Environmental Report 2003

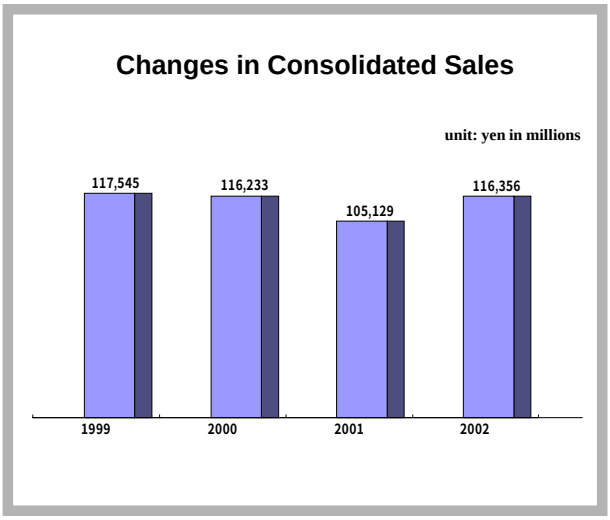
MABUCHI MOTOR

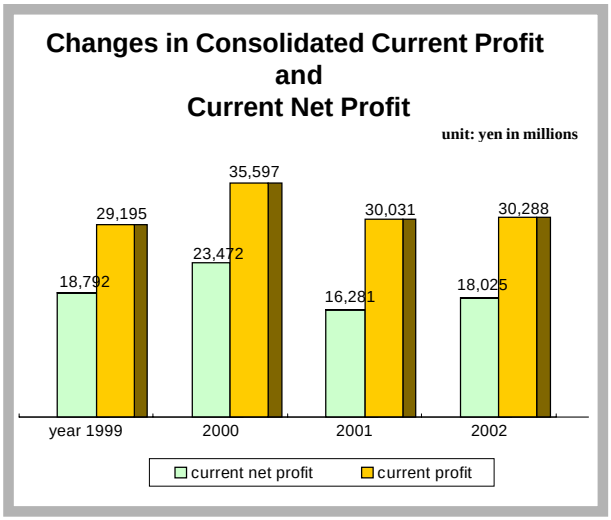
Mabuchi Motor Co., Ltd., Headquarters

Contents

■ Company Outline

Trade name:	MABUCHI MOTOR CO., LTD.
Established:	January 18, 1954
Field of Operations:	Manufacture and sales of small electric motors
Capital:	20,704 million yen
Employees:	Headquarters: 995 Mabuchi Group: approx. 50,000 (as of December 31, 2002)
President:	Shinji Kamei
Address:	Headquarters: 430 Matsuhidai, Matsudo-shi, Chiba-ken, 270-2280 Japan TEL: +81-47-384-1111 FAX: +81-47-385-2026 Technology Center: 280 Ryufukuji, Motono-son, Inba-gun, Chiba-ken, 270-2393 Japan TEL: +81-476-97-1331 FAX: +81-476-80-9015





■ Scope of Environmental Report 2003

- Year: fiscal year 2002 (January 1, 2002 through December 31, 2002)
- Companies: Headquarters and overseas related companies
- Activities: Contents of environmental activities related to manufacture and sales of motors and provision of services

<Remarks>

a)In this Report, "overseas related companies" mean the following companies:
Hong Kong Mabuchi (including Guangdong Mabuchi)
Taiwan Mabuchi
Kaohsiung Mabuchi
Dalian Mabuchi (including Wafangdian Mabuchi)
Malaysia Mabuchi
Jiangsu Mabuchi
Vietnam Mabuchi

b)In this Report, "Mabuchi Group" means a general term for a group consisting of "Headquarters" and "overseas related companies" above.

Message from President

Shinji Kamei
President and Representative Director

We have already been living an extremely materially-rich life. On the other hand, though we know that environmental disruption is worsened, it is understandable that our awareness of environmental protection declines if we have to give up our current rich life in order to protect environment.

However, we believe that protecting environment does not conflict with maintaining our rich life. In order to promote environmental protection, it is naturally necessary to change our current corporate activities to those with reduced environmental loads and to change our current life style to the one considering energy saving. At the same time, we believe it is possible to reduce emissions of environmental pollutants to environment and to reduce emission of CO_2, the very cause of global warming, by concentrating all the technologies such as product development technologies, production technologies, and production control technologies. We understand it is corporations' important task to develop or implement these technologies.

We are producing micro motors, which are incorporated in automotive electrical components, audiovisual products, office automation equipment, household electric appliances, kitchen equipment, electric tools, toys and the like and are widely used throughout the world. We are replacing materials, which are used for these micro motors, with harmless ones, reducing chemical substances, which are used in the production, and developing and manufacturing micro motors, which have few environmental loads and do not adversely affect environment when our customers use these micro motors and after they dispose of the motors. Our overseas related companies are also conducting environmental protection activities, the level of which is the same as that of the environmental protection activities by Headquarters. We will continuously do our best to cope with the reduction of environmental loads with all Mabuchi Group's strength.

This Environmental Report presents Mabuchi Group's efforts for reducing environmental loads and results of the efforts in fiscal year 2002. We believe it is extremely important for continuously improving our environmental protection activities that we let many people know Mabuchi Group's environmental protection conditions and receive their opinions on the conditions. We would greatly appreciate receiving your opinions or impressions on this Environmental Report.

May 2003

S. Kamei

Shinji Kamei
President and Representative Director

Management Philosophy and Management Guidelines

Mabuchi Motor is conducting its corporate activities clarifying its basic ideas related to environmental protection in its Management Guidelines.

Management Philosophy

Contributing to International Society and Ever-expanding Our Contribution

Management Guidelines

1. Create superior and reasonably priced products. Our hope is to help build a more satisfying and comfortable life for customers around the world who enjoy a life with products using our motors.

2. Transfer our technology and bring forth new opportunities for employment. We hope that our contribution can become a helping hand in leveling international economic disparities and stimulating global economic development.

3. By placing “people” as an important managerial resource, we strive to heighten individual potential through work, and to raise more productive citizens of society.

4. Conduct corporate activities that promote the preservation of our earth’s environment and our own human health.

Aiming at Reduction of Environmental Loads


Nobuyo Habuchi, Managing Director

We are conducting our corporate activities showing our aim of minimizing environmental loads in our Management Policies.

As a part of our measures for achieving the minimization, we are making efforts to fulfill our roles in constructing "sustainable society" through effectively using materials and energy, recycling wastes, prohibiting/reducing use of hazardous substances, developing high-performance products, establishing a high-efficiency production system, and the like. Though we have many difficult problems related to the realization of the above, we believe that we will be able to realize them by establishing and developing new technologies and introducing new systems.

The following are some of our major environmental tasks that we are addressing through our business activities:

1. Developing and producing environment-friendly products

2. Prohibiting use of hazardous substances

3. Reducing emission of CO_2 (saving energy)

4. Reducing landfilled solid wastes

In 1997, we introduced Headquarters' environmental management system. From 1999 to March 2001, we addressed acquisition of certification of ISO 14001 in all production bases including overseas production bases. We were taking measures such as the above in parallel based on our systematic plan.

In our environmental targets for fiscal year 2002, we set tasks including the above 1 through 4 and surely yielded satisfactory results.

Regarding hazardous chemical substances contained in products, though we conventionally used chemical substances below, we have been directing our energies into prohibiting or reducing their use and making progress in replacing them with their substitutes.

The following are the hazardous chemical substances contained in our products:

1) Lead ---used for solder, carbon brushes, and balancing weights

2) Cadmium---used for commutators

3) Hexavalent chromium---used for housings and endbells

At present we can provide you micro motors without containing these hazardous chemical substances.

We will continuously and surely implement our roles to be fulfilled for realizing the "sustainable society" through development and spread of these new technologies and united effort-based Mabuchi Group's activities for raising our awareness of environmental protection.

May 2003

Nobuyo Habuchi
Environmental Management Representative and
Managing Director

Basic Policy for Environment

Mabuchi Motor's Basic Policy for Environment shows Mabuchi Group-wide basic ideas on environmental problems. At the same time, this Basic Policy for Environment embodies our Management Philosophy in the field of environmental management.

Basic Policy for Environment

1. We establish an environmental management system (EMS) for conducting corporate activities considering global environment and make efforts to continuously improve both the corporate activities and EMS.

