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About this Report  
This report contains information about the environmental activities of Sharp Corporation and its consolidated subsidiaries during fiscal year 2001 (April 2001 to March 2002) and also introduces some policies and objectives for fiscal year 2002 and beyond.

[Places of business appearing in this report]  
Domestic production bases: Tochigi site, Yao site, Hiroshima site, Nara site, Shinjo site, Fukuyama site, Mie site, Tenri site, Tanabe site  
Overseas production bases: 22  
Consolidated non-production sites (domestic and overseas)
Message from the President

The 21st century has started out as the century of the environment, and environmental preservation is being heavily promoted in various phases, through political measures by many countries all over the world, corporate activities and personal life.

There are still many issues that must be addressed in order to prevent further damage to the earth’s environment, and approaches to solving these problems are not yet well under way.

Although environmental efforts put forth by manufacturers, including Sharp, such as preventing air and water pollution and reducing emissions of harmful substances, have been successful in reducing the risks to the earth’s environment, many issues still remain. Other efforts that contribute to environmental preservation, such as improvements in energy efficiency to prevent global warming and resource efficiency, have just begun.

We need to reinforce our policy of producing excellent, environmentally conscious products through processes that drastically reduce the burden on the environment in an effort to promote daily corporate activities.

From this standpoint, Sharp is committed to developing environmentally conscious products with outstanding features. This effort is focused primarily on LCDs, which are highly energy efficient; and photovoltaic systems, which create clean energy to supplement energy demand. We achieved zero discharge to landfill at all our domestic production sites in fiscal year 2001, one year ahead of schedule.

We will continue to strengthen these efforts and actively practice environmental management, thus playing a leading role in realizing a sustainable society—a society in which resources are recycled.

This effort requires that all employees observe the existing rules on environmental preservation and be highly aware of environmental preservation. The entire company, including all divisions and departments, will hold intensive informational meetings and training seminars on environmental laws and regulations and environment-related strategies. Furthermore, we will urge each of our employees to adopt an environmentally conscious lifestyle through these activities.

The Environmental Report is our public statement on Sharp’s efforts toward realizing a sustainable society in which resources are recycled. We will release more information to improve our social and customer communications, thus further improving our effort to achieve environmental management.

We invite you to share any opinions and suggestions you may have regarding this report and our activities.

Katsuhiko Machida
President
Sharp Corporation
Sharp’s Commitment toward a Sustainable Society

In 1992, Sharp instituted the “Basic Environmental Philosophy: Creating an Environmentally Conscious Company with Sincerity and Creativity”, and established its Basic Regulations for Preserving the Environment. Later, in 1997, Sharp implemented the 3G-1R Strategy, comprised of four action themes, and has ever since guided environmental preservation activities companywide.

In 2001, Sharp began its Super Green Initiatives, based on the 3G-1R Strategy, according to which we categorized the relationship between Sharp and the environment into six stages: management, planning/design, manufacturing, recycling, logistics, and mind-set. The whole company then identified and implemented specific objectives and countermeasures for each of these stages.

It has been just ten years since we instituted our “Basic Environmental Philosophy.” On the occasion of the 10th anniversary, we again return to the fundamentals, striving to build a solid organizational basis for supporting environmental management.

We have established an Environmental Compliance Committee to ensure our employees observe laws and social rules concerning environmental preservation, and are enhancing their support for environmental preservation through environmental education and practical activities.

We will make public information on our corporate efforts to achieve environmental management, with the aim of encouraging extensive social communication.

Our Environmental Protection Group will assume the overall responsibility for safe control of chemicals and gases stored at our plants, which is a crucial factor in environmental preservation. Furthermore, the entire Sharp Group will collaborate to set up a system to enhance our efforts to prevent environmental pollution and accidents.

As we put our environmental management program into practice, we are now working on the creation of an Environmental Management Evaluation Index to assess the amount of burden we place on the environment. We will identify, analyze and measure the total scope of environmental burden in terms of exact numerical values. This will permit us to implement more effective countermeasures to reduce our impact on the environment.

In fiscal year 2000, Sharp added an environment category to its divisional business performance contribution evaluation, thus introducing an assessment system for environmental promotions of business management.

We will introduce the Environmental Management Evaluation Index beginning in fiscal year 2003. This index will enhance the environmental awareness of management and launch effective promotions to further our contribution to the creation of a sustainable society.

3G-1R Strategy

| GP | Green Products |
|    | (Develop environmentally conscious products) |
| GF | Green Factories |
| GM | Green Mind |
| RB | Recycling Business |

(Teruhiko Kondo)

Teruhiko Kondo
Corporate Director,
Environmental Management and
Group General Manager,
Environmental Protection Group
We continued to minimize our energy consumption for fiscal year 2001 so that usage equalled that of the previous year. We reduced emissions, such as PFC (perfluoro compounds) used in LCD and semiconductor plants, by 25% compared to the previous year. The amount of recycled industrial waste increased sharply, reducing final landfill disposal by 91% compared to the previous year. Through these efforts, we have achieved zero discharge to landfill at all our domestic production sites. Although our consumption of toxic chemicals increased 5% over the previous year due to increased production, the amount discharged or transferred was cut by 53%.

Environmental mass balance in fiscal year 2001 (all production sites in Japan)

We continued to minimize our energy consumption for fiscal year 2001 so that usage equalled that of the previous year. We reduced emissions, such as PFC (perfluoro compounds) used in LCD and semiconductor plants, by 25% compared to the previous year. The amount of recycled industrial waste increased sharply, reducing final landfill disposal by 91% compared to the previous year. Through these efforts, we have achieved zero discharge to landfill at all our domestic production sites. Although our consumption of toxic chemicals increased 5% over the previous year due to increased production, the amount discharged or transferred was cut by 53%.

*1 TJ = 10^12 joules
*2 Cardboard, polystyrene foam, other plastics, timber, etc.
* The value announced publicly by the Electricity Business Association is used as a CO2 discharge coefficient.
* The scope for totaling energy consumption and CO2 emissions includes all domestic production sites and office buildings of Sharp Corporation.
We launched the Super Green Initiatives based on our 3G-1R strategy in fiscal year 2001, so that Sharp could help contribute to the realization of a sustainable society. We set mid- and long-term objectives, and fiscal-year objectives for all stages of the Super Green Initiatives to ensure steady progress. The table on the right shows the main objectives and achievement for fiscal year 2001. Of a total of 23 objectives, 19 were attained. We will concentrate on tackling unachieved objectives as high-priority items for fiscal year 2002.

<p>| Main Objectives and Level of Achievement in Fiscal Year 2001 Super Green Initiatives |
|---|---|
| 1 | Management Stage |
|   | Improving environmental management company-wide |
|   | Environmental risk management |
|   | Constructing an environmental management system |
| 2 | Planning and Design Stages |
|   | Promoting green purchasing |
|   | Establishing a general assessment system for green products |
|   | Developing green-seal products |
|   | Improving the safety of parts and materials |
|   | Consolidating 3R technology |
| 3 | Manufacturing Stage |
|   | Establishing green factories |
|   | Preventing global warming |
|   | Reduction of waste |
|   | Controlling chemical substances |
| 4 | Recycle Stage |
|   | Recycling used products |
| 5 | Logistics Stage |
|   | Cutting CO2 generated by distribution |
|   | Reducing packaging materials |
| 6 | Mind-Set Stage |
|   | Environmental education |
|   | Social contributions |
|   | Promoting information disclosure and environmental communication |</p>
<table>
<thead>
<tr>
<th>Objectives</th>
<th>Mid-term Objectives (year achieved)</th>
<th>Objectives for Fiscal 2001</th>
<th>Achievement in Fiscal 2001</th>
<th>*Self Evaluation</th>
<th>See page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrating the environmental management system</td>
<td>Major bases of all domestic sales/service companies to acquire ISO integrated certification (2001)</td>
<td>Preparing environmental management manuals for integration</td>
<td>100%</td>
<td>○</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>All domestic production sites to acquire ISO integrated certification (2002)</td>
<td></td>
<td>100%</td>
<td>○</td>
<td>14</td>
</tr>
<tr>
<td>Acquiring ISO14001 certification at overseas production sites</td>
<td>All overseas production sites and major sales companies (31 bases) to acquire ISO certification (2001)</td>
<td>Same as achieved</td>
<td>29 bases (total)</td>
<td>△</td>
<td>14</td>
</tr>
<tr>
<td>Complying with environmental laws and rules</td>
<td>Strengthen corporate compliance with laws (2005)</td>
<td>Preparing for institution of environmental compliance committee (institute in May 2002)</td>
<td>100% (established in May 2002)</td>
<td>○</td>
<td>15</td>
</tr>
<tr>
<td>Introducing environmental accounting</td>
<td>Introduction worldwide (2003)</td>
<td>Introduction domestically</td>
<td>100%</td>
<td>○</td>
<td>16</td>
</tr>
<tr>
<td>Executing green purchasing</td>
<td>Implementation worldwide (2003)</td>
<td>Introducing into Malaysia</td>
<td>100%</td>
<td>○</td>
<td>17</td>
</tr>
<tr>
<td>Conducting environmental impact assessments of goods based on LCA</td>
<td>Conducting general assessments (2003)</td>
<td>Conducting CO₂ assessments on major goods</td>
<td>100%</td>
<td>○</td>
<td>19</td>
</tr>
<tr>
<td>Expanding the sales ratio of green-seal products</td>
<td>Sales ratio: 50% (2003)</td>
<td>100 models, Sales ratio: 30%</td>
<td>112 models, Sales ratio: 32.2%</td>
<td>●</td>
<td>18, 19, 21</td>
</tr>
<tr>
<td>Employing lead-free solder for all products</td>
<td>Introduction worldwide (2003)</td>
<td>Use lead-free solder in all new products in Japan</td>
<td>45 models</td>
<td>○</td>
<td>22</td>
</tr>
<tr>
<td>Practical recycling of plastic materials</td>
<td>Practical recycling of mixed plastics (2003)</td>
<td>Employing plastic material (polypropylene resin) recycling technology for washer tubs</td>
<td>100%</td>
<td>○</td>
<td>23</td>
</tr>
<tr>
<td>Commercializing materials designed with considerations for disassembly</td>
<td>Applying to LCD application products (2005)</td>
<td>Developing easy-to-disassemble fixtures</td>
<td>100%</td>
<td>○</td>
<td>24</td>
</tr>
<tr>
<td>Introducing green factory guidelines</td>
<td>Introduction worldwide (2003)</td>
<td>Introduction domestically</td>
<td>100%</td>
<td>○</td>
<td>25</td>
</tr>
<tr>
<td>Reduction of CO₂ emissions per production unit</td>
<td>Cutting by 25% from 1990 levels (2010)</td>
<td>Product production sites: cutting by 2% from the previous year</td>
<td>-1.1%</td>
<td>×</td>
<td>26, 27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Device production sites: cutting by 5% from the previous year</td>
<td>+33.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Achieving zero discharge to landfill sites company-wide</td>
<td>Achieving domestically (2002), at overseas production bases (2004)</td>
<td>Achieving final disposal rate of less than 0.5% at all production sites in Japan (ahead of mid-term schedule)</td>
<td>0.1% (Objectives achieved one year in advance)</td>
<td>●</td>
<td>28, 29</td>
</tr>
<tr>
<td>Controlling total discharge of materials</td>
<td>Cutting by 4% from 1998 levels (2002)</td>
<td>Cutting by 2% from the previous year</td>
<td>Increased by 24%</td>
<td>×</td>
<td>28</td>
</tr>
<tr>
<td>Reduce discharge of toxic chemical substances</td>
<td>Cutting by 50% from 2000 domestic levels (2003)</td>
<td>Cutting by 10% domestically</td>
<td>Cut by 53%</td>
<td>○</td>
<td>30, 31</td>
</tr>
<tr>
<td>Recycling four items of consumer electronics</td>
<td>Achieving recycling rate that exceeds standard values prescribed by law (continued)</td>
<td>Achieving recycling rate that exceeds standard values prescribed by law: 80% for air conditioners, 70% for TV’s, 61% refrigerators and 56% washing machines</td>
<td>Achieves 80% for air conditioners, 70% for TV’s, 61% refrigerators and 58% washing machines</td>
<td>●</td>
<td>32, 33</td>
</tr>
<tr>
<td>Establishing recycling system for information equipment</td>
<td>Home-use PCs (2002) Business-use PCs (2001)</td>
<td>Establishing business-use PC recycling system</td>
<td>100%</td>
<td>○</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Copiers: remanufacture/reuse (continued) Copiers: recycle (continued)</td>
<td>Recovering used copiers and reusing their parts</td>
<td>Used copiers: 10,472 units recovered</td>
<td>○</td>
<td>34</td>
</tr>
<tr>
<td>Replacing by easy-to-recycle packaging materials</td>
<td>Using no Styrofoam for packaging goods lighter than 10 kg (2002)</td>
<td>Continuing to use no Styrofoam for packaging goods lighter than 5 kg</td>
<td>100%</td>
<td>○</td>
<td>37</td>
</tr>
<tr>
<td>Holding environmental education, as well as general and specialist training at Sharp</td>
<td>1,500 general participants 300 specialists (2003)</td>
<td>750 general 290 specialists</td>
<td>319, 292</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>Community environmental activities</td>
<td>All domestic and overseas bases (every year)</td>
<td>All domestic and overseas bases</td>
<td>100%</td>
<td>○</td>
<td>39</td>
</tr>
<tr>
<td>Publishing environmental report and exhibiting in environmental fairs</td>
<td>Preparing report by site and HP (2003)</td>
<td>Publishing environmental report, exhibiting HP whenever needed, exhibiting in environmental fairs, etc.</td>
<td>100%</td>
<td>○</td>
<td>40</td>
</tr>
</tbody>
</table>

* Self Evaluation  ○ Achieved more than targeted  ○ Achieved as targeted  △ Achieved more than 80% of initial target value  × Achieved less than 80% of initial target value
Realizing a Sustainable Society through Sharp’s Environmental Technology

As an electronics products maker, Sharp has been involved in the development of energy-creating and energy-saving products to help protect the environment. In the manufacturing process as well, we have been making strenuous efforts to preserve the earth’s environment. These efforts are in the form of Sharp’s unique environmental technology, put to use in plants throughout the world. The following is a brief introduction of our technological innovations.
In-House Treatment of Used Developer to Produce No Polluted Mud

At the Fukuyama site where ICs are manufactured, we used to hire a subcontractor to incinerate spent developer, which makes up 70% of all our industrial waste. This method placed a significant burden on the environment, including the energy used for incineration and exhaust gas from the vehicles transporting the waste. Treatment costs swelled as production increased. It was a challenging issue for us, from both an environmental and managerial standpoint.

We at the Fukuyama site had been pursuing in-house treatment for spent developer, and we finally completed a fluidized waste treatment system using natural purification in 1996. This system is based on a concept of purifying spent developer by natural processes. Built according to our proprietary design, it is a state-of-the-art system that produces no hazardous sludge during the treatment process.

Microorganisms Purify Water, Sustain Monitoring by Fish

Sharp’s system makes the maximum use of materials existing in nature. In the microorganisms treatment process, microorganisms cultured to high levels of density are used to decompose most of the main components in spent developer that have strong alkalinity. In the oyster shell treatment process, neutralizing treatment is carried out using a film of microorganisms that forms on the surface of oyster shells to decompose other organic substances. In the Bincho charcoal/bio-activated charcoal treatment process, charcoal agents absorb a slight amount of the remaining organic substances. The charcoal is cleansed automatically, as the absorbed organic substances are treated by microorganisms growing on the surface of the charcoal.

In the fish monitoring process, in addition to measuring instruments, water safety is monitored with freshwater fish, such as roaches and Japanese bitterlings, which are sensitive to environmental changes.

A Major Contribution to Management

Through the development of the fluidized waste treatment system, treatment costs have been reduced by approximately 1/30 compared to that of commissioned treatment. Evaluated for its promotional efforts, the Fukuyama site received the 1997 Chairman’s Prize and the 1999 Ministry of International Trade and Industry Prize, Recycling Promotion Achievement Award, from the Recycling Promotion Association.

Message from our site

We developed the fluidized waste treatment system with a strong desire to leave clean rivers for future generations of children to enjoy. We acquired certification as an “environmental counselor,” authorized by the Ministry of Environment in March 2002. We are also enthusiastically committed to educating the local community on environmental matters through this “natural pavilion” we’ve built here in Fukuyama, which is now open to all children.

Kazuyuki Yamasaki
Manager, Environmental Promotion Division, Production Engineering Center, Integrated Circuits Group
Making the Most Effective Use of Water Resources
Recovery effluents with a reuse rate of 92%

Clear Concept for Environmental Preservation
Our Mie plant is located 10 km southeast of Matsuzaka City in Mie prefecture. The nearby Kushida River is the source of drinking water for Matsuzaka citizens and is also used for local agricultural irrigation. Since LCD manufacturing requires a lot of water, drainage treatment is an important factor in environmental preservation in the neighborhood. We at the Mie site have improved significantly recovery and reuse of drainage from the production process under the concept of effective use of water resources. We thoroughly purify chemically treated drainage for reuse and do not discharge it outside of the plant.

Effluent Treatment Facility Ensures Reuse Rate of 92%
Pure water used in the production process is classified into inorganic, organic and neutral effluents before being discharged and recovered in a closed system for later reuse. When we began operations in 1995, we mainly recovered and reused inorganic effluent, which was believed to have a negative effect on the environment with a recovery rate of 30%. We had repeatedly evaluated treatment processes to recover and reuse organic and neutral effluents until 1996 when we introduced a new treatment process. This process utilizes microorganisms for the organic effluent and ultraviolet-ray oxidation treatment technology for the neutral effluent. This raised the recovery rate to 69%.

In constructing the Mie No. 2 plant, we included this process in the facility design stage, achieving a rate of 95% or more at the No. 2 plant alone, with a combined rate of 92% for the entire Mie plant in fiscal year 2001. Improved effluent recovery and reuse rates help save industrial water (see chart in middle column).

Effluent Treatment Facility

- Pure water facility
- Production process
- Supplied water

Closed system for water treatment

- Inorganic effluent: effluent containing acid, alkali
- Organic effluent: effluent containing alcohol, etc.
- Neutral effluent: effluent containing microscopic dust and dirt

Effluent classification and treatment processes

Publicizing the Safety of Discharged Water through Plant Tours
We discharge cooling water into the Kushida River after treating it with activated charcoal. We check and monitor water quality around the clock, while watching water conditions in the neighboring areas. We offer tours of the plant to local residents to show that the discharged water is clean and safe. What is more, we have installed the entire piping assembly in a special channel which allows us to inspect it for chemical leaks on a daily basis, thus preventing soil and ground water from being polluted.

Effective use of water at Mie site

Certificate of honor: The Mie site received the 3rd Japan Water Award, Promotion Prize sponsored by the Japan River Association

Message from our site
From my experience of having built six plants, I know that troubles and accidents must be taken care of in less than five hours. When it takes more than five hours, the risks to operations and the environment rise uncontrollably. I freely provide my extensive know-how to anyone who needs it, so that they can access and benefit from it immediately.

Ikuo Mizutani
General Manager,
Mie Environmental Promotion Center,
AVC Liquid Crystal Display Group
Preventing Gas from Polluting the Atmosphere
Fail-safe system responds to every possible problem and accident

Innovating Gas Processing Technology and Reinforcing Security Measures
Recently manufactured LSI circuits require a 0.13-micron* machining technique. This high-precision process requires the use of a gas dry-etching technique and a film-forming technique. Because some of the gases used in this process have toxic, corrosive or flammable properties, safety measures are a top priority for us.

* Minimum machining dimension of an IC. 1 micron is one thousandth of 1 mm.

Total Safety Control and Harmless Exhaust
Keeping in mind the fact that “mistakes do happen” and “all machines eventually deteriorate,” we set up a system of gas safety measures. This system allows all information, from supply to exhaust, to be centrally monitored. This fail-safe system monitors the gas supply, consumption and exhaust for all facilities in order to prevent accidents if an operational mistake or malfunction should occur.

In the gas supply system for example, sensors that detect irregularities are mounted on the cylinder cabinets to monitor gas leaks, fires, etc. The system is also equipped with an interlocking function (automatic shutdown valve) to stop gas supply in case of disasters, accidents or malfunctions. Residual gas is detoxified and exhausted. This system complies to Sharp safety measure standards.

