Safety & Environmental Report 2008

Table of Contents

Editorial Policy

◉Purpose of the report

This report has been prepared to disclose information about TOYO's and Toyo Group's safety and environment activities to the stakeholders inside and outside TOYO.

◉Reference guideline

This report has been prepared referring to "Environment Guideline (2007)" of the Ministry of the Environment.

◉Period

The report covers the activities for fiscal 2007 (from April 1, 2007 through March 31, 2008) and for part of fiscal 2008.

◉Scope

The report covers the activities of all the organizations of TOYO and Toyo Group as well as of the construction sites inside Japan and outside Japan.

◉Next report

The next issue is scheduled for July 2009.

◉Prepared by

Safety, Quality and Environment Management Division /
Environment Management Team
(Phone 047-454-1132, Fax 047-454-1833)

President's Message

Aiming to be a corporation trusted by our clients, and by the local and international communities.

On behalf of everyone at Toyo Engineering Corporation (TOYO), I would like to express our sincere gratitude to you for your understanding and support for our activities over the years.

TOYO provides its clients all over the world with specialized services ranging from the project planning phase to the plant operation phase by utilizing its project management skills and comprehensive engineering capabilities. In the process of plant construction, we place the highest priority on safety, implementing a wide range of safety measures. However, unfortunate situations may arise as long as construction work is carried out by humans, regardless of the best possible efforts for preventing errors or mistakes. Should any accidents occur, we immediately report them to the client and the relevant authorities, and share the information companywide so that the entire Toyo Group can implement necessary and thorough safety measures.

While providing specialized services, TOYO fulfills its social responsibility to protect the global environment by employing energy and resource-saving designs, and by paying the utmost attention to environmental concerns in plant construction. We would like to act as a corporation trusted not only by our clients, but also by the local and international communities.

We would be pleased if you would look over the "Safety and Environment Report 2008," which describes TOYO's activities in these fields, and let us know your honest views of these activities.

Yutaka Yamada
President and CEO

