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STM
Executive Statement

From 2010 Global Vision “Innovation into the future” to the Toyota Earth Charter, environmental issues play an important role in the earth.

Toyota Motor Thailand Co., Ltd (TMT) intends to use the principle of sustainable development by applying it as appropriate to with our business in economic and social areas and the Environment in order to garner the trust of all stakeholders. This enables TMT to ensure that its business does not have a significant impact on society and the environment. In addition, TMT business still supports social improvement and sustainable conservation of the environment.

With awareness of the environment of all employees, our intention to comply with the law and continuous improvement in the environment has qualified us for the Prime Minister’s Industry Awards 2003 in Environmental Quality Preservation at the Samrong Plant from Prime Minister Dr. Thaksin Shinawatra. This award is the most honorable and it has made us proud of our company.

We are pleased that the second edition of Toyota Motor Thailand’s environmental report aims to show the performance of TMT in the area of environmental management and activities.

(Mr. R. Sasaki)  
President

(Mr. Y. Mishima)  
Executive Vice President

(Mr. Apichai S.)  
Vice President and Companywide EMR
Scope of the report

This report is the second edition environmental report. The content of this report covers Toyota Motor Thailand Co., Ltd. (TMT)’s environmental performance and social activities in Fiscal Year 2003 (April 2003 - March 2004) from its production operations in Samrong plant, Gateway plant and all affiliates.

Highlights of Environmental IN FY 2003

Production
- Reduction of energy consumption from 3.80 to 3.57 GJ/U
- VOC reduction to 63.22 g/m²
- The use of recycled water
- First step to achieve zero landfill, 5R - activity
- Recycled bumper activity

Supply Chain and Purchasing
- ISO 14001 certification for suppliers
- Substance of environmental concern (SOC) management

Logistics and Packaging
- Decrease of CO₂ emission volume from Milk-run system
- Use of returnable containers

Sales and Aftersales
- The environmental guideline for dealers
- Environmental Management System expansion to 52 dealers

Social Contributions
- Computer donation for rural schools
- Reforestation at Chonburi Province
- Rachamongkol Rice Co., Ltd as a way of paying tributes to His Majesty the King of Thailand
Toyota Motor Thailand Co., Ltd. (TMT) is one of the most modernized car factories in Asia. We have the same production standard as the Toyota Motor Corporation factory in Japan. The purpose of TMT is to respond to a rapid growth of the automotive market, to comply with government policy in supporting domestic industries, and to be a center for exporting automobiles. These have resulted in job creation for Thai people and have strengthened the national economy.

Business Overview Principles

Toyota Motor Thailand Co., Ltd. has 2 plants:

1) Samrong Plant
   Established in: 1975
   Location: Samutprakan Province
   Area: 186,150 m²
   Product: Hilux and Unit parts
   Manpower: 3,297 employees working in 2 shifts operation.

2) Gateway Plant
   Established in: 1997
   Location: Chachoengsao Province
   Area: 1,000,000 m²
   Product: Camry, Corolla Altis, Soluna Vios and Wish
   Manpower: 2,350 employees working in 2 shifts operation.
Toyota Motor Thailand Co., Ltd.(TMT) has been the leading car seller in Thailand for many years. In 2004 TMT will develop the IMV (Innovative-International Multi-Purpose Vehicle) project. This project is established for the new model pick-up truck that will be launched in the middle of 2004, costing $825 Million in investments. Next year, more than 100,000 units of the new model will be exported.

With our intention and innovation to achieve the best quality automobiles, it is important for the factory to pay attention to advanced technology for all stages of production enhancing Toyota manufacturing potential, maximizing product quality as well as the concern for the environment.
Global Vision 2010


The fundamental concept for Global Vision 2010 has three elements:

1) To step beyond “harmonious growth” and demonstrate our responsibilities as a “world leader”
2) To benefit society through monozukuri (manufacture of value-added products) and “technological innovation”
3) To share prosperity with our employees

Toyota 2010 Global Vision was announced in April 1, 2002 by TMC and Toyota Motor Thailand (TMT), as a part of the Toyota global family. We will support and implement this vision in all operations. This vision also sets the framework for future environmental activities and practices.