2. We strictly observe environment-related laws, regulations and other requirements and positively establish and control self-imposed environment-related standards.

3. In order to use limited resources as effectively as possible, we positively address energy saving, recycling, and reducing the amount of wastes.

4. We replace substances, which cause environmental loads, with their substitutes as much as possible.

5. In order to raise employees' environmental awareness, we positively carry out education and public relations.

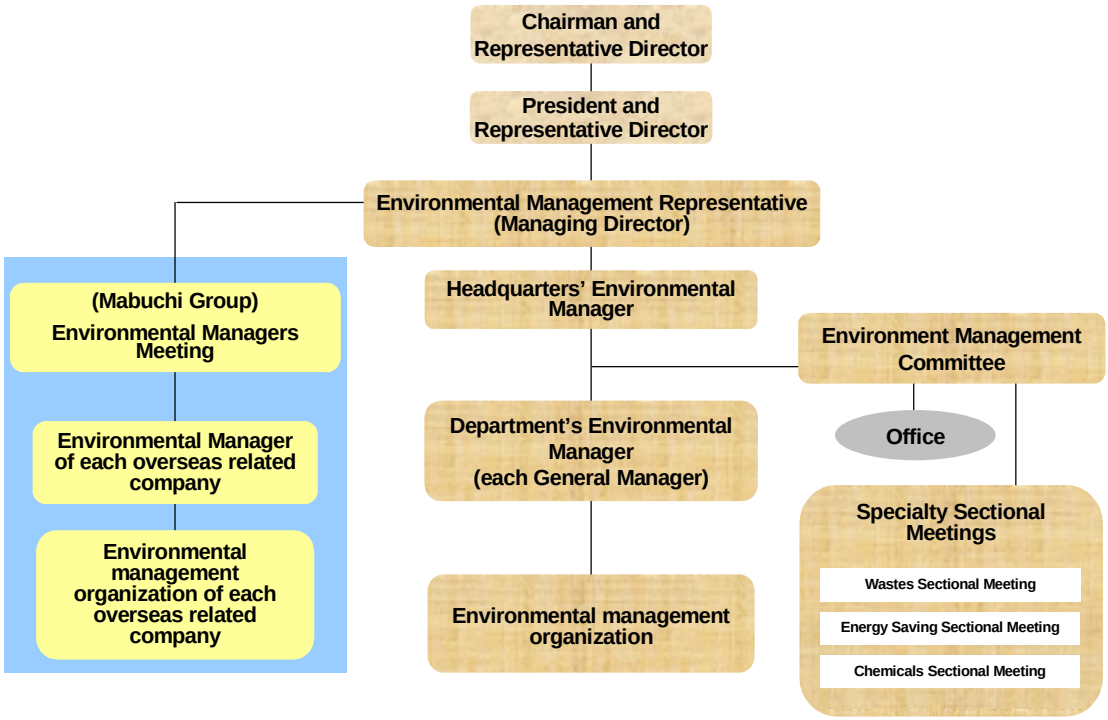
6. We make each Environmental Policy, which Headquarters or each production base has established as concrete environmental measures, known to each employee concerned, and as necessary we disclose it to external parties concerned.

Established on: September 27, 1998

Environmental Management System

To concretely cope with environmental problems, in June 1997 Mabuchi Motor established "Environment Management Committee." Environment Management Committee discusses and determines policies, targets, measures and the like for Mabuchi Group's environmental protection activities. There are some Specialty Sectional Meetings under Environment Management Committee, and each Specialty Sectional Meeting plans measures such as measures for wastes, chemical substances and the like. Each overseas related company is also conducting environmental protection activities led by Environmental Manager.

Environmental Management Organization of Mabuchi Group



Environmental Managers Meeting

For the purpose of sharing environment-related information among Headquarters and overseas related companies and efficiently performing environmental protection activities, we have been holding "Environmental Managers Meeting," which consists of Environmental Managers of respective companies in Mabuchi Group, since 2000. So far we have held this Meeting in the following areas:

The first Meeting (September 2000): Vietnam Mabuchi (Bienhoa City, Vietnam)

The second Meeting (September 2001): Jiangsu Mabuchi (Wujiang City, Jiangsu Province, China)

The third Meeting (September 2002): Dalian Mabuchi (Dalian City, China)

The third Environmental Managers Meeting (September 2002 in Dalian Mabuchi, China)

Environmental Management System

Acquisition of ISO 14001 Certification

From December 1999 to March 2001, in order to organize and systematize environmental management activities and heighten their clearness to society, Mabuchi Motor has acquired certification of ISO 14001, International Standard of environmental management, in Headquarters and all the overseas related companies.

In October 2002, DNV Japan carried out an "ISO 14001 environmental management recertification audit" for Headquarters. As a result of this audit, DNV Japan awarded recertification (that is effective until December 2005) to Headquarters.

Mabuchi Group will continuously promote higher-level environmental protection activities with a united effort.


DET NORSKE VERITAS
MANAGEMENT SYSTEM CERTIFICATE
マブチモーター株式会社

Certificate awarded to Mabuchi Motor Headquarters as a result of the recertification audit carried out in October 2002

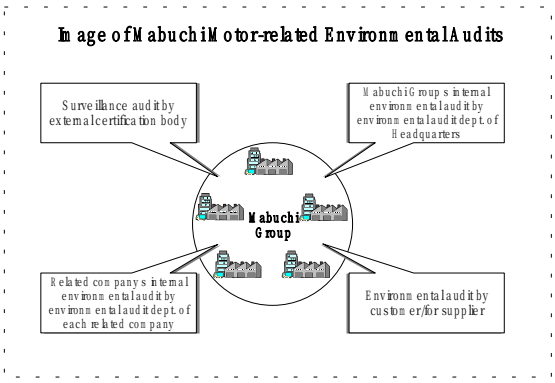
Mabuchi Group's Track Record on Acquisition of ISO 14001 Certification

Environmental Management System

Environmental Audit

Environmental audits are activities that are indispensable as means to check whether an environmental management system is effectively operating or not. The following are major environmental audits performed related to Mabuchi Motor:

1)ISO 14001 surveillance audit by an external certification body
2)An internal environmental audit by an environmental audit department of Headquarters. This audit is for each department of Headquarters and each related company of Mabuchi Group.
3)An internal environmental audit by an environmental audit department of each overseas related company.
4)An environmental audit by our customer for Mabuchi and an environmental audit by Mabuchi for our supplier.



Especially, the purpose of the environmental audit, which the environmental audit department of Headquarters performs for each overseas related company, is not only to detect nonconformity in the environmental management system of the related company. It also aims to check the environmental management level, to clarify advantages, disadvantages and the like of the contents of the environmental management, and to disclose and horizontally develop them to all companies in Mabuchi Group.

From October 2002 to March 2003, SONY performed


ISO 14001 surveillance audit for Headquarters by DNV


Internal audit for a related company (Dalian Mabuchi) by Headquarters

environmental audits for Hong Kong Mabuchi and Guangdong Mabuchi, Dalian Mabuchi, Jiangsu Mabuchi and Malaysia Mabuchi. Though SONY pointed out some minor problems, as a result of the audits, SONY determined that the above-mentioned related companies satisfied SONY's environmental management requirements. We expect that SONY will accredit these related companies as its suppliers for green procurement. We will continue to positively accept any environmental audit by our customer.

With respect to our environmental management system audits for our suppliers, in fiscal year 2002, Headquarters performed the audits for eight companies to which Headquarter entrusted waste disposal activities. Headquarters had these companies understand its Environmental Policy and checked their law-abiding conditions regarding the waste disposal activities. Since the results of the audits proved that all the eight companies had reached the level required for the certification, Headquarters determined that in fiscal year 2003 it would continue to entrust the waste disposal activities to these companies.


Environmental audit by SONY (Jiangsu Mabuchi in China)


Environmental audit for a waste-disposal company by Headquarters (Chiba-ken, Japan)

We are reporting results, which are obtained from these external and internal audits, to President as materials or data for reviewing and further improving our environmental management systems. We are surely and continuously heighten our environmental management levels by providing instructions for correcting or remedying deficient points based on the results of the review.

