



# **ENVIRONMENTAL REPORT 2006 DIGEST**



Caring for our Customers while caring for our world

# TOPICS

## Pioneer Wins the Economy, Trade and Industry Minister Award at the 8<sup>th</sup> Green Purchasing Awards

Pioneer won the Economy, Trade and Industry Minister's Award at the 8<sup>th</sup> Green Purchasing Awards sponsored by the Green Purchasing Network\* (GPN) in Japan. With "Caring for our Customers while caring for our world" being the basic principle, Pioneer was highly evaluated for our wide range of high-standard environmental preservation efforts covering the entire range of business activities, from green purchasing of office equipment and machines to green procurement of production materials, provision of eco-friendly products and communication with customers. The awards ceremony was held at Keidanren Hall, Tokyo, in February 2006, with Pioneer's president, Mr. Sudo, in attendance at the ceremony to say a few words of appreciation and to participate in the Environmental Top Talk.

\* Green Purchasing Network (GPN)  
A network established in 1996 that loosely unites corporations, administrations and consumers to promote green purchasing efforts. Various companies and organizations participate in the network as buyers of the same stance.



President Sudo making a presentation at the Environmental Top Talk



President Sudo attending the Environmental Top Talk together with Environment Minister Koike and Shiga Governor Kunimatsu

The Economy, Trade and Industry Minister's Award is presented to an organization that shows overall excellence in green purchasing efforts and particularly excels in the promotion of external green purchasing (environmental communication on green products or efforts to promote customers' green purchasing). The awarding of this prize is clear evidence that Pioneer is highly valued for its wide-ranging activities, including internal efforts for environmental preservation, provision of eco-friendly products and communication with customers.

### [ Internal Environmental Activities ]

"We don't buy unnecessary things. When we buy necessary things, we always buy Eco Label products or products listed in the GPN database," says Michiko Wakabayashi, a Pioneer employee in charge of green purchasing for office supplies. "We have target green purchase ratios for 13 articles. For 12 out of the 13, we allow no exceptions and always aim at 100% green procurement for them. If there is only one article that cannot fulfill the criteria, the 100% level will not be reached. Despite the high hurdle, we cleared it for 10 articles."

Pioneer is also active in 3R activities, which include the setting up of a recycling corner for waste stationery products and the publicising of unused office furniture through the intranet to promote reuse.



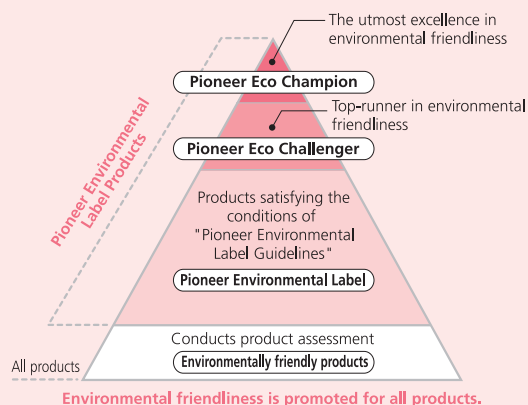
Rikizo Takayanagi (left) and Michiko Wakabayashi (right), Environmental Preservation Department, General Administration Division, spearhead Pioneer's environmental preservation activities

### [ Provision of Environmentally Friendly Products ]

Pioneer conducts product assessment\* for the environment on all its products. In other words, it is an effort to turn customer actions to buy Pioneer products directly into implementation of green purchasing.

We have the Pioneer Environment Label in place to identify the products that pass our own environmental standards. This is part of our effort to promote environmentally friendly design for all products, with the Pioneer Eco Champion as the most excellent. We also award facilities that achieve the greatest sales in environmentally friendly products, such as the Hi-Vision Plasma TV that won the Energy Saving Grand Prize, so as to enhance employee awareness of environmentally friendly products.