The following diagram explains Toyota Global Vision 2010
TMT Corporate Vision

“Toyota respect for people and the environment” is the heart of everything that we do. As the largest automaker in Thailand, we are committed to continuous improvement and looking forward to a better tomorrow.

1. Be one of the leading core companies of Toyota within its global network operations.
2. Be the most admired and respected automobile company in Thailand

Our Corporate Principles:

1. Employ continuous improvement by means of challenge and change
2. Respect people and their needs
3. Pursue excellent customer satisfaction
4. Dedicate ourselves to the highest standard
5. Adopt spirit of social responsibilities to our communities and environment

Toyota Motor Thailand grows with Thai society.

One of TMT’s corporate policy is “Adopting a spirit of social responsibilities to our communities and environment”. Toyota has a long-standing commitment to preserve the environment by raising the employees’ concern for the environment with full support from top management. In addition, to ensure that they strictly adhere to the environmental management system as well as comply with the continuous improvement of the environmental conservation methods to bring the international standards of best practices to Toyota. One of Toyota’s group that continues to develop to promote the quality of life for people is “Toyota Thailand Foundation (TTF)”, which was established in October 1992. TTF has the framework activities concerned with social contribution, such as supporting public organizations and providing opportunities to the disenfranchised, especially children in rural areas.

Toyota Earth Charter

1. Contribution toward prosperous 21st-century society
   - Achieve growth that is harmonious with the environment
   - Challenge to achieve “zero emission” throughout all our business activities

2. Pursuit of environmental technologies
   - Establish new technologies to enable the environment and the economy to co-exist harmoniously

3. Voluntary action
   - Prevention of environmental problems and conformance to legal standards in global, regional and national aspects.

4. Working in cooperation with society
   - Build close and cooperative relationships concerned with environmental protection.
Environmental Management Systems (EMS)

At present Toyota Motor Thailand Co., Ltd. (TMT) has continuously improved the Environmental Management System (EMS), which is an effective tool to manage environmental problem(s) / issue(s). The benefit from the EMS is reducing environmental impacts. In addition, Toyota is also increasing environmental awareness among all employees because we realize that the environment is one of the crucial parts of nature and human life.

Not only improvements in the Environmental Management System, but Toyota has also improved the Occupational Health and Safety Management System for both the Samrong & Gateway plants, and was certified by Thai Industrial Standard (TIS 18001) in 2000. In 2004, Toyota is ready for OHSAS 18001 certification and will be certified by July, 2004.

Toyota Motor Thailand Environmental Policy

1) Toyota Motor Thailand will strive to meet all environmental regulatory concerns, legislative requirements and internal standards, and will aim to achieve environmental objectives and targets.

2) Toyota Motor Thailand is committed to the continual improvement in environmental performance and prevention of pollution. This will be achieved by:

   a) Aiming to minimize the environmental impacts of new materials and processes, through prior assessment of their environmental impacts.
   b) Seeking ways to minimize the consumption of resources and energy, to eliminate or reduce the generation of pollutants in the environment, and to minimize the quantity of waste requiring disposal.

3) Toyota Motor Thailand is engaged in the continual strengthening and development of the understanding of all company associates on the best environmental operations and management practices.

4) Recognizing the importance of communication with local communities and positive cooperation with environmental protection activities in the community.

Environment Committee

The Toyota Environment Committee was established for direct importance of environmental programs to promote environmental preservation and raise environmental awareness within the company. The meetings and activities are organized by the Production Control Department, Safety and Environment Control (SEC) Function.
Affiliate Company ISO 14001 Certification

Toyota Motor Thailand (TMT) is the first automotive manufacturer in Thailand which obtained the ISO 14001 certification by using PDCA cycle activities to achieve goals, and from “Continual improvement”, which is the most important principle of Environmental Management System. With this reason, TMT has focused on the expansion of Environmental Management System by supporting all affiliates including Siam Toyota Manufacturing, Hino, Thai Auto Work, Toyota Training Center and Automotive School, Toyota Transportation Thailand, Part Service Center and also the biggest service center in Thailand “Toyota Body Service” to acquire ISO 14001 certification by the year 2003.

The Prime Minister’s Industry Awards 2003

In 2003 Toyota Motor Thailand at Samrong Plant received the Prime Minister’s Industry Award from the Prime Minister of Thailand, Dr. Thaksin Shinawatra in the area of:

“ENVIRONMENTAL QUALITY PRESERVATION”.

