



# Social Environmental Report 2003

Always eco-active

# Overview

Profile	Used throughout the semiconductor and electronic components industries, Disco's Kiru, Kezuru, and Migaku solutions comprise four elements: precision machines (dicers, grinders, and polishers), precision processing-point technologies (blades, grinding wheels, and laser systems), applications, and services. These solutions help companies around the globe produce the world's most advanced industrial and consumer products.	
Basic information	Name	Disco Corporation
	Location of Head Office	14-3, Higashi Kojiya 2-chome, Ota-ku Tokyo, Japan 144-8650
	Date founded	May 5, 1937
	Date incorporated	March 2, 1940
	Capital	¥9,772,528,559 (as of April 30, 2003)
	Total number of shares issued	32,117,999 shares (as of April 30, 2003) Listed on Tokyo Stock Exchange, First Section Securities Identification Code: 6146
	Number of employees	1,068 (as of March 31, 2003)
Products	Precision grinding and cutting equipment: Dicing saws, cutting saws, laser saws, grinders, polishers, Dicing Before Grinding (DBG) in-line systems, etc.  Precision diamond blades: Blades, grinding wheels, dry polishing wheels, etc.	
Period covered by this report	April 1, 2002, to March 31, 2003 (also includes certain information pertaining to the period April to September 2003)	
Month issued	September 2003	
Facilities covered in this report	<ul style="list-style-type: none"> <li>• Head Office (Ota-ku, Tokyo)</li> <li>• Kure Plant (Kure-shi, Hiroshima)</li> <li>• Kuwabata Plant (Kure-shi, Hiroshima)</li> <li>• Nagatani Plant (Kure-shi, Hiroshima)</li> </ul>	

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## Message from the President

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In 1992 the United Nations Conference on Environment and Development (UNCED) called for a comprehensive system to improve the environment, and the International Organization for Standardization introduced ISO 14001, an environmental management system, in 1996. In response to these developments, Disco quickly made environmental issues a chief management theme. Disco obtained ISO 14001 certification for the Hiroshima Works, our production base, in February 1998, and since then we have promoted corporate-wide activities to reduce environmental impact.

To do our part in the prevention of global warming, we have both promoted energy conservation in production and R&D and have also worked to improve the energy efficiency of our semiconductor manufacturing equipment. The latter initiative is a top priority at Disco, since semiconductor manufacturing plants consume large amounts of electricity.

In accordance with Japan's movement as a society toward greater sustainability, we at Disco have promoted the 3R's—Reduce, Reuse and Recycle—in every aspect of our business. For example, Disco has received qualification as a Nationwide Recycler of Designated Industrial Refuse from the Ministry of the Environment. This qualification allows Disco to collect our used machines from customers in Japan and disassemble them for reuse, recycling, and responsible disposal. Disco is the first company in the industrial machinery sector to receive this qualification.

In the future, we will continue to refine our business activities for greater eco-efficiency; that is, we will aim to achieve the same or greater results while using less energy and resources.

The 21st Century can be described as the "era of the global community." As its part of our efforts to preserve the global environment, Disco has made EHS—Environment, Health, and Safety—a theme understood by all employees and considered in all our activities. With this theme kept firmly in mind, Disco seeks to be a leader in environmental management.



Hitoshi Mizorogi  
President and COO

## Towards leadership in environmental management

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I grew up where Disco was founded: Aga-machi, Kure City, Hiroshima Prefecture. Aga-machi faces the scenic Inland Sea; there the mountains rise directly from the shore. In my youth I played to my heart's content in the sea and on the mountains. At that time the Inland Sea was still pure, the fish were bountiful, and even a young child could easily catch a fish with a bamboo pole and a hook baited with a worm or a grain of rice. Ours was a simple life. We burnt paper scraps to warm the bath, or perhaps we made a fire in the front yard. We threw leftover food right into the sea, knowing, as the adults told us, that the waves would dispose of it.

Indeed, such daily waste as we made was, as we now say, "biodegradable." Thereafter, however, Japan entered a phase of high economic growth, in which it began to produce chemicals that, if disposed of improperly, remained in the ecosystem a long period of time and had a greatly negative impact on the environment.

Based on my personal experience, I wish firmly for Disco to be a leader in corporate environmental strategy. We must do our part by encouraging recycling and reducing waste, by minimizing the use of harmful chemicals, by protecting the ozone layer and the ecosystem—and more.

Disco has been certified for ISO 14001 for manufacturing since 1998 and has thereafter continued proactively to engage in environmental management. We also intend to achieve ISO14001 certification for our non-manufacturing facilities and will continue to promote environmental activities throughout the Disco Group, including our overseas subsidiaries and affiliates. This full participation is needed not only to lessen environmental impact during manufacturing, but also to promote the selection of more environmentally friendly production materials and logistical systems.

By producing energy-efficient and environmentally friendly products, Disco also helps its customers manage environmental impact. By such mutual cooperation and lifecycle assessment of our products, Disco can truly be a leader in our industry for environmental management.

Hideyuki Sekiya  
Executive Director,  
Environmental Management  
General Manager, Hiroshima Works

## Disco Corporation Environmental Charter

### Environmental philosophy

We recognize that the preservation of nature and the global ecosystem is essential for the future happiness and survival of humanity.

We will therefore ensure that ample resources are available for creating a sustainable business that is appropriate for a member of a recycling-based society.

### Basic environmental policy

1. We will continually evaluate the environmental effect of our business activities and work to improve them.
2. We will endeavor to provide products whose negative impact on the environment is kept to a minimum throughout their life cycles.
3. We will give maximum consideration to the health of our customers, suppliers, employees, and members of the local community.
4. We will conduct continuing environmental education programs for our employees.
5. We will endeavor to design our products to comply with the most stringent of laws and regulations from the countries where our products are used.
6. As a good corporate citizen, we will actively engage in community activities at the local level to help improve the environment.
7. We will openly share information concerning the environment in a timely manner.

### Our environmental action guideline

## “Always eco-active”

At all times and in all places, concern for the environment will guide our actions.

