



Environmental Report

**2003**

**AISIN**



Aisin's symbol of the global environment:  
"Harmony with Society and Nature"

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### Editorial Policy

In drafting this report, we referred in part to the Environmental Reporting Guidelines issued by the Ministry of the Environment and the Global Reporting Initiative (GRI) Guidelines.

### Important Notes

1. A section on social aspects has been added with the Sustainability Report kept foremost in mind.
2. Consideration is given in the usage of technical terminology to ensure readability by nontechnical readers.
3. To ensure understanding by nontechnical readers, descriptions of cases also include information on innovations, processes, and the like.
4. This report is based primarily on data from FY2003 (April 2002 through March 2003), with partial coverage of cases from the present fiscal year. The domestic and overseas members Aisin Consolidated Environmental Management Companies also receive partial coverage.
5. Information for years earlier than FY2003 may also contain data and the like relating to FY2003.



## Aisin Consolidated Environmental Management Companies

### Manufacturing Companies in Japan

- AISIN SEIKI CO., LTD.
- AISIN TAKAOKA CO., LTD.
- AISIN CHEMICAL CO., LTD.
- AISIN AW CO., LTD.
- AISIN KEIKINZOKU CO., LTD.
- AISIN KIKO CO., LTD.
- AISIN AI CO., LTD.
- AISIN SIN'EI CO., LTD.
- AISIN AW INDUSTRIES CO., LTD.
- AISIN DEVELOPMENT CO., LTD.
- AISIN TOHOKU CO., LTD.
- AISIN KYUSHU CO., LTD.
- SAITAMA KOGYO CO., LTD.
- KOTOBUKI GIKEN INDUSTRY CO., LTD.
- AISIN MAINTENANCE CO., LTD.
- AICHI GIKEN CO., LTD.
- YAMAGATA CLUTCH CO., LTD.

### Manufacturing Companies in Overseas

- AISIN U.S.A. MFG., INC.
- AISIN DRIVETRAIN, INC.
- AISIN ELECTRONICS, INC.
- AISIN AUTOMOTIVE CASTING, LLC
- LIBERTY MEXICANA S.A. DE C.V.
- AISIN MEXICANA S.A. DE C.V.
- ELITE SEWING MACHINE MFG. CO., LTD.
- AISIN NTTF PRIVATE LIMITED
- PT. AISIN INDONESIA
- SIAM AISIN CO., LTD.
- AISIN HONGDA AUTOMOBILE PARTS CO., LTD.
- TANGSHAN AISIN GEAR CO., LTD.
- TIANJIN AISIN AUTOMOBILE PARTS CO., LTD.
- AISIN EUROPE MANUFACTURING (UK) LTD.

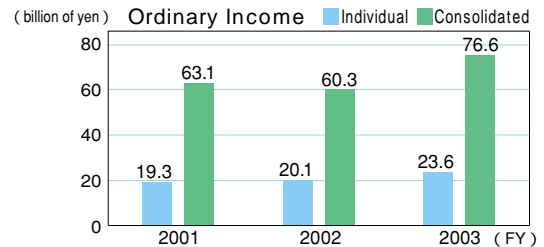
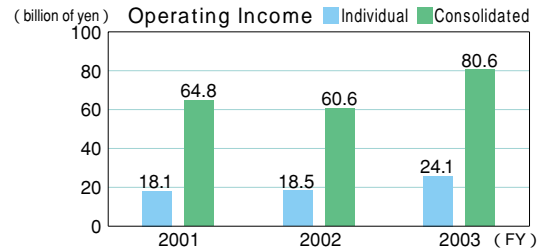
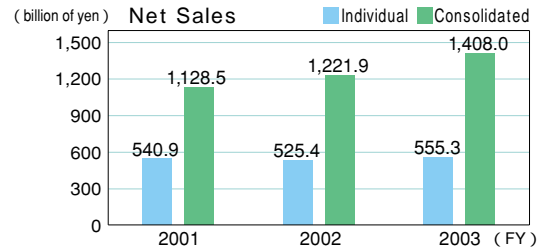
## Environmental History

FY	Action taken
<b>1971</b>	<ul style="list-style-type: none"> <li>• Established the Safety, Health, and Pollution Management Office</li> </ul>
<b>1980</b>	<ul style="list-style-type: none"> <li>• Established the Energy Planning Office.</li> </ul>
<b>1990</b>	<ul style="list-style-type: none"> <li>• Changed name of Health and Environment Office to Safety, Health, and Environment Department in order to strengthen local environmental-conservation activities.</li> </ul>
<b>1993</b>	<ul style="list-style-type: none"> <li>• Established the Global Environment Committee.</li> <li>• Abolished use of trichloroethylene.</li> </ul>
<b>1994</b>	<ul style="list-style-type: none"> <li>• Created the First Environmental Action Plan.</li> <li>• Abolished use of designated CFC products in manufacturing processes.</li> </ul>
<b>1996</b>	<ul style="list-style-type: none"> <li>• Established the ISO Promotion Office.</li> </ul>
<b>1997</b>	<ul style="list-style-type: none"> <li>• Reformation of the Environmental Committee (revision and strengthening of organization)</li> <li>• Changed name of the Energy Planning Office to the Global Environment Office.</li> <li>• Issued "Aisin Seiki Environmental Charter".</li> <li>• Created the Second Environmental Action Plan.</li> <li>• Began clean-up work to remove trichloroethylene from soil and groundwater.</li> </ul>
<b>1998</b>	<ul style="list-style-type: none"> <li>• Established ISO 14001 system. (environmental management system planning).</li> </ul>
<b>1999</b>	<ul style="list-style-type: none"> <li>• Merged the Global Environment Office with the Safety, Health and Environment Office's Environment Section to create the Environment Department. This was done in order to strengthen our response to environmental operations.</li> <li>• The Anjo Plant, along with other two plants and two regions, gained ISO 14001 certification.</li> </ul>
<b>2000</b>	<ul style="list-style-type: none"> <li>• Remaining plants all attained ISO 14001 certification.</li> <li>• Issued the first Environmental Report.</li> </ul>
<b>2001</b>	<ul style="list-style-type: none"> <li>• Created the Third Environmental Action Plan</li> <li>• Established "Aisin Seiki Environmental Policy".</li> </ul>
<b>2002</b>	<ul style="list-style-type: none"> <li>• Start of company-wide Environmental Management System.</li> <li>• Start of Aisin Consolidated Environmental Management System.</li> <li>• Reregistered under ISO 14001 by the company-wide Environmental Management System.</li> </ul>
<b>2003</b>	<ul style="list-style-type: none"> <li>• Reorganized company-wide Environmental Management Organization.</li> <li>• Launched operations at the Eco-center.</li> </ul>

## Profile

### Company Summary

Name	Aisin Seiki Co., Ltd.
Established	June 1, 1949
Head Office	2-1 Asahi-machi, Kariya, Aichi, 448-8650, Japan
Capital	¥41.1 billion (as of March 31, 2003)
Net Sales	
Consolidated	¥1,408 billion (Year ended March 31, 2003)
Individual	¥555.3 billion (Year ended March 31, 2003)
Operating Income	
Consolidated	¥80.6 billion (Year ended March 31, 2003)
Individual	¥24.1 billion (Year ended March 31, 2003)
Ordinary Income	
Consolidated	¥76.6 billion (Year ended March 31, 2003)
Individual	¥23.6 billion (Year ended March 31, 2003)
Employees	
Consolidated	44,000 (as of March 31, 2003)
Individual	10,900 (as of March 31, 2003)
Plants	11 plants
Consolidated Subsidiaries	106 companies (as of March 31, 2003)
Affiliated Accounted for Under the Equity Method	14 companies (as of March 31, 2003)



## Details of Business

Aisin is developing businesses based mainly on the manufacture of automotive parts, and including life & energy related products and others.



Category		Main products
Automotive parts	Engine related products	Water pumps, oil pumps, pistons, intake manifolds, variable valve timings
	Drivetrain related products	Automatic transmissions, clutch covers, clutch discs, clutch master cylinders
	Brake & chassis related products	Disc brakes, brake master cylinders, anti-lock brake systems, vehicle stability control systems, air suspension systems
	Body related products	Power seats, door latches, sunroofs, power windows, door hinges, power sliding door systems
	Information related products and other products	Parking assist systems, lane-departure warning systems, dies, prototypes
Life & energy related products and others		Sewing machines, beds, shower-toilet seats, welfare apparatus, residential remodeling, gas engine driven heat-pump air conditioners, gas engine driven cogeneration systems

## Message from the President

Since the 1992 Earth Summit was held in Rio De Janeiro, significant progress has been made in protecting the environment and pursuing sustainable development around the world. However, many difficult challenges still lie ahead of us.

At Aisin Seiki Co., Ltd., we are fully aware of our impacts upon the environment. All of our business operations have direct and indirect environmental consequences. As a manufacturer of automotive parts and other industrial products, our production processes use a great amount of electricity, gas and fuel oil derived from nonrenewable energy sources. The emission of carbon dioxide (CO<sub>2</sub>) ultimately contributes to global warming. In addition, the end uses of our products extend the chain of harmful environmental impacts. For example, automobiles built with our automotive parts also consume fossil fuels and emit pollutants, thereby creating environmental burdens.

Based on our recognition of these ecological effects, our environmental preservation activities focus on both reducing environmental burdens during production and improving the environmental friendliness of our products. The Environmental Report 2003 outlines our major achievements for the fiscal year ended March 31, 2003. We strove hard to reduce CO<sub>2</sub> emissions from our production processes, a major priority; nonetheless, we fell short of our fiscal 2003 goal. CO<sub>2</sub> emissions totaled 194,000 tons, 4,000 tons more than our target of 190,000 tons. However, we are aggressively pursuing our original reduction goals for fiscal 2006. On the brighter side, we continued to make notable advances in preventing and reducing waste generation. Having achieved our goal of reducing landfill wastes by more than 95 percent from fiscal 1998 levels at all our plants during fiscal 2002, this year we significantly reduced the generation of all industrial wastes, including those destined for incineration. The volume of combined wastes for landfills and incineration was reduced by more than 95 percent from fiscal 1998 levels at five plants during fiscal 2003, as part of our "Zero Emission" program. Meanwhile, our ECO Center, established in April 2002 to fortify our recycling activities, has begun research and development work on recycling technologies to further reduce and recycle wastes from our facilities. We also met our goal of reducing harmful chemical substances listed under the Pollutant Release and Transfer Register (PRTR) program by 30 percent from fiscal 1999 levels three years ahead of the original schedule, including a 40 percent reduction in volatile organic compounds (VOCs).

We have also made quite a few gains in designing and producing more environmentally friendly products. For example, we significantly reduced the weight of many automotive parts, contributing to lighter weight vehicles that improve fuel economy. At the same time we introduced new products that impose lower environmental burdens, such as the automated manual transmission, a manual transmission that features an additional automated mode. This product combines the ease of operation an automatic transmission with the enhanced fuel economy and sporty driving performance of a manual transmission. We are making the utmost companywide efforts to reduce the use of substances of environmental concern in our products, and will continue striving to make our products "greener" and more environmentally sound.

Although we are proud to report favorable results from our environmental conservation activities, we are always reminded of the complexity of preserving natural resources and respecting the environment. Environmental problems are not easy to solve. For instance, chlorofluorocarbons (CFCs) were once considered harmless, but turned out to be a major culprit in damaging the ozone layer. Vinyl chloride was also regarded as safe until very recently. That substances once believed safe may be later proven to be harmful illustrates the inherent difficulties in discerning the proper path when tackling environmental issues. We must be humble to learn from nature, and remain committed to seeking the truth through scientific advances.

This year's report upgrades the information on company safety and hygiene policy and related measures as well as corporate citizenship activities, which we first included last year. We hope the Environmental Report 2003 will deepen our readers' understanding of our activities. We welcome feedback and comments so that we may further improve our efforts, helping to lead the way to an environmentally and economically sustainable future.



July 2003

Aisin Seiki Co., Ltd.

A handwritten signature in black ink, reading "K. Toyoda". The signature is written in a cursive, flowing style.

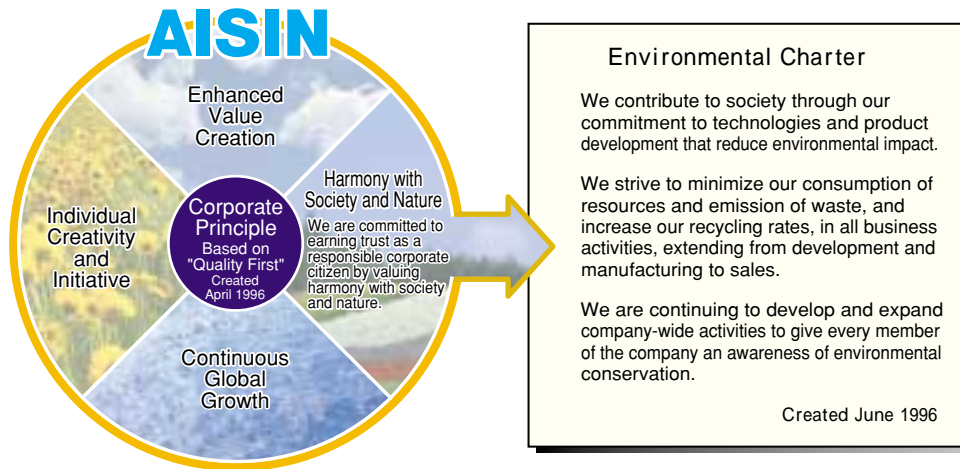
Kanshiro Toyoda, President



# Environmental Management

## Basic Approach on the Environment

Aisin established the "Aisin Seiki Environmental Charter" and the "Aisin Seiki Environmental Policy" based on the corporate principles that were established in 1996. These serve as a framework that allows us to begin to meet the challenge of beginning company-wide environmental conservation activities that extend from the highest levels of management all the way down to new hires.



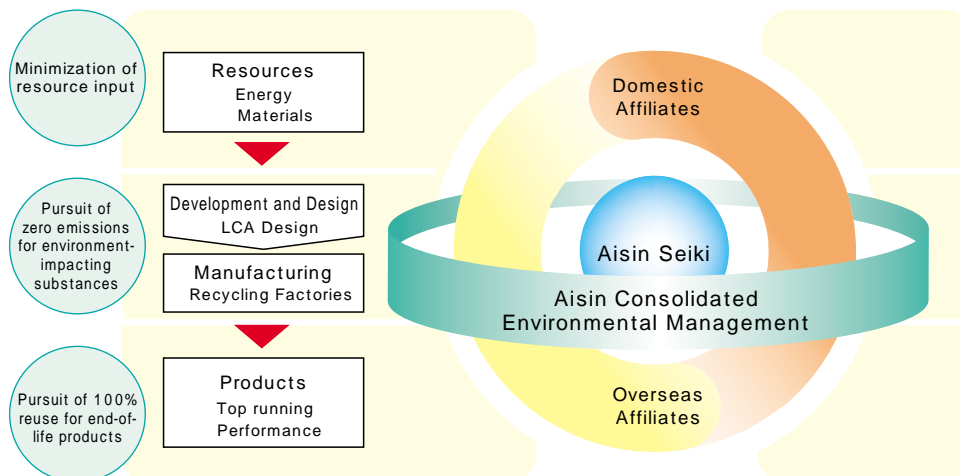
## Environmental Policy Created March 2001

In conducting our business activities, we do not only comply strictly with environmental regulations, accords to prevent pollution, and the like, but also establish voluntary standards and roll out activities to prevent pollution. Also, to further reduce the environmental impact of our activities in such areas as development, production, and sales, we are establishing targets and working to effect ongoing improvements in our environmental management system and performance through systematic action and revision.

1. Developing environmentally friendly products and technologies
2. Saving resources and enhancing recycling activities based on the spirit, "effective utilization of limited resources"
3. Minimizing environmental impact waste in manufacturing and implementing stringent environmental management
4. Promoting environmental preservation through close information-sharing with the government and customers and through cooperation and support with suppliers and overseas manufacturing companies
5. Intensifying public relations, education, and corporate citizenship activities

We are working to ensure full awareness and understanding of this policy among all our employees, and are also actively publicizing it outside the company.

