pioneer Group manufacturing processes.
	September	Product assessments are begun for all electrical appliances.
	November	Environmental Preservation Policies are established as an Environmental Charter.
1993	February	Use of collapsible cardboard packaging for A/V products is adopted; collection and recycling of nickel-cadmium batteries begins.
1995	June	A Pioneer director is named to take charge of environmental affairs.
1996	March	HCFCs (substitute for CFCs) are eliminated from all Pioneer Group manufacturing processes.
	June	Tokorozawa Plant obtains ISO 14001 certification (the first in the Pioneer Group).
1998	August	Division of Environmental Preservation is established with a full-time director in charge.
	October	Pioneer Environmental Label is established.
	November	Products with lead-free solder go on sale.
1999	March	ISO 14001 certification is completed at all Pioneer design and manufacturing facilities in Japan.
	June	First issue of the Pioneer Environmental Report is published.
2000	June	Public announcements of environmental accounting begin.
	July	Green Procurement Standards are published.
	October	Awards ceremony for the First Pioneer Environment Contribution Awards is held.
2001	December	Pioneer participates in Eco Products Expo Japan.
	March	Pioneer Headquarters obtains ISO 14001 certification.
	March	ISO 14001 certification is completed at all of Pioneer's main manufacturing facilities worldwide.
	April	Environmental Accounting system is introduced, and its introduction to overseas plants commences.
	October	Publication of site reports begins.
2002	March	European headquarters obtains ISO 14001 certification.
	March	Full-scale introduction of lead-free solder to products manufactured in Japan begins.
	March	In-company Life Cycle Assessment (LCA) system is established.
	June	First World Environment Conference held.
	June	Mini Rakura DVD player launched as the first product of the internal Eco Champion Support System.
	November	Newly established Chinese production company begins ISO14001 acquisition.
2003	March	Regional headquarters for North America and Asia acquire ISO14001 certification.

Promotional System

In July 1991, the Pioneer Environmental Conservation Committee was established as a group-wide organization. This committee deliberates over and controls group-wide measures for environmental problems. When necessary it forms specialized working groups to strengthen those activities.

Organization of the Pioneer Environmental Conservation Committee

The Pioneer Environmental Conservation Committee is a top-level agency responsible for consideration and overall control of action on environmental issues. Its membership comprises representatives of group companies, headquarters departments, environmental management departments of company facilities, and related companies.

(as of April 1, 2003)

President

Director in charge of environmental preservation

Division of environmental preservation

Pioneer Environmental Conservation Committee

Chairman: Managing director of the Division of environmental preservation

The Environmental Conservation Committee

Technical Committee

Environmental Products Committee
Promoting environmental consideration in product design.

LCA Committee
Consideration of Life Cycle Assessment

Lead-free Solder Committee
Promoting the use of lead-free solder.

Green Procurement Committee
Environmental consideration in purchasing product materials and components.

Green Purchasing Committee
Environmental consideration in purchasing equipment and furnishings, office supplies etc.

Environmental Accounting Committee
Preparation of environmental accounts and consideration of guidelines.

Plant and Company Supervising Committee
Raising the level of plant management.

Home Entertainment Company

Tokorozawa Plant

Mobile Entertainment Company

Kawagoe Plant

Components Business Company

Industrial Solutions and Entertainment Company

Ohmori Plant

Procurement Center

Sections in charge of environmental activities at headquarters

Meguro Headquarters

Corporate R&D Laboratories

Environmental departments at domestic affiliates

Tohoku Pioneer
Pioneer Display Products
Pioneer Micro Technology
Pioneer Communications
Pioneer Precision Machinery
Pioneer LDC
Towada Electronic
Pioneer Shared Services Japan
Pioneer Service Network

North America Regional Headquarters
Pioneer North America, Inc., USA (Los Angeles)

Europe Regional Headquarters
Pioneer Europe NV, Belgium (Antwerp)

Asian Regional Headquarters
Pioneer Electronics Asiacentre, PTE. Ltd., Singapore

China Regional Headquarters
Pioneer China Holding Co., Ltd., China (Shanghai)

International Business Division
Controlling other regions abroad.

Pioneer's Environmental Impact and Issues to be Tackled

The illustration below shows the life cycle of Pioneer products, from their planning and manufacture to their delivery to customers, their use and ultimate disposal or recycling. It is inevitable that the environment will be impacted in various ways at each stage of the process. Pioneer continues to devote full attention to the reduction of this impact as far as possible.

Data is collated for domestic operations.
Figures in parentheses are approximations including some degree of estimation.

Pioneer's Enviro

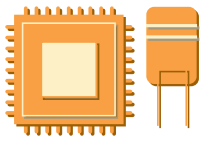
Input

Suppliers 676 companies
Resources (26,800 tons)

Total energy: 2,296* tera-joule
- Electricity: 163.62 million kWh
- Fuel: 15,000 kiloliters
- Gas: 462,000 m³

Water consumption: 2,854,000 m³
Chemical substances handled: 190 tons
OA paper: 39,382,000 sheets

Total transportation volume (2.89 million ton-km)



Procurement

Planning, design, production

Transportation

Output

CO_2: 99,555 tons CO_2
Global-warming gas excluding CO_2: 14,341 tons CO_2 (equivalent)
Waste generated: 8,681 tons
- Amount recycled: 8,134 tons
- Amount disposed: 512 tons
- Amount reduced: 35 tons

Wastewater: 2,788,000 m³
Waste chemical substances: 56 tons
SOx: 19 tons
NOx: 515 tons

CO_2: (1,012 tons CO_2)

Recycling
Products
Facilities

Pioneer's Focus for Env

Products

- Life Cycle Assessment (LCA)
- Green procurement
- Pioneer Eco Champion Models
- Reduce or substitute the use of environmentally harmful substances
- Reduce power consumption during standby
- Facilitate product recycling

Facilities

- Reduce CO_2 emissions (saving energy) to prevent global warming
- Reduce waste, aiming for zero emissions
- Reduce the use of environmentally harmful substances
- Green procurement and purchasing
- Increase transportation efficiency
- Reduce the use of OA paper

Reduce Overall social bu

Realize a sust

* Tera- means 10^{12}

nmental Impact

Electricity use at home
Disposal of packaging materials

World Parts Center (WPC)
Total energy: 6 tera-joule
Water consumption: 2,313 m³

Recycled packaging materials
- Paper: 108 tons
- Plastics: 218 tons

CO_2: 268 tons CO_2
Waste generated: 162 tons
- Amount recycled: 60 tons
- Amount disposed of: 102 tons

Wastewater: 2,313 m³

Recycled waste
CRT TV sets: 83 tons

Recycling

Products

ironmental Preservation

Management activities

- Promotion of the environmental management system
- Environmental accounting
- Establishment of global systems

Social Activities

- Active participation in local volunteer activities
- Communication with local communities
- Support for environmental preservation organizations
- Environmental education and PR
- Publicity campaigns

rden on the environment
ainable society

To reduce efficiently the environmental impact of the above production processes, we organize our activities into four aspects, :products, facilities, management activities and social activities. The next chapter will explain the challenges and our responses in each of these four aspects.

Environmental Targets and Performance

At Pioneer, we have set ourselves the task of reducing the environmental impact generated by our products and plants. Looking beyond individual years, we have adopted a new vision to continue until 2010. Our evaluations of the results for FY2003 are reported in detail on the relevant pages.

Category	Objectives	Targets in FY2003	FY2003 results	Self assessment
Products	Construction of frameworks for ecological model development: Life Cycle Assessment (LCA)	・Adapt to large products such as plasma displays ・Incorporate LCA results into design process	・Developed product LCA that can be applied easily to large products and product development	○
	Construction of frameworks for ecological model development: Eco Champion models	・Incorporate environmental points into design guidelines	・Launched a Pioneer Eco Champion model and won a resource recycling technology award	◎
	Construction of frameworks for ecological model development: Green procurement	・Introduce green procurement worldwide	・Began green procurement in China, and elsewhere in Asia and beyond ・Domestic green procurement rate reached 63%	○
	Reduction of environmentally harmful substances and use of substitutes	・Promote replacement of polyvinyl-chloride resin that includes lead	・Eliminated PVC-sleeved electrolytic capacitors from all car electronics products	○
		・Full-scale introduction of lead-free solder in overseas production	・Fully introduced lead-free solder as scheduled for all new products produced overseas	○
	Reduction of power consumption during standby (home AV products)	・Less than 0.5 W on average	・Achieved 0.33 W average for home products	◎
	Simple recycling of products	・Improve recyclability rates and reduce disassembly time	・Achieved targets in AV products and ・CATV terminals, and in set-top boxes for the European market	○
Facilities	Prevention of global warming	・Reduce CO_2 by 1% compared to FY1991	・14% reduction for Pioneer alone (CO_2). ・6% increase on FY2002 for the Group (CO_2)	×
	Reduction of waste (zero emissions)	・Zero manufacturing-related waste (Pioneer Corporation)	・Pioneer achieved zero waste emissions for all production systems and facilities	○
	Reduction of environmentally harmful substances	・Reduce atmospheric emissions of substances subject to the PRTR Law by 10% compared to FY2002	・Atmospheric emissions increased 31% on FY2002	×
	Green procurement	・Promote purchase of LCD screens	・Raised LCD installation ratio from 62% to 77%	○
		・Promote low-pollution company-owned vehicles	・Raised low-emission vehicle ratio from 7% to 23%	○
	Reduction of OA paper	・Reduce OA paper usage from the previous year's level	・97% of FY2002 volume	○
	Improvement in logistics	・Implement environmental measures in distribution	・Implementation of modal shift and milk runs	○
Management activities	ISO 14001 certification	・Obtain by overseas regional headquarters	・Acquired by two overseas regional headquarters, ten distribution companies and one Chinese manufacturer	○
	Environmental accounting	・Establish system and incorporate into Group companies	・Overseas extension of systems completed	○
	Establishment of global systems	・Promote the World Environmental Conference	・First World Environment Conference held ・Worldwide environmental DB introduced internally ・81% of Pioneer Group environmental impact identified (ratio of employee numbers)	○
Social activities	PR activities	・Disclose information promptly	・Participation in various exhibitions (Ecoproducts exhibition etc.)	○
	Environmental education	・Conduct educational and training activities for employees and their families	・Environmental contribution prize contest carried out (new patent section added, prizes for individual entrant division) ・Implementation or participation in numerous environment-related symposia ・129 experts gained national qualifications and a system of 213 internal auditors was set up	○
	Social activities in the local environment	・Communicate with local communities ・Participate in local volunteer activities ・Support environmental preservation organizations	・Participated in numerous social activities at various facilities ・Established guidelines and systems for activities	○

Self assessment criteria
◎ Target cleared by a large margin
○ Target achieved
× Target not achieved

*Raw unit for sales amount: Environmental impact amount per ¥100 million of sales

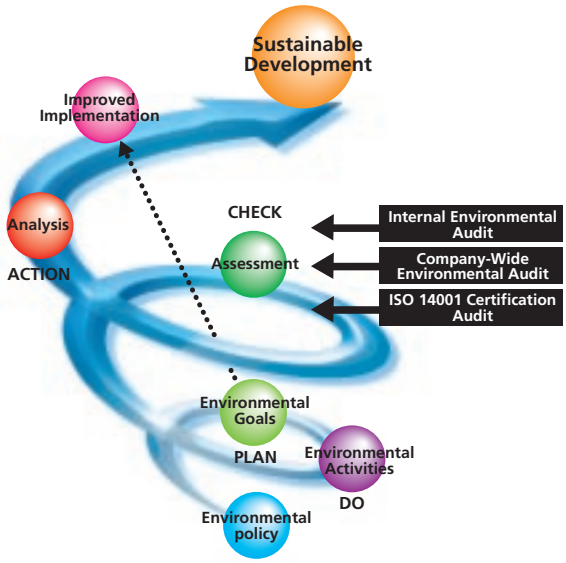
Targets for FY2004	Targets for FY2006	Vision for 2010	Reference pages
・Introduce product LCA (network compatible) and conduct trials in domestic and overseas facilities	・Greater consideration for the environment during product development applied to more models	Integration of business activities and environmental activities EQCD E(Environment) Q(Quality) C(Cost) D(Delivery)	16
・Selection of new Eco Champion models	・Establish environmental design guidelines		14
・Green procurement ratio 80% (in Japan)	・Green procurement 100% (in Japan)		15
・Expand the full elimination of PVC-sleeved electrolytic capacitors to more products	・Total elimination of lead, mercury, sexivalent chromium, cadmium etc. (except where no alternative technology exists)		19
・Use lead-free solder in all models			19
・Reduce the average stand-by power consumption below the previous year	・Introduce products below 0.1 W (in each category)		18
・Improve the recyclable ratio ・Reduce the removal time for components that must be removed	・Increase recyclable ratio further ・Reduce removal time for components that require removal to 10 minutes or less for large products		20
・Reduce global warming gas emission in Japan by 1% compared to FY2002 ・Reduce Group discharge in the *raw unit by 1% compared to FY2002	・Reduce global warming gas emission in Japan by 3% compared to FY2002 ・Reduce Group discharge in the raw unit by 4% compared to FY2002		22
・Expand zero waste emission to non-production facilities	・Expand zero waste emission to all Group facilities in Japan		24
・Maintain atmospheric emissions at the FY2002 level	・Reduce atmospheric emissions by 20% from the FY2002 level		23
・Expand designated product categories for green purchasing statistics to 10 items ・Raise green purchasing rate to 70%	・Further expand designated product categories for green purchasing statistics ・Raise green purchasing rate to 90%		27 27
・Less than the previous year	・Reduce by 15% compared to FY2001		27
・Study overseas logistics	・Enlarge the range of activities		27
・Expand certification to new facilities in China and elsewhere	・Acquisition by all Group companies worldwide		10
・Expand the range covered in China	・Compile statistics for all ISO accredited facilities worldwide		12,13
・Identify 85% of the Pioneer Group's environmental impact	・Identify 90% of the Pioneer Group's environmental impact		29
・Raise the frequency of information disclosure (At least 1 homepage posting per month)	・Promote periodic activities		33,34
・Continued implementation of environmental contribution prizes ・Implementation of environmental symposia at each facility ・At least 100 employees to receive new national qualifications ・Maintain system of 200 internal auditors and expand specialist education	・Continue to promote activities		32,33
・Continue activities and expand communication between each facility and its local community	・Reinforce activities based on social contribution action indices		31

Environmental Management System

Pioneer is building an environmental management system based on ISO 14001 international standards. This system has been used effectively in Pioneer Group companies worldwide to implement, maintain and improve environmental preservation activities. By March 2003 regional headquarters for the US and Asia, distributors in Europe and other facilities newly had acquired ISO 14001 certification.

Three-tier environmental auditing systems

Pioneer performs internal environmental auditing to check the status of environmental preservation and management activities on a facility-by-facility basis. Domestically, the Pioneer Group has 213 internal environmental auditors.
In addition, the Division for Environmental Preservation performs group-wide environmental audits to confirm the status of operational activities. When it discovers superior results at certain facilities, it expands the activities concerned to all Group facilities.
Finally, we have a third audit system of ISO 14001 audits by a third party (an ISO 14001 auditing and registration agency).
If and when problems are brought to light through any of these three environmental audits, Pioneer acts quickly to take appropriate measures, and strives to improve environmental management and preservation activities.