Environmental Management System

Environmental Education and Training

Regarding environmental protection activities, we believe it is quite important that each employee understands Environmental Policy concerned, recognizes the environmental management system, and spontaneously performs the activities based on awareness of and ability in environmental matters. For the purpose of training human resources who can implement the above, we have established an organized environmental education and training system shown in the figure below and are implementing the system.

Employees receiving general education (Headquarters)

Training for handling a contingency supposing any chemical substance leaks (Vietnam Mabuchi)

For Headquarters or each related company, we have established "general education," which each employee is to receive, as fundamental education. Further, we have constructed an environmental education and training system by level, workplace, and activity.

Through the implementation of these education and training, we have our employees understand the need for global environmental protection, Environmental Policy concerned and requirements of ISO 14001, and actions to be taken in case any contingency occurs.

Mabuchi Motor's Environmental Education System

Classification of education	Employee(s) to be educated	Contents of education	Person/dept. in charge for implementing education
General education	All employees	・Basic Policy for Environment and Environmental Policy ・Environment-related Regulations ・Environmental objectives and targets of dept. concerned ・Other related education and training	Office of Environment Management Committee and each department leader
Professional education	Employee(s) engaged in activities related to significant environmental aspects and environmental laws/regulations	・Related Regulations ・Special practical work of activity concerned	Leader of department to control activity concerned
	Environment improvement promoter(s)	・Environmental impacts evaluation ・Procedures for setting objectives, targets and plans	Office of Environment Management Committee
	Internal environmental auditor(s)	・Environmental audit techniques, environmental laws	
	Interested party (parties) to perform operations in Mabuchi	・Environmental education and training necessary in performing activity concerned	
External education	Person(s) to actually perform activity concerned	・Various seminars ・Education for training auditors	Various external environmental educational institutions

Development of Environment-Friendly Motors

One of Mabuchi Motor's Management Policies is "Promote business activities that have minimal negative impact on the environment and that strictly abide by safety standards." Based on this Management Policy, we are designing and developing motors without using environmental load causing substances as much as possible.

Mabuchi's Environment-Friendly Motors

Though there are various types of environmental load causing substances, in the first place Mabuchi Motor preferentially designated those, which overseas and domestic laws/regulations regulate and for which our customers or industries are addressing their reduction, as our environmental load causing substances to be addressed. Mabuchi Motor is addressing reduction of these designated environmental load causing substances from various aspects including design, materials, and processing methods for production.

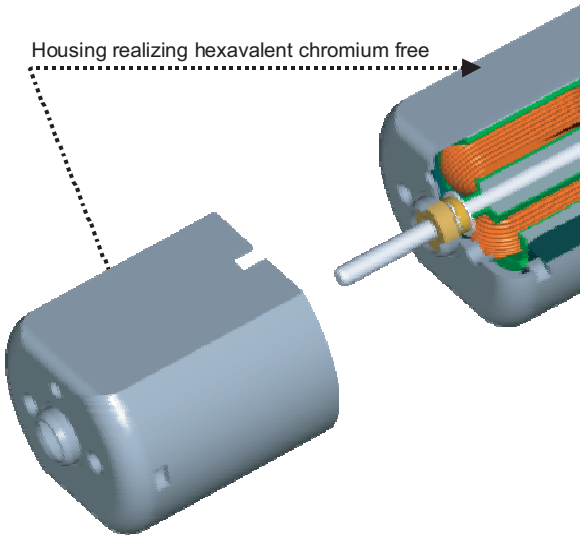
Lead, cadmium and hexavalent chromium are major environmental load causing substances to be reduced (we are not using mercury from the start).

Though these environmental load causing substances are contained in motor parts, as long as motors are used, they are not harmful to humans. If the motors are disposed of to nature after their use, however, the environmental load causing substances in the motors dissolve in water and soil because of corrosion. These dissolved environmental load causing substances are in danger of putting loads on humans or nature.

Each motor itself is small and the amount of environmental load causing substances used in it is extremely small. However, since we are annually producing 1700 million pieces of motors (an actual result of 2002) and supplying them throughout the world, the total amount of the environmental load causing substances in these motors is quite large and cannot be disregarded. We are pursuing design and development of motors, which do not contain the environmental load causing substances as much as possible.

In fiscal year 2001, we have completed development and evaluation based on lead-free processing methods for our representative models. We are proposing these lead-free models to our customers and mass-producing the models starting from those for which customers' approval have been obtained.

Image of Environment-Friendly Motor



Realizing Lead-free Solder for Joints

Since solder containing lead has advantages of having both a lower melting point and satisfactory wettability for a copper terminal, it has been used as a material for joining electronic parts for a long time.

Mabuchi Motor is also using this solder for joining a commutator and a magnet wire, joining a lead wire and a terminal, joining a varistor and the like in our motors.

Lead in this solder may dissolve when illegally disposed electric equipment or the like corrodes and may cause pollution of underground water or rivers. Also, since lead disturbs growth or adversely affects the nervous system and the metabolic system after entering the human body, it is designated as a significant environmental load causing substance. Lead is also specified as a chemical substance to be regulated in ELV Directive (*1) and RoHS Directive (*2).

Mabuchi Motor has been addressing realization of lead-free solder since 1999. Mabuchi Motor has selected Sn-Cu (tin-copper type material) and Sn-Ag-Cu (tin-silver-copper type material) as substitutes for the conventional solder and is promoting replacement of conventional products with lead-free ones.

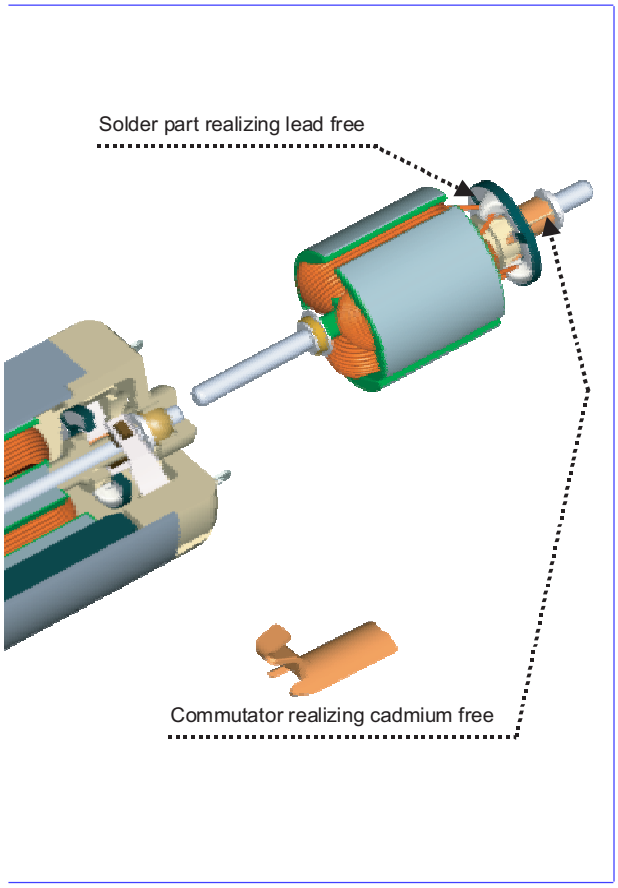
Realizing Cadmium-free Commutator

In order to prolong the life of a motor commutator and to stabilize its contact, we are using a material containing a very small quantity of cadmium for some commutator.

Cadmium is a heavy metal harmful for an ecosystem. Aiming at eliminating the use of cadmium, Mabuchi Motor started joint development with material manufacturers in 1997

Development of Environment-Friendly Motors

and completed activities for selecting substitute materials for the material containing cadmium in fiscal year 2000. Since 2001 we have been promoting activities for obtaining customers' approval for the substitute materials. We are planning to eliminate the use of cadmium in all of our products by the end of 2003.



Realizing Hexavalent Chromium-free Motor Housing

Recently it has become clear that an electrogalvanized steel plate, which is used as a material of a motor housing, contains a very small quantity of hexavalent chromium for the purpose of enhancing rustproof performance. Poisonousness of hexavalent chromium has been known for a long time, and recently it is also called a cancer-causing substance.

In order to provide products with fewer environmental loads, Mabuchi Motor is also addressing the realization of hexavalent chromium-free motors.