## Our Targets Challenging zero emissions aiming for growth "Harmony with Society and Nature"

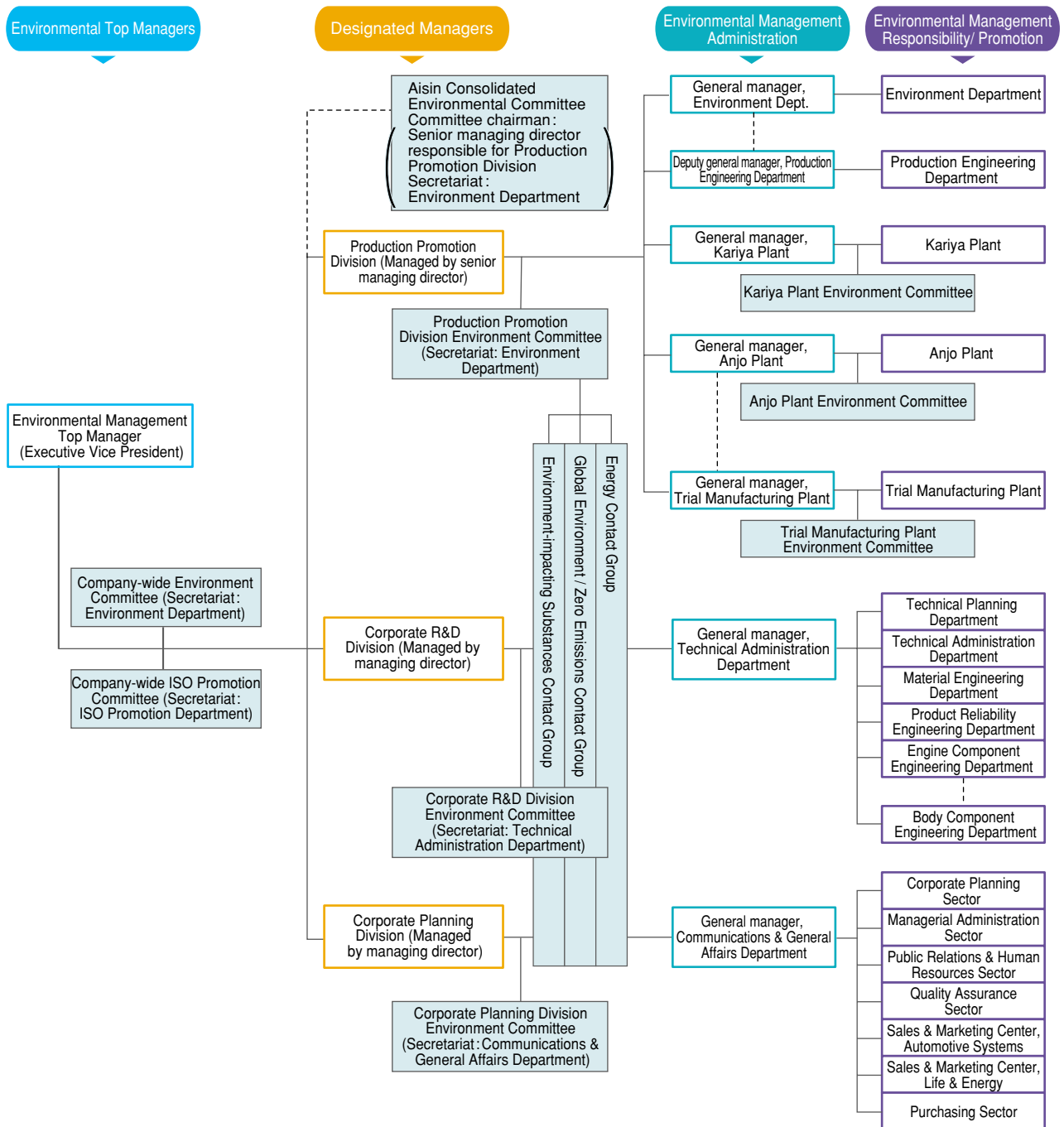




## Organization

In FY2003, in our moves to fuse the company-wide environmental management system with our existing corporate organizational structure, we made the company-wide Environment Committee the basis for establishing three further committees covering our three key functional divisions: the Corporate Planning Division, the Corporate R&D Division, and the Production Promotion Division. Further, each of these environmental committees is chaired by the director responsible for the corresponding division, enabling the fiscal-year policies to be rolled out at the respective lower levels of the organization where they are put into action, thereby enabling improvements and the like to be implemented swiftly.

### Company-wide Environmental Management Organization





## ISO 14001(Environmental Management Systems Standards Established by the International Organization for Standardization)

### Expansion of Acquisition of ISO 14001 Certification

We are promoting systematic efforts in the area of environmental conservation through the creation of a unified, company-wide environmental management system. In addition to this, all manufacturing companies

affiliated with us both in Japan and overseas are expected to enhance their levels of environmental management and be able to achieve certification by the end of FY2004.

Status and Plans for ISO 14001 Certification

	Certified by FY2002	FY2003 (certified)	FY2004 (planned)
Aisin	All plants, Head Office, and R&D Center (including proving grounds)	—	—
Group 1 Domestic group companies	Aisin AW Co.,Ltd., Aisin Takaoka Co., Ltd., Aisin Sin'ei Co., Ltd. Aisin Chemical Co., Ltd., Aisin Keikinzoku Co., Ltd. Aisin AI Co., Ltd., Aisin Development Co., Ltd. Aisin Kiko Co., Ltd., and Aisin AW Industries Co., Ltd.	—	1 company
Group 2 Domestic affiliates	Aisin Tohoku Co., Ltd. and Saitama Kogyo Co., Ltd.	Aisin Kyushu Co., Ltd. and Kotobuki Giken Industry Co., Ltd.	3 companies
Group 3 Overseas manufacturers	Aisin U.S.A. Mfg., Inc., Aisin Automotive Casting, LLC Aisin Hongda Automobile Parts Co., Ltd. Elite Sewing Machine Mfg.Co., Ltd., Aisin NTT Private Limited, and Aisin Drivetrain, Inc.	Siam Aisin Co., Ltd., Aisin Mexicana S.A. de C.V., and Liberty Mexicana S.A. de C.V.	5 companies

### Environmental Management System Auditing

#### 【Environmental Audits】

Our environmental audits take place on two levels: internal environmental auditing in regard to the creation and implementation of plans by the ISO Promotion Office, and a self-diagnosis system, which aims to raise understanding and awareness of the environment among employees by encouraging them to detect problems unique to each department at an early stage. The self-diagnosis system experienced such issues as deficient entries for environmental aspects, missing entries in plans for promoting environmental management, and missing entries in control lists for documents and records, but these issues have all been identified and corrected through followup audits. During the past fiscal year we trained a further 63 internal auditors, for an aggregate total of 184. External audit results for FY2003 revealed three minor nonconformities at a few sites, but high evaluations were earned for the appropriate implementation of the environmental management system and efforts made toward effecting ongoing improvements.



External audit

### Environmental Risk Management

To prevent environmental pollution in the event of an accident or natural disaster, Aisin conducts daily inspections and periodic environmental measurements for equipment and facilities having major potential environmental impact, together with establishing criteria for cases requiring emergency action and conducting periodic emergency drills.



Emergency drill

### Environmental Accidents, Litigation, and other matters

Aisin has not been named in any environment-related lawsuits or complaints by local citizens. An issue involving water quality at the Shinkawa Plant occurred, but action was taken to resolve the matter promptly. The details of this incident are given in the Plant Discharge Data at end of this report (page 36).



## Environmental Accounting

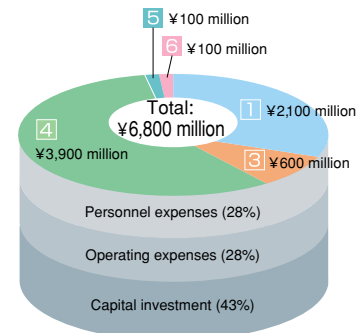
The environmental accounting described in this report represents calculations of the environmental conservation costs for reducing the environmental impact of our work, and the benefits achieved through environmental conservation activities. We are endeavoring to achieve further understanding of our environmental conservation activities through the proactive publication of environmental accounting information. Accounting data was based partly on guidelines from the Ministry of the Environment.

### Environmental Conservation Costs

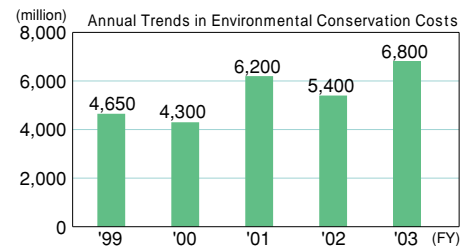
Based on prescribed standards, we calculated our FY2003 environmental conservation costs as follows, dividing costs into such categories as capital investment, experimental research costs, and personnel costs relating to the reduction of environmental impact,

including prevention of air and water pollution and prevention of global warming. Our environmental costs are calculated on a cash-flow basis, with the tabulated values for capital investment representing the amount of investment for the fiscal year, and not depreciation.

Category		Major costs in FY2003
1 Operational costs	① Cost of preventing pollution ② Cost of global environmental conservation ③ Cost of recycling resources	<ul style="list-style-type: none"> <li>•Capital investment for installation of waste incinerators</li> <li>•Personnel expenses for management of wastewater treatment</li> <li>•Capital investment for reclamation of waste heat from scrap-aluminum smelting furnace</li> <li>•Capital investment for promotion of recycling</li> </ul>
2 Up- and downstream costs		<ul style="list-style-type: none"> <li>•Agential expenses involved in recycling packaging materials (These are omitted from the diagram to the right due to the fact that they represent only a minute sum.)</li> </ul>
6 Cost of environmental management activities		<ul style="list-style-type: none"> <li>•Personnel expenses for ISO 14001 system management</li> <li>•Personnel expenses for participation in environmental education</li> </ul>
4 Research and development costs		<ul style="list-style-type: none"> <li>•Operating and personnel expenses for product development contributing to environmental conservation, including automated manual transmissions</li> <li>•Capital investment for construction of an energy laboratory for conducting research and development into energy conservation, prevention of global warming, and the like</li> </ul>
5 Community-involvement costs		<ul style="list-style-type: none"> <li>•Expenses for greening activities</li> <li>•Expenses for air-pollution levies and the like</li> </ul>
6 Environmental-damage costs		<ul style="list-style-type: none"> <li>•Capital investment for reclamation of groundwater polluted in the past</li> </ul>



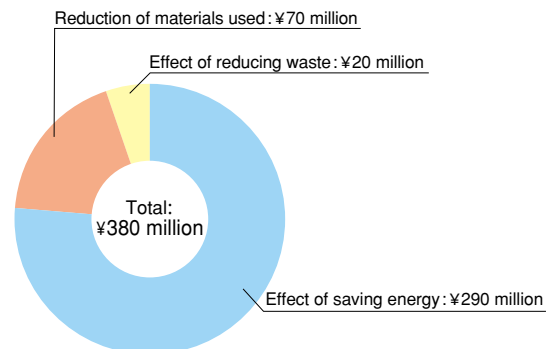
The total cost of environmental conservation in FY2003 was increased by 26% over the previous fiscal year because of major capital investment for the renovation of incinerators and the construction of an energy laboratory.



### Benefits of Environmental Conservation Activities

Benefits can be expressed as economic or quantitative. Quantitative benefits are detailed throughout this report, but only those economic benefits that can be clearly shown within the operational area concerned are calculated. Presumptive or indirect benefits such as risk aversion and enhanced added value for products may also occur, but in consideration of such matters including the fact that standards for converting these into economic values have not been devised, effects of such types are excluded from calculations. Benefits for the single year FY2003 totaled ¥380 million, as shown in the graph at right.

(Up through the last fiscal year, cumulative benefits taking into account the useful life of equipment and facilities were given, but starting with FY2003 only the figures for benefits that can be clearly shown for the single fiscal year are given.)



A major contribution was made by the introduction of a cogeneration system at the Kariya Plant in FY2002, but the aggregate effects of individual energy-saving activities in FY2003, the small effect of reducing waste, and the small effect in proportion to capital investment played a major part in the resulting figures, which show a reduction of 37% from the previous fiscal year.



## Fiscal 2003 Results of the Third Environmental Action Plan

Aisin formulated and promoted annual plans in line with the Third Environmental Action Plan, a midterm plan for the company's environmental initiatives (FY2002 through FY2006). Following on the ahead-of-schedule achievement in FY2002 of the zero landfill-waste emission targets by all plants (see page 26), in FY2003 we continued to make solid progress, including achievement of our FY2006 targets for reductions of PRTR-target substances. We will revise the Third Environmental Action Plan to set even higher targets and carry out activities to reduce environmental impact.

### 1 Developing environmentally friendly products and technologies

Item	Action policy	Target for FY2003	Results of activities during FY2003	See page
1 Preliminary environmental evaluation	Augmentation of preliminary evaluations from the development and design stages	Study product evaluation methods with <sup>2</sup> LCA • Number of cases: 1	Conducted LCA analyses (surveys) of 26 major products based on the Aisin LCA database	P 11 P 12
2 Development of clean-energy equipment	Product development for EV and life & energy related products	Development of products having low environmental impact • Number of development topics: 3	Development of new 56kW model gas engine driven heat-pump air conditioner  Achievement of performance targets for home-use fuel cells: , and One other topic	P 16
3 Measures to counter global warming	Product and technology development linked to reduction of CO <sub>2</sub> emissions	Reduction of weight for automotive parts in conjunction with customers (Activities in 6 areas, including body and drivetrain)	Weight reductions in 6 areas • Seat having a new frame, tilt and telescopic steering system having a simplified structure and made of aluminum, etc.	P 13 P 14
4 Improvement of recyclability	Design with consideration for recyclability, development of recycling technology, and expansion of recyclable materials	Evaluation of product recyclability • Number of evaluations: 1 or more	Evaluation of easy dismantling and recyclability of shower-toilet seats	P 18
5 Management and reduction of environment-impacting substances	Augmentation of management and effective reductions through preliminary evaluations	Promotion of lead-free solder • Reduction in amount used: 0.15t/ year  Abolition of use of hexavalent chromium • Reduction in amount used: 6kg/ year	Abolition of lead: Reduction of 0.15t/ year • Complete elimination of lead from ECUs for four-wheel drive vehicle switching actuators, etc.  Abolition of hexavalent chromium: Reduction of 6kg/ year • Substitution of trivalent chromium in some plating for jacks, door locks, etc.	P 17 P 18

### 2 Saving resources and enhancing recycling activities based on the spirit, "effective utilization of limited resources"

### 3 Minimizing environmental impact waste in manufacturing and implementing stringent environmental management

Item	Action policy	Target for FY2003	Results of activities during FY2003	See page
6 Measures to counter global warming	Active promotion of measures to reduce CO <sub>2</sub> emissions	Reduction activities Target volume of CO <sub>2</sub> emitted: 195,000 t-CO <sub>2</sub> / year <sup>3</sup> (Actual execution target: 190,000 t-CO <sub>2</sub> / year)  Topic allocation rate for FY2006 CO <sub>2</sub> reduction target (5% reduction of total amounts emitted from FY1991 levels): 100%	Volume of CO <sub>2</sub> emitted: 194,000 t-CO <sub>2</sub> / year <sup>4</sup> The mid- to long-term targets were reached, but the execution target was not. • Reduction of no-load operation loss for hydraulic pumps • Reduction of internal pressure loss in compressors, etc.  Improved allocation rate through revisions of CO <sub>2</sub> reduction scenarios and implementation of revamped engineering methods: 92%	P 19 P 20

1. PRTR...Pollutant Release and Transfer Register

2. LCA...Life Cycle Assessment, a method of assessing the extent of the environmental impact of a product throughout its life cycle, from the mining of its raw materials through to production, transportation, usage, and disposal

3. Execution target...Target for the present fiscal year established based on the results of the previous fiscal year

4. Mid- to long-term targets...Targets of the Third Environmental Action Plan (FY2002 through FY2006)



Item	Action policy	Target for FY2003	Results of activities during FY2003	See page
<b>7</b> Management and reduction of environment-impacting substances	Augmentation of one layer of control for chemical substances and reduction of release of substances designated by the PRTR system	Establishment of a tabulation system for PRTR-target substances  Total emissions of PRTR-target substances: 115t/ year ( <sup>5</sup> VOCs: 101t/ year)	Established and launched operation of tabulation system for PRTR-target substances  Total emissions of PRTR-target substances: 114t/ year (VOCs: 101t/ year) (Target achieved 3 years ahead of schedule)	P 23 P 25 P 35 P 38
<b>8</b> Reduction of waste materials and conservation of resources	Promotion of waste-reduction and resource-conservation activities aimed at zero emissions	Incinerated waste: 327t/ year  Waste subject to external treatment: 371t/ year	Incinerated waste: 240t/ year  Waste subject to external treatment: 241t/ year	P 21 P 22
<b>9</b> Streamlining of logistics	Active promotion of streamlined logistics geared toward reduction of CO <sub>2</sub> emissions and reduction of packing and packaging materials	Volume of CO <sub>2</sub> emissions during transportation: 13,900 t-CO <sub>2</sub> / year  Volume of packing and packaging materials used: 4,386t/ year	Volume of CO <sub>2</sub> emissions during transportation: 13,800 t-CO <sub>2</sub> / year Joint transportation, <sup>6</sup> modal shift, etc.  Packaging materials: 4,593t/ year (target not achieved) Packaging-material specifications were changed, but the amounts transported increased	P 26

**4** Promoting environmental preservation through close information-sharing with the government and customers and through cooperation and support with suppliers and overseas manufacturing companies **5** Intensifying public relations, education, and corporate citizenship activities

