

2004

ENVIRONMENTAL SUSTAINABILITY REPORT



Innovator in Electronics

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About This Environmental Sustainability Report

- This report addresses the environmental activities of the member companies of the Murata Manufacturing Group located both inside and outside Japan; specifically, this includes our basic objectives and main achievements for fiscal 2003 as well as our plans to be addressed in the future.
- In order to meet our responsibility to disclose information as part of our corporate responsibility to society, we have produced this Environmental Sustainability Report by incorporating a social report in the environmental report.
- In preparing this report, we made reference to the Sustainability Reporting Guideline 2002 of the GRI (Global Reporting Initiative); Environmental Reporting Guidelines, 2003 Edition, of the Ministry of the Environment; and Environmental Reporting Guidelines 2001 of the Ministry of Economy, Trade and Industry.
- In this document, the term "Murata Group" refers to the member companies of the Murata Manufacturing Group both inside and outside Japan.
- While we made every effort to include the most up-to-date results among the various statistics presented in this report, this was not always possible due to editing and publishing considerations.

Scope of This Report

Organizational scope: This report encompasses the activities of Murata Manufacturing Co., Ltd. and its subsidiaries and affiliates both within and outside Japan. However, the various environmental data are primarily derived from Murata Manufacturing Co., Ltd., and its manufacturing plants inside and outside Japan as indicated with an asterisk on page 38, except where otherwise noted.

Target period: This document covers the Murata Group's fiscal year 2003 spanning the period April 1, 2003, to March 31, 2004; however, some portions of this document address initiatives and plans extending from before 2002 and beyond 2004.

Message from the President

Corporations have a responsibility to contribute to a prosperous society and healthy environment.

Since its establishment in 1944, the Murata Group has consistently sought to contribute to the prosperity of society through the development and growth of the electronics industry. The insights of our company management have been compiled into the Murata Philosophy, which serves as the starting point for the attitude and conduct of all Murata Group employees. On the occasion of the company's 50th anniversary, we further developed the Murata Group's "Mind Identity," which expresses our corporate ideals through the slogan "Innovator in Electronics."

This initiative reflects our wish to contribute to a richer life for people worldwide through the development of the "electronics-based society." As we transform the Murata Group into a true innovator through this effort, we pledge to remain continuously aware of the need to make products that do not waste energy resources. At the same time, we are implementing production methods that do not harm the environment in all our research, development, production, and other operations. Moreover, we pledge to fully consider the environment in every respect and to work strenuously to maintain harmony with the environment.

For our 2004 fiscal year, we initiated our Third Environmental Action Plan, which looks 10 years into the future. With the foundation laid by this action plan, we will continue to focus on environmental preservation in the interests of achieving a sustainable society.

In order to fulfill our social responsibility as a good corporate citizen, we must implement equitable and forthright management. All members of the Murata Group shall conduct themselves according to the highest ethical standards and comply with all relevant laws, corporate ethical norms, action guidelines, and other essential requirements.

To the greatest extent possible, we have specified the courses of action that can contribute to or detract from achieving the above; these we have summarized as our action guidelines. In this way, we are establishing a system that focuses on the ethics that allow the active participation of all members of the Murata Group to follow action standards.

No business can develop or prosper unless it gives due consideration to the health of the environment and the welfare of society. Therefore, we will continue to focus on achieving our target values while remaining committed to strengthening existing initiatives.

As we pursue these undertakings, we will take steps to ensure that we continue to earn the trust of the public and lead the entire Murata Group to become a true innovator in the electronics-based society.

Yasutaka Murata

President
Statutory Representative Director
Murata Manufacturing Co., Ltd.



MURATA PHILOSOPHY WE PLEDGE...

To Contribute...

To The Continued Worldwide Development Of
Industry And Culture Through
Management Commitment

To Pursue...

Total Quality And Customer Satisfaction, While
Continuously Introducing Innovative Products In
Integrated And Interrelated Technologies Which
Will Allow Our Company, Our Employees,
Customers And Other Partners, And Our Communities

To Grow And Prosper...

With An Appreciative Feeling Of Mutual
Pride And Trust

Corporate Profile

As of March 31, 2004

Trade Name	Murata Manufacturing Co., Ltd.	Number of Employees	Consolidated basis: 26,469 Parent Co. basis: 5,070
Date of Incorporation	December 23, 1950 (established in October 1944)	Stock Exchange Listings	In Japan: Tokyo, Osaka Overseas: Singapore
Paid-in Capital	¥69,376 million	Head Office	26-10, Tenjin 2-chome, Nagaokakyo-shi, Kyoto 617-8555, Japan (Our corporate address will change to the following on October 12, 2004.) 10-1, Higashikotari 1-chome, Nagaokakyo-shi, Kyoto 617-8555, Japan
Sales Amount (Consolidated Basis)	¥414,247 million (as of March 2004)	URL	http://www.murata.com/
Number of Subsidiaries (Consolidated Basis)	54 (25 in Japan and 29 overseas) Affiliated: 1 (overseas)		

Business Activities

Since its establishment in 1944, Murata has conducted wide-ranging research and development of functional ceramics as functional raw materials. Focusing primarily on the electrical properties of ceramics, Murata has built on the success of our representative dielectric product, the chip monolithic ceramic capacitor, to develop piezoelectric products such as ceramic filters as well as microwave devices and modules incorporating thin film forming technology, micro-scale processing technology, and microwave circuit design technology. In addition to developing these varied electronic components, we have developed related products while refining our manufacturing and marketing expertise.

Working in the belief that "new quality electronic equipment begins with new quality components, and new quality components begin with new quality

materials," Murata has maintained consistent production of items ranging from inorganic and organic chemical materials to ceramics and electronic components. Supporting this effort as the foundation of the company's material, process, design and production expertise, Murata's R&D initiatives emphasize the vertical integration of these technologies.

In recent years, the global electronics industry has been making rapid progress toward ever more compact and thin form factors while developing electronic devices and tools offering enhanced functionality and multifunctionality. Moreover, the market for products incorporating microwave and digital technologies has grown significantly, particularly in the area of mobile communications equipment and computer-related equipment. The result of these trends has been a growing demand for new components.



Dielectric Products



Chip Monolithic Ceramic Capacitors



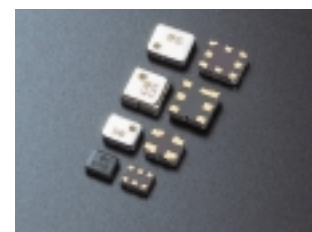
Thermistors



Piezoelectric Products



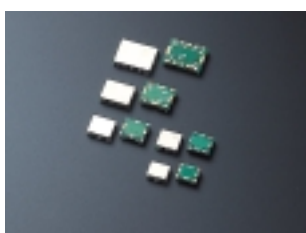
Ceramic Filters, Ceramic Resonators



Surface Acoustic Wave (SAW) Filters



Functional Modules



VCOs (Voltage Controlled Oscillators)



Bluetooth[®] Application Modules



EMIFIL[®] EMI Suppression Filters



Piezoelectric Application Sensors



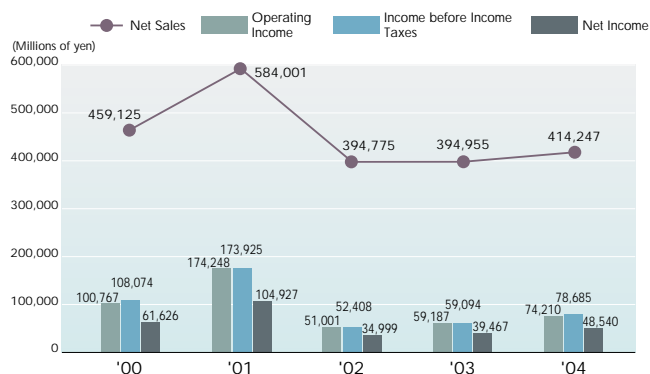
Chip Coils



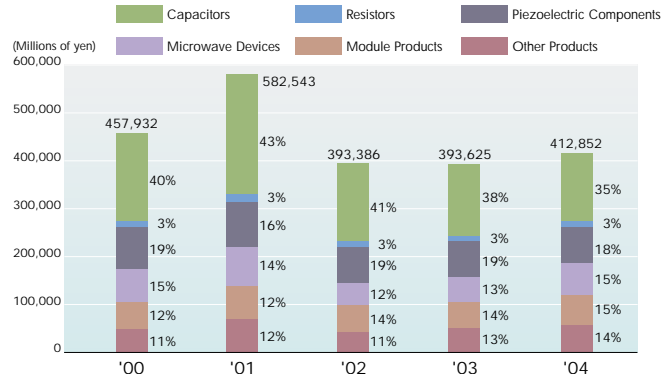
Chip Dielectric/Multilayer Antennas

Financial Highlights

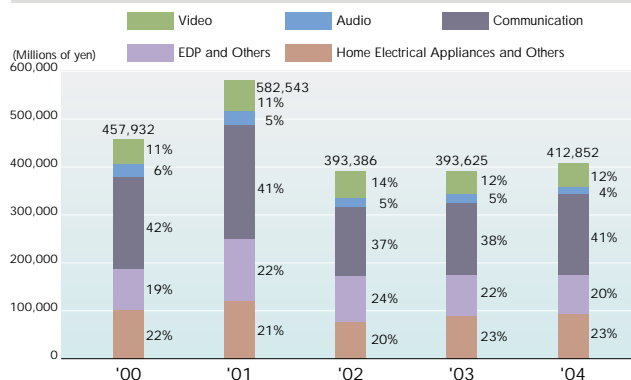
Trend of Net Sales & Income (Consolidated Basis)



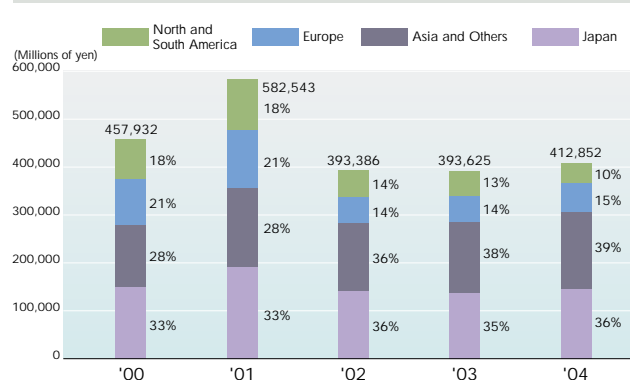
Sales by Product (Consolidated Basis)



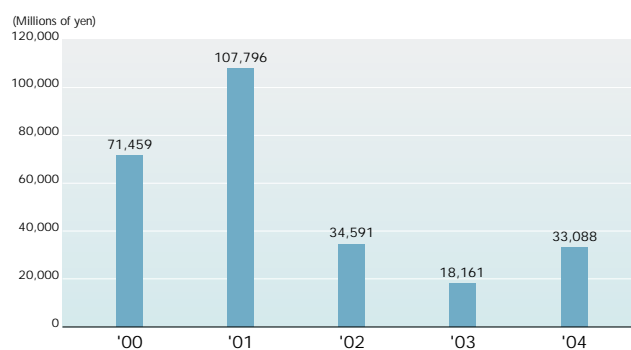
Sales by Application (Consolidated Basis)



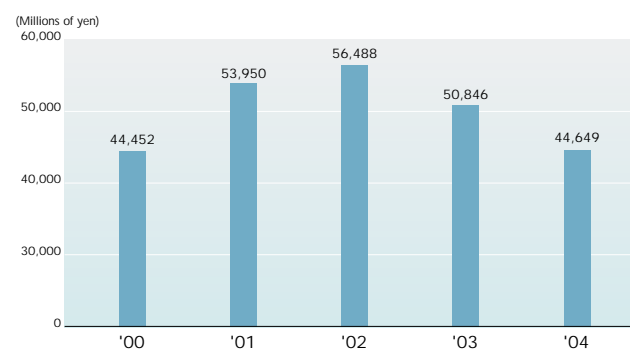
Sales by Area (Consolidated Basis)



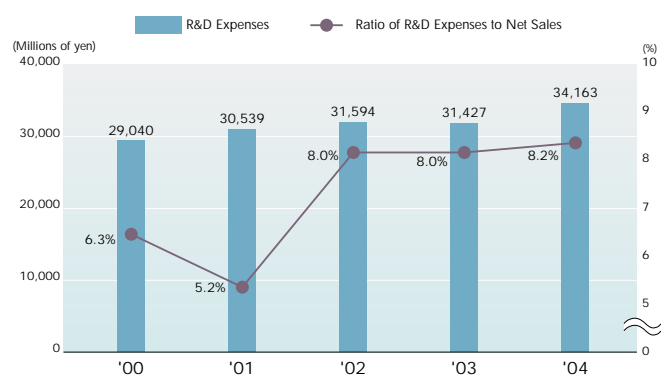
Capital Investment (Consolidated Basis)



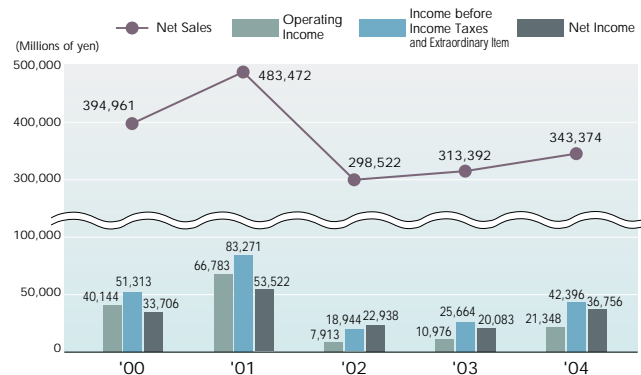
Depreciation and Amortization (Consolidated Basis)



R&D Expenses (Consolidated Basis) Ratio of R&D Expenses to Net Sales (Consolidated Basis)



Trend of Net Sales and Income (Parent Co. Basis)



Corporate Governance

Corporate governance is a priority at the Murata Group. We have addressed this subject by improving management efficiency, strengthening management-monitoring functions, and ensuring thorough compliance with all relevant laws and regulations.

Business Management Structure for Decision-Making, Implementation, and Supervision

The Murata Group has distributed development, production, and sales responsibilities among its various businesses. The Murata Group is committed to improving the management efficiency ratio of the group as a whole and to enhancing the management control organization and systems. In short, the Murata Group's functional staff division, R&D division, Sales & Marketing Division and Products Division, production companies and sales companies actively cooperate in this endeavor. Each member of the Murata Group assumes responsibility as an independent corporation and takes steps to contribute to overall corporate value by helping to improve the efficiency and income of the entire group.

Board of Directors

Murata Manufacturing has segregated its day-to-day business operations from its management policy and decision-making tasks for critical business operations; moreover, under its system of executive officers, the company is further strengthening its management functions. The board of directors comprises 11 executives, two of whom are from outside the company. The board focuses on management policy, decision-making, and supervision of critical business operations while monitoring the performance of the president. Moreover, the Management Executive Committee was established as a deliberative body that assists the board of directors and president in their decision-making. Its members comprise directors with special titles as well as executives and operating officers with special titles.

Audit System

Having adopted an auditor system, Murata Manufacturing ensures that its board of directors meetings and other important meetings have auditors in attendance. The auditors are a body that conducts detailed audits of legality and validity, which includes inspections of the operations and financial statements of Murata Manufacturing. At the same time, Murata conducts daily inspections, including on-site audits, of its domestic and overseas affiliates in order to further enhance the scope of auditing operations. Currently, the auditing system comprises four auditors, two of which are external auditors.

The Internal Control Committee

In implementing its internal controls, the Functional Staff Division addresses the entire Murata Manufacturing Group and provides daily instruction, pointing out areas requiring improvement. In this way, it systematically implements highly effective operational audits. The Internal Control Committee was also established to implement development, evaluation, and improvement activities targeting the internal control system and to devise an appropriate business risk management system for the entire Murata Group. In this way, it has strengthened the company's internal controls. The Internal Control Committee has also devised a risk management system that is used to evaluate any residual risk that may be present following risk identification, extraction, evaluation, and amelioration. This approach enables the Murata Group to continue conducting its business operations with an emphasis on social responsibility.

Compliance System

Murata practices its corporate philosophy with the highest ethical standards and observes all relevant laws and regulations, articles of incorporation, internal rules, policies, and important procedures related to its business, products, and services. To respect the spirit of this effort, Murata is promoting a variety of activities.

Compliance Promotion Initiatives

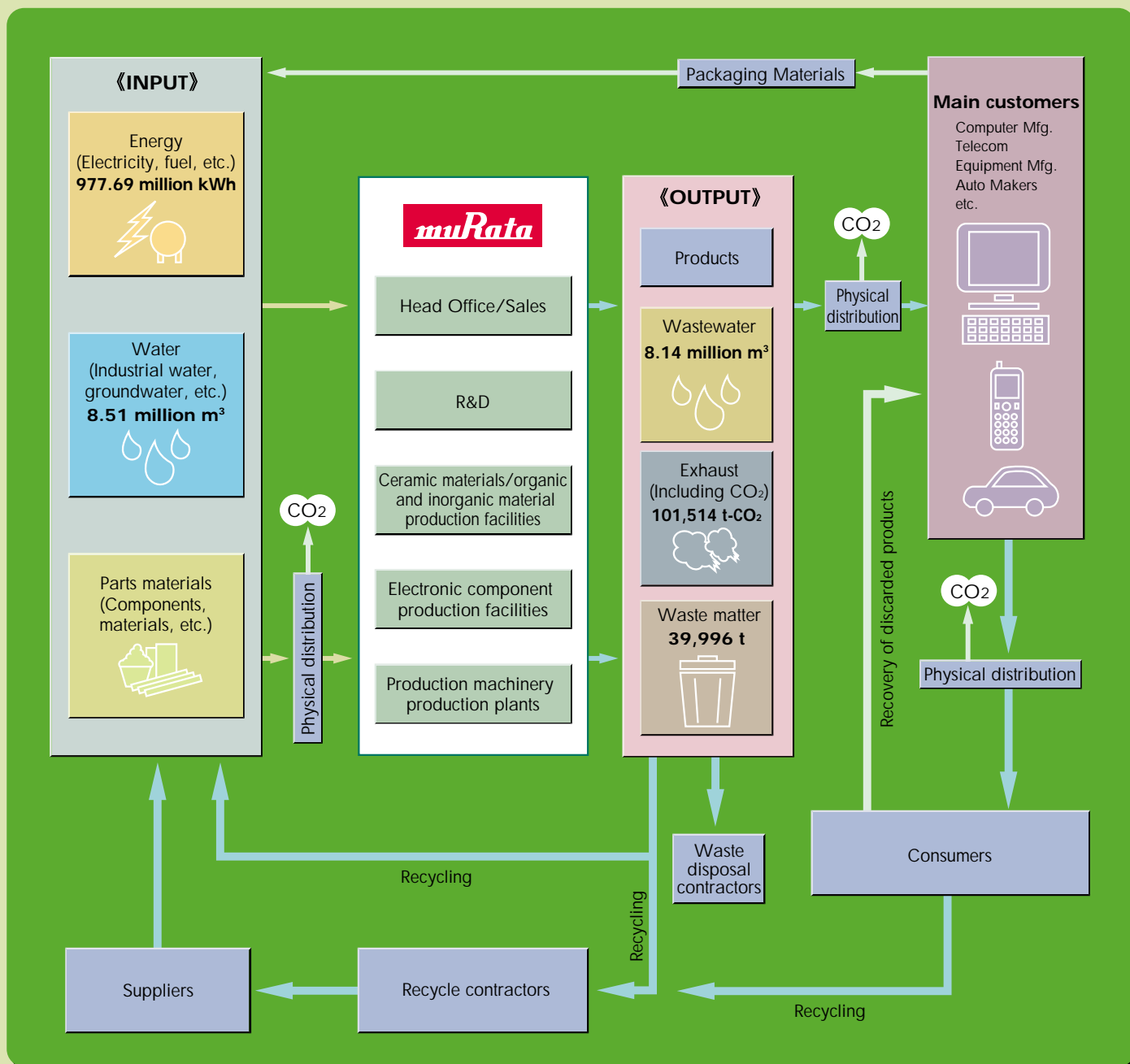
As a member of society, a corporation is required to operate in compliance not only with laws and regulations, but also with the dictates and norms of society. When a company violates laws and regulations, the results can include sanctions by regulatory authorities, filing of lawsuits, the risk of loss of business, damage to the corporate brand, and the risk of loss of social credibility.

The Murata Group established the Compliance Promotion Committee as an advisory body to the president. This committee outlines the ethical stance that corporate officers and employees should share, as well as the ethical standards that all should adhere to, in the form of corporate ethical standards and action guidelines. Moreover, a reporting system has been established through which compliance issues must be reported in order to ensure effective compliance as well as timely monitoring. This approach also helps to prevent the occurrence of problems related to laws and regulations in any part of the company while contributing to group-wide compliance with action guidelines.

Furthermore, with the formulation of the Compliance Program Regulations and the election of a Compliance Promotion Leader in each division, compliance activities are strengthened through improved operations systems and enhanced initiatives.

ENVIRONMENTAL REPORT

Relation between Our Business Operations and the Environment



Note: The above values represent fiscal 2003 totals for Murata Manufacturing and major plants inside and outside Japan (specifically, those identified with an asterisk on page 38).

Achievement of Zero Emissions

In order to reduce the environmental impact of waste disposal to almost zero, Murata is promoting reuse and recycling and has adopted the target of zero emissions (defined as a 100% recycling rate and zero landfilling). Achieving zero emissions proved particularly difficult for some of Murata's most common waste products, notably the ceramic-related waste generated through manufacturing, firing and molding processes for the raw materials of electronic components. However, through a review of the production processes as well as the sorting of the waste generated—combined with the development of recycling methods and routes in cooperation with waste processors—Murata has succeeded in achieving zero emissions at the 21 targeted plants and subsidiaries in Japan as of the end of March 2004.

■ We Achieved Our Fiscal 2003 Target of a 100% Recycling Rate in Japan.

1. Transition in Total Emissions and Recycling

The following table shows our achievements in reducing total waste emissions and increasing recycling.

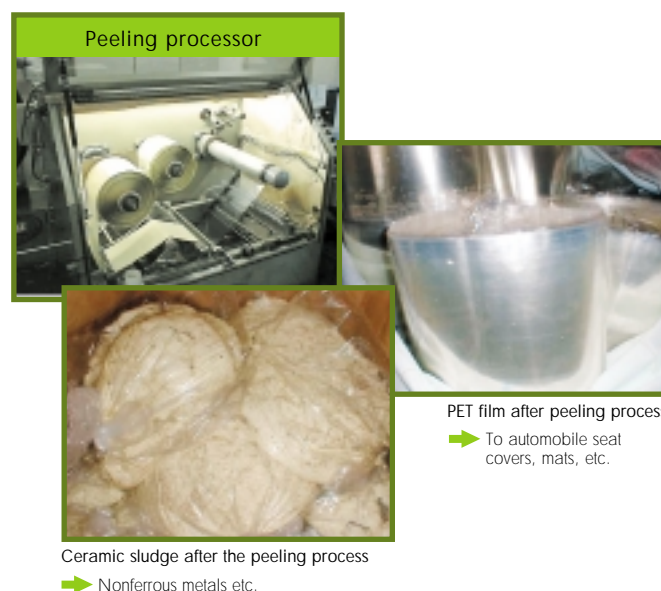
	March 31, 00	March 31, 01	March 31, 02	March 31, 03	March 31, 04
Total waste emissions (metric tons/month)	2,942	3,504	2,176	2,361	2,852
Recycling rate (%)	31.7	38.3	53.4	84.9	100

2. Examples of Recycling

The following table shows examples of the recycling of main categories of waste.

Waste category	Recycling
Sludge	Cement raw materials, construction materials (roadbed etc.)
Waste plastics	Raw material for PET, solid fuel, blast furnace reducer
Waste acid, waste alkali	Cement raw materials, construction materials (roadbed etc.)
Waste oil	Recycled solvent, raw materials/fuel for cement
Waste metal	Raw materials for metal
Glass and ceramic waste	Cement raw materials, construction materials (roadbed etc.)
Paper	Recycled paper

Recycling of Films Attaching Ceramics





3. Steps toward Improving the Recycling Rate

Murata is working to minimize the environmental impact resulting from the waste produced through our business operations. We seek to contribute to the creation of a society committed to recycling by minimizing waste disposal and promoting recycling and reuse.

As one aspect of this effort, we formulated an action plan to achieve zero emissions by the end of fiscal 2003. Our objective was to achieve zero landfilling* of waste matter** (in other words, a 100% recycling rate) following the theme of "environmentally friendly business activities" as listed in the Murata Environmental Charter.

Our recycling rate, which had stagnated at a level of about 30%, exceeded 50% when we began to implement this program at the end of fiscal 2001 and further improved to about 85% by the end of fiscal 2002.

We reviewed our production processes as well as the sorting of waste. Moreover, in cooperation with waste processors, we set out to develop recycling methods and establish new recycling routes.

