TOYOTA INDUSTRIES CORPORATION

2001

Environmental Report

Spinning the Dreams of Tomorrow

Table of Contents

The data in this report covers fiscal 2000 (April 1, 2000, to March 31, 2001). Some activities up to August 2001, the time of publication, are also included.

This report deals chiefly with the environmental protection activities of Toyota Industries Corporation, but some information concerns consolidated subsidiaries and affiliates.

The report begins with an account of Companywide environmental activities. An outline of business activities and major environmental aspects is followed by a section on our Environmental Action Plan with details of the Company's basic philosophy, policy, and related matters. Then, a section on our Environmental Management System follows, dealing with organizational structures and progress in acquiring ISO 14001 certification. Our environmental accounting section begins on page 11, and a Companywide item-by-item review follows on pages 12 through 23.

Pages 24 through 35 detail environmental activities at the Company's various business divisions, and pages 36 and 37 contain information on environmental activities at subsidiaries and affiliates. The final section of this report, on pages 38 through 40, contains environmental data by plant and a brief history of the Company's environmental activities.

To encourage dialogue with readers of the report, Toyota Industries has included a questionnaire at the back. The final page provides the Company's Website URL and a telephone number for further information.

Executive titles and names of posts in this report reflect changes after the Ordinary General Meeting of Shareholders held on June 28, 2001.

A Message from the President

The 21st century can be called the century of the environment. Economies and societies have been dramatically affected by the rapid development of IT (Information Technology) and other examples of the astonishing wave of technological innovation in the last 10 years of the 20th century. We now live in an age when information transmission is instant and not affected by distance, enabling the environmental protection trend that began in Europe to sweep the world. The world is realizing that environmental protection is a matter of survival for humankind in the 21st century.

Against this background, Toyota Industries Corporation is diversifying its mainstay businesses—textile machinery, vehicles, engines, material handling systems, car air-conditioning compressors, and electronic products—and is increasing the scale of its production. Over the last 10 years, we have also rapidly globalized our operations, setting up a string of overseas production bases and acquiring some foreign companies. At the same time, we keep a close eye on environmental protection trends in Europe and North America, and pursue economic development in harmony with the environment in the belief that environmental protection is a management priority. As a part of this effort, Toyota Industries unveiled its Third Environmental Action Plan in August 2000, with the goal of providing products that are clean, safe, and of superior quality by stepping up environmental protection activities.

Toyota Industrial Equipment, S.A. (TIESA), of France, has become the latest member of the Group to acquire ISO 14001 certification following Toyota Industrial Equipment Mfg., Inc. (TIEM), and Michigan Automotive Compressor, Inc. (MACI), our U.S. subsidiaries. Some of the manufacturing bases of BT Industries AB, a Swedish warehouse truck maker that we acquired in June 2000, have been ISO 14001 certified. We are working to obtain certification for all remaining domestic and overseas plants, to establish a consolidated Groupwide environmental management system covering operations at home and abroad.

We are upgrading and making better use of design guidelines for evaluating the environmental impact of substances contained in newly developed products and for improving their recyclability. New Design Review methods enable us to assess the environmental impact of products at the initial stage of development. Simultaneously, we launched our Environmentally Preferable Purchasing (EPP) program and introduced a method for carrying out environmental evaluations of newly designed products.

To recognize the importance of making environmental protection activities and progress public, and of contributing to society, we support voluntary activities by our employees and interact with local communities. In these and other ways, we are able to closely monitor local public opinion.

It is my firm belief that, by ensuring that our products and services are environment-friendly, Toyota Industries is making a small but significant contribution to the establishment of a sustainable global community.

This is our third environmental report since we began producing them in 1999. We will be very glad if we have succeeded in giving people a better idea of what we are doing to improve the environment and how we are going about it. We invite readers to give us their comments on this report and suggest how it could be improved.

August 2001

Tadashi Ishikawa
President

Tadashi Ishikawa

CORPORATE INFORMATION

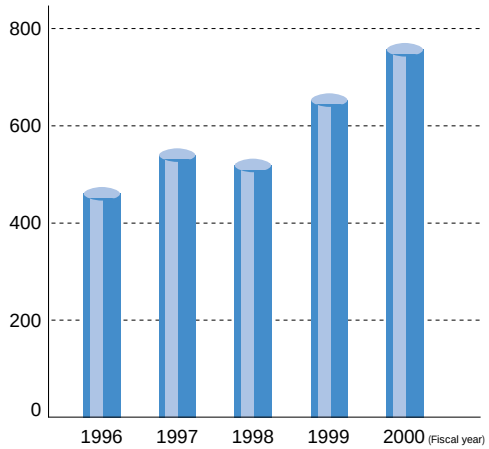
Corporate Profile

Name	TOYOTA INDUSTRIES CORPORATION
Date of Establishment	November 18, 1926
Capital	¥68.0 billion (as of March 31, 2001)
Number of Employees*	21,118 (as of March 31, 2001)
Stock Exchange Listings	First sections of the Tokyo, Osaka, and Nagoya stock exchanges
Principal Businesses	Textile machinery, car air-conditioning compressors, industrial equipment, material handling systems, vehicles, engines, and semiconductors & electronics equipment

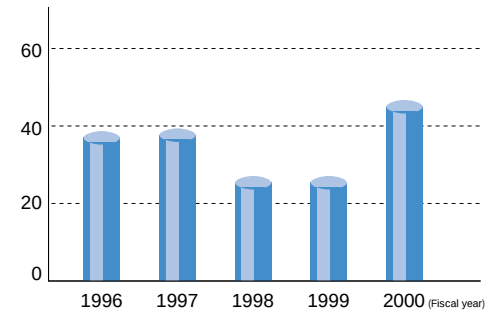
*On a consolidated basis

Consolidated Net Sales and Ordinary Income

■Net Sales (¥ billion)



■Ordinary Income (¥ billion)



Corporate History

1926 ●Toyoda Automatic Loom Works, Ltd. (now TOYOTA INDUSTRIES CORPORATION), established

1933 ●Automobile Division set up

1935 ●Company unveils Model G1 truck at a new-car-release exhibition in Shibaura, Tokyo

1937 ●Automobile Division spun off as Toyota Motor Co., Ltd. (now Toyota Motor Corporation)

1940 ●Steel Production Division spun off as Toyoda Steel Works, Ltd. (now Aichi Steel Corporation)

1944 ●Obu Plant begins operations (manufacturing foundry parts)

1949 ●Stock listed on Tokyo, Nagoya, and Osaka stock exchanges

1953 ●Kyowa Plant begins operations (manufacturing engines and assembling automobiles)

1955 ●Vehicle Division set up

1960 ●Toyota Central Research & Development Laboratories, Inc., established with capital from 10 Toyota Group companies

1967 ●Nagakusa Plant begins operations (manufacturing small commercial vehicles)

1970 ●Takahama Plant begins operations (manufacturing industrial vehicles)

1971 ●Divisional structure introduced (Textile Machinery, Industrial Equipment, and Vehicle divisions)

1977 ●Compressor Division spun off from Textile Machinery Division

1982 ●Hekinan Plant begins operations (automotive diesel engines)
●Introduced Total Quality Control (TQC)

1985 ●Engine Division spun off from Vehicle Division

1986 ●Obu Plant renamed Foundry Division
●Received the Deming Prize for quality control implementation

1987 ●Electronics Sub-Division set up

1988 ●Toyota Industrial Equipment Mfg., Inc. (TIEM), established in Indiana, U.S.A., as a joint venture with Toyota Motor Corporation

1989 ●Michigan Automotive Compressor, Inc. (MACI), established in Michigan, U.S.A., as a joint venture with Nippondenso Co., Ltd. (now DENSO Corporation)

1990 ●Received 1990 PM Excellent Plant Award

1992 ●Material Handling System Division established

1994 ●Toyota Industry (Kunshan) Co., Ltd. (TIK), established in Jiangsu, China, as a joint venture between Toyota Tsusho Corporation and Lioho Machine Works, Ltd.

1995 ●Toyota Industrial Equipment, S.A. (TIESA), established in France as a joint venture between Toyota Motor Corporation and Manitou B.F.
●Forklift production reaches one million units
●Kirloskar Toyoda Textile Machinery Ltd. (KTTM) established in India as a joint venture with the Kirloskar Group

1997 ●Car air-conditioning compressor production reaches 100 million units
●ST Liquid Crystal Display Corp. jointly established with Sony Corporation for the production of LCDs

1998 ●TD Deutsche Klimakompressor GmbH (TDDK) jointly established in Germany with DENSO Corporation for the production of car air-conditioning compressors
●TIBC Corporation jointly established with Ibiden Co., Ltd., for the production of plastic package substrates for IC chip sets

1999 ●Toyota Industries takes over water jet loom business from Nissan Texsys Co., Ltd.

2000 ●Company acquires BT Industries AB of Sweden, a world-leading manufacturer of warehouse trucks, as a subsidiary

2001 ●Company takes over the industrial equipment sales division of Toyota Motor Corporation, and TOYOTA Material Handling Company established as an in-house company
●Name changed to TOYOTA INDUSTRIES CORPORATION

Production Bases

■Head Office/Kariya Plant

Head Office, Textile Machinery Division, Compressor Division

Address: 2-1, Toyoda-cho, Kariya, Aichi
Main products: Textile machinery, car air-conditioning compressors
Employees: 3,160

■Takahama Plant

TOYOTA Material Handling Company

Address: 2-1-1, Toyoda-cho, Takahama, Aichi
Main products: Forklift trucks, material handling systems
Employees: 1,600

■Hekinan Plant

Engine Division

Address: 3, Hama-cho, Hekinan, Aichi
Main product: Engines (for use in automobiles and industrial equipment)
Employees: 1,280

■Nagakusa Plant

Vehicle Division

Address: 9-2, Yamaguchi, Nagakusa-cho, Obu, Aichi
Main product: Automobiles
Employees: 2,190

■Kyowa Plant

Technology Development Center, Mechatronics Engineering Sub-Division, Machinery & Tools Sub-Division

Address: 8, Chaya, Kyowa-cho, Aichi
Main products: Semiconductors and electronics equipment, press dies, production facilities
Employees: 830

■Obu Plant

Compressor Division
Engine Division

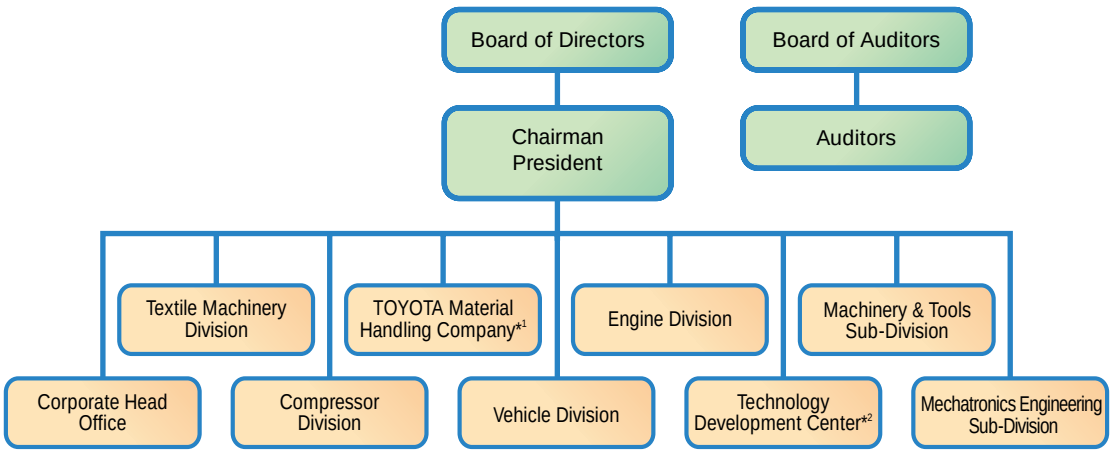
Address: 1-1, Ebata-cho, Obu, Aichi
Main products: Car air-conditioning compressors, foundry parts
Employees: 460

■Higashichita Plant

Engine Division

Address: 4-15, Nittou-cho, Handa-shi, Aichi
Main products: Foundry parts
Employees: 80

Organization Chart (As of July 1, 2001)



Notes: 1. TOYOTA Material Handing Company was established as an in-house company within Toyota Industries in April 2001, integrating the industrial equipment sales operations of Toyota Motor Corporation with Toyota Industries' Industrial Equipment and Material Handling System divisions.
2. The Technology Development Center was established on June 28, 2001, integrating the Research and Development Center with the Semiconductor & Electronics Equipment Division.

Major Subsidiaries and Affiliates (As of March 31, 2001)

■Japan

TIBC Corporation (TIBC)
TOYODA-SULZER MANUFACTURING LTD.
ALTEX CO., LTD.
Sun River Co., Ltd.
IZUMI MACHINE MFG. CO., LTD.
TOKYU CO., LTD.
MINO TOKYU CO., LTD.
Toyoda High System, Incorporated
Nishina Industrial Co., Ltd.
Tokaiseiki Co., Ltd.
LOGISTEC CO., LTD.
SKE Inc.
SK Maintenance Inc.
Iwama Loom Works, Ltd.
KAWAMOTO SYSTEM CORPORATION
ARTI Inc.
HARA CORPORATION
Mizuho Industry Co., Ltd.
Sun Valley Inc.
Sun Staff, Inc.
TOKAI SYSTEM INSTITUTE CORP.
Shine's Inc.
ST Liquid Crystal Display Corp. (ST-LCD)
TAIKOH TRANSPORTATION CO., LTD.

■Overseas

Toyota International Sweden AB
BT Industries Group
Michigan Automotive Compressor, Inc. (MACI)
Toyota Industries North America, Inc. (TINA)
Toyota Industrial Equipment Mfg., Inc. (TIEM)
Toyoda Textile Machinery, Inc.
TAL Personnel Service, Inc. (TALPS)
Toyota Material Handling USA, Inc. (TMHU)
TD Deutsche Klimakompressor GmbH (TDDK)
Kirloskar Toyoda Textile Machinery Ltd. (KTTM)
Toyota Industry (Kunshan) Co., Ltd. (TIK)
Toyota Truck Norge Group
Toyota Industrial Equipment, S.A. (TIESA)

Business Activities and Major Environmental Aspects

Toyota Industries manufactures textile machinery, car air-conditioning compressors, industrial equipment, vehicles, engines, semiconductors, and electronics equipment. Major production processes include pressing, welding, painting, machining, semiconductor manufacture, and assembly of electronic parts, as well as casting and manufacture of aluminum die casts. We reviewed our businesses looking at such aspects as emissions into the air and water, management of wastes, soil pollution, and the use of raw materials and natural resources. Then, we selected the most significant aspects of environmental hazards and have displayed these in the following table.

The factory using the most energy and causing the most waste by volume is the Obu Plant, which makes castings using electric and cupola furnaces. The factory with the highest volume of emissions of PRTR-listed substances and VOCs is the Nagakusa Plant, followed by the Takahama Plant. The Kariya Plant produces the most industrial wastewater, followed by the Nagakusa Plant.

Based on these facts, targets under the Environmental Action Plan were set for specific plants by the Energy, Pollution Prevention, and Waste Minimization subcommittees. (For more details, please see page 7.)

■Comparison of Environmental Impact of Each of the Six Plants

Plant	Main business activities	Main production processes	Main sources of environmental impact	Main resulting problems	Other remarks
Kariya	Manufacture of textile machinery and car air-conditioning compressors	Painting, machining, assembly	VOCs from paint, cleaning agents, etc., emission of PRTR-listed substances, etc., waste fluid, odors	Air pollution, odors, water pollution, noise	• Large amounts of wastewater • Close to residential area
Takahama	Manufacture of forklift trucks and other industrial equipment, automated storage and retrieval systems, and other material handling systems	Welding, painting, machining, assembly	VOCs from paint, cleaning agents, etc., emission of PRTR-listed substances, etc., waste fluid, odors	Air pollution, odors, water pollution	
Hekinan	Manufacture of engines	Machining, assembly	Emission of cleaning agents, waste fluid	Air pollution, water pollution	
Nagakusa	Automobile assembly	Pressing, welding, painting, assembly	Noise and vibration during pressing, VOCs from paint, cleaning agents, etc., emission of PRTR-listed substances, etc., waste fluid, odors	Air pollution, odors, water pollution, noise, vibrations	Large emissions of PRTR-listed and other chemical substances • Large wastewater volumes • Close to residential area
Kyowa	Manufacture of semiconductors and electronics equipment	Semiconductor manufacture, assembly of electronics equipment	Emission of VOCs and PRTR-listed substances from paint, waste fluid, noise and vibration during manufacturing processes	Air pollution, odors, water pollution, noise, vibrations	• Close to residential area
Obu	Manufacture of castings for engines and die casts for car air-conditioning compressors	Manufacture of castings, aluminum die casts	Emission of metal dust and fumes, odors, noise and vibration during manufacturing processes	Air pollution, odors, water pollution, noise, vibrations	• High power consumption • Large emissions of waste materials • Close to residential area

Environmental Action Plan

Revision of Environmental Action Plan

Our basic corporate principle states that "Toyota Industries believes that economic growth and conservation of the natural environment are compatible. The Company strives to offer products and services that are clean, safe, and of high quality." In accordance with this principle, we launched our First Environmental Action Plan in March 1993. In May 1996, this was revised to create the Second Environmental Action Plan.