Item	Action policy	Target for FY2003	Results of activities during FY2003	See page
<b>10</b> Augmentation of affiliated-organization activities	Augmentation of activities with customers, Aisin cooperative associations, etc.	Compatibility with Toyota's consolidated environmental management Base augmentation and launch of Aisin Consolidated Environmental Management	Participation as member in operation of Toyota's consolidated environmental management Convened the Aisin Consolidated Environmental Committee (2 times/ year) and the Energy-saving Environmental Conservation Study Conference by member companies	P 27 P 28
<b>11</b> Environmental considerations at overseas subsidiaries	Support for acquisition of ISO 14001 certification	Support for acquisition of ISO 14001 certification by overseas manufacturing companies Inspection and guidance for suppliers for environmental management system	Offered guidance to 4 companies, 2 of which acquired certification Inspected and offered guidance to 61 companies	
<b>12</b> Corporate citizen activities	Active participation in regional communication activities	Consideration of communication with the region policy and trial activities Regional environmental conservation improvement activities/ clean-up of areas surrounding plants	Implemented Regional Discussion Meetings in each plant area Rolled out clean-up operations in each plant area Beautification activities for the Nishio Living Things Fureai-no-Sato	P 30 P 32
<b>13</b> Public-relations activities and dissemination of information	Augmentation of provision of environmental information	Creation/ publication of environmental reports	Published Environmental Report 2002 in Japanese & English. Also on website.	P 30
<b>14</b> Training and awareness activities for employees	Increasing level of knowledge and awareness among employees	Implementation and participation in environmental training at a company-wide level Environment Month, Energy Saving Month activities, to increase awareness	Education and training for environmental managers, practitioners, newly appointed section managers, etc. (8 times/ year) Held lecture meeting on the environment (July 2002)	P 29

**6** Action system -- Promotion by Aisin's Environment Committee

Item	Action policy	Target for FY2003	Results of activities during FY2003	See page
<b>15</b> Promotion of comprehensive environmental management	Refinement of environmental management organization	Revision of and establishment of regulations for company-wide EMS  Ongoing ISO 14001 inspections	Revision of company-wide EMS in keeping with new corporate hierarchy • Revision of company-wide regulations • Regular convening of Environment Committees  Ongoing ISO 14001 inspections	P 6 P 7

5. VOC...Volatile organic compound (i.e., solvent)

6. Modal shift...Transition (shift) in the mode of transportation used for product transportation

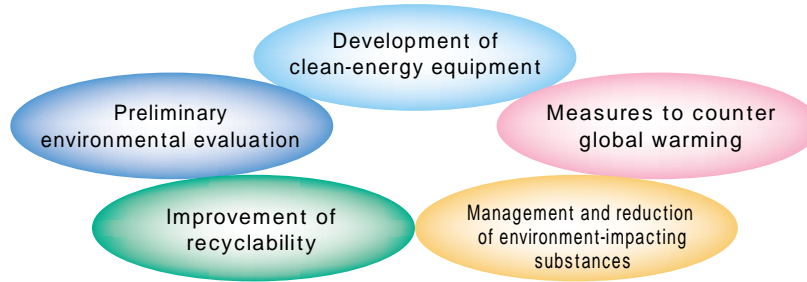


# Development and Design

## Basic Approach

Based on our Environmental Action Plan, we consistently prioritize not only the control and reduction of environment-impacting substances, but also, as a global citizen, strive towards the development of clean energy devices, and the presentation to the world of ever-better products.

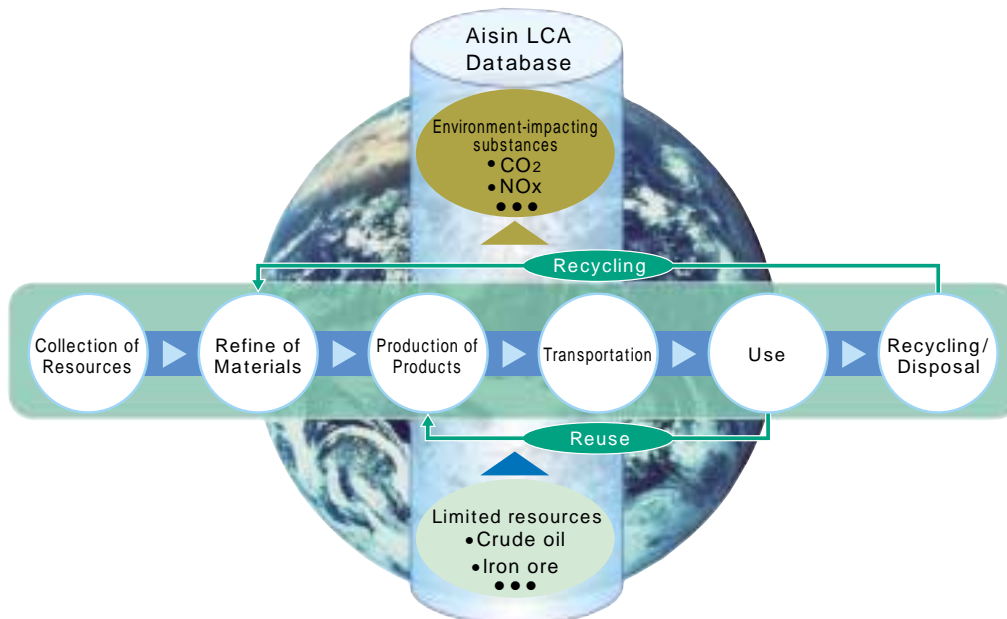
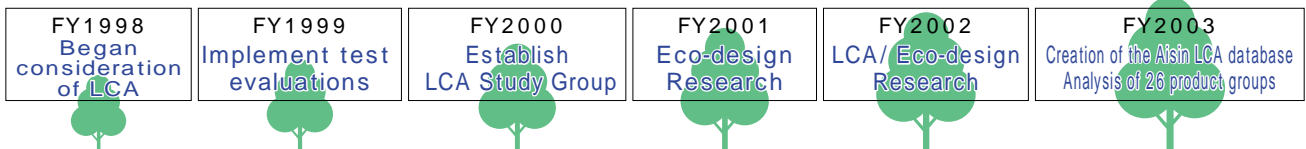
Develop and design low environmental impact, highly functional, high quality products



## Research into Environmental Pre-evaluation Systems (LCA)

Aisin has been implementing LCA (Life Cycle Assessments) since FY1998 in order to bring forth products having low impact on the global environment. We have created a system that enables us to analyze and reduce the environmental impact of products at every stage, from collection of raw materials to product manufacturing, usage, and disposal. LCA is still limited in terms of its

effect-evaluation method, unit data, and other aspects. Aisin is striving to address areas that are incomplete through the creation of our own proprietary LCA database. We are continuing to work toward enhancing analysis technology as well as the environmental friendliness of our products in order to achieve our targets of better analysis, better evaluation, and better product development.



LCA...A method of assessing the extent of the environmental impact of a product throughout its life cycle, from the mining of its raw materials to production, transportation, usage, and disposal



## Examples of LCA for Aisin Products

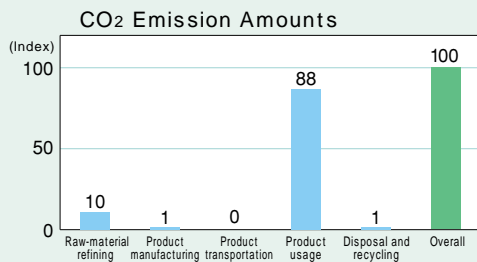
We have classified our products into 26 groups and conducted LCA, which has allowed us to analyze the environmental-impact trends of each product group. This data serves as the basis for assessing which product groups and stages deserve scrutiny in order to reduce

environmental impact efficiently, and we will continue to devote efforts to development and enhancements geared toward bringing the world ever better products.

### 【CO2 Emissions Data】

#### Automotive Parts

##### 1. Door Frame

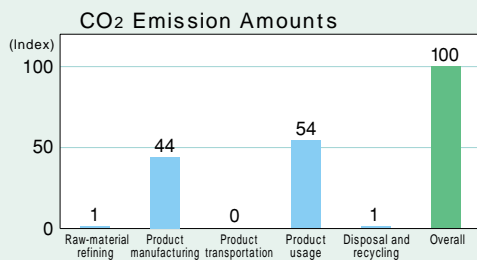


The amount of CO<sub>2</sub> emissions in the "product manufacturing" stage accounts for 88% of the total. Accordingly, we learned that the keys to reducing CO<sub>2</sub> emissions lie in measures to suppress fuel consumption during vehicle travel, such as by making parts more lightweight.



Door Frame

##### 2. Piston



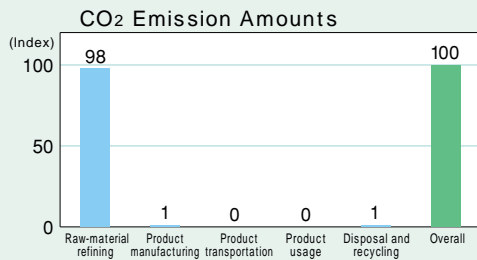
The amount of CO<sub>2</sub> emissions in the "product manufacturing" stage accounts for 44% of the total. Accordingly, we learned that the keys to reducing CO<sub>2</sub> emissions lie not only in measures to suppress fuel consumption during vehicle travel, but also in making the production processes more efficient.



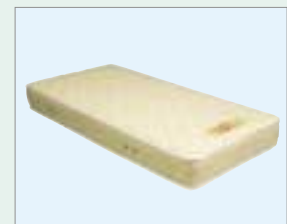
Piston

#### Life & Amenity related Products

##### 1. Mattress



The amount of CO<sub>2</sub> emissions in the "raw-material refining" stage accounts for 98% of the total. Accordingly, we learned that the keys to reducing CO<sub>2</sub> emissions lie in selecting materials that offer not only quality and functioning, but also superior environmental friendliness.



Mattress

Note...Product analysis is based on information from the Aisin LCA database. Data for the "product manufacturing" stage includes only data from in-house production lines. Data from suppliers or the like is not included.

## Improvements in the Environmental Friendliness of Automotive Parts

The automobile industry is currently proactively involved in working toward prevention of global warming, as well as toward reductions in fuel consumption and in resource depletion. As a manufacturer of automotive parts, Aisin is currently pressing ahead with development operations that seek to improve the environmental friendliness of automobiles, through, for example, improving engine efficiency and transmission efficiency and reducing vehicle weight, and responding both to the requirements of manufacturers and drivers.

【At Aisin, we are taking up the challenges of performance evaluation and component development through such operations as measurement of the composition of exhaust emissions from automobiles equipped with the parts we manufacture.】



## Improvements in Transmission Efficiency

Improving the efficiency of transmission for the drive power conveyed from the engine to the wheels can reduce the load on the engine. That is to say, the amount of fuel consumed by the engine decreases, and atmospheric pollution and fuel consumption can be reduced.

【Aisin is promoting development of components that enhance the transmission efficiency of automobiles.】

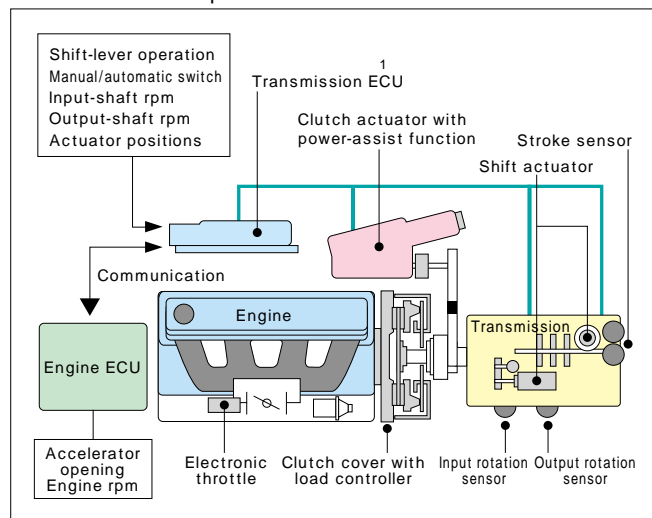
### Automated Manual Transmission

Conventional automatic transmissions conveyed the drive power of the engine to the transmission by means of oil pressure, using a torque converter, wet clutch, or the like. The automated manual transmission developed by Aisin is based on a highly efficient manual transmission that performs direct drive mechanically. It uses computer control to enable gear shifting in an optimized state, thereby improving fuel efficiency (developed jointly with Aisin AI Co., Ltd.).



Automated Manual Transmission

### Structural Principles



<sup>2</sup> Mode fuel consumption: Automatic Transmission < Manual Transmission < Automated Manual Transmission

1.ECU...Electronic control unit (computer)

2.Mode fuel consumption...Fuel consumption occurring during vehicle travel in a prescribed travel pattern

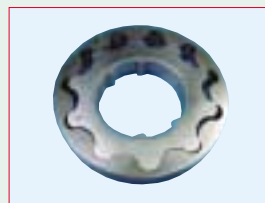


## Improvements in Engine Efficiency

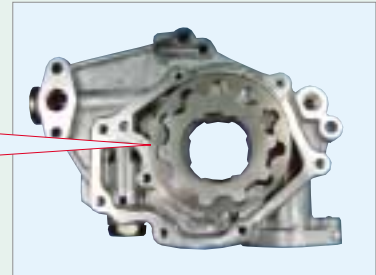
Automobile engines require a wide range of components for enhancing efficiency and maintaining engine durability. Aisin is engaged in the development of parts that enhance engine durability, improve engine efficiency, and reduce fuel consumption.

### Oil Pump

We conducted repeated evaluations on actual engines and computer simulation analysis using computers. This enabled us to optimize the configuration of the oil pump's drive rotor as well as its inlet and outlet ports, making it possible to reduce pumping loss by 15% and thereby help enhance fuel economy.



Drive Rotor



Oil Pump

## Weight Reductions

Reducing the weight of automotive parts is an effective way of improving the environmental friendliness of automobiles. Even when the amount of weight reduction of each individual component is small, the total weight reduction of all automotive parts adds up to less overall weight for the vehicle, which results in a proportionate reduction in fuel consumption. This in turn reduces exhaust emissions, such as CO<sub>2</sub>, NO<sub>x</sub>, and SO<sub>x</sub>.

### Power Seat

Adoption of an integral seat frame and use of high tensile-strength steel reduced weight by 20%



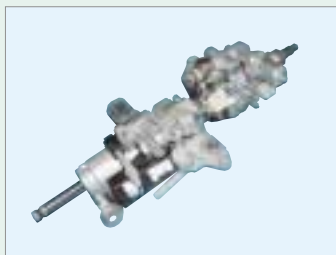
### Sunroof

Adoption of plastic materials for the glass opening/closing mechanism and the guide piping for the glass-drive cable reduced weight by 10%.



### Tilt and Telescopic Steering System

Use of aluminum for the telescopic tube-support components and simplification of the structure reduced weight by 20%.



### Power-shift Transmissions for Forklift Truck

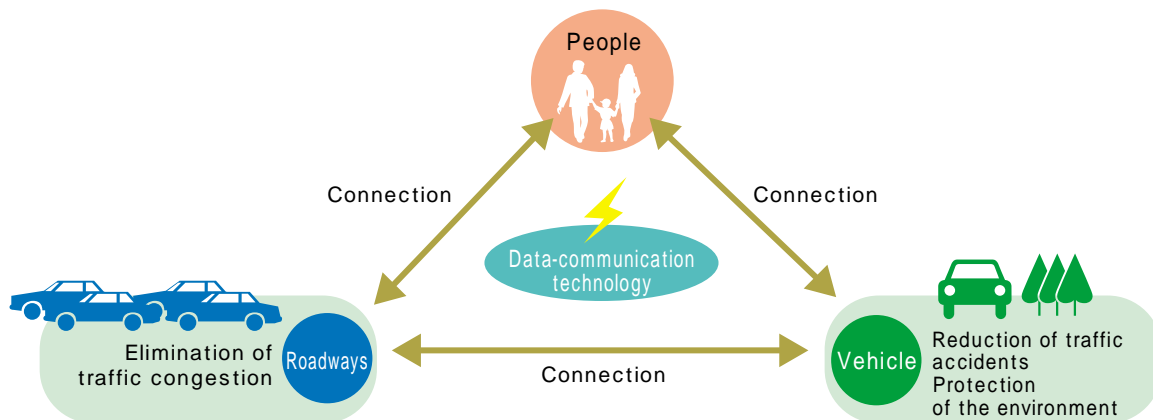
Use of aluminum for the transmission case and adoption of light-weight gears and other components reduced weight by 40%.





## Commitment to Intelligent Transport Systems (ITS)

ITS is currently being developed at a worldwide level, aiming to improve the smoothness and safety of automobile traffic systems. ITS contributes to the environment through easing traffic congestion, thereby improving fuel consumption and reducing emissions of NOx and other exhaust gases. It also acts preventively to reduce accidents, which leads to reductions in the consumption of resources. Aisin is implementing development of ITS through work on vehicle control, image recognition, and navigation technology.



### 【Participation in the Crayon Project】

Aisin is taking part in the planning for trial experimentation for the Crayon project under development by Toyota Motor Corporation. Crayon is a next-generation mobility system that enhances protection of the environment as well as convenience by combining commuter EVs with advanced ITS technology.