Published January 1, 1997  
Revised October 16, 2000

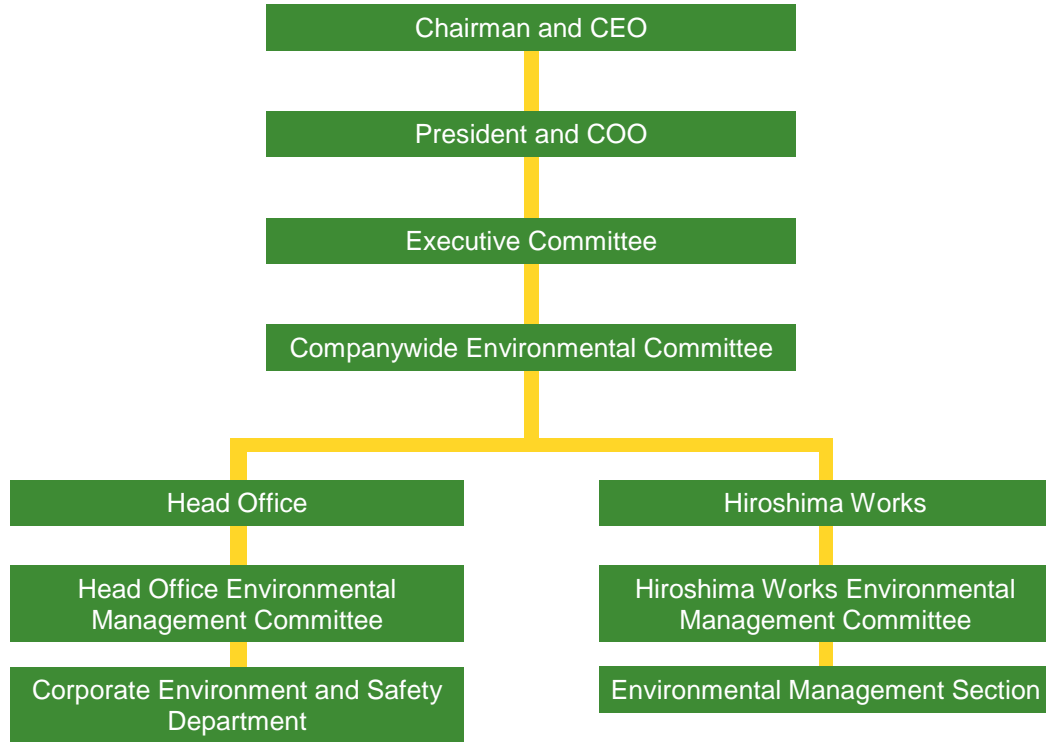
Hitoshi Mizorogi  
President and COO

## Environmental activities thus far

January 1997	Disco Corporation Environmental Charter announced by the President.
February 1997	Environmental Management Section established at Hiroshima Works.
April 1997	Environmental Management Committee established at Hiroshima Works; activities for reducing environmental impact initiated.
May 1997	Environmental management policy formulated at Hiroshima Works.
July 1997	Environment and Safety Office established at Head Office.
December 1997	Waste output measurement system (43 classifications) introduced at Hiroshima Works.
February 1998	ISO 14001 certification acquired for environmental management system at Hiroshima Works (Kure and Kuwabata Plants).
July 1999	Ice thermal storage air-conditioning system (eco-ice) installed at Hiroshima Works.
August 1999	LCA (Life Cycle Assessment) Project initiated at Head Office.
April 2000	Companywide Environmental Committee and Head Office Environmental Management Committee established.
October 2000	Disco Corporation Environmental Charter revised.
April 2001	Environmental Goal Management System initiated at Head Office.
July 2001	Circulation system for wastewater (including silicon cutting water) introduced at Hiroshima Works.
August 2001	ISO 14001 certification for environmental management system updated at Hiroshima Works.
March 2002	Material Safety Data Sheets (MSDS) for blades, wheels, and dresser boards made available on Disco website.
June 2002	Report in compliance with the Pollutant Release and Transfer Register (PRTR) Law compiled at Hiroshima Works.
July 2002	Environmental policy revised at Hiroshima Works.
October 2002	Recycling service for certain used products started. Environmental Report 2002 (first in series of yearly reports) issued.
March 2003	Participated in ISO 14001 Promotion Committee organized by Hiroshima Eco-Forum.
August 2003	Qualification as Nationwide Recycler of Designated Industrial Refuse received from Ministry of the Environment.

## Organization and roles

Disco's environmental organization is as follows with the Companywide Environmental Committee in a key leadership role.



Organization	Role	Chairman	Base of operations
Companywide Environmental Committee	Formulation of companywide environmental strategy, focusing primarily on products: 1. The PS Company is responsible for product-specific environmental strategy 2. The Corporate Environment and Safety Department of the Corporate Support Division is responsible for companywide initiatives	Hideyuki Sekiya General Manager, Hiroshima Works; Executive Director, Environmental Management	Corporate Environment and Safety Department
Head Office Environmental Management Committee	Preservation of Head Office environment; minimization of environmental impact	Takao Tamura Director	Corporate Environment and Safety Department
Hiroshima Works Environmental Management Committee	Preservation of environment of Hiroshima Works; minimization of environmental impact; administration of ISO 14001	Hideyuki Sekiya General Manager, Hiroshima Works; Executive Director, Environmental Management	Environmental Management Section

## Disco and the environment

Disco products and environmental impact

Disco's products can be divided into two main categories.

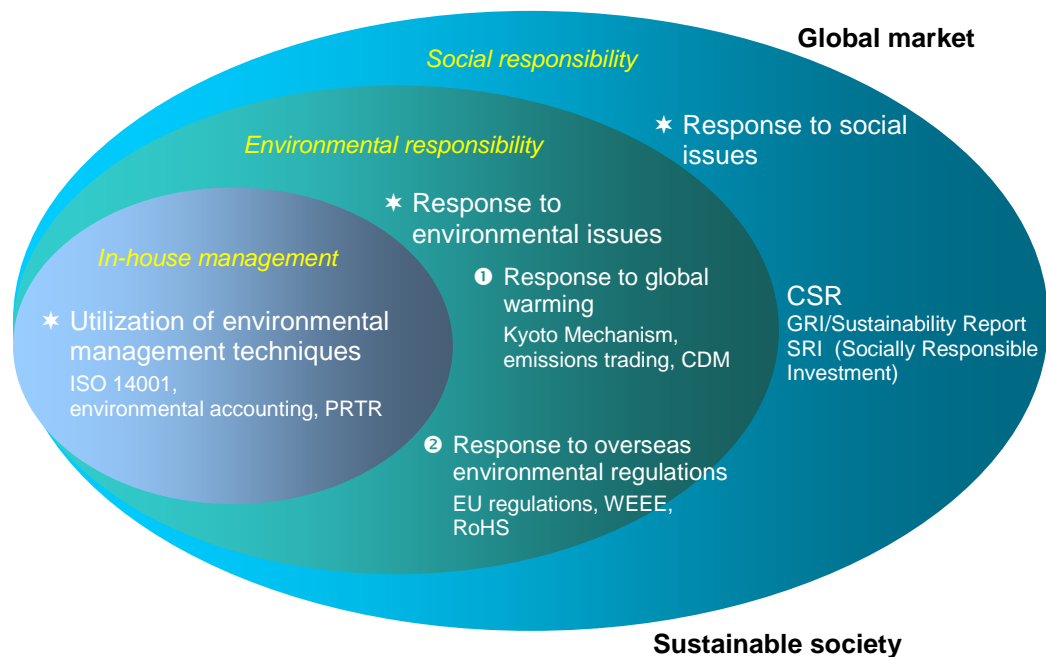
1. Precision machinery: dicing saws, cutting saws, laser saws, grinders, polishers, Dicing Before Grinding (DBG) in-line systems, etc.

These are machines for processing semiconductors and electronic components. The total energy used in producing a machine, including its many subcomponents, is large. Further, machine lifespan is long; therefore each product generation must be designed with conservation in mind, as considerable amounts of air, water, and electricity are used during the cutting and grinding processes. Water is used to cool both the processing point and the spindles. Hence, machine operation tends to have more environmental impact than the manufacture of the machine itself.

2. Precision diamond (and other) abrasives: blades, grinding wheels, dry polishing wheels, etc.

These are consumables used for the precision processing of semiconductors and electronic components, typically with Disco precision machinery. Lifespan is an important design issue. Further, the handling and proper disposal of the chemicals used in manufacturing these products are issues for continuous attention and examination.

Future environmental activities



**CDM:** Clean Development Mechanism  
A system in which a developed country conducts activities in a developing country that reduce or avoid emissions and claims credit for that reduced amount for itself.

**CSR:** Corporate Social Responsibility  
Corporate behavior that meets or exceeds the ethical, legal, commercial and public expectations of society.

**GRI:** Global Reporting Initiative  
An independent institution that develops and disseminates the internationally applicable Sustainability Reporting Guidelines, which have economic, environmental, and social dimensions.

(Based on materials provided by JMA Consultants Inc.)

## Environmentally conscious products

### Energy-saving design of dicers

LCA (life cycle assessment) is an important concept at Disco. Through LCA Disco learned that the best way to reduce the environmental impact of Disco dicers was to reduce energy consumption at the time of use. Feedback from LCA has been employed in the design of DFD6340 and DFD6361.



DFD6361

### Water Temperature Control Unit DTU162

This water temperature control unit, which employs circulation technology, is connected to a dicer designed primarily for the electronic parts industry. Its wheel coolant circulation system lessens environmental impact by reducing water use. It is CE and SEMI compliant and uses as refrigerant R407C—a completely non-ozone-depleting gas.



DTU162

### Fully Automatic Dry Polisher DFP8140

Most approaches to stress relief, which removes grinding damage from wafers, employ slurry, chemical, or solvents. Disco, however, has developed an environmentally friendly process that uses none of these—in fact, Disco's unique dry polishing process doesn't even require water. Instead, a non-diamond abrasive pad engages in a solid-phase reaction with silicon and other materials to provide exceptional stress relief. DFP8140 and DFP8160 are the machines that deliver this solution.



DFP8140

### Precision diamond blade packaging

Polypropylene, a recyclable material, has been adopted for the following two precision diamond product packages (including labels), and new items will be added as feasible.