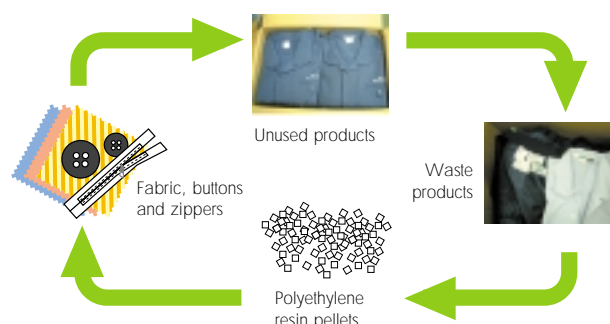
We established recycling routes for general waste such as plastic and metal waste, which are readily recyclable. However, a lack of recycling routes presented a challenge when we set out to recycle waste related to raw materials that is generated through the manufacturing, firing, and molding processes for raw materials for electronic components, one of Murata's representative product lines. Recycling of jigs used for firing, waste cases, and other waste also presented difficulty for the same reason.

However, as a result of our initiatives and our strong desire to achieve our goal, Murata achieved zero emissions throughout all plants and subsidiaries in Japan as of March 31, 2004, as set out in the action plan of the Murata Environmental Charter.

* Landfill zero
Represents zero direct landfilling of waste as well as zero landfilling of residual waste and sludge remaining after waste processing (such as incineration and neutralization).

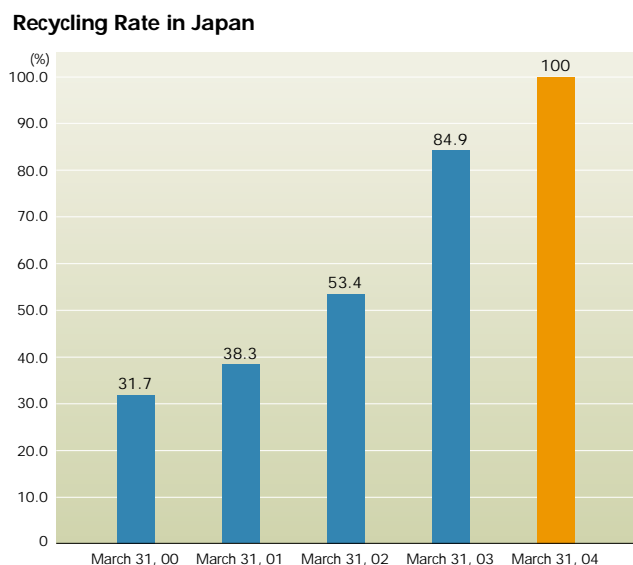
**Waste matter subject to the zero emissions campaign
Murata's zero emissions and recycling rate targets exclude waste matter that the company is unable to process on its own, such as excess sludge in remediation tanks and general waste designated for processing at a public facility.

Recycling of Uniforms



Murata is promoting the recycling of uniforms used within the Murata Group companies. Because the uniforms are made of 100% polyester, old uniforms are recycled by polyester recycling companies as polyester products (such as uniforms).

Trend in Recycling Rate



Environmental Considerations Reflected in Our New Head Office

We are currently constructing a new head office on a site located just east of JR Nagaokakyo Station in Kyoto. This new structure is an office building intended as a cutting-edge eco-structure designed to conserve resources and energy throughout its life cycle, from construction to the end of its useful life. Compared with a conventional office building, this innovative structure incorporates measures intended to achieve energy savings of about 30%.

■ Our Head Office building, designed for the environmental century, will be completed in autumn 2004.

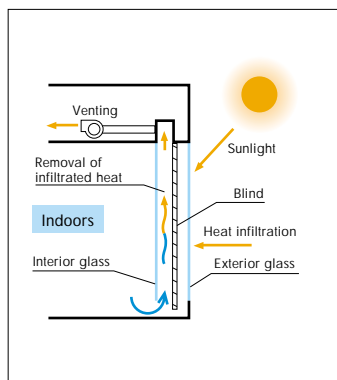
1. Energy Conservation

■ Architectural method

- ① Core sections comprising the elevator shafts and machine rooms are located on the east and west sides of the structure, thus blocking the severe thermal load from east-west sunlight.



- ② Incorporates airflow outside double sash windows and reduced air conditioner load.



- ③ The shape of the building makes it possible to gain maximum daylight from the north and south and from the atrium. The resulting natural lighting reduces the consumption of energy for electrical lighting.



- ④ Rooftop greenery reduces the air conditioner load by absorbing and releasing heat.



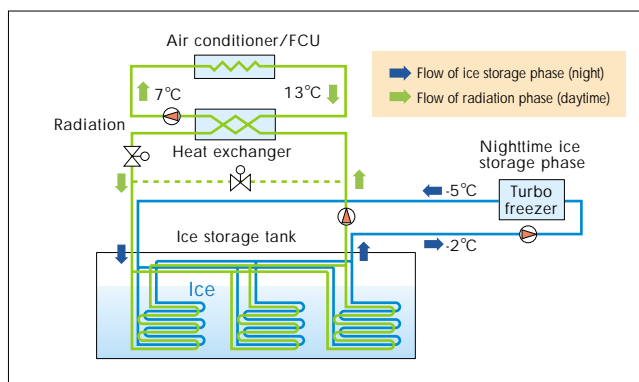


□ Building details

Address: 10-1, Higashikotari 1-chome,
Nagaokakyo-shi, Kyoto
Site area: 12,321 square meters
Building footprint: 3,000 square meters
Total floor space: 42,500 square meters
Structure: Steel frame with portions of steel-
reinforced concrete
Height: 83 meters
Number of floors: 18 floors above ground, 1 below ground,
2 penthouse floors
Application: General offices, reception rooms,
meeting rooms, PR corners, cafeteria,
library, parking, miscellaneous rooms
Total cost: ¥12.5 billion
Expected date of
completion: September 29, 2004

■ Facilities method

⑤ An ice storage system is employed to level the power load.



⑥ The source for the heating system is a combination turbo freezer and gas absorption freezer. This system offers the best mix for maximum efficiency.

⑦ An exterior cooling system is employed to reduce the energy consumption of the air conditioning system during the fall, winter, and spring.

⑧ An underfloor air conditioning system is employed; the energy consumption of the air conditioning system is reduced by means of sensor-controlled vents that open when a human presence is detected.

⑨ Rooftop rainwater and grey water are recovered and treated in order to reduce consumption of city-supplied water. This water is recycled as toilet water and as sprinkler water for the greenery located on the rooftop and elsewhere on the premises.

⑩ Energy consumption for lighting is reduced through control of daytime lighting by means of high-efficiency lighting fixtures (Hf fluorescent lamps) and sensor-controlled light switches.

2. Zero Emissions Construction

Before the start of construction work, we set out to achieve zero emissions during construction through 100% recycling of waste (zero landfilling). At the design stage, we formulated a system of on-site work rules, committed to the use of recyclable materials, and established recycling routes. From the start of construction to this writing, the zero emissions policy has been maintained without exception and is expected to remain so until completion of construction in September 2004. This initiative is considered very progressive for construction work in the Kansai area of Japan.



Eco-friendly New Products

During product development at the Murata Group, we give due consideration to resource conservation, energy conservation, and reduced use of controlled substances in products. This approach is intended to reduce the environmental impact of the product itself.

■ Murata's Environmentally Conscious Products

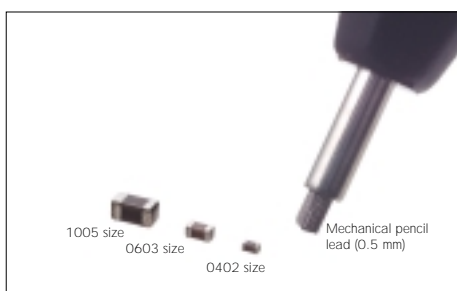
Elimination of Hazardous Substances



Translucent Ceramic (LUMICERA™)

Glass with outstanding optical properties normally contains lead. By employing proprietary technologies—specifically those related to firing, processing, materials design, and the like, all of which have been developed through our expertise in ceramics—Murata has succeeded in developing a translucent ceramic that is completely lead-free. This translucent ceramic has the same transmissivity as optical glass, offers a refractive index (2.08) that exceeds that of optical glass, and offers good optical properties with no double refraction. It is expected to be employed as a new material for elemental optical devices that require compact designs and thin layers.

Compact Designs That Conserve Resources



0402 size Chip Monolithic Ceramic Capacitors

As mobile devices and other electronic devices become more compact and multifunctional, demand is increasing for higher-density packaging. Having already introduced 0603 size (0.6 x 0.3 mm) capacitors, Murata has continued to work on improving high-accuracy processing technologies and thin-layer dielectrics in order to meet this demand. As a result, we have succeeded in developing a 0402 size (0.4 x 0.2 mm) chip monolithic ceramic capacitor.



The world's first Chip Monolithic Ceramic PTC Thermistor

Murata has developed POSISTOR®, the world's first chip monolithic ceramic PTC thermistor. We have incorporated this technology in a PTC thermistor for overcurrent protection at 0.2 ohms and 0.5 A non-operating current at an ambient temperature of 60°C. This device is a 2012 size (2.0 x 1.25 x 0.9 mm), the smallest in the industry. Mass production of this item began in September 2003.

(*POSISTOR® is a registered trademark of Murata.)

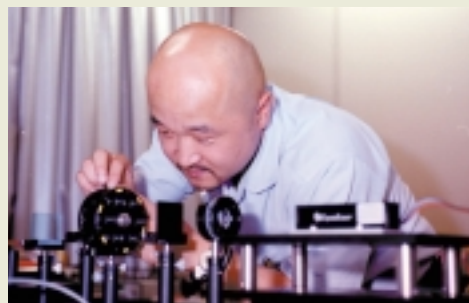


The ways in which electronic components contribute to eco-friendly product design are not always readily apparent to the user. In particular, materials development, which is a critical aspect, is a relatively hidden element of product development. Below we introduce some enthusiastic Murata engineers who are currently engaged in this field.

Dramatic energy savings achieved with the industry's first practical TAG single crystal transparent to visible light

Takenori Sekijima, Materials Research & Development Center

"We succeeded in developing the industry's first single crystal material that is transparent in the visible light zone yet which exhibits excellent magnetic and optical properties. We used an innovative manufacturing method employing an FZ hybrid laser that sharply lowers the energy required for manufacturing. This required some ingenuity, such as selecting materials that incorporate absolutely no environmentally hazardous substances and minimizing the use of rare elements."



Leading the industry by eliminating the minuscule amounts of lead present in nickel plating

Tomohiko Mori, Materials Research & Development Center

"We took on the challenge of reducing the lead in electroless nickel plating to the extremely low level of 0.1%. Of course, this achievement has no meaning if we consume additional energy elsewhere or create even more emissions. We succeeded in developing a lead-free electroless nickel plating method that surpasses conventional methods used by other companies in terms of cost, quality, and environmental impact. We are proud of our ability to revolutionize the industry by achieving both a cyan-free and lead-free result at the same time."



By improving on conventional work methods, we've eliminated highly environmentally toxic organic solvents while reducing the energy consumed in manufacturing by two-thirds.

Tsutomu Sasaki, Materials Group

"We thoroughly reviewed the conventional materials and processing methods used for plating, which is an indispensable step in the manufacture of electronic components. As a result, we have reduced the energy consumed during manufacturing by two-thirds while maintaining quality. At the same time, our innovative approach eliminated the use of environmentally hazardous organic solvents. We are continuing to discover techniques for minimizing environmental impacts, such as the waste that is generated during production processes, even though our efforts may remain unrecognized in the final product."



Environmental Management System

In 1995, Murata established its Environmental Charter, which spells out the basic environmental policy and action plan for the whole group. Murata is making a daily effort to put this commitment into practice.

Murata Environmental Charter

Corporate Environmental Policy

[Concept]

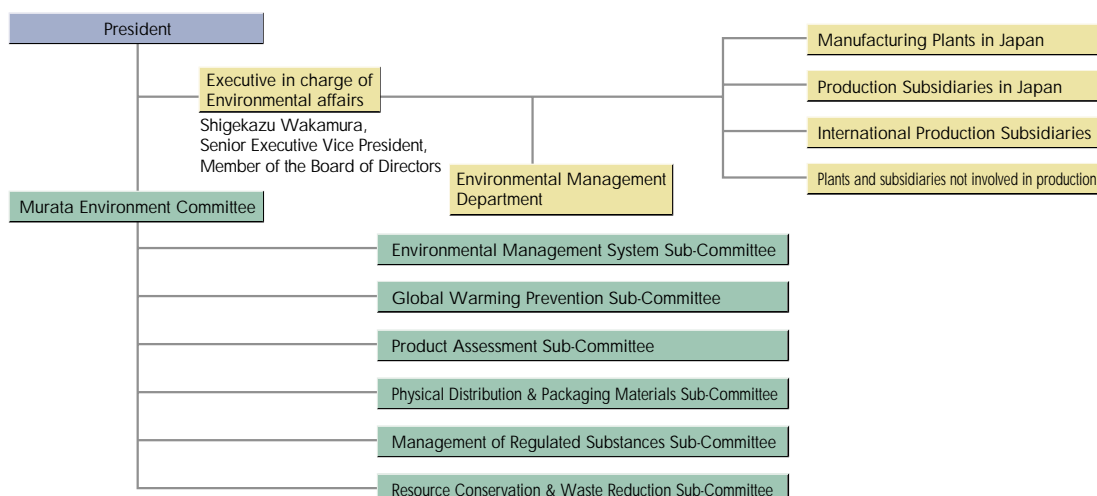
In the desire to contribute to a truly rich human society, we develop materials and products, devise and maintain production activities, and supply products worldwide. However, we cannot deny that our production activities as well as our products themselves are unintentionally affecting the global environment. We fully acknowledge this impact on the global environment and are taking action to reduce our environmental impacts as one of the important initiatives being put into practice as part of our Murata Philosophy and establishment vision. We will unite the efforts of our management organization, repeatedly work toward reducing our environmental impacts, and through management efficiency determine the points at which business and environmental interests converge.

[Action Guidelines]

1. Not restricting ourselves merely to the observance of environmental laws and regulations, we will establish a voluntary management standard and will strive to improve our management standards for environmental protection.
2. We will strive to reduce the environmental impacts of our products.
 - 2-1 In our R&D and design activities, we will consider approaches that will minimize the environmental impact of our products.
 - 2-2 In cases where a product contains an environmentally hazardous substances, we will seek ways to reduce the amount used or incorporate a more benign substitute.
 - 2-3 In the effort to minimize the amount of packaging materials used with our products, we will adopt a "reduce, reuse and recycle" policy.
 - 2-4 We will develop procurement activities through which we will select materials that have minimal direct or indirect environmental impacts.
3. We will strive to reduce the environmental impacts of our business operations.
 - 3-1 To help prevent global warming, we will implement energy conservation and reduce greenhouse gas emissions.
 - 3-2 Where production processes make use of environmentally hazardous substances, we will seek ways to reduce the amount used or incorporate a more benign substitute.
 - 3-3 We will aggressively seek to reduce, reuse and recycle wastes and will seek to minimize the amount of waste produced and conserve resources.
4. Through aggressive social initiatives, we will adopt environmental preservation activities in close contact with the local community and promote afforestation of corporate land according to a systematic long-term plan while working to improve the local environment.
5. While making all employees aware of the environmental policy, we will strive to raise employee awareness of higher environmental ethics. Moreover, we will develop timely and appropriate educational as well as public relations activities.
6. We will strive to become a corporation focused on environmental management and active public disclosure of our achievements in this area.
7. In order to implement each of the above action guidelines, we will establish and adopt our environmental action plan while continuously striving to improve our environmental performance.

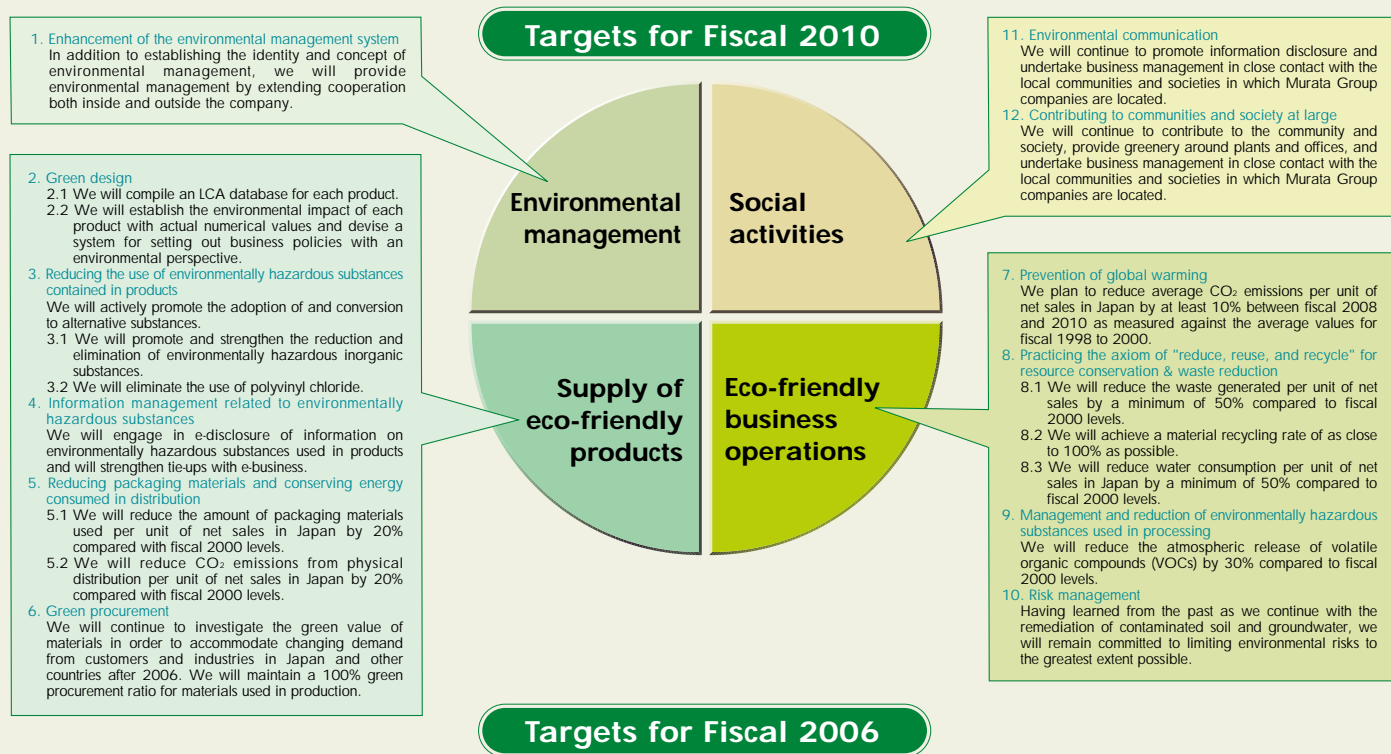
Promotion System

Murata, as the party responsible for harmonizing the environmental conservation activities of the entire group, we will appoint an individual responsible for environmental affairs. As well, with the Environmental Management Department as the functional staff, we are promoting comprehensive environmental preservation activities. Moreover, we will include the entire group and will examine and deliberate various themes. We have also established a Murata Environment Committee as a consultative body to the president. For the lower branch of the Environment Committee, we have established sub-committees according to theme, and are conducting specialized research and planning activities.



3rd Environmental Action Plan

We have established our 3rd Environmental Action Plan, which sets out fiscal 2006 milestones for the fiscal 2010 environmental management targets of the Murata Group. We are implementing new initiatives in fiscal 2004 to achieve these milestones.



Theme	No.	Item	Targets for Fiscal 2006
Environmental management	1	Enhancement of environmental management	① We intend to obtain certification of registration with ISO 14001 at multiple sites of Murata Manufacturing. ② We will establish internal management techniques for cost-effective environmental management and will provide our subsidiaries outside Japan with an environmental cost management system.
Providing environmentally conscious products	2	Environmental Conscious Designs	① We will extend product assessments throughout the company. ② We will devise an arrangement by which we will address environmental conservation when formulating research and development themes. ③ We will compile a database in order to increase the efficiency of LCA data calculations.
	3	Reducing environmentally hazardous substances contained in products	We will actively promote the adoption of alternative materials or the conversion to alternative technologies. ① We will complete the abolition of substances subject to the RoHS Directive. ② We will curtail the amount of halogenated flame-retardants in use by 20% compared to fiscal 2003 levels.
	4	Managing information related to environmentally hazardous substances	We will compile and adopt a chemical substance management database. Fiscal 2004: Compilation of a database for finished products Fiscal 2005: Compilation and sharing of a database on materials for the purchasing department
	5	Reducing the use of packaging materials & the consumption of energy used for physical distribution	① We will reduce the amount of packaging materials used per unit of net sales in Japan by 5% compared with fiscal 2000 levels. ② We will reduce CO ₂ emissions from physical distribution per unit of net sales in Japan by 5% compared with fiscal 2000 levels.
	6	Green procurement	① We will conduct surveys of the green value of materials in order to responsibly accommodate additions to or revisions of lists of controlled substances in response to changing demand from customers and industries. During fiscal 2004, we will achieve a 100% green procurement ratio for materials used in production at plants and subsidiaries in Japan and will continue efforts to achieve this target at subsidiaries outside Japan. ② The Murata Group will achieve a 100% green purchasing ratio for all products not used in production. Moreover, we will disclose our progress in achieving this green purchasing target.
Eco-friendly business operations	7	Preventing global warming	We will reduce CO ₂ emissions per unit of net sales in Japan by 10% compared with fiscal 2002 levels.
	8	Implementing a policy of resource conservation and reducing, reusing and recycling wastes	① We will reduce total waste emissions per unit of net sales in Japan by more than 15% compared with fiscal 2000 levels. ② We will achieve a material recycling rate in Japan of 90%. ③ We will reduce water usage per unit of net sales in Japan by more than 20% compared with fiscal 2000 levels. ④ We will achieve zero emissions in construction of new buildings in Japan. ⑤ We will achieve zero emissions in construction of new buildings outside Japan.
	9	Management and reduction of environmentally hazardous substances used in processing	① We will reduce atmospheric emissions of VOCs, which contribute to the generation of photochemical oxidants, and suspended particulates by more than 3% compared with fiscal 2000 levels. ② We will reduce atmospheric emissions in Japan of PFCs, which contribute to greenhouse gasses, by more than 80% compared with the fiscal 2002 levels.
	10	Risk management	We will undertake environmental remediation of contaminated soil and groundwater as a countermeasure to address the current method, which requires much time to achieve complete remediation at plants and subsidiaries where soil and groundwater contamination have been confirmed. We will reduce the remediation period by almost 50%.
Social activities	11	Environmental communication	① We will continue to issue an annual environmental report and will release additional information more than two times a year via other media. ② We will issue environmental reports on each site.
	12	Community and social activities	① Each plant and subsidiary will undertake activities to contribute to the community and society more than once per year. ② We will expand rooftop greenery areas at plants and offices by more than 10%.

ISO14001, Environmental Training and Development

Murata, a global enterprise that has developed its business internationally, has adopted an environmental management system as an important aspect of its environmental stewardship. By adhering to the "Plan-Do-Check-Action" (PDCA) cycle, we are continually reducing our environmental impacts.

ISO14001

All of Murata's production sites in Japan and in other countries have acquired certification of registration with ISO14001, the international standard for environmental management systems.

We began preparations to seek certification of ISO14001 registration during fiscal 2003 for two new production sites in China that started full operation in the second half of fiscal 2002. It is expected that they will receive certification of registration by September 2004.

Functional initiatives of the Head Office, R&D Division, and Sales Division contribute significantly to reducing the overall environmental impact of the Murata Group; therefore, we intend to strengthen our environment-related corporate governance by integrating the environmental management systems that are in place in the Murata Group's various plants and offices.

Schedule of certification of ISO14001 registration at non-production sites

Fiscal 2004: Yokohama Technical Center

Fiscal 2005: Head Office/Nagaoka Plant, Tokyo Branch

Fiscal 2006: Linking of the Environmental Management Systems of the Head Office/Nagaoka Plant, Tokyo Branch, Yokohama Technical Center, Yasu Plant, and Yokaichi Plant, and conversion to multi-site certification of ISO14001 registration.