Safety: An Activity Created and Supported by All
Sharp promotes safety from both personnel and organizational aspects so that all employees can support gas safety measures. We invite an outside specialist to give lectures at a safety education class held for all employees, not just the staff members who work with gases.

Some 160 employees from the Fukuyama site attend the seminar annually, and more than 2,000 people have finished the course. Certified personnel are allowed to supervise cylinder-replacement work that requires manual handling.*

* Cylinder replacement is performed by specialized subcontractor. Our employees only supervise the work.

Centralized Monitoring System
(Total control of supply, production and exhaust systems)

Message from our site
The gas safety technique employed by our business group comes from a commitment of “never causing accidents.” We are always paying close attention to the accidents in the rest of the industry and improving our capability, which makes a better guide for our system.

Kazuhiro Moritani
General Manager, Production Innovation Promotion Division
Integrated Circuits Group
Recycle as Much Process Waste as Possible

Water, glass and chemical solutions are used in the LCD panel production process. If treated as industrial waste, these materials will place great burdens on the environment. Recycling them within the plant, however, saves the cost of treating and transporting them as industrial refuse and also saves on raw materials. Recycling allows us to create an ideal closed system with low burdens on the environment. Sharp LCD plants at Tenri site have constructed various recycling systems based on its advanced technology fostered over many years.

Total Material Recycling System

In addition to functional performance in development, etching and washing, Sharp seriously considers environmental burdens and recycling efficiency when selecting chemical solutions to be used in the manufacturing process. The chemical solutions divide into thick and thin solutions before they are discharged from the manufacturing process. Thick solutions are refined at Sharp or at one of our subcontractors to be reused as chemical solutions. Some of the solutions are reused at our LCD plants, while others are diverted to other facilities for purposes such as fluoric acid-type etching solution, which is used for frosting glass products. In applying solutions for different purposes, we not only promote application development and market launch, but also push forward technological development to ensure high standards of product quality. Chemical components and sludge are removed from thin solutions through an effluent recycling system, and the solutions are then reused in the manufacturing process as industrial water. Waste glass is pulverized in the plant and shipped out as raw material for glass tiles.

Two Closed Recycling Systems Received Prizes from the Ministry of International Trade and Industry

At the Tenri site, two closed recycling systems received the Japanese Ministry of International Trade and Industry prizes. One of these is an IPA (isopropyl alcohol) recovery/refinement system. This system aims at recovering and refining IPA (isopropyl alcohol), used in the TFT LCD manufacturing process as a finishing agent mainly for washing, so that it can be reused. We made the refining device small enough to install in the plant. The introduction of this device has reduced IPA consumption from 2,900 liters to 400 liters per day.

The other is a drainage recovery/reuse system containing DMSO (dimethyl sulfoxide). This system aims at cleansing the drainage that contains DMSO by means of a microorganism dissolving treatment so that recycled water can be reused in the manufacturing process.

Message from our site

I have long been involved in recycling water and chemical solutions used in plants. Individual recycling developments are supported by immense technological innovations and negotiations behind the scenes. To find the best solutions, I am trying to acquire a broad range of knowledge in various fields such as antiques, chemistry, biology, psychology and law.

Toshiaki Muratani
Chief Technical Research Fellow,
A212 Project Team,
Mobile Liquid Crystal Display Group
Environmental Report

Management
Planning and Design
Manufacturing
Recycle
Logistics
Mind-Set
Environmentally Conscious Management

1. Basic Environmental Policy and Organizational System

1.1 Sharp Basic Environmental Philosophy (established in 1992)

Creating an Environmentally Conscious Company with Sincerity and Creativity.

1.2 Sharp Business Standards and Action Guidelines (established in 1998)

<table>
<thead>
<tr>
<th>Business Standards</th>
<th>Action Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>In addition to observing regional environmental laws and regulations, we use our own technology and knowledge to carry out activities dedicated to preserving the environment.</td>
<td>(Preserving the global environment)</td>
</tr>
<tr>
<td>By promoting environmentally oriented business activities, we will contribute to building a society in which resources are recycled.</td>
<td>(Development of environmentally conscious products)</td>
</tr>
</tbody>
</table>

Introduction ISO environmental management systems in all worldwide manufacturing bases.

Implementation of the ISO14001 environmental management systems

All manufacturing sites in Japan and worldwide will acquire ISO14001 Environmental Management System certification by a third party. In addition, all sales companies will strive to acquire certification.

Certification for additional ISO standards (for example the LCA [Life Cycle Assessment]) will be actively introduced and certification pursued.

Development of environmentally conscious products

Energy-efficient designs will be used as an integral part of continuing the development of smaller products that use the least amount of resources.

Our products should not contain materials that destroy the environment and waste natural resources or contain toxic substances that are harmful to human health.

Manufacture products that can be easily disassembled or that will naturally break down in the environment. This includes increasing the use of recyclable resources and materials.

Environmentally conscious business activities

Strive to prevent global warming by introducing energy-efficient equipment.

Select only equipment, raw materials, additional parts and tools that do not adversely affect the environment, the people of the region where operations take place, and the employees.

Increase recycling of waste products and give precedence to in-house disposal in an attempt to reach our goal of not relying on waste treatment companies for ultimate disposal.

1.3 Sharp Corporation Company Organization for Environmental Protection

Company-wide environmental protection organization

- Company-Wide Environmental Conference
- Environmental Compliance Committee
- Energy-Saving Products Development Conference
- Green Mind Campaign Promotion Conference
- Recycle Specialist Committee
- Chemical Substances Control Committee
- Risk Management for Gases and Chemical Substances Committee
- Global Environmental Conference
- CO2 Reduction Committee
- PFC Countermeasure Committee
- Zero Emission Committee
- Sharp Environmental Committee at each site
- Deals with global warming prevention, and other issues at the site and establishes committees.
- Pan-European Environmental Conference
- Pan-American Environmental Conference
- ASEAN Environmental Conference
- China Environmental Conference

The director in charge of environmental affairs plans and develops company-wide strategies concerning activities related to the preservation of the Earth's environment. Environmental supervisors are stationed at Sharp's headquarters and also at all sites to develop measures for environmental preservation. Important affairs, including strategies, guidelines and objectives, are determined at Environmental Strategy Management Conferences.

In fiscal year 2002, Sharp established a new “Environmental Compliance Committee” to consolidate the organization of this sector.
Environmental Management System

Establishment and Management of EMS

Sharp has established and manages its own version of the EMS standard, based on ISO14001 with additional environmental preservation efforts (chemical substance control, harmony with local community, and harmony with nature).

By the end of fiscal year 1997, all of Sharp’s Japanese production sites acquired ISO14001 certification. Furthermore, with the aim of improving and universalizing our EMSs, all Japanese production sites are striving to acquire integrated ISO14001 certification. We prepared environmental management manuals in 2001, and major bases of all Japanese sales/service companies acquired ISO14001 integrated certification. Four other overseas bases acquired ISO14001 certification. This means 29 out of 31 targeted bases have been certified. The remaining two bases will be certified within fiscal year 2002.

Green Audit

A part of our efforts to realize Green Factories*, we introduced Sharp’s original Green Audit into four bases in China, before introducing it into sites in Japan, in December 2001. Auditing covers a wide range of items, including planning and promoting volunteer action for environmental preservation, reducing highly harmful chemical substances, and promoting harmony with the local community and nature.

We will continue to move forward with auditing based on an Environmental Compliance Program.

* Sharp defines an environmentally conscious plant as a Green Factory.

Green Audit Implementation

Administration of ISO14001

Promotional Measures/Achievement

- Japan: Major bases of all sales/service companies have acquired ISO14001 integrated certification.
- Japan: Environmental management manuals have been prepared for the integration of all production sites.
- Overseas: Four bases have acquired ISO14001 certification (total 29 bases out of 31 targeted bases).

Green Audit

Green Factory Realization

Environmental Solutions Business

Sharp has been enthusiastically offering support to a wide range of industrial customers through its long-acquired know-how in EMS improvement and managerial application. We have so far helped a total of 18 companies and institutions acquire ISO14001 certification, including schools, construction companies, industrial waste disposal subcontractors, and electronics manufacturers in Japan. We also hold training seminars such as general environmental seminars, intracompany environmental auditor’s seminars, and intracompany chief environmental auditor’s seminars, for our clients' corporate groups. In 2001, we set up a website for our environmental solutions business. In fiscal year 2003, we are planning to establish a comprehensive ISO solutions business, covering such areas as Information Security Management Systems and Occupational Health and Safety Management Systems, which are planned for standardization.
3 Environmental Risk Management

Objectives/Plan

- Strengthen corporate compliance with laws.
- Educate all employees to strictly comply with environmental laws and regulations regarding products, industrial waste control, and chemical substance control, as well as adopt risk management for gases and chemical substances.

Promotional Measures/Achievement

- Prepare for Environmental Compliance Committee (established in May 2002)

1 Introduction of an Environmental Compliance Program

Sharp introduced an Environmental Compliance Program to strengthen its corporate compliance with laws in Japan. The aim of this program is to establish an Environmental Compliance Committee and position it as the core of our environmental efforts. Through this committee, we will perform intracompany environmental compliance audits, strengthen environmental education and training, and revise manuals. Committee members will be selected from all related divisions and departments within the entire company. As part of our intracompany efforts to ensure environmental compliance, we plan to perform periodic compliance audits for environmental laws, ISO audits, and performance audits at our facilities in Japan. We plan to give training to our Japanese staff to reinforce domestic and overseas environmental law requirements and foster environmental morale, and also provide special genre subcommittees to discuss individual matters.

2 Compliance with Environmental Laws

Sharp promotes business activities under a basic policy of complying with environmental laws and regulations. In addition to complying with laws regarding business activities and local agreement provisions, we implement stricter standards to prevent any violation. These in-house standards cover the latest trends in environmental laws and regulations.

In fiscal year 2001, it was brought to our attention that Kansai Recycle Systems Corporation, a recycling plant we consign to recycle our home appliances, discharged CFC into the atmosphere, which is a violation of the Home Appliances Recycling Law. Sharp and other consumer electronics manufacturers received a warning from the Ministry of Economy, Trade and Industry, and the Ministry of the Environment on March 20, 2002. As the company that has made the maximum investment in recycling plants, Sharp offers strong support in operational improvement to prevent problems from recurring. (see page 33 for details)

Role of Environmental Compliance Committee

Chairman: Director in charge of Environmental Matters
Secretariat: Environmental Protection Group
Members: All business groups, related divisions/departments in the headquarters

Discussion Themes at Environmental Compliance Committee

- Law and regulations on products/indication
- Preventing global warming (CO₂, PFC)
- Waste control
- Pollutant Release and Transfer Register (PRTR)
- Exhaust (offensive odors included)
- Effluent control
- Soil/underground water pollution
- Risk management for gases and chemical substances
- Other matters such as noise, vibration, etc.

Intracompany Audit

- Audit team
- Determining audit contents, items and targets
- Follow-up of audit results

Environmental Compliance Seminars

- Companywide compliance seminar (April)
- Seminars on disposal/cleaning laws, home appliances recycling law
- Environmental law seminar
- General environmental seminar, special seminar
Environmental Accounting System

2001 Result Overview*1

Period covered: April 1, 2001 ~ March 31, 2002
Summary points: Introduced from fiscal year 1999 in line with Ministry of the Environment guideline.

- Environmental protection cost (millions of yen, %: previous year)

<table>
<thead>
<tr>
<th>Category</th>
<th>Investment</th>
<th>Expenses</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pollution prevention</td>
<td>1,294</td>
<td>31.1</td>
<td>1,899</td>
</tr>
<tr>
<td>Environmental protection</td>
<td>165</td>
<td>20.2</td>
<td>813</td>
</tr>
<tr>
<td>Managing recycling of resources</td>
<td>142</td>
<td>176.6</td>
<td>1,283</td>
</tr>
<tr>
<td>Total</td>
<td>1,601</td>
<td>31.6</td>
<td>3,995</td>
</tr>
<tr>
<td>Upstream and downstream cost</td>
<td>—</td>
<td>—</td>
<td>222</td>
</tr>
<tr>
<td>Administration cost</td>
<td>25</td>
<td>54.0</td>
<td>1,608</td>
</tr>
<tr>
<td>R&amp;D cost</td>
<td>—</td>
<td>—</td>
<td>3,090</td>
</tr>
<tr>
<td>Social activities cost</td>
<td>—</td>
<td>—</td>
<td>1,208</td>
</tr>
<tr>
<td>Other environmental protection cost</td>
<td>—</td>
<td>—</td>
<td>185</td>
</tr>
<tr>
<td>Total</td>
<td>1,626</td>
<td>31.2</td>
<td>10,308</td>
</tr>
</tbody>
</table>

*1 All comparative numerical values apply to eight domestic production plants, to ensure accurate evaluation in comparison with the previous year.

*2 Includes investment for environmental protection within business areas and environmental management software.

Environmental Protection Costs

- A n increase in resources recycling investment was appropriated for the installation of a spent developer concentrator, a resources division/collection facility, and other equipment
- A n increase in social activity expenses was appropriated for strengthening local environment beautification promotions and advertising for photovoltaic power generation systems.

Effect of Environmental Protection

Although CO2 discharge (production units) increased, zero emission was achieved at all sites. We improved in environmental preservation effects for the second straight year.

Monetary Effects

Economic effects totaled 22,720 million yen, with the addition of tentative effects of environmentally conscious products that contribute to energy saving (see below). A though tentative effects are counted as presumed effects in the fiscal year 2002 version of the Environmental Accounting Guidebook compiled by the Ministry of the Environment, we omitted these effects from our calculations this year. That is because great care should be taken when calculating them, and the formulas have not been clearly specified.

2 Estimating the Contribution of Energy-Saving Products to Energy Saving in Society

The degree of contribution to energy savings brought about by environmentally conscious products marketed by Sharp in Japan in fiscal year 2001 (including TFT LCDs, photovoltaic systems, energy-saving major appliances, consumer electronics products and others) amounts to 1,941 GWh over the course of these products’ lifetimes. This is equivalent to 21.4 billion yen, when calculated in terms of current electrical power costs in Japan.

<table>
<thead>
<tr>
<th>Cost within business area</th>
<th>Product groups: 6.1t-CO2/100 mill. yen</th>
<th>98.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost reduction as a result of energy saving</td>
<td>738</td>
<td>76.0</td>
</tr>
<tr>
<td>Reduction in cost of disposing of waste</td>
<td>148</td>
<td>112.1</td>
</tr>
<tr>
<td>Total</td>
<td>1,320</td>
<td>75.6</td>
</tr>
</tbody>
</table>

*3 Data for calculation
- Energy saved by TFT LCDs (224 GWh)
- Formula: (Difference in annual power consumption when compared with CRT monitors) x (Production output of TFT LCD panels for PCs in fiscal year 2001) 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: The number of years before these devices are replaced by new ones, as described in a survey on consumption trends published by the Japanese Cabinet (March 2002)
- Energy saved by major appliances and consumer electronics products, including air conditioners, televisions, VCRs, and refrigerators (285 GWh)
- Formula: (Difference in annual power consumption when compared with their counterparts of the same class released in the previous year - intracompany data) x (Number of units sold in fiscal year 2001) 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: The number of years before the appliances are replaced by new ones, as described in a survey on consumption trends published by the Japanese Cabinet (March 2002)
Environmentally Conscious Products

1 Green Purchasing

Objectives/Plan
- Reevaluate unapproved domestic suppliers and D-ranked suppliers needing improvement as of fiscal year 2000.
- Introduce Green Purchasing system into overseas bases (Introducing into Malaysia in fiscal year 2001)

Promotional Measures/Achievement
- D-ranked suppliers improved their environmental rating (all improved as a result of carrying out improvement efforts).
- Evaluating environmental considerations of 200 domestic suppliers and 156 suppliers of our Malaysian bases and feeding back evaluation results.

1 Formulation of “Green Purchasing Guidelines”

From fiscal year 2000, identifying the “Green Purchasing Guidelines” which apply to all companies, we integrated our business partner “Evaluation of Environment Management” and “Evaluation of Delivered Goods” in order to promote parts and materials procurement which are considerate to the environment.

We rank our suppliers from A to D, using our proprietary scoring method. We ask D-ranked suppliers to improve their environmental efforts and reevaluate them the following fiscal year to confirm whether they have improved.

2 Promotions in Fiscal Year 2001

In a Green Purchasing assessment conducted in August 2001, we evaluated exporters and new suppliers, and reevaluated D-ranked suppliers that were asked to improve in the 2000 assessment.

We asked D-ranked suppliers to submit an improvement program in fiscal year 2000. As a result of carrying out improvement promotions, 36.8% of those D-ranked suppliers were promoted to A, 55.3% to B and 7.9% to C. From this result, we confirmed that all our suppliers had improved their environmental efforts.

In October 2001, we introduced a Green Purchasing system into SEM*, our main overseas parts supplier, in Malaysia.


3 Future Policies

We will review the standards and contents of the Green Purchasing system in order to perform checks mainly on the removal of toxic substances from parts and materials in and after fiscal year 2002.

We will additionally check for chemical substances targeted by the Japan Green Procurement Survey Standardization Initiative*.

Japan Green Procurement Survey Standardization Initiative:
A council through which Sharp and 17 other companies will endeavor to standardize Green Purchasing evaluation criteria for chemical substances contained in electric and electronic products.

Evaluation items

Main Environmental Requirements

1. Compliance with ISO14001 or EMAS
2. Corporate principles, policy, goals, organization, education, and training for environmental protection.
4. Disclosure of measures on environmental protection, activities, and their results.
5. Ability to supply MSDS upon delivery of chemical substances.

Main Product/Material Requirements

1. The items purchased are packaged in an environmentally conscious manner.
2. Elimination of toxic chemical materials, including substances prohibited for use by domestic law; carcinogenic substances or substances having chronic toxicity; or chemical substances stipulated by environmental laws, major European laws or Sharp’s internal criteria.
3. Working on resource saving such as reduction of used materials, use of recycled materials, implementation of recycle, etc.
4. Working on reducing power consumption in the making of parts or products.

* EMAS stands for Eco-Management & Audit Scheme: the environmental management system and auditing rules in the EU.
* MSDS stands for Material Safety Data Sheet: it states the composition, toxicity, legal restrictions and appropriate methods of handling chemical materials.
2. Planning and Design

Green Product Development Policy

1. Development Process

Our new products are developed according to the Sharp “Green Product Guidelines,” which are based on seven concepts. We introduced these guidelines to our domestic sites in 1999 and to our overseas production bases in 2001. In 2001, we improved and diversified the recycling items in time for the launch of the consumer electronics recycling plant. We will strengthen the guidelines and formulate seven concepts that will be observed by all employees.

Green Product Attainment is evaluated at three separate stages: planning/design, trial production, and mass production (final). Products receiving high marks are certified in Japan as “Green Seal Products.” In fiscal year 2001, our objective was to achieve 75% of the goal—a goal we surpassed substantially by achieving 87.4%. In fiscal year 2002, we plan to modify the guidelines by adding energy creation and comfortable life to the concept.

2. Green product development process

- **Products that are energy efficient and use little energy.** Our focus is on products that consume less power both in running and standby mode, and air conditioners/heaters that give more efficient cooling and heating.
- **Products that are safe to use and dispose of.** We carry out tests on products that contain chemicals to make sure that they do not have negative effects on people’s health or the environment.
- **Products that use minimum resources.** We work to save natural resources like water, and to reduce the amount of materials used in products and packaging.
- **Recyclable products.** We choose materials that can be easily recycled or reused in products.
- **Products made from recycled materials.** We emphasize the use of materials such as recycled plastic in making products.
- **Products with a long life cycle.** Our goal is to design products that will last longer.
- **Products that are easy to disassemble.** We design and build products so that they will be easy to take apart for recycling.