ISO 14001 Certified:
- Toyota Auto Work Co., Ltd: December 2002
- Toyota Education and Training Center: May 2003
- Toyota Transport Thailand Co., Ltd: June 2003
- Bangplee Part Center: September 2003
- Toyota Body Service Co., Ltd: December 2003
## Environmental Activities 2003

<table>
<thead>
<tr>
<th>Subject</th>
<th>Activities 2003</th>
<th>Target 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Reduction of Energy Consumption</td>
<td>1) Adjust combustion efficiency of steam boiler 2) Install skylight roof at warehouse</td>
<td>Reduction of energy consumption per unit S/R = 3.62 GJ/U (5% of 2002) G/W = 3.51 GJ/U (7% of 2002)</td>
</tr>
<tr>
<td>2) VOC Reduction</td>
<td>1) Install air-mixing valve 2) Improve material recovery system 3) Optimize washing ratio of auto machine</td>
<td>S/R and G/W : VOC emission less than 60 g/m² (8% of 2002)</td>
</tr>
<tr>
<td>3) Water Resources Conservation</td>
<td>1) Brine water reuse in RO process 2) Use discharged water from waste water treatment plant for toilet flushing</td>
<td>Reduction of water usage per unit S/R = 4.5 m³/U (5% of 2002) G/W = 2.7 m³/U (7% of 2002)</td>
</tr>
<tr>
<td>4) Waste Disposal and Reduction</td>
<td>1) Early achievement of zero landfill waste and promotion of supporting activities by sending hazardous waste for incineration in cement kiln 2) Study to promote reduction at</td>
<td>Reduction of landfilled and incinerated waste per unit S/R = 8.2 Kg/U (10% of 2002) G/W = 5.8 Kg/U (10% of 2002)</td>
</tr>
<tr>
<td>5) Prior Assessment Systems</td>
<td>1) Introduction of computerized approval system for new chemicals being used in Manufacturing process</td>
<td>Development and improvement of Prior Assessment System for the environmental impacts when new chemicals being used in manufacturing Process</td>
</tr>
<tr>
<td>6) Supplychain and Purchasing</td>
<td>1) Promote ISO 14001 implementation by providing consultants to selected suppliers 2) Phase out banned chemicals found by replacing them with local environmental friendly chemicals (25% achievement)</td>
<td>Acquiring ISO 14001 certification for chemical and paint suppliers Reduce/Phase out banned chemical usage in manufacturing process</td>
</tr>
</tbody>
</table>
# Environmental Management

## 7) Logistics and Packaging

### 7.1 Decrease CO₂ emission volume
- Use Milk-run system to reduce CO₂ emission volume
- Use returnable packaging and container

### 7.2 Packaging Reduction
- Use returnable packaging and container

## 8) Sales and Aftersales

- ISO 14001 implementation to TMT’s 52 dealers

## 9) Social Contribution Activities and PR Environmental Activities

- Provide Safety and Environmental Knowledge to schools located in the proximity of the TMT plant
- Reforestation Project
- Disclose Environmental report to the public

## Target 2003

- Reduce CO₂ emission from transportation
- Reduce volume of packaging usage
- Volunteer dealers received ISO 14001 certification by the end of 2004
- Promote the development of social contribution activities
- Disclose environmental information to the public

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**Employees Education**

To increase the environmental awareness, TMT provides training programs for new employees. The course includes fundamental knowledge of ISO 14001 and Occupational Health and Safety. Not only for new employees but Toyota also provides a program for the continuing education of current employees.

The training for employees to increase environmental awareness
Environmental aspect and compliance

Automotive production processes cause various environmental effects starting from energy and natural resources usage such as electricity, LPG, furnace oil, and water. There are many environmental aspects relating to the processes of production, such as:

- **Press process** causes noise pollution and metal scrap waste.
- **Body welding process** causes air pollution from metal fume and dust.
- **Paint process** causes water pollution, paint and thinner vapor and many hazardous wastes, such as paint sludge, waste water sludge and phosphate sludge etc.
- **Assembly process** causes waste in packaging.