In fiscal year 2001, we started technical research on development of substitute materials for the electrogalvanized steel plate, methods for processing and evaluating motors using the materials, and the like. In fiscal year 2002, since it became possible to mass-produce motors using the substitute materials as a result of the research, we started production of hexavalent chromium-free motors starting from models for which customers' approval were obtained.

(*1)ELV Directive is also called "EU Directive on End-of-life Vehicle": This is an EU (European Union) Directive that generally prohibits any seller using lead, cadmium, hexavalent chromium, and mercury on and after July 1, 2003.

(*2)RoHS Directive is also called "EU Directive on Restriction of Hazardous Substances": This is an EU (European Union) Directive requiring to prove that any new electric or electronic device to be sold on and after January 1, 2006 contains none of lead, cadmium, hexavalent chromium, mercury, polybrominated biphenyl (PBB), and polybromo diphenyl ether (PBDE).

"Though some of us living now might be thinking the use of hazardous substances does not affect global environment so much, considering future generations, I think we have to stop using hazardous substances immediately. The accumulation of small amounts of hazardous substances gradually pollutes soil and the water quality and disrupts global environment. Global regulations for hazardous substances are being established more and more. I think Mabuchi also has to extend its antenna for catching environmental information and make efforts to take the initiative in dealing with environment."

Isamu Serizawa, Leader of Chemicals Sectional Meeting

Green Procurement

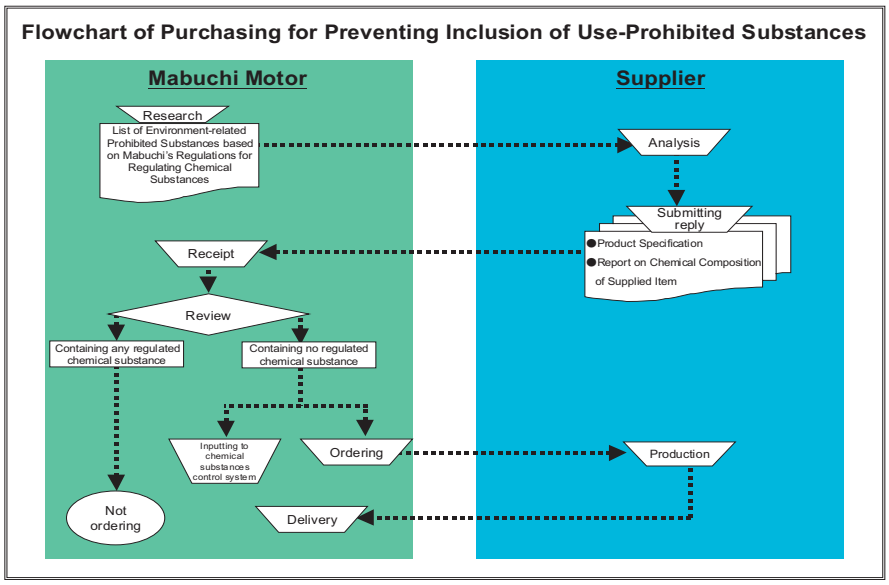
Mabuchi Motor is producing products with few environmental loads by procuring parts and materials that contain no/few environmental load causing substances.

Control of Environmental Load Causing Substances in Purchasing

Mabuchi Motor has constructed a green procurement system in fiscal year 2000. Using this system, we are purchasing parts and materials containing no hazardous substances from suppliers that are surely implementing environmental safety activities.

We have specified chemical substances that shall not be used for parts, materials and packaging materials. We are showing a list of these chemical substances to our suppliers and regulating their inclusion in materials to be purchased.

Also, for our suppliers, we are conducting research on all the chemical substances, which are used for parts and materials to be purchased from the suppliers, and presence of environmental load causing substances in them.



Our design departments are reviewing the results of the research. If any part or material to be purchased contains any prohibited substance out of the environmental load causing substances or if it contains any regulated substance more than its permissible concentration, the part or material is unprocurable.

Besides, for any part or material accepted, our chemical substances control system is grasping the type and content of each chemical substance used for the part or material. We are using these data for green procurement activities.

Promotion of Green Purchasing of Office Supplies

Regarding purchasing and leasing of office equipment and office supplies, Mabuchi is generally considering various environmental impacts and promoting purchasing of articles having few environmental loads.

Headquarters has OFFICE SUPPLIES CENTER (OSC), an in-house unmanned office supplies provision and control system, and is promoting green purchasing also for stationery and office supplies to be handled with OSC. In 2002 a little more than 60% of stationery and office supplies provided were procured through green purchasing. We are planning to further increase the percentage of green purchasing.

Office supplies to be procured through green purchasing

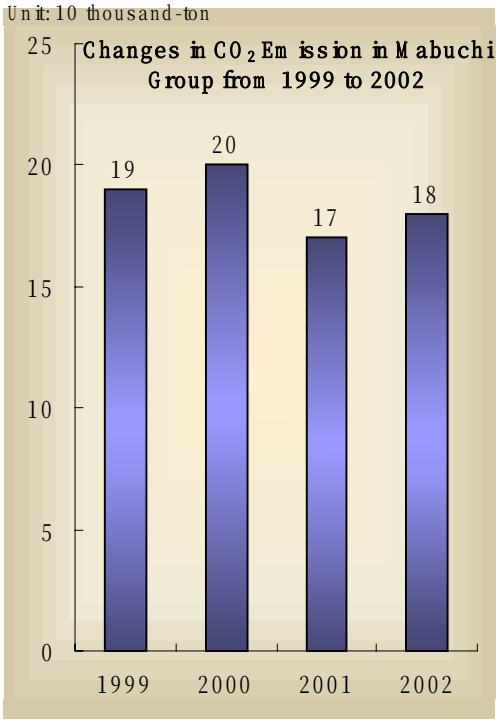
Prevention of Global Warming

It is humans' common task to prevent global warming for protecting global environment. Through daily corporate activities, Mabuchi Motor is taking various preventive measures against global warming.

Addressing Prevention of Global Warming

Evil influences of global warming have already been appearing everywhere on the earth. The significance of the evil influences has been recognized globally, and various concrete activities for prevention of global warming have been started in accordance with moves related to the effectuation of Kyoto Protocol. Mabuchi Motor has also started activities for prevention of global warming considering many adverse effects on environment that may be caused by global warming.

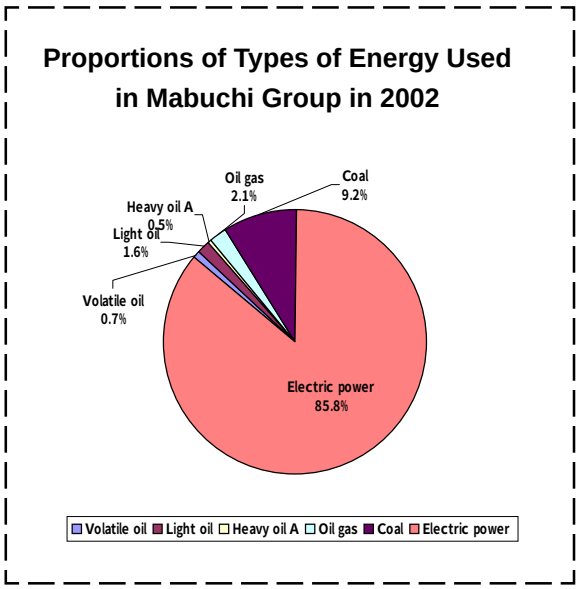
Since Mabuchi Motor is performing all of its production overseas, Mabuchi Motor is making efforts to reduce emission of CO_2 including those in overseas related companies. As our concrete reduction plan, we are aiming to "reduce emission of CO_2 per net sales by 25% of the emission of 2000 by 2010."



As concrete measures for the reduction, we are implementing the following items:

1. Integration of production factories
2. Effective use of production space
3. Downsizing of production equipment
4. Reduction of useless lighting and air conditioning
5. Control of use of the following: substances causing global warming and machinery and equipment containing the substances

As a result of these activities, in fiscal year 2002 we reduced the emission of CO_2 by 12.4% of that of fiscal year 2000. Though we have already made considerable progress in reducing the emission, we are continuously making further efforts to attain our aim above.



Mabuchi Motor is constructing new factories always keeping energy saving in mind. This picture shows a new office building of Guangdong Mabuchi Factory 1. Mabuchi Motor has introduced many energy-saving technologies in this building.