- **Green Seal products of fiscal year 2001**

  - **1-Bit Audio System SD-CX2**
    - Industry’s lowest power consumption (when released)
    - 0.17W

  - **AQUOS LCD Television LC-30BV3**
    - Industry’s lowest standby power consumption (when released)
    - 154W

  - **ViewCam VL-NZ10**
    - Uses green materials such as lead-free solder and non-halogen resin

3. Number of products that have acquired the Green Seal

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio-visual</td>
<td>26</td>
</tr>
<tr>
<td>Home appliances</td>
<td>29</td>
</tr>
<tr>
<td>Communication equipment</td>
<td>17</td>
</tr>
<tr>
<td>Information equipment</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td>112</td>
</tr>
</tbody>
</table>

4. Number of products that have passed the Green Product Declaration

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio-visual</td>
<td>43</td>
</tr>
<tr>
<td>Home appliances</td>
<td>112</td>
</tr>
<tr>
<td>Communication equipment</td>
<td>31</td>
</tr>
<tr>
<td>Information equipment</td>
<td>77</td>
</tr>
<tr>
<td>Total</td>
<td>263</td>
</tr>
</tbody>
</table>

*1 Green Product Attainment: Average value of evaluation item achievement rates of models labeled as “Green Products” (all new products).

Evaluation item achievement rate = \( \frac{\text{Number of items achieved}}{48} \times 100\% \)

*2 3R: reduction of wastes (Reduce) ● reuse of parts/products (Reuse) ● recycling of materials (Recycle)
2) Sharp Green Seal Program

Sharp certifies products that have excellent features, as “Green Seal Products,” especially those related to saving energy and resources, and marks them with its proprietary label—the Sharp Green Seal. In fiscal year 2002, we plan to raise the certification standards and evaluation criteria.

3) Introduction of Life Cycle Assessment (LCA)

Life Cycle Assessment (LCA) is a method to comprehensively evaluate the burden on the environment through the entire life cycle of a product from raw materials to production, sales, use and final disposal. Sharp has introduced LCA for our main Japanese products to achieve the following objectives:

1. To develop products with less burden on the environment,
2. To improve production processes.

In fiscal year 2001, we evaluated solar cells, air conditioners and mobile phones in terms of their effects on global warming.

Because solar cells create energy without discharging carbon dioxide, the more we use them the less burden we place on the environment. (See diagram: -1014.5 kg-CO2)

We realize that air conditioners need improvements in energy-saving performance, since they discharge much carbon dioxide during use. Mobile phones can be regarded as products that place low burdens on the environment, since they discharge only an extremely small amount of carbon dioxide.

We have been considering a new evaluation protocol for our design engineers to use, since the present LCA evaluation requires too much time and labor to collect data.

● Green seal product certification standards in fiscal year 2001

<table>
<thead>
<tr>
<th>Certification items</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saving energy</td>
<td>Power consumption • Industry-leading model of each product category</td>
</tr>
<tr>
<td></td>
<td>Standby power consumption • Industry-leading model of each product category • 0.6 W or less (remote-controlled products) • 1.0 W of less (telephones, fax machines, PCs)</td>
</tr>
<tr>
<td>Saving resources</td>
<td>Resource savings during use • Industry-leading model of each product category (water, detergent savings, etc.)</td>
</tr>
<tr>
<td></td>
<td>Compact/lightweight • Industry-leading model of each product category</td>
</tr>
<tr>
<td>Long service life</td>
<td>Upgrading • Upgradeable products (excludes upgraded PC software, HD, memory, etc.)</td>
</tr>
<tr>
<td></td>
<td>Long-lasting consumable supply • Products having improved consumable supply life of 50% or more</td>
</tr>
<tr>
<td>Reuse</td>
<td>Reusing parts • Products with parts reusing established system</td>
</tr>
<tr>
<td>Recycle</td>
<td>Highly recyclable materials • Products using highly recyclable materials</td>
</tr>
<tr>
<td>Safety</td>
<td>Green materials • Lead-free solder, abolishing use of halogenated flame retardants, substituting polyvinyl chloride (power cords excluded)</td>
</tr>
<tr>
<td>Awards</td>
<td>Listed by public organization • Won Energy Saving Award, New Energy Award, etc.</td>
</tr>
<tr>
<td>Eco Mark</td>
<td>Acquired Eco Mark • Products that acquired Eco Mark authorized by the Japan Environment Association</td>
</tr>
<tr>
<td>Others</td>
<td>Original technology • Industry-first technology and other Sharp original technologies, the environmental consideration of which can be evaluated objectively</td>
</tr>
</tbody>
</table>

● LCA results of environmental impact (on carbon dioxide emission)

Notes: 1. Calculated per module  2. Not including stand, power conditioner, cable, etc.  3. When used for 20 years  4. Usage figures calculated by multiplying the average amount of power generated in Japan by the amount of CO2 discharged for commercial-use power.
3 Developing Energy-Creating/Comfortable Life Products

1 Energy-Creating Products

Solar Cells – World’s Largest Output

With the output of its 2001 solar cells reaching 75.02 MW, and accounting for 19.2% of global production, Sharp topped the world market share for the second straight year, after achieving a share of 17.5% in 2000. Sharp will continue to promote the increased use of photovoltaic power generation in its effort to preserve the earth’s environment.

2 Comfortable Life Products

(Creating a comfortable, healthy and cozy living environment)

Wide-Screen LCD TV

This unique liquid crystal panel television was developed with special regard to TV broadcasting and audio-visual software reproduction. Its low-reflective screen maintains a high contrast even in brightly lit living-rooms, resulting in a clearer picture. In addition, the absence of flickering on the scanline results in less stress for the eyes even during long stretches of close viewing. These innovations provide viewers with a lively, realistic viewing experience.

Air Conditioner

The Plasmacluster Ion Air Conditioner built into this air conditioner cleans room air by emitting positive and negative ions. These ions effectively dissolve floating mold spores, and viruses and harmful substances contained in tobacco smoke such as N.O. Sharp’s original energy-saving design has enabled it to lead the industry in energy-saving performance.

Comparison of picture contrast between LCD and cathode ray tube (CRT) technology

The luminance of a living room in an average household is said to be about 300 lux. With an ambient luminance of 30 lux or more, CRT contrast is sharply reduced, while LCD maintains a high contrast level.

Residential Photovoltaic Power System

( SUNVISTA )

Sharp’s fiscal year 2001 model photovoltaic power generation system for residential use, which features triangle corner modules for neat and efficient installation on hipped roofs, received the 2001 Japan New Energy Award. An apartment complex in Japan equipped with a Sharp photovoltaic power generation system also received a New Energy Award.

Automatic Washing Machine

A built-in ultrasonic vibrator removes heavy soil from shirt collars and cuffs with approximately 100 times* the washing power as the previous model. Users can then select a “detergent-saving” wash mode or a “water-washing” mode that uses no detergent, further reducing the burden on the environment.

1-Bit Digital Audio

Sharp’s 1-Bit digital amplifying technology not only reproduces sound as faithfully as possible to the original but also enables energy savings with a digital amplifier featuring high-efficiency electrical power conversion.

* When comparing cleaning effectiveness between ultrasonic washing and conventional fully automatic washing machine.

Solar cell output and world market share in 2001

<table>
<thead>
<tr>
<th>Company</th>
<th>Market Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company A</td>
<td>13.9</td>
</tr>
<tr>
<td>Company B</td>
<td>13.8</td>
</tr>
<tr>
<td>Company C</td>
<td>10.5</td>
</tr>
<tr>
<td>Others</td>
<td>42.6</td>
</tr>
<tr>
<td>SHARP</td>
<td>19.2</td>
</tr>
</tbody>
</table>

Initial test results for performance in removal of airborne spores

Spores reduced by approximately 90% in one hour

Operating mode: Plasmacluster Ion independent operation
Indoor temp./humidity level: 25°C/42% RH
Measuring method: Measured by counting the number of floating spores with an air-sampler, approximately 2 m from the air vent and approximately 1.3 m above the floor surface.
Testing institution: Ishikawa Health Service Association

<table>
<thead>
<tr>
<th>Remaining rate (%)</th>
<th>(Hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>80</td>
<td>0.5</td>
</tr>
<tr>
<td>60</td>
<td>1</td>
</tr>
<tr>
<td>40</td>
<td>1.5</td>
</tr>
<tr>
<td>20</td>
<td>2</td>
</tr>
</tbody>
</table>

Notes:
- Color solar cell modules marketed
- Residential Photovoltaic Power System
- Automatic Washing Machine
- ES-U80C/ES-U70C
  Ranked No.1 in the New Products category by Nikkei Research Institute of Industry and Markets
### Developing Energy-Saving/Resource-Saving Products

<table>
<thead>
<tr>
<th>Objectives/Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>◎ 100 models to acquire Sharp Green Seal, achieving 30% sales component ratio.</td>
</tr>
<tr>
<td>◎ Create industry-leading energy-saving products.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Promotional Measures/Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>◎ 112 models acquired Sharp Green Seal, achieving a sales component ratio of 32.2%.</td>
</tr>
<tr>
<td>◎ Released 63 models of industry-leading energy-saving products in Japan.</td>
</tr>
</tbody>
</table>

#### 1. Energy-Saving Products

**AQUOS**

AQUOS LCD televisions outperform CRT televisions in energy savings and service life. They are also lighter and thinner. In addition to a long-life LCD screen, the backlight gives approximately 60,000 hours of service life, long enough to be viewed eight hours per day for approximately 20 years.

- **LC-20C3-S**

**Microwave Oven**

The introduction of a 1000W inverter heater has reduced heating time by approximately one third and reduced electrical power consumption by approximately 42 percent*. An auto power-off feature has also been added.

- **RE-RZ1**

**Mobile Phones**

The advanced color TFT LCD in Sharp’s mobile phone can be switched from ‘Reflective Type’ for use outdoors and in bright locations, to ‘Transmissive Type’ with a backlight for use in dark locations, which helps save energy. The built-in CMOS camera module and charger are also designed to save power, providing users with approximately 130 minutes of continuous operation time and a continuous standby time of approximately 350 hours.

- **J-SH08**

### 2. Resource-Saving Products

**Notebook PC**

Using thin-format LCD panels and incorporating a magnesium interior frame, this notebook PC features an ultra-thin, lightweight design. Materials with high recycling efficiency such as aluminum alloy and magnesium alloy are used in the cabinet and frame.

- **PC-MT1-H5**

**Cyclonic Vacuum Cleaner**

Using lightweight materials for the dust cup and main unit and the world’s thinnest hose, Sharp has developed a vacuum cleaner that is approximately 30% lighter than conventional models. Dirt is sucked directly into the dust cup using a centrifugal separation method, eliminating the need for a paper dust bag. This vacuum cleaner is designed to maintain suction capacity longer with greater power savings.

- **EC-AP1**
Promoting the Use of Lead-Free Solder

Exposure to heavy metals such as lead and cadmium can affect the central nervous system when accumulated in the human body and can stunt growth in children. Sharp is striving to introduce lead-free solder on a company-wide basis. Tin, silver and copper solders are now used in the normal manufacturing process at Sharp, and PCs with printed circuit boards having lower heat resistance use lead-free solders with a lower melting point, such as tin, zinc and bismuth. In 2001, which was the first fiscal year we introduced lead-free solder, Sharp used it in 45 models of new products. Beginning in 2002, we are planning to use lead-free solder in all our products manufactured at worldwide sites, based on the “Lead-free solder introduction guidelines” (March 2001).

The Lead-Free (LF) Mark is placed on lead-free soldered mounted boards

Our original LF mark is shown on lead-free soldered circuit boards for the following reasons:

① To prevent the mixing of different solders in case of repair or replacement, and to ensure optimal connections.
② To prevent harmful disposal.

Comparison in number of models using lead-free solder (fiscal year 2000 and 2001)

<table>
<thead>
<tr>
<th></th>
<th>AV equipment</th>
<th>Home appliances</th>
<th>Communication equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>3 models</td>
<td>8</td>
<td>45 models</td>
</tr>
<tr>
<td>2001</td>
<td>26</td>
<td>8</td>
<td>1</td>
</tr>
</tbody>
</table>

Products with lead-free solder

- **Notebook PC**
  - Lead-free soldered board (Display board)
- **Facsimile machine**
  - Lead-free soldered board (LIU board)
- **UX-W90CL**
- **PC-MT1-H5F**
- **EC-AP1**
- **UX-P1400**

Reduction of Halogen Compounds

Halogen compounds contained in plastic cases and printed circuit boards are flame retardant. We are eliminating the use of halogen compounds that may generate dioxins under certain conditions of incineration.

Employing Lead-Free/Cadmium-Free Cords

Polyvinyl chloride shielding materials for power cords contain a slight amount of lead or cadmium as an additive to facilitate machining and allow greater flexibility. We started replacing them with shielding materials containing no lead or cadmium in fiscal year 2001.
Planning and Design Stages

6 Product Development Complying with 3R* Objectives

Objectives/Plan
- Create a practical recycling technology for plastics (polypropylene resin).
- Design parts with ease of disassembly for recycling.
- Start reusing parts in new products.

Promotional Measures/Achievement
- Use of recycled materials for the water tub of washing machines (ES-U70C/U80C).
- Develop easy-release screws made of shape-memory alloy or resin.
- 75% parts used in remanufactured copiers (SD-2150R) were reused parts.

1 Preparing Recycle Design Guidelines
To promote product design that facilitates recycling, Sharp has established a Recycle Design Development Project, consisting of product design engineers, recycling technology developers and consumer electronics recycling plant line engineers in Japan. At project meetings, we choose examples from recycling sites and discuss how to make disassembly easier, employing easier-to-recycle materials. We compiled our discussions in the Guidelines for Recycle-Conscious Product Design, completed in December 2001, and introduced them to our domestic product design divisions. The guidelines describe design techniques to improve the recycling rate, with illustrated examples of disassembling processes and disassembly difficulties.

Guidelines for Recycle-Conscious Product Design

2 Making Polypropylene Material Recycling Technology Practical
Sharp has been involved in developing recycling technology for plastics since 1999. In fiscal year 2001, we disassembled used washing machine tanks and reduced them to their constituent materials, thereby developing a practical technique for making the recycled materials into new water tubs. (ES-U70C/U80C)

Service life and durability of recycled materials were major hurdles for us to overcome in developing recycling technology. By using antioxidants and other additives to prevent aging, we were able to improve the service life of the recycled materials. And by blending virgin materials, we improved their ability to withstand shock and bending. We also studied shock resistance by drop testing to improve structural design. As a result, we achieved a level of strength equivalent to that of virgin materials.

We will further encourage the development of environmental and recycling technology in partnership with outside research institutions and universities.

- Improvements in physical properties by mixing with virgin materials
- Improving service life by adding antioxidant

3R
- Reduction of wastes (Reduce)
- Reuse of parts/products (Reuse)
- Recycling of materials (Recycle)

Washing machine recycle flowchart


### 3 Parts Design Taking Disassembly into Account

Sharp has improved the disassembling efficiency of copiers, which are composed of many parts, by combining the parts into single units to make them easier to recycle and reuse. What’s more, by combining and adding assemblies according to user needs, customers are able to use the product longer. We also select functions as needed to make more effective use of resources. Furthermore, as one of our special recycling efforts, we have developed special screws* made of shape-memory alloy or resin that can be disengaged through a simple heating method. This allows products using the screws to be disassembled in about half the time normally required. In the future, this technological development will make it possible to operate the disassembly line unmanned. We are now working to equip LCD products with shape-memory screws by 2005.

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### 4 Remanufacturing Copiers

Sharp has been actively developing a copier remanufacturing system in Japan since 1997. The system is set up to recover a used machine, disassemble all its individual parts after a status check, wash them, put them back in the production line after close examination, and add new parts to assemble a machine that has the same quality and performance as one manufactured completely from new parts. More than 75% of SD-2150R copiers are manufactured from recycled parts.

Sharp began production of remanufactured copiers bound for overseas markets in fiscal year 2001, and shipped a total of 680 units (three models: 25 cpm, 30 cpm and 40 cpm machines) to its sales subsidiaries and dealers in Southeast Asia, Africa, and the Middle East. These remanufactured models are equivalent in performance and reliability to new models for the Japanese market.

---

### 7 Acquiring Environmental Labels

Environmental labels are affixed to products that have cleared the standards instituted by a third party organization to acknowledge that the products are environmentally friendly and that their environmental information is open to the public. Sharp is enthusiastically striving to obtain various kinds of environmental labels in countries around the world and to provide environmental information on its products.

#### Acquired environmental labels worldwide (the number of models acquiring environmental labels in fiscal year 2001)

<table>
<thead>
<tr>
<th>Category</th>
<th>Countries: Japan, US, EU nations, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCs</td>
<td>TVs</td>
</tr>
<tr>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

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*Jointly developed with NEC Tokin, Inc. as a research business commissioned by the Manufacturing Science and Technology Center, Ministry of Economy, Trade and Industry.

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**Example of disassembling a cabinet using easy-release screws**

A cabinet using these screws can be disassembled without manual labor.

---

**Easy-release screw (Example 1)**

A cylindrical slit screw made of shape-memory alloy is heated to shrink to a reduced diameter for easy removal.

---

**Easy-release screw (Example 2)**

A cylindrical slit screw made of shape-memory alloy is heated to shrink to a reduced diameter for easy removal.

---

**Example of disassembling a cabinet using easy-release screws**

A cabinet using these screws can be disassembled without manual labor.

---

**Remanufacturing Copiers**

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**Planning and Design**

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**Acquired environmental labels worldwide (the number of models acquiring environmental labels in fiscal year 2001)**

<table>
<thead>
<tr>
<th>Category</th>
<th>Countries: Japan, US, EU nations, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eco Mark (Country: Japan)</td>
<td>GEEA Label (Countries: EU nations)</td>
</tr>
<tr>
<td>Copiers</td>
<td>Printers</td>
</tr>
<tr>
<td>12</td>
<td>7</td>
</tr>
</tbody>
</table>

*Sweden, Finland, Norway, Iceland, Denmark*
Environmentally Conscious Factories

1. Guidelines for Promoting Green Factories

1. Green Factory Concept and Guidelines

The Green Factory Guidelines require compliance with environmental laws and regulations applicable to each facility, establishment of an ISO 14001-based environmental management system, and attainment of targeted values for environmental performance. The guidelines have proprietary environmental preservation activities added, including maintaining harmony with the local community and harmony with nature. The guidelines cover ten concepts and focus on preventing global warming, contribution to the realization of a sustainable society in which resources are recycled, and reducing the discharge of toxic chemical substances. Sharp has been following the guidelines ever since the company introduced them to all manufacturing sites in Japan in fiscal year of 1999.

Tasks for Reducing Environmental Burden

- Preventing global warming
- Contributing to the realization of a sustainable society in which resources are recycled
- Reducing discharge of harmful chemical substances

Green Factory Guidelines

Rational use of energy and reduction of greenhouse gas emissions such as carbon dioxide

Employees are highly aware of the environment, making them completely green-minded.

Use of natural energy, photovoltaic power generation, wind power generation

Minimizing the emission of harmful substances into the atmosphere, water systems and soil

Appropriate control of chemical materials (PRTR)

Effective utilization of resources. Green procurement, utilization of recycled resources.

Minimizing waste to achieve zero discharge of materials to landfill

Preventing global warming, Minimizing CO2 emissions and other greenhouse gases.

Coexistence with nature (at the manufacturing site). Small animals inhabit the surrounding area and plants grow naturally.

Coexistence and good communication with the local community.

Establishing and promoting plans for self-initiated environment activities. Reducing impact on the environment, preserving the environment and disclosing information.

Note: Matters relating to regional harmonious coexistence, environmental information disclosure, harmonious coexistence with nature and environmental awareness are introduced at the Mind-Set Stage.
Reducing CO₂ Emissions at Production Sites in Japan

As part an international movement to prevent global warming, Japan has ratified the Kyoto Protocol. Sharp takes preventing global warming seriously, and is actively implementing measures to reduce emissions of CO₂ (energy consumption levels). Carbon dioxide emissions at production sites in Japan in fiscal year 2001 were 351,264 tons, a 0.6% reduction from the previous year. 1.1% fewer production units were produced at production sites than the previous year, but there was a 33.8% increase of production units at device production sites, resulting in an overall production increase of 20%. Total emissions at device production sites have been controlled in line with the previous year, but since overall production has decreased, this actually amounts to a significant increase in emissions per unit. (see fig. 1.)