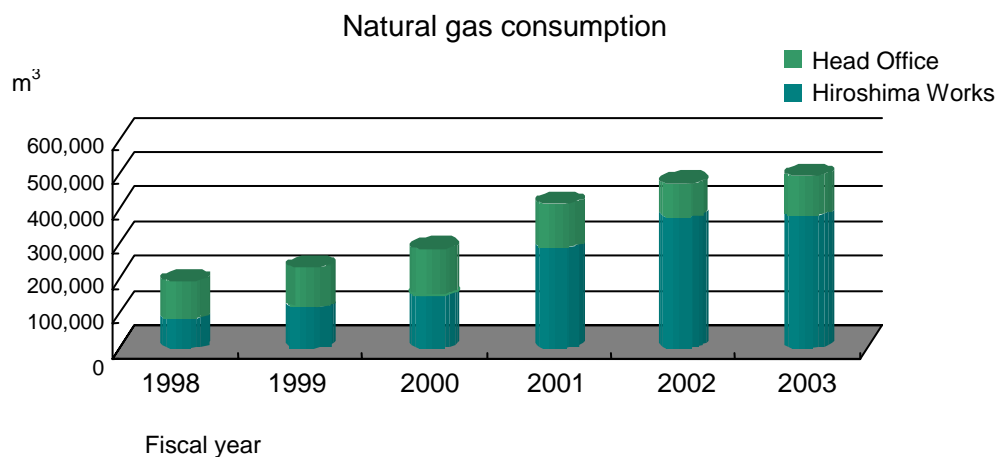
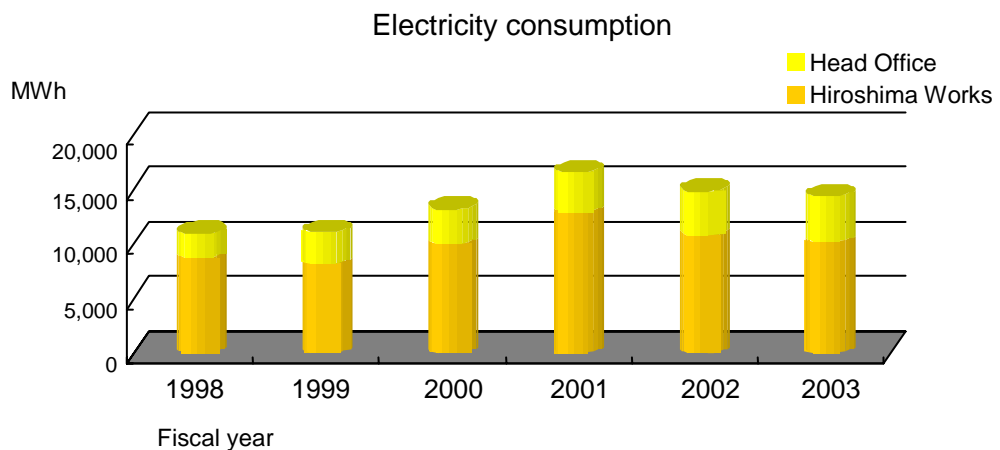
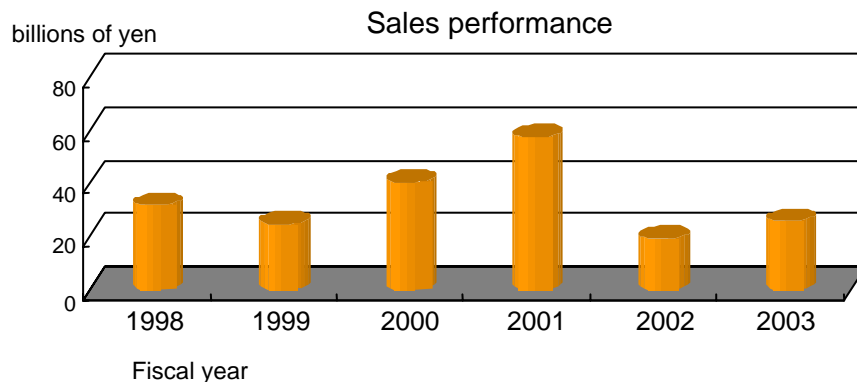
- NBC-ZH dicing blades
- Grinding wheels



## Energy, resources, and waste

Below are statistics regarding Disco's consumption of resources and output of waste. These activities are influenced by sales levels and the construction of new facilities. Accurate measurements are the first step in conserving resources and reducing waste.

1996	Buildings E and F added to Kuwabata Plant, Hiroshima Works.
1999	Building E expanded at Kuwabata Plant, Hiroshima Works.
2000	Buildings C', G, H, I and K added to Kuwabata Plant, Hiroshima Works. Building E added to Head Office complex.
2001	Nagatani Plant added to Hiroshima Works. Use of Building C2 initiated at Head Office complex.
2002	Use of Building C2 ceased and use of Building F initiated at Head Office.

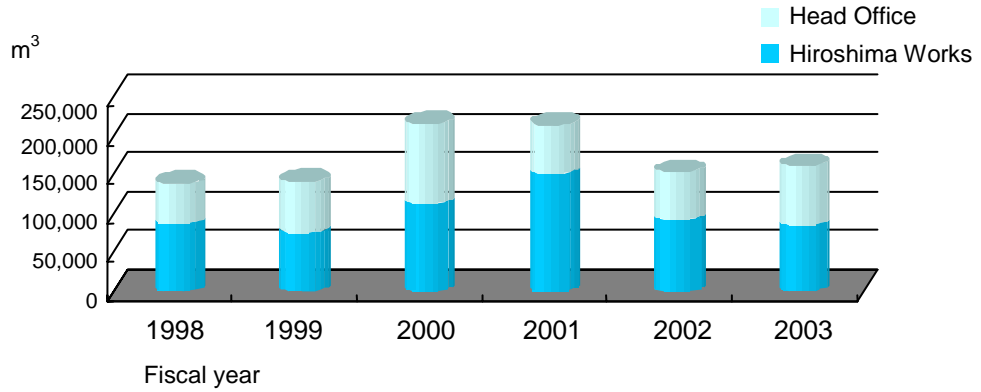


Metric tons of carbon dioxide emitted

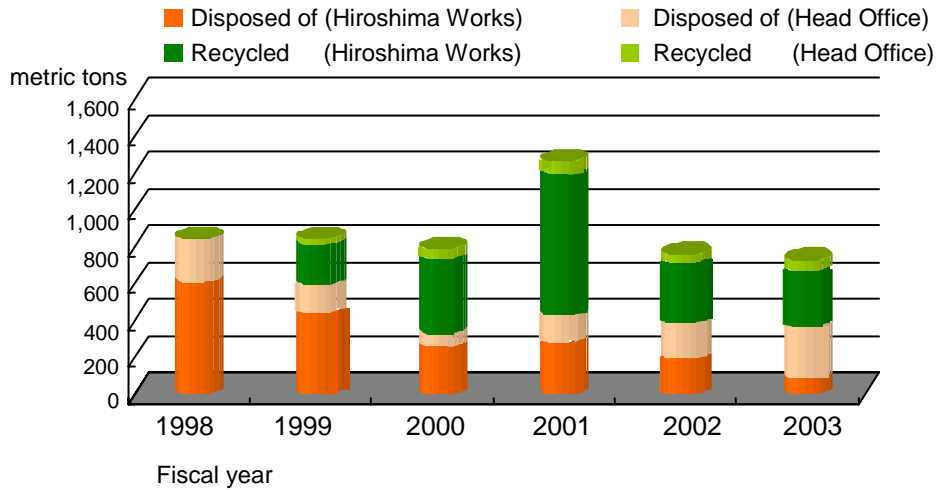
	Head Office	Hiroshima Works	Total
Fiscal year 2003	1,843	6,386	8,229
Fiscal year 2002	1,237	6,559	7,796

Note 1: CO<sub>2</sub> emitted through commuting (e.g., gas for transportation) is not included.  
 Note 2: Environmental accounting of CO<sub>2</sub> emissions includes also CO<sub>2</sub> produced via the generation of waste and the use of water.

Water consumption



Waste disposed of and recycled



## Management of environmental impact

FY 2003  
water quality  
management  
activities

At Disco, a strict system of wastewater content measurement and management is in force. The Head Office discharges wastewater to the sewer system and strictly follows the laws pertaining to such use. In fact, at the Head Office wastewater content is measured four times a year, and only up to 90% of the substance amounts permitted by law are allowed to be present in the water.

The Hiroshima Works (which comprises the Kure, Kuwabata, and Nagatani Plants) releases no water to rivers or other natural bodies of water; rather, all wastewater is discharged to the sewer system in strict compliance with the pertinent laws. The Hiroshima works measures wastewater content once per week and allows only 80% of the substance amounts permitted by law to be present in the water.

