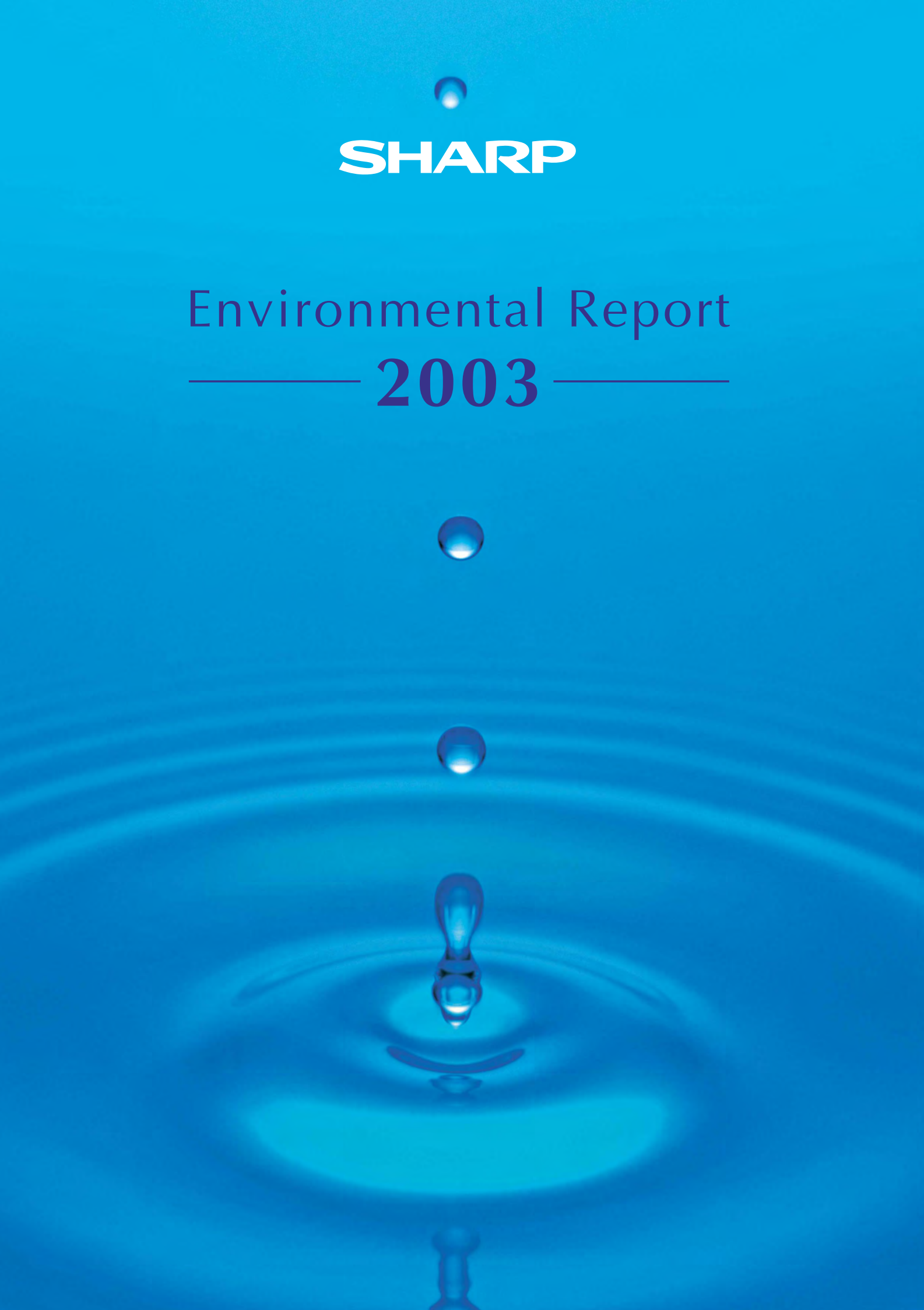
SHARP

Environmental Report 2003

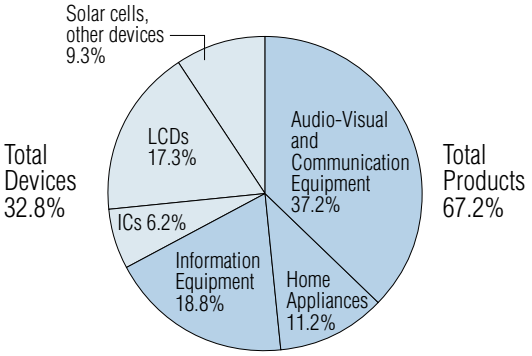


Corporate Profile

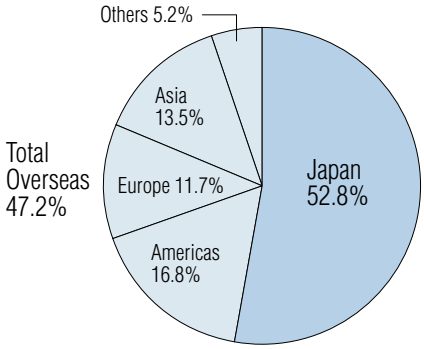
Name	Sharp Corporation
Head office	22-22, Nagaike-cho, Abeno-ku, Osaka 545-8522, Japan
President	Katsuhiko Machida
Establishment	1912
Operations	Manufacture and sales of audio-visual and communication equipment, home appliances, information equipment, LCDs, solar cells, ICs, etc.
Capital stock	204,675 million yen (any fractional sum of less than a million yen is discarded) (as of March 31, 2003)
Net sales	Consolidated base: 2,003,210 million yen Non-consolidated base: 1,552,211 million yen (term ending March 2003)
Operating income	Consolidated base: 99,466 million yen Non-consolidated base: 76,772 million yen (term ending March 2003)

Fiscal 2002 Consolidated Sales in Product Group and Region

Product Group



Region



Number of Employees

(Unit: no. of persons)

Fiscal year	2000	2001	2002
Japan	30,862	30,010	29,662
Overseas	18,239	16,508	16,971
Total	49,101	46,518	46,633

As of March 31, including Sharp Corporation and consolidated subsidiaries.

Sharp website URL for corporate profile:
http://sharp-world.com/corporate/info/index.html

About This Report

- This Environmental Report covers basic policy, achievements for fiscal 2002, and future plans for environmental protection and social activities for the Sharp Group.
- To fulfill our duty to explain our social responsibilities to the general public, for the second year in a row we include reporting on our social activities as well as our environmental activities, and have added new items regarding our efforts to raise customer satisfaction through our responsibility to produce quality products. We have also reported on our economic situation through basic performance metrics in the business summary section. (For a more detailed report, see our Annual Report or the Sharp website.)
- We have based our reporting on the Environmental Reporting Guidelines (fiscal 2000 edition) published by the Ministry of the Environment and on the Sustainability Reporting Guidelines 2002 published by the GRI (Global Reporting Initiative).
- In this report, the Sharp Group is referred to as "Sharp," while Sharp Corporation is referred to as "Sharp Corporation" or "our company."
- To make this report understandable to a wide range of readers, we have used photos, diagrams, and graphs and clear, concise language.
- Sharp Corporation has been publishing this Environmental Report in English and Japanese every year since 1999. The next edition will come out in 2004.

What the Report Covers

Period: Fiscal 2002 (April 2002 to March 2003)
There is also information on policies, goals and efforts for fiscal 2003 and beyond.

Companies: Sharp Corporation and domestic and overseas subsidiaries and affiliates. Environmental performance data covers the following.

Sites Covered in Environmental Performance Data

Production sites	All sites (15 domestic, 22 overseas)
Non-production sites	ISO-certified sites and sites with 300 or more employees (15 domestic, 10 overseas)

- For details on sites covered in the data, see the list of major Sharp Group sites on page 57.
- Environmental performance data for non-production sites covers items related to energy consumption (CO_2 emissions) and waste.
- Non-production sites with less than 300 employees were not included for the following reason:
  The environmental burden of non-production sites is extremely small; these sites only consume $1/10^7$ of the total energy consumed by Sharp and generate $4/10^6$ of the total waste, according to in-house calculations.

For any inquiries on this report please contact:

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About the Cover

We invited employees and families of the Sharp Group worldwide to send in their ideas for the cover design. From among the 212 entries received, we selected the work of Ms. Atsuko Kanari, Junior Manager, Design Center, Appliance Systems Group, Sharp Corporation.

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Contents

A Message to People and the Earth

Aiming to Become an Environmentally Advanced Company that Contributes to a Sustainable Society Through Proprietary Environmental Technology

Katsuhiko Machida
President
Sharp Corporation

Based on our business creed of "Sincerity and Creativity," our company has contributed to progress in society by anticipating changes and developing proprietary technology that brings satisfaction to customers in the form of never-before-seen products.

With the breakneck speed of today's industrial development come serious problems—global warming, exhaustion of resources, destruction of nature and environmental pollution—that we must solve if we are to save the planet that supports us.

At Sharp, we realize that it is our responsibility as a manufacturer and a user of finite resources to create products that allow us to live in harmony with the Earth and thus contribute to the building of a sustainable society.

Sharp makes full use of its resources to develop proprietary technologies. These enable us to develop environmentally conscious products and carry out environmentally responsible manufacturing.

In particular, we are channelling our efforts into reducing dependence on CO_2-emitting fossil fuels by offering "energy-creating products"—solar cells—and "energy-saving products"—LCDs.

Energy-Creating Solar Cells

Since beginning mass production of solar cells in 1963, Sharp has for the past 40 years worked to advance technology for photovoltaic power generation. These 40 years have seen Sharp accumulate experience and know-how through the development of photovoltaic power generation systems for a wide range of industrial and general user applications, including satellites, lighthouses and private homes. This know-how and experience has made Sharp the world's largest producer of solar cells for the last three years in a row.

The sun is a limitless, evenly distributed, renewable energy source; it is said that if we could harness all the sun's rays that reach the Earth's surface for just one hour we could provide the whole world with a year's supply of power. Solar cells are environmentally friendly, energy-creating devices that turn the sun's rays into electricity without emitting CO_2. Sharp will continue to raise the conversion efficiency of its solar cells as we expand production and market penetration in doing our part to contribute to the reduction of global warming.

Energy-Saving LCD TVs

LCD TVs are energy-saving products that use 30 to 50% less power than CRT TVs. And with their long life and a weight that is less than half that of CRT TVs, LCD TVs use minimal resources and thus place less burden on the environment. Sharp's goal is to eventually phase out CRT TVs and replace them with LCD TVs worldwide.

Environmental Preservation in Manufacturing

We make every effort in our manufacturing processes to reduce emissions of greenhouse gases, toxic chemicals, and waste.

Set to begin operation in January 2004, the leading-edge Kameyama Plant, currently under construction, will be the world's first facility to encompass a consistent manufacturing system that covers every stage from LCD manufacture to final assembly of TVs. The Kameyama Plant's high-value-added manufacturing based on leading-edge development and production technologies will be a model of economic efficiency and environmental and social responsibility.

Social Contributions through Environmental Activities

In order to foster a company atmosphere in which all employees understand their environmental duties, we established the Sharp Green Club, a joint labor-management body, in June 2003. The Sharp Green Club will be the center of environmental social contribution activities and the expansion of exchanges with local communities as a good corporate citizen.

In 1992, the year of the World Summit in Rio de Janeiro, Brazil, Sharp vowed to commit the entire company to all-out conservation of the environment and established a basic environmental philosophy: "Creating an environmentally conscious company with Sincerity and Creativity."

Based on this philosophy, Sharp aims to protect our irreplaceable nature and step up environmental conservation efforts by becoming an environmentally advanced company for the sake of the Earth and its people.

This Environmental Report introduces Sharp's efforts to realize a sustainable society. We will continue active information disclosure for communications with the general public, and continue a policy of environmental management.

We hope you find this report valuable and we welcome your opinions and comments.

Business Philosophy

We do not seek merely to expand our business volume.
Rather, we are dedicated to the use of our unique,
innovative technology to contribute to the culture,
benefits, and welfare of people throughout the world.

It is the intention of our corporation to grow
hand-in-hand with our employees,
encouraging and aiding them to reach their full potential
and improve their standard of living.

Our future prosperity is directly linked to the prosperity of
our customers, dealers, and shareholders… indeed,
the entire Sharp family.

Business Creed

Sharp Corporation is dedicated to two principal ideals:

"Sincerity and Creativity"

By committing ourselves to these ideals, we can derive
genuine satisfaction from our work, while making
a meaningful contribution to society.

Sincerity is a virtue fundamental to humanity...
always be sincere.

Harmony brings strength...
trust each other and work together.

Politeness is a merit...
always be courteous and respectful.

Creativity promotes progress...
remain constantly aware of
the need to innovate and improve.

Courage is the basis of a rewarding life...
accept every challenge with a positive attitude.

Business Summary

Business Performance in Fiscal 2002

In fiscal 2002, we introduced one-of-a-kind products and, through a stronger R&D system, the devices that go into these products in order to offer consumers new lifestyles. We expanded and diversified our lines of uniquely featured products, introducing new AQUOS models, camera-equipped mobile phones powered by original devices, and health-oriented home appliances equipped with Plasmacluster Ion technology. In the device field, we boosted our capabilities for high-value-added LCDs, including wide-viewing-angle, fast-response Advanced Super View LCDs and transflective advanced TFT LCDs. We also began mass production of revolutionary, futuristic System LCDs at the Tenri Plant. In addition, Sharp's aggressive business efforts included increased production of CCD/CMOS imagers in response to flourishing demand, the world's largest production system for solar cells, and the start of operation at a new plant specializing in production of compound semiconductors such as laser diodes.

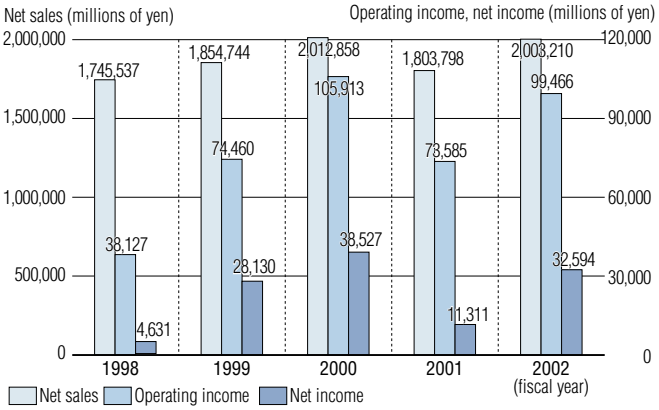
As a result of these company-wide efforts, our consolidated net sales for fiscal 2002 totaled 1,057.4 billion yen in Japan, a 7.5% increase over the previous year, and 945.8 billion yen overseas, a 15.3% increase, reaching 2,003.2 billion yen in total, an 11.1% increase over the previous year.

Operating income totaled 99.4 billion yen, a 35.2% increase and net income 32.5 billion yen, a 188.2% increase over the previous year, although a sluggish stock market caused a loss on sales and valuations of investment securities.

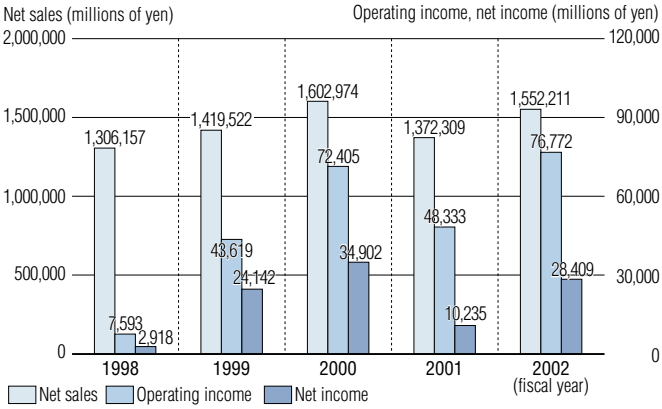
As for our non-consolidated performance in fiscal 2002, net sales totaled 1,552.2 billion yen, a 13.1% increase, operating income 76.7 billion yen, a 58.8% increase, and net income 28.4 billion yen, a 177.5% increase over the previous year.

For detailed information on business results, visit our website at http://sharp-world.com/corporate/ir/index.html

Net Sales, Operating Income and Net Income (consolidated)



Net Sales, Operating Income and Net Income (non-consolidated)



Sharp's History of Original Technologies and Products

1912	1915	1925	1953	1963	1964	1973	1979

Founder Tokuji Hayawaka establishes a metalworks in Tokyo, inventing his original "Tokubijo" snap buckle

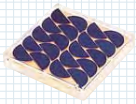
Start of production of TVs as NHK begins television broadcasts

Development of the world's first COS calculator using an LCD

Assembly, production and marketing of compact crystal radio sets

Development of "Compet," the world's first all transistor-diode electronic desktop calculator

Invents the "Ever-Sharp Pencil," a mechanical pencil

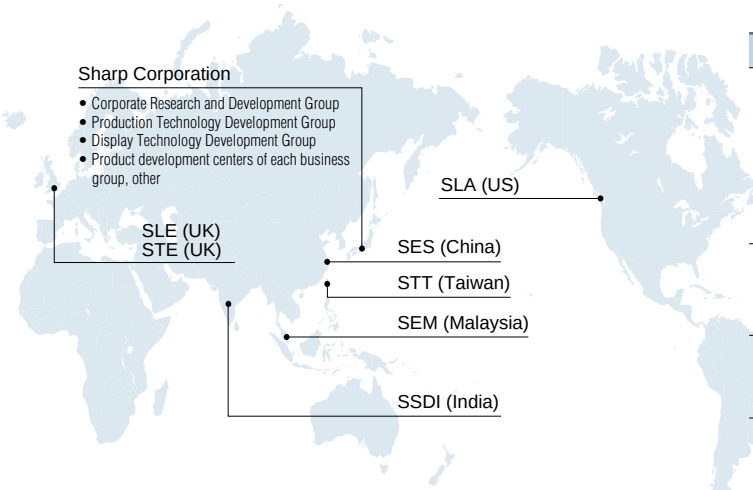


Mass production of solar cells and silicon photoelectric conversion elements

Development and marketing of a 1.6-mm electronic calculator, the world's thinnest

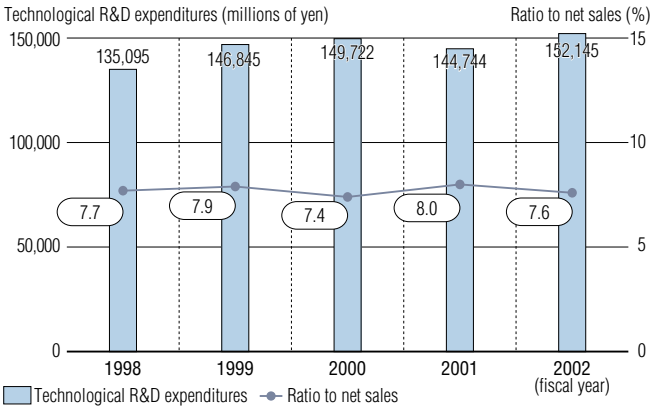
R&D Bases

Sharp is committed to developing leading-edge technology, with an R&D organization in 21 domestic divisions and at seven overseas bases in six countries. In Japan, we are researching key technologies that will be the base of new demand-creating and high-value-added products. Our overseas bases are conducting research in ways distinctive to each country and region.



Name	Location	Business activities
Sharp Corporation • Corporate Research and Development Group • Production Technology Development Group • Display Technology Development Group • Product development centers of each business group, other	Tenri, Nara, Japan	• R&D in key technologies for new demand-creating products • Development of high-value-added products
Sharp Corporation • Ecological Technology Development Center, Corporate Research and Development Group	Shinjo, Nara, Japan	• R&D in next-generation solar cells, energy systems, etc.
SLE (Sharp Laboratories of Europe, Ltd.)	Oxford, UK	• R&D in information technology and optoelectronic devices to tailor products to European markets
SLA (Sharp Laboratories of America, Inc.)	Camas, Washington, US	• R&D in advanced digital processing technology, networking technology for North American markets, and creation of key devices
STE (Sharp Telecommunications of Europe, Ltd.)	Bracknell, UK	• Development of software for mobile phone communication protocols and standardization
STT [Sharp Technology (Taiwan) Corp.]	Taipei, Taiwan	• Design of semiconductor circuitry, design and development of information equipment, etc.
SEM (Sharp Electronics Malaysia Sdn. Bhd.)	Shah Alam, Selangor, Malaysia	• Design and development of audio-visual equipment, including TVs and VCRs
SSDI (Sharp Software Development India Pvt. Ltd.)	Bangalore, India	• Development of software for digital document systems
SES [Sharp Electronics (Shanghai) Co., Ltd.]	Shanghai, China	• Research, design, and development of home appliances, including air conditioners and washing machines

R&D Expenditures (consolidated)



1988

Development of the world's first 14-inch color TFT LCD

1992

Development and marketing of the Viewcam, the world's first camcorder with a built-in LCD monitor

1993

Introduction of a thin and light B5-size notebook PC equipped with an 11.3-inch color TFT LCD

Development and marketing of the Zaurus PDA

1998

Development and marketing of a 20-inch LCD TV

Development of the world's first Plasmacluster Ion air purification technology

1999

Development and marketing of the world's thinnest and lightest notebook PC equipped with a 12.1-inch LCD

2000

Marketing of a 37-inch wide-screen color LCD TV with a BS/110° CS digital HDTV tuner

2001

2002

Business Summary

Product and Business Strategies for Fiscal 2003

In fiscal 2003, we will pursue two major one-of-a-kind product strategies—"Fine Appliances" and "Ubiquitous Appliances"—in response to needs for environmentally conscious products and ubiquitous networks. We will also contribute to the creation of people- and earth-friendly environments through businesses such as solar cells that give clean energy and prevent global warming, LCDs that last longer and use fewer resources and energy, and home appliances that offer a clean living environment. We will place particular emphasis on the following six product businesses.

Solar Cell Business

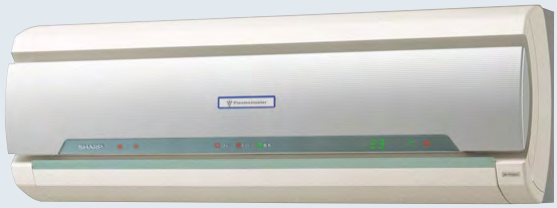
With countries like Japan, Germany, Italy and the US promoting photovoltaic power generation through government subsidies, both domestic and overseas demand for solar cells is expected to increase sharply in fiscal 2003. In March 2003, we extended our annual production capacity at the Shinjo Plant to 200 MW. In May, a module assembly plant with an annual capacity of 20 MW went online in Tennessee, US. We are also looking into production in Europe.

LCD TV Business

The world demand for LCD TVs is increasing sharply and we are planning to sell 1.5 million units in fiscal 2003. Currently under construction in Mie Prefecture, the Kameyama Plant will start operations in January 2004. LCD TV assembly began in China and Spain in fiscal 2002 and in Mexico in May 2003.

Home Appliance Business

We have a number of new developments: Plasmacluster Ion products like air conditioners and air purifiers that effectively remove airborne viruses; dishwashers that provide hard-water ion washing with salt; and fully automatic washing machines that use silver ions to remove bacteria and deodorize laundry. We use "academic marketing" to convey scientific proof of the health and environmental benefits of our products to consumers the world over.



LCD Business

With the recently increasing demand for LCD TVs and the recovering demand for mobile phones, demand for both large and small-to-medium LCDs is expected to increase. In response to the expected increase in demand for System LCDs—high-definition displays for the coming age of ubiquitous networks—we began producing these at the Mie No. 3 Plant in June 2003, following the start of production at the Tenri Plant in October 2002.

Mobile Communications Terminal Business

The continuing commercialization of next-generation mobile communications is expected to help restore demand in fiscal 2003. We will target the international market and make the maximum use of our proprietary devices—including 3D LCDs, System LCDs, high-sensitivity CCD cameras—to develop originally featured mobile communications products.

IC Business

More and more mobile phones have color displays and built-in cameras. Sharp is leading the domestic IC industry as it steps up development of larger-capacity flash memory and mass-produces megapixel CCD camera modules for mobile phones.

Environmental Report

Management Stage

Planning and Design Stage

Manufacturing Stage

Recycle Stage

Logistics Stage

Mind-Set Stage

Sharp's Basic Environmental Policy

Basic Environmental Philosophy

Creating an Environmentally Conscious Company with Sincerity and Creativity

Sharp Charter of Conduct

Activities for the conservation of the environment

- Comply with all applicable environmental laws, regulations and territorial agreements and engage in voluntary activities for the conservation of the global environment, such as practicing efficient use and conservation of resources and energy, in the recognition that environmental conservation is an essential facet of corporate and individual pursuits.
- Strive for disclosure of information on the chemicals used in research, development and manufacturing, and ensure their proper control at the levels determined by laws and regulations or stricter.
- Engage in the active acquisition, reporting and promotion of environmental information at an international level, and promote communication with shareholders and local residents.

Development of an environmental management system

- Strive to acquire third-party certification of the ISO environmental management system for all domestic and overseas business sites and affiliates, as well as production sites. Further, conduct practical, internal audits for constant improvement of the environmental management system.
- Determine to obtain certification for any future additional ISO standards.

Development of environmentally conscious products

- Engage in the reduction of resource use, reduction in the size and weight of products, use of recycled materials, and the development of long-lasting, energy-saving products.
- Avoid in principle the use of any harmful substance that might damage the environment or human health.
- Use recyclable materials wherever possible, with product development focused as a matter of policy on structures that are detachable or capable of dismantling, and suited to recycling.

Promotion of environmentally conscious business activities

- Work to counter global warming through the active introduction of energy-saving facilities and technologies and clean energy sources such as solar cells.
- Select and purchase materials that are harmless to the global environment, local residents and employees, for the resources needed for business activities (equipment, raw materials, subsidiary materials, tools, etc.).
- Practice 3R (reduce, reuse and recycle) to the utmost and strive to minimize the amount of final landfill disposal, in the recognition that waste is itself a valuable resource.

The Sharp Charter of Conduct was established in April 2003 as a revised version of our previous Business Standards and Action Guidelines, established in 1998.
The above is an excerpt from descriptions of our environmental conservation efforts.

Super Green Initiatives

In 1997, the year of the Kyoto Conference on the Prevention of Global Warming (COP3), Sharp established its Environmental Protection Group in Japan and formulated the 3G-1R Strategy, in efforts to contribute to protecting the Earth's environment. Ever since, we have pushed forward with environmental management on a company-wide basis.

Based on the 3G-1R Strategy, in fiscal 2001 we began the Super Green Initiatives and established a system that sets objectives and controls environmental activities for the entire company. It categorizes environmental activities into six stages: management, planning and design, manufacturing, recycling, logistics and mind-set. Each of these comprises concrete goals to be achieved annually and in the medium term. The pursuit of these goals works to create an upward spiral of environmental sustainability management.

Developing Environmental Technology

Sharp's main environmental technologies—in the form of energy-creating solar cells and energy-saving LCDs—lead the world in both quality and production capacity. Behind this is Sharp's experience—40 years in solar cells and 30 years in LCDs—of R&D into these technologies.

We will improve the conversion efficiency of solar cells and the energy efficiency of LCDs while developing technologies for reuse and recycling, thus contributing to environmental protection. Bio fuel cells and plastic material recycling are examples of promising R&D themes for the future.

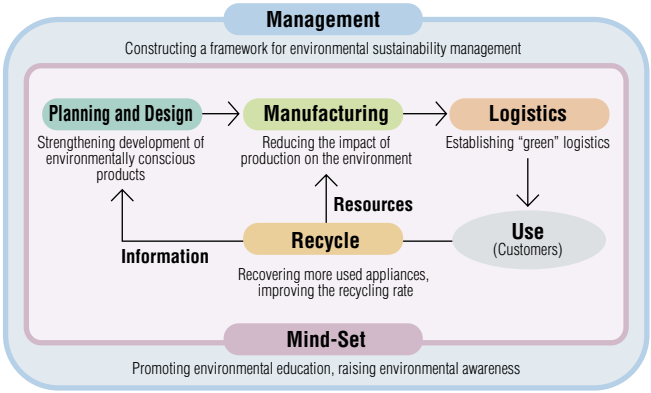
We will boost our environmental R&D capabilities so that we can contribute to the creation of a sustainable society through our proprietary environmental technologies.

3G-1R Strategy

Four Action Themes

GP: Green Products (Develop environmentally conscious products)
GF: Green Factories (Manufacture with the environment in mind)
RB: Recycling Business (Collect and recycle used products where feasible)
GM: Green Mind (Create an ecologically minded company atmosphere)

Super Green Initiatives



Each of the six stages comprises concrete goals to be achieved annually and in the medium term. Through continuous efforts aimed at achieving these goals, we are able to create an upward spiral of environmental sustainability management.

Sharp's 10.2 kW self-sustaining photovoltaic power generation system, installed in a village with no electricity in Qinghai Province, China, supplies power to light and pump water to 240 households.

Super Green Initiatives—Main Objectives and Achievements in Fiscal

Achievements in Fiscal 2002

In fiscal 2002, all 15 objectives were attained.

In the planning and design stage, we released 151 models of Green Seal products with environmentally advanced features, surpassing our initial target of 100 models. These accounted for 43% of all products sold, 3% higher than our target of 40%.

We were also the first company in the industry to put to practical use a process of repeatedly recycling and using waste plastic materials as parts and components without degrading their quality.

In the manufacturing stage, we reduced CO2 emissions by approximately 20% per production unit at all domestic manufacturing sites compared to the previous fiscal year, reduced chemicals under high-priority control by approximately 60% compared to fiscal 2000, and attained zero discharge to landfill of waste for the second consecutive year.

In June 2003, we established the Sharp Green Club, a company-wide, joint labor-management organization that will encourage environmental social contribution activities.

Future Policies

In the planning and design stage, we will formulate a new Green Seal certification system and continue to create environmentally conscious products of the highest level to meet fiscal 2005 targets. We will also accelerate the reduction of chemicals used in products and strengthen development of environmental technologies that enable the reuse and recycling of resources.

In the manufacturing stage, we will reduce the environmental burden and aim to create the ultimate Green Factory that is worthy of making green products. We will also strengthen environmental efforts at overseas bases.

Centered around the Sharp Green Club, all Sharp Group sites will work together to actively contribute to society through environmental activities on a regular basis.

We will also work to do much more, on a global scale, in the management, recycling, logistics, and mind-set stages.