Specific results of external auditing

Periodic auditing of all domestic facilities has produced the evaluation that they are broadly "improving". Evaluation has been particularly favorable for the environmental assessment of research results in the corporate R&D laboratories and the positioning of environmental goals and targets within the core operations in our headquarters.
The indications from external audits comprise six minor shortcomings, 20 observations and four recommendations.
The main indications included lack of environmental impact assessment (incorporation into core operations), and inconsistency between written regulations and procedures and actual practice in the education of internal auditors.
Swift remedial measures have been taken at all facilities, and we are working to realize further improvements.

ISO 14001 Certification Status

(Facilities certified by April 2003)

- Pioneer Tokorozawa Plant
- Pioneer Kawagoe Plant
- Pioneer Ohmori Plant
- Pioneer Corporate R&D Laboratories
- Pioneer Headquarters, Meguro
  - Pioneer Service Network Corporation
  - Pioneer Shared Services Japan Corporation
  - Pioneer Design Corporation
  - Increment P Corporation
  - Pioneer Media Creates Corporation
  - Pioneer AFM
  - Pioneer Industry Corporation
  - Pioneer Navicom Corporation
  - Fukuin Corporation
  - Pioneer HRD Corporation
  - Techno Access Corporation
  - Pioneer Welfare Service Corporation
  - Pioneer Building Management Corporation
  - Monetech Tokyo Corporation
  - Pioneer Micro Technology Corporation Semiconductor division, Tokyo office
  - E.D. Lease Corporation
  - Pioneer Health Insurance Association
  - Pioneer Welfare Annuity Fund
  - Pioneer Workers Union
- Pioneer Micro Technology Corporation
- Pioneer Display Products Corporation Headquarters, Niike and Yamanashi Plants
- Pioneer Service Network Corporation World Parts Center
- Tohoku Pioneer Corporation Headquarters, Yonezawa and Tendo Minami Plants
  - Mogami Electric Corporation
  - To-Pi Electronic Corporation
  - T.P.A. Corporation
  - T.S.E. Corporation
  - Biotech Corporation
- Pioneer Communications Corporation
- Pioneer Precision Machinery Corporation
- Towada Electronic Corporation
  - Towada Pioneer Corporation
  - Towada Tech Corporation
- Pioneer LDC Corporation

Asia

- PIONEER ELECTRONICS ASIA CENTRE, PTE. LTD. (PAC) Singapore
- PIONEER TECHNOLOGY (MALAYSIA) SDN.BHD (MPT) Malaysia
- PIONEER ELECTRONIC (TAIWAN) CORP. (PTW) Taiwan
- PIONEER MANUFACTURING (THAILAND) CO.LTD. (PTM) Thailand
- TOHOKU PIONEER (THAILAND) CO.LTD. (TPT) Thailand

China

- PIONEER ELECTRONICS MANUFACTURING (SHANGHAI)CO.LTD. (PSM) Shanghai
- SHANGHAI PIONEER SPEAKERS CO.LTD. (SPS) Shanghai
- PIONEER TECHNOLOGY (DONGGUAN) CO., LTD. (PTD) Dongguan
- DONGGUAN MONETEC ELECTRONIC CO. LTD., (MND) Dongguan

Europe

- PIONEER EUROPE NV (PEE) Belgium
- PIONEER TECHNOLOGY BELGIUM NV (PEM) Belgium
- PIONEER TECHNOLOGY PORTUGAL SA (PEP) Portugal
- PIONEER TECHNOLOGY UK LTD. (PTK) U.K.
- PIONEER BENELUX BV (PEB) The Netherlands
- PIONEER FRANCE SA (PFS) France
- PIONEER ELECTRONICS IBERICA, S.A. (ESP) Spain
- PIONEER DENMARK AS (PDS) Denmark
- PIONEER NORGE AS (PEN) Norway
- PIONEER SCANDINAVIA AB (PES) Sweden

North America

- PIONEER NORTH AMERICA, INC. (PNA) U.S.A.
  - PIONEER ENTERTAINMENT (U.S.A.) L.P. (PEAI)
- PIONEER INDUSTRIAL COMPONENTS, INC. (PIC) U.S.A.
- PIONEER ELECTRONICS TECHNOLOGY, INC. (PET) U.S.A.
- PIONEER ELECTRONICS (USA) INC. (PUSA) Customer Support Division U.S.A.
- PIONEER AUTOMOTIVE ELECTRONICS SALES, INC. (PAM) U.S.A.
- DISCOVISION ASSOCIATES (DVA) U.S.A.
- PIONEER DIGITAL TECHNOLOGIES, INC. (PDT) U.S.A.
- PIONEER ELECTRONICS OF CANADA, INC. (POC) Canada
- PIONEER MANUFACTURING de MEXICO,S.A. de C.V. (PMM) Mexico
- PIONEER SPEAKERS, S.A.DE C.V. (PSSA) Mexico

Environmental Risk Management

Strict voluntary management standards

If an accident occurs at one of our facilities and causes environmental contamination of the surrounding area, the necessary restoration work requires enormous amounts of time and money.
Pioneer has set and operates voluntary management standards that are stricter than those provided by law, in order to minimize this kind of risk. In the event that our voluntary management standards are not cleared, we will devise and implement swift countermeasures to prevent breach of legal standards.
There were no breaches of environment-related laws by Pioneer in FY2003.

Implementation of emergency response training

For facilities which could cause major environmental impact in the event of an accident (such as crude oil tanks), we carry out emergency response training to handle any emergency that can be envisaged.
In the unlikely event of an accident, or a breach of legal standards, we go beyond immediate action to minimize the extent of the incident, using a system to promptly notify local authorities with jurisdiction over the facility concerned.

Examples of responses to accidents and complaints (in Japan)

In FY2003 there were two incidents related to risk management.

● CFC refrigerant leaked from air conditioning system pipes (July)

Cause : Excessive tightening and thermal stress appear to have fractured a pipe nut.

Action: The replacement nut was tightened to the correct torque, and insulation material was used to reduce thermal stress.

● A small fire occurred in planting at the edge of a site (January)

Cause : Somebody using the road outside the site did not extinguish their cigarette.

Action: Thorough clearance of fallen leaves and other efforts to prevent fires.

We received seven complaints and demands.

- A disposal contractor requested more thorough waste sorting (1 case).
- Authorities requested a survey of industrial waste emission records (2 cases).
- A member of the public requested an investigation of illegal disposal of products (1 case).
- Complaints from local residents over new factory construction works (3 cases: noise, dust and electromagnetic interference).

Oil barrier around crude oil tanks
(Pioneer Micro Technology Corporation)

Risk management by PRTR

Data submission under the PRTR Law in Japan began in 2001. The Pioneer Group reports environmental data for each facility to prefectural authorities, according to the Law.
This data is collated and managed for each facility, and we are working to raise the level of environmental risk management and lessen environmental impact.
Overseas we carry out management in accordance with equivalent local laws. In countries where such laws have not been enacted, we carry on the same data collation and management as under Japan's PRTR Law.

PRTR See page 23

Thorough management of PCBs

PCBs were used in the past as insulation oil in appliances such as electrical condensers and fluorescent light ballasts. Its production has now been stopped as a pollution prevention measure. However, the capacity of facilities for processing PCBs is currently inadequate, and PCBs must, by law, be stored and reported to prefectural authorities annually to prevent loss or leakage.
Such containers are strictly managed at each of our facilities and reported to the authorities.

PCBs under careful storage

High-voltage condensers in storage

Application to products

We carry out risk management of chemical substances in products through green procurement, to guard against the inclusion of harmful substances.

Green procurement See page 15

Environmental Accounting

Pioneer has kept environmental accounts since the Environmental Accounting Committee was formed in October 1999. In FY2003, a number of companies worldwide followed our example beginning their own environmental accounting measures. Today, this coverage has grown to include a total of 33 companies (16 domestic and 17 overseas). (For details, refer to the environmental impact data included at the start of this report).
Pioneer chooses to disclose its environmental accounting results as an important tool to promote corporate environmental preservation activities.

Pioneer's environmental accounting defined

Pioneer has established its own Group-wide Environmental Accounting Guidelines based on the publication "Environmental Accounting Guidelines (2002 Edition)" issued by Japan's Ministry of the Environment. These guidelines stipulate that environmental investment is depreciable in fixed amounts over a five-year period, and that its economic benefit also extends to five years. Our environmental investment calculations however, reflect figures from 1999 onwards, the year that Pioneer began keeping environmental accounts.
Economic benefits include actual profits and cost savings, but not so-called "surmised benefits" (those derived from risk avoidance or estimated benefits contributing to profits).

Revision of internal guidelines

IN FY2003, we revised our Pioneer guidelines. The main changes were to clarify their function in internal management, enabling monitoring of costs and benefits.
In particular, the new concept of Consumer benefits (described below) was formally incorporated under accounting of benefits.

Environmental accounting and management systems linked to production and distribution systems

All cost and benefit figures are collated through the Environmental Accounting System intranet.
This system, which is linked to production and distribution systems, is able to instantly ascertain the environmental costs and benefits of any product.
This enables central management of environmental accounting, making the work of collating figures simpler, faster and more accurate.

Data collection results by category

Environmental accounting results for FY2003 in this environmental report have been classified into categories, as in the table below.
The four categories are products, facilities, management activities and social activities.
The Products category consists of direct costs and indirect costs (R&D expenditure). Direct cost is calculated by booking the "cost-increase" portion of products with environmental considerations as "cost" and the "cost-reduction" portion as "benefit", and multiplying either figure by the number of products manufactured in FY2003.
A distinctive feature of Pioneer's environmental costs is that R&D costs (¥1,300 million) represent a high ratio of 31% of total costs.

FY2003 Data Collection Results by category

(Million ¥)

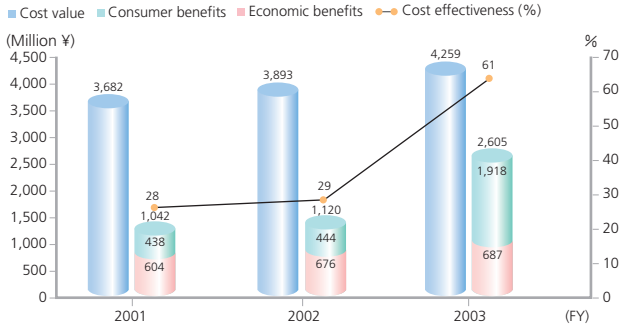
	Main activities	Investment value	Cost value	Economic benefits
Products	Direct cost (energy-saving measures, use of lead-free solder, product cost increase/decrease through reduced packaging materials)	96	1,038	98 ✱(1,918)
	R&D cost (increased efficiency of plasma displays, organic EL and others)	41	1,330	
Facilities	Pollution elimination and energy-saving activities, waste reduction, green purchase, reduced distribution	119	877	585
Management activities	Environmental management systems and all management activities	0	938	4
Social activities	Personnel costs, expenses and other costs for community environmental contribution activities, PR activities, education etc.	0	76	0
	Total	**256**	**4,259**	**687✱(2,605)**

✱Figures in ( ) represent collected data and include consumer benefits.

Consumer benefits

Consumer benefits are savings gained by our customers through using our products. We regard these as separate from benefits gained by Pioneer, but they are also added to economic benefits for internal management to assist in judging cost effectiveness.
Calculation standards have been set for each product type and booked for products that show clear energy-saving benefits. As a result, savings equivalent to ¥1.9 billion in value and 35,000 tons of CO_2 were gained.

Cost effectiveness including consumer benefits



Consumer benefits

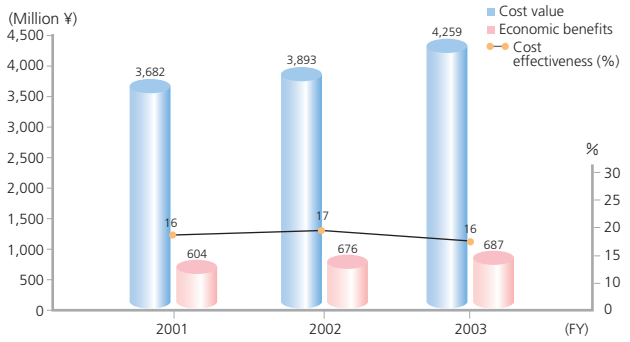
	Details	Savings	Equivalent value (Millions ¥)
AV products	Reduced standby power consumption	51,470,000 kWh	1,184
Plasma displays	Reduced operation and standby power consumption	3,890,000 kWh	89
CATV terminals	Reduced operation and standby power consumption	26,840,000 kWh	617
Car electronics products	Fuel savings from improved fuel consumption due to reduced weight	419 t (equivalent to 281 kl of gasoline)	28
	Total		**1,918**

Calculation formula =∑{(FY99 reference model - FY2003 model) x other terms x coefficient x No. of units produced per year}
Consumer usage conditions over one year were envisaged as follows:
- Standby time: 22 h/day x 365 days (AV products) (operation time: 4.5 h/day, standby time 19.5 h/day) x 365 days (for plasma displays and CATV terminals)
- Weight of normal car = 1.5 t, fuel consumption 10 km/l, drive distance 10,000 km (car electronics)
- Coefficients: Unit electricity cost (¥)23/kWh), gasoline (¥)100/l)

Data collection results (based on Japan's ministry of the environment guidelines)

Data collection results based on guidelines laid down by Japan's Ministry of the Environment for investment, expense and economic benefit came to ¥260 million, ¥4,300 million and ¥680 million, respectively. Environmental investment accounts for 0.6% of the total value of capital investment by the Pioneer Group (¥40.8 billion), while environmental R&D accounts for a 2.9% share of R&D expenditure (¥45.4 billion) Direct comparison between years is not possible, but environmental efficiency (cost effectiveness) is largely constant at around 16%.

Results collected according to the Ministry of the Environment Guidelines



Environmental costs

(Million ¥)

Cost category	Details		Investment	Expense
Plant	1. Anti-pollution costs	Cost required for pollution prevention	30	236
	2. Global environmental preservation costs	Cost of measures for energy saving, etc.	82	156
	3. Resource recycling costs	Costs for waste reduction, disposal	7	415
Product-related	Costs for environment-friendly products (elimination of styrene foam, use of lead-free solder, energy saving, etc.), green procurement, green purchasing		96	1,108
Management	Costs necessary for acquiring/maintaining ISO 14001, education and training, and PR costs		0	1,004
R&D	Costs for technology development including environmental factors		41	1,330
Social activities	Costs for social activities (voluntary activities, donations, etc., for environmental preservation)		0	10
Environmental damage	Insurance fees etc. (No fines or charges)		0	0
		Total	**256**	**4,259**

Note: Terminology and categories based on Guidelines (2002) set down by Japan's Ministry of the Environment.