Embracing environmental trends as a crucial business issue at the dawn of the 21st century, Toyota Industries revised the second plan and compiled the Third Environmental Action Plan in August 2000 to put environmental protection activities on a Groupwide footing, including consolidated subsidiaries, with a common basic policy and action guidelines, to achieve harmony with the global environment and contribute to the formation of a society with environmentally sound material cycles. Key areas of action are "developing and supplying clean products with low environmental impact," "production activities aimed at zero emissions," and "expanding environmental management systems."

Toyota Industries' Basic Philosophy

Respect for the Law
Toyota Industries is determined to comply with the letter and the spirit of the law, in Japan and overseas, and to be fair and transparent in all its dealings.

Respect for Others
Toyota Industries is respectful of the people, culture, and tradition of each country and region in which it operates. It also works to promote economic growth and prosperity in those countries.

Respect for the Natural Environment
Toyota Industries believes that economic growth and conservation of the natural environment are compatible. It strives to offer products and services that are clean, safe, and of high quality.

Respect for Customers
Toyota Industries conducts intensive product research and forward-looking development activities to create new value for its customers.

Respect for Employees
Toyota Industries nurtures the inventiveness and other abilities of its employees. It seeks to create a climate of cooperation, so that employees and the Company can realize their full potential.

Third Environmental Action Plan (Fiscal 2001 to 2005)

Basic Policies

1. Conduct corporate activities that are considerate of the environment at every stage of the product's life cycle from development through design, production, use, and disposal, to provide clean and safe products to society
2. Strive to intensify environmental management, including that of consolidated subsidiaries, for the further advancement of corporate activities that promote environmental protection
3. Promote social contribution, information disclosure, and knowledge through wide-ranging cooperation with society on environmental protection, with the ultimate aim of achieving a better global environment

Action Guidelines

1. Develop and provide clean products with minimal environmental impact
   ①Thoroughly implement environmental considerations in development and design
   ②Promote Environmentally Preferable Purchasing (EPP)
2. Promote manufacturing that strives for zero emissions
   ①Further reduce environmental impact through resource and energy conservation
   ②Voluntarily set, carry out, and monitor goals through the Environmental Committee
3. Expand environmental management systems
   ①Strengthen cooperation between the Company and its affiliates and suppliers
   ②Firmly grasp environmental protection expenses and cost efficiency
4. Actively participate in public environmental protection efforts as a responsible corporate citizen
   ①Engage in the creation of a society with environmentally sound material cycles
   ②Thoroughly implement active information disclosure and communicate with local communities

■Third Environmental Action Plan

Action guidelines	Goal	Action policy
1. Develop and provide clean products with minimal environmental impact (1) Thoroughly implement environmental considerations in development and design (2) Promote EPP*1	Improve fuel efficiency	Achieve best-in-class fuel efficiency in all countries and regions and reduce emissions Improve fuel efficiency and reduce CO_2 emissions through the development of energy-conservation technologies
	Reduce exhaust emissions	Tailor measures in accordance with usage environments
	Development of clean-energy vehicles*2	Launch new vehicles in accordance with market conditions Develop clean products that meet market needs
	Improve recyclability	Promote recyclable designs to contribute to the goal of a 95% recycling rate by 2015 Expand the use of recycled materials
	Control and reduce volumes of substances with environmental impact	Set global standards in the management of hazardous substances
	Reduce noise	Further reduce noise from all sources in the automobiles and forklift trucks we produce
	Prevent global warming due to car air conditioners	Develop compressors that are compatible with new alternative refrigerants to HFCs*3
	More thoroughly conduct environmental evaluations at the development and design stages	Conduct prior assessments of all environmental impact throughout products' life cycles from the very first stages of development and design
	Strengthen cooperation with business partners	Promote environmentally sound EPP through strengthened cooperation with business partners
2. Promote manufacturing that strives for Zero Emissions*4 (1) Further reduce environmental impact through resource and energy conservation (2) Voluntarily set, carry out, and monitor goals through the Environmental Committee	Set global warming preventive measures	Active promotion of CO_2 reduction initiatives CO_2 : Reduce total emission volume by 5% compared with fiscal 1990 levels by fiscal 2005 year-end (10% by fiscal 2010) Promote thorough energy-saving programs Develop production technologies that reduce CO_2 emissions
	Strictly control and reduce the use of hazardous substances	Strengthen proper control and voluntary reductions of hazardous substances used in production processes PRTR*5: Reduce total emission volumes of targeted substances by 50% compared with fiscal 1998 levels by fiscal 2005 year-end VOCs*6: Promote total emission volume reduction and reduce emissions from painting lines by 50% compared with 1998 levels by fiscal 2005 year-end
	Reduce waste and conserve resources	Reduce waste for achievement of Zero Emissions Zero emissions: Eliminate direct landfill disposal at all plants by fiscal 2003 Promote paperless operations by enhancing in-house IT network systems
	Curtail water usage	Various initiatives
	Conduct logistics streamlining measures	Improve transport efficiency and promote CO_2 reduction and resource conservation through the reduction of packing materials
3. Expand environmental management systems (1) Strengthen cooperation between the Company and its subsidiaries, affiliates, and suppliers (2) Firmly grasp environmental protection expenses and cost efficiency	Expand environmental management systems	Organize fundamental policy development and administration systems for Group companies Attain ISO 14001 certification at Group companies
	Enhance environmental accounting systems	Organize environmental accounting systems
4. Actively participate in public environmental protection efforts as a responsible corporate citizen (1) Engage in the creation of a society with environmentally sound material cycles (2) Thoroughly implement active information disclosure and communication with local communities	Conduct efforts for creation of EPP	Participate in initiatives in the public sphere aimed at the achievement of a 95% recycling rate by 2015
	Promote social contribution activities	Broaden dialogue with local communities and deepen participation in greenery activities
	Promote public relations and disclosure activities	Disclose more information relating to our environmental activities

*1 EPP: Procurement of parts and materials that considers the supplier's ISO 14001 status and the presence of hazardous substances in the procured materials and parts
*2 Clean-Energy Vehicles: Electric forklift trucks and compressed natural gas (CNG)-powered forklift trucks *3 HFCs: Hydrofluorocarbons. HFCs were used as substitutes for CFCs, but pressure has risen to reduce their use because they contribute to global warming. *4 Zero Emissions: Toyota Industries defines zero emissions as reducing emissions to a level equivalent to at least 95% of landfill waste.
*5 PRTR: Pollutant Release and Transfer Register *6 VOCs: Volatile Organic Compounds

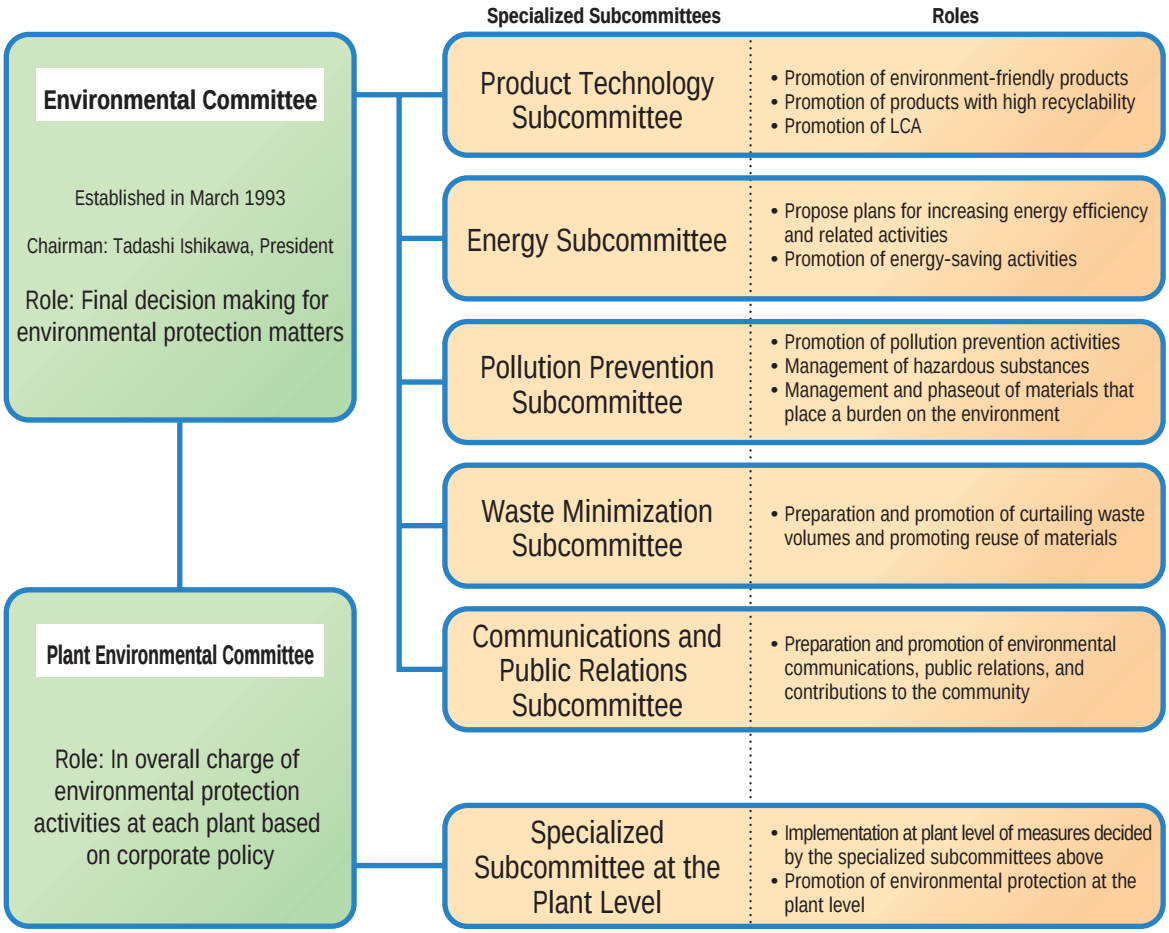
Environmental Management System

Organization

To tackle environmental issues in a consistent and organized manner, we have set up the Environmental Committee, chaired by the president. The committee has five specialized subcommittees. Also, each plant has organized its own Plant Environmental Committee and specialized subcommittees to deal with environmental issues regarding individual manufacturing facilities.

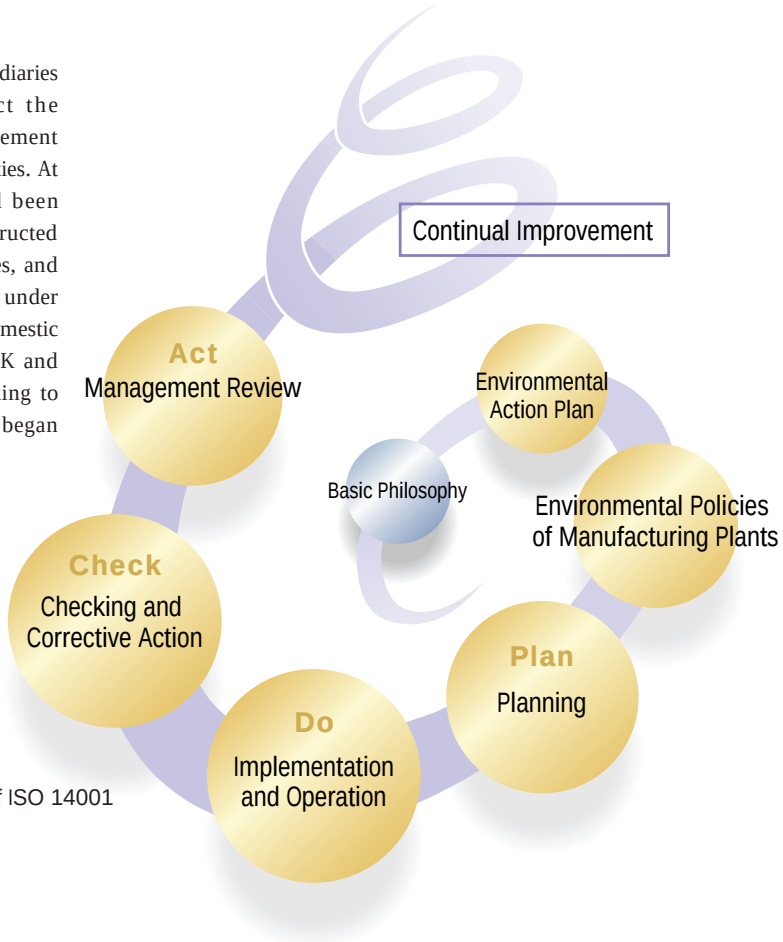
Each committee and specialized subcommittee develops environmental strategies and policies, sets targets in its particular field, and evaluates progress at its respective plant.

■Internal Organization and Roles as of August 1, 2001



Progress in ISO 14001 Certification

In order for Toyota Industries and its consolidated subsidiaries to fulfill their corporate responsibility to protect the environment, we are creating an environmental management system and acquiring ISO 14001 certification at our facilities. At the end of fiscal 2000, ISO 14001 certification had been acquired by all domestic plants, except the newly constructed Higashichita Plant, two domestic consolidated subsidiaries, and three overseas consolidated subsidiaries. Preparations are under way for certification of the Corporate Head Office, one domestic affiliate, and two overseas consolidated subsidiaries (TIK and KTTM), which will be obtained in 2001. We are working to obtain certification for the Higashichita Plant, which began operations in 2000, and for TDDK by the end of 2002.



■Outline of ISO 14001

■Facilities that Have Acquired ISO 14001 Certification and Date

Facility		Certification date
Toyota Industries' plants in Japan	Nagakusa	October 1997
	Kariya	October 1998
	Takahama	December 1998
	Hekinan	November 1999
	Kyowa (Toyoda-Sulzer Manufacturing Ltd. and TIBC)	January 2000
	Obu	March 2000
Domestic consolidated subsidiaries	Toyoda-Sulzer Manufacturing Ltd.	January 2000
	TIBC	January 2000
Overseas consolidated subsidiaries	TIEM	June 1999
	MACI	June 1999
	TIESA	January 2001

■ISO 14001 Acquisition Pending

Facility		Target certification date
Toyota Industries' plants and offices in Japan	Head Office	By the end of 2001
	Higashichita Plant	By the end of 2002
Domestic affiliate	ST-LCD	By the end of 2001
Overseas consolidated subsidiaries	TIK	By the end of 2001
	KTTM	By the end of 2001
	TDDK	By the end of 2002

Note: Please see page 36 for details of ISO 14001 certification at BT Industries AB, the Swedish warehouse truck manufacturer acquired by Toyota Industries in June 2000.

Consolidated Environmental Management

To ensure that our environmental protection efforts go beyond the parent company, we have started to create a consolidated environmental management system covering the entire Group, including consolidated subsidiaries.

In March 2001, we held an explanatory meeting for 69 domestic consolidated subsidiaries, affiliated companies, and business partners. We are now putting into action an Environmental Action Plan of the same type as that of the parent company. Based on this plan, environmental protection targets are set for each fiscal year, and initiatives have begun under management programs.

Mr. Hisashi Katada of the Safety, Health & Environment Department gives an explanatory lecture on the Third Environmental Action Plan.

Environmental Audits

Environmental audits based on the Company's environmental management systems are of two types—external and internal. Their goal is to verify the status of environmental initiatives.

Internal audits consist of plant audits conducted by each plant's auditing team and Head Office audits of the whole Company, plant by plant, by audit teams in which members are drawn from all the Company's plants.

In fiscal 2000, as the last plant (not including the Higashichita Plant) acquired ISO 14001 certification, we decided to increase the frequency of Head Office audits at each plant from once every three years to once every two years, to enhance environmental protection at each factory.

After accrediting these Companywide auditing activities, the Japan Environmental Management Association for Industry (JEMAI) registered the names of our lead environmental management system auditor and subordinate auditor. The association is a body for registering evaluations of environmental management system auditors.

After the audit, study sessions are held for the staff of each plant on issues raised. Plants try to improve their environmental track record by the discussion and exchange of information, including examples of areas of steady improvement and cases where improved product quality has had significant environmental benefits.

Furthermore, as a result of reporting progress in this way to the Environmental Committee, we were able to enhance ISO 14001 certification activities and lay the groundwork for certification of the Head Office, within the Kariya Plant. The target date is October 2001.

■Progress of Environmental Auditing

	Fiscal year	1997	1998	1999	2000
Companywide audit	No. of Companywide audits	1	2	3	4
	No. of audits of departments	9	19	30	84
Plant audit	No. of factories covered by plant audits	0	2	6	5

Environmental Education for Raising Awareness

To combat the degradation and improve the quality of the environment, it is important to raise the consciousness of each and every employee. To this end, we are emphasizing employee environmental training and education.

Environmental training programs being conducted include courses for employees in accordance with their position in the Company, courses for training ISO 14001 internal auditors, and instruction for personnel working with important environment-related equipment. In addition to these programs, we also organize lectures on the environment, run special features in our in-house newsletter, and publish monthly environmental news to raise environmental awareness among employees.

Environmental Training

●Courses for Employees

Employees are divided into groups according to job level (training for workers, supervisors, and managers), and courses are systematically tailored to each group.