ISO14001-registered Production Sites in Japan and Other Countries (In Order of Registration)

Production Site	Certification Body	Date of Registration
Taiwan Murata Electronics Co., Ltd.	BSMI	September 30, 1997
Murata Electronics Singapore (Pte.) Ltd.	PSB	December 5, 1997
Kanazawa Murata Manufacturing Co., Ltd.	JACO	December 22, 1997
Murata Electronics (Thailand) Ltd.	UL	October 5, 1998
Murata Manufacturing Co., Ltd., Yokaichi Plant	JACO	November 25, 1998
Fukui Murata Manufacturing Co., Ltd.	JACO	December 25, 1998
Izumo Murata Manufacturing Co., Ltd.	JACO	December 25, 1998
Toyama Murata Manufacturing Co., Ltd.	JACO	December 25, 1998
Komatsu Murata Manufacturing Co., Ltd.	JACO	February 23, 1999
Murata Manufacturing (UK) Limited	BSI	March 9, 1999
Murata Electronics (Malaysia) Sdn. Bhd.	SIRIM	August 6, 1999
Beijing Murata Electronics Co., Ltd.	CCEMS	September 23, 1999
Okayama Murata Manufacturing Co., Ltd.	JACO	October 27, 1999
Tome Murata Electronics Co., Ltd.	BVQI	November 20, 1999
Kanazu Murata Manufacturing Co., Ltd.	BVQI	November 27, 1999
Azumi Murata Manufacturing Co., Ltd.	JACO	December 1, 1999
Himi Murata Manufacturing Co., Ltd.	JACO	December 1, 1999
Hakui Murata Manufacturing Co., Ltd.	JACO	December 2, 1999
Iwami Murata Electronics Co., Ltd.	JACO	December 2, 1999
Sabae Murata Manufacturing Co., Ltd.	BVQI	December 5, 1999
Murata Manufacturing Co., Ltd., Yasu Plant	JACO	December 27, 1999
Wakura Murata Manufacturing Co., Ltd.	JACO	December 27, 1999
Anamizu Electronics Industries, Ltd.	JACO	December 28, 1999
Wuxi Murata Electronics Co., Ltd.	CCEMS	January 21, 2000
Murata Electronics Co., Ltd. (Suzhou)	CCEMS	June 7, 2004
Murata Electronics Plant, Nanling, Buji, Longgang Dist., Shenzhen	CCEMS	December 2004 (expected)

Environmental Training

Each Murata employee supports the promotion of business activities that consider the environment, as the contribution of everyone is required in this effort. We believe that all employees should understand and practice the environmental vision and objectives set forth by corporate management and the initiatives of the plants and divisions, as these represent the driving force for environmental preservation.

Through this approach, we are providing effective environmental training.

Environmental Training

Environmental Training Item	Content
New recruit training	Lecture on environmental preservation held during annual initiation assembly for new recruits
Practical training in environmental management system at plants	Periodic practical environmental training at the plant sites as part of the plant environmental management system
In-company courses for training internal environmental auditors	To develop qualified personnel as internal environmental auditors in our plants, we periodically provide courses in-house. As of March 2004, we had trained 577 individuals with qualified official examiners as lecturers.



In-house training of internal environmental auditors
(Yasu Plant, Murata Manufacturing Co., Ltd., January 2004)

Environmental Audits

The Murata Group employs four auditing systems to conduct environmental audits at each of its production plants and production subsidiaries. The purpose of these audits is to discover and correct any noncompliance that may arise in various operations. As well, we use the basic information obtained through these audits when conducting reviews of our environmental management system.

Environmental Audits

At each of its production plants and production subsidiaries, Murata undertakes four audits periodically and checks on activities.

1. Internal self-audit of the company's environmental management system
2. Functional staff audit by the Environmental Management Department of Murata Manufacturing Co., Ltd.
3. Audit by auditors
4. Periodic ISO14001 audit by a certification body

We undertake audits Nos. 2 and 3 above, except at production plants and production subsidiaries. This audit system, together with the discovery and correction of noncompliance in all kinds of applications, makes use of the data obtained through the audits as basic information for use whenever a review of the entire environmental management system is conducted.

Continual Improvement



Functional Staff Audit by the Environmental Management Department of Murata Manufacturing Co., Ltd.

The internal company audit and the audit by an external certification body are implemented around the appropriate management plan and conformance to laws, as well as improvement targets measured against actual results. As well, Murata's Environmental Management Department, as the main functional staff of the Murata Group, periodically audits all plants and subsidiaries. Using the results of the internal audit and external inspection of the plant, we implement the audit by functional staff by focusing on the state of progress according to the company-wide environmental action plan as well as the results of the inspection for conformance to important laws and regulations. This approach aims to compensate for the limited time available for the inspection by the external certification body. In addition, it compensates for the specialized portion that cannot be covered by the plant internal inspection. The audits regarding nonproduction offices are focused on compliance with the law.



Functional staff audit underway at Hakui Murata Manufacturing Co., Ltd. in December 2003

Periodic ISO14001 Audit by Certification Bodies

Certification bodies conduct periodic on-site audit of the environmental management systems at all Murata production sites and production subsidiaries to ensure continuous compliance with the ISO14001 international standards.

Plant Internal Self-audit

At each production plant and production subsidiary, we have established a management standard for day-to-day business and are continuing with the discovery and correction of noncompliance and monitoring of operations. In addition, we undertake internal audits at fixed intervals every year, and we undertake activities to correct any issues detected as a result. In this audit, we take steps to determine whether the various prescribed rules are being followed correctly. This plant internal self-audit has been undertaken at each production plant and production subsidiary since the formation of the plant environmental management system from 1997 to 1999. We intend to upgrade the skills of the auditors by re-training and by building on the experience gained during internal environmental audits.



Internal environmental audit underway at Suzhou Murata Electronics in May 2004

Environmental Cost Management

Murata has long instituted and managed a budget for environmental preservation, pollution control, energy conservation, and prevention of soil and groundwater contamination. Moreover, we have reserved a portion of the total cost of remediation for liabilities related to ongoing efforts to remove soil and groundwater contamination. At the same time, we have carefully managed costs related to the environment. More recently, we introduced an environmental cost management system with the goal of increasing the efficiency of our environmental practices.

Introduction of the Environmental Cost Management System

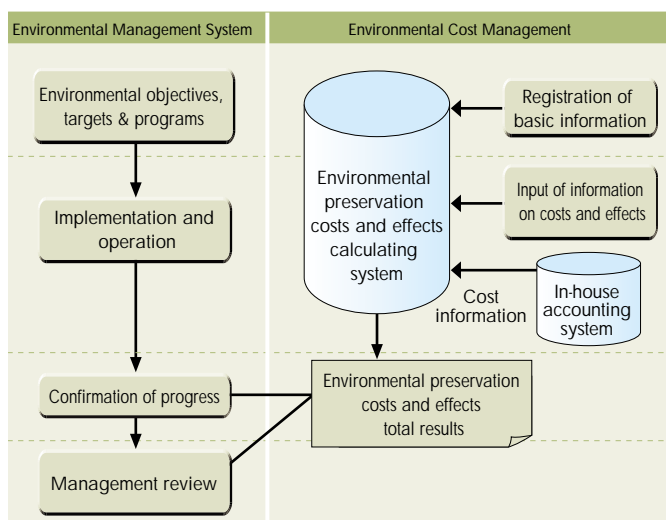
In the interests of ensuring more efficient environmental management, Murata identifies and analyzes the effect of its environmental preservation investments and costs. To underpin this approach, Murata has established a unique environmental cost management system based on the Minister of the Environment's Environmental Accounting Guidelines, 2002 Edition. This system was implemented in the company's plants, offices, and subsidiaries in Japan in October 2003.

This system has enabled Murata to pinpoint the costs and effects of individual programs of its ISO14001-compliant environmental management system. This information enables us to confirm our progress, modify our plans or review our management approach. By supplementing our environmental management system with a cost management capability, we can implement efficient measures, promote horizontal business development, achieve our environmental goals, establish targets, and review the effectiveness of our progress.

To determine the costs and effects, we calculate individual environmental preservation objectives. Toward this end, we extract environment-related investments and costs from items that have other objectives. To determine the effects, we perform an individual accounting of only the measurable economic and physical effects. For the effects of investments, we calculate the

projected economic and physical effects over a five-year period in light of the five-year amortization period used for environmental preservation facilities, considering the need for technical renewal after such a period.

Outline of the Environmental Cost Management System



Performance for Second Half of 2003

Investment versus effects

Costs and Results of Environmental Preservation (Investment versus Effects)

(Millions of yen)

Classification		Investment	Economic effects	Physical effects		Reference page
Costs for plant and office areas	Pollution control	12	—			27, 28, 39–51
	Global environmental conservation	144	234	Reduction in CO ₂ emissions	14,130 t-CO ₂	24
	Recycling	5	258	Resource conservation	18 t	7–10, 25
				Water conservation	18,900 m ³	
	Subtotal	161	492			—
Cost of upstream/downstream environmental conservation		69	—			19–23
Cost of management		—	—			—
Cost of social activities		—	—			—
R&D cost		18	—			11–12, 19
Cost of environmental damage		—	—			—
Total		249	492			

① The scope of the accounting includes the plants and offices of Murata Manufacturing and 16 subsidiaries in Japan.

② The accounting term is the six-month period from October 1, 2003, to March 31, 2004.

③ The effects include the materials and costs that are reduced over the five years as a result of the application of the investment.

④ Proportional accounting is carried out for compounded costs in which the cost of environmental conservation is embedded in other costs.

⑤ Presumptive effects, such as the avoidance of potential risk, are not calculated.

⑥ For the fuel and electric power conversion coefficients for CO₂ emissions, we used the figures contained in the Report on Survey of Carbon Dioxide Emissions (1992) of the Environment Agency.

⑦ The amount of the reduction is calculated as the effective difference between application and non-application of the investment.

〈Investment〉

The total investment for environmental conservation by the Murata Group (in Japan) during the second half of 2003 was approximately ¥250 million.

The largest investment was toward global environmental conservation resulting from aggressive investment in inverters—which included conversion to energy-efficient lighting, pumps, compressors and air conditioners—as well as unit control and integration for improved energy efficiency.

〈Effects〉

The estimated economic effect obtained through the investment is about ¥490 million for the second half of fiscal 2003.

The estimated reduction in CO₂ emissions is about 150,000 metric tons resulting from our aggressive promotion of investment in energy efficiency. The economic benefit of this energy conservation and other efforts is estimated at about ¥230 million.

As for resource recycling, the estimated reduction in raw material consumption is 18 metric tons resulting from the introduction of a raw material recycling facility, which will accrue an economic effect estimated at ¥260 million.

■ Costs versus effects

Costs and Results of Environmental Preservation (Costs versus Effects)

(Millions of yen)

Classification		Amount Invested	Economic effects	Physical effects		Reference page
Costs for plant and office areas	Pollution control	259	—	Reduction in chemical substances emitted	209 t	27, 28, 39–51
	Global environmental conservation	73	131	Reduction in CO ₂ emissions	21,783 t-CO ₂	24
	Recycling	703	1,175	Resource conservation	827 t	7–10, 25
				Water conservation	31,240 m ³	
				Waste reduction	4,137 t	
				Increase in recycling	6,184 t	
Subtotal		1,035	1,306			—
Cost of upstream/downstream environmental conservation		142	6	Reduction in chemical substances used	2 t	19–23
Cost of management		219	—			13–18, 26
Cost of social activities		80	—			37
R&D cost		284	—			11–12, 19
Cost of environmental damage		0	—			29–30
Total		1,759	1,312			

① The scope of the accounting includes the plants and offices of Murata Manufacturing and 16 subsidiaries in Japan.

② The accounting term is the six-month period from October 1, 2003, to March 31, 2004.

③ Costs include labor but not depreciation.

④ Proportional accounting is carried out for compounded costs in which the cost of environmental conservation is embedded in other costs.

⑤ Presumptive effects, such as the avoidance of potential risk, are not calculated.

⑥ For the fuel and electric power conversion coefficients for CO₂ emissions, we used the figures contained in the Report on Survey of Carbon Dioxide Emissions (1992) of the Environment Agency.

⑦ The physical effects are calculated as the effective difference between implementation and non-implementation of the countermeasures.

〈Costs〉

The total cost of environmental conservation for the Murata Group (Japan) during the second half of fiscal 2003 was ¥1.8 billion.

The largest portion was spent on recycling resources due to aggressive promotion of waste reduction and recycling in the effort to achieve zero emissions.

R&D costs resulted from efforts to achieve reductions in product size, control waste generation, reduce hazardous substances, eliminate use of lead, and reduce the power consumption of products.

Costs related to management activities resulted mainly from efforts to maintain our environmental management system, provide educational training, and control chemical substances. Most expenses are related to labor.

As part of its corporate accounting, the Murata Group performed a trial calculation of the total cost of a full-scale cleanup of environmental contamination and appropriated this amount as a liability. In the second half of fiscal 2003, the cost of environmental damage was zero, so it was not necessary to appropriate an additional amount for cleanup of environmental contamination.

〈Effects〉

For the second half of fiscal 2003, the economic effect totaled ¥1.3 billion.

Waste emissions were reduced by 4,137 metric tons and the amount recycled increased to 6,184 metric tons as a result of aggressive promotion of the waste reduction and recycling. The zero emissions target was achieved in March 2004, and the economic effect of this effort amounted to ¥1.18 billion.

See pages 7 and 8

CO₂ emissions were reduced by 21,783 metric tons as a result of measures to increase energy efficiency. The economic effect of this effort totaled ¥130 million.

In addition, our efforts to control pollution by reducing the use of hazardous chemical substances such as toluene during production processes resulted in a 209 metric ton reduction in consumption.

Management of pollution control enabled entire plants and offices to meet regulated values for drainage and gas emissions.

Developing Environmentally Conscious Products

Murata has been actively implementing measures such as reducing the use of environmentally hazardous substances contained in its products, designing more compact products, saving power, improving packaging materials, and introducing green procurement measures in order to reduce the environmental impact of its products.

Developing Environmentally Conscious Products

At Murata, we have been taking steps to reduce the environmental impact of our products. In April 1996, Murata established a program intended to reduce or eliminate environmentally hazardous substances in products. In November 1997, this program was expanded to include chemical substances used in production processes. See pages 21 and 27

We have also adopted the life cycle assessment (LCA) method to clarify the issues that should be addressed at every stage of product design in order to reduce the overall environmental impact.

Moreover, we completed preparations to integrate a product assessment system in fiscal 2001, determined concrete action details in 2002 and implemented them in 2003.

Implementation of LCA

The LCA is a method of quantitatively assessing the various environmental impacts imparted by a product throughout its life cycle, which extends from resource extraction to manufacturing, sales, use and disposal.

Murata established its first LCA Sub-Committee in 1995. Using the results of an analysis of LCA data on our typical products, we prepared clear LCA guidelines and introduced them into our R&D process in 1999.

The items considered in an LCA assessment include carbon dioxide emissions, lead content, amount of principal raw materials consumed, the product and its production equipment.

The LCA data analysis revealed not only the energy consumed directly in manufacturing, but also the energy consumed indirectly by air conditioning and the like. As a result, we recognized anew the importance of energy conservation through initiatives such as cogeneration.

Sample LCA Data Sheet (Inventory Data)

Classification	Item	Unit	Process		Measurement	Total
			Cutting	Drilling		
Input	Energy consumption					
	Electricity	kWh	0.13	12.32	5.08	76.09
	Fuel Gas	kJ	0	0	0	0
	Consumption of major raw materials					
	Material A	g	99.26	0	0	99.26
	Material B	g	0	0	0	70.43
	Consumption of raw materials containing lead					
Output	Solder	g	0	0	0	58.60
	Others	g	0	0	0	0
	Exhaust emissions					
	CO ₂ (direct)	g	0	0	0	0
	CO ₂ (indirect)	g	54	5150	2123	31810

Introduction of a Product Assessment System

The product assessment system is a method of assessing, at the design stage, a product's impact on the environment. As part of this system, Murata has been taking steps to reduce or eliminate the use of environmentally hazardous substances in its products and manufacturing processes since April 1996.

One particularly important theme is the "lead-free" initiative, which has been developed as a standalone project.

In fiscal 2003, our R&D division introduced the product assessment as an initial step. The features of the product assessment are as follows.

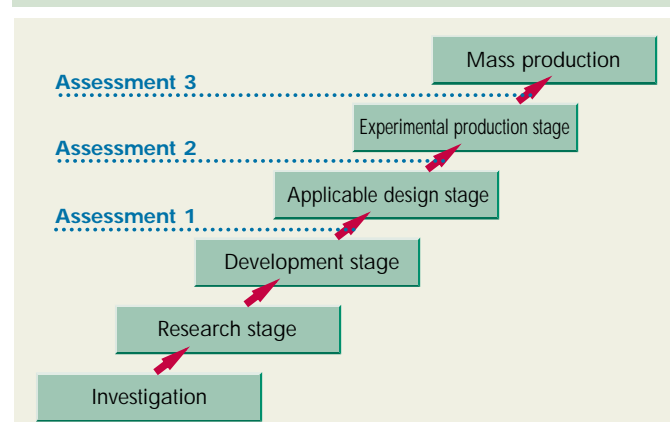
- Evaluation items are established for product assessments based on the "3R" principle (reduce, reuse and recycle). New products and design alterations to existing products are measured against these evaluation items.
- Product assessments are carried out not only on products to be delivered to customers, but also on the materials and processes developed in-company during the design stage. This system considers the environment in every stage of development.
- The dedicated division evaluates all product assessments at the same time.
- The life cycle assessment (LCA) method has been partially introduced in order to provide an approximation of the energy consumed during manufacturing.
- By establishing criteria for all evaluation items, this system can provide feedback that prevents the criteria from being eroded.

Through this approach to product assessment, we are promoting eco-friendly product development.

Product Assessment Items

Classification	Item
Product	Reduction of environmentally hazardous substances → page 21
	Reduction of main raw materials
	Compact
	Power conservation
	Green procurement → page 20
Production process	Reduction of environmentally hazardous substances → page 27
	Reduction of energy consumption → page 24
	CO ₂ reduction → page 24
	Waste reduction → page 25
	Green procurement → page 20
Packaging	Reduction of regulated substances → page 21
	Promotion of reduce, reuse and recycle → page 23

Product Assessment Process



Green Procurement

The Murata Group has established a green procurement system that classifies procured parts and materials into those used in production and those used in non-production applications. Through this system, we can determine in advance the environmental soundness ("greenness") of these parts and materials.

Green Procurement and Green Purchasing Initiatives

Green Procurement

We have evaluated the "greenness" of our suppliers and have formulated a system that is reflected in our business dealings.

Evaluating the "Greenness" of New Suppliers

In considering the purchase of materials to be included in our products, used in production process, used for product packaging, and so on, we conduct an "evaluation of supplier greenness" before dealing with a new supplier. We carry out surveys of their acquisition of third-party certifications such as ISO14001 and the systems they have devised for managing environmentally hazardous chemical substances. We evaluate the results in addition to examining quality, cost, delivery time, and other factors. We employ these criteria when considering whether to do business with a prospective supplier.

Evaluating the "Greenness" of Current Suppliers

We evaluate the greenness of current suppliers at fixed intervals. As a result, we can provide instruction regarding management systems for environmentally hazardous chemical substances and can request that they acquire third-party certifications such as ISO14001 registration.

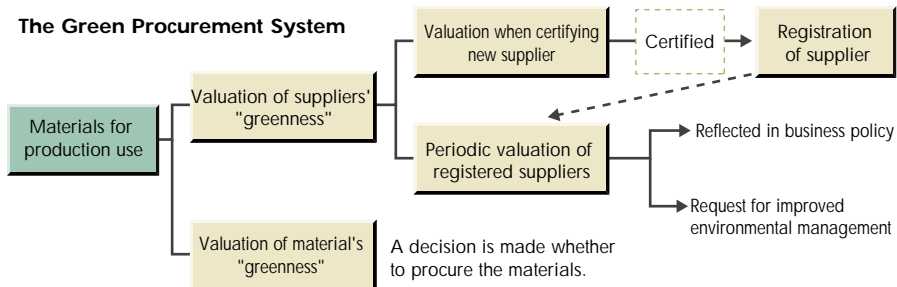
Evaluating the "Greenness" of Materials

We evaluate the greenness of procured materials and have devised a system for determining whether to adopt a particular material.

As for materials (chemical substances, products and packaging) used in products of the Murata Group, we apply a "greenness" inspection to determine whether chemical substances prohibited by laws and regulations are included.

Our expert staff conduct particularly stringent examinations of chemical substances. In September 2003, we introduced a system by which we register in our database only those chemical substances that have passed our inspection. Thus, we cannot procure any chemical substance that is not registered in this database.

In 2004, we will introduce a similar system for products and packaging materials.



Sample Details of a Greenness Evaluation

Details of Evaluation

Supplier's

- Environmental management system
- Circumstances of environmental implementation
- Environmental impact

Material purchasing

- Status of chemical substances

Green Purchasing

This is a system by which we preferentially purchase goods that comply with the Law on Promoting Green Purchasing as well as goods bearing the Eco Mark certification. This applies to goods not directly related to the production of Murata products, such as office supplies and equipment.

Initiatives of Okayama Murata Manufacturing

Okayama Prefecture established the "Okayama Eco Plant" certification system as a way of promoting its eco-friendly corporate management ordinance under the Basic Law for Establishing a Recycling-based Society. Okayama Murata Manufacturing Co., Ltd. was recently granted this certification, primarily for its public disclosure of the content of its green procurement initiatives, such as its purchase of eco-friendly recycled goods and its certification of ISO14001 registration.



Environmentally Hazardous Substances in Products

Murata is actively incorporating the technologies and innovations that enable environmentally hazardous substances contained in products to be reduced or substituted.

Adoption of Voluntary Standards Regarding the Environmentally Hazardous Substances in Products

The Murata Group led the industry by establishing a “product regulation program” intended to reduce the use of environmentally hazardous substances in all its products. Moreover, Murata has instituted its own regulations based on this program.

We have established a four-part ranking within our voluntary regulations for severely restricted substances: substances whose use is prohibited in manufacturing are ranked as “prohibited,” while those not subject to this restriction are ranked as “prohibited in products,” “reduce” or “prepare to reduce.” We are making an effort to reduce and eventually eliminate the use of these substances. Through this product regulation program, we control chemical substances as follows: substances of a particular chemical group are classified by the degree of environmental hazard they present; they are also classified by product application and according to the specific part containing the substance. The product regulation program also covers substances contained in packaging materials.

We strengthened the voluntary aspects of the product regulation program in February 2004 in order to keep up with improvements to laws and regulations governing environmentally hazardous chemical substances contained in products. As a result of the revision of our product regulation program, we now regulate a total of 34 groups of substances, having included azo compounds, polychlorinated naphthalene, and chlorinated paraffin as prohibited substances, and having added stringent content regulations for lead, polyvinyl chloride, and bromine-based flame retardants. In addition, aside from groups of

regulated substances, we are managing the content of substances that are likely to be regulated in future or that can be recycled and reused. We have taken this approach by instituting a policy for chemical substances whose content is to be determined at time of procurement.

The 34 Substance Groups of the Voluntary Regulation Program for Environmentally Hazardous Substances in Products

Asbestos	Lead and its compounds
Azo compounds	Nickel and its compounds
Antimony and its compounds	Halogen compounds
Ethylene glycolethers and its acetates	Arsenic and its compounds
Chlorinated paraffin	Beryllium and its compounds
Cadmium and its compounds	Benzene
Xylene	Pentachlorophenol (PCP)
Metal carbonyl	Polychlorinated terphenyls (PCTs)
Chromium and its compounds	Polychlorinated naphthalene
Cobalt and its compounds	Polyvinyl chloride (PVC) and its blends
Cyanides and Nitriles	Polychlorinated biphenyls (PCBs)
Mercury and its compounds	Formaldehyde
Selenium and its compounds	Organotin compounds
Dioxins and Dibenzofuranes	Organophosphorus compounds
Thallium and its compounds	Cobalt chloride in packaging materials
Tellurium and its compounds	Foam polystyrene for packaging materials
Toluene	Heavy metals in packaging materials (Cd, Cr ⁶⁺ , Hg, Pb)

Reduction and Elimination of the Use of Environmentally Hazardous Substance in Products

We are making progress in reducing the use of environmentally hazardous substances according to the product regulation program for existing products. In addition, we have established a system that can confirm compliance with the product regulation program during the design stage of products under development. As well, we are working to provide customers with products consisting of less environmentally hazardous substances.

Specifically, we are aggressively addressing the need for this reduction and elimination by organizing a project targeting the reduction of lead, hexavalent chromium, mercury, cadmium, and specified brominated flame retardants subject to strengthened EU regulations. Below are examples of substances listed in the Murata Group product regulation program whose use has been either reduced or eliminated. We have never used mercury or polybrominated biphenyl (PBB).

Cadmium and Its Compounds

The volume of cadmium in use company-wide as of fiscal 2001 was 99.8% less than the 1996 level. The amount still in use is limited to applications with exceptional specifications.

We are continuing to search for substitutes for cadmium and its compounds.

Hexavalent Chromium

As of March 2003, five models of our products contained hexavalent chromium used as rustproofing surface treatment on screws and nuts. We are continuing to seek out materials and specifications that do not require the use of hexavalent chromium.

Polybrominated Diphenyl Ethers (PBDEs)

These chemicals are used as flame retardant in resins. In 1989, we led the industry by taking initial steps to reduce our use of these substances. Currently, we do not use any PBDEs.

Heavy Metals in Packaging Materials

In 1992, the State of New York in the U.S.A. enacted a law covering the total content of heavy metals (lead, cadmium, mercury and hexavalent chromium) in packaging materials. This approach was eventually adopted by other states in the U.S.A., as well. Murata has been complying with these individual laws. Since January 1997 all our packaging materials have incorporated materials that satisfy the regulated values, with less than 100 ppm of heavy metals in total content. This standard is now satisfied even in regions where no such law applies.

Accommodating the RoHS* Directive

In order to respond rapidly to the EU's environmental regulations, Murata is promoting a systematic response that focuses on a voluntary regulation of chemical substances.