Economic benefits

(Million ¥)

Ministry-defined categories	Details	Economic benefits
a. Income Sale profits from waste recycling etc.	1. Savings due to environmental preservation (energy saving, etc.)	307
	2. Savings due to resource recycling (selling or saving resources, reduced waste treatment costs, etc.)	214
b. Expenses Savings in energy saving and waste treatment costs	3. Product-related savings (in procurement, production, distribution and green purchasing)	162
	4. Other savings (in ISO 14001 certification consulting fees, etc.)	4
	Total	687

Environmental performance effect in Japan

		Main Activities	Environmental impact FY2002	Values corrected in FY2002*	FY2003	Environmental preservation benefit Value corrected in FY2002, FY2003	Assessment
Reduction categories	INPUT	Energy (tera-joule)	2,887	3,106	3,272	-166	↘
		Water used (1,000 m³)	3,365	3,620	3,487	133	↗
	OUTPUT	Chemical substances handled (tons)	149	160	190	-30	↘
		CO_2 discharge amount (1,000 ton CO_2)	121	130	137	-7	↘
		Waste water (1,000 m³)	3,359	3,614	3,367	247	↗
		Waste generated (tons)	22,397	24,095	30,303	-6,208	↘
		Waste disposed (tons)	1,700	1,829	614	1,215	↗
Category increased		Recycled amount (tons)	7,141	7,682	8,194	512	↗

*Values corrected for FY2002 = Environmental impact for FY2002 x Sales for FY2003 / Sales for FY2002 (based on the definition of the Ministry of the Environment)

The benefit indicated by the material base is a factor in environmental accounting. The comparison in yearly changes above excludes any increase/decrease in sales in accordance with the guidelines of the Ministry of the Environment.

Future environmental accounting

Environmental Accounting is still in the development stage. Pioneer will continue to participate in the Business Study Group for Environmental Accounting sponsored by Japan's Ministry of the Environment, and reflect the results in its in-company guidelines for full utilization as an environmental management index.

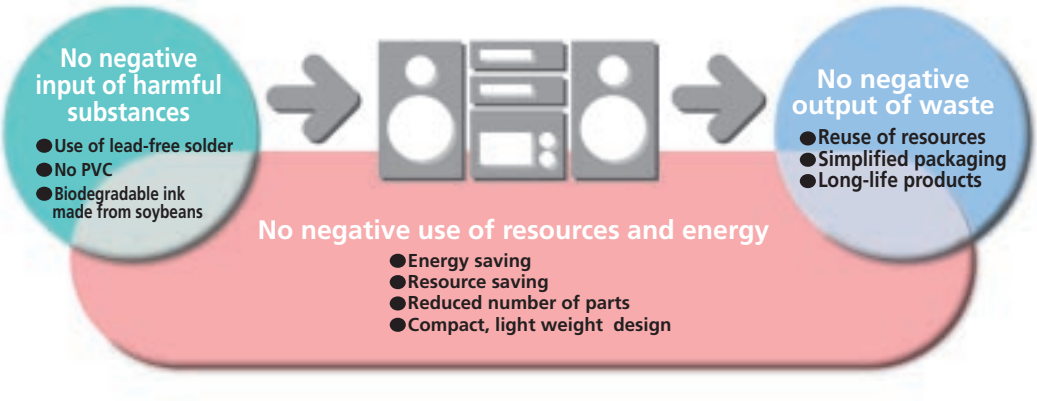
Ask the expert

Environmental accounting means identifying the costs and benefits of activities that are good for the environment as a guideline for future activities.
For example, when an incandescent bulb is replaced with an energy-saving fluorescent bulb in a home the incandescent bulb costs ¥200 against ¥1,000 for the fluorescent bulb, but the electricity saving is ¥1,500 year. Therefore the environmental cost is ¥1,000 - 200 = ¥800 and the benefit is ¥1,500. Thus a cost of ¥800 yielded a saving of ¥1,500.

Realizing Environment-Friendly Products

Pioneer sets "no negative input, no negative use and no negative output" as its activity guidelines for environmental consideration in products.
We have set Pioneer Environmental Label Guidelines for environment-friendly products, and only products meeting the set conditions may bear the Pioneer Environmental Label.
From FY2003, we have instituted the Pioneer Eco Champion Model Support System that assists the development of environment-friendly products.

No negative input, No negative output and *No negative use* concept for product design



Pioneer Environmental Label Guidelines As of March 2003

Pioneer

The Pioneer Environmental Label reflects images of the Earth, the Environment, and Living in Harmony.

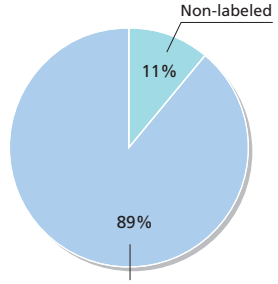
Compulsory Items (Products must meet all items)

1. To facilitate recycling, parts containing 20 grams of resin or more are labeled as such in accordance with ISO standards.
2. Specific brominated flame retardants said to release dioxins during incineration are not used.
3. CFCs, HCFCs and other ozone-depleting substances are not used at all in Pioneer's products or manufacturing processes.
4. All batteries are located so that they can be easily removed.
5. The volume of packaging materials used has been reduced by more than 20% from FY1990 levels.

Optional Items (Products must meet one or more of these items)

1. Remote control standby power consumption is reduced to less than 1W.
2. Styrene foam and other resinous packaging materials are not used.
3. Recycled materials are widely used in the products.
4. Lead-free solder is used.

Pioneer Environmental Label products as a proportion of domestic



Pioneer Environmental Label products

Most non-labeled products are long-life models launched before the Environmental Label system was adopted (1998). Therefore most AV products are labeled.

The DVD Mini Rakura DVD player, Pioneer's Eco Champion model, won the incentive award from the Resource Recycling Technology and Systems Award

The DVD Mini Rakura, the first model developed under the Pioneer Eco Champion Support System that was instituted within Pioneer in 2002, won the 2002 incentive award from the Resource Recycling Technology and Systems Award.
This long-running award system is organized by the Ministry of Economy, Trade and Industry and the Clean Japan Center (CJC) to recognize recycling and environmental conservation.
The DVD Mini Rakura was highly evaluated for its measures to facilitate recycling, such as full labeling of resin materials and use of molded pulp shock absorbing material, and for using 100% lead-free solder and halogen-free resins and circuit boards.

Nobuyuki Isobe and Toshio Hirano of the Tokorozawa Plant, receiving the award.

The DV-U7 DVD Mini Rakura

Green Procurement

Since December 1999, Pioneer has been building a database of substances that have a detrimental effect on the environment with the aim of reducing the environmental impact of its products. Led by our corporate Green Procurement Promotion Committee, Pioneer is implementing a program of green procurement that places high priority on materials with minimal environmental impact.

Expansion of green procurement standards

For environmentally harmful substances, which are one of the key points of the green procurement, we have replaced the previous "harmful substances list" with a harmful substances standard that more clearly stipulates the standards for prohibited materials and materials subject to reduction.

These standard documents are disclosed to our suppliers.

Briefings extended overseas

We have organized overseas briefings on the management of harmful substances. The first was in Shanghai (PSG) in July, followed by briefings at manufacturers in Thailand and the USA. Collection of data on materials procured from overseas is proceeding.

Briefing on harmful substance management in Thailand

Environmental Management System (EMS) for our suppliers

We have evaluated all 676 facilities that supply Pioneer with components etc., with the following results:

- ISO 14001 certified facilities: 65%
- Facilities scheduled for certification within the next year: 7.5%.

Seven important substances designated for elimination

The seven substances below have been assigned the highest priority in our efforts to eliminate them.

- Cadmium
- Mercury
- Lead
- Paraffin chloride
- Hexavalent chromium
- PBBs and PBDEs*

*PBBs and PBDEs are abbreviations for polybrominated biphenyls and polybrominated biphenyl ethers (PBDEs), specified brominated fire retardant compounds.

Judgement of suppliers by their Green Scores

We have evaluated the environmental preservation activities of each supplier and awarded them green scores accordingly.
(Scores based on the above EMS efforts, plus a weighting for the level of cooperation with our own environmental conservation)
The Green Score is a way of extending the standard evaluation of suppliers by QCD (Quality, Cost, Delivery) to include E (Environment). Pioneer views E as an important element in deciding on suppliers. Results for FY2003 are as follows:

- A rank Suitable: 63%
- B rank Improvement needed: 34%
- C rank Unsuitable: 3%

The proportion achieving A rank is managed as the green procurement ratio. We plan to bring it to 100% by FY2006.

Participation in standardization of green procurement studies in the electrical machinery and electronics industry

We participate actively as an executive member of the Japan Green Procurement Survey Standardization Initiative (JGPSSI), working towards global standardization. Since June 2002 we have been taking the lead in the JGPSSI in carrying out trial surveys based on its primary guidelines.

Environmental auditing

We have conducted an environmental audit of suppliers which have not acquired ISO 14001 certification. The audit is partly intended to guide suppliers towards environmental conservation.

- Companies audited: 19 in FY2003
- Purpose: To clarify the content of actual action on environmental conservation
- Results : All audited companies exhibited improvement, and their awareness of the importance of environmental conservation was reaffirmed. One of the audited companies has already acquired ISO 14001 certification.

What is Green Procurement?

Pioneer defines green procurement as follows:

● Procurement of components and materials for the manufacture of products, which prioritizes procurement of environment-friendly supplies from suppliers that are active in environmental preservation.

We also have the following definition for green purchasing

● Prioritizing environment-friendly options when purchasing in fields not directly connected with Pioneer's production, such as office supplies and vehicles.

Green purchasing See page 27

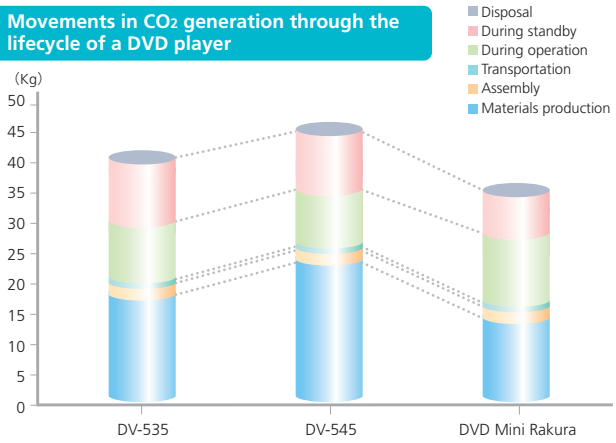
Research & Development

Pioneer uses Life Cycle Assessment (LCA) to analyze and evaluate the impact of our products on the environment. In-company LCA guidelines, defined and issued by the LCA committee, whose members include the Corporate R&D Laboratories and Design Departments of Plants, enable Pioneer to develop more eco-friendly products.

What is Life Cycle Assessment (LCA)?

Industrial products consume resources and energy, and continue to emit CO_2 and other wastes throughout their lifetime, from the mining and manufacture of materials and parts, to assembly, transportation, during actual product operation and standby, and to disposal. LCA is a process whereby products are fully analyzed and assessed for their influence on the environment over the course of their lifetime, in order to effectively reduce environmental impact. Information obtained through LCA enables a numerical weighting of the environmental effects of the different stages of a product's life cycle, thus helping us to better develop and design more eco-friendly products.

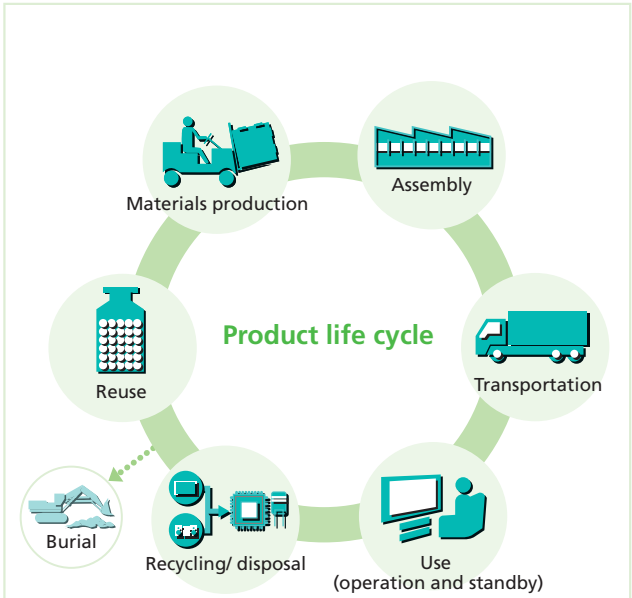
Movements in CO_2 generation through the lifecycle of a DVD player



Pioneer used LCA for its three-generation DVD players to evaluate CO_2 emissions, and made use of the results.
For the DV-535 in FY2001, we calculated the lifetime CO_2 generation and found the proportion of that caused by standby power consumption.
We cut standby power consumption for our FY2002 products, but added functions and the packaging specification meant that CO_2 emission at the materials production stage increased, leading to an overall increase in life cycle CO_2.
The DVD Mini Rakura, an Eco Champion model, was subjected to thorough study at the planning and design stage, with reference to previous results, which succeeded in cutting CO_2 emission in the materials production stage. The result was a reduction of around 20% in life cycle CO_2, compared to the previous model.

The product LCA screen

Junichi Kurata of the Research and Development Department of the Corporate R&D Laboratories, who developed ProLCA, a unique online LCA system.



Product LCA (ProLCA) has radically improved the efficiency of Pioneer's LCA

Pioneer views LCA as highly important, and it has been striving to numerically quantify the environmental impact of products in order to create products that care for the global environment.
Therefore we need to calculate what materials and energy are used in each product. However, that is an extremely time-consuming process, involving taking products apart, obtaining materials information from component suppliers and manufacturers and tallying the weights of each of a large number of materials.
Product LCA (ProLCA), developed by Pioneer Corporate R&D Laboratories, has made a radical improvement in the efficiency of the process.
Materials data for the components of a product, and assessment coefficients to quantify the CO_2 generation volume for each material, are stored in a database that is shared online, enabling design engineers to use LCA easily.
Data is shared over the network, and designers can easily find materials data, enabling them to build environmental consideration into products from the design stage.

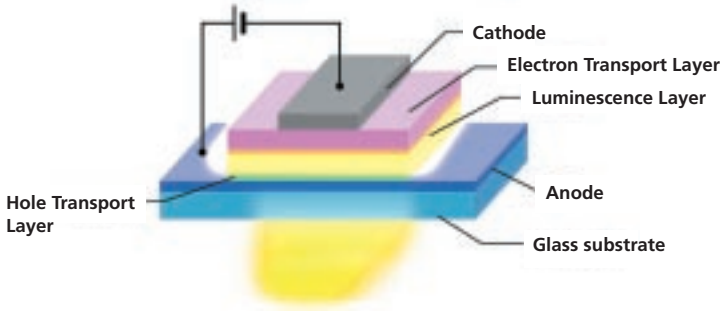
Next-generation displays: Organic EL

Organic EL display is a next-generation display device that uses organic compounds for electroluminescence.
Such displays are attracting attention, partly for the many environmental advantages they offer.
We visited the Corporate R&D Laboratories to report on environmental measures among the latest technological research and development.

Organic EL displays are destined for diverse applications

Slim and light, with low power consumption, a sharp image and a wide field of vision, these displays also have rapid response that makes them suitable for video viewing. These advantages are attracting close attention to organic EL as the next generation display system.
They are already used in cellular telephones and car audio equipment, and they have potential for use in unprecedented new applications, such as wearable computers.