Pioneer also provides environment-related information to customers through the "Environmental Treasure Box" cartoon on our website, our e-mail magazine, and our product catalogs. Pioneer has thus gained a reputation for comprehensively integrating its business and environmental activities.



Environmental friendliness is promoted for all products.

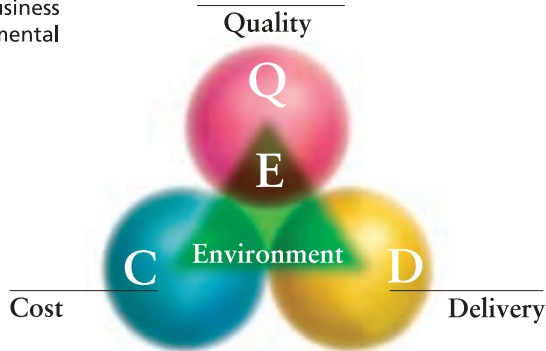
\* Product Assessment  
Product assessment is the preliminary evaluation of products in their design stage by investigating and predicting the influence of the products on safety, resources and the environment at every stage of the product cycle; production, use and disposal. This assessment is intended to improve each process to reduce environmental impacts.

Total Evaluation for Pioneer's Overall Efforts



## 2010 Environmental Vision

Pioneer Group aims at the true integration of business activities and environmental preservation activities.



## Basic Policies of Environmental Preservation

1. Compliance with Laws and Regulations
2. Preservation of Environment
3. Development of Environment-Friendly Products
4. Management by Goals
5. System Promoting Environmental Protection
6. Training
7. Continuous Improvement
8. Disclosure and Communications

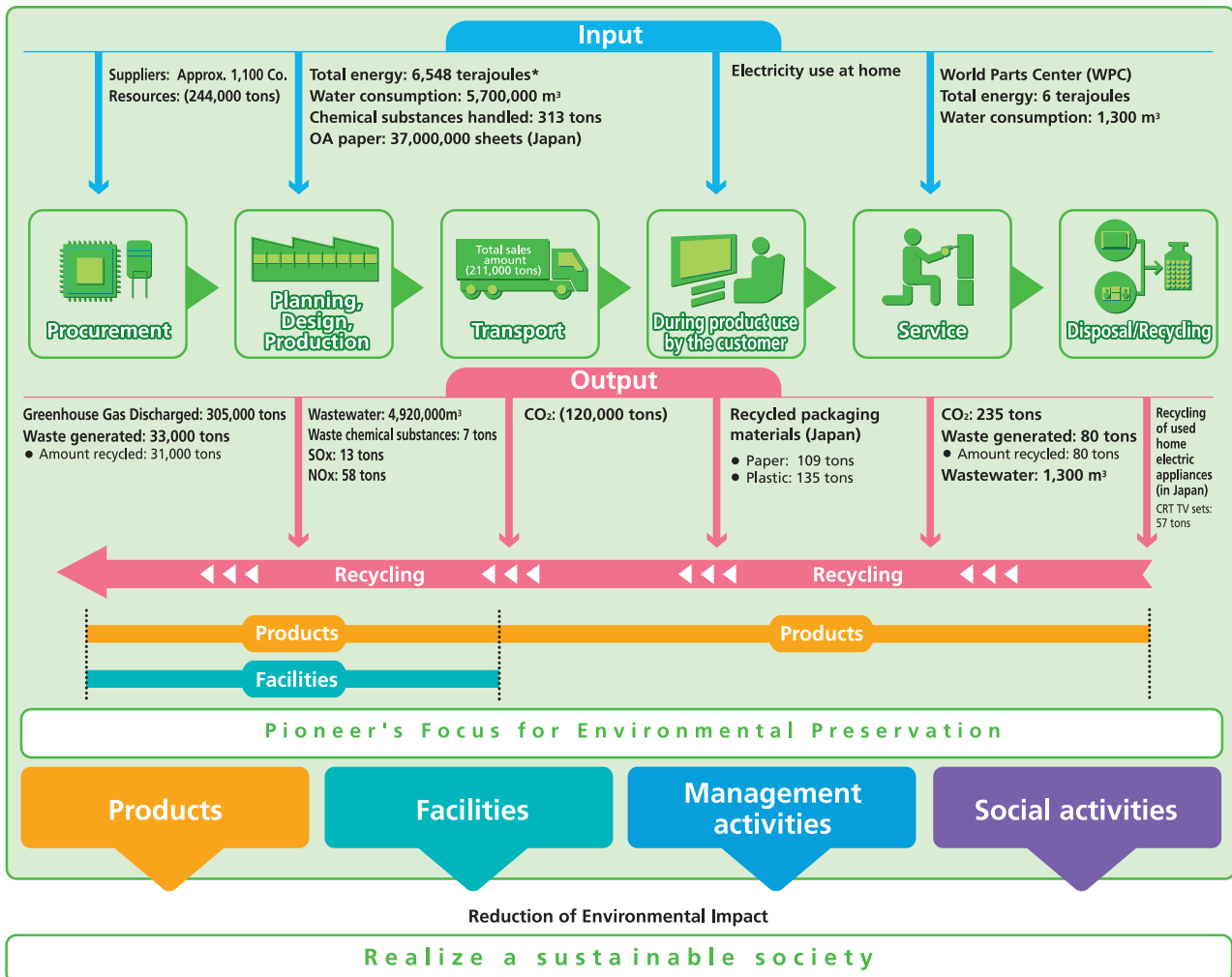
## Pioneer's Environmental Impact and Issues to be Tackled