Compliance

During 2003, Toyota Motor Thailand maintained good regulation compliance and a good record over all environmental aspects.

The results of all monitoring: Air monitoring, water monitoring and noise monitoring. These are in accordance with legal regulation and we have zero complaints from the neighboring community.

**Air quality monitoring**

**Treated waste water quality monitoring**

**Noise monitoring**

**Treated waste water**
Toyota Motor Thailand Co., Ltd. (TMT) has various policies concerning nature and the environment, such as the policy for Global warming prevention by reducing energy consumption, VOC reduction, water resource conservation, waste reduction, etc. The life cycle of the automobile causes many pollutants. The production process is partly responsible for generating pollution, such as air pollution from NOx, SOx and other substances and water pollution etc. Toyota has many procedures to manage the environmental impact which include:

**Energy Consumption Reduction (Electricity + Heavy Oil + LPG)**

Toyota’s energy consumption has dramatically decreased since 2002 as a result of energy reduction projects, which improved manufacturing efficiency and continuous maintaining of equipment. The activities for reducing energy consumption include:

1. Fixing an energy saving day (No working on holiday)
2. Reducing spatter at welding shop
3. LPG consumption reduction at fuel tank oven
4. Increasing awareness among employees
5. Reducing unnecessary energy consumption
6. Installing solar cell for meeting room & air conditioning

**Energy consumption (Gj/U)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>3.49</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>3.57</td>
<td>3.36</td>
</tr>
</tbody>
</table>

**Increasing employees’ awareness to turn off unnecessary light**
VOCs Reduction

There are many air pollutants released in the process of automotive manufacturing. The majority of air emission is Volatile Organic Compounds (VOCs) that react with photochemicals in the presence of sunlight and Nitrogen Oxide forming ground-level ozone-3 components of smog. According to the painting process, the painting operation is the primary source of VOCs release.

VOCs reduction activities

1. Reusing clear coat painting consumption at front pillar of Camry model
2. Reducing cleaning thinner consumption at primer process from 140 liters / day down to 78 liters / day
3. Collecting waste minibell thinner for reusing
4. Changing air spray gun to electrostatic spray gun
5. Using a spatula instead of sealer brushing
6. Reducing the auto machine for spray line of stair booth side from 3 to 2 machine by cancelling the lower machine and adjusting the center machine
7. Reducing interior painting under the hood in Soluna model
8. Installation of an air-mixing valve

Installing hood insulator under hood

Before After
Reducing interior painting under hood by installing hood insulator

VOCs emission (g/m²)

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>66.15</td>
<td>60</td>
</tr>
<tr>
<td>2003</td>
<td>63.22</td>
<td>60</td>
</tr>
</tbody>
</table>

Installing air mixing valve

Before After

Cancelling lower machine & adjusting center machine

Before After
Water Resource Conservation

The main water usage is in the painting process operations. Toyota attempts to reduce its water usage without influencing the quality of Toyota vehicles by removing water sanding and washing operations in the paint shop, and developing additional water-conservation activities at each of the manufacturing plants such as:

1. Reusing water in the Waste Water Treatment Plant (25 m³/day)
2. Utilizing water in garden watering (100 m³/day)
3. Using water in Fire Extinguishing
4. Using water for reducing temperature inside the factory (465 m³/day)
5. Reusing water in toilets (65 m³/day)

Waste Disposal and Reduction

Toyota facilities aim to reduce manufacturing waste, especially hazardous waste. In addition to environmental benefits, the attempt also improves the company’s bottom line by reducing cost and predicting more efficient manufacturing system. The primary step in waste management is waste separation by separating waste according to materials used in each area and then carrying these wastes to sub-shipping house. The final step is to transport wastes to main shipping house and managing the waste with appropriate method.
Each year Toyota manufacturing team members refine production processes with the goals of reducing waste generation by using Toyota’s 5Rs Program for waste elimination.