Main Objectives and Level of Achievements in

Stages	Promotional themes	Main objectives
Management	Improve environmental management system	Employ a Sharp in-house environmental management system (S-EMS) that includes proprietary control items such as environmental compliance
		Acquire ISO14001 certification
	Promote environmental sustainability management	Maximize environmental/economic value in terms of environmental sustainability management indexes
Planning and Design	Develop green products	Expand sales ratio of Green Seal products
		Formulate new Sharp Green Seal certification system
	Improve the safety of parts and materials	Reduce chemicals contained in products
		Use lead-free solder in all products
	Strengthen 3R technology	Put plastic material recycling technology to practical use
		Put materials (easy-release fasteners) that make disassembly easy to practical use
		Establish recycling process for LCD TVs
Manufacturing	Control greenhouse gas emissions	Reduce CO_2 emissions (per production unit)
	Reduce and recycle waste	Reduce waste
	Reduce the risk of harmful chemicals	Reduce release of chemicals under high-priority control
		Set original risk assessment criteria
Recycling	Recycle used products	Expand the line of recyclable products
Logistics	Reduce distribution-related CO_2 emissions	Promote changing modes of transportation
Mind-Set	Environmental education	Hold environmental seminars
Social Report	Social contribution activities	Expand and diversify environmental social contribution activities

Fiscal 2002

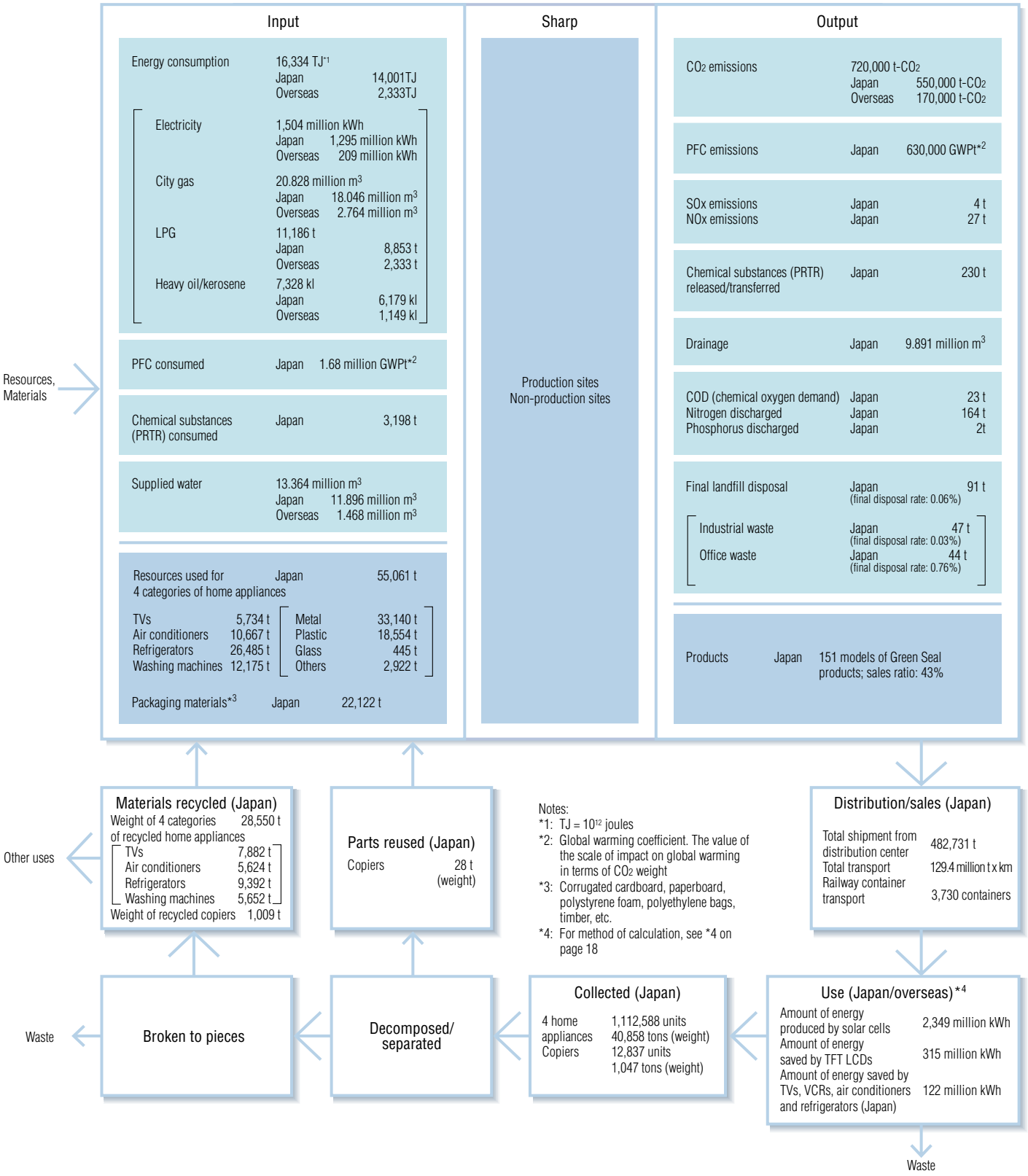
Self evaluation ◎ Achieved more than targeted ○ Achieved as targeted △ Achieved more than 80% of initial target × Achieved less than 80% of initial target

Objectives for fiscal 2002	Achievements in fiscal 2002	Self evaluation	Objectives for fiscal 2003	Objectives for fiscal 2005	See page
Formulate standards for Sharp in-house environmental management system (S-EMS)	Formulation completed	○	Introduce S-EMS into all domestic production sites	Complete construction of S-EMS at all domestic and overseas production sites, and at major non-production sites	15
Acquire integrated ISO certification at 22 domestic non-production sites	Acquired in March 2003		Acquire certification at two production sites and one non-production site overseas		
Prepare draft of environmental sustainability management indexes	Draft completed	○	Formulate environmental sustainability management indexes	Establish environmental sustainability management indexes that facilitate managerial decisions	17~18
Release 100 models of Sharp Green Seal products; sales ratio 40%	151 models released (achievement rate: 151%); sales ratio: 43.4%	◎	Release 100 models; sales ratio: 50%	Use new Sharp Green Seal certification system and develop major products that are the most energy efficient in their product categories	19~20
			Formulate new Sharp Green Seal certification system		
Construct new chemicals inspection system for products	System construction completed	○	Initiate inspection of chemicals contained in parts and materials	Completely abolish use of six RoHS-designated substances (in fiscal 2004)	27~28
Use lead-free solder in 80% of new products manufactured in Japan	Objective achieved	○	Completely abolish use of lead solder in in-house designed circuit boards	Completely abolish use of lead solder (in fiscal 2004)	
Use lead-free solder in 16 models of new products manufactured overseas	Used in 21 models				
Expand the line of products that use recycled plastic materials	Put technology for repeatedly recycling and using waste plastic into practical use Recovered and recycled three plastic parts for use in new refrigerators and air conditioners	◎	Develop technology to separate and sort mixed plastics	Put mixed-plastic separation/sorting technology into practical use	29~30
Conduct disassembly tests of easy-release parts	Conducted disassembly tests on LCD TVs	○	Develop mass-production technology for easy-release fasteners	Apply easy-release fasteners in LCD application products	
Start development of LCD TV recycling technology	Instituted LCD TV recycling study group	○	Study recycling technology for major parts	Establish LCD TV recycling technology	
Japan: Product production sites: Reduce by 2% against previous year Device production sites: Reduce by 5% against previous year	Products: Reduced by 28% against previous year Devices: Reduced by 20% against previous year Total: Reduced by 21% against previous year	◎	Japan: Product production sites: Reduce by 2% against previous year Device production sites: Reduce by 5% against previous year	Japan: Product production sites: Reduce by 2% against previous year Device production sites: Reduce by 5% against previous year (reduce fiscal 2010 level by 25% against fiscal 1990 level)	33~34
Overseas: Reduce by 2% against previous year	Increased by 5.2% against previous year	×	Overseas: Reduce by 2% against previous year	Overseas: Reduce by 2% against previous year	
Japan: Achieve zero discharge to landfill for second consecutive year at all production sites (landfill disposal rate: 0.5% or less)	Achieved landfill disposal rate of 0.06%	◎	Japan: Achieve zero discharge to landfill for third consecutive year, convert waste to valuable recycled material	Japan: Make outsourcing costs for waste processing equal to sales of valuable recycled material	35~36
Overseas: Reduce amount of waste per production unit by 2% against previous year	Increased by 9.3% against previous year	×	Overseas: Reduce by 2% per production unit against previous year	Overseas: Reduce by 2% per production unit against previous year	
Reduce release of chemicals under high-priority control by 50% (more than half) at all domestic production sites against fiscal 2000 level	Reduced by 62% against fiscal 2000	◎	Reduce by 67% (more than one-third) against fiscal 2000	Shift from quantity control to risk assessment control (start in fiscal 2004)	37~38
			Set original risk assessment criteria		
Establish home-use PC recycling system	Completed in June 2003 (started in October)	○	Carry out survey for building recycling system in Europe	Build and start up recycling system in Europe	39~41
Railway cargo transport: 300 containers/month	311 containers/month (achievement rate: 103.7%)	◎	Railway cargo transport: 450 containers/month	Railway cargo transport: 600 containers/month (in fiscal 2004)	42
General training: 1,500 participants Expert training: 300 participants	General training: 2,316 participants Expert training: 468 participants	◎	General training: 1,500 participants Expert training: 300 participants	Conduct environmental education on a global scale	44
Organize company-wide, joint labor-management system for environmental social contribution activities	Established Sharp Green Club (SGC) in June 2003	○	Carry out environmental social contribution activities centered around Sharp Green Club (SGC)	Carry out regular environmental social contribution activities	50

How Business Activities Relate to the Environment

Environmental Mass Balance in Fiscal 2002

Understanding how all business activities relate to the environment in terms of numerical values is an important part of environmental sustainability management. Sharp measures current environmental business performance numerically so that we may use these numbers to plan and analyze environmental measures and thus ensure effective reduction of our environmental burden. Material-related data will be further enhanced and reflected in future policy and measures.



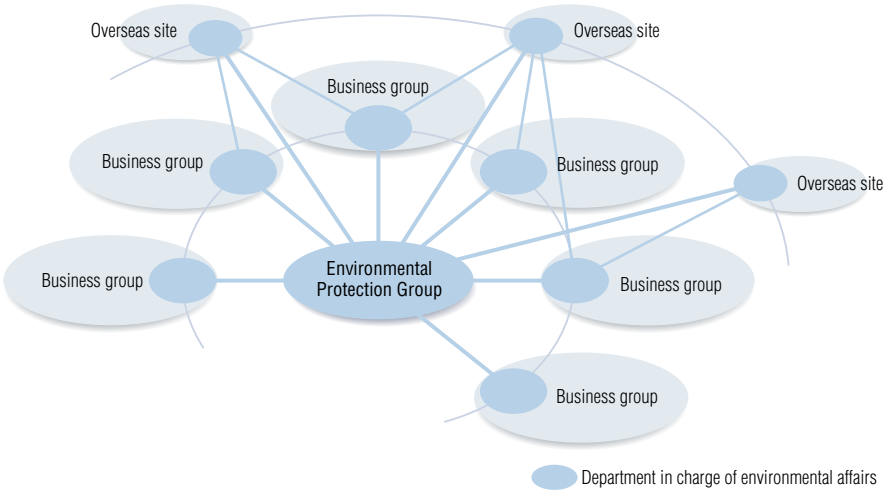
Organization for Environmental Sustainability Management

Organization for Environmental Sustainability Management Centered around the Environmental Protection Group

The Environmental Protection Group and the departments in charge of environmental affairs of all business groups and overseas sites communicate closely with each other to plan and promote environmental policies, strategies, and measures for the entire Sharp group, business groups, and overseas sites.

These environmental departments work together centered around the Environmental Protection Group. They identify problems and come up with new ideas for environmental measures by participating in special interest committees or working groups that are formed as needed, making for an integrated environmental effort by the entire Sharp Group.

Network of Sharp Group Environmental Departments Centered around the Environmental Protection Group



Environmental Conferences and Committees

Overseen by directors in charge of environmental affairs, Environmental Strategy Management Conferences are the supreme decision-making organizations. Members discuss and decide on matters such as company-wide environmental policies, strategies and objectives. They also inform the entire company on the latest environmental laws and regulations.

Company-wide Environmental Conferences also act as forums where all sites can discuss and report on concrete environmental measures.

Each Sharp site holds environmental conferences and committees, discussing and monitoring the status of local environmental policies and measures and reporting on Sharp corporate policies.

Sharp promotes thorough understanding of environmental policy by inviting all supervisors in charge of environmental affairs from major Japanese and overseas sites to the Global Environmental Conference held every other year in Japan. Environmental conferences are also held every year in North America, Europe, ASEAN and China to discuss market trends and local environmental laws and regulations and to decide on measures to meet these conditions.

Environmental Conferences and Committees

Supervised by Environmental Protection Group

Supervised by Individual Sites/Regions

Company-Wide Environmental Conference

Local site environmental conferences and committees

[Affiliated subcommittees]
CO_2 Reduction Committee
Waste Reduction Committee
PFC Countermeasure Committee
LCD TV Recycling Study Group
Chemical Product Assessment (C-PA) System Working Group
Company-Wide Lead-Free Soldering Technique Liaison Committee

Environmental Strategy Management Conference

Environmental Compliance Committee

Chemical Substances Control Committee

[Affiliated subcommittees]
PRTR Measures Working Group
Sharp Chemical Management System (S-CMS) Working Group
Risk Communicator Liaison Committee

Company-Wide Special Safety Management Committee

Special Safety Management Committee at each site

Global Environmental Conference

Pan-American Environmental Conference

Pan-European Environmental Conference

ASEAN Environmental Conference

China Environmental Conference

The 3rd Global Environmental Conference held in Japan in November 2002 was attended by supervisors in charge of environmental affairs from 22 sites in 16 countries worldwide.

Environmental Management System

Objectives for Fiscal 2002	Achievements	Objectives for Fiscal 2003	Objectives for Fiscal 2005
● Formulate standards for Sharp in-house environmental management system (S-EMS*)	→ Formulation completed	● Introduce S-EMS into all domestic production sites ● Acquire certification at two production sites and one non-production site overseas	● Complete construction of S-EMS at all domestic and overseas production sites, and at major non-production sites
● Acquire integrated ISO certification at 22 domestic non-production sites	→ Acquired in March 2003		

* Sharp Environmental Management System

Acquiring ISO14001 Certification for More Sites

By the end of fiscal 1997, all of Sharp's domestic production sites (8 locations) acquired ISO14001 certification. We are also expecting to acquire certification in fiscal 2003 for the Mihara Plant, which started operations in May 2002.

Ten major non-production sites in Japan achieved certification by the end of fiscal 2001. With the aim of improving and standardizing our EMS and expanding environmental activities, we acquired integrated certification for our 22 sites in Japan, including the Head Office and sales subsidiaries, in fiscal 2002. In fiscal 2003, we are striving to acquire integrated certification for more sites.

Twenty of 22 overseas production sites have acquired ISO certification, while eight of nine major overseas non-production sites have achieved certification.

All remaining overseas sites will be certified within fiscal 2003.

Note: For Sharp's ISO-certified sites, see page 57.

Stepping Up to S-EMS

Sharp has strived to make improvement of environmental performance a top priority after acquiring ISO14001 certification and the company has succeeded in achieving zero discharge to landfill* of industrial waste at all domestic production sites.

In addition to improving performance, however, we need to improve our environmental compliance and EMS by adding 49 more in-house standards to our ISO control system. We call this effort the "Sharp Environmental Management System (S-EMS)" and we formulated its standards in fiscal 2002. We plan to use S-EMS as company-wide in-house rules.

Meanwhile, we are strengthening our auditing system by establishing Green Audit that the Environmental Protection Group will use to audit environmental compliance and performance.

We will upgrade our environmental management by introducing S-EMS into production sites in fiscal 2003.

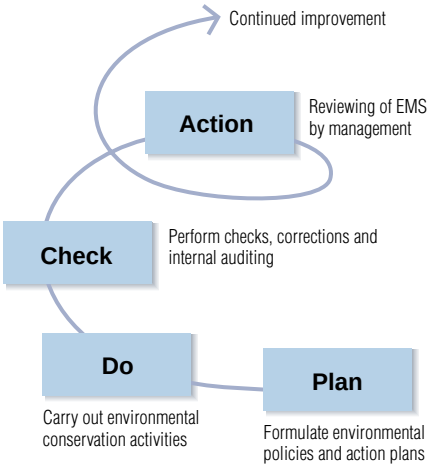
Training Internal Environmental Auditors

Continued improvement of EMS requires proper intracompany environmental auditing. In an effort to upgrade EMS and improve environmental performance, we have continued to train internal environmental auditors who thoroughly understand ISO14001 requirements and can perform proper auditing.

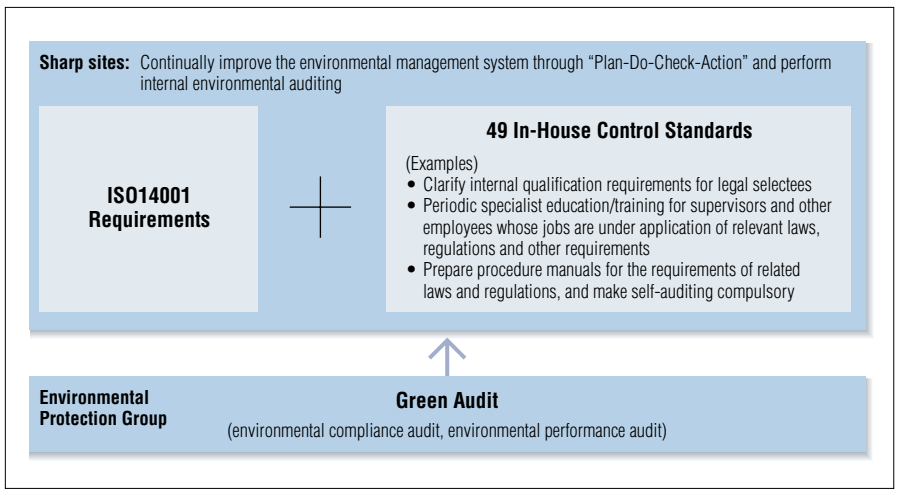
Sharp employees who have completed a training course and passed a qualification test have been registered as qualified internal environmental auditors (877 persons registered as of the end of March 2003).

* Zero discharge to landfill is defined as reducing final landfill to a disposal rate (amount of landfill disposal ÷ amount of total emissions x 100) of less than 0.5%.

Environmental Management System Model



Structure of S-EMS



Environmental Compliance

Environmental Compliance Program

With increasing social responsibility for corporate activities and higher expectations for corporate morals from the general public, Sharp is aiming to be a company trusted by people and society through open and aboveboard management.

We have formulated an Environmental Compliance Program as we dedicate ourselves to establishing an organization and company atmosphere geared towards compliance with laws.

The Environmental Compliance Program formulated in fiscal 2001 is composed of environmental compliance auditing and education/training.

In May 2002, we established the Environmental Compliance Committee as a company-wide organization to lead the Environmental Compliance Program. This committee seeks to ensure thorough company-wide environmental compliance by constructing a framework for training on environmental laws and rules, revision of manuals and criteria, auditing of environmental compliance, and assessment and correction of audit results.

Outline of Environmental Compliance Committee

Environmental Compliance Committee

Chairperson: Director in charge of environmental affairs
Secretariat: Environmental Protection Group
Members: All business groups, related divisions/departments in the Head Office

Main Target Fields:

- Laws and regulations on products/indication
- Preventing global warming (CO_2, PFC)
- Waste control
- Pollutant release and transfer register (PRTR)
- Exhaust (offensive odors included)
- Effluent control
- Soil/underground water pollution
- Special safety management
- Other matters such as noise, vibration, etc.

Education/Training and Revision of Manuals and Criteria

From May through September 2002, the directors in charge of environmental affairs held environmental compliance management meetings, attended by 2,006 managers at eleven sites in Japan. We also held environmental compliance seminars covering environmental laws for general employees.

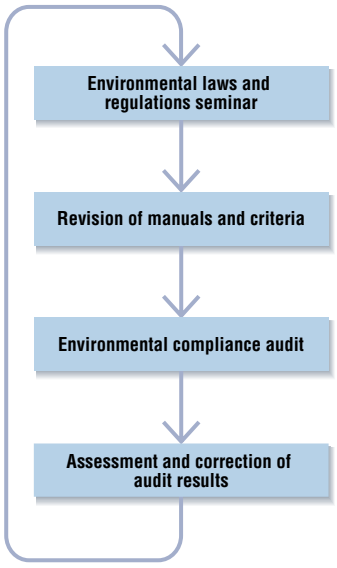
We also revised work-related manuals and criteria at all Sharp sites to ensure that we are complying with environmental laws and regulations.

We will continue to give practical training and carry out detailed revision of manuals and criteria so that we can create job protocols and a company atmosphere geared towards compliance with environmental laws and regulations.

Environmental Compliance Management Meeting

Yao site

Process of Improving Environmental Compliance



Environmental Compliance Auditing

From October through November 2002, specialists in environmental laws and regulations carried out environmental compliance audits at all ten production sites in Japan. After determining what needed to be done at individual sites, we held seminars for personnel in charge of the relevant jobs or sections where environmental laws and regulations apply and conducted follow-up audits.

We plan to carry out internal environmental audits at non-production sites as part of the S-EMS Green Audit.

Based on the results of environmental compliance auditing, we held environmental laws and regulations seminars for 325 participants at each production site from December 2002 to March 2003.

Compliance with Environmental Laws

In addition to complying with laws regarding business activities and with local agreements, we have strict standards to prevent any violation of these. Such in-house standards allow us to anticipate trends in environmental laws and regulations.

In fiscal 2001, Kansai Recycle Systems Corporation, a home appliances recycling plant in which Sharp is the largest investor, discharged CFC* into the atmosphere in violation of the Home Appliances Recycling Law. We accepted full responsibility for this violation and helped Kansai Recycle Systems improve its work processes, equipment, and compliance programs in order to prevent a reoccurrence of this violation.

* It was revealed in February 2002 that between July and September 2001, Kansai Recycle Systems Corporation illegally and intentionally discharged CFC collected from wasted air conditioners and refrigerators into the atmosphere.
The company promptly stopped operations, reviewing and improving CFC recovery and other processes, creating an information control system, and taking measures including introduction of a compliance program and improvement of employee training to prevent further such violations. The company resumed operations on August 2, 2002 with the consent of the national and local governments.

Environmental Accounting System

Fiscal 2002 Result Overview
(Period covered: April 1, 2002 to March 31, 2003)

In 1999, we introduced environmental accounting based on the environmental accounting guidelines by the Ministry of the Environment, as a tool for quantitatively measuring and assessing the cost and effect of our environmental activities. This environmental accounting contributes to our environmental sustainability management by allowing use of some items as part of our organizational performance evaluation.

Regarding performance for all of Sharp Corporation's domestic production sites in fiscal 2002, problems included increased expenses over the previous year due to the start of operation at the Mihara Plant and the increase of total production resulting from this, as well as an increase in waste generation that caused a reduction in the economic effects of environmental conservation. However, things like reduced amount of CO2 emissions per production unit resulted in enhanced environmental conservation effects.

In fiscal 2002, we began gathering figures for major Japanese non-production sites and for Japan and overseas consolidated subsidiaries of Sharp Corporation. These initial figures are shown here for reference, and from fiscal 2004 onward we will include a wider range of data for use in understanding the effectiveness of our environmental measures.

All Domestic Production Sites of Sharp Corporation

Environmental Conservation Costs (millions of yen, %: comparison ratio to previous year)

Category		Investment	%	Expenses	%
Cost within business area	Pollution prevention	149	11.5	1,905	100.3
	Environmental conservation	444	269.1	1,313	161.5
	Managing recycling of resources	62	43.7	1,358	105.8
	Subtotal	655	40.9	4,576	114.5
Upstream/downstream cost: recycling cost within site, etc.		—	—	249	112.2
Administration cost		24	96.0	2,557	159.0
R&D cost		—	—	3,211	103.9
Social activities cost		—	—	3,761	311.3
Other environmental conservation costs		—	—	304	164.3
Total		679	41.8	14,658	142.2

Environmental Conservation Costs:
Account for investment and expenses to protect the environment within business areas.
Investment: Includes investment for environmental conservation within business areas and environmental management software.
Expenses: Include personnel expenses for environmental conservation activities, depreciation from investment for environmental conservation, etc.

Environmental Conservation Effects (%: comparison ratio to previous year)

Details		Fiscal 2002	%
Cost within business area	Amount of CO_2 emission per production unit	Product groups: 4.3 t-CO_2/100 million yen	70.5
		Device groups: 55.6 t-CO_2/100 million yen	80.1
	Amount of waste reused	144,533t	112.5
	Amount of final landfill disposal	91t	58.0
Amount of polystyrene foam used		1,162t	102.5

Economic Effects of Environmental Conservation (millions of yen, %: comparison ratio to previous year)

Details	Amount	%
Cost reduction as a result of energy savings*1	701	95.0
Profits from sale of recyclable waste	663	152.8
Reduction in cost of disposing of waste*2	–81	—
Total	1,283	97.2

*1: Economic effects of energy-saving activities; calculation of the amount of energy expenses saved compared to the fiscal yearly budget, such as electricity, petroleum, gas, etc., from production and service activities.
*2: Calculation of reduction against the previous year in expenses needed to effectively use resources, such as the amount needed to reduce waste.

Environmental Conservation Costs

• Investment (environmental investment)

Since almost all of our investments in currently operating equipment and facilities—for prevention of pollution and for recycling of resources such as industrial waste—were completed by fiscal 2002, total investment decreased compared to the previous fiscal year.

Investment for environmental conservation such as in equipment to prevent global warming and save energy increased with the introduction of PFC gas-removing devices at the Mie Plant and cogeneration equipment at the Tenri and Shinjo Plants.

• Expenses (environmental expenses)

The overall increase in environmental expenses is due to the start of full operation of our new System LCD business.

The increase in social activity costs is due to increased advertising promoting the energy-creating and energy-saving benefits of photovoltaic power generation systems and LCD TVs.

Environmental Conservation Effects

CO_2 emissions per production unit decreased in both products and devices.

We achieved zero discharge to landfill* at all sites last year, the second consecutive year of major improvements in waste reuse and final disposal.

* Zero discharge to landfill is defined as reducing final landfill to a disposal rate (amount of landfill disposal ÷ amount of total emissions x 100) of less than 0.5%.

Economic Effects of Environmental Conservation

Benefits from waste reduction include a reduced cost the following year for disposing of or processing the waste. In fiscal 2002, production increased along with waste generation. Therefore, benefits decreased as treatment expenses increased against the previous year. Contrarily, profits from the sale of recyclable waste increased.

Economic Effects that Include Tentative Effects

The total value of economic effects arising from environmental conservation was 31.983 billion yen, a 40.8% increase over the previous year. This includes the tentative effect of the energy-savings that environmentally conscious products make to society (see calculation of this on the right).

The tentative effects are mentioned in the 2002 Environmental Accounting Guidebook as an economic effect; however, since no numerical formula is specified, the assumed effect values are mentioned for reference only in this fiscal 2003 edition.

Sharp Corporation Major Domestic Non-Production Sites and Domestic and Overseas Consolidated Subsidiaries

(9 companies in Japan, 15 companies overseas; expenses include 2 companies in Japan and 9 companies overseas)

Environmental Conservation Costs (millions of yen)

Category		Investment	Expenses
Cost within business area	Pollution prevention	137	36
	Environmental conservation	71	8
	Managing recycling of resources	18	27
	Subtotal	226	71
Upstream/downstream cost: recycling cost within site, etc.		—	1
Administration cost		—	204
R&D cost		—	1
Social activities cost		—	7
Other environmental conservation costs		—	1
Total		226	285

Environmental Conservation Costs: Account for investment and expenses to protect the environment within business areas.
Investment: Includes investment for environmental conservation within business areas and environmental management software.
Expenses: Include personnel expenses for environmental conservation activities, depreciation from investment for environmental conservation, etc.

Environmental Conservation Effects

Details	Fiscal 2002
Amount of CO_2 emission per production unit	26.7 t-CO_2/100 million yen
Amount of total waste	9,992t

Environmental conservation effects cover only production sites of major consolidated subsidiaries overseas.

Economic Effects of Environmental Conservation (millions of yen)

Details	Amount
Cost reduction as a result of energy savings*1	376
Profits from sale of recyclable waste	81
Reduction in cost of disposing of waste*2	63
Total	520

*1: Economic effects of energy-saving activities; calculation of the amount of energy expenses saved compared to the fiscal yearly budget, such as electricity, petroleum, gas, etc., from production and service activities.
*2: Calculation of reduction against the previous year in expenses needed to effectively use resources, such as the amount needed to reduce waste.

Estimating the Contribution of Environmentally Conscious Products to Energy Saving in Society*3

Environmentally conscious products, including TFT LCDs, solar cells and major energy-saving home appliances, sold by Sharp in fiscal 2002 save 2,786 million kWh*4 over the course of their product lifetimes. This is equivalent to 30.7 billion yen (43.5% increase over the previous year) when calculated in terms of electricity costs in Japan.

*3: Trial calculation for units sold in Japan and overseas (major energy-saving home appliances are for Japan only)
*4: Data of calculation
(1) Energy saved by TFT LCDs (315 million kWh)
- Formula: (difference in annual power consumption when compared with CRT monitors) x (production output of TFT LCD panels for PCs in fiscal 2002) x 4.1 (average years of use)
- Formula for annual power consumption: As per the energy-saving catalog published by the Energy Conservation Center, Japan
- Years of use: Number of years before these devices are replaced by new ones, as described in a survey on consumption trends published by the Japanese Cabinet in March 2003

(2) Energy generated by solar cells (2,349 million kWh)
- Formula: (annual power generation by solar cells in fiscal 2002) x 17.6 (years of creating energy)
- Years of during which solar cells keep creating energy: Years of service life (20 years) – payback time (2.4 years)

(3) Energy saved by major home appliances and consumer electronics, including air conditioners, TVs, VCRs and refrigerators (122 million kWh)
- Formula: (difference in annual power consumption when compared with their counterparts of the same class released in the previous year [Sharp comparison]) x (number of units sold in fiscal 2002) x (years of use)
- Formula for annual power consumption: As per the energy-saving catalog published by the Energy Conservation Center, Japan
- Years of use: Number of years before these devices are replaced by new ones, as described in a survey on consumption trends published by the Japanese Cabinet in March 2003

Environmental Assessment as Part of Domestic Organizational Performance Evaluation

Since fiscal 2000, we have considered the Green Product Guideline achievement rate, the reduction rate of CO_2 emissions per production unit compared to the previous year, and the achievement rate of zero discharge to landfill as part of the evaluation of business contributions made by Sharp business groups. Sharp Corporation achieved zero discharge to landfill at all domestic sites for the second consecutive year.

In fiscal 2002, we added a new item, “achievement rate of in-house-planned release reduction of PRTR-designated chemical substances,” to our evaluation standards.

Formulating Environmental Sustainability Management Indexes

We are working on establishing environmental sustainability management indexes as a tool for evaluating environmental sustainability management effectiveness as well as for making managerial decisions. We want to calculate how much added value was given back to society per amount of environmental burden. We plan to start formulating figures in fiscal 2003 and introduce them in fiscal 2004.

Green Product Development

Objectives of Fiscal 2002 → Achievements	Objectives for Fiscal 2003	Objectives for Fiscal 2005
● Release 100 models of Sharp Green Seal products; achieve sales ratio of 40% → **151 models released (achievement rate: 151%); achieved sales ratio of 43.4%**	● Release 100 models of Sharp Green Seal products; achieve sales ratio of 50% ● Formulate new Sharp Green Seal certification system	● Use new Sharp Green Seal certification system and develop major products that are the most energy-efficient in their product categories

Policy and Process of Development

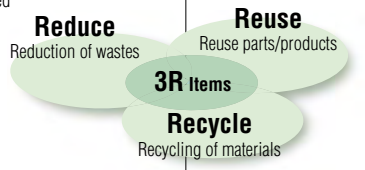
To develop environmentally conscious products, Sharp is moving ahead with the development of technologies that enhance environment-related added values, low energy consumption and the "3Rs" that play a role in reducing environmental burden. We have established "Green Product Guidelines" which are based on seven concepts to make all of our products as environmentally conscious as we can by using these technologies.

We introduced these guidelines to our design and production sites in Japan in fiscal 1999 and overseas in fiscal 2001, to develop new products according to the guidelines. We use the "Green Product Declaration" when products are being judged whether they meet the criteria of green products. All the new products of fiscal 2002 comply with the Green Product Guidelines. There are 46 assessment items and 80% of these must be met.

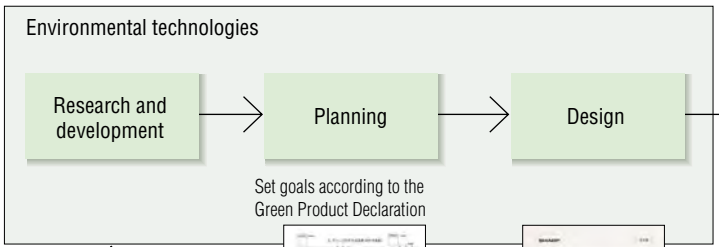
To make products with even better environmental performance, we will raise the 80% mark to 85% in fiscal 2003.

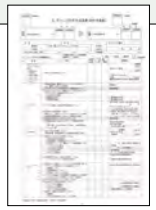
Seven Green Product Concepts

Low energy consumption	Products that are energy-efficient and use little energy Design products that consume less power both in running and standby mode, and air conditioners/heaters that give more efficient cooling and heating.
Safety	Products that are safe to use Carry out tests on products for chemicals and work to abolish or reduce use of chemicals that have negative effects on people's health or the environment.
Resource reduction	Products that use minimum resources Make products that use less water and detergent, and reduce the amount of materials used in products and packaging.
Recycle	Recyclable products Choose materials that can be easily recycled or reused in products, and label the type of material used.
Use recycled materials	Products made from recycled materials Use recycled plastic and reuse parts in making products.
Long life usability	Products with a long life cycle Design products that are upgradeable and easy to repair.
Easy to disassemble	Products that are easy to disassemble Design products so that they will be easy to take apart for recycling.



Green Product Development Process





Green Product Declaration

Green Product Guidelines

Assessment

Judge achievement of the goals during trial mass production

Number of products that have been certified as a Green Product in fiscal 2002

Audio-visual/communication	100
Home appliances	76
Information equipment	72
Total	248

Green Seal

Certified as Green Seal Products

Number of products that have acquired the Green Seal in fiscal 2002

Audio-visual/communication	70
Home appliances	46
Information equipment	35
Total	151
Target model number	100
Achieved sales ratio	43.4%
Target sales ratio	40%

Development of Environmental Technologies

In order to develop environmentally conscious products, our company is developing technologies that enhance environment-related added value and that reduce environmental burden.

Technologies that enhance environment-related added value include energy-creating technology, such as photovoltaic power generation and fuel cells, as well as Plasmacluster Ion technology that help to create a comfortable living environment.

Technologies that reduce environmental burden include energy-saving technology such as LCD; other examples are "3R" technologies including plastic material recycling, easy-release fasteners that use shape-memory alloy, and making products smaller through resource-saving design.

