2003

Environmental Report

Murata Group

Innovator in Electronics

C O N T E N T S

Company Name Murata Manufacturing Co., Ltd.
Date of Incorporation December 23, 1950 (established in October 1944)
Paid-in Capital ¥69,376 million (as of May 1, 2003)
Sales Amount ¥394,955 million (as of March 2003)
Number of Subsidiaries Consolidated: 53 (23 in Japan and 30 overseas)
Affiliated: 1 (overseas) (as of March 31, 2003)
Number of Employees Consolidated basis: 26,435
Parent Co. basis: 5,104 (as of March 31, 2003)
Stock Exchange Listings Domestic: Tokyo, Osaka Overseas: Singapore
Head Office 26-10, Tenjin 2-chome, Nagaokakyo-shi, Kyoto 617-8555, Japan
URL http://www.murata.com/
For more information, contact the Public Relations Section, General Administration Department.
Phone: 81-75-955-6786
Fax: 81-75-958-2219
E-mail: env@murata.co.jp

About this Environmental Report

This environmental report presents the environmental management vision, targets, details of implementation and results of the Murata Group in Japan and internationally.

In preparing this report, we made reference to the Sustainability Reporting Guidelines 2002 of GRI (Global Reporting Initiative); Environmental Report Guidelines, 2000 Edition, by the Japanese Ministry of the Environment; Environmental Reporting Guidelines 2001, by the Japanese Ministry of Economy, Trade and Industry; and other publications.

Furthermore, while we considered including very recent findings among the various statistics presented in this report, this was not feasible due to the circumstances of editing and publication.

Murata's Approach to Environmental Concerns

Although the environment is the foundation supporting the very survival of humanity and all other living organisms, the many activities of the human race have brought about global environmental problems that are among the most far-reaching challenges we face today.

The Murata Manufacturing Group ("Murata"), while making use of the Earth's finite resources amid the blessings of the natural environment, has consistently undertaken careful research and development of materials and has constructed production facilities in order to produce a variety of electronic components. In providing these important products to the world, we have given much attention to the need to use the Earth's resources efficiently. We believe that we must place special priority on business activities that allow for harmonious coexistence with the environment by not placing an undue burden on the environment.

Since its establishment, Murata has compiled the insights of its management into the Murata Philosophy that serves as the basis of the attitude and conduct of all employees of the company. Furthermore, on the occasion of the company's 50th anniversary in 1994, we developed Murata's "Mind Identity," expressing our ideals through the slogan Innovator in Electronics. This initiative expressed our wish to contribute to the realization of a richer life for people around the world through the development of the "age of electronics." As part of this effort, and while shaping the entire Murata Group into an innovator in the age of electronics, we pledge to remain continuously aware of the need to make products that do not waste energy resources and conduct production methods that do not harm the environment in all our research, development, production and other activities. Moreover, we pledge to fully consider the environment and to work strenuously to ensure harmonious coexistence with the global environment.

No business can develop or prosper without consideration for the health of the environment and society. Therefore, in fiscal 2003, we will focus on achieving our target values in three specific areas: developing an environmental cost management system, achieving zero waste emissions, and reducing carbon dioxide emissions. In addition, we will remain committed to enhancing our previous initiatives.

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,
Cusomers And Other Partners, And Our Communities

To Grow And Prosper...

With An Appreciative Feeling Of Mutual
Pride And Trust

President
Murata Manufacturing Co., Ltd.
Yasutaka Murata

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.

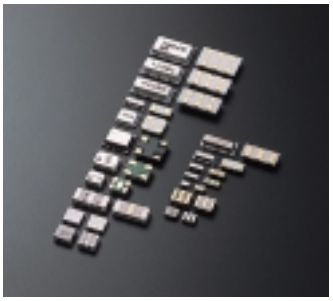
In recent years, the global electronics industry has been making rapid progress toward ever more compact and thin form factors while developing electronic devices and tools offering enhanced functionality and multifunctionality. Moreover, the market for products incorporating microwave and digital technologies 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

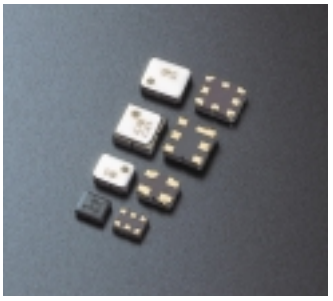
Chip Monolithic Ceramic Capacitors

Thermistors

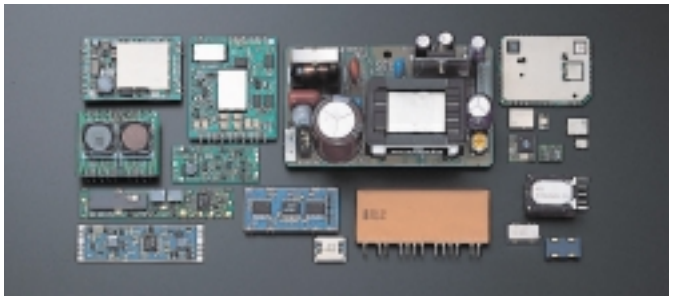
Piezoelectric Products



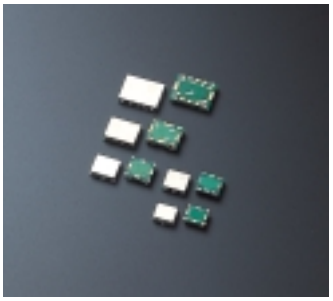
Ceramic Filters, Ceramic Resonators



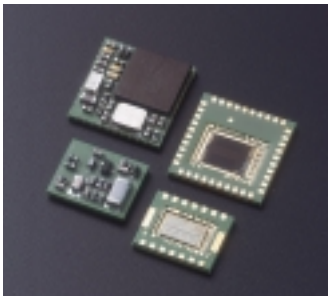
Surface Acoustic Wave (SAW) Filters



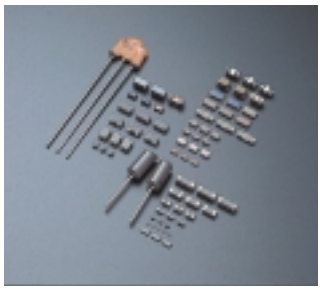
Functional Modules



VCOs (Voltage Controlled Oscillators)



"*Bluetooth*®", Application Modules



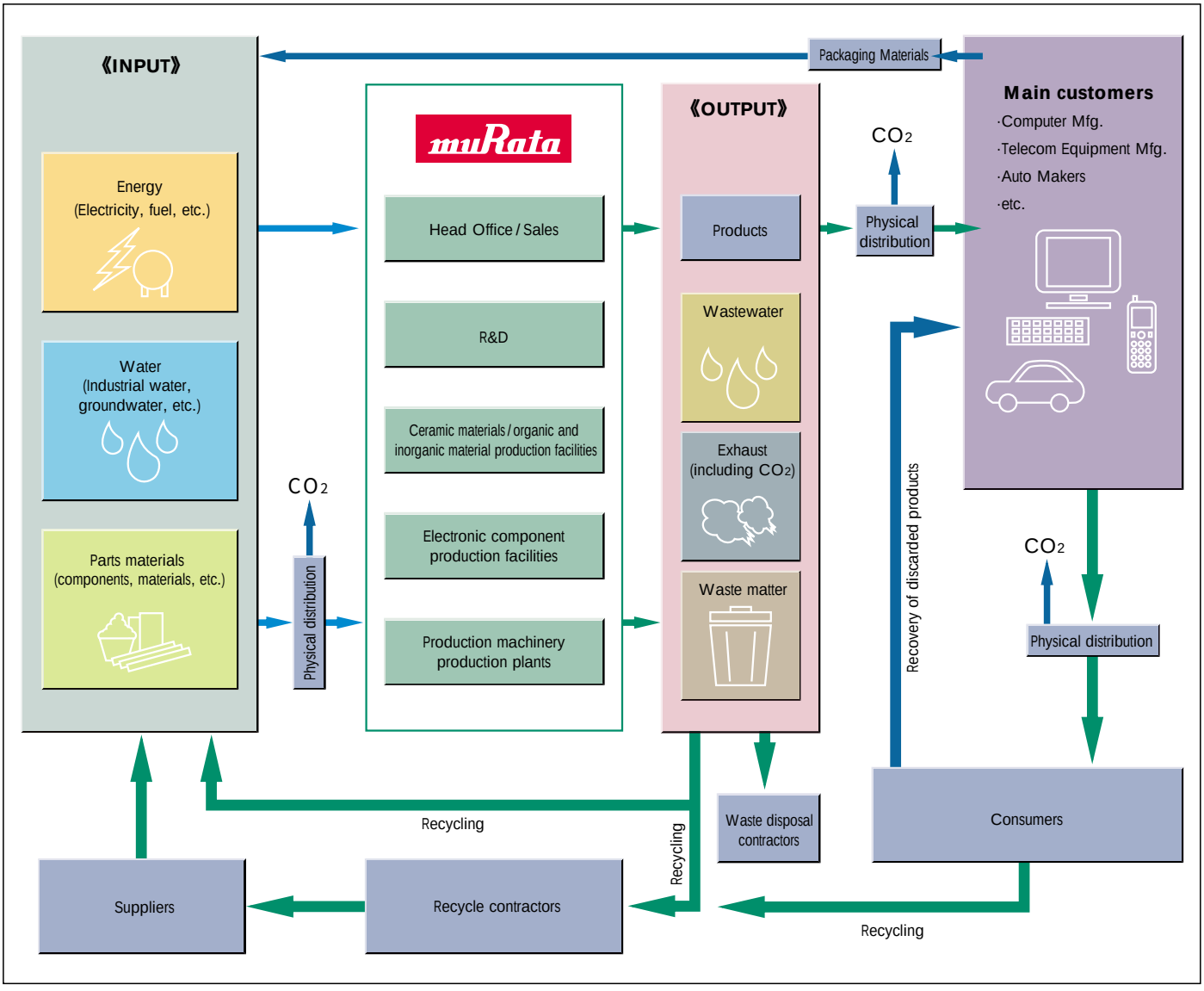
"*EMIFIL*®", EMI Suppression Filters

Piezoelectric Application Sensors

Chip Coils

Chip Dielectric/Multilayer Antennas

Relation between Our Business Operations and the Environment



Compost made from raw food waste from company dining facilities, etc., used as fertilizer (Murata Manufacturing Co., Ltd. Yokaichi Plant)

Composting of chips from pruning of trees and shrubs (Murata Manufacturing Co., Ltd. Yasu Plant)

Policy, System, Objectives and Targets

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】

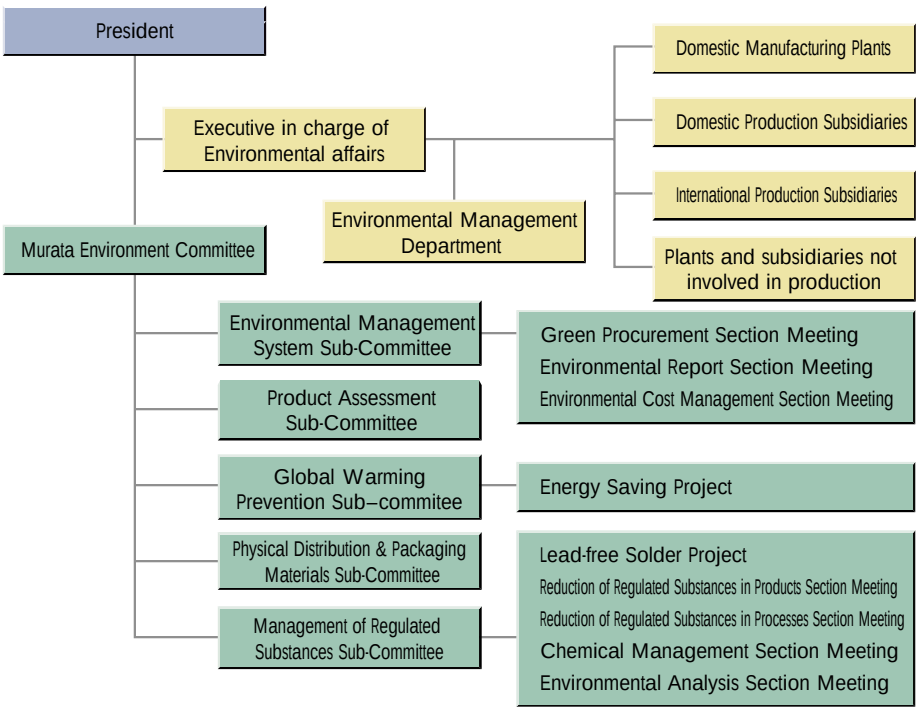
In the desire to contribute to a truly rich human society, we develop materials and products, devise and maintain production activities, and supply products worldwide. However, we cannot deny that our production activities as well as our products themselves are unintentionally affecting the global environment. 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.

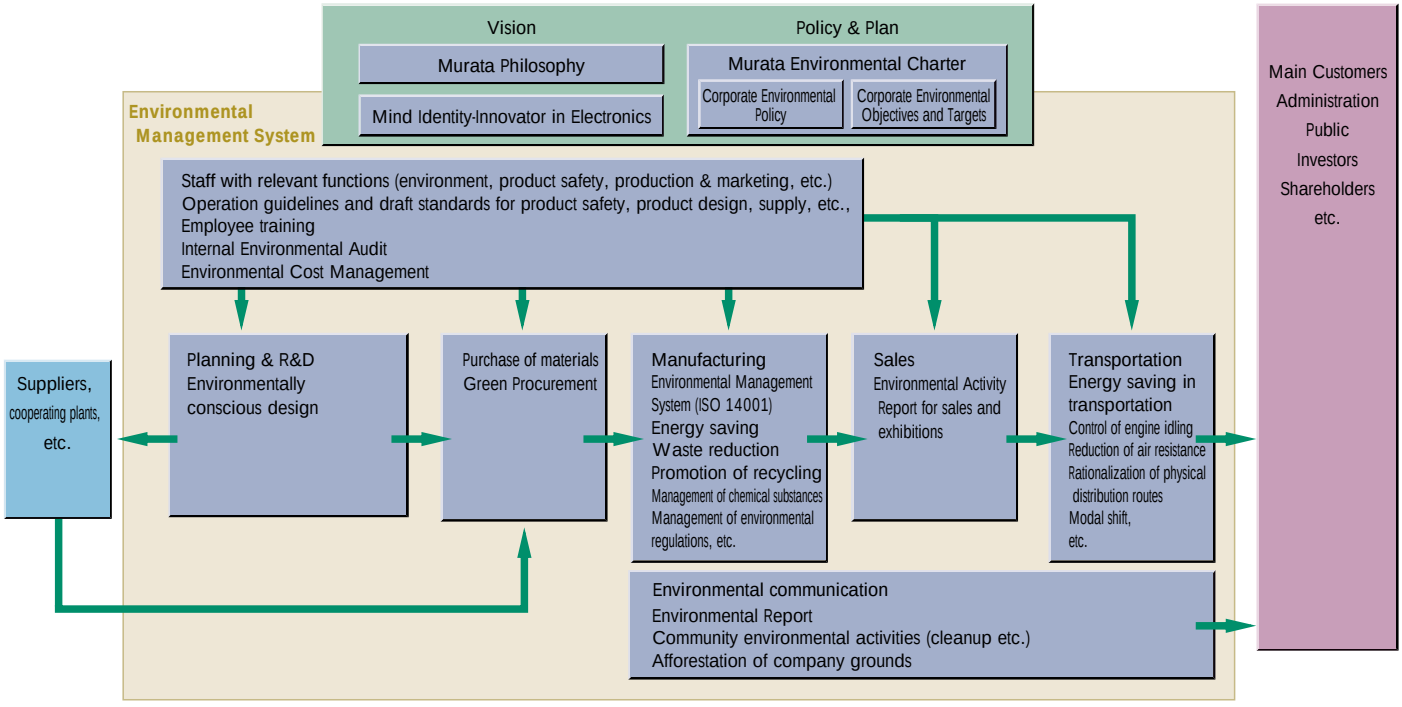
Promotion System

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 and section meetings according to theme, and are conducting specialized research and planning activities.



Corporate Objectives and Targets

Theme	No.	Item	Objectves and Targets
Environmental Management	1	Continual Improvement	While maintaining an environmental management system compliant with the ISO 14001 international standard for our production facilities, we will strengthen our cooperation with the entire company's environmental management system. At the same time, we will measure the ongoing reduction in our environmental impacts. As well, we will undertake environmental remediation of soil and groundwater contamination that occurred in the past.
	2	Environmental Cost Management	While developing a grasp of the costs of global environmental preservation activities and management plans in more detailed classifications by objective, we will introduce this plan across the entire company by the end of fiscal 2003. We will use that information to plan for improved environmental efficiency.
Providing Environmentally Conscious Products	3	Environmental Conscious Designs	We will promote environmental conscious design targeting product designs that are considerate of the environment. By the end of the fiscal 2003, we will have implemented environmental conscious design company-wide. Moreover, we will undertake product assessments and ensure their development throughout the company.
	4	Management and reduction of environmentally hazardous substances that are contained in products	Regarding environmentally hazardous substances, we will actively promote the adoption of alternative substances as well as the conversion to alternative technologies within the scope of feasibility. Specifically, we will supply products containing substitutes for the lead contained in the metal plating applied to electrodes and lead wires as well as for the solder used for internal parts to the greatest extent possible.
	5	Improvement of packaging materials	We will promote bulk case packaging for chip components.
	6	Green procurement	We will actively incorporate materials with low environmental impacts by promoting a green procurement policy. By the end of fiscal 2001 we implemented green procurement in all our domestic offices, and by the end of fiscal 2003 we will have extended this policy to all our offices outside Japan.
Environmentally Sound Business Activities	7	Preventing global warming	We will promote the effort to prevent global warming. By the end of fiscal 2003 we will have reduced carbon dioxide emissions per unit of net sales by 10% compared with the fiscal 1990 levels. We pledge to further reduce carbon dioxide emissions per unit of net sales by 30% compared with the fiscal 1990 levels by the end of fiscal 2010.
	8	Implementing a policy of resource conservation and reducing, reusing and recycling wastes	We will adopt the challenge of zero emissions by promoting the "3R policy" of Reduce-Reuse-Recycle. By the end of the fiscal 2003, we will achieve zero disposal of landfilled waste, and we will reduce total emissions per unit of net sales by 10% compared with the fiscal 2000 levels.
	9	Management and reduction of environmentally hazardous substances used in processing	As for the environmentally hazardous substances, we will actively promote the adoption of substitute substances having a reduced environmental impacts as well as conversion to alternative technologies. Additionally, we will reduce the atmospheric output of volatile organic solvents.
Environmental Communication	10	Afforestation	As part of the systematic promotion of afforestation at each of our offices, we will implement afforestation objectives at each office and will establish a medium-term afforestation plan.
	11	Coexistence with local communities	Each office will develop environmental activities rooted in the community and will plan for harmonious coexistence with the local environment.
	12	Information disclosure	The Murata Group will publish an Environmental Report every fiscal year detailing its environmental preservation activities.