The Project to Accommodate the RoHS Directive

The EU has issued the RoHS Directive limiting the use of lead, mercury, hexavalent chromium, cadmium, and brominated flame retardants (PBB and PBDE) in electrical and electronic equipment sold in the EU. Each country in the EU region has enacted laws that comply with this directive. Moreover, with the adoption of the ELV** Directive and with countries outside the EU zone considering the adoption of regulations similar to the RoHS Directive, it is clear that the trend is toward increasingly stringent regulation of environmentally hazardous chemical substances contained in electronic parts.

At Murata, we are incorporating activities aimed at reducing the use of environmentally hazardous substances in line with our "Product Regulation Program for Environmentally Hazardous Substances." In January 2004, our product group completed its efforts to comply with the RoHS Directive for regulated substances. This group accounts for 66% of all Murata products.

We have already eliminated the use of certain brominated flame retardants and mercury; as for hexavalent chromium and cadmium, there remain specifications for particular applications that require their use. Regarding lead, we have been promoting the development of technology that contributes to the use of lead-free solder through our "LF (Lead-Free) Solder Project." This initiative was undertaken in 1995 by our Technical Development Department and Product Planning and Design Department, but since August 2003 we have been organizing an RoHS response project that spreads the target of reduction and abolition to "purposes and substances regulated by RoHS"; moreover, we are developing further reduction and abolition activities.

*The restriction of the certain hazardous substances in electrical and electronic equipment (2002/95/EC)

**End-of-life vehicles directive (2000/53/EC)

The Reduction and Elimination of Lead from Products

A champion of numerous measures to reduce the use of lead from early on, Murata has made progress in its lead reduction efforts, having eliminated lead from terminal plating and from the surface of soldered terminals. Additionally, we have begun supplying lead-free and reduced-lead products to the market.

Within the electronic component industry, demand has been increasing for the lead-free approach, particularly as a result of initiatives by electronic equipment manufacturers to adopt lead-free solder assembly, green procurement, and product assessment activities. By matching the lead content of our products to the content regulations according to the RoHS Directive, Murata has been responding to this trend in a timely manner.

1. Elimination of lead from solder used in products, from stabilizers for polyvinyl chloride, and from surface finishing/plating

As part of Murata's voluntary prohibition, we intend to use lead for the purposes regulated by the RoHS Directive and will discontinue its use by July 2006, when the RoHS Directive on lead comes into effect.

Regarding the use of lead in surface finishing and plating of terminals, we have been supplying products that meet the substitute specification since April 2001. Murata's Lead Elimination Activities catalogue provides information on the lead-free composition of our main products, sample applications, mass production, and model number changes. This information is also available on Murata's website (www.murata.com/catalog/index.html).

In addition, we provide electronics makers with evaluation data on the packaging of products that are required to incorporate lead-free solder.

2. Reducing the lead content in glass, high-melting-point solder, ceramics, and free-cutting alloys

These parts are exempt from the lead prohibition targets under the RoHS Directive because substitution presents extreme technical difficulties. However, at the same time we are pursuing the development of substitutes, we are advancing the reduction and elimination of the total amount in use while seeking the cooperation of suppliers.

Notably, eliminating lead from ceramics presents difficulties in the early stages. While incorporating the developments of substitution technology on the one hand, we will reduce the amount of lead in use by miniaturizing our products. Simultaneously, we are continuing to reduce the environmental burden.

Furthermore, we have sought to patent the technologies developed through our lead-free initiatives and have actively put them to practical use. Some have been licensed to third parties.

Examples of Lead Free Products



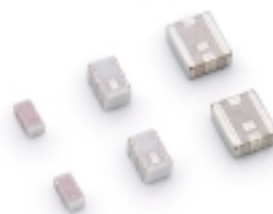
Chip Monolithic Ceramic Capacitors
(Safety Standard Recognized Ceramic Capacitors)



Trimmer Potentiometers
(PVZ2A Series etc.)



Chip Coils
(LQ18H Series etc.)



Multilayer Devices
(LDC/LDB/LFB2H Series, etc.)

Reducing Packaging Materials and the Consumption of Energy in Physical Distribution

Murata is seeking to reduce the environmental burden of distribution and packaging materials in order to reduce the environmental burden at the time of product shipment.

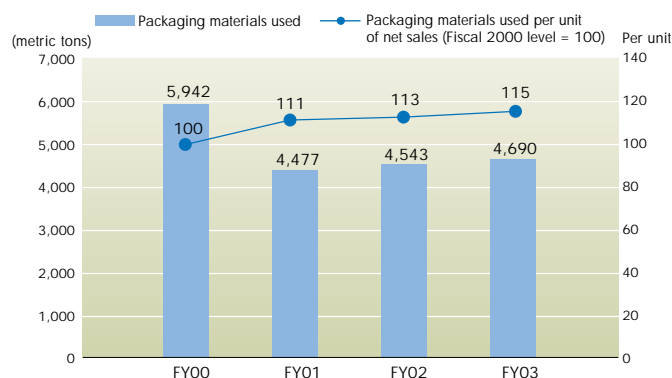
Reducing Packaging Materials

To date, we have switched our chip component packaging method to bulk cases; reduced the number of cardboard boxes used by switching to larger cardboard boxes for tape-packaged products; reused taping reels; and reused the aggregate cases used for delivery to customers. Going forward, we will review the targets listed below and continue to strengthen our initiatives.

- Promoting the bulk packaging of chip components
The packaging used for chip components comprises mainly tape and reels. However, by switching to bulk packaging, which avoids the use of either tape or reels, we have simplified the packaging.
- Promoting the reuse of packaging materials
We will be extending the reuse of packaging materials beyond those currently being reused (taping reels and bulk cases).

We plan to reduce the amount of packaging materials used per unit of net sales by 5% by fiscal 2006 and by 20% by fiscal 2010 compared to fiscal 2000 levels.

Amount of Packaging Materials Used (in Japan)



Details of the bulk case
Bulk case dimensions: 110 x 36 x 12 mm (L x W x H)

Reducing Energy Consumed during Distribution

In order to reduce the CO₂ emitted during the transportation and delivery of Murata products, we have been incorporating various measures intended to reduce the fuel consumption of trucks.

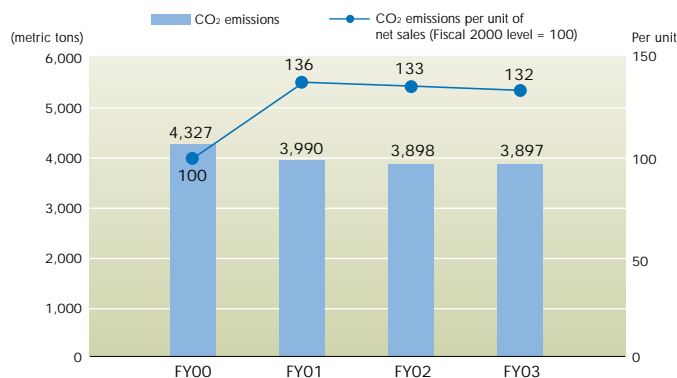
- Implementation of energy-efficient driving methods such as limited idling and low-rpm upshifting
- Review of transportation routes to minimize the transportation distance
- Implementation of modal shift from trucks to railways etc.

In order to further reduce CO₂ emissions, we intend to introduce the following measures and further strengthen our initiatives.

- Improvement of loading efficiency along with a review of transportation routes and vehicle type
- Continuation and extension of energy-efficient driving methods
- Expansion of the modal shift from trucks to railways
- Expanded introduction of natural gas vehicles

Our goal is to reduce CO₂ emissions per unit of net sales by 5% by fiscal 2006 and by 20% by fiscal 2010 compared to fiscal 2000 levels.

CO₂ Emissions from Distribution (in Japan)



Prevention of Global Warming

The greenhouse gases emitted as a result of Murata's business activities are primarily CO₂ generated from the energy consumed during production. To help reduce global warming, we are aggressively implementing initiatives to reduce the amount of energy we consume.

CO₂ Emissions

With the goal of reducing CO₂ emissions per unit of net sales by 10% in fiscal 2003 compared to fiscal 1990 levels, Murata has been implementing initiatives intended to conserve energy. As a result of the initiatives instituted in fiscal 2003, we reduced CO₂ emissions by 24,609 metric tons for the fiscal year

(estimated); however, this still represents a 43% deterioration in CO₂ emissions compared to fiscal 1990 levels, which we attribute to fluctuations such as lower product prices and increased production quantities. As a result, we were unable to achieve our goal.

Initiatives for 2003

Implementation of Energy Audits

In order to promote energy conservation, we set out to improve our energy efficiency by assigning a specialist group within the company to undertake an energy audit.

Introduction of Flow Control Mechanism in the Cool Water Pump of the Air Conditioning System

Okayama Murata Manufacturing has introduced a flow control* mechanism for the hot/cold water generator used in its air conditioning system. This directly controls the flow according to the load on the primary cold water pump. This innovation has reduced CO₂ emissions by 205 metric tons per year.

Komatsu Murata Manufacturing has introduced a similar flow control mechanism for the warm water pump of its air conditioning system. As a result, CO₂ emissions have been reduced by 41 metric tons per year.

*Controls the flow by sensing the direct flow of the previous inverter pump control. Provides a significant energy savings.

Improving Operational Efficiency by Linking Piping of Air Conditioning Heat Sources

The Miyazaki Plant of Fukui Murata Manufacturing has linked the piping of its air conditioning heat sources located in separate buildings. This has improved the efficiency of the heating system, resulting in a reduction in CO₂ emissions of 1,150 metric tons per year.

Installation of High-efficiency Lighting Fixtures

Komatsu Murata Manufacturing, Toyama Murata Manufacturing, and Izumo Murata Manufacturing have completely replaced their lighting fixtures with high-efficiency fixtures, thereby reducing CO₂ emissions by 57 metric tons per year. In fiscal 2004, we plan to update the lighting fixtures throughout the Murata Group in Japan with high-efficiency devices. We anticipate that

this initiative will reduce CO₂ emissions by 2,000 metric tons annually.

Reducing the Consumption of Compressed Air

By reducing leaks and improving the ways in which compressed air is used in production, we have reduced CO₂ emissions by 1,970 metric tons annually.

Increasing the Efficiency of the Heat Treatment Furnace

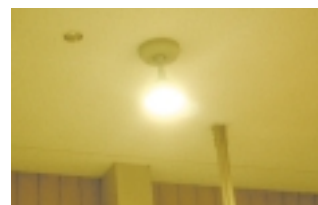
By improving the operating conditions of the heat treatment furnace, we have reduced CO₂ emissions by 462 metric tons annually.



Flow control



Interlinked air conditioning piping



High-efficiency lighting fixtures

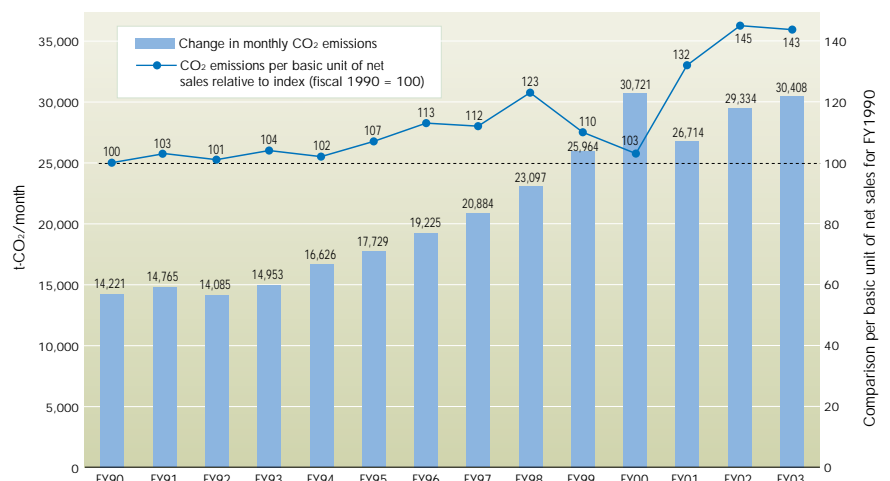


Reduced consumption of compressed air

Future Issues to Be Addressed

In fiscal 2004, we will introduce our goals of reducing CO₂ emissions per unit of net sales during the period from fiscal 2008 to 2010 by 10% compared to those for the period fiscal 1998 to 2000; moreover, we will promote the following initiatives: introduction of additional cogeneration systems; switch to innovative high-efficiency air conditioning equipment; and introduction of various types of inverters.

Trends in CO₂ Emissions per Basic Unit of Net Sales (Total for Japan)



Resource Conservation and Waste Reduction

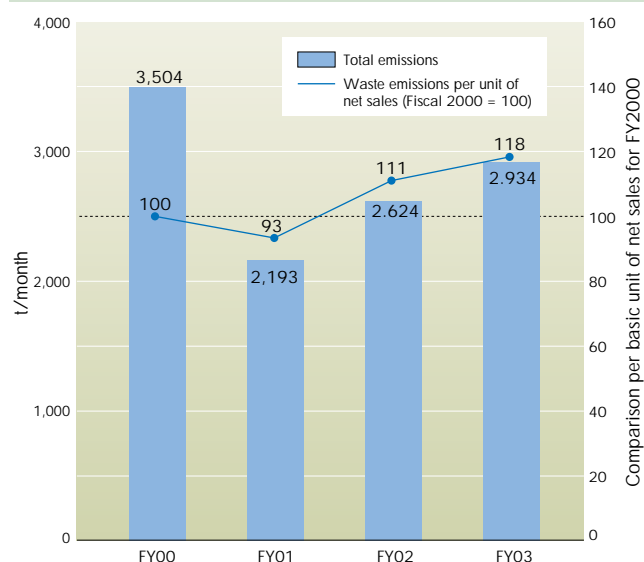
Murata is working to reduce—to as close to zero as possible—the environmental impacts accruing from waste produced as a result of our business activities. Our goal is to contribute to the development of a "recycling society" by reviewing production processes, minimizing the disposal of waste matter, and promoting recycling and reuse.

Reducing Waste Production

In fiscal 2003, Murata's monthly average waste emissions totaled 2,934 metric tons in Japan and 400 metric tons outside Japan. Our goal for the end of fiscal 2003 was to promote various initiatives in order to achieve a 10% reduction in waste matter generated per unit of net sales; however, the result was an 18% increase in Japan. The main cause of this increase in waste emissions was the trend toward higher production because of extensive and continually falling unit prices for products since fiscal 2000; as a result, net sales increased only slightly.

Although we achieved our zero emissions target in 2003, we believe there is a need to decrease emissions further in order to further reduce the environmental load. Therefore, we will continue to work toward reducing emissions. Specifically, in addition to implementing initiatives to reduce emissions by decreasing the failure rate and using more high-efficiency materials, we will incorporate a review of the sorting method for disposal in order to sell the recyclable waste materials obtained.

Trends in Waste Emissions per Basic Unit of Net Sales (Total for Japan)



Change of Cleansing Methods in the Production Process

At Izumo Murata Manufacturing, we used to generate waste liquids through our cleansing processes. However, thanks to the cooperation and collaboration of our technology division and manufacturing division, as well as repeated testing and evaluation, we have developed a production method that renders cleaning unnecessary while achieving the necessary product quality.

Through this approach, we have been able to reduce the amount of cleansing waste liquid generated by 2,000 metric tons annually. Moreover, as a secondary benefit, we have reduced our consumption of chemical products and energy.



Reduction of Water Consumption

In order to reduce our consumption of water, a finite resource, we are recycling coolant water and optimizing the amount of water used for cleaning.

Previously, the various plants, offices, and subsidiaries would address this theme in a specific way. Going forward, however, we will establish a common group-wide reduction goal and will take steps to further reduce our water consumption.

Trends in Water Consumption Per Basic Unit of Net Sales (Total for Japan)



Management of Chemical Substances

Murata compiles accurate information on the chemical substances it handles through a comprehensive and focused management structure.

Compiling of the Database

In 1998, Murata established a chemical substance inspection and registration system. We have been using this system since 2000 to enforce voluntary management of chemical substances throughout the Murata Group in Japan.

This system requires that we obtain a Material Safety Data Sheet (MSDS)* for each chemical substance that we use in the mass production of our products and that we obtain detailed information from suppliers on the environmental impact of the chemical substance—based on a contamination level ranging from that of an impurity to a hazardous level—in line with Murata's own inspection sheet. Prior to the procurement stage, Murata Manufacturing's specialists in charge of Industrial Health and Safety, Environment, and Product Safety subject the substance to the required staff inspection, while plant employees who use the substance subject it to a plant inspection. This step allows us to establish compliance with Murata's own voluntary regulations as well as environmental laws, laws related to industrial health and safety, and chemical laws (such as TSCA**) in Japan and other countries. We also verify compliance with local regulations.

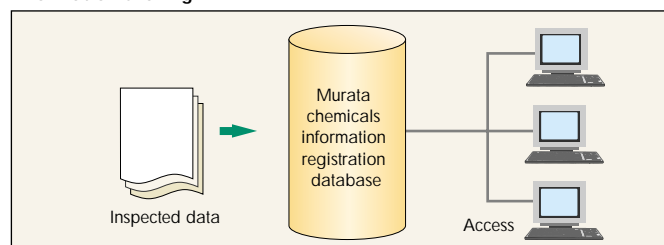
Only those chemical substances that pass these inspections are issued a unique number. The handling (purchase, application, manufacturing, storage, and sale) of a substance is possible only after the substance has been registered in Murata's database. In addition, this registered information is linked to the

company's internal material procurement system and is monitored to prevent the purchase of unregistered chemical substances. In this way, we ensure the proper use of chemical substances and support the manufacture of products with a low environmental impact.

* To help ensure the safe handling of chemical substances, this document provides indispensable information such as the name of the substance, its supplier, its hazard and toxicity, the safety measures required in its handling, and proper emergency measures in the event of an accident.

** The Toxic Substances Control Act is a U.S. law regulating the manufacture, handling and application of chemical substances. It is intended to protect human health and the environment from toxic substances. When producing a new chemical or exporting a chemical to the U.S.A., we must first submit safety data and other necessary information and inspection reports to the EPA (U.S. Environmental Protection Agency). Murata established a system that ensures that no chemical can be shipped to the U.S.A. other than those that have been rated as suitable for export. Since 2003, we have been using this system.

Information sharing



The Pollutant Release and Transfer Register

Murata has compiled a database that contains information on the chemical substances handled within our plants in Japan. We employ a system that enables us to obtain and manage the application situations of individual chemical substances quickly and easily.

In compliance with the Japanese Pollutant Release and Transfer Registry (PRTR) law, we use Murata's chemical database system to calculate the amount of chemicals released and transferred.

The law stipulates 354 substance groups subject to reporting. In Japan, between April 1, 2002 and March 31, 2003, Murata handled

14 substance groups for which PRTR reporting was required including toluene, xylene and lead. Detailed information on releases and transfers of each of these 24 substances is listed in the table below.

Murata has long taken steps to reduce environmental emissions, such as introducing facilities for removing hazardous substances; modifying production process; improving operations; and promoting conversion to substitute substances. In the future, will make practical use of PRTR data and, for chemical substances released in large amounts, we will assign target values and implement additional reductions.

Pollutants Released and Transferred Subject to the PRTR Law (Total for Japan)

(metric tons/year)

Gov't issued No.	Substance	Released				Transferred		
		Atmospheric release	Released to public bodies of water	To soil	Landfilled	Released to sewerage	Transferred to waste	Transferred to recycling
16	Monoethanolamine	0.0	0.0	0.0	0.0	0.0	0.0	6.1
25	Antimony and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.6
30	Bisphenol A liquid epoxy resin	0.0	0.0	0.0	0.0	0.0	1.8	1.1
40	Ethyl benzene	5.0	0.0	0.0	0.0	0.0	1.0	0.0
45	Ethylene glycol monomethyl ether	0.0	0.0	0.0	0.0	0.0	0.0	5.6
58	1-octanol	0.0	0.0	0.0	0.0	0.0	0.0	0.9
63	Xylene	4.7	0.0	0.0	0.0	0.0	1.2	27.3
64	Silver and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	1.2	16.9
68	Chromium and trivalent chromium compounds	0.0	0.0	0.0	0.0	0.0	0.2	0.6
100	Cobalt and its compounds	0.0	0.0	0.0	0.0	0.0	1.2	0.3
177	Styrene	4.0	0.0	0.0	0.0	0.0	0.0	1.4
202	Tetrahydroxymethyl anhydrous phthalic acid	0.1	0.0	0.0	0.0	0.0	0.4	0.1
207	Water-soluble copper salts (excluding complex salts)	0.0	0.0	0.0	0.0	0.0	0.0	2.0
227	Toluene	23.2	0.0	0.0	0.0	0.0	141.3	462.4
230	Lead and its compounds	0.0	0.0	0.0	0.0	0.0	12.4	104.4
231	Nickel	0.0	0.0	0.0	0.0	0.0	20.0	67.1
232	Nickel compounds	0.0	0.0	0.0	0.0	0.0	12.1	18.8
242	Nonyl phenol	0.0	0.0	0.0	0.0	0.0	0.0	2.0
253	Hydrazine	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270	Di-n-butyl phthalane	0.1	0.0	0.0	0.0	0.0	2.9	1.9
272	Bis(2-ethylhexyl) phthalate	0.0	0.0	0.0	0.0	0.0	17.3	3.0
304	Boron and its compounds	0.0	0.0	0.0	0.0	0.0	4.9	1.5
310	Formaldehyde	0.0	0.0	0.0	0.0	0.0	0.0	0.0
311	Manganese and its compounds	0.0	0.0	0.0	0.0	0.0	2.3	0.7

* The above data covers the period April 1, 2003 to March 31, 2004. * PRTR reporting is required when more than 1 metric ton of the PRTR substances are handled per year.

* Amounts of less than 100 kilograms are rounded up. * As the waste transfer amount in fiscal 2003 was entirely recycled, this amount is expected to be zero in fiscal 2004.

Environmentally Hazardous Substances in Production Processes

In order to reduce the environmental impact of chemical substances used in production activities, Murata has adopted voluntary regulation as well as monitoring of release into the environment.

Reduction of Environmentally Hazardous Substances in Production Process

Among the various chemical substances used in production processes, those with the potential to affect the environment are subjected to Murata's unique "voluntary regulation program," which was established in November 1997. We continue to target the reduction and elimination of substances specified in our product regulation program.

As for existing processes, we are promoting reduced use and release according to the terms of our voluntary regulation program. For environmentally hazardous substances used in new processes, we are studying ways of reducing the use and release of these substances.

Moreover, in May 2002, we adjusted our voluntary regulation program following an examination of laws and regulations and the monitoring of voluntary trends within the electrical and electronics industry. As part of these revisions—and especially because Murata uses toluene and xylene in relative abundance—we established targets for reducing the release of these substances into the atmosphere. In addition, we implemented initiatives such as introducing a regenerative thermal oxidizer (RTO) and we achieved the target value at the end of fiscal 2003, the targeted fiscal year.

In April 2004, we established targets for reducing the release

of VOCs (volatile organic compounds) into the atmosphere. As well, we set targets to reduce the atmospheric release (CO₂ conversion) of total PFCs—which contribute to the greenhouse effect—by more than 80% of fiscal 2002 levels by 2006. We are continuing to strengthen these initiatives.

Reduction Targets and Achievements for the Atmospheric Release of Toluene and Xylene

【Target】

Toluene	Reduction of release to not less 50% of 2000 level as of the end of fiscal 2003
Xylene	Reduction of release to not less 20% of 2000 level as of the end of fiscal 2003

【Achievement】

	Fiscal 2000 emissions (metric tons)	Fiscal 2003 emissions (metric tons)	Reduction rate (%)
Toluene	63.3	23.2	63.3
Xylene	6.4	4.7	26.6

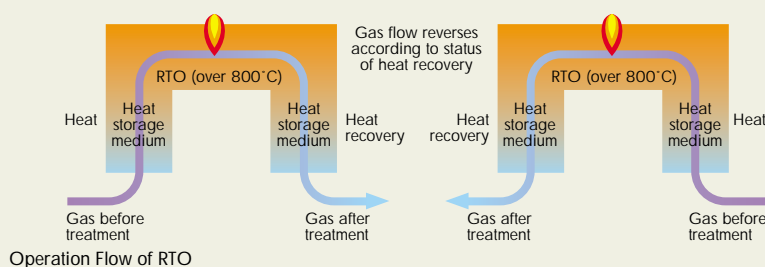
Voluntary Regulation Program for Environmentally Hazardous Substances in Production Process

	Ranking	Target Substance
A	Prohibited (41 substance groups) Any application prohibited	• Asbestos • Cadmium and its compounds (limited to resins) • Dioxins • White lead • Trichloroethylene • Halon • Benzene • CFCs • HCFCs etc.
B	Application prohibited within a specified period (23 substance groups) Prohibited after a specified period	• Acrylonitrile • Cadmium and its compounds (excluding resins) • Mercury and its compounds • Arsenic and its compounds (excluding semiconductors) • Organic lead • Hexavalent chromium compounds etc.
C	Reduce emissions (22 substance groups) Reduced emissions planned	• Acetaldehyde • Chloroform • Cyanide compounds • Formaldehyde • Nickel sulfate • Lead and its compounds (used in some ceramics, solder, etc.) • Toluene • Xylene • PFCs etc.
D	Prepare to reduce emissions (45 substance groups) Control emissions and voluntarily prepare to reduce emission	• Zinc and its compounds • Chrome and its compounds • Copper and its compounds • Nickel powder • Methyl ethyl ketone • Lead and its compounds (used in some ceramics, glass, alloys, etc.) • Arsenic and its compounds (application limited to semiconductors) etc.