●Training for ISO 14001 Internal Auditors

To prepare certain employees to act as environmental auditors and train others as leaders for internal ISO 14001 purposes, we organize courses with content provided by external research institutes. A total of 76 employees underwent training in fiscal 2000, and, as of the end of March 2001, 370 employees had earned qualifications as internal auditors.

Environmental Education

■Major Activities

Item	Fiscal 2000 results
Environmental Report	Published on October 27, 2000
Environmental lectures	Product design for a society with environmentally sound material cycles (July 11, 2000)
	Design assessment of product recycling (December 15, 2000)
	Reducing hazardous substances Design guidelines (February 27, 2001)
Awareness raising through in-house newsletter	Annual feature *"Let's Go, Eco-Bee"* series*1 (carried six times a year) April: Publication of fiscal 1999 Environmental Report June: Zero Emissions initiative begins July: Cogeneration facilities—a new concept for energy saving August: Progress report on environmental activities, with recommendation of keeping an environmental account book October: Garbage handling in Germany January: Toyota Motor Corp. sets target of reducing landfill waste to zero

Employees participating in a training course

Environment-Related Qualifications

To encourage compliance with environmental rules in the workplace and greater awareness of environmental issues, the Company supports employees studying to obtain various official environment-related qualifications.

■Employees with Environment-Related Qualifications

Environment-related qualification		Number of holders	Increase from FY2000
CEAR*2 Registered Environmental Lead Auditor		1	1
CEAR Registered Lead Auditor		1	1
Environmental Management System Provisional Auditor		1	0
Persons successfully completing EMS Auditor training		10	0
Pollution Control Manager	Air	51	3
	Water	66	3
	Noise	120	0
	Vibration	56	0
Licensed Environmental Measurer		2	0
Technical Manager for Waste Disposal and Treatment Facilities		26	0
Manager for Specially Controlled Industrial Waste		24	0
Energy Manager (Thermal)		19	1
Energy Manager (Electrical)		19	2
Electrical Power Chief Engineer (Grade 2)		8	0
Electrical Power Chief Engineer (Grade 3)		8	1
Boiler Engineer (Grade 1)		22	0
Boiler Engineer (Grade 2)		31	1
Boiler Turbine Chief Engineer (Grade 1)		3	0
Boiler Turbine Chief Engineer (Grade 2)		1	0

*1 *Let's Go, Eco-Bee* series: A series of reports in the in-house newsletter detailing the Company's approach to the environment. In the series, an environmentally conscious bee named "Eco-Bee" presents an outline of various environmental issues as well as Toyota Industries' environmental protection activities.

*2 CEAR: Center for Environmental Auditors Registration in Japan Environmental Association for Industry

Environmental Accounting

Environmental accounting involves ascertaining the costs and results of environmental protection activities and is an important tool in the management of environmental protection. Disclosing the quantitative results of such activities plays a crucial role in deepening shareholders' and customers' understanding of companies' environmental protection activities.

Toyota Industries is promoting the implementation of environmental accounting and began to analyze data in fiscal 1999 on an experimental basis.

In fiscal 2000, total environmental protection costs and economic effects of environmental protection measures were calculated, referring to the Ministry of the Environment Guideline "Toward the Establishment of Environmental Accounting Systems (2000 Report)."

■Fiscal 2000 Results

Toyota Industries reported its environmental protection costs and the economic effects of environmental protection measures for fiscal 1999 in the Company's *Environmental Report 2000*. Total environmental costs for fiscal 1999 were classified into two categories—environmental maintenance and environmental investment—and totaled ¥4.7 billion.

In reference to the Ministry of the Environment Guideline, environmental protection costs have been classified as either investment or expenses. Capital investment totaled ¥2.9 billion, and expenses comprising expenditures and labor costs came to ¥3.9 billion, amounting to ¥6.8 billion in total environmental protection costs. Although changes in the calculation method render a precise comparison with fiscal 1999 figures impossible, costs rose ¥2.1 billion in fiscal 2000. The economic effects of environmental protection activities have been calculated based on real, ascertainable results, amounting to ¥1.0 billion.

■Environmental Protection Costs

(¥ billion)

		Investment	Expenses*
1. Business area costs	• Equipment and maintenance costs related to air, water, soil, and other pollution • Energy-saving equipment and other global environmental protection costs • Recycling, waste processing, and other reuse/recycling costs	¥2.5	¥1.3
2. Upstream, downstream costs	• Additional costs for new capital investment for equipment manufacturing products that contribute to environmental protection	0.4	–
3. Management activity costs	• Environment-related employee education costs, expenses related to maintenance of ISO 14001 certification • Payment to certifying agencies, labor costs for internal audits • Environmental impact monitoring, measurement expenses; labor costs of environmental protection measures and management	–	0.5
4. R&D costs	• R&D expenses for environment-friendly products • R&D costs for controlling environmental impact	–	1.8
5. Social activity costs	• Nature conservation, beautification activities, support for environmental protection activities of local residents • Contributions, support for environmental protection groups • Costs related to disclosing environment-related information	–	0.3
6. Environmental damage costs	• Repair/cleanup expenses related to environmental pollution, environmental pollution insurance	–	–
Total		¥2.9	¥3.9

*Depreciation and amortization is not included in expenses.

Total amount: ¥6.8

■Economic Effects of Environmental Protection Measures

(¥ billion)

		Value of effect
Real effect	• Effect of energy saving	¥0.4
	• Effect of waste reduction (sales of recycled materials, including iron, nonferrous metals, oil, etc.)	0.6
Constructive effect, accidental effect*		–
Total		¥1.0

*Not calculated for fiscal 2000

Companywide Environmental Protection Activities

Results of the Second Environmental Action Plan

In its Second Environmental Action Plan, enacted in fiscal 1996, Toyota Industries set annual goals for each item, expanding its activities to reach its final objectives by fiscal 2000.

As shown in the chart below, the Company achieved its objectives for most items.

The Company will work toward the goals of the Third Environmental Action Plan, unveiled in August 2000.

■Status of the Second Environmental Action Plan

	Action policy	Principal activities	Results
1. Establishment of the necessary internal systems	(1) Establishment of environmental management and auditing system	• Establishment of a system that incorporates ISO 14001 certification standards • Creation of a plant management system in 1996 through the creation of a Plant Environmental Committee • Expansion of internal audits at principal plants	• ISO 14001 certification of all domestic plants except for the newly constructed Higashichita Plant • Organization of liaison conference on environmental issues with business partners • Establishment of a management system with installation of a Plant Environmental Committee and Specialized Subcommittees at the Plant Level • Implementation of internal audits
	(2) Establishment of environmental prior assessment system	• Establishment of prior assessment system that reduces the environmental impact of activities occurring in the development, manufacture, use, and disposal of a product	• Promotion of LCA evaluations for principal products by Product Technology Subcommittee
2. Development of environment-friendly business activities	(1) Development of environment-friendly products	• Reduction in level of engine emissions • Reduction of products' noise • Improved energy consumption of products • Recycling-conducive design • Material markings for plastic and rubber parts • Use of easily recycled materials • Promotion of design that facilitates simple disassembly and separability	• Emissions reduction in diesel engines for Corolla, Caldina, and forklift trucks • Commercialization of a variable displacement car air-conditioning compressor contributing to more-fuel efficient, lighterweight vehicles • Air jet looms with reduced electricity consumption • Material identification for plastic and rubber parts in automobiles and engines • Reduction in number and type of parts for compressors and forklift trucks
	(2) Reduction of environmental impact	• Expansion of environmental impact reduction activities • Improvement in painting efficiency • Stronger voluntary measures that take into consideration the environmental impact of hazardous substances • Voluntary prohibition, priority control of certain substances	• Reduction in VOC emissions due to installation of metallic bell and thinner recovery equipment • Reduction in wastewater nitrogen levels due to installation of denitrogenation processing equipment • Commencement of prior assessments of environmental impact of chemical substances • Establishment of prohibited-use substances, grasp of use of 345 substances in preparation for PRTR legislation
	(3) Promotion of energy saving	• Stabilize carbon dioxide emissions at the fiscal 1990 ratio of emissions to sales by fiscal 2000 year-end • Implement technologies that improve energy efficiency and reduce carbon dioxide emissions with such measures as the installation of cogeneration systems and changes in heat sources • Promote waste elimination on production lines	• 4% reduction in fiscal 1990 levels of carbon dioxide emissions by fiscal 2000 year-end • Installation of cogeneration systems in Kariya, Takahama, Nagakusa, and Hekinan plants • Promotion of conversion of heavy oil to CNG (compressed natural gas) • Promotion of waste elimination activities on production lines with such measures as equipment consolidation and energy saving

Action policy		Principal activities	Results
2. Development of environment-friendly business	(4) Promotion of waste output control and reuse of resources	• Reduce 1990 volume of production waste emissions by 75% by fiscal 2000 year-end • Expand recycling of cast metal • Promote waste elimination at the source	• 86% reduction in the 1990 volume of production waste emissions by fiscal 2000 year-end • Reduce the volume of cement and recycle sand, with efforts focused on foundry sand • Reduction in waste coolant due to installation of condensation equipment
	(5) Improvement of efficiency of distribution systems	• Higher efficiency through improved transportation routes • Improve load efficiency in container transport • Promote resource saving related to packaging and packaging materials	• Rationalized distribution through improved transport routes and mixed loading • Transition to returnable packaging for forklift truck parts, resulting in a 4,500 ton reduction in packaging
	(6) Environment-friendly overseas business	• Transfer of environmental management system and environment-friendly technologies to overseas bases • Support through interaction among employees	• ISO 14001 certification acquired by two U.S. plants
3. Contribution to society	(1) Employee education activities	• Awareness raising through in-house newsletters • Use of education activities for each job level as an opportunity to expand employee knowledge • Increase employee awareness through monthly environment-related activities	• 10 informative activities per year through in-house newsletters • Publication of monthly environmental news • Lectures on the environment covering such topics as LCA, environmental accounting, zero emissions, etc. (three lectures) • Incorporation of environmental education in training for newly appointed managers
	(2) Development of PR activities	• Appropriate disclosure of status of environment-related policies • Continuous environmental campaign through participation in community environment-related activities	• Publication of annual environmental report since 1999 • Promotion of information disclosure regarding the environment to the mass media
	(3) Promotion of forest preservation and "greening" activities	• Continuous support of tree planting in exchange for collected “green marks” • Creation of “green zones” at plants • Promotion of paper recycling and paperless offices	• Promotion of the greening of the area surrounding Company plants • Reuse of wastepaper through sorted trash collection • Promotion of paperless offices through the installation of Office Automation equipment • Participation in and support for the Greening Promotional Council of Aichi Prefecture
	(4) Promotion of contribution to society	• Support of academic pursuits with an environmental protection theme • Support of employee volunteer activities	• Contribution to the Japan Federation of Economic Organization's Nature Preservation Fund • Support of iris cluster environmental preservation activities • Support of the OISCA* Children’s Forest Program (CFP) in Indonesia through contribution of telephone cards

*OISCA: Organization for Industrial, Spiritual and Cultural Advancement

Promotion of Environment-Friendly Products (Product Technology Subcommittee's Report)

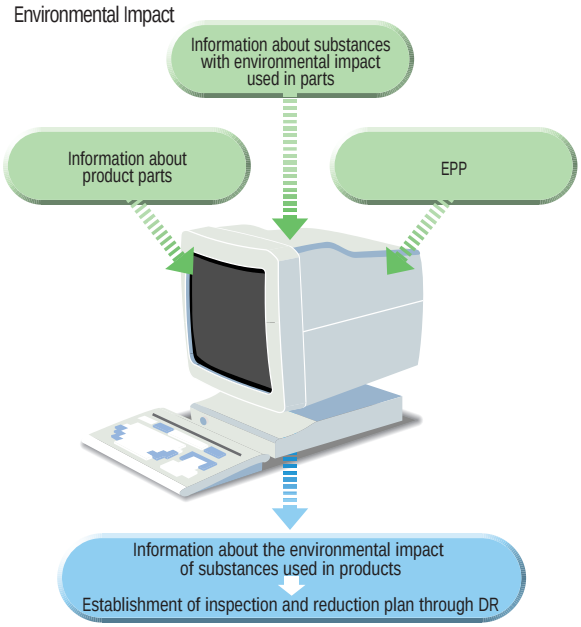
Toyota Industries strives to develop environment-friendly products. To this end, the Product Technology Subcommittee is endeavoring to reduce the use of products containing hazardous substances that have an environmental impact*1, improve product recyclability, and implement Life Cycle Assessments (LCAs)*2. All results of these activities have been posted on the environmental home page that can be viewed by all engineers over an Intranet, thereby facilitating information sharing.

■Reduction of Use of Products Containing Substances Hazardous to the Environment

To respond to the demand for products with little environmental impact and the adoption of EPP by our customers, Toyota Industries has promoted strengthened management and reduction of hazardous substances that have an impact on the environment. We feel that design assessment at the development stage is especially important and, for this reason, have created Guidelines for the Evaluation and Management of Substances with an Environmental Impact. These guidelines, which explain targeted substances and provide a framework for management and reduction through Design Review (DR), have been employed Companywide since March 2001.

Furthermore, we follow the latest developments in the regulation of products with hazardous substances that have an impact on the environment. With the aim of providing information for our development departments, we invited a specialist to lecture at a February 2001 presentation, attended by 60 employees from each development department.

■Guidelines for the Evaluation and Management of Substances with an Environmental Impact



■Improving Recyclability

To increase our product-recycling rate and improve the recyclability of used products, we have completely revised our Guidelines for Recycling Design.

Toyota Industries is improving recoverability from many angles; it is developing easily recyclable materials, designing easily removable parts, and consolidating and integrating parts, based on the recoverability design assessment system.

Furthermore, to raise the recyclability of used products, we conducted factory tours, attended by 64 employees in total, and inspections at 12 locations to observe disassembly, waste processing, and recycling of waste products. The results of such training activities are being reflected in product development.

Toyota Industries keeps up with the newest developments in laws and regulations related to recycling. In addition to this, we invited a specialist to give a lecture in December 2000, which was attended by 45 engineers from each development department.

*1 Substances with an environmental impact: Hazardous substances. Toyota Industries classifies these substances into three categories: prohibited substances, reduced-use substances, and substances to be monitored.

*2 Life Cycle Assessment (LCA): Evaluation of a product's total impact on the environment through assessment and calculation of the energy needs and waste throughout the life of the product, including material procurement, production, use, disposal, and recycling of the final product

■LCA

Toyota Industries engages in emissions evaluations*1 of its products. In the past, such evaluations focused solely on emissions during use. However, to promote the development and provision of products that are environment-friendly, it is necessary to reduce the environmental impact of a product throughout its life cycle. We are moving forward with an inventory analysis*2 of our existing products for implementing LCA.

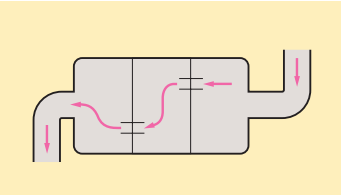
●Life Cycle Inventory Analysis of Diesel Engine (1DZ-Ⅱ) for Forklift Trucks

The results of an inventory analysis of the 1DZ-Ⅱ diesel engine for forklift trucks are shown below. Forklift trucks equipped with this kind of engine were evaluated with three kinds of mufflers—a standard (STD) muffler, a catalyst (CAT) muffler, and a muffler with a diesel particulate filter (DPF)—to ascertain the different qualities of each.

The inventory analysis was limited to ascertaining data during the production stage internally. In the future, however, Toyota Industries is considering a survey that includes suppliers when necessary. We will acquire LCA methods through the confirmed assessments of new technologies. At the same time, we will make efforts to use these methods to reduce the environmental impact throughout the entire product life cycle from manufacture to disposal.

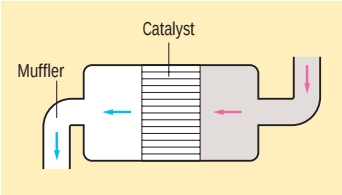
■STD Muffler

Standard muffler. Because a forklift truck is a special kind of vehicle, unlike a passenger automobile it is not usually equipped with a muffler that includes a three-way catalyst converter or an oxidation catalyst converter.