Outline of Initiatives to Date

Below we introduce an outline of Murata's global environmental preservation initiatives and social activities to date.

Policy & System

To promote the preservation of the global environment company-wide, we have developed the following policy, plan and system.

October 1994	The Murata Environmental Committee is established as an advisory organ for top management to devise strategies for global environmental preservation.
January 1995	A special sub-committee is established as the lower branch of the Environmental Committee to carry out planning and drafting of documents classified by individual theme.
May 1995	The Murata Environmental Charter is adopted.
May 1995	The Environmental Management Department is established in the head office as a body dedicated to promoting global environmental preservation.
May 2001	The Murata Environmental Charter is revised.

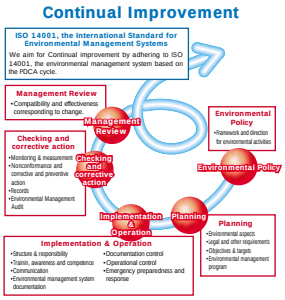
See pages 5 and 6.

Environmental Management System

We have developed and maintained an environmental management system as part of the plan to promote the Murata Environmental Charter.

•The international standard for environmental management systems (ISO 14001)

A total of 25 of the Company's production sites, both domestic and international, have acquired registration of ISO 14001 certification.



•Internal environmental audit

The Company has undertaken a four-pronged audit of internal operations, including an internal audit by plants, an audit by the Environmental Management Department of the head office, an inspection by the auditor, and an audit by the ISO 14001 certification body.

See pages 9 to 13.

Dealing with Environmental Risk

Since 1995, we have been taking initiatives to avoid the possibility of any chemical substances permeating soil and groundwater, including moving storage tanks from below ground to above ground; moving underground plumbing overhead; and adopting voluntary standards for coatings to prevent permeation. In fiscal 2002, Murata completed all steps required in order to comply with this voluntary standard.

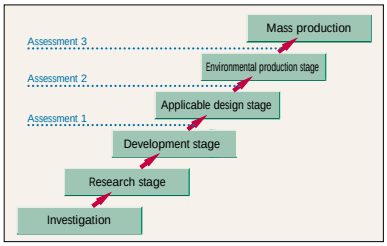
See page 13.

Environmentally Conscious Design

We have focused attention on the environmental impact of each product and have been promoting initiatives to reduce that impact.

The Product Assessment Sub-Committee (former LCA, Life Cycle Assessment Sub-Committee), a specialized Sub-Committee of the Environmental Committee, carries out LCA data analyses of Murata's representative products and compiles the company's unique LCA guidelines.

Product Assessment Process



In addition, while carrying forward this activity step-by-step, we are developing a product assessment plan that addresses environmental considerations during the product design stage.

See page 14.

Environmentally Hazardous Substances and Lead-Free Solder

We have been promoting an initiative to reduce consumption or adopt substitutes for toxic substances (environmentally hazardous substances) included in our products.

Murata has adopted a voluntary regulation chart especially for environmentally hazardous substances that are related to our products. Since April 1996, we have been implementing systematic reductions and substitutions.

In addition to this initiative, we have established the Lead-Free Solder Project as a strategy for promoting the use of solder containing no lead. As a result, we have been promoting a lead-free solder policy.

See pages 15 and 16.

Packaging & Distribution

To reduce the amount of packaging material that is supplied with products provided to our main customers, we have promoted an initiative targeting resource conservation through a policy of reuse and recycling.

Previously, we collected and reused taping packaging reels and incorporated simple packaging, especially reused packaging material. To contribute to energy conservation during distribution, we have been focusing on bulk case packaging, which has brought about considerable benefits.

Bulk case

See pages 17 and 18.

Green Procurement

If a Murata product is to be environmentally benign, the materials supplied for making that product, as well as the process by which the product is manufactured, must be environmentally benign as well.

In 2001, Murata distributed its Green Procurement Guide for procurement suppliers within Japan. In conducting our material procurement activities, we have sought the understanding and cooperation of our suppliers in Japan as part of our approach to reducing environmental impacts.

See page 19.

Preventing Global Warming

In the effort to prevent global warming, Murata has been aggressively promoting energy-saving initiatives in the utility and production facilities of plants and subsidiaries. As a result of various initiatives implemented in 2002, we have achieved a number of successes in individual circumstances. However, CO_2 emissions per unit net sales (carbon dioxide emissions per basic unit of net sales) worsened by 45% compared with 1990 levels. This resulted from the significant reduction in unit pricing of our products against the increase in our production volume in 2002, which caused our net sales to decrease.

See pages 21 and 22.

Waste Reduction and Zero Emission

We have reviewed our production processes, controlled the production of waste, and promoted initiatives to recycle the resources in any waste that is produced.

Main Initiatives

- Recycling of films with ceramics
- Introduction of composting facilities for raw food waste from company canteen
- Introduction of a Sludge Dryer
- Recycling of Uniforms
- Production of high-temperature molten slag from sludge

As a result of these efforts, the Murata Group's total recycling rate in Japan was 84.9% as of the end of fiscal 2002, a considerable improvement over the fiscal 2001 rate of 53.3%.

See pages 23 and 24.

Soil & Groundwater Strategies

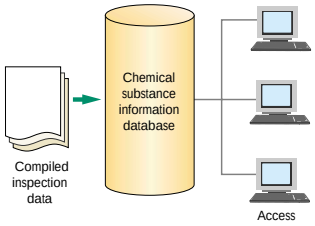
After the fiscal 1983, the year the carcinogenic characteristics of chlorinated organic solvents such as trichloroethylene became a problem, we have recognized that such substances are an important issue. We set out to eliminate the use of such solvents, and by the fiscal 1995 we succeeded in eliminating their use in all but one location. One factory reluctantly continued use of the product because of the product preferences of a particular customer; anyway, we eliminated the use of this substance at this factory in March 1998.

Furthermore, we have been conducting soil and groundwater surveys because we had used chlorinated organic solvents in the past. At plants that were deemed to be in need of remediation, we established purification facilities in contaminated regions and drilled wells on the borders of such sites. We actively promoted remediation of the contaminated soil and groundwater in order to prevent their diffusion outside company grounds.

See pages 27 and 28.

Management of Chemical Substances

To ensure that chemical substances are used properly across the entire group of companies in Japan, we have introduced a chemical substance inspection and registration system in 2000. Before a chemical substance is introduced in a production process, specialist staff examine the substance beforehand. If judged acceptable, it is assigned a unique number and information on the substance is registered in a database; only then can it be purchased and used. To ensure that such chemical substances are used properly, we are planning on sharing all relevant information.



Also, in 1997, we created a voluntary regulation chart for chemical substances that impart an environmental impact that are used in the production process. In this way we are promoting the reduced use and substitution of such products.

See pages 25,26 and 29.

Occupational Health and Safety, Contributing to the Community, and Afforestation of Company Grounds

Regarding worker health and safety, although we previously addressed this issue, in 2000 we introduced a system for advance investigation and registration of chemical substances that may affect worker health and safety before a chemical substance is introduced at the production stage. Moreover, in 2001 we introduced a risk assessment system for development of production facilities. In addition, we established a periodic health and safety forum in order to improve the level of health and safety throughout Murata while promoting activities targeting employee health.

We are also promoting active afforestation of company grounds in order to gain the interest of regional society while enriching the work environment. Also, aware of our role as a member of the local community, we will cooperate with local citizens and local governments. Additionally, we are promoting community initiatives such as the community clean-up activities and opening company green tracts to the public.

See pages 30 to 32.

Environmental Management System

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 ISO 14001, the international standard for environmental management systems.

The ISO 14001 standard for environmental management system calls for the formulation and implementation of the following management plan.

Environmental policy targeting environmental preservation are identified; a concrete plan is established and enforced; checks and corrective measures are conducted; and all aspects are reviewed by top management. In some cases, depending on the results of these reviews, the environmental policy may be modified. The ongoing implementation of this plan results in continual improvement of the plan itself. As a result, the achievements of the plan are also improved.

We are now preparing to seek certification of ISO 14001 registration during fiscal 2003 for our two new production sites in China - Suzhou Murata Electronics Co., Ltd. and Hongkong Murata Electronics Co., Ltd. - both of which began full-scale operation in fiscal 2002.

ISO 140001-registered production sites in Japan and other countries (In order of registration)

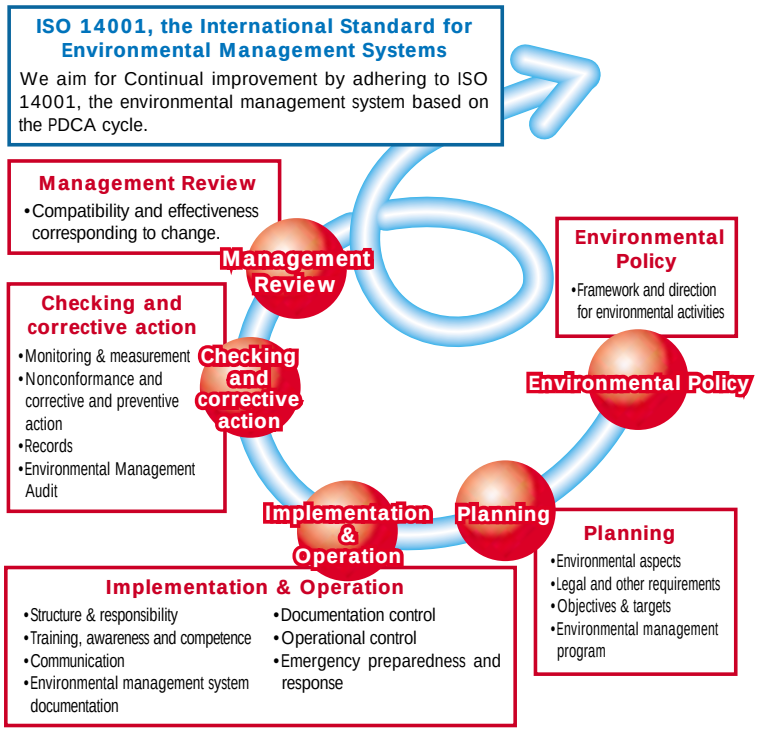
Production Site	Certification Body	Date of Registration
Taiwan Murata Electronics Co., Ltd.	BSMI	September 30, 1997
Murata Electronics Singapore (Pte.) Ltd.	PSB	December 5, 1997
Kanazawa Murata Manufacturing Co., Ltd.	JACO	December 22, 1997
Murata Electronics (Thailand) Ltd.	UL	October 5, 1998
Murata 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
Murata Electronics North America, Inc.	LRQA	November 11, 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

Komatsu Murata Manufacturing Co., Ltd.

We introduced an ISO 14001-compliant environmental management system as well as other initiatives in Ishikawa prefecture. Moreover, we implemented activities targeting preservation of the global environment. As a result of our efforts, we were awarded the "Ishikawa Prefectural Governor's Green Enterprise Award," which was established in 2001 to recognize enterprises for outstanding achievements and to propose them as models for other enterprises. We were honored that Kanazawa Murata Manufacturing Co., Ltd. became the first enterprise to win this award. Komatsu Murata Manufacturing Co., Ltd. received the second award in 2002.

The company earned praise for its continued efforts targeting global environmental preservation through its ISO 14001-compliant environmental management system as well as its efforts in the areas of waste reduction, recycling, resource conservation, energy saving, green purchasing, environmental education and other initiatives.

Continual Improvement



Environmental Cost Management

Murata has long instituted and managed a budget for environmental preservation, pollution control, energy saving and prevention of soil and groundwater contamination. Moreover, we have allocated a reserve amount to cover the total cost of remediation efforts to correct soil and groundwater contamination, and we have enforced the management of costs related to the environment.

Introduction of the Environmental Cost Management System

With the revision of the Murata Environmental Charter in May 2001, we further developed and refined our existing environmental cost management, clarified the cost of investment in environmental preservation, and highlighted the results according to objective. By using this information effectively, we are aiming to ensure efficient environmental management.

Murata introduced its environmental cost management system (see following chart) to gain an overall perspective; to classify environmental preservation in compliance with the Guidelines of the Ministry of the Environment; and to determine the costs and effects of individual environmental preservation activities of the environmental management system. This enables us to confirm our progress, modify our plans or review our management. By linking the Guidelines to our environmental management system, we can implement efficient measures, promote horizontal business development, achieve environmental goals, prepare targets and review our progress for effectiveness.

To tabulate the costs and effects, we will develop and introduce an accounting system that utilizes the data from our in-house accounting system, as we need to reduce the office work associated with accounting operations, ensure the reliability of the accounting, and secure storage for the original accounting data.

By September 2003, we expect to have prepared a system that can tabulate the cost and effectiveness. This will enable us to introduce this system in October in plants and subsidiaries in Japan.

Investment in Environmental Preservation

The following table outlines our investment in environmental preservation.

Investment in Environmental Preservation (Millions of yen)

Classification of Investment Objective	Total Expenditures for Fiscal 1998–2001		Expenditure for Fiscal 2002	
	Nonconsolidated	Consolidated	Nonconsolidated	Consolidated
Pollution control	69	484	19	69
Global environmental preservation	590	670	33	76
Recycling of resources	451	786	6	6
Prevention of soil and groundwater contamination※	225	552	675	720
Others	19	93	0	65
Total	1,355	2,586	732	936

※See page 13.

Regarding the accounting of remediation costs for contaminated soil and groundwater in particular in terms of business accounting, we have made a trial calculation of all costs accruing through to completion of the contamination remediation strategy and have appropriated a security reserve amount as a liability.

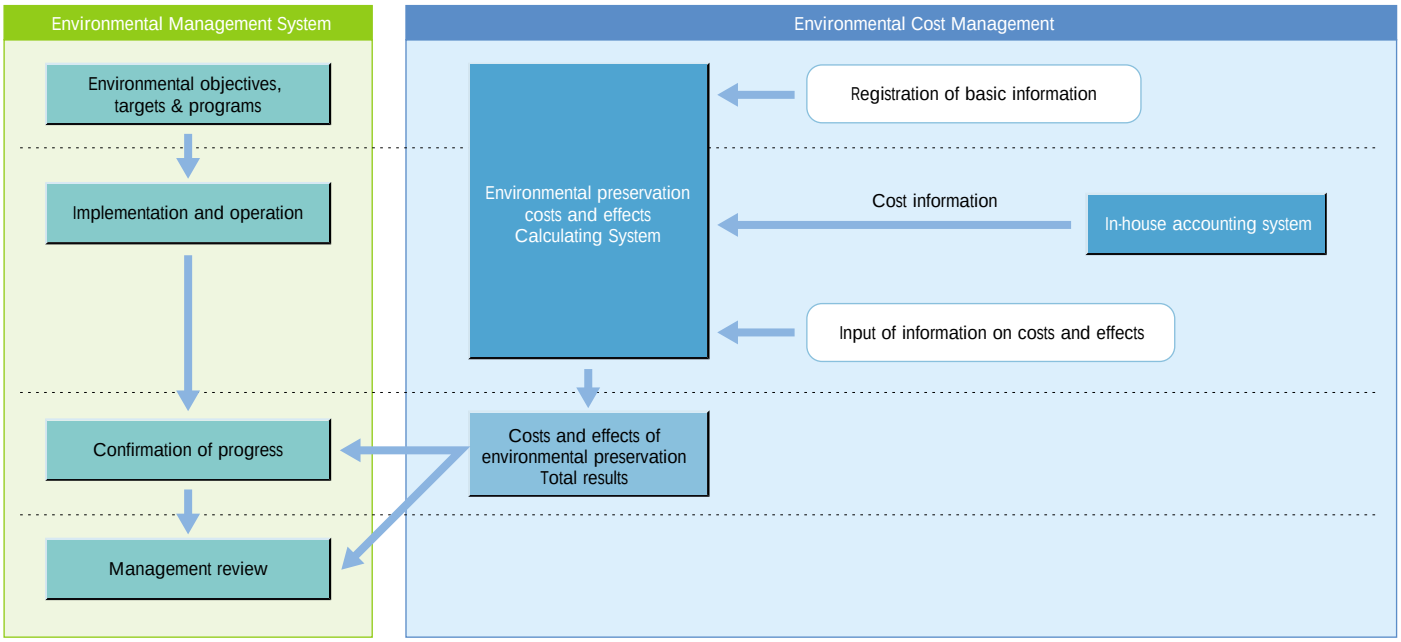
Remediation Cost of Soil and Groundwater Contamination (Millions of yen)

Total up to end of Fiscal 2002		Estimate for Fiscal 2003 and thereafter※	
Nonconsolidated	Consolidated	Nonconsolidated	Consolidated
774	6,409	874	4,899

* 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.

See page 27.

Outline of the Environmental Cost Management System



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.

Therefore, we are implementing practical environmental training and raising awareness according to this objective.