Introduction of Regenerative Thermal Oxidizers (RTO)*

In an effort to curtail the atmospheric release of volatile organic compounds (VOCs), Murata is introducing regenerative thermal oxidizers (RTO). So far, seven such units have been introduced in Japan and overseas, resulting in significant benefits.

*Incinerating VOCs at temperatures above 800°C breaks down more than 98% of these compounds, rendering them nontoxic. The RTO uses heat stored in a ceramic thermal storage medium to preheat gas before treatment (with a thermal efficiency exceeding 95%). As a result, VOCs undergo autogeneous combustion, greatly reducing the cost of fuel.



Regenerative thermal oxidizer (Fukui Murata Manufacturing Co., Ltd.)

Dealing with Environmental Risk

The Murata Group is preparing facilities intended to eliminate any environmental impact in the event of an accident.

Dealing with Environmental Risk

To minimize the potential environmental risk of Murata's business activities, particularly in the event of an accident, we are preparing facilities intended to eliminate any impact on the surrounding environment. With special consideration for the scale and period of impact, we have established the following four voluntary standards for storage and transport of chemical substances within plant facilities. The implementation of relevant countermeasures was completed during fiscal 2002.

Prohibition against Underground Storage Tanks

In principle, storage tanks for fuel, organic solvents, acids, alkalis, waste liquids and wastewater tanks for treating wastewater shall be located above ground. If it is unavoidable that a tank be placed underground due to legal requirements, it shall be a double-walled tank.

Example of aboveground tank



(Murata Manufacturing Co., Ltd. Yasu Plant)

Prohibition against Underground Piping

Pipes for transporting fluids such as fuel, organic solvents, acids and alkalis as well as waste liquids shall be located overhead.

Example of overhead piping



(Toyama Murata Manufacturing Co., Ltd.)

Cost of Countermeasures to Prevent Ground Permeation (Millions of yen)

FY1995–FY2002	
Nonconsolidated	Consolidated
1,004	2,355

Permeation Barrier Coating

Locations where fluids such as fuel, organic solvents, acids, and alkalis as well as waste liquids are handled shall be provided with a bed made of a permeation barrier coating or stainless steel.

Example of permeation barrier coating



(Murata Electronics (Malaysia) Sdn. Bhd.)

Emergency Containment Structure

Workplaces where liquids are received or where waste liquids are discharged to or from tank trucks or the like shall have a structure for immediately containing any leakage should an accident occur.

Example of emergency containment structure



(Murata Manufacturing Co., Ltd. Himi Plant)

Monitoring the Condition of Long-term Industrial Waste Disposal

Murata's plants and subsidiaries entrust the disposal of industrial wastes to licensed specialist companies. We visit the disposal sites at fixed intervals to ensure continued proper disposal that imparts no secondary environmental impact. We also confirm that proper disposal is practiced.



Measures to Control Soil and Groundwater Contamination

We are actively implementing measures targeting early-stage completion of remediation of soil and groundwater contamination generated by Murata's past business activities.

Measures to Control Soil and Groundwater Contamination

Elimination of Trichloroethylene and the Like

In the first half of the 1980s, the Environment Agency (currently the Ministry of the Environment) first identified chlorinated organic solvents, such as trichloroethylene, as potentially carcinogenic. Recognizing the importance of this issue, Murata began taking steps toward eliminating the use of chlorinated organic solvents such as trichloroethylene. By the time groundwater permeation was prohibited according to the terms of the 1989 Water Pollution Prevention Law, 17 of Murata's 22 production plants and subsidiaries had ceased using trichloroethylene. Furthermore, by 1995, four of the remaining five plants had eliminated the use of chlorinated organic solvents, with the remaining plant continuing use of such solvents because of the product preferences of a particular large customer. By March 1998, however, use of such solvents—which include trichloroethylene, tetrachloroethylene, dichloromethane, 1,1,1-trichloroethane, and carbon tetrachloride—had been eliminated throughout the company. We can boast that, among all companies using chlorinated organic solvents, our achievement was exceptionally rapid. In 1991, in parallel with this countermeasure, Murata introduced up-to-date technology that enabled the Company to undertake a factual survey of soil and groundwater contamination in all plants.

As a result of this effort, it was concluded that 14 of the Company's 36 plants and subsidiaries had to institute remediation measures to remove contamination by chlorinated organic solvents.

Implementing Early-stage Remediation Countermeasures

As part of our cleanup operation, we drilled wells wherever it was deemed necessary at polluted sites and along the borders of plants and subsidiaries. We have also prevented the spread of contamination beyond the sites by actively cleaning polluted soil and groundwater by means of strong vacuum extraction and the activated carbon absorption process* and by the water pumping, aeration, and activated carbon absorption process.**

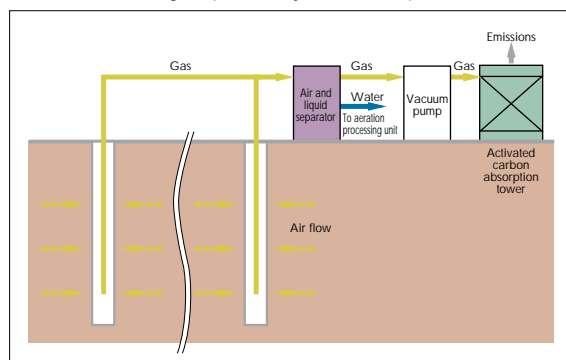
Regarding our prior use of chlorinated organic solvents, we sought to document the results of our survey and countermeasures. Thus, since 1991, we have undertaken detailed soil and groundwater pollution surveys and have instituted a voluntary response. The survey and cleanup measures adopted by Murata are implemented with the most advanced technologies available. Furthermore, we reported our progress to the government and ceased submission of government reports in 1998.

Preventing the Migration of Pollution beyond Plant Sites

Table 1 shows the progress of the cleanup during fiscal 2003. Two plants (Toyama Murata Manufacturing Co., Ltd. and Kanazu Murata Manufacturing Co., Ltd.) have completed their cleanup operations, while 12 plants are continuing to conduct cleanup operations. As the table indicates, the year-on-year trend is toward lower pollution in general, and cleanup efforts are progressing. Each plant is remediated by concentrating the local pollutants in wells drilled along the border of the site. As a result, we believe that this approach currently prevents any pollution from migrating beyond the plant sites. Moreover, two plants—the Takefu Plant of Fukui Murata Manufacturing Co., Ltd. and Wakura Murata Manufacturing Co., Ltd.—have largely satisfied the environmental standard.

* Strong vacuum extraction and activated carbon absorption process

A well drilled for remediation of a contaminated area is decompressed with the installation of a vacuum pump. Any chlorinated organic solvents in the soil are extracted by means of gasification. The recovered gas is processed by means of absorption with activated charcoal.



** Water pumping, aeration and activated carbon absorption process

Groundwater is pumped up with a pump installed in a well used for remediation of a contaminated area. The recovered water is aerated and the chlorinated organic solvent is isolated by means of gasification. The treated water is discharged into the sewerage or a river when the contaminant has been reduced to less than the environmental standard. The gasified chlorinated organic solvent is processed by means of absorption with activated charcoal.

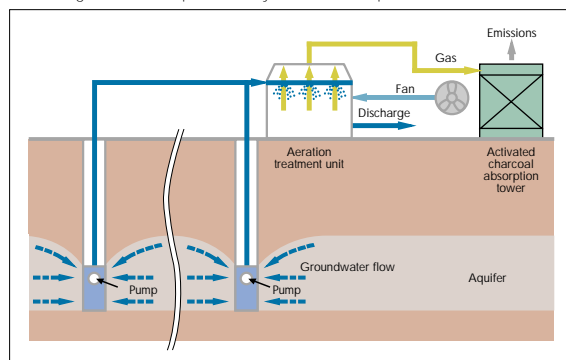


Table 1. State of Groundwater Remediation

(mg/L)

Substance (Environment Standard Value)	Trichloroethylene (0.03 max.)		Cis-1,2-dichloroethylene (0.04 max.)		Remarks
	FY2002	FY2003	FY2002	FY2003	
Plants and Subsidiaries					
Murata Manufacturing Co., Ltd., Head Office, Nagaoka Plant	0.267	0.047	0.006	N.D.	
Fukui Murata Manufacturing Co., Ltd., Takefu Plant	0.014	0.013			
Fukui Murata Manufacturing Co., Ltd., Shirayama Plant	0.869	0.373	0.284	0.230	
Fukui Murata Manufacturing Co., Ltd., Miyazaki Plant	1.385	1.375	0.289	0.273	
Asuwa Electronics Industries, Ltd.	0.376	0.098	4.105	1.139	
Iwami Murata Manufacturing Co., Ltd.	0.181	0.194	1.616	1.108	
Wakura Murata Manufacturing Co., Ltd.	N.D.	N.D.			
Himi Murata Manufacturing Co., Ltd.	N.D.	N.D.	N.D.	N.D.	
Kanazu Murata Manufacturing Co., Ltd.	N.D.	N.D.			Cleanup completed
Kanazu Murata Manufacturing Co., Ltd., Natsume Plant	0.114	0.117	0.095	0.123	
Hakui Murata Manufacturing Co., Ltd.	0.044	0.027	0.157	0.111	
Hakui Murata Manufacturing Co., Ltd., Togi Plant	0.171	0.178	0.147	0.251	
Toyoma Murata Manufacturing Co., Ltd.	N.D.	N.D.			Cleanup completed
Murata Electronics North America	Trichloroethylene		Cis-1,2-dichloroethylene		
State College Operation	0.014	0.017	0.014	0.030	

1) Data are average values from April 2002 to March 2003 and from April 2003 to March 2004.

2) Data show the average values for downstream groundwater in all wells drilled along the border of a site.

3) We established the apprehended area in order to prevent migration of pollutants beyond the site, and are undertaking remediation efforts.

4) "Not detectable" means the measured quantity is below the lower limit of detection.

5) The diagonal line indicates that the site is deemed free from contamination.

6) The standard value at the Murata Electronics North America State College Operation will be determined by the most recent risk assessment.

Thorough Prevention of Groundwater and Soil Contamination

Beginning in 1995, Murata established a voluntary standard for preventing ground permeation. As a result, we are taking steps to avoid ground permeation by any and all chemical substances. To ensure compliance with our voluntary standard for ground permeation prevention, we are implementing the measures stated at right. These measures have been concluded everywhere during fiscal 2002, except in some parts of some plants.

See page 28

- Tanks containing chemical substances shall be double-walled and installed above ground, fluid control banks shall be installed, and leakage control coatings shall be applied.
- All forms of conveyance for chemicals, drainage from production processes and wastewater treatment equipment shall be doublewalled and installed above ground.

Allocating Reserves to Cover All Remediation (Decontamination) Costs

Completion of all remediation (decontamination) measures entails very high countermeasure costs. For business accounting purposes, Murata has completed a trial calculation of the full cost of remediation measures to ensure all contamination has been removed. As a result, we have appropriated a reserve as a credit (Table 2).

Table 2. Cost of Soil and Groundwater Remediation (Millions of yen)

Total for FY1991–FY2003		Estimate for FY2004 and later*		Total	
Nonconsolidated	Consolidated	Nonconsolidated	Consolidated	Nonconsolidated	Consolidated
963	6,741	691	4,709	1,653	11,450

* Note: Amount allocated as a reserve credit is the result of a trial calculation of the full cost of remediation measures, up to completion of the contamination cleanup.

Our Efforts to Promote Remediation

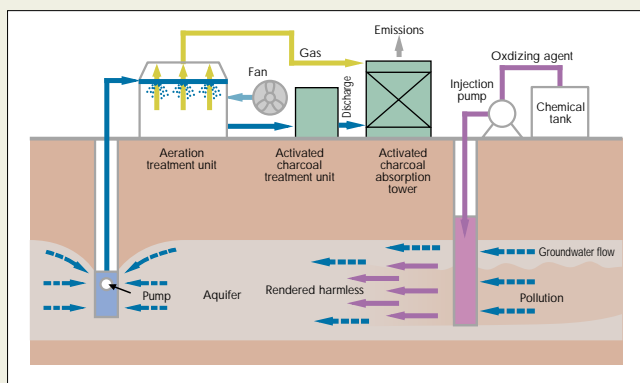
In an effort to complete their remediation efforts at the earliest possible date, our plants and subsidiaries with relatively high pollution densities have introduced new technologies in addition to their existing remediation measures. They are also aggressively implementing new remediation measures.

We plan to promote remediation at five sites in fiscal 2004. For each site, we employ one of three remediation different methods—the Anaerobic Bio Method, the On-Site Iron Powder Method, and the On-Site Oxidation and Decomposition Method—depending on density of the contamination and the location of the source of contamination (Table 3).

Table 3. Remediation Methods and Sites Planned for Implementation in Fiscal 2004

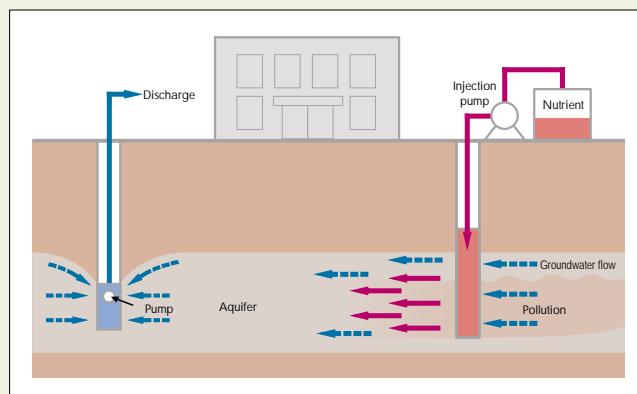
Plant	Method
Fukui Murata Manufacturing Co., Ltd., Shirayama Plant	Anaerobic Bio Method
Asuwa Electronics Industries, Ltd.	On-Site Iron Powder Method
Iwami Murata Manufacturing Co., Ltd.	Anaerobic Bio Method
Hakui Murata Manufacturing Co., Ltd.	On-Site Oxidation and Decomposition Method
Hakui Murata Manufacturing Co., Ltd., Togi Plant	Anaerobic Bio Method

The distinctive features of each method are illustrated as follows.



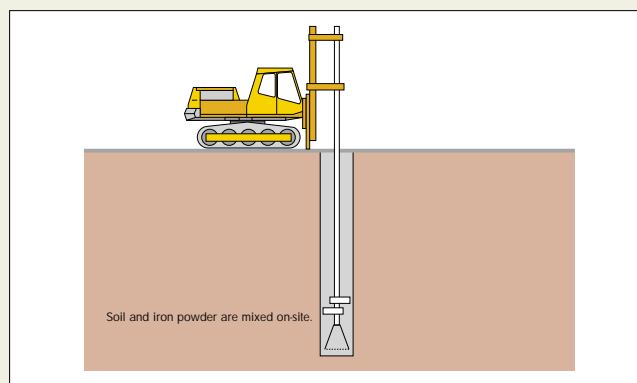
On-Site Oxidation and Decomposition Method

This method entails the direct injection of the oxidizing agent (potassium permanganate) into groundwater, which directly oxidizes, decomposes and renders harmless various chlorinated organic solvents such as trichloroethylene and cis-1,2-dichloroethylene. In order to prevent any unreacted oxidizing agent from flowing to the downstream area, a pumping well and activated charcoal removal system are installed downstream from the injection point of the oxidizing agent.



Anaerobic Bio Method

This method decomposes chlorine-based organic solvents by injecting nutrients into groundwater in order to cultivate microbes present in the soil under anaerobic conditions. This is a very safe method because it used anaerobic microbes that already exist in the soil.



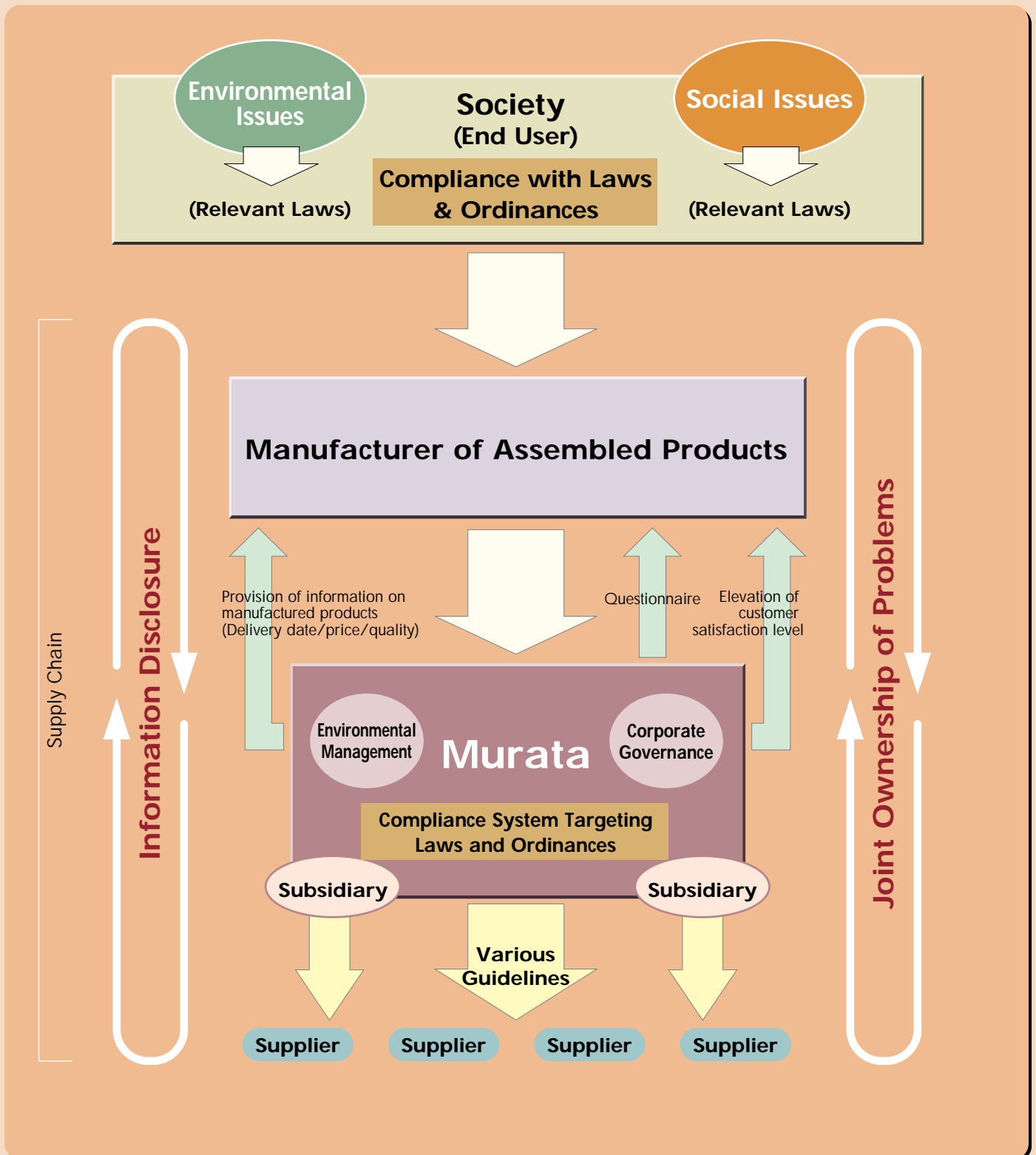
On-Site Iron Powder Method

Soil and iron powder are mixed on-site. The reducing power of metallic iron deoxidizes, decomposes, and renders harmless chlorinated organic solvents such as trichloroethylene and cis-1,2-dichloroethylene.

Murata's Environmental Preservation Activities

1989		Voluntary policy to eliminate ozone-depleting substances (designated CFCs and 1,1,1-trichloroethane) is adopted.
		Project to eliminate ozone-depleting substances initiated.
1991		Survey of soil and groundwater contamination is initiated.
1993		Elimination of ozone-depleting substances (1,1,1-trichloroethane and designated CFCs) is achieved.
		A voluntary policy to eliminate chlorine-based organic solvents (trichloroethylene, tetrachloroethylene, and dichloromethane) is adopted.
1994		Murata Environment Committee is established.
1995		The Murata Environmental Charter (First Environmental Action Plan) is adopted.
		The Environmental Management Department is established in the Head Office.
		The Lead-Free Solder Project is launched.
		Elimination of chlorine-based organic solvents (dichloromethane and tetrachloroethylene) and hydrochlorofluorocarbons (HCFCs) is achieved.
1996		A voluntary regulation program is adopted to reduce environmentally hazardous substances contained in products.
1997		Taiwan Murata Electronics Co., Ltd. becomes the first member of the Murata Group to acquire certification of ISO14001 registration.
		A voluntary regulation program is adopted to reduce emissions of environmentally hazardous chemical substances from manufacturing processes.
		In-house courses introduced for training of internal environmental auditors.
1998		Use of chlorine-based organic solvent (trichloroethylene) is discontinued, representing the achievement of the objective of the voluntary policy adopted in 1993.
		All discarded paper in Japan is recycled, thereby discontinuing the use of waste incinerators.
		A special feature on Environment Month is published in the company journal.
1999		Life cycle assessment (LCA) guidelines are adopted.
		A cogeneration system begins operation at the Yasu Plant.
		Soil pollution control standards are established. Upgrading of existing equipment is initiated.
		A chemical substance inspection and registration system is introduced.
2000		Production bases inside and outside Japan complete certification of ISO14001 registration.
2001		A composting system is introduced for raw food waste from company dining facilities in Japan.
		The Murata Environmental Charter (Second Environmental Action Plan) is revised.
		The Green Procurement Guide is issued and the green procurement policy implemented.
2002		Existing equipment in Japan is upgraded to meet soil pollution control standards.
		The inaugural Environmental Report is issued.
2003	April	Construction begins on new head office designed on the concept of an eco-friendly office building. Efforts are made to ensure a zero-emissions policy is applied to construction waste from the new construction. The building is expected to be completed in September 2004.
	July	The product assessment system is introduced.
	October	The environmental cost management (environmental accounting) system is introduced.
2004	March	The zero emissions objective is achieved in Japan.
	April	The Murata Environmental Charter (Third Environmental Action Plan) is revised.

Social Report



A Commitment to Stakeholders

To Our Customers: Customer Satisfaction & Quality Assurance

At Murata, we implement various initiatives in order to provide products and services that satisfy our customers. Our goal is to further improve the quality of our work and the quality of our enterprise as well as the quality of our products and services.

Improving Customer Satisfaction

Manufacturer of assembled products and other customers install Murata products in various electronic devices such as cell phones and computers, after which they are offered to the public. We believe that by earning the satisfaction of our customers, we can contribute to society through our customers, and thereby contribute to the satisfaction of society. Establishing a relationship of trust with our customers is one of our most significant challenges; therefore, we will change our work-related systems and other systems company-wide with the objective of increasing customer satisfaction.

The Concept of Customer Satisfaction

The electronics industry is entering a period of major change as it shifts from a paradigm of mass production and mass consumption to one of small-lot manufacturing and fast delivery of a wide variety of products in response to the increasing diversification of market needs. Accordingly, customers are demanding that industry provide a wider range of services and disclose appropriate information, and not merely limit themselves to mere issues of quality, price, and delivery date. In recent years in particular, customers have been demonstrating an increasing level of interest in Murata's response to

environmental issues and observance of laws and regulations. In response to this trend, we are obliged to present accurate proof of compliance and reports. In order to fulfill their corporate social responsibility and comply with environmental laws, various legal requests, and demands of society, customers must be prepared to comply with all legal and social demands—even down to the level of the parts installed in their products.

Murata is committed to meeting the emerging needs of customers who are responding to changing markets even as we strive to improve quality, price, and delivery date. We believe it is important that we prepare ourselves to respond quickly to the emerging needs of our customers.

Customer Satisfaction Initiatives

The core focus of Murata's efforts to improve customer service is to earn a satisfactory evaluation for our response to customer requests and to adequately grasp the social background behind such customer requests. As one initiative, Murata has implemented a unique questionnaire survey to determine the level of customer satisfaction achieved. Our customers' objective evaluations will shape our response so that we may enhance our concrete action plans through stringent self-assessment and thereby steadily execute our action plan.

Quality Assurance

Murata implements quality management activities by taking the customer's perspective in an effort to achieve a higher level of customer satisfaction at every stage from product planning, design, and development to production and after-sales service. This approach ensures that we are capable of providing products and services that satisfy our customers.

Quality Management Policy

Through our Quality Management Policy, Murata is able to instill the foundation of our quality management in the thoughts and actions of all employees.

We remain committed to the continuous development of unique products and the cultivation of new areas of expertise. Our underlying approach is our belief that "better equipment is made from better parts and better design, and better parts are made from better materials and better processes." With this belief, we consistently manage every stage including design, selection of materials, procurement, production, sales, and service in cooperation with all members who compose the Murata Group—from top management to individual employees—by employing the Deming circle. In this way, we can economically produce quality products that meet market needs with full consideration for the natural environment.