Using Automobiles Friendly to Global Environment

In buying a new company automobile, Mabuchi Motor Headquarters is preferentially introducing a hybrid automobile with few emissions of substances causing global warming. (Headquarters has four hybrid automobiles mentioned above out of its 28 automobiles.)

Control of Chemical Substances

Mabuchi Motor has been implementing various measures to control and reduce harmful chemical substances contained in products or used in production process to prevent environmental pollution.

PRTR Law and Mabuchi Motor

Since 1998, Mabuchi Motor Headquarters has conducted surveys and reports in accordance with PRTR (Pollutant Release and Transfer Register). No chemical substances were present in 2002 for the specified chemical substances were all under the stated level. We further continue to be committed to activities to reduce harmful chemical substances and maintain and improve the control system.

Main Control System of Chemical Substances

Mabuchi Motor has established "Procedures for Regulating Environment-Related Chemicals" in 1999, which has been applied to all operations in order to clarify the type of chemical substances to be controlled and its control method, and to minimize the adverse effects on the environment by chemical substances used in products and production process. Those defined as self-control chemical substances total 34, which are classified into 3 groups and controlled: immediately prohibited substances; elimination targeted substances; and reportable substances.

Also the following measures have been taken to reduce environmental load of chemical substnces through each phase of purchase, design, usage and disposal.

In a phase of purchase, we purchase raw materials, components, and sub-materials in which these self-control chemical substances are not contained or otherwise of the low content percentage if the use of substances is still required by reason of technology. (Please refer to page 13, Green Procurement.)

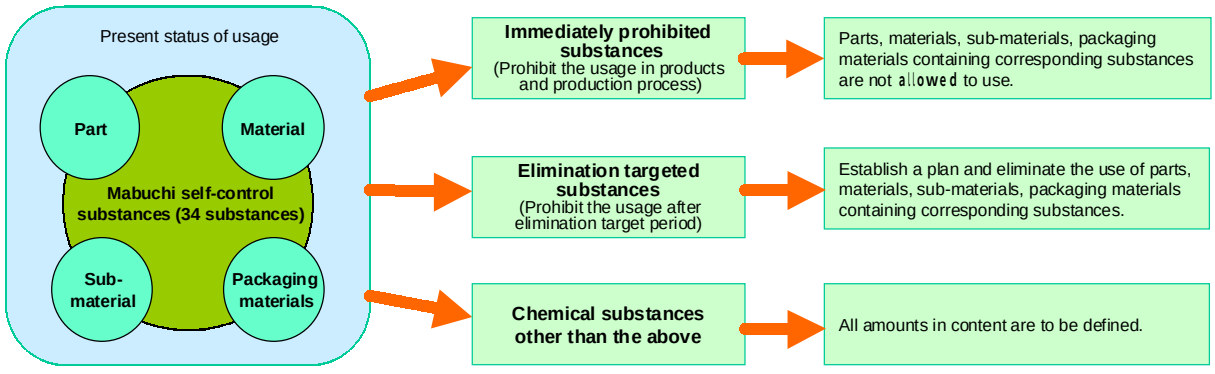
In a phase of design, establishing "Standard Procedure for Implementing Product Development and Improvement Activities," we design and improve environment-friendly motors in which these self-control chemical substances are not contained or otherwise reduced in content wherever feasible if the use of substances is still required for technological restriction. (Please refer to page 11, Development of Environment-friendly Motors.)

In a phase of usage, establishing "Procedures for Handling Chemical Substances" which specifies how to handle operational accidents in a phase such as receipt, store and take-out, so that we contain the risk of environmental load caused by chemical substances to the minimum.

A vehicle for transportation of chemical substances (Guangdong Mabuchi)

Pans set under all drums containing trichloroethylene fluid to prevent its leak (Jiangsu Mabuchi)

In a phase of disposal of self-control chemical substances, establishing "Guidelines for the disposal of waste" for discharges in order to contain the environmental load, the expert renders the discharges harmless.



Control of Chemical Substances

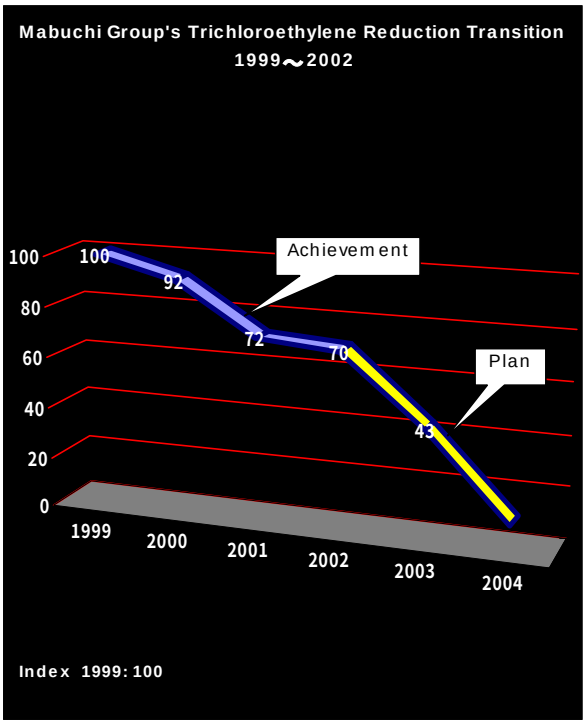
Efforts to Reduce the Use of Trichloroethylene

Production process of motors requires trichloroethylene as wash agent for precision parts.

The trichloroethylene has been essential to the manufacturing of semiconductors and precision instruments to remove stains of oil or various organic substances. Even if not accumulated in the body, the trichloroethylene has been indicated as a difficult chemical substance to be environmentally decomposed as well as being a carcinogen, which cause problems such as health disorder of workers, pollution of the regional ground water and the soil. Therefore it is a PRTR Law Class I Designated Chemical Substances required to declare the amount of its purchase, use, and disposal. Mabuchi Motor's positive efforts to completely eliminate the trichloroethylene from the Headquarters fulfilled in May 2002.

Although the trichloroethylene is yet being used to wash precision parts of motors in Mabuchi Group overall, with the objective of complete elimination in the near future, our efforts continues to eliminate the wash together with switching over to substitutes.

We achieved 30% reduction of trichloroethylene for the year 2002 over the year 1999 by means such as elimination of the wash.



Purification of Ground Water and Soil Polluted by Chemical Substances

In 2002 soil pollution by trichloroethylene and tetrachloroethylent above the limit of environmental standasd was detected in the soil of an area having been used for a washing room by the advance survey of the soil necessary for the construction work on the premises of Headquarters. We conducted further detailed investigations on materials, surface layer gas, soil, and ground water according to "Guidelines for Investigation and Countermeasures for Soil and Groundwater" (Ministry of the Environment, 1999) and reported the result to autonomy. Regarding the area exceeding the limit of standard, purification and repair has been implemented by means such as the soil excavation method, ground water pumping method, and vacuum gas extraction method under the instructions of autonomy. We will pursue the advanced technology of purification and accelerate the repair work.

Purification Work of Soil and Water


Investigating the soil on the premises


Excavating the polluted soil

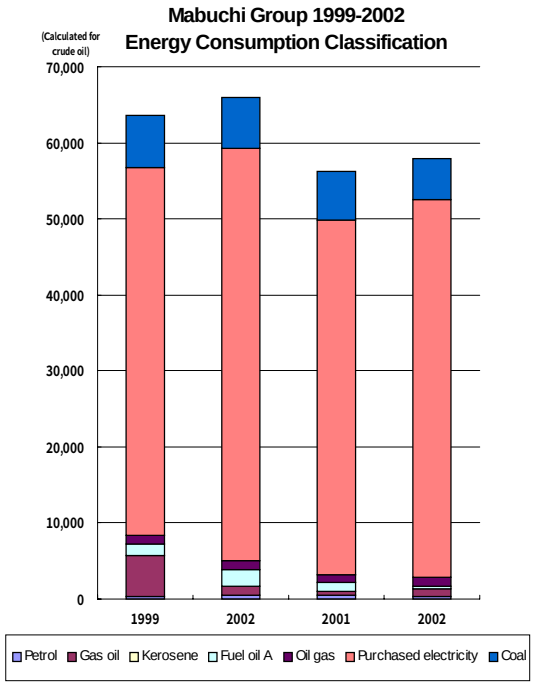

Ground water pumping and purification system

Efficient Use of Resources and Energy

Resources are scarce as well as common property of all mankind, and for people in future generations. Based on this concept, Mabuchi Motor is positively committed to resource and energy conservation.

