

Reduction of Environmental Risks in Production

Risk Assessment Program Based on Environmental Impact

▶ Graph 1

Total Environmental Impact

Toyota Industries action policies for the reduction of environmental risks in production, as stated in the Fourth Environmental Action Plan, are the minimization of environmental risk factors and further reductions in the emissions of substances of concern (SoC). During the development of the methods for appropriate management of environmental risk factors, the different characteristics of the environmental impact at the various plants made it difficult to clarify which problems should be given priority. To solve this problem, in fiscal year 2007, Toyota Industries introduced its own index for the integrated management of environmental impact.

Based on JEPIX^{*1}, this index is used to calculate Toyota Industries' total impact on the environment. Statistics used in environmental management—greenhouse gas emissions, PRTR emissions (VOC-derived), and water contaminants (BOD^{*2}, COD, nitrogen, and phosphorous)—are converted into a quantified environmental impact, which is then used to set targets and manage their attainment.

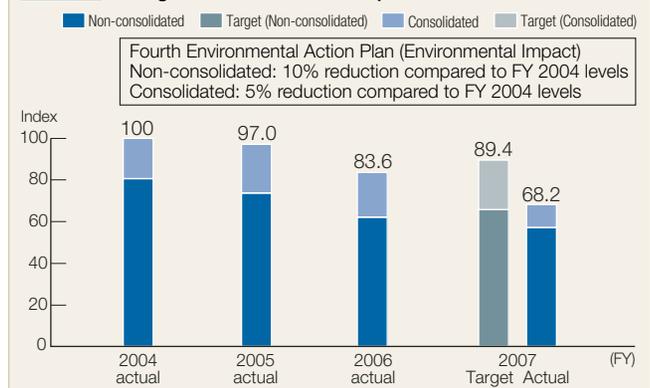
The targets for environmental impact in fiscal year 2007 were both an 18% reduction for Toyota Industries alone and a 10% reduction on a consolidated basis (production companies in Japan), compared to fiscal year 2004 levels. Measures implemented to achieve these targets included the move by away from PRTR Law-designated substances to alternative substances the vehicle business and the switch to water-based coatings for the counterweights on lift trucks by the materials handling equipment business. One of our group companies, ST Liquid Crystal Display Corp., also implemented measures to reduce its emissions of hydrogen fluoride, which is used in its glass etching processes.

These measures enabled both Toyota Industries alone and the Group as a whole to surpass their fiscal year 2007 targets, with Toyota Industries achieving reductions of 29% and the group achieving reductions of 32%.

^{*1} JEPIX (Japan Environmental Policy Index): A method of assessing environmental performance as a theoretical basis for environmental ratings, developed jointly by the Science and Technology Agency of Japan and the Sustainable Management Forum of Japan.

^{*2} BOD (Biochemical Oxygen Demand): Indicator of the degree of water pollution

▶ Graph 1 Changes in Environmental Impact



* The index is calculated by setting the FY 2004 level as 100.

Toyota Industries is continuing to reinforce its activities for the reduction of environmental impact in order to achieve the fiscal year 2011 targets set out in the Fourth Environmental Action Plan. Ongoing measures to protect the environment include the expanded use of water-based coatings in the materials handling equipment business and conversion to more efficient painting methods in the car air conditioning business.

Case Study

Introduction of Water-Based Coatings for Lift Truck Parts Achieves a Major Reduction in VOC Emissions

The materials handling equipment business has developed and introduced new painting methods, switching from VOC (volatile organic compounds)-based coatings to water-based coatings for the lift truck counterweights.

This has resulted in a 75% reduction in VOC emissions from the counterweight painting process.



Lift truck counterweight

Case Study

Measures to Reduce Hydrogen Fluoride Emissions from the LCD Panel Manufacturing Processes

— ST Liquid Crystal Display Corp.

ST Liquid Crystal Display Corp., a manufacturer of small to medium-sized LCD panels, uses hydrogen fluoride, a PRTR Law-designated substance, in its glass etching processes. The company has already been recycling used hydrogen fluoride for some time, but washing equipment with water during production shut-downs was generating large volumes of diluted waste liquids. Therefore, in February 2005, the equipment was modified and work processes were changed so that the equipment no longer needed to be washed with water. This succeeded in cutting down on the volume of those diluted waste liquids. Also, after the equipment modifications, the monitoring of changes in the solid content of the hydrogen fluoride during operation management has made it possible to ensure quality and increase operational efficiency.