Environmental Training

In addition to a general environmental training intended to impart an understanding of Murata's environmental vision and objectives, we also provide programs such as in-house courses that provide training for internal environmental auditors.

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 2003, we had trained 464 individuals with qualified official examiners as lecturers.

Training of new employees

Head office of Murata Manufacturing Co., Ltd.

Practical training in the environmental management system at plant sites

Murata Manufacturing Co., Ltd. Yokaichi Plant

In-house training of internal environmental auditors

Fukui Murata Manufacturing Co., Ltd.

In addition, Murata presents environmental management lectures for managers posted to overseas subsidiaries.

Murata Electronics (Thailand) Ltd.

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 ISO 14001 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.

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.

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 guidelines and company-wide targets 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 non-production offices are focused on compliance with the law.

Periodic ISO 14001 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.

ISO 14001 audit by certification body

Murata Manufacturing Co., Ltd. Yasu Plant

Functional staff audit

Murata Electronics (Thailand) Ltd.

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. See page 28.

Cost of countermeasures to prevent ground permeation (Millions of yen)

FY1995–FY2000		FY2001		Total	
Nonconsolidated	Consolidated	Nonconsolidated	Consolidated	Nonconsolidated	Consolidated
329	1,635	675	720	1,004	2,355

•Prohibition against underground storage tanks

In principle, storage tanks for fuel, organic solvents, acids, alkalis and waste liquids 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.

•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. Yokaichi Plant

Emergency response drill (Okayama Murata Manufacturing)

In addition to implementing the risk countermeasures mentioned above, we conduct regular training to simulate emergencies.

Addressing Environmental Preservation through Our 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 processes. See pages 15 and 26.

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 and determined concrete action details in 2002 scheduled for implementation 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 co-generation. See page 21.

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.

In particular, one important theme is the "lead-free" initiative, which has been developed as a dedicated project. See page 16.

In 2002, we have been implementing preparations such as determining concrete evaluation items for undertaking product assessments. We have established a system for providing a material greenness inspection at the design stage in order to determine the presence of chemical substances imparting an environmental load in purchased products. See page 19.

In the product assessment, the assessed items are largely categorized according to their relation to the product, the production process and packaging, and all are subject to the "3Rs" (Reduce, Reuse and Recycle) with the goal of eliminating or reducing the use of chemical substances imparting an environmental load. Moreover, the product assessment is undertaken at each stage of product development. In addition, by establishing standard items for assessment, this system provides feedback from the design stage to prevent any lowering of the standard.

We remain committed to promoting environmentally conscious product development through the product assessment system.

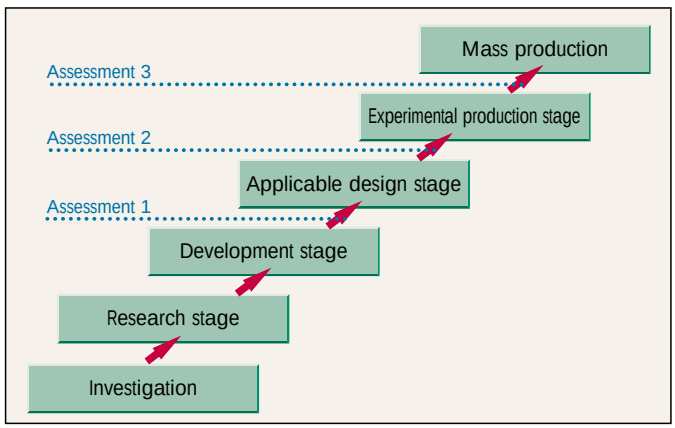
Sample LCA Data Sheet (inventory data)

Classification	Item		Unit	Process				
				Cutting	Drilling		Measurement	Total
Input	Energy consumption							
		Electricity	kWh	0.13	12.32		5.08	76.09
			kJ	460	4434		18,300	234,900
		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							
		Solder	g	0	0		0	58.60
		Others	g	0	0		0	0
Output	Exhaust emissions							
		CO_2(direct)	g	0	0		0	0
		CO_2(indirect)	g	54	5,150		2,123	31,810

Product Assessment Items

Classification	Item	
Product	Reduction of environmentally hazardous substances	page 15
	Reduction of main raw materials	
	Compact	
	Power conservation	
	Green procurement	page 19
Production process	Reduction of environmentally hazardous substances	page 26
	Reduction of energy consumption	
	CO_2 reduction	
	Waste reduction	
	Green procurement	page 19
Reduction of regulated substances	Packaging	page 15
	Promotion of reduce, reuse and recycle	page 17

Product Assessment Process



Environmentally Hazardous Substances in Products

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

Adoption of voluntary standards regarding the environmentally hazardous substances in products

Since the late 1980s, Murata has been addressing this issue on a case-by-case basis by setting reduction targets for specific chemical substances. In April 1996, Murata led the industry by creating a "product regulation program" intended to reduce the use of environmentally hazardous substances in all its products. According to the product regulation program, Murata currently regulates 32 groups of substances. 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 such restriction are ranked as "voluntarily prohibited," "reduce" or "prepare to reduce." We are making an effort to reduce and eventually abolish the use of these substances. Through the product regulation program, we control chemical substances as follows: substances of a particular chemical group are classified by their degree of environmental hazard. 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.

The 32 substance groups of the voluntary regulation program for environmentally hazardous substances in products

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

Example of product regulation program

Chemical substance name / Rank	A	B	C	D
Cadmium and its compounds	〈Resin material〉	〈All except resin material〉		
Mercury and its compounds		Mercury and its compounds		
Polyvinyl chloride (PVC) and its blends		Packaging materials used for shipping products. PVC and its blends containing Cd as a stabilizer	PVC and its blends containing Pb as a stabilizer	PVC and its blends containing stabilizers other than Cd and Pb

Details of regulation by ranking

A: Prohibited…Prohibit containing the substances

B: Voluntarily prohibited…Prohibit containing them in principle (prohibit after a given period of time for lead)

C: Reduce…Reduce or eliminate content by specified time limit.

D: Prepare to reduce…Research and prepare to reduce.

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 have implemented lead reduction activities by organizing a project that targets the reduction and elimination of lead use.

See page 16.

Reduction and abolition of the use of environmentally hazardous substances in products

Below are examples of substances listed in the Murata product regulation program whose consumption has been either reduced or eliminated.

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.

Hexavalent Chromium

As of June 2002, eight models of our products contained hexavalent chromium used as rustproofing surface treatment on screws and nuts. By March 2003, we had reduced this to five models. We are continuing to seek substitutes for the remaining models with the goal of eliminating the use of hexavalent chromium.

Polybrominated biphenyl oxide (PBBO)

This substance is commonly used in resins as a flame retardant. We began reducing our consumption of PBBO in 1989, well in advance of the global trend. At present, we do not use any of this substance.

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.

Eliminating Lead

The Lead free Solder Project

Murata's efforts to reduce lead have been implemented according to the product regulation program for environmentally hazardous substances in products. In 1995, we established the "LF (Lead free) Solder Project," an initiative undertaken by our Technical Development Department and Product Planning and Design Department with the goal of introducing lead free solder. We have continued to promote the development of technology that contributes to the use of lead free solder.

Eliminating Lead from Products

Long a champion of numerous measures to reduce the use of lead, Murata has achieved significant progress in its lead reduction efforts. For example, we have eliminated lead from the plating of terminals and from the surface of soldered terminals. Moreover, we have begun supplying lead free and reduced-lead products to the market.

Demand has been increasing within the electronic component industry for a lead free approach, particularly as a result of initiatives by electronic equipment manufacturers to adopt lead free solder assembly, green procurement, product assessment activities and the WEEE* and RoHS** regulations of the EU directives. Murata is providing a timely response to this trend.

Murata's approach to reducing the lead content of its products largely addresses the following three categories of lead-containing parts.

*1 WEEE (Waste Electrical and Electronic Equipment)
*2 RoHS (The restriction of the certain hazardous substances in electrical and electronic equipment)

1. Elimination of lead from terminal plating and solder on terminal surfaces

In April 2001, we began supplying products that use lead free materials in plating and solder on terminal surfaces. As of the end of January 2003, we had completed the preparation of substitutes for 82% of our products. We will complete this substitution for all our products by the end of December 2003.

Furthermore, our publication titled "Lead Elimination Activities" contains sample applications, mass production schedules, model number changes, and detailed information on main products for which the surface of soldered terminals is lead free. Details are available at our website (http://www.murata.com/catalog/k27e1.pdf).

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

2. Reducing lead used for solder in products, for glass in electrode materials, and in stabilizers for polyvinyl chloride, etc.

Working in cooperation with our suppliers, we intend to reduce or substitute the lead content in these areas by the end of December 2003. Among these, as of the end of January 2003, we have provided substitutes for 88% of our products that still utilize lead connecting solder (which has a lead content of less than 85%).

3. Research on the substitution of the lead contained in ceramics and some glass materials and research on alloys with lead free materials

The present EU RoHS directive that came into effect in February 2003 exempts the lead used in these parts from the ban, as it is technically difficult to substitute other materials for the lead used in such parts.

However, Murata will continue to review the possibility of eliminating lead from such parts through research and development of relevant technologies to reduce the size of such parts.

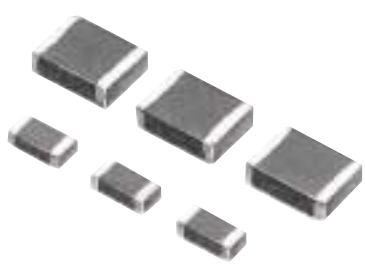
Moreover, we have sought to patent the technologies developed through our lead free initiatives and have actively put them into practice. Some have been licensed to other parties.

Examples of lead free products

Multilayer Devices
(LFB3***SL Series etc.)

Trimmer Potentiometers
(PVZ2A Series etc.)

Chip Coils
(LQG18HN Series etc.)



Chip Monolithic Ceramic Capacitors
(Safety Standard Recognized Ceramic Capacitors)

Reducing Packaging Materials and the Consumption of Energy in Physical Distribution

Since 1995, Murata has been working to reduce the environmental impacts accruing from distribution and from packaging materials as they relate to our business activities. We have addressed this issue from two sides: we have devised a packaging material strategy intended to conserve the resources consumed by packaging materials as well as a distribution strategy intended to conserve the energy consumed in distribution activities.

Promoting the Adoption of Bulk Case Packaging

The main initiative in our strategy to reduce packaging material at Murata involved switching over the chip component packaging method from tape to bulk cases. The principal advantage of bulk casing is that it eliminates the need for the paper tape used in tape packaging. Moreover, bulk case packaging offers the advantage of a more compact form, as the packaging shape allows for the storage of a larger number of chip components in a smaller space. Not only does this approach contribute to environmental preservation, it also enhances productivity and increases the available storage space.

However, the introduction of the bulk casing involved major challenges such as the remodeling of chip placement equipment, improvement of bulk feeder, and the increased dimensional accuracy of the components. Most notably, the need to supply the components in a continuous line resulted in increased structural complexity in the component supply section. In addition, technical and quality problems arose. However, we were able to overcome these technical problems through ongoing development and evaluation with the cooperation of the customers and equipment manufacturers. As well, in order to reduce the amount of used plastic, we collected used bulk cases for reuse.

We intend to continue implementing the switchover from tape to bulk cases.

Details of the bulk case

Bulk case dimensions:
110 x 36 x 12 mm (L x W x H)

Promoting the Adoption of Bulk Cases

An industry standard specification for bulk cases was adopted in March 1992. Although Murata holds the industrial property rights for this type of bulk case, we are encouraging its widespread adoption by licensing it free of charge. We have declared our intention to extend this policy to companies in other countries as well.

Building on the "Bulk Summit" conference in the U.S.A. in 1999, Murata has taken part in planning "Bulk Summit Japan" in 2000 and 2001. Furthermore, we have aggressively promoted the spread of bulk casing from our position as a leader in the industry. We have also proposed a small bulk case that is more suited to accommodating orders of smaller quantities. It can accommodate chip components in sizes as small as 0.6 x 0.3 mm.

Promotion the Reduction and Reuse of Packaging Materials

Our green innovations include more than just the switchover to bulk cases. For example, since 1996 we have been reducing the number of cardboard boxes consumed by introducing larger cardboard boxes for taped-packaged products. Additionally, we began reusing tape reels as well as aggregate cases used for delivery to customers. By 2002, we had reduced the amount of packaging material used per unit of net sales by 11% compared with 1995 levels, maintaining the level achieved the previous year.

Reducing Energy Consumption during Transport

In 1996, we began to address the issue of energy conservation in distribution. To reduce the fuel consumption of the trucks transporting Murata's products, we have promoted energy-conserving driving practices (such as reducing the rpm at which transmission shifts occur and minimizing engine idling time), reduced the transportation distance (by reviewing transit routes), and promoted a modal shift from trucking to railroad. As a result, by 2002 we had improved fuel consumption per unit of mileage by 25% compared with 1995 levels.

By continuing with the policies we have adopted to date, such as promoting energy-conserving driving practices and reduced transportation distances, we will move closer to our goal of converting to the use of energy-conserving vehicles.

Advantages of Bulk Cases

Increased productivity

- Reduced stop time for chip placer
- Simplified replenishment of parts

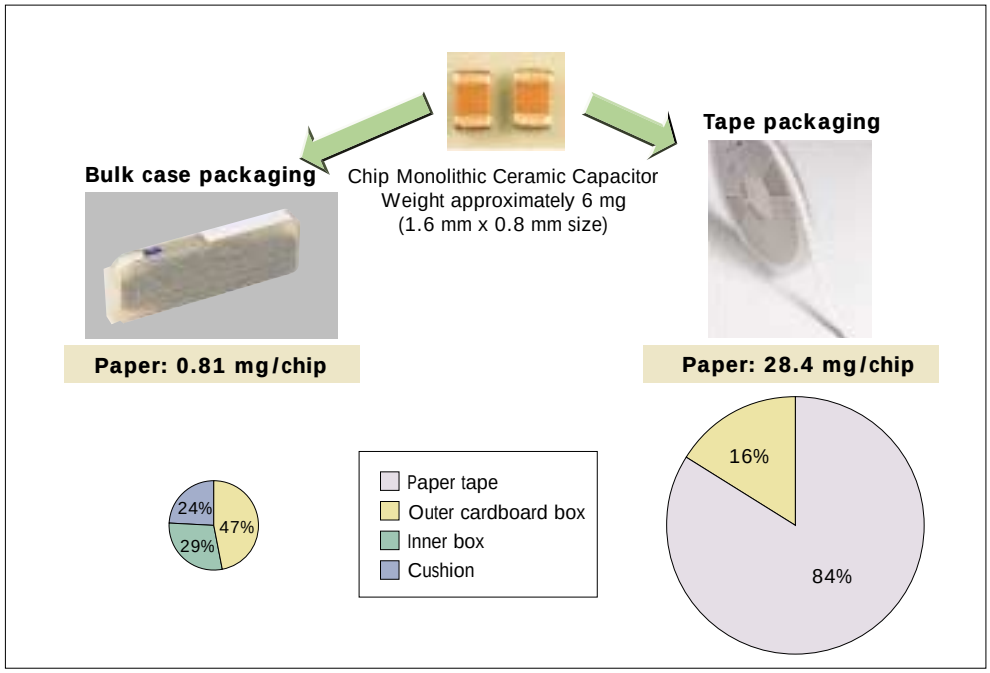
Reduced storage space requirements

1/20 of tape packaging

Bulk case products

Environmental preservation

- **Reduction in amount of paper consumed: 1/30 of tape packaging**



- **Easily recyclable packaging material**
- **Reduced energy consumption during transportation: 1/6 of tape packaging**

Bulk-case-packaged products

Tape-packaged products

Note: Based on calculation using the data of 1.6 mm x 0.8 mm size.

Addressing Environmental Preservation through Our Products

Green Procurement

If a Murata product is to be environmentally benign, the materials supplied for making that product, as well as the process by which the product is manufactured, must be environmentally benign as well.

In 2001, Murata distributed its "Green Procurement Guide for procurement suppliers" within Japan. This approach has served to publicize Murata's basic stance toward environmental impacts abatement. We also carry out the following material procurement activities.

Evaluating the "Greenness" of a Supplier's Activities

We evaluate and confirm the environmental conservation efforts of domestic suppliers before we undertake any transactions regarding the purchase of the following: materials incorporated in Murata's products; materials used in the mass production process; materials used for product packaging; and facilities.

As for suppliers with whom we maintain an ongoing relationship, we examine their environmental management system and impact on the environment at fixed intervals in addition to evaluating their services on the basis of Q (quality), C (cost) and D (delivery).

If our survey and evaluation of a supplier reveal any inadequacies in the area of environmental issues, we approach them and suggest improvements.

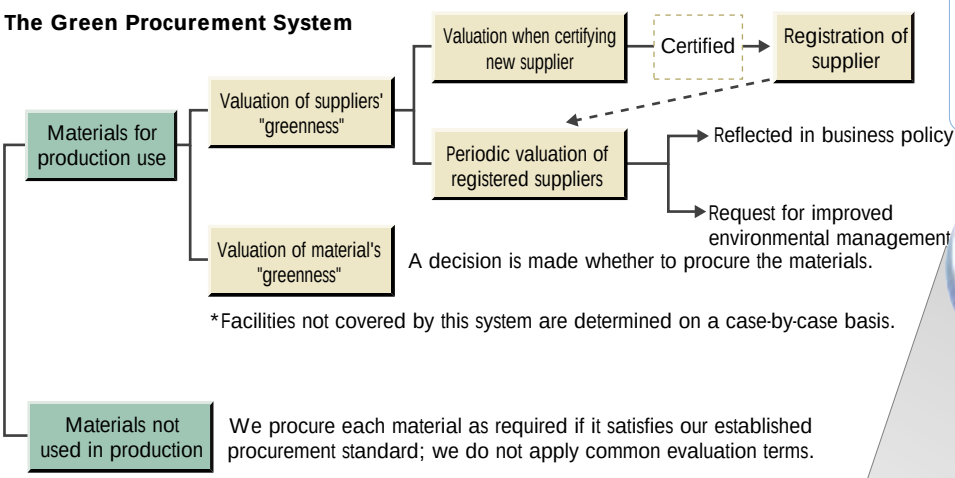
Evaluating the "Greenness" of Materials

Regarding the various materials that are used in the manufacture of Murata's products, such as raw materials; materials used in the mass production process; and materials used for the packaging of Murata's products, we undertake an environmental impact assessment (of the "greenness" of the material), evaluate the material against Murata's standard for the material itself, and weigh the advantages and disadvantages of adopting the material.