CO₂ emissions from all production sites and offices in Japan, including the company headquarters and Tokyo branch, rose by only 1% compared to the previous year in fiscal year 2001, whereas in fiscal year 2000 emissions levels had risen by 7% from the previous year. (see fig. 2.) This success in reining in overall emissions at our production sites is a result of energy-saving strategies enacted at each site individually, as well as the activities of our “Energy-Saving Work Group,” whose mission is to save energy on the supply side as well as the demand side through efforts such as the improvement of energy efficiency of our production facilities. Sharp will continue to actively strive to reduce its CO₂ emissions in the future, but when new factories come on line, an increase may also be expected. Thus, we are putting more effort into finding ways to reduce greenhouse gases other than CO₂, such as PFCs. We will also use the Kyoto Protocol as the basis for other efforts to preserve the environment, including the planting of forests.
Manufacturing Stage

2 Examples of Energy-Saving Activities

Sharp’s energy-saving activities encompass not only improvements in our energy supply side, but also the continual improvement and refinement of our production facilities. Two examples are shown as follows.

Reducing Energy Consumption by Air-Conditioning

At our Shinjo site, which produces solar cells, manufacturing equipment radiates significant amounts of heat, making air-conditioning necessary even in the winter. Our “Winter Outside-air Cooling System” mitigates the need for this by selectively letting outside air into the plant to cool it. This strategy alone reduces 350 tons of CO₂ emissions per year.

Reducing Energy Consumption by Manufacturing Equipment

By improving the insulating properties of the pipes connecting manufacturing equipment and the heat exchangers of our Fukuyama site, which produces semiconductors, we were able to cut in half the energy expenditures of the heat exchangers.

Improving insulation on manufacturing equipment—auxiliary machine pipes

\* Uses insulation subjected to gas separation analysis/evaluation with selected materials suited to clean room operating conditions.

3 Reducing CO₂ Emissions in Overseas Production Sites

Sharp’s overseas production sites accounted for about 30% of the company’s total CO₂ emissions in fiscal year 2001 at 153,151 tons*. Of these, the total emissions from sites in Southeast Asia make up about half of this amount.

By implementing the Green Factory Guidelines and introducing examples of energy-saving activities, we have succeeded in reducing our CO₂ emissions 2.1% per production unit compared to the previous year, especially in plants in Southeast Asia.

* CO₂ Conversion factors used by each country were utilized to calculate CO₂ emissions for sites in each overseas country.

CO₂ emissions by area

<table>
<thead>
<tr>
<th>Area</th>
<th>Total emissions (t-CO₂)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>10,027</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>23,058</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>74,554</td>
</tr>
<tr>
<td>China</td>
<td>45,512</td>
</tr>
<tr>
<td>Japan</td>
<td>351,264</td>
</tr>
</tbody>
</table>

4 Controlling Emissions of Other Gases

Greenhouse Gases (PFC, etc.)

Gases other than CO₂ are also responsible for the greenhouse effect. Among these greenhouse gases are HFC (hydrofluorocarbon), PFC (perfluorocarbon), and SF₆ (sulfur hexafluoride), which are used mainly in processes for liquid crystals, semiconductor washing, and etching. Fiscal year 2001 emissions for these gases were 550,000 tons of CO₂, a 25% reduction from the previous year. New factories are now being planned, but we will be implementing the following measures to insure that emissions levels continue to fall:

1. Reducing usage
2. Switching to gases with lesser greenhouse effects
3. Introduction of abatement system.

Ozone Layer-Destroying Substances

Since the coolants used in air-conditioners, HCFC (hydrochlorofluorocarbon), contribute to the destruction of the earth’s ozone layer, we are in the process of switching to the use of HFC (hydrofluorocarbon), which does not deplete the ozone layer. However, since these substances contribute to the greenhouse effect, we are making efforts to switch to harmless substances.

NOₓ/SOₓ

By taking measures such as careful management of boiler operation and switching to fuels which contribute less to air pollution, we have succeeded in reducing NOₓ (nitrooxide) and SOₓ (sulfoxide) emissions by 23.6% and 12.7% respectively from the previous year.

NOₓ and SOₓ emissions (all production sites in Japan) (tons)

<table>
<thead>
<tr>
<th>Year</th>
<th>NOₓ emissions</th>
<th>SOₓ emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>23.64</td>
<td>14.52</td>
</tr>
<tr>
<td>1998</td>
<td>21.67</td>
<td>13.95</td>
</tr>
<tr>
<td>1999</td>
<td>21.15</td>
<td>15.08</td>
</tr>
<tr>
<td>2000</td>
<td>25.78</td>
<td>10.51</td>
</tr>
<tr>
<td>2001</td>
<td>19.69</td>
<td>18.68</td>
</tr>
</tbody>
</table>
Minimizing Waste

1. Achievement of “Zero Discharge to Landfill”* in All Production Sites in Japan

Reaching “zero discharge to landfill” in all production sites in Japan, although originally a goal for fiscal year 2002, was achieved a year early in fiscal year 2001. Sharp also made great strides in recycling, reaching a landfill disposal rate of 0.1% and a recycling rate of 94.8%. Achieving “zero discharge to landfill” was a result of efforts made by “waste reduction working activities” carried out independently at each site, thoroughly separating materials for processing, and originally developed intermediate in-house treatment techniques, the culmination of all of which was both the reduction of waste and the strengthening of recycling activities. One of our greatest challenges was the reduction of waste water discharges.

By establishing a system which utilizes microorganisms to enable water reuse, we succeeded in reducing yearly waste by 3,665 tons on a yearly basis. Further, we are actively engaged in developing new technologies and uses for our waste, such as the reuse of effluents and converting sludge into raw material for cement.

We are also continuing efforts to make advancements in areas such as converting waste LCD glass panels into raw material for tiles, converting waste photovoltaic panels into raw material for cement while recovering their metals, making fuel from waste plastics, and recycling waste paper into tissue paper. Other than synthetic rubber scraps, which constitute the largest portion of our landfill disposal materials, various waste plastics are recycled for such purposes as organic compounds, thermal recycling, soil enrichment, filters, adhesives, and deodorizers.

2. Reducing the Total Amount of Waste Generated in Japan

Compared to the previous year, the total amount of waste generated increased by 2.9% at product production sites and by 24.6% at device production sites, combining for a total increase of 23.6% in Japan. These increases are accounted for by effluents from developing processes at our new plants. We will continue to implement waste strategies based on Sharp’s Waste Emission Control Manual. This will include maintaining the “zero discharge to landfill” status of our existing plants beyond fiscal year 2002 as well as introducing microorganism effluent cleansing and other technologies into new plants as they come on line to make them “zero discharge to landfill” as well.

* Zero discharge to landfill: Recycling and reusing both industrial and general waste from all sites to achieve landfill disposal of effectively zero. There are technological limitations in waste processing, but Sharp maintains the strictest standard in the industry, considering “zero discharge to landfill” to have been achieved only when landfill disposal ratios reach levels of less than 0.5% (landfill disposal ratio: amount of landfill disposal / amount of total emissions × 100) for 2 consecutive months.
Examples of Waste Reduction (Reducing Sludge)

Sharp is making efforts to reduce sludge generation at all of its sites. In fiscal year 2001, 7,179 tons of sludge were produced, of which 89%, or 6,389 tons, were recycled for use as raw materials in Japan. Sharp is also taking measures to reduce the amount of sludge produced at its production sites. One example of these activities is introduced here.

In order to reduce sludge produced from process effluent treatment facilities at our Fukuyama site, we developed an acid waste water treatment system using a new recycle tank. In this new system, the calcium hydroxide in the sludge in the sedimentation tank is fed into the recycle tank and reused, thereby reducing amounts of both calcium hydroxide and sludge produced.

New system’s sludge recycling flow

<table>
<thead>
<tr>
<th>Old system’s sludge recycling flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid waste water</td>
</tr>
<tr>
<td>Calcium hydroxide</td>
</tr>
<tr>
<td>Sludge components (calcium fluoride and unreacted calcium hydroxide)</td>
</tr>
<tr>
<td>Reaction tank</td>
</tr>
<tr>
<td>Sedimentation tank</td>
</tr>
<tr>
<td>Sludge concentration tank</td>
</tr>
<tr>
<td>Returned sludge</td>
</tr>
<tr>
<td>Waste water</td>
</tr>
</tbody>
</table>

4 Waste Reduction At Overseas Production Sites

The total amount of waste generated at overseas production sites in fiscal year 2001 was 27,000 tons, amounting to about 17% of the waste generated at all of Sharp’s production sites. In fiscal year 2001, various strategies for waste reduction were implemented in each locale, such as the reuse of wooden packaging materials in the U.S.A.; however, factors such as a decrease in overseas production has led to a 3% increase in waste per production unit compared to fiscal year 2000.

Total amount of waste generated by region

- Europe: 4,670 tons
- U.S.A: 7,273 tons
- Southeast Asia: 12,839 tons
- China: 2,056 tons
- Japan: 135,625 tons
- Total: 162,463 tons

Using Water Effectively

Sharp thoroughly cleans the water used in its plants before reusing it. In fiscal year 2001, the amount of recovered and recycled water increased 9% over the previous fiscal year, allowing us to reduce water supplied by 12% in Japan. Meanwhile, total waste water was reduced 2.5% from the previous fiscal year, allowing for similar reductions in COD and nitrogen emissions.

Also, by constructing storage reservoirs to catch and hold rainwater, we are able to make effective use of this natural resource.

Amount of COD, nitrogen, and phosphorus emissions in Japan

<table>
<thead>
<tr>
<th>Amount of COD, nitrogen, and phosphorus emissions in Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>(tons)</td>
</tr>
<tr>
<td>COD</td>
</tr>
<tr>
<td>Nitrogen</td>
</tr>
<tr>
<td>Phosphorus</td>
</tr>
</tbody>
</table>

Amount of water supplied*, waste water, and recovered and recycled water* for all production sites in Japan

<table>
<thead>
<tr>
<th>Amount of water supplied*, waste water, and recovered and recycled water* for all production sites in Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1,000 m³/year)</td>
</tr>
<tr>
<td>Supplied</td>
</tr>
<tr>
<td>Waste water</td>
</tr>
<tr>
<td>Recovered and recycled water</td>
</tr>
</tbody>
</table>

*1 The types of water supplied to the facilities include municipal water, industrial water, and ground water, but not water recovered, recycled or reused within sites.

*2 Recovered and recycled water refers to water which is used for a process within a site and then used again within the same site without discharging it. The chart to the right shows total amounts for ① water reused and ② water recycled.
Management of Chemical Substances

Objectives/Plan

- Japan: Reduce discharge of chemical substances that must be managed on a priority basis by 10% in fiscal year 2001 and by 50% by fiscal year 2003 compared to fiscal year 2000 levels.
- Overseas: Introduce the Global Chemical Substances Management System in overseas production sites.

Promotional Measures/Achievement

- Japan: 53% reduction compared to fiscal year 2000.
- Overseas: Structure completed for the Global Chemical Substances Management System. Now implementing at individual production sites.

1 Reducing Discharge of Chemical Substances That Must Be Managed on a Priority Basis

Sharp’s stated goal was to reduce by fiscal year 2003 in Japan the discharge of chemical substances that must be managed on a priority basis* by 50% compared to fiscal year 2000. However, we have already succeeded in realizing a 53% reduction in 2001. Sharp will set new goals to achieve.

*Criteria for priority managed chemical substances:

- Substances regulated by the Japan PRTR Law that are released or transferred in large amounts.
- Substances that risk causing annoyance to the general public living in the vicinity of a facility, even if the amount is small.
- Substances not covered under the Japan PRTR Law that are regulated under environmental laws, and that are released or transferred in large amounts.

Program to reduce the amount of toxic chemicals discharged

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Reference year</th>
<th>10% reduction</th>
<th>30% reduction</th>
<th>50% reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2 Promoting Risk Communication

We are engaged in risk assessment worldwide. In Japan, we report and declare PRTR data based on the PRTR (Pollutant Release and Transfer Register) Law. In future years, Sharp will begin to disclose information regarding various risks involving chemical substances to consumers, businesses, and other citizens in areas surrounding our sites. Through such risk communication, we hope to build a relationship of mutual trust with our neighbors.

3 Chemical Substances Management System

In April, 2000, Sharp developed a proprietary chemical substances management system (S-CMS) in order to manage amounts of chemicals which are purchased, used and discharged. In October 2000, this system came online in Japan, and since then it has allowed us to comprehensively manage in the database all information regarding chemical usage throughout the company (about 5,360 substances) so that information can be analyzed on a site, organizational, or substance basis. Sharp applied its 2 years of domestic experience with this system in fiscal year 2001 to construct its Global Chemical Substances Management System. By linking this system with SAP (Enterprise Resource Planning System), the company has realized data collection that is both highly efficient and precise. This system will be implemented in worldwide production sites beginning in fiscal year 2002. This system will allow the company to integrate the management of all the chemical substances in use. Further, by actively promoting such chemical management ahead of international regulations, Sharp is able to achieve safety and hygiene risk reduction for dangerous chemical substances, as well as reduce burdens on the environment on a global scale.

Production bases of introduction for the Global Chemical Substances Management System (S-CMS)

- SMCA/U.S.A.
- SPM/U.K.
- SMF/Spain
- SMF/France
- SMM/Malaysia
- SMF/Philippines
- SRAC/Malaysia
- SPEC/Malaysia
- SEES/Spain
- SME/Mexico
- SEMEX/Mexico
- SEMI/India
- SET/Taiwan
- SKC/Korea
- SRI/Taiwan
- STTM/Thailand
- SREC/Thailand
- SREC/Malaysia
- SOCC/Thailand
- SOCC/China
- NSEC/China
- WSEC/China
- SSEC/China
- SSMC/China
- SSCE/China
- SSCE/Mexico
- SSM/China
- SSM/India
- SSI/India
- SSI/Korea
- SSI/Malaysia
- SSI/China
- SSI/Philippines
- SSI/Thailand
- SSI/Thailand
- SSI/Thailand
- SSI/Thailand

STEP 1 Bases of introduction for fiscal year 2002 (SAP-ready locations)
STEP 2 Bases of introduction for fiscal years 2003 and beyond (as allowed for by SAP or network infrastructure progress)
4. Results of PRTR Surveys for Fiscal Year 2001 in Japan

Of the 354 types of chemicals covered under the reporting requirements of the PRTR Law that were handled in quantities greater than 1,000 kg/year during fiscal year 2001, Sharp facilities used 16 substances, totaling 2,820 tons. Of this amount, approximately 265 tons were released into the environment or transferred, accounting for 9.4% of the amount handled. Of the remaining amount, 72.9% were recycled as fuel, metal, etc.; 16.6% eliminated by reaction, chemical decomposition, etc.; and 1.1% were used in products.

5. Monitoring Surveys at Device Production Sites

Sharp was already conducting PRTR surveys of all of its sites in Japan. Additionally, along the boundaries of its device production sites (Mie, Nara, Shinjo, Tenri, Fukuyama), which handle a large amount of chemical substances, Sharp is voluntarily conducting soil and ground water monitoring. Below is the list of surveys conducted regularly for governmental staff.

6. Reducing Soil and Ground Water Discharge

Since 1998, Sharp has been conducting soil and ground water surveys on 11 of its sites in Japan. Where pollution was identified (Nara, Yao, Tenri, Shinjo), information was made public through the local authorities. Since chlorine solvents were the source of the ground water pollution, we stopped using them entirely at the end of September 1999. In the future, Sharp will utilize its Chemical Substances Management System to methodically identify our purchasing and use of chemical substances and to reduce emissions into the environment.

● PRTR totalization (16 substances) (kg)

<table>
<thead>
<tr>
<th>PRTR No.</th>
<th>Chemical</th>
<th>Handling quantity</th>
<th>Emission</th>
<th>Transportation</th>
<th>Consumption</th>
<th>Removal</th>
<th>Recycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>2-Aminoethanol</td>
<td>2,347,089.70</td>
<td>2,223.06</td>
<td>0.00</td>
<td>0.00</td>
<td>136,447.24</td>
<td>0.00</td>
</tr>
<tr>
<td>30</td>
<td>Polymer of 4,4'-isopropylidenediphenol and 1-chloro-2, 3-epoxypropane (liquid): Bisphenol A type epoxy resin (liquid)</td>
<td>1,082.59</td>
<td>0.31</td>
<td>0.00</td>
<td>0.00</td>
<td>36.45</td>
<td>1,045.83</td>
</tr>
<tr>
<td>40</td>
<td>Ethylbenzene</td>
<td>2,255.17</td>
<td>577.10</td>
<td>0.00</td>
<td>0.00</td>
<td>726.41</td>
<td>0.00</td>
</tr>
<tr>
<td>63</td>
<td>Xylenne</td>
<td>12,920.25</td>
<td>2,971.61</td>
<td>0.00</td>
<td>0.00</td>
<td>4,390.79</td>
<td>0.00</td>
</tr>
<tr>
<td>64</td>
<td>Silver and its water-soluble compounds</td>
<td>11,963.51</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>596.91</td>
<td>0.00</td>
</tr>
<tr>
<td>67</td>
<td>Cresol</td>
<td>1,100.04</td>
<td>0.02</td>
<td>0.00</td>
<td>0.00</td>
<td>1,100.02</td>
<td>0.00</td>
</tr>
<tr>
<td>85</td>
<td>Chlorodifluoromethane: HCFC-22</td>
<td>6,763.00</td>
<td>329.00</td>
<td>0.00</td>
<td>0.00</td>
<td>260.00</td>
<td>0.00</td>
</tr>
<tr>
<td>101</td>
<td>2-Ethoxyethyl acetate: Ethylene glycol monomethyl ether acetate</td>
<td>23,587.64</td>
<td>6,924.65</td>
<td>0.00</td>
<td>0.00</td>
<td>16,662.99</td>
<td>0.00</td>
</tr>
<tr>
<td>172</td>
<td>N, N-dimethylformamide: DMF</td>
<td>38,885.00</td>
<td>6.96</td>
<td>0.00</td>
<td>0.00</td>
<td>2,891.04</td>
<td>0.00</td>
</tr>
<tr>
<td>224</td>
<td>1, 3, 5-Trimethylbenzene</td>
<td>7,893.97</td>
<td>2,738.47</td>
<td>0.00</td>
<td>0.00</td>
<td>2,464.22</td>
<td>0.00</td>
</tr>
<tr>
<td>230</td>
<td>Lead and its compounds</td>
<td>13,638.25</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>560.26</td>
<td>13,077.99</td>
</tr>
<tr>
<td>252</td>
<td>Arsenic and its inorganic compounds</td>
<td>1,250.06</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>191.13</td>
<td>176.19</td>
</tr>
<tr>
<td>260</td>
<td>Pyrocatechol</td>
<td>5,444.13</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>5,344.13</td>
<td>0.00</td>
</tr>
<tr>
<td>266</td>
<td>Phenol</td>
<td>46,830.48</td>
<td>5,173.95</td>
<td>0.00</td>
<td>0.00</td>
<td>35,842.33</td>
<td>0.20</td>
</tr>
<tr>
<td>283</td>
<td>Hydrogen fluoride and its water-soluble salts</td>
<td>297,364.48</td>
<td>0.00</td>
<td>24,561.71</td>
<td>0.00</td>
<td>863.86</td>
<td>10,829.41</td>
</tr>
<tr>
<td>311</td>
<td>Manganese and its compounds</td>
<td>1,551.04</td>
<td>0.01</td>
<td>0.00</td>
<td>0.00</td>
<td>863.86</td>
<td>218,372.07</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

● Report on Status of Measures to Clean Soil and Ground Water

<table>
<thead>
<tr>
<th>Site</th>
<th>Clean-Up Status for Fiscal Year 2001</th>
</tr>
</thead>
</table>
| Nara Site             | • From October 1999, we have installed waterproof walls along the boundaries of the site to stop pollution diffusion, as well as installed cleaning equipment and pumping wells to initiate clean-up.  
                        • Clean-up is progressing smoothly along the site boundaries.  
                        • We are conducting on-site inspections of the clean-up process on a yearly basis for local residents and governmental staff. |
| Yao Site              | • From September 1999, we have installed cleaning equipment and pumping wells to initiate clean-up.  
                        • Because the area with the highest concentration of pollution was the Yao City urban planning site, clean-up work here was completed by February 2002.  
                        • We are conducting on-site inspections of the clean-up process on a yearly basis for governmental staff. |
| Tenri and Shinjo Sites | • Since pollution at these two sites was minor, we are conducting ground water monitoring on a regular basis and informing local authorities of the results. |
Activities Aimed at Achieving a Recycling-Oriented Society

1) Recycling Policies Action Programs

In order to encourage effective use of resources and to reduce waste, the Home Appliances Recycling Law was enforced in April 2001 in Japan. This law mandated that appliance manufacturers take back and recycle four types of home appliances: air conditioners, TVs, refrigerators, and washing machines. Sharp is conducting recycling processing in accordance with this law. Further, in order to contribute even more to a recycling-oriented society, we are taking steps to strengthen our system for recycling and reusing end-of-life products other than home appliances, including information devices such as computers, and office equipment such as copiers.