Structure of Organic EL displays



Film display

Akira Sugimoto of the display devices research section at the Corporate R&D Laboratory is researching film-type organic EL displays that can be flexed easily. Compared to glass substrate, the film is permeable to moisture, so the key point of research is the development of an impermeable membrane to eliminate the influence of water on the luminescent material.
Sugimoto's address to the EL2000 (International Workshop on Inorganic and Organic Electroluminescence 2000) in 2000 on the subject of this impermeable membrane was regarded as a breakthrough leading to reliable film displays.


Wearable display using film-type organic EL

Organic EL fulfills the three principles, no negative input, no negative output and no negative use

● **No negative input**
Electroluminescence eliminates the need for mercury-containing fluorescent tubes to provide back-light.
Environment-friendly substances can be chosen from the almost limitless range of organic materials, so no harmful substances are put in at the molecular design stage.

● **No negative output**
The organic substance that serves as the light emitter is readily soluble, making it easy to break down and reuse, which helps to reduce waste.

● **No negative use**
Power consumption is very low, approximately half that of an LCD display with a back-light (compared to Pioneer products).
In particular, film-type displays have 1/5~1/10 of the volume of LCD displays, saving space and weight.
They also have fewer components and simpler manufacturing processes, saving on materials and energy consumption.


Akira Sugimoto, working on development of film-type organic EL displays

The Corporate R&D Laboratories

The Corporate R&D Laboratories have introduced environmental management, and it acquired ISO 14001 certification in 2000. Environmental measures are incorporated from the earliest stages of R&D, and Life Cycle Assessment (LCA) is used to assess environmental impact. Research contributes to improved energy and resource efficiency and reduced use of harmful substances.
Waste reduction and recycling are also enthusiastically promoted in connection with R&D for energy saving and zero emissions.

Energy Savings

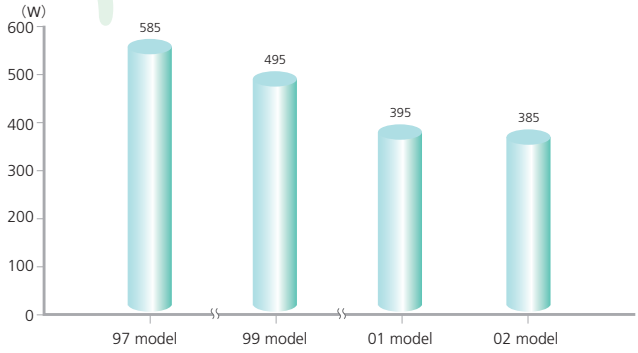
Pioneer is striving to reduce the power consumption of our products in order to reduce to the CO_2 emissions that cause global warming.

Plasma Displays

Plasma displays are becoming increasingly popular as the next generation display unit because of their visual impact, screen brightness and clarity, and slimness relative to their screen area. Pioneer has literally been a pioneer in plasma displays, and our efforts in this area have emphasized environmental aspects.
Looking at 50V inches models, for example, brightness has increased 2.6-fold (900 cd/350 cd) from our first PDP-501HD model in 1997 to the latest DPD-A503HD model. Despite that, we have managed to cut power consumption by 34% (385 W/585 W). The new models also include a range of energy-saving features, such as an energy-saving mode and an auto-shutoff mode, which switches the power off when there is no signal for ten minutes.

The PDP-A503HD plasma TV

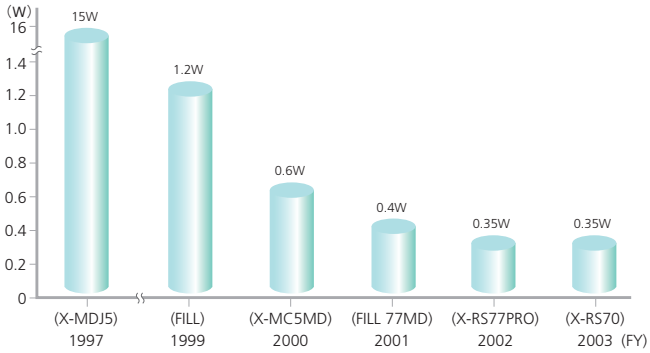
Plasma display power consumption



Standby power consumption

Standby power consumption is said to be a major element in household power consumption.
Since FY2000, Pioneer has been aiming to design all new products for standby power consumption of 1 W or less, and in FY2003 the weighted average for our household AV products reached 0.33 W.
We have pre-empted the voluntary standard of 1 W standby power consumption adopted by the home electrical industry in FY2004, and we are now introducing new technology to achieve our new in-company target of 0.1 W for FY2006, as we strive to cut this type of power consumption.

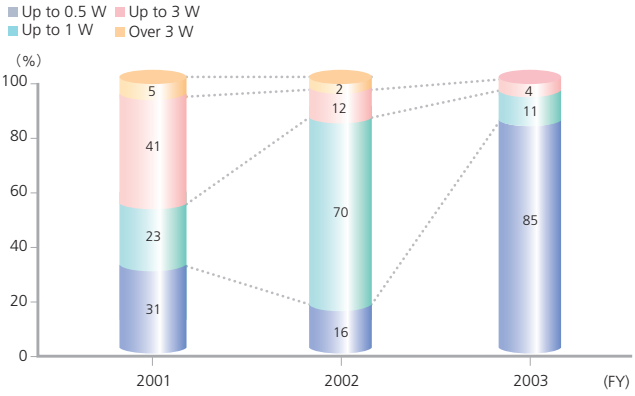
Standby power consumption in audio systems (domestic)



Product example X-PR9DV audio system (2003 model)

Our energy-saving design has achieved standby power consumption of 0.065 W, which is in the industry's top class. The system's slim flat panel speakers can be wall-mounted to fit any room.

Breakdown of production volume by standby power consumption level (domestic AV products)



The Energy Star Program

The US Environmental Protection Agency (EPA) established the Energy Star Program.
Pioneer participates in the program with AV products such as mini component systems and DVD players. Products meeting the standards carry the Energy Star logo.
The program has also begun in Australia, and Pioneer is among the first participants.

Reducing Environmentally Harmful Substances

Lead-free solder introduced on all new products

Lead is a substance that has adverse effects on people and the environment when it is disposed of. For this reason, calls to ban the use of lead are becoming louder around the world. For example, the European Union (EU) is planning to ban its use and that of other harmful substances in home electrical products by July 2006.

Pioneer began to use lead-free solder in 1998, and since that time it has been employed in a variety of products from A/V products such as plasma display systems to car electronics products, DVD players, CATV terminal equipment, DVD-ROMs, and cordless telephones. Pioneer has achieved its goal of fully introducing lead-free solder for all new products manufactured in Japan by March 2002 and worldwide by March 2003.

Lead-free manufacturing lines have already been installed at production centers in Malaysia, Thailand, China, the UK, Belgium, Portugal, the USA and elsewhere. Beside new models, we are actively switching to lead-free solder even in older models.

Lead-free soldering equipment installed in Belgium

Lead-free soldering equipment in China

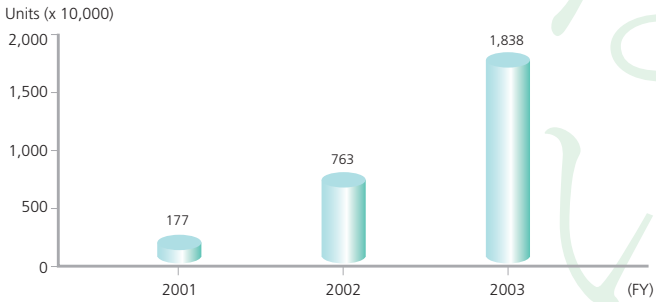
Production line using lead-free soldering equipment in China

Lead-free solder symbol

We have prepared a standard multi-lingual "Lead Free Solder" sign that is displayed in production centers around the world. Eric Tan of MPT (Malaysia), who designed the Lead-free solder symbol.

Lead Free Solder sign

Trends of products using lead-free solder



Product example DVR-77H DVD recorder

In this product, 57% of the solder used is lead free. Users can record programs to hard disk and record only what they need to DVD-R/RW disks by high-speed dubbing. This process avoids using unnecessary recording disks, thereby saving resources.

Use of lead-free solder: 48%

Plasma display systems

PDP-503CMX

Use of lead-free solder: 73%

Car audio

DEH-P7

Use of lead-free solder: 83%

Cordless telephones

TF-SV520-S

Use of lead-free solder: 100%

DVD players

DV-U7 DVD Mini Rakura

Reducing the use of vinyl chloride

When vinyl chloride is burnt, dioxins may be generated. To prevent this from happening it must be properly processed. However, vinyl chloride used in home electrical appliances is extremely difficult to separate from the product at the time of disposal. Pioneer is therefore working on substitutes for vinyl chloride for use in the fascia panels, electrical parts and other areas of products, in order to reduce the quantity used.

In particular, we are studying the use of nonvinyl chloride sleeves for the electrolytic capacitors. We have taken measures such as beginning joint trials with electrical component manufacturers, and we have switched to fully nonvinyl-chloride components in car electronics products.

Product Recycling

Product recycling is one of the most important elements of environmental preservation.
Pioneer is engaged in a range of recycling activities, based on the theme of "no negative output."

Whisky cask materials recycled into high-quality speakers

This oak cask material was used for 50 years to mature whisky. At the end of its service life it is reborn as speaker cabinets, creating masterpiece speaker products to satisfy discerning audiophiles. This project was made possible by collaboration with Suntory Corporation, the distiller, and Oak Village, an art studio in Hida-Takayama.
In October 1998, the S-PM1000-LR became the first product to bear the Pioneer Environmental Label. Its successor, the S-PM2000, was launched in 2000, and it is still well loved by many users.

The enclosure, newly created from casks.

The S-PM2000 Pure Malt Speaker

Easier recycling

Raising the recyclability ratio

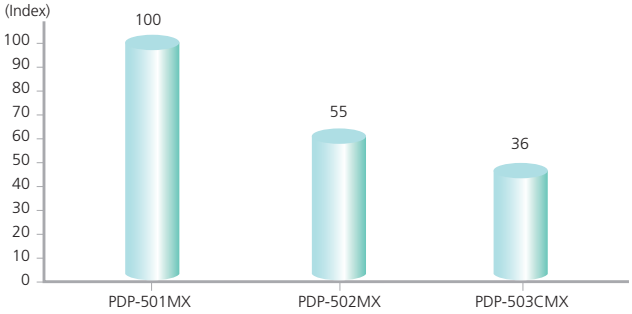
We are raising the recyclability ratios of our products to promote their recycling on disposal.
The recyclability ratio of our CATV terminals reached an average of 71% in FY2003, and the ratio for AV products overall has improved by 57% from the FY1996 level.

CATV terminal BD-V2TC

Reduced disassembly time

We are working to reduce the time taken to disassemble our products, as a way to facilitate recycling.
For large plasma displays, we have reduced the disassembly time by 36% compared to first-generation models.

Plasma display disassembly time



Compliance with the Home Appliances Recycling Act (Japan)

Pioneer CRT TV sets with built-in tuners are subject to Japan's Home Appliances Recycling Act. In FY2003, 3,159 units were collected at a recycling rate of 80%, far exceeding the 55% required by law.

Recycling performance in FY2003

No. of TVs recycled	3,151
Weight of TVs recycled	82.8t
Weight of materials recycled	66.8t
Recycling rate	80 %

Rechargeable battery recycling

Our cordless telephone products use compact rechargeable batteries. To avoid waste in the use of limited resources, Pioneer has joined the Battery Association of Japan, Battery Recycling Center, and is actively collecting and recycling compact secondary cells.

Packaging materials

Pioneer is working to make maximum use of pulp moldings and corrugated cardboard from recycled paper as shock-absorbent materials. All new car electronics products are packed in such materials.
The AVIC-DR2500 car navigation system won a special prize in the Japan Packaging Competition 2003 for its use of corrugated cardboard shock absorbent materials.

Packaging using molded pulp as shock absorbent material

The corrugated cardboard packaging of the AVIC-DR2500, which won a special prize

Ideas drawn from environmental preservation - Pioneer Car Electronics

Pioneer is pursuing advanced technological development in the car electronics field, and it is constantly looking for ways to save energy and resources through new product ideas.
Even a slight improvement in fuel economy reduces CO_2, and the accumulation of such reductions adds up to a major impact for preserving the global environment.

Car navigation helps to save energy and reduce CO_2 emission by reducing wasteful driving

Ten minutes of pointless driving after losing one's way consumes approximately 350 cc of fuel and generates 800 g of CO_2.
The effective use of car navigation for route selection doesn't just save fuel, it prevents global warming.
In addition to position measurement by GPS, a car navigation system gathers a variety of information from Intelligent Transport Systems (ITS) such as VICS (Vehicle Information Communication System) and ETC (Electronic Toll Collection), making driving more comfortable and efficient.

Network navigation set

No negative input, output and use by Air Navi

The AVIC-T1 network navigation set, known as Air Navi, has attracted attention as a next-generation product since its launch in November 2002.
It is a revolutionary product, the first of its kind on the market*, because its map, road and service information content is kept constantly updated from a server.
Even without replacing the DVD-ROM software, maps are automatically updated, allowing route selection based on the latest information at all times.
More than ever before, users can enjoy driving in comfort while saving on wasteful fuel consumption and CO_2 emission and reducing the burden on the environment.

● No negative input
Solder is lead free. We minimize the use of lead, which can contaminate people and the environment.

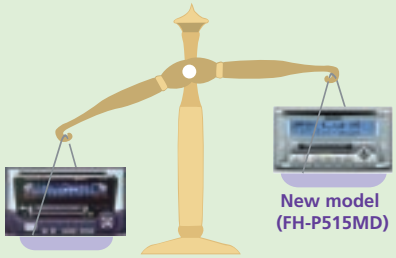
● No negative output
No expanded polystyrene is used for shock-absorbent material as it has been completely replaced by easily recycled corrugated cardboard.

● No negative use
Air Navi can download updates of applications as well as data from the server, eliminating the need for disks and their associated packaging and transportation and thereby making a major saving in resources and energy.

Yusuke Nakane of the business planning department of the Mobile Entertainment Company talks about the prospects for next-generation navigation.

*As of September 17, 2002 it was the only map-displaying car navigation system with a built-in communications unit (according to an investigation by Pioneer).

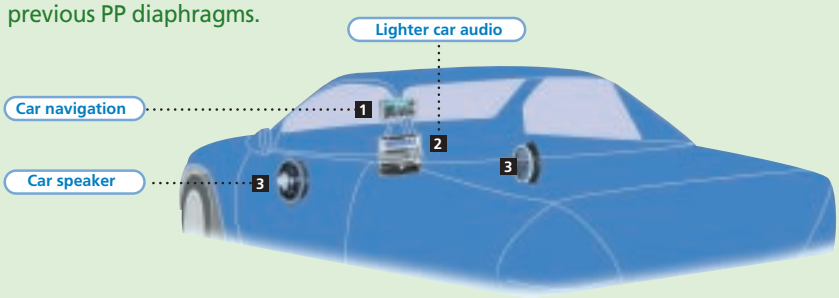
Weight reduction of car audio products



Weight reduction of car electronics products

Pioneer is devoting considerable efforts to reducing the weight of car electronics products such as audio and speakers, playing an active role in improving fuel consumption and cutting exhaust gas emissions.
In car audio units we have reduced weight by 20% from previous models by making chassis and printed circuit board elements thinner and reducing the number of components by approximately 15%.