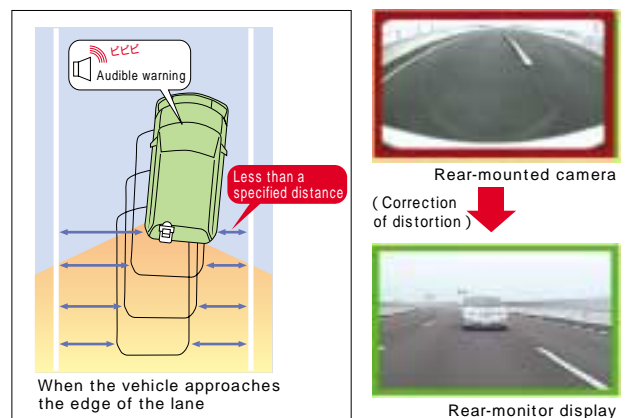
### 【Parking Assist Systems】

A monitor screen and audio guidance inform the driver of parking-locus information, assisting the driver in parking smoothly and efficiently. This can help save fuel.



### 【Lane-departure Warning Systems】

This system makes use of the compact rear-mounted camera for the parking-assist system to sound an audible warning to the driver when the vehicle is about to leave its lane, thereby promoting smooth traffic flow and even helping prevent accidents. This dual use of the compact rear-mounted camera achieves new functionality at low cost.





## Improving the Environmental Friendliness of Life & Energy related Products

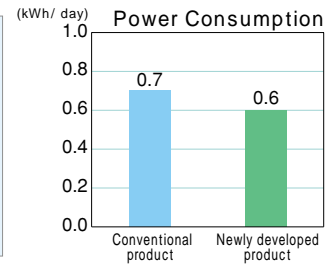
Our key concern is to offer consumers products that are kind to both people and the earth. To this end, we are developing products that offer reduced power consumption, improved efficiency, and less emissions of CO<sub>2</sub> and NO<sub>x</sub>.

### 【Energy-saving Shower-toilet Seats】

By mixing air into the flush water, we have achieved flushing performance having a feel equivalent to the 1.3 liters per minute of water of a conventional toilet, yet using only 0.9 liters per minute of water. This makes it possible to reduce the capacity of the tank by 30%. What is more, a change in the shape of the toilet lid prevents such problems as heat radiation from the toilet seat, making possible energy savings of 0.1 kWh per day compared with conventional types.



Shower-toilet Seats

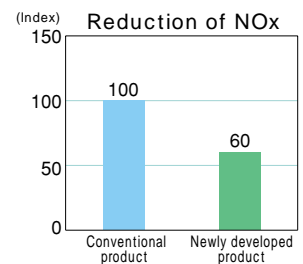
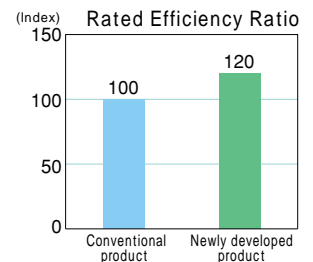


### 【Highly Efficient Gas Engine Driven Heat-pump Air Conditioners】

In consideration for the global environment, Aisin is developing gas engine driven heat-pumps designed to be more efficient, consume little fuel, and have exhaust-gas systems that emit small amounts of environment-impacting substances. We have also made efforts to make the 56kW model that we began manufacturing in March 2003 more energy-efficient. For instance, in low-load cases of cooling only a single room, control of engine speed and of the compressors drives only one of the four compressors. The air conditioner is thereby able to achieve optimized, energy-saving operation under such load conditions.



Gas Engine Driven Heat-pump Air Conditioners (56kW model)



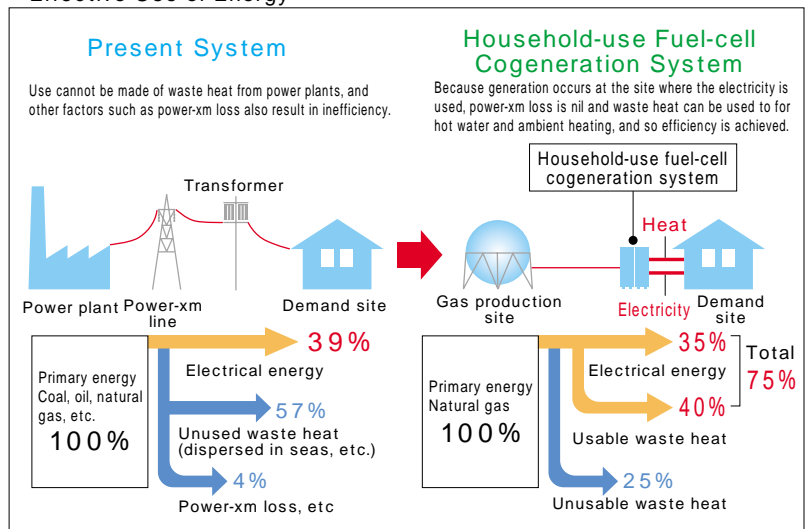
### 【Development of a Fuel-cell Cogeneration System】

The fuel-cell cogeneration system generates hydrogen from sources such as natural gas, and generates electricity and produces hot water through an electrochemical reaction. It can supply households and the like with electrical power and hot water while achieving clean emissions. This product has less environmental impact and is more efficient than combinations of conventional electric and gas-powered hot-water equipment. (Under development jointly with Toyota Motor Corporation)



Fuel-cell Cogeneration System

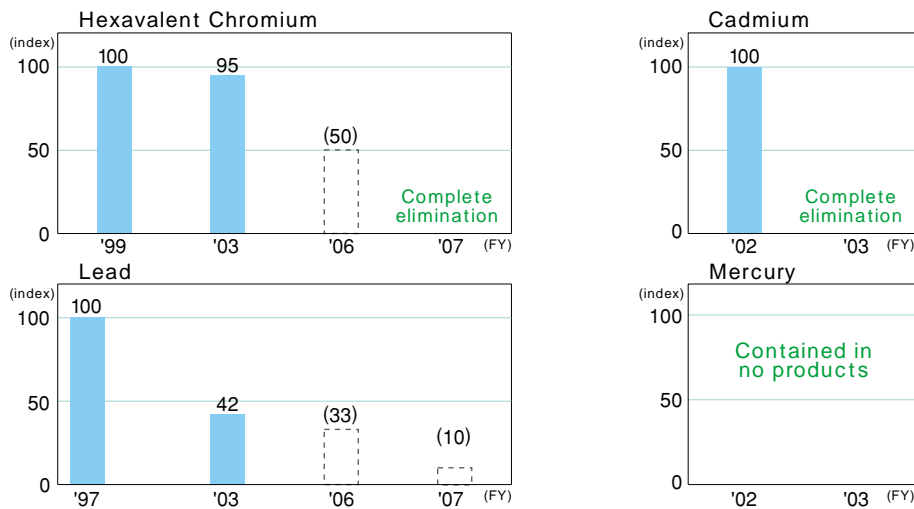
#### Effective Use of Energy



## Reducing Substances That Impact the Environment

The heavy metals hexavalent chromium, lead, cadmium, and mercury are four environment-impacting substances that leach out of scrapped automobiles and inevitably contaminate water supply or other resources and are becoming serious issues. Aisin is engaged in activities to reduce their amounts in automotive parts. Through our activities in FY2003, we completely eliminated cadmium from our products; mercury as well is a substance previously wholly eliminated from our products.

We also plan to abolish hexavalent chromium completely by FY2007, and similarly expect to reduce lead to one-tenth of its present levels. We are pressing ahead with certain of these activities on our own initiative in consideration of the European Union's End-of-Life Vehicles (ELV) Directive.



### Reducing Amounts of Hexavalent Chromium

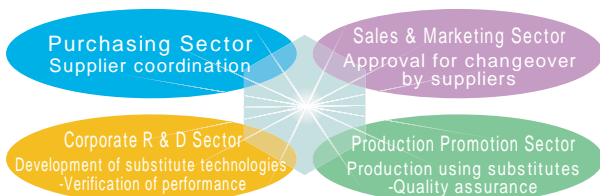
Hexavalent chromium has been widely used to prevent rust in automotive parts and the like, but it has recently been found to have a severe impact on the environment. Aisin is working in collaboration with car manufacturers to reduce amounts of hexavalent chromium. In FY2003 we replaced hexavalent chromium with trivalent chromium in components for jacks, some door locks, and others, a move made ahead of the EU's ELV Directive. These moves succeeded in reducing hexavalent chromium by 5% this year.

Because these are broad-based activities that extend from our customers to our suppliers, we established an in-house Special Action Committee for Hexavalent Chromium, and are promoting these moves as company-wide coordinated activities that encompass engineering, manufacturing, sales, and procurement.



Jack

#### Special Action Committee for Hexavalent Chromium



• European Union End-of-Life Vehicles Directive...A directive intended to prevent the release of environment-impacting substances into the natural environment when vehicles are scrapped by prohibiting the use of environment-impacting substances (lead, hexavalent chromium, cadmium, and mercury) in vehicles sold by dates established for each respective substance. (Some components fall outside the scope of the directive.)



### Reducing Amounts of Lead

Lead is found in solder and in rubber products. For this reason, we replaced the lead in solder with a tin-silver alloy, but such solder has a high melting point, and a solder-application temperature that is excessively high can give rise to such problems as destruction of IC chips and other electronic components. Aisin prevents damage to ICs and other components through strict temperature controls for solder application. We have also achieved lead-free rubber parts without sacrificing performance by replacing the lead used in the forming process to enhance durability with zinc and magnesium compounds. In FY2003 we adopted lead-free solder for the ECUs for four-wheel drive actuators as well as achieving lead-free rubber parts, thereby reducing the amount of lead used by 1% from FY2002. Solder is an item outside the scope of the ELV Directive, but we are conducting our own research and development in this area.



Four-wheel Drive Actuator ECU



Vacuum Switch  
(rubber part for internal sensors)

### Elimination of the Use of Cadmium

Our products previously used cadmium to prevent seizure of the contacts in bimetal thermostats, but we have eliminated the use of cadmium by replacing it with nickel.



Bimetal Thermostat

## Developing Recycling Technologies

With "looking after our limited natural resources" as our motto, Aisin is promoting development taking into account "3R" (Reduce, Reuse, Recycle), actively striving to develop recycling technologies.

### Evaluation of the Ease of Dismantling for Shower-toilet Seats

We conduct investigation in the design stage of such matters as attachment methods, number of attachment points, adhesive materials, composition labeling, and dismantling time, with our aim being to design products that are easier to be recycled.

Dismantling-ease Evaluation Sheet

Esaie of Dismantling at the Product and Subassembly Level		Recyclability at the Individual-component Level				
No.	No.	Part name	Structural material			Material labeling
			Metal	Thermoplastic resin	Thermoplastic resin	Other
1	1	Lid		○		○
2	2	Seat		○		○
3	3	Seat cover		○		○
4	4	Sealing rubber				○ ×
5	5	Sensor tape	○			×
6	6	Plate spring	○			×
7	7	Base cover		○		○



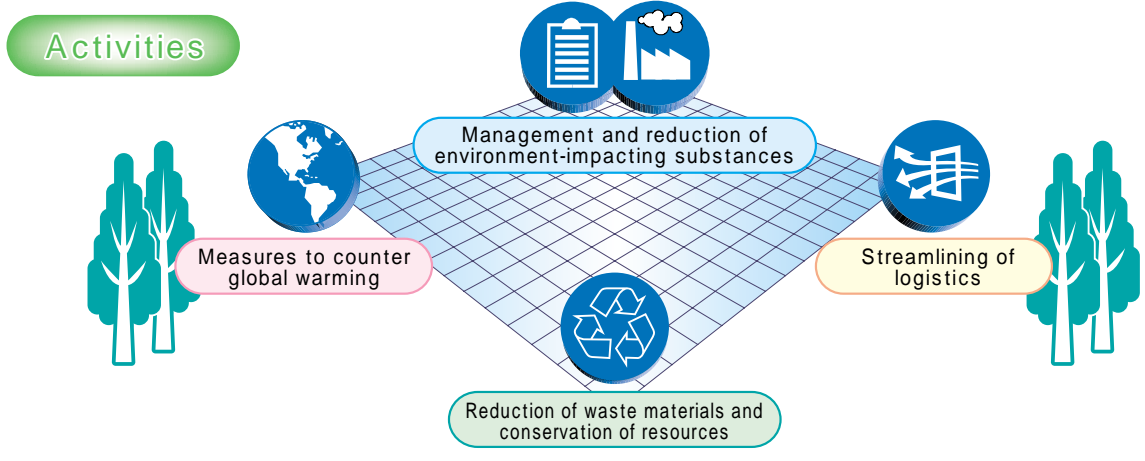
Shower-toilet Seat



# Production

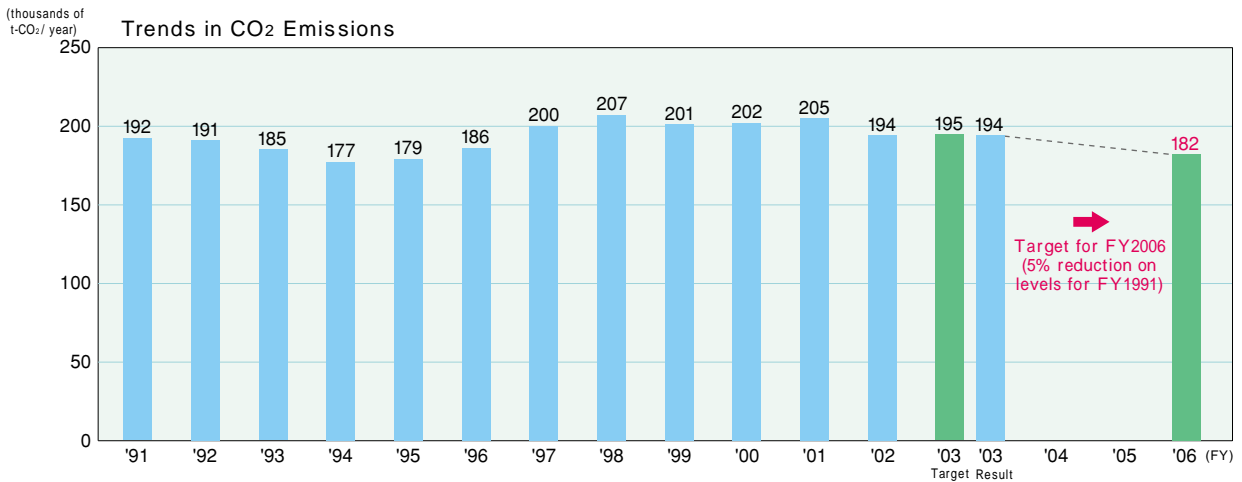
## Basic Approach

On the basis of the Third Environmental Action Plan, Aisin is conducting activities according to this policy :1) Saving resources and enhancing recycling activities based on the spirit,"effective utilization of limited resources" and 2) Minimizing environmental impact waste in manufacturing and implementing stringent environmental management.



## Activities to Prevent Global Warming

We are currently promoting "Reductions in the amount of energy used" and "Efficient use" as measures to allow us to respond to the problem of global warming, and also to implement the more effective use of energy resources. Our target is to reach a 5% reduction in the level of CO<sub>2</sub> emitted in FY2006 against the level recorded for FY1991, and we are pressing ahead with our energy-saving measures in order to achieve this.



Note: The conversion factors for CO<sub>2</sub> have been changed over from calculation of C to calculation of CO<sub>2</sub>, using the figures shown below, and calculating back to FY1991. In doing this, cogeneration is evaluated using the CO<sub>2</sub> conversion factors for fire-powered electricity generation. Electricity: 0.381kg-CO<sub>2</sub>/ kWh, crude oil: 2.7000kg-CO<sub>2</sub>/ℓ, LNG: 2.3576kg-CO<sub>2</sub>/ m<sup>3</sup>, LPG: 3.30094kg-CO<sub>2</sub>/ kg, and kerosene: 2.5308kg-CO<sub>2</sub>/ℓ

During FY2003, our energy-saving activities achieved a saving of 11.4 thousand t-CO<sub>2</sub> (against a target of 4.8 thousand t-CO<sub>2</sub>). We thus limited the amount of CO<sub>2</sub> emissions to levels equivalent to those of the previous fiscal year despite increased production volumes, thereby achieving our mid- to long-term target (195 thousand t-CO<sub>2</sub>/ year). However, we did not reach our execution target (190 thousand t-CO<sub>2</sub>/ year), which entailed further energy-saving activities. Our main energy-saving improvement themes for the year were, on the technical front, reductions in the amount of LNG used through the

implementation of more efficient combustion technology, and improvements in fluid pressure loss, allowing reductions in pump-operation motive power. On the management side, measures such as prevention of air leaks and shutdowns of various pieces of equipment when not in use through energy-saving patrols are steadily being rolled out horizontally in our plants. In addition to this, we also created CO<sub>2</sub> reduction scenarios with the intention of using them to help meet FY2006 targets, and periodically evaluated these for their practicality, to strengthen our mid-to long-range approach.