The lifecycle of Pioneer products includes planning, design and manufacture, before delivery to customers as finished products, as well as final disposal or recycling after their service life has ended. 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.

Figures in parentheses are approximate, based on estimates.

### Pioneer's Environmental Impact

\* Tera- means 10<sup>12</sup>



# Realizing Environment-Friendly Products

Pioneer sets "No negative input, No negative output and No negative use" 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.

## Pioneer Environmental Label Guidelines

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



### Compulsory Items (Products must meet all items)

1. Conduct the product assessment for environment
2. To facilitate recycling, parts containing 20 grams of resin or more are labeled as such in accordance with ISO standards.
3. Specific brominated flame retardants said to release dioxins during incineration are not used.
4. CFCs, HCFCs and other ozone-depleting substances are not used at all in Pioneer's products or manufacturing processes.
5. All batteries are located so that they can be easily removed.
6. The volume of packaging materials used has been reduced by more than 20% from FY1991 levels.
7. Lead-free solder is introduced.

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

1. Standby power consumption is reduced to 0.5 W or less (however, CATV terminals are at 1 W or less).
2. Styrene foam and other resinous packaging materials are not used.
3. Recycled materials are widely used in the products.

As of June 2006

## Reducing Environmentally Hazardous Substances

Pioneer issued its management standard for environmentally hazardous substances (EHS) in December 2002 to thoroughly eliminate hazardous chemical substances in products. In November 2003, Pioneer set up the Eco Products Division to promote consistent EHS management in the entire group. Our ongoing efforts in this respect include expediting early response to chemical substance regulations in Europe as well as the rest of the world. It is our mission to provide products that are safe for customers to use and eliminate chemical substances that can pollute the environment after products are discarded.

### Pioneer Responding to the RoHS Directive\*

Pioneer started action in response to the RoHS Directive in 2002. Our efforts to comply with this European standard include looking for alternatives for parts that contain EHS, establishing our EHS information system, and reviewing EHS detection methods. Since it is also important to control the supply chain in which materials and parts are produced by suppliers, Pioneer provides EHS management audits to suppliers to help them develop a system to produce or supply EHS-free parts and materials. Since regulations to control specific chemical substances are being established in countries and regions other than Europe, Pioneer is pushing hard to realize completely EHS-free products and ensure that all the products handled or used in the entire group comply with those regulations through a global standard.