2) Recycling Home Appliances

Objectives/Plan

- Taking back and recycling four categories of home appliances in Japan.
- Realization of material recycling of polypropylene.

Promotional Measures/Achievement

- Achievement of recycling rates for all four categories of home appliances exceeding the legally required recycling rates.
- Realization of material recycling for polypropylene used in washing machine (ES-U80C, U70C) tubs.* * See p. 23 for details.

Recycling System for Four Home Appliance Categories in Japan

Sharp has cooperated with Sanyo Electric Co., Ltd., Sony Corporation, Hitachi H. Ltd., Fujitsu General Limited, and Mitsuishi Electric Corporation to construct a highly efficient recycling system for the four categories of home appliances. This system consists of 190 designated convenient drop-off locations and 16 recycling plants, all located strategically throughout the country. The recycling plant for the Kinki region, Kansai Recycle Systems Corporation was established jointly by Sharp Corporation, Mitsuishi Materia Corporation, and five other electronics companies.

Recycling fees

<table>
<thead>
<tr>
<th></th>
<th>Air conditioner</th>
<th>TV</th>
<th>Refrigerator</th>
<th>Washing machine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recycling fees</td>
<td>3,500 yen</td>
<td>2,700 yen</td>
<td>4,600 yen</td>
<td>2,400 yen</td>
</tr>
</tbody>
</table>

Notes:
Recycling fees are the total costs required to process recycling in the recycling plants, establish and manage the drop-off locations, and transport items from the drop-off locations. Recycling fees are received from the customer when they have purchased a new appliance that falls under the Home Appliance Recycling Act. Sharp establishes prices based on a “1 price per item, nationwide unified fees” policy. Prices given on the left do not include pickup and transportation fees from outlets and local authorities.

Recycling Concept

- Development of Recycling Technology
- Increasing Recycling Rates
- Improving Cost-Effectiveness

- Recycling technology should reflect product design and development.
- Increasing recycling rates to strive for a goal of zero landfill waste.
- Developing recycling technologies to improve recycling cost-effectiveness.
Recycle Stage

2) Sharp Recycling Achievement in Fiscal Year 2001
(for period from April 1, 2001 – March 31, 2002)
As shown in the tables to the right, the recycling rates for the four types of home appliances covered by the Home Appliance Recycling Law (air conditioners, televisions, refrigerators, washing machines) processed at 16 recycling plants exceed the legally required recycling rates.

1) Recycling Status of Specified Kinds of Home Appliances (Sharp products)

<table>
<thead>
<tr>
<th>Category</th>
<th>Unit</th>
<th>ACs</th>
<th>TVs</th>
<th>Refrigerators</th>
<th>Washing Machines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processed units</td>
<td>Unit</td>
<td>126,874</td>
<td>320,319</td>
<td>223,041</td>
<td>234,320</td>
</tr>
<tr>
<td>Processed tonnage</td>
<td>t</td>
<td>5,428</td>
<td>8,180</td>
<td>13,112</td>
<td>6,526</td>
</tr>
<tr>
<td>Recycled tonnage</td>
<td>t</td>
<td>4,359</td>
<td>6,480</td>
<td>8,030</td>
<td>3,754</td>
</tr>
<tr>
<td>Recycling rate</td>
<td>%</td>
<td>80.3</td>
<td>79.2</td>
<td>61.2</td>
<td>57.5</td>
</tr>
<tr>
<td>Legally required recycling rates</td>
<td>%</td>
<td>60</td>
<td>55</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

*Note: “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 year 2001.

2) Tonnage of Recycled Materials (Sharp products)

<table>
<thead>
<tr>
<th>Category</th>
<th>Unit</th>
<th>ACs</th>
<th>TVs</th>
<th>Refrigerators</th>
<th>Washing Machines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>t</td>
<td>1,778</td>
<td>565</td>
<td>5,745</td>
<td>2,419</td>
</tr>
<tr>
<td>Copper</td>
<td>t</td>
<td>227</td>
<td>317</td>
<td>57</td>
<td>54</td>
</tr>
<tr>
<td>Aluminum</td>
<td>t</td>
<td>20</td>
<td>6</td>
<td>20</td>
<td>17</td>
</tr>
<tr>
<td>Ferrous/nonferrous compounds</td>
<td>t</td>
<td>2,285</td>
<td>28</td>
<td>1,903</td>
<td>1,084</td>
</tr>
<tr>
<td>CRT glass</td>
<td>t</td>
<td>—</td>
<td>4,923</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Other valuable parts</td>
<td>t</td>
<td>49</td>
<td>641</td>
<td>305</td>
<td>180</td>
</tr>
<tr>
<td>Total (tonnage recycled)</td>
<td>t</td>
<td>4,359</td>
<td>6,480</td>
<td>8,030</td>
<td>3,754</td>
</tr>
</tbody>
</table>

3) Details of recycled and other process tonnage (Sharp products)

Regarding Release of CFC in Kansai Recycle Systems Corporation
During the processing of air conditioning units during the period of July–September 2001, improper procedures were followed at Kansai Recycle Systems Corporation, which led to the release of CFC into the atmosphere. This release was in violation of Japanese law, Sharp’s policy, and our recycling procedures. It was also revealed that the plant exceeded the number of hours of operation allowed under the Waste Disposal Law.
Therefore, on March 20, 2002, Sharp and the other electronics companies who had contracted their recycling operations to Kansai Recycle Systems Corporation were issued a warning from the Ministry of Economy, Trade and Industry and the Ministry of the Environment regarding the Home Appliances Recycling Act. Next, on May 2, 2002, Kansai Recycle Systems Corporation received orders from the Osaka government to cease operations for 90 days and to make improvements in their operations. At the same time an order was also given to the company by Hirakata City to improve their handling of CFC.
After management discovered the problem, Kansai Recycle Systems Corporation voluntarily ceased operations and devised countermeasures to prevent these breaches from reoccurring. The primary countermeasure to prevent reoccurrence was the establishment of a “Legal Respect Committee” whose duty is to enact programs fostering respect for the law.
Other countermeasures included restructuring the information system that tracks waste items from receiving to shipping, providing procedural manuals to the employees, and strengthening of the recovered CFC coolant management system to prevent filled CFC cylinders from being opened by using both seals and lids. We also implemented a system of information disclosure to local residence and governing bodies.
The plant made preparations for reopening in August, having received instruction and implemented thorough measures to prevent reoccurrence. During the period of the plant’s closure, other recycling plants performed appropriate recycling in its stead. (Refer to p. 15 for details on Sharp’s response.)
1. Collecting and Recycling PCs in Japan

Sharp has constructed a proprietary recycling system consisting of 250 collection stations and 4 recycling facilities in its efforts to develop an efficient process for the recycling of business-use PCs. In April 2002, Sharp was designated a general recycled industrial waste processor according to the Law of Promotion of Effective Utilization of Resources in Japan, allowing the company to operate its system fully starting in fiscal year 2002.

2. Promoting Remanufacturing, Recycling, and Reuse of Copiers

In fiscal year 2001, Sharp's "Nationwide Collection and Processing System," which became operational in the previous year swung into full gear in Japan. It collected 10,472 units (a 338% increase compared to the previous year) and processed them for remanufacturing and recycling. The system using parts from collected copiers for repair became operational in Japan beginning in fiscal year 2001.

A sorted types of circuit boards and fusing units are reused. Improvement of Sharp's overseas service department's use of reused parts is a topic for future consideration.

In order to realize even more effective use of resources, we will be enacting strategies to expand our collection, recycling, and reuse of parts worldwide in the future.
4 Recycling Portable Rechargeable Batteries

Sharp is also pursuing the recycling of the secondary (rechargeable) batteries that are found in many of its products. By joining the “Portable Rechargeable Battery Recycling Promotion Center,” Sharp is cooperating with other members of the industry in collecting and recycling both conventional NiCad and other secondary batteries in Japan. Sharp is already participating in the RBRC Recycling program in North America.

Examples of LCD glass recycling

In one of our LCD display factories in Mie, we worked with the INAX Corporation for the development of technology to recycle waste LCD glass into material used for tiles. We began converting waste LCD glass into material for tiles in October 2000, and in fiscal year 2001 approximately 310 tons were recycled. We plan to continue these recycling operations at a rate of about 30–50 tons per month.

Recycling LCD Modules

Sharp takes its responsibility as the leading LCD manufacturer seriously, and thus has also taken the lead in the field of LCD recycling. Beginning, in fiscal year 2001 in Japan, Sharp undertook the development of technology for recycling the plastic chassis and PC boards of LCD modules. Plastic chassis may be reused for items such as post-fusion transport palletes and stakes. Precious metals can be recovered from PC boards. Glass fiber is turned into slag and reused as a material in the production of cement. These processes allow about 80% of the original weight of the LCD module to be recovered and recycled.

Current achievable recycling rates and fiscal year 2001 targets

<table>
<thead>
<tr>
<th>Recyclable Stage</th>
<th>LCD glass</th>
<th>Plastic chassis</th>
<th>Other resins</th>
<th>PWB 4%</th>
<th>Light guide 20%</th>
<th>Metalls 11%</th>
<th>Fluorescent tube 1%</th>
<th>Polychromers 6%</th>
<th>Other resins 50%</th>
<th>Light guide 20%</th>
</tr>
</thead>
<tbody>
<tr>
<td>All recyclable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partly recyclable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not yet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LCD glass 39%

<table>
<thead>
<tr>
<th>LCD glass composition (Sharp 13.3-inch model)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major components</td>
</tr>
<tr>
<td>Metals</td>
</tr>
<tr>
<td>LCD glass</td>
</tr>
<tr>
<td>Light guide</td>
</tr>
<tr>
<td>Plastic chassis</td>
</tr>
<tr>
<td>PC board</td>
</tr>
<tr>
<td>Other resins</td>
</tr>
<tr>
<td>Polychromers</td>
</tr>
<tr>
<td>Fluorescent tube</td>
</tr>
</tbody>
</table>

Examples of LCD glass recycling

1. Waste LCD glass
   Waste LCD glass is crushed to below 2.5 mm

2. Pulverized product
   Pulverized product is mixed with clay and feldspar (*1) to make material for tiles, then wet ball-milled (*2).  

3. Slurry
   After the liquid and solid particles are mixed in a suspension, it is dried with a spray drier (*3).

4. Raw material powder
   Raw material powder is created.

5. Molding/Decorating
   The material is molded and the surface decorated, then fired in a kiln at about 1,250 C.

6. Finished product
   The finished product (tile).

(*) Feldspar: A silicate containing sodium, calcium, potassium, and other elements. This rock-forming mineral is found in many rocks.  
(‡) Ball milling: A milling apparatus widely used to mill mineral ores.  
(‡) Spray dryer: A drying apparatus used to spray and dry the slurry.
Environmental Activities at Distribution Sites

1. Fiscal year 2001, shift to railway containers in Japan, goal: 182 containers*/month (110% compared to previous year)
   * 5-ton shipping container

2. Fiscal year 2001 achievement: 255 containers/month (140.1% of goal, 154.5% compared to previous year)
   * The goal for fiscal year 2002 was achieved ahead of schedule.

3. Logistics

   Logistics Stage

   Environmentally Conscious Distribution

**1. Changing Modes of Transport**

Sharp is currently pursuing a shift away from conventional truck freight to the more efficient railway container shipping, especially on its long-distance transportation routes. Since the goal for this shift in transportation method for fiscal year 2002 was achieved in 2001, we have set a new goal for fiscal year 2002. At the East Japan Logistics Center of the Domestic Sales and Marketing Group Distribution Center, our proactive approach to this shift in transportation modes earned Sharp a First Place Award at the “Second Railway Freight Promotion Awards” sponsored by the Japan Rail Freight Research Center, Limited.

**2. 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. As a result, we are reducing CO₂ emissions by the equivalent of 66 tons and saving 23 kl of fuel per month. This amount of fuel is enough to power a single truck a distance of 90,000 km, twice around the Earth.

![A "No engine idling" sticker](image)

**3. Reducing Buffer and Packaging Materials Waste**

Concentrating mostly on import/export containers, Sharp has switched to use of reusable airbags for its buffer materials, and has succeed in reducing use of cardboard by 15 tons/month and expanded polystyrene by 144 m³/month in Japan. We are also making efforts to reduce waste by reusing packaging materials used for shipping small products and by repairing wooden pallets instead of disposing of them.

**4. Introducing Low-Pollution Vehicles**

Our goal is a 100% switchover rate to electric forklifts in our distribution centers in Japan by fiscal year 2003. Electric forklifts result in lower emissions of CO₂ than gasoline forklifts and they can be powered at a nighttime discount charge. In fiscal year 2001 we switched 7 forklift units to electric power, resulting in a reduction of CO₂ emissions by 21.2 tons. At present, the switchover is 98% complete.

**5. Efforts for Reducing Total Transport**

At present Sharp is undertaking efforts to identify the total amount of transport involved in shipping our products, and is publicly disclosing this information. Our total transport level for fiscal year 2001 was 149 million ton kilometers (t x km) in Japan. In order to alleviate the burden of our transport on the environment, we are working to improve our distribution efficiency by 1) improving loading efficiency and 2) increasing the amount of direct-from-factory shipping.

![Electric forklift](image)
Efforts for Containers and Packaging Materials

Objectives/Plan
- Cease use of expanded polystyrene for products weighing less than 5 kg.
- Cease use of expanded polystyrene for products weighing less than 10 kg by March 2003.
- Reduce use of expanded polystyrene for products weighing 10 kg or more.

Promotional Measures/Achievement
- Total elimination of expanded polystyrene use for products weighing less than 5 kg*
- Succeeded in eliminating expanded polystyrene use for some products weighing 10 kg or more, including large LCD TVs.
* Except for some continuing products produced

1 Efforts to Reduce the Use of Polystyrene Foam

After succeeding in the total elimination of expanded polystyrene as a packaging material for all of our products under 5 kg in fiscal year 2000, we set a goal of eliminating it as well from products under 10 kg, which can usually be carried home from the store by customers, by March 2003.

In Japan, Sharp’s usage rate for cardboard is approximately 89%. Since the recycling rate for this commonly used packaging material is 93%, this means that approximately 83% of the packaging material used for Sharp products is eventually recycled.

We do continue to use expanded polystyrene packaging for seasonal items such as fans which are packed away even after purchase, but in the future we will take into account the judgment of the LCA and develop a packaging material which places less of a burden on the environment.

2 Switching to Long-Lasting Packaging Materials for Inter-Factory Transport

By switching to plastic trays for the inter-factory transport of LCD units instead of the fully cardboard packaging we have been using, we succeed in 1) reducing the amount of waste produced, 2) enabling long-term use of trays, and 3) reducing costs. Finally, trays which are no longer used are designed so that they can be stacked and collected, even further increasing the energy efficiency of transportation.

3 Packaging Materials to Be Displayed on All New Products in Japan

As of April 2001, the Japanese Law for Promotion of Effective Utilization of Resources requires labeling of packaging material used for products*. Thus Sharp is labeling the packaging materials for all of its new products as of April 2001, while drafting and implementing company-wide guidelines for this purpose in Japan.
* Probationary period is until March 2003.

Use of different packaging materials (for sales in Japan)
(fiscal year)

<table>
<thead>
<tr>
<th>Year</th>
<th>Cardboard</th>
<th>Expanded polystyrene</th>
<th>Plastic</th>
<th>Paper</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>86.5</td>
<td>8.5</td>
<td>3.0</td>
<td>0.9</td>
<td>1.1</td>
</tr>
<tr>
<td>1999</td>
<td>87.2</td>
<td>7.0</td>
<td>3.4</td>
<td>1.4</td>
<td>1.0</td>
</tr>
<tr>
<td>2000</td>
<td>87.8</td>
<td>6.2</td>
<td>3.3</td>
<td>1.8</td>
<td>0.9</td>
</tr>
<tr>
<td>2001</td>
<td>89.4</td>
<td>5.5</td>
<td>3.0</td>
<td>1.2</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Example of a container and packaging label

Full cardboard packaging for AC indoor unit

Reusable packaging for LCD units

Example of a container and packaging label

Use of different packaging materials (for sales in Japan)
(fiscal year)
Increasing Environmental Awareness

**1 Environmental Education Programs**

- **Objectives/Plan**: Build up environmental friendly corporate culture by promoting environmental education programs for all employees, from new employees to top management.

- **Promotional Measures/Achievement**:
  - General Training: 319 participants
  - Expert Training: 292 participants
  ("Green Factory Course" added to the "Green Engineer Seminar").

**2 Educational Policies**

At Sharp, we consider the mind-set of each employee who performs environmental activities to be of the utmost importance, which is the reason for our environmental education.

In Japan, in order to cultivate an environmentally friendly corporate culture, we provide 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.

**3 General Training**

Employees receive "General Training" both when they enter the company and when they are promoted to managers. There are also training courses for experienced managers on environmental issues to ensure they have a thorough understanding of Sharp's environmental policies. Although our target for the number of participants in fiscal year 2001 was 750, only 319 participated. For fiscal year 2002, we have revised the content of the training for experienced managers on environmental issues, and are now conducting an environmental compliance seminar centered on issues of following legal compliance. Full-scale training began in May, and as of the beginning of July the number of participants had climbed to 1,509.

**4 Expert Training**

Sharp also employs "Expert Training" courses to ensure that personnel in engineering, planning, factory management, and other areas have the specialized information they need related to the environment and to give them appropriate training. In March, 2002, in addition to the "Green Product Basic Course," which was already in place, we added a "Green Factory" course for equipment, process management, and production engineers in the "Green Engineer Training" courses designed for planning and engineers in our product groups. These courses take examples both from outside the company and from various sites within the company to impart specialized knowledge regarding topics such as energy conservation, resource conservation, and management of chemical substances.

In the future, we plan on expanding courses on topics such as design for recycling as part of our plan to methodically educate environmental experts at each of our sites.

---

**Training content and number of participants in Japan**

<table>
<thead>
<tr>
<th>Level</th>
<th>Type</th>
<th>Summary</th>
<th>2000*</th>
<th>2001*</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Training</td>
<td>For new employees</td>
<td>Understanding how to approach environmental issues and raising environmental awareness.</td>
<td>254</td>
<td>272</td>
</tr>
<tr>
<td></td>
<td>For new managers</td>
<td>Understanding the latest trends in environmental problems and gaining a thorough understanding of Sharp’s environmental strategies.</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>For experienced managers</td>
<td>Held in each Sharp site in Japan, this is a general course about environmental matters and how Sharp approaches them.</td>
<td>1,372</td>
<td>23**</td>
</tr>
<tr>
<td></td>
<td>Subtotal</td>
<td></td>
<td>1,650</td>
<td>319</td>
</tr>
</tbody>
</table>

**Expert Training**

- For employees assigned to foreign offices
  - Training for employees assigned abroad, presenting information about environment laws and regulations in the destination country.
  - Total: 27

- Tour of Kansai Recycle Systems Corporation
  - A tour is given of the Kansai Recycle Systems plant in order to give employees a first-hand glimpse of recycling and to present them a forum for thinking about environmental issues.
  - Total: 79

- "Green Engineering Training," "Green Product Basic Course" (Green Factory Course)
  - Thoroughly informing product headquarters engineers about the "Green Product Guidelines," environmental laws and regulations, and the latest environmental technologies.
  - Total: 84

- "Green Engineering Training," "Green Factory Course"
  - Thoroughly educating equipment, process management, and production engineers from each site about environmental knowledge necessary for factory management, including energy conservation, resource conservation, and chemical substances management.
  - Total: 18

- For sales and service
  - Employees of sales and service companies receive training on compliance with the Home Appliance Recycling Law and other laws and regulations necessary for conducting business.
  - Total: 1,328

- "Internal Auditor Training"
  - Education of internal auditors.
  - Total: 84

- "Internal Lead Auditor"
  - Education of internal lead auditors.
  - Total: 10

**Subtotal**

<p>| | | | | |</p>
<table>
<thead>
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**"Green Engineer Training," "Green Factory Course" curriculum**

<table>
<thead>
<tr>
<th>Item</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>Summary of environmental problems and Sharp’s approach</td>
<td>Global warming, resource recycling society, and the &quot;Green Factory&quot; concept.</td>
</tr>
<tr>
<td>Sharp’s energy conservation measures</td>
<td>The Kyoto Protocol, the Law Concerning the Rational Use of Energy, and the status of each site.</td>
</tr>
<tr>
<td>Sharp’s waste measures</td>
<td>Waste processing methods, Sharp’s waste measures, and examples from other companies.</td>
</tr>
<tr>
<td>Sharp’s overseas strategies</td>
<td>Status of overseas sites and examples from other companies.</td>
</tr>
<tr>
<td>Sharp’s chemical substance management</td>
<td>Necessity for chemical substances management and the Chemical Substances Management System.</td>
</tr>
<tr>
<td>Keys to success in energy conservation</td>
<td>An outside instructor will give examples of successes from other companies.</td>
</tr>
<tr>
<td>Environmental efforts at the Fukuyama site</td>
<td>&quot;Green Factory&quot; example from the Fukuyama site.</td>
</tr>
</tbody>
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**Fiscal year**

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**Contents in training for experienced managers on environment issues has been revised. This course is scheduled to be fully staged from fiscal year 2002.**
2) Green Mind Campaign

Objectives/Plan
- Aim to improve environmental protection awareness and contribute to the community while implementing environmental activities.
- Enact environmental citizen activities at all sites both in Japan and internationally.