We are also developing Life Cycle Assessment (LCA) evaluation techniques in order to design products that will continue to reduce environmental burden through the whole life cycle of the product.

In fiscal 2003, we will reinforce these technologies and look into the latest environmental technologies, such as biotechnology for the development of future environmentally conscious products.

Introduction of Life Cycle Assessment (LCA)

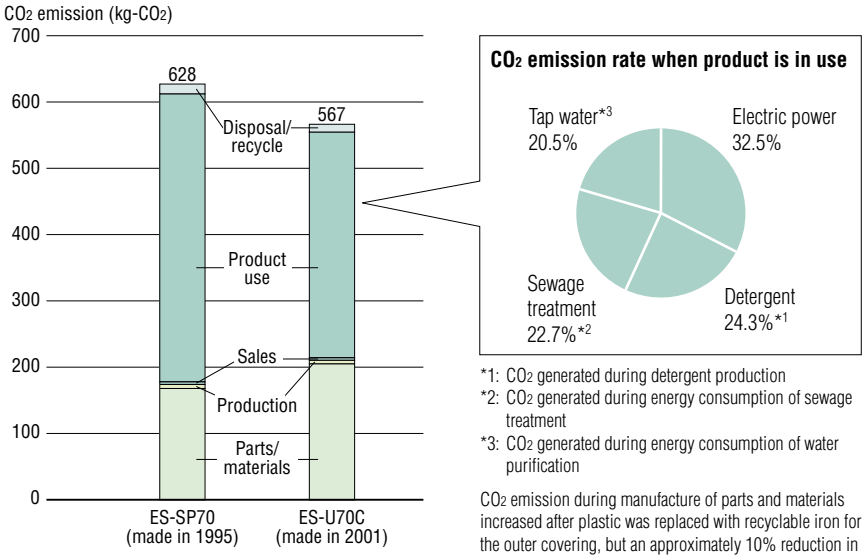
LCA is a method to quantitatively evaluate the burden on the environment through the entire life cycle of a product from procuring raw materials to production, sales, use, disposal and recycling.

In order to comprehensively reduce environmental burden, Sharp has applied LCA in its designing stages since 1996, and has carried out evaluations of factors such as the amount of CO_2 emissions.

To promote the implementation of LCA, a labor-saving method of collecting data by reducing the number of raw materials used in products was developed in fiscal 2002. Based on this new method, the amount of CO_2 emission of washing machines produced in 1995 and 2001 was compared. Results confirmed that approximately 10% of CO_2 emissions was reduced during the whole life cycle of the washing machines. This confirmed the importance of not only low energy consumption, but also water and detergent conservation during the time the washing machines were in use.

In fiscal 2003, LCA techniques will be put in practical use to design products with even less burden on the environment. We are also planning on developing LCA methods that are appropriate for designing devices.

Comparison of CO_2 Emission Levels between Washing Machines Made in 1995 and 2001 Using LCA



*1: CO_2 generated during detergent production
*2: CO_2 generated during energy consumption of sewage treatment
*3: CO_2 generated during energy consumption of water purification

CO_2 emission during manufacture of parts and materials increased after plastic was replaced with recyclable iron for the outer covering, but an approximately 10% reduction in total CO_2 emission was achieved thanks to improvements in energy and water conservation during product use.

Sharp Green Seal Program

Since 1998, Sharp has introduced a Green Seal Program that certifies its products with superior features, especially those related to saving energy and safety. Product brochures of these products bear Sharp's original label—the Green Seal.

In fiscal 2002, Sharp revised the certification standards of the Green Seal Program to upgrade the evaluation criteria and establish them as fiscal 2003 standards. In fiscal 2003, we will work on creating a new certification system.

Green Seal

Green Seal Product Certification Standards in Fiscal 2003

Green Seal products are certified when products have completely met the "Green Seal basic standards", proving their comprehensive environmental consciousness as well as either of the "Green Seal individual standards" that give evidence of remarkable environmental consciousness.

Green Seal basic standards

Items	Detail
Saving energy	Less power consumption and standby power consumption when compared to previous model
3R	Easy separation and disassembly or upgradable
Safety	Uses lead-free solder in more than one circuit board
Packaging	• Abolishing the use of polystyrene foam • Reduced use of plastics or amount of wrapping material when compared to previous model

+

Green Seal individual standards

Items	Detail
Saving energy	Power consumption • Industry-leading model of each product category Standby power consumption • Industry-leading model of each product category • 0.1W or less (remote controlled products) • 1.0W or less (telephones, facsimiles, PCs)
3R	Resource savings during use • Industry-leading model of each product category (saving water and detergent, etc.) Compact/lightweight • Industry-leading model of each product category • Reduced by 30% or more when compared to previous model Recycled materials • Use of recycled materials (material recycling 1*)
Safety	Green materials • Abolishing use of halogen-based flame retardants, substituting polyvinyl chloride • Use of refrigerant with low global warming coefficient • Use of lead-free solder in all circuit boards • Abolishing the use of heavy metals (lead, mercury, hexavalent chromium, cadmium)
Eco Mark	Acquired Eco Mark • Acquired Eco Mark authorized by the Japan Environment Association
Others	Original technology • Sharp technology, the environmental consciousness of which can be evaluated objectively

*See page 29 for material recycling 1.

Energy-Creating Products

Photovoltaic Power Generation Systems

World's Largest Solar Cell Production Volume for 3 Consecutive Years

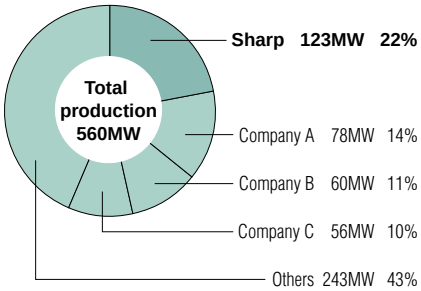
Sharp started developing solar cells*1 in 1959 and achieved mass production in 1963. Since then Sharp has been carrying out precise research and development for the last 40 years. Not only the world's top producer of solar cells in terms of volume, Sharp has also achieved the highest level in the world in module*2 conversion efficiency*3 (17.4%, NT-167AK; as of April 21, 2003). Also in May 2003, though still on the research level, the rate of cell*4 conversion efficiency reached 36.5%, the highest level in the world.

Sharp has a complete line-up of products depending on the needs of the market. They include high-power-output models for industrial use, low-power models for installing in street lamps, see-through and light-through types that can let outside sunlight in, and models suitable for severe environmental conditions such as briny air and strong winds. Our photovoltaic power generation systems play an important role in creating clean energy in various locations, such as office buildings, factories, public institutions, educational organizations and housing complexes.

We will continue to promote the increased use of photovoltaic power generation by improving energy conversion efficiency and lowering costs in our efforts to preserve the earth's environment.

*1: A semiconductor device that converts the energy of sunlight into electric energy.
*2: A group of connected solar cells covered with tempered glass to allow outdoor use.
*3: The rate of energy conversion from solar energy to electric energy.
*4: The minimum basic unit of a solar cell; silicon is crystallized to make a crystal pillar called an ingot, which is then cut into thin slices and made into an electrode.

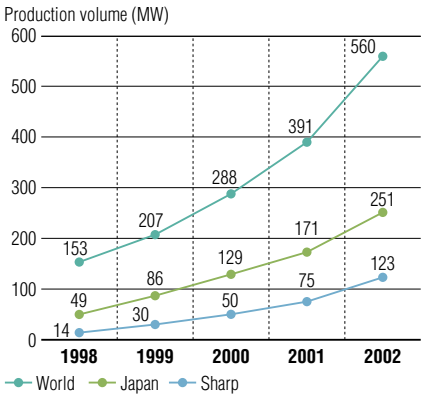
Solar Cell Production Volume and World Market Share in 2002



Sharp topped the world market share for the third straight year in solar cell production.

Source: PV News (May 2003)

Solar Cell Production

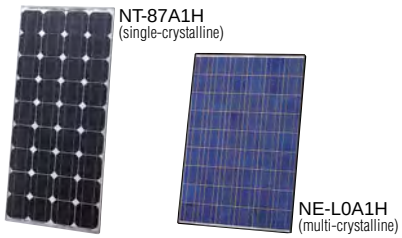


Source: PV News (May 2003)

Industrial Photovoltaic Module Lineup

Standard type	Corresponds to wide use
Large-sized high-power-output type	Efficiently generates large quantities of electricity
Strong wind-resistant type	Can be installed at high elevations where wind velocity is high
Low power type	Used in street lamps and indicator systems
See-through type (made to order)	Enables moderate lighting and is suitable for window use
Light-through type (made to order)	Suitable as an element of construction design; colored type also available

There are two different types of photovoltaic modules: single-crystalline, with cells consisting of one big crystal, and multi-crystalline, with cells consisting of many small crystals. The single-crystalline type has greater conversion efficiency whereas the multi-crystalline type is highly durable and suitable for mass production.



Japan's only NASDA-authorized solar cell manufacturer
Japan's National Space Development Agency (NASDA) installed Sharp solar cells in 143 satellites from 1976 to March 2003. The photo shows the world's first automatic docking of two satellites (Orihime and Hikoboshi).

Photo supplied by NASDA

Electricity supplied to more than 1,500 lighthouses
Sharp's solar cells supply a stable source of power to 1,585 lighthouses (as of end of March 2003) under severe conditions, such as damage from salt and gale. The photo shows the Onoe Island lighthouse in Nagasaki Prefecture, Japan.

Photo supplied by the Japan Coast Guard

Installation Examples

Nippon Institute of Technology
Won the Chairman of the New Energy Foundation in the 2000 New Energy Awards

"Advance 21 Kifune" apartment
Won the Minister of Economy, Trade and Industry Prize in the 2001 New Energy Awards

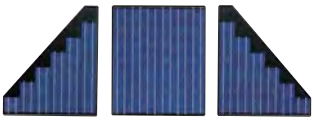
Hyogo Prefecture Nishi-harima government building
Won the Minister of Economy, Trade and Industry Prize in the 2002 New Energy Awards

Increased Use of Residential Photovoltaic Power Generation Systems

Sharp markets various types of photovoltaic modules for neat and efficient installation. You can take advantage of the subsidy system organized by the nation and your local self-governing community when you purchase. If excess power is generated, this power can be sold to electric power companies.

Sharp will continue to promote the increased use of photovoltaic power generation systems as society becomes more and more environmentally conscious.

Residential Photovoltaic Modules



Photovoltaic modules for hipped roofs (multi-crystalline)
NE-050BL NE-100BC NE-050BR

Roof tile-integrated photovoltaic modules are designed to harmonize with the appearance of residences (multi-crystalline)
NE-36K5F

High-efficiency single-crystalline photovoltaic module
NT-167AK
Achieves world's No.1 module conversion efficiency of 17.4% for a residential model

Installation Example

Solar Town in Matsudo, Chiba Prefecture, Japan
Won the Minister of International Trade and Industry in the 1999 New Energy Awards

Detailed information regarding photovoltaic power generation can be found in the following URL.
http://sharp-world.com/solar/index.html

Overseas Installation Examples

10.2kW self-sustaining photovoltaic power generation system brought to a village with no electricity (Qinghai Province, China)
Sharp staff member in charge: It was a 12-hour drive from Xining airport to the village at an altitude of 3,500 m. Villagers can only get one bucket of water per day and there are no bathing utilities in households. The fact that the villagers seem to feel no inconvenience made me think about the difference from our consumer lifestyles.
Jun Sugita, Junior Manager, Solar Systems Group
Photo: Villagers after finishing installation (Mr. Sugita is in the back row, first from left)

1.7MW photovoltaic power generation system in Germany (Sonnen, Bayern, Germany)
Photo supplied by CONERGY

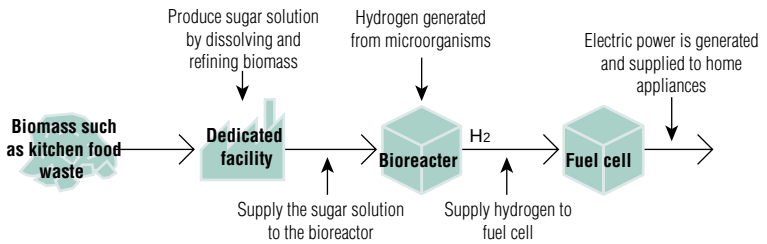
Research and Development of Bio Fuel Cells

Our Corporate Research and Development Group's Ecological Technology Development Center (Shinjo site) is doing collaborative research with Japan's Research Institute of Innovative Technology for the Earth (RITE) to develop basic technology for generating hydrogen using biotechnology.

Microorganisms are used to generate large amounts of hydrogen from biomass such as kitchen food waste. The hydrogen is then supplied to fuel cells. We are working on developing mainly fuel cells for household use and aiming for their practical utilization by 2010.

Research in fuel cell technology is progressing toward the goal of its practical use as a source of energy that does not depend on fossil fuel. Our research in the use of biomass is attracting attention as a beneficial method of meeting the challenges of waste reduction and global warming.

Process of Fuel Cells Using Biotechnology



Energy-Saving / Resource-Saving Products

AQUOS LCD TVs

LCD TVs Save Energy and Resources and Provide Long Service Life

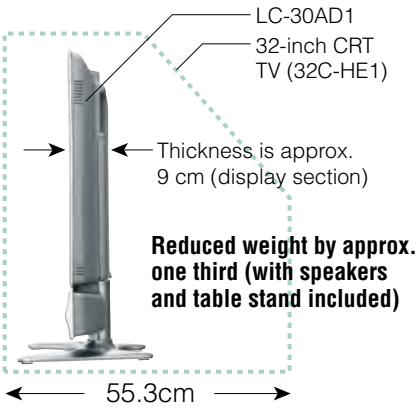
Liquid crystal displays outperform cathode ray tubes in energy savings and service life; they are also lighter and thinner.

For example, a 30-inch AQUOS LCD TV, compared with a CRT TV of equivalent size (32-inch), consumes 38% less power, is one-sixth the depth, and weighs only one-third the CRT TV.

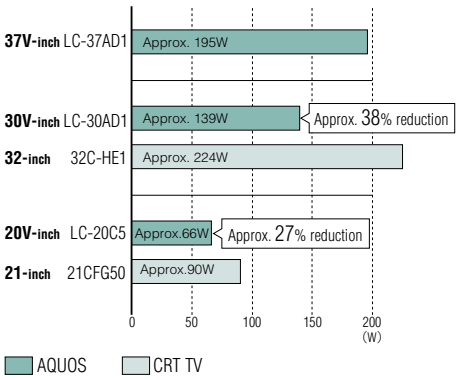
The long-life backlight is designed to give approximately 60,000 hours of service life (you can watch an AQUOS LCD TV for 16 hours a day for approximately 10 years). In addition, the LCD panel itself hardly deteriorates in performance, so you can enjoy bright, clear images for a long time.

In addition, Sharp incorporates environment-friendly materials in the AQUOS; non-halogen materials are used in its cabinet, the base stand is made of recycled plastic and main circuit boards use lead-free solder.

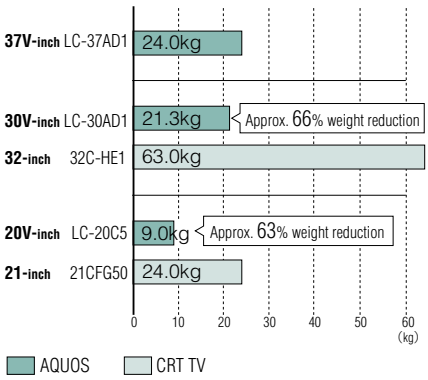
Comparison of Size in AQUOS and CRT TV (Sharp comparison)



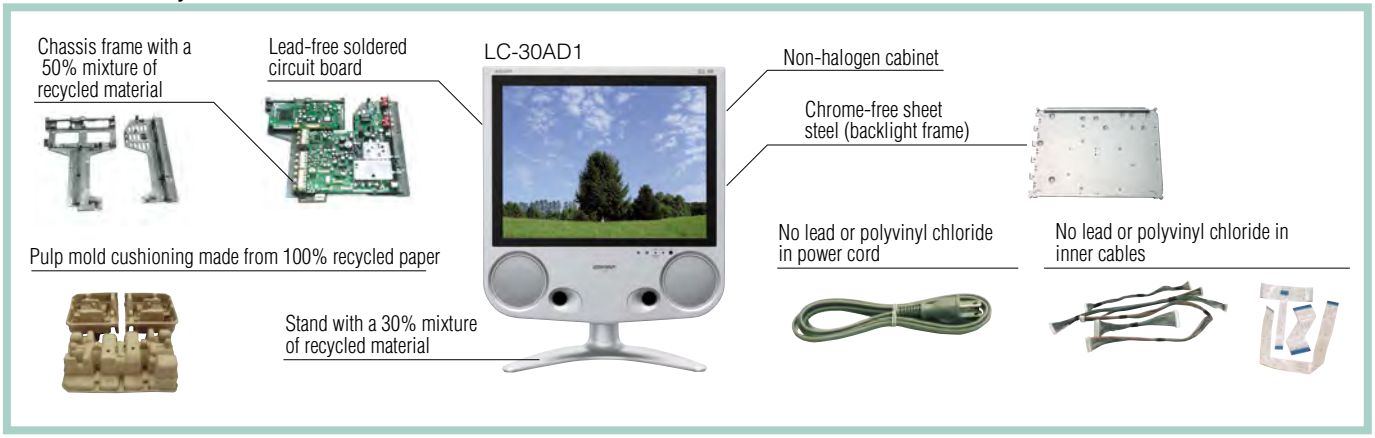
Comparison of Power Consumption in AQUOS and CRT TV (Sharp comparison)



Comparison of Weight in AQUOS and CRT TV (Sharp comparison)



Environmentally Conscious AQUOS



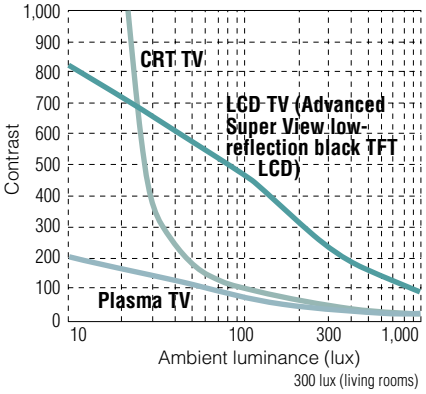
LCD's High Picture Quality

On an LCD TV, there is no flickering caused by scanning lines, resulting in less stress for the eyes, even during long viewing hours. Plus an LCD TV generates almost no ultraviolet light, which is harmful to your eyes.

Sharp's originally developed Advanced Super View TFT LCD effectively reduces screen glare caused by sunlight and indoor lights, and maintains high-definition picture quality and high contrast. It also provides wide viewing angles of 170° both vertically and horizontally.

The HDTV-ready LCD panel specially developed for 37- and 30-inch TVs achieves a high contrast ratio of 700:1 and displays black tones richly and deeply. And a faster response rate ensures clean and clear reproduction of high-speed moving images.

Comparison of Picture Contrast Between LCD, CRT and Plasma TVs



- The graph shows a comparison of three different kinds of TVs: CRT, plasma and Advanced Super View low-reflection black TFT LCD (our new HDTV-ready 37-inch LCD). In a dark place with a luminance of less than 25 lux, the contrast of CRT exceeds 800; however, with an ambient luminance of 25 lux or more, the contrast of LCD exceeds that of CRT.
- The luminance of a living room in an average household is 300 lux. Rooms illuminated by the afternoon sun have a luminance of approximately 1,500 lux.

Multifunction Digital Copier/Printers

Compact and Lightweight, with Excellent Energy Efficiency

Sharp developed a new high-quality LED write head that is 1/20 the volume and 1/6 the weight of previous write heads. Our tandem process color machine uses a large-capacity toner cartridge (capable of 20,000 copies in B&W and 11,000 copies in color) but has the smallest machine size*1 in the industry. In addition, Sharp's high-efficiency design obtained a 30% reduction in weight compared to previous Sharp models, resulting in a machine weighing only 67 kg*1, the lightest in the industry.

Furthermore, our copier/printer features energy-saving functions such as Auto Power Shut-Off Mode that automatically minimizes power consumption after a designated period of time in standby and Pre-Heat Mode. We achieved an energy consumption efficiency rate of 140Wh/h*2 (a 36% reduction compared to our previous machines).

*1: As of October 2002. Comparison of the main unit of a digital color copier/printer with a tandem printing engine and output speeds of more than 15 cpm (color A3 size).
*2: Energy consumption efficiency rate conforms to the Energy Conservation Law's copier measurement method.


AR-C260S

Hard Water Ion Washing Dishwasher

Reducing the Amount of Detergent and Water Used

Hard water is effective at dissolving protein-based stains, such as egg, that become hardened and difficult to remove otherwise. Sharp introduced an industry-first dishwasher equipped with an "ion exchange system" that makes hard water from tap water using table salt, and an "ultrasonic generating element" that generates a superfine steam mist before washing that surrounds food stains and makes them easy to remove. You can save a great amount of water and dishwasher detergent compared to washing by hand, because this machine provides powerful washing of ordinary stains without the need for dishwasher detergent.


QW-A60

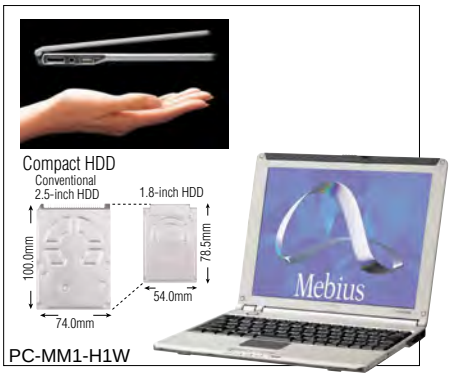
Notebook PCs

Durable, Thin-Profile Notebook is Resource-Saving

Using materials and devices such as magnesium and aluminum alloys and a compact 1.8-inch HDD that is only 5 mm thick, Sharp succeeded in achieving a super-thin, ultra-light notebook PC. Our original high-density mounting technology made possible a tough and sturdy body with the world's thinnest profile* of 13.7 mm (at the thinnest section) and the lightest weight* of approximately 950 g.

We are also keen to save energy by using low-power-consumption devices for its HDD and LCD.

*The thinnest and lightest for a notebook PC equipped with a 10.4-inch LCD (as of December 2002, Sharp survey).



PC-MM1-H1W

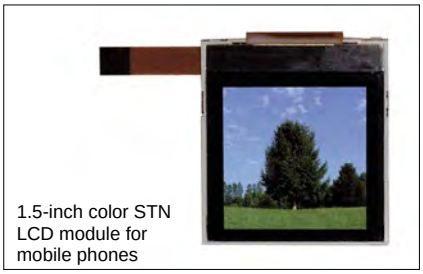
LCD Module for Mobile Phones

30% Cut on Power Consumption Without Dropping Brightness

To meet market needs for high brightness and low power consumption, Sharp succeeded in reducing power consumption without sacrificing brightness.

We developed a new backlight system that efficiently places two white LED light sources at both ends of the light guides. This allows a 30% reduction in power consumption compared to conventional backlight systems with three white LEDs installed.

Furthermore, this new backlight system is made of non-halogen materials.


1.5-inch color STN LCD module for mobile phones

Products that Create Clean Living Environments

Plasmacluster Ion Products

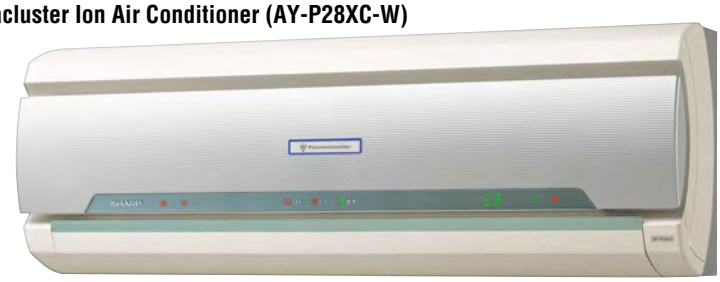
Plasmacluster Ion Technology Inactivates Airborne Mold and Viruses

Sharp developed the world's first Plasmacluster Ion air purification technology in 2000. This new technology, entirely different from conventional purifying methods using a filter to clean air, generates positive (H^+) and negative (O_2^-) Plasmacluster Ions from water molecules (H_2O) and oxygen molecules (O_2) in the air by plasma discharge, and releases them into the air. These ions fill every corner of a room and effectively inactivate not only airborne viruses and mold by surrounding and adhering to them, but also decompose nitric monoxide (NO), which is contained in tobacco smoke* and stench (acetic acid and styrene).

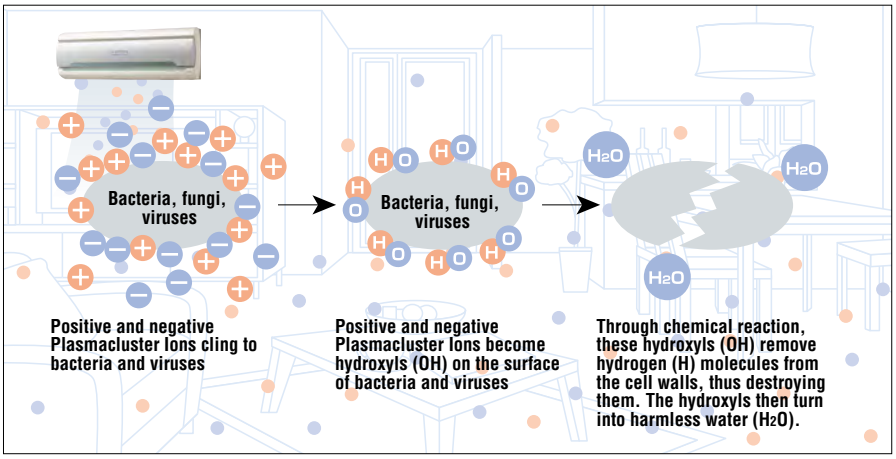
Plasmacluster Ion products are highly recognized for their dramatic efficacy and are being used in many places, such as public facilities, kindergartens, nurseries and general households. Sharp is expanding the range of Plasmacluster Ions to fields other than consumer electronics, such as shower toilets and automobiles.

*Harmful substances contained in tobacco smoke (such as carbon monoxide) cannot be removed.

Plasmacluster Ion Air Conditioner (AY-P28XC-W)

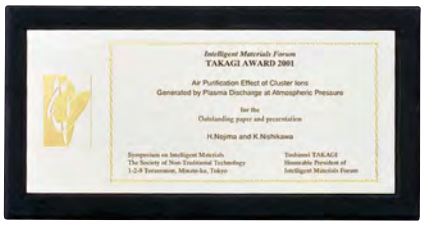


Mechanism of Plasmacluster Ion Technology



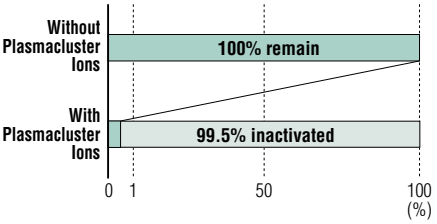
Highly Appreciated by Academic and Public Organizations, both Domestic and Foreign

The effect of Plasmacluster Ion technology has been demonstrated not only at Japanese research institutions but also overseas organizations such as the Lübeck Medical University in Germany and the Shanghai Municipal Preventive Medicine Research Institute in China. Our research has been announced at the Japanese Society for Virology, the top authority in viral research, and has been attracting the attention of many specialists in this field.



Plasmacluster Ion technology won the authoritative Takagi Award for the most outstanding technology at the Intelligent Materials Forum directed by the Japanese Ministry of Education, Culture, Sports, Science and Technology (March 2001).

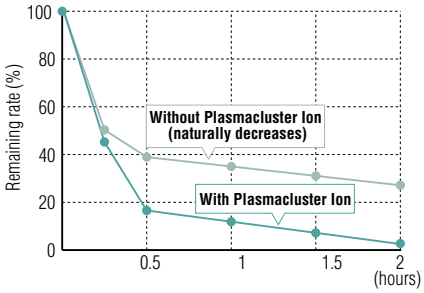
Test Result for Inactivation of Airborne Viruses



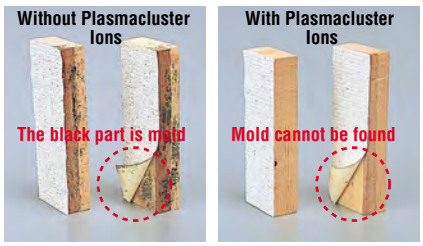
- Testing method: Single-pass method, which involves releasing airborne viruses (approx. 2,000 viruses in 300 liters of air) into a cylindrical container (5.5 cm diameter, 20 cm length) with a Plasmacluster Ion generator installed, letting the viruses pass through the container at 4 m per second, and then measuring the rate at which the airborne viruses were removed. As a comparison, the rate of existent airborne viruses is 100% without Plasmacluster Ions.
- Tested virus: airborne viruses
- Inactivating method: Release Plasmacluster Ions (200,000 ions/cm^3) into the container.
- Testing institution: Kitasato Research Center for Environmental Sciences

Plasmacluster Ion generator

Test Result for Inactivation of Airborne Fungi (mold)



- Operating mode: Plasmacluster Ion independent operation
- 4.9 m^2 area, indoor temperature 25°C, humidity level 42%RH
- Measuring method: Measured by counting the number of airborne fungi with an air sampler, at approx. 2 m from the air vent and 1.3 m above the floor surface.
- Inactivating method: Release Plasmacluster Ions into the air.
- Testing institution: Ishikawa Health Service Association



Experiment in mold propagation control (Sharp experiment)
Note: Mold that has already been propagated cannot be removed.

Plasmacluster Ion Products

Air purifier

In combination with a filter, this air purifier eliminates household odors.

Humidifier

This humidifier purifies air while maintaining comfortable humidity levels.

Refrigerator

Plasmacluster Ions surround airborne bacteria inside the refrigerator and suppress their propagation.

Vacuum cleaner

This vacuum cleaner not only cleans the floor but also purifies the air.

Dehumidifier

This dehumidifier dries damp laundry and prevents it from smelling musty.

Ceramic fan heater

Plasmacluster Ions help to purify air while humidifying and heating.

Personal air cooler

This portable air cooler provides clean, on-the-spot cooling.

Head of Project Team

Reproducing a physiological mechanism in electronics

Research on Plasmacluster Ion technology started in the fall of 1998 with the aim of "creating a healthy air environment." Our aim was to develop a technology to remove not only dust and bad odors but also viruses and microorganisms (mold) that are the primary cause of allergic diseases, which many people suffer from. At the time, the race for developing dust collection filters was becoming increasingly intense. However, we thought there were limits to the filtration method of purifying air so we came with the idea for a method that would effectively act on the entire air in a room. After many days of trial-and-error, we were finally successful in developing Plasmacluster Ion technology. As a matter of fact, the basic principle of this technology is the same as the immune reaction mechanism that occurs in the human body; in other words, we were able to reproduce a physiological mechanism in electronics. This new technology has attracted the attention of various industries, from which we are receiving a lot of inquiries. We intend to continue technical development to achieve the "ultimate air environment."

Dr. Hideo Nojima
(engineering doctor)
Deputy General Manager and
Project Chief
A1229 Project Team
Appliance Systems Group
Sharp Corporation

Fully Automatic Washing Machine with Ag^+ Ion Coating

Prevents Propagation of Bacteria in Clothes to Make Them Odor-Free

Silver is known for its ability to remove bacteria and prevent bad odors safely and effectively and is used in many different products such as tableware, deodorant/disinfectant sprays and purification filters for drinking water.

Sharp developed the world's first "disinfecting/deodorizing coating technology with Ag^+ (silver) ions" and applied it to our fully automatic washing machines. An ion generator ionizes silver, which is released into the rinsing cycle. A coating of Ag^+ ions forms on the clothes to give them a disinfecting/deodorizing effect until the next wash.

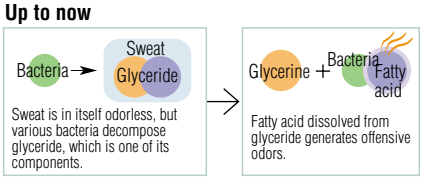
In addition, Sharp's washing machines are equipped with a hole-less spin-dry tub that eliminates water between the spin-dry and water tubs, making them the most water- and detergent-efficient washing machines in the industry*.

*As of October 2002.

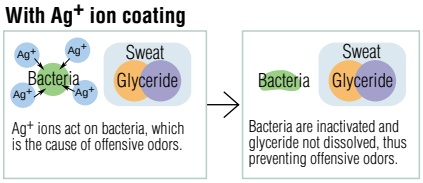
ES-U80D

How Ag^+ Ion Coating Controls Sweaty Odors

Up to now



With Ag^+ ion coating



Comparison of Antibacterial Effect in Conventional Rinsing and Ag^+ Ion Coating

Compared to conventional rinsing, Ag^+ ion coating greatly reduces bacteria propagation and prevents offensive odors.