### RoHS Directive

RoHS is a directive prohibiting the use of specified hazardous materials in electric and electronic equipment.

No electric or electronic equipment sold in the EU in and after July 2006 shall contain any of six substances: lead, mercury, cadmium, hexavalent chromium, PBB (polybrominated biphenyl), and PBDE (polybrominated diphenyl ether).

## Pioneer Eco-Products 3C Action

Pioneer Eco Products 3C (Champion, Challenger, Contest) Action is an in-house program to promote environmentally-friendly design of Pioneer products. The program consists of three sub-programs: (1) the Pioneer Eco Champion Model—flagship products in which every aspect of the design is environmentally-friendly; (2) the Pioneer Eco Challenger Model—products that feature specific areas of highly environmentally-aware design; and (3) the Pioneer Eco Product Idea Contest, which commercializes environmentally-friendly design ideas from employees.

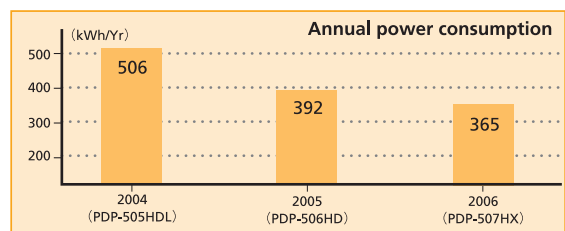


Pioneer Eco Challenger Model HTZ-232DV

## Reducing Power Consumption

Pioneer is actively reducing the annual power consumption of its products.\* Its achievement requires the reduction of power consumption at almost every occasion of power use, such as power consumption in the operation and standby modes. Our 2006 model plasma TV sets can reduce the annual power consumption by about 30% from the 2004 model.

All of our products developed after FY2000 have been designed to consume less than 1 W of power in standby mode. Moreover, an increasing number of models in our product line, including plasma TVs and DVD players, now use less than 0.1 W of energy while in standby.



\* Annual power consumption: power consumption in one year, calculated based on the average home viewing time by using a special calculation equation, depending on the type, size or receiver, as per the Energy Saving Law.

### Plasma TV PDP-507HX

This TV successfully achieved an annual power consumption of 365 kWh/year and a rated power consumption of 343 W through the use of an energy-saving panel with enhanced luminous efficiency, the new P.U.R.E. Black Panel, and many other energy-saving techniques. In addition, the TV has an energy-saving mode designed to further reduce power consumption during viewing. Its light-weight body, at 37.4 kg, also helps reduce CO<sub>2</sub> emissions during transport.



Plasma TV PDP-507HX



### Energy- and Resource-Saving Mini-Component System

The X-MF7DV DVD/MD mini-component system owes its enhanced energy- and resource-saving efficiency (reduction in the number of parts) to full digital technology.



Mini-Component X-MF7DV

#### ● Full Digital Raises Conversion Efficiency

The use of digital amplification designed to amplify DVD or CD digital signals without converting them to analog and an improved switching power unit featuring extremely high power efficiency has improved conversion efficiency from 30% to 70%. Eventually, the new model achieved about a 52% reduction in power consumption.

#### ● Reducing the size and number of parts

Since the new model generates less heat, the need for a heat-sink and cooling fan was eliminated, leading to a successful reduction in the size and number of parts used. A 15% reduction in the number of parts and a 33% reduction in weight have thus been achieved.



The size of the transformer has become much more compact than that of the previous model.

Comparison with the previous model (without speakers)

Main body	X-MF7DV	Previous model (X-HA7DV)	Reduction ratio
Power consumption (W)	33	69	52%
Product weight (kg)	3.8	5.7	33%
No. of parts	1,208	1,422	15%



Masahito Keino (right) and Kazuya Miyamoto (left), Audio/Video Designing Department, HBG Engineering Division, explaining the energy-saving effect of the digital amplifier

### Taking on the Challenge of Reducing Size and Weight while Improving Efficiency (Car Audio Amplifier)

The PRS-D400 is the outcome of our taking on the challenge of achieving full-range high quality in a digital amplifier and of realizing high efficiency (energy-saving) and reduced CO<sub>2</sub> emission with reduced heat generation.