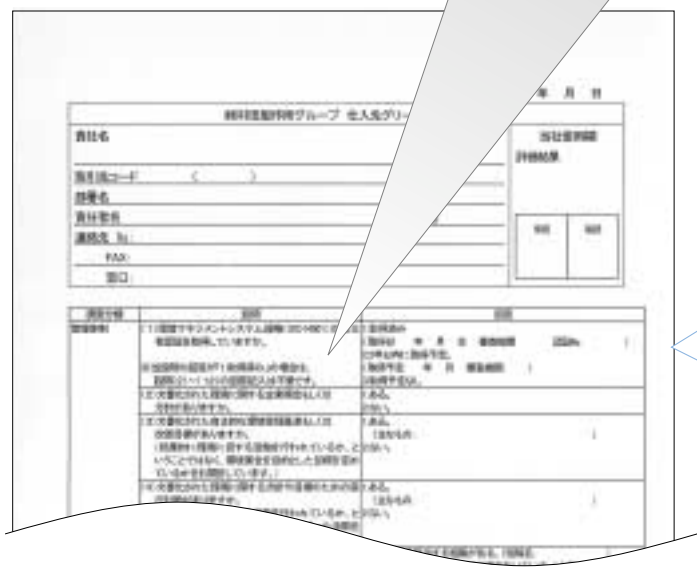
In 2003, in order to take more carefully thought-out investigations of the greenness of material procurement, we began investigations applicable to individual cases by adopting three classifications for purchased materials: chemical substances, products and packaging materials.

For other goods not directly related to the production, such as office supplies and equipment; and purchases related to amenities, Murata has promoted green procurement by establishing voluntary standards to ensure environmentally conscious purchases and applications.

The Green Procurement System



1. Have you acquired third-party certification of registration with the environmental management system standard (ISO 14001)?
2. Has your company adopted a documented corporate guideline or policy regarding the environment?
3. Has your company adopted a documented voluntary environmental management standard or improvement targets?



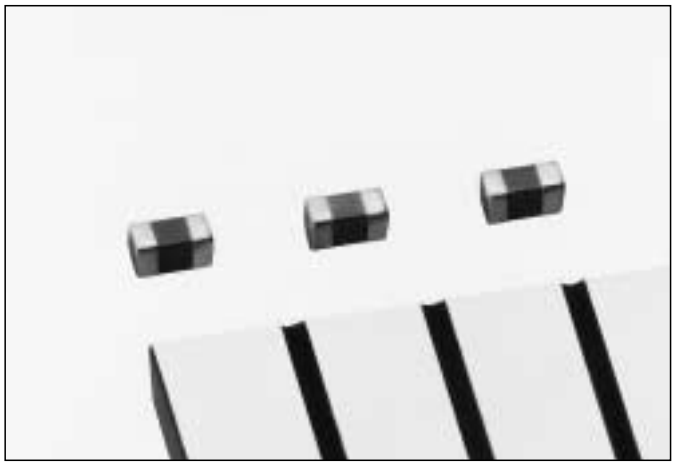
Details of Evaluation

Supplier's
- Environmental management system
- Circumstances of environmental implementation
- Environmental impact

Material purchasing
- Status of chemical substances

Murata's Environmentally Conscious Products

Lead Free

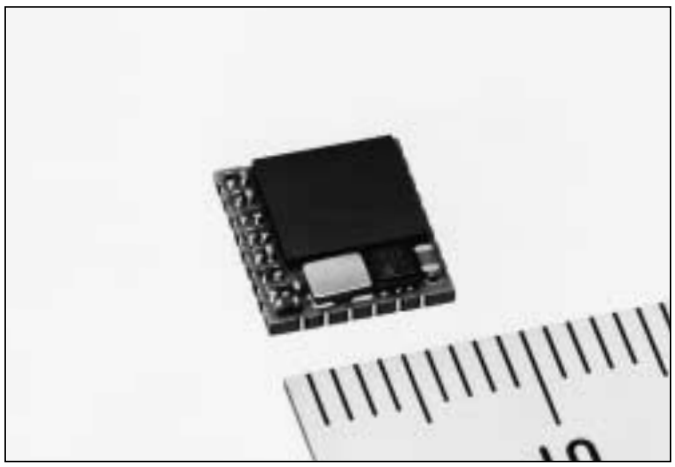


Ultra-Compact Chip Monolithic Ferrite Beads

Murata has developed a system for supplying all our ultra-compact chip monolithic ceramic capacitors (in sizes ranging from 0.6 x 0.3 mm to 5.7 x 5.0 mm) meeting the specification for lead-free electrodes.

Moreover, we have employed the same system to supply lead-free thermistors, the industry's smallest (0.6 x 0.3 x 0.3 mm) chip monolithic ferrite beads, and many other products. See page 16.

Compact

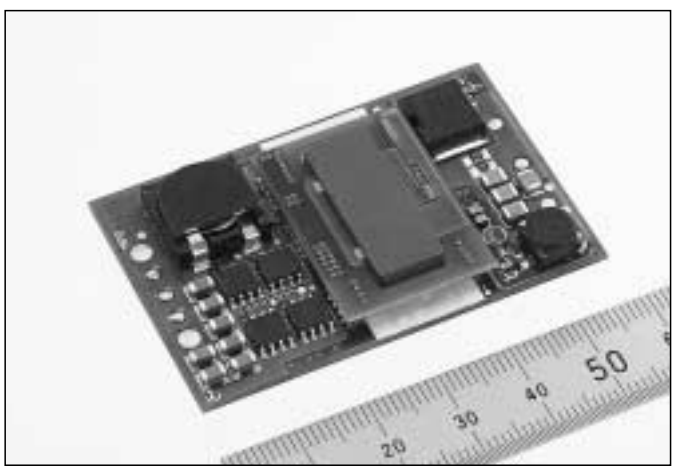


Ultra-compact Lightweight HCI Modules for *Bluetooth*® (Blue Modules™)

This module was developed with Murata's longstanding low-temperature co-fired ceramics technology combined with ceramic multilayer functional substrate technology and microwave circuit design technology. Measuring a mere 9.3 mm x 7.9 mm x 1.8 mm, for a roughly 25% reduction in size, this module is more compact than our conventional products.

As a result of this size reduction, this module contributes to a reduction in multiple environmental impacts through energy saving and reduced waste during manufacturing as well as space-saving and reduced consumption of principal raw materials.

Power Saving



Energy-saving Switching Power Supply

Murata has long been focusing on the development of a high-efficiency energy-saving power supply module.

Responding to the need to reduce the power consumption of devices that are on 24 hours a day, we have employed our standby power supply technology - created through the development and marketing of products with energy-saving power supplies - to achieve the lowest standby power loss in the industry, a mere 0.1 W.

Moreover, our technology for saving energy in rated-use conditions has enabled us to develop and market a high-efficiency quasi-resonant converter that achieves more than 90% conversion efficiency at AC input, contributing to equipment with improved energy efficiency.

Thanks to these energy-saving power technologies, Murata has become an industry leader in this area.

Incorporating Environmental Preservation in Business Activities

Murata has been working to reduce the environmental load of its products, at the same time actively addressing the need to reduce the environmental load of its business activities. These efforts encompass prevention of global warming, resource conservation, waste reduction and proper management of chemical substances.

Prevention of Global Warming

Greenhouse gases such as carbon dioxide that are emitted during production activities can have an important effect on everyday life, as they may contribute to global warming that leads to climate change and rising sea levels. For its part, Murata is instituting energy saving measures intended to prevent global warming.

Energy Conservation Activities to Date

In the effort to prevent global warming, Murata has been aggressively promoting energy-saving initiatives in the utility and production facilities of plants and subsidiaries. As a result of various initiatives implemented in 2002, we have achieved a number of successes in individual cases. However, CO_2 emissions per unit net sales (carbon dioxide emissions per basic unit of net sales) worsened by 45% compared with 1990 levels. This resulted from the significant reduction in unit pricing of our products against the increase in our production volume in 2002, which caused our net sales to decrease.

Our main activities for 2002 are outlined below.

Energy-saving Activities in Utility Facilities

Utility facilities consume a large amount of energy, as they supply hot and cold water, compressed air, and other inputs required for production activities.

Introduction of an Electromagnetic Water Treatment System

The operation efficiency of the facility was improved with the introduction of an electromagnetic water treatment system for treating the cooling water used in the facility. This innovation reduced annual CO_2 emissions by 69 metric tons.

Electromagnetic Water Treatment System

Introduction of a Heat Exchanger

We introduced a heat exchanger that utilizes outdoor air to generate cooling water in winter. Introduced in February, this innovation reduced CO_2 emissions by 141 metric tons compared with the preceding year.

Heat Exchanger

Control of Compressed Air Leakage

Inspection and repair of leaks in the compressed air system used for production processes reduced annual CO_2 emissions by 92 metric tons.

Inspection for leakage of compressed air

Other Improvements

The following additional improvements reduced total annual CO_2 emissions by 1,864 metric tons.

- Suspension of operation of transformers when not under load
- Switch to high-efficiency transformers
- Introduction of mechanical seals on cooling water pumps
- Provision of outdoor air for compressors
- Lighting updated to hafnium
- Energy consumption reduced through introduction of energy-saving campaign and other activities for staff

These energy-saving activities contributed to a 2,166-metric-ton reduction in CO_2 emissions in fiscal 2002.

Energy-Saving Activities for Heat Treatment Equipment

Heat treatment equipment consumes much of the energy required during production activities. Murata long ago developed a proprietary technology for heat treatment equipment and has incorporated energy conservation innovations in various devices and applications. As a result, we have been able to supply highly energy-efficient equipment. For example, we have reduced power consumption and thereby increased the energy efficiency by decreasing the weight of the mesh belt used as the transport mechanism and improving the thermal insulation in the furnace wall of the firing furnace.

Reduction in Power Consumption of Mesh-Belt-Type Firing Furnace

By reducing the weight of the metal mesh belt of the conveyor as well as the conveyance devices inside the firing furnace (a weight reduction of 58% compared with conventional belts), we have achieved a roughly 20% reduction in power consumption. Moreover, we reduced total power consumption by 25% by controlling heat conduction loss through the wall of the firing furnace and by reviewing heat emissions. We will continue to promote these measures in the interests of improved energy efficiency.

Enhancing Energy Saving

Currently, with the aim of achieving greater energy savings, we are promoting activities to reduce carbon dioxide missions per basic unit of net sales by 30% compared with fiscal 1990 levels as of the end of fiscal 2010.

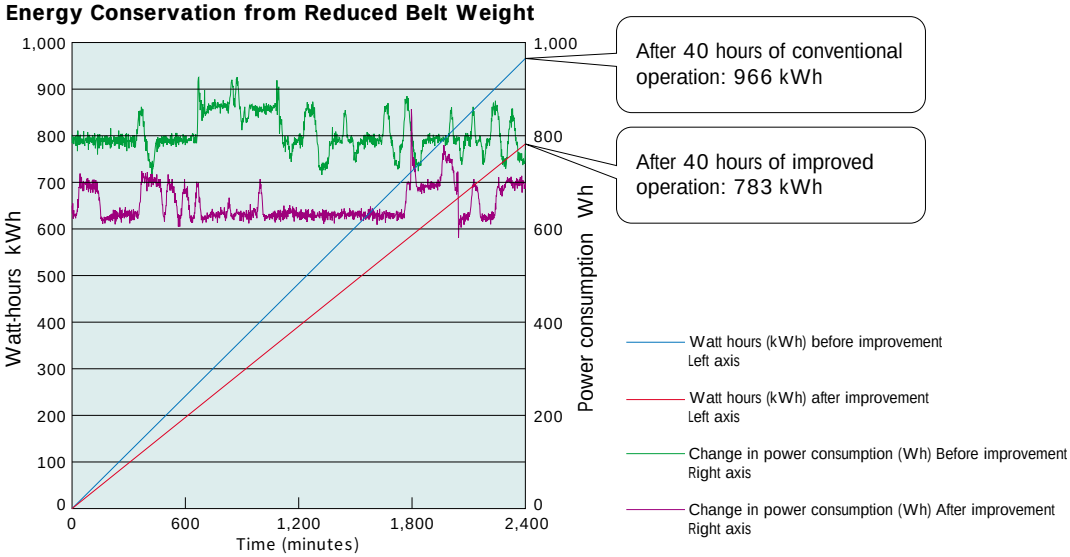
As a specific initiative, we are advancing the following policies companywide with a focus on specialist technicians and energy managers.

- Innovations in utility equipment
- Energy saving innovations for heat treatment equipment and effective use of waste heat
- Improvements in facility productivity and innovations in heat treatment technology
- Development of more compact products

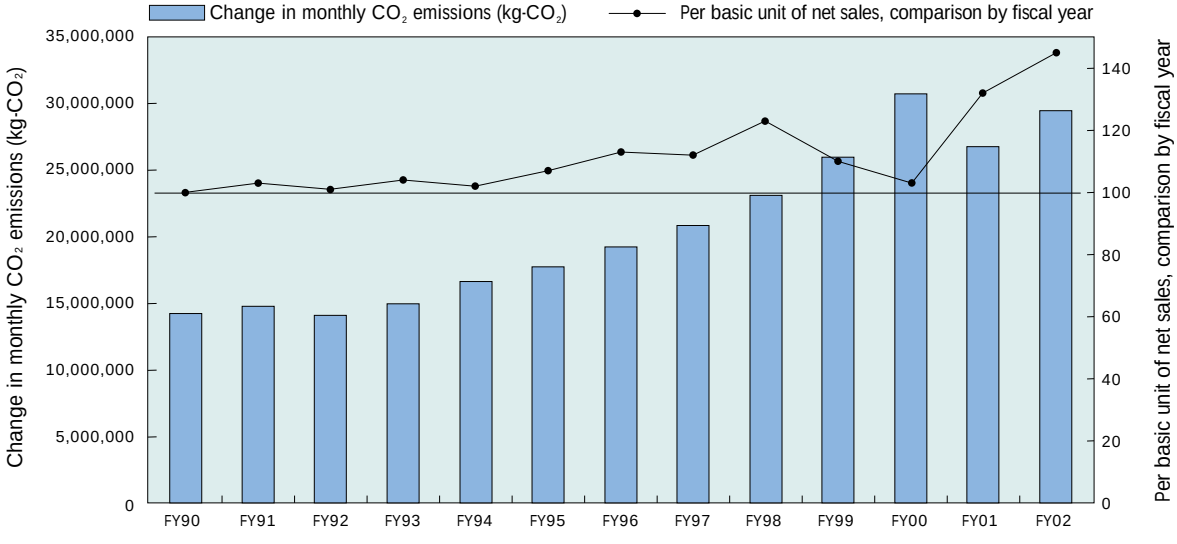
In addition, we will continue to seek reductions in the use of chemical substances imparting an environmental impact in the manufacturing process. This will apply even to countermeasures for the non-energy group of greenhouse gases - such as PFCs, HFCs, SF_6 and the like - which have been listed as subject to regulation at the COP3 (the Third Conference of Parties to the United Nations Framework Convention on Climate Change)

See page 26.

Energy Conservation from Reduced Belt Weight



Transition in carbon dioxide emissions and basic unit of net sales in fiscal 1990 (Totals in Japan)



Note: The conversion of energy consumption to carbon dioxide emissions is calculated according to Murata's own standards.

Incorporating Environmental Preservation in Business Activities

Waste Reduction and Zero Emissions

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.

Targeting Zero Emissions

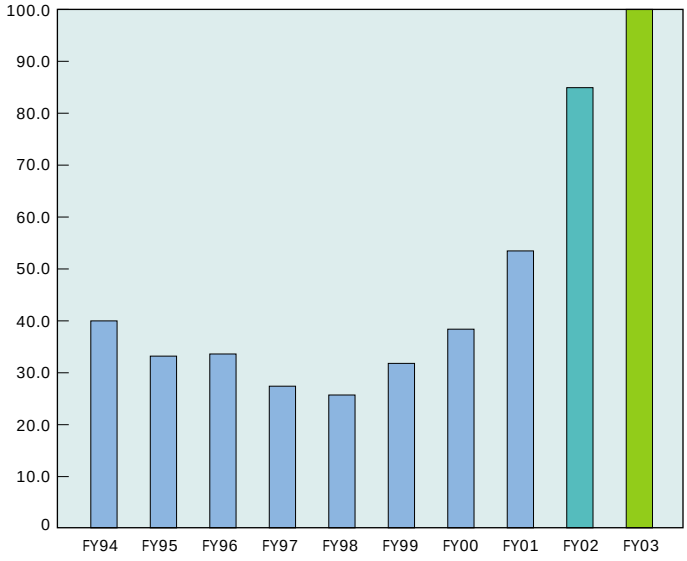
To achieve the goal of zero emissions, Murata is targeting zero landfilling* of waste matter** (100% recycling rate). Our objective is to achieve this goal by the end of fiscal 2003 by reviewing production processes, minimizing disposal of waste matter, and promoting recycling and reuse. Our recycling rate as of March 31, 2003, increased by 31.6 percentage points to 84.9% (40.1% in overseas plants) compared to fiscal 2002.

Our primary target for fiscal 2002 included high-temperature melting slug (reused as roadbed) and recycling of ceramic-coated PET film.