## CO<sub>2</sub>-reduction Measures Taken During Fiscal 2003

Aisin implemented various energy-saving activities in plants and office spaces to facilitate "Reductions in the amount of energy used" and "Efficient use," with the aim of meeting our targets for FY2003. These activities included the plant-wide implementation of our existing energy-saving themes,

as well as the proactive replacement of aging facilities with new, energy-saving alternatives. Major examples of our energy-saving activities are described below.

### Measures in Plants (Production Processes)

#### 【Casting】 Adoption of Regenerative Burner in a Scrap Smelting Furnace

We have introduced regenerative burner that recovers high-temperature exhaust gas from an aluminum smelting furnace for reclaimed scrap, and uses this gas to preheat combustion air, thereby reducing gas consumption. Ceramic balls are used for the heat reservoir, reducing maintenance costs as well as waste materials generated during replacement.

**Reduction rate: 40%**  
Nishio Plant



#### 【Resin Molding】 Reduction of Electrical Power Through Recovery of Waste Heat from Material-drying Equipment

We have shortened heater operating times by recirculating heat discharged by equipment for drying material, thereby reducing electrical consumption.

**Reduction rate: 13%**  
Anjo, Nishio Body Components, and Shinkawa plants



#### 【Equipment Machining】 Reduction of No-load Operation Loss for Hydraulic Pumps

Inverter control is used to eliminate the loss from hydraulic pumps for machine tools during no-load operation, when hydraulic pressure is not needed, thereby reducing electrical consumption.

**Reduction rate: 50%**  
Anjo, Nishio, Ogawa, and Kariya plants



#### 【Stamping】 Reduction of Electrical Power Through Use of an Energy-saving Circuit in Hydraulic Pumps

The loss from hydraulic pumps for machine tools during no-load operation, when hydraulic pressure is not needed, is reduced by stopping the pump after a fixed interval, thereby reducing electrical consumption. A dedicated relay for suppressing inrush current due to switching the energy-saving circuit on and off has been added to improve durability.

**Reduction rate: 93%**  
Ogawa Plant



### Measures in Plants (Motive-power Processes)

#### 【Compressors】 Reduction of Internal Pressure Loss in Compressors

We gave attention to pressure loss inside compressors, which is can lead to a loss of air-supply pressure, and effected a change to a pressure-maintaining valve having no pressure differential, thereby reducing electrical consumption.

**Reduction rate: 9%**  
Shintoyo Plant



#### 【Cogeneration】 Introduction of a Micro-cogeneration System

We introduced a micro-cogeneration system capable of yielding both heat and electricity simultaneously. Hot water obtained from this system is used by testing devices located adjacent to the production equipment, thereby improving the efficiency of energy usage.

**Reduction rate: 1%**  
Anjo Plant

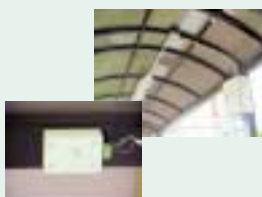


### Measures in Office Areas

#### 【Lighting】 Motion-sensor Shutoff of Lighting When Not Needed

We devised control panels that combine motion sensors with illumination sensors, and installed them in locations with infrequent movement of personnel in or out. These control panels shut off lighting when it is not required, thereby reducing electrical consumption.

**Reduction rate: 9%**  
Nishio and Shintoyo plants



#### 【Lighting】 Changeover to Inverter-type Fluorescent Lighting

In conjunction with our replacement of lighting, we adopted Hf fluorescent lights that use by ballast circuits with inverters, thereby reducing electrical consumption for lighting.

**Reduction rate: 30%**  
All plants



## Activities for Reducing Waste Emissions

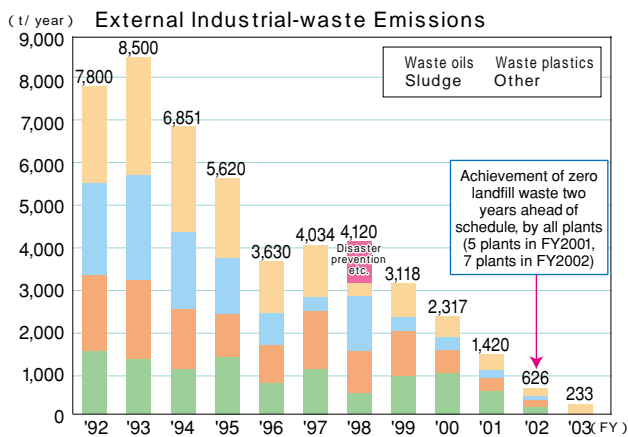
Aisin launched activities to reduce industrial waste in FY1993, and in our Third Environmental Action Plan we set the targets "All plants to be producing zero landfill-waste emissions by the end of FY2004" and "A 30% reduction in the amount of incinerated waste emitted by the end of FY2006 in comparison with FY2001." As a result of activities carried out accordingly, we met each of these targets ahead of schedule in FY2002, and we are now rolling out efforts toward achieving our new target of zero waste emissions by FY2006 -- a goal already attained at five plants in the course of FY2003.

### Zero Landfill-waste Emissions

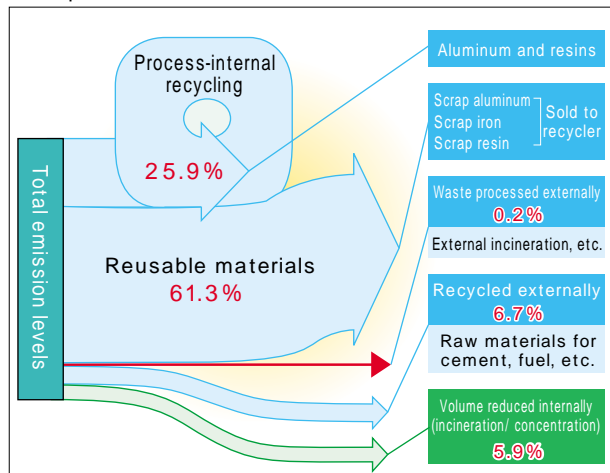
Plants which have reduced landfill-waste emissions by 95% or more from FY1998 figures are termed "plants which have achieved zero landfill-waste emissions." (This target was achieved company-wide in FY2002.)

### Zero Waste Emissions

Plants which have reduced emissions of landfill-waste materials and of waste materials disposed of by external incineration (midterm) by 95% or more from FY1998 figures are termed "plants which have achieved zero waste emissions." (We are now working toward achieving this target.)



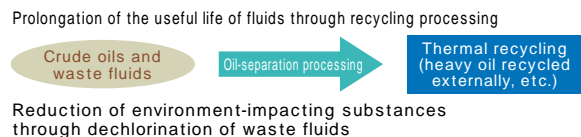
### Disposal of Waste in FY2003



### 【Main Waste-reduction Methods】

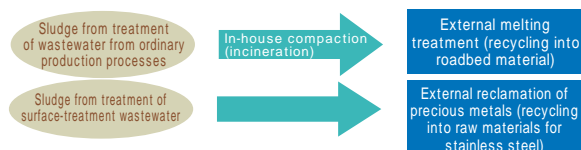
#### Reduction of Amounts of Waste Liquid Generated

We are promoting measures such as prolonging useful life through recycling processing to reduce the amounts of oil solutions, washing agents, and other types of waste that are generated. We are also working toward achieving dechlorination in order to make oils more easily recyclable.



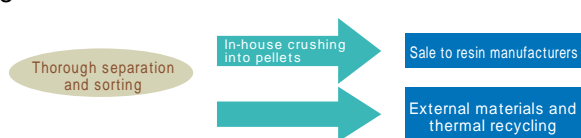
#### Reclamation of Resources from Sludge

For sludge generated at wastewater treatment sites and plants, that which contains heavy metals is subjected to material recycling, and that which does not is compacted through in-house incineration, then made into materials intended for roadbeds.



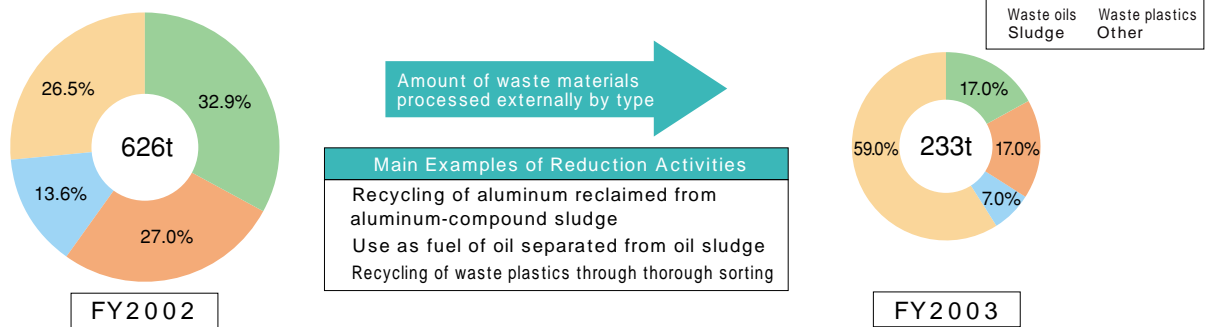
#### Reclamation of Resources from Waste Plastics

We are promoting activities in which single-type materials are crushed into pellets, then recycled, and compound materials are recycled through sorting and separation.



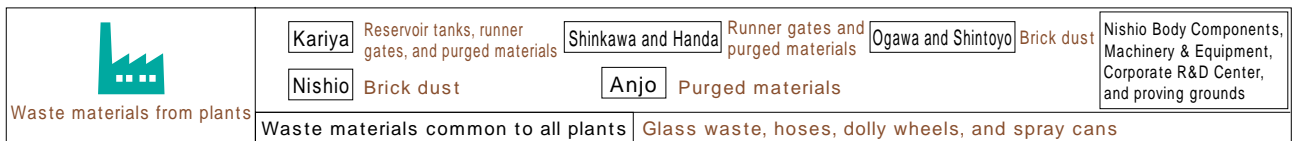


## State of the Reduction of Industrial Waste for Fiscal 2003



## Launch of Eco-center Operations

In order to reclaim resources from items that are difficult to recycle and cannot be processed using external recycling technology as well as from small-lot waste materials for which external recycling routes cannot be used, in May 2002 we inaugurated the Eco-center, a center for recycling wastes from all plants.



**Eco-center** Recycling into resources of waste materials from plants through collection, sorting, and separation

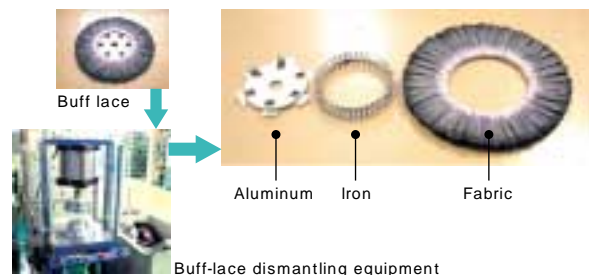


## Zero-emissions Activities

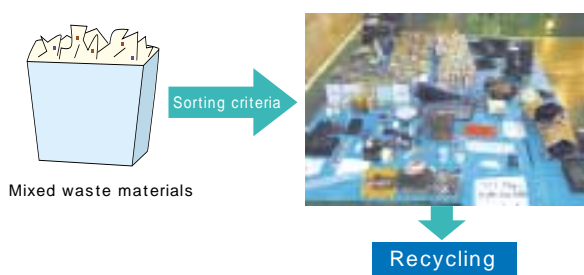
We are making company-wide efforts in resource-reclamation measures aimed at achieving our reduction targets for waste materials subject to outsourced processing (to a company-wide amount of 87 tons per year or less of industrial wastes in FY2006).

### Reclamation of Resources Through Thorough Sorting

Buffing laces for polishing were previously disposed of in landfills. We sorted these items and, after investigating their structure, developed equipment to dismantle them through trial and error, and now recycle these materials.



We established a Recycling Yard capable of thoroughgoing sorting of waste materials, established sorting criteria, and now sort and recycle all waste materials.



## Management and Reduction Activities for Environment-impacting Substances

### Local Environmental Conservation Activities

In order to achieve thoroughness in environmental conservation, we have established a self-imposed Aisin Environmental Standard, which specifies air- and water-quality standards that are more stringent than those prescribed by law, and we are implementing activities to reduce environment-impacting substances based on this.

#### Prevention of Air Pollution

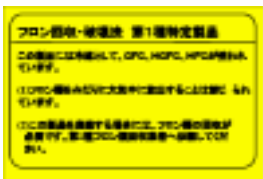
We have installed a state-of-the-art incineration facility with dioxin-eliminating equipment. To obtain understanding for the rationale behind this facility among residents living within a four-kilometer radius, before installation we held explanatory meetings with delegates from the town. For exhaust emissions, we entered into an agreement specifying stringent values with the city of Nishio, and introduced catalytic equipment (for breakdown of dioxins) as well as urea-addition equipment (for breakdown of nitrogen oxides) in order to achieve strict compliance with this agreement.



Incinerator

#### Creation of a System for Recovering CFCs from Used Equipment

CFCs are used as a coolant in various types of cooling equipment in plant processes, in commercial-use air conditioners, in commercial-use refrigerators and freezers in employee dining facilities, and elsewhere. When such equipment is discarded, we turn it over to licensed CFC-recovery and salvaging companies for reliable disposal that prevents the release of the CFCs contained into the atmosphere.



In-house control sticker



CFC-recovery equipment

#### Prevention of Water Pollution

We adopted continual measuring apparatus to automatically measure and constantly monitor the concentrations of the eutrophic substances nitrogen and phosphorus in wastewater.



Fully automatic continual measuring apparatus for nitrogen and phosphorus

#### Storage of Equipment Containing Polychlorinated Biphenyls

Because facilities do not currently exist that are capable of proper disposal of high-pressure condensers and fluorescent-light ballasts that use polychlorinated biphenyls (PCBs) as insulating oil, we carry out strictly controlled storage to prevent leakage or loss.



PCB-containing condensers in storage



PCB storage facility



## Groundwater Purification

Trichloroethylene came to be widely used from around the mid-1950s as a superior cleaning agent, but was designated as a toxic substance in 1989, and we completely abolished its use at Aisin in 1992. We have also completed work on the groundwater downstream-barrier wells, which were installed between FY1997 and FY1998 within our plants and prevent water escaping downstream, as well as water-pump aeration-cleaning equipment, and are continuing cleanup operations using this equipment. We report the results to the government at regular intervals. Three plants have yet to meet the environmental standards for this substance, but we will continue with our purification operations. We are making efforts to rapidly establish appropriate purification technology for the three plants in order to enable the environmental-standard levels to be reached quickly.

Trichloroethylene Investigation Results During FY2003  
(Environmental standard: 0.03 mg/ℓ)

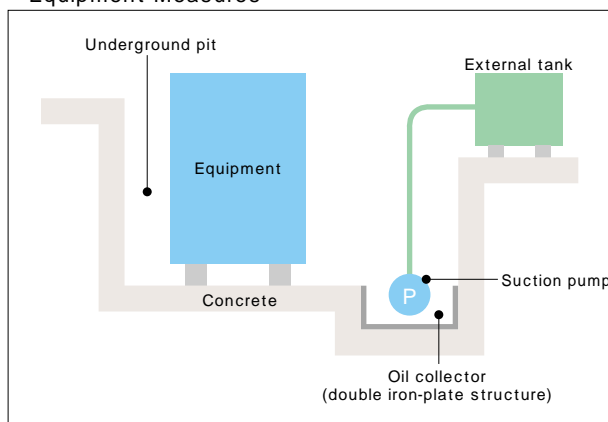
Plant	History of use	<sup>2</sup> Groundwater level
Kariya	Yes	0.32 mg/ℓ
Shintoyo	Yes	0.31 mg/ℓ
Nishio	Yes	0.07 mg/ℓ
Ogawa	Yes	Not detected
Handa	NO	—
Shinkawa	Yes	Not detected
Anjo	Yes	Not detected

•Continuous monitoring is carried out at all plants

## Prevention of Soil Pollution

To prevent pollution of the soil, in FY2002 the piping from underground tanks and the like was changed from buried to aboveground piping, thereby enabling early detection and response for soil pollution due to oils or other substances. In FY2003 we surveyed the status of underground equipment pits. This served as a basis for investigating response methods permitting automatic take-up of oil and transfer to external tanks in the unlikely event of leakage, and we will to implement this progressively starting in FY2004.

Equipment Measures



## Noise Prevention

At the Shintoyo Plant, residences are located close to the plant in some sections, and so we have installed sound-insulating boxes for stamping, welding, and other equipment in the plant, as well as fitting assembly-process equipment with sound-damping devices and smoothing the paths for trucks and forklifts to reduce noise. We have also implementing such noise-reduction measures as replacing rooftop air-conditioning cooling towers and other machinery with low-noise equipment. In FY2003 we erected sound-barrier walls to further enhance quietness.



1. Aeration cleaning...Air is blown up through a mist of groundwater, and trichloroethylene is vaporized and removed, then absorbed by activated charcoal.  
2. Groundwater level...Annual mean collected-water concentrations from within plant grounds.