Quality Assurance System

Murata delivers to customers only products that embody full quality assurance; we also design and manufacture all our products under a quality system governed by in-house regulations.

We design and develop products requested by customers according to Murata's design criteria, which are in full compliance with safety and environmental standards. We conduct environmental tests designed to evaluate product applications and reliability. This also ensures that we build quality, reliability, and safety into our products at the design stage.

In the manufacturing stage, we manufacture our products according to a standardized quality management system that encompasses thorough employee training in the interest of achieving design for quality assurance. We are able to confirm the quality of our finished products through periodic reliability testing and mass production inspections as well as through "4M (man, machine, material & method) management" and monitoring of processing quality.

Our system accommodates rapid feedback of customer information as well as complaints regarding product quality into our processing and product design stages.

ISO9001, QS9000 & ISO/TS16949

The Murata Group inside and outside Japan has received certification of registration with ISO9001, the international quality management standard. We

are also achieving progress in acquiring certification of registration with ISO/TS16949, an international standard specific to the automotive industry.

We have been making a special effort to achieve world-class compliance with international quality management systems so that customers the world over can use the products of Murata—a global corporation active internationally—with complete peace of mind.

Quality System

Product Planning	Surveys, research and review of planning
Design Development	Design based on safety standards and design standards
Design Inspection	Design review, product assessment, assessment of reliability and safety, legal compliance
Preparation for Production	Sampling and adjustment of standardization
Production	Production, training, periodic testing, and inspection of mass production according to the quality system
Marketing	Confirmation of quality by the customer
Service	After sales service

Major Accredited Production Plants Inside and Outside Japan (as of March 2004)

Plant	Certification Organ	Target Standard	Date
Fukui Murata Manufacturing Co., Ltd.	UL	ISO9001	April 2, 1997
Murata Manufacturing Co., Ltd. Yokaichi Plant	UL	TS16949	September 25, 2003
		QS9000	March 31, 1998
Toyama Murata Manufacturing Co., Ltd.	UL	ISO9001	December 16, 1996
		TS16949	August 12, 2003
Kanazawa Murata Manufacturing Co., Ltd.	UL	ISO9001	April 16, 1998
		QS9000	
Izumo Murata Manufacturing Co., Ltd.	UL	ISO9001	July 25, 1997
		QS9000	
Okayama Murata Manufacturing Co., Ltd.	UL	ISO9001	July 1, 1998
		QS9000	
Murata Electronics (Thailand), Ltd.	UL	QS9000	March 17, 1998
		ISO9001	
Murata Electronics Singapore (Pte.) Ltd.	PSB	ISO9001	November 3, 1999
		TS16949	September 30, 2003
Taiwan Murata Electronics Co., Ltd.	BSMI	ISO9001	November 26, 1993
Murata Electronics North America, Inc.	UL	QS9000	March 7, 1996
		ISO9001	June 15, 1994
Murata Electronics (Malaysia) Sdn. Bhd.	SIRIM	ISO9001	February 28, 1997
Beijing Murata Electronics Co., Ltd.	UL	ISO9001	December 10, 1998
Suzhou Murata Electronics Co., Ltd.	UL	ISO9001	August 2, 2003
Wuxi Murata Electronics Co., Ltd.	UL	QS9000	May 12, 1999
		ISO9001	

Note: Certifications have been acquired by 35 companies, including production bases inside and outside Japan, and sales companies.

To Our Suppliers: Materials Procurement Policy

At Murata, we take the approach that good machinery comes from good products, and good products come from good materials. In this spirit, we continue to procure materials from a better, wider range of eco-friendly suppliers, both inside and outside Japan, by improving the environment in which we conduct our business.

Our Approach to Purchasing from Suppliers

At Murata, all dealings with suppliers are grounded in an attitude that adheres strictly to ethics, laws, and regulations.

Moreover, the basis on which Murata's purchasing personnel conduct their dealings with suppliers adheres to principles of fairness, justice, and sincerity and rejects personal relationships as a basis for trade.

As part of this effort, we have drawn up in-house regulations and manuals on these issues and are thoroughly training all employees accordingly.



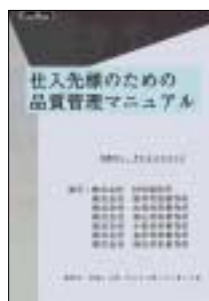
Guidelines for Dealing with Suppliers

(1) Dealing with better suppliers

In selecting our suppliers, we favor those we evaluate as being fair and just according to rational norms such as quality, price, delivery date, and efforts to reduce environmental impact. We ensure just and upright trade by remaining available to all potential suppliers.

(2) Emphasizing quality and timely delivery

At Murata, we emphasize product quality and timely delivery in order to provide customers with products of higher quality whenever they are needed. As part of this effort, we provide our suppliers with our Quality Management Manual for Suppliers, which serves to raise their awareness of our quality improvement and quality assurance requirements. Murata seeks to do business with suppliers who are capable of observing the prescribed quality and delivery requirements.



Quality Management Manual for Suppliers

(3) Emphasizing reduced environmental impact

Murata actively implements initiatives targeting reduced environmental impact in order to ensure that we provide our customers with more eco-friendly products. In order to manufacture such products, we must take steps to ensure that procured materials are environmentally friendly and supplied through environmentally sound processes. In this spirit, we have established a green procurement system for our production materials that utilizes the findings of our "supplier greenness assessment" and "materials greenness assessment" according to the terms of Murata's Environmental Policy.

For materials not used in production, our green purchasing initiatives target reduced environmental impact company-wide and disclose the results of these efforts.

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(4) Emphasizing Value Engineering*

The electronics industry is marked by rapid technological innovation and short product life cycles. In addition, price competition is intense, and the standard practice is to constantly provide new products in order to accommodate customer needs and pricing. Murata seeks to trade with suppliers capable of providing new materials through value engineering and at lower cost.

*The Society of Japanese Value Engineering defines value engineering as "a systematic team approach to conducting function-oriented research on products and services in order to achieve the required function at the lowest life cycle cost."

(5) Emphasizing provision of information

Technological innovation in the electronics industry is always rapid; responding to this level of innovation is a central challenge. Moreover, customer requests regarding laws and regulations, as well as environmental inquiries related to global environmental protection, are growing year by year. For this reason, we must constantly gather data on new technologies and products. Therefore, we seek to do business with those suppliers who can provide such information.

(6) Emphasizing efforts to accelerate material procurement

In an era in which changing customer demand calls for a rapid, flexible response, Murata has identified "accelerating the supply of materials" as one of the most important factors contributing to customer satisfaction. As a result, we seek to trade with suppliers who can reduce the time required for material supply and respond to market changes quickly and with flexibility.

(7) Accommodating the "Made in Market" approach

Murata's management targets the "Made in Market" approach. As a result, we tend to procure needed materials in the region in which our production takes place, as a rule, whether inside or outside Japan. Consequently, we seek to trade with suppliers who can provide a stable supply of materials regardless of their location worldwide.

(8) Strictly safeguarding highly confidential information

When dealing with our suppliers, we at Murata are committed to providing the greatest possible amount of data required. The information we furnish includes information that is confidential to Murata. Therefore, we ensure thorough management of trade secrets, including information provided by suppliers. We also seek to do business with suppliers who can maintain the confidentiality of this information.

(9) Emphasizing the application of IT

We believe that, going forward, the exchange of information by means of networks and other information technology is essential to accelerating operations and strengthening relations with suppliers. Therefore, we seek to do business with suppliers who are committed to improving and applying their IT environment.

A Commitment to Stakeholders

To Our Employees: Our Personnel System

Murata has introduced a personnel system based on the principles of merit and human dignity. This approach adheres to Murata's philosophy of "pursuing innovation and mutual prosperity with our associates." Since its establishment, Murata has believed in the pursuit of "creating unique products through innovation, not imitation"; therefore, we have adopted a merit-based approach to our personnel system and our product development. Our perspective is that we must always engender feelings of gratitude by ensuring the prosperity of our associates; moreover, we must manage our personnel by maintaining respect and positive sentiment.

Rewarding Merit

A Personnel System that Disregards Seniority

In order to prevail amid global competition and produce unique products with significant added value, we must cultivate a corporate culture in which each employee can respond to environmental change and display his or her abilities to the full. Murata's wage system relegates seniority to a relatively minor consideration so that employees are evaluated in a manner that reflects their abilities. By basing our evaluation system and promotion system on this principle, we are managing our personnel according to the above policy by clearly rewarding those who demonstrate their value to the company.

A Fair and Highly Transparent Rating System

A fair and transparent rating system is required in order to ensure rational treatment of all employees. In responding to this reality, we must ensure correct observation of results; however, we must also consider how the process itself affected the achievement of theme of the project, and not simply determine whether the employee has completed the particular project they have been assigned. We are endeavoring to operate our system fairly by feeding back results, including the employee's abilities, merit as reflected in performance, and areas requiring improvement.

With this rating system, we are diligently urging our employees to take on creative work by increasing the evaluation weight of an individual's spirit of challenging positive initiatives and by advocating a willingness to take on new fields and tasks with which one is unfamiliar.

Human Dignity

A Personnel System that Promotes Individual Growth

By demonstrating respect for each individual employee, Murata helps to ensure that all can adequately display their abilities. For this reason, we have established a personnel system that supports an individual's growth and provides an environment in which individuals can achieve their dreams. This system incorporates a training assignment system that reviews, after one year of service, the choice of departments to which new graduates have been assigned; a self-reporting system under which an employee formulates his or her own transfer plan and decides a key line of work; and an international training dispatch system for young employees, who represent the driving force of the future.

A Substantial Human Resource Development Program

We have identified the three-year term following entry into the company as the freshman employee training period. We consider this the starting period for cultivation of future business leadership skills. Thereafter, we continue to provide the necessary training under a systematic program that trains deserving employees for each rank up to the management level. Moreover, we endeavor to cultivate human resources and invigorate the workplace through in-house training to refine Murata's proprietary world-leading elemental technology, career support for female employees, and management training that cultivates the unique skills of each employee, among other efforts.



To Our Employees: Occupational Health and Safety

Murata promotes occupational health and safety in the effort to provide a work environment in which each employee can work without risk to health and safety.

Statistics on Work-Related Injuries and Deaths

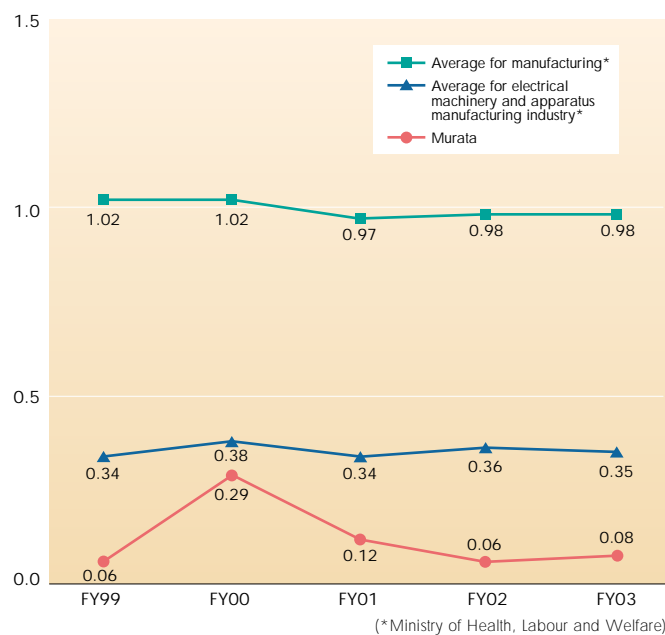
Murata's work-related injuries and deaths fell to the lowest frequency rate* for accident statistics in Japan.

Because Murata's production lines include relatively few dangerous or harmful operations, the number of serious work-related accidents requiring shutdown of the line is very low. However, relatively minor injuries—such as fingers being pinched and drawn into equipment—do occur during non-regular operations such as repair, adjustment, and transfer of equipment and machinery.

Whenever an accident occurs, we make the details of the accident available to the Occupational Health and Safety Committees of the various plants or subsidiaries involved. In addition, we standardize operations, implement training, undertake workplace patrols, and provide work instructions through the management supervisor using special work observation techniques in order to prevent a similar type of accident from recurring. In short, we have undertaken a group-wide effort to prevent work-related injuries and deaths.

*The frequency of accidents expressed as the number of work-related injuries and deaths per million working hours.

Occurrence of Shutdown Accidents (Japan) (Millions of hours per incident)



Addressing Risk Reduction

In 1999, the Ministry of Labor (currently the Ministry of Health, Labour and Welfare) provided guidelines on a management system for occupational health and safety. In response, Murata took steps to organize and introduce this system. The occupational health and safety management system reduces potential causes of accidents, and systematically improves the level of occupational health and safety through a plan to continuously promote the process chain encompassing planning, enforcement, assessment and improvement.

Murata subsequently introduced risk assessments that are the core

of this system. In conducting a risk assessment when new chemical substances are introduced, we use our chemical substance inspection and registration system to survey all relevant legal regulations and confirm the appropriate facilities and other aspects are in place before receiving the chemical at the plant.

We have completed a risk assessment for the design and manufacture of production facilities on a trial basis in the Model Division and will extend this to all plants and offices in April 2004. Furthermore, we conduct occupational health and safety inspections whenever we introduce a facility at a production site.

Employee Health Management

Activities that contribute to the health of employees are growing in importance. Murata itself has established a basic approach to promoting the health of its employees, and on this basis we have implemented activities intended to promote health maintenance. In short, we are taking steps to support both the physical and mental health of our employees.

During routine health checkups, we also implement motor function measurements and use these measurements to provide guidance related to health, exercise, and nutrition. We also support events that promote exercise, primarily walking, in cooperation with health insurance societies, as well as health-promoting activities in which individuals set and adopt their own goals for healthier lifestyles.

Additionally, we have provided a system through which industrial physicians as well as doctors specializing in mental

health regularly visit the group's major plants and offices. This effort includes sponsored counseling and mental health classes. In this way, we are providing the information and opportunities required to ensure good mental and physical health.



A Commitment to Stakeholders

To Our Society and Community: Social Contribution and Tree-planting

We want our presence to be a source of joy and pride in the communities in which we operate. Toward this end, we are promoting community volunteering activities, and tree-planting of company grounds.

Community Volunteering Activities

Each of Murata's plants and subsidiaries makes an effort to be recognized as a member of local society, and seeks to cooperate with both local residents and the government on initiatives emphasizing community environmental preservation. In this connection, Murata and some of its subsidiaries participate in a special holiday system intended to allow employees to participate in volunteer activities benefiting the community.

Participating in Community Cleanup Activities

In an effort to fulfill their role effectively as members of their respective communities, Murata's plants and subsidiaries actively participate in environmental amelioration activities, including cleanup of the areas surrounding the plants, with the sponsorship of local governments and communities.



Members from Yokohama Technical Center of Murata Manufacturing Co., Ltd. participate in cleanup activities.

Sponsor of the "Wakaba Cup," the National Elementary School Student Badminton Championship

Since 1988, when the National Athletic Meet was held in Kyoto, many residents of Nagaokakyo city, home of Murata's head office, have started to enjoy badminton. Murata has been sponsoring the Wakaba Cup (the National Elementary School Students Badminton Championship) every year, since the 7th Championship was held at Nagaokakyo in 1991.



Murata Science Promotion Foundation

The foundation has been offering support and financial aid for research on the natural sciences and humanities since 1985. It places a special emphasis on original fundamental research, an area in which Japan is considered to be lagging behind other advanced nations.



MYU-Town Activities

The community activities of MYU-Town—which stands for "Murata Yasu United-Town"—are intended to unite Murata and Yasu community. Its main activities are environmental improvement of community welfare facilities and donations of wheelchairs purchased with the proceeds from charity bazaars.



Tree-planting of Plants and Offices

Murata is taking steps to ensure harmony with local communities through tree-planting of plant and office sites. This effort includes restoration of virgin forests and remediation of the local natural environment.

Planning of Tree-planting

Murata has formulated a tree-planting policy and a medium-term tree-planting plan for each plant and office. As well, we have established a tree-planting policy for the entire group and have promoted active tree-planting at plants and offices. We also manage the cultivation of these trees and plants by maintaining a database of the various trees and plant species, their planting date, and their features. This database is utilized in our tree-planting plans.

Harmony with Local Communities

In the belief that abundant greenery contributes to harmony with the community, we are promoting the cultivation of trees and plants (80,000 trees and shrubs of 250 species) that allow people to enjoy the changing seasons. Visitors to these areas of flowering trees and arbors in prefectures and in municipalities that focus on tree-growing in virgin forests have an opportunity to enjoy flowers, fruit, fragrances, new greenery, autumn colors, and wild birds and insects.

For example, Izumo Murata Manufacturing is actively planting 1,000 varieties of

camellia and 59 varieties of cherry trees. These areas are opened to the local community when the flowers are in season.

A camellia tour of Izumo Murata Manufacturing was undertaken as an optional tour of the 14th National Camellia Summit Matsue held in March 2004. Many people participated on the day and enjoyed viewing camellia in the compound. Information was provided that describes the various species and their characteristics.



Optional tour of the 14th National Camellia Summit Matsue (Izumo Murata Manufacturing)

Murata Group Companies

* Domestic and overseas subsidiaries listed are those in existence as of March 31, 2004.

* The environmental data listed by plant beginning on page 39 represent the environmental impacts data of Murata Manufacturing Co., Ltd. (excluding sales branches) and domestic and overseas production subsidiaries marked with an asterisk.

• Domestic Sites

Murata Manufacturing Co., Ltd.

Head Office: Nagaoka Plant*

Yokaichi Plant*

Yasu Plant*

Yokohama Technical Center*

Tokyo Branch*



Head Office: Nagaoka Plant

Fukui Murata Manufacturing Co., Ltd.*
Izumo Murata Manufacturing Co., Ltd.*
Toyama Murata Manufacturing Co., Ltd.*
Komatsu Murata Manufacturing Co., Ltd.*
Kanazawa Murata Manufacturing Co., Ltd.*
Okayama Murata Manufacturing Co., Ltd.*
Kanazu Murata Manufacturing Co., Ltd.*
Sabae Murata Manufacturing Co., Ltd.*
Iwami Murata Manufacturing Co., Ltd.*

Hakui Murata Manufacturing Co., Ltd.*
Himi Murata Manufacturing Co., Ltd.*
Azumi Murata Manufacturing Co., Ltd.*
Wakura Murata Manufacturing Co., Ltd.*
Tome Murata Manufacturing Co., Ltd.*
Anamizu Electronics Industries, Ltd.*
Asuwa Electronics Industries, Ltd.*
Ogaki Murata Manufacturing Co., Ltd.
Murata Land & Building Co., Ltd.
and seven other companies

• Overseas Sites

North & South America

Murata Electronics North America, Inc. (USA)*

Murata Electronics Trading México, S. A. de C. V.

Murata World Comercial Ltda. (Brazil)

Murata Amazônia Indústria E Comércio Ltda. (Brazil)*

and one other company

Europe

Murata Europe Management GmbH (Germany)

Murata Elektronik GmbH (Germany)

Murata Electronics (Netherlands) B.V.

Murata Electronics (UK) Limited

Murata Manufacturing (UK) Limited*

Murata Electronique S.A. (France)

Murata Electronics Switzerland AG

Murata Elettronica S.p.A. (Italy)

and one other company

Asia

Beijing Murata Electronics Co., Ltd. (China)*

Murata Electronics Trading (Tianjin) Co., Ltd. (China)

Wuxi Murata Electronics Co., Ltd. (China)*

Suzhou Murata Electronics Co., Ltd. (China)

Murata Electronics Trading (Shanghai) Co., Ltd. (China)

Murata Electronics Trading (Shenzhen) Co., Ltd. (China)

Murata Co., Ltd. (China)

Hong Kong Murata Electronics Co., Ltd. (China)

Korea Murata Electronics Co., Ltd.

Taiwan Murata Electronics Co., Ltd.*

Murata Electronics Singapore (Pte.) Ltd.*

Murata Electronics Philippines Inc.

Murata Electronics (Thailand), Ltd.*

Thai Murata Electronics Trading, Ltd. (Thailand)

Murata Electronics (Malaysia) Sdn. Bhd.*

Murata Trading (Malaysia) Sdn. Bhd.

• Domestic and Overseas Production Bases



Yokaichi Plant



Yasu Plant



Fukui Murata Manufacturing Co., Ltd.



Izumo Murata Manufacturing Co., Ltd.



Toyama Murata Manufacturing Co., Ltd.



Komatsu Murata Manufacturing Co., Ltd.



Kanazawa Murata Manufacturing Co., Ltd.



Okayama Murata Manufacturing Co., Ltd.



Wuxi Murata Electronics Co., Ltd. (China)



Murata Electronics Singapore (Pte.) Ltd.



Murata Electronics (Thailand), Ltd.



Murata Electronics (Malaysia) Sdn. Bhd.

Environmental Data by Murata Plants

In every Murata plant, either domestic or overseas, we maintain the control level satisfied by currently effective ordinances or agreements that are stricter than laws or regulations.

- ① The data for chemical substances in this report are in principle for those substances subjected to the laws or regulations currently effective in the country or region where the Murata plant in question is situated.
- ② The items lacking a target level are those being subjected to voluntary control.
- ③ The water quality data are the values measured at the final discharge point.
- ④ The air quality data are the values measured at the exhaust point.
- ⑤ Unless otherwise specified, the data listed below either with plants in Japan or overseas are those acquired in the period of April 1, 2003 to March 31, 2004.
- ⑥ The fuel consumption values have been obtained by converting the consumptions of heavy oil, kerosene and fuel gas into the equivalent consumption of petroleum. For this purpose, the conversion coefficient for plants in Japan and overseas is the one mentioned in the regular report per "Law Concerning the Rational Use of Energy in Japan".
- ⑦ "Recycling ratio" refers to a ratio of waste (including salable waste) sold or recycled to the total amount released (other than a waste that appears not to be coped with by the efforts of Murata). [See pages 7 and 8](#)
- ⑧ Target levels are taken from the strictest values stipulated by laws, regulations and agreements with local government, with plants either in Japan or overseas.
- ⑨ The "amounts released or transported of substance subjected to PRTR" have been calculated in compliance with the PRTR law in Japan. The results have been rounded off to the order of 0.1 ton.

Murata Manufacturing Co., Ltd. Head Office/Nagaoka Plant

26-10, Tenjin 2-chome, Nagaokakyo-shi,
Kyoto 617-8555, Japan
Electricity consumption: 7,327,209 kWh/year
Fuel consumption: 53 kl/year
Total waste released: 191 t/year
(Annual mean recycling ratio: 99.8%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8–8.6	7.5	7.0–7.7*1
BOD	160	1.7	7.7
Zinc	5	0.013	0.013
Lead	0.1	0.001	0.014
Fluorine and its compounds	15*2	0.4	3.3
Nickel	2	0.007	0.028
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Trichloroethylene	0.3	N.D.	0.003
Tetrachloroethylene	0.1	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for fluorine and its compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.3	0.01	0.02
SOx	1	0.03	0.03
NOx	180	78	78

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides

Amount released or transported of substances to be subjected to PRTR:

Any substances to be subjected to PRTR is used in an amount that necessitates registration.

Murata Manufacturing Co., Ltd. Yokaichi Plant

4-4-1, Higashiokino, Yokaichi-shi, Shiga 527-8558,
Japan
Electricity consumption: 90,142,320 kWh/year
Fuel consumption: 6,824 kl/year
Total waste released: 2,890 t/year
(Annual mean recycling ratio: 88.5%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	6.0–8.5	7.3	7.0–7.6*1
SS	20	N.D.	N.D.
COD	15	2.7	7.3
BOD	15	1.6	4.6
n-hexane (mineral oil)	3	0.08	0.7
Phenols	1	N.D.	N.D.
Copper	1	0.014	0.021
Zinc	1	0.10	0.23
Soluble iron	10	0.18	0.27
Soluble manganese	10	0.12	0.15
Total chromium	0.1	N.D.	N.D.
Number of coliform groups	3000	58	470
Total nitrogen	8	2.4	3.8
Total phosphorus	0.8	0.02	0.05
Lead	0.1	0.004	0.025
Fluorine and its compounds	8	0.1	0.2
Boron and its compounds	2	0.06	0.09
Ammonia			
Ammonium compounds	730*2	1.8	2.9
Nitrite compounds and nitrate compounds			
Nickel	—	0.024	0.058
Antimony	0.05	N.D.	N.D.
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none; number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for ammonia, ammonium compounds, nitrite compounds and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.
- [Target level]: No particular standard value per currently effective laws or regulations.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.1	0.007	0.09
SOx	0.63	N.D.	N.D.
NOx	130	51	100
Lead	7	0.06	0.16
Lead (at border of site)	0.0015	N.D.	N.D.
Phenol (at border of site)	0.2	N.D.	N.D.
Fluorine (at border of site)	0.02	N.D.	N.D.
Cadmium (at border of site)	0.001	N.D.	N.D.
Antimony (at border of site)	0.005	N.D.	N.D.
Nickel (at border of site)	—	N.D.	N.D.
Hydrogen chloride (at border of site)	0.07	N.D.	N.D.
Chlorine (at border of site)	0.03	N.D.	N.D.
Suspended particulate matter (at border of site)	—	61	67

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm; lead, mg/Nm³; others, mg/Nm³
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)
- Level of pollution was measured at several locations, each location given a unique target level. For safe evaluation, the strictest level is adopted.
- [Target level]: No particular standard value per currently effective laws or regulations.