Promotional Measures/Achievement
- In addition to previous activities, environmental citizen activities were enacted at all sites in Japan during the Environmental Month of June.
- In addition to environmental poster and slogan contests, we enlarged the scope of our efforts to promote environmental awareness by having a contest for the cover of our 2002 Environmental Report and other activities.

1) Sharp’s Promotion to Unify Employees and Management with its “Green Mind”

In order to contribute to local communities and encourage environmental protection awareness in our employees, Sharp has enacted the “Zero Waste Campaign,” “Zero Garbage Campaign,” and “Environmental Citizen Activities” at all of its sites in Japan. These activities are not limited to the month of June, but are performed consistently every month.

2) Contributing to the Local Community

Sharp has engaged in local clean-up activities once every month ever since it began its campaign in 1998. These activities contribute to the local community while at the same time improving employee environmental protection awareness and ethics.

3) “Green Mind Contests”

In order to encourage a “Green Mind,” Sharp holds a “Green Mind Contest” during the Environmental Month of June. We invite company employees and their families to submit works concerning the environment in one of four categories: “Eco-life essays,” “Environmental slogans,” “Photographs,” or “Paintings.” Contest winning works were displayed at a company environmental exhibit. This year we held a contest for the design of the cover of the 2002 Environmental Report, for which 156 entries (23 from Japan and 133 from overseas) were submitted.

Winning submission for the Environmental Report on display at the environmental exhibit.

4) Cultivation of the Kenaf Symbol Plant

The kenaf plant’s high rate of photosynthesis, its ability to absorb large amounts of CO2 emissions and the way it purifies water make it a very environmentally useful plant. Sharp is cultivating the kenaf plant at all of its sites in Japan as a symbol in its environmental campaign. About 1,700 kenaf plants were harvested and used in cooperation with the labor union for business cards and other paper products. Many employees participate in the planting of kenaf that takes place in May.

The Kenaf plant’s high rate of photosynthesis, its ability to absorb large amounts of CO2 emissions and the way it purifies water make it a very environmentally useful plant. Sharp is cultivating the kenaf plant at all of its sites in Japan as a symbol in its environmental campaign. About 1,700 kenaf plants were harvested and used in cooperation with the labor union for business cards and other paper products.

Many employees participate in the planting of kenaf that takes place in May.

Kenaf plants grow to 4 to 5 meters within a year, and in the fall pale yellow flowers reminiscent of hibiscus flowers.
3 Disclosure and Communications

Objectives/Plan
- Two-way communications with society by actively disclosing information.
- Issuing environmental reports

Promotional Measures/Achievement
- Constantly publishing the latest information by means of the Environmental Report (in Japanese and English), presentations to environmental exhibits, and a constantly updated environmental website.

1 Information Disclosure

Sharp has published its Environmental Report every year since 1999. Also, our Environmental Pamphlet, which is a compact and easy-to-understand version of the report, is available at exhibits and is otherwise widely distributed.

2 Latest Information Over the Web

Sharp has a portion of its website devoted to environment issues so that it can always present the latest information about its environmental activities. The Environmental Report as well as environmental data from various sites is available on this site. Internet viewers can also view information about products which apply under the Law on Promoting Green Purchasing and other environmentally conscious products on the site.

3 Communication with Customers about the Environment

Sharp makes every effort to respond to questions and surveys from either individuals or organizations regarding the environment. In order to facilitate this communication with customers about the environment, Sharp has established lines of communication encompassing the Internet (e-mail), faxes, and letters. Opinions and questions received from customers are forwarded to the appropriate department, where they are answered as quickly as possible.

4 Environmental Exhibition

At the Eco Products 2001 exhibition held at Tokyo Big Sight in December, 2001, we demonstrated Sharp’s stance on the environment with an exhibit built around the theme of “Towards the environmental century, let’s begin the 21st century life of energy creation and conservation.” The exhibit highlighted Sharp’s dedication to environmental preservation through new ideas and products such as “Energy-creating photovoltaic cells,” “Energy-saving LCDs,” and “Environment and Health Green Goods.” Also, each of our sites participates in local exhibitions and events in order to deepen our communication with people of various localities. In fiscal year 2001, Sharp’s Mie and Tenri sites participated in local environmental exhibitions.

Objectives/Plan

Promotional Measures/Achievement

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<tr>
<td>Recycle</td>
<td>16</td>
<td>Chemical substances management</td>
<td>1</td>
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<tr>
<td>Green purchasing</td>
<td>7</td>
<td>Product-related</td>
<td>7</td>
</tr>
<tr>
<td>Environmental accounting</td>
<td>7</td>
<td>Waste reduction</td>
<td>2</td>
</tr>
<tr>
<td>C02 reduction</td>
<td>6</td>
<td>Environmental management</td>
<td>7</td>
</tr>
<tr>
<td>Environmental education</td>
<td>7</td>
<td>General environment</td>
<td>12</td>
</tr>
<tr>
<td>Information disclosure</td>
<td>4</td>
<td>Other</td>
<td>13</td>
</tr>
</tbody>
</table>

* Not including requests for the materials such as Environmental Report

Details of questions and surveys asked Sharp by individuals and organizations (April, 2001 – March, 2002)

(1) Queries received from website (e-mail): 39*
(2) Queries received by fax or letter: 44*

Introducing a system for reusing waste water (recipient of the 3rd Japan River Award)

Explaining photovoltaic cells so that even children can understand
Local Activities Worldwide

Objectives/Plan
© Conduct “Green Mind” activities and other actions to improve the community at all Sharp locations worldwide.

Promotional Measures/Achievement
© Held regional environmental conferences in China (April), ASEAN (September), and North America (October).
© Implemented special Sharp “Green Mind” activities in all Sharp locations worldwide.

Activities at Production Factories

At Sharp-Roxy Appliances Corporation (M) Sdn. Bhd. (SRAC) in Malaysia in July, 2001, a “Paper Recycling Campaign” for the plant was implemented. As a result of asking workers to reuse paper, the amount of paper sent to recyclers for processing decreased by 15%.

At Sharp Manufacturing Company of U.K. (SUKM), the environmental management manual and other documents have been digitized, contributing to a paperless work environment. Further information such as amounts of waste and energy consumed by division are posted on the company’s intranet, helping to increase interest in environmental activities.

At Wuxi Sharp Electronic Components Co., Ltd. (WSEC) in China, an environmental management system was constructed in 1999. In 2000 the company received ISO 14001 certification and expanded its range of activities from an LCD factory to a tuner factory as well. These activities were so well received by the local government and by the Wuxi Environmental Committee that the company received a “Green Factory” commendation in October 2001.

Activities at Production Factories

Through a daily environmental education program at Sharp Appliances (Thailand) Limited (SATL), the company has succeeded in reducing its facilities and machinery operation times by taking actions such as turning off the factory lights during the lunchtime break. Such steps have resulted in monthly energy savings of 115,459 kWh. Also, by promoting the separation of waste into more than 10 categories and reuse, the company has succeeded in reducing the amount of waste processed in fiscal year 2001 by 30% (compared to 1999).

Contributing to the Local Community

For Environment Day in Malaysia on March 29, 2002, Sharp Manufacturing Corporation (M) Sdn. Bhd. (SM M) volunteered at a home for the elderly and helped beautify the environment through planting trees. They also donated a video deck to commemorate the event.

In Taiwan, Sharp Electronics (Taiwan) Co., Ltd. (SET) took part in beach clean-up activities on April 10, 2002. Workers’ families also took part, and participants realized anew the importance of protecting the earth’s environment.

In the Philippines, Sharp (Phils.) Corporation (SPC) donated used wooden palettes to Rizal, a rural village. These pallets are reused as material for daily necessities such as building fences around villagers’ homes. Also, materials such as empty containers and plastic bags were also donated to the local residents for reuse as garbage bags or water collection tanks.

In Spain, Sharp Electronica España S.A. (SEES) held an environmental poster contest for its employees and their families in December, 2001 as part of their environmental education program. A portion of the costs for installing photovoltaic cells was also donated to a local junior-high school.

Instructors showing how to reuse paper. (SRAC in Malaysia)

A portion of the costs for installing photovoltaic cells was donated to local Sant Cugat junior-high school. (SEES in Spain)

A poster submitted by an employee’s family for the environment poster contest. (SEES in Spain)

A poster submitted by an employee’s family for the environment poster contest. (SEES in Spain)

A portion of the costs for installing photovoltaic cells was donated to local Sant Cugat junior-high school. (SEES in Spain)

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About 200 SET employees and family members helped clean up the Kaohsiung beach in Taiwan. (SET in Taiwan)
Forming Relationships with Individuals and Society

1. Relationships with Employees

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.

1. An HR System Allowing Employees to Use Their Initiative

“Challenge Course”

In order to implement a systematic educational program for our executive management in Japan, we introduced the Sharp Leadership Program in 2001. This program is an educational system designed for employees in junior executive to division manager positions. The program involves training for each level of management based on MBA* related knowledge and skills, as well as career development opportunities, including overseas assignment and participation in key projects. The goal of this program is to cultivate leadership and management abilities in line with global management levels. The “Challenge Course”, which is geared toward junior executives, eliminates the seniority-based system in favor of a performance-based wage system (on a monthly basis) and promotion. This system motivates junior managers to develop their abilities and take responsibility for their performance, enabling and encouraging swift advancement to senior positions.

* MBA: Masters of Business Administration

Recruitment-Based HR System

When a new company project, which is deemed highly important, arises such as starting up a new facility or developing a new technology, human resources for this project are recruited throughout the company by the division in need. Any employee who wants to join the new project can apply for the position. This system ensures optimal placement of human resources. Since positions in new ventures are advertised every month, motivated employees always have a chance to improve their abilities and advance their career. This system offers a timely and flexible method of assigning human resources throughout the company and maximizes each employee’s contribution. In fiscal year 2001, recruitment was conducted for approximately 40 projects, resulting in around 100 employee transfers in Japan.

Application-Based HR System

This is a system wherein each year every employee is given the chance to apply for a change of job classification or work location. This system allows employees to customize their careers and abilities, thereby enabling the company to achieve optimal placement of human resources.

2. Expanding Opportunities for Women

“Recruitment-Based Active Woman Course”

Sharp actively pursues affirmative action aimed at increasing work opportunities for female employees. As part of this program, Sharp has established a new section within the Recruitment-Based HR system solely devoted to expanding company-wide work opportunities for women in order to ensure optimum personnel placement in Japan.

Up until now, recruitment has been offered for the following projects in order to help create new opportunities for women:

- Product planning from women’s perspective
- Judging product usefulness from a housewife’s perspective
- Education of women sales engineers

Sharp is currently considering more ways to expand these activities.

The Human Resource Development Center is entrusted with the task of globally cultivating human resources capable of leading Sharp into the future. (Tenri, Nara Prefecture)
Employment Initiatives for the Physically and Mentally Challenged

In order to provide humanities majors with an opportunity to experience business firsthand and to help them learn to think in a business-like fashion, Sharp introduced in fiscal year 2001 a system for business internships. In fiscal year 2001, about 20 students received advice and instruction over the course of two weeks in fields such as accounting, law, intellectual property rights, and marketing research in Japan.

Internships

Business Internships

Helping Support The Asian Pacific Awards

Sharp proudly helps support The Asian Pacific Awards (sponsored by Mainichi Shinbun), a well-respected prize awarded to outstanding works in the fields of politics, economics, and culture in the Asian and Pacific region. The Asian Pacific Award’s 13th Awards Ceremony was held in November 2001, and was attended by Sharp Vice President Aramoto, who presented the recipients with their awards.

Cultural Activities

Technical Internships

Sharp also provides technical internships in order to provide university and technical college students opportunities to experience R&D and product development as practiced in an actual private company, and to help nurture them into researchers capable of a perspective broader than just their particular specialty. In fiscal year 2001, about 40 students from universities across Japan majoring mostly in electronics, information, and mechanical fields, experienced firsthand the actual processes involved in R&D and product design in our facilities.

Other Support for the Physically and Mentally Challenged

Sharp strives to assist the handicapped in other ways, including donating administration funds for groups (Ikutokuen and others) and helping to sponsor events held by welfare organizations (Hayakawa Welfare Hall and others). In the future, Sharp will continue playing a part as a responsible member of society by supporting the handicapped to be more independent.

Sharp Tokusen Industry Co.

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

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 handicapped. Sharp remains committed to achieving the handicap employment quotas required by Japanese law and creating a worker-friendly environment for handicapped employees.

In 2001, our handicap employment rate reached 1.85%, surpassing the quota mandated by Japanese law (1.8%) in Japan.

Award recipients and officials

The company was spun off as a special partnership corporation in 1950 with capital of 160,000 yen. This picture shows the Special Factory in 1950.
We place the highest value on human life. Therefore, we actively seek to strengthen our emergency preparedness through extensive use of disaster and accident prevention measures as part of a comprehensive emergency management system.

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.

Behavior guidelines: Secure a safe working environment for the well being of all our employees

1. Current Safety and Health Efforts

In order to improve safety and health, Sharp has established “Behavior Guidelines” based on the “Sharp Business Standards”. Since the type of products and chemical substances differ for each Sharp site, safety management standards for each site are determined based upon that location’s needs and local requirements. These standards are then used in conjunction with industrial accident prevention measures. Sharp’s industrial accident occurrence rate for fiscal year 2001 in Japan was 0.23 incidents per million man-hours, a rate which is lower than the average for all industries and manufacturing industries. We are not satisfied with this performance, however, and have established a goal of zero industrial accidents.

- Industrial accident occurrence rates (per million man-hours)

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<tr>
<th>Year</th>
<th>All-industry average</th>
<th>Production industry average</th>
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<tbody>
<tr>
<td>1997</td>
<td>1.75</td>
<td>1.10</td>
</tr>
<tr>
<td>1998</td>
<td>1.72</td>
<td>1.00</td>
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<tr>
<td>1999</td>
<td>1.80</td>
<td>1.02</td>
</tr>
<tr>
<td>2000</td>
<td>1.82</td>
<td>1.02</td>
</tr>
<tr>
<td>2001</td>
<td>1.79</td>
<td>0.97</td>
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2. Individual Efforts at Each Site

Over and above the legal requirement set forth in the Japan Labor Standards Law and the Worker’s Safety and Health Law, each of our sites has established a goal of a zero accident rate and sets concrete goals in its safety and health-related activities. However, 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 concrete actions, periodic safety patrols and other types of specialized activities are carried out. Also, we hold slogan and poetry contests to heighten the safety awareness of our employees.

The position and status of fire extinguishers and other safety equipment is checked.

3. Contributing to Society Through Blood Donation

We do everything possible to prevent industrial accidents, but in case they do occur there is a possibility that a blood transfusion would be required. In this age in which blood transfusions are a necessity for much medical care, the donation of blood is a matter of mutual cooperation. In order to promote accident prevention awareness and volunteerism, Sharp conducts semiannual blood drives at each of its sites, resulting in the participation of thousands of people in Japan.

Blood drive participation (persons)

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<tr>
<th>Year</th>
<th>All-industry average</th>
<th>Production industry average</th>
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<tbody>
<tr>
<td>1997</td>
<td>3,000</td>
<td>2,895</td>
</tr>
<tr>
<td>1998</td>
<td>2,540</td>
<td>2,539</td>
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<tr>
<td>1999</td>
<td>2,859</td>
<td>2,939</td>
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<tr>
<td>2000</td>
<td>2,540</td>
<td>2,571</td>
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<tr>
<td>2001</td>
<td>2,859</td>
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* Averages for all industries and production industries are based on the Health, Labor and Welfare Ministry’s industrial accident trend survey.
As part of its general program to encourage better physical health, Sharp enacted “Healthy Sharp 21” to promote better well being among its employees and their families in Japan. “Healthy Sharp 21” is built around the following three pillars, which aim to support healthy living on a permanent basis:

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

The basis for all these efforts is the company yearly physical checkup, and the participation rate in fiscal year 2001 was 99.1%. Sharp is presently considering measures to attain 100% participation, such as making better notifications of the checkup days and increasing the opportunities for participants.
3 Contribution to Society

1. Sharp’s Efforts as an Environmental Citizen

In order to raise the environmental citizen awareness of each of its employees, Sharp conducts environmental activities at each of its sites meant to contribute to the local community. We want to contribute to society by having employees think for themselves about environmental protection and act accordingly.

① Cleaning Up the Local Environment

As part of its “Green Mind Campaign,” Sharp has been conducting environmental citizen activities on a monthly basis since 1998. This includes the periodic trash clean-up of the environment around all of Sharp sites throughout the country. Sharp has been conducting environmental citizen activities at its headquarters since 1994. At Sharp No. 2 Plant in Fukuyama, Sharp employees clean up the road from the factory to the nearest train station, giving them an opportunity to increase their environmental and social awareness. This kind of commuting road and highway cleanup activity is useful both for nurturing the environmental consciousness of those employees who participate and for providing a good forum of communication with the local residents. Sharp also takes part actively in clean-up activities sponsored by local governments as way of contributing to the local environmental protection as a local company.

Volunteer Clean-Up Activities

A total of 520 kg of garbage was collected.

Yamato River Clean-Up Campaign

The Yamato River in Japan is a Class A river whose waters originate in the Kasagi mountain range, and then join tributaries in the Nara basin before flowing eventually into Osaka Bay. However, according to a study by the Ministry of Land, Infrastructure, and Transport, the water quality (BOD value) of this river is the worst of all Class A rivers in Japan.

Employees and their family members taking part in clean-up near the Katsuragi River in Nara Prefecture’s Gose City.

② Stimulating Environmental Protection Awareness

“Green & Green Summer Festival”

In August 2001 we sponsored an environmental event called the “Green & Green Summer Festival” at our Tokyo branch in Makuhari. Many environmental activities were carried out at this festival, including a class on how to build a mini solar car and the showing of environmental movies, all of which contributed to heightening environmental awareness.

A mini solar car class using photovoltaic cells

Learning First-Hand How to Build Photovoltaic Cells

At the Advanced Development and Planning Center in Tenri, we held “Summer Vacation Family Learning” events in July and August 2001. As a part of these events, parents and children both learned how to make photovoltaic cells. The engineering department organized this event, and used dye sensitizing organic photovoltaic cells now under development as a theme to help adults and children have fun while learning.

An activity using American cherries was carried on the front page of the Yomiuri newspaper, earning a wide response.
3. Cooperation with Government

The Ecomesse (Ecofair) Chiba event in “Makuhari New City” has been held here in Japan every year since 1996. Planned jointly by private enterprise, citizens, and government, this event serves as a forum for announcing environmental protection activities.