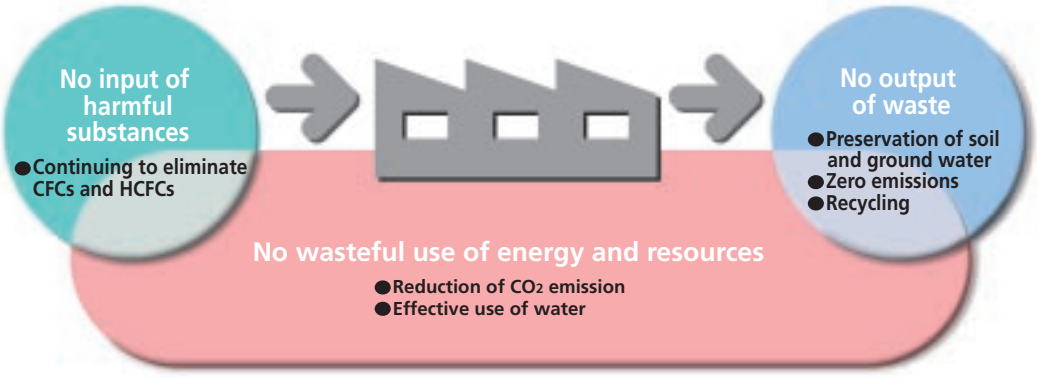
Car speakers use diaphragms of super-lightweight PP foam, cutting weight by approximately 40% from previous PP diaphragms.



Environmental Preservation at Pioneer Facilities

Pioneer is strengthening its efforts to reduce environmental impact at all its manufacturing facilities in Japan and overseas. We are also continually working towards CO_2 reduction, zero waste emission and the promotion of recycling and other activities in the manufacturing process, under the slogan "No negative input, no negative output, no negative use."

No negative input, No negative output and *No negative use* Activities in Facilities



Reduction of greenhouse gas emissions

Global warming is caused by increases in greenhouse gases, such as CO_2 and methane, and threatens to bring a variety of potentially catastrophic effects to the environment and ecosystems.

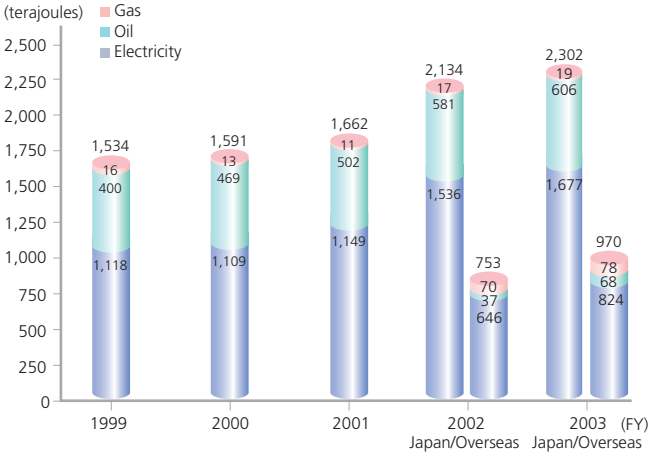
Pioneer regards global warming countermeasures as an important task. In addition to CO_2 emissions due to energy consumption, we convert greenhouse gases such as PFC and HFC, which are used in production processes, into equivalent CO_2 emissions, and we aim to reduce the total emission volume.

Our new business fields such as plasma and EL displays are expanding, leading to a rising trend in our greenhouse gas emissions. We are striving to reduce emissions by 3% by FY2006, and to turn emission volume per raw unit of overseas production to a downward trend. To that end we are switching to energy-saving equipment and working to reduce energy consumption in our production processes. We also plan to fully eliminate PFCs, HFCs and similar materials by 2010.

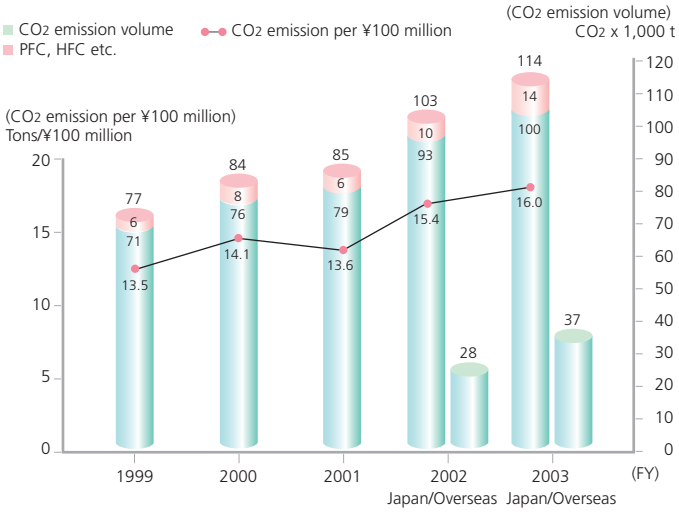
Furthermore, we are working to reduce the CO_2 emission associated with power consumed by our products while they are in use by our customers.

Consumer benefits See page 12

Movements in energy consumption



Movements in greenhouse gas emissions



Ask the expert

PFC and HFC are CFC substitutes. They do not harm the ozone layer because they do not contain chlorine. Applications include washing components and air conditioning refrigerant, but as greenhouse gases they are several thousand times more potent than CO_2.

COLUMN

Proper management of harmful substances

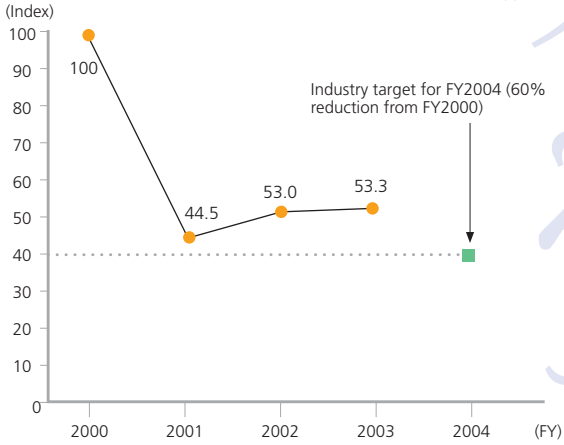
Japan's Air Pollution Control Law requires efforts to reduce dichloromethane, a harmful atmospheric pollutant. In the electrical machinery and electronics industry, dichloromethane, tetrachloroethylene, trichloroethylene and chloroform are named as key substances for emission reduction, and the industry is working to reduce their emissions.
Pioneer has reduced dichloromethane emissions in FY2003 by 46%, relative to FY2000.
We will step up our reduction efforts still further in FY2004 as we work towards industry reduction targets.

● Reduction in key substances for emission reduction

- Tetrachloroethylene → Use had already ceased
- Trichloroethylene → Eliminated by FY1999
- Chloroform → Zero emission (handled volume less than one ton per year)

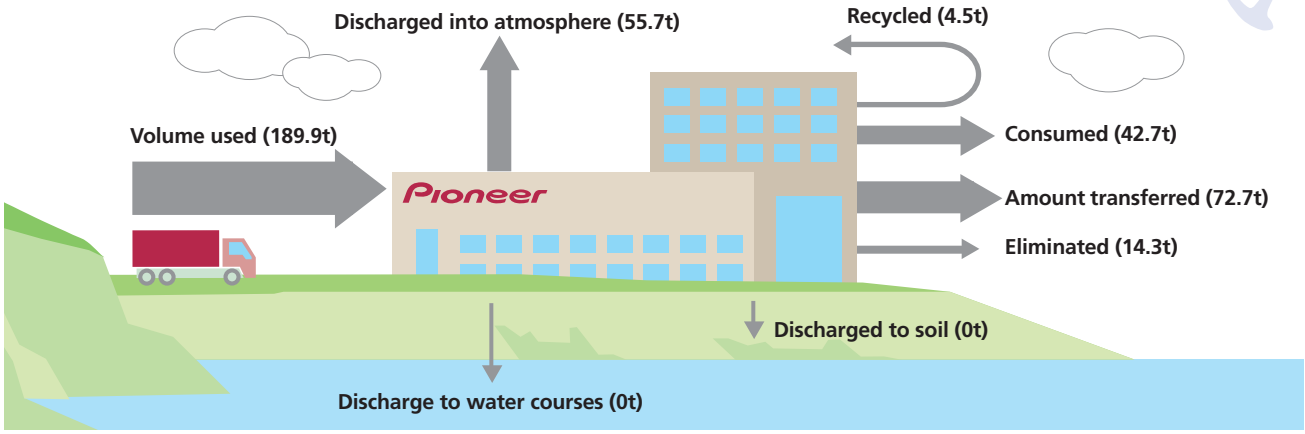
Atmospheric emissions of dichloromethane

*Index based on Pioneer's FY2000 usage (0.4 t/year) as 100.



Management under the PRTR system

The PRTR (Pollutant Release and Transfer Register) Law requires companies to record and disclose to the state the quantities of environmentally harmful substances discharged into the environment, starting with records for FY2002.
In FY2003 disclosure of records was required for substances handled in amounts exceeding 5t/year (type 1 designated chemical substances), but Pioneer has raised the level of management and records data on materials handled in amounts of 1t/year or more.
In future we will go on raising the level of our environmental risk management and reducing environmental impact.



Results of survey of PRTR-controlled substances (Japan)

Substance	No. of facilities	Volume used (tons)	Discharged into atmosphere (tons)	Amount transferred			Consumed (tons)	Eliminated (tons)	Recycled (tons)
				Amount transferred as waste (tons)	Amount transferred to sewers (tons)	Total (tons)			
2-amino ethanol	2	16.8	0	1.5	4.0	5.5	0	11.3	0
Ethylene glycol	3	4.6	0	0.2	0	0.2	4.4	0	0
Silver and its water-soluble compounds	3	9.9	0	5.3	0	5.3	1.2	0	3.4
1,1-dichloro-1-fluoroethane	1	12.6	12.6	0	0	0	0	0	0
Toluene	6	44.9	42.5	2.2	0	2.2	0.2	0	0
Lead and its compounds	8	91.5	0	58.4	0	58.4	32.0	0	1.1
Nickel	1	1.3	0	0	0	0	0.2	1.1	0
n-butyl phthalate	2	2.5	0.6	0	0	0	0	1.9	0
Boron and its compounds	1	4.3	0	1.0	0	1.0	3.3	0	0
Methyl methacrylate	1	1.5	0	0.1	0	0.1	1.4	0	0
Total		**189.9**	**55.7**	**68.7**	**4.0**	**72.7**	**42.7**	**14.3**	**4.5**

Note: 1,1-dichloro-1-fluoroethane is used on the direction of trading partners. It is not used in Pioneer products.

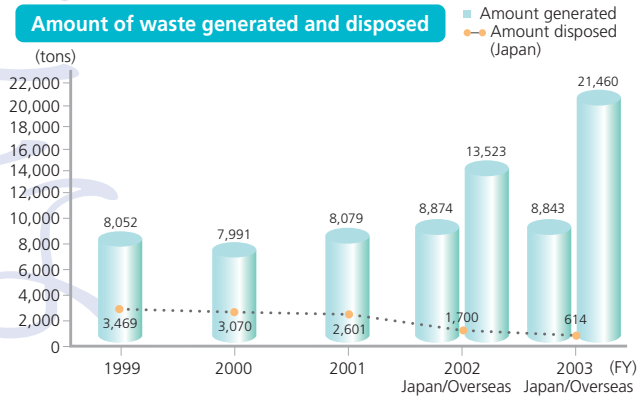
Recycling at Facilities

Pioneer is working towards the goal of achieving zero emission of waste at its production facilities worldwide in FY2006.

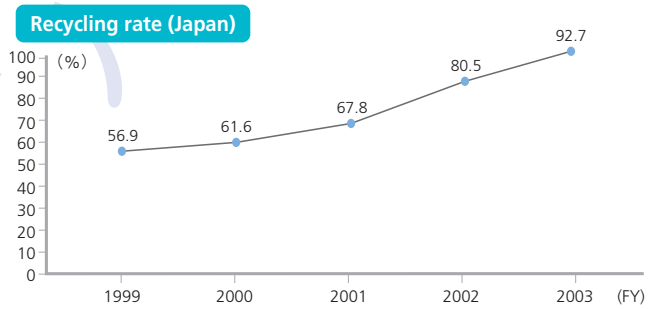
Towards zero emissions

In FY2003 our waste emissions in Japan fell slightly, partly due to shifting production overseas. Waste volume fell by 36% on the preceding year, and recycling increased by a huge 93% margin.
The Yamanashi Plant of Pioneer Display Products Corporation (DPC), a plasma display production center, and Pioneer Micro Technology (MTC), a semiconductor manufacturer, achieved zero emissions, which also helped to boost the recycling rate.

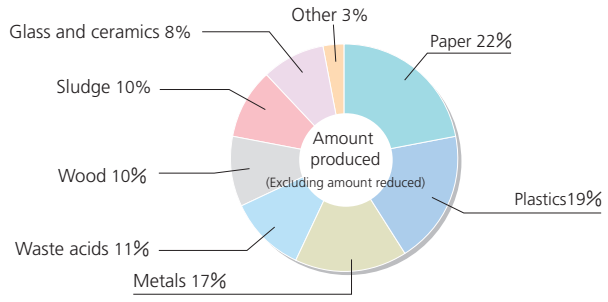
Amount of waste generated and disposed



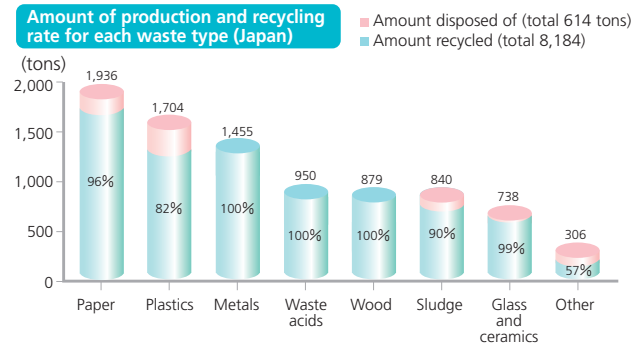
Recycling rate (Japan)



Composition of waste materials (Japan)

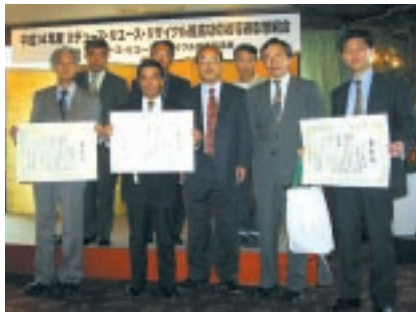


Amount of production and recycling rate for each waste type (Japan)



Pioneer wins a succession of 3R Promotion Council Chairman's Prizes

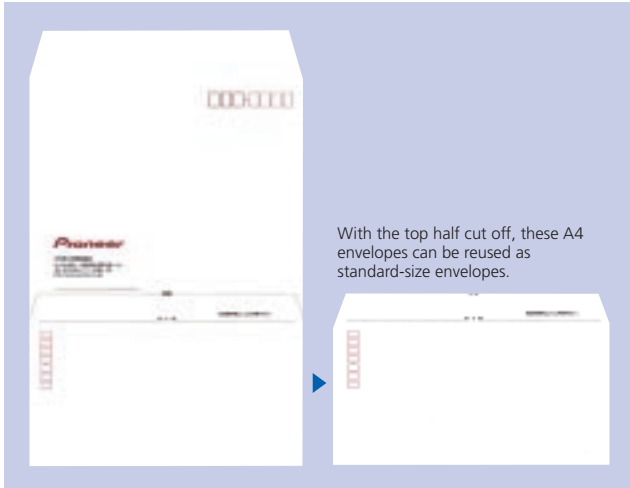
A total of eight facilities belonging to Pioneer and related companies have won the 3R Promotion Council Chairman's Prizes. The council was formed with the participation of consumer groups, industry groups and related government agencies with the aim of building a recycling society. "3R" means Reduce, Reuse and Recycle.
The awards were won by the Meguro headquarters, the Ohmori Plant, the Tokorozawa Plant, the Kawagoe Plant, the Corporate R&D Laboratory, MTC, DPC headquarters the Shizuoka Plant and the Tohoku Pioneer headquarters.