**Reduce**: Develop and design effective production technologies in waste reduction.

**Reuse**: Reuse used materials in the same production process.

**Recycle**: Utilize used materials in other utilities.

**Retrieve Energy**: Utilize waste energy resources.

**Refine**: Substitute materials and adjust designs to further facilitate expansion in reduction, reuse and recycle.

### WASTE DISPOSAL STANDARD

#### GENERAL
- Samrong Plant
- Gateway Plant
- Sanitary Landfill
- Incinerate waste in industrial estate incinerator

#### RECYCLE
- Recycle at government licenced company

#### CONTAMINATED WASTE
- Incinerate waste in cement kiln

### Waste reduction activities include:
1. De-watering waste water sludge by sunlight, exhaust air from compressor air and oven stack.
2. Reducing waste water sludge by chemical changing.
3. Recycling damaged bumpers.

### Total Waste (Kg/Vehicle)

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
<th>Target</th>
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</thead>
<tbody>
<tr>
<td>2002</td>
<td>9.50</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>7.09</td>
<td>6.46</td>
</tr>
</tbody>
</table>
The recycling of used fluorescent lamps

In order to achieve Zero Landfill Policies, TMT has to change its method of disposing fluorescent lamps by recycling them instead of taking them to a landfill. By this activity, TMT has achieved:

“ZERO LANDFILL FOR HAZARDOUS WASTE”

The recycling of damaged new bumper

Toyota has a process for recycling bumpers that are defective or damaged and cannot be used for assembly.

Recycle processes for bumpers consist of:
1. Cutting the damaged bumpers into small pieces and breaking them down to small materials.
2. Mixing recycled materials and new materials together at 1:4 ratio and passing the processed recycled parts on for the production of new bumpers.
### TMT Vehicle Environmental Performance Data

**Vehicle performance data for sample models in TMT**

<table>
<thead>
<tr>
<th>Picture</th>
<th>Model</th>
<th>Engine</th>
<th>Fuel Type</th>
<th>Fuel consumption* [L/100 km]</th>
<th>CO₂ [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td>Hilux</td>
<td>2.5 D4D</td>
<td>Diesel</td>
<td>8.82</td>
<td>235</td>
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<tr>
<td><img src="image2.png" alt="Image" /></td>
<td>Camry</td>
<td>2.0 VVT-I</td>
<td>Petrol</td>
<td>9.69</td>
<td>230</td>
</tr>
<tr>
<td><img src="image3.png" alt="Image" /></td>
<td>Sedan, AT</td>
<td>2.4 VVT-I</td>
<td>Petrol</td>
<td>10.10</td>
<td>239</td>
</tr>
<tr>
<td><img src="image4.png" alt="Image" /></td>
<td>Wish</td>
<td>2.0 VVT-I</td>
<td>Petrol</td>
<td>9.04</td>
<td>214</td>
</tr>
<tr>
<td><img src="image5.png" alt="Image" /></td>
<td>Minivan, A/T</td>
<td>2.0 VVT-I</td>
<td>Petrol</td>
<td>9.04</td>
<td>214</td>
</tr>
<tr>
<td><img src="image6.png" alt="Image" /></td>
<td>Corolla</td>
<td>1.6 VVT-I</td>
<td>Petrol</td>
<td>7.75</td>
<td>183</td>
</tr>
<tr>
<td><img src="image7.png" alt="Image" /></td>
<td>Sedan, AT</td>
<td>1.8 VVT-I</td>
<td>Petrol</td>
<td>7.42</td>
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<tr>
<td><img src="image8.png" alt="Image" /></td>
<td>Corolla</td>
<td>1.6 VVT-I</td>
<td>Petrol</td>
<td>7.26</td>
<td>171</td>
</tr>
<tr>
<td><img src="image9.png" alt="Image" /></td>
<td>Sedan, MT</td>
<td>1.5 VVT-I</td>
<td>Petrol</td>
<td>6.61</td>
<td>157</td>
</tr>
<tr>
<td><img src="image10.png" alt="Image" /></td>
<td>Soluna</td>
<td>1.5 VVT-I</td>
<td>Petrol</td>
<td>6.32</td>
<td>149</td>
</tr>
</tbody>
</table>

**Average Data in March’04**

* : Fuel Consumption Resulting from “Exhaust Emission Test”, not from Fuel Consumption Test

**MT = Manual Transmission, AT = Automatic Transmission**
Suppliers’ Environmental Management

Because Toyota has many suppliers, in 2001 TMT established the “Environmental Purchasing Guideline”. This Guideline is intended to control all suppliers of automobile parts and materials and to be the criteria to be used in accordance with Toyota environmental management.