Car Audio Amplifier PRS-D400

#### ● Using high-efficiency parts greatly reduce size and weight

Highly efficient and low heat-generating parts are used in this car audio amplifier to realize a significant reduction in size and weight.

It helps reduce the fuel consumption of vehicles and ultimately reduces the load on the global environment.

#### ● Great improvement in capacity ratio, weight ratio and efficiency over the previous year's model

The advantages of the digital amplifier plus its innovative design ideas have attained great efficiency improvement and the following features compared to the previous model:

Size reduction: 41% in capacity ratio

Weight reduction: 36%

Efficiency improvement: 30%



PRS-D400 (center), prototype (left), previous model (GM-6100T) (right)

### Supporting afforestation with Pure Malt Speakers

The Pure Malt speaker is made of casks retired from their 50-year duty of maturing whisky. This is not just a recycled product; it creates a soft, warm sound that cannot be attained using freshly felled wood. Pioneer donates part of the sales to the Green Fund of the National Land Afforestation Promotion Organization to support the creation richly wooded land in the future.

In October 2005, Pioneer won the Clean Japan Center President Prize at the 2005 Resource Recycling Technology and System Awards sponsored by Clean Japan Center.



The Green Fund symbol



Pure Malt speaker S-A4SPT-PM

### Using Car Navigation to Reduce Environmental Impact

#### Car Navigation and Prevention of Global Warming

If you get lost and waste gas driving around for 10 minutes, some 350 cc of fuel is used up and 800 grams of CO<sub>2</sub> is exhausted. By using a car navigation system and selecting an efficient route, this kind of waste can be avoided, which is connected to prevention of global warming.



# Environmental Targets and Performance



At Pioneer, we have set ourselves the task of reducing the environmental impact generated by our products and plants. As the importance of environmental issues never stops increasing and legal regulations eventually become more stringent, we re-examined some of the goals to better respond to the changes of the times.

Self assessment criteria

- ◎ Target cleared by a large margin
- Target achieved
- △ Target tried, but more effort is necessary
- × Target not achieved

\*Basic unit for net sales amount: Environmental impact amount per ¥100 million of sales