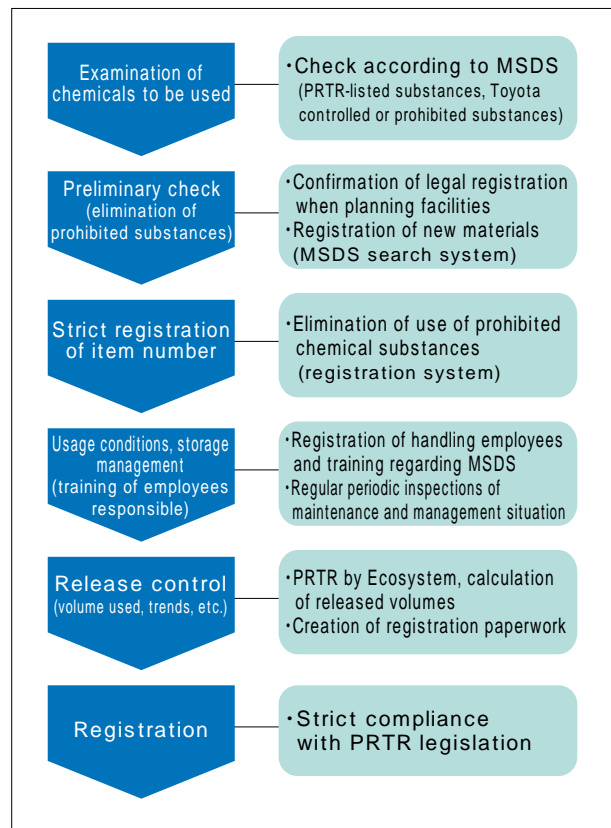
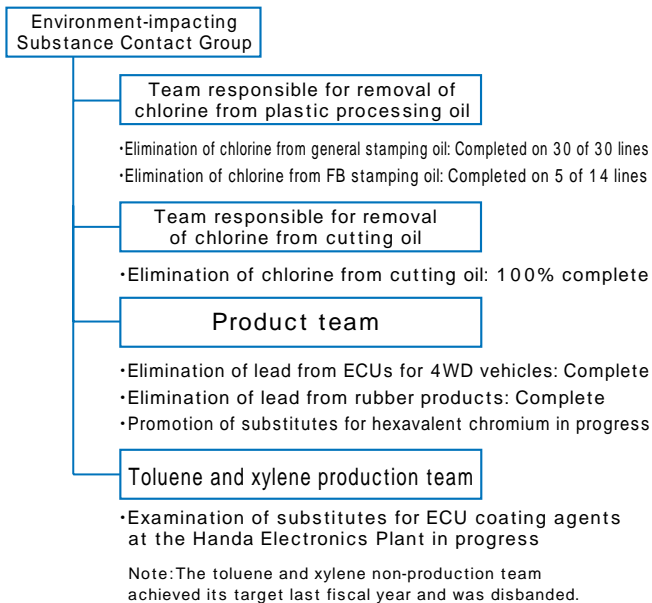
## Management of Chemical Substances

Chemicals are a necessary part of our everyday life, but growing attention is being focused on hormone disruptors, chemicals that damage the ozone layer, and the environmental issues of accidents and leakage incidents. To manage chemical substances at Aisin, we have implemented a <sup>1</sup>PRTR network system at each of our plants and carry out management of the amounts of PRTR-target substances handled and discharged. Accuracy has been enhanced by these moves. Additionally, when new chemicals are introduced at Aisin, we assess their impact and register the people who are going to be handling them. Staff undergo <sup>2</sup>MSDS and PRTR training and are taught to store and manage chemicals with strict adherence to regulations as part of thorough steps to prevent accidents. We are also promoting activities to reduce environment-impacting substances, including eliminating chlorine-containing lubricating oils.

## Reduction in Use of Environment-impacting Substances

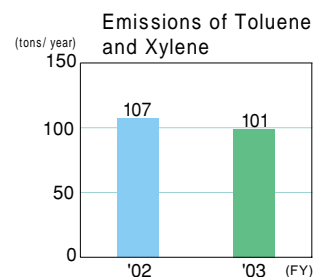
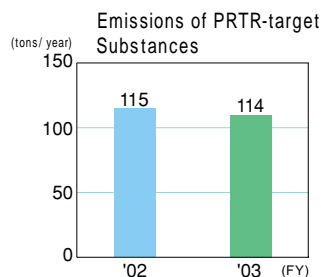
Aisin eliminated the use of trichloroethylene in FY1993, and of specified CFCs in FY1994, and is continuing to work toward reducing the amount and number of environment-impacting chemicals it uses. Based on the Third Environmental Action Plan that we created in FY2001, we are rolling out company-wide efforts to reduce the use of particularly damaging chemical substances from the development through to the utilization stages.

Organization of Environment-impacting Substances Reduction Activities, Main Results, and Details of Considerations During FY2002



## PRTR-target Substances (Excluding those in company-wide quantities of 100kg per year or less)

During FY2003, Aisin handled 657 tons of 40 PRTR-target chemicals, and released 114 tons of such substances. Some 98% of the substances released were to the atmosphere, with the remaining 2% to water. As of FY2003 we have already reached the targets set forth in our Third Environmental Action Plan (emissions of PRTR-target substances: 115 tons per year; emissions of toluene, xylene, etc.: 101 tons per year).



1. PRTR...Pollutant Release and Transfer Register  
2. MSDS...Material Safety Data Sheet



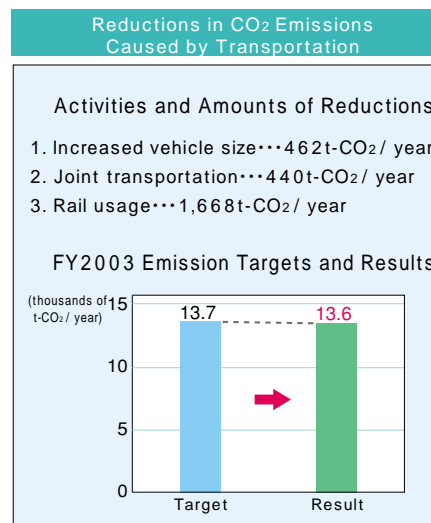
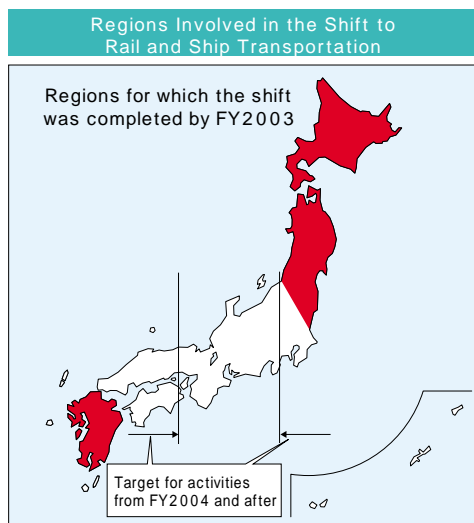
## Streamlining of Logistics

Aisin has long been conducting environmentally friendly logistics activities. One of these activities is the prevention of global warming through improving the efficiency of its transportation. Another activity is in the area of reducing the amount of packaging materials through improvements in packaging.

### Improving Transportation Efficiency

For short-distance logistics, in our activities to enhance load efficiency and reduce the number of vehicles put on the road, Aisin is actively promoting expansion of joint transportation with other companies and the use of vehicles with low-floor bodies that offer larger load capacities. For long-distance logistics, based on comparisons of

amounts of CO<sub>2</sub> emissions and transportation costs, we are progressively effecting a switch (modal shift) from trucks to transportation by rail and ship. This shift to rail and ships reduced CO<sub>2</sub> emissions in FY2003 by the amounts shown below.



### Improving Packaging

Aisin is making efforts focused on reducing the packaging we use to send shipments to our overseas production facilities. During FY2003, in addition to our ongoing activities to reduce the numbers of corrugated-cardboard boxes by improving the container volume efficiency, we also promoted efforts to reuse the packaging for imported articles for exports. A case study is described below.

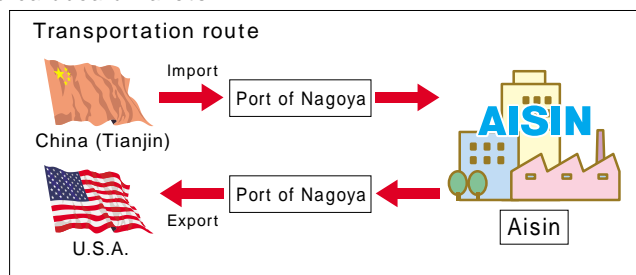
#### 【Overview】

We achieved reductions in new purchases in Japan by adopting identical module dimensions for imports and exports and reusing the corrugated-cardboard pallets for imports for exports as well.

#### 【Modifications】

- Establishment of specifications taking into account the deterioration of pallet quality during importing.
- Establishment of storage areas and storage periods for pallets until they are reused (countermeasures against moisture absorption)

#### Case Study of Reuse of Corrugated-cardboard Pallets



**Amount Reduced**

Reduced purchases of new corrugated-cardboard pallets

**66 tons / year**



# Affiliates

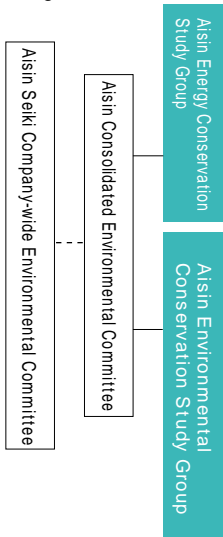


## Aisin Consolidated Environmental Management Activities

Aisin is rolling out a program of activities that targets unified and shared environmental activities among its consolidated manufacturing companies. The Aisin Consolidated Environmental Committee that we established in FY2002, whose members are drawn from our domestic consolidated manufacturing companies, serves as the center for promoting steady efforts toward our FY2006 targets as well as sharing of activities at the practical level by two study groups -- the Aisin Energy Conservation Study Group and the Aisin Environmental Conservation Study Group. For our overseas consolidated manufacturing companies, we are strengthening management systems by sharing information, including among upper management, and together with this we have been devoting efforts to establishing a foundation for independent activities by each company through such measures as detailed personalized guidance to practical staff members and guidance on on-site patrols. We will continue to roll out ongoing efforts around the globe and work to help the environment on a planetary scale.

### In Japan

#### 【Organization】



#### 【Activities】

##### Creation of scenarios for reaching CO<sub>2</sub> emission reduction targets

Thoroughgoing investigation on a model production line for discovering new energy-saving ideas is being conducted.  
To enable companies to make sure use of energy-saving ideas, thorough checks of status of usage and roll-out of the ideas in each company were performed.  
Thoroughgoing reductions in amounts of wasted energy during production-line stoppages were achieved through the implementation of warning systems and the like.



Symposium for Energy Conservation Case Studies

##### Legal compliance

Timely dissemination of information about new legal restrictions and full-coverage response are being carried out.

##### Achievement of zero emissions

To achieve well-grounded reduction activities oriented toward achieving our target of zero landfill-waste emissions, reduction case studies were communicated to the companies and on-site tours were held.

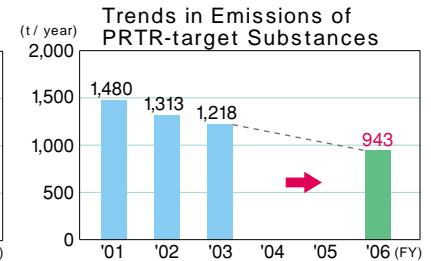
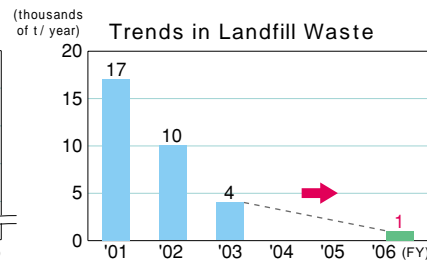
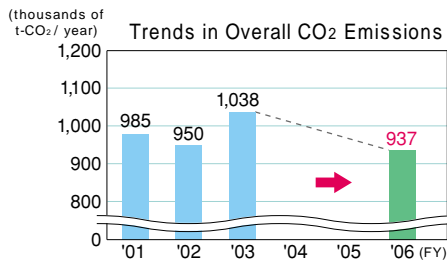
##### Organization of chemical-substance management system

To prevent use of toxic chemical substances and the like, creation of a system to conduct surveys prior to purchase is being promoted. To reduce the amounts of PRTR-listed substances used, the creation and updating of lists of substitutes is being continued.

##### Organization of an environmental management system that also covers suppliers

Consolidated companies are promoting coordinated education and audits to reach a level at which stable environmental management can be promoted by all companies with which we are involved.

### 【Amalgamated Data for Domestic Consolidated Manufacturing Companies】



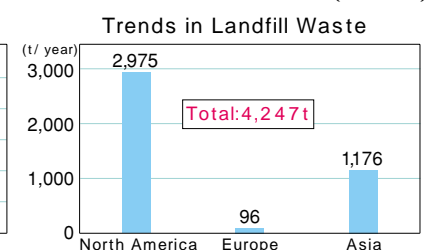
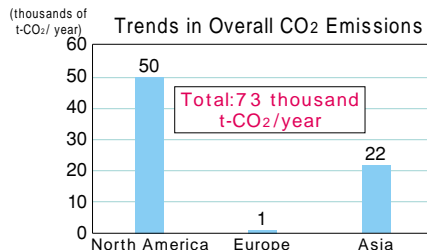
### Overseas 【Activities】



Overseas patrol guidance

### 【Amalgamated Data for Overseas Consolidated Manufacturing Companies】

(FY2003)





## Green Purchasing

Aisin makes every effort to purchase parts, materials, and resources that are friendly to the environment, from environmentally aware companies. We work with our suppliers to improve levels of environmental conservation.

### Supplier-related Activities

To enable each and every one of our suppliers to carry out corporate activities that are kind to the global environment, we created an Environmental Management Inspection Checksheet, which suppliers use for voluntary-inspection activities. We also visit and inspect our suppliers premises, using this Environmental Management Inspection Checksheet to carry out such measures as identifying inadequate areas and having suppliers implement improvement activities. In this way we are providing continuous assistance to enhance the level of environmental management at our suppliers. In addition to this, as environmental-related legislations and the like continue to increase, starting in FY2003 we are furnishing suppliers with environment-related information on legal regulations and the like, and are making efforts to share information.



Environmental-management inspection of supplier's premises by Aisin

#### Current State of Activities

To FY2002	During FY2003
1996 and after -- Creation and updating of list of suppliers of toxic substances March 2000 -- Distribution of the Supplier Environmental Management Guideline Holding of Environmental Management Briefings (annual)	1996 and after -- Creation and updating of list of suppliers of toxic substances July 2002 -- Held Environmental Management Briefing at which environmental management basics and trends in legal regulations were explained (attended by approx. 110 companies) Furnished environment-related information (4 times per year)
<b>Based on Environmental Management Inspection Checksheet</b>	
July 2000 and after -- Start of voluntary inspections and voluntary improvements at each company July 2000 and after -- On-site inspections by Aisin (expansion of scope from approx. 40 to approx. 100 companies)	July 2002 and after -- Voluntary inspections and voluntary improvements at each company (approx. 100 companies) July 2002 and after -- On-site inspections by Aisin (61 companies) (Continued inspections at 53 companies from the previous year, and new inspections at 8 companies)

### Purchase of Eco-friendly Products

Aisin uses recycled paper for all office work, other than the few cases that require particularly unique paper types. For office stationery and consumable supplies as well, we select articles whose materials have a low environmental impact, such as those that use recycled or alternative materials and those designed to be recycled. For office equipment, we selectively purchase products that bear environmental labels such as the "eco" logo or the "green" logo, and are actively promoting purchases of eco-friendly products.





古紙配合率100%再生紙を使用しています

We promote purchases of products bearing environmental labels such as the "eco" logo, the "green" logo, and the "recycled paper" logo.

#### Order Form for Office Stationery Supplies

Indicates eco-products (articles whose use is recommended). Eco-products are ordered using special order forms.



# Social Activities



## Education and Awareness

It's been said that people are what make a company, and we believe it is vital for every single one of our employees to be aware of today's global environment and play an active role in environmental conservation in order to carry out reductions in environmental impact. In cognizance of this, Aisin conducts environmental education and awareness-raising activities for our entire workforce.