Prizes were won by five Pioneer facilities and three related companies

Reusable A4 company envelopes

We have improved the design of A4 company envelopes for use within Japan, so that the bottom half can be reused as a standard-size envelope. They are also made from 70% recycled paper out of consideration for the reuse of resources.



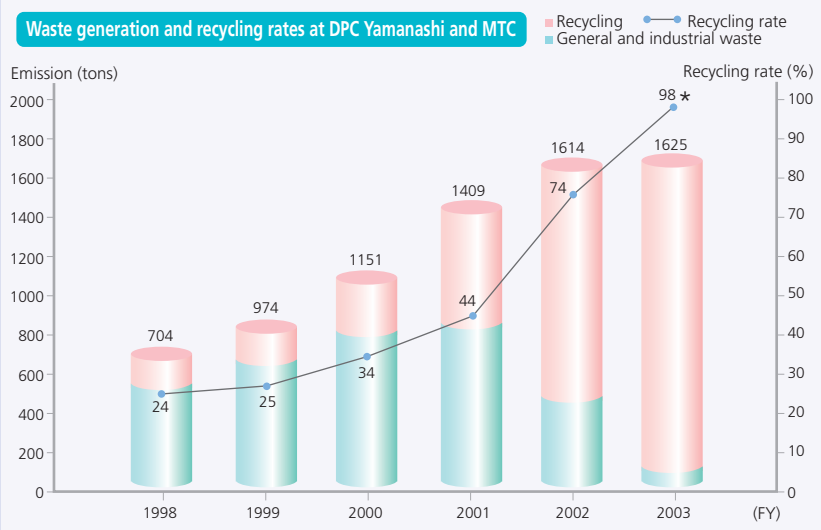
With the top half cut off, these A4 envelopes can be reused as standard-size envelopes.

Pioneer Display Products (DPC) Yamanashi Plant and Pioneer Micro Technology (MTC) have reached zero emissions

Pioneer is always working towards waste zero emissions at all facilities.
As we create new products, we need new ideas and techniques to achieve our goals.
As production of plasma displays (PDP) gets fully under way, we look at the examples of DPC and MTC, which both achieved zero emissions.

Reaching zero emissions in quick succession

MTC, which makes semiconductor-related products, and the DPC Yamanashi Plant, which manufactures PDP panels, have both achieved zero emissions.
They are jointly the third group facilities to reach the target, following the Tokorozawa and Kawagoe Plants.
Pioneer defines zero emission as the situation when waste emission from a facility is less than 1% of total production.



*The recycling rate has been at least 99% since September 2002.

Glass recycling is the key

Glass with adhering lead, which accounted for nearly 20% of waste emissions, was the greatest barrier to raising the recycling rate. The DPC Yamanashi factory checked recycling operators nationwide, and found one in Kyushu that could recycle it through a lead refining process, so the factory began using the glass that way.
The recycling of the glass with adhering lead, and of lead polishing powder and waste acid, brought the recycling rate from 44% in FY2001 to 74% in FY2002. In FY2003 the factory started recycling waste plastic and rags contaminated with organic solvents, which were previously incinerated and then sent for landfill disposal. Paper waste (burnable waste) from the facility was converted to RDF (Refuse-Derived Fuel). These efforts first took the recycling rate to over 99% in November, a level which was maintained for two consecutive months, bringing the factory to zero emission status.


Glass with adhering lead, for recycling

New methods introduced for PDP-related emissions

Yasushi Takashima of the DPC panel production division, who has been promoting recycling, says of his struggle "It was very difficult to find a company to handle the waste properly. For example, there are a lot of companies able to neutralize chemicals, but there were almost none who would recycle the resulting sludge for use as fertilizer." He has been working closely with Isao Nakanoya of the MTC business support division, who says "In 1997 our recycling rate was 24%, so we had to aim for an improvement of over 70%. Recycling the PDP-related wastes that comprised at least 60% of the waste from the two facilities required new measures not used at other facilities. Now that we have reached zero emission, we expect to be able to maintain our recycling rate, even if new PDP production lines start running in future."

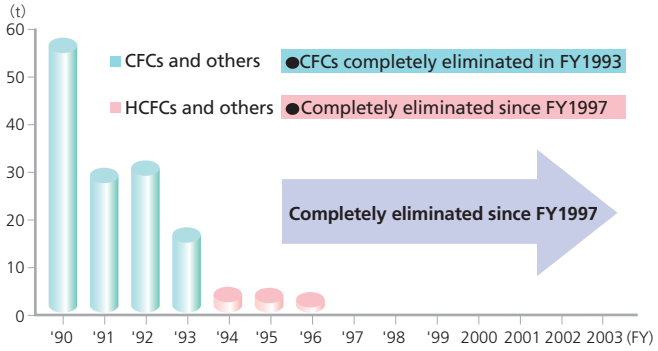

Isao Nakanoya of MTC and Yasushi Takashima (right) of DPC, who cooperated closely to achieve zero emissions

Environmental Preservation at Pioneer Facilities

Ozone-depleting substances have been fully eliminated

Pioneer completely eliminated designated CFCs from all production processes in 1992.
CFC substitutes have very low ozone depletion coefficients, but Pioneer adopted the non-washing method or switched to alcohol washing in order to eliminate them from the production processes of all our products by 1996, well ahead of the international regulation calling for elimination by 2020.

Trends in the use of ozone-depleting chemicals



Conservation of water resources

Data collection to reduce wastewater volume

Pioneer began gathering data on water resource usage in the Group in FY1998, and started doing the same for wastewater volume in FY2001. Our water usage rose in FY2003, partly due to the opening of our new production center in China, but we were still able to reduce the volume of wastewater by reusing it.

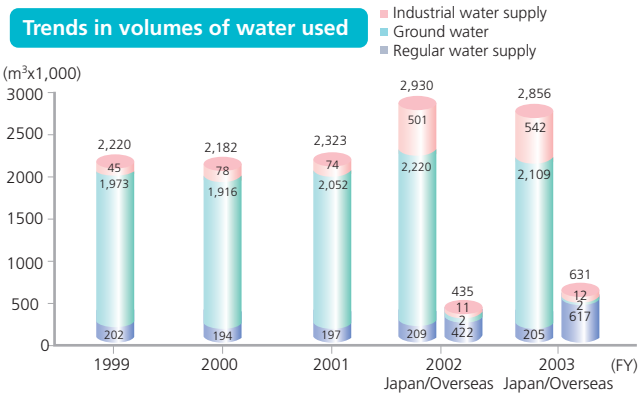
Wastewater reuse

The production of organic EL, semiconductors and PDP requires pure water. The pure water is drawn from industrial water supplies and passed through various filters before use.
Wastewater is generated when the water passes through filters, but it is recovered and reused as industrial water supply. In FY2003 we reused 165,000 m³ in this way.

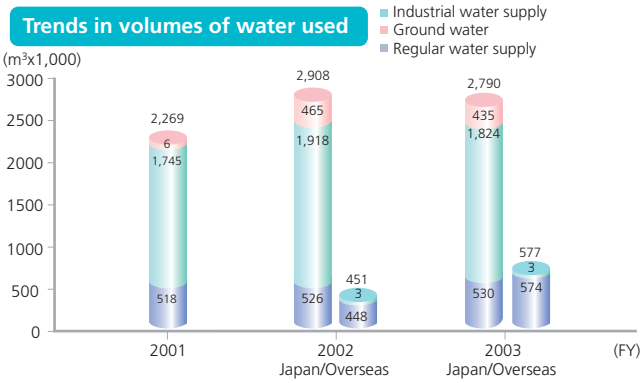
Thorough water quality management

Pioneer has set voluntary water quality standards that are stricter than those set by Japanese law, and the whole group pursues painstaking water quality management (see table below right).
The Corporate R&D laboratory has introduced non-chemical wastewater treatment systems that purify wastewater without using chemicals as part of their exhaustive water quality management.

Trends in volumes of water used



Trends in volumes of water used



Measures against groundwater and soil contamination

Pioneer has been surveying groundwater and soil contamination based on the raw unit since 1998, and has conducted sample borings and other detailed investigations at facilities where contamination is suspected. These investigations have confirmed the absence of such problems. Surveys were also conducted at non-production facilities when they obtained ISO certification, and at other times.
In the past, values in excess of environmental standards have been detected at measurement points within site boundaries, but we have analyzed groundwater flow directions and other factors and determined the figures to be caused by external contamination. Continuing investigation has confirmed values within environmental standards. We also report results to local authorities, confirming the problem-free status of nearby wells.

Example of water quality measurement results (Pioneer Micro Technology)

	Legal standard	Pioneer's standard	Measured value	Measurement frequency
BOD	30	6	2.5	4 times/yr.
SS	50	5	1.0	4 times/yr.
n-hexane extracts	5	0.6	0.5	4 times/yr.

BOD: Biochemical Oxygen Demand (mg/l)
SS: Suspended solids (mg/l)
n-hexane extracts (general name for oils) (mg/l)

Logistical initiatives

Pioneer understands that improving the efficiency of product transportation is an important element in environmental conservation. Therefore, we are merging and relocating our logistical centers and eliminating distribution steps in a review of our transportation methods.

Modal shift

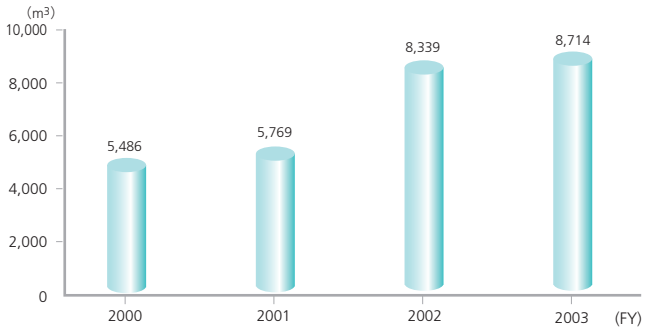
Modal shift is the transfer of transportation to rail. Pioneer has been actively promoting modal shift for some time.

In FY2003 our use of rail transport stood at 8,7214 m³, which is a very small volume, but we aim to make the maximum possible use of rail transport on trunk routes in future.

Milk run development

We have focused on the transportation of components from our suppliers in our review of logistical steps. In the past, each supplier contracted an individual distribution company to transport components. Instead, by having a single distribution company to travel around the suppliers in sequence, picking up shipments, we can eliminate duplication of routes. This approach has reduced the total travel distance for 2t and 4t trucks by 34,645 km, saving 6,771 Liters of fuel equivalent to 17.9t of CO_2. We will invite more suppliers to participate in these milk runs in future.

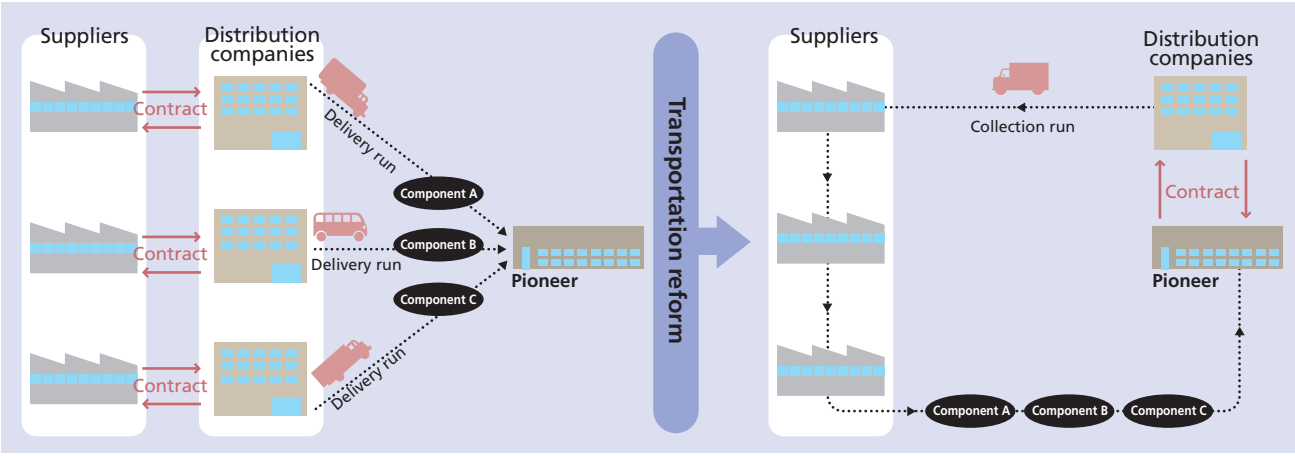
Trends in modal shift (Japan)



World Logistics Conference

In August 2002 we brought logistics managers from around the world together for an international logistics conference. Now that a high proportion of our production takes place overseas, we are reinforcing our sharing of logistical information to achieve optimum logistics for the whole Pioneer Group.

Transport reform using milk runs



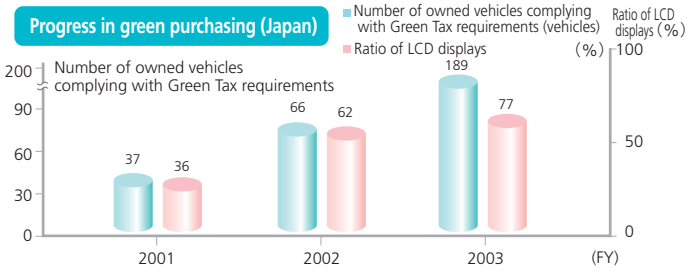
Written standard adopted for green purchasing

All Pioneer companies strongly promote green purchasing in line with Pioneer's internal green purchasing standard.

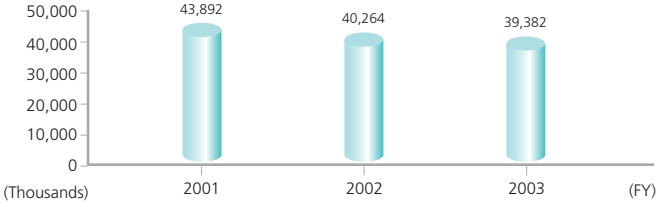
We devote particular efforts to switching from CRT displays to LCD displays, and to replacing company cars with vehicles complying with Green Tax requirements.