The Environmental Purchasing Guideline has two main principles:

1. Acquisition of ISO 14001 Certification

The Environmental Management System is an important tool for obtaining ISO 14001 certification and for driving continuous improvement in environmental performance. TMT has had the plan for suppliers to acquire ISO 14001 certification since the year 2002. In the year 2002, 18 suppliers volunteered in a pilot project to acquire ISO 14001 certification and before the end of 2003, TMT extended it to cover 55% of its suppliers. Finally, by the end of 2005, 80% of suppliers (excluding traders) will have received the certification.

2. Controlled Substances of Environmental Concern (SOC)

SOC are substances which are harmful to human and/or the environment (causes of pollution in any way). Toyota has two steps to manage these substances as follows:

2.1 Phasing out banned chemicals

Toyota has a plan to phase out currently banned substances by replacing them with environmental friendly chemicals.

2.2 Prior assessment for new chemicals to be used in the manufacturing process.

Toyota has a plan to request suppliers who send direct and indirect materials to Toyota Plants, to declare all of the compositions in their products to ensure that new chemicals are not banned substances.

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Previously, TMT had used Non-Milk-Run System in which suppliers would carry automotive parts to the manufacturer individually. In addition, Non-Milk-Run System had caused pollution from CO₂ emission due to a high number of truck frequency. Therefore, since 2001, Toyota Motor Thailand has launched Milk-Run project for reducing environmental impact resulting from logistic process.

The merit of this system is that it is able to perform high delivery frequency (Easy to secure volume)
- Short lead time
- Flexible response, by changing product volume

The purpose of the Milk-Run System is that it can lead to 2 indicators for significant impact reduction:

1) Decrease CO₂ emission volume

2) Waste packaging reduction
1) Decreasing CO\textsubscript{2} emission volume

Milk-Run System can reduce CO\textsubscript{2} emission from 94 ton-CO\textsubscript{2}/Day to 56 ton-CO\textsubscript{2}/Day. Therefore, this system can reduce CO\textsubscript{2} emission by 38 tons of CO\textsubscript{2}/Day

The principles of this system are:

- Increasing loading efficiency
- Collaborating shipment
- Designing optimal route
- Reducing trip frequency

2) Waste packaging reduction

Milk-Run System is also concerned with the packaging and containing of parts

- Use returnable containers

- Modification of eliminated packing materials

Material usage reduction by reusing modules, from one-way module to returnable module
**Dealer Environmental Guideline**

Toyota has adopted a specific environmental guideline to set an example for dealers in conforming with the environmental improvement and management.

The Aftersales Department has improved the environmental standard in the Dealer Performance Evaluation System (TEDAS) by adding Environmental Management System to TEDAS.

**Environmental Management System for Dealers**

Toyota has been operating the Environmental Management System for dealers since 2003. The first model dealer, Toyota Nangrong in Bureerum Province, obtained ISO 14001 certification in Dec 2002.

In early 2004, 52 dealers signed a contract as a commitment to acquire ISO 14001 certification. This is the biggest expansion of an ISO 14001 program to cover dealers.

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**Model dealer**  
Toyota Nangrong  
Phase 1  
2002

**Volunteer dealers: 52 dealers (65 Body and Paint Service shops)**  
Phase 2  
2003, 2004

**All dealers to acquire ISO 14001**  
Phase 3  
2005

---

ISO 14001 certification ceremony at Toyota Nangrong  
ISO 14001 expansion to 52 dealers  
ISO 14001 training for 52 dealers
On the success path of Toyota Motor Thailand (TMT), which has been growing along with the Thai society, this is what we have always adhered to. Under TMT’s policy on social and environmental stewardship, this involves continuous activities and projects.

**Computer donation**

Donate computers and provide Safety & Environmental knowledge to schools located in the proximity of our plants.

In order to disseminate equality in technological education to children, TMT (Gateway plant) has donated 20 computers to 4 schools in the areas surrounding our manufacturing plants. The computers contain useful knowledge and information for students to study and to create new experience for young children.

**Reforestation Project**

In 2003, forest areas of Thailand decreased to 13%; therefore deforestation became a serious problem. The government has been promoting an increase of more green forest areas.