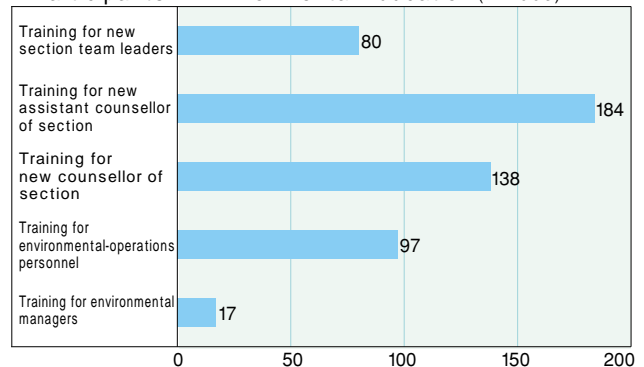
### Environmental Education

Aisin provides education on the environment, as well as education covering safety and hygiene, as an integral part of the company's level-graded education for newly appointed counsellor of section, assistant counsellor of section, and others. We also conduct education for environmental-operations personnel and environmental managers, performing training matched to the respective positions of requisite personnel. Further, when required we also convene explanatory meetings and the like covering environment-related legislation that is modified or enacted each year for related areas and personnel. In FY2003 we conducted explanatory meetings at all plants focusing particularly on an overview of amendments involving reporting for the PRTR Law, along with Aisin's tabulation system.



Mr. Suzuki of the Environment Department explains the PRTR Law

Participants in Environmental Education (FY2003)



### Awareness Activities

We issue an in-house newsletter, and during Environment Month and Energy Saving Month (June and February), we recommend "creative consideration" proposals, bringing home the importance of environmental conservation to our employees. In February, which was Energy Saving Month, some 4,000 proposals for saving energy were submitted, of which 56 were deemed excellent. In July 2002 we held Environmental Lectures by invited instructions from outside the company. These Environmental Lectures were attended not only by in-house Aisin personnel, but also by many persons from our group companies, thereby deepening awareness for the environment throughout the Aisin group.



Environmental Lecture

### Awards from Outside the Company

Field	Award date	Prize name	Type of award
Energy conservation	16 April 2002	Education and Science Minister's Award (For Merit in Creative Consideration)	Design of heating device for energy and CO <sub>2</sub> reduction, plus one other item
	6 February 2003	Energy Saving Excellence Technician Award • Energy Conservation Center Japan's Chairman's Award • Energy Conservation Center Japan's Tokai-Hokuriku Branch Director's Award	Electricity Category: 1 person Electricity Category and Thermal Category: 1 person each
Waste reduction	16 April 2002	Education and Science Minister's Award (For Merit in Creative Consideration)	Design of sun-roof window general-use returnable container, plus one other item



## Communication

To enable our corporate environmental activities to be better understood, Aisin disseminates this Environmental Report to members of the communities surrounding our plants, as well as to our customers, suppliers, investors, and others. In particular, for the past two years we have been actively disclosing information through Regional Discussion Meetings for members of the communities around our plants.

### Regional Discussion Meetings

The extent of the regional effects of environment-impacting substances from Aisin is a matter of vital interest to the people who live in the communities surrounding our plants. For this reason, Aisin has been holding Regional Discussion Meetings for the residents living in the respective communities around each one of our plants, and we have been actively disseminating environmental information about the status of Aisin's environmental efforts through these meetings as well as through plant tours.



Regional Discussion Meeting -- Explanation by Mr. Onda of Aisin's Environmental Department

### AISIN com-center

In November 2001 Aisin opened the AISIN com-center pavilion, which is designed to be a communication center to link the company with the community, customers, and Aisin group companies. The center exhibits products not only from Aisin, but also from group companies as well, and also showcases the company's history, our environmental-related efforts, future product trends, and more. Some 27,119 people from outside the company have visited the center since its opening.



New pavilion "AISIN com-center"



Tour of the AISIN com-center

### Disclosure of Environmental Information Through the Environmental Report

Aisin disseminates environmental information through the company's Environmental Report, which is published as a booklet and also posted on the Aisin website. Below are some of the responses we received via the feedback form included in the printed booklet.

- ① Explanations for case-study photos are a little too brief.
  - ② Specific coverage of measures for reduction of environment-impacting substances other than lead are desired.
  - ③ High expectations are held for greater vitality in "Corporate Citizen Activities and Education"
  - ④ Text information should be reduced to a minimum, with liberal use made of photos, illustrations, and the like.
- Etc.

Although we also received opinions expressing approval for various articles, we are making a point of listing negative views here so as to spur us toward further improving this Environmental Report. We intend to cover as many matters as possible and make the report better than ever.



Environmental Report 2002

## Corporate Citizen Activities

In our aim to be a corporation that is friendly to people, the community, and nature, we have "Be With" the pass-phrase symbolizing our roll-out of activities under in close collaboration with the community our own initiative, helping to ensure that every one of our employees fulfills his or her social responsibility to be a good corporate citizen. We intend to expand our "circle of coexistence" from the local community to the world through volunteer activities and a wide range of other fields that also include environmental conservation.



### Community and Urban Development

#### Support Fund for Environmental NPOs

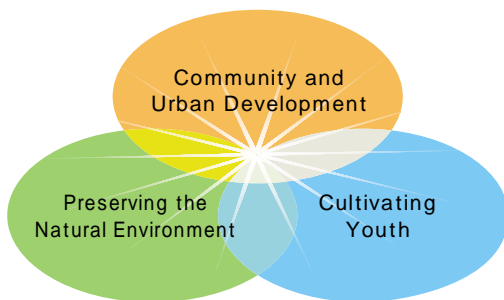
Aisin established the All-Aisin NPO Support Fund to enable profits from the annual charity concert sponsored by the Aisin Group to actively support nonprofit organizations (NPOs), volunteer groups, and other such organizations in



Aichi Prefecture. In FY2003 we selected the beneficiaries of these funds, with emphasis given to environmental NPOs and the like, thereby helping them to augment their activities.

## Overview of Activities

Our corporate citizen activities can be grouped into three areas: 1) community and urban development, 2) preserving the natural environment, and 3) cultivating youth. In each of these areas we are involved in a wide range of activities, and although the scope of each field is narrow we are building up a solid record of achievements. We intend to cherish every single one of these experiences, continuing to turn a humble ear to the wants and desires of the community as we aim for activities that enable us to feel for ourselves how our employees are good corporate citizens.



### Preserving the Natural Environment

#### Back-to-Nature Tours

To heighten interest in environmental conservation among young people, we hold annual Back-to-Nature Tours at a different location each year. The FY2003 tour was held with the cooperation of the Toyota City Nature Observation Forest. On



the day of the tour, around 50 local elementary-school students and persons with disabilities communed with insects, birds, and flora and fostered a sense of group solidarity.

### Cultivating Youth

#### "Making Things" Tour

To give children from the local community a hands-on opportunity to learn about the spirit of "making things," we invited elementary-school students to visit the Toyota Commemorative Museum of Industry and Technology in the



city of Nagoya. The children who took part gained first-hand experience in the joy of making things. This project is helping to pass on the spirit of making things to the coming generation.



### Harvest Festival at DenPark Farm

Each year, Aisin rents a portion of the DenPark allotment farm in the Aichi Prefecture city of Anjo, and invites local groups for persons with disabilities to attend harvest festivals for strawberries in the spring and for sweet potatoes in the fall.



Participants are delighted by the amazing bounty they harvest.

### Aisin "Walk & Walk" Trail

Each year Aisin holds a walking event for local residents and members of facilities for persons with disabilities, as well as for company members. The course covers close to ten kilometers and is intended to promote communication and experience in volunteering among the participants. Over 350 persons take part in this vibrant event.



### Voluntary Grass-cutting at the Hirahara Genji Firefly Park

The Hirahara Genji Firefly Park is situated in the mountains of Nishio City, where one of our plants is located. In the late autumn the waterways here become choked with weeds, creating an environment in which the fireflies cannot breed. Section managers cooperate in cutting the grass in the park on a volunteer basis each year, helping to ensure an environment in which the fireflies can thrive.



### Volunteer Activities at the Nishio City Living Things Fureai-no-Sato

At Aisin's Nishio Plant, we cooperate with the city of Nishio to support environmental-conservation activities at the Living Things Fureai-no-Sato located in the city. More than 100 plant workers and their families worked hard at pulling weeds and performing clean-up.



### Aisin "Making Things" Plaza

The Aisin "Making Things" Plaza was launched in FY2003 with 50 invited members of the Boys and Girls Invention Club in the Nishio region. This event expanded curiosity about science among the children through the process of making things. We intend to continue holding this event.



### Experiencing Farming in Hokkaido

We hold annual hands-on farm learning sessions in the town of Toyokoro, Hokkaido, which is the site of one of Aisin's proving grounds. Younger Aisin employees stay on a farm over a three-night, four-day schedule, interacting with local residents and learning first-hand about dairy farming and other aspects of agricultural operations.



DenPark...The city of Anjo was once known as "Japan's Denmark," because it served as a model for agriculture throughout the country. DenPark was established as a hands-on theme park, taking its name from the "Den" in "Denmark." The park re-creates the town streets of Denmark within buildings of European architecture and giant hothouses.



## Health and Safety

Ensuring health and safety is at the basis of a company's activities, and is a responsibility that the company holds to society. The following are the basic policies and activity indices adopted by Aisin to ensure prevention of accidents and incidents in the workplace by all employees.

### Basic Policies and Activity Indices

#### 【Basic Policies】

Ensuring health and safety is at the basis of a company's activities, and is a responsibility that the company holds to society.

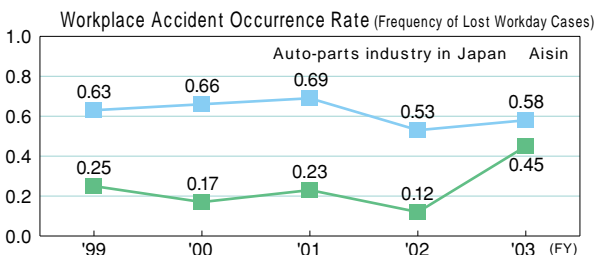
Aisin believes in the fundamental value of every person working within its organization, from top management through every level, and aims for "no accidents" and "no injuries."

#### 【Activity Indices】

1. Strives to remove all factors from its activities that could present danger or hazard within the workplace.
2. Strives to abide by all legal regulations, and in addition, sets its own stringent criteria for management level improvements.
3. Strives to consistently improve its health and safety standards, through the implementation and operation of a health and safety management system.
4. Respects the need for communication and cooperation between the company, its employees and the local community.
5. Strives to raise the awareness of its employees through extensive education, training and publicity activities.
6. Involved in government and local community activities.
7. Invests appropriately in order to implement its policies.

### Commitment

Aisin is committed to adhering strictly to all health and safety laws as a matter of principle, and in addition, has implemented workplace regulations and criteria that minimize risk of accidents even further. Management and supervisors teach all employees our rules and regulations regarding accident prevention, as well as enforcing adherence to these rules, and we are also rolling out a program of self-regulated activities designed to encourage employees in the workplace to think of improvements that can be implemented in this area. As a result of this, we are continuing to maintain the company's workplace-accident occurrence rate (frequency of lost-workday cases) at a level below the national average for the industry.



$$\text{Frequency rate of lost-workday cases} = \frac{\text{No. of lost workday cases}}{\text{Total working hours}} \times 1 \text{ million}$$

A higher number of lost-workday cases than the annual average occurred in FY2003. (There was high occurrence of pinching accidents and back pain among staff members in production engineering, safety, and the like.)




**【Creation of Basic Policies and Action Cards for Health and Safety】**

Amid the circumstances of the higher-than-average number of lost-workday cases that occurred in FY2003, as part of our activities to prevent accidents we have all employees learn and observe Aisin's basic policies and actions for health and safety and set self-declared action targets for health and safety, thereby raising awareness for health and safety.

**安全衛生基本行動**

1. あいさつは自ら進んでします
2. 服装・みだしなみはきちんとしてします
3. ポケットに手を入れないで歩きます
4. 作業要領・作業ルールを守ります
5. 通路に出る時は一時停止し、左右の安全確認をします
6. 整理・整頓は自ら進んでします
7. 自己宣言



氏名 \_\_\_\_\_ 宣言日 \_\_\_\_\_ 年 \_\_\_\_\_ 月 \_\_\_\_\_ 日

**AISIN**

**Strengthening and Augmenting Activities for Promoting Mental Health**

At Aisin, we are striving to augment our mental-health system by conducting mental-health training for new section team leaders and supervisors, including listener, self-care, and line-care training. As a result of this, the number of mental-health consultations recently surpassed 100, evidence that the system is being actively used. Additionally, in November 2002 we introduced a new self-diagnosis system that runs on personal computers. Because this system enables individuals to check their own mental health, it has earned extremely high acclaim from the standpoint of privacy.

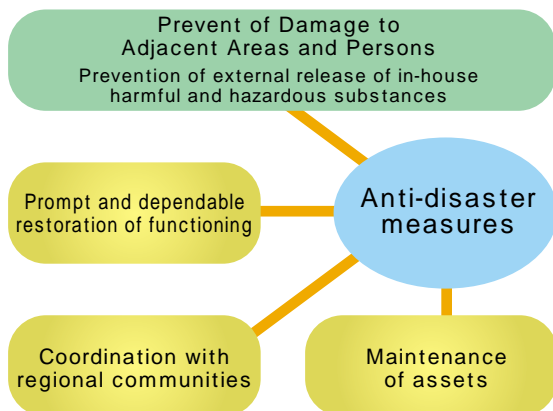
Self-diagnosis System



**Tokai Earthquake Response Activities**

In April 2002 many municipalities in Aichi Prefecture, where Aisin is headquartered, were designated as areas requiring intensive anti-disaster measures in the event of a major earthquake. Along with this, Aisin established subcommittees with the Tokai Earthquake Response Measures Committee serving as the core, and is working

to strengthen its anti-disaster system in terms of both training and materiel. Among these efforts, to ensure that human lives are protected we are conducting firefighting training to deal with earthquake-caused fires, and are continuing to carry out activities to ensure preparedness.



1. Listener...A person capable of listening to others who have concerns.  
 2. Self-care...Maintaining an awareness of one's own stress levels and taking steps to alleviate such stress.  
 3. Line care...Improvements to the working environment, one-on-one guidance, offering advice, and the like by management and supervisors.



# Plant Discharge Data

## Air Pollution Data:

The following units are used: P.M., g/Nm<sup>3</sup>; NOx, ppm; SOx, K value; hydrogen chloride, mg/Nm<sup>3</sup>

The most stringent value prescribed by laws, ordinances, or conventions is rendered as the specified value.

The measurement indicates the maximum value.

If a multiple number of the same type of equipment is used, the equipment given is the one to which the most stringent specified value is applied.

## Kariya Region

(Kariya Plant・Trial Manufacturing Plant・R&D center)

Location / 2-1 Asahi-machi ,Kariya ,Aichi 448-8650 ,Japan  
 Completion / March .1943  
 Land Area / 182,000 m<sup>2</sup>  
 Floor Space / 164,000 m<sup>2</sup>  
 Employees / 3,850  
 Main Products / Disc brakes ,brake master cylinders, parking brakes, wheel cylinders, etc.



### Air Pollution Data

Item	Equipment	Regulated value	Aisin environmental standard	Measured value
NOx	Boiler	180	150	120
P.M.	Boiler	0.2	0.2	0.002
	Gas carburizing furnace	0.2	0.2	Abolition
SOx	Boiler	1.75	1.75	0.17
	Gas carburizing furnace	3.5	1.75	—

### Water Pollution Data

Item	Regulated value	Aisin environmental standard	Measured value	
			Maximum	Average
PH	5.8 ~ 8.6	5.8 ~ 8.6	7.2	6.6
BOD	25	20	5	2.3
COD	25	20	10	4.4
SS	30	20	12	3
Oil	5	3	0.3	0.1
Total nitrogen	15	15	6.4	4
Total phosphorus	2	2	0.1	0.1
Coliform bacteria	3,000	1,000	0	0
Soluble iron	5	2	0.7	0.7
Soluble manganese	5	2	ND	—
Zinc	5	2	0.13	0.07
Copper	1	0.5	0.36	—
Chromium	2	0.4	ND	ND
Phenols	5	1	ND	—
Fluorine	8	2	ND	—
Cadmium	ND	ND	ND	—
Cyanide	ND	ND	ND	—
Lead	0.08	ND	ND	—
Chromium(VI)	0.05	ND	ND	—

### PRTR-Target Substances

Substance name	Volume handled	Volume released		Transfer volume	Volume recycled	Volume removed	Volume attached to product	Consumption volume
		Air	Water					
Zinc compounds (water-soluble)	1,320	0	66	0	132	198	924	0
Organic tin compounds	268	0	3	24	0	0	241	0
Toluene	216	216	0	0	0	0	0	0
Lead and its compounds	781	5	0	6	38	0	727	3
Nickel compounds	607	0	0	0	0	425	182	0
Bis (2-ethylhexyl) phthalate	7,153	1	0	230	332	3	6,588	0
Poly(oxyethylene) nonylphenyl ether	515	2	25	475	0	0	9	4
Manganese and its compounds	584	0	0	0	29	175	380	0
Total	11,444	225	93	735	531	801	9,051	7

## Handa Region

(Handa Plant・Handa Electronic Plant)

Location / 4-29 Nitto-cho, Handa, Aichi 475-0033, Japan  
 Completion / April.1991  
 Land Area / 325,000 m<sup>2</sup>  
 Floor Space / 80,000 m<sup>2</sup>  
 Employees / 1,080

Main Products / Electronic control units, sensors, actuators, antilock brake systems, power tilt & telescopically adjustable steering columns, etc.