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Antimony and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Ethylene glycol monomethyl ether	0.0	0.0	0.0	0.0	0.0	0.0	3.2
Xylene	0.1	0.0	0.0	0.0	0.0	0.0	18.6
Silver and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	0.3	8.5
Chromium and trivalent chromium compounds	0.0	0.0	0.0	0.0	0.0	0.2	0.3
Cobalt and its compounds	0.0	0.0	0.0	0.0	0.0	1.2	0.1
Water-soluble copper salts (except complex salts)	0.0	0.0	0.0	0.0	0.0	0.3	2.0
Toluene	0.4	0.0	0.0	0.0	0.0	0.2	72.5
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.8	29.7
Nickel	0.0	0.0	0.0	0.0	0.0	3.0	0.5
Nickel compounds	0.0	0.0	0.0	0.0	0.0	3.2	2.2
Di-n-butyl phthalate	0.0	0.0	0.0	0.0	0.0	0.8	0.1
Boron and its compounds	0.0	0.0	0.0	0.0	0.0	0.3	0.1
Formaldehyde	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Manganese and its compounds	0.0	0.0	0.0	0.0	0.0	2.1	0.7

- Unit: t/year

Murata Manufacturing Co., Ltd.
Yasu Plant

2288, Oshinohara, Yasu-cho, Yasu-gun,
Shiga 520-2393, Japan
Electricity consumption: 22,151,751 kWh/year
Fuel consumption: 15,590 kL/year
Total waste released: 10,892 t/year
(Annual mean recycling ratio: 94.4%)

Water quality data:
[Outlets #1 and #2]
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	6.0–8.5	7.4	6.0–8.3*1
SS	25	0.25	3
COD	20	4.5	8.5
BOD	20	2.8	13.0
n-hexane (mineral oil)	3	N.D.	N.D.
Phenols	1	N.D.	N.D.
Copper	1	0.004	0.007
Zinc	1	0.042	0.073
Soluble iron	10	0.09	0.11
Soluble manganese	10	0.022	0.038
Total chromium	0.1	N.D.	N.D.
Hexavalent chromium	N.D.	N.D.	N.D.
Number of coliform groups	3000	4.5	23
Total nitrogen	8	0.41	4.3
Total phosphorus	0.6	0.01	0.05
Cadmium	N.D.	N.D.	N.D.
Cyanide	N.D.	N.D.	N.D.
Lead	0.1	N.D.	N.D.
Arsenic	N.D.	N.D.	N.D.
Mercury	N.D.	N.D.	N.D.
Alkyl mercury compounds	N.D.	N.D.	N.D.
Fluorine and its compounds	6	N.D.	0.3
Boron and its compounds	2	0.04	0.27
Ammonia			
Ammonium compounds	730*2	0.1	2.1
Nitrite compounds and nitrate compounds			
Nickel	—	N.D.	N.D.
Tin	—	N.D.	N.D.
Antimony	0.05	N.D.	N.D.
Thiuram	N.D.	N.D.	N.D.
Simazine	N.D.	N.D.	N.D.
Benthocarb	N.D.	N.D.	N.D.
Selenium	N.D.	N.D.	N.D.
PCB	N.D.	N.D.	N.D.
Organic phosphides	N.D.	N.D.	N.D.
Dichloromethane	N.D.	N.D.	N.D.
Carbon tetrachloride	N.D.	N.D.	N.D.
1,2-dichloroethane	N.D.	N.D.	N.D.
1,1,1-trichloroethane	N.D.	N.D.	N.D.
1,1,2-trichloroethane	N.D.	N.D.	N.D.
1,1-dichloroethylene	N.D.	N.D.	N.D.
Cis-1,2-dichloroethylene	N.D.	N.D.	N.D.
Trichloroethylene	N.D.	N.D.	N.D.
Tetrachloroethylene	N.D.	N.D.	N.D.
1,3-dichloropropene	N.D.	N.D.	N.D.
Benzene	N.D.	N.D.	N.D.

- Unit: pH, none; number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for ammonia, ammonium compounds, nitrite compounds and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.
- [Target level]: No particular standard value per currently effective laws or regulations.

[Outlets #3 and #4]
The management level is strictly enough to meet the target level.

Target level	Target level	Average	Max. value
pH	6.0–8.5	7.7	6.6–8.4*1
SS	25	2.5	12
COD	15	4.4	8.1
BOD	15	1.9	8.9
n-hexane (mineral oil)	3	N.D.	N.D.
Phenols	1	N.D.	N.D.
Copper	1	0.010	0.025
Zinc	1	0.028	0.046
Soluble iron	10	0.31	0.49
Soluble manganese	10	0.11	0.18
Total chromium	0.1	N.D.	N.D.
Hexavalent chromium	N.D.	N.D.	N.D.
Number of coliform groups	3000	3	15
Total nitrogen	8	0.2	3
Total phosphorus	0.5	0.06	0.27
Cadmium	N.D.	N.D.	N.D.
Cyanide	N.D.	N.D.	N.D.
Lead	0.1	N.D.	N.D.
Arsenic	N.D.	N.D.	N.D.
Mercury	N.D.	N.D.	N.D.
Alkyl mercury compounds	N.D.	N.D.	N.D.
Fluorine and its compounds	6	N.D.	0.2
Boron and its compounds	2	N.D.	0.06
Ammonia			
Ammonium compounds	730*2	N.D.	1.2
Nitrite compounds and nitrate compounds			
Nickel	—	0.017	0.063
Tin	—	N.D.	N.D.
Antimony	0.05	N.D.	N.D.
Thiuram	N.D.	N.D.	N.D.
Simazine	N.D.	N.D.	N.D.
Benthocarb	N.D.	N.D.	N.D.
Selenium	N.D.	N.D.	N.D.
PCB	N.D.	N.D.	N.D.
Organic phosphides	N.D.	N.D.	N.D.
Dichloromethane	N.D.	N.D.	N.D.
Carbon tetrachloride	N.D.	N.D.	N.D.
1,2-dichloroethane	N.D.	N.D.	N.D.
1,1,1-trichloroethane	N.D.	N.D.	N.D.
1,1,2-trichloroethane	N.D.	N.D.	N.D.
1,1-dichloroethylene	N.D.	N.D.	N.D.
Cis-1,2-dichloroethylene	N.D.	N.D.	N.D.
Trichloroethylene	N.D.	N.D.	N.D.
Tetrachloroethylene	N.D.	N.D.	N.D.
1,3-dichloropropene	N.D.	N.D.	N.D.
Benzene	N.D.	N.D.	N.D.

- Unit: pH, none; number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for ammonia, ammonium compounds, nitrite compounds and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.
- [Target level]: No particular standard value per currently effective laws or regulations.

Air quality data:
The management level is strictly enough to meet the target level.

Target level	Target level	Average	Max. value
Soot and dust	0.05	N.D.	N.D.
NOx	70	13	13
NOx	150	53	77
Lead	7	N.D.	N.D.
Fluorine compounds	3	N.D.	N.D.
Antimony	3	N.D.	N.D.
Ethyl acetate	—	N.D.	N.D.

- Unit: soot and dust, g/Nm³; NOx, ethyl acetate, ppm; lead, fluorine compounds, antimony, mg/Nm³
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)
- [Target level]: No particular standard value per currently effective laws or regulations.

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Bisphenol A type liquid-epoxy resin	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Ethylbenzene	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ethylene glycol monomethyl ether	0.0	0.0	0.0	0.0	0.0	0.0	2.5
1-octanol	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Xylene	0.0	0.0	0.0	0.0	0.0	0.0	8.1
Silver and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	1.0	0.3
Tetrahydromethyl phthalate anhydride	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Toluene	0.9	0.0	0.0	0.0	0.0	0.0	20.2
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Nickel	0.0	0.0	0.0	0.0	0.0	0.0	5.4
Nickel compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Hydrazine	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boron and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Formaldehyde	0.0	0.0	0.0	0.0	0.0	0.0	0.0

- Unit: t/year

Environmental Data by Murata Plants

Murata Manufacturing Co., Ltd. Yokohama Technical Center

18-1, Hakusan 1-chome, Midori-ku Yokohama-shi,
Kanagawa 226-0006, Japan
Electricity consumption: 4,188,384 kWh/year
Fuel consumption: 580 kL/year
Total waste released: 55 t/year
(Annual mean recycling ratio: 98.6%)

Water quality data:
The management level is strictly enough to meet the target level.
Process wastewater

Item	Target level	Average	Max. value
pH	5.0–9.0	7.3	7.0–7.6*1
SS	—	0.6	4
COD	—	2.9	3.2
BOD	—	0.4	0.8
n-hexane (mineral oil)	5	N.D.	0.7
Copper	1	0.006	0.01
Zinc	1	0.007	0.019
Soluble iron	3	0.4	1.4
Soluble manganese	1	0.002	0.007
Total chromium	2	N.D.	N.D.
Hexavalentchromium	0.5	N.D.	N.D.
Lead	0.1	N.D.	0.01
Arsenic	0.1	N.D.	N.D.
Fluorine and its compounds	15*2	0.1	0.2
Boron and its compounds	25*2	N.D.	0.04
Nickel	1	N.D.	0.007
Tin	—	N.D.	N.D.
Barium	—	N.D.	0.012
Palladium	—	N.D.	N.D.
Strontium	—	0.016	0.03
Zirconium	—	0.02	0.29
Antimony	—	N.D.	N.D.
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

Domestic wastewater

Item	Target level	Average	Max. value
pH	5.0–9.0	6.8	6.2–7.4*1
SS	—	81	130
COD	—	90	110
BOD	—	165	190
n-hexane (animal and vegetable oil and fats)	—	21	47

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for fluorine, fluorine compounds, boron, boron compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.
- [Target level]: No particular standard value per currently effective laws or regulations.

Air quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
NOx B-1 boiler	0.13	0.127	0.127
NOx B-2 boiler	0.055	0.037	0.037
NOx chilled/hot water generator	0.046	0.016	0.028
NOx gas engine	0.111	0.019	0.028

- Unit: NOx, Nm³/h
- NOx: Nitrogen oxides

Amount released or transported of substances to be subjected to PRTR:
Any substances to be subjected to PRTR is used in an amount that necessitates registration.

Murata Manufacturing Co., Ltd. Tokyo Branch

29-12, Shibuya 3-chome, Shibuya-ku,
Tokyo 150-0002, Japan
Electricity consumption: 1,161,336 kWh/year
Fuel consumption: 58 kL/year
Total waste released: 39 t/year
(Annual mean recycling ratio: 89.3%)

Water quality data:
There is no waste water subject to monitoring, and no measurement is performed for this purpose.

Air quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
NOx	45	43	43

- Unit: NOx, ppm
- NOx: Nitrogen oxides

Amount released or transported of substances to be subjected to PRTR:
Any substances to be subjected to PRTR is used in an amount that necessitates registration.

Fukui Murata Manufacturing Co., Ltd.

1, 13-go, Okamoto-cho, Takefu-shi, Fukui 915-8601, Japan

Electricity consumption: 152,605,000 kWh/year

Fuel consumption: 9,266 kL/year

Total waste released: 6,428 t/year

(Annual mean recycling ratio: 91.9%)

[Takefu Plant]

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8–8.6	7.4	6.8–7.8*1
SS	45	2	16
BOD	30	2.8	19
n-hexane (mineral oil)	5	N.D.	0.6
Phenols	5	N.D.	N.D.
Copper	3	0.025	0.11
Zinc	5	0.054	0.08
Soluble iron	10	0.064	0.069
Soluble manganese	10	0.06	0.13
Total chromium	2	N.D.	N.D.
Hexavalent chromium	0.05	N.D.	N.D.
Cadmium	0.1	N.D.	N.D.
Cyanide	1	N.D.	N.D.
Lead	0.1	N.D.	0.007
Mercury	0.005	N.D.	N.D.
Arsenic	0.1	N.D.	N.D.
Fluorine and its compounds	8	N.D.	N.D.
Boron and its compounds	10	0.04	0.14
Ammonia			
Ammonium compounds	730*2	5.40	10.3
Nitrite compounds and nitrate compounds			
Nickel	5	0.009	0.075
Tin	5	N.D.	0.02
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Cis-1,2-dichloroethylene	0.4	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.
1,3-dichloropropene	0.02	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none: others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for ammonia, ammonium compounds, nitrite compounds and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.1	N.D.	N.D.
NOx	150	70	93

- Unit: soot and dust, g/Nm³; NOx, ppm
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Silver and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Toluene	5.4	0.0	0.0	0.0	0.0	0.2	0.1
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	7.6	5.4
Nickel	0.0	0.0	0.0	0.0	0.0	9.6	6.8
Nickel compounds	0.0	0.0	0.0	0.0	0.0	0.5	0.1
Di-n-butyl phthalate	0.0	0.0	0.0	0.0	0.0	0.8	0.2
Bis-2-ethylhexyl phthalate	0.0	0.0	0.0	0.0	0.0	8.0	1.6
Boron and its compounds	0.0	0.0	0.0	0.0	0.0	1.8	1.3

- Unit: t/year

[Miyazaki Plant]

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8–8.6	7.0	6.5–7.8*1
SS	45	1	9
BOD	30	1.5	5.7
n-hexane (mineral oil)	5	N.D.	0.6
Phenols	5	N.D.	N.D.
Copper	3	0.012	0.064
Zinc	5	0.039	0.078
Soluble iron	10	0.27	0.50
Soluble manganese	10	0.052	0.095
Total chromium	2	N.D.	N.D.
Hexavalent chromium	0.05	N.D.	N.D.
Cadmium	0.1	N.D.	N.D.
Cyanide	1	N.D.	N.D.
Lead	0.1	N.D.	0.009
Mercury	0.005	N.D.	N.D.
Arsenic	0.1	N.D.	N.D.
Fluorine and its compounds	8	N.D.	N.D.
Boron and its compounds	10	0.05	0.09
Ammonia			
Ammonium compounds	730*2	1.5	3.0
Nitrite compounds and nitrate compounds			
Tin	5	N.D.	N.D.
Nickel	5	0.010	0.051
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Cis-1,2-dichloroethylene	0.4	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.
1,3-dichloropropene	0.02	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none: others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for ammonia, ammonium compounds, nitrite compounds and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.1	N.D.	N.D.
NOx	150	77	95

- Unit: soot and dust, g/Nm³; NOx, ppm
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Silver and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.1	0.0

- Unit: t/year

[Shirayama Plant]

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8–8.6	7.6	7.0–8.0*1
SS	45	1	6
BOD	30	1.6	3.8
n-hexane (mineral oil)	5	N.D.	N.D.
Phenols	5	N.D.	N.D.
Copper	3	0.005	0.005
Zinc	5	N.D.	N.D.
Soluble iron	10	0.42	0.42
Soluble manganese	10	0.035	0.035
Total chromium	2	N.D.	N.D.
Hexavalent chromium	0.05	N.D.	N.D.
Cadmium	0.1	N.D.	N.D.
Cyanide	1	N.D.	N.D.
Lead	0.1	N.D.	N.D.
Mercury	0.005	N.D.	N.D.
Arsenic	0.1	N.D.	N.D.
Fluorine and its compounds	8	N.D.	N.D.
Boron and its compounds	10	N.D.	N.D.
Ammonia			
Ammonium compounds	730*2	0.23	0.23
Nitrite compounds and nitrate compounds			
Nickel	5	0.002	0.008
Tin	5	N.D.	N.D.
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	1	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.02	N.D.	N.D.
Cis-1,2-dichloroethylene	0.04	N.D.	N.D.
Trichloroethylene	0.03	N.D.	0.001
Tetrachloroethylene	0.1	N.D.	N.D.
1,3-dichloropropene	0.02	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none: others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for ammonia, ammonium compounds, nitrite compounds and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.

Air quality data:

There is not release into air subject to monitoring, and no measurement is performed for this purpose.

Amount released or transported of substances to be subjected to PRTR:

Any substances to be subjected to PRTR is used in an amount that necessitates registration.

Environmental Data by Murata Plants

Izumo Murata Manufacturing Co., Ltd.

2308, Kaminaoe, Hikawa-cho, Hikawa-gun,
Shimane 699-0696, Japan
Electricity consumption: 143,346,399 kWh/year
Fuel consumption: 4,498 kL/year
Total waste released: 7,336 t/year
(Annual mean recycling ratio: 91.5%)

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	6.0–8.5	7.4	7.1–7.7* ¹
SS	70	7	36
COD	50	5.9	21
COD (total pollutant load control)	114.4 kg/day	15.43	48.3
BOD	20	1.7	3.8
n-hexane (mineral oil)	5	N.D.	0.7
Copper	3	0.011	0.022
Number of coliform groups	3000	39	167
Total nitrogen	15	3.9	7
Total nitrogen (total pollutant load control)	84.3 kg/day	12.6	22
Total phosphorus	3	0.31	0.67
Total phosphorus (total pollutant load control)	16.9 kg/day	1.0	1.9
Cadmium	0.1	N.D.	N.D.
Cyanide	0.8	N.D.	N.D.
Lead	0.1	N.D.	N.D.
Fluorine and its compounds	15* ²	N.D.	0.3
Boron and its compounds	25* ²	0.08	0.21
Ammonia			
Ammonium compounds	730* ²	2.6	4.1
Nitrite compounds and nitrate compounds			
Nickel	8	0.08	0.28
Tin	8	N.D.	N.D.
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none: number of coliform groups, others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for fluorine, fluorine compounds, boron, boron compounds, ammonia, and ammonium compounds, nitrite compounds and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.

Air quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.1	N.D.	N.D.
SOx	10	N.D.	N.D.
NOx	150	66	110

- Unit: soot and dust, g/Nm³: SOx, Nm³/h: NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)

Toyama Murata Manufacturing Co., Ltd.

345, Ueno, Toyama-shi, Toyama 939-8195, Japan
Electricity consumption: 39,661,000 kWh/year
Fuel consumption: 250 kL/year
Total waste released: 662 t/year
(Annual mean recycling ratio: 90.1%)

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	6.0–8.3	7.6	7.5–7.8* ¹
SS	50	N.D.	2
BOD	20	2.9	5.4
n-hexane (mineral oil)	3	N.D.	1.3
Copper	3	0.023	0.033
Number of coliform groups	3000	3	5
Lead	0.1	0.02	0.03
Fluorine and its compounds	15* ²	N.D.	N.D.
Boron and its compounds	25* ²	0.02	0.05
Ammonia			
Ammonium compounds	730* ²	2.9	3.6
Nitrite compounds and nitrate compounds			
Tin	—	0.09	0.96
Nickel	—	N.D.	0.007
1,1,1-trichloroethane	1	N.D.	N.D.
Trichloroethylene	0.1	N.D.	N.D.

- Unit: pH, none: number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for fluorine, fluorine compounds, boron, boron compounds, ammonia, and ammonium compounds, nitrite compounds and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.
- [Target level]: No particular standard value per currently effective laws or regulations.

Air quality data:
There is not release into air subject to monitoring, and no measurement is performed for this purpose.

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Silver	0.0	0.0	0.0	0.0	0.0	0.0	3.5
Chromium and trivalent chromium compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Cobalt and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Toluene	4.7	0.0	0.0	0.0	0.0	0.0	18.8
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	23.7
Nickel	0.0	0.0	0.0	0.0	0.0	0.0	3.5

- Unit: t/year

Komatsu Murata Manufacturing Co., Ltd.

93, Hikari-machi, Komatsu-shi, Ishikawa 923-8626, Japan
Electricity consumption: 18,624,187 kWh/year
Fuel consumption: 247 kL/year
Total waste released: 280 t/year
(Annual mean recycling ratio: 93.1%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8–8.6	7.6	6.9–8.3* ¹
SS	90	1	4
COD	40	4.4	16
BOD	40	6.6	37
Copper	3	0.08	0.18
Zinc	5	0.15	0.23
Soluble iron	10	0.07	0.26
n-hexane (mineral oil)	5	N.D.	N.D.
Total chromium	2	N.D.	N.D.
Hexavalent chromium	0.5	N.D.	N.D.
Number of coliform groups	3000	N.D.	N.D.
Cadmium	0.1	N.D.	0.001
Lead	0.1	N.D.	0.01
Trichloroethylene	0.3	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none; number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	—	N.D.	N.D.
SOx	—	0.16	0.23
NOx	—	82	90

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)
- [Target level]: No particular standard value per currently effective laws or regulations.

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred			
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling	
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.1	

- Unit: t/year

Kanazawa Murata Manufacturing Co., Ltd.

Chi-18, Sodanimachi, Tsurugi-machi, Ishikawa-gun, Ishikawa 920-2101, Japan
Electricity consumption: 50,257,275 kWh/year
Fuel consumption: 3,089 kL/year
Total waste released: 1,049 t/year
(Annual mean recycling ratio: 100%)

[Kanazawa Plant]

Water quality data:

The management level is strictly enough to meet the target level.

Target level	Target level	Average	Max. value
pH	6.0–8.5	7.8	7.4–8.2* ¹
SS	70	3	11
BOD	20	2.3	14
n-hexane (mineral oil)	5	N.D.	0.7
Phenols	5	N.D.	N.D.
Copper	3	N.D.	N.D.
Zinc	5	0.08	0.20
Soluble iron	10	N.D.	0.30
Soluble manganese	10	N.D.	0.14
Total chromium	1.6	N.D.	N.D.
Hexavalent chromium	0.5	N.D.	N.D.
Number of coliform groups	3000	3	27
Cadmium	0.1	N.D.	N.D.
Cyanide	0.8	N.D.	N.D.
Lead	0.1	N.D.	N.D.
Mercury	0.005	N.D.	N.D.
Arsenic	0.1	N.D.	N.D.
Fluorine and its compounds	12	0.2	4.7
Boron and its compounds	25* ²	0.15	0.24
Ammonia			
Ammonium compounds	730* ²	2.9	5.5
Nitrite compounds and nitrate compounds			
Nickel	—	0.029	0.048
Antimony	—	0.008	0.012
Dichloromethane	0.2	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none; number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for boron, boron compounds, ammonia, ammonium compounds, nitrite compounds, and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.
- [Target level]: No particular standard value per currently effective laws or regulations.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.1	N.D.	N.D.
SOx	6.05	N.D.	N.D.
NOx	150	90	140* ¹
Hydrogen chloride	60	N.D.	0.16
Fluorine compounds	10	N.D.	0.3

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm; hydrogen chloride, fluorine compounds, mg/Nm³
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)
- Level of pollution was measured at several locations, each location given a unique target level. For safe evaluation, the strictest level is adopted.
- *1: Though below the permissible maximum, the measured value was higher than normal because the operating conditions of the absorption chilled water/hot water generator had not been optimized. This value returned to normal following inspection, adjustment, and re-measurement by the manufacturer.

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred			
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling	
Monoethanol amine	0.0	0.0	0.0	0.0	0.0	0.0	6.1	
Bisphenol A type liquid-epoxy resin	0.0	0.0	0.0	0.0	0.0	0.0	0.5	
Xylene	0.6	0.0	0.0	0.0	0.0	0.0	0.5	
Nonyl phenol	0.0	0.0	0.0	0.0	0.0	0.0	2.0	

- Unit: t/year

[Nishikanazawa Plant]

Water quality data:

The management level is strictly enough to meet the target level.

Target level	Target level	Average	Max. value
pH	5.0–9.0	7.6	7.3–7.9* ¹
SS	600	5	22
BOD	600	14	46
n-hexane (animal and vegetable oils and fats)	30	4.3	12
Phenols	5	N.D.	N.D.
Copper	3	N.D.	N.D.
Zinc	5	0.12	0.28
Soluble iron	10	N.D.	N.D.
Soluble manganese	10	N.D.	N.D.
Total chromium	2	N.D.	N.D.
Lead	0.1	0.02	0.07
Iodine	220	N.D.	1.6
Fluorine and its compounds	8	0.5	1.7
1,1,1-trichloroethane	3	N.D.	N.D.
Temperature	45	18	27

- Unit: pH, none; number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:

The management level is strictly enough to meet the target level.

Target level	Target level	Average	Max. value
Soot and dust	0.3	N.D.	N.D.
SOx	0.9	0.16	0.21
NOx	180	78	79

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred			
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling	
Bisphenol A type liquid-epoxy resin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

- Unit: t/year

Environmental Data by Murata Plants

Okayama Murata Manufacturing Co., Ltd.