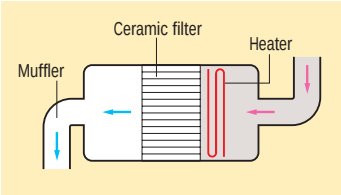
■CAT Muffler

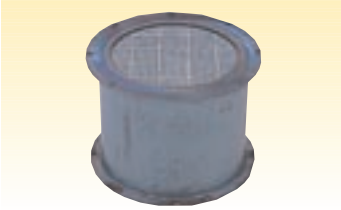
Catalyst muffler. Equipped as an option and used in oxidation catalysts in diesel engine-powered forklift trucks



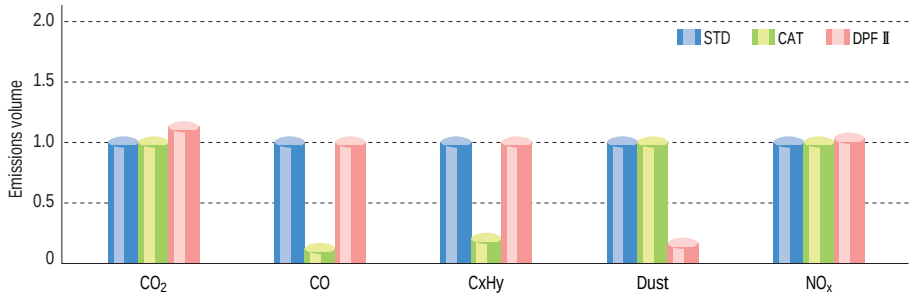
■DPF Ⅱ Muffler

Soot-reducing muffler with diesel particulate filter. Equipped as an option





■Emissions Evaluation of Diesel Engine 1DZ-Ⅱ for Forklift Trucks (Applied to 2.5-ton forklift truck)



Notes:
- Emissions volume is notated using an index, with STD muffler emissions valued at 1.
- At the use stage, driving time is 15,000 hours (typical lifetime).
- Fuel consumption is calculated from 30m cycle test data.
- Production stage analysis is limited to studies that could be conducted in-house.
- Disposal is not taken into account in this analysis.
- Material production, energy production, and incineration data taken from JEMAI-LCA
- Iron production data taken from Japan Iron and Steel Federation data
- Carbon dioxide emission for the DPF Ⅱ is high due to regeneration of DPF.

*1 Emissions evaluation: Evaluation of the environmental impact of a product's energy consumption and emissions into the air and water from production to disposal
*2 Inventory analysis: Inventory analysis is the ascertainment of the volume of gaseous emissions that affect the environment throughout a product's life cycle.

■Environmentally Preferable Purchasing (EPP)

To provide green products that have a lessened impact on people and the environment, Toyota Industries is endeavoring to take the environment into consideration at every stage of a product's life cycle, including procurement of materials and parts, development, design, production, use, and disposal.

In March 2001, we established our *EPP Guideline* to fulfill our aim of "procuring environmentally friendly materials and parts" from environmentally conscious suppliers and have distributed the guidelines to 700 materials and parts suppliers to commence "green procurement."

The *EPP Guideline* outlines standards for both an environmentally conscious company and environment-friendly materials and parts.

EPP Guideline

●Environmentally Conscious Company

We are requesting that our materials and parts suppliers obtain ISO 14001 certification or establish an equivalent environmental management system by fiscal 2003.

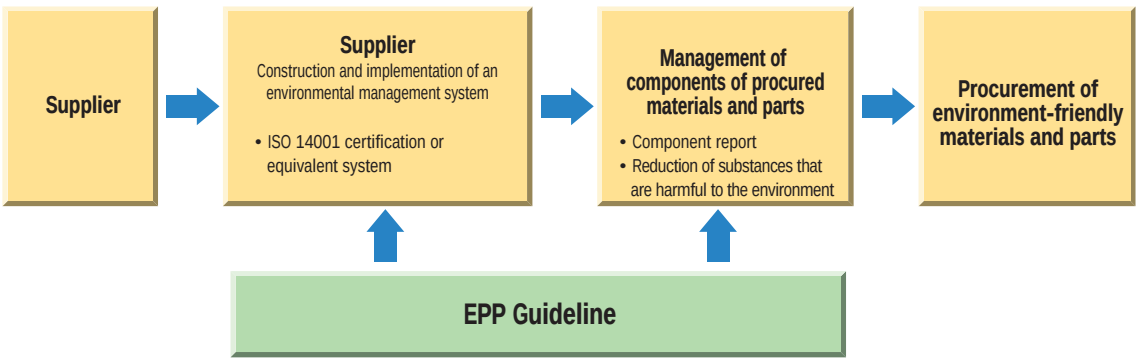
As of the end of fiscal 2000, 100 suppliers have acquired ISO 14001 certification.

●Environment-Friendly Materials and Parts

With the aim of managing hazardous substances that have been designated as prohibited or reduced-use, we require our suppliers to provide data on the components of their products.

Based on such data, we have begun to discuss the creation of a framework for managing hazardous chemical substances in preparation for PRTR legislation.

■Outline of EPP



Carbon Dioxide Reduction and Energy-Saving Measures (Energy Subcommittee's Report)

■Reducing Carbon Dioxide Emissions and Promoting Energy Saving

To reach its objective of stabilizing carbon dioxide emissions at 1990 levels (total emissions of 101,471 tons and an emissions-to-sales ratio of 18.24 tons/¥100 million) by fiscal 2000 year-end, the Company implemented such measures as reducing energy loss on production lines and installing a cogeneration system*.

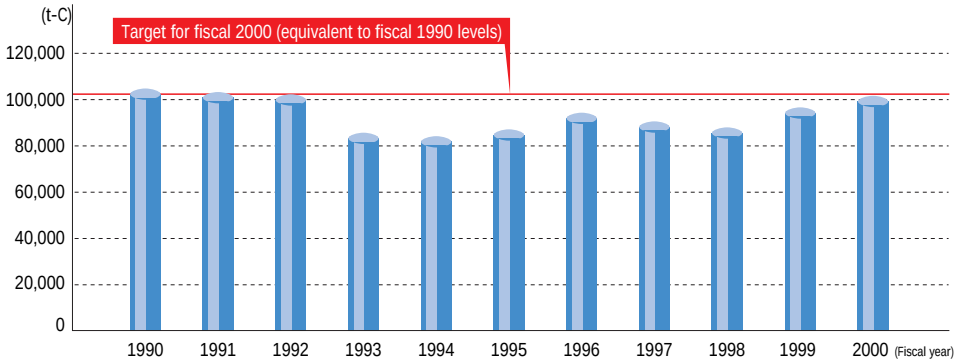
In addition, striving to save energy and reduce the volume of carbon dioxide emissions, in fiscal 2000 Toyota Industries enacted the conversion of energy from liquefied petroleum gas (LPG) to compressed natural gas (CNG) as well as the implementation of an energy measurement system. However, due to a rise in production volume, carbon dioxide emissions totaled 99,173 tons, a 5,658-ton increase from fiscal 1999 levels. Nonetheless, the ratio of carbon dioxide emissions volume to net sales was 17.23 tons per ¥100 million, a slight decrease of 0.7 ton per ¥100 million in net sales from fiscal 1999.

As carbon dioxide emissions levels in fiscal 2000 were lower than fiscal 1990 levels, Toyota Industries achieved its Second Environmental Action Plan objective for carbon dioxide emissions.

Cogeneration system that uses CNG (Takahama Plant)

By fiscal 2005, we have set the goals of reducing the volume of carbon dioxide emissions 5% from fiscal 1990 levels, and 10% from fiscal 1990 levels by fiscal 2010.

■Volume of Carbon Dioxide Emissions



*Cogeneration system: A system that uses fuel to produce electricity and heat energy

■Soil and Underground Water

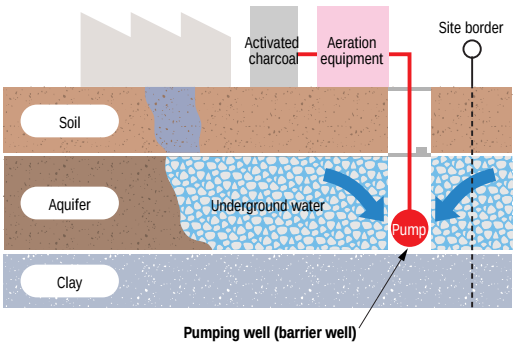
●Soil and Underground Water Analysis

In the past, Toyota Industries used the organic chlorine compound trichloroethylene as a cleanser and degreasing agent, but abolished its use in June 1984, before it was designated as a harmful substance under the Water Pollution Control Law in 1989. In 1994, a provisional policy regarding soil and underground water was enacted by the Ministry of the Environment, whereby plants with a record of using this substance were required to proactively investigate the state of pollution by carrying out soil analysis and installing observation wells. The results of such actions showed that, although a high concentration of the substance was not detected in the soil, it was detected in the underground water in some areas of the plants' grounds. Concentrations of trichloroethylene—including decomposition product cis-1, 2-dichloroethylene—exceeding environmental standards were detected at the Kariya Plant in March 1996 and at the Kyowa Plant in June 1998. Concentrations of trichloroethylene substitutes 1,1,1-trichloroethane, which was used temporarily and abolished in May 1995, and dichloromethane, which was abolished in October 1996, were below environmental standards.

●Underground Water Purification Measures

After the pollution was revealed, we placed high priority on conducting detailed analyses and preventing the polluting substances from leaking outside the plant sites. To this end, we installed wells along the borders of the plant sites in the direction of the underground water flow. We then pumped the water from the wells and purified it using the pumping-aeration method* and absorbed the polluting substances with activated charcoal, thereby recovering them.

■Purification Method



●Disclosure of Information

In April 1998 and March 1999, the Kariya and Kyowa plants, respectively, issued voluntary reports to the local governments and since then have submitted periodic reports on the status of monitoring of the observation wells, carrying out initiatives while receiving guidance.

Furthermore, in April 2001 at a roundtable discussion with residents in the local communities, Toyota Industries reported and explained its actions related to soil and underground water pollution and plans to continue such reports on a periodic basis.

■Trichloroethylene Measurements in April 2001

(mg/l)

Plant	Underground water measurement
Kariya Plant	0~1.93 (64 times)
Kyowa Plant	0~5.4 (180 times)

Notes: 1. Studies at other plants did not reveal any pollution.
2. Amounts in parentheses denote concentrations compared with environmental standards.

*Pumping-aeration method: Underground water is drawn and sprayed while air is blown from below. Thus, the organic solvent is vaporized, separated, and absorbed into the activated charcoal, thereby removing the pollutants.

■Management of Chemical Substances

●Chemical Substance Management Based on a PRTR*1 System

At Toyota Industries, when new chemical substances contained in raw and subsidiary materials are used for the first time, a prior assessment of the effect on the natural environment and work environment is conducted based on the MSDS*2 and a list of the components in the material provided by suppliers.

In response to the PRTR legislation implemented in April 2001, we have participated in the Ministry of Environment's PRTR project since 1997, constructing a framework for grasping our released and transferred volumes of chemical substances. Of the 354 substances targeted by PRTR legislation, Toyota Industries uses 48 substances.

In fiscal 2000, the total combined emissions of designated chemical substances were 22% lower than fiscal 1999 levels, due to cleansing thinner recovery and other activities.

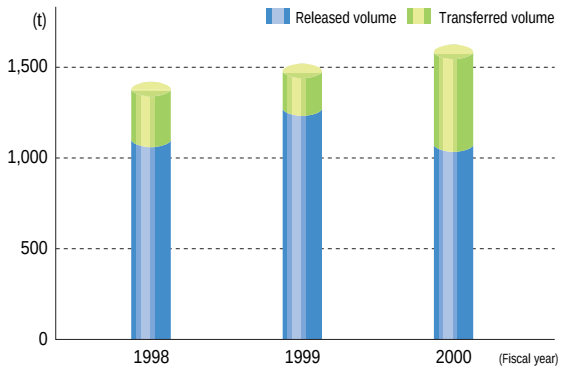
We are aiming to achieve our objective of a 50% reduction in fiscal 1998 total emissions of PRTR-listed substances by fiscal 2005 year-end by advancing further reduction activities.

■Total Emissions of Chemical and Other Substances (Non-consolidated basis)

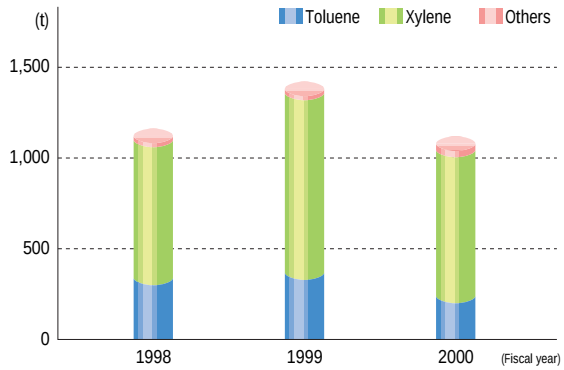
(tons)

Fiscal year	Total volume handled	Released volume				Transferred volume				Total	Consumption volume	Removed volume
		Air	Water	Soil	Subtotal	Waste	Company-controlled landfills	Recycling	Subtotal			
1998	2,727	1,107	3	0	1,110	82	104	92	278	1,388	1,336	3
1999	2,811	1,368	4	0	1,372	41	34	36	111	1,483	1,311	17
2000	2,999	1,063	4	0	1,067	98	121	297	516	1,583	1,388	28

■Released and Transferred Volumes of Chemical Substances



■Emission Volumes of Chemical Substances into the Air



*1 PRTR: Acronym for Pollutant Release and Transfer Register. Under the system, companies ascertain the extent of the chemical substances that are released and transferred into the environment and are deemed to be harmful to people or the environment and report the total volume to the government. Based on government notifications and estimates, they then publicize the estimated released and transferred volumes. This system was enacted in July 1999 and implemented in April 2001.

*2 MSDS: Acronym for Material Safety Data Sheets. MSDS provide information regarding listed chemical substances and products that contain those substances as well as their proper handling and use. MSDS are provided by suppliers to customers and users.

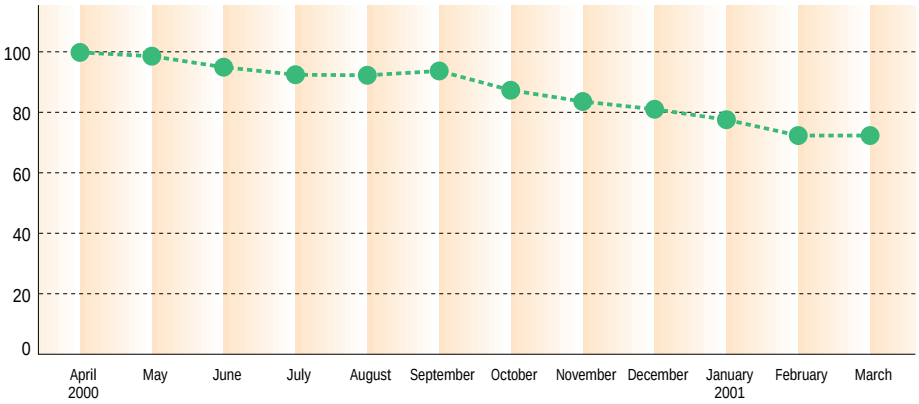
●Reduction of VOC Emissions

As Toyota Industries uses such VOCs* as paint thinner in the outer body shells of automobiles, it has undertaken voluntary activities to reduce VOC emission volumes under the guidance of the Japan Automobile Manufacturers Association, Inc., and the Japan Autobody Industries Association, Inc., as well as the Toyota Group.

In fiscal 2000, Toyota Industries expanded such activities to reduce VOC emissions as the installation of powder-coating equipment at the Takahama Plant and the installation of cleansing thinner recovery equipment at the Nagakusa Plant. As a result, in March 2001, a Company objective of reducing emissions by 25% was achieved at the Nagakusa Plant.

We will strive to make further reductions to reach our next target of reducing VOC emission volumes by 50% compared with fiscal 1998 levels by fiscal 2005 year-end.

■Fiscal 2000 Month-by-Month VOC Emission Volumes of Nagakusa Plant (April 2000 = 100)



■Prevention of Pollution and Accidents

Using methods laid out in each plant's environmental manual and regulations, equipment that is assumed to affect the environment is designated to be environmentally important equipment for which management must take measures to prevent environmental pollution. Emergency drills are carried out periodically so that the usage of necessary equipment and the roles and responsibilities of each person can be reconfirmed.

In fiscal 2000, water and gas emissions concentrations were at acceptable levels.

(For more details, please see pages 38-39.)

*VOC: Volatile Organic Compound. Includes such items as paint solvent and thinner as well as adhesives and sealer solvent. Toyota Industries is working to reduce the use of such items.

Activities to Reduce Waste, Conserve Resources, and Improve the Efficiency of Distribution Systems (Waste Minimization Subcommittee's Report)

■Activities to Reduce Waste

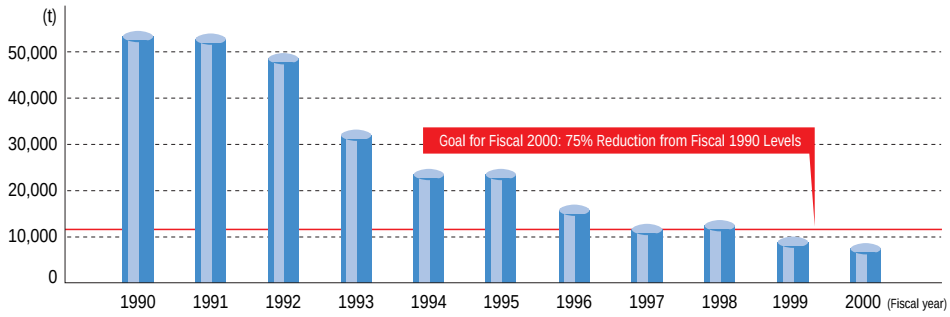
Toyota Industries' stated goal was to reduce industrial waste output levels 75% from the fiscal 1990 levels (53,360 tons) by the end of fiscal 2000.

In fiscal 2000, the Company conducted recovery of zinc from dust collected from casting and recovery of nickel from aluminum shot dust. In addition, Toyota Industries is also recycling waste by converting waste plastics into solid fuel and converting waste sludge from wastewater processing plants into raw materials for cement. The volume of effluent processed at wastewater processing plants has also been reduced due to the use of effluent concentration devices. As a result, the waste output for fiscal 2000 was 7,498 tons, an 86% reduction compared with fiscal 1990, exceeding the Company's goal.