Active introduction of low-pollution company vehicles

Progress in green purchasing (Japan)



Usage of OA paper (Japan)



Efforts in Other Countries

North America

Pioneer North America (PNA), the regional headquarters, acquires ISO 14001 certification

Pioneer North America, Inc. (PNA), the North American regional headquarters in Los Angeles, and five of its subsidiary companies, have acquired ISO 14001 certification, as has Pioneer Electronics of Canada, Inc. (POC), the Canadian distributor.
Certification of a center with headquarters functions brings environmental activities into the core business functions.


PNA's ISO staff

Europe

Our Spanish distributor (ESP) acquires ISO 14001 certification

In Europe, a region of advanced environmental measures, ISO certification even extends to distribution centers. Pioneer Electronics Iberia, S.A. (ESP), our distributor in Spain, is the fifth distributor in Europe to acquire ISO 14001 certification.


ESP's ISO staff

Environmental Charter

Since 2001, Pioneer Technology Belgium NV (PEM) is involved in a project from the Chamber of Commerce East-Flanders, called the 'Environmental Charter'. Each company has to set 10 environmental objectives translated in an action plan with an added value above the environmental legislation. This is audited by an external auditor. When at least 4 actions are realised, the company is awarded with an Environmental Charter Certificate.
Based on the audit findings in 2002, PEM received the 'Environmental Charter' for 2001.

Environmental Charter (PEM)

Asia

Pioneer Electronics Asiacentre, PTE. Ltd. (PAC), the Asian regional headquarters, acquires ISO 14001 certification

Pioneer Electronics Asiacentre, PTE. Ltd. (PAC), the Asian regional headquarters, situated in Singapore, has acquired ISO 14001 certification. It was the first non-production center in Southeast Asia to be certified. In addition to energy saving efforts in its offices, such as shortening the usage of air conditioning, it acts as the headquarters to provide constant environmental education to the production companies under its umbrella.

PAC's ISO staff

China

PTD, our new production plant, acquires ISO 14001 certification

Pioneer Technology (Dongguan) Co., Ltd. (PTD) acquired ISO 14001 certification in September 2002.
The plant was planned from the foundation of the company with certification in mind, and it has managed environmental aspects such as water, electricity, oil, paper, recycling and the processing of hazardous materials. PTD is also working to reduce harmful substances and component packaging materials, and it holds green procurement briefings for suppliers and is actively engaged in environmental preservation.

PTD's certificate

The first world environmental conference

Pioneer held its global-scale environmental conference over three days from May 29, 2002. It brought together environment-related staff from five zone centers (Japan, North America, Europe, Asia and China) for seminars, meetings and study tours, with great success.

Participation from the Pioneer Group around the world

The conference reported on environmental efforts in Japan, and on future issues, such as plans and challenges, and participants from other countries introduced their efforts in a wide-ranging exchange of information intended to stimulate future activity.
The first day's main event was the Environment Staffs' Seminar at the Meguro headquarters, which was attended by participants from 17 countries. The seminar examined medium-term environmental measures devised by the social and environmental departments, and discussed cooperation between headquarters and production companies in each region.


Participants in the Environment officer's seminar

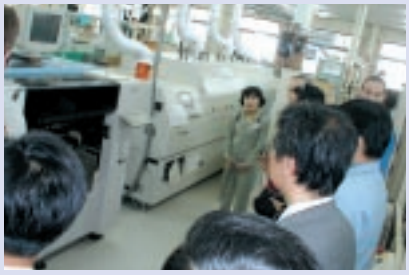
Introduction of initiatives from around the world

The main program event of the second day, the World Environmental Conference, also took place at the Meguro headquarters. It was attended by over 100 managers from regional headquarters and from R&D, materials procurement and production companies.
Discussions covered tasks that the Pioneer Group as a whole should tackle and data that should be obtained, and confirmed the Group's resolve to strive for further reductions in environmental impact.


The Conference opened with a greeting from the managing director for the environment

Study visit to the Tokorozawa Plant

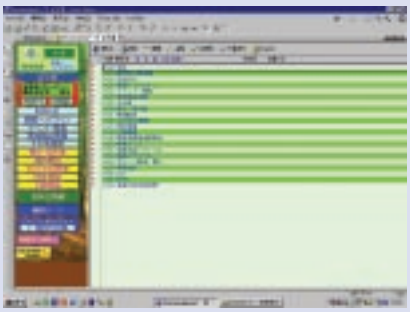
The last day of the event was a study visit to the Tokorozawa Plant, to view actual environmental-related equipment, such as the recycling center, the resource collection center and oil-water separation equipment. Some participants came from centers without facilities on the scale of those at the Tokorozawa Plant, and they listened with interest to enthusiastic explanations.


Explanation of a lead-free solder production line


A passionate debate in progress

Worldwide environmental database

Pioneer's internal database on environmental preservation, named Environmental, was the center of attention from many of the participants in the World Environmental Conference.
It is divided into over 20 sections, such as specialist information for practical personnel and ISO14001-related information. It is already being used to disseminate information in English.
Rather than just sending out information from headquarters, the database can accept information sent from other facilities and overseas corporations, so that it can be used by the Pioneer Group worldwide.

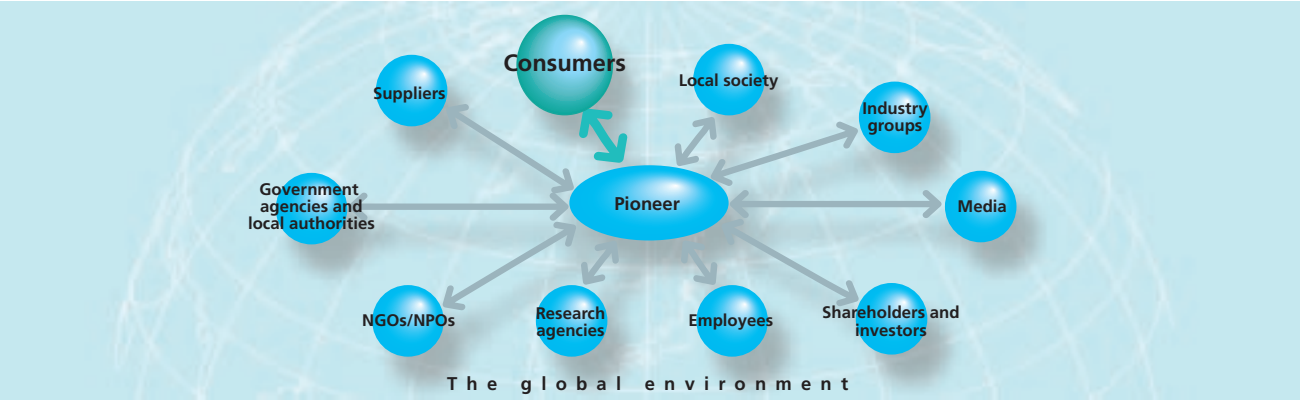

Bidirectional communication is possible.

Social Reporting

Pioneer will move forwards as a constant leader in the creation of new markets, and in doing so we believe it is important to work, as a responsible corporation, to protect and improve the global environment, maintaining a high level of ethics as good corporate citizens. We believe the Pioneer Group concept of "Move the heart and touch the soul" will be realized through that attitude.

The various stakeholders

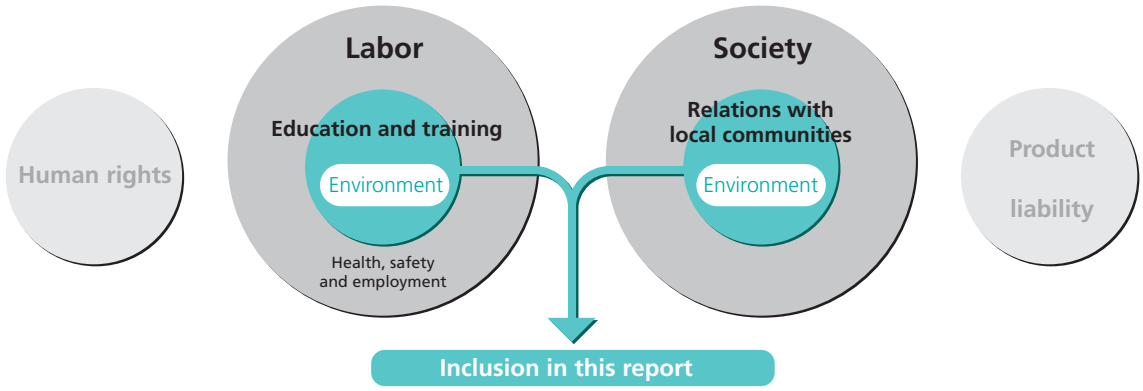
This illustration shows the role Pioneer should play among our various stakeholders (interested parties).



The scope of social reporting

Within the social fields listed in the GRI guidelines, the social reporting in this report covers those matters which are directly related to the environment, such as environmental education and social contribution for the environment. Other non-environment social reporting can be accessed from the homepage at any time.

Classification of social fields in the GRI guidelines (From the GRI Sustainability Reporting Guidelines 2002)



HP Check the homepage for Corporate Citizen pages. **http://www.pioneer.co.jp/index-e.html**

Pioneer is active in the environment-related activities of various groups. As of March 2003

- Japan Federation of Economic Organizations (Keidanren)
- Japan Electronics and Information Technology Industries Association
- Association for Electric Home Appliances
- Japan Machinery Center for Trade and Investment
- Battery Association of Japan, Battery Recycling Center
- Japan Environment Management Association for Industry
- Network for Environmental Reports (NER)
- Green Purchasing Network (GPN)
- Business Study Group on Environmental Accounting sponsored by the Ministry of the Environment

Social Activities to Preserve the Environment

Community beautification through Zero Garbage

All Pioneer facilities gather clean-up volunteers from among their staff and carry out regular Zero Garbage clean-ups along roads and in neighborhoods. The president and directors are keen participants.

The Meguro headquarters has been awarded the Eco Challenge Prize by Meguro Ward for its contribution to the local environment through its Zero Garbage work.
The Pioneer Group as a whole gets involved in this kind of community activity, and our local corporations around the world have their own Zero Garbage clean-ups.

PTM, the Thai production company, in a Zero Garbage cleanup on the coast.

Pioneer president, Kaneo Ito, participates in a zero garbage activity. (HQ)

Participants collect discarded cigarette butts (Tokorozawa Plant)

An award from Meguro Ward for our activities

Local junior high and high school students experience environmental study and tree planting

The Pioneer Group contributes to tree planting, forestation and other planting campaigns around the world, to deepen its community ties and spread environmental action.

Our overseas production companies and other Group members promote programs which invite junior high and high school students to participate in introductions to Pioneer's environmental preservation work, with environmental training, after which they participate in tree planting.

PTM, the Thai production company, invited local schoolchildren to an introduction to environmental initiatives, after which they planted a commemorative tree.

Tree planting along the river at Ayutthaya, Thailand.

PEP, the Portuguese production company, invited local schoolchildren to an introduction to environmental initiatives and donated seedlings for their schools.

A letter of thanks from the National Land Afforestation Promotion Organization

Cask wood that has been used to mature whisky is reborn to create the cabinets for the unique Pure Malt Speaker S-PM2000. Pioneer donated a portion of the sales to the Green Fund of the National Land Afforestation Promotion Organization, which responded with a letter of thanks.
This donation from Pioneer is used to promote the effective use of wood and for tree-planting activities.

The donation is used for deciduous tree planting and other activities

Continued collection of compact rechargeable batteries

The Pioneer Group has been collecting rechargeable batteries since 1993. We started collecting button batteries in FY2001, collecting a total of 222kg in FY2003. We sell the collected batteries to recycling companies and donate the proceeds every year to World Wildlife Fund (WWF) Japan, a nature conservation group.
Pioneer will continue this combination of battery collection, recycling and donation in future.

Environmental Education

Distribution of environmental report to each employee

The Pioneer Environmental Report is given to each employee every year, not only raising awareness of the environment, but also highlighting Pioneer's environmental commitment for the benefit of suppliers, stockholders and others outside the company.

Selections for Pioneer Environmental Contribution Awards

Every year, Pioneer's Division of Environmental Preservation selects facilities, groups and individuals who contributed to environmental preservation activities, and honors them with the Pioneer Environmental Contribution Award.
In FY2003, awards for excellence were presented for 'Education and event organization for energy-saving operation' in the individual category, and to the Tokorozawa Plant in the group category for the planning and design of the Eco Champion model DVD Mini Rakura.

Environmental Contribution Award winners

Environmental patent prize winners

Awards for three environmental patents

We began presenting Environmental Patent Awards in FY2003 with the aim of linking environmental conservation technologies to patents.
Three inventions, deemed to be particularly strongly focused on the environment, were selected for Environmental Patent Awards from among 11 candidates that had been recognized to contribute to environmental improvement.

Use of the e-Learning environmental education program

Pioneer is making increasingly broad use of the e-Learning program, which delivers environmental education via the Internet. As it is difficult for sales/marketing staff to attend periodical training courses, they have the option of undergoing environmental training utilizing Q&A-style tests through their PC. Over 90% of such staff in our facilities have taken the courses, which are popular as a way to build knowledge and awareness of environmental preservation.

No. of Personnel with Major Environment-related Qualifications

	Qualification		No. of people qualified	No. qualifying in FY2003
National qualification	Pollution-related	Administrator of pollution prevention (air, water, noise)	30	1
	Energy	Administrative engineer for energy (electrical, heating)	13	2
		Administrative personnel for energy (electrical)	17	4
		Boiler engineer	45	4
	Waste materials	Administrative officer for specially managed industrial waste disposal	73	10
	Handling of hazardous materials	Agent for dangerous articles	287	22
		Chief personnel for designated high-pressure gas	210	19
		Chief personnel for high-pressure gas	77	8
		Work supervisors (organic solvents, lead, designated chemicals)	259	46
		Chief agent for toxic substances	6	0
Internal qualification	Environmental management	Internal environmental auditor	213	54

Environmental lectures

In March 2002, the Tokorozawa Plant invited lecturers from the city of Tokorozawa for a lecture meeting on The State of Dioxin Countermeasures in Tokorozawa. The meeting was attended by 90 people, ranging from general staff to managers.
The Kawagoe Plant invited university lecturers to lecture on the theme of The Edo Era as a Recycling Society, providing hints on the environmental activities companies should perform.
Our facilities will go on hosting events such as these environmental lectures as elements in our employee education.

90 participants listened attentively (Tokorozawa Plant)

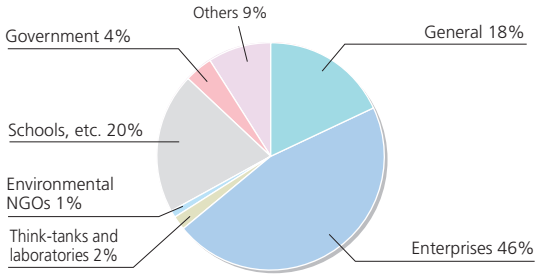
A lecture in progress (Kawagoe Plant)

Pioneer Environmental Report as reference

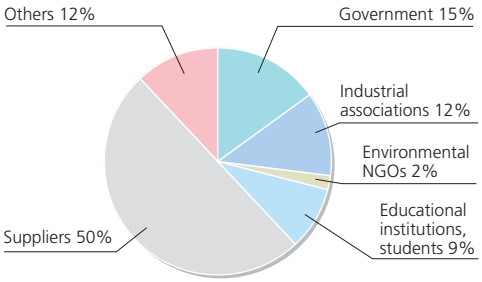
Pioneer links the Environmental Report, which has been published since 1999, with the homepage, to build environmental communication with people in many fields, within the company and outside.