As Toyota is a part of the communities that use the resources and generate CO₂ emission from our business, TMT is aware of the importance of reforestation by joining with the Thai government's project called “The Reforestation Project in Honor of His Majesty the King’s Reign” at Amphur Borthong, Chonburi Province, covering an area of 32,000 m².
Rachamongkol Rice Co., Ltd

With His Majesty the King’s kindness towards Toyota Family, and with an initial Royal fund of Baht 600,000, a rice mill was constructed in Gateway Industrial Park, Chachoengsao Province. An official inauguration was held on Thursday, September 9, 1999. And purchases of paddy, at a reasonable price, from farmers in the local areas and from nearby provinces started. The product from the rice mill was sold, as company welfare, to company staff and Toyota family.

### Production Volume
- About 200 tons/month

### Working Time
- 8 p.m. - 5 a.m.

### Type of Product
- Jasmine rice, white rice and milled but unpolished rice.

Rachamongkol’s Rice Mill was operated with electricity with high technology, therefore it did not generate pollution like the old rice mill. Only a small amount of waste was released when milling rice, such as leaves and stones, etc. Wastes were disposed of by using the facility of Gateway industrial park.

For Husk and Rice-bran, farmers would buy them to use in their farms (Rice-bran is used to feed pigs; Husk is used to lay on a chicken coop).
Reducing Energy Consumption

Siam Toyota Manufacturing measures energy efficiency as the amount of energy used per engine produced for Engine Factory and per ton produced for Casting Factory.

<table>
<thead>
<tr>
<th>Environmental Action Policy</th>
<th>Environmental Action Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promote ways to reduce and prevent global warming.</td>
<td>Reduce energy consumption by 15% per unit of production from the 1999 base year.</td>
</tr>
<tr>
<td>Reduce and / or manage substances with an environmental concern.</td>
<td>Survey and reduce banned substance that has concentration &gt;0.1%. Establish system to manage new materials by non-concentration of banned substances.</td>
</tr>
<tr>
<td>Reduce waste and minimize the use of resources.</td>
<td>Reduce waste disposal volume by 15% per unit of production from the 1999 base year.</td>
</tr>
<tr>
<td>Develop cooperation between Toyota and its suppliers to improve environmental performance.</td>
<td>Reduce hazardous waste disposal at landfill by 97% from the base year 2000. (Zero Landfill) Continue research and development activities aimed at reducing other wastes where possible.</td>
</tr>
<tr>
<td>Require suppliers to be ISO 14001 certified by 2005.</td>
<td>Require suppliers to be in compliance with Toyota’s chemical ban list / environmental data sheet.</td>
</tr>
</tbody>
</table>

Energy consumption per unit of product has been reduced by 17% from the 1999 base year of Casting Plant and raised up from the 1999 base year of Engine Plant because of an addition of a new line for IMV Project.

Main activities:
1. Modify pre-heater of Melting and Pouring line for heat loss reduction.
2. Study and trial to reduce air pressure of each machine to 5 Kg/cm².
3. Support further study and trial of new equipment for energy saving.
Reducing Waste Disposal Volume

Siam Toyota Manufacturing measures waste reduction efficiency as waste per engine produced for Engine Factory and per ton produced for Casting Factory.

Waste disposal volume per unit of product has decreased by 23% from the 1999 base year of Casting Plant and raised up from the 2001 year of Engine Plant because of the termination of coolant treatment plant and sending waste for incineration at Cement Company.

Main activities:
1. Install oil skimmer at coolant tank.
2. Set up standard for maintaining and cutting oil.

The environmental impact of landfill disposal sites is a problem for society at large. Rapid reduction in landfill usage has been identified as a primary concern for Siam Toyota Manufacturing.