Category	Objectives	Targets for FY2006	FY2006 Results	Self assessment	Targets for FY2007
Products	Environmentally friendly design	Increase the number of models to which Product LCA applies and apply LCA to environmentally friendly design	Started LCA effort with cordless telephones	○	Gather information on EuP Directive *1 and study how to respond to it (carry out design in compliance with EuP by 2008)
		Promote Eco-Product 3C Action	Developed Eco Challenger products	○	
	Reduction of environmentally hazardous substances and use of substitutes	Achieve High Green Score Rate of 95% (in Japan)	Achieve High Green Score Rate of 99% (in Japan)	◎	Achieve a High Green Score rate of 95% (worldwide)
		Totally eliminate lead, mercury, hexavalent chromium, and cadmium from all new products (except where no alternative technology exists)	Total disposal completed (excluding those without alternative technologies)	○	Further reduce the use of lead, mercury, hexavalent chromium and cadmium by developing alternative technology
Reduction in power consumption	Increase the number of products featuring an average standby power consumption of 0.1W or less Reduce annual power consumption	0.065 W products introduced in mini-component system series Reduced annual power consumption by 23% (6th generation 50V type PDP)	○	Reduce the annual power consumption to less than that of the previous year's model	
Facilities	Prevention of global warming (reduction in greenhouse gas emissions) (for production-related facilities in Japan)	Reduce by 25% from the FY1991 level in basic unit for net production	Reduced 19% from the FY1991 level in basic unit for net production 5 points up from the previous year	△	Reduce the amount in basic unit for net production by 25% from the FY1991 level
	Reduction of waste (Zero Emissions of Waste)	Promote at production-related facilities in the group	Achieved at all group production-related facilities in Japan	○	Apply to all group production-related facilities
	Reduction of EHS emissions (in basic unit for sales)	Reduce the amount by 50% from the FY2002 level for the Group	Reduced the amount by 90% from the FY2002 level	◎	Reduce the amount by over 90% from the FY2002 level
	Green purchasing	Maintain a green purchasing rate of over 90% Increase the number of designated items	Green purchasing rate (97% total) Number of designated items increased from 10 to 13	◎	Green purchasing rate at over 95%
	Reduction of OA paper	Reduce the amount by 15% from the FY2001 level	Reduced the amount by 16% from the FY2001 level	○	Reduce the amount by over 16% from the FY2001 level
	Improvement in logistics (for distribution of products in Japan) (in basic unit for sales)	Go below the FY2005 level	Reduced the amount by 9% from the FY2005 level	○	Reduce the amount by over 9% from the FY2005 level Be ready to meet the framework of the Energy Saving Law
Management activities	ISO 14001 certification	Acquire certification at all Group companies in the world	Acquired certification at all major facilities except for newly established ones	○	Encourage one new facility to acquire certification
	Establishment of global systems	Enrich the content of the World Conference Identify more than 90% of our environmental impact	Held the 4th World Environment Conference (applying to product environment) 87% achieved by opening new overseas facilities, etc	△	Continuously hold the World Environment Conference Identify more than 90% of our environmental impact
Social activities	PR activities	Enrich the Web site content with an international focus	Updated the content of the Web site every quarter, including renewal, for overseas facilities Domestic websites were updated every month, including renewal. Added three episodes of the Environmental Treasure Box	○	Update once or more per month Improve the P.R. for children
	Environmental education	Continue awarding environmental prizes Hold lectures on the environment at each facility New acquisition of national qualifications, 100 or more people Maintain the internal auditing system at 200 people	Presented 3 groups and 1 individual with Environmental Contribution Award and Environmental Patent Award Environment-related lectures held twice and general education offered (to all facilities) Number of employees who newly acquired national licenses: 77 Internal auditor: 251	△	Continue awarding environmental prizes Hold lectures on the environment at each facility New acquisition of national qualifications, 100 or more people Maintain the internal auditing system at 200 people
	Social activities in the local environment	Promote activities based on social contribution action indices	Carried out various activities at Pioneer facilities, including Zero Garbage cleanups, environment symposia and tree planting	○	Promote activities based on social contribution action indices

\*1 EuP Directive: EU Directive concerning environmentally friendly design. EuP stands for Directive on Eco-Design of Energy-using Products.



# Actions at Facilities

## Energy Saving

### Reduction of Greenhouse Gas Emissions

Pioneer sees the prevention of global warming as an important task to tackle. We continue to endeavor to reduce our total greenhouse gas emissions, including CO<sub>2</sub> emitted as a result of energy consumption, as well as PFC, HFC and other greenhouse gasses\*<sup>1</sup> arising from production processes (converted to CO<sub>2</sub>). Pioneer, as the parent company, reduced CO<sub>2</sub> emissions by 14% compared with the FY1991 level, but the emissions for the entire group in Japan are increasing due to expanding new business, such as plasma displays.

Pioneer has now set the integrated target of the four major electric and electronic industry associations based on the voluntary action program of Nippon Keidanren (Japan Business Federation), "2010 CO<sub>2</sub> emission reduction by 25% from the FY1991 level in basic unit for net production\*<sup>2</sup>," and is aggressively trying to achieve the target.