* 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 Rate in Japan

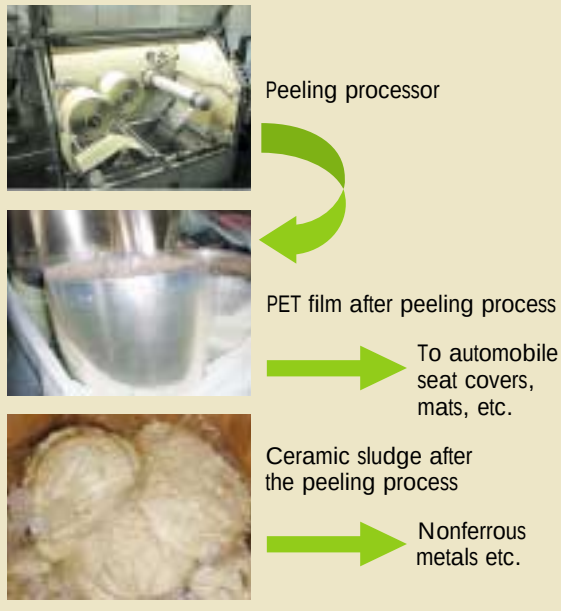


Recycling of Uniforms

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).

Recycling of Films Attaching Ceramics

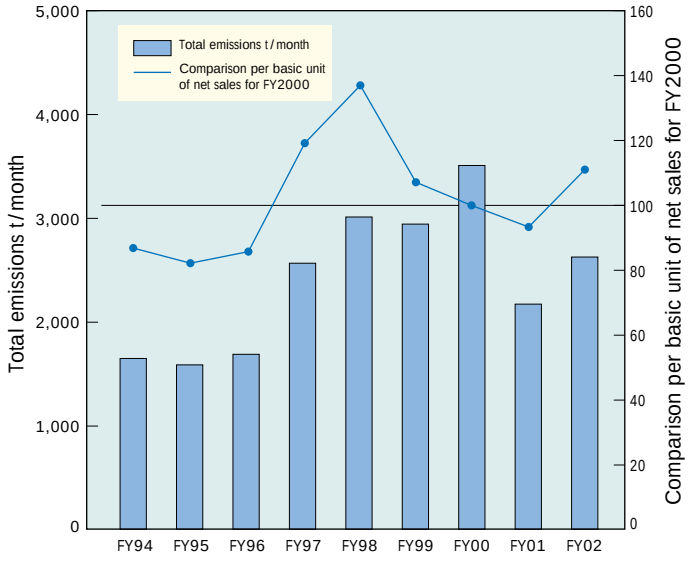
Fukui Murata Manufacturing peels ceramics from PET film coated with ceramics. The peeled PET film is then recycled as the raw material for PET. The recovered ceramic material is recycled for recovery of precious metals and the refining of nonferrous metals. Murata Electronics Singapore (Pte.) Ltd. and other locations also recycle these resources.



Reducing Waste Production

Murata's monthly average total emission of waste in fiscal 2002 was 2,624 metric tons/month in Japan and 382 metric tons/month in other countries. As for our action plan targeting the end of fiscal 2003, we have been implementing a variety of initiatives aiming at a 10% reduction in waste production per basic unit of net sales compared to the level for fiscal 2000. The result for fiscal 2002 was an 11% increase compared to the level for fiscal 2000. The reason for this increase was a significant reduction in the unit price of products as well as a drop in production compared to fiscal 2000 levels. However, we are committed to continued improvement efforts through measure such as reducing waste, decreasing the spoilage rate and increasing the efficiency of material use.

Total emissions of waste per basic unit of net sales compared with results for fiscal 2000 (domestic total)



Composting of Raw Food Waste from Staff Dining Halls

Our Japanese plants with employee dining halls and kitchens generate appreciable amounts of raw food waste. To address this issue, we had completed introducing facilities for composting this raw waste in all 18 plants and subsidiaries (representing a total investment of ¥69 million.)
The raw kitchen waste generated within Murata's domestic operations totals about 200 metric tons annually. As a result of this initiative, however, we have succeeded in reducing this volume to a mere 20 to 40 metric tons. Furthermore, because we compost the remainder, we have been able to discontinue all external disposal of food waste; we now use the resulting compost on company grounds as part of our green landscaping efforts.

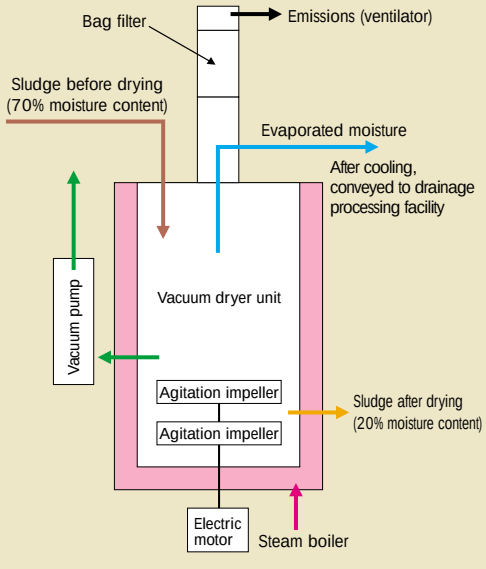
Device

Feed food waste

Working compost into soil

Introduction of a Sludge Dryer

Toyama Murata Manufacturing Co., Ltd. has introduced a vacuum sludge dryer to reduce the amount of sludge generated in the drainage process. By reducing the moisture content of the sludge from 70% to 20%, this innovation has effectively reduced the annual sludge output by about 190 metric tons.



Incorporating Environmental Preservation in Business Activities

The Pollutant Release and Transfer Register (PRTR)

Utilizing databases

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 14 substances is listed in the table below.

Reduction of Release

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.

Environmentally Hazardous Substances in Production Process

Eliminating Ozone-Depleting Chemicals (ODCs)

The "Montreal Protocol on Substances That Deplete the Ozone Layer," signed in 1987, set forth a schedule for the elimination of ODCs.

At one time, Murata used ODCs as cleansers. However, we have adopted strategies such as process modifications and the introduction of substitute cleaners. We also promoted a campaign through which our purchasing department suggested changes to our material suppliers. As a result, we were able to eliminate the use of ODCs prior to the Montreal Protocol, including among the suppliers to our material purchasing department.

Regarding specified fluorocarbons, we eliminated the use of 1,1,1-trichloroethane in March 1993 and HFCFs (a fluorocarbon substitute) in December 1995.

Elimination of Chlorinated Organic Solvents

Because chlorinated organic solvents such as trichloroethylene, tetrachloroethylene and dichloromethane are inexpensive and nonflammable, Murata has used these excellent cleaners for the removal of fats and in cleaning processes. Also, we have a history of partially adopting these substances as substitutes for ODCs.

However, we became aware that chlorinated organic solvents have a significant effect on the environment, causing air pollution, water pollution and contamination of soil and groundwater. Therefore, following the elimination of ODCs in May 1993, we adopted an independent policy to eliminate the use of chlorinated organic solvents. As a result, we eliminated use of these substances at all but one facility as of the end of 1995, and achieved complete elimination by March 1998.

Furthermore, in June 1997 we extended this policy to include raw material suppliers to our purchasing department. We sought their cooperation and adjustments toward the goal of eliminating the use of these substances as of March 1999. To date, most of our suppliers have extended their cooperation and complied with the elimination of these substances.

Domestic total amounts of pollutants released and transferred subject to the PRTR law

(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
30	Bisphenol A liquid epoxy resin	0	0	0	0	0	0.5	0
63	Xylene	3.8	0	0	0	0	0.2	17.6
64	Silver and its water-soluble compounds	0	0	0	0	0	0.6	18.3
202	Tetrahydroxymethyl anhydrous phthalic acid	0	0	0	0	0	0.2	0
227	Toluene	26.5	0	0	0	0	201.1	508.0
230	Lead and its compounds	0	0.1	0	0	0	27.0	129.6
231	Nickel	0	0	0	0	0	22.9	3.7
232	Nickel compounds	0	0	0	0	0	19.7	2.1
243	Barium and its water-soluble compounds	0	0	0	0	0	374.1	70.9
253	Hydrazine	0	0	0	0	0	7.3	0
270	Di-n-butyl phthalane	0	0	0	0	0	1.6	0
272	Bis-2-ethylhexyl phthalate	0	0	0	0	0	16.7	0
310	Formaldehyde	0.5	0	0	0	0	0.1	0
311	Manganese and its compounds	0	0	0	0	0	2.3	0.5

* The above data covers the period April 1, 2002 to March 31, 2003.
* PRTR reporting is required when more than 5 metric tons of the PRTR substances are handled per year.
* Amounts of less than 100 kilograms are rounded up.

Adoption of Voluntary Standards for Environmentally Hazardous Substances in Production Process

Among the chemical substances used in processing, those that have the possibility of imparting an environmental impact have been subject to Murata's own voluntary regulation standards, which were established in November 1997. We are targeting the reduction and elimination of substances specified in our product regulation program.

As for existing processes, we are implementing reduced use and release based on our voluntary regulation program. As for environmentally hazardous substances used in new processes, we are studying reduced usage and release of these substances.

Moreover, in May 2002, we adjusted our voluntary regulation program following an examination of the laws and regulations and the trends toward voluntary response within the electrical and electronics industry.

As part of these revisions, and especially because Murata uses toluene and xylene in relative abundance, we have established targets for reducing the emission of these substances into the atmosphere.

Reduction targets for the release of toluene and xylene into the atmosphere

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

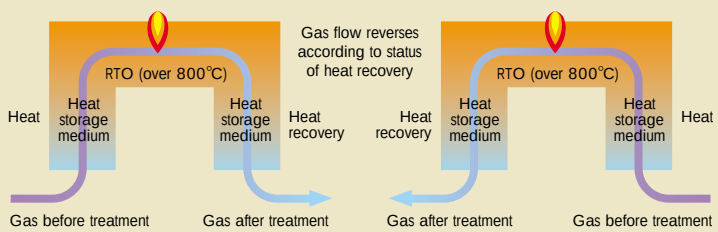
Voluntary Regulation Program for environmentally hazardous substances in production process

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 • Hexavalant 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.



Operation Flow of RTO

Regenerative Thermal Oxidizer (Fukui Murata Manufacturing Co., Ltd.)

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.

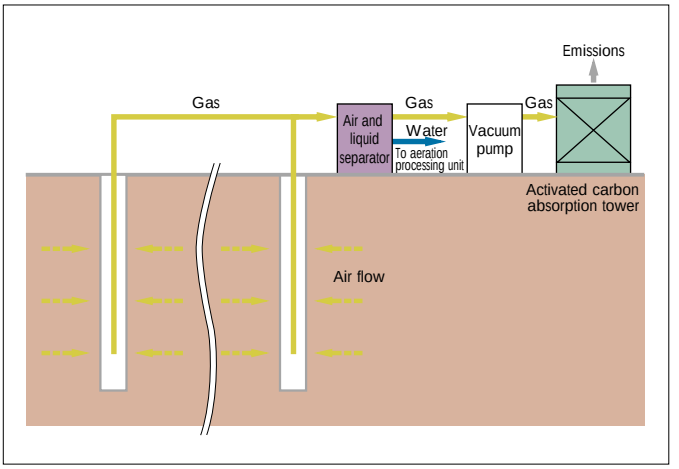
As a result of this effort, it was concluded that 14 of the Company's 36 plants and subsidiaries had to institute remediation measures to remove contamination by chlorinated organic solvents.

Implementing early-stage remediation countermeasures

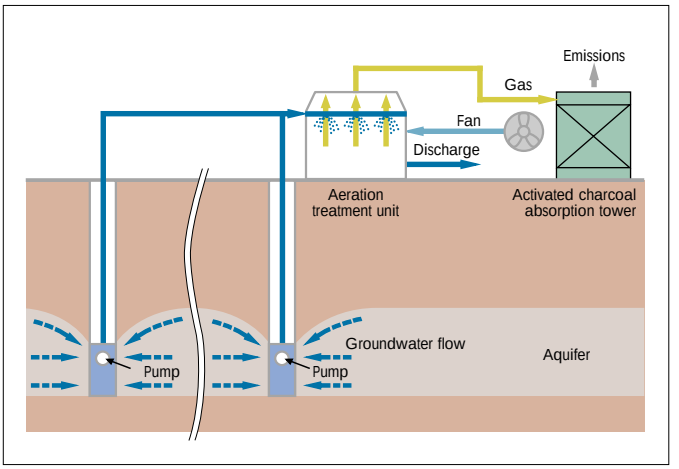
As part of our cleanup operation, we drilled wells wherever it was deemed necessary at polluted sites and along the borders of plants and subsidiaries. We have also prevented the spread of contamination beyond the sites by actively cleaning polluted soil and groundwater by means of strong vacuum extraction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

*1. 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.



*2. 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 one-half the environmental standard. The gasified chlorinated organic solvent is processed by means of absorption with activated charcoal.



Preventing the migration of pollution beyond plant sites

Table 1 shows the progress of the cleanup during fiscal 2002. 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, one plant - the Fukui Murata Manufacturing Co., Ltd. Takefu Plant - has already satisfied the environmental standard, and this plant is preparing to conclude its remediation operations.

Table 1. State of groundwater remediation (mg/L)

Substance (Environment Standard Value) / Plants and Subsidiaries	Trichloroethylene (0.03 max.)		Cis-1,2-dichloroethylene (0.04 max.)		Remarks
	FY2001	FY2002	FY2001	FY2002	
Murata Manufacturing Co., Ltd., Head Office, Nagaoka Plant	0.349	0.267	0.011	0.006	
Fukui Murata Manufacturing Co., Ltd., Takefu Plant	0.015	0.014			Preparing for completion of cleanup
Fukui Murata Manufacturing Co., Ltd., Shirayama Plant	2.249	0.869	0.460	0.284	
Fukui Murata Manufacturing Co., Ltd., Miyazaki Plant	1.127	1.385	0.212	0.289	
Asuwa Electronics Industries, Ltd.	0.436	0.376	4.125	4.105	
Iwami Murata Manufacturing Co., Ltd.	0.140	0.181	1.964	1.616	
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	0.203	0.114	0.109	0.095	
Hakui Murata Manufacturing Co., Ltd.	0.061	0.044	0.187	0.157	
Hakui Murata Manufacturing Co., Ltd., Togi Plant	0.242	0.171	0.379	0.147	
Toyoma Murata Manufacturing Co., Ltd.	N.D.	N.D.			Cleanup completed
Murata Electronics North America State College Operation	Trichloroethylene (0.005 max.)		Cis-1,2-dichloroethylene (0.07 max.)		
	0.013	0.014	0.014	0.014	

1) Data are average values from April 2001 to March 2002 and from April 2002 to March 2003.
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.

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 13.

- 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 double-walled 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–FY2002		Estimate for FY2003 and later*		Total	
Nonconsolidated	Consolidated	Nonconsolidated	Consolidated	Nonconsolidated	Consolidated
774	6,409	874	4,899	1,648	11,308

* 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.

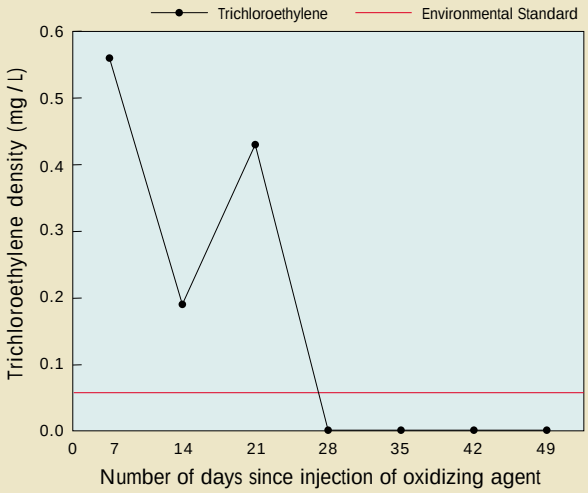
Our Efforts to Promote Remediation

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.

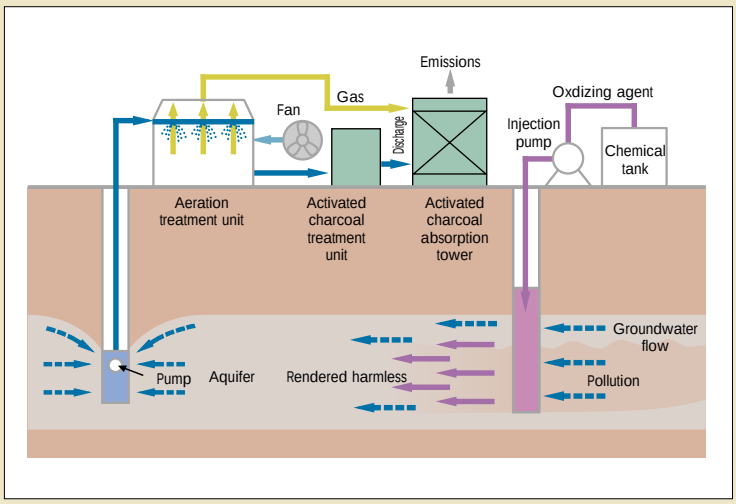
For example, in fiscal 2002 Fukui Murata Manufacturing Co., Ltd. Miyazaki Plant introduced the On-Site Oxidation and Decomposition Method* in areas with a relatively high pollution density. As a result, pollution density in the areas in which this approach was implemented fell significantly to less than 1/100th of previous levels.

Moreover, Head office of Murata Manufacturing Co., Ltd. is planning to promote remediation by the Iron Powder Excavation and Reclamation Method** during fiscal 2003.