77, Fukumoto, Oku-cho, Oku-gun,
Okayama 701-4241, Japan
Electricity consumption: 39,789,360 kWh/year
Fuel consumption: 3,715 kL/year
Total waste released: 1,983 t/year
(Annual mean recycling ratio: 94.0%)

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	6.0–8.5	7.5	7.4–7.7*1
SS	30	N.D.	N.D.
COD	10	2.1	4.8
BOD	10	0.7	0.8
n-hexane (mineral oil)	2	N.D.	0.7
Ammonia			
Ammonium compounds	730*2	2.7	7.5
Nitrite compounds and nitrate compounds			
Total chromium			
Hexavalent chromium	0.05	N.D.	N.D.
Total nitrogen	60	3.2	7.8
Organic nitrogen	—	0.2	0.3
Total phosphorus	8	0.4	1.4
Lead	0.1	N.D.	0.007
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for ammonia, ammonium compounds, nitrite compounds and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.

Air quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.05	N.D.	N.D.
SOx*1	4.91	N.D.	N.D.
NOx	100	51	53

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: Level of pollution was measured at several locations, each location given a unique target level. For safe evaluation, the strictest level is adopted.

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred			
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling	
1-octanol	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
Silver and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Toluene	0.2	0.0	0.0	0.0	0.0	0.0	0.0	20.9
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.5
Nickel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.8
Nickel compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6
Bis-2-ethylhexyl phthalate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4
Manganese and its compounds	0.0	0.0	0.0	0.0	0.0	0.2	0.0	

- Unit: t/year

Kanazu Murata Manufacturing Co., Ltd.

10-28, Hananomori 2-chome, Awara-shi,
Fukui 919-0633, Japan
Electricity consumption: 8,843,748 kWh/year
Fuel consumption: 89 kL/year
Total waste released: 216 t/year
(Annual mean recycling ratio: 81.5%)

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8–8.6	7.3	6.8–7.7*1
SS	120	1.5	6
COD	160	4.6	6.1
BOD	120	3.3	5.2
n-hexane (mineral oil)	5	N.D.	N.D.
Lead	0.1	N.D.	N.D.
Total chromium	2	N.D.	N.D.
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.3	N.D.	N.D.
SOx	4.3	0.049	0.069
NOx	260	79.5	83

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred			
	Atmosphere	Public waters	Landfill	Soil	Sewage	Waste	Recycling	
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.4	

- Unit: t/year

[Natsume Plant]

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8–8.6	8.0	7.8–8.1*1
SS	200	N.D.	N.D.
COD	160	1.1	1.3
BOD	160	1.6	1.9
n-hexane (mineral oil)	5	N.D.	N.D.
Cadmium	0.1	N.D.	N.D.
Lead	0.1	0.015	0.03

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:
There is not release into air subject to monitoring, and no measurement is performed for this purpose.

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred			
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling	
Bisphenol A type liquid-epoxy resin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.4	
Di-n-butyl phthalate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

- Unit: t/year

Sabae Murata Manufacturing Co., Ltd.

2-82, 1-chome, Miyuki-cho, Sabae-shi,
Fukui 916-0015, Japan
Electricity consumption: 11,301,000 kWh/year
Fuel consumption: 311 kL/year
Total waste released: 862 t/year
(Annual mean recycling ratio: 99.2%)

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.7–8.7	7.1	6.6–7.6*1
SS	300	16	33
Copper	3	0.13	0.34
Zinc	5	0.027	0.045
Soluble iron	10	0.035	0.061
Soluble manganese	10	N.D.	0.004
Total chromium	2	N.D.	N.D.
Hexavalent chromium	0.5	N.D.	N.D.
Cyanide	1	N.D.	N.D.
Lead	0.1	0.004	0.03
Contents ammonia nitrogen, nitrite nitrogen and nitrate nitrogen	125	23.7	48.8
Iodine	220	0.6	0.6
Fluorine and its compounds	8	1.26	4
Nickel	5	0.14	0.33

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.3	N.D.	N.D.
SOx	2.1	0.12	0.17
NOx	260	42	50

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred			
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling	
Nickel	0.0	0.0	0.0	0.0	0.0	0.0	1.0	
Nickel compounds	0.0	0.0	0.0	0.0	0.0	2.2	0.0	

- Unit: t/year

Iwami Murata Manufacturing Co., Ltd.

Ohda Yi 795-1, Ohda-cho, Ohda-shi,
Shimane 694-0064, Japan
Electricity consumption: 7,284,858 kWh/year
Fuel consumption: 200 kL/year
Total waste released: 350 t/year
(Annual mean recycling ratio: 93.8%)

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8–8.6	7.9	7.2–8.2*1
SS	200	1.7	5
COD	160	6.6	10
BOD	160	2.5	5.1
n-hexane (mineral oil)	5	0.2	0.6
Copper	3	0.008	0.009
Zinc	5	0.07	0.17
Soluble iron	10	0.57	0.9
Soluble manganese	10	0.06	0.09
Number of coliform groups	3000	151	420
Lead	0.1	0.006	0.019
Nickel	—	0.002	0.008
Tin	—	N.D.	N.D.
Barium	—	0.04	0.06
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Trichloroethylene	0.3	0.001	0.007
Tetrachloroethylene	0.1	N.D.	N.D.

- Unit: pH, none: number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- [Target level]: No particular standard value per currently effective laws or regulations.

Air quality data:
There is not release into air subject to monitoring,
and no measurement is performed for this purpose.

Amount released or transported of substances to be
subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Bisphenol A type liquid-epoxy resin	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ethylbenzene	3.2	0.0	0.0	0.0	0.0	0.0	0.0
Xylene	1.8	0.0	0.0	0.0	0.0	0.0	0.1
Styrene	4.0	0.0	0.0	0.0	0.0	0.0	1.4
Toluene	0.7	0.0	0.0	0.0	0.0	0.0	0.3
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.7

- Unit: t/year

Hakui Murata Manufacturing Co., Ltd.

52, Yanagibashi-machi, Hakui-shi,
Ishikawa 925-8555, Japan
Electricity consumption: 6,139,422 kWh/year
Fuel consumption: 100 kL/year
Total waste released: 349 t/year
(Annual mean recycling ratio: 94.3%)

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8–8.6	8	7.4–8.2*1
SS	40	7	12
COD	90	4.8	8.7
BOD	40	1.4	2.2
n-hexane (mineral oil)	5	N.D.	N.D.
Copper	3	0.007	0.014
Soluble iron	10	1.9	3.2
Total chromium	2	N.D.	N.D.
Number of coliform groups	3000	24	64
Lead	0.1	0.015	0.016
1,1,1-trichloroethane	3	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.

- Unit: pH, none: number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.3	N.D.	N.D.
SOx	5.08	0.24	0.37
NOx	180	24	24

- Unit: soot and dust, g/Nm³: SOx, Nm³/h; NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)

Amount released or transported of substances to be
subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Bisphenol A type liquid-epoxy resin	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Toluene	0.6	0.0	0.0	0.0	0.0	1.7	0.1
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	24.6

- Unit: t/year

Himi Murata Manufacturing Co., Ltd.

12-5, Oura, Himi-shi, Toyama 935-0103, Japan
Electricity consumption: 8,469,192 kWh/year
Fuel consumption: 61 kL/year
Total waste released: 370 t/year
(Annual mean recycling ratio: 79.9%)

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8–8.6	6.7	6.6–6.8*1
SS	120	1.2	4
BOD	25	3.5	6
n-hexane (mineral oil)	5	0.8	1.1
Copper	1	0.033	0.042
Total chromium	2	N.D.	N.D.
Hexavalent chromium	0.5	N.D.	N.D.
Number of coliform groups	3000	N.D.	N.D.
Cadmium	0.1	N.D.	N.D.
Lead	0.1	0.014	0.02
1,1,1-trichloroethane	3	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.

- Unit: pH, none: others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.3	0.005	0.005
SOx	13	0.020	0.022
NOx	180	80	81

- Unit: soot and dust, g/Nm³: SOx, Nm³/h; NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides

Amount released or transported of substances to be
subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Ethylbenzene	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Xylene	1.2	0.0	0.0	0.0	0.0	0.1	0.0
Silvers and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.7
Toluene	3.6	0.0	0.0	0.0	0.0	14.3	0.0
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.1	1.7

- Unit: t/year

Environmental Data by Murata Plants

Azumi Murata Manufacturing Co., Ltd.

1020, Takibe, Toyoshina-machi, Minamiazumi-gun,
Nagano 399-8294, Japan
Electricity consumption: 11,653,668 kWh/year
Fuel consumption: 903 kL/year
Total waste released: 741 t/year
(Annual mean recycling ratio: 95.9%)

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8–8.6	7.4	7.2–7.5*1
SS	600	5	7
BOD	600	8.5	8.9
n-hexane (mineral oil)	5	1.7	2.1
Copper	3	0.05	0.1
Zinc	5	0.055	0.095
Soluble iron	10	0.049	0.062
Lead	0.1	0.002	0.003
Fluorine and its compounds	8	0.1	0.1
Boron and its compounds	10	1.44	4.04
Contents ammonia nitrogen, nitrite nitrogen and nitrate nitrogen	380	1.7	3.8

- Unit: pH, none: others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.1	0.003	0.004
SOx	6.3	N.D.	N.D.
NOx	150	73.7	82

- Unit: soot and dust, g/Nm³: SOx, Nm³/h: NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred			
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling	
Silver and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3
Nickel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7
Nickel compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.9
Di-n-butyl phthalate	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.6

- Unit: t/year

Wakura Murata Manufacturing Co., Ltd.

1, U, Ishizaki-machi, Nanao-shi,
Ishikawa 926-0173, Japan
Electricity consumption: 4,389,912 kWh/year
Fuel consumption: 115 kL/year
Total waste released: 365 t/year
(Annual mean recycling ratio: 93.2%)

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8–8.6	7.8	7.4–8.0*1
SS	90	7.38	24
COD	40	6	20
BOD	40	10	29
n-hexane (mineral oil)	5	0.2	1.3
Copper	3	0.007	0.013
Zinc	5	0.044	0.081
Number of coliform groups	3000	27	74
Total nitrogen	120	21	94
Total phosphorus	16	1.5	4.1
Lead	0.1	0.001	0.008

- Unit: pH, none: number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.3	N.D.	N.D.
SOx	1.5	N.D.	N.D.
NOx	180	65	84

- Unit: soot and dust, g/Nm³: SOx, Nm³/h: NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred			
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling	
Bisphenol A type liquid-epoxy resin	0.0	0.0	0.0	0.0	0.0	0.4	0.0	
Tetrahydromethylphthalic anhydride	0.1	0.0	0.0	0.0	0.0	0.4	0.0	
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.1	3.9	

- Unit: t/year

Tome Murata Manufacturing Co., Ltd.

11-1, Nakae 4-chome, Sanuma, Hasama-cho,
Tome-gun, Miyagi 987-0511, Japan
Electricity consumption: 6,103,251 kWh/year
Fuel consumption: 124 kL/year
Total waste released: 34 t/year
(Annual mean recycling ratio: 100%)

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.0–9.0	6.5	6.2–6.8*1
SS	600	11	16
BOD	600	13	26
n-hexane (mineral oil)	30	3.6	6.3
Copper	3	0.010	0.021
Zinc	5	0.038	0.077
Fluorine and its compounds	8	N.D.	N.D.
Boron and its compounds	10	0.02	0.02
Contents ammonia nitrogen, nitrite nitrogen and nitrate nitrogen	380	0.03	0.21

- Unit: pH, none: others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.3	0.017	0.024
SOx	3.94	0.038	0.043
NOx	180	68	73

- Unit: soot and dust, g/Nm³: SOx, Nm³/h: NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- Level of pollution was measured at several locations, each location given a unique target level. For safe evaluation, the strictest level is adopted

Amount released or transported of substances to be subjected to PRTR:
Any substances to be subjected to PRTR is used in an amount that necessitates registration.

Anamizu Electronics Industries, Ltd.

Chi-53, Ohmachi, Anamizu-machi, Fugeshi-gun,
Ishikawa 927-0026, Japan

Electricity consumption: 2,993,145 kWh/year

Fuel consumption: 32 kL/year

Total waste released: 103 t/year

(Annual mean recycling ratio: 88.7%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8–8.6	7.4	6.9–7.8*1
SS	200	25	46
COD	80	23.3	48
n-hexane (mineral oil)	5	0.9	1.2
Zinc	5	0.14	0.22
Soluble iron	10	0.14	0.3
Lead	0.1	0.01	0.02
Fluorine and its compounds	15*2	N.D.	N.D.
Boron and its compounds	25*2	0.023	0.03
Ammonia			
Ammonium compounds	730*2	9.4	20.5
Nitrile compounds and nitrate compounds			
Nickel	—	N.D.	N.D.
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: The target levels for fluorine, fluorine compounds, boron, boron compounds, ammonia, and ammonium compounds, nitrile compounds and nitrate compounds are temporary requirements for the electronic component manufacturing industry in Japan. They were stipulated by the associated laws and remained in effect until June 30, 2004.
- [Target level]: No particular standard value per currently effective laws or regulations.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Soot and dust	0.3	N.D.	N.D.
SOx	1.1	0.019	0.021
NOx	180	84	86

- Unit: soot and dust, g/Nm³; SOx, Nm³/h; NOx, ppm
- SOx: Sulfur oxides
- NOx: Nitrogen oxides
- N.D.: not greater than minimum limit of determination (Not Detected)

Amount released or transported of substances to be subjected to PRTR:

Chemical compound name	Amount released				Amount transferred		
	Atmosphere	Public waters	Soil	Landfill	Sewage	Waste	Recycling
Bisphenol A type liquid-epoxy resin	0.0	0.0	0.0	0.0	0.0	1.3	0.0
Ethylbenzene	0.8	0.0	0.0	0.0	0.0	0.9	0.0
Xylene	0.9	0.0	0.0	0.0	0.0	1.1	0.0
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	13.2

- Unit: t/year

Asuwa Electronics Industries, Ltd.

1321, Emorinaka 2-chome, Fukui-shi,
Fukui 918-8025, Japan

Electricity consumption: 844,842 kWh/year

Fuel consumption: 0 kL/year

Total waste released: 6 t/year

(Annual mean recycling ratio: 86.8%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.8–8.6	7.9	7.7–8.1*1
SS	200	5	7
BOD	160	11	12
n-hexane (mineral oil)	5	N.D.	0.6
Number of coliform groups	3000	47	91
Cadmium	N.D.	N.D.	N.D.
Lead	0.1	0.03	0.07
Dichloromethane	0.2	N.D.	N.D.
Carbon tetrachloride	0.02	N.D.	N.D.
1,2-dichloroethane	0.04	N.D.	N.D.
1,1,1-trichloroethane	3	N.D.	N.D.
1,1,2-trichloroethane	0.06	N.D.	N.D.
1,1-dichloroethylene	0.2	N.D.	N.D.
Trichloroethylene	0.3	N.D.	N.D.
Tetrachloroethylene	0.1	N.D.	N.D.
Benzene	0.1	N.D.	N.D.

- Unit: pH, none; number of coliform groups, number/cc; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:

There is not release into air subject to monitoring, and no measurement is performed for this purpose.

Amount released or transported of substances to be subjected to PRTR:

Any substances to be subjected to PRTR is used in an amount that necessitates registration.

Environmental Data by Murata Plants

Murata Electronics North America, Inc. State College Operation

1900 W. College Avenue State College, PA 16801-2799 USA
Electricity consumption: 19,832,853 kWh/year
Fuel consumption: 510 kL/year
Total waste released: 390 t/year
(Annual mean recycling ratio: 28.2%)

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
BOD	—	33	60
Zinc	1.48	N.D.	0.015
Total chromium	1.71	N.D.	N.D.
Hexavalent chromium	1.5	N.D.	N.D.
Copper	2.07	N.D.	N.D.
Cadmium	0.25	N.D.	N.D.
Lead	0.43	N.D.	N.D.
Mercury	0.0002	N.D.	N.D.
Silver	0.24	N.D.	N.D.
Thallium	0.19	N.D.	N.D.
Total cyanide	0.65	N.D.	N.D.
Chloroform	0.08	N.D.	N.D.
Methylene chloride	1	N.D.	N.D.
Toluene	0.5	N.D.	N.D.
Barium	—	1.1	8.5
DBP	—	0.08	0.31
Nickel	3.1	0.2	2
Tin	—	2.8	30.6
Xylene	2.1	N.D.	N.D.
1,1,1-trichloroethane	1.5	N.D.	N.D.
γ-BHC	0.003	N.D.	N.D.
DOP	—	0.006	0.007

- Unit: mg/L
- BOD: Biochemical Oxygen Demand
- DBP: di-n-butyl phthalate
- γ-BHC: γ-benzenehexachloride (lindane)
- DOP: dioctyl phthalate
- N.D.: not greater than minimum limit of determination (Not Detected)
- [Target level]: No particular standard value per currently effective laws or regulations.

Air quality data:
There is not release into air subject to monitoring, and no measurement is performed for this purpose.

Murata Amazônia Indústria E Comércio Ltda. Manaus Operation

Avenida Buriti 5395, Distrito Industrial Manaus- Amazonas Brazil CEP 690750-000
Electricity consumption: 550,200 kWh/year
Fuel consumption: none
Total waste released: 10 t/year
(Annual mean recycling ratio: 24.8%)

Water quality data:
There is no waste water subject to monitoring, and no measurement is performed for this purpose.

Air quality data:
There is not release into air subject to monitoring, and no measurement is performed for this purpose.

Murata Manufacturing (UK) Limited

Thornbury Road, Estover Plymouth, Devon PL6 7PP, United Kingdom
Electricity consumption: 2,015,052 kWh/year
Fuel consumption: 90 kL/year
Total waste released: 147 t/year
(Annual mean recycling ratio: 80.6%)

Water quality data:
There is no waste water subject to monitoring, and no measurement is performed for this purpose.

Air quality data:

Item	Target level	Average	Max. value
CO	—	59	69
CO ₂	—	8.0	8.7
Temperature	—	102	95* ¹

- Unit: CO, ppm; CO₂, %; Temperature, °C
- CO: Carbon monoxide
- CO₂: Carbon dioxide
- * 1: Lowest temperature
- [Target level]: No particular standard value per currently effective laws or regulations.

Beijing Murata Electronics Co., Ltd.

No. 11 Tianzhu Road, Tianzhu Airport Industry Zone, Shunyi, Beijing 101312, China
Electricity consumption: 6,032,100 kWh/year
Fuel consumption: none
Total waste released: 245 t/year
(Annual mean recycling ratio: 15.4%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	6.0–8.5	7.2	7.2
SS	50	10	10
COD	60	54	54
BOD	—	17.2	17.2
Color	—	4	4

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Organic matters belonging to hydrocarbon groups other than methanes	120	3	12

- Unit: mg/Nm³

Wuxi Murata Electronics Co., Ltd.

Lot 123-125, Xingchuang 1st Road, Wuxi-Singapore Industrial Park, Wuxi, Jiangsu 214028, China
Electricity consumption: 11,663,994 kWh/year
Fuel consumption: 60 kL/year
Total waste released: 321 t/year
(Annual mean recycling ratio: 60.1%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	6.0–9.0	8.0	7.8–8.2* ¹
SS	400	60.5	60.5
COD	500	328	452* ²
Ammonical nitrogen	35	8.4	8.4
Total lead	1	N.D.	N.D.
Animal/plant oils	100	25	28

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.
- *2: Though below the permissible maximum, the maximum COD value was higher than normal because personnel had been added to accommodate the expansion of our business operations. To limit the increase in COD, we have been increasing the capacity of our wastewater treatment facilities and reconsidering our wastewater emission methods.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Lead dust	0.7	N.D.	N.D.
NOx	240	N.D.	N.D.
Benzene	12	3.6	3.6
Toluene	40	6.3	6.3
Xylene	70	N.D.	N.D.

- Unit: mg/Nm³; NOx, ppm
- NOx: Nitrogen oxides

Taiwan Murata Electronics Co., Ltd.

225 Chung-Chin Road, Taichung, Taiwan
Electricity consumption: 7,540,800 kWh/year
Fuel consumption: 0.8 kL/year
Total waste released: 326 t/year
(Annual mean recycling ratio: 83.4%)

Water quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	6.0–9.0	7.5	7.3–7.9* ¹
SS	80	13	26
COD	250	53.9	89.8
BOD	80	8.4	18.1
Temperature	35°C	27.3	30.9
Number of coliform groups	—	3333	6600
Dissolved Oxygen (DO)	3 min.	3.8	3.2* ²

- Unit: pH, none; number of coliform groups, number/cc; temperature, °C; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- *1: The minimum to maximum pH values.
- *2: The minimum Dissolved Oxygen (DO) value.
- [Target level]: No particular standard value per currently effective laws or regulations.

Air quality data:

The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Dust (emission point (1))	500	187	209
Dust (emission point (2))	406	1	1
Dust (emission point (3))	357	2	2
Dust (emission point (4))	266	N.D.	N.D.
Lead (emission points (1–3))	10	N.D.	N.D.

- Unit: mg/Nm³
- N.D.: not greater than minimum limit of determination (Not Detected)

Environmental Data by Murata Plants

Murata Electronics Singapore (Pte.) Ltd.

200 Yishun Avenue 7, Singapore 768927, Singapore
Electricity consumption: 69,409,590 kWh/year
Fuel consumption: 824 kL/year
Total waste released: 1,478 t/year
(Annual mean recycling ratio: 51.2%)

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	6.0–9.0	7.9	7.1–8.6* ¹
SS	400	14	65
COD	600	54	174
BOD	400	26	83
TDS	3000	1785	2936* ²
Sulfate	1000	327	676
Fat and oil (hydrocarbon)	60	11	41
Fat and oil (glyceride)	100	10	49
Barium	10	0.66	1.52
Nickel	10	0.29	1.94
Tin	10	0.05	0.36

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- TDS: Total Dissolved Nitrogen
- *1: The minimum to maximum pH values.
- *2: Though below the permissible maximum, an incidental high value was detected owing to a variation in the amount of wastewater released. To limit such variation, we have been reconsidering our wastewater emission methods.

Air quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Ammonia and ammonium compounds	76	N.D.	N.D.
Sulfuric acid (as SO ₃)	100	N.D.	N.D.
Dust	100	N.D.	N.D.
CO	625	8.52	26.6
Copper and its compounds	5	0.08	0.09
Benzene	5	N.D.	N.D.
Cyclohexane	-	N.D.	N.D.
Dibutyl phthalate	-	N.D.	N.D.

- Unit: mg/Nm³; CO, ppm
- CO: Carbon monoxide
- N.D.: not greater than minimum limit of determination (Not Detected)
- [Target level]: No particular standard value per currently effective laws or regulations.

Murata Electronics (Thailand), Ltd.

Northern Region Industrial Estate, 63 Moo 4, Tambol Ban-Klang, Amphur Muang, Lamphun 51000, Thailand
Electricity consumption: 32,026,803 kWh/year
Fuel consumption: none
Total waste released: 1,694 t/year
(Annual mean recycling ratio: 34.9%)

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.5–9.0	7.0	5.8–7.9* ¹
SS	200	49	85
COD	750	173	320
BOD	500	88	209
TDS	3000	276	344
TKN	100	22	59
Phenols	1	0.06	0.12
Copper	2	0.1	0.69
Zinc	5	0.09	0.17
Total iron	10	0.19	0.28
Trivalent chromium	0.75	N.D.	N.D.
Hexavalent chromium	0.25	N.D.	N.D.
Lead	0.2	0.03	0.07
Fluoride	5	0.43	0.86
Sulfide	1	0.59	0.73
Cadmium	0.03	N.D.	N.D.
Selenium	0.02	N.D.	N.D.
Barium	1	N.D.	N.D.
Nickel	1	0.05	0.1
Formaldehyde	1	0.19	0.34
Chloride	1	0.04	0.11
Oils and grease	10	2	4
Odor	Not perceived	Satisfactory	—
Color	Not perceived	Satisfactory	—
Temperature	45	33	37

- Unit: pH, none; temperature, °C; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- TDS: Total Dissolved Nitrogen
- TKN: Total Kjeldahl Nitrogen
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Dust	400	11	112
Lead	30	0.05	0.24
Chlorine	30	N.D.	N.D.
Hydrogen chloride	200	3	3
Carbon monoxide	1000	15	128
Sulfuric acid	100	10	10
Sulfur dioxide	1300	1.4	10
Nitrogen dioxide	470	5.3	19
Xylene	870	N.D.	N.D.

- Unit: mg/Nm³
- N.D.: not greater than minimum limit of determination (Not Detected)

Murata Electronics (Malaysia) Sdn. Bhd.

Plot 15, Bemban Industrial Park, Jalan Bemban, 31000 Batu Gajah, Perak, Malaysia
Electricity consumption: 4,078,515 kWh/year
Fuel consumption: 6 kL/year
Total waste released: 183 t/year
(Annual mean recycling ratio: 96.7%)

Water quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
pH	5.5–9.0	7.1	6.5–7.6* ¹
SS	100	5	15
COD	100	7	17
BOD	50	3	6
Oils and grease	10	2	4

- Unit: pH, none; others, mg/L
- pH: hydrogen ion concentration
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *1: The minimum to maximum pH values.

Air quality data:
The management level is strictly enough to meet the target level.

Item	Target level	Average	Max. value
Lead	25	0.012	0.017
SPM	400	31	33

- Unit: mg/Nm³
- SPM: Suspended Particulate Matter

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