### Air Pollution Data

Item	Equipment	Regulated value	Aisin environmental standard	Measured value
NOx	Boiler	150	150	57
	Generator	200	200	180
P.M.	Boiler	0.10	0.10	0.002
	Generator	0.05	0.05	0.004
SOx	Boiler	1.75	1.75	0.008
	Generator	1.75	1.75	0.04

### Water Pollution Data

Item	Regulated value	Aisin environmental standard	Measured value	
			Maximum	Average
PH	6.0~8.0	6.0~8.0	6	7.4
BOD	15	10	5.0	1
COD	15	10	9.2	2.9
SS	15	10	1.6	0.5
Oil	2	2	0.4	0.1
Total nitrogen	15	15	15	6.4
Total phosphorus	2	2	ND	ND
Coliform bacteria	3,000	1,000	15	1.3
Soluble iron	0.5	0.5	0.38	0.04
Soluble manganese	0.5	0.5	0.13	0.1
Zinc	5	2	0.25	0.16
Copper	1	0.5	ND	—
Chromium	2	0.4	ND	ND
Phenols	0.5	0.5	ND	—
Fluorine	8	2	ND	—
Cadmium	0.1	ND	ND	—
Cyanide	ND	ND	ND	—
Lead	0.1	ND	ND	—
Chromium(VI)	0.05	ND	ND	—

### PRTR-Target Substances

Substance name	Volume handled	Volume released		Transfer volume	Volume recycled	Volume removed	Volume attached to product	Consumption volume
		Air	Water					
Bis(2-ethylhexyl) adipate	402	0	0	0	0	0	402	0
2-Aminoethanol	903	0	0	375	8	378	0	143
Bisphenol A type epoxy resin (liquid)	7,121	0	0	0	0	0	7,121	0
Toluene	3,890	3,068	0	0	822	0	0	0
Lead and its compounds	7,951	0	0	0	398	0	7,553	0
Molybdenum and its compounds	175	0	0	0	0	0	175	0
Tris(dimethylphenyl) phosphata	258	0	0	0	0	0	258	0
Xylene	3,401	3,401	0	0	0	0	0	0
Total	24,100	6,469	0	375	1,227	378	15,508	143

Water Pollution Data:  
The following units are used: mg/ (except pH); and count/ cm<sup>3</sup> for Coliform bacteria only  
pH: hydrogen ion concentration; BOD: biochemical oxygen demand; COD: chemical oxygen demand; SS: suspended solids  
The most stringent value prescribed by laws, ordinances, or conventions is rendered as the specified value.  
"ND" indicates a value that is below the minimum detection limit.

PRTR-Target Substances  
Unit: kg/ year  
Does not include compounds of which Aisin handles less than 100kg/ year

## Plant Discharge Data

### Plant Discharge Data

## Anjo Plant

Location / 1-24 Shofukuda, Minowa-cho, Anjo, Aichi 446-8524, Japan  
Completion / November. 1961  
Land Area / 36,000 m<sup>2</sup>  
Floor Space / 26,000 m<sup>2</sup>  
Employees / 350  
Main Products / Beds, sewing machines, embroidery machines, shower-toilet seats, gas engine driven heat-pump air conditioners, supplemental drive unit for artificial human hearts, etc.



### Air Pollution Data

Item	Equipment	Regulated value	Aisin environmental standard	Measured value
NOx	Boiler	—	230	33
P.M.	Boiler	0.3	0.3	0.002
SOx	Boiler	5.3	5.0	0.005

### Water Pollution Data

Item	Regulated value	Aisin environmental standard	Measured value	
			Maximum	Average
PH	6.5~8.5	6.5~8.5	7.8	7.1
BOD	20	10	3.6	1.1
COD	—	10	4.8	3.2
SS	20	10	5.4	1.5
Oil	4	1	0.5	0.2
Total nitrogen	—	10	1.8	1.3
Total phosphorus	—	2	ND	ND
Coliform bacteria	1,000	1,000	0	0
Soluble iron	2	2	ND	ND
Soluble manganese	2	2	ND	—
Zinc	2	2	0.16	0.06
Copper	0.2	0.2	ND	—
Chromium	0.2	0.2	ND	ND
Phenols	0.2	0.2	ND	—
Fluorine	2	2	ND	—
Cadmium	ND	ND	ND	—
Cyanide	ND	ND	ND	—
Lead	0.1	ND	ND	—
Chromium(VI)	0.05	ND	ND	ND

### PRTR-Target Substances

Substance name	Volume handled	Volume released		Transfer volume	Volume recycled	Volume removed	Volume attached to product	Consumption volume
		Air	Water					
Antimony and its compounds	21,858	0	0	0	652	0	21,207	0
Ethylene glycol	75,285	0	0	0	0	0	75,285	0
Xylene	152	152	0	0	0	0	0	0
Chlorodifluoromethane (HCFC-22)	58,460	197	0	0	0	237	58,026	0
Total	155,754	349	0	0	652	237	154,517	0

## Shinkawa Plant

Location / 4-75 Rokuken-cho, Hekinan, Aichi 447-0861, Japan  
Completion / March. 1945  
Land Area / 23,000 m<sup>2</sup>  
Floor Space / 23,000 m<sup>2</sup>  
Employees / 470  
Main Products / Door latches, window regulators, sensors, etc.



### Air Pollution Data

Item	Equipment	Regulated value	Aisin environmental standard	Measured value
NOx	Boiler	260	180	96
P.M.	Boiler	0.30	0.20	0.002
SOx	Boiler	1.75	1.75	0.088

### Water Pollution Data

Item	Regulated value	Aisin environmental standard	Measured value	
			Maximum	Average
PH	5.8~8.6	5.8~8.6	7.5	6.7
BOD	25	20	7.8	1.6
COD	25	20	*33	6.8
SS	30	20	7	1.4
Oil	5	3	0.8	0.2
Total nitrogen	40	40	34	19
Total phosphorus	3	3	0.2	0.1
Coliform bacteria	3,000	1,000	0	0
Soluble iron	5	2	0.21	0.21
Soluble manganese	5	2	0.05	0.05
Zinc	5	2	0.70	0.29
Copper	1	0.5	ND	ND
Chromium	2	0.4	ND	—
Phenols	5	1	ND	—
Fluorine	8	2	ND	—
Cadmium	0.1	ND	ND	—
Cyanide	1	ND	ND	—
Lead	0.1	ND	ND	—
Chromium(VI)	0.5	ND	ND	—

### PRTR-Target Substances

Substance name	Volume handled	Volume released		Transfer volume	Volume recycled	Volume removed	Volume attached to product	Consumption volume
		Air	Water					
Bis(2-ethylhexyl) adipate	134	0	0	0	0	0	134	0
Toluene	222	222	0	0	0	0	0	0
Lead and its compounds	117	0	0	0	6	0	111	0
Total	473	222	0	0	6	0	245	0

\*Cause: Although the rules specify that used detergent from cleaning operations performed by outside clean-up firms is to be taken away for off-site disposal, unauthorized disposal in rainwater drains occurred, resulting in abnormal quality of the water in the discharge tank. Automatic monitoring equipment detected the abnormality and effected a transfer to an emergency tank.

Countermeasure: The firms commissioned to perform cleaning were assembled and given training as part of thorough efforts to prevent recurrence of the problem.

## Shintoyo Plant

Location / 1 Tenuoh, Takaokashin-machi, Toyota, Aichi 473-0921, Japan  
 Completion / August. 1961  
 Land Area / 86,000 m<sup>2</sup>  
 Floor Space / 63,000 m<sup>2</sup>  
 Employees / 1,170  
 Main Products / Belt moldings, seats, door frames, door hinges, etc.



### Air Pollution Data

Item	Equipment	Regulated value	Aisin environmental standard	Measured value
NOx	Boiler	180	150	71
P.M.	Boiler	0.1	0.1	0.006
	Gas carburizing furnace	0.2	0.2	0.002
SOx	Boiler	9.0	9.0	0.3
	Gas carburizing furnace	9.0	9.0	0.007

### Water Pollution Data

Wastewater processing at the Shintoyo Plant is tendered to another group company occupying the same site.  
 As a result there is no individual data for the Shintoyo Plant.

### PRTR-Target Substances

Substance name	Volume handled	Volume released		Transfer volume	Volume recycled	Volume removed	Volume attached to product	Consumption volume
		Air	Water					
2-Aminoethanol	1,217	0	1	1	0	1,146	69	0
N-alkylbenzenesulfonic acid and its salts	346	0	346	0	0	0	0	0
Xylene	1,866	1,866	0	0	0	0	0	0
Styrene	100,497	3,015	0	0	0	0	97,482	0
Toluene	7,346	7,346	0	0	0	0	0	0
Bis(2-ethylhexyl) phthalate	38,413	0	0	1,248	0	1,825	35,340	0
Hydrogen fluoride and its water-soluble salts	3,401	680	102	0	2,619	0	0	0
Boron and its compounds	230	0	196	0	17	0	0	17
Poly(oxyethylene) nonylphenyl ether	587	0	1	292	0	0	3	291
Molybdenum and its compounds	126	0	0	0	0	0	125	1
Tris (dimethylphenyl) phosphata	4,656	0	0	151	221	0	4,283	0
<b>Total</b>	<b>158,685</b>	<b>12,908</b>	<b>646</b>	<b>1,693</b>	<b>2,857</b>	<b>2,971</b>	<b>137,302</b>	<b>309</b>

(alkyl C=10-14)

## Ogawa Plant

Location / 1 Kukui, Ogawa-cho, Anjyo, Aichi 444-1162, Japan  
 Completion / December. 1985  
 Land Area / 88,000 m<sup>2</sup>  
 Floor Space / 72,000 m<sup>2</sup>  
 Employees / 760  
 Main Products / Clutch covers, clutch discs, automatic transmissions, etc.



### Air Pollution Data

Item	Equipment	Regulated value	Aisin environmental standard	Measured value
NOx	Boiler	150	140	51
	Heating furnace	180	140	47
	Generator	70	35	27
P.M.	Boiler	0.10	0.10	0.002
	Heating furnace	0.20	0.20	0.002
	Generator	0.05	0.05	0.002
SOx	Boiler	3.0	3.0	0.008
	Heating furnace	3.0	3.0	0.03
	Generator	3.0	3.0	0.20

### Water Pollution Data

Item	Regulated value	Aisin environmental standard	Measured value	
			Maximum	Average
PH	6.5~8.5	6.5~8.5	7.4	7.1
BOD	10	10	4.3	4.6
COD	160	10	8.2	1.7
SS	10	10	1.9	0.8
Oil	2	2	0.3	0.1
Total nitrogen	40	40	18	9.1
Total phosphorus	3	3	0.85	0.4
Coliform bacteria	300	300	0	0
Soluble iron	2	2	0.4	0.31
Soluble manganese	2	2	0.05	—
Zinc	2	2	0.70	0.17
Copper	0.2	0.2	ND	—
Chromium	0.2	0.2	ND	—
Phenols	0.2	0.2	ND	—
Fluorine	2	2	ND	—
Cadmium	ND	ND	ND	—
Cyanide	ND	ND	ND	—
Lead	0.1	ND	ND	—
Chromium(VI)	0.05	ND	ND	—

### PRTR-Target Substances

Substance name	Volume handled	Volume released		Transfer volume	Volume recycled	Volume removed	Volume attached to product	Consumption volume
		Air	Water					
Zinc compounds (water-soluble)	613	0	49	0	135	0	429	0
2-Aminoethanol	3,381	0	0	28	0	3,353	0	0
Xylene	248	248	0	0	0	0	0	0
Nickel compounds	1,566	0	0	4	6	140	1,417	0
Di-n-heptyl phthalate	1,307	0	0	0	0	0	1,307	0
Boron and its compounds	712	0	178	241	11	19	57	207
Molybdenum and its compounds	179	0	0	0	0	0	177	2
<b>Total</b>	<b>8,007</b>	<b>248</b>	<b>227</b>	<b>273</b>	<b>151</b>	<b>3,511</b>	<b>3,387</b>	<b>209</b>



## Nishio Region

(Nishio Plant·Nishio Body Component Plant  
·Machinery & Equipment Plant)

Location / 80 Kowari, Minaminakane-cho, Nishio, Aichi 445-0801 Japan  
Completion / March. 1967  
Land Area / 253,000 m<sup>2</sup>  
Floor Space / 151,000 m<sup>2</sup>  
Employees / 2,340  
Main Products / Pistons, intake manifolds, transmission cases,  
oil pumps, water pumps, variable valve timings, etc.



### Air Pollution Data

Item	Equipment	Regulated value	Aisin environmental standard	Measured value
NOx	Boiler	230	150	140
	Aluminum melting furnace	180	150	140
	Heat-treatment furnace	180	150	57
	Waste-material incinerator	250	250	32
	Generator	100	100	93
P.M.	Boiler	0.20	0.20	0.002
	Aluminum melting furnace	0.20	0.20	0.19
	Heat-treatment furnace	0.20	0.20	0.002
	Waste-material incinerator	0.25	0.25	0.013
	Generator	0.05	0.05	0.002
SOx	All facilities	3	3	0.48
Hydrogen chloride	Waste-material incinerator	700	500	20

### Water Pollution Data

Item	Regulated value	Aisin environmental standard	Measured value	
			Maximum	Average
PH	5.8~8.6	5.8~8.6	7.4	7.1
BOD	10	10	6.8	2.8
COD	10	10	8.5	4.7
SS	10	10	5.7	1.2
Oil	5	2	0.4	0.1
Total nitrogen	15	15	2	1.3
Total phosphorus	2	2	0.11	0.1
Coliform bacteria	300	300	12	1
Soluble iron	3	2	ND	ND
Soluble manganese	3	2	ND	ND
Zinc	1	1	0.25	0.11
Copper	0.5	0.5	0.03	0.02
Chromium	0.1	0.1	ND	ND
Phenols	0.5	0.5	ND	—
Fluorine	2	2	ND	—
Cadmium	0.1	ND	ND	—
Cyanide	ND	ND	ND	—
Lead	0.1	ND	ND	—
Chromium(VI)	0.05	ND	ND	—

### PRTR-Target Substances

Substance name	Volume handled	Volume released		Transfer volume	Volume recycled	Volume removed	Volume attached to product	Consumption volume
		Air	Water					
Zinc compounds (water-soluble)	154	0	0	0	154	0	0	0
2,2'-azobisisobutyronitrile	166	0	0	0	0	0	166	0
2-Aminoethanol	1,171	0	133	0	0	772	0	266
3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate	9,313	0	0	0	0	0	9,313	0
Ethyl benzene	31,885	26,275	0	0	5,610	0	0	0
Ethylene glycol	5,659	283	0	1	0	0	5,375	0
-caprolactam	826	0	0	0	0	0	826	0
Xylene	34,718	29,086	0	0	5,632	0	0	0
Chromium and chromium ( ) compounds	424	0	0	0	424	0	0	0
Chromium(VI) compounds	1,106	1	4	0	0	448	652	0
Inorganic cyanide compounds	845	0	0	0	0	845	0	0
Styrene	138	0	0	0	6	0	132	0
Hexamethylenetetramine	6,820	0	0	0	0	0	0	6,820
Copper salts(water-soluble, except complex salts)	5,251	0	7	0	0	505	4,739	0
1,3,5-trimethyl benzene	229	229	0	0	0	0	0	0
Toluene	53,138	31,026	0	0	22,113	0	0	0
Nickel compounds	14,281	0	0	0	1,285	0	12,996	0
Hydroquinone	872	0	0	0	0	0	0	872
Phenol	1,381	0	0	0	0	0	1,381	0
Bis (2-ethylhexyl) phthalate	326	0	0	16	15	0	295	0
Hydrogen fluoride and its water-soluble salts	8,178	408	94	6,107	0	0	0	1,569
Hexamethylene diisocyanate	134	0	0	0	70	0	65	0
Boron and its compounds	402	0	96	48	0	55	0	203
Poly(oxyethylene) alkyl ether	5,087	4,796	7	3	0	59	35	188
Poly(oxyethylene) nonylphenyl ether	272	26	0	123	0	0	0	123
Formaldehyde	539	108	0	0	0	0	0	431
Phthalic anhydride	465	0	0	0	0	0	465	0
Methyl methacrylate	115,393	0	0	0	0	51,927	63,466	0
Molybdenum and its compounds	178	0	0	0	0	0	178	0
Dioxins	2.2	2.2	0.0	0.0	0.0	0.0	0.0	0.0
Total	299,353	92,239	340	6,298	35,310	54,611	100,083	10,473

.(except complex salts and cyanates)

(Dioxins:mg-TEQ/year)

## **AISIN SEIKI CO., LTD.**

2-1 Asahi-machi, Kariya, Aichi 448-8650, JAPAN

Contact:

Environment Department Aisin Seiki Co., Ltd.

Phone: +81-566-24-8902 Fax: +81-566-24-8311

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<http://www.aisin.co.jp/>

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