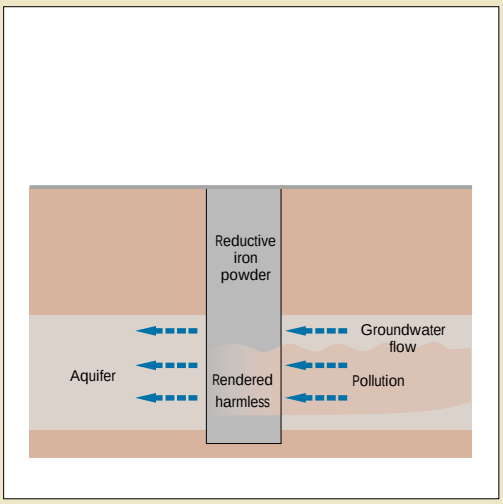
Result of introduction of on-site oxidation and decomposition method at Fukui Murata Manufacturing Co., Ltd. Miyazaki Plant



*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.



**In this method, a polluted area is excavated and iron powder is reclaimed from the excavation. Chlorinated organic solvents such as trichloroethylene and cis-1,2-dichloroethylene are deoxidized, decomposed and rendered harmless.



Management of Chemical Substances

Introduction of an inspection and registration system for chemical substances

In 1998, Murata established a chemical substance inspection and registration system. Since 2000, we have been using this system to enforce self-management of chemical substances throughout the entire domestic group.

This system requires that we obtain an MSDS (Material Safety Data Sheet*) for each chemical substance that we use in the mass-production of our products. Before using a substance, Murata Manufacturing's Personnel and Environmental Staff Departments subject it to the required staff inspection and plant inspection. This step allows us to establish compliance with chemical laws in force in Japan and other countries, environmental laws, worker health and safety laws, and Murata's own voluntary regulations. We also verify compliance with local regulations.

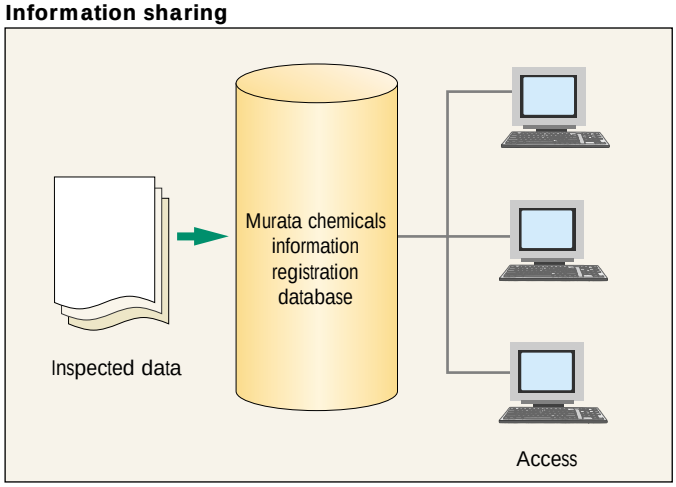
Only those chemical substances that pass such an inspection are issued a unique number. The handling (purchase, application, manufacturing, storage and sale) of a substance is possible only after the substance has been registered in Murata's database. In this way, we ensure the proper use of chemical 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.

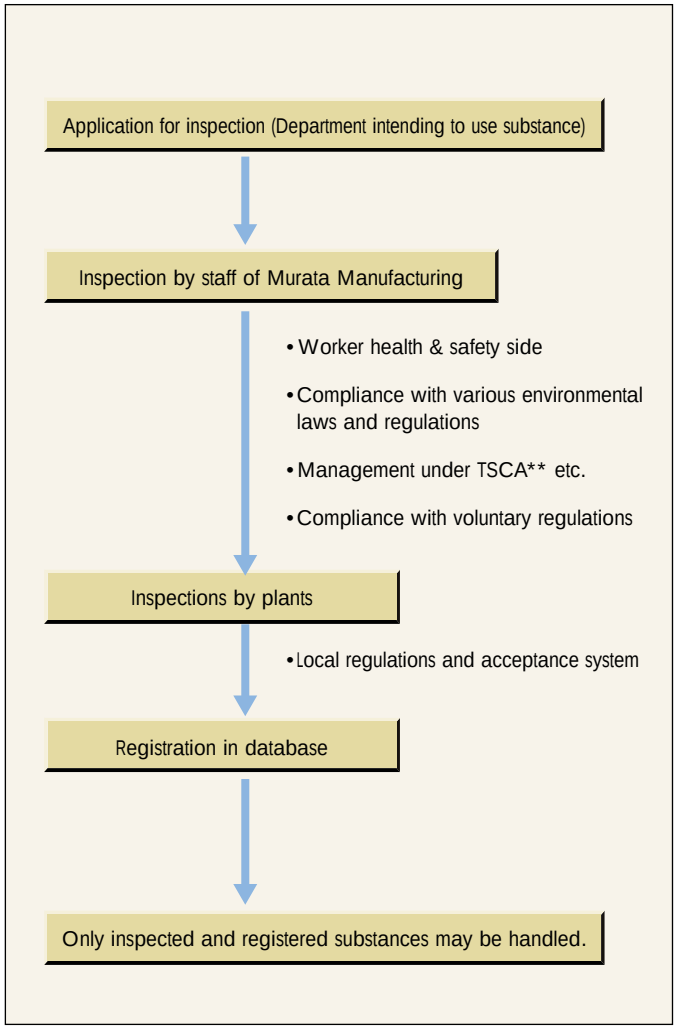
Features of Murata's Chemical Inspection & Registration System

- Observance of laws and regulations ⟹ Inspection prior to handling
- Avoidance of hazardous substances ⟹ Only registered substances shall be handled (purchased, manufactured, stored and sold).
- Information sharing ⟹ Registration in database

Information sharing



Flow of Chemical Substance Inspection & Registration



** 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.

Occupational Health and Safety

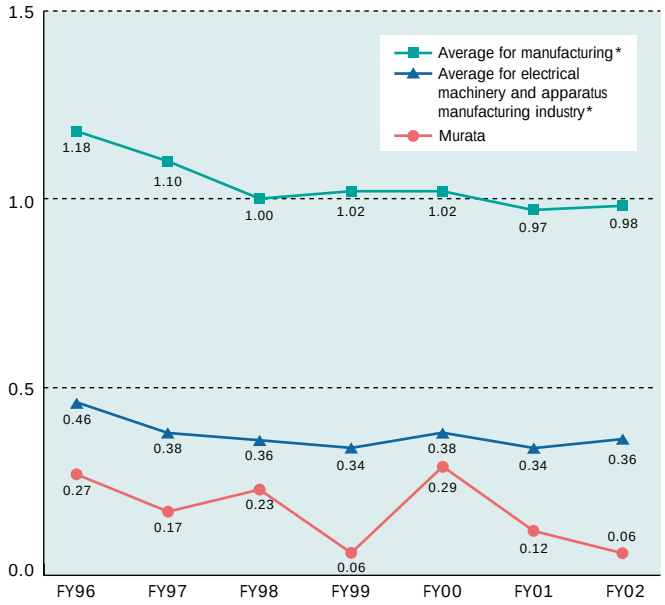
Murata promotes occupational health and safety in the effort to provide a work environment in which each employee can work without risk to health and safety.

Statistics on Work-Related Injuries and Deaths

Murata has taken steps as an entire group with the goal of preventing work-related injuries and deaths. As a result of this effort, the number of incidents to date has decreased. Moreover, the rate of occurrence of work-related injuries or deaths per million working hours ("frequency rate") is at a very low level in comparison with the domestic average for the electrical machinery and apparatus manufacturing industry. However, we will continue to work toward a goal of zero work-related injuries and deaths. To remove any potential risks associated with the occurrence of accidents, in fiscal 2000 we introduced an inspection and registration system applicable to the introduction of new chemical substances. Moreover, in fiscal 2001, we developed a risk assessment system applicable to production equipment.

Another of our initiatives involves instituting accident prevention under a management superintendent who utilizes special skills for monitoring work, standardizes operations in non-regular work, and produces procedure manuals.

Occurrence of shutdown accidents (Japan) (Millions of hours per incident)



(*Ministry of Health, Labour and Welfare)

Addressing Risk Assessments

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. In fiscal 2001, Murata introduced a risk assessment approach that can be considered the nucleus of this system, and we are moving ahead with preparations toward developing an occupational health and safety management system that accommodates the specified guidelines.

Promoting Total Health Promotion《THP*》Activities

Activities that contribute to the health of employees are growing in importance. Murata itself has established a basic approach to promoting health, and on this basis we have adopted activities intended to promote health maintenance. Moreover, we are supporting both the physical and mental health of our employees.

For example, we provide nutritional guidance as well as exercise guidance based on measurements of motor functions and the results of a physical examination. We also support health-promoting activities in which the individual sets and adopts his or her own goals regarding life in general such as exercise, meals and preference for an improved lifestyle. Additionally, we are actively sponsoring the information and opportunities required for the health of both the mind and body by staging exercise promotion events centered around walking as well as mental health classes.

*Healthful activity for the mind and body advocated by the Ministry of Health, Labour and Welfare

The Occupational Health & Safety Forum

Murata has stepped up efforts to improve the group-wide level of occupational health and safety. As part of this effort, we introduced a health and safety conference periodically in order to assemble the entire domestic group. This conference brought together the persons in charge of Occupational Health and Safety Division, the Production Technology Division, and the Manufacturing Division in order to promote the collection and sharing of information and the exchange of ideas. In 1999, we renamed this event the Occupational Health and Safety Forum with management superintendents as the participants, and all participants were urged to debate a common theme in order to further increase the level of expertise related to occupational health and safety as well as their general knowledge and awareness.

The forum suggests specific schemes and tips intended to resolve occupational health and safety problems and themes contributed by the participating plants and manufacturing subsidiaries. Our goal is to make use of the knowledge gained in various occupational health and safety activities. With the horizontal spread of expertise and strategies promoted company-wide, the forum is becoming established as an activity linked to efficiency.

Harmony with the Community

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, communication concerning the environment, and afforestation 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, many plants of Murata actively participate in environmental improvement activities as sponsored by local governments and communities and cleanup community areas.

Members from Head office of Murata Manufacturing Co., Ltd. participate in cleanup activities.

Hakui Murata Manufacturing Co., Ltd. members participate in Chirihama Clean Campaign sponsored by Hakui city, Ishikawa prefecture.

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.

Communication Concerning the Environment

Our approach to disclosure of environmental information

Murata's environmental policy is characterized by active and timely disclosure of information, as evidenced by our announcements to the mass media, responses to journalists, and advertising.

In the area of official announcement of various scientific findings on the environment, Murata's stance is that the best policy for maintaining high credibility and objectivity is to report to the local government, which is involved in various highly specialized laws, ordinances and regulations and is entrusted to apply its own evaluation and judgment. We have long conferred with the local governments that govern the locations of our plants or subsidiaries, and we follow their guidance.

Murata has issued annual Environmental Reports based on our policy of "information disclosure" since fiscal 2002. The reports have been posted on our website in order to minimize use of paper resources.

Introduction of Environmental Activities at Exhibitions

Participating in various exhibitions such as CEATEC Japan, Murata actively introduces environmental activities and environmentally conscious products.

Afforestation of Plants and Offices

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

Protection of virgin forests

We are taking steps to develop walking trails, remove weeds and control the pine weevil. Pruned branches and shrubs are composted and used as bark fertilizer.

Rhododendron appreciation event at the Yokaichi Plant

Restoration of virgin forests and harmony with local communities

In the belief that rich greenery ensures harmony with the community, we are promoting the cultivation of trees and plants that allow people to enjoy the changes of the four seasons. Visitors to areas of flowering trees and arbors in prefectures and municipalities can enjoy flowers, fruits, the scents of greenery, autumn colors, wild birds and insects, as well as shrubs and 80,000 trees of 250 species growing in a virgin forest.

Cherry blossom appreciation event at Izumo Murata Manufacturing

Harmony with local communities

Murata cultivates many species of plants and trees and opens its green areas to the community during the blossom season, welcoming many visitors each year.

① The Yokaichi Plant and Yasu Plant cultivate 1,500 rhododendrons - the official flower of Shiga prefecture - in 150 varieties. Every year they hold a rhododendron appreciation event. Both plants welcome several thousand visitors from the local community and from outside their prefectures. This event has become established as a community event.

② Izumo Murata Manufacturing cultivates rows of cherry trees (340 trees of 59 varieties) and opens its gardens to the public when the cherry blossoms are in bloom. It also cultivates 1,000 varieties of camellia in a garden that is opened to the local community when the flowers are in season.

③ Kanazawa Murata Manufacturing harvests apples from its apple orchard and donates them to welfare facilities, day care centers and other community facilities, where they are much appreciated.

Afforestation project at Kanazawa Murata Manufacturing

Major Afforestation Commendations

2000 Izumo Murata Manufacturing wins the Chugoku District Directors Award from the Ministry of International Trade and Industry.

1999 Izumo Murata Manufacturing is commended by the Japan Afforestation Center at the 18th National Convention for Promotion of Factory Afforestation.

1998 Yasu Murata Manufacturing is commended by the Japan Afforestation Center at the 17th National Convention for Promotion of Factory Afforestation.

1998 Fukui Murata Manufacturing is presented with the Chairman's Award of the 8th Promotion Council in the *Hanano Machizukuri* Contest.

1996 Yasu Murata Manufacturing is awarded the Silver Award in the Shiga Factory Afforestation Contest.

Corporate Profile

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.*

Kanazawa Murata Manufacturing Co., Ltd.*

Toyama Murata Manufacturing Co., Ltd.*

Komatsu Murata Manufacturing Co., Ltd.*

Hakui Murata Manufacturing Co., Ltd.*

Okayama Murata Manufacturing Co., Ltd.*

Sabae Murata Manufacturing Co., Ltd.*

Kanazu Murata Manufacturing Co., Ltd.*

Himi Murata Manufacturing Co., Ltd.*

Iwami Murata Manufacturing Co., Ltd.*

Wakura Murata Manufacturing Co., Ltd.*

Anamizu Electronics Industries, Ltd.*

Asuwa Electronics Industries, Ltd.*

Tome Murata Manufacturing Co., Ltd.*

Azumi Murata Manufacturing 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 (Mexico)

Murata World Comercial Ltda. (Brazil)

Murata Amazônia Indústria E Comércio Ltda. (Brazil)*

Murata Electrônica Do Brasil Ltda. (Brazil)

<Europe>

Murata Europe Management GmbH (Germany)

Murata Elektronik GmbH (Germany)*

Murata Elektronik Handels GmbH (Germany)

Murata Electronics (Netherlands) B.V. (Netherlands)

Murata Electronics (UK) Limited (UK)

Murata Manufacturing (UK) Limited (UK)*

Murata Electronique S.A. (France)

Murata Electronics Switzerland AG. (Switzerland)

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 (Shenzehn) Co., Ltd. (China)

Murata Co., Ltd. (China)

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

Korea Murata Electronics Co., Ltd. (Korea)

Taiwan Murata Electronics Co., Ltd. (Taiwan)*

Murata Electronics Singapore (Pte.) Ltd. (Singapore)*

Murata Electronics Philippines Inc. (The Philippines)

Murata Electronics (Thailand), Ltd. (Thailand)*

Thai Murata Electronics Trading, Ltd. (Thailand)

Murata Electronics (Malaysia) Sdn. Bhd. (Malaysia)*

Murata Trading (Malaysia) Sdn. Bhd. (Malaysia)

* Domestic and overseas subsidiaries listed are those in existence as of March 31, 2003.

* The environmental data listed by plant beginning on page 35 represent the environmental impacts data of Murata Manufacturing Co., Ltd. (excluding sales branches) and domestic and overseas production subsidiaries marked with an asterisk.

Domestic and Overseas Production Bases

Murata Manufacturing Co., Ltd. Yasu Plant

Murata Manufacturing Co., Ltd. Yokaichi Plant

Fukui Murata Manufacturing Co., Ltd.

Izumo Murata Manufacturing Co., Ltd.

Kanazawa Murata Manufacturing Co., Ltd.

Toyama Murata Manufacturing Co., Ltd.

Komatsu Murata Manufacturing Co., Ltd.

Okayama Murata Manufacturing Co., Ltd.

Murata Electronics North America, Inc.

Murata Manufacturing (UK) Limited

Murata Electronics (Malaysia) Sdn. Bhd.

Murata Electronics Singapore (Pte.) Ltd.

Murata Electronics (Thailand), Ltd.

Wuxi Murata Electronics Co., Ltd.