Efforts to Reduce the Power Consumption

Energy consumed by Mabuchi Motor Group is mostly electricity (85%). Others include coal used for the heating during winter in Dalian Mabuchi. The breakdown of power consumption relatively indicates larger amount of the use of air conditioning and lights, which we have been committed to reduce.



Mabuchi Group Energy Consumption Breakdown

Unit: calculated for crude oil (kl)

	1999	2002	2001	2002
Petrol	405	482	489	419
Gas oil	5,300	1,234	563	946
Kerosene	10	9	9	4
Fuel oil A	1,484	2,190	1,077	279
Oil gas	1,113	1,194	1,022	1,200
Purchased electricity	48,367	54,223	46,715	49,659
Coal	6,913	6,604	6,314	5,366
Total	63,592	65,936	56,189	57,873

Mabuchi Motor has 7 overseas manufacturing companies where 14 factories, large and small scale, are located. Each factory could be divided into smaller facilities thus efficient use of energy was not satisfactory. The integration of factories has been taken place to improve the efficiency and almost completed in 2002. By this means we have achieved large amount of reduction in electric energy consumption.

We further pursue various activities to reduce the energy consumption.

Efforts to Reduce the Use of Office Papers

Mabuchi Motor, being aware the reduction in use of office papers leads to the conservation of forests and prevention against global warming, endeavors to reduce the use of office papers in both Headquarters and overseas affiliates.

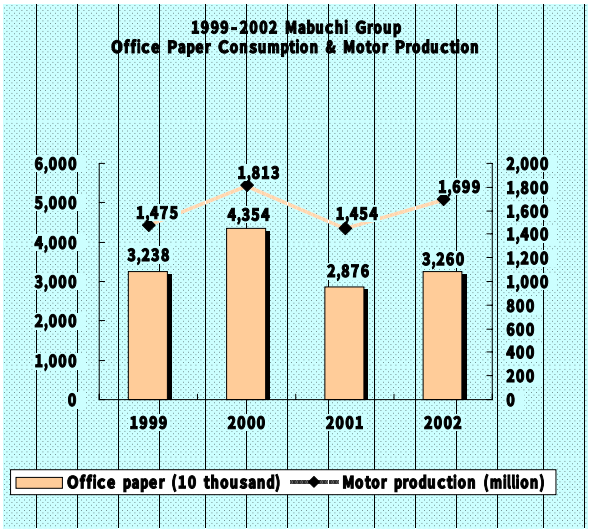
In furtherance of reduction in use of office papers, Mabuchi Group specifically realizes the following measures:

- Promote computerized data transmission in place of fax to internal and external addresses and to block the delivery of unnecessary fax
- Promote reuse of backing paper for printing and duplex printing
- Promote paperless for internal communications by developing LAN emailing at the Headquarters and overseas branches
- Promote paperless for meeting material with the aid of a projector

We also promote the activity to switch from fine-quality to recycled papers for daily use and outsourced printing.

Mabuchi Motor corporate profile made with 100% recycled papers

The information about Group's energy and resource consumption including office papers has been provided on our intranet since 2002, so that each employee is committed to activities to reduce the use of papers as well as comprehending the status.

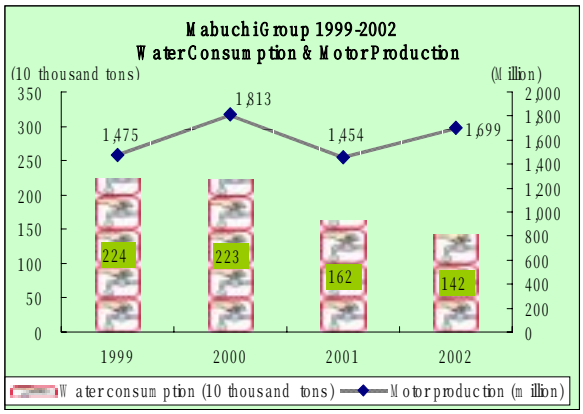


Efficient Use of Resources and Energy

Efforts to Conserve Water Resources

Water gives lives to all organisms and an essential element to our lives and industries.

In Japan while people think water is an infinite resource, actually almost 97% of the water on the earth accounts for sea water, approximately 2% for glacier and ice sheet at the polar regions, and the remaining 1% in which freshwater available for drinking, irrigation industry is scarcely included.
If the water continues to be used at the present pace, 27 billion people would face a serious water shortage problem by 2025. (March 16-23, 2003 The 3rd World Water Forum, source from The Ministry of Agriculture, Forestry and Fisheries of Japan) The conservation of water has become an issue that all mankind must face with. Mabuchi Group has been committed to activities considering saving water as one of assignments to conserve environment.



Utilization of Rainwater at Mabuchi Motor Headquarters

In furtherance of effective use of water resources, Mabuchi Motor Headquarters built the system to utilize the rainwater on its premises, which has been used for cooling air conditioner and living in the Headquarters for 18 years.

Reused water (rainwater) tower installed on the top of the building of Headquarters

Rainwater utilized in 2002 amounted to 5,000 tons, which equals to 16.6% of water used in the Headquarters. Rainwater utilized as an alternative of tap water has amounted to 260,000 tons until now.

Utilization of Spring Water at Dalian Mabuchi

Dalian City in China, where Dalian Mabuchi is located, is a region that faces water shortage problem during the dry season every year. Dalian Mabuchi has been committed to save all industrial and living water under the provisions for environmental conservation since 1996. With establishment of "Regulations for Water Conservation Control" and appointment of person responsible for control of water conservation for each department/section, we are implementing the thorough control of water usage. The water usage in 2002 amounted to 310,000 tons, reduced to approximately a third of 720,000 tons in 1995.

Spring water utility in Dalian Mabuchi (Dalian City, China)

In 2001, spring water was found under the shallow surface of the earth in the site of Dalian Mabuchi. Upon the survey and evaluation of the expert, a water storage utility with the capacity of 500 tons was constructed to utilize the spring water, 110,000 tons of which were used as an alternative of tap water in 2002.

Prevention of Pollution

Mabuchi Motor Headquarters and overseas affiliates promote activities to prevent pollution and reduce environmental load so as to minimize the adverse effect on environment accompanied by production activity.

Efforts to Prevent Air Pollution

In the neighborhood of Dalian City in China where Dalian Mabuchi is located, the coal is primarily used as heating fuel. On account of the use of a boiler burning coal as fuel for heating the factory, Dalian Mabuchi has been committed to various countermeasures against environmental load caused by burning the coal:

1) Use of coal with less amount of sulfur in content to contain sulfur oxide emitted from burning coal.
2) Installation of the latest model of dust collector with desulfurizer on the smoke outlet of the boiler and appropriate burning maneuver according to the operation control procedures to contain the emission of sulfur dioxide to minimum.

Dalian Mabuchi boiler room, introducing the energy-saving boiler and the latest model of dust collector with desulfurizer

Emissions from vehicles contain substances such as CO (carbon monoxide), HC (hydrocarbon), and NOX (nitrogen oxide), which are announcedly carcinogen acts not only accelerating global warming but causing asthma, cancer, allergy and so on.

Signboard encouraging "Stop Idling" (at parking lot in Headquarters)

Mabuchi Motor pursues to reduce emissions from vehicles wherever feasible within the control.

We have reduced total emissions from vehicles at the Headquarters by a thorough control of varying numbers of commuter buses depending on the number of passengers and encouraging employees to share company vehicle (automobiles) practically. Additionally we require all vehicles regardless of company or visitors' to stop idling while stopping on the premises of the Headquarters.

For each overseas affiliated company, we implement various countermeasures starting with introducing a diesel particular filter and reasonable arrangement of company vehicle to reduce the actual amount of vehicle exhaust.

A company car with a diesel particular filter (Dalian Mabuchi)

Efforts to Prevent Water Pollution

Water used in the course of production at Mabuchi Group is extremely a little and mostly attributes to the living water used and discharged by our employees.