In addition, in the area of proper disposal of waste, Toyota Industries conducts on-site inspections of the disposal methods used by the companies it entrusts with waste processing.

In order to achieve Toyota Industries' stated goal of completely eliminating the direct landfill disposal of waste at all plants by fiscal 2003, the Company is carrying out measures to reduce the amount of waste produced.

■Companywide Waste Emissions



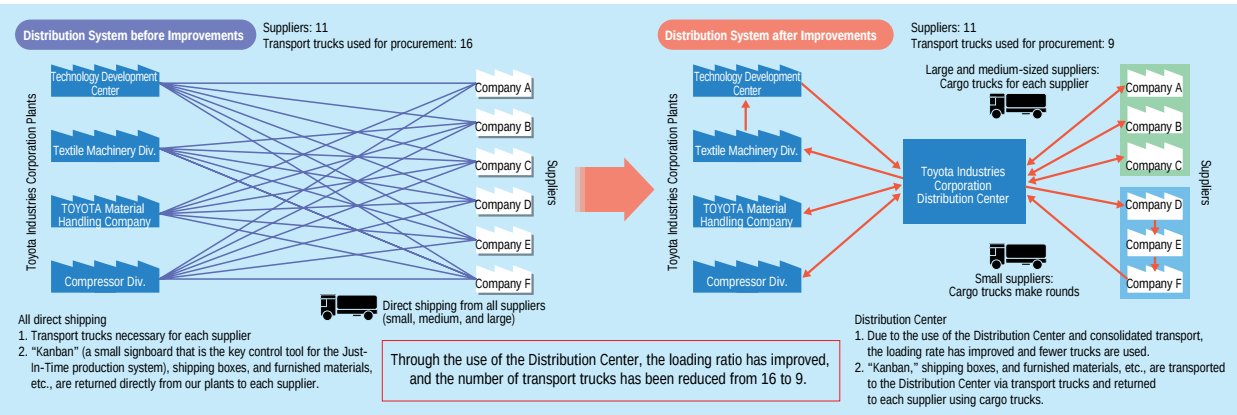
The goal under the Second Environmental Action Plan was to reduce emissions 75% from the fiscal 1990 levels (53,360 tons) by fiscal 2000 year-end.

■Activities to Conserve Resources and Improve the Efficiency of the Distribution System

To reduce the amount of energy used to transport parts procured by the Company by truck, the Distribution Center was established in Ichinomiya, Aichi Prefecture. The distribution system has been changed to one in which parts procured from different suppliers are collected at the Distribution Center and then the parts are trucked to the appropriate plants. As a result, transport distance and CO_2 emissions have both decreased compared with fiscal 1998.

In the future, as it strives to make optimum use of resources, Toyota Industries is studying and taking action on the issues of conservation of water resources and further streamlining of the distribution system.

■Improvement of Distribution System



Communicating Environmental Issues and Contributing to the Community (Communications and Public Relations Subcommittee's Report)

■Communicating Environmental Issues

●Providing Information on the Purification of Contaminated Soil and Underground Water

Briefing sessions were held in April 2001 to discuss the trichloroethylene contamination of soil and underground water on the grounds of the Kariya and Kyowa plants with representatives of the residents from these two areas, and Toyota Industries is continuing to keep them informed. (In Kariya, the meetings were held in conjunction with seven members of the Toyota Group, and in Kyowa they were held in conjunction with two neighboring companies.)

At the briefing sessions, the community representatives were given a thorough explanation of the sequence of events leading up to the confirmation of the soil and water contamination, purification measures and methods, and Toyota Industries' activities in the area of environmental protection. In addition, the production conditions at each plant and measures to improve traffic safety were discussed. The community representatives expressed their approval of the Company's disclosure policies as well as the hope that these sessions would be conducted regularly.

In addition to the explanation given at the briefing sessions, a press conference was held and the information presented was widely disseminated.

The subject was also featured in the in-house newsletter (August 2001 issue) to help raise our employees' awareness of environmental issues.

In the past, such informal meetings with area residents had been held at the discretion of each individual plant. From now on, Toyota Industries plans to hold these meetings once or twice a year at the initiative of the Head Office so that residents fully understand our entire business activities.

(Please see page 18 for information on soil and underground water purification measures.)

Briefing session for residents (Takatoshi Hioki of the Safety, Health & Environment Department gives an explanatory lecture on June 8, 2001.)

■Contributing to the Community

Toyota Industries employees are actively involved in contributing to local communities through such volunteer activities as environmental protection and cleanup activities. Many of our environmentally aware employees actively contribute to charities and participate in various volunteer activities.

In addition, the Company's volunteer organization "Heartful Club" supports these activities. The club currently has approximately 250 registered members who assist with events and participate in environmental protection activities.

●Environmental Protection Activities

(Protecting Irises)

Every year, along with a group of local residents called "The Committee to Protect Ozutsumi Nishiike Irises," members of the Company's Heartful Club volunteer to cut grass and clean up the land occupied by the Ozutsumi Nishiike Iris Colony in Kariya, Igaya-machi, which has been designated by the Japanese government as a natural treasure.

●Volunteer Cleanup Activities

In-house groups, such as manager-level employee associations and company dormitory associations, conduct volunteer cleanup activities throughout the year. In fiscal 2000, in recognition of these continuous "zero garbage" efforts, Toyota Industries received a certificate of recognition as a company that has made a positive contribution from the Committee to Promote the Kariya Cleanup Movement.

Zero garbage activities

●Supporting Charities

(Collection of Used and Unused Telephone Cards)

In Japan, the number of phones that accept telephone cards is decreasing. Rather than have such cards go to waste, Toyota Industries has asked its employees to donate them and is currently considering how to use the proceeds from their sale to establish a fund to support environmental protection. Used telephone cards are also collected and sent to OISCA (Organization for Industrial, Spiritual and Cultural Advancement) to support its Children's Forest Program (CFP) in Indonesia, which helps local children plant trees to combat deforestation.

(Sending Clothing to Earthquake Victims in India)

To support the victims of the earthquake that occurred in western India on January 26, 2001, the Company sent 73 cardboard boxes of much-needed clothing to India through the Japan Relief Clothing Center.

Members of the Heartful Club pack clothing

Improving the Workplace Environment—Employee Safety and Health (Specialized Subcommittee at the Plant Level Report)

■Measures to Prevent Oil Mist

During the machining process in a plant, oil mist is produced from the coolant. Toyota Industries has kept these areas sealed and recovered the oil mist to reduce worker exposure and keep it from escaping into the atmosphere. In addition, operating noise has been reduced and the overall workplace environment has been improved.

■Measures to Prevent Welding Fumes from Escaping

Toyota Industries has continuously worked to reduce migration of welding fumes in plants.

In fiscal 2000, a push-pull type ventilation device was introduced to reduce the amount of welding fumes during the welding process that escape into the atmosphere. Moreover, fume collectors have been installed in welding facilities.

Welding with a fume collector (Nagakusa Plant)

Push-pull type ventilation device (Takahama Plant)

Environmental Protection Activities of the Textile Machinery Division

Main Business Activities: Manufacturing & Sales of Textile Machinery

Division Manager & Managing Director
Textile Machinery Division
Tatsuo Matsuura

Environmental Approach

Just as for other types of machinery, the need is growing year by year for environment-friendly textile machinery to produce yarn and cloth while conserving energy and emitting little vibration or noise.

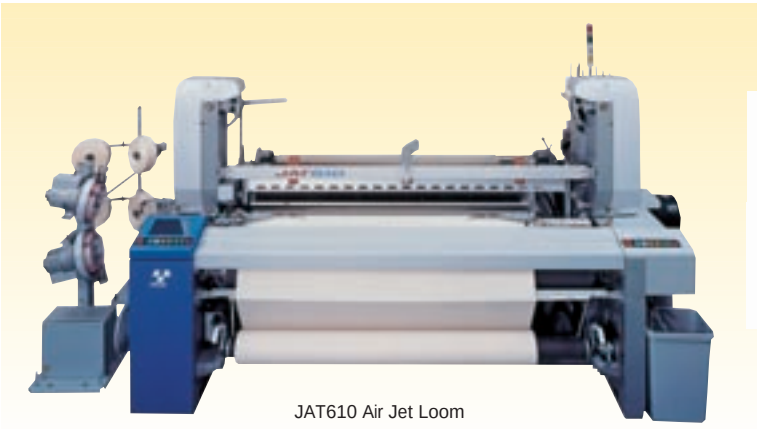
Our Textile Machinery Division has structured environment-friendly production processes, beginning with the selection of materials used in its products, and is exerting its fullest efforts to offer products that meet the environmental requirements of its customers.

Activities

Development and Design

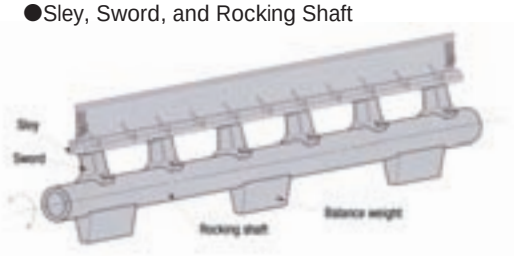
■Vibration Reduced with the JAT610 Air Jet Loom

An air jet loom makes cloth using compressed air to insert the weft into the warp. The weft is inserted into the warp by the rocking motion of the sley, sword, reed, and rocking shaft. By reducing the vibration produced by the rocking motion of this non-balanced load, Toyota Industries has successfully improved the workplace environment of its customers' weaving mills. The JAT610 air jet loom was designed to optimize the cross-sectional shape of the sley, the weight of which was reduced by 20%. In addition, the material of the sword was changed and by perfecting its placement of ribs using computer analysis, it was possible to lighten and harden the sword. By attaching the balance weight to the rocking shaft, the load was reduced. As a result, vibration was greatly decreased by reducing the dynamic load on the floor by 20%.



JAT610 Air Jet Loom

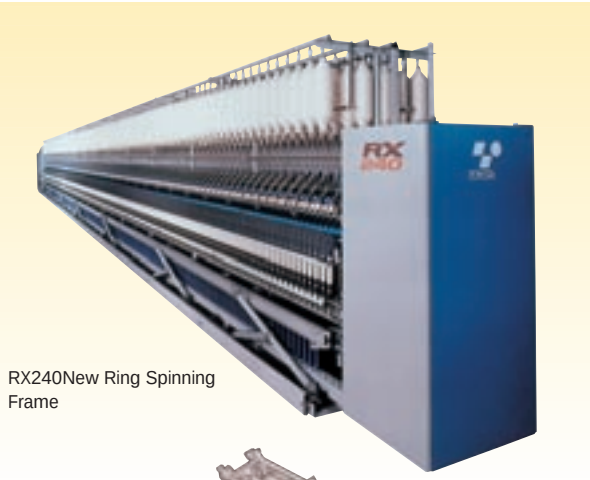
●Sley, Sword, and Rocking Shaft



■Lightening of the RX240New Ring Spinning Frame

A ring spinning machine produces thread by aligning bundles of fiber of a certain thickness and then twisting them into thread. Formerly, the weight of the spring pieces of the RX240 ring spinning frame were 49kg each, and each draft rod was 28kg. Forty of these pieces, respectively, are used for each machine, for a total weight of 3,089kg. In developing the RX240New, by reviewing the shape of the parts and changing the materials used in construction of this frame, the weight of the each spring piece was reduced to 6.5kg, and each draft rod was reduced to 18kg for a total reduction of approximately 30%, or 989kg.

As a result, resources and energy are conserved during manufacturing, CO_2 emissions are reduced during shipping, and the unit cost has been reduced.



RX240New Ring Spinning Frame

Spring piece of the RX240New

■Lightening of Frame

Part	Material	RX240	RX240New	Weight reduction	Measures taken
Spring Piece	FC200	1,960kg	1,700kg	260kg	Review of part shapes (thinning)
Draft Rod	S48C	1,129kg	400kg	729kg	Change from solid to pipe construction
Total		3,089kg	2,100kg	989kg	

Distribution and Recycling

■Conservation of Resources through Improvements in Transport and Package Shape

To improve the transport efficiency of ring spinning frames, they are shipped overseas as partially assembled units and components packed in wooden crates and then assembled in the customer's spinning mill. As part of the division's efforts to conserve resources, an improvement of the package shape was conducted.

Transport routes, destination ports and the handling of wooden crates at the customer's factory were all carefully researched, and adjustments in crate size and improvements in the capacity and materials were reconsidered. For example, the packaging for one of the parts of the ring spinning frame, the pneuma-duct*, was changed from a wooden crate to a pallet-type, and the packaging of the bottom roller was changed from a wooden crate to reinforced cardboard. As a result of these measures, the number of crates used was reduced by 20% and the weight of wood used was reduced by 70% to 80%, thereby conserving resources. In addition, due to the fact that reuse and recycling of crates have become easier, fewer waste products are produced. At the same time, transport efficiency was improved, and these measures helped the division conserve energy.

Pneuma-duct pallet packaging

Bottom roller reinforced cardboard packaging

*Pneuma-duct: The pipe portion of the air duct used in a ring spinning frame

Environmental Protection Activities of the Compressor Division

Main Business Activities: Manufacturing of Car Air-Conditioning Compressors

Division Manager & Director
Compressor Division
Masafumi Kato

Environmental Approach

The rising level of attention being directed to environmental protection issues has led to increasingly strict regulations related to automobile energy consumption and the use of chloroflurocarbon (CFC) refrigerants. Thus, responding to environmental issues has become one of the most important tasks facing manufacturers of car air-conditioning compressors.

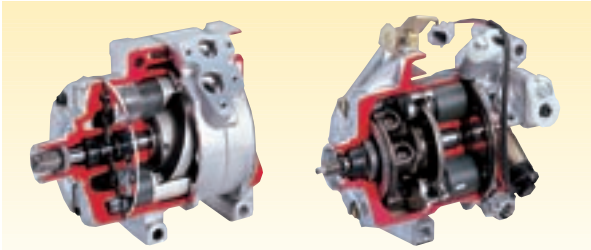
The Compressor Division is engaged in R&D programs aimed at reducing fuel consumption, lowering product weights, and developing new refrigerants for compressors. At all stages, from development and design through manufacturing, we are maintaining efforts to reduce environmental impact.

Activities

Development and Design

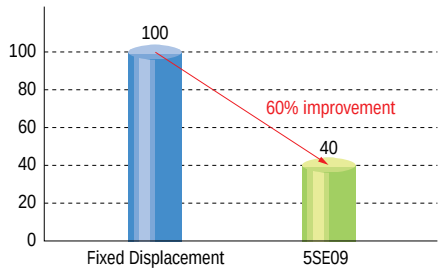
■Development of the 5SE09 External Variable Displacement Car Air-Conditioning Compressor

Conventionally, fixed displacement compressors were installed in compact cars. Toyota Industries developed a super-lightweight fixed displacement compressor series, the 10S series, taking into consideration conservation of resources and fuel. This contributed to the improvement of fuel economy. To further improve fuel efficiency and driving comfort, the 7S and 6S series of variable displacement compressors were developed, being followed by the development of the compact and lightweight 5SE09 external variable displacement compressor. This product, compared with the 10S series of fixed displacement compressors, is 25% lighter, boasts 60% lower fuel consumption, and has 30% faster acceleration, which helps to conserve energy and resources and reduce CO_2 emissions.



Fixed Displacement Compressor　　5SE09 External Variable Displacement Compressor

■Comparison of Fuel Economy between Fixed Displacement Compressors and the 5SE09 External Variable Displacement Compressor



Note: Fixed displacement compressor = 100

Production

■Energy Conservation through the Introduction of the Barrier-Zone Air-Conditioning System

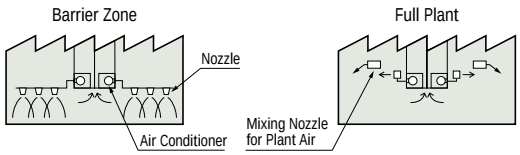
Toyota Industries introduced a barrier zone air-conditioning system to its production line. A barrier zone system directs cold air to the spot where it is required, blowing it through a nozzle. Compared with full-plant air-conditioning systems, this system is more energy efficient. In addition to reducing CO_2 emissions by 125t/year, the barrier-zone system has improved the work environment (the effective temperature was reduced by 7°C during the summer).