Item	Unit	Value permitted by law	Measurement results			
			Head Office	Kure Plant	Kuwabata Plant	Nagatani Plant
pH		5 to 9	7.5	7.2	7.3	7
BOD	mg/L	600	12	11	6.4	17
Suspended solids	mg/L	600	17	52	38	31
N-hexane extracts	mg/L	5	3.6	Undetected	Undetected	0.7
Iodine consumption	mg/L	220	3.2	-	-	-
Cadmium	mg/L	0.1	-	Undetected	Undetected	Undetected
Cyanogens	mg/L	1	-	Undetected	Undetected	Undetected
Lead	mg/L	0.1	0.03	Undetected	Undetected	Undetected
Chromium	mg/L	2	Undetected	-	-	-
Hexavalent chromium	mg/L	0.5	Undetected	Undetected	Undetected	Undetected
Arsenic	mg/L	0.1	0.02	Undetected	Undetected	Undetected
Mercury	mg/L	0.005	-	Undetected	Undetected	Undetected
Polychlorinated biphenyl	mg/L	0.003	-	Undetected	Undetected	Undetected
Trichloroethylene	mg/L	0.3	-	Undetected	Undetected	Undetected
Tetrachloroethylene	mg/L	0.1	-	Undetected	Undetected	Undetected
Carbon tetrachloride	mg/L	0.02	-	Undetected	Undetected	Undetected
Benzene	mg/L	0.1	-	Undetected	Undetected	Undetected
Phenol	mg/L	5	-	Undetected	Undetected	Undetected
Copper	mg/L	3	Undetected	Undetected	Undetected	Undetected
Zinc	mg/L	5	0.07	Undetected	1.2	Undetected
Soluble iron	mg/L	10	-	Undetected	Undetected	Undetected
Soluble manganese	mg/L	10	-	Undetected	Undetected	Undetected
Fluorine compounds	mg/L	15	Undetected	2.3	1.5	0.2
Boron	mg/L	230	15	9.6	14	Undetected
Total nitrogen	mg/L	240	-	21	28	7.4

Note: A hyphen indicates an item not measured.

FY 2003 noise  
and vibration  
management  
activities

Disco measures noise and vibration once per year.

Unit: dB		Head Office	Kure Plant	Kuwabata Plant	Nagatani Plant
Time of day division for noise		Afternoon and evening/ night	Morning, afternoon, and evening/ night	Morning, afternoon, and evening/ night	Morning/ afternoon/ night
Time of day division for vibration		Afternoon/ night			
Noise	Regulatory standard	60 / 55	70 / 60	70 / 60	50 / 55 / 45
	Disco standard	NA	65 / 55	65 / 55	45 / 50 / 40
	Measurement results	52 / 50	64 / 59	51 / 47	45 / 49 / 44
Vibration	Regulatory standard	NA	65 / 60	65 / 60	60 / 55
	Disco standard	NA	60 / 55	60 / 55	55 / 50
	Measurement results	NA	44 / 40	34 / < 30	<30 / <30

## Environmental management: Hiroshima Works

### Hiroshima Works Environmental Policy

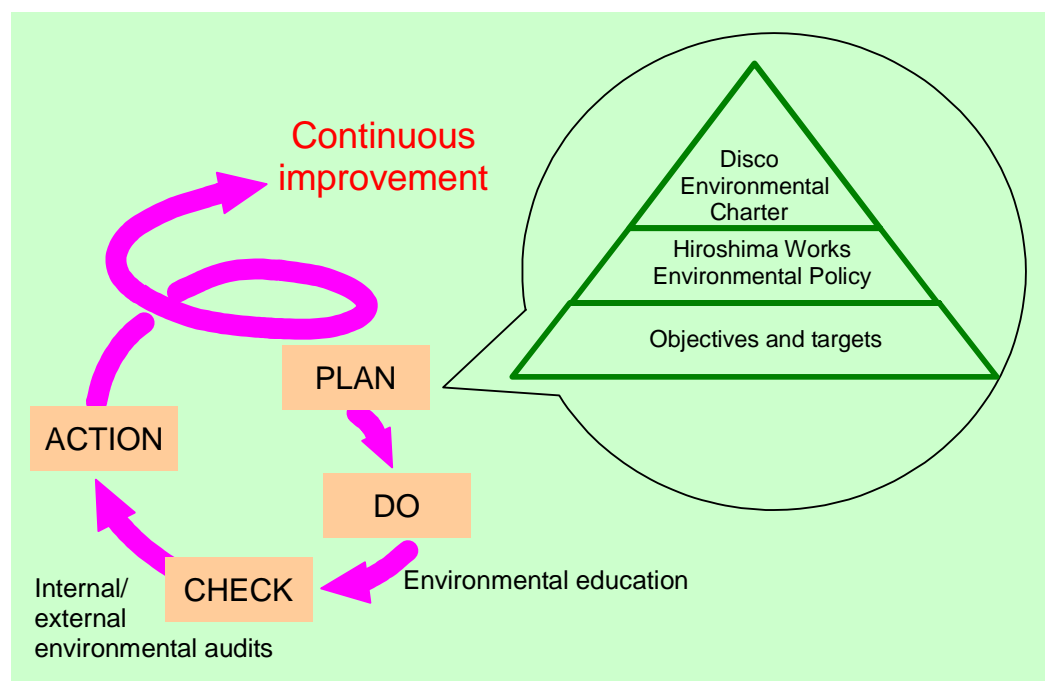
1. At the Hiroshima Works, we consider the impact of every business activity on the environment. We establish environmental goals and targets as well as autonomous management standards and, based on these, we engage in continuous environmental protection activities.
2. We not only strictly comply with the relevant laws and regulations but also seek to prevent pollution and improve the environment within the limits of economic and technological feasibility.
3. Mindful of the 3Rs of Reduce, Reuse, and Recycle, we seek to minimize environmental impact by conserving energy and resources, reducing industrial waste, and preventing the discharge of hazardous chemicals. We also work to minimize the impact on the environment from the facilities, processes, and materials that we employ.
4. As an important part of our business activities, we implement a thorough program of environmental education so that employees can increase their understanding both of our environmental policy and the environment itself. We conduct environmental audits to maintain and improve our environmental management system.
5. We monitor and seek to reduce the discharge of substances having a negative impact on the environment. By monitoring and managing our impact on the immediate environment (e.g., noise, vibration, odor, and appearance), we seek to earn the trust of our community.

This policy is for both internal and external distribution.

Published May 1, 1997  
Revised July 1, 2002

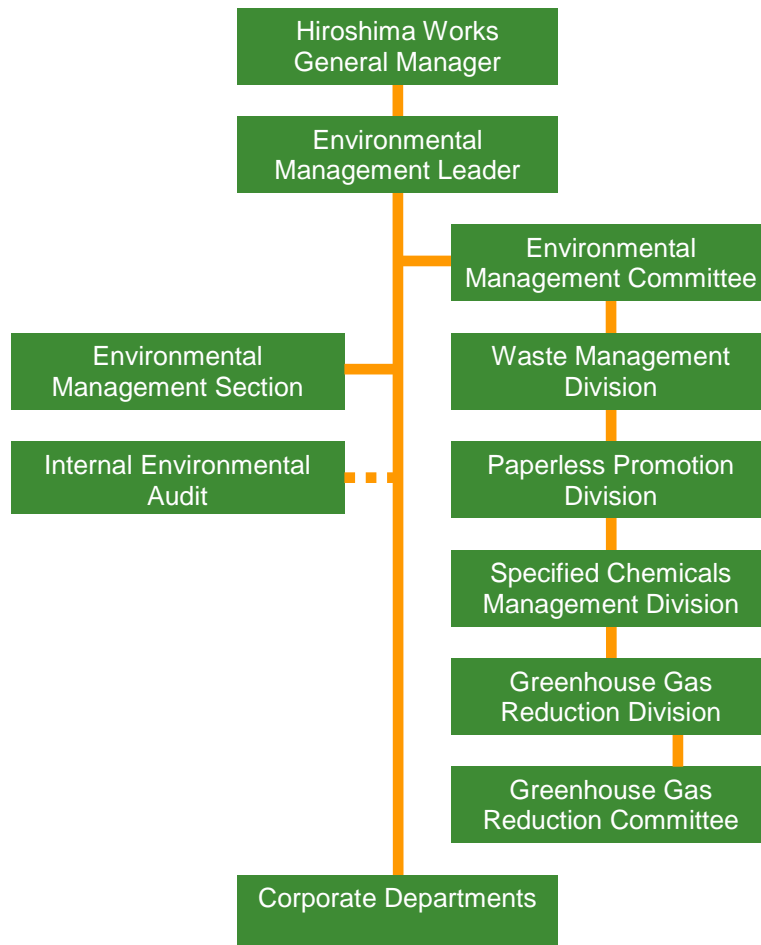
Hideyuki Sekiya  
General Manager, Hiroshima Works  
Director, Disco Corporation

### Mechanism of environmental management



Environmental organization chart

The environmental organization of the Hiroshima Works is headed by the General Manager and has the following structure.