Conventional rinsing | Ag^+ ion coating

- Testing institution: Kyoto Biseibutsu Kenkyusho
- Testing method: JIS L1902 "Testing for antibacterial activity and efficacy on textile products"
- Disinfecting method: Silver ions. The effect of silver ions lasts from drying to the next wash.
- Comparison: A piece of cloth rinsed in the conventional way and another piece of cloth coated with Ag^+ ions were each immersed in bacteria liquid. A comparison was then made after storing the cloths for 18 hours at 37°C.

Designing Products that are Safe to Use

Objectives for Fiscal 2002	Achievements
Construct a new chemicals inspection system for products	System construction completed
Use lead-free solder in 80% of new products manufactured in Japan	Target of 80% achieved
Use lead-free solder in 16 models of new products manufactured overseas	Used in 21 models

Objectives for Fiscal 2003
Initiate inspection of chemicals contained in parts and materials
Completely abolish use of lead solder in in-house designed circuit boards

Objectives for Fiscal 2005
Completely abolish use of six RoHS*-designated substances (in fiscal 2004)
Completely abolish use of lead solder (in fiscal 2004)

*An EU Directive. Details can be found on page 28; please refer to "Reduction of Other Harmful Substances."

Green Purchasing

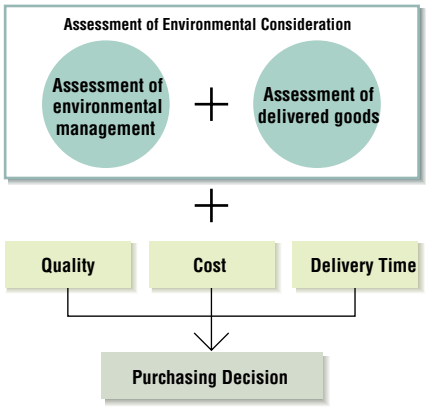
In fiscal 2000, Sharp formulated the "Green Purchasing Guidelines" and comprehensively implemented them through "Assessment of Environmental Management" and "Assessment of Delivered Goods" of our suppliers, therefore promoting the purchase of environmentally conscious goods and materials. Using our own system, we ranked our business partners between A and D. Those who attained a low rank were sent a Proposal of Improvement document along with a request that they implement the measures therein. As of fiscal 2002, we have carried out evaluations on 826 of our business partners (with transaction values of over 10 million yen).

In fiscal 2002, 55.1% of our business partners ranked A, 34.8% ranked B, 8.4% ranked C and 1.7% ranked D.

In fiscal 2003 we will emphasize the elimination of harmful substances in our parts and materials and based upon the assessment criteria that were decided by the Japan Green Procurement Survey Standardization Initiative*, we will widen the scope of our chemical substance content evaluations.

*A council through which Sharp and 33 other companies will endeavor to standardize Green Purchasing evaluation criteria for chemical substances contained in electric and electronic products.

Standards of and Decisions behind Green Purchasing



Green Purchasing Guidelines
(Japanese and English editions)

Main Criteria for Assessment of Environmental Management

1. Compliance with ISO14001 or EMAS*1
2. Activities related to environmental conservation: corporate principles, policy, objectives, organization, education and enlightenment
3. A Green Purchasing mechanism in place when parts and materials are procured
4. Public disclosure of the content and results of environmental conservation activities
5. Ability to supply MSDS*2 upon delivery of chemical substances

*1: Eco-Management and Audit Scheme: the environmental management system and auditing rules in the EU.
*2: Material Safety Data Sheet: States the composition, toxicity, legal restrictions and appropriate methods of handling chemical materials.

Sharp hosts an explanatory meeting on evaluation of substances that place burden on the environment for its business partners.

Main Criteria for Assessment of Delivered Goods

1. The items purchased are packaged in an environmentally conscious manner
2. Elimination of toxic chemical materials, including substances prohibited under Japanese law; carcinogenic substances or chronically toxic substances; or chemical substances stipulated by environmental laws, major European laws or Sharp's internal criteria
3. Resource saving measures such as reducing the use of materials, using recycled materials and recycling
4. Reduce energy consumption of products or units that use electricity

For the latest version of our Green Purchasing Guidelines in PDF format, please point your browser to the following URL:
http://www.sharp.co.jp/corporate/eco/01tyoutatsue.pdf

Our Approach to the Abolition of Lead Solder

As lead poses a threat to both our bodies and the natural environment, we at Sharp are progressing towards total abolition of the use of lead.

Starting with the introduction of the use of lead-free solder since the latter half of fiscal 2000, in March 2001, we formulated the "Lead-Free Solder Introduction Guidelines," which was implemented in production sites in Japan and overseas.

In fiscal 2002, of the 159 new product models that were produced in Japan, 127 models used lead-free solder. Of the 209 new product models that were produced overseas, 21 models used lead-free solder.

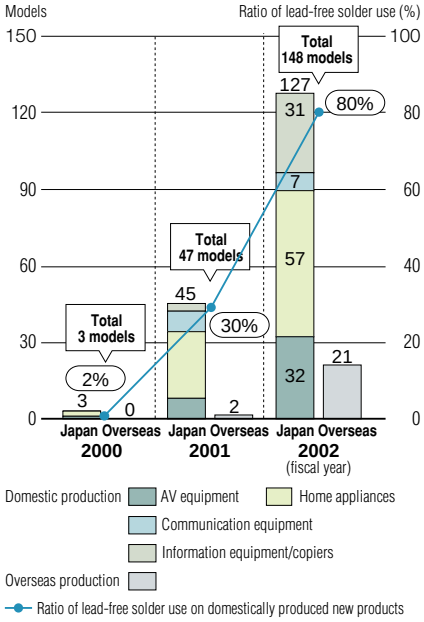
During fiscal 2003, we will abolish the use of lead solder in our in-house designed circuit boards. In fiscal 2004 we will extend this requirement to parts and circuit boards that we purchase from third-party suppliers and our plan is for all our new products to be lead-free.

In addition, during fiscal 2003 we also plan to publish "Lead-Free Solder Introduction Guidelines Ver. 2," which will include an explanation of soldering technologies.

Lead-Free Solder Introduction Guidelines
(Japanese, English and Chinese editions)

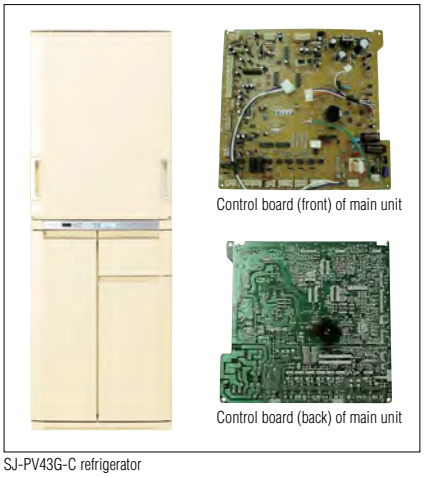
Briefing meeting on the introduction of lead-free solder at SOCC (China)

Comparison in Number of Models Using Lead-Free Solder



Examples of Products with Lead-Free Solder

LS071X7LA01 7.1-inch LCD module for mobile PC use



Control board (front) of main unit

Control board (back) of main unit

SJ-PV43G-C refrigerator

Reduction of Ozone Layer Depleting Substances

In the past, Sharp did use substances that caused the depletion of the ozone layer in products such as refrigerators and air conditioners, but with the exception of one model series of air conditioners, the switch to non-ozone depleting substances is complete.

We are advancing in the conversion of HCFC (hydrochlorofluorocarbon), which was used as the refrigerant in air conditioners, with HFC (hydrofluorocarbon) that have a zero impact coefficient on the ozone layer. Of the Sharp-brand products aimed at the Japanese market, by October 2002 all domestically manufactured products had been converted. Regarding overseas manufacture, it is planned that all products shipped after October 2004 will be converted to the new coolant.

CFC (chlorofluorocarbon) was used as a foaming agent for thermal insulating material in refrigerators, but was totally replaced by November 1994 by an alternative material that posed no threat to the ozone layer—cyclopentane. The CFC that was used as a refrigerant was also replaced by October 1995 with HFC that has a zero impact coefficient on the ozone layer. Moreover since July 2002, we have progressed with the replacement of HFC with isobutene, which has a much smaller impact coefficient on global warming.

Reduction of Other Harmful Substances

Sharp is working to reduce halogen compounds, which under certain conditions of incineration, are the cause of dioxin. We have also adopted the use of chrome-free sheet steel. Moreover, with regard to the shielding material for power cords, since fiscal 2001 we have been sequentially replacing conventional materials with those that are both lead-free and cadmium-free and from fiscal 2002 these will be made polyvinyl chloride-free.

In addition to these measures, due to the promulgation of the EU directive on the "Restriction on the use of certain Hazardous Substances = RoHS*," from fiscal 2003 we will investigate whether our parts and materials contain substances targeted by the RoHS directive and replace those substances. As the guidelines set out in the RoHS directive affect the Green Purchasing mechanism, we will phase out the use of all the targeted substances during fiscal 2004.

*RoHS demands that manufacturers entirely abolish the use of heavy metals (lead, mercury, cadmium, hexavalent chromium) together with specified bromine-based flame retardant materials (PBB, PBDE), in products released after July 1, 2006, in the EU.

Developing 3R* Design Technologies

* 3R: Reduce (reduce waste), Reuse (reuse products/parts), Recycle (recover and recycle materials)

Objectives for Fiscal 2002 → Achievements		Objectives for Fiscal 2003	Objectives for Fiscal 2005
● Expand the line of products that use recycled plastic materials	→ **Put technology for repeatedly recycling and using waste plastic into practical use Recovered and recycled three plastic parts for use in new refrigerators and air conditioners**	● Develop technology to separate and sort mixed plastics	● Put mixed-plastic separation/sorting technology into practical use
● Conduct disassembly tests of easy-release parts	→ **Conducted disassembly tests on LCD TVs**	● Develop mass-production technology for easy-release fasteners	● Apply easy-release fasteners in LCD application products
● Start development of LCD TV recycling technology	→ **Instituted LCD TV recycling study meeting**	● Study recycling technology for major parts	● Establish LCD TV recycling technology

Developing Closed-Loop Recycling Technologies for Plastic Materials

To achieve higher recycling rates for discarded consumer electronics, the recycling rate for the plastics that account for a large percentage of the raw materials used in them must be improved.

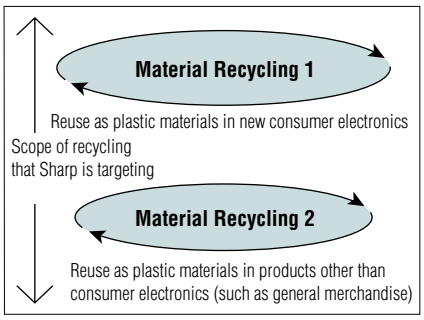
Beginning in 1999, Sharp began efforts to develop closed-loop recycling technologies for polypropylene (PP) and polystyrene (PS), more of which are used than any other polymer material. We have already begun to recycle polypropylene wash tubs from scrapped washing machines and reuse the material in new wash tubs, but in fiscal 2002, we put a technology into practical use to recycle the PP and PS resins of three parts, such as the rear cabinets of TVs, for use in new refrigerators and air conditioners.

Sharp has also successfully developed the industry's first technology to easily evaluate the level of degradation in recovered plastics, as well as a formula (additive) to arrest this degradation. This technology makes it possible to repeatedly recycle and reuse recovered PP and PS in new product parts without loss of material quality.

In fiscal 2003, we plan to utilize a total of 320 tons of recycled plastic (120 tons in refrigerators and air conditioners, and 200 tons in washing machines) produced using these technologies in new products.

Future plans call for further development of separation and sorting technologies for mixed plastics, and their implementation.

Steps in Recycling Plastics from Discarded Consumer Electronics



Development of Material Recycling

Recovered part	Material	Technologies	Recycled as	Quantity of recycled material used (tons/year) Fiscal 2001	Fiscal 2002	Fiscal 2003
Washing machine wash tubs	Polypro-pylene	• Restore/adjust properties • Improve service life	Washing machine wash tubs	40	80	200
Washing machine spin-dry tubs	Polypro-pylene	• Restore/adjust moldability • Improve service life	Refrigerator parts	—	—	50
TV rear cabinets	Polypro-pylene	• Select/sort non-incombustible PP • Improve service life • Improve heat resistance	Air conditioner parts	—	—	20
		• Select/sort non-incombustible PP • Improve service life • Improve heat resistance	Refrigerator parts	—	—	30
Refrigerator shelf boards	Poly-styrene	• Select/sort materials • Restore/adjust properties • Improve service life	Refrigerator parts	—	—	20
			Totals	40	80	320

Developing Easy-Release Fasteners

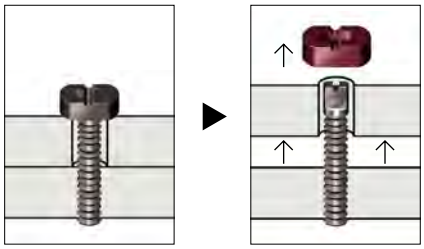
Since fiscal 2002, Sharp has been developing fasteners designed to facilitate disassembly when a product is recycled. In fiscal 2002, we developed prototype shape-memory alloy screws and shape-memory resin snap-fit fasteners*1 that unfasten merely with the application of heat. These fasteners were installed in LCD TVs, and subjected to proof-of-concept tests for disassembly*2.

These tests confirmed that products can be disassembled by passing them through an oven. We were also able to pinpoint issues that will require future study before they can be applied in actual products, such as the most efficient way to convey heat to the shape-memory parts.

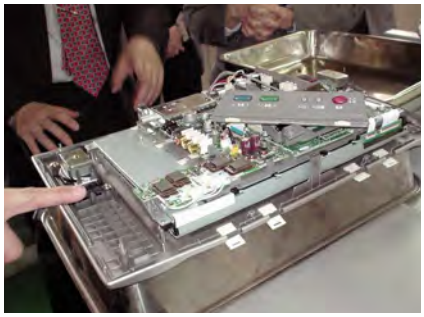
Our intention is to use these easy-release fasteners in actual products by fiscal 2005, with the goal of using unmanned disassembly processes to achieve efficient recycling.

*1: A cantilever-shaped fastener with a latching tab.
*2: Jointly developed with NEC Tokin, Inc. as a research business commissioned by the Manufacturing Science and Technology Center, Ministry of Economy, Trade and Industry.

Easy-Release Screw (working example)



The head made of a shape-memory material expands with the application of heat, causing it to come unfastened from the threaded shank.



Disassembly test for easy-release screws

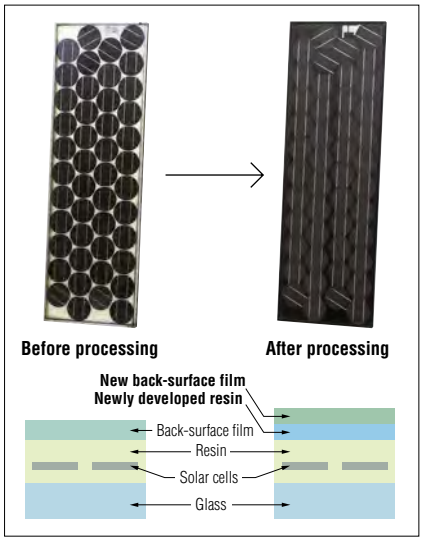
Developing Technologies to Reuse Photovoltaic Modules

In fiscal 2002, we developed a technology* to enable photovoltaic modules that have been in service for long periods to be reconditioned. In this approach, a newly developed resin is used to form a new back-surface film, enabling the solar cells, front-surface glass and module-encapsulating resin to be re-used "as is."

The market for photovoltaic power generation systems continues to grow rapidly, and in the near future, the industry will face the emerging problem of how to dispose of used photovoltaic modules. Our R&D efforts to solve this problem will continue as we work to develop the basic technologies and conduct the field tests needed to ensure that these reconditioned photovoltaic modules can be put to practical use.

*Conducted as part of the R&D Initiative for Recycle/Reuse Processing Technologies for Photovoltaic Power Generation Systems sponsored by NEDO (New Energy and Industrial Technology Development Organization).

Before and After Comparison of Photovoltaic Modules Processed Using Reconditioning Technologies



Process to Recondition Photovoltaic Modules

Check exterior of module to be reused and verify electrical properties

↓

Remove aluminum frame and terminal box
Strip off back-surface film

↓

Form new back-surface film
Mount in new aluminum frame; install new terminal box

↓

Inspect external appearance; test electrical properties

Studying Technologies to Recycle LCD TVs

LCD TVs are on the verge of coming into widespread use, and the market for these innovative products is expanding rapidly. To cope with waste disposal in the future, we launched the LCD TV Recycling Study Group in fiscal 2002.

This research group is working to unify our efforts related to developing recycling policies by sharing the latest information emerging out of discussions and debate by the Industrial Structure Council*1 and JEITA*2. This group is investigating the composition of LCD TVs, and the types and quantities of parts (materials) used in them, and is compiling basic data gathered from disassembly operations and from the manufacturing sector.

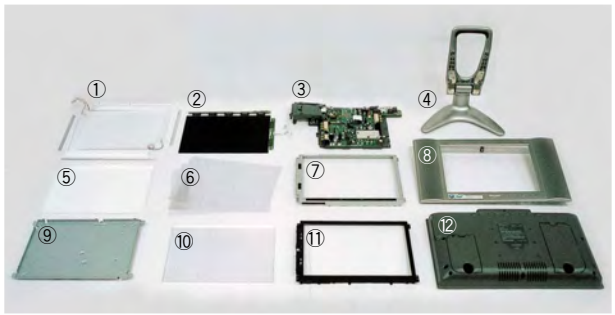
The results of this research will be used as a basis on which to move forward with efforts to improve the recycling rate for LCD TVs, such as studying technologies for recycling structural parts.

*1: An advisory body reporting to Japan's Minister of Economy, Trade and Industry charged with studying important public policy issues related to industrial structure.

*2: Japan Electronics and Information Technology Industries Association is a new industrial organization in Japan active in the fields of electronics and IT (information technology). Formed on November 1, 2000, by the merger of the Electronic Industries Association of Japan (EIAJ) and the Japan Electronic Industries Development Association (JEIDA).

LCD TV Recycling Study Group

Structural Parts in an LCD TV



① Fluorescent light unit (lamp, reflective sheet, lamp holder)
② LCD panel
③ Substrate unit
④ Stand
⑤ Reflective sheet
⑥ Optical layer (diffusion sheet, lens sheet)
⑦ LCD front shield case
⑧ Front cabinet
⑨ LCD rear shield case
⑩ Light guide plate
⑪ Polymer resin chassis for LCD
⑫ Rear cabinet

Recycle Design Guidelines for Four Home Appliance Products

In December 2001, we formulated our "Guidelines for Recycle-Conscious Product Design" for four products subject to regulation under the Home Appliances Recycling Law—air conditioners, TVs, refrigerators and washing machines. These guidelines compiled the results of studies to identify problems encountered at recycling sites related to product disassembly and the selection and processing of materials. They describe design techniques intended to improve the recycling rate and include illustrated examples of disassembling processes and disassembly difficulties. The guidelines were introduced to our domestic product design divisions as soon as they were formulated and approved, and introduced to overseas divisions in fiscal 2002.

We plan to expand the target appliances beyond the four mandated by law, and will revise the guidelines to cover four additional products in fiscal 2003—LCD TVs, microwave ovens, clothes dryers and kerosene heaters.

Guidelines for Recycle-Conscious Product Design (Japanese and English editions)

Guidelines for Promoting Green Factories

Green Factory Concept and Guidelines

Sharp is promoting a 10-concept Green Factory program in order to attain high-level production, maintain harmony with the local community and nature, and reduce environmental burden.

The "Green Factory Guidelines" are the foundation of the program and outline the company's ISO14001-based environmental management system and targeted values for environmental performance. It also supplies basic policies and practices to achieve the values.

We introduced the guidelines to all production sites in Japan in fiscal year 1999 and to all overseas production sites in fiscal 2001.

Green Factory Guidelines
(Japanese and English editions)

Ten Green Factory Concepts

Greenhouse gases Minimize emission of greenhouse gases	**Energy** Minimize energy consumption
Waste Minimize discharge of waste	**Resources** Minimize resource consumption
Chemical substances Minimize risk of environmental pollution and accidents caused by chemical substances	**Atmosphere, water, soil** Minimize environmental burden on the atmosphere, water and soil
Harmony with nature Endeavor to preserve nature both on and off site	**Harmony with the community** Encourage harmony with the local community
Environmental consciousness High environmental awareness among employees	**Information disclosure** Disclose information on the environment

Commitment to Super Green Factories

Sharp will conduct environmental impact assessments, starting from the planning stage, before constructing new factories. These "super green factories" will be even more environmentally friendly than "green factories."
By objectively defining in advance the environmental measures to be taken and the target levels to be achieved, we are determined to create the latest factories that place a minimal burden on the environment and that make Sharp trusted by the local community.

Creating a Super Green Factory

Green Factory Concept + **Environmental Impact Assessment Approach**

A third party objectively assesses the factory's environmental performance and performance evaluation items are defined on the basis of the assessment results.

↓

Apply Quantified Environmental Performance Evaluation Items

↓

Realization of Super Green Factory
The factory must meet more than 90% of criteria defined in the evaluation items.

Our Kameyama Plant is a state-of-the-art facility planned and designed as a Super Green Factory.

The Kameyama Plant — A Super Green Factory

The Kameyama Plant (Kameyama, Mie Prefecture), currently under construction and planned to go on line in January 2004, is Sharp's latest manufacturing facility for LCD TVs. With this plant, Sharp aims to create a business model that serves as the ultimate example of economic efficiency, social mindedness and environmental conservation.

The plant will integrate the production of LCD panels and LCD TVs, thus creating a synergistic effect of reduced lead-time and development technologies. This will greatly improve efficiency, add higher value and strengthen price competitiveness. Eliminating the transport of LCD panels between different plants means less packaging material is needed and less CO_2 and nitrogen oxide will be emitted from transport vehicles.

With this cutting-edge Green Factory, Sharp will use its existing environmental conservation technologies as well as add new technologies to dramatically reduce burden on the environment.

(1) Installation of Cogeneration System* Using LNG (liquefied natural gas)

A cogeneration system will supply the plant with about one-third of its annual electricity and will utilize waste heat for air conditioning. This will reduce CO_2 emissions by about 40% over the current level. LNG will be supplied through pipelines, eliminating the CO_2 and nitrogen oxides caused by tanker truck transportation.

* An energy-saving system which produces electricity from city gas and utilizes the resulting waste heat for air conditioning, hot-water supply, and steam power production.

(2) Installation of Light-Through Type Photovoltaic Modules

The wall of the plant will have about 600 photovoltaic modules.

(3) 100% Water Recycling in the Production Process

The plant will collect all the wastewater from the production process (max. 9,000 tons a day) and recycle it with water purification techniques using microorganism treatment.

(4) Zero Discharge to Landfills

For process waste as well, the plant is designed to be a "zero emission" facility from the start of operations, reducing discharge and reusing and recycling as much waste as possible with diverse technologies and know-how.

(5) Harmony with the Community and Nature

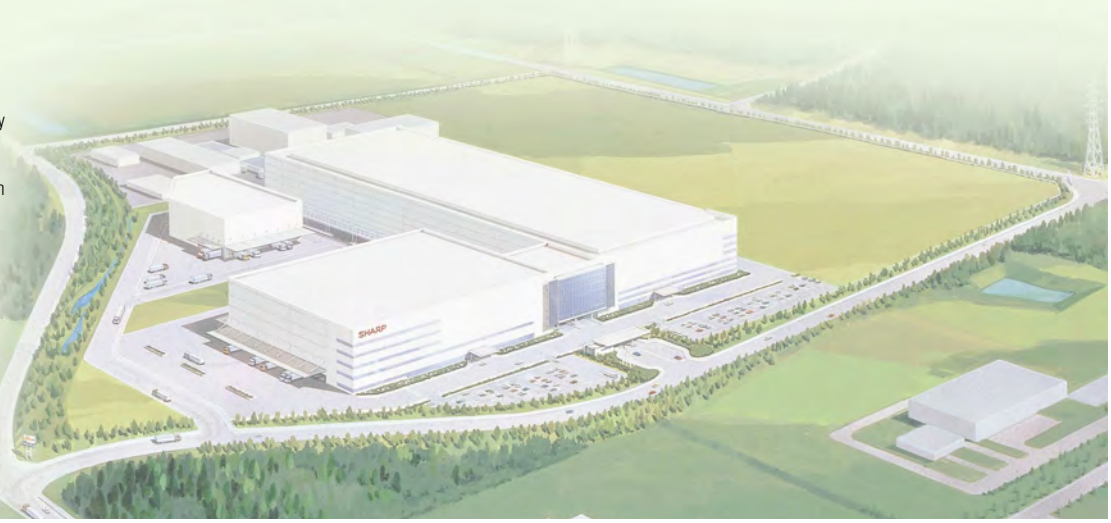
The construction of this LCD TV plant, the largest in the world, will have a significant impact on the local community from both economic and social perspectives. We are actively working toward the preservation of natural surroundings and the establishment of a natural park through collaboration with government, industry, and local residents so that all parties will appreciate the plant.

A Plant that People Know and Trust

The Kameyama Plant will not only reduce environmental burden through its production activities but also through the construction of the plant itself.
For example, we have moved some of the trees at the construction site to another place and we will replant them around the facility after completion of construction. Other trees that had to be cut down were processed into wood chips to be used as fertilizer for the surrounding green space. Additionally, Sharp and other companies are constructing a nature park in the corner of the industrial complex. We plan to release indigenous fish caught by local volunteers into an artificial pond in the center of the park. In this way, we are trying to restore the local ecosystem as much as possible.
Furthermore, Sharp is promoting a project in cooperation with the local government, industry and citizenry to set aside an area of forestland on the west side of the plant where people can enjoy nature.

Kouki Narita, Manager
Kameyama Plant Construction Project Team
Mie-Kameyama Production Group
Sharp Corporation

Kameyama Plant (conceptual drawing)
With a site area of about 330,400m^2, the plant will start full-fledged operations in January 2004. The plant uses the world's largest mother glass substrates, and its high-efficiency production lines eliminate wasted work and shorten production lead-time. The plant will make Sharp cost competitive in the LCD TV field, where fierce competition is expected in the future.



Reducing Greenhouse Gas Emissions

Objectives for Fiscal 2002 → Achievements	Objectives for Fiscal 2003	Objectives for Fiscal 2005
Reduce CO_2 emissions per production unit*	Reduce CO_2 emissions per production unit	Reduce CO_2 emissions per production unit
● Japan: At product production sites by 2% against previous year → **28% reduction** At device production sites by 5% against previous year → **20% reduction**	● Japan: At product production sites by 2% against previous year At device production sites by 5% against previous year	● Japan: At product production sites by 2% against previous year At device production sites by 5% against previous year (reduce fiscal 2010 level by 25% against fiscal 1990 level)
● Overseas: By 2% against previous year → **5.2% increase against previous year**	● Overseas: By 2% against previous year	● Overseas: By 2% against previous year
Total 13.1% reduction for Sharp Group		

* An indicator of the amount of CO_2 emitted to manufacture a specific quantity of products (= CO_2 emissions ÷ production output).

Controlling CO_2 Emissions

Sharp uses an indicator called "per production unit" to evaluate the reduction of CO_2 emissions.

In fiscal 2002, the Sharp Group reduced CO_2 emissions per production unit by 13.1% as compared to the previous year. This is because Sharp had only a 3.7% increase in CO_2 emissions while achieving a 19.1% increase in production output. For production in Japan, we reduced CO_2 emissions per production unit by 20.7% from the previous year.

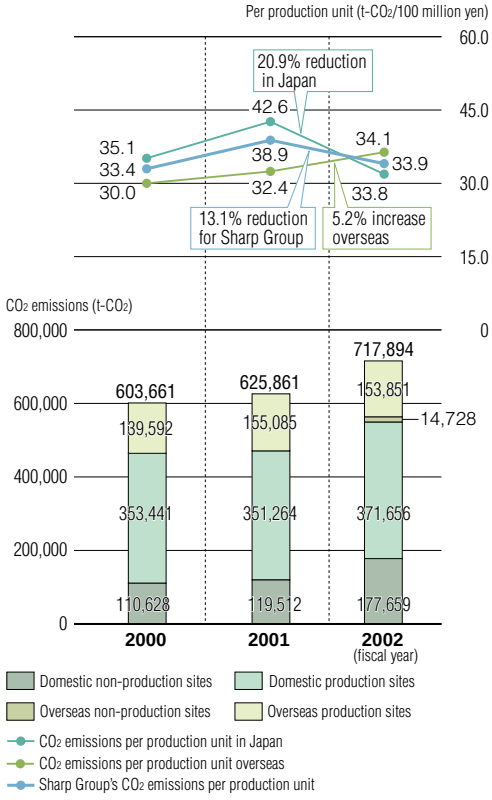
Our product production sites in Japan will continue to steadily cut back on CO_2 emissions with the expanded production of high-value-added items such as LCD TVs and camera-equipped mobile phones and with the implementation of energy-saving measures.

Our domestic device production sites have also achieved a substantial drop in CO_2 emissions compared to the previous year, with increased production of LCD panels and solar cells, the conversion from heavy oil to natural gas, which cuts CO_2 emissions, and an improvement in production processes.

As for overseas production, CO_2 emissions per production unit rose by 5.2% as compared to the previous year, with a 5.7% decrease in production output accompanied by only a 0.8% drop in CO_2 emissions.

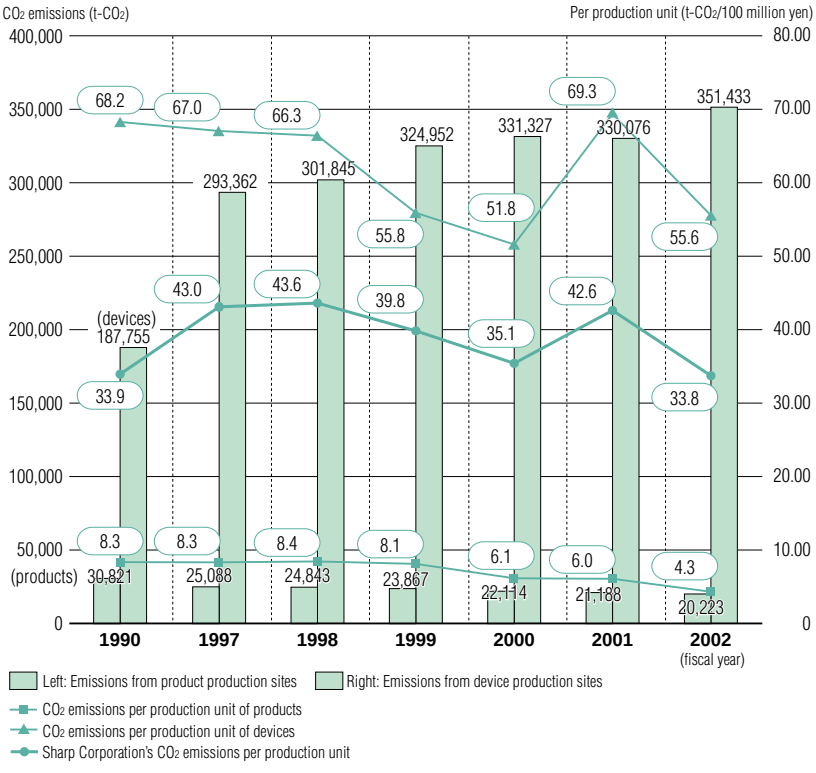
As well as stepping up such efforts at the existing plants, we will actively strive to reduce CO_2 emissions at new plants with the use of CO_2 emission-reduction technologies and the installation of systems using natural energy and cogeneration.

Sharp Group's CO_2 Emissions Per Production Unit



● Japanese sites include subsidiaries and affiliated companies as of fiscal 2002.
Overseas sites include non-production sites as of fiscal 2002.
Per production unit is calculated from production-related CO_2 emissions.

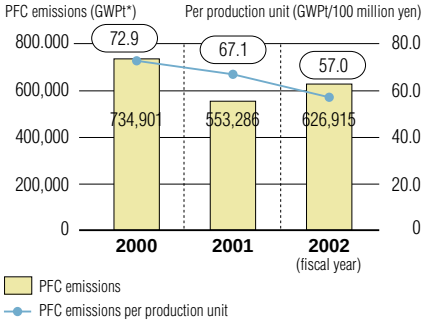
CO_2 Emissions Per Production Unit by Business Category for Sharp Corporation Production Sites in Japan



Controlling Emissions of Other Greenhouse Gases

Sharp uses PFCs in the production process for LCD panels and semiconductors. Since PFC is several hundred to several tens of thousand times as strong a greenhouse gas as CO_2, Sharp has established voluntary targets for reducing PFC emissions and is working to ensure that emission levels continue to fall by switching to gases with a lesser greenhouse effect and by installing scrubbers to reduce damage from greenhouse gases.

Sharp Group's PFC Emissions Per Production Unit

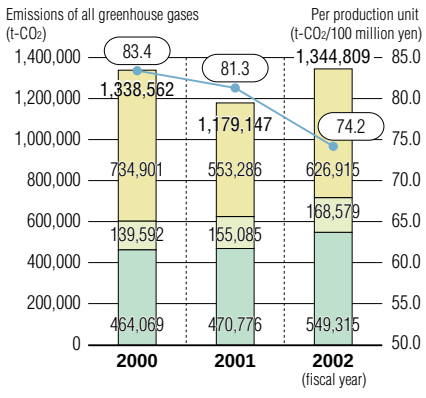


*The value of the scale of impact on global warming in terms of CO_2 weight, obtained by multiplying the GWP (global warming potential).

Controlling Sharp Group's Emissions of All Greenhouse Gases

In fiscal 2002, the Sharp Group reduced emissions of both CO_2 and PFCs per production unit as compared to the previous year, resulting in an 8.7% reduction per production unit in total.

Sharp Group's Emissions of All Greenhouse Gases Per Production Unit



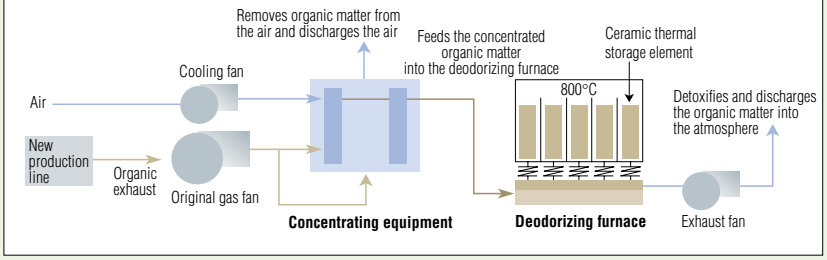
• Per production unit is calculated from production-related CO_2 emissions.

Examples of Greenhouse Gas Emission Reduction

Energy Saving in CG-Silicon LCD Panel Production

Our Tenri Plant has installed various energy-saving equipment to its production line for next-generation power-and-space-saving LCD panels (System LCDs).
In particular, we installed our first regenerative thermal oxidizer, which deodorizes and detoxifies volatile organic exhaust from the production line by burning it at temperatures of more than 800˚C. The equipment collects waste heat generated in the deodorization process and enables us to save 50% of the city gas needed for raising the temperature inside the deodorizing furnace. These efforts have borne fruit in the form of CO_2 emission reductions of 1,009 tons a year.

Flowchart for the regenerative thermal oxidizer

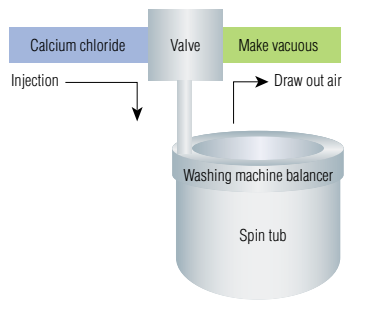


Reducing Production Process Energy

Our washing machine manufacturing plant at the Yao site has saved energy in the production process for washing machine balancers (which keeps the spin tub in balance) by using a new method of injecting calcium chloride.

Previously, calcium chloride was injected using a metering pump with the injection needle inserted into the balancer. Under the new method, the chemical is injected using the pressure difference caused when a vacuum is induced in the balancer. This technical innovation has shortened operating hours and reduced electric power consumption to one-third.

Vacuum injection method



Reducing PFC Gas Emissions from IC Plants

In March 2003, our Fukuyama Plant switched from C_2F_6 gas to C_3F_8 gas, which has a lower GWP, for the manufacture of semiconductors, resulting in 50% less gas used. This will cut back on PFC emissions during 2003 by about 90,000t-CO_2 compared to the previous year, the equivalent of 22% of the total PFC emissions from the Fukuyama Plant. Furthermore, the use of equipment to reduce damage from greenhouse gases is expected to give a 45,000-ton reduction in future, resulting in a total emission reduction of 35%.

Installing Photovoltaic Power Generation Systems

Sharp is working to equip all production sites in Japan with photovoltaic power generation systems. The Kameyama Plant, scheduled to start operations in January 2004, has about 600 light-through type photovoltaic modules.

Photovoltaic power generation system at Kameyama Plant (front of building)

Minimizing and Recycling Waste

Objectives for Fiscal 2002	Achievements	Objectives for Fiscal 2003	Objectives for Fiscal 2005
● Japan: Achieve zero discharge to landfill*1 for second consecutive year at all production sites (Landfill disposal rate: 0.5% or less)	→ **Zero discharge to landfill was achieved with landfill disposal rate of 0.06%**	● Japan: Achieve zero discharge to landfill for 3rd consecutive year, convert waste to valuable recycled material ● Overseas: Reduce amount of waste per production unit by 2% against previous year	● Japan: Make outsourcing costs for waste processing equal to sales of valuable recycled waste ● Overseas: Reduce amount of waste per production unit by 2% against previous year
● Overseas: Reduce amount of waste per production unit*2 by 2% against previous year	→ **Increased by 9.3% against previous year**		

*1: Zero discharge to landfill is defined as reducing final landfill to a disposal rate (amount of landfill disposal ÷ amount of total emissions x 100) of less than 0.5%.
*2: An indicator of the amount of waste generated to manufacture a specific quantity of products.

Reducing the Amount of Waste

Compared to the previous year, the total amount of waste increased 17% in Japan in fiscal 2002. This increase is due mainly to spent developer discharged from LCD production at the Mie Plant, which started full-fledged operation of a new line the same year.

With the Kameyama Plant starting production within fiscal 2003, domestic waste is expected to increase. We will strive to minimize discharge of waste based on Sharp's "Waste Emission Control Manual" and recycle as many waste materials as possible, leading to a decrease in final landfill disposal.

Waste Emission Control Manual
(Japanese and English editions)

Zero Discharge to Landfill in Japan for the Second Consecutive Year

We achieved zero discharge to landfill at all production sites in Japan in both fiscal 2001 and 2002. The landfill disposal rate was 0.06% in fiscal 2002, just half the fiscal 2001 level of 0.12%.

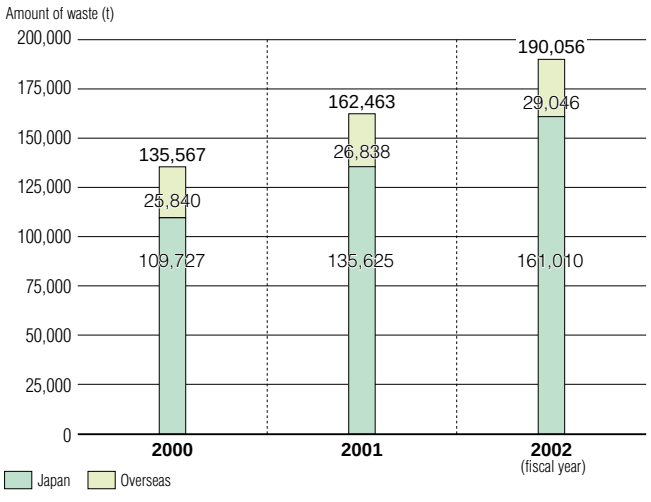
Several factors contributed to the decreased landfill disposal rate. We continued reducing and recycling waste by thoroughly separating materials to be processed and by using originally developed intermediate in-house treatment techniques. We also carried out thermal and material recycling of waste plastics.

In addition, we have been carrying out more in-house intermediate treatment with the installation of advanced spent developer concentrating equipment at our Tenri Plant, a move that contributed to a reduction in landfill disposal rate. This equipment is capable of concentrating spent developer by up to 100 times, compared to 10 to 18 times for conventional systems. The equipment was installed to handle the increased amount of spent developer generated with the start of operations of the new System LCD production line.

We will continue from this fiscal year to implement the zero discharge to landfill program and have plans to make new facilities, such as the Kameyama Plant, achieve zero discharge to landfill from the start.

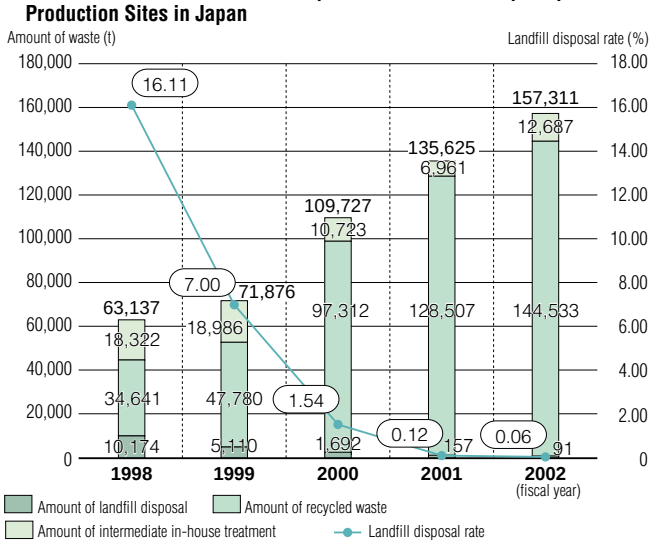
We have also been stepping up efforts to recycle waste and convert it into valuable material from fiscal 2003. Our aim is to have sales of valuable recycled material equal to expenses for outsourcing waste processing by fiscal 2005.

Amount of Waste Generated from Sharp Group



• Japanese sites include subsidiaries and affiliated companies as of fiscal 2002.
Overseas sites include non-production sites as of fiscal 2002.

Amount of Waste and Landfill Disposal Rates from Sharp Corporation Production Sites in Japan

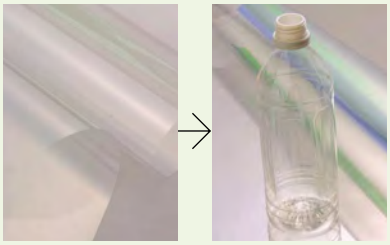


Examples of Waste Reduction

Recycling Waste into Valuable Resources

At our Mie Plant for LCD panel manufacture, we have since October 2002 been recycling waste base films discharged from the color filter process into material for PET bottles and plastic cases. We have also since December 2002 produced sources of nutrition for bio-treatment bacteria from phosphoric acid contained in chemical solution SLA used during the aluminum wiring etching process. We sold about 29 tons of waste base film and about 140 tons of SLA in fiscal 2002.

At our Mihara Plant for electronic component manufacture, we are looking into extracting and recycling metal gallium from the dried sludge from the waste etching effluent discharged during the semiconductor production process. This will enable the Mihara Plant to reduce both waste generated and the cost of disposing of discharged sludge.



Conversion of color filter base film into PET bottle material

Reducing Garbage

At SUKM, a production site in the UK, we have since April 2002 had a waste reduction project for recycling polyethylene and separating waste products. This has enabled SUKM to reduce final landfill disposal to just 2% of all waste, down from 55% previously.

In the future, we will develop guidelines on packing for our suppliers in order to help them either reduce the amount of packing materials or replace them with other materials with less of an environmental burden.

Reducing waste

Recycling One-Way Pallets

At our Nara Plant, we are recycling no-name pallets (pallets with no company name on them). We also provide these pallets free of charge to local residents, companies, and business partners for a variety of uses. In fiscal 2002, 464 pallets were reused in-house and 170 were used outside the company.

Recycling no-name pallets

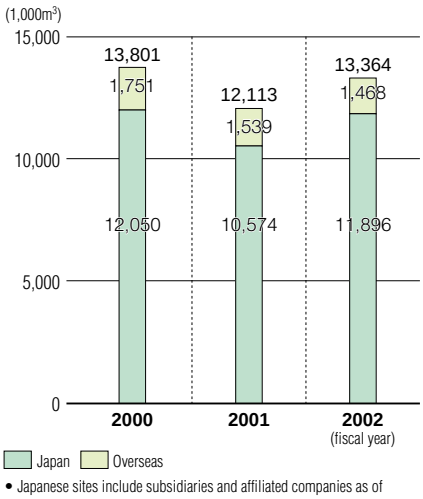
Recycling Water

Sharp collects wastewater from the production process and recycles it by wastewater purifying techniques.

Since an especially large amount of water is used for the manufacture of LCD and IC products, wastewater treatment is very important to not only business operations but also to conserving the local environment.

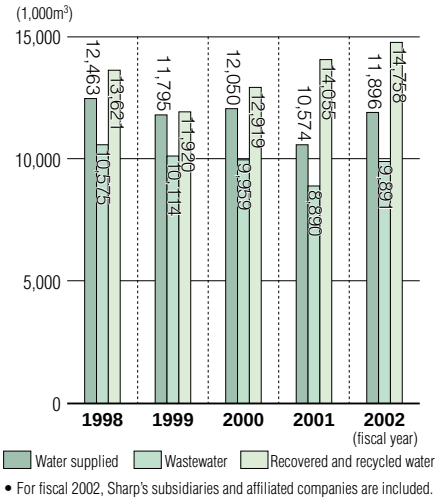
The total amount of recovered and recycled water at all Sharp Corporation production sites in Japan increased by 5% in fiscal 2002 as compared to the previous year. We will work towards even more effective use of water in future.

Amount of Water Used by Sharp Group (amount of water supplied)



• Japanese sites include subsidiaries and affiliated companies as of fiscal 2002.
Overseas sites include non-production sites as of fiscal 2002.

Amount of Water Supplied, Wastewater, and Recovered and Recycled Water at All Production Sites in Japan



• For fiscal 2002, Sharp's subsidiaries and affiliated companies are included.

Proper Management and Release Reduction of Toxic Chemicals

Objectives for Fiscal 2002 → Achievements	Objectives for Fiscal 2003	Objectives for Fiscal 2005
● Reduce release of chemicals under high-priority control by 50% at all domestic production sites against fiscal 2000 level → **Reduced by 62% against fiscal 2000**	● Reduce release of chemicals under high-priority control by 67% (more than 1/3) at all domestic production sites against fiscal 2000	● Shift from quantity control to risk assessment control (starting from fiscal 2004)

Chemical Substances Management System (for Japan and Overseas)

In fiscal 2000, Sharp developed a proprietary chemical substances management system (S-CMS*1) to manage all chemicals used at the company's sites, and introduced this system into all production sites in Japan. The company then incorporated the global version of this system into 13 out of 22 production sites overseas in fiscal 2002.

This system allows us to easily check purchase records for all chemical substances at overseas production sites and to automatically compile the statistics on emission and transfer of toxic chemicals. Such chemicals include those regulated under the Pollutant Release and Transfer Register (PRTR)*2 in each country, ozone layer depleting substances, and greenhouse gases. With this system, we can manage the amounts of chemicals that are purchased, used, and released at our sites worldwide.

In fiscal 2003, we will bring the system into the remaining nine overseas production sites so that we can complete the management of chemical substances, reduce risks in the use of chemicals at our sites, and minimize burden on the environment on a global scale.

*1: Sharp Chemical Management System
*2: A law that regulates keeping track of emissions of specified chemical substances and promotes improvement in management of these substances.

Reducing Release of Toxic Chemicals

Since fiscal 2001 Sharp has been moving ahead with a project to reduce by fiscal 2003 the release of chemical substances that must be managed on a priority basis* by 50% compared to fiscal 2000. We have already reached this target ahead of schedule, with a reduction of 53% in fiscal 2001.

In fiscal 2002, we set the same objective of reducing emissions by 50% from fiscal 2000 since our production volume was expected to increase at that time. As it turned out, though, we exceeded our target with a reduction of 62%.

During fiscal 2003, we will work to achieve a decrease in toxic chemical emissions of 67%, equivalent to about one-third of the amount in fiscal 2000. From fiscal 2004, we will shift from quantity control of chemical emissions to risk assessment control, which considers the risk level for each chemical substance, with the aim of completely reducing risks in the use of chemical substances.

*Criteria for chemicals under high-priority control
(1) Substances regulated by the Japan PRTR Law that are released and transferred in large amounts.
(2) Substances that risk causing annoyance to the general public living in the vicinity of a facility, even if the amount is small.
(3) Substances not covered under the Japan PRTR Law that are regulated under environmental laws, and that are released or transferred in large amounts.

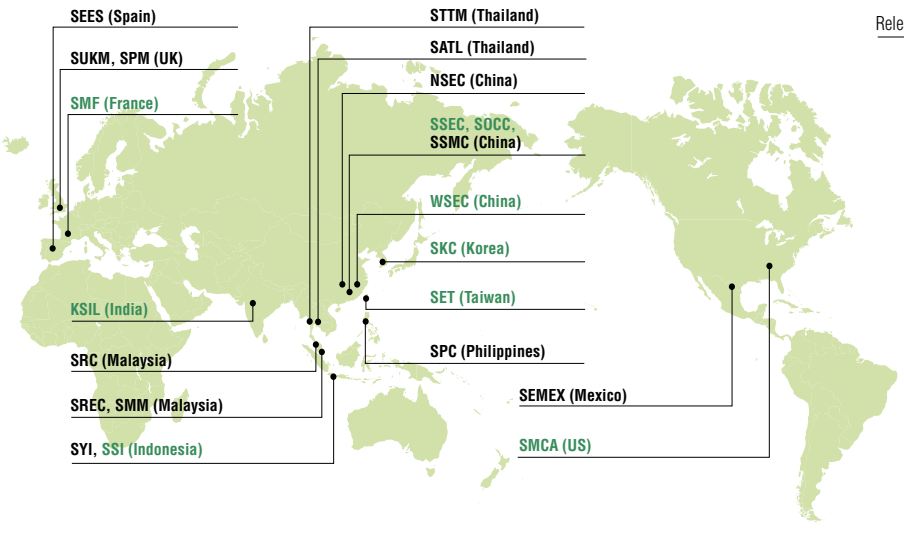
Results of PRTR Surveys for Fiscal 2002 in Japan

Of the 354 types of chemicals covered under the reporting requirements of the PRTR Law (those handled in quantities greater than 500kg/year) during fiscal 2002, Sharp facilities used 18 substances, totaling 3,198 tons, a 15% increase from the previous year (the details of destinations are shown in the figure below).

An increase in the amount of substances handled meant increases in the amounts of substance elimination, recycling and consumption by 20%, 16% and 5%, respectively. However, from fiscal 2001 to 2002 there was a drop in the amount of substances released into the atmosphere by 37%, the amount of substances released into water areas by 7%, and the amount of substances transferred by 12%. We will continue our efforts to reduce the amounts of chemical substances released into the atmosphere and water areas while increasing the amounts that we eliminate and recycle.

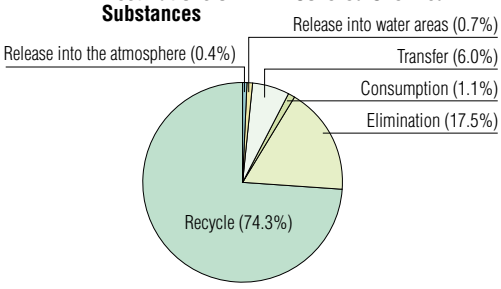
Note: For more information on the PRTR statistics for fiscal 2002, see the data section on pages 58 and 59.

Production Sites Using the Global Chemical Substances Management System (S-CMS)



Step 1: Sites that introduced S-CMS in fiscal 2002
Step 2: Sites that will introduce S-CMS in fiscal 2003

Destinations of PRTR-Covered Chemical Substances



Chemical Substances Released into the Atmosphere and Water Areas in Large Amounts

Main chemical substances	Amount of release (t)	Proportion (%)	Destination
Hydrogen fluoride & water-soluble salts	22.7	63.0	Water areas
2-Ethoxyethyl acetate	6.0	16.6	The atmosphere
Phenol	3.4	9.5	
2-Aminoethanol	2.1	5.9	
Xylene	0.9	2.4	
1, 3, 5-Trimethylbenzene	0.6	1.6	

Risk Management

Special Safety Management and Emergency Training

Sharp performs extensive safety management for hazardous articles and harmful substances (special safety management) at all facilities, from laboratories to production lines. The company has set up a special safety management committee at each of its sites and has organized a company-wide special safety management committee. This committee supervises all local committees with the goal of improving safety levels at all the sites. Each of the sites provides its employees with emergency training to prepare for possible accidents.

For accident prevention, the company thoroughly implements the process assessment system* and carries out audits of the usage of hazardous articles and harmful substances.

In future, we will establish our own risk management system by quantifying safety evaluations for our facilities and by performing audits of these evaluations.

*A system in which newly adopted chemical substances and equipment for handling them are inspected for hazardous and harmful properties in order to eliminate or reduce risks in all processes of storage, handling and disposal.

Emergency training at the Shinjo Plant; participants simulate a situation in which a hazardous material (acetic acid) has leaked from the piping.

Risk Communications

We are working to develop "risk communication" with residents living near our sites. In these communications, we provide locals with information on how we are controlling chemical substances in use, the amount of release into the environment, and possible health effects, and we incorporate feedback obtained from residents into our chemical substances management measures. This deepens mutual understanding and creates a trusting relationship.

In fiscal 2002, we appointed 20 risk communicators at each of our sites. We also prepared a "Risk Communication Manual for Chemical Substances (first edition)," a summary of working rules, precautions, and related information required for risk communications. Workshops were held to familiarize risk communicators with the content of the manual. These activities will help us further promote risk communications at all our sites.

Risk communication workshop

Examples of Risk Communications

At our Nara site, we hold an information meeting every April with local resident associations (towns of Minosho-cho, Kamimitsuhashi-cho and Hieda-cho) and local governments (Nara Prefecture and Yamato-Koriyama City) on our progress in cleaning polluted groundwater.

At recent sessions, we have assured local residents and organizations that the contaminated water is being gradually cleaned and that no polluted water has contaminated areas outside the company sites.

At our Yao site as well, we hold a similar meeting with Yao City every April to report on our progress in groundwater cleanup. In July 2002, we completed water cleanup in one of three contaminated areas at the Yao site and reported this result to the city.

Information meeting on Sharp's progress in cleaning up polluted groundwater (at the Nara site)

Purifying Soil and Groundwater

Since 1998, Sharp has been conducting soil and groundwater surveys at all its sites in Japan. For sites where pollution was identified (Nara, Yao, Tenri and Shinjo), we have been carrying out continuous monitoring and been taking cleanup measures. Since chlorine solvents* were the source of the groundwater pollution, we stopped using them entirely as of the end of September 1999.

*This is an incombustible substance, which excels in dissolving organic substances and has a high drying property. These characteristics make it widely used as a cleaning agent for metal working fluid and PC board fluxes, as a remover agent for coating materials and as spraying agents.

Progress in Cleaning Up Soil and Groundwater

Site	Cleanup status for fiscal 2002
Nara Site	• In October 1999, we installed waterproof walls along the boundaries of the site to stop polluted water from leaving the site. We also use cleaning equipment and pumping wells to clean up soil and groundwater. • Cleanup is progressing smoothly and there is no contamination outside the waterproof walls. • We held an information meeting in April 2002 to report our progress to local resident associations, agricultural cooperatives, and authorities concerned (in the prefecture and city).
Yao Site	• In September 1999, we installed cleaning equipment and pumping wells to clean up soil and groundwater. • At one of three polluted areas, we completed the cleanup process in July 2002. We continuously monitor another area to ensure that its pollution concentration is below the environmental quality standard. The other is currently being cleaned up and steady progress is being made. • We are conducting annual on-site inspections of the cleanup process with government staff.
Tenri and Shinjo Sites	• Since pollution was minor at these two sites, we monitor groundwater on a regular basis and inform local authorities of the results.

Recycling Used Products

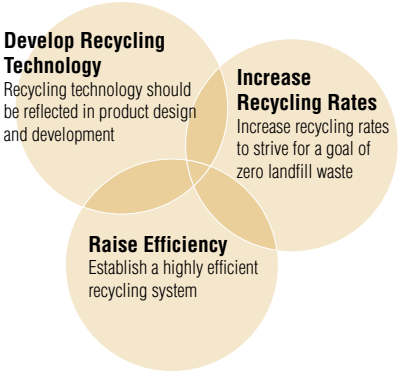
Objectives for Fiscal 2002 → Achievements	Objectives for Fiscal 2003	Objectives for Fiscal 2005
● Establish home-use PC recycling system → **Completed in June 2003 (started in October)**	● Carry out survey for building recycling system in Europe	● Build and start up recycling system in Europe

Policy

In Japan, since April 2001, in accordance with the Home Appliances Recycling Law, it has become compulsory for four categories of household appliances (air conditioners, televisions, refrigerators and washing machines) to be recycled. In accordance with the Law for Promotion of Effective Utilization of Resources, it is now a legal requirement that business-use PCs are collected and recycled. Moreover, from October 2003, it will be compulsory for home-use PCs to be collected and recycled in the same fashion. Sharp has been steadily advancing towards the establishment of a recycling system that meets these legal stipulations, a system that also includes categories not mentioned in these laws, such as copiers, which we are also studying with regard to reuse and recycling.

When we create and improve upon our recycling system, we implement the concept of increasing our recycling rate with our ultimate goal of zero landfill disposal, and establishing a highly efficient recycling system that leads to reduced costs, as well as reflecting our recycling technologies in our product designs. Through these activities, we are aiming to achieve a recycling-oriented society.

Recycling Concept



Recycling System for Four Home Appliance Categories in Japan

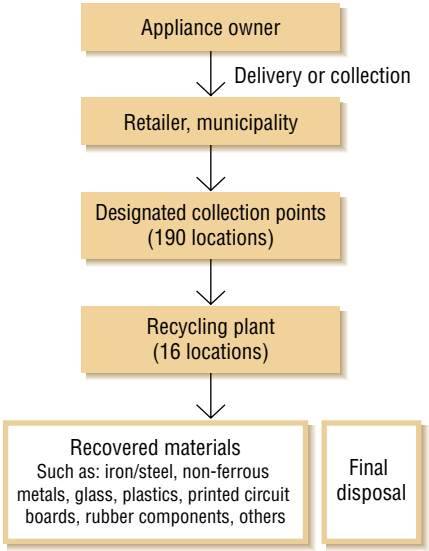
Sharp has cooperated with Sanyo Electric Co., Ltd., Sony Corporation, Hitachi H.L.S Ltd., Fujitsu General Limited, and Mitsubishi Electric Corporation to construct a highly efficient recycling system for the four categories of home appliances. This system consists of 190 designated collection points and 16 recycling plants, all located strategically throughout the country.

Of these locations, Kansai Recycle Systems Corporation*, the recycling plant for the four prefectures that make up the Kinki region, processes approximately 600,000 units per year, which makes it one of the largest appliance recycling plants in the country. Kansai Recycle Systems Corporation was established jointly by Sharp, Mitsubishi Materials Corporation and five other electronics companies.

* Kansai Recycle Systems Corporation, which was found to have released CFCs into the atmosphere (please see page 16 for full details), voluntarily ceased operations from February 28, 2002 and conducted a thorough improvement of its processes, resulting in operations restarting on August 2, 2002. The improvements carried out were as follows:

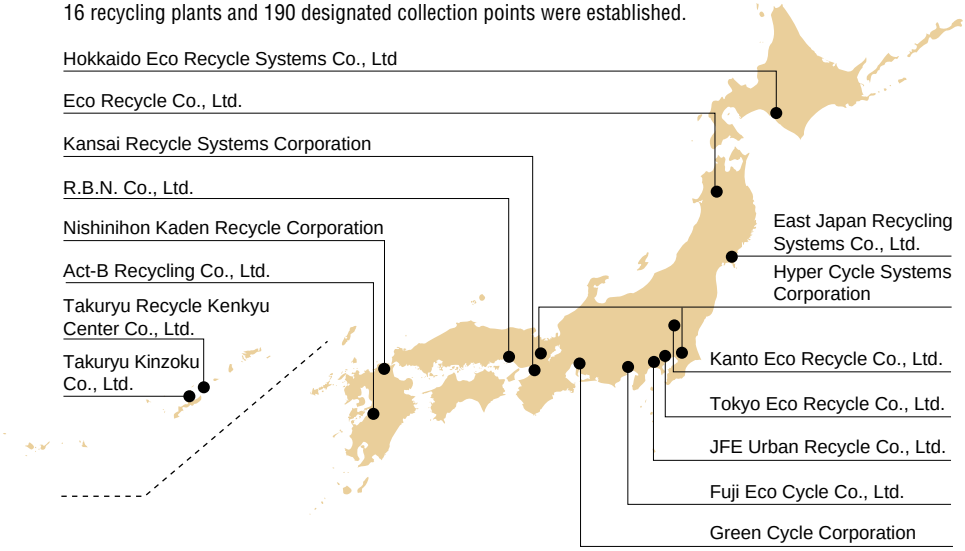
i. Implementation of a compliance program;
ii. Strengthening of the training system;
iii. Strict adherence to operating hours;
iv. Strict adherence to the permitted processing capacity limits;
v. Provision of procedural manuals;
vi. Establishment of a CFC refrigerant recovery system and an information management system

Home Appliance Recycling System Flow



Recycling Plants

16 recycling plants and 190 designated collection points were established.



Recycling Used Home-Use PCs

Due to the April 7, 2003 ministerial decree that rectified part of the Law for Promotion of Effective Utilization of Resources, from October 1, 2003 manufacturers are legally obliged to collect and recycle all home-use PCs that have been disposed of as general waste.

Accordingly, following the enforcement of the new stipulation, manufacturers of home-use PCs shall recover the cost of collection and recycling at the point of sale, thereby allowing customers, when they wish to dispose of their used PC, to have it collected at no extra charge*.

Here at Sharp, we will use a collection system that was organized by the Japan Electronics and Information Technology Industries Association (JEITA) and the Japan Post for smooth collection and recycling. The system will begin operating on October 1, 2003.

*PCs carrying the JEITA recycle sticker may be collected free of charge. Regarding PCs that do not bear the JEITA sticker, such as those purchased prior to September 30, 2003, the owners of these units shall pay for their collection and recycling.

Recycling Used Business-Use PCs

In order to comply with the Law for Promotion of Effective Utilization of Resources, which was rendered effective as of April 1, 2001, Sharp has constructed a proprietary recycling system consisting of 250 collection stations in 4 regions nationwide in its efforts to develop an efficient process for the recycling of business-use PCs.

This system has been designated as a wide-area recycled industrial waste processor under the special measures* criteria of the Waste Management and Public Cleansing Law.

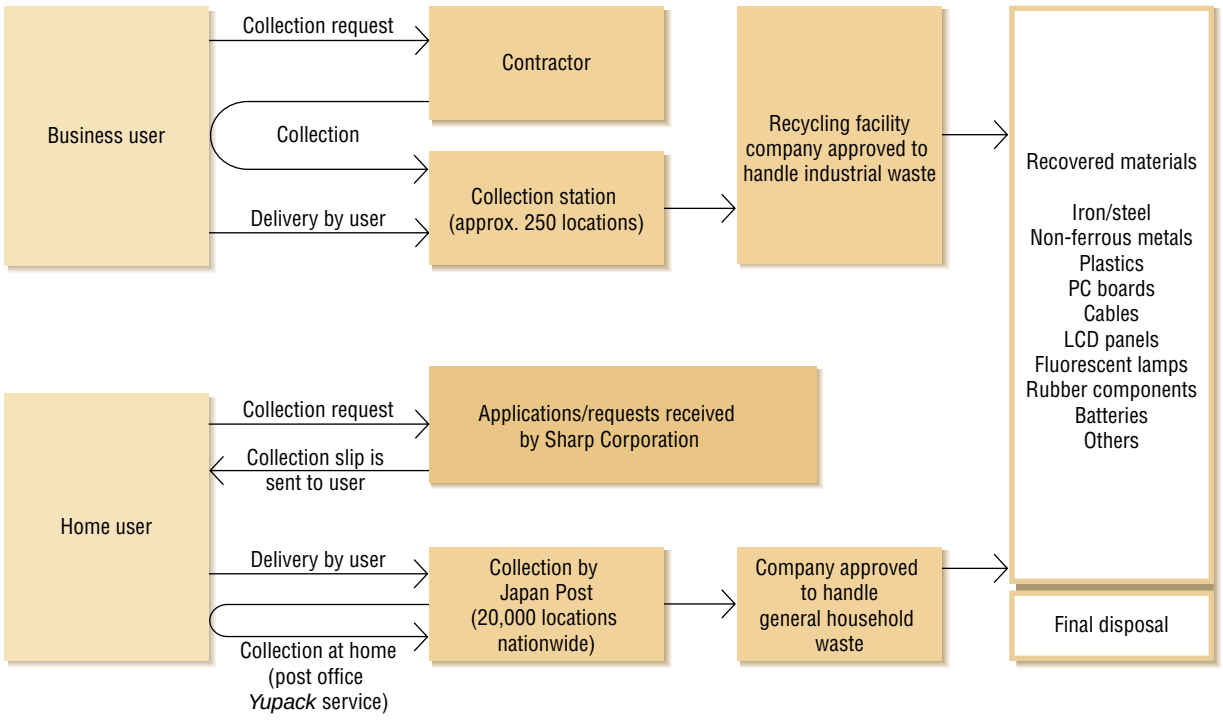
* The Waste Management and Public Cleansing Law states that any corporation that creates waste during its business activities has the responsibility to treat this waste in the most suitable manner. This treatment of waste, in principle, based upon the statutes of the Waste Management and Public Cleansing Law, lies solely with waste collection and processing companies that have attained the permission of the prefectural governor. However, in accordance with the "program for designated wide-area recycled industrial waste processors," certain manufacturers in line with a directive from the Minister of the Environment which falls under the 'special measures' remit, can engage nationally in the collection and recycling of industrial waste materials that are generated during the manufacturing and/or processing of their own products.

• Please refer to page 60 for data on recycled business-use PCs for fiscal 2002.

Dismantling of a collected PC

Hard disks are physically destroyed

Used-PC Voluntary Collection and Recycling Flow



Recycling Used Products

Recycling Copiers

The copier industry has established a system of collection centered on "Copier Exchange Centers*1" that copier manufacturers, working together, have used to collect their traded-in units. In addition to this existing system, Sharp has established its own proprietary "Nationwide Collection and Processing System*2," which in fiscal 2002 collected 12,837 units (a 23% increase compared to the previous year).

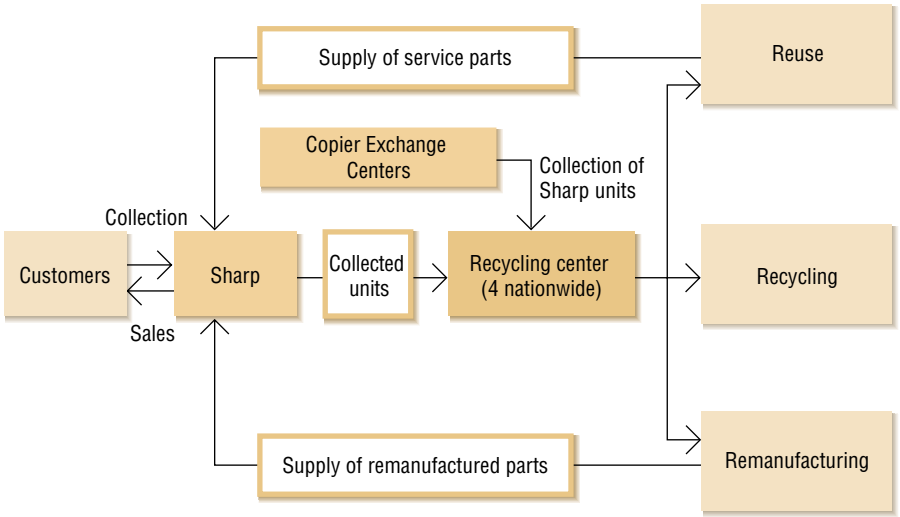
Once the copier has been returned to Sharp, we check the unit to ascertain its condition and then begin disassembly into its component parts. Once they have been checked and cleaned they are returned to the production line. With the help of new parts, the disassembled parts are remanufactured into copiers that possess the same quality and specifications as completely new copiers. In fiscal 2002, 812 copiers were produced by this remanufacturing system and were shipped to Southeast Asia, the Near and Middle East and Africa.

Moreover, the cabinets of the returned copiers can also be reused. We have established our own "Closed-Loop Recycling System," which replaces the need for the use of virgin materials and instead reuses copier cabinets. The used cabinets go through the process of crushing, cleaning, melting down and pelletization until they are once again at the raw plastic material stage. From this material we make the internal parts for a new copier one grade of flame resistance lower (American UL approved) than the outer cabinet. These parts are then added to the production line.

Since fiscal 2001, we have reused circuit boards and fusing units as service parts for repair work. We are expanding the range of parts that are reused as we continue to aim for the effective use of resources.

*1: The Japan Business Machine Makers Association (JMBA) established these centers in May 1999. Every manufacturer is open to receiving another manufacturer's copier from a business customer. These traded-in units are collected at an exchange center and separated by manufacturer. The copiers are then returned to their respective manufacturers.
*2: Sharp's system for the trade-in and return of its own copiers.

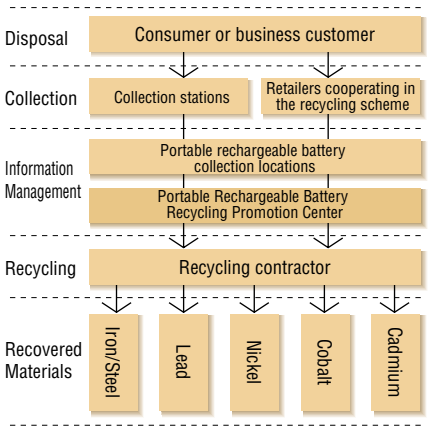
Copier Collection and Recycling Flow in Japan



Collecting and Recycling Portable Rechargeable Batteries

In Japan, in accordance with the Law for Promotion of Effective Utilization of Resources, manufacturers of portable rechargeable batteries, along with manufacturers of appliances that use portable rechargeable batteries, are now legally obliged to collect and recycle used rechargeable batteries.

By joining the Battery Association of Japan's "Portable Rechargeable Battery Recycling Promotion Center," Sharp is cooperating with other members of the industry in collecting and recycling portable rechargeable batteries. We have also established collection stations at business sites and repair stations throughout Japan. This way, Sharp is striving to recycle NiCad batteries, nickel metal hydride batteries, lithium-ion batteries and even a portion of small sealed lead-acid batteries.



Measures to Comply with the EU WEEE Directive

In February 2003 the European Union issued a directive that proposed to make the recycling of Waste Electrical and Electronic Equipment (WEEE) a legal obligation within the boundaries of the EU. In accordance with this directive, all manufacturers active within the current 15 member states of the EU must assume responsibility for the recycling of their electrical and electronic equipment products from August 2005.

Sharp is participating in the discussion of setting up collection and recycling system in each EU member state. Sharp is also promoting the development of products with high recyclability in order to contribute to the sustainable society.

Environmental Activities at Distribution Sites in Japan

Note: One unit is equivalent to a 5t container

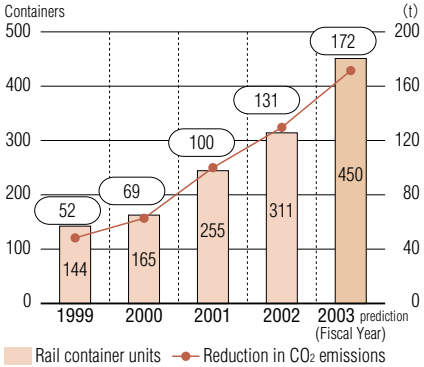
Objectives for Fiscal 2002 → Achievements	Objectives for Fiscal 2003	Objectives for Fiscal 2005
● Railway cargo transport (container transport) 300 containers/month → **311 containers/months (achievement rate: 103.7%)**	● Railway cargo transport (container transport) 450 containers/month	● Railway cargo transport (container transport) 600 containers/month (fiscal 2004)

Changing Modes of Rail Transport

We are taking positive steps to change from conventional truck-based transport to rail freight transportation, which has a smaller impact on the environment, especially on long-distance transportation routes. We achieved a monthly average of 311 container units of rail freight transportation during fiscal 2002, resulting in a reduction of 131t of carbon dioxide emissions (an increase of 131.8% on the previous fiscal year). It would take wooded area the size of 19 Tokyo Domes to absorb that much carbon dioxide.

In fiscal 2003 we will add the 10t Ecoliner type of rail container to our regular 5t container, which is currently in use, to increase transport efficiency. We will also introduce combined sea- and rail-based freight transportation, which means transshipping the 20ft and 40ft shipping containers that bring our products into Japan from overseas to railways. With these innovations, we have set a target of 450 container units a month, 44.7% increase on fiscal 2002. We will accelerate the move toward rail freight transportation.

Railway Container Shipments and CO_2 Reduction (monthly average)



Ecoliner container

Introducing Low-Pollution Vehicles

We use electric forklifts in our logistics centers. The changeover to electric forklifts has not only resulted in lower emission of CO_2 than gasoline forklifts, but also contributed to the reduction of power rates since electric forklifts can be charged during the night when the power rates are lower. In fiscal 2002 we managed a 98% switchover to electric forklifts. Our goal for fiscal 2003 is to make this 100%.

Moreover, the laws and restrictions governing the trucking of freight are continually increasing. The application of the NOx-PM vehicle law, the restrictions on diesel vehicles and the obligatory installation of speed limiters have made us consider the use of low-pollution trucks, such as those that run on natural gas and hybrid vehicles.

Low-pollution vehicle

Eliminating Engine Idling

We have almost entirely eliminated engine idling by using stickers placed in vehicles, as well as signs and posters, to encourage drivers to turn off their engines while waiting to load or unload.

Efforts for Reducing Total Transport

Our total transport level for fiscal 2002 was 129.4 million ton kilometers (t x km). In order to alleviate the burden of our transport on the environment, we are working to improve our logistics efficiency by 1) improving loading efficiency and 2) increasing the amount of direct shipment from the factories. At present Sharp is undertaking efforts to develop a system that identifies the total amount of transport for measuring the effect of CO_2 reduction, and to publicly diclose this information.

Reducing Cushioning and Packaging Materials Waste

Concentrating mostly on import/export containers, Sharp has switched to use of reusable airbags for its cushioning materials, and has succeed in reducing use of expanded polystyrene by 216 m^3/month in Japan. We are also making efforts to reduce waste by reusing packaging materials used for shipping small products and by repairing wooden palettes.

Reusable airbag cushioning

Recycling Design for Containers and Packaging Materials

Recycling Design for Packaging Materials

A great deal of general household waste is generated from the cushioning used to package small appliances*. Originally we used plastic but now this has been replaced with cardboard, which makes recycling a lot easier.

Moreover, apart from the largest models, all of our LCD TVs use cardboard cushioning.

* A 'small appliance' is defined as one with a gross weight of less than 10 kg. However this definition does not apply to seasonal products that require storage.

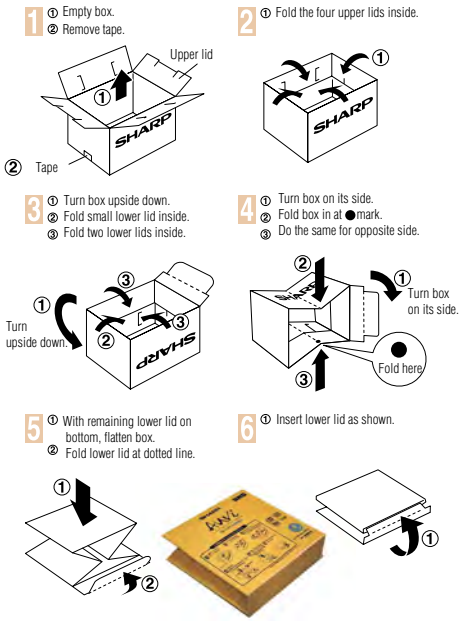
Cardboard cushioning surrounding an LCD TV

Consideration Given to Disposal

When a household wishes to dispose of cardboard for recycling, it must be cut into small pieces and/or folded up. Considering this point, our audio products are now packaged with cardboard that is designed to fold into a small, manageable size with little exertion. Moreover, as this special cardboard does not need to be tied with string or held with tape, recycling becomes that much easier.

• When waste collections are delineated by the type of waste, please abide by the regulations that govern recycling in your area of residence.

Packaging that Folds Down into an Easy-to-Recycle Shape



Packaging is folded into a small size.

Labeling on All Packaging Materials

In accordance with the Law for Promotion of Effective Utilization of Resources, since April 2003, Sharp has affixed identification marks to all packaging material on its products.

Moreover, since fiscal 2002, we have been using the "Corrugated Cardboard Recycle Symbol" from the Japan Corrugated Case Association (JCCA) on our cardboard packaging.

Identification Marks for Containers and Packaging

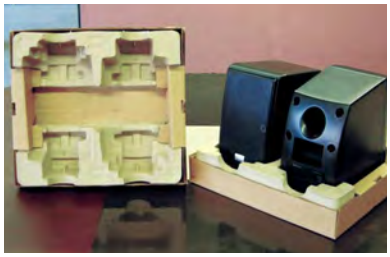
Corrugated Cardboard Recycle Symbol

Sharp's Packaging Wins in the Electrical Appliance Packaging Category at the 'Japan Packaging Contest'

At the 2002 Japan Packaging Contest (hosted by the Japan Packaging Institute), Sharp won the Electrical Appliance Packaging Category for its "new packaging design for air conditioner indoor units" and also for its "environmentally conscious packaging for speakers."

The "new packaging design for air conditioner indoor units" saves on resources by utilizing a case that can be turned into a sheet to package the bundled accessories. The cushioning material for the main unit is designed for easy handling. The speaker packaging uses 100% recycled paper and cardboard, which in addition to being a very efficient design in terms of production, is also a very environmentally conscious method of packaging.

New packaging design for air conditioner indoor units



Environmentally conscious packaging for speakers

Environmental Education Programs in Japan

Objectives for Fiscal 2002 → Achievements	Objectives for Fiscal 2003	Objectives for Fiscal 2005
● General Training: 1,500 participants → **2,316 participants** ● Expert Training: 300 participants → **468 participants**	● General Training: 1,500 participants ● Expert Training: 300 participants	● Conduct environmental education on a global scale

Educational Policies

At Sharp, in order to raise the environmental awareness of each employee and cultivate an environmentally friendly corporate culture, we hold environmental education programs.

This means the provision of two levels of environmental education, a "General Training" course, which seeks to increase environmental awareness and knowledge for all our employees, and an "Expert Training" course, which is meant to produce environmental specialists in various fields of expertise.

Green Engineering Training

General Training

Employees receive "General Training" both when they enter the company, called "New Employee Training," and when they are promoted to managers, which is known as "New Manager Training." The training covers issues such as environmental knowledge, trends in related laws and regulations, and Sharp's environmental strategies to ensure thorough understanding at all levels of their career with the company.

In addition, during fiscal 2002 we revised the content of the training to fortify the issue of compliance. "Environmental Compliance Seminars" were held at 11 locations and attended by 2,006 managers. At these seminars the corporate executives responsible for environmental matters explained the latest trends in environmental legal regulations and the importance of compliance.

Our future goals are to broaden the scope of our environmental training programs, so that all employees have a greater awareness of the environment.

Expert Training

"Expert Training" courses ensure that personnel in engineering, planning, factory management, internal auditors for ISO14001 certification and other areas have the specialized information they need related to the environment and to give them appropriate training.

During fiscal 2002, we offered the "Green Product Basic Course" and the "High-Pressure Gas Course" as part of our "Green Engineering Training." The "Green Product Basic Course" was aimed at planners and engineers from our product groups and explained not only items from our "Green Product Guidelines," but also included a tour of a home appliance recycling plant (Kansai Recycle Systems Corporation), all towards the aim of training our staff to develop environmentally conscious products. The "High-Pressure Gas Course" was targeted towards those in charge of managing high-pressure gas in the device groups. This course focused on the extremely important areas of legal regulations and technological trends concerning the treatment of high-pressure gas.

Moreover, in fiscal 2002 the important addition to the training curriculum was that of compliance. All business sites were subject to an "Environmental Laws and Regulations Seminar" linked to the "Environmental Compliance Audit." Each site received special attention to the areas of the law that reflected on their particular activities and confirmed the situation of their compliance system.

In the future, we plan to raise the expertise level of training to increase the level of environmental awareness and techniques of our engineers and to foster environmental experts. And as part of strengthening legal compliance, we will continue our environmental law seminars.

Training Content and Number of Participants in Japan

(unit: no of persons)

Level	Type	Summary	2001*	2002*
General Training	For new employees	Understanding Sharp's environmental policy and raising environmental awareness	272	283
	For new managers	Understanding the latest trends in environmental issues and gaining knowledge of Sharp's environmental strategies	24	27
	Environmental Compliance Seminar	Thorough understanding of the latest trends in environmental laws and regulations and importance of compliance with such laws (in fiscal 2001, this course was part of training for experienced managers)	23	2,006
		Subtotal	319	2,316
Expert Training	For employees assigned to overseas offices	Thorough training about the environmental laws of the destination country	37	25
	Green Engineering Training Green Product Basic Course	Aimed at planners and engineers from product groups, the course covers Green Product Guidelines, the current situation of home appliance recycling and how to design easy-to-recycle products	48	12
	Green Engineering Training High-Pressure Gas Course	Aimed at those in charge of managing high-pressure gas in the device groups, the course covers laws and regulations and technological trends concerning the treatment of high-pressure gas (in fiscal 2001, these topics were covered by the Green Factory Course)	18	27
	Internal Environmental Auditor Training	Training ISO14001 auditors	94	70
	Internal Chief Environmental Auditor Training	Training ISO14001 chief auditors	16	9
	Environmental Laws and Regulations Seminar	Linked with the environmental compliance audit, thoroughly informing each business site with important laws that reflected on their particular activities and how to comply with them	—	325
	Tour of Kansai Recycle Systems Corporation	Tour of the Kansai Recycle Systems plant gives employees a glimpse of recycling first hand	79	—
		Subtotal	292	468

*fiscal year

Green Mind Activities

Advancement of "Green Mind" through Cleanup Activities

Since 1998, Sharp has run the "Green Mind Campaign," which arranges for cleanup activities around our business sites. Through these activities, not only do we contribute to the beautification of the local environment, we also advance the concept of "Green Mind" with our employees.

At the head office, Sharp employees have been engaged in cleanup activities since November 1994. As of July 2003, a total of 4,141 employees have contributed to this program.

At the Nara site, there are regular cleanup activities. During one morning, November 15, 2002, employees cleaned up the roads leading to their place of work and managed to fill 70 bags with garbage such as discarded cans and PET bottles.

Environmental Photo Contest

Sharp holds an Environmental Photo Contest during the Environment Month of June. In fiscal 2002, the contest organizers asked for photos from employees and their families. In the end 77 submissions were displayed and the winners were selected through a ballot.

The winning photos were added to a PC wallpaper calendar depicting scenes from the natural environment and then made available to employees.

Cultivation of the Kenaf Plant—a Living Environmental Education Tool

The kenaf plant's high rate of photosynthesis, its ability to absorb large amounts of CO_2 emissions and the way it purifies water make it a very environmentally useful plant. Moreover, the kenaf plant is also a valuable source of paper.

Since fiscal 2000, there have been approximately 650 kenaf plants cultivated at the Fukuyama site. In fiscal 2002, the seeds were planted in the middle of May and at the August Summer Festival Family Day, around 6,000 visitors had come to see the 3m-tall kenaf plants. These plants will be harvested in mid-October and processed into paper by volunteer organizations. This paper will then be donated to local schools and residents. The kenaf plant serves as an educational resource on the environment.

Environmental Household Account Contest

Sharp holds an Environmental Household Account Contest, which asked contestants to keep a record of their household accounts using a Environmental Household Account Book for one year so that the total amount of energy used and carbon dioxide generated could be calculated. The contestants gave in ideas for saving energy and resources such as water.

Taking the opportunity of this contest, we hope that our employees and their families will increase their awareness of the environment by involving themselves in energy conservation and recycling activities.

Worldwide "Green Mind" Activities

There are many different types of "Green Mind" activities taking place around the globe.

In the UK during February and March of 2003, SUKM held a variety of environmental conservation training programs such as environmental awareness training, waste management training and internal auditor training.

In Malaysia in June 2002, SREC held an EMS exhibition. Attendees numbered 2,300, or 92% of the total workforce. Local business partners also made the time to attend the exhibition.

In Spain, SEES held an Environmental Ideas Contest. Employees contributed 18 ideas and ideas such as "installing solar cells on the factory roof" were declared winners.

In Canada, SECL asked employees to commemorate Earth Day by bringing in Sharp products, which they no longer used. All the items that were collected were properly recycled by a local recycling company.

Social Report

A Commitment to Improving Customer Satisfaction in Japan

Environmental Communications

Contributing to the Community

Building a Rewarding Workplace in Japan

Contributing to Safety and Health in Japan

A Commitment to Improving Customer Satisfaction in Japan

Customer Comments Are Shared Immediately Across the Entire Company

Sharp takes its responsibilities as a product manufacturer seriously. In this connection, we have placed customer satisfaction at the very heart of all our business activities. All employees in every department—from development to production, from sales to service—are committed to improving the level of customer satisfaction.

At our Integrated Call Center, our most important mission is to provide maximum customer satisfaction by taking the customer's point of view and responding in a way that exceeds customer expectations. Product-related help and advice on topics such as product purchase and how to use them is always available.

In fiscal 2002, we introduced an on-line system that enables reports of customer interactions and questions received at the Call Center to be shared company-wide on the following business day. In this way, our production and other facilities can receive direct feedback from customers, leading to faster action to remedy problems and improve products.

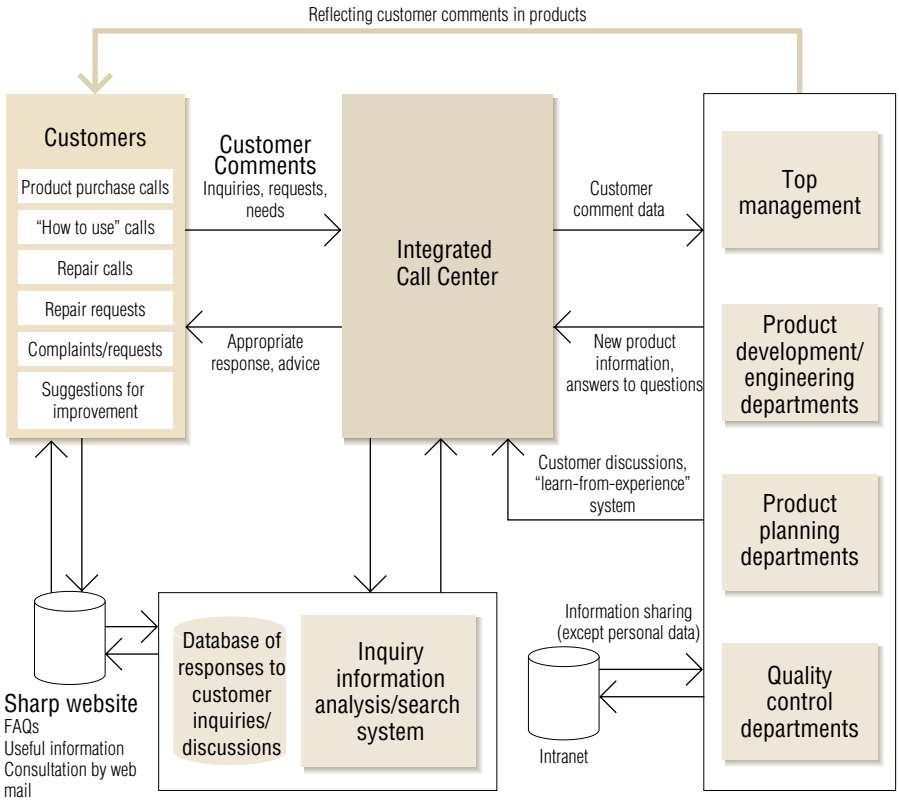
Integrated Call Center

Improving Customer Satisfaction in Repair and Service

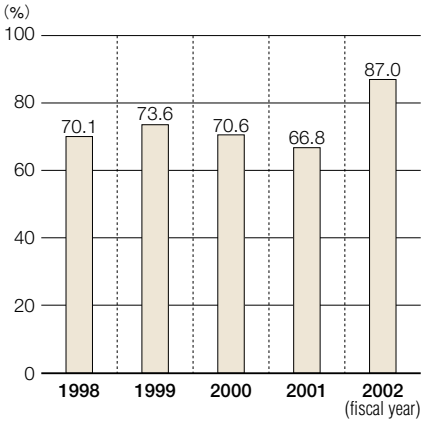
Sharp is taking action in a variety of ways to build a repair and maintenance service organization centered around improving customer satisfaction. We have revamped our maintenance parts supply system, and have implemented a program of follow-up phone calls to customers after they have received service or repairs at our service centers.

As a result, in fiscal 2002, the number of complaints related to repair and service declined by 70% compared to the previous year, and according to the results of a survey on repairs, our "Satisfactory" rating approached 90%. Building on such successes, we will continue to work to improve customer satisfaction in the future.

System to Reflect Customer Comments in Business Activities



Transition in Satisfactory Ratings from Questionnaire Results



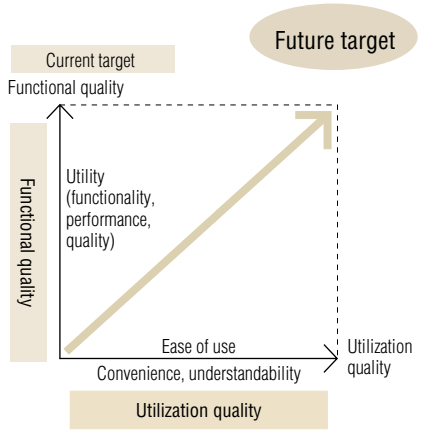
Service desk

Improving Usability

No matter how outstanding the functionality and performance of a product, its value will never be appreciated unless the consumer knows how to use it correctly. In this light, Sharp is working to further enhance customer satisfaction by seeking not only to improve "functional quality" by including more sophisticated features with even better performance, but also to improve "utilization quality" that encompasses the usability and convenience of products.

One element in this effort is the introduction of "usability tests" into the product development process. In these tests, those individuals responsible for product planning and development have the opportunity to directly observe consumers using a product to verify that it is convenient and easy to use.

These tests enable us to identify the factors that hinder "ease of use" under actual usage conditions. By applying this knowledge, we can move constructively to manufacture products offering greater usability, and implement a process of continuous, incremental product improvement.




Observation room

Ensuring and Improving Long-Term Reliability

Improved long-term reliability is essential for a product to be used on a regular basis over a long period of time. One aspect of our efforts to improve reliability is the introduction of accelerated life testing using a HALT test equipment and multi-environment test equipment.

HALT (Highly Accelerated Life Testing) enables durability tests to be carried out under severe environmental conditions with usage frequencies "10 times greater than normal" which are not possible with conventional test equipment. Plus, multi-environment test systems enable precise control over temperature, humidity and vibration and prove their worth in the detailed analysis of failure points uncovered during HALT testing.

Taking full advantage of these two types of systems enables Sharp to manufacture products offering high reliability that consumers can use with confidence over long periods of time.


HALT test equipment


Multi-environment test equipment

Seeking to Become "Customer-Oriented" Through Small Group Activities

Sharp is launching small group activities company-wide that are designed to enhance our business and management activities.

In fiscal 2003, we are putting into place further innovations intended to foster a customer-oriented culture across the whole company. We have developed activities within our 1,150 departments with the objective of fostering "company-wide innovation toward a customer-oriented organization aimed at establishing a quality brand*" and "encouraging an open-minded, vibrant workplace environment."

*Brand selected for its high level of product quality.


Convention of small group activities

Systems to Deal with Quality Issues

In the unlikely event that a Sharp product causes damage to a consumer's life, physical health or property, or if it is determined that there is a risk of it, we pledge to disclose such information promptly. At the same time, we will work to minimize loss to consumers by providing counseling and to take action to prevent the recurrence of problems, such as strengthening the quality and reliability of components and improving reliability evaluations, always keeping in mind the circumstances and environments under which consumers use our products.

Environmental Communications

Environmental Report and Website

Sharp recognizes that the "Environmental Report" is our most important tool for communicating our environmental policies and activities. This document has been published in both English and Japanese editions every year since 1999.

In the future, we will endeavor to report in greater depth and detail on our activities outside of Japan, and there are plans to enhance information disclosure for individual business sites.

Sharp's corporate website offers information from the "Environmental Report," and also provides detailed data that could not be published in the printed version of the "Environmental Report," as well as related timely information under "Topics."

2002 Environmental Report
(Japanese and English editions)
Sharp website URL for environmental activities:
http://sharp-world.com/corporate/eco/index.html

Environmental Exhibitions

At the Eco Products 2002 exhibition held at Tokyo Big Sight in December 2002, the Sharp exhibit featured three zones (Photovoltaic Power Generation Systems, AQUOS LCD TVs and Plasmacluster Ion) that presented a number of Sharp eco-products built around the theme of "Thinking about the Earth, the environment, and life."

Each of our sites also participates in local exhibitions and events in an effort to enhance our communication with the local community. For example, in 2001, our Mie site exhibited at the "2002 MIE Environmental Fair for and by the People of Mie" held in the Yokkaichi Dome (Yokkaichi City). And our Tenri site set up an exhibit presenting Sharp's environmental technologies in the Sharp Technology Hall, which opened to the general public in April 2002.

Advertising and Commercials

Sharp is working hard to communicate its corporate policies and environmental activities, as well as highlight its efforts in environmentally conscious product manufacturing through widespread advertising in newspapers and magazines as well as in TV commercials.

In fiscal 2002, a series of newspaper ads entitled "One-of-a-Kind Products" centering on environmentally conscious products such as LCD TVs, photovoltaic power generation systems, and home appliances equipped with Plasmacluster Ion technology, won the Newspaper Excellence Prize in the Public Division of the 32nd Fuji Sankei Group Advertising Grand Prix Awards. This prize is given to the best creative work from newspaper, TV, magazine and radio advertising categories as judged by the consuming public in the Tokyo and Osaka metropolitan areas. Sharp's ads with the tagline of "Sharp—Right on Target" received wide acclaim because of their use of clear visuals and simple language to convey Sharp's corporate stance.

"One-of-a-Kind Products"
A series of five ads published in the *Sankei Shimbun* March 14 to 18, 2002

1) AQUOS LCD TV
2) Notebook PC
3) SunVista photovoltaic power generation system
4) 1-Bit digital audio system
5) Plasmacluster Ion home appliances

Eco Products 2002

2002 MIE Environmental Fair for and by the People of Mie

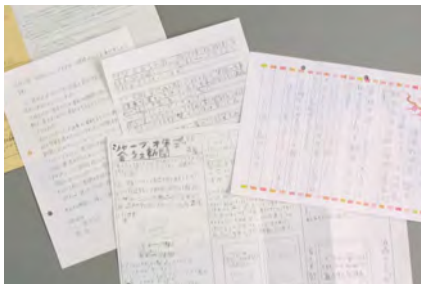
Responding to Your Comments and Questions

Sharp makes every effort to respond to questions and surveys regarding the environment submitted by either individuals or organizations. Opinions, questions and survey questionnaires are sent in via the Internet (e-mail), fax or letters. The appropriate departments work together to answer them as quickly as possible.

Topics of questions and surveys received from organizations and individuals
(1) Queries received from website (e-mail): 65*
(2) Queries received by fax or letter: 56*

Topic	No.	Topic	No.
EMS	8	Chemical substances management	3
Environmental accounting	1	Recycling	20
Green purchasing	7	Environmental education	2
Product-related	18	Information disclosure	9
Preventing global warming	13	General environmental actions	19
Waste reduction	6	Other	15

*Not including requests for materials such as the Environmental Report


Thank-you note received for our response to an elementary school questionnaire


Environmental disclosure display in the Sharp Technology Hall (Tenri)

Contributing to the Community

Sharp Green Club (SGC)

The Sharp Green Club was launched in June 2003, with the cooperation of both labor and management, as an organization to promote environment-related activities that contribute to the local community on behalf of the entire Sharp Group.

In addition to further expanding our current Green Mind Campaign and working to foster even greater environmental awareness among individual employees, we are also working to strengthen communication with local residents through activities to protect the environment, with the goal of building relationships of trust. A "Chief Promoter" is designated for each of our sites whose duty is to promote these activities.

Governing Body and Description of Activities

Organization in charge		Environmental conservation activities
SGC office Environmental Protection Group Labor Relations Division Human Resources Group	Corporate level	• Forest conservation – Cultivation of kenaf and study on commercialization of kenaf products – "Sharp Forest" study • Environment Month events
SGC at each site Chief Promoter Deputy Chief Promoter	Site level	• Community-based activities – Regionally focused activities on themes of "water" and "air" • Wakakusayama Green Campaign • Community-based cleanup and beautification activities – Promoting once-a-month cleanup activities • Energy conservation activities at places of work
All staff and employees	Home/ family level	• Cooperating in local social contribution activities • Participating in volunteer activities • Promoting environmentally conscious lifestyles in the home – "Environmental household accounting" activities – Kenaf cultivation (household environmental education)

Wakakusayama Green Campaign

On July 26, 2003, we launched the "Nara Park/Wakakusayama Green Campaign" as the first joint event following the inauguration of the Sharp Green Club. This event was supported by Nara Prefecture and the City of Nara, in cooperation with the local Nara Wakakusayama Tourism Promotion Association and Garden Net, a non-profit organization registered with Nara Prefecture. Approximately 1,300 participants, mainly Sharp employees and their families, worked to cut and root out Chinese tallow, a type of non-native invasive tree, and volunteered their time to preserve the landscape and ecosystem of Wakakusayama. To encourage the general public to think about environmental issues, they also distributed flower seeds attached to a message at Nara Station.

Asian Pacific Awards

Sharp helps support the Asian Pacific Awards (sponsored by Asian Affairs Research Council and the "Mainichi Shimbun" newspaper), a well-respected prize awarded to outstanding works in the fields of politics, economics and culture in the Asia and Pacific region. The Asian Pacific Award's 14th ceremony was held in November 2002, and was attended by Sharp Corporate Senior Executive Vice President Magohiro Aramoto, who presented the recipients with their awards.

Asian Pacific Award ceremony

Examples of Community Activities

Activities within Japan

Family Day Environmental Exhibit

Our Fukuyama site held a Family Day event on August 25, 2002 with the participation of some 400 people, including children from the surrounding communities. At the event location, we installed mini-biotope* aquariums to allow the attendees to actually experience the pleasure and importance of appreciating nature. We also introduced environmental programs that our Fukuyama site has implemented to protect the environment.

Sharp Festivals

Sharp holds festivals and athletic events for its employees and their families, and has been welcoming the public to these events for more than 10 years. Recently the number of events sponsored jointly by Sharp and local communities has been growing and these events have become a tradition in many places.

Company and Factory Tours

Sharp is responding to requests from various organizations from a variety of regions to tour our business premises and production facilities. At our Tokyo Branch and the Advanced Development and Planning Center (at Tenri), we hold workplace tours and hands-on programs, targeting mainly junior high school and younger students. These programs are used in education and career guidance in the schools.

Participating in Ecomesse Chiba 2002 (Makuhari New City)

Ecomesse Chiba, held every year since 1996, is organized by a planning committee with the cooperation of private enterprise, citizens and government to create a venue to showcase their respective environmental conservation activities. Sharp has participated as a key member of the planning committee since its inception, and supports its operations through broad efforts ranging from setting the exhibition theme to providing publicity and accounting services.

Parent-Child Events

We hold showroom visits on a regular basis in which parents and children participate during summer vacation. These programs provide an opportunity to enjoy learning about the environment. At our Advanced Development and Planning Center (at Tenri), we held an event on how to build a solar-powered mini car. At our Tokyo Branch, we held various events on solar power to give participants a better understanding of environmental conservation.

Co-Sponsoring the National Goldfish Scooping Championship

Our Nara site has been co-sponsoring the National Goldfish Scooping Championship held in Yamato-Koriyama, the leading center in Japan for the cultivation of goldfish, since 1995. This competition is a test of skill in which players use a sheet of tissue paper or other material that tears easily to attempt to scoop up goldfish swimming in a tub. The eighth such annual event held on August 18, 2002, attracted 1,786 participants from around Japan. It has recently received widespread coverage on TV and in newspapers and is on its way to becoming a traditional event.

Sharp Employee Opens "Nature Classroom"

Kazuyuki Yamasaki of our Fukuyama site has opened Harashizen-kan (lit., "Original Nature House") housing a series of more than 20 large and small aquariums, primarily mini-biotopes, as a volunteer activity. Children from the local community, who visit almost daily, have given it high ratings for providing them a place where they can have fun experiencing nature. It is being used as an environmental classroom as a part of coursework by local elementary schools.

Coverage by local TV station

Newspaper article featuring the activities of Mr. Yamasaki

Participating in the Volunteer Support Program

Beginning in May 2002, our Mie site has been participating in the Volunteer Support Program sponsored by Japan's Ministry of Land, Infrastructure and Transport. One day each month has been designated as an "Environmental Action Day," and labor and management work together in volunteer cleanup activities along the local streets in the vicinity of our site.

Co-Sponsoring the Yaita Takahara Marathon

Our Tochigi site co-sponsors the Yaita Takahara Marathon and has supplied race numbers and assisted in publishing race information pamphlets every year since the event's inception in 1990. The 13th annual event was held on November 10, 2002, with the participation of some 1,100 athletes.

*Biotope: A word of German origin coined from the combination of "bio" (life, living) and "tope" (place). Ecologically, a biotope is the smallest unit of habitat where all environmental conditions and all types of organisms found within it are the same throughout, but it has come to refer to small-scale natural environments created artificially, often within a well-defined geographical area, for example, in an urban setting.

Overseas Activities

Higashi-Hiroshima Cleanup and Beautification Campaign

On June 9, 2002, 106 employees from our Hiroshima site and members of their families participated in the cleanup campaign sponsored by the city of Higashi-Hiroshima and worked together with local citizens to clean up trash and litter in the vicinity of city hall and various schools. This campaign is held in connection with Environment Month designated as June of each year. Our Hiroshima site has participated in this event since 1998.

Setting Up a Public On-Site Day-Care Facility (SEMEX, Mexico)

In November 2002, in cooperation with the Mexican Social Security Institute, Sharp Electronica Mexico S.A. de C.V. (SEMEX) set up the first public day-care center for children in the city of Rosarito, Baja California, on the grounds of its facilities. Intended to serve parents of children from infants to age four, the center is being used not only by Sharp employees, but also by the public at large. Mr. Luis Enrique Diaz Felix, mayor of Rosarito, expressed kind words of appreciation for this pioneering effort.

Recreational Park Cleanup Campaign (SREC, Malaysia)

On August 25, 2002, 150 employees of Sharp-Roxy Electronics Corporation (M) Sdn. Bhd. (SREC), in cooperation with the local city council, participated in the cleanup of a recreational park on the Batu Pahat River. They also erected an informational sign promoting environmental beautification and donated two trash collection containers to the park.

Fukuyama Cleanup and Beautification Campaign

On the third Sunday in October of each year, the city of Fukuyama launches a total cleanup of city streets. In fiscal 2002, a total of some 6,000 people participated, collecting over 10 tons of trash and garbage, such as empty cans and cigarette butts. 102 employees from our Fukuyama site and members of their families participated in this event.

Co-Sponsoring the Walk America Charity Event (SMCA, USA)

Sharp Manufacturing Company of America (SMCA) is a co-sponsor of the "Walk America," a 7-mile (11 km) charity walking event. This event raises money for a charitable foundation that works to promote children's health by preventing birth defects and infant deaths. SMCA has been a major local sponsor since 1991, and each year, donates Sharp products to the event.

Audio Equipment Donation (SPC, Philippines)

As one aspect of its activities benefiting the local community, SPC is engaged in a program to donate audio equipment to local schools. In fiscal 2002, SPC donated a karaoke setup to Cupang Elementary School.

Yamato River Watershed Cleanup Campaign

The 3rd annual Furu River cleanup event sponsored by an environmental volunteer organization based in Tenri, was held during June 2002. The Furu River is a branch of the Yamato River that flows through the city of Tenri, and Sharp, which has facilities in the Tenri area, used its intranet to ask for participation by employees and their families.

Volunteer Tree Planting (SPC, Philippines)

Sharp (Phils.) Corporation (SPC), in cooperation with the village of Bangar in the northern suburbs of Manila, launched a tree-planting campaign in the area around the village. The tree planting took place on February 22, 2003, with the participation of approximately 50 SPC employees working with local volunteers. Some 500 mahogany seedlings were planted.

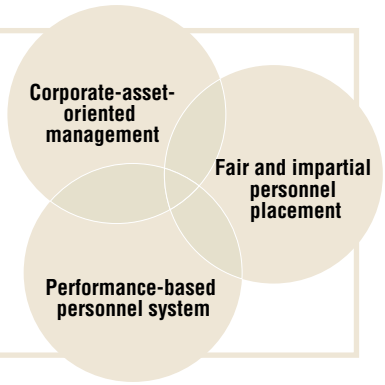
Environmental Protection Seminar (SPC, Philippines)

SPC is taking constructive action to educate the community on environmental topics. In fiscal 2002, SPC conducted a series of seminars on protecting the environment, aimed at local residents associations, elementary schools and students who tour the SPC manufacturing sites.

Building a Rewarding Workplace in Japan

Basic HR (Human Resources) Policy

- Implement a corporate-asset-oriented management strategy, which values the experience and technical skills of each of our employees.
- Carry out flexible personnel placement with a focus on "putting the right employee in the right position," without favor or partiality.
- Increase the abilities of our personnel and the competitiveness of the company through a new HR system founded on a "performance-based" policy.



Personnel System that Makes the Most of Employee Initiative and Diversity

Leadership Program and Challenge Course

The Sharp Leadership Program was introduced in 2001 as an educational system targeting all employees from younger staff members in semi-managerial positions to experienced experts in supervisory positions with the objective of systematically nurturing management personnel. In addition to knowledge-based education implemented in relation to an MBA (Masters of Business Administration) curriculum, this program provides a career development path that includes overseas assignments and participation in a key project, and is intended to nurture management potential and leadership that is in line with global standards.

The Challenge Course, which was introduced in fiscal 2001 for younger staff members in semi-managerial positions, strips away seniority-based factors and sets up a compensation (monthly salary system) and promotion system based to the greatest extent possible on performance. It is intended to foster a mind-set of working to improve one's skills and to encourage responsibility for one's performance, and enables early recruitment of younger personnel.

Personnel Declaration System

The Personnel Declaration System enables all employees to declare once a year their desired type of position and desired assignment location. Based on this declaration, basic information is compiled for the purpose of developing skills and making the most appropriate assignments to foster career development.

Recruitment Entry System

The Recruitment Entry System is a scheme to solicit personnel from among all employees company-wide, inviting them to take newly available positions in critically important areas, such as pioneering new business, developing new technologies and products, etc., and from among the applicants, assign the most appropriate person to the most appropriate position. Employees with the enthusiasm to confront new challenges can always apply for the jobs they desire and gain the opportunity to demonstrate their competence, using their skills and career experience to full advantage.

In fiscal 2002, jobs were offered in approximately 60 projects, resulting in about 130 employees transferring to a new position.

Skill Training Program and Support for Self-Development

In addition to the Leadership Management Development Program and Level-Classified Management Training, we also have in-house training programs by function and occupation intended to further enhance the knowledge and know-how that employees need to do their jobs, including programs in software network technology, value engineering, and intellectual property (patents) for engineers.

In addition, the Human Resources Development Center offers a diverse menu of self-development support programs including e-learning, extension courses, correspondence courses and language training, intended to support employees who desire to hone their skills and capabilities on their own.

Expanding Opportunities for Women

Sharp's human resources system adheres to a performance-based concept with no distinction by career/clerical-track positions or by gender. Many women in semi-managerial positions have signed up for the Challenge Course mentioned previously.

Training class in software network technology essential for the IT age

The Human Resources Development Center works to develop global personnel to pioneer the business areas of the future (Tenri, Nara Prefecture)

Sharp also pursues affirmative action aimed at increasing work opportunities for women and has set up an "Active Woman Course" within the Recruitment Entry System designed exclusively for women. To support working women, we are also providing programs such as maternity leave, parental leave, a system to offer regular employee status while working limited hours, and a system to subsidize the expense of hiring a "home helper."

Examples of projects for the "Active Woman Course"

- Judging product usefulness from a homemaker's perspective
- Education of women sales engineers, etc.

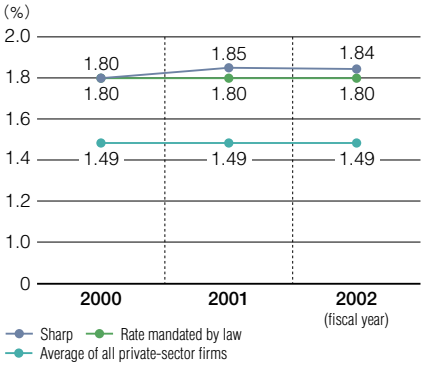
Employment Initiatives for the Physically and Mentally Challenged

Employment

Sharp's commitment to the physically and mentally challenged dates back to 1950, with the founding of Sharp Tokusen Industry Co., a special subsidiary specifically for the physically and mentally challenged. Sharp has established a committee to promote employment of those who are physically or mentally challenged, and remains committed to achieving the physically and mentally challenged employment quotas required by Japanese law, as well as creating a worker-friendly environment for physically and mentally challenged employees.

In fiscal 2002, our physically and mentally challenged employment rate reached 1.84%, surpassing the quota mandated by Japanese law (1.80%).

Physically and Mentally Challenged Employment Rate



Other Support

Sharp strives to assist the physically and mentally challenged in other ways, including donating funds to help cover administrative expenses for charitable organizations (Ikutokuen and others) and helping them to sponsor events (Hayakawa Welfare Hall and others). In the future, Sharp will continue playing a role as a responsible corporate citizen by supporting the physically and mentally challenged in their efforts to become more independent.

Commendation System

Each year, Sharp honors employees and departments at all our sites who have achieved outstanding performance. In fiscal 2002, a total of 131 commendations were awarded, with the AQUOS LCD TV Full Line-Up Expansion Group taking the Sharp Grand Prize. Sharp Appreciation Awards were presented to all our outside consultants and business partners who contributing to society.

President Machida with representatives of the Sharp Grand Prize winning group

Internships

Business Internships

Sharp has implemented a business internship program to provide students of the humanities with an opportunity to experience business firsthand and to develop a business-oriented mind-set. In fiscal 2002, about 60 students received advice and instruction over the course of two weeks from employees, covering issues in areas such as accounting, law, intellectual property rights, and marketing research in Japan.

Technical Internships

Sharp also offers technical internships to provide university and technical college students the opportunity to experience R&D and product development as practiced at Sharp.

In fiscal 2002, about 40 students from universities across Japan majoring mostly in electronics, information, and mechanical fields, were able to experience firsthand the actual processes involved in R&D and product design at our manufacturing sites.

An intern receiving software development instruction from an employee

Sharp Tokusen Industry Co.

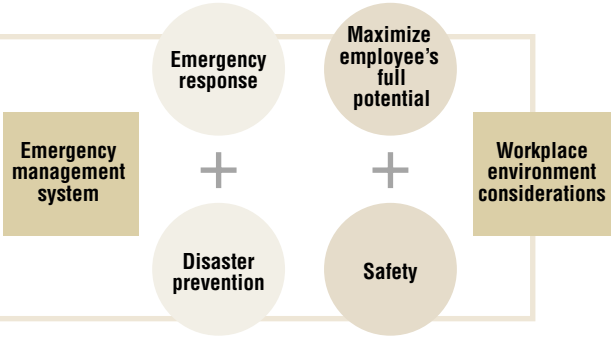
In 1942 a separate factory was founded for the purpose of providing blind war veterans a place to work in Japan. This factory later became the Hayakawa Special Metals Factory in 1950, and continues in operation to this day. In addition to its longtime activities of fabricating electronic parts and PC boards, the corporation has recently stepped into the information age with undertakings such as document digitization and website creation. Even now, the company is expanding the ways in which the physically and mentally challenged may find fulfilling work.

Contributing to Safety and Health in Japan

Disaster Prevention and Safety and Health in the Home and Workplace

1) Sharp places the highest value on human life. Therefore, we actively work to strengthen our emergency preparedness through extensive use of disaster and accident prevention measures as part of a comprehensive emergency management system.
2) In addition to full compliance with safety and health laws wherever we operate, at home or overseas, Sharp strives to create a "safety-first and worker-friendly" environment for all its employees so that they can maximize their full potential.

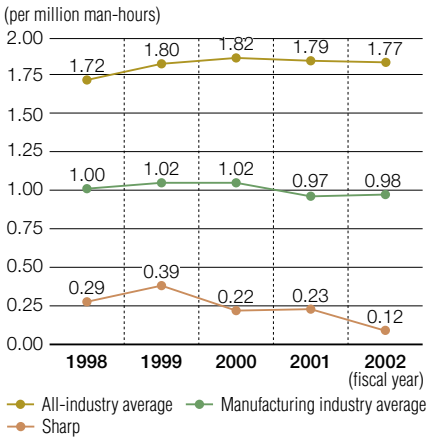
(From the *Sharp Charter of Conduct*)



Current Safety and Health Efforts

The *Sharp Charter of Conduct*, a set of guidelines for corporate behavior for the entire Sharp Group, clearly mandates that a program for "Disaster Prevention and Health and Safety in the Home and Workplace" should be implemented. Because each site has a different product inventory and handles different chemical substances, we have established safety management standards for each site based upon that location's specific needs and local requirements. These standards are then used in conjunction with industrial accident prevention measures. Sharp's industrial accident occurrence rate in Japan for fiscal 2002 was 0.12 incidents per million man-hours, a rate lower than the average for all industries (1.77) and for manufacturing industries (0.98). We do not rest on this performance, however, and have set a goal of zero industrial accidents, committing ourselves to management and continuous improvement of the workplace environment.

Industrial Accident Rate



• Averages for all industries and manufacturing industries are based on the industrial accident trend survey of the Ministry of Health, Labor and Welfare.

Individual Efforts at Each Site

Beyond meeting the minimum legal requirements set forth in the Japan Labor Standards Law and the Worker's Safety and Health Law, each of our sites sets specific goals to achieve a zero accident rate and carries out safety and health-related activities accordingly. Each site shares in safety management efforts whose goal is to heighten safety awareness among employees, eradicate unsafe behavior, and make all of our facilities even safer than they already are.

In terms of specific actions, we carry out periodic workplace safety inspections, fire evacuation drills, and a variety of specialized advisory programs (mental health counseling, health study groups on lifestyle-related diseases, dental health education, VDT operation study groups, traffic safety workshops, and health management for long-hour workers). Events are held throughout the year designed to build employee health, including walking events, bowling tournaments, and other sports tournaments.

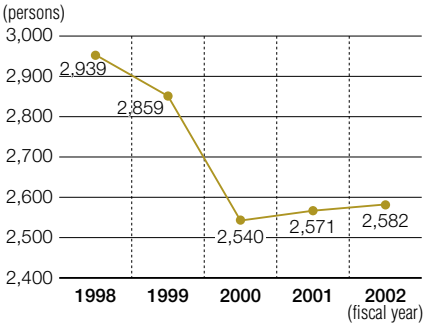
The location and condition of fire extinguishers and other safety equipment is checked.

Fire evacuation drills are held at all our business sites, representing a constructive approach to emergency preparedness.

Contributing to Society Through Blood Donations

Sharp conducts semiannual blood drives at each of our sites in Japan, with more than 2,500 people participating each year. Our objectives are to 1) contribute widely to society by donating blood for the victims of accident and illness, 2) raise awareness of industrial accident prevention and instill a sense of volunteerism, and 3) serve the needs of personal health management by informing donors of blood test lab results.

Blood Drive Participation



Many employees donate in semiannual blood drives.

Efforts to Promote Better Physical Health for Employees and Their Families

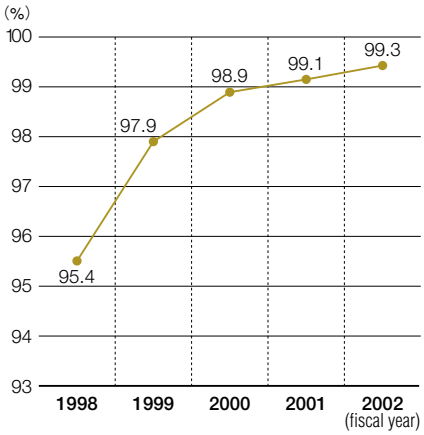
The increase in disease thought to arise from lifestyle habits, such as high cholesterol, high blood pressure, diabetes, heart disease, etc., is becoming a major social and economic issue. Sharp is promoting a voluntary-participation health program aimed at individual behavior modification with the goal of preventing and relieving these lifestyle-related diseases. As part of this effort, Sharp enacted "Healthy Sharp 21" to promote greater well-being among its employees and their families in Japan.

"Healthy Sharp 21" is built on three pillars, with the aim to support healthy living on a permanent basis:

1) Voluntary participation in programs to improve physical well being (strengthening primary prevention efforts)
2) Individual guidance based on data (proactive secondary prevention)
3) Creation of a health network

The basis for all these efforts is the company annual physical checkup, and the participation rate in fiscal 2002 was 99.3%. Sharp is presently studying ways to achieve 100% participation, such as improving notification of the checkup days and increasing opportunities to participate. We are also enhancing our support for improving health, such as providing more work-related measures for employees whose physical checkup indicated problems.

Physical Checkup Participation Rates



Support for Mental Health Care

We have launched the Sharp Stress Management Program designed to generate an awareness for mental disorders (depression, autonomic dysfunction, etc.) as well as to provide support for employees suffering from these afflictions and to strive to reduce the occurrence of mental illness in the workplace.

Program Description

- Provide telephone consultation and face-to-face counseling by specialized outside organizations
- Distribute publications on mental health (at workplace meetings, study groups, etc.)
- Hold mental health workshops
- Conduct stress surveys, provide feedback
- Conduct stress checks through personal interviews with subordinates, and support as necessary
- Educate through managerial-level staff training
- Build a support program intended to prevent relapse

Mental health brochures distributed to all staff, and manual for managers

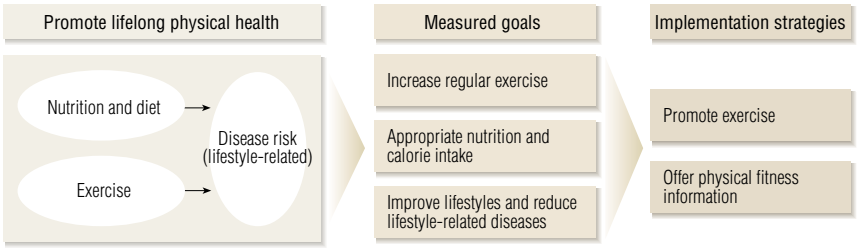
Eliminating Smoking in the Workplace

Based on the Health Promotion Law and Guidelines for Smoking Measures in the Workplace (issued by the Ministry of Health, Labor and Welfare), we are working to prevent exposure to environmental tobacco smoke (passive smoking) by instituting a ban on smoking in all areas except designated "smoking rooms." This is another aspect of our efforts to reduce health risks to employees and maintain a comfortable work environment.

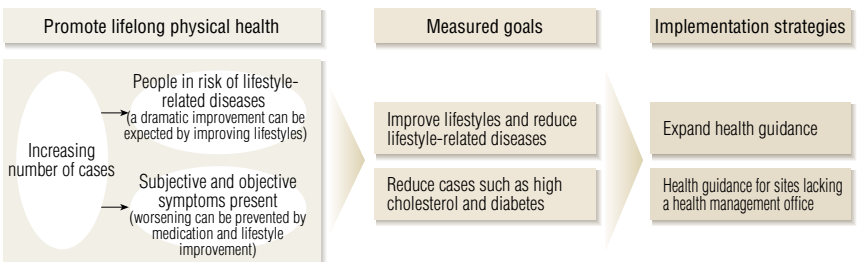
Smoking room, a measure taken to provide a separate smoking areas

Structure of "Healthy Sharp 21"

1) Voluntary participation in programs to improve physical well-being (primary prevention efforts)



2) Individual guidance based on data (proactive secondary prevention)



Environmental Data

Major Sharp Group Business Sites

● Sites covered in environmental performance data ● ISO-certified sites

Japan

Production sites	Sharp Corporation	●	●	Tochigi site
		●	●	Yao site
		●	●	Hiroshima site
		●	●	Nara site
		●	●	Shinjo site
		●	●	Fukuyama site
		●	●	Mie site
		●	●	Tenri site
		●		Mihara site
	Consolidated subsidiaries	●	●	Sharp Manufacturing Systems Corporation
		●	●	Sharp Niigata Electronics Corporation
	Non-consolidated subsidiaries	●	●	Sharp Hiroshige Mie Corporation
		●	●	Sharp Tokusen Industry Co.
	Affiliated companies	●	●	Kanto Tatsumi Electronics Co., Ltd.
		●	●	Sharp Takaya Electronics Industry Co., Ltd.
Non-production sites	Sharp Corporation	●	●	Head Office/Tanabe Building
		●	●	Makuhari Building (Tokyo Branch)
		●	●	Tokyo Ichigaya Building
	Consolidated subsidiaries	●	●	Sharp Electronics Marketing Corporation
		●	●	Sharp Finance Corporation
		●	●	Sharp System Products, Co., Ltd.
		●	●	Sharp-Engineering Corporation
		●	●	Sharp Document Systems Corporation
		●	●	Sharp Amenity Systems Corporation
		●	●	Sharp Trading Corporation
	Non-consolidated subsidiaries	●	●	Sharp Semiconductor Corporation
				Sharp Business Computer Software Inc.
		●	●	SI Solutions Corporation
		●	●	One Stop Support Corporation
	Affiliated companies	●	●	Sharp Electronics Sales Okinawa Corporation
				Sharp Matsuyama OA Co., Ltd.
				OA. System Sharp Corpration
				Japan RF Solutions Co., Ltd.
		●	●	Kansai Recycle Systems Corporation

Americas

Production sites	Consolidated subsidiaries	●	●	Sharp Manufacturing Company of America (SMCA)* United States
		●		Sharp Electronics Mexico S.A. de C.V. (SEMEX) Mexico
Non-production sites	Consolidated subsidiaries	●		Sharp Electronics Corporation (SEC) United States
		●	●	Sharp Laboratories of America, Inc. (SLA) United States
				Sharp Electronics of Canada Ltd. (SECL) Canada

*Production division of SEC

Europe

Production sites	Consolidated subsidiaries	●	●	Sharp Manufacturing Company of U.K. (SUKM)* UK
		●	●	Sharp Electronica España S.A. (SEES) Spain
		●	●	Sharp Manufacturing France S.A. (SMF) France
	Non-consolidated subsidiaries	●	●	Sharp Precision Manufacturing (U.K.) Ltd. (SPM) UK
Non-production sites	Consolidated subsidiaries	●	●	Sharp Electronics (Europe) GmbH (SEEG) Germany
		●	●	Sharp Electronics (U.K.) Ltd. (SUK) UK
		●	●	Sharp Electronics France S.A. (SEF) France
		●	●	Sharp Laboratories of Europe, Ltd. (SLE) UK
				Sharp Electronics (Italia) S.p.A. (SEIS) Italy
				Sharp Electronics (Schweiz) AG (SEZ) Switzerland
				Sharp Electronics (Nordic) AB (SEN) Sweden
				Sharp Electronics Benelux B.V. (SEB) Netherlands
				Sharp International Finance (U.K.) Plc. (SIF) UK
				Sharp Electronics Ges. M.B.H. (SEA) Austria

*Production division of SUK

Asia, Middle East and Oceania

Production sites	Consolidated subsidiaries	●	●	Sharp Appliances (Thailand) Ltd. (SATL) Thailand
		●	●	Sharp (Phils.) Corporation (SPC) Philippines
		●	●	Sharp Electronics (Taiwan) Co., Ltd. (SET) Taiwan
		●	●	Sharp Manufacturing Corporation (M) Sdn. Bhd. (SMM) Malaysia
		●	●	Shanghai Sharp Electronics Co., Ltd. (SSEC) China
		●	●	Sharp Office Equipments (Changshu) Co,. Ltd. (SOCC) China
		●	●	Wuxi Sharp Electronic Components Co., Ltd. (WSEC) China
		●	●	Nanjing Sharp Electronics Co., Ltd. (NSEC) China
		●	●	P.T. Sharp Semiconductor Indonesia (SSI) Indonesia
		●	●	P.T. Sharp Yasonta Indonesia (SYI) Indonesia
	Non-consolidated subsidiaries	●	●	Kalyani Sharp India Limited (KSIL) India
		●		Shanghai Sharp Mold and Manufacturing Systems Co., Ltd. (SSMC) China
	Affiliated companies	●	●	Sharp-Roxy Electronics Corporation (M) Sdn. Bhd. (SREC) Malaysia
		●	●	Sharp Korea Corporation (SKC) Korea
		●	●	Sharp-Roxy Corporation (M) Sdn. Bhd. (SRC) Malaysia
		●	●	Sharp Thebnakorn Manufacturing (Thailand) (STTM)* Thailand
Non-production sites	Consolidated subsidiaries	●	●	Sharp Corporation of Australia Pty. Ltd. (SCA) Australia
		●	●	Sharp Electronics (Malaysia) Sdn. Bhd. (SEM) Malaysia
				Sharp Software Development India Pvt. Ltd. (SSDI) India
				Sharp Corporation of New Zealand Ltd. (SCNZ) New Zealand
				Sharp-Roxy Sales (Singapore) Pte., Ltd. (SRS) Singapore
				Sharp Electronics (Singapore) Pte., Ltd. (SESL) Singapore
				Sharp Electronic Components (Taiwan) Corporation (SECT) Taiwan
				Sharp Technology (Taiwan) Corporation (STT) Taiwan
				Sharp Middle East FZE (SMEF) UAE
	Non-consolidated subsidiaries	●		P.T. Sharp Yasonta Antarnusa (SYA) Indonesia
	Affiliated companies	●	●	Sharp-Roxy Sales & Service Company (M) Sdn. Bhd. (SRSSC) Malaysia
				Sharp Thebnakorn Co., Ltd. (STCL) Thailand

*Production division of STCL

Preventing Global Warming

	Japan			Americas			Europe		
	Fiscal 2000	Fiscal 2001	Fiscal 2002	Fiscal 2000	Fiscal 2001	Fiscal 2002	Fiscal 2000	Fiscal 2001	Fiscal 2002
Energy consumption (GJ*)	11,663,860	11,936,473	14,001,379	385,317	359,400	402,581	205,935	212,645	291,472
Electricity (MWh)	1,078,015	1,120,208	1,294,937	33,312	30,612	35,882	15,551	15,959	21,638
City gas (1,000 m^3)	11,003	10,026	18,064	1,300	952	831	1,262	1,329	1,878
LPG (t)	9,170	7,896	8,853	68	371	300	5	3	3
Heavy oil/kerosene (kL)	10,078	8,586	6,179	0	0	0	0	0	0
CO_2 emission (t-CO_2)	464,069	470,776	549,315	23,109	24,992	28,244	8,742	10,027	14,254

	Asia/Oceania			China			Total		
	Fiscal 2000	Fiscal 2001	Fiscal 2002	Fiscal 2000	Fiscal 2001	Fiscal 2002	Fiscal 2000	Fiscal 2001	Fiscal 2002
Energy consumption (GJ*)	1,249,184	1,137,508	1,119,659	442,763	457,529	518,891	13,947,059	14,103,555	16,333,982
Electricity (MWh)	109,834	99,499	99,652	44,312	45,904	52,099	1,281,024	1,312,182	1,504,208
City gas (1,000 m^3)	0	0	0	39	51	55	13,604	12,358	20,828
LPG (t)	2,393	2,172	2,030	0	0	0	11,636	10,442	11,186
Heavy oil/kerosene (kL)	1,319	1,363	1,026	152	114	123	11,549	10,063	7,328
CO_2 emission (t-CO_2)	70,194	74,554	74,452	37,547	45,512	51,629	603,661	625,861	717,894

*GJ=10^9J

Amount of Waste by Category (production sites in Japan)

(unit: ton)

Category	Amount generated			Amount recycled			Amount to landfill		
	Fiscal 2000	Fiscal 2001	Fiscal 2002	Fiscal 2000	Fiscal 2001	Fiscal 2002	Fiscal 2000	Fiscal 2001	Fiscal 2002
Waste alkaline	78,583	104,013	123,564	70,168	99,116	112,536	4.8	4.0	0.5
Waste oil	11,513	13,319	15,175	10,826	12,849	14,672	1.2	0.5	0.7
Inorganic sludge	4,942	3,685	4,284	4,747	3,670	4,269	195.8	6.3	2.4
Waste fluid	4,004	3,203	2,462	3,648	3,165	2,426	270.1	9.3	0.3
Waste paper	2,911	3,110	3,475	2,277	2,669	3,087	94.0	18.3	7.3
Waste glass	1,429	1,628	1,794	835	1,598	1,787	589.9	27.9	7.4
Scrap metal	1,270	1,093	986	1,253	1,093	983	15.3	0.0	0.0
Waste plastic	1,350	1,380	1,441	764	1,043	1,204	404.9	82.0	34.4
Others	3,725	4,195	4,130	2,794	3,304	3,569	116.4	9.0	37.7
Total	109,727	135,626	157,311	97,312	128,507	144,533	1692.4	157.3	90.7

Atmosphere / Water Quality Measurements

(production sites in Japan)

(unit: ton)

		Fiscal 2000	Fiscal 2001	Fiscal 2002
Amount of air pollutants emitted	SOx	10.5	9.2	4.1
	NOx	25.8	26.8	26.5
Water quality measure-ments	COD	42.5	19.8	22.7
	Nitrogen	144.1	117.5	163.8
	Phosphorus	3.2	2.6	1.9

Chemical Substances Management

PRTR Totalization of All Sharp Corporation Production Sites in Japan in Fiscal 2002

Figures are for substances of which at least 500 kg was handled.

(unit: kg)

PRTR No.	Chemical	Amount handled	Amount emitted			Amount transported		Amount consumed	Amount removed	Amount recycled
			Into atmosphere	Into public waterways	Into soil/ landfill	Into sewage	To off-site			
16	2-Aminoethanol	2,693,671.36	2,144.64	0.00	0.00	0.00	123,593.55	0.00	231,797.63	2,336,135.56
40	Ethylbenzene	1,988.15	131.60	0.00	0.00	0.00	805.64	0.00	1,050.95	0.00
43	Ethylene glycol	1,121.57	0.00	39.00	0.00	0.00	1,025.60	0.00	56.97	0.00
63	Xylene	9,998.43	883.99	0.00	0.00	0.00	4,134.36	0.00	4,977.94	2.19
64	Silver and its water-soluble compounds	18,117.75	0.00	0.00	0.00	0.00	919.17	16,978.11	0.06	220.43
67	Cresol	907.37	0.00	0.00	0.00	0.00	907.37	0.00	0.00	0.00
85	Chlorodifluoromethane: HCFC-22	1,798.88	107.00	0.00	0.00	0.00	484.00	1,207.88	0.00	0.00
101	2-Ethoxyethyl acetate	13,254.85	5,978.62	0.00	0.00	0.00	7,276.23	0.00	0.00	0.00
172	N, N-dimethylformamide:DMF	62,514.00	10.76	0.00	0.00	0.00	4,474.24	0.00	58,029.00	0.00
224	1, 3, 5-Trimethylbenzene	8,311.92	584.92	0.00	0.00	0.00	5,827.67	0.00	1,871.62	27.77
230	Lead and its compounds	12,782.55	0.00	0.00	0.00	0.00	716.33	12,065.84	0.00	0.39
252	Arsenic and its inorganic compounds	2,452.68	0.00	0.00	0.00	0.00	1,185.26	125.72	0.00	1,141.75
260	Pyrocatechol	5,694.37	0.00	0.00	0.00	0.00	5,612.37	0.00	82.00	0.00
266	Phenol	16,820.58	3,427.10	0.00	0.00	0.00	13,393.29	0.21	0.00	0.00
283	Hydrogen fluoride and its water-soluble salts	343,497.62	17.37	22,748.01	0.00	1,441.61	20,245.72	0.00	261,874.66	37,170.36
304	Boron and its compounds	1,331.41	2.33	0.23	0.00	0.00	845.78	483.01	0.12	0.00
311	Manganese and its compounds	3,295.25	0.02	0.00	0.00	0.00	61.10	3,138.10	96.00	0.00
346	Molybdenum and its compounds	667.35	0.00	5.96	0.00	0.00	609.63	36.27	14.83	0.69
	Total	3,198,226.09	13,288.35	22,793.20	0.00	1,441.61	192,117.31	34,035.14	559,851.78	2,374,699.14

Environmental Data

Chemical Substances Management

Amount of Chemicals Released and Transferred Based on a Sharp International Standard

Sharp has created a list of 204 chemicals* whose handling and transfer is to be controlled. These chemicals include PRTR substances that are recognized in all countries, greenhouse gases, ozone layer depleting substances, and substances covered under our company's "Green Purchasing Guidelines." The tables below show the calculations for substances of which at least 250 kg was handled per Sharp business site in fiscal 2002.

* Chemicals (number of substances): Specified bromine-based flame retardants (2), CFCs (15), halons (37), HCFCs (37), HFCs (13), PFCs (7), PCBs (3), agrichemicals (3), chlorine-based organic solvents (20), chlorobenzenes (3), ester phthalates (4), aromatic organic solvents (14), other organic solvents (27), heavy metals (12), other non-organic compounds (7)

Americas

(unit: kg)

	Amount handled	Amount emitted			Amount transported		Amount consumed	Amount removed	Amount recycled
		Into atmosphere	Into public waterways	Into soil/ landfill	Into sewage	To off-site			
Lead and its compounds	29,070	0	0	0	0	0	13,200	0	15,870

Europe

	Amount handled	Amount emitted			Amount transported		Amount consumed	Amount removed	Amount recycled
		Into atmosphere	Into public waterways	Into soil/ landfill	Into sewage	To off-site			
Lead and its compounds	12,524	0	0	0	0	0	10,364	0	2,160

Asia

	Amount handled	Amount emitted			Amount transported		Amount consumed	Amount removed	Amount recycled
		Into atmosphere	Into public waterways	Into soil/ landfill	Into sewage	To off-site			
Chlorodifluoromethane: HCFC-22	268,564	1,589	0	0	0	0	266,975	0	0
Pentafluoroethane (HFC-125)	5,850	170	0	0	0	0	5,680	0	0
1,1,1,2-Tetrafluoroethane (HFC-134a)	30,289	132	0	0	0	0	30,157	0	0
Difluoromethane (HFC-32)	5,850	170	0	0	0	0	5,680	0	0
Methyl ethyl ketone	3,243	2,471	0	0	0	0	772	0	0
Antimony and its compounds	2,112	0	0	0	0	924	1,188	0	0
Lead and its compounds	259,467	0	0	0	0	511	190,467	0	68,489

China

	Amount handled	Amount emitted			Amount transported		Amount consumed	Amount removed	Amount recycled
		Into atmosphere	Into public waterways	Into soil/ landfill	Into sewage	To off-site			
Chlorodifluoromethane: HCFC-22	600,000	3,550	0	0	0	0	596,450	0	0
Pentafluoroethane (HFC-125)	40,000	1,160	0	0	0	0	38,840	0	0
1,1,1,2-Tetrafluoroethane (HFC-134a)	48,400	211	0	0	0	0	48,189	0	0
Difluoromethane (HFC-32)	40,000	1,160	0	0	0	0	38,840	0	0
Methanol	348	348	0	0	0	0	0	0	0
Lead and its compounds	24,050	0	0	0	0	0	19,910	0	4,140

Water Resources (water supplied)

(unit: m^3)

	Japan			Americas			Europe		
	Fiscal 2000	Fiscal 2001	Fiscal 2002	Fiscal 2000	Fiscal 2001	Fiscal 2002	Fiscal 2000	Fiscal 2001	Fiscal 2002
Total amount consumed	12,049,700	10,573,715	11,895,735	301,066	203,828	190,072	21,304	22,020	19,580
Municipal water	4,437,081	3,371,337	4,085,519	291,808	171,778	190,072	20,470	21,399	18,971
Industrial water	6,177,697	5,659,422	6,348,668	0	0	0	834	621	609
Groundwater	1,434,922	1,542,956	1,461,548	9,258	32,050	0	0	0	0

	Asia/Oceania			China			Total		
	Fiscal 2000	Fiscal 2001	Fiscal 2002	Fiscal 2000	Fiscal 2001	Fiscal 2002	Fiscal 2000	Fiscal 2001	Fiscal 2002
Total amount consumed	583,995	465,420	638,181	844,969	848,246	620,395	13,801,034	12,113,229	13,363,963
Municipal water	388,814	287,997	460,306	725,318	719,051	498,663	5,863,491	4,571,562	5,253,531
Industrial water	115,725	99,127	98,965	119,651	129,195	121,732	6,413,907	5,888,365	6,569,974
Groundwater	79,456	78,296	78,910	0	0	0	1,523,636	1,653,302	1,540,458

Number of Environmental Label Products

(unit: no. of model type)

International Energy Star Program[*1]									
PCs	Monitors	Facsimiles	Air conditioners	Copiers	Printers	TVs	VCRs	LCD TVs	VCRs/DVDs
53	34	31	5	52	6	54	3	18	2

International Energy Star Program		Environmental Choice Program		Nordic Environmental Label[*2]		Enery-Saving Label[*3]	PC Green Label[*4]	Eco Mark[*5]	
Audio systems	DVDs	Copiers	Printers	Copiers	Printers	Refrigerators	PCs	Copiers	Calculators
28	4	8	6	7	8	2	53	16	8

GEEA Label[*6]	Hong Kong Energy-Saving Label		Hong Kong[*7]	Thai Energy Label	Thai Green Label	Australia Energy Label	Turkey Energy Label	Venezuela Energy Label	Philippines Energy Label
LCD TVs	Air conditioners	Refrigerators	Copiers	Air conditioners	Refrigerators	Refrigerators	Refrigerators	Refrigerators	Refrigerators
4	8	5	2	5	10	7	5	3	5

*1: **Target Countries—**Japan, United States, EU nations, etc. *2: **Target Countries—**Sweden, Finland, Norway, Iceland, Denmark *3: **Target Country—**China *4: **Target Country—**Japan
*5: **Target Country—**Japan *6: **Target Countries—**EU nations
*7: The Hong Kong Voluntary Energy Efficiency Labelling Scheme

Recycling Used Products

Business-Use PCs Recycled in Fiscal 2002

	Amount collected (kg)	No. of collected units	Amount recycled (kg)	Recycling rate (%)
Notebook PCs	812	280	435	53.6
Desktop PCs	2,459	243	1,702	69.2
CRT monitors	1,519	124	960	63.2
Total	4,790	647	3,097	64.7

Recycling of 4 Categories of Home Appliances

1. Recycling Status of Specified Kinds of Home Appliances

	Unit	Air conditioners	TVs	Refrigerators	Washing machines	Total
Recycling rate	%	80	81	62	61	69
Legally required recycling rates	%	60	55	50	50	—
Collected units	Unit	162,448	370,609	266,691	317,109	1,116,857
Processed units*	Unit	161,189	370,693	266,473	314,233	1,112,588
Processed tonnage*	t	6,999	9,723	15,011	9,125	40,858
Recycled tonnage	t	5,624	7,882	9,392	5,652	28,550

* "Processed units" and "processed tonnage" refer to the total number of units and tonnage of appliances in categories specified by law which underwent processes necessary for recycling in fiscal 2002.

2. Tonnage of Recycled Materials

	Unit	Air conditioners	TVs	Refrigerators	Washing machines	Total
Iron	t	1,832	644	6,491	3,446	12,413
Copper	t	328	377	100	83	888
Aluminum	t	22	8	38	25	93
Ferrous/nonferrous compounds	t	3,241	56	2,137	1,569	7,003
CRT glass	t	—	5,938	—	—	5,938
Other valuable material	t	193	818	615	506	2,132
Total tonnage	t	5,616	7,841	9,381	5,629	28,467

3. Total Amount of Collected Refrigerants

	Unit	Air conditioners	TVs	Refrigerators	Washing machines	Total
Total amount of collected refrigerants	kg	75,496	—	23,286	—	98,782

For details on environmental data (atmosphere measurements, water quality measurements, PRTR totalization, malodorant substances, and COD/nitrogen/phosphorous emissions) for Sharp's domestic production sites, see the following website:
http://sharp-world.com/corporate/eco/site_info/2002/index.html

Environmental History and Awards

History

Environmental Activities Over the Years in Japan

Year	Activities
1971	● Establishes the Environmental Technology Center
1979	● Establishes the First Synthetic Energy Committee
1987	● Establishes the CFC Regulation Countermeasure Committee
1991	● Appoints the Corporate Director for Environmental Management ● Establishes the Environmental Activities Promotion Department
1992	● Enacts the Sharp Environmental Charter and Basic Environmental Conservation Guidelines
1993	● Establishes the First Environmental Strategy Conference ● Announces the Voluntary Plan on Environment ● Begins registration of persons in charge of environmental conservation for overseas operations
1994	● Phases out ozone-depleting chemicals in the cleansing process of all operations ● Phases out vinyl chloride in all packaging ● Establishes the C-PA (Chemical Product Assessment) system
1995	● Revises the Product Assessment Guidelines
1996	● Achieves the Waste Reduction Voluntary Plan goal ● Starts an all-company effort to create Green Products
1997	● Completes ISO 14001 certification acquisition at all Japanese production sites ● Conducts a Global Environmental Conference ● Establishes the Environmental Protection Group
1998	● Begins the environmental 3G-1R strategy ● Green Products Guidelines published ● Sharp Green Seal system introduced ● Green Mind Campaign started
1999	● Environmental Report published ● Kansai Recycle Systems Corporation established ● Trial introduction of the environmental accounting system
2000	● All Japanese sites introduce the Green Purchasing System ● Introduces full-fledged environmental accounting system ● Launches environmental solutions business ● Establishes company-wide chemical substance management committee ● Issues Green Factory Guidelines
2001	● Launches Green Engineering training ● Starts Super Green Initiatives ● Acquisition of ISO 14001 integrated certificate at major bases of all domestic sales and service companies
2002	● Achieves zero discharge to landfill at all Japanese production sites ● Establishes environmental compliance committee
2003	● Puts closed loop plastic material recycling technology to practical use ● Establishes Sharp Green Club

Awards

Sites

Year / Month	Sites and Awards
1995. 6	**Tenri LCD Group, Tenri, Japan** ■ IPA (isopropyl alcohol) recovery and refinement, Minister of International Trade and Industry Prize, 21st Award for Excellent Environmental Equipment
1995. 10	**All Sharp** ■ 1995 US Environmental Protection Agency Stratospheric Ozone Protection Award
1995. 12	**SRAC, Selangor, Malaysia** ■ Malaysia Ozone Layer Protection Award
1996. 4	**SUKM, North Wales, UK** ■ UK Styrofoam Recycling Award
1996. 6	**Advanced Development and Planning Center, Health and Welfare Division** ■ 1995 Excellent Facilities of Lighting Widespread Award
1997. 4	**Fukuyama IC Group, Fukuyama, Hiroshima, Japan** ■ Fluorine Contaminated Waste Liquid Crystal Treatment Technology, 56th Outstanding Invention Award from the Science and Technology Award
1997. 6	**Electronic Components Group, Shinjo, Japan** ■ 1997 Environmental Protection Distinguished Service Award for Global Warming Prevention from the Environmental Agency
1997. 6	**TFT LCD Group, Tenri and Mie, Japan** ■ DMSO (dimethyl sulpho oxide) Contaminated Waste Water Recovery and Reuse System, Minister of International Trade and Industry Prize, 23rd Award for Excellent Environmental Equipment
1997. 10	**Fukuyama IC Group, Fukuyama, Hiroshima, Japan** ■ Recycling Promotion Achievement Award, Chairman's Prize from Recycling Promotion Association
1997. 12	**SET, Kaohsiung, Taiwan** ■ Industrial Waste Recycling Activity Grand Prize from the Economy Management Bureau
1998. 1	**STTM, Nakornchaisri, Thailand** ■ 1997 Excellent Environmental All Factory Award
1998. 10	**TFT LCD Group, Tenri, Japan** ■ Recycling Promotion Achievement Award, Chairman's Prize from Recycling Promotion Association
1999. 10	**Fukuyama Integrated Circuits Group, Japan** ■ Recycling Promotion Achievement Award, Minister of International Trade and Industry Prize, from Recycling Promotion Association
1999. 10	**Nara Site, Japan** ■ Recycling Promotion Achievement Award, Chairman's Prize from Recycling Promotion Association
1999. 10	**TFT LCD Group, Mie, Japan** ■ Recycling Promotion Achievement Award, Chairman's Prize from Recycling Promotion Association
1999. 12	**SET, Kaohsiung, Taiwan** ■ Award for Environmentally Conscious Companies ■ Silver Award for Recycling Activities
2000. 2	**All Sharp** ■ Special Company Energy Conversion Awards
2001. 4	**TFT LCD Group, Mie, Japan** ■ 3rd Japan Water Award, Promotion Prize
2001. 10	**West Japan Logistics Center** ■ 2nd Railway Freight Promotion Award
2002. 10	**AVC Liquid Crystal Display Group/Mobile Liquid Crystal Display Group** ■ Reduce, Reuse, Recycle Promotion Achievement Award, Chairman's Prize from Recycling Promotion Association
2002. 10	**Appliance Systems Group** ■ Reduce, Reuse, Recycle Promotion Achievement Award, Chairman's Prize from Recycling Promotion Association
2003. 5	**SMCA, Tennessee, US** ■ Industrial Water Quality Achievement Award
2003. 6	**Sharp Corporation, Japan** ■ Third Prize, 6th Green Reporting Award

Products

Year / Month	Products and Awards
1994. 2	**Fully Automatic Washing Machine** ■ Commendation from the Director General of the Agency for National Resources and Energy in the 1993 Energy Conservation Vanguard 21
1996. 2	**Refrigerator** ■ Commendation from the Chairman of the Energy Conservation Center in the 1995 Energy Conservation Vanguard 21
1997. 1	**Residential Photovoltaic Power Generation System** ■ Commendation from the Director General of the Agency for National Resources and Energy in the 1996 Energy Conservation Vanguard 21
1997. 1	**Electric Carpet** ■ Commendation from the Chairman of the Energy Conservation Center in the 1996 Energy Conservation Vanguard 21
1997. 1	**Refrigerator** ■ Commendation from the Director General of the Agency for National Resources and Energy in the 1996 Energy Conservation Vanguard 21
1997. 3	**Photovoltaic Power Generation System for Residential Use** ■ Approval of Excellent Energy Conservation Construction Technology of Solar-Powered House System
1997. 11	**Vacuum Insulation Technology** ■ 1997 US Environmental Protection Agency Stratospheric Ozone Protection Award
1998. 1	**Fully Automatic Washing Machine** ■ Commendation from the Minister of International Trade and Industry in the 1997 Energy Conservation Vanguard 21
1998. 2	**Residential Photovoltaic Power Generation System** ■ Commendation from the Director General of the Agency for National Resources and Energy in the 1997 New Energy Vanguard 21
1999. 2	**LCD Navigation Microwave Oven / Super Mobile LCD / Low Power Consumption Power Supply** ■ Commendation from the Chairman of the Energy Conservation Center in the 1998 Energy Conservation Awards
1999. 2	**200 kW Photovoltaic Generator with Snow Melting Function** ■ Commendation from the Minister of International Trade and Industry in the 1998 New Energy Awards
1999. 2	**Residential Photovoltaic Power Generation System** ■ Commendation from the Chairman of the New Energy Foundation in the 1998 New Energy Awards
2000. 1	**Refrigerator [made at Shanghai Sharp Electronics Co., Ltd. (SSEC)]** ■ Ozone Protection Award from China's Environmental Protection Agency
2000. 2	**20-Inch LCD TV** ■ Commendation from the Chariman of the Energy Conservation Center in the 1999 Energy Conservation Awards
2000. 2	**Refrigerator** ■ Commendation from the Chairman of the Energy Conservation Center in the 1999 Energy Conservation Awards
2000. 2	**Environment-Friendly Housing Complexes Equipped with Photovoltaic Power Generation System** ■ Commendation from the Minister of International Trade and Industry in the 2000 New Energy Awards
2000. 11	**Non-Volatile Memory Cell Read-Out Circuit Logic** ■ 2000 Kinki Regional Invention Prize
2001. 2	**Refrigerator** ■ Commendation from the Chairman of the Energy Conservation Center in the 2000 Energy Conservation Awards
2001. 2	**Residential Photovoltaic Power Generation System** ■ Commendation from the Chairman of the New Energy Foundation in the 2000 New Energy Awards
2001. 2	**Photovoltaic Power Generation System at Nippon Institute of Technology** ■ Commendation from the Chairman of the New Energy Foundation in the 2000 New Energy Awards
2002. 2	**Apartment Equipped with High-Density Photovoltaic Power Generation System** ■ Commendation from the Minister of Economy, Trade and Industry in the 2001 New Energy Awards
2002. 2	**Residential Photovoltaic Power Generation System for Hipped Roof** ■ Commendation from the Chairman of the New Energy Foundation in the 2001 New Energy Awards
2002. 2	**Micowave Oven (RE-VC1)** ■ Commendation from the Chairman of the Energy Conservation Center in the 2001 Energy Conservation Awards

Third-Party Opinion of Sharp's Environmental Report

Dr. Yutaka Suzuki
President
Himeji Institute of Technology
Professor
Emeritus, Osaka University

Looking to our future, I have the sense that the general public widely recognizes that nothing is more important than protecting the environment. Our society, which features various laws mandating recycling, ordinances and taxes promoting green purchases, and especially grass-roots community efforts such as recycling campaigns, has been made possible by the fundamental support of the public for these systems.

The concern of the public is focused not only on choosing products and services that place a minimal burden on the environment, but is also directed toward the stance of corporations that supply them. It is obvious that the amount of consideration a business enterprise gives to protecting the environment will have a major impact on its future potential. Environmental reports are becoming essential to establish how corporations conduct their businesses, and also for the public to objectively evaluate their behavior and actions.

Sharp is a corporation representing Japan that has expanded to conduct business on a global basis. Sharp is well known for developing uniquely featured products. In particular, Sharp has been the world's largest producer of solar cells by far for three years running. Typical environmental reports focus mainly on efforts to reduce the burden on the environment, but the Sharp Environmental Report aims at making a positive contribution to building an "ecologically sustainable society" that conserves and protects the environment. Its dominant feature is that it extols clean "energy creation" based on solar cells and "energy conservation" based on LCD TVs, and provides concrete results in terms of environmental impact to back it up.

The environmental mass balance diagram on page 13 of the report depicts in an easy-to-understand manner the connection between business activities and the environment. For example, the fact that the amount of energy expected to be created during the working life of all solar cells manufactured throughout fiscal 2002 is equivalent to 1.5 times the amount of energy consumed by all of Sharp's operations during fiscal 2002 can be gleaned from this diagram. I am looking forward to further refinements and data enhancements for this diagram.

Sharp has titled its overall corporate environmental activities the Super Green Initiatives, and they can be regarded as a total management-by-objective system. By dividing it up into six stages (Management, Planning & Design, Manufacturing, Recycling, Logistics and Mind-Set), Sharp has set clear single-year and intermediate-term goals and policies for each stage, with action programs intended to achieve these goals. The table on pages 11 and 12 brings together, for each action theme at each stage, the specific items that will be focused on, goals and results for fiscal 2002, self-evaluation, and goals for the next fiscal year and for fiscal 2005. Specific descriptions of activities in the Super Green Initiatives can be perused in list form.

The foundation of environmental sustainability management is establishing a system for its planning and promotion and working toward continuous incremental improvement of the environmental management system (EMS) by repeated application of the PDCA (Plan, Do, Check, Act) process model. Sharp has set up an Environmental Protection Group headed by the corporate director responsible for environmental matters, and has built a system to coordinate closely with the departments responsible for environmental affairs in each business group and at its overseas sites. The company has also laid out a robust environmental action framework under which an environmental strategy management conference that will serve as the ultimate decision-making body for environmental conservation activities will be held. In fiscal 2002, the company also formulated the Sharp Environmental Management System (S-EMS) that adds 49 unique items to those already being managed under ISO 14001 with the goal of further invigorating its EMS efforts and ensuring maximum environmental compliance with applicable laws and regulations. Sharp will introduce the S-EMS in its manufacturing facilities in fiscal 2003 and we can all look forward to its beneficial impact.

Environmental accounting is an effective tool for gaining a quantitative understanding of the result of actions taken to protect the environment. This system was introduced at Sharp in fiscal 1999, and a summary of results for fiscal 2002 appears on pages 17 and 18. The coverage is expansive, from Japan to overseas, and Sharp is now moving to implement a global environmental accounting system as described above. However, I think some devisal will be necessary to make the explanations easier to understand and at the same time raise the inclusivity and accuracy of the data. Also, the fact that all of Sharp's manufacturing facilities in Japan have attained zero discharge to landfill (the landfill disposal rate is less than 0.5%) for two years in a row represents an outstanding achievement.

Green product development, energy-creating products, energy-saving and resource-saving products, products that create for clean living environments, design to enable products to be used safely, and development of design technologies that take the 3Rs (reduce, reuse, recycle) into consideration are all described and explained in an easy-to-understand manner. This document will likely become a valued reference for the ordinary reader.

The report also presents the current status of actions to recycle used products and minimize the use of containers and packing materials.

I rate the Sharp Environmental Report to be totally complete in terms of content, focusing on the theme of environmental sustainability management while presenting the depth and breadth of Sharp's corporate activities. I hope next year's report will reach an even higher level through implementing the PDCA process model.

Professional Background of Dr. Yutaka Suzuki

Professional background	October 1972 to March 1998	Professor, Osaka University (School of Engineering)
	April 1995 to March 1998	Director, Collaborative Research Center for Advanced Science and Technology, Osaka University
	August 1995 to August 1997	Dean, School of Engineering, Osaka University
	April 1998 to September 2000	Professor, Setsunan University (Faculty of Engineering)
	April 1998 to present	Professor Emeritus, Osaka University
	October 2000 to present	President, Himeji Institute of Technology
Research activities	Pursued research on regional energy supply/demand analysis, regional energy planning, design and assessment of new power generation systems, energy load balancing, etc.	
Publications		
Translator:	"Beyond the Age of Waste" (Diamond Inc. 1979)	
Editor:	"Recycling-Based Engineering" (Japan Society of Energy and Resources, 1996)	
Editor:	"Energy Load Balancing" (Japan Society of Energy and Resources, 2000)	
Committees		
Chairman:	Japan Society of Energy and Resources	
Councilor & Chairman:	Science and Technology Advisory Committee, Research Institute of Innovative Technology for the Earth	
Member:	Global Environment 100-Member Committee & Moderator: Environment Strategy Council, Global Environment Forum Kansai	
Member:	Energy Technology Policy Committee & Chairman: CO_2 Reduction Subcommittee, Osaka Science & Technology Center	
Chairman:	Osaka Prefectural Conference on Building a Rich and Productive Environment	

Third-Party Certification

Sharp considers third-party certification to ensure the credibility of its Environmental Report to be extremely important. However, we did not seek third-party certification at this time because no guidelines exist regarding auditing standards and auditing methodologies and because there is a lack of clarity regarding the qualification requirements for certification organizations and auditors.
In the future, we will monitor the situation closely to determine when the objectivity, impartiality, and comparability of the certification process has been established through the publication of guidelines, and will conduct frequent reviews regarding the methods and timeframe for the introduction of third-party certification.

Environmental Report

2003

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http://www.sharp.co.jp

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• Printed with VOC (volatile organic compound)-free ink.

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We'd like to hear your comments about this environmental report.

This Environmental Report introduces Sharp's policies and activities to achieve a sustainable society. We do our utmost to report our activities to as many people as possible, in the process improving the quality of these activities through dialog with our customers and society.
We would like to ask you to take a few minutes to fill in the questionnaire on the back of this sheet and fax it to us.

Environmental Protection Group
Sharp Corporation
22-22, Nagaike-cho, Abeno-ku, Osaka 545-8522, Japan
Phone: 81-6-6625-0434 Fax: 81-6-6625-0153 E-mail: eco@sharp.co.jp

Replies to the Questionnaire in Our 2002 Environmental Report

We sincerely thank all of you who filled in last year's questionnaire. Your replies and valuable opinions are summarized below, along with our subsequent improvements in response to reader comments.

Overall Evaluation

1. Good Points

(1) There were many diagrams and photos, and the report was organized according to the Super Green Initiatives, making it easy to understand and follow.
(2) Because the Super Green Initiatives cover all of Sharp's environmentally related actions, all facets were reported on, making for an all-inclusive and complete report.

2. Points for Improvement

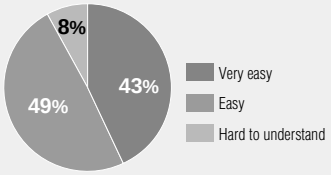
(1) A number of questionnaire respondents wanted to see more on environmental management facets such as environmental accounting, and more information on the environmental efforts at overseas bases.
(2) Questionnaire respondents had differing opinions as to what should be included in the report. For future reports, we need to make improvements in order to cater to a wider range of readers.

3. Future Expectations for Sharp

(1) The majority of comments were on LCD-related subjects, such as hopes that LCD TV prices will drop and LCD TV screens get larger.
(2) Many readers hoped solar cell costs would drop and that Sharp would develop new "energy-creating" technology.

Reader Opinions and Improvements in the 2003 Environmental Report

Q1 How easy to understand was this Environmental Report?



■ **Reader Opinions and 2003 Improvements**

- More photos and diagrams make it easier to understand.
- The report is divided into the different stages of the Super Green Initiatives and is therefore easy to follow.

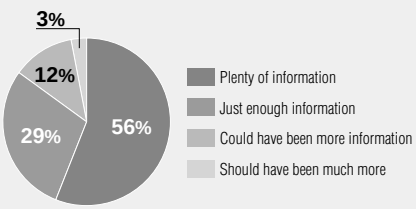
We created this report to be, above all, easy to understand. This year's report is also divided according to our Super Green Initiatives so that we can cover all environmental activities for maximum readability.

- The logical progression—from objectives/plans to promotional measures/achievements for each item in a table—made the report easy to follow.

We have improved this year's table by including objectives for fiscal 2003 and 2005.

Q2 How did you feel about the amount of information in this Environmental Report?

■ **Satisfactory Points**



- Special Edition, the six stages
- The colors of the graphics, the sophisticated layout
- Detailed explanations, comparisons of past and present electricity consumption, success rate of each division's efforts

■ **Insufficiencies and Points for Improvement**

- Not enough information on items such as environmental accounting and environmentally conscious products.

This year's report includes more pages on environmental accounting and environmentally conscious products.

- Not enough environmental data

We tried to expand the amount of environmental data, particularly that for overseas sites (Sharp Group data).

- Not enough information on collection and recycling of products other than those four covered by the Home Appliances Recycling Law.

Page 13 shows the number of units and tonnage collected for copiers.

Q3 What information about Sharp did you find most impressive in this Environmental Report?

(total number of respondents)

Message from the President	1	Recycle Stage	7
Sharp's Commitment toward a Sustainable Society	6	Logistics Stage	6
Main Objectives and Level of Achievement	8	Mind-Set Stage	8
Special Edition	10	Social Report	3
Management Stage	11	Economic Report	2
Planning and Design Stage	17	Environmental Data by Business Site in Japan	7
Manufacturing Stage	11	Ensuring the Reliability of Sharp's Environmental	3

■ **Readers' Reasons for Responses**

- Could understand the importance of environmental considerations, starting from the design stage. (Planning and Design)
- Could understand Sharp's clear desire to ensure reliability. (Ensuring the Reliability of Sharp's Environmental Report)
- The special section, "Purifying Water with Bio-Power," was interesting. It's amazing how water can be purified using only the power of nature, without man-made chemicals, and how oyster shells can neutralize waste fluid.
- The personal messages from the development staff in the Special Edition were interesting.

Q4 Please provide your comments on this Environmental Report or on Sharp's environmental activities.

■ **Reader Opinions and 2003 Improvements**

- Sharp should consider introducing third-party certification.

We once again included our thoughts on third-party certification. This year's report also includes an opinion from Mr. Yutaka Suzuki, the president of Himeji Institute of Technology.

- The corporate profile should be at the beginning of the report.

We have placed the corporate profile at the beginning.

- There should be more detailed information on Sharp's environmentally conscious LCD TVs.

We included details on the environmental performance of our LCD TVs (on page 23).

- The inclusion of social and economic reports, in addition to environmental data, is admirable.
- There should be more details on environmental accounting; at least two or three pages.
- Giving details of how Sharp carried out its environmental efforts adds truth to the report.
- Was able to see how Sharp contributes to society and communicates with the general public.

Q5 What do you expect from Sharp's future activities?

■ **Reader Opinions**

- More large-screen LCDs
- Lower-cost, lighter LCD TVs
- Sharp should promote a clean corporate image through products like solar cells and LCD TVs.
- Sharp should develop new environmentally conscious products.
- Sharp should use its proprietary technologies to realize true environmental management that balances business progress with sustainability.

Please fill in the following questionnaire and fax it to:

FAX **Environmental Protection Group, Sharp Corporation +81-6-6625-0153**

Q1 How easy to understand was this Environmental Report?

(1) Very easy (2) Easy (3) Hard to understand (4) Extremely hard to understand

Please explain:

Q2 How did you feel about the amount of information in this Environmental Report?

(1) There was plenty of information (2) There was just enough information (3) There could have been more
(4) There should have been much more

There was sufficient information on the following topics	There should have been information on the following topics

Q3 What information about Sharp did you find most impressive in this Environmental Report?

(1) A Message to People and the Earth (2) Business Summary (3) Sharp's Basic Environmental Policy
(4) Main Objectives and Achievements in Fiscal 2002 (5) Management Stage (6) Planning and Design Stage
(7) Manufacturing Stage (8) Recycle Stage (9) Logistics Stage (10) Mind-Set Stage (11) Social Report
(12) Environmental Data (13) Environmental History and Awards (14) Third-Party Opinion

Please explain why

Q4 Please provide your comments on this Environmental Report or on Sharp's environmental activities.

Q5 What do you expect from Sharp's future activities?

Q6 Which of the following would best describe you?

(1) Shareholder, investor (2) Product user (3) Someone who does business with Sharp (4) Environmental expert
(5) Person in charge of environmental matters at your company (6) Environmental NGO member (7) Member of government, civil servant (8) Media member (9) Student (10) Resident living near a Sharp site (11) Other

Q7 How did you hear about this Environmental Report?

(1) Sharp website (2) Other website ( ) (3) Newspaper article ( ) (4) Magazine article ( )
(5) Seminar ( ) (6) Exhibition ( ) (7) Sharp employee (8) Others ( )

Q8 Please write any other comments, suggestions or wishes here.

Thank you for your cooperation. Please fill in the following information.

Name	Name of company (department) or school	
Address (home or office)	Job title	
Phone and fax number, e-mail address	Sex ☐ Male ☐ Female	Age