Environmental Data by Murata Plants

In every Murata plant, either domestic of 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, 2002 to March 31, 2003.
[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 page 23.)
[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: 7,266,812 kWh/year
Fuel consumption: 60 kℓ/year
Total waste released: 201 t/year
(Annual mean recycling ratio: 98.3%)

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	7.6	6.8–7.9*1
BOD	160	0.6	4.4
Lead	0.1	N.D.	0.02
Fluorine and its compounds	15*2	0.2	3.4
Nickel	2	N.D.	0.042
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.	0.003
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 the temporary requirements for the electronic components manufacturing industry in Japan, that were stipulated by the associated law and will remain effective to 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	N.D.	0.04
SOx	1	0.03	0.03
NOx	180	74	74

- Unit: soot and dust, g/Nm^3; SOx, Nm^3/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: 91,718,670 kWh/year
Fuel consumption: 6,954 kℓ/year
Total waste released: 3,032 t/year
(Annual mean recycling ratio: 53.1%)

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

Item	Target level	Average	Max. value
pH	6.0–8.5	7.4	7.0–8.2*1
COD	15	3.2	7.5
BOD	15	2.1	5.4
SS	20	0.5	4.0
n-hexane (mineral oils)	3	0.2	1.0
Phenol	1.0	N.D.	N.D.
Copper	1	0.017	0.026
Zinc	1	0.175	0.45
Soluble iron	10	0.3	0.5
Soluble manganese	10	0.09	0.18
Total chromium	0.1	N.D.	N.D.
Number of coliform groups	3000	29	140
Total nitrogen	8	2.6	3.6
Total phosphorus	0.8	0.03	0.06
Lead	0.1	0.003	0.02
Fluorine and its compounds	8	0.3	0.9
Boron and its compounds	2	0.10	0.14
Ammonia Ammonium compounds Nitrite compounds and nitrate compounds	730 *2	2.6	3.6
Nickel	—	0.040	0.062
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	3.0	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	0.002
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
- 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 the temporary requirements for the electronic components manufacturing industry in Japan, that were stipulated by the associated law and will remain effective to 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	0.005	0.04
SOx	0.63	N.D.	N.D.
NOx	130	53	120
Lead	7	0.03	0.1
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)	—	31	51

- Unit: soot and dust, g/Nm^3; SOx, Nm^3/h; NOx, ppm; lead, mg/Nm^3; others, mg/Nm^3
- 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
Xylene	0.8	0.0	0.0	0.0	0.0	0.0	14.9
Silver and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	0.3	9.5
Toluene	0.8	0.0	0.0	0.0	0.0	0.1	50.4
Lead and its compounds	0.1	0.1	0.0	0.0	0.0	3.3	28.1
Nickel compounds	0.0	0.0	0.0	0.0	0.0	2.5	1.8
Barium and its water-soluble compounds	0.0	0.1	0.0	0.0	0.0	7.5	10.2
Formaldehyde	0.5	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	2.3	0.5

- Unit: t/year

Murata Manufacturing Co., Ltd. Yasu Plant

2288, Oshinohara, Yasu-cho, Yasu-gun, Shiga 520-2393, Japan
Electricity consumption: 20,641,881 kWh/year
Fuel consumption: 15,644 kℓ/year
Total waste released: 9,319 t/year
(Annual mean recycling ratio: 90.3%)

Water quality data:
[Outlet #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	6.9–7.8*1
SS	25	0.7	6
COD	20	4.2	6.8
BOD	20	2.8	8.7
n-hexane (mineral oil)	3	N.D.	N.D.
Phenol	1	N.D.	N.D.
Copper	1	0.006	0.05
Zinc	1	0.04	0.06
Soluble iron	10	0.15	0.25
Soluble manganese	10	0.024	0.077
Total chromium	0.1	N.D.	N.D.
Hexavalent chromium	N.D.	N.D.	N.D.
Number of coliform groups	3000	22	64
Total nitrogen	8	0.4	5.7
Total phosphorus	0.6	N.D.	0.07
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.
Fluorine and its compounds	6	N.D.	0.2
Boron and its compounds	2	0.02	0.07
Ammonia Ammonium compounds Nitrite compounds and nitrate compounds	730 *2	0.6	4
Nickel	—	0.004	0.008
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.
Benthiocarb	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.

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

Item	Target level	Average	Max. value
pH	6.0–8.5	7.6	7.2–8.1*1
SS	25	3	10.4
COD	15	3.5	7.9
BOD	15	1.3	4.9
n-hexane (mineral oil)	3	N.D.	N.D.
Phenol	1	N.D.	N.D.
Copper	1	0.008	0.034
Zinc	1	0.035	0.076
Soluble iron	10	0.14	0.46
Soluble manganese	10	0.19	0.37
Total chromium	0.1	N.D.	N.D.
Hexavalent chromium	N.D.	N.D.	N.D.
Number of coliform groups	3000	30	100
Total nitrogen	8	N.D.	1.1
Total phosphorus	0.5	0.05	0.2
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.
Fluorine and its compounds	6	N.D.	0.3
Boron and its compounds	2	N.D.	0.02
Ammonia Ammonium compounds Nitrite compounds and nitrate compounds	730 *2	N.D.	1.5
Nickel	—	0.04	0.1
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.
Benthiocarb	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 the temporary requirements for the electronic components manufacturing industry in Japan, that were stipulated by the associated law and will remain effective to 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	0.25	N.D.	N.D.
NOx	70	22	44
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	0.5	0.0
Xylene	0.0	0.0	0.0	0.0	0.0	0.1	2.8
Silver and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Tetrahydromethyl phthalate anhydride	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Toluene	2.2	0.0	0.0	0.0	0.0	0.0	14.9
Nickel	0.0	0.0	0.0	0.0	0.0	0.3	1.7
Nickel compounds	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Barium and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Hydrazine	0.0	0.0	0.0	0.0	0.0	7.3	0.0
Formaldehyde	0.0	0.0	0.0	0.0	0.0	0.1	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: 4,027,200 kWh/year
Fuel consumption: 593 kℓ/year
Total waste released: 42 t/year
(Annual mean recycling ratio: 66.6%)

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	7.2	7.0–7.5*1
SS	—	1.8	8
COD	—	3.6	3.6
BOD	—	N.D.	N.D.
n-hexane (mineral oil)	5	N.D.	N.D.
Copper	1	0.008	0.021
Zinc	1	0.009	0.015
Soluble iron	3	1.2	2.7
Soluble manganese	1	0.005	0.01
Lead	0.1	N.D.	N.D.
Arsenic	0.1	N.D.	N.D.
Fluorine and its compounds	15 *2	N.D.	N.D.
Boron and its compounds	25 *2	0.01	0.03
Nickel	—	N.D.	0.008
Tin	—	N.D.	N.D.
Barium	—	N.D.	0.018
Palladium	—	N.D.	N.D.
Strontium	—	0.022	0.034
Zirconium	—	N.D.	N.D.
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	6.9	6.0–7.2*1
SS	—	51	87
COD	—	32	39
BOD	—	58	100
n-hexane (animal and vegetable oils and fats)	—	17	58

- 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 the temporary requirements for the electronic components manufacturing industry in Japan, that were stipulated by the associated law and will remain effective to 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 boiller	0.130	0.024	0.024
NOx B-2 boiller	0.055	0.023	0.023
NOx chilled / hot water generator	0.046	0.027	0.031
NOx gas engine	0.111	0.025	0.032

- Unit: NOx, Nm^3/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: 1,124,364 kWh/year
Fuel consumption: 191 kℓ/year
Total waste released: 42 t/year
(Annual mean recycling ratio: 87.9%)

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
Soot and dust	0.05	0.014	0.02
NOx	45	32	41

* Unit: soot and dust, g/Nm^3; 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: 143,700,900 kWh/year
Fuel consumption: 9,826 kℓ/year
Total waste released: 5,013 t/year
(Annual mean recycling ratio: 64.8%)

[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	7.0–7.7*1
SS	45	1.4	10
BOD	30	3	16.0
n-hexane (mineral oil)	5	N.D.	0.8
Phenol	5	N.D.	N.D.
Copper	3	0.015	0.048
Zinc	5	0.027	0.035
Soluble iron	10	0.022	0.041
Soluble manganese	10	0.016	0.017
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.	0.02
Mercury	0.005	N.D.	N.D.
Arsenic	0.1	N.D.	N.D.
Fluorine and its compounds	15	N.D.	N.D.
Boron and its compounds	10	N.D.	N.D.
Ammonia Ammonium compounds Nitrite compounds and nitrate compounds	730 *2	1.2	1.7
Nickel	5	0.004	0.021
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	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 the temporary requirements for the electronic components manufacturing industry in Japan, that were stipulated by the associated law and will remain effective to 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	64	110

- Unit: soot and dust, g/Nm^3; 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	4.4	0.0	0.0	0.0	0.0	0.3	0.0
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	15.7	0.0
Nickel	0.0	0.0	0.0	0.0	0.0	13.8	0.0
Nickel compounds	0.0	0.0	0.0	0.0	0.0	0.4	0.0
Barium and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	103	0.0
Bis-2-ethylhexyl phthalate	0.0	0.0	0.0	0.0	0.0	9.2	0.0

- 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	7.1	6.6–7.5*1
SS	45	2.8	18.0
BOD	30	2.6	7.3
n-hexane (mineral oil)	5	N.D.	N.D.
Phenol	5	N.D.	N.D.
Copper	3	0.009	0.024
Zinc	5	0.07	0.11
Soluble iron	10	0.1	0.2
Soluble manganese	10	N.D.	N.D.
Total chromium	2	N.D.	0.01
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.	0.02
Mercury	0.005	N.D.	N.D.
Arsenic	0.1	N.D.	N.D.
Fluorine and its compounds	15	N.D.	N.D.
Boron and its compounds	10	N.D.	N.D.
Ammonia Ammonium compounds Nitrite compounds and nitrate compounds	730 *2	2.3	4.4
Nickel	5	0.01	0.06
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	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 the temporary requirements for the electronic components manufacturing industry in Japan, that were stipulated by the associated law and will remain effective to 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	83	110

- Unit: soot and dust, g/Nm^3; 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:
Any substances to be subjected to PRTR is used in an amount that necessitates registration.

[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	7.4	7.1–7.7*1
SS	45	2	7
BOD	30	4	6
n-hexane (mineral oil)	5	N.D.	0.6
Phenol	0.1	N.D.	N.D.
Copper	3	0.006	0.006
Zinc	5	0.012	0.012
Soluble iron	10	0.48	0.48
Soluble manganese	10	0.019	0.019
Total chromium	2	N.D.	N.D.
Hexavalent chromium	0.05	N.D.	N.D.
Cadmium	0.1	N.D.	N.D.
Cyanide	5	N.D.	N.D.
Lead	0.1	N.D.	0.02
Mercury	0.005	N.D.	N.D.
Arsenic	0.1	N.D.	N.D.
Fluorine and its compounds	15	N.D.	N.D.
Boron and its compounds	10	N.D.	N.D.
Ammonia Ammonium compounds Nitrite compounds and nitrate compounds	730 *2	1.9	1.9
Nickel	5	N.D.	0.03
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	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.	0.004
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 the temporary requirements for the electronic components manufacturing industry in Japan, that were stipulated by the associated law and will remain effective to 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.

Izumo Murata Manufacturing Co., Ltd.

2308, Kaminaoe, Hikawa-cho, Hikawa-gun, Shimane 699-0696, Japan
Electricity consumption: 133,727,592 kWh/year
Fuel consumption: 4,315 kℓ/year
Total waste released: 7,153 t/year
(Annual mean recycling ratio: 49.7%)

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	7.2–7.6*1
SS	70	4.5	8
COD	20	3.6	9
COD (total pollutant load control)	114.4kg/day	12.1	26.3
BOD	20	2	3
n-hexane (mineral oil)	5	N.D.	N.D.
Copper	3	0.008	0.013
Number of coliform groups	3000	N.D.	N.D.
Total nitrogen	15	3.3	4.7
Total nitrogen (total pollutant load control)	84.3kg/day	11.3	17.0
Total phosphorus	3	0.24	0.46
Total phosphorus (total pollutant load control)	16.9kg/day	0.84	1.48
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.	0.2
Boron and its compounds	25 *2	0.08	0.2
Ammonia Ammonium compounds Nitrite compounds and nitrate compounds	730 *2	2.1	3.3
Nickel	8	0.041	0.055
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, number/cc
  Total pollutant load control about COD, total nitrogen and total phosphorus: kg/day; 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 the temporary requirements for the electronic components manufacturing industry in Japan, that were stipulated by the associated law and will remain effective to 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/Nm^3; SOx, Nm^3/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	0.3
Toluene	6.7	0.0	0.0	0.0	0.0	153.6	399.1
Nickel	0.0	0.0	0.0	0.0	0.0	4.6	0.0
Nickel compounds	0.0	0.0	0.0	0.0	0.0	1.7	0.1
Barium and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	258.1	60.7
Di-n-butyl phthalate	0.0	0.0	0.0	0.0	0.0	1.6	0.0
Bis-2-ethylhexyl phthalate	0.0	0.0	0.0	0.0	0.0	7.5	0.0

- Unit: t/year

Environmental Data by Murata Plants

Kanazawa Murata Manufacturing Co., Ltd.

Chi-18, Sodanimachi, Tsurugi-machi, Ishikawa-gun, Ishikawa 920-2101, Japan
Electricity consumption: 49,398,354 kWh / year
Fuel consumption: 3,306 kℓ / year
Total waste released: 967 t / year
(Annual mean recycling ratio: 98.2%)

[Kanazawa Plant]

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	7.8	7.4–8.2*1
SS	70	3.4	20
BOD	20	2	16
n-hexane (mineral oil)	5	N.D.	N.D.
Phenol	5	N.D.	N.D.
Copper	3	N.D.	N.D.
Zinc	5	0.08	0.21
Soluble iron	10	0.05	0.42
Soluble manganese	10	0.03	0.12
Total chromium	1.6	N.D.	N.D.
Hexavalent chromium	0.5	N.D.	N.D.
Number of coliform groups	3000	1	10
Cadmium	0.1	N.D.	N.D.
Cyanide	0.8	N.D.	N.D.
Lead	0.1	N.D.	N.D.
Arsenic	0.1	N.D.	N.D.
Mercury	0.005	N.D.	N.D.
Fluorine and its compounds	12	N.D.	N.D.
Boron and its compounds	25*2	0.2	0.3
Ammonia Ammonium compounds Nitrite compounds and nitrate compounds	730*2	2.6	6.6
Nickel	—	0.03	0.08
Antimony	—	0.007	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 the temporary requirements for the electronic components manufacturing industry in Japan, that were stipulated by the associated law and will remain effective to 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	0.10	N.D.	N.D.
SOx	6.05	N.D.	N.D.
NOx	150	78	110
Hydrogen chloride	60	0.14	0.46
Fluorine compounds	10	N.D.	N.D.

- Unit: soot and dust, g / Nm^3; SOx, Nm^3 / h; NOx, ppm; hydrogen chloride, fluorine compounds, mg / Nm^3
- 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:
Any substances to be subjected to PRTR is used in an amount that necessitates registration.

[Nishikanazawa Plant]

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	7.3	6.6–7.8*
SS	600	8.3	28
BOD	600	8.3	32
n-hexane (animal and vegetable oils and fats)	30	1.7	9.9
Phenol	5	N.D.	N.D.
Copper	3	N.D.	N.D.
Zinc	5	0.1	0.2
Soluble iron	10	0.02	0.14
Soluble manganese	10	N.D.	N.D.
Total chromium	2	N.D.	N.D.
Lead	0.1	0.01	0.05
Iodine	220	N.D.	N.D.
Fluorine and its compounds	8	0.3	1
1,1,1-trichloroethane	3	N.D.	N.D.
Temperature	45	14	20

- Unit: pH, none; number of coliform groups,number / cc; temperature, °C; 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)
- *: 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	0.9	0.08	0.12
NOx	180	88	110

- Unit: soot and dust, g / Nm^3; SOx, Nm^3 / 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:
Any substances to be subjected to PRTR is used in an amount that necessitates registration.

Toyama Murata Manufacturing Co., Ltd.

345, Ueno, Toyama-shi, Toyama 939-8195, Japan
Electricity consumption: 39,219,663 kWh / year
Fuel consumption: 305 kℓ / year
Total waste released: 729 t / year
(Annual mean recycling ratio: 75.7%)

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	7.4–7.8*1
SS	50	2.1	23
BOD	20	4.5	16
n-hexane (mineral oil)	3	0.17	1.1
Copper	3	0.025	0.038
Number of coliform groups	3000	N.D.	N.D.
Lead	0.1	0.01	0.07
Fluorine and its compounds	15*2	N.D.	N.D.
Boron and its compounds	25*2	0.07	0.07
Ammonia Ammonium compounds Nitrite compounds and nitrate compounds	730 *2	3.6	3.9
Nickel	—	0.004	0.024
Tin	—	N.D.	N.D.
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 the temporary requirements for the electronic components manufacturing industry in Japan, that were stipulated by the associated law and will remain effective to 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 and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	0.1	4.2
Toluene	5.8	0.0	0.0	0.0	0.0	23.1	0.0
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	3.1	38.1
Nickel	0.0	0.0	0.0	0.0	0.0	1.1	2.0

- Unit: t / year

Komatsu Murata Manufacturing Co., Ltd.

93, Hikari-machi, Komatsu-shi, Ishikawa 923-8626, Japan
Electricity consumption: 18,541,000 kWh / year
Fuel consumption: 272 kℓ / year
Total waste released: 316 t / year
(Annual mean recycling ratio: 89.0%)

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	7.7	7.4–8.1*
SS	70	1	4
COD	30	5	15
BOD	30	7	22
Copper	3	0.09	0.21
Zinc	5	0.17	0.38
Soluble iron	10	0.1	0.3
n-hexane (mineral oil)	5	0.3	2.1
Total chromium	2	N.D.	N.D.
Hexavalent chromium	0.5	N.D.	N.D.
Number of coliform groups	3000	205	410
Cadmium	0.1	N.D.	N.D.
Lead	0.1	0.015	0.029
1,1,1-trichloroethane	3	N.D.	N.D.
Trichloroethylene	0.3	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)
- *: The minimum to maximum pH values.

Air quality data:
No particular standard value per currently effective laws or regulations.
Despite this, monitoring is performed according to a voluntary control standard.

Item	Target level	Average	Max. value
Soot and dust	—	N.D.	N.D.
SOx	—	0.13	0.28
NOx	—	77	84

- Unit: soot and dust, g / Nm^3; SOx, Nm^3 / 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:
Any substances to be subjected to PRTR is used in an amount that necessitates registration.

Hakui Murata Manufacturing Co., Ltd.

52, Yanagibashi-machi, Hakui-shi, Ishikawa 925-8555, Japan
Electricity consumption: 7,862,328 kWh / year
Fuel consumption: 155 kℓ / year
Total waste released: 375 t / year
(Annual mean recycling ratio: 93.3%)

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	7.8	7.4–8.1*
SS	40	5.8	9
COD	90	4.1	4.9
BOD	40	1.0	2.4
n-hexane (mineral oil)	5	N.D.	N.D.
Copper	3	0.005	0.009
Soluble iron	10	1.2	1.9
Total chromium	2	N.D.	N.D.
Number of coliform groups	3000	6	16
Lead	0.1	0.03	0.06
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)
- *: 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	0.001	0.001
SOx	5.47	0.35	0.35
NOx	180	84	84

- Unit: soot and dust, g / Nm^3; SOx, Nm^3 / 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
Toluene	1.3	0.0	0.0	0.0	0.0	3.9	0.0
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	28.1

- Unit: t / year

[Togi 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	8.2	8.2*
SS	60	9	11
BOD	60	2.1	2.5
n-hexane (mineral oil)	5	N.D.	N.D.
Number of coliform groups	3000	21	29
1,1,1-trichloroethane	3	N.D.	N.D.
Trichloroethylene	0.3	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)
- *: 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	6.1	0.22	0.22
NOx	180	96	96

- Unit: soot and dust, g / Nm^3; SOx, Nm^3 / 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:
Any substances to be subjected to PRTR is used in an amount that necessitates registration.