Element	Role	Person responsible	Base of operations
Hiroshima Works General Manager	As Executive Director of Environmental Strategy, provides comprehensive leadership for ISO 14001 at the Hiroshima Works	-	-
Environmental Management Leader	As delegated by the Hiroshima Works General Manager, promotes environmental management activities under ISO 14001	Environmental Management Section Manager	-
Environmental Management Committee	As highest governing body of environmental management at the Hiroshima Works, establishes divisions to promote environmental management activities under ISO 14001	Hiroshima Works General Manager	Environment Management Section
Internal Environmental Audit	Comprises 17 internal auditors to verify activities performed under ISO 14001	Environmental Management Leader	Environment Management Section

Environmental activities in FY 2003

The Hiroshima Works changed the name of the Energy Conservation Measures Division to the Greenhouse Gas Reduction Division. Further, through the Waste Management Division, the Specified Chemicals Management Division, and the Paperless Promotion Division, the works has sought to strengthen environmental management activity in a wide variety of areas.

Measures to reduce greenhouse gas output

This Greenhouse Gas Reduction Division, along with the Greenhouse Gas Reduction Committee, seeks to reduce output of greenhouse gases, including CO<sub>2</sub>. To this end, these organizations calculate greenhouse gas output from Disco facilities and consider the implementation of such countermeasures as fuel cell use and cogeneration systems. Concurrently, they are responsible for general energy conservation initiatives.



New circulating water system

- General initiatives
- FY 1998
    - Environmental education program implemented.
  - FY 1999
    - Energy Conservation Committee, responsible for effective long-term conservation strategies, established.
    - Aging air conditioners replaced with gas air conditioners.
  - FY 2000
    - Air leakage checked and solution implemented.
    - Air conditioner filters and fins of outdoor units cleaned.
    - Switching off of unnecessary lighting promoted.
    - Ice thermal storage air-conditioning system (eco-ice) installed.
  - FY 2001
    - Each section/team tasked with proposing and implementing at least one unique energy conservation activity.
    - Regular energy conservation patrols begun by the Energy Conservation Committee of each plant. Temperature settings and cleanliness of air conditioners checked and educational activities implemented.
    - Air pipe bores standardized to reduce air loss.
  - FY 2002
    - Individual energy conservation targets established and implemented at Kure, Kuwabata and Nagatani Plants.
    - Air conditioner operation standards established for all plants.
    - Energy conservation patrols begun in FY 2001 continued.
  - FY 2003
    - Greenhouse Gas Reduction Committee established and regular meetings to determine countermeasures initiated.
    - Fuel cell facilities reviewed and introduction considered.

Waste management initiatives

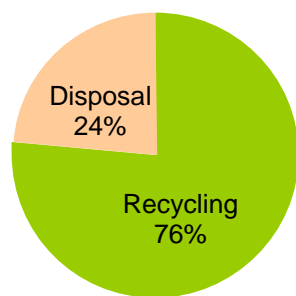
An important Disco waste management initiative was to cut in half the amount of landfill waste generated in 1996, 680 metric tons, by fiscal year 2002. In fact, however, the result for that year was a mere 199 tons. The five year plan beginning in fiscal year 2003 contains the goal of further reducing this amount by 20%.

- FY 1998 • Recycling of paper, plastic, and other materials begun.
- FY 1999 • Aluminum sludge reduced by half; use begun of neutralization waste liquid and strong alkali as raw materials for cement.
- FY 2000 • Recycling of waste plastics begun.
- FY 2001 • Material recycling of sludge (for which material Disco is paid a fee) initiated at Kuwabata Plant.
- FY 2002 • Total waste reduced and recycling increased (wood scraps, carbon debris, lead, fluorescent lights, etc.).
- FY 2003 • Further separation of waste plastics increased for material recycling.

To reduce landfill waste and promote thorough recycling, Disco sorts waste into 47 categories.

We thoroughly sort wastes into 47 categories and reduce the waste amount consigned for disposal while increasing the recycling amount. Through the recycling of metal debris, the use of waste liquid for cement raw material, the sorting and thermal recycling of plastics, and other initiatives, Disco has raised its percentage of material recycled to well over 70%.

FY 2003 recycling/disposal ratio



- Recycling**  
Metal debris, paper, sludge, plating waste liquid, and other valuable resources
- Disposal**  
General trash, blade raw materials debris, etc.

Waste output measurement system

The waste output measurement system was implemented at the Kure Plant in December 1996, at the Kuwabata Plant in January 1997, and at the Nagatani Plant in April 2001 (upon completion of plant construction). This system, which employs sophisticated information technology, is used by the Environmental Management Section to measure and handle waste output at the Hiroshima Works. It allows Disco to respond quickly to new directives from local and national government.



Waste output measurement system

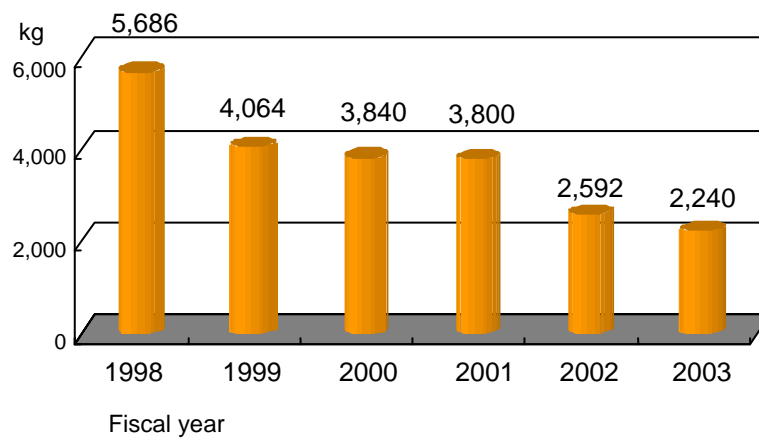
Specified chemicals management initiatives

1. Disco has completely discontinued the use of government-specified chemicals as cleaning agents.
2. Disco has continued to introduce CFC substitutes. Ozone-depleting HCFC-141b was used to clean machine parts as late as March 1998, but thereafter a switch was made to a mixture of HCFC-225ca and HCFC-225cb, which has a low ozone impact; a further change was later made to a 1-bromopropane solvent. In FY 1999 Disco switched to a fluorinated mold lubricant (a mixture of HCFC134a and HCFC141b) and continues to investigate chemicals that have little or no ozone-depleting potential.
3. Disco has greatly reduced its use of organic solvents by both reducing the amount used and by implementing a recycling system that reduces the amount of new solvent ordered. Disco continues to investigate the health and safety aspects of organic substances and will continue to implement new initiatives to reduce their use.

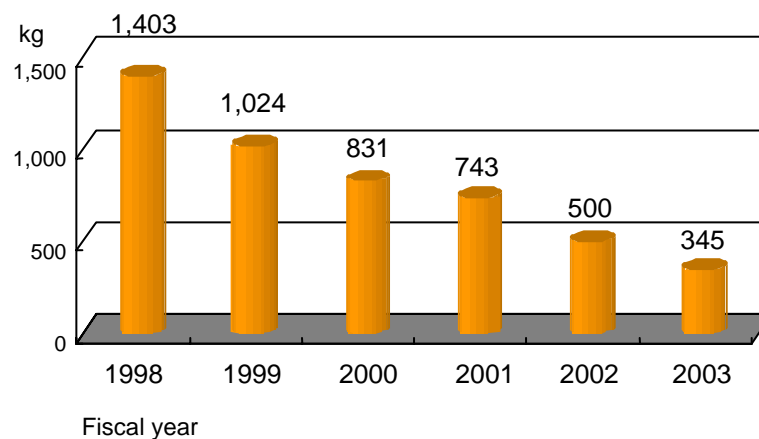


Solvent recovery and recycling system

Methanol purchased



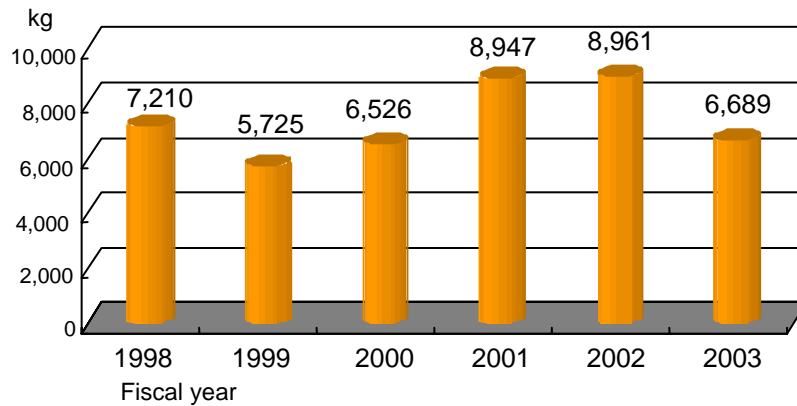
Cleaning solvent "Brand A" purchased



Paperless promotion activities

In FY 2003, the amount of paper used was reduced by introducing electronic media for various internal documents and encouraging the use of both sides of copy paper. These measures will be continued in FY 2004.