Waste volume Kg/Engine for Engine Plant

<table>
<thead>
<tr>
<th>Year</th>
<th>Waste Volume Kg/Engine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ave'99</td>
<td>2.936</td>
</tr>
<tr>
<td>Ave'00</td>
<td>2.641</td>
</tr>
<tr>
<td>Ave'01</td>
<td>2.371</td>
</tr>
<tr>
<td>Ave'02</td>
<td>2.096</td>
</tr>
<tr>
<td>Ave'03</td>
<td>1.881</td>
</tr>
</tbody>
</table>

Waste volume Kg/Engine for Casting Plant

<table>
<thead>
<tr>
<th>Year</th>
<th>Waste Volume Kg/Engine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ave'99</td>
<td>210</td>
</tr>
<tr>
<td>Ave'00</td>
<td>186</td>
</tr>
<tr>
<td>Ave'01</td>
<td>161</td>
</tr>
<tr>
<td>Ave'02</td>
<td>161</td>
</tr>
<tr>
<td>Ave'03</td>
<td>163</td>
</tr>
</tbody>
</table>

Main activities:
1. Recycle melting slag by separating slag and metal.
   - Metal ==> Recycle at steel company.
   - Slag ==> Recycle for road material.
2. Recycle waste sand to cement material.
3. Recycle WWTP sludge to cement material.

Landfill waste volume (Ton/year)

<table>
<thead>
<tr>
<th>Year</th>
<th>Waste Volume (Ton/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ave'00</td>
<td>3080</td>
</tr>
<tr>
<td>Ave'01</td>
<td>2960</td>
</tr>
<tr>
<td>Ave'02</td>
<td>234</td>
</tr>
<tr>
<td>Ave'03</td>
<td>120</td>
</tr>
</tbody>
</table>

96% Reduction

Case zero landfill activity

Case zero landfill activity

<table>
<thead>
<tr>
<th>Waste</th>
<th>Cement</th>
<th>Cement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand</td>
<td>Refractory Lining</td>
<td>Melting Slag</td>
</tr>
<tr>
<td></td>
<td>Grinding Sludge</td>
<td>Separate Company</td>
</tr>
</tbody>
</table>

Case zero landfill activity

<table>
<thead>
<tr>
<th>Material</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal</td>
<td>Reuse in steel company</td>
</tr>
<tr>
<td>Slag</td>
<td>Metal</td>
</tr>
<tr>
<td>Road Materials</td>
<td>Slag</td>
</tr>
</tbody>
</table>

Environmental Report 2003
During 2001, the banned chemical list combined TMC and Thai regulation was established. At the same time, the supplier survey was finished. Only 6 items are in chemical banned substance list but level of concentration is less than 0.1% ==> acceptable. System to manage new materials is already established and implemented.

### Scope and expiry date of the exemption

<table>
<thead>
<tr>
<th>Material and component</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protective coating for fuel tank</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glass of light bulb , Spark</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ED paint , O-ring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Air bag) Pyrotechnic initiator (detonator)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cadmium</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact point (Relay)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hybrid IC (Thick film paste)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mercury</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No restriction date yet : HID , Display , Meter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hexavalent Chromium</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Anti - corrosion purpose)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bolt , Nut , Chassis &amp; Body parts , etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SoC Investigation & Evaluation

<table>
<thead>
<tr>
<th>Items</th>
<th>No.</th>
<th>With SOC</th>
<th>No SOC</th>
<th>Under Investigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Parts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Carry Over</td>
<td>93</td>
<td></td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>- New Parts</td>
<td>148</td>
<td></td>
<td>148</td>
<td></td>
</tr>
<tr>
<td>In-house Parts</td>
<td>8</td>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>- Casting</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>- Machine</td>
<td>6</td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Direct Material</td>
<td>38</td>
<td></td>
<td>38</td>
<td></td>
</tr>
</tbody>
</table>

**Require suppliers to be ISO 14001 certified by 2005**

### Local Part Suppliers

<table>
<thead>
<tr>
<th>Items</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get ISO 14001</td>
<td>10</td>
<td>17</td>
<td>41</td>
</tr>
<tr>
<td>On Process</td>
<td>13</td>
<td>30</td>
<td>28</td>
</tr>
<tr>
<td>No Plan</td>
<td>37</td>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>62</td>
<td>78</td>
</tr>
</tbody>
</table>

### Material Suppliers

<table>
<thead>
<tr>
<th>Items</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get ISO 14001</td>
<td>0</td>
<td>29</td>
<td>35</td>
</tr>
<tr>
<td>On Process</td>
<td>0</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td>No Plan</td>
<td>77</td>
<td>29</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>77</td>
<td>77</td>
<td>68</td>
</tr>
</tbody>
</table>