Some factories are located in rural areas with no service of public sewage utility where drainage of water (living water and industrial discharge) out of the factories into rivers without proper treatment must be banned, hence we build our own sewage treatment plant, which enables not merely the treatment of sewage from factories but supplying the treated water for agriculture and contributing to help the region against water shortage in some regions and cases.

With precedent of Jiangsu Mabuchi (Jiangsu, China), Wafangdian Mabuchi (Liaoning, China), where no public sewage utility is serviced, having built and run the sewage utility respectively, in 2002 a sewage utility with treatment capacity of

Prevention of Pollution

2000 tons per day completed and started its operation at Factory 1 in Guangdong Mabuchi, which is expected to reduce more environmental load by Mabuchi Group.


Sewage utility built in Factory 1, Guangdong Mabuchi

Efforts to Prevent Soil Pollution

For wash agent and machine lubricants used in the process of production, countermeasures are taken to prevent leaks in the course of production activity and soil pollution.

Each affiliated company is fully provided with control procedures regarding loading and controlling wash agent and machine oil, safety instructions, and prevention of environmental pollution, and necessary operational training has been implemented. Also an oil retaining wall and oil pan are installed to prevent soil pollution caused by leakage of wash agent and machine oil owing to carelessness and so on.


Leak-proof and explosion-proof storage for storing chemical substances including wash agent (Jiangsu Mabuchi)


Oil retaining floor at iron scrap shed to prevent soil pollution from machine oil contained in iron scrap (Dalian Mabuchi)

Efforts to Prevent Noise Pollution

Among facilities and machinery used in the course of production is the object of noise control in accordance with environmental laws and regulations.

Each affiliated company of Mabuchi Group has established additional strict internal regulations based on official environmental laws and regulations, and implemented countermeasures against noise pollution to reduce the environmental load and protect employees' health. Presses and air compressors, listed as one of control-object facilities and machinery, have been provided with noise prevention measures such as a sound proof chamber since installed.

In 2002, the construction work on air compressor room to prevent noise pollution completed in Dalian Mabuchi and Jiangsu Mabuchi.


Sound proof chamber of press (Dalian Mabuchi)


Noise-proof wall added to air compressor room (Jiangsu Mabuchi)

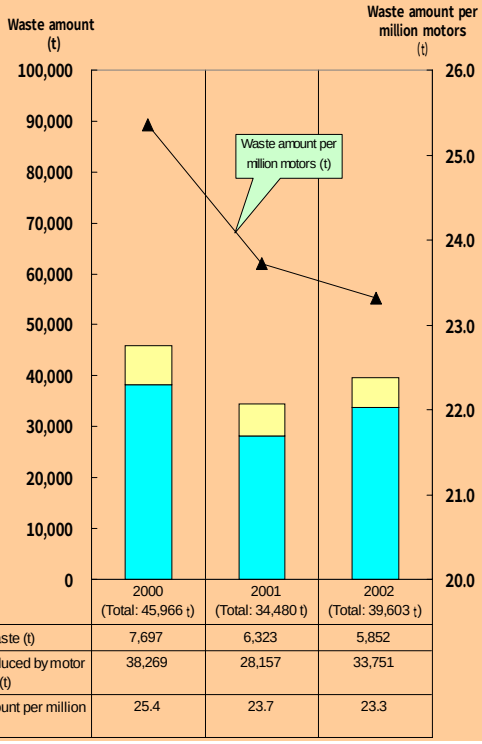
Reduction and Recycle of Waste

Mabuchi Motor endeavors to reduce and recycle waste generated from business activities to reduce environmental load.

Mabuchi Group's Waste Amount Generated in 2002

The waste discharged from the Headquarters and affiliated companies in 2002 amounts to 39,693 tons, decreased by 6,379 tons (- 14%) from a reference year 2002. (See the graph below.)

2000-2002
Mabuchi Group Waste Amount



	2000 (Total: 45,966 t)	2001 (Total: 34,480 t)	2002 (Total: 39,603 t)
General waste (t)	7,697	6,323	5,852
Waste produced by motor production (t)	38,269	28,157	33,751
Waste amount per million motors (t)	25.4	23.7	23.3

Mabuchi Group's Countermeasures to Reduce Waste

(1) Promote production operations with less generation of waste to reduce the generated waste from the source.
(2) Improve the recycle rate of waste by fragmented classification of waste to reduce the total amount of waste.
(3) Research and find recycling bodies in pursuit of recycling waste.

Mabuchi Group's Efforts to Reduce Waste

With respect to practical waste reduction activities, Mabuchi Group overseas production bases have different way of waste disposal from that of Headquarters because of the difference of laws and regulations. For example, in some countries or districts where overseas affiliates are located and for which no requirement of such fragmented classification of disposal as Japan is provided, waste which is once classified on disposal are collected altogether. On the other hand, some waste can be collected and recycled as a local resource while unable to be collected as a resource in Japan for its unprofitability.

As such, Mabuchi Group has initially drawn up and implemented waste reduction and classification plans pertinent to waste disposal situation of each country or region where overseas affiliates are located in stead of establishing uniform standards of classified disposal. However, merely observation of the laws and regulations and waste classification rules of country or regions of location of each overseas affiliate, might have a risk of regression of Mabuchi Group's environment preservation activities. On this account, a standardized "Guidelines for the disposal of waste" has been established and applied to the Headquarters as well as each overseas affiliate so that entire Mabuchi Group could control waste uniformly for the better.

Collecting metal scraps to recycle (Guangdong Mabuchi)

Landfilled Solid Waste Reduction Activities at Headquarters

At the beginning of 2002, the Headquarters laid down a target of 10% reduction in amount of landfilled solid waste over the previous year.

The important key to realize this target is how to improve the recycle rate of waste.

The Headquarters spotlighted the recycle rate of plastic waste. The plastic waste generated from the Headquarters was recycled at the rate of 30% and the remaining 70% was landfilled. We sought complete classification of disposed plastic

Reduction and Recycle of Waste

and to research and find new recycle bodies to enable recycling of landfilled waste.

As a result of the research, we found a recycling body which enables 100% recycling of organic waste including plastic by a novel treatment system called "Kawasaki Thermo-Select System" and realized recycling of landfilled plastic waste.

By this means, we attained 100% recycling of plastic waste of the Headquarters, which resulted to be greatly beyond the target of reduction in amount of landfilled solid waste in 2002 and achieved 30% reduction over the previous year.

Moreover, we will consider recycling of waste other than plastic and continue to encourage activities to reduce landfilled solid waste.

Landfilled Solid Waste Reduction Activities at Production Site

In a magnet factory in Dalian Mabuchi (Liaoning, China), over 200 tons of grinding waste and scrap magnet are generated in a year in the process of grinding, which have been landfilled as industrial waste.

Dalian Mabuchi engaged in a research to recycle this grinding waste and scrap magnet as a part of waste reduction activities to reduce environmental load.

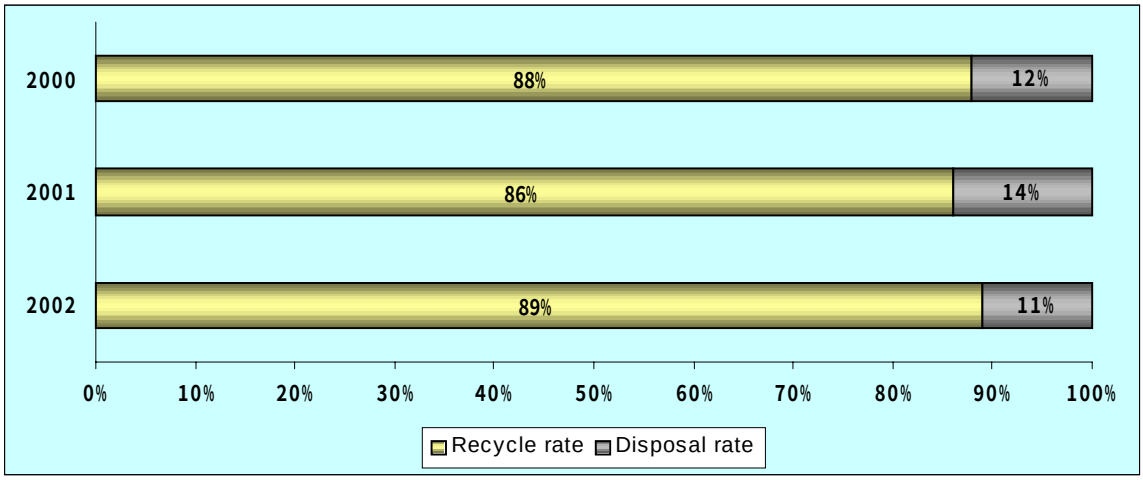
In 2002, the research bore fruit and successfully developed a method to recycle grinding waste and scrap magnet to use it as raw material of magnet.