Pioneer's CO<sub>2</sub> emissions were 19% down from the FY1991 level in basic unit for net production in FY2006, which was 5 points up from FY2005. We intend to continue our effort by introducing energy-saving equipment to further reduce emissions in the production processes.

Pioneer is also promoting an effort to help customers reduce the CO<sub>2</sub> emissions that result from the use of our products by improving energy efficiency. This effort yielded a 40,000 tons reduction in FY2006.

\*<sup>1</sup> Global warming substances, such as PFC or HFC: gases other than CO<sub>2</sub> specified by the Kyoto Protocol

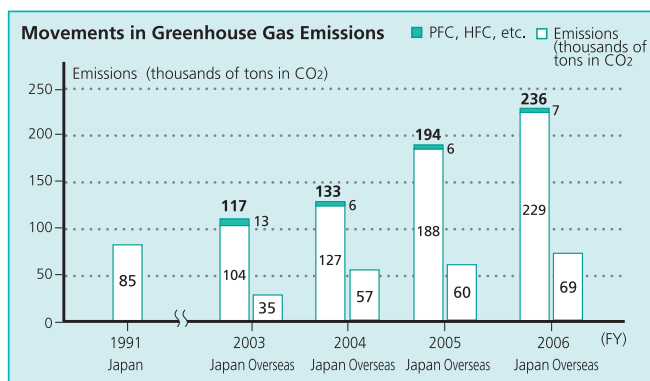
\*<sup>2</sup> Net production: Production is corrected by the FY1991 Bank of Japan domestic corporations commodity price index (electric equipment).

$$\text{Net production} = \frac{\text{Production}}{\text{Bank of Japan domestic corporations commodity price index}}$$

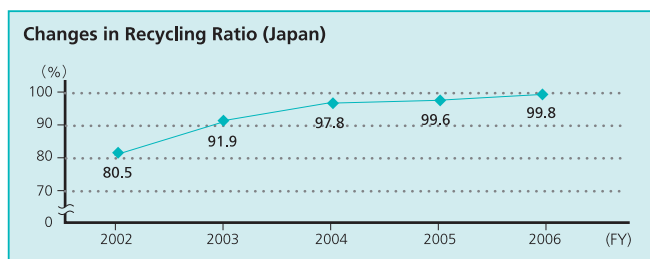
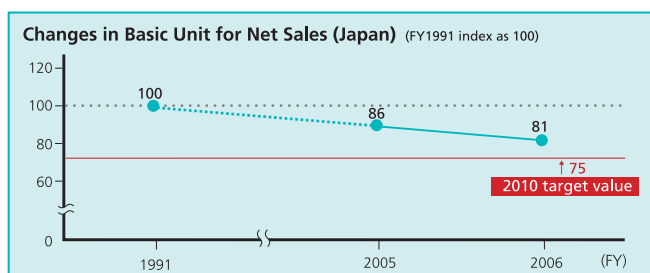
### Zero Emission of Waste Achieved in Japan

The waste generated in FY2006 increased by 3% over the previous year in Japan and 17% overseas due to increased production and other factors, but total domestic waste was cut by 63%, pushing the recycling ratio up to 99.8%.

Another two affiliated companies newly achieved zero emissions, bringing the total number of zero-emission facilities to 20. This means all the facilities in Japan attained zero-emission status.



\* Change from Environmental Report 2005  
The Power to CO<sub>2</sub> conversion factor used above is the updated one announced by the Federation of Electric Power Companies of Japan. Since the factor for FY2006 is yet to be announced, the FY2006 factor is used instead. For other conversion factors, those shown in the Ministry of the Environment's Guideline on the Calculation Method for Greenhouse Effect Gas Emissions from Businesses were used. The FY2005 overseas data were re-examined.



# Social Activities to Preserve the Environment

## Local Zero Refuse Movement

Pioneer makes a group-wide effort to keep local areas free of rubbish, with volunteer employees cleaning up the streets surrounding facilities under the "Zero Refuse Movement" initiative. In June, which is Environmental Month, Pioneer called on all departments and affiliated companies to join the movement at 8 Pioneer locations in Japan. This movement is helping improve our employees' awareness for environmental education and promote environmental communication with local customers.