Environmental Data by Murata Plants

Okayama Murata Manufacturing Co., Ltd.

77, Fukumoto, Oku-cho, Oku-gun, Okayama 701-4241, Japan
Electricity consumption: 32,687,831 kWh/year
Fuel consumption: 3,061 kℓ/year
Total waste released: 1,177 t/year
(Annual mean recycling ratio: 85.9%)

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	7.7	7.3–7.9*1
SS	30	N.D.	N.D.
COD	10	2.1	3.8
BOD	10	1.1	2.3
n-hexane (mineral oil)	2	0.1	0.6
Total chromium	2	N.D.	N.D.
Hexavalent chromium	0.05	N.D.	N.D.
Total nitrogen	60	4.1	8.1
Total phosphorus	8	0.04	0.24
Lead	0.1	0.01	0.06
Ammonia Ammonium compounds Nitrite compounds and nitrate compounds	730*2	3.41	5.96
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 the temporary requirements for the electronic components manufacturing industry in Japan, that were stipulated by the associated law and will remain effective to 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*	4.44	0.015	0.033
NOx	100	24	39

- 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)
- *: 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
Toluene	0.3	0.0	0.0	0.0	0.0	0.0	43.6
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	4.6	0.0
Nickel	0.0	0.0	0.0	0.0	0.0	3.2	0.0
Nickel compounds	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Barium and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	5.1	0.0

- Unit: t/year

Sabae Murata Manufacturing Co., Ltd.

2-82, 1-chome, Miyuki-cho, Sabae-shi, Fukui 916-0015, Japan
Electricity consumption: 10,840,224 kWh/year
Fuel consumption: 297 kℓ/year
Total waste released: 814 t/year
(Annual mean recycling ratio: 86.3%)

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	7.2	6.5–7.7*
SS	300	10	19
Copper	3	0.34	1
Zinc	5	0.009	0.012
Soluble iron	10	0.02	0.05
Soluble manganese	10	N.D.	N.D.
Total chromium	2	N.D.	N.D.
Hexavalent chromium	0.5	N.D.	N.D.
Cyanide	1	N.D.	N.D.
Lead	0.1	0.01	0.08
Iodine	220	N.D.	N.D.
Fluorine and its compounds	8	0.4	0.9
Nickel	5	0.4	1.2

- Unit: pH, none; others, mg/ℓ
- pH: hydrogen ion concentration
- SS: Suspended Solids
- N.D.: not greater than minimum limit of determination (Not Detected)
- *: 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	0.18
NOx	260	48	55

- 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
Nickel compounds	0.0	0.0	0.0	0.0	0.0	3.9	0.0

- Unit: t/year

Kanazu Murata Manufacturing Co., Ltd.

10-28, Hananomori 2-chome, Kanazu-cho, Sakai-gun, Fukui 919-0633, Japan
Electricity consumption: 8,612,001 kWh/year
Fuel consumption: 84 kℓ/year
Total waste released: 232 t/year
(Annual mean recycling ratio: 71.8%)

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	7.8	7.3–8.1*
SS	120	1.9	5.0
COD	160	1.4	2.8
BOD	120	0.7	2.3
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)
- *: 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	0.063	0.077
NOx	260	78	81

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

[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	7.9–8.0*
SS	200	N.D.	N.D.
COD	160	1.2	1.4
BOD	160	0.6	0.6
n-hexane (mineral oil)	5	N.D.	N.D.
Cadmium	0.1	N.D.	N.D.
Lead	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)
- *: 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.

Himi Murata Manufacturing Co., Ltd.

12-5, Oura, Himi-shi, Toyama 935-0103, Japan
Electricity consumption: 7,580,730 kWh/year
Fuel consumption: 51 kℓ/year
Total waste released: 338 t/year
(Annual mean recycling ratio: 67.9%)

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	6.6–7.1*
SS	120	1.5	3.0
BOD	25	4.5	7.4
n-hexane (mineral oil)	5	0.9	1.5
Copper	1	0.032	0.036
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	0.011	0.020
1,1,1-trichloroethane	3	N.D.	N.D.
Trichloroethylene	0.3	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)
- *: 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	0.018	0.018
SOx	13	0.017	0.018
NOx	180	79	79

- 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
Toluene	5.1	0.0	0.0	0.0	0.0	20.1	0.0
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.2	2.9

- Unit: t/year

Iwami Murata Manufacturing Co., Ltd.

Ohda Yi 795-1, Ohda-cho, Ohda-shi, Shimane 694-0064, Japan
Electricity consumption: 7,142,367 kWh/year
Fuel consumption: 233 kℓ/year
Total waste released: 303 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	7.6	7.2–7.8*
SS	200	9.3	12
COD	160	6.5	8.9
BOD	160	2.9	4.2
n-hexane (mineral oil)	5	0.5	0.9
Copper	3	0.007	0.012
Zinc	5	0.08	0.13
Soluble iron	10	0.7	1.2
Soluble manganese	10	0.07	0.09
Number of coliform groups	3000	224	310
Lead	0.1	0.02	0.03
Nickel	—	N.D.	N.D.
Tin	—	N.D.	N.D.
Barium	—	0.27	0.72
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	0.003
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)
- *: 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
Xylene	3.0	0.0	0.0	0.0	0.0	0.1	0.0
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	1.7

- Unit: t/year

Wakura Murata Manufacturing Co., Ltd.

1, U, Ishizaki-machi, Nanao-shi, Ishikawa 926-0173, Japan
Electricity consumption: 4,407,000 kWh/year
Fuel consumption: 140 kℓ/year
Total waste released: 296 t/year
(Annual mean recycling ratio: 76.4%)

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	7.6–8.0*
SS	90	11	31
COD	40	11	36
BOD	40	7	23
n-hexane (mineral oil)	5	0.5	1.5
Copper	3	0.007	0.021
Number of coliform groups	3000	102	540
Total nitrogen	120	14	60
Total phosphorus	16	1.8	6.9
Lead	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)
- *: 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	68

- 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
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.1	5.2

- Unit: t/year

Environmental Data by Murata Plants

Anamizu Electronics Industries, Ltd.

Chi-53, Ohmachi, Anamizu-machi, Fugeshi-gun, Ishikawa 927-0026, Japan
Electricity consumption: 2,431,224 kWh/year
Fuel consumption: 36 kℓ/year
Total waste released: 95 t/year
(Annual mean recycling ratio: 81.4%)

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	7.2	6.8–7.8*1
SS	200	14	17
COD	80	15	24
n-hexane (mineral oil)	5	1.4	2.0
Zinc	5	0.13	0.41
Soluble iron	10	0.16	0.37
Lead	0.1	0.02	0.05
Fluorine and its compounds	15*2	0.1	0.2
Boron and its compounds	25*2	0.05	0.12
Ammonia Ammonium compounds Nitrite compounds and nitrate compounds	730*2	4.7	7.5
Nickel	—	N.D.	0.016
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, nitrite compounds and nitrate compounds are the temporary requirements for the electronic components manufacturing industry in Japan, that were stipulated by the associated law and will remain effective to 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	0.018	0.02
NOx	180	70	72

- 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
Lead and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	25.6

- Unit: t/year

Asuwa Electronics Industries, Ltd.

1321, Emorinaka 2-chome, Fukui-shi, Fukui 918-8025, Japan
Electricity consumption: 880,410 kWh/year
Fuel consumption: none
Total waste released: 12 t/year
(Annual mean recycling ratio: 56.8%)

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	8.0	7.7–8.2*
SS	200	12	16
BOD	160	19	35
n-hexane (mineral oil)	5	N.D.	N.D.
Number of coliform groups	3000	8	16
Cadmium	0.1	N.D.	N.D.
Lead	0.1	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 concentration
- SS: Suspended Solids
- BOD: Biochemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)
- *: 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.

Tome Murata Manufacturing Co., Ltd.

11-1, Nakae 4-chome, Sanuma, Hasama-cho, Tome-gun, Miyagi 987-0511, Japan
Electricity consumption: 5,487,411 kWh/year
Fuel consumption: 172 kℓ/year
Total waste released: 41 t/year
(Annual mean recycling ratio: 88.3%)

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	6.0	5.2–6.4*
SS	600	28	47
COD	—	38	49
BOD	600	41	61
n-hexane (animal and plant)	30	3	7
Copper	3	0.010	0.013
Zinc	5	0.03	0.04
Fluorine and its compounds	8	N.D.	N.D.
Boron and its compounds	10	0.02	0.03
Contents ammonia nitrogen, nitrite nitrogen and nitrate nitrogen	380	0.2	0.4

- 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)
- *: The minimum to maximum pH values.
- [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	0.008	0.009
SOx	2.96	0.031	0.036
NOx	180	68	72

- 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.

Azumi Murata Manufacturing Co., Ltd.

1020, Takibe, Toyoshina-machi, Minamiazumi-gun, Nagano 399-8294, Japan
Electricity consumption: 10,635,270 kWh/year
Fuel consumption: 879 kℓ/year
Total waste released: 836 t/year
(Annual mean recycling ratio: 84.6%)

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	6.9	6.8–6.9*
SS	50	2.5	3.0
COD	30	12	13
BOD	30	6	7
n-hexane (mineral oil)	5	1.8	2.0
Copper	3	0.034	0.035
Zinc	5	0.03	0.04
Soluble iron	10	0.07	0.13
Lead	0.005	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)
- *: 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	0.0030	0.0053
SOx	6.3	0.012	0.024
NOx	150	69	91

- 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
Silver and its water-soluble compounds	0.0	0.0	0.0	0.0	0.0	0.0	4.0
Nickel compounds	0.0	0.0	0.0	0.0	0.0	10.8	0.2

- Unit: t/year

Murata Electronics North America, Inc.
State College Operations

1900 W. College Avenue
State College, PA 16801-2799 USA
Electricity consumption: 25,970,589 kWh/year
Fuel consumption: 637 kℓ/year
Total waste released: 443 t/year
(Annual mean recycling ratio: 33.5%)

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

Item	Target level	Average	Max. value
BOD	—	19	31
Zinc	1.48	0.01	0.02
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.
Dichloromethane	1	0.004	0.014
Toluene	0.5	N.D.	N.D.
Barium	—	0.8	2.4
DBP	—	0.1	0.2
Nickel	3.1	N.D.	0.53
Tin	—	2	15
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	—	N.D.	N.D.

- 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 Factory

Avenida Buriti 7040, Distrito Industrial
Manaus-Amazonas Brazil
CEP 690750-000
Electricity consumption: 493,920 kWh/year
Fuel consumption: none
Total waste released: 12 t/year
(Annual mean recycling ratio: 51.1%)

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: 1,821,801 kWh/year
Fuel consumption: 75kℓ/year
Total waste released: 131t/year
(Annual mean recycling ratio: 74.9%)

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	—	63	75
CO_2	—	8.6	8.8
Temperature*	—	101	88*

- Unit: CO, ppm; CO_2, %; Temperature, °C
- CO: Carbon monoxide
- CO_2: Carbon dioxide
- *: Lowest temperature
- [Target level]: No particular standard value per currently effective laws or

Environmental Data by Murata Plants

Beijing Murata Electronics Co., Ltd.

No. 11 Tianzhu Road, Tianzhu Airport Industry Zone, Shunyi, Beijing 101312, China
Electricity consumption: 6,581,400 kWh/year
Fuel consumption: none
Total waste released: 89 t/year
(Annual mean recycling ratio: 45.0%)

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

Item	Target level	Average	Average
pH	6.0–8.5	7.4	7.3–7.5*
SS	50	N.D.	N.D.
COD	60	50	54
Nickel	0.5	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)
- *: The minimum to maximum pH values.

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

Item	Target level	Average	Average
Organic matters belonging to hydrocarbon groups other than methanes	120	1.3	2.9

- Unit: mg/Nm^3

Wuxi Murata Electronics Co., Ltd.

Lot 123-135, Xingchuang 1st Road, Wuxi-Singapore Industrial Park, Wuxi, Jiangsu 214028, China
Electricity consumption: 7,269,996 kWh/year
Fuel consumption: 79 kℓ/year
Total waste released: 191 t/year
(Annual mean recycling ratio: 58.9%)

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

Item	Target level	Average	Max. value
SS	400	58	58
COD	500	111	111
Total lead	1	N.D.	N.D.
Ammonical nitrogen	35	N.D.	N.D.

- Unit: mg/ℓ
- SS: Suspended Solids
- COD: Chemical Oxygen Demand
- N.D.: not greater than minimum limit of determination (Not Detected)

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

Item	Target level	Average	Max. value
Dust	50	32	32
NOx	100	30	30
SOx	—	38	38

- Unit: mg/Nm^3
- SOx: Sulfur oxides
- NOx: Nitrogen oxides

Taiwan Murata Electronics Co., Ltd.

Taiwan Murata Electronics Co., Ltd.
225 Chung-Chin Road, Taichung, Taiwan
Electricity consumption: 7,255,998 kWh/year
Fuel consumption: 1.6 kℓ/year
Total waste released: 279 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	Average
pH	6.0–9.0	7.5	7.4–7.6*1
SS	80	8	13
COD	250	29	32
BOD	80	12	13
Temperature	35°C	28	32
Number of coliform groups	—	60	100
Dissolved Oxygen (DO)	3 min.	6.4	4.2*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 Oxigen (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	293	384
Dust (emission point (2))	410	N.D.	N.D.
Dust (emission point (3))	389	N.D.	N.D.
Dust (emission point (4))	124.88	N.D.	N.D.
Lead (emission point (2))	10	N.D.	N.D.
Lead (emission point (3))	10	N.D.	N.D.
Lead (emission point (4))	2.51	N.D.	N.D.

- Unit: mg/Nm^3
- N.D.: not greater than minimum limit of determination (Not Detected)

Murata Electronics Singapore (Pte.) Ltd.

200 Yishun Avenue 7, Singapore 768927, Singapore
Electricity consumption: 68,852,991 kWh/year
Fuel consumption: none
Total waste released: 1,261 t/year
(Annual mean recycling ratio: 42.5%)

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

Item	Target level	Average	Average
pH	6.0–9.0	7.8	7.1–8.4*
SS	400	10	34
COD	600	85	236
BOD	400	24	182
TDS	3000	1960	2964
Sulfate	1000	402	834
Fat and oil (hydrocarbon)	60	2	41
Fat and oil (glyceride)	100	4	47
Barium	10	N.D.	0.7
Nickel	10	0.4	1.8
Tin	10	N.D.	1.2

- 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
- *: 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
Ammonia and ammonium compounds	76	N.D.	N.D.
Sulfuric acid (as SO_3)	100	N.D.	1.2
Dust	100	N.D.	5
CO	625	4	7
Nitrogen oxide (as NO_2)	700	N.D.	N.D.
Copper and its compounds	5	N.D.	N.D.

- Unit: mg/Nm^3
- CO: Carbon monoxide
- N.D.: not greater than minimum limit of determination (Not Detected)

Murata Electronics (Thailand), Ltd.

Northern Region Industrial Estate, 63 Moo 4, Tambol Ban-Klang, Amphur Muang, Lamphun 51000, Thailand
Electricity consumption: 31,944,060 kWh / year
Fuel consumption: none
Total waste released: 1,976 t / year
(Annual mean recycling ratio: 23.5%)

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	6.9–7.9*
SS	200	51	98
COD	750	215	454
BOD	500	98	188
TDS	3000	365	770
TKN	100	77	91
Phenol	1	0.08	0.23
Copper	2	0.021	0.067
Zinc	5	0.1	0.2
Total iron	10	0.074	0.091
Trivalent chromium	0.75	N.D.	N.D.
Hexavalent chromium	0.25	N.D.	N.D.
Lead	0.2	0.018	0.063
Fluoride	5	0.32	0.35
Sulfide	1	0.31	0.42
Cadmium	0.03	N.D.	N.D.
Selenium	0.02	N.D.	N.D.
Barium	1	0.02	0.11
Nickel	1	0.005	0.008
Formaldehyde	1	0.12	0.15
Chloride	2000	63	69
Oils and grease	10	N.D.	7.1
Odor	Not perceived	Satisfactory	—
Color	No color	Satisfactory	—
Temperature	45	31	33

- 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)
- *: 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	14	128
Antimony	20	0.01	0.09
Lead	30	0.03	0.19
Chlorine	30	0.031	0.1
Hydrogen chloride	200	N.D.	N.D.
Mercury	3	N.D.	N.D.
Carbon monoxide	1000	28	243
Sulfuric acid	100	1.9	14
Hydrogen sulfide	140	N.D.	N.D.
Sulfur dioxide	1300	0.3	2.0
Nitrogen dioxide	470	4	10
Xylene	870	N.D.	N.D.
Cresol	22	N.D.	N.D.

- Unit: mg / Nm^3
- 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: 3,832,158 kWh / year
Fuel consumption: 7.2 kℓ / year
Total waste released: 208 t / year
(Annual mean recycling ratio: 89.6%)

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	6.7	5.7–7.7*
SS	100	11	21
COD	100	31	81
BOD	50	10	38
Oils and grease	10	3	7

- 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)
- *: 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	N.D.	N.D.
SPM	400	0.3	0.4

- Unit: mg / Nm^3
- SPM: Suspended Particulate Matter
- N.D.: not greater than minimum limit of determination (Not Detected)