Consequently this achieved 100% recycling of grinding waste and scrap magnet produced in Dalian Mabuchi magnet factory and accordingly a year average of over 200 tons of reduction in landfilled solid waste.

Waste classification instructions at Headquarters, classifying waste wherever feasible to improve recycle rate

Recycling scrap magnet to use it as raw material of magnet (Dalian Mabuchi)

Mabuchi Group 2000-2001 Recycle Rate of Waste



Communication

Mabuchi Motor positively conveys our environmental concept and present environmental management activities to the public through various opportunities.

Environmental Information Release

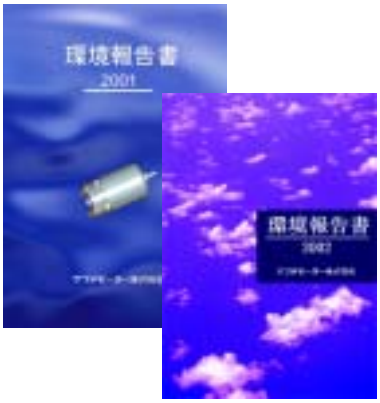
Information about Mabuchi Group's environmental activities is available from our home page where you can get more information about Mabuchi Motor.

Mabuchi Motor home page URL
http://www.mabuchi-motor.co.jp

Mabuchi Motor Home page

In December 2001, Mabuchi Motor posted the first environmental report named "Environmental Report 2001" and subsequently "Environmental Report 2002" in June 2002 on our home page.

We plan to post "Environmental Report" issued every year on our web site. We would be delighted to listen to the voices and comments of the people for its improvement.



Mabuchi Motor Environmental Report 2001 and 2002

Mabuchi Motor exhibits motors and products using our motors to "MOTORTECH JAPAN 2002" (sponsored by Japan Management Association) held in April every year at Makuhari Messe in Chiba and represent visitors "motors are of great use."

In 2002, at a symposium with a theme "Key technology to support environment and IT society" in Makuhari Messe, Akira Okazaki (Mabuchi Motor, Research and Development Headquarters, Manager of ECO-Motor Design Group) lectured on "Motor technology solutions to environment" and presented and answered questions regarding:

1) Present status of solutions to environment required for motors
2) Policy of reduced use of environmental harmful substances contained in Mabuchi Motor products and its current progress
3) Future development

It was a great and beneficial opportunity to know that people are very concerned about environmental problems.

Mabuchi Motor booth at MOTORTECH

Visitors look at products at Mabuchi Motor booth

Contributions to Society

We participate in various activities to contribute to create desirable community as a member of our society.

Tree Planting Activities (Dalian Mabuchi)

Dalian city in Liaoning province, China where Dalian Mabuchi is located, once used to be surrounded by rich forests, however, more and more trees were cut for fuel and reckless tree planting was carried out in neglect of tree cutting schemes thereafter, with the result that the forests were reduced to be exceedingly scarce. In Dalian district, tree planting is practiced every spring. Dalian Mabuchi has participated in this planting activity since 1995 and a great number of employees have taken part in it other than financial aid.

In 2002, besides continuous support of outside planting activities, we also encouraged tree planting inside the premises and consequently developed 8600 m^2 of lawn and planted 540 trees.

Our efforts will continue to promote tree planting and keep Dalian Mabuchi "Garden factory".

Factory building surrounded by greenery (Dalian Mabuchi)

Grass park developed in 2002 (Dalian Mabuchi site)

Local Community Support Activities

The Headquarters and overseas affiliated companies not only always keep internal environment clean but have extended its commitment to conservation of the surrounding environment.

The Headquarters has been continuing weekly clean-up activity of the surroundings for 7 years.

In overseas affiliated companies, a great number of employees volunteer for activities for better environment in local community.

Weekly clean-up around the Headquarters

October 2002, 50 employees of Dalian Mabuchi voluntarily participated in "Green-Up Project" of Dalian development government

Activities to Support Juvenile Education

Children at Mabuchi booth, "HOBBY SHOW" in Shizuoka

Mabuchi Motor participate in the exhibitions "SHIZUOKA HOBBY SHOW" in spring and "ALL JAPAN PLAMODEL RADICON SHOW 2002" in fall every year and conveys the enjoyment of handicrafts and the uniqueness of science such as the mechanism of motor.

"MOTORIZATION GUIDE" issued every year introduces crafts you can make using items around you, and recycling of plastic bottles and film cases so that we can show what children can do to help save the earth.

"MOTORIZATION GUIDE" 2002

History of Environment Conservation Activities

History of Mabuchi Group Environment Conservation Activities

June 1993	**Codify "business activities for developing, manufacturing, and selling small electric motors without sacrificing environment of the earth and the health of people" in Management Guidelines in "Management Philosophy."**
December 1993	**Reported the performance of development of cadmium free material for motor commutator.**
January 1994	**Set targets of recycling rate and reduction of in-house waste as a year program and start continuous control of numeric targets.**
June 1997	**Set up "Environment Management Committee" for control of information regarding environmental problems in Business Platform Innovation Headquarters.**
November 1997	**Start improvement of cadmium free material.**
January 1998	**Revised the Standards for Waste Disposal Control to the Procedures based on 3R.**
July 1998	**Set up ISO 14001 certification acquisition project (called E-Project) in Business Platform Innovation Headquarters.**
	Started prior survey to acquire ISO 14001 certification.
October 1998	**Establish Mabuchi Group "Basic Policy for Environment." E-Project started its operations to acquire ISO 14001 certification.**
May 1999	**Establish "Environmental Policy" of Headquarters according to the requirements of ISO 14001.**
May 1999	**Announced "Interim Environmental Target" of Headquarters.**
June 1999	**EMS (Environmental Management System) of Headquarters started.**
December 1999	**Headquarters acquired ISO 14001 certification.**
January 2000	**Start to fully eliminate and reduce the use of trichloroethylene.**
January 2000	**Start activities to develop a new method of lead free soldering.**
March 2000	**Kaohsiung Mabuchi (Kaohsiung, Taiwan) acquired ISO 14001 certification.**
May 2000	**Completed full elimination of use of trichloroethylene in Headquarters.**

History of Environment Conservation Activities

History of Mabuchi Group Environment Conservation Activities

July 2000	**Malaysia Mabuchi (Malaysia, Ipoh City) acquired ISO 14001 certification.**
August 2000	**Jiangsu Mabuchi (Jiangsu, China) acquired ISO 14001 certification.**
August 2000	**Dalian Mabuchi (Liaoning, China) acquired ISO 14001 certification.**
September 2000	**Start development of hexavalent chromium free material for motors.**
October 2000	**Start green procurement activities.**
December 2000	**Completed evaluation of selection of cadmium-free substitutes.**
December 2000	**Taiwan Mabuchi (Hsinchu City, Taiwan) acquired ISO 14001 certification.**
December 2000	**Hong Kong Mabuchi (Hong Kong, Guangdong, China) acquired ISO 14001 certification.**
December 2000	**Start operation of returnable-container system in some regions.**
March 2001	**Vietnam Mabuchi (Bienhou City, Vietnam) acquired ISO 14001 certification.**
July 2001	**Lead-free soldering for motors is approved by Sony "Committee for Electrical Component Standardization."**
December 2001	**Completed arrangement of mass-production of lead-free soldering.**
December 2001	**Posted "Environmental Report" 2001 edition on web site.**
April 2002	**Start sample shipping of hexavalent chromium free motors.**
June 2002	**Posted "Environmental Report" 2002 edition on web site.**
July 2002	**Detected soil pollution by tetrachloroethylene in a section on the premises of Headquarters and started its purification and improvement.**
September 2002	**Start supply of EU-ELV corresponding motors.**
December 2002	**Renewed ISO 14001 certification of Headquarters by certification renewal audit.**

MABUCHI MOTOR CO., LTD.

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