Tokorozawa Plant, Saitama, Japan



Kawagoe Plant, Saitama, Japan



Tohoku Pioneer Tendo Plant, Yamagata, Japan

## 2nd Pioneer Forest Event Held

The wooded area near Kamakita lake in Saitama, Japan is designated as a Pioneer forest, demonstrating Pioneer's active involvement in an afforestation initiative undertaken by the Saitama Prefecture Agricultural and Forestry Public Corporation. On a sunny autumn day in November 2005, the 2nd event was held with employees and their families as participants. The event consisted of tree pruning for the adults and a "nature experience" for the children, who enjoyed mountain climbing and getting their hands dirty in the natural surroundings under the supervision of the *Mori no Yugakusha* NPO. We intend to continue these events in the future.



40 children and adults participated in the event.





# Environmental Communication

## Pioneer Corporate R&D Laboratories Holds Environmental Symposium

### The 3rd Environmental Symposium (Tsurugashima City, Saitama, Japan)

Tsurugashima Environmental Network, in which Pioneer Corporate R&D Laboratories is a member, held its 3rd Tsurugashima Environmental Symposium at the R&D Lab. conference hall in November 2005. The event included the display of environment and social contribution activities of the neighboring six companies to promote exchange between local corporations and citizens.



Participants enthusiastically listening to the lecture

## Pioneer Participates in Eco Products 2005

Pioneer exhibited at Eco Products 2005, held at Tokyo Big Sight in Japan in December 2005.

Under the concept of "Caring for our Customers while caring for our world," Pioneer put on displays using natural materials (Natadecoco) and very lightweight onboard speakers to introduce its energy- and resource-saving efforts. The Environmental Treasure Box cartoon was greatly loved by the children who visited the event.



Display made with natural materials (Natadecoco)



The Environmental Treasure Box cartoon was very popular among the children

## Open House 10<sup>th</sup> Anniversary held in Portugal

In July 2005, Pioneer Technology Portugal SA (PEP) held an Open House 10<sup>th</sup> Anniversary event for employees and their families with the slogan, "The family we are, opening the door to the family we have." The main theme of the event was the environment, with several awareness activities taking place.

Environmental activities developed over the last few years were explained in relation to several environmental subjects: water quality, the ozone layer, PEP environmental impacts, environmental activities implemented within PEP, poster campaigns, and so on.

An area was set up where children could make toys with several residues produced in PEP. This activity's objective was to raise awareness among the youngest as well as their parents about the importance of "re-using."

An environmental area within the plant symbolizes Pioneer's commitment to the environment and to the well-being of all the people that belong to this "family." A tree was planted in this new environmental area.



The scenes of open house

## Cleanup Event held at Thammikarat Temple World Heritage Site in Thailand

Pioneer Manufacturing (Thailand) Co., Ltd. (PTM) organised a temple cleanup on June 18, 2005, as a social event in Ayutthaya, a Thai province that boasts several World Heritage sites. Since PTM is based in Ayutthaya, the event also represents a social contribution. The cleanup at Thammikarat Temple was undertaken by employees from each department at PTM, with a total of around 50 people participating. We plan to repeat the event at more than ten temples in Ayutthaya province, with six events per year scheduled.



The scenes of cleaning at world heritage

This is the digest version of Pioneer Group's environmental preservation activities in FY2006.

This year, we only disclose the digest version in print and our environmental activities on our website to reduce the consumption of paper. Please see the Environmental Preservation page at the following URL. It provides you with detailed information on the environmental load status for each facility or new product development. There is also a questionnaire.

<http://pioneer.jp/environment/e/>

## Pioneer Corporation

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Pioneer is a member of the Green Purchasing Network.

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