These initiatives resulted in an improvement of the hydrogen fluoride recycling rate from 50% to 65%, and waste liquids fell by about 30%. The elimination of the washing process also reduced monthly water consumption by 430m³. As additional benefits, emissions of hydrogen fluoride into the waterways and atmosphere were reduced to virtually nothing, and total environmental impact was cut by 98% compared to the fiscal year 2006 results.



Glass etching equipment

Compliance with Environmental Legislation

Environmental Risk Management

Toyota Industries recognizes that the prevention of risks to the environment, such as environmental pollution and the violation of environmental legislation, is a grave corporate responsibility. Toyota Industries is working to reduce risks such as atmospheric and water pollution, noise and vibration, and the generation of foul odors.

In fiscal year 2007, the Toyota Industries Group, both in Japan and overseas, committed no infringements of environmental legal standards and was subjected to no fines or penalties. There were also no environment-related legal actions taken against any company in the Toyota Industries Group. There were four noise complaints made by local residents, but these were resolved by taking action in the areas generating the noise.

Thorough Controls with Voluntary Target Standards for Prevention of Further Water Pollution

Because all of Toyota Industries' plants are located in the vicinity of Ise Bay, where degradation of water quality due to eutrophication is a serious problem, the maintenance of the quality of wastewater from our plants is of particular importance.

Toyota Industries has therefore set voluntary targets that are stricter than the legally mandated levels and thoroughly controls wastewater quality levels on a daily basis. Also, wastewater volumes have been reduced by recycling water used at the plants, thus reducing the environmental impact on public waterways.

Ongoing Report: The Prevention of Contamination Outflow to Soil and Groundwater and Clean-Up Operations ▶ Table 1

Toyota Industries has been investigating the contamination of soil and groundwater from its past use of trichloroethylene as a cleaning agent and conducting clean-up operations where necessary. In addition to the prevention of the outflow of pollutants beyond plant boundaries, clean-ups of contaminated soil and groundwater within those boundaries are also conducted.

Observation wells have been drilled at some plants in the past to monitor the progress of soil clean-up operations. In fiscal year 2008, these observation wells will be established at all Toyota Industries plants to check regularly that soil and groundwater are not being contaminated by substances covered by the Soil Contamination Countermeasures Law or other grease and oils.

▶ Table 1 Trichloroethylene Readings (FY 2007)

Plant	Weighted Average Concentration in Groundwater (mg/l)	Current Status
Kyowa Plant	0.69	Clean-up in progress
Kariya Plant	0.9	Clean-up in progress

* Environmental limit: 0.03

TOPICS

Introduction of Prior Assessment System for New Plants and Equipment

As the scale of the Toyota Industries Group's operations grows, one initiative that the Group has embarked on is the concept of "Eco-Factory Activities", in which health, safety, and environmental measures are taken into account from the very planning stages of operations. As a mechanism to ensure the pursuit of these activities, Toyota Industries has established a Prior Assessment System (in-house standards), which began in fiscal year 2007.

In this program, health, safety, and environmental measures concerning production activities are factored in from the planning stages of the construction of new plants or equipment and the feasibility of those measures is examined. This prior assessment has made it possible to put in place measures that are more effective and efficient than the kind of catch-up measures that are implemented only after construction is complete, which was the usual method used in the past.

The specific flow of the prior assessment system begins with the incorporation of health, safety, and environmental measures by the planning departments at the planning and specifications deliberation stages. These measures are submitted in a prescribed format at the same time as the formal request for project approval is made. After assessment, the measures are audited even after construction or manufacture has commenced, and, in the case of large-scale projects, the results of those audits are reported to the Production Environment Subcommittee (see Page 38).

As well as improving the effectiveness of health, safety, and environmental measures through the implementation of this system, Toyota Industries plans to extend its implementation to other group companies.

Prior Assessment System