Copy paper purchased



Environmental preservation initiatives

- |         |  |
|---------|--|
| FY 1998 | <ul style="list-style-type: none"> <li>• Noise standards stricter than those required by law introduced.</li> <li>• New waste management system introduced; waste management facilities added and expanded.</li> </ul> |
| FY 1999 | <ul style="list-style-type: none"> <li>• Tank walls doubled and reserve tanks installed to prevent leakage.</li> </ul>   |
| FY 2000 | <ul style="list-style-type: none"> <li>• Stoppers installed in plant run-off troughs to prevent accidental effluents.</li> <li>• Rainwater drainage system updated.</li> </ul>   |
| FY 2001 | <ul style="list-style-type: none"> <li>• Kuwabata plant updated with new waste compression system, improved garbage disposal system, and new monitoring system for electricity consumption.</li> </ul>                 |
| FY 2002 | <ul style="list-style-type: none"> <li>• Noise management systems updated at Kure and Nagatani Plants.</li> <li>• Sludge management system updated at Kure plant.</li> </ul>   |
| FY 2003 | <ul style="list-style-type: none"> <li>• Basic facilities largely unchanged.</li> </ul>  |

Current status of initiatives

Greenhouse gas reduction	In accordance with the Cabinet decision of June 4, 2002, the Japanese government ratified the Kyoto Protocol, thus committing to reduce greenhouse gas emissions from 1990 levels by 6%. Disco is also working to reduce emission levels as much as possible by utilizing a variety of energy-saving techniques.
Waste management	Although the groundwork has been laid for higher rates of recycling and lower environmental impact, Disco has much work left ahead to accomplish its goal of being a greener corporation.
Specified chemicals management	Solvent recovery efforts have reached fruition and the recycling rate essentially maximized. Disco will continue its efforts to reduce or eliminate regulated and hazardous chemicals.
Paperless promotion	As paper reuse rates have reached a practical maximum, further reductions will need to be accomplished via increased use of electronic means.

Environmental risk management structure

In accordance with ISO 14001, the Hiroshima Works has established a structure to respond to environmental crises, including an emergency communications network. Procedures for dealing with various environmental situations have also been documented.

## Environmental management: Head Office

Environmental organization chart

The environmental organization of the Head Office is headed by the General Manager of the Corporate Support Division and has the following structure.



Element	Role	Person responsible	Base of operations
Office Group	Environmental preservation and impact reduction in office area	Corporate Support Division General Manager	Corporate Environment and Safety Department
Technical Group	Environmental preservation and impact reduction in R&D and prototyping areas	Corporate Support Division General Manager	Corporate Environment and Safety Department

### Summary

In addition to standard office areas, the Head Office also comprises R&D and prototyping facilities. Since FY 2002, Disco has implemented initiatives to monitor and reduce the consumption of electricity, gas, and water in both types of facility.

In FY 2003, the target for copy paper reduction was met; however, in the three other categories increases resulted instead of reductions. The original targets had not taken into consideration the need to install and run new equipment in Buildings E and F, which additions resulted in an increased overall environmental load in the Head Office Complex. Disco will continue to adapt and use this targeting system with a view toward increased sophistication and improved results.

Item	Targeted reduction from FY 2002 level	Result
Electricity	-2%	+2%
Gas	-6%	+15%
Water	-8%	+28%
Copy paper	14.6 kg per person per year	12.7 kg per person per year

Reduction of electricity and gas consumption

To conserve electricity, in FY 2003 the auto-operating time of heating and air-conditioning units in toilets and hallways was shortened, and a seasonal temperature setting system was also introduced. Further, the use of hot water in bathroom sinks in from May to September was eliminated. The use of lighting in all office and technical areas was examined, and unnecessary use was discouraged.

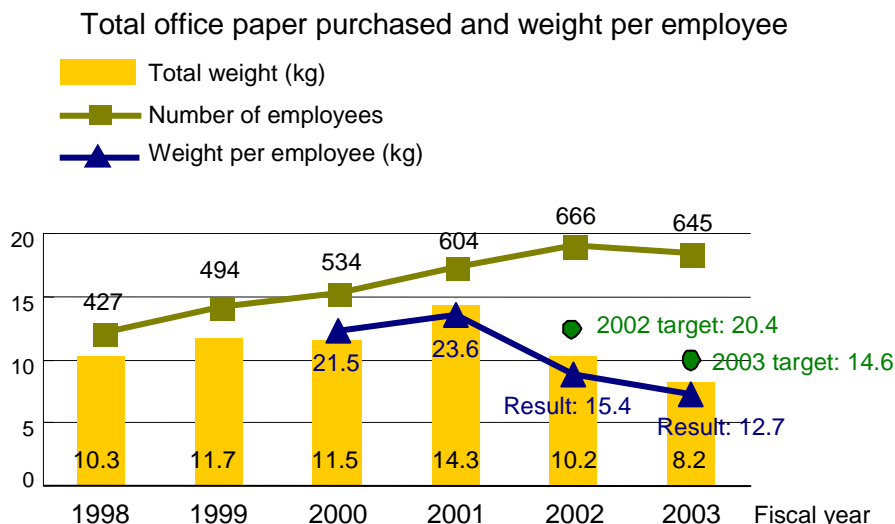
Reduction of water consumption

At the Head Office water is used in machines for R&D, is used to produce purified water, and is used in toilets, for drinking water, etc. The water used in machines for R&D is recycled for other uses, and other consumption reduction measures have been implemented.

In FY 2002 Disco introduced water circulation equipment to certain furnaces and in FY 2003 implemented the reuse of a portion of this circulated water in toilets and elsewhere. Overall, a reduction in water consumption of 12,960 m<sup>3</sup> per year has been realized.

Reduction of paper consumption

A reduction in per-employee use of paper by 1.2 kg was a goal for FY 2003. By implementing such measures as the use of double-sided printing and the reverse side of documents, this target was exceeded and yearly consumption of paper reduced by 2.7 kg per person.



Sorting and recycling of paper

Disco has in place a comprehensive paper recycling system in which confidential documents, copy paper, newspapers, brown paper, computer paper, and cardboard are sorted and placed in special containers located on every floor; this paper is all recycled. Further, the purchasing of products using recycled and environmentally friendly materials is also promoted: Disco uses 100% recycled-material toilet paper and business cards made of kenaf, a plant related to cotton and okra.



Special container for paper recycling

Waste reduction initiatives

To do its part to promote an environmentally sustainable society, Disco has implemented a strict program of sorting and recycling waste. The following are all sorted into separate categories for proper disposal or recycling: plastic, metal, wood, used equipment, cardboard, fluorescent lighting tubes, and scrap silicon.

Also, special garbage cans have been placed on each floor for sorting the following types of office waste: combustible garbage, incombustible garbage, plastic, cans, and bottles.

The following are examples of ways Disco recycles the waste it produces:

- Certain waste plastics are treated for use as blast-furnace reducing agents and RDF (refuse derived fuel).
- Silicon wafers are reused as a reducing agent in iron manufacturing.



Special garbage cans for separation of office waste and their English/Japanese labels.



## Chemicals management

**System for purchasing and managing chemicals** All chemicals purchased are assigned a control number and registered in a database that contains MSDS information viewable by employees from any network PC. When an entirely new substance is to be purchased for use in research or manufacture, an approval process is required to make sure that the chemical is safe and appropriate for the intended use.

**Compliance with the PRTR Law** In Compliance with the Pollutant Release and Transfer Register Law, Disco carefully tracks the purchase and movements of all chemicals and submits all reports required by law. The following is information regarding a nickel compound used at the Hiroshima Works.

Name of Type I Designated Chemical Substance		Nickel compound
Control number of Type I Designated Chemical Substance		232
Amount handled		13,619.7 kg
Amount used in products		592.4 kg
Amount recycled		12,538.8 kg
Amount discharged	a. To the atmosphere	0 kg
	b. To public waters	0 kg
	c. To facility soil (other than d)	0 kg
	d. To facility landfill	0 kg
Amount transferred	a. To sewage system	368.1 kg
	b. Outside facility (other than a)	120.4 kg

Note: "Amount used into products" includes transformation of material state.