Air-conditioning system nozzles

■Comparison of Energy Consumption and CO_2 Emissions between Barrier-Zone and Full-Plant Air-Conditioning Systems

Type		Barrier-Zone	Full-Plant
Energy consumption	Electricity usage	110kWh	273kWh
	CNG usage	62.5m^{3}N/h	150m^{3}N/h
CO_2 annual emission volume (at 1,500h/year full capacity operation)		87.8t/year	213.2t/year

■Barrier Zone and Full Plant Air-Conditioning Systems

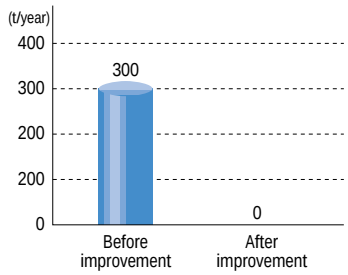


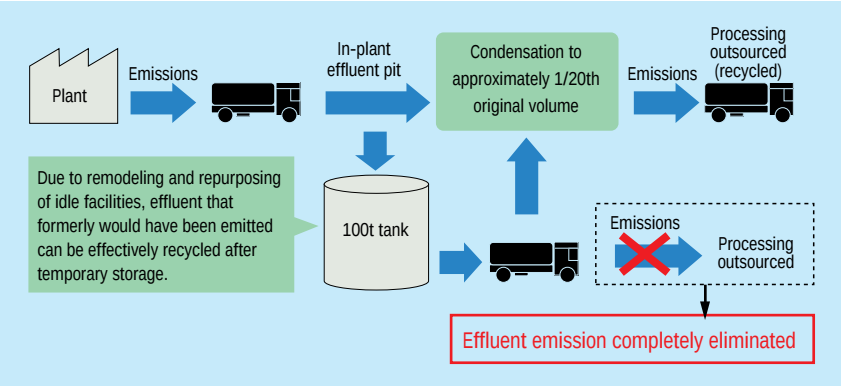
■Reduction of Waste through Effective Use of Idle Equipment

The water-soluble waste liquid produced during the machine processing and assembly processes is recycled for use as a fuel additive following in-plant condensation processing that reduces the amount to 1/20th of the original volume. However, when more water-soluble effluent than can be stored in the plant's effluent pit is produced, the excess effluent has conventionally been disposed of as waste.

In fiscal 2000, an unused heavy oil storage tank (100 tons) was remodeled and repurposed as an effluent storage tank. As a result, effluent that formerly was emitted as waste can now be temporarily stored and, following in-plant condensation processing, can be recycled for use as a fuel additive. This has made possible a 300t/year reduction in effluent.

■Reduction of Waste due to Effective Use of Idle Equipment





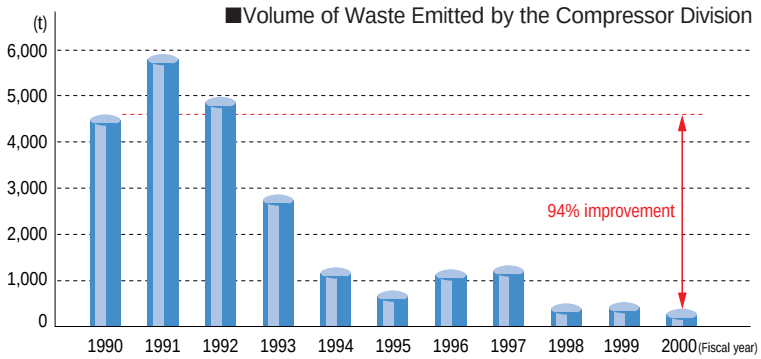
■Promoting Activities to Reduce Waste with the Zero Emissions Corner

As part of Toyota Industries' efforts to reduce waste, a Zero Emissions Corner was set up in the car air-conditioning compressor plant in order to raise the consciousness of employees and encourage them to reduce unnecessary purchases, separate their garbage, and recycle more. The Zero Emissions Corner includes easy-to-understand information about what and how types of waste are recycled and what types of waste are emitted without recycling. This raises the awareness of employees regarding separation of garbage and activities to reduce waste.

Due to such measures as the effective use of effluent and the establishment of the Zero Emissions Corner, the amount of waste emitted in fiscal 2000 was 94% less than in fiscal 1990.

Zero Emissions Corner

■Volume of Waste Emitted by the Compressor Division



Environmental Protection Activities of TOYOTA Material Handling Company

Main Business Activities: Manufacturing & Sale of Such Industrial Equipment as Forklift Trucks and Material Handling Systems, Including Automated Storage and Retrieval Systems

Company President
TOYOTA Material Handling Company
Koichiro Noguchi
(Executive Vice President of Toyota Industries Corporation)

Environmental Approach

As companies proceed with the manufacturing of industrial equipment that is more compatible with the global environment, the environmental friendliness of forklift trucks and material handling systems is becoming a key product specification. Responding to this trend, TOYOTA Material Handling Company has accumulated various technologies for reducing exhaust emissions from internal-combustion forklift trucks and for improving the performance of electric forklift trucks. While continuing to emphasize the development of the next generation of environment-friendly technologies, we are working to supply products that assist our customers in building the distribution systems of the future.

Activities

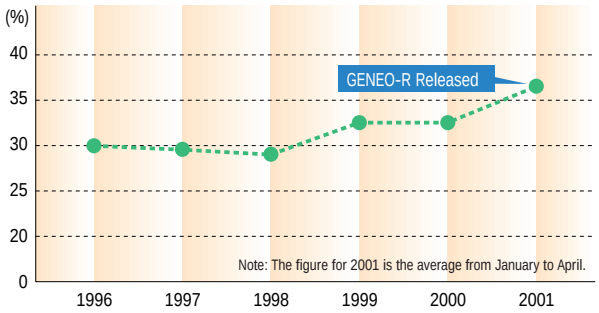
Development and Design

■Development of the GENEO-R* Electric Reach Truck that Reduces Environmental Impact

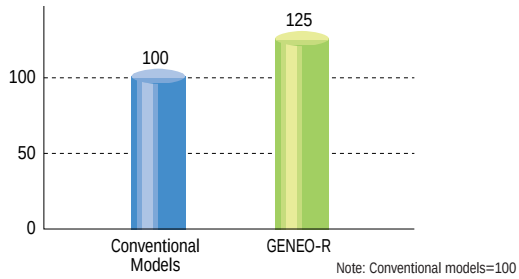
The GENEO-R electric reach truck, which was released in January 2001, was well received as a product that met the needs of customers. Since its release, the GENEO-R has been gaining market share in Japan.

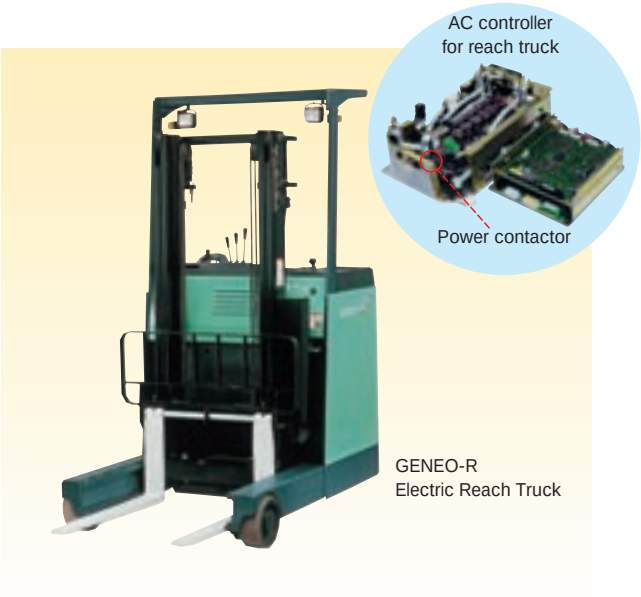
As with the GENEO-B electric counterbalanced forklift truck, the GENEO-R comes standard with an AC motor drive system. AC motors feature a simple construction with no expendable parts, such as motor brushes. In addition, due to this motor's compact structure, output has been increased 15% compared to conventional DC motors. Furthermore, using the drive system's excellent motor control, we have developed a new control system that compensates for power loss resulting from a decline in battery voltage, enabling a 25% increase in efficient operating time.

■Domestic Market Share of Electric Reach Trucks



■Improvement in Efficient Operating Times





Toyota Industries developed an energy-saving control system using electrokinetic energy to recharge the battery when the brakes are applied and while the accelerator is released, when the vehicle is in motion. This regenerative braking system extends operating time, reduces break-lining wear, and reduces maintenance costs.

The controller also features an environment-friendly design. In conventional models, four contactors are used for driving and lifting. The new models use only one, thus reducing the number of expendable parts. In addition, the coating on the condenser terminal has been changed from solder plating to gold plating, and the connection between the condenser and the copper wiring board now employs micro resistance welding, thus reducing the amount of lead solder used.

*The GENEO-R is sold only in Japan.

Production

■Reduction in VOC Emission Volumes through the Introduction of Powder-Coating Facilities

To reduce VOC emissions, the recycling of cleansing thinner and various other measures to increase efficiency in painting, such as the reduction of the use of cleansing thinner when changing colors and adjusting the pressure of paint guns, have been implemented.

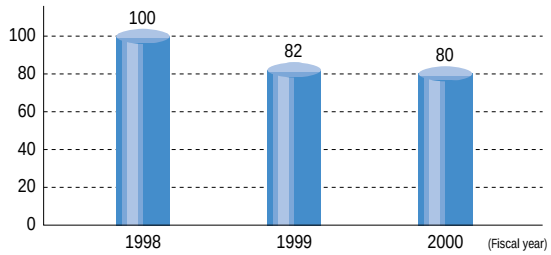
The backrest (see photo) part of the forklift truck is very difficult to paint efficiently. In fiscal 2000, powder-coating facilities were introduced to the painting process. Powder coating is an adhesive painting method in which powdered paint is evenly spread on the surface to be painted and then melted in a drying furnace. No VOCs are emitted.

In addition, by developing a low-heat-type paint powder and switching the drying furnace fuel from kerosene to natural gas, VOC emissions were reduced by 16 tons per year and CO_2 emissions were reduced by 8 tons per year. Through the collection and reuse of paint, waste emissions were reduced by 11 tons per year.

As a result, VOC emissions were reduced by 20% compared with fiscal 1998 on a per vehicle basis.

Painting facilities

■VOC Emissions per Forklift Truck (Fiscal 1998 = 100)



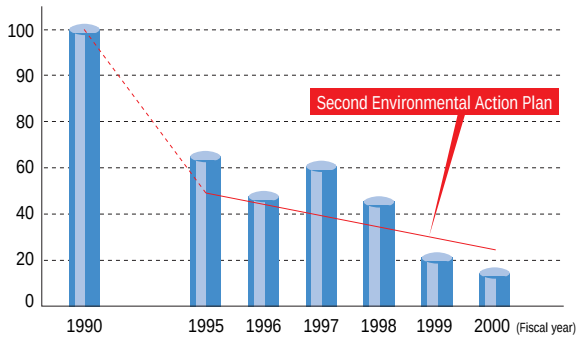
■Waste Reduction through Discontinuing Use of Nitric Acid When Cleaning Heat Exchangers and Recycling Shot Waste

To maintain chemical membrane processing liquid at a constant temperature, heat exchangers are used in the electrocoating paint facility. Previously, due to tight vertical sealing, it was impossible to clean these heat exchangers with a brush, and so they were normally cleaned once a year with nitric acid cleaner. In fiscal 2000, Toyota Industries switched to a plate-type heat exchanger that can be disassembled and cleaned using a water jet. As a result, the amount of nitric acid used was reduced by 112kg per year and the amount of effluent emitted was reduced by 4.5 tons per year.

To remove the oxidized membrane from the frame of the forklift truck before painting, the surface of the frame is bombarded with small metal balls called shotblast. As a result of recycling the remains of the membrane, the waste liquid, and oil, the amount of industrial waste emitted in fiscal 2000 (excluding repurposed waste) was 204 tons, a 30% reduction compared with fiscal 1999. This amounts to an 85% reduction in the amount of waste compared with fiscal 1990 (1,393 tons), thus successfully achieving the goal set out in the Second Environmental Action Plan.

Plate-type heat exchanger

■Takahama Plant Industrial Waste Emissions (Fiscal 1990 = 100)



Note: Excluding reused waste

Environmental Protection Activities of the Vehicle Division

Main Business Activities: Automobile Assembly

Division Manager & Managing Director
Vehicle Division
Akira Imura

Environmental Approach

The Vehicle Division is striving to produce compact cars in an environment-friendly manner through such measures as those aimed at increasing recycling activities related to manufacturing processes and reducing volumes of substances that place a burden on the environment.

In view of the rising demand for environment-friendly automobiles, the division is dedicating itself to the goal of developing and manufacturing cars in a way that is in harmony with the global environment.

Activities

Development and Design

■Development of the TOYOTA bB Open Deck Compact Car: Environment-Friendly and Energy Saving

The TOYOTA bB Open Deck was developed by the Vehicle Division on behalf of Toyota Motor Corporation and launched in June 2001. In developing this new compact car with a pickup bed, we used designs and materials for metal parts and plastic parts that are amenable to recycling, energy conservation, and weight reduction at every stage from production to scrapping.

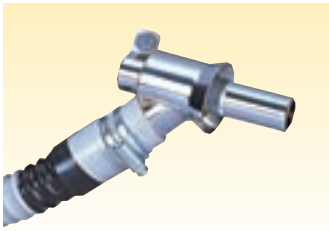
TOYOTA bB Open Deck

One example is our use of Toyota Super Olefin Polymer (TSOP), a highly recyclable plastic, in the outer and inner panels of the tailgate and deck. By replacing metal with plastic and making corresponding changes for integrated parts, we achieved a reduction in mass of around 15% compared with traditional designs. In this way, we have achieved weight reduction and conserved energy.

■New Device Reduces Fumes* from Welding

Fumes generated during welding operations are detrimental to the health of the welder and escape into the atmosphere. In June 2001, Toyota Industries responded to this problem by unveiling GENEFRESH, which lowers the density of fumes in the welding environment and prevents their escape into the atmosphere.

The nozzle-mounted version of GENEFRESH eliminates fumes through a filter by sucking them up during welding and trapping them with a filter. Approximately 70% to 90% of the fumes are retained, and over 99% of retained fumes are neutralized (Toyota Industries' estimate).



Nozzle-mounted type

Welding-face type

In addition to the nozzle type, we have also developed a device with the fume neutralizer on the welding surface. We are striving to further improve performance.

■Comparison of Old and New Welding Types

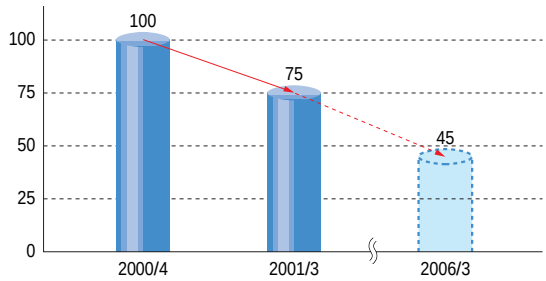
*Fumes: Airborne particles released during welding

Production

■Working to Reduce VOC Emissions

To lower VOC emissions during the painting process, the Vehicle Division is making efforts to reduce the volume of cleansing thinner used in painting booths during maintenance and when changing paint colors in painting machines. The Vehicle Division also recycles thinner after cleansing. Thanks to such efforts, by fiscal 2000 year-end the division achieved its target of reducing the volume of VOC emissions by 25% from the previous fiscal year. The division is currently working toward reaching its next target (Third Environmental Action Plan) of achieving a 55% reduction in the volume of VOC emissions by the end of fiscal 2005.

■Results in Reducing the Volume of VOC Emissions (April 2000 = 100)



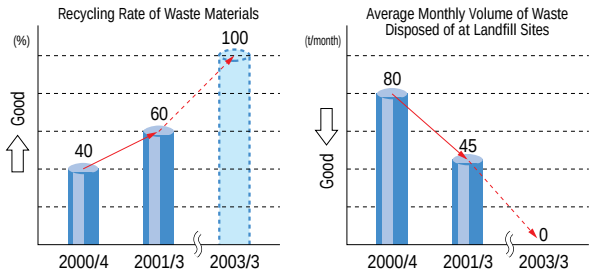
■Zero Emission Activities

A large proportion of waste materials previously generated as a result of the Company's business activities was disposed of mainly through incineration or at landfill sites. However, in keeping with the specific measures of the Third Environmental Action Plan, the Vehicle Division commenced its Zero Emissions activities (referred to in the division as "Zero Emi activities"). The division has defined zero emissions as not just completely eliminating waste directly disposed of at landfill sites but also totally eliminating waste disposed of indirectly at landfill sites.

As it strives to attain these objectives, in November 2000 the Vehicle Division commenced a project to completely eliminate waste by the end of March 2004 (total elimination of waste in fiscal 2003), which is also a target of the division's Zero Emissions medium-term plan.

In fiscal 2000, the division converted various types of plastics into solid fuels and thus reduced the volume of waste disposed of at landfill sites.

■Status of Waste Materials as of March 2001




Inspection of waste-gathering station


An inspection of a model workplace by the division manager

■Details of Principal Zero Emissions Activities

Slogan: "Eliminate, Reduce, and Change"	
Awareness-raising activities	• Make known our efforts to separate waste materials and introduce patrols to promote such separation • Regularly publish "Zero Emi" versions of *Environment News*
Promotion activities	• Promote Zero Emissions by setting up model workplaces • Solve special issues by designating a person to promote activities at the workplace • Inspections by the division manager
Project activities	• Clarify "Zero Emi" basic policies • Carry out surveys and decide on recycling policies • Procure office goods with consideration of factors that include disposal

Environmental Protection Activities of the Engine Division

Main Business Activities: Manufacturing of Engines

Division Manager & Managing Director
Engine Division
Shinjiro Kamimura

Environmental Approach

There are a host of environment-related needs in engines—the most important component of an automobile—such as the need for lower fuel consumption, cleaner exhaust emissions, and reduced noise. From development to manufacturing, all members of the Engine Division place high importance on people and the environment in the manufacturing of engines, and this division devotes its efforts to offering products that achieve a high level of basic and environmental functions.