1999	2000	2001	2002
Japanese: 12 pages, 3,700 copies.	Japanese: 18 pages, 12,500 copies	Japanese: 26 pages, 13,000 copies	Japanese: 38 pages, 16,000 copies
English: 12 pages, 3,000 copies	English: 18 pages, 3,000 copies	English: 26 pages, 3,000 copies	English: 38 pages, 3,000 copies

Environmental report requests (Total: 2,500)



Inquiries (376, other than report requests)



Communication with the community

Participation in community exhibitions

Pioneer is an active participant in many community-led events.
Kawagoe Plant participates in the annual Earth Day in Kawagoe event, which takes place in Saitama Prefectural Kawagoe Water Park every September.
Tokorozawa Plant exhibits its environmental activities at the Shun no Ichi (Seasonal Market) which is held every May.

The lively Earth Day in Kawagoe

Participating in Shun no Ichi in Tokorozawa

Eco Presentation at Ohmori Plant

Ohmori Plant held an Eco Presentation in March 2003 to present its action for the global environment to local residents, who were invited to attend.
The visitors were shown the plant's environmental facilities, such as the food waste processing equipment, and given suggestions for energy saving. They were particularly interested in the plant's solar panels and the measurement of standby power consumption.

Residents listening attentively

Presentations at symposia

Environmental preservation activities presented at the Meguro Zero Garbage Symposium 2002

The Meguro Zero Garbage Symposium was held in December 2002 by Meguro-ku, Tokyo, and Pioneer's Meguro headquarters participated with a panel presentation entitled Our Challenge - A Zero Garbage Society. The presentation included the information that the Meguro headquarters, which was already ISO 14001 certified, was very close to achieving zero emissions. It also promised to participate in future environmental promotion activities in the area.

Participating as a panel member in the Towards a Zero Garbage Society discussion

Energy saving activities presented at the Rational Electricity Use Seminar

Tokorozawa Plant took part in the Rational Electricity Use Seminar, which took place in Tokyo in February 2003, reporting on its internal energy-saving activities.
The plant's earnest energy saving work has been highly praised, winning the Kanto Region Rational Electricity Use Committee Prize for Excellence and the Kanto Bureau of Economy, Trade and Industry Director's Prize in February 2002.

A presentation on energy-saving activities

Eco Products Exhibition 2002 Tokyo Japan

The Pioneer booth at Eco Products 2002 in December 2002 attracted many visitors. Our experience programs for children involved visiting schoolchildren in our environmental education. Our presentation on the mini stage gave an overview of our environmental activities and introduced the DVD Mini Rakura, a Pioneer Eco Champion Model.

A questionnaire was passed out after the mini stage presentation to ask the audience for their opinions. Over 70% of respondents thought it only natural to consider the environment in AV products, and the interesting results generally indicated widespread environmental awareness.
Pioneer will go on presenting clear and interesting exhibition booths.

The large number of visitors shows the high level of interest in the environment


The DVD Mini Rakura Pioneer Eco Champion Model presented on the mini stage

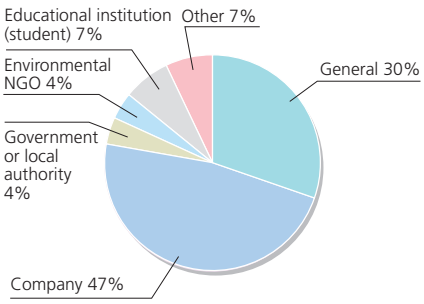

A wearable display using organic EL


Cyber-conferencing realizes paperless remote meetings

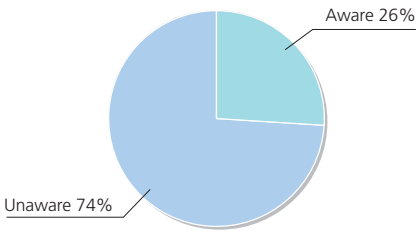

Fish Life, a product designed to use plasma displays, which is popular with all ages

Results of the questionnaire at the Pioneer booth

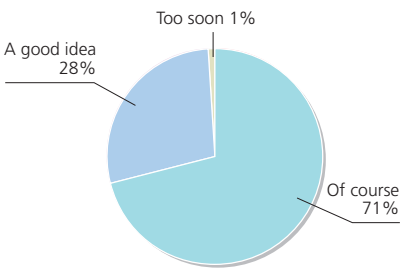
What is your position?



Were you aware of environmental measures in DVD players?



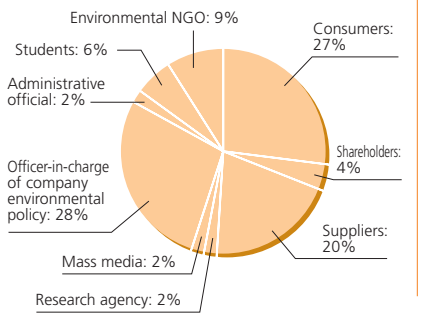
Environment-oriented AV products



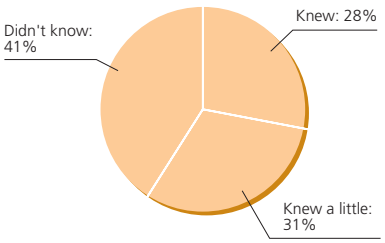
Your Opinions

Pioneer has been publishing the Environmental Report each year since FY2000 to promote our environmental preservation activities. Below is an analysis of feedback we have received from readers of the Environmental Report 2002. Your opinions, impressions and requests are valuable to us and will be reflected in our future activities and in the next edition of this Environmental Report.

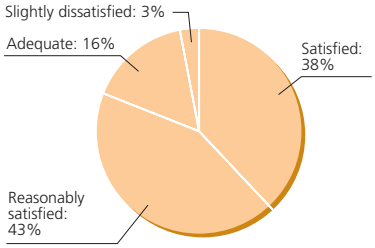
1 Your title or position.



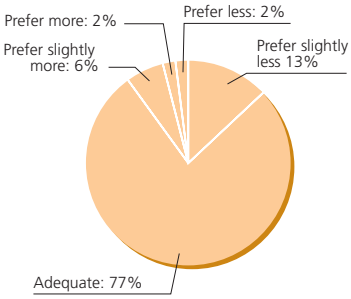
2 Did you know about Pioneer's environmental preservation activities?



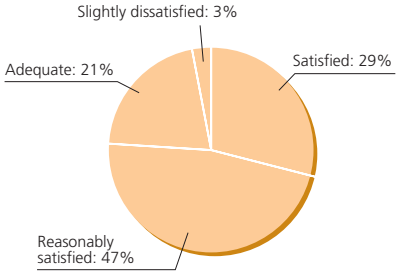
3 Your level of satisfaction with this environmental report



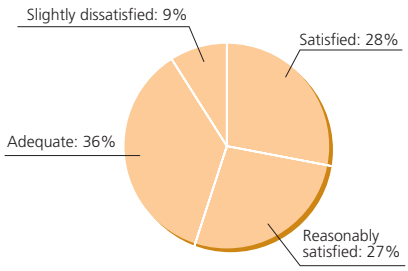
4 What about copy volume?



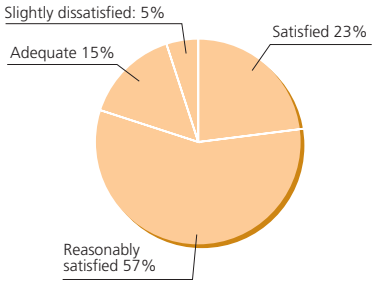
5 Was it easy to understand?



6 Cover design



7 Overall satisfaction level



Items of interest to you (top six)

- Realizing environmentally friendly products
- Environmental impact and issues to be tackled
- Whisky casks revived to create supreme sound ("Pure Malt" series)
- Green procurement
- Environmental preservation at Pioneer Facilities
- Life Cycle Assessment (LCA)

Reader impressions (plus evaluation)

- Just the right number of pages.
- Very clear and easy to read. I'd like to read it as a student textbook.
- The table of Pioneer's environmental impact was clear at a glance.
- The reports showing the actual product developers were good.
- Reusable envelopes are a great idea.
- Good, concrete content.
- Pictures of actual products make the content easier to understand.

Note: Questionnaire data was obtained by analysis of 65 responses from the Environmental Report 2002.

Reader feedback and Pioneer responses

I'd like more information from overseas.	Extra reports on overseas activities have been added from this report on (Page 28).
Please increase the content that can be understood by students.	Explanations of terminology have been included as much as possible and the illustrations and photographs increased to make it more visually comprehensible.
Not enough expert data.	Over 70% of questionnaire respondents rated the number and content of pages highly. We divide the content so that detailed and regional data for Japan are presented on the homepage.
I want more detail on environmental risk management.	I want more detail on environmental risk management. We have added more detail on environmental risk management (Page 11).

We will attempt to reflect your opinions and requests in the content of this and succeeding issues.

Thank you for taking the time to read the Pioneer Environmental Report

We would be most grateful if you would enhance our environmental activities and the editing of future environmental reports by giving us some feedback. Please complete the questionnaire below and fax it to the Pioneer Division of Environmental Preservation. Anonymous responses are also welcome.

1. Your title or position. (Please check)

☐Consumer ☐Shareholder ☐Retailer/supplier ☐Pioneer employee ☐Investor/ institutional investor
☐Market research ☐Officer-in-charge of company environmental policy.
☐Government environmental policy official ☐Educator ☐Student ☐Environmental NGO ☐Other

2. Your level of satisfaction with this Environmental Report. (Please check)

Content:	☐Satisfied	☐Reasonably satisfied	☐Adequate	☐Slightly dissatisfied	☐Dissatisfied
No. of pages:	☐Prefer less	☐Prefer slightly less	☐Adequate	☐Prefer slightly more	☐Prefer more
Clarity:	☐Satisfied	☐Reasonably satisfied	☐Adequate	☐Slightly dissatisfied	☐Dissatisfied
Cover design:	☐Satisfied	☐Reasonably satisfied	☐Adequate	☐Slightly dissatisfied	☐Dissatisfied
Paper quality:	☐Satisfied	☐Reasonably satisfied	☐Adequate	☐Slightly dissatisfied	☐Dissatisfied

3. Items of interest to you (Please check) (Multiple choice is ok)

☐Corporate philosophy, environmental policies and promotion system
☐Environmental impact and issues to be tackled ☐Environmental targets and performance
☐Environmental Management system and risk management ☐Environmental accounting

Products: ☐Pioneer Environmental Label and Eco Champion models ☐Green procurement ☐R&D (LCA)
☐Energy saving and harmful substance reduction ☐Product recycling

Facilities: ☐Greenhouse gas reduction and harmful substance management ☐Recycling at facilities
☐Ozone layer preservation, water resources, ground water and soil, logistics ☐Efforts in other countries

Social: ☐Social activities to preserve the environment and environmental education
☐Environmental communication and Your Opinions

Columns: ☐Next-generation displays: Organic EL
☐Ideas Drawn From Environmental Preservation - Pioneer Car Electronics ☐Zero emissions
☐The First World Environmental Conference

4. How do you rate Pioneer's environmental preservation activities overall?

☐Excellent ☐Good ☐Average ☐Poor

5. If you have any other opinions or impressions regarding this Environmental Report or Pioneer's environmental preservation activities, please write them here.

Thank you for your kind cooperation. Lastly, if you wouldn't mind completing the following:

The personal information you provide here will be used for our statistics, and for sending any documents you request.
Our privacy protection policy can be found on our homepage: http://www.pioneer.co.jp/privacy/

Name: Male/Female: Age:

Address:

E-mail address:

Occupation (Company): Division/Dept./Sec.:

Pioneer Corporation, Division of Environmental Preservation Fax: +81-3-3495-4761

Corporate Profile

Name: Pioneer Corporation

Headquarters: 4-1, Meguro 1-chome, Meguro-ku, Tokyo 153-8654

Telephone: +81-3-3494-1111

Founded: January 1, 1938

Incorporated: May 8, 1947

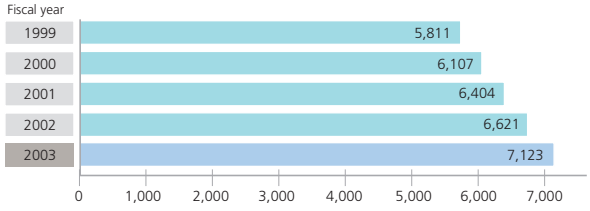
Paid-in capital: ¥49 billion (as of March 31, 2003)

President and Representative Director: Kaneo Ito

Business Activities: Home electronics, car electronics and related business.

Operating revenue

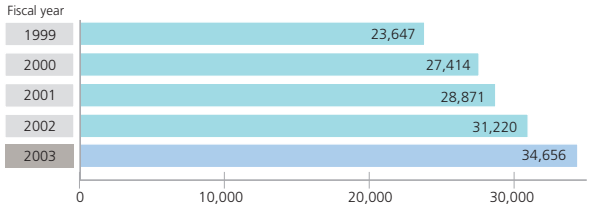
Consolidated (¥100 million)



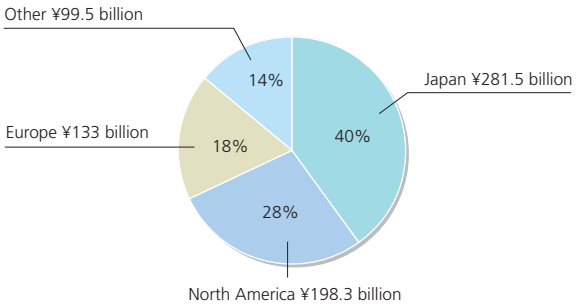
*Operating revenue is the total of net sales and royalty revenue.
*Previous figures have been amended to comply with a change in US accounting standards.

Number of employees

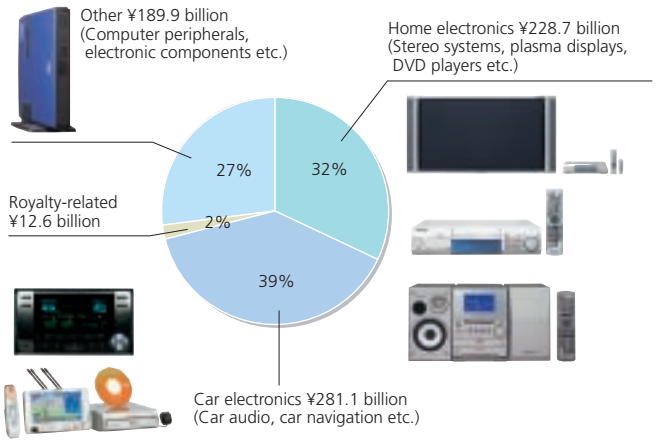
Consolidated



Sales by region



Business segments



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