**Disclosure of product MSDS** As a service to our customers and other concerned parties, Disco discloses on the company homepage the MSDS for precision diamond products (dicing blades and grinding wheels) and peripheral accessories (dresser boards, etc.).

**Introduction of CFC substitutes** In FY 1996 Disco ceased using CFCs in molding processes. From FY 2000 to FY 2002 the Chemicals Management Division considered the potential use of nine additional compounds in a variety of processes, but none was adopted. In FY 1997, however, Disco switched from air conditioners using R22 to those using R407C, a non-ozone-depleting gas.

**Compliance with local environmental ordinances** As a part of the Ohta Ward, Tokyo, community, Disco complies with all of the regulations of the Tokyo metropolitan government. The following is information submitted to the Tokyo government in FY 2003.

Name of substance	Amount handled (kg)
Acetone	126
Nickel	170
Nickel compounds	499
Sulfuric acid	169

## Environmental accounting

Introduction of environmental accounting

Disco introduced its environmental accounting system in FY 2002 and produced its first set of environmental accounting statistics in FY 2003. The statistics below are calculated in compliance with the guidelines specified by the Ministry of the Environment.

FY 2003 environmental preservation costs (1 April 2002 to 31 March 2003)

Unit: ¥1,000

Category	Major activities	Investment	Costs
1) Costs incurred within the business itself		2,739	115,268
1. Pollution prevention costs	<ul style="list-style-type: none"> <li>Activities to prevent air pollution and water pollution</li> <li>Maintenance of anti-pollution equipment</li> <li>Measurement and analysis of air and water quality</li> </ul>	1,564	63,829
2. Global environmental preservation costs	<ul style="list-style-type: none"> <li>Prevention of ozone layer depletion</li> <li>Energy conservation activities</li> </ul>	0	9,021
3. Recycling costs	<ul style="list-style-type: none"> <li>Plant waste recycling</li> <li>Activities to promote recycling</li> <li>Introduction of waste treatment equipment</li> </ul>	1,175	42,418
2) Costs to minimize upstream and downstream environmental impact	<ul style="list-style-type: none"> <li>Promotion and support of recycling</li> <li>Green purchasing</li> </ul>	875	875
3) Managerial costs	<ul style="list-style-type: none"> <li>Acquisition and maintenance of ISO 14001 certification</li> <li>Implementation of environmental audits</li> <li>Implementation of environmental education</li> </ul>	0	60,111
4) R&D costs	<ul style="list-style-type: none"> <li>Development of environmentally friendly prototypes</li> </ul>	65,632	43,211
5) Costs incurred in socially responsible activities	<ul style="list-style-type: none"> <li>Nature preservation and greening</li> </ul>	0	8,269
6) Costs incurred in amending environmental damages		0	0
Total		69,246	227,734

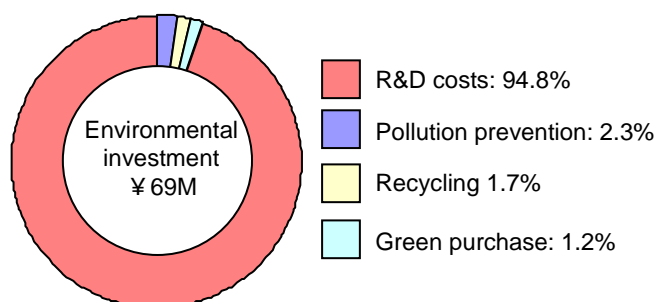
Regarding the calculation of costs

- Scope: Head Office and Hiroshima Works.
- In those cases in which production goals and environmental preservation goals overlapped or were identical, the contribution rate (to environmental preservation costs) was calculated by a Disco rule of thumb.
- Personnel expenses were calculated based on the time personnel dedicated to environmental issues multiplied by applicable wages.
- Green purchasing was calculated based on applicable products.
- Reported costs: Difference calculated.
- R&D costs were calculated based on their applicability to environmental themes and Disco's rule-of-thumb contribution rates.
- Other environmental preservation costs were fully costed.

Environmental Related Investment Ratio

	Disco total (yen)	Environment related (yen)	Rate
Total investment amount	1,284,083,000	69,246,000	5.39%
Total labor costs	8,916,753,000	84,269,000	0.95%
Total costs	18,421,834,000	227,734,000	1.24%
Net sales vs. environmental costs	25,614,178,000	227,734,000	0.89%

Environmental investment by category



Effectiveness of environmental preservation efforts

Only those items were calculated for which concrete numbers were available. In principle items calculated based on empirical reasoning were included. Deemed effects and avoided costs (effects after deducting costs such as the current environmental preservation from anticipated loss) were not included as calculation basis was hard to prove.

Effectiveness of environmental measures								
Category	Item	Economic effect		Environmental preservation effect				
		Activity	¥1,000	Amount by which environmental impact reduced		Amount of environmental impact generated		Reduction rate (%)
Reduction	Electricity	Promotion of energy conservation	8,086	Reduced (MWh)	570	Total used (MWh)	14,378	3.8
	Water		7,688	Reduced (m <sup>3</sup> )	13,692	Total used (m <sup>3</sup> )	160,866	7.8
	Gas (LPG)		577	Reduced (m <sup>3</sup> )	4,508	Total used (m <sup>3</sup> )	381,982	1.2
	Gas (LNG)		1,671	Reduced (m <sup>3</sup> )	50,628	Total used (m <sup>3</sup> )	112,422	31.1
	Plating waste liquid	Minimizing of waste generation	15,800	Reduced (m <sup>3</sup> )	476.6	Total discharged (m <sup>3</sup> )	42.1	91.9
	Sludge		2,242	Reduced (t)	84.4	Total discharged (t)	19.2	81.5
	CO <sub>2</sub> within business area	Control of global warming	-	Reduced (t)	480	Total discharged (t)	8,229	5.5
	NOx	Prevention of air pollution	-	Reduced (t)	0.06	Total discharged (t)	1.7	3.4
	CFC substitutes	Protection of ozone layer	-	Reduced (t)	0	Total used (t)	1.9	0.0
Reuse	Cleaning agents	Minimizing and reuse of waste	840	Reduced (kL)	2.4	Total discharged (kL)	2.4	50.0
	Copy paper		430	Reduced (t)				
Recycling	Metal debris	Amount saved by selling or not disposing of valuable resources	4,839	Recycled (t)	85.9	Total generated (t)	-	-
	Other valuable resources		2,457	Recycled (t)	41.5	Total generated (t)	-	-
	Used paper	Amount saved by not disposing of waste	328	Recycled (t)	62.5	Total generated (t)	-	-
	Other wastes		3,266	Recycled (t)	40.2	Total generated (t)	-	-
Proper disposal	Industrial waste	Amount saved by not disposing of waste	-	-	-	Total generated (t)	251.1	-
	General waste		-	-	-	Total generated (t)	29.7	-
	Industrial waste subject to special control		-	-	-	Total generated (t)	88.6	-
Total			48,224					

Regarding effectiveness calculations

- Calculations of environmental economic and preservation effects were based entirely upon concrete data.
- No estimated effects were calculated.
- Effects were categorized by the 3R's: Reduce, Reuse and Recycle.
- The statistics cover the Head Office and Hiroshima Works.
- The reduction rate was calculated with the following formula: Environmental impact reduced / (environmental impact reduced + environmental impact generated) x 100.
- CO<sub>2</sub> reduced was calculated based upon reductions in waste and the consumption of electricity, water, and gas.
- The calculation period for effect is based on the depreciation period of the equipment.

## Environmental education and awareness activities

**Head Office** Disco greatly values environmental education and requires all employees to attend seminars dealing with environmental issues. Similar seminars are also held at overseas subsidiaries.

### Basic Seminar

- One session series held per year
- Required of all employees
- 72 participants in FY 2002
- Topics include company rules pertaining to the environment and issues awareness

### Advanced Seminar

- One session series held every 1 or 2 years (none held in FY 2003)
- Participants are manager-level and above
- Topics include environmental management systems and environmental management



Basic Environmental Seminar

**Hiroshima Works** Environmental training is especially important at the Hiroshima Works, and Disco has implemented a full range of education programs to respond to various levels of potential environmental impact. For example, an on-the-job training course lasting six months has been implemented for those employees who have the greatest potential impact.