Activities

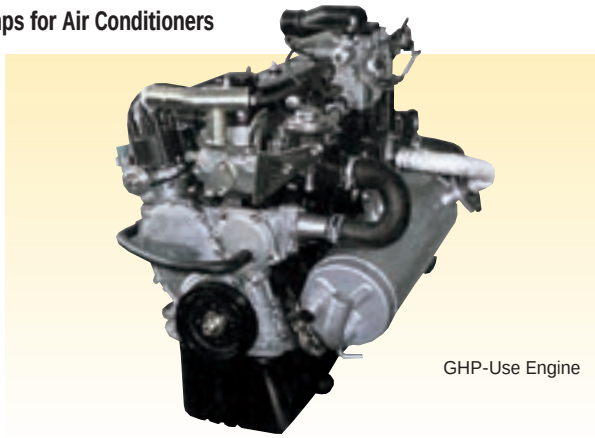
Development and Design

■Development of Engines that Raise the Efficiency of Gas Heat Pumps for Air Conditioners

A gas heat pump (GHP) for air conditioners is a cooling and heating system that integrates a compressor powered by a gas engine. Because GHPs offer excellent efficiency and can operate using natural gas—a clean fuel—they emit no SO_x or soot. Moreover, compared with electric heat pumps (EHPs), GHPs enable an approximately 22% reduction in CO_2 emissions, a principal cause of global warming. By utilizing engine exhaust heat, GHPs enable high heating temperatures and rapid heating, even when the outside air temperature is low. To further enhance these features of GHPs, we developed an engine that improves GHP efficiency.

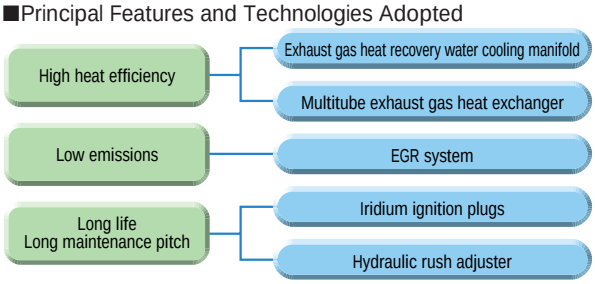
The Engine Division developed a GHP-use engine based on the 4Y-type automobile engine. In developing this engine, we adopted various methods to achieve characteristics required for GHP-use engines, including high heat efficiency, low emissions, and long life as well as long maintenance pitch. Specifically, in striving to optimize ignition timing and the shape of the combustion chamber, we incorporated an exhaust gas heat recovery water cooling manifold, a multitube exhaust gas heat exchanger, an exhaust gas recirculation (EGR) system, iridium ignition plugs, and a hydraulic rush adjuster.

At present, this GHP has a COP* of 1.2. In the future, however, we will strive to attain a COP of 1.5 for these GHPs and intend to make various improvements, including improvements to the engine (high-pressure compression ratio) as part of efforts to conserve energy and reduce CO_2 emissions, and thus contribute to the prevention of global warming.

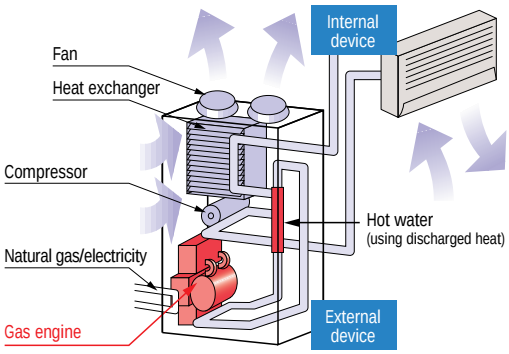


GHP-Use Engine

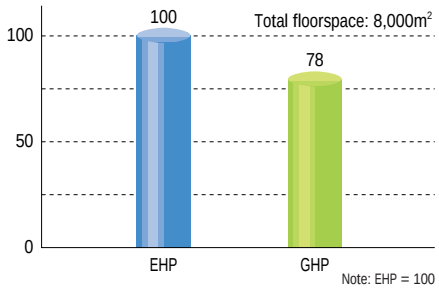
■Principal Features and Technologies Adopted



■Outline of GHP Air Conditioner



■Comparison of Volume of CO_2 Emissions
(Source: Japan Gas Association)



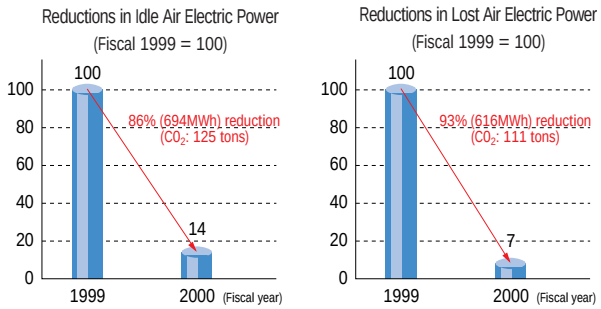
*COP: Coefficient of Performance. Ratio of heat to electricity supplied

Production

■Conserving Energy by Raising the Operational Efficiency of Air Compressors on Production Lines

By combining a single system for controlling the volume of air used by the numerous compressors with a supply pressure control system for individual areas in its plant, the Engine Division is able to supply air for its compressors in accordance with the actual volume of air required. This has allowed the Engine Division to achieve an 86% reduction in idle air electric power*1 compared with fiscal 1999. In addition, to the present we have used equipment in our plant to supply air to the development and other departments not directly linked to production lines and have operated air compressors even when production lines were not in operation, which resulted in lost air electric power*2. By introducing individual facilities, we reduced lost air electric power by 93% from fiscal 1999.

■Reductions in Idle Air Electric Power and Lost Air Electric Power

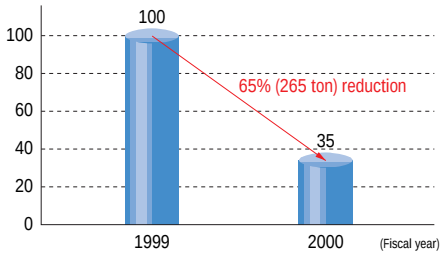


■Our Approach to Recycling Industrial Waste Materials


Engine Division's testing equipment

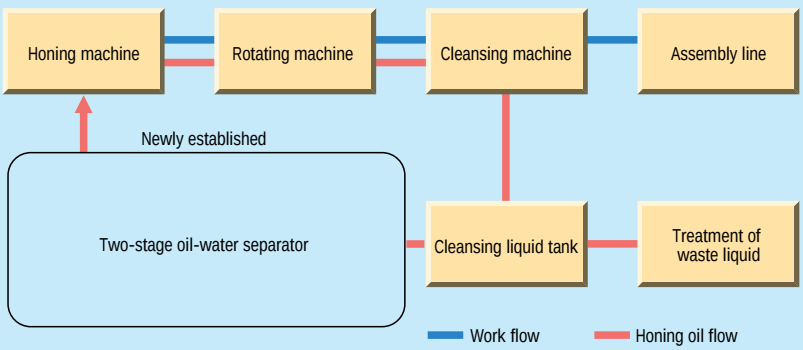
The Engine Division is reducing the volume of industrial waste material generated on its production lines by progressing with efforts to recycle and reuse such waste. These efforts include adopting measures inside the plant as well as cultivating recycling routes. Specific measures being taken include inspecting oil and air pressure components with the division's own testing equipment, which enables recycled parts to be used for component replacements, thereby eliminating waste of actual oil and air pressure components. Also, by adopting the two-phase oil-water separation method, honing oil, which is carried away by being attached to the work piece of the assembly line, can be sent directly to the grinder, thereby reducing emissions of waste cleansing liquids by 50%.

■Reduction in the Volume of Industrial Waste (Fiscal 1999 = 100)



■Work Flow and Honing Oil Flow


Two-stage oil-water separator



*1 Idle air electric power: Electric power consumed when compressors are in a waiting (standby) mode
*2 Lost air electric power: Electric power used to supply air in excess of actual amounts needed

Environmental Protection Activities of the Technology Development Center

Main Business Activities: Manufacturing of Semiconductors and Electronics Equipment

Center Manager and Associate Director
Technology Development Center
Goro Asahi

Environmental Approach

In manufacturing semiconductors, which requires the use of numerous chemical substances, we are focusing on efficiently using resources, recycling resources, and reducing amounts of waste materials generated in each phase of the production process. The Technology Development Center works day-in, day-out to contribute to the preservation of the environment by developing power electronics technology that is essential for such next-generation clean vehicles as electric vehicles and hybrid vehicles.

Activities

Development and Design

■Development of New DC-AC Inverter (Pre-Installed Type)

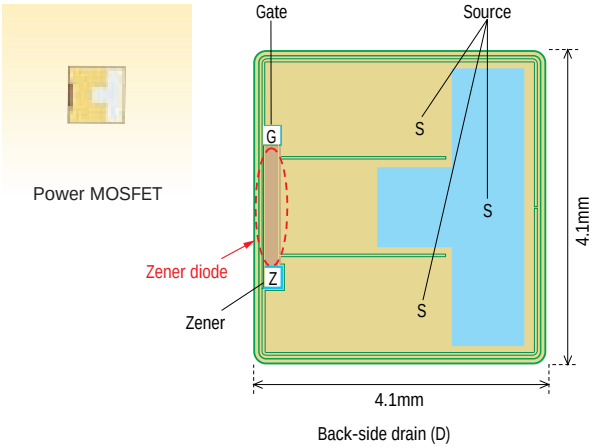
This DC-AC inverter (pre-installed type) converts the DC 12V current from an automobile battery into an AC 100V current, enabling household electric appliances to be operated inside vehicles. We commenced our business in DC-AC inverters in August 1995 with the start-up of production of a vehicle-mounted DC-AC inverter as a dealer option. Today, we are developing and manufacturing DC-AC inverters that are mounted as standard equipment on some vehicles.

In fiscal 2000, we developed a new compact, low-cost, high-performance DC-AC inverter (mounted on vehicles as standard equipment). By making energy-conservation considerations through a compact, lightweight DC-AC inverter and designing an optimal-scale production line, we are restraining our consumption of energy, which has allowed us to reduce the volume of energy used during production.

DC-AC Inverter (pre-installed type)

Plug

■Development of Power MOSFET for D4 Engines



D4 engines are advanced engines that efficiently use energy resources and help protect the environment. These engines operate based on a method whereby gasoline is directly injected into a cylinder that intakes large volumes of air only. The chief advantage of this method is precision control during fuel injection, which allows highly efficient combustion of even small amounts of fuel. D4 engines enable the ultra-lean combustion of an extremely thin mixture of gasoline, approximately one-third the mixture combusted by conventional gasoline engines.

The Technology Development Center has developed a power MOSFET for use in the injector drive of D4 engines, which has played an important role in the commercialization of the D4 engine. This, in turn, has contributed to environmental protection by reducing energy consumption and CO_2 emissions.

The Kyowa Plant, where the Technology Development Center is located, carries out the following activities.

Production

■Reducing Sludge by Shifting to Coagulating Method for Waste Coolant

Waste coolant emitted during the production process is treated internally. We previously treated sludge by adding aluminum sulfate and slaked lime (calcium hydroxide), inorganic chemicals for coagulating and separating degraded emulsion and dewatering sludge. This sludge was then handled by outside parties and disposed of at landfill sites. In accordance with our Zero Emissions targets, in fiscal 2000 we shifted to a new recovery method that involves changing to the use of organic polymer chemicals for breaking down emulsions, which are then separated and recovered as floating oil. The introduction of this process has eliminated the generation of sludge as well as the need to dispose of sludge at landfill sites.

Plant Greenery

■Operating Earthworm Farms to Reduce Botanical Waste Materials

Greenery at the Kyowa Plant includes 39,000 square meters of lawn and approximately 300 trees. In the past, the Kyowa Plant commissioned outside waste disposers to handle and dispose of cut grass, weeds, and fallen leaves as botanical waste materials. From fiscal 2000, however, the Kyowa Plant began operating earthworm farms, where earthworms are mixed with leaf mold (humus), which has a high nutritional value, for the creation of compost. By efficiently using cut grass and other decomposing vegetation at these earthworm farms, we have reduced the amount of botanical waste generated at the plant. Also, in building our earthworm farms, we utilized used pallets to serve as enclosures.

Earthworm farm

■Creating Humus from Fallen Leaves

In the past, every year from October to December, we commissioned outside parties to dispose of fallen leaves from zelkova trees and cherry trees. These leaves were handled as botanical waste materials. However, from fiscal 2000 we built a 16m^3 enclosure, combined slaked lime, soil, and fallen leaves, and sealed off outside air to create humus. We are effectively using this humus as a soil activation agent.

Also, as part of our interaction with local communities, we distribute this humus free of charge to visitors at a summer festival at the Kyowa Plant. This humus has been highly acclaimed, and we intend to continue providing this to the public in the future.

Site for creating humus

Environmental Protection Activities of BT Industries AB

Outline of Business Activities: BT Industries is a holding company serving as the core of the BT Group, which is composed of 80 subsidiaries and affiliated companies (as of December 31, 2000). Headquartered in Sweden with business bases worldwide, the BT Group engages mainly in the development, production, and sale of warehouse trucks.

Activities

Environmental Approach

Over 90% of the BT Group's products are recyclable, with the exception of batteries. Substances having an impact on the environment that are contained in products are categorized and managed according to either the BT Group's black list or grey list. For example, the BT Group has placed cadmium on its black list and is working to completely discontinue the use of this substance. The amounts of these blacklisted substances used by the BT Group that have an impact on the environment have already been reduced to very low levels. Moreover, in the market for recycled parts and trucks, the BT Group uses new components only to replace malfunctioning components of motors that have been recovered from the market. BT then recycles a large portion of these motors as its own rebuilt motors.

By taking the preceding approach, BT has declared that its REFLEX reach truck has satisfied the ISO 14021 type-II* environmental label requirements. In the future, BT will implement environmental impact assessments for all products, covering product manufacturing to product usage as well as publicize the results of these assessments.

BT REFLEX
Reach Truck

Environmental label for BT REFLEX Reach Truck

Working to Reduce Environmental Impact during the Production Process

BT is working to reduce VOCs by replacing paints used during the production process with powdered paints and water-soluble paints. BT is also managing the volume of water used in cleansing tanks as well as amounts of wastewater. In addition, BT is establishing a framework for assessing environmental impact when introducing new production facilities and new production methods.

Working to Obtain ISO 14001 Certification

The BT Group is carrying out operations with consideration for the environment and is also taking a vigorous groupwide approach to securing ISO certification at its business bases. Progress made in obtaining ISO 14001 certification is shown in the accompanying table.

Company name	Location		ISO 14001 certification status	
			Date obtained	Planned date for obtaining
BT Products AB	Sweden	Mjölby (PT*1)	November 1997	
	Sweden	Mjölby (MT*2)	November 1997	
	Belgium	Antwerp		2001
Life-Rite Inc.	Canada	Brantford		2002~2003
CESAB Carrelli Elevatori S.p.A.	Italy	Bolognia		2002
BT Raymond Inc.	United States	Greene	February 2001	
	United States	Muscatine		2002
	Canada	Brantford	March 1999	

Notes: 1. PT: This is an abbreviation of powered truck and refers to a specialized plant for manufacturing powered trucks.
2. MT: This is an abbreviation of manual truck and refers to a specialized plant for manufacturing manual-type trucks, such as hand pallet trucks.

*ISO 14021 type-II: This refers to an international standard for an environmental label for displaying the environmental functions of products and is based on a product supplier's own standards.

Environmental Activities of ST Liquid Crystal Display Corp. (ST-LCD)

Outline of Business Activities: ST-LCD is a joint venture between Toyota Industries and Sony Corporation that engages in the manufacture of low-temperature polysilicon TFT LCD panels (operations commenced in April 1999). The products manufactured at ST-LCD are used by Sony and several other companies mainly as panels for video cameras, digital still cameras, and personal digital assistants (PDAs).

Activities

Reducing Environmental Impact during the Production Process

Recycling Activities

Since commencing operations, ST-LCD has recycled or converted chemical liquids, including thinners, and sludge into fuels and raw materials. As of the end of fiscal 1999, ST-LCD had achieved a recycling rate of 95% and attained Zero Emissions*1 as defined by its internal standards. ST-LCD further raised its recycling rate to 98.8% as of the end of fiscal 2000 by recycling glass used in LCDs as well as waste plastics and cardboard and introducing resource-conserving equipment through tie-ups with equipment suppliers. Also, ST-LCD recovers pure water used during production for reuse as cooling water, scrubber water, and toilet water.

Activities to Conserve Resources

Since commencing operations, ST-LCD has worked to conserve resources through measures that include introducing equipment to recycle developing agents used in the photolithography*2 process, with the aim of extending the useful life of these agents. ST-LCD also reuses dummy glass through cleaning. Also, by changing paint dispersal methods for resists, ST-LCD has attained a 20% reduction in the volume of waste material emitted per sheet of glass used.