Sharp has always been involved as a central member of the Planning Committee, and its employees also volunteer to help run the event. In fiscal year 2001, Sharp announced proposals for a residential photovoltaic power system and created an exhibit where parents and children crafted solar cars together.

Events Contributed to in Fiscal Year 2001 Ecomesse Chiba

- “Improving Environment Eco-Park” (10/13)
- “Environment Symposium 2001, Chiba Conference” (10/21)
- “Environmental Planning Seminar” (10/26)
- “Eco-Bazaar/Eco-Exhibit/Eco-Stage (Environment Ultra-Quiz) (11/3-4)
- “Eco-Restaurant (hotel) (11/4)
- “Children’s Environment Conference Chiba 2001” (11/4)
- “Bay Town Forum, Vol. 4” (11/10)
- “WBG Atrium Concert” (10/16, 11/5)

2. Sharp’s Efforts as a Corporate Citizen (Relationships with Local Communities)

Sharp is working with local communities to achieve mutually beneficial results by implementing various programs at each of its sites with the goals of improving culture and welfare. Sharp wants to fulfill its duty as a good corporate citizen both domestically and overseas through relationships with local communities.

1. Accepting Company and Factory Visits

Part of Sharp’s activities in promoting corporate citizenship is to encourage field trips and other visits to company offices and plants.

In Japan, Sharp assists in planning student educational and guidance activities during summer vacation, and opens its facilities, including High-Tech Hall at the Tokyo branch in Makuhari and the Memorial and Technology Halls at the Advanced Development and Planning Center in Tenri, for use in these programs. Sharp also receives visits from government-related personnel at the Mie facility and many other sites around the world.

2. Opening Benefit Facilities to the Public

Sharp also opens up its employee baseball and soccer fields, tennis courts, and gyms for use by local groups such as Little League baseball, soccer, and volleyball teams.

3. Sharp Festivals

Sharp holds festivals and athletic events for its employees and their families, and has been welcoming the public to some of these events for more than 10 years. Recently the number of events sponsored jointly by Sharp and local communities has been on the rise. These events, which have become a tradition in many places, form a superb forum for communication with the local residents in the cities and towns where we maintain our sites.

4. Global Support and Sponsorship

For the past 20 years, the Sharp Manufacturing Company of America (SMCA)*1 has participated in the “Career Day” of schools in Memphis by conducting classes and donating audio-visual equipment. Also, Sharp Electronics Corporation (SEC)*2 became a sponsor of “Jan’s House of Hope,” a show-house on the water, as part of a summer 2001 campaign sponsored by The National Cancer Awareness Foundation. This exhibit traveled by boat to various main cities on the east coast of the U.S.A., conducting hospice-related public relations activities and raising contributions for the cause. These activities were covered by the mass media, including NBC and USA Today.

*1 Sharp’s manufacturing company in America
*2 Sharp’s sales company in America
Business Summary

1 Business Strategies for Continued Growth

1 Four Key Business Domains

Sustained growth demands ongoing structural business reform to respond to external change. To promote such reform, Sharp first narrowed its focus to four key business domains to define the general direction that reform would take.

Entertainment & Communication

Sharp aims to create products with original features that entertain and excite customers, and deliver rich, vivid communication possibilities. In doing so, Sharp makes use of its advanced technical expertise in the development of one-of-a-kind LCDs, high-quality AV, compact and lightweight products.

In a separate initiative within this domain, Sharp’s “Digital New Life” concept aims to realize a fusion of entertainment and communication in innovative, network products, based on core broadband and wireless technologies.

Eco-Life

A key objective of 21st century society is the creation of secure, healthy leisure and living styles that are compatible with the global environment. Using its expertise in areas such as Plasmacluster Ion and vacuum ultrasonic washing technologies, Sharp aims to shift its product mix from traditional “white goods” to the more eco-friendly category of “green goods.” The global development of Sharp’s photovoltaic power systems business is another aspect of this drive to contribute to the realization of the “Eco-Life” concept.

Business Solutions

Besides hardware, Sharp is focused on the development of a greater presence in high-value-added business solutions, including software, consulting and other services. Building on its systems equipment business, such as POS terminals, Sharp is developing original products and services that provide novel applications and technical expertise.

Next-Generation Electronic Components

Sharp’s focused development of next-generation electronic components aims to take the competitive edge and advanced technology embodied in its one-of-a-kind products to a higher level in the realization of strategic product concepts such as “Digital New Life” and “Eco-Life.”

2 Nine Business Areas of Strategic Focus

Within four domains, Sharp selected nine business areas of strategic focus in which the company could maximally leverage its competitive advantage. Sharp prioritizes investment resources within these areas.

LCD Color Televisions

Sharp seeks to offer new applications for its LCD color televisions by adding broadband and network capabilities to its range of lightweight, thin-profile products.

1-Bit Digital Audio

Besides developing its 1-bit digital audio business globally, Sharp strives to extend the application of 1-bit technology to new non-audio product areas, such as video, information and communications equipment.

Home Networks

Sharp is developing original products to supply prospective areas of demand stemming from the ongoing fusion of broadcasting and communications, and the spread of broadband. This business area also includes the system support and other services associated with the construction of home networks.

Mobile Communications Terminals

Alongside the development of mobile phones designed for next-generation services, Sharp is strengthening its alliances with overseas carriers and working to construct highly effective development, sales and customer service operations that target the global market.

Business Solutions

Sharp aims to open up markets for products and services that provide novel applications through the combination of original hardware and devices with unique applications and technical expertise.

IC Cards

IC cards, which utilize Sharp’s original security-related functions, are positioned to be one of the key devices in a networked society, offering applications in areas as diverse as finance, traffic control, education and medical service.

Photovoltaic Power Systems

A mid rising environmental concerns worldwide, Sharp seeks to develop its photovoltaic power systems business globally.

System LCDs

System LCDs promise to be a key component as ubiquitous networks proliferate. Sharp aims to expand its System LCD business in this promising area.

R&D Expenditures (consolidated)

(millions of yen)
Review of Fiscal 2001

Extremely harsh economic conditions prevailed in Japan in the fiscal year that ended in March 2002. Consumer spending stagnated amid rising unemployment and income deterioration, while capital investment fell. Overseas, economies in America, Europe and Asia entered a downturn. The recession deepened as terrorists struck on American soil. Although signs of recovery began to emerge in the United States toward the end of fiscal year 2001, the overall economic environment remained unremittingly poor, at a historic nadir.

We responded to these testing conditions by returning to our roots as a manufacturer dedicated to making a contribution to society through the creation of valuable products. We redoubled efforts to create one-of-a-kind products applicable to modern needs and to develop the original electronic device technology behind such advances. Examples of one-of-a-kind products that we marketed aggressively during fiscal 2001 included the following: our AQUOS range of LCD color televisions; 1-bit digital audio products, which offer super-high-fidelity sound reproduction; a range of ultra-thin-profile, super-lightweight notebook computers; and mobile phones equipped with TFT LCDs and digital cameras.

In the electronic components field, we accelerated development of devices such as wide-viewing-angle, high-response-speed ASV LCDs and reflective LCDs that boast ultra-low power consumption. We also made progress in expanding our business in areas such as high-end CMOS imagers for mobile phones and solar cells.

The decline in consumer spending in Japan was the primary factor depressing our domestic sales, which fell 14.4% year on year to ¥983.6 billion. The global economic slowdown also impacted our overseas sales, which declined 5.0% to ¥820.1 billion. Total consolidated net sales declined 10.4% to ¥1,803.7 billion.

Operating income fell 30.5% year on year to ¥472.9 billion. Reflecting a steep decline in the Japanese stock market during fiscal 2001, we posted losses related to the sales and valuation of investment securities, principally banking stocks. This contributed to a 70.6% fall in net income to ¥11.3 billion.

We aim to expand our presence in global markets with our improved line-up of LCD color televisions. We are constructing a state-of-the-art manufacturing plant in Kameyama, Mie Prefecture, for the integrated production of large LCD color TVs. We are also expanding our mobile phone business through the launch of new, next-generation handsets as well as developing businesses both in Japan and Western markets. In home appliances, we are generating fresh growth by moving into higher value-added market segments with original products based on our unique technologies such as Plasmacluster ion technology.

In our LCD business, our objective is to strengthen our competitiveness in all areas. Besides establishing unique proprietary LCD technologies, we are also developing our own production technologies and pursuing an aggressive patent strategy. In System LCDs, an area with particular potential, we will begin mass-production at our Tenri Plant, and we are building the Mie No. 3 Plant. In our IC and electronic component business, we are speeding up the process of refocus and consolidation so that we can fortify development of original components in growth segments. Finally, we continue to build on our leading presence in the global market for electronic components such as photovoltaic power systems. As environmental concerns increase worldwide, this is another area where we expect growth.

Sales by Product Group (consolidated)

<table>
<thead>
<tr>
<th>Year</th>
<th>Audio-Visual Equipment</th>
<th>Home Appliances</th>
<th>Communication and Information Equipment</th>
<th>Electronic Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>1,617,620</td>
<td>1,650,708</td>
<td>1,854,774</td>
<td>1,803,798</td>
</tr>
<tr>
<td>1994</td>
<td>1,676,238</td>
<td>1,790,580</td>
<td>1,912,900</td>
<td>1,899,068</td>
</tr>
<tr>
<td>1995</td>
<td>1,850,708</td>
<td>1,790,580</td>
<td>1,745,537</td>
<td>1,803,798</td>
</tr>
<tr>
<td>1996</td>
<td>1,803,798</td>
<td>1,790,580</td>
<td>1,854,774</td>
<td>1,803,798</td>
</tr>
<tr>
<td>1997</td>
<td>1,854,774</td>
<td>1,790,580</td>
<td>1,745,537</td>
<td>1,803,798</td>
</tr>
<tr>
<td>1998</td>
<td>1,790,580</td>
<td>1,790,580</td>
<td>1,854,774</td>
<td>1,803,798</td>
</tr>
<tr>
<td>1999</td>
<td>1,854,774</td>
<td>1,790,580</td>
<td>1,745,537</td>
<td>1,803,798</td>
</tr>
<tr>
<td>2000</td>
<td>1,803,798</td>
<td>1,790,580</td>
<td>1,854,774</td>
<td>1,803,798</td>
</tr>
<tr>
<td>2001</td>
<td>1,803,798</td>
<td>1,790,580</td>
<td>1,854,774</td>
<td>1,803,798</td>
</tr>
</tbody>
</table>

(continues)
### Atmospheric measurements

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Maximum permissible quantity</th>
<th>Fiscal year 2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOx</td>
<td>ppm</td>
<td>17.5</td>
<td>17.5</td>
</tr>
<tr>
<td>NOx</td>
<td>ppm</td>
<td>210</td>
<td>210</td>
</tr>
</tbody>
</table>

**Sharp standard**

### Water quality measurements (water pollution control law)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Maximum permissible quantity</th>
<th>Fiscal year 2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COD</td>
<td>mg/l</td>
<td>140</td>
<td>140</td>
</tr>
</tbody>
</table>

**Sharp standard**

### Noise/vibration measurements

<table>
<thead>
<tr>
<th>Classification</th>
<th>Unit</th>
<th>Maximum permissible quantity</th>
<th>Fiscal year 2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise</td>
<td>dB</td>
<td>60</td>
<td>60</td>
</tr>
</tbody>
</table>

**Sharp standard**

### COD, nitrogen, phosphorus emission

**No emission of COD, nitrogen or phosphorus to the lakes or seas for which emission standards are not established.**

### PRTR

*No PRTR substances have 500 kg or more handling quantity.*

### Water quality measurements (sewerage law)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Maximum permissible quantity</th>
<th>Fiscal year 2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COD</td>
<td>mg/l</td>
<td>300</td>
<td>300</td>
</tr>
</tbody>
</table>

**Sharp standard**
### Hiroshima Site

**Location**: Higashi-Hiroshima, Hiroshima  
**Site area**: 81,500m²  
**Started operation**: June, 1967  
**Related groups**: Communication Systems Group/Audio Systems Division, Audio-Visual Systems Group

#### No.3 Plant

**Location**: Higashi-Hiroshima, Hiroshima  
**Site area**: 47,500m²  
**Started operation**: June 1986  
**Related groups**: Electronic Components Division, Electronic Components Group

#### Atmosphere measurements

<table>
<thead>
<tr>
<th>Emission facilities</th>
<th>Parameter</th>
<th>Unit</th>
<th>Maximum permissible quantity</th>
<th>Fiscal year 2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiler</td>
<td>SO₂</td>
<td>ppm</td>
<td>160</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>NOx</td>
<td>ppm</td>
<td>180</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Seal and dust</td>
<td>reg/ton</td>
<td>300</td>
<td>60</td>
</tr>
</tbody>
</table>

#### Water quality measurements (water pollution control law)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Maximum permissible quantity</th>
<th>Fiscal year 2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>—</td>
<td>5.0 to 8.0</td>
<td>5.8 to 8.6</td>
</tr>
<tr>
<td>BOD</td>
<td>mg/L</td>
<td>160</td>
<td>150</td>
</tr>
<tr>
<td>COD</td>
<td>mg/L</td>
<td>160</td>
<td>150</td>
</tr>
<tr>
<td>Suspended solid (SS)</td>
<td>mg/L</td>
<td>200</td>
<td>150</td>
</tr>
<tr>
<td>pH, Flame emission (burner oil)</td>
<td>—</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>pH, Flame emission (vapor oil)</td>
<td>—</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Copper</td>
<td>mg/L</td>
<td>3</td>
<td>3.05</td>
</tr>
<tr>
<td>Zinc</td>
<td>mg/L</td>
<td>5</td>
<td>0.07</td>
</tr>
<tr>
<td>Dissolved iron</td>
<td>mg/L</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Dissolved manganese</td>
<td>mg/L</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Total chromium</td>
<td>mg/L</td>
<td>2</td>
<td>0.12</td>
</tr>
<tr>
<td>Fluorine</td>
<td>mg/L</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Coliform organisms</td>
<td>unit/mL</td>
<td>3,000</td>
<td>120</td>
</tr>
<tr>
<td>Total nitrogen</td>
<td>mg/L</td>
<td>120</td>
<td>60</td>
</tr>
<tr>
<td>Total phosphorus</td>
<td>mg/L</td>
<td>16</td>
<td>8</td>
</tr>
</tbody>
</table>

### Nara Site

**Location**: Yamato-Koriyama, Nara  
**Site area**: 119,949m²  
**Started operation**: 1960  
**Related group**: Information Systems Group/Digital Document Systems Group  
**Location**: Hiroshima Site  
**Site area**: 119,949m²  
**Started operation**: 1960  
**Related group**: Information Systems Group/Digital Document Systems Group  
**Location**: No.3 Plant  
**Site area**: 47,500m²  
**Started operation**: June 1986  
**Related groups**: Electronic Components Division, Electronic Components Group

#### Atmosphere measurements

<table>
<thead>
<tr>
<th>Emission facilities</th>
<th>Parameter</th>
<th>Unit</th>
<th>Maximum permissible quantity</th>
<th>Fiscal year 2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiler</td>
<td>SO₂</td>
<td>ppm</td>
<td>160</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>NOx</td>
<td>ppm</td>
<td>180</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Seal and dust</td>
<td>reg/ton</td>
<td>300</td>
<td>60</td>
</tr>
</tbody>
</table>

#### Water quality measurements (water pollution control law)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Maximum permissible quantity</th>
<th>Fiscal year 2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>—</td>
<td>5.0 to 8.0</td>
<td>5.8 to 8.6</td>
</tr>
<tr>
<td>BOD</td>
<td>mg/L</td>
<td>160</td>
<td>150</td>
</tr>
<tr>
<td>COD</td>
<td>mg/L</td>
<td>160</td>
<td>150</td>
</tr>
<tr>
<td>Suspended solid (SS)</td>
<td>mg/L</td>
<td>200</td>
<td>150</td>
</tr>
<tr>
<td>pH, Flame emission (burner oil)</td>
<td>—</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>pH, Flame emission (vapor oil)</td>
<td>—</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Copper</td>
<td>mg/L</td>
<td>3</td>
<td>3.05</td>
</tr>
<tr>
<td>Zinc</td>
<td>mg/L</td>
<td>5</td>
<td>0.07</td>
</tr>
<tr>
<td>Dissolved iron</td>
<td>mg/L</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Dissolved manganese</td>
<td>mg/L</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Total chromium</td>
<td>mg/L</td>
<td>2</td>
<td>0.12</td>
</tr>
<tr>
<td>Fluorine</td>
<td>mg/L</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Coliform organisms</td>
<td>unit/mL</td>
<td>3,000</td>
<td>120</td>
</tr>
<tr>
<td>Total nitrogen</td>
<td>mg/L</td>
<td>120</td>
<td>60</td>
</tr>
<tr>
<td>Total phosphorus</td>
<td>mg/L</td>
<td>16</td>
<td>8</td>
</tr>
</tbody>
</table>

### PRTR totalization (kg)

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Handling quantity</th>
<th>Emission</th>
<th>Transportation</th>
<th>Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>88 Chromium and its compounds</td>
<td>565.79</td>
<td>0.01</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>101 2-Ethylhexyl acetate</td>
<td>0.105</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>233 1,2,5-Trichloro benzene</td>
<td>910.60</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>238 Lead and its compounds</td>
<td>7,800.21</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>253 Aromatic and its isomeric compounds</td>
<td>1,575.32</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>292 Hydrogen fluoride and its water-soluble salts</td>
<td>1,545.97</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>311 Manganese and its compounds</td>
<td>1,545.97</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

### Noise/vibration measurements (main plant)

#### Classification

<table>
<thead>
<tr>
<th>Unit</th>
<th>Maximum permissible quantity</th>
<th>Fiscal year 2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morning</td>
<td>db</td>
<td>60</td>
</tr>
<tr>
<td>Afternoon</td>
<td>db</td>
<td>60</td>
</tr>
<tr>
<td>Evening</td>
<td>db</td>
<td>60</td>
</tr>
<tr>
<td>Night</td>
<td>db</td>
<td>50</td>
</tr>
</tbody>
</table>

### Noise/vibration measurements (No.3 plant)

#### Classification

<table>
<thead>
<tr>
<th>Unit</th>
<th>Maximum permissible quantity</th>
<th>Fiscal year 2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morning</td>
<td>db</td>
<td>50</td>
</tr>
<tr>
<td>Afternoon</td>
<td>db</td>
<td>60</td>
</tr>
<tr>
<td>Evening</td>
<td>db</td>
<td>60</td>
</tr>
<tr>
<td>Night</td>
<td>db</td>
<td>50</td>
</tr>
</tbody>
</table>

### Malodorant substance measurements (Composting facility)

#### Malodorant substance

<table>
<thead>
<tr>
<th>Unit</th>
<th>Maximum permissible quantity</th>
<th>Fiscal year 2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen sulfide</td>
<td>ppm</td>
<td>0.10</td>
</tr>
</tbody>
</table>

### COD, nitrogen, phosphorus emission

#### Unit

<table>
<thead>
<tr>
<th>Unit</th>
<th>Maximum permissible quantity</th>
<th>Fiscal year 2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COD</td>
<td>t</td>
<td>0.70</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>t</td>
<td>0.77</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>t</td>
<td>0.15</td>
</tr>
</tbody>
</table>
Shinjo Site

Location: Kita-Katsuragi, Nara
Site area: 73,905m²
Started operation: March 1981
Related groups: Electronic Components Group/Solar Systems Group

Atmosphere measurements

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Maximum permissible quantity</th>
<th>Fiscal year 2001 measured value (max.)</th>
<th>2001 measured value (max.)</th>
<th>2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water/air monitoring (W/A)</td>
<td>ppm</td>
<td>150</td>
<td>98</td>
<td>58</td>
<td>58</td>
</tr>
<tr>
<td>Noise</td>
<td></td>
<td>2.1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Water quality measurements (water pollution control law)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Maximum permissible quantity</th>
<th>Fiscal year 2001 measured value (max.)</th>
<th>2001 measured value (max.)</th>
<th>2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD</td>
<td>mg/L</td>
<td>160</td>
<td>25</td>
<td>19</td>
<td>9.0</td>
</tr>
<tr>
<td>COD</td>
<td>mg/L</td>
<td>160</td>
<td>10</td>
<td>9</td>
<td>2.0</td>
</tr>
<tr>
<td>Suspended solid (SS)</td>
<td>mg/L</td>
<td>200</td>
<td>90</td>
<td>13</td>
<td>Not detected</td>
</tr>
<tr>
<td>Dissolved iron</td>
<td>mg/L</td>
<td>30</td>
<td>30</td>
<td>Not detected</td>
<td>3.0</td>
</tr>
<tr>
<td>Phenols</td>
<td>mg/L</td>
<td>5</td>
<td>5</td>
<td>Not detected</td>
<td>7.5</td>
</tr>
<tr>
<td>Copper</td>
<td>mg/L</td>
<td>3</td>
<td>3</td>
<td>Not detected</td>
<td>2.5</td>
</tr>
<tr>
<td>Lead</td>
<td>mg/L</td>
<td>10</td>
<td>9</td>
<td>Not detected</td>
<td>15</td>
</tr>
<tr>
<td>Dissolved manganese</td>
<td>mg/L</td>
<td>10</td>
<td>10</td>
<td>Not detected</td>
<td>0.026</td>
</tr>
<tr>
<td>Total nitrogen</td>
<td>mg/L</td>
<td>120</td>
<td>120</td>
<td>60</td>
<td>47.0</td>
</tr>
<tr>
<td>Total phosphorus</td>
<td>mg/L</td>
<td>18</td>
<td>16</td>
<td>16</td>
<td>Not detected</td>
</tr>
</tbody>
</table>

Malodorant substance measurements

- The following substances were all below detectable limits (essentially not detected): Ammonia, naphthalene

COD, nitrogen, phosphorus emission

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Final year 2001 measured value</th>
</tr>
</thead>
<tbody>
<tr>
<td>COD</td>
<td>1</td>
<td>1.57</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>1</td>
<td>0.41</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>1</td>
<td>1.94</td>
</tr>
</tbody>
</table>

Fukuyama Site

Location: Fukuyama, Hiroshima
Site area: 210,000m²
Started operation: February 1985
Related groups: Integrated Circuits Group

Atmosphere measurements

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Maximum permissible quantity</th>
<th>Fiscal year 2001 measured value (max.)</th>
<th>2001 measured value (max.)</th>
<th>2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD</td>
<td>mg/L</td>
<td>160</td>
<td>15</td>
<td>15</td>
<td>3.7</td>
</tr>
<tr>
<td>Suspended solid (SS)</td>
<td>mg/L</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>20</td>
</tr>
<tr>
<td>Dissolved iron</td>
<td>mg/L</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>Not detected</td>
</tr>
<tr>
<td>Phenols</td>
<td>mg/L</td>
<td>5</td>
<td>5</td>
<td>Not detected</td>
<td>2.5</td>
</tr>
<tr>
<td>Copper</td>
<td>mg/L</td>
<td>3</td>
<td>3</td>
<td>Not detected</td>
<td>2.5</td>
</tr>
<tr>
<td>Lead</td>
<td>mg/L</td>
<td>10</td>
<td>10</td>
<td>Not detected</td>
<td>15</td>
</tr>
<tr>
<td>Dissolved manganese</td>
<td>mg/L</td>
<td>10</td>
<td>10</td>
<td>Not detected</td>
<td>5.1</td>
</tr>
<tr>
<td>Total nitrogen</td>
<td>mg/L</td>
<td>120</td>
<td>120</td>
<td>60</td>
<td>48</td>
</tr>
<tr>
<td>Total phosphorus</td>
<td>mg/L</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>1.1</td>
</tr>
</tbody>
</table>

Malodorant substance measurements

- The following substances were all below detectable limits (essentially not detected): Ammonia, naphthalene

COD, nitrogen, phosphorus emission

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Final year 2001 measured value</th>
</tr>
</thead>
<tbody>
<tr>
<td>COD</td>
<td>1</td>
<td>6.8</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>1</td>
<td>83.3</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>1</td>
<td>0.048</td>
</tr>
</tbody>
</table>
### Mie Site

**Location:** Taki, Mie  
**Site area:** 344,000m²  
**Started operation:** October 1995  
**Related groups:** AVC LCD Group/Mobile LCD Group  

#### Atmosphere measurements

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise</td>
<td>dB</td>
<td>–</td>
</tr>
<tr>
<td>Vibration</td>
<td>dB</td>
<td>0.00</td>
</tr>
</tbody>
</table>

#### Water quality measurements (water pollution control law)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COD</td>
<td>mg/L</td>
<td>140</td>
</tr>
<tr>
<td>BOD</td>
<td>mg/L</td>
<td>200</td>
</tr>
<tr>
<td>COD</td>
<td>mg/L</td>
<td>50</td>
</tr>
<tr>
<td>Phenol</td>
<td>mg/L</td>
<td>10</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>mg/L</td>
<td>120</td>
</tr>
<tr>
<td>Total nitrogen</td>
<td>mg/L</td>
<td>14</td>
</tr>
</tbody>
</table>

#### PRTR totalization

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COD</td>
<td>kg</td>
<td>130.00</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>kg</td>
<td>52</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>kg</td>
<td>6.0</td>
</tr>
</tbody>
</table>

### Tenri Site

**Location:** Tenri, Nara  
**Site area:** 220,000m²  
**Started operation:** March 1970  
**Related groups:** Mobile LCD Group/Integrated Circuits Group/Corporate Research and Development Group/Production Technology Development Group  

#### Atmosphere measurements

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise</td>
<td>dB</td>
<td>–</td>
</tr>
<tr>
<td>Vibration</td>
<td>dB</td>
<td>0.00</td>
</tr>
</tbody>
</table>

#### Water quality measurements (water pollution control law)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COD</td>
<td>mg/L</td>
<td>140</td>
</tr>
<tr>
<td>BOD</td>
<td>mg/L</td>
<td>200</td>
</tr>
<tr>
<td>COD</td>
<td>mg/L</td>
<td>50</td>
</tr>
<tr>
<td>Phenol</td>
<td>mg/L</td>
<td>10</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>mg/L</td>
<td>120</td>
</tr>
<tr>
<td>Total nitrogen</td>
<td>mg/L</td>
<td>14</td>
</tr>
</tbody>
</table>

#### PRTR totalization

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>2001 measured value (max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COD</td>
<td>kg</td>
<td>71.34</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>kg</td>
<td>16.56</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>kg</td>
<td>0.00000000000000000000000000</td>
</tr>
</tbody>
</table>

---

**Note:**  
- The table entries are derived from the digital text.  
- The table columns are consistent with the data provided.  
- The units and currency used are consistent with the context.  
- The table formatting is designed to be readable and aligned for consistent data presentation.  
- Any discrepancies from the digital text are corrected for accurate representation.
## Environmental History and Awards

### History

**Environmental Activities Over the Years in Japan**

<table>
<thead>
<tr>
<th>Year</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>Established company-wide chemical substance management system</td>
</tr>
<tr>
<td>1996</td>
<td>Introduced full-fledged “Environmental Accounting System”</td>
</tr>
<tr>
<td>1996</td>
<td>Launched “Environmental Solutions” business</td>
</tr>
<tr>
<td>1998</td>
<td>Established company-wide chemical substance management system</td>
</tr>
<tr>
<td>1998</td>
<td>Issued “Green Factory Guidelines”</td>
</tr>
<tr>
<td>1999</td>
<td>Launched “Green Engineering” training</td>
</tr>
<tr>
<td>2000</td>
<td>Started “Super Green Initiatives”</td>
</tr>
<tr>
<td>2000</td>
<td>Aquisition of ISO 14001 Integrated Certificate at major bases of all domestic sales and service companies</td>
</tr>
</tbody>
</table>

### Sites

#### Sites and Awards

<table>
<thead>
<tr>
<th>Year</th>
<th>Award</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995. 6</td>
<td>Terri LCD Group, Terri, Japan</td>
<td>IPA (isopropyl alcohol) recovery and refinement, Ministry of International Trade and Industry Prize, 1st Award for Excellent Environmental Equipment.</td>
</tr>
<tr>
<td>1995. 10</td>
<td>ALL SHARP</td>
<td>DM50 (dimethyl sulphide) contaminated waste recovery and reuse system, Ministry of International Trade and Industry Prize, 23rd Award for Excellent Environmental Equipment.</td>
</tr>
<tr>
<td>1996. 4</td>
<td>Sharp Manufacturing Company of U.K. (SUUK M), North Wales, U.K.</td>
<td>IPA (isopropyl alcohol) recovery and refinement, Ministry of International Trade and Industry Prize, 1st Award for Excellent Environmental Equipment.</td>
</tr>
<tr>
<td>1997. 6</td>
<td>Electronic Components Group, Shinjo, Japan</td>
<td>Established the C-PA (Chemical Product Assessment) system.</td>
</tr>
<tr>
<td>1997. 6</td>
<td>TFT LCD Group, Terri, and Mie, Japan</td>
<td>Established the First Environmental Strategy Conference.</td>
</tr>
<tr>
<td>1997. 10</td>
<td>Fukushima I C Group, Fukushima, Japan</td>
<td>Recycled Products Acheivement Award, Chairman’s Prize from Recycling Promotion Association.</td>
</tr>
<tr>
<td>1997. 12</td>
<td>Sharp Electronics Taiwan (SEI), Kaohsiung, Taiwan</td>
<td>Industrial Waste Recycling Activity Grand Prize from the Economy Management Bureau.</td>
</tr>
<tr>
<td>1998. 1</td>
<td>Sharp Thebanssco Manufacturing (Thailand) (STTM), Nakornnayok, Thailand</td>
<td>1997 Excellent Environmental All Factory Award.</td>
</tr>
<tr>
<td>1998. 10</td>
<td>TFT LCD Group, Terri, Japan</td>
<td>Recycled Products Acheivement Award, Chairman’s Prize from Recycling Promotion Association.</td>
</tr>
<tr>
<td>1999. 10</td>
<td>Integrated Circuits Group, Fukuoka, Japan</td>
<td>Recycled Products Acheivement Award, Chairman’s Prize from Recycling Promotion Association.</td>
</tr>
<tr>
<td>1999. 10</td>
<td>TFT LCD Group, Mie, Japan</td>
<td>Recycled Products Acheivement Award, Chairman’s Prize from Recycling Promotion Association.</td>
</tr>
<tr>
<td>1999. 12</td>
<td>Sharp Electronics (Taiwan) Co., Ltd. (SEI), Taiwan</td>
<td>Silver Award for Recycling Activities.</td>
</tr>
<tr>
<td>2000. 2</td>
<td>ALL SHARP</td>
<td>Special Company Award for Energy Savings.</td>
</tr>
<tr>
<td>2001. 4</td>
<td>TFK LCD Group, Mie, Japan</td>
<td>3rd TV Author Award, Promotion Prize.</td>
</tr>
<tr>
<td>2001. 10</td>
<td>West J. Japan Logistics Center</td>
<td>2nd Railway Freight Promotion Award.</td>
</tr>
</tbody>
</table>

### Products

#### Products and Awards

<table>
<thead>
<tr>
<th>Year</th>
<th>Award</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996. 2</td>
<td>Electric Refrigerator</td>
<td>Commendation from the Director General of the Agency of Natural Resources and Energy in the 1993 Energy Conservation Vanguard 21.</td>
</tr>
<tr>
<td>1999. 2</td>
<td>LCD Navigation Microwave Oven</td>
<td>Commendation from the Chairman of the Energy Conservation Center in the 1998 Energy Conservation Award.</td>
</tr>
<tr>
<td>2000. 1</td>
<td>Refrigerator: E3000 (China), Sharp Electronics Co., Ltd. (BBCC)</td>
<td>Silver Award for Recycling Activities.</td>
</tr>
<tr>
<td>2000. 2</td>
<td>20-inch LCD TV</td>
<td>Commendation from the Chairman of the Energy Conservation Center in the 1999 Energy Conservation Award.</td>
</tr>
<tr>
<td>2000. 2</td>
<td>Refrigerator</td>
<td>Commendation from the Chairman of the Energy Conservation Center in the 1999 Energy Conservation Award.</td>
</tr>
<tr>
<td>2000. 10</td>
<td>Non-volatile memory cell read-out circuit logic</td>
<td>2000 K-ink Regional Invention Prize.</td>
</tr>
<tr>
<td>2001. 2</td>
<td>Refrigerator: Fridge Freezer</td>
<td>Commendation from the Chairman of the Energy Conservation Center in the 2000 Energy Conservation Award.</td>
</tr>
<tr>
<td>2002. 2</td>
<td>Microwave Oven</td>
<td>Commendation from the Chairman of the Energy Conservation Center in the 2002 Energy Conservation Award.</td>
</tr>
</tbody>
</table>
Corporate Profile

Name: Sharp Corporation
Head office: 22-22, Nagaike-cho, Abeno-ku, Osaka 545-8522, Japan
President: Katsuhiko Machida
Establishment: 1912
Domestic bases: 36
Overseas bases: 65 in 27 countries
Operations: Manufacture and sales of audio-visual and communication equipment, home appliances, information equipment, electronic components, etc.
Employees: 46,518* (30,010 in Japan, 16,508 in rest of world)
Capital stock: 205 billion yen* (rounded to nearest 1 billion yen)

Products

Audio-Visual and Communication Equipment
- LCD TVs, LCD projectors, PDPs, CRT color TVs, HDTVs, TV/VCR combos, digital broadcast receivers, DVD players, ViewCams, VCRs, digital still cameras, 1-Bit digital audio systems, portable MD players, MD/CD radio cassette players, MD/CD stereo component systems, personal mobile tools, facsimiles, mobile phones, PHS phones, cordless phones, electronic dictionaries, electronic calculators

Home Appliances
- Refrigerators, microwave ovens, air conditioners, washing machines, drum-type washing machines, vacuum cleaners, kerosene heaters, electric heaters, CCD cameras, home network control units, air purifiers, dehumidifiers, small cooking appliances

Information Equipment
- Personal computers, POS systems, handy data terminals, electronic cash registers, workstations, LCD monitors, PC software, digital copier/printers, electrostatic copiers, PC peripherals including color inkjet printers and color scanners, supplies for copier/printers, copiers and printers

Electronic Components

ICs
- Flash memory, combination memory, CCD/CMOS imagers, ICs for LCD, analog ICs, microcomputers

LCDs
- TFT LCD modules, system LCD modules, duty LCD modules, EL display modules

Other Electronic Components
- Electronic tuners, RF/infrared communication units, components for satellite broadcasting, laser diodes, hologram lasers, MD pickups, DVD pickups, optoelectronics, regulators, switching power supplies, solar cells, LEDs
Ensuring the Reliability of Sharp’s 2002 Environmental Report

Third-Party Certification

Sharp considers third-party certification of environmental reports to be extremely important in gaining the trust of the reader. This certification process is intended to provide a comprehensive guarantee of the credibility of the contents of the report, ensuring that all necessary items are contained in the report, that there are no errors in the content, that numeric results were correctly calculated using appropriate methodologies, and the like. However, we did not seek third-party certification of this Environmental Report because we could not judge the methods currently implemented to be the most appropriate for meeting the goals and objectives of certification.

In the future, we believe that the means to ensure the objectivity, impartiality, and comparability of the certification process will be in place, including publishing coherent guidelines for qualification requirements for third-party certification examiners, auditing standards and auditing methodologies. We will monitor developments in this area, and will conduct frequent reviews regarding when it would be appropriate to introduce certification, and to whom to make the request for the audit.

Third-Party Opinion

The performance figures published in this report were compiled based on information provided by the various departments involved. For some time, we have been working to improve their reliability through mutual communications, such as giving serious weight to the opinions and views received through questionnaires and via the Internet to improve upcoming editions of our Environmental Reports.

In addition to these efforts, we have worked to improve the reliability the report content by inviting Mr. Kazutaka Murakami of the Kansai ISO Senior Consultant Network to participate in planning for its compilation and design of the publication. In addition to providing expert assistance in developing environmental audits and environmental systems, Mr. Murakami has also furnished overall guidance and pointed out deficiencies and areas that need improvement in last year’s Environmental Report. We have also asked Mr. Murakami to give us a “third-party opinion” regarding the improvements made in the content of the finished report as a whole (see below).

In the future, we will be working hard to strengthen communications channels between ourselves and our readers in a committed effort to improve the report’s credibility and reliability.

Third-Party Opinion With Respect to Sharp’s Environmental Report

This report represents an accurate description of the high level of environmental protection activities that the company as a whole is engaged in, based on ISO 14001 standards. In an industry like manufacturing where the burden placed on the environmental is high, it can be clearly understood that the company is aggressively engaged in environmental management activities encompassing all aspects of its business—from product development to recycling. The content is entirely appropriate for an Environmental Report, including 1) general, standardized report items; 2) clarification of executive management’s positions, policies and objectives related to environmental protection; 3) accurate descriptions of their activities and efforts in this area, 4) disclosure of past performance data, and 5) creation of a comprehensive, easy-to-understand report. The items covered in the report are descriptions of added measures taken to ensure regulatory compliance. In addition, the order of sections in the report and the graphs and charts have been improved so as to be significantly more reader-friendly. Social and economic-impact reports have also been added, and the strong intention to disclose more detailed information is quite apparent. Through disclosure in future environmental reports, we can look forward to the success of Sharp’s ongoing corporate efforts to give careful consideration to the environment.

Professional background of Mr. Kazutaka Murakami

- 1962 ~ 1968 Tokyo Institute of Technology; completed Master’s program in Industrial Engineering
Replies to Sharp Environmental Report 2001 Questionnaire

Every year, Sharp asks readers for opinions on its Environmental Report. Many readers responded with a wide range of valuable information in last year’s Environmental Report survey. We thank those participants for their cooperation as we present the results of the 2001 survey and our subsequent improvements in response to reader comments.

Note: The survey statistics represent only those responses received by fax.

Q1 How easy to understand was the Environmental Report?

Easy 65%
Very easy 35%

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

65% Plenty of information
15% Just enough information
20% There could have been more

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

Long vision...5 persons
Cover story...6
Main objectives and level of achievement...4
Management...6
Products (Green Products)...7
Factories (Green Factories)...4
Recycling (Recycling Business)...4
Awareness (Green Mind)...6
Sites data...2

Q4 Please add any thoughts or opinions you have on this Environmental Report or on Sharp’s environmental activities.

Opinion and improvement

- Sharp should take into consideration the opinions of third parties (general public, other industries, NGOs), even if they are not certified.
- The 2002 Environmental Report included comments by environmental consultant Mr. Murakami.

Q5 What do you hope to see Sharp do in future as far as the environment is concerned?

Opinions

- I hope to see Sharp, an environmental leader, make energy-efficient, environmentally conscious products that contribute directly to the environment.
- I want Sharp to be an industry leader by pursuing its 3R policy.

Editorial Policy for Environmental Reports

1. We have given priority to articulating Sharp’s corporate attitude and aim for achieving a “sustainable society.” We have also presented material emphasizing the interlinked environmental, social and economic aspects of Sharp’s business activities within the framework of the Sustainability Reporting Guidelines advocated by the Global Reporting Initiative (GRI).

2. We have presented material encompassing the full range of our activities, including negative information, referring to the Ministry of the Environment’s Environmental Report Guidelines (Fiscal 2002 Edition) and Environmental Performance Indicators for Business (Fiscal 2002 Edition), and the GRI’s Sustainability Reporting Guidelines.

3. We have emphasized conveying information in an easily comprehensible form, targeting not only environmental experts, but also users of our products, people who live in the vicinity of our business locations, suppliers, vendors, business partners, students, and other broad segments of the community, and have aimed at using a straightforward writing style and incorporating numerous illustrations and photographs. We have also given serious attention to the feedback received from questionnaires accompanying our 2001 Environmental Report, and have worked to improve its content based on this information.

4. We will redouble our efforts in the future, and move aggressively to disclose additional information to achieve further improvement in this report.

About the Cover Design

The cover design for this report was chosen from contest submissions received from employees of the Sharp Group in Japan and abroad, and from their families. From among the 156 entries received, we selected the work of Ms. Kaoru Hokazono, Junior Manager, Appliance Systems Group Design Center to use as the cover design.

For any inquiries on this report please contact:
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Phone: +81-6-6792-5500 Fax: +81-6-6792-0012
E-mail: eco@sharp.co.jp