Type of Employees	Type of Education
All employees	General education
Workers engaged in environmentally relevant labor	General education and specialized training
Workers operating environmentally related equipment	General education, specialized training, and on-the-job training

## Environmental public relations

### Environmental communication

The Corporate Environment and Safety Department responds to stakeholder inquiries regarding the environment and health and safety concerns. For example, requests for issuing MSDS and inquiries regarding the chemicals substances contained in Disco products have recently increased. In response, Disco has begun to post applicable MSDS (material safety data sheets) on the Disco website. At the Hiroshima Works, the Environmental Management Section handles requests and comments from local residents and other stakeholders.

### Awards

*Advanced Packaging*, the US packaging monthly magazine, presented Disco with an award for new product DFP8140 at SEMICON West, held in July 2002. DFP8140, a polisher that uses a completely dry process to strengthen IC die, was honored because of its environmentally conscious design (it uses water only to clean the wafers, and waste from the process has less environmental impact than that of other processes) and the fact that this design also reduced production costs.

In November 2002, Disco was awarded a certificate by ST Micronics for success in that firm's "Packing Audit." Disco was recognized for its use of steel crating, which is an environmentally friendly alternative to wood because it is reusable. At Disco's Kuwabata Plant, the two ST Micronics experts from France found no items for modification and granted Disco their highest packing grade: "Low Risk."



Award for DFP8140

### Participation in environmental associations

Disco is active in the following environmental associations:

- Japan Environmental Management Association for Industry (JEMAI)
- Hiroshima Eco-Forum
- Semiconductor Equipment Association of Japan (SEAJ)  
Environmental Information Committee  
Environmental Issues Working Group
- Nippon Environment Club



Steel crating

### Greening

In support of a workplace appealing not only to Disco employees but also those living near Disco facilities, Disco makes its facilities as green and beautiful as possible. Both the Head Office and Hiroshima Works have grounds full of trees, shrubs, and flowers, and the Head Office facilities feature several roof-top gardens as well.



Cherry blossoms at Kuwabata Plant

## Good corporate citizenship

Disco believes that being a good corporate citizen is the basis for establishing a good relationship with society.

Philosophy of equal opportunity	Disco does not evaluate persons on the basis of gender, age, nationality, race, religion, or educational background.
Employing the Disabled	To date, Disco's employment of the disabled has not been adequate. In October 2003, however, Disco will for the first time met the hiring quota established by law, and top management continues to sponsor new hiring initiatives for the physically and mentally disabled. In July 2002 a Disco employee was recognized as an "Excellent Disabled Worker" by the Tokyo Metropolitan Government, and in September 2003 a Disco employee at the Hiroshima Works was similarly recognized by Ministry of Health, Labor, and Welfare.
Respecting human rights	Disco does not tolerate human rights violations and makes this position clear in internal literature. Sexual harassment, for example, is specifically prohibited in the company rules, and each employee must attend a seminar dealing with identifying, preventing, and handling this serious problem.
Internship system	Since 1999 Disco has supported two sessions of Head Office internships a year—one each in spring and summer—focused on college students. These internships provide an opportunity for young persons to learn about the industry in general, Disco in particular, and what it is like to join the workforce. These internships are offered in a wide variety of departments, and students also have an opportunity to talk with managers at special lunches and other events. The Hiroshima Works offers similar internship opportunities to local high school students.
Scholarships	In November 2002 Disco Hi-Tec America presented \$1,000 in scholarship funds to Brian How, a California student who had attended a Workforce Development Institute program sponsored by SEMI (Semiconductor Equipment and Materials International, a trade association).
Community service	<p>As a member of the ISO 14001 Promotion Committee organized by the Hiroshima Eco-Forum, in March 2003 Disco began an initiative to help small businesses in Hiroshima Prefecture achieve ISO 14001 certification. Disco held its first seminar in October 2003 and will be giving tours of the Hiroshima Works to demonstrate ISO compliance directly.</p> <p>Disco has also been active in JICA (Japan International Cooperation Agency), which serves as a bridge between Japan and developing countries. In July 2003 a Disco employee served as an instructor at a JICA seminar dealing with waste management, and Disco will participate similarly in a November 2003 seminar dealing with pollution prevention technology. At these seminars, persons representing government and industry from a variety of developing countries can learn about Japanese science and technology.</p>



Scholarship award ceremony

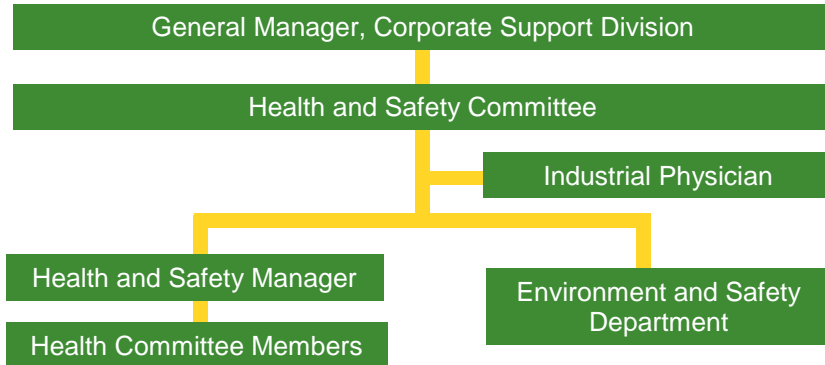


JICA Seminar

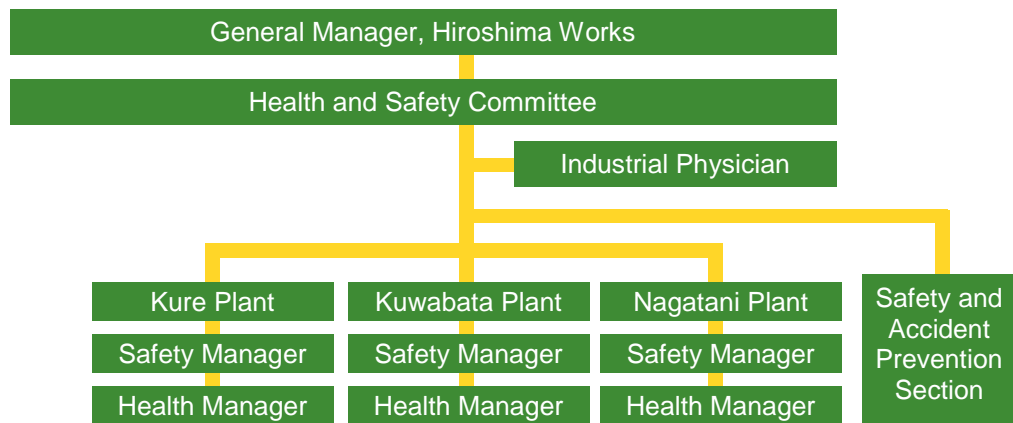
## Health and safety organizations

To advance the health and safety of its employees, customers, and other stakeholders, Disco has established the following structures.

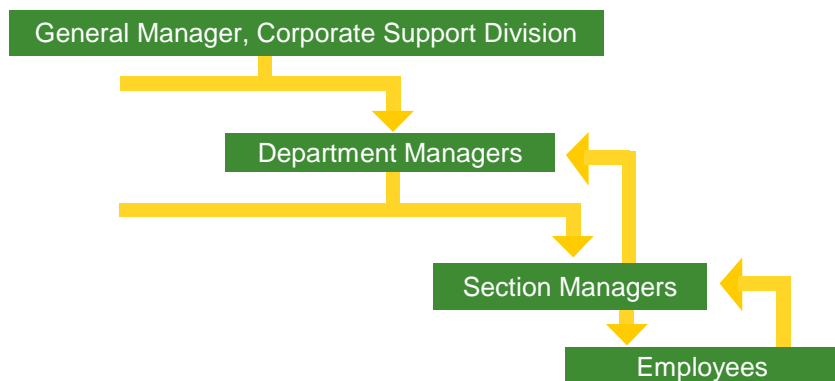
Head Office



Hiroshima Works



Emergency communication network



Disco Corporation

14-3, Higashi Kojiya 2-chome, Ota-ku, Tokyo, Japan 144-8650

Phone: 81-3-3743-0111

Fax: 81-3-3743-5700

[www.disco.co.jp](http://www.disco.co.jp)

Please send comments and inquiries to the following:

Corporate Environment and Safety Department

14-3, Higashi Kojiya 2-chome, Ota-ku, Tokyo, Japan 144-8650

Phone: 81-3-3743-5045

Fax: 81-3-3743-5700

Hiroshima Works, Administration, Environmental Management Section

1-23, Hirobunka-cho, Kure-shi, Hiroshima, Japan 737-0198

Phone: 81-823-72-2211

Fax: 81-823-72-0059

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