Using Late-Night Electric Power for Daytime Plant Cooling

Late-night electric power is being used to make ice and to cool plants during daytime hours. By using late-night electric power, which uses less fossil fuels and is in excess supply, we have reduced our daytime consumption of electric power 4.4% from fiscal 1999 while contributing to a reduction in the volume of CO_2 emissions.

Ice storage tanks for plant cooling

Reducing Substances that Have an Impact on the Environment

We previously used acetone as an organic solvent for washing production facilities for LCDs. By shifting to water-based solvents, ST-LCD is working toward the use of processes that reduce environmental impact.

Maintaining Water Containment Areas

ST-LCD has introduced rainwater collection tanks to avoid the risk of any pollution-causing substances that may accumulate on the ground surfaces at its plants from being directly washed into rivers by rain. Rainwater accumulating in these tanks is treated as wastewater before being discharged into rivers. Also, to confirm that this rainwater does not become polluted, water is temporarily stored in small catchment basins for examination.

Reservoir

Rainwater tank

*1 Zero emissions: ST-LCD defines zero emissions as the attaining of a 95% recycling rate.
*2 Photolithography: An electronic circuit pattern manufacturing technology. A photoresist (a light-sensitive resin) is coated on a raw material. A mask pattern is transferred to the photoresist when ultraviolet light is flashed through a glass mask and a photo-reaction takes place.

Environmental Data

Head Office, Textile Machinery Division, Compressor Division

[Kariya Plant]

■Air Pollution Data
(Conforming to the Air Pollution Control Law and Prefectural Ordinances)

Item	Equipment	Control Value	Actual Measurement (Maximum)
NO_X	Boiler	104	87
		144	97
		150	86
		171	99
		237	95
	Heating/cooling units for room and water	96	50
	Gas turbine	50	36
	Incinerator	200	85
Particulate matter	Boiler	0.1	0.006
		0.2	0.099
	Heating/cooling units for room and water	0.1	0.003
	Gas turbine	0.05	0.006
	Incinerator	0.5	0.1
Hydrogen chloride	Incinerator	700	140
Dioxins	Incinerator	80	1.7

■Water Pollution Data
(Conforming to the Water Pollution Prevention Law and Prefectural Ordinances)

Item	Control Value	Actual Measurement		
		Maximum	Minimum	Average
pH	5.8-8.6	7.2	6.6	6.8
COD	—	17.0	0.2	7.8
BOD	25 (20)	15.7	0.6	8.5
SS	30 (20)	5.4	N.D.	1.2
Oil	5	2.8	N.D.	0.5
Copper	1	0.012	0.001	0.007
Zinc	5	0.8	N.D.	0.113
Soluble iron	10	0.65	0.088	0.201
Soluble manganese	10	0.139	0.027	0.061
Total chrome	2	0.013	N.D.	0.003
Total nitrogen	(15)	3.84	1.44	2.57
Total phosphorus	(2)	0.1	N.D.	0.04
Lead	0.1	0.023	N.D.	0.005
Hexavalent chromium	0.5	0.02	N.D.	0.01
Cadmium	0.1	N.D.	N.D.	N.D.

TOYOTA Material Handling Company

[Takahama Plant]

■Air Pollution Data
(Conforming to the Air Pollution Control Law and Prefectural Ordinances)

Item	Equipment	Control Value	Actual Measurement (Maximum)
NO_X	Boiler	120	91
		237	65
	Gas turbine	35	35
	Oven	184	41
		218	—
	Incinerator	200	120
Particulate matter	Boiler	0.1	0.032
		0.3	0.082
	Gas turbine	0.05	0.003
	Oven	0.2	0.06
	Incinerator	0.25	0.039
Hydrogen chloride	Incinerator	700	75
Dioxins	Incinerator	80	2.6

■Water Pollution Data
(Conforming to the Water Pollution Prevention Law and Prefectural Ordinances)

Item	Control Value	Actual Measurement		
		Maximum	Minimum	Average
pH	5.8-8.6	7.0	6.7	6.9
COD	—	10.7	3.2	6.7
BOD	25 (20)	10.1	1.4	4.3
SS	30 (20)	4.6	N.D.	0.8
Oil	5	1.9	N.D.	0.6
Copper	1	0.015	0.002	0.007
Zinc	5	0.2	N.D.	0.046
Soluble iron	5	0.55	0.085	0.195
Soluble manganese	5	0.55	0.02	0.1
Total chrome	2	0.009	N.D.	0.003
Total nitrogen	(15)	8.64	3.36	6.65
Total phosphorus	(2)	0.05	N.D.	0.04
Lead	0.1	0.018	N.D.	0.005
Hexavalent chromium	0.5	N.D.	N.D.	N.D.
Cadmium	0.1	N.D.	N.D.	N.D.

Engine Division

[Hekinan Plant]

■Air Pollution Data
(Conforming to the Air Pollution Control Law and Prefectural Ordinances)

Item	Equipment	Control Value	Actual Measurement (Maximum)
NO_X	Boiler	100	74
	Heating/cooling units for room and water	100	61
	Gas turbine	26	18
	Incinerator	200	120
Particulate matter	Boiler	0.1	0.002
	Heating/cooling units for room and water	0.1	0.008
	Gas turbine	0.04	0.004
	Incinerator	0.1	0.078
Hydrogen chloride	Incinerator	700	110
Dioxins	Incinerator	80	2.7

■Water Pollution Data
(Conforming to the Water Pollution Prevention Law and Prefectural Ordinances)

Item	Control Value	Actual Measurement		
		Maximum	Minimum	Average
pH	5.8-9.0	7.4	6.6	7.0
COD	15	6.0	0.9	2.6
BOD	—	11.9	0.5	2.6
SS	30 (20)	6.0	N.D.	0.7
Oil	2	0.5	N.D.	0.1
Copper	1	0.016	0.003	0.009
Zinc	3	1.15	N.D.	0.196
Soluble iron	3	0.45	0.077	0.158
Soluble manganese	5	0.126	0.02	0.06
Total chrome	2	0.025	N.D.	0.004
Total nitrogen	(15)	7.44	0.24	3.1
Total phosphorus	(2)	0.1	N.D.	0.03
Lead	0.1	0.018	N.D.	0.006
Hexavalent chromium	0.5	0.01	N.D.	N.D.
Cadmium	0.1	N.D.	N.D.	N.D.

Vehicle Division

[Nagakusa Plant]

■Air Pollution Data
(Conforming to the Air Pollution Control Law and Prefectural Ordinances)

Item	Equipment	Control Value	Actual Measurement (Maximum)
NO_X	Boiler	171	64
		142	89
		144	110
	Gas turbine	80	66
	Oven	237	25
		218	10
		184	17
	Incinerator	200	N.D.
Particulate matter	Boiler	0.2	0.007
		0.25	0.01
		0.3	0.005
	Gas turbine	0.05	0.008
	Oven	0.2	0.009
		0.35	0.023
		0.4	0.008
	Incinerator	0.25	0.094
Hydrogen chloride	Incinerator	700	N.D.
Dioxins	Incinerator	80	1.5

■Water Pollution Data
(Conforming to the Water Pollution Prevention Law and Prefectural Ordinances)

Item	Control Value	Actual Measurement		
		Maximum	Minimum	Average
pH	5.8-8.6	6.8	5.8	6.4
COD	—	16.3	5.8	10.2
BOD	25 (20)	10.6	N.D.	2.2
SS	30 (20)	15.4	0.8	7.2
Oil	5	1.0	N.D.	0.4
Copper	1	0.017	0.003	0.008
Zinc	5	1.8	0.8	1.329
Soluble iron	5	2.2	0.086	0.331
Soluble manganese	5	1.35	0.3	0.725
Total chrome	2	0.02	N.D.	0.005
Total nitrogen	(15)	5.09	2.3	3.44
Total phosphorus	(2)	0.96	N.D.	0.21
Lead	0.1	0.02	N.D.	0.007
Hexavalent chromium	0.5	0.01	N.D.	N.D.
Cadmium	0.1	N.D.	N.D.	N.D.

Technology Development Center, Machinery & Tools Sub-Division, Mechatronics Engineering Sub-Division

[Kyowa Plant]

■Air Pollution Data
(Conforming to the Air Pollution Control Law and Prefectural Ordinances)

Item	Equipment	Control Value	Actual Measurement (Maximum)
NO_X	Boiler	120	63
	Water & room heating/cooling units	120	79
Particulate matter	Boiler	0.1	0.006
	Water & room heating/cooling units	0.3	0.003

■Water Pollution Data
(Conforming to the Water Pollution Prevention Law and Prefectural Ordinances)

Item	Control Value	Actual Measurement		
		Maximum	Minimum	Average
pH	5.8-8.6	7.4	6.4	6.8
COD	—	4.4	0.2	1.8
BOD	25 (20)	4.7	N.D.	1.0
SS	30 (20)	10.4	N.D.	1.8
Oil	2	0.9	N.D.	0.2
Copper	1	0.156	0.008	0.058
Zinc	5	0.35	N.D.	0.076
Soluble iron	10	1.1	0.092	0.245
Soluble manganese	10	0.233	0.019	0.066
Total chrome	2	0.021	N.D.	0.004
Total nitrogen	(15)	9.12	1.44	5.48
Total phosphorus	(2)	1.1	N.D.	0.21
Lead	0.1	0.027	N.D.	0.005
Hexavalent chromium	0.5	N.D.	N.D.	N.D.
Cadmium	0.1	N.D.	N.D.	N.D.

Note: This data shows the results of measurements for discharged water, including wastewater emitted by a subsidiary situated on the grounds of the plant.

Compressor Division, Engine Division

[Obu Plant]

■Air Pollution Data
(Conforming to the Air Pollution Control Law and Prefectural Ordinances)

Item	Equipment	Control Value	Actual Measurement (Maximum)
NO_X	Boiler	180	—
	Heating furnace	180	—
Particulate matter	Boiler	0.3	—
	Melting furnace	0.1	0.003
	Heating furnace	0.2	—

Note: Some data for this plant cannot be determined due to the ceasing of the operation of facilities.

■Water Pollution Data
(Conforming to the Water Pollution Prevention Law and Prefectural Ordinances)

Item	Control Value	Actual Measurement		
		Maximum	Minimum	Average
pH	5.8-8.6	7.3	6.5	6.9
COD	—	18.1	3.0	8.2
BOD	25 (20)	16.0	1.4	6.7
SS	40 (30)	14.8	N.D.	4.3
Oil	2	1.2	N.D.	0.2
Copper	1	0.018	0.003	0.008
Zinc	5	1.4	N.D.	0.208
Soluble iron	10	1.3	0.084	0.31
Soluble manganese	10	0.9	0.05	0.194
Total chrome	2	0.029	N.D.	0.005
Total nitrogen	(15)	6.72	1.92	3.26
Total phosphorus	(2)	0.1	N.D.	0.03
Lead	0.1	0.027	N.D.	0.007
Hexavalent chromium	0.3	N.D.	N.D.	N.D.
Cadmium	0.05	N.D.	N.D.	N.D.

Air Pollution Units and Figures
1. The units used are as follows—NO_x, ppm; particulate matter, mg/Nm^3; hydrogen chloride, mg/Nm^3 (O2-12%); dioxins, ng-TEQ/Nm^3
2. The figures used to represent the actual measurement are the maximum values recorded during measurements.

Water Pollution Units and Figures
1. Except for pH, all items are measured in terms of mg/l.
2. Limit figures in parentheses represent the maximum permissible daily average level.
3. Items marked as "N.D." were not present in detectable concentrations.
4. The meaning of abbreviated items are as follows—pH, concentration of hydrogen ions; COD, chemical oxygen demand; BOD, biochemical oxygen demand; SS, suspended solids; oil, n-Hexan extracts

Period covered: April 1, 2000, through March 31, 2001

A History of Environmental Activities

Date	Details of Principal Environmental Activities
1984	Completely abolished the use of trichloroethylene at all production plants
1993: March	Established Environment Committee, CFC Reduction Subcommittee, and Waste Reduction Subcommittee
	Established the Public Affairs and Publications Subcommittee, Recycling Subcommittee, and Energy Reduction Subcommittee
	Formulated Plan for the Environment (First Environmental Action Plan)
April	The Hekinan Plant received special award at the 12th Aichi Prefecture Greenery Competition
September	The Hekinan Plant earned award at the 12th National Greenery Promotion Convention sponsored by the Japan Greenery Research and Development Center
1995: February	Completely abolished the use of 1,1,1-trichloroethane at all production plants
August	Changed name of CFC Reduction Subcommittee to the Chemical Substance Management Subcommittee
September	The Hekinan Plant received Greenery Award from the Chubu Bureau of Economy, Trade and Industry
1996: January	Changed name of the Recycling Subcommittee to the Product Technology Subcommittee
	Established the Plant Environment Subcommittee
May	Formulated Second Environmental Action Plan (Fiscal 1996 to Fiscal 2000)
November	Completely eliminated the use of organic chloride based solvents at all production plants
1997: August	Changed name of Chemical Substance Management Subcommittee to the Pollution Prevention Subcommittee
October	Obtained ISO 14001 certification at the Nagakusa Plant
1998: October	Obtained ISO 14001 certification for the Compressor Division at the Kariya Plant
December	Obtained ISO 14001 certification at the Takahama Plant
1999: March	Completely eliminated the use of HCFCs in the electronic product manufacturing process at the Kyowa Plant
June	Obtained ISO 14001 certification at TIEM, in the United States
	Obtained ISO 14001 certification at MACI, in the United States
November	Obtained ISO 14001 certification at the Hekinan Plant
December	Published first Environmental Report
	Published PRTR pilot business report (covering fiscal 1998)
2000: January	Obtained ISO 14001 certification at the Kyowa Plant (Toyoda-Sulzer and TIBC, situated on the same location, also obtained ISO 14001 certification)
February	Changed name of Waste Reduction Subcommittee to the Waste Minimization Subcommittee
March	Obtained ISO 14001 certification at the Obu Plant
April	Formulated Third Environmental Action Plan (Fiscal 2001-Fiscal 2005)
October	Obtained ISO 14001 certification for the Textile Machinery Division at the Kariya Plant
2001: January	Obtained ISO 14001 certification at TIESA, in France
March	Issued Guideline for Reducing Hazardous Substances for Product Design
	Issued Guideline for Recycling Design
	Issued Guideline for EPP

In Conclusion

Thank you for reading the *Environmental Report of Toyota Industries Corporation.* Through its corporate activities, the Company is striving to contribute to improve both society and the quality of the earth's environment. We see this as our corporate mission, and we plan to keep up our efforts to achieve this mission. Also, we plan to continue publicizing our environmental protection efforts through the publication of environmental reports and intend to issue our next report in July 2002.

We are distributing this report together with a questionnaire. We hope that you will complete this questionnaire and return it to us so that we can improve our environmental reports in line with the wishes of the readers. We appreciate your cooperation.

August 2001

Shin Nihon & Co.

Shin Nihon Environmental Management and Quality Research Institute

Certified Public Accountants
Hibiya Kokusai Bldg.
2-2-3, Uchisaiwai-cho,
Chiyoda-ku, Tokyo 100-0011

Phone:03 3503-1028
Fax: 03 3503-2818

Independent Review Report on
"TOYOTA INDUSTRIES CORPORATION 2001 Environmental Report"

August 1 ,2001

Mr. Tadashi Ishikawa
President and Representative Director
TOYOTA INDUSTRIES CORPORATION

1. Purpose and Scope of our Review

We have reviewed the "TOYOTA INDUSTRIES CORPORATION 2001 Environmental Report" (the "Report") of TOYOTA INDUSTRIES CORPORATION (the "Company"), published by the Company who is responsible for its contents. The review consisted of performing certain procedures as described below in relation to the collection, compilation and calculation of the information included in the Report.

Our work does not constitute an audit or examination. We therefore do not express an opinion on the accuracy or completeness of the information or data bases used to compile the information or the representations made by the Company in the Report.

2. Procedures Performed

We have performed the following review procedures agreed upon with the Company;

(1) We reviewed the procedures performed by the Company and the methods of accounting followed in the preparation of the "Environmental Performance" and the "Environmental Cost and Effect" information.

(2) We compared the "Environmental Performance" and "Environmental Cost and Effect" information presented in the Report on a sample basis with the respective supporting documents and verified the accuracy of the calculations on a sample basis.

(3) We compared the "Descriptive Information" other than the "Environmental Performance" and the "Environmental Cost and Effect" information presented in the Report with the respective supporting documents and verified the accuracy of the descriptions.

(4) When deemed necessary, we made inquiries to the responsible individuals at the Company's factories, conducted on-site inspections of these sites and reviewed the decision-making process at each location.

3. Results of the Procedures Performed

As a result of the procedures which we performed,

(1) We are not aware of any material modifications which should be made to the "Environmental Performance" and the "Environmental Cost and Effect" information presented in the Report in order for them to comply with the Company's policies for gathering and reporting such information.

(2) We are not aware of any material modifications which should be made to the "Descriptive Information" presented in the Report in order for them to comply with the Company's policies for gathering and reporting such information.

Yasuo Kurihara
Representative Director
Shin Nihon Environmental Management
and Quality Research Institute

Y. Kurihara

For additional information regarding the environmental protection activities of Toyota Industries, please feel free to contact the Company's Safety, Health & Environment Department.

Tel: 81-566-27-5120

For a general description of the Company, please look at our Website.

http://www.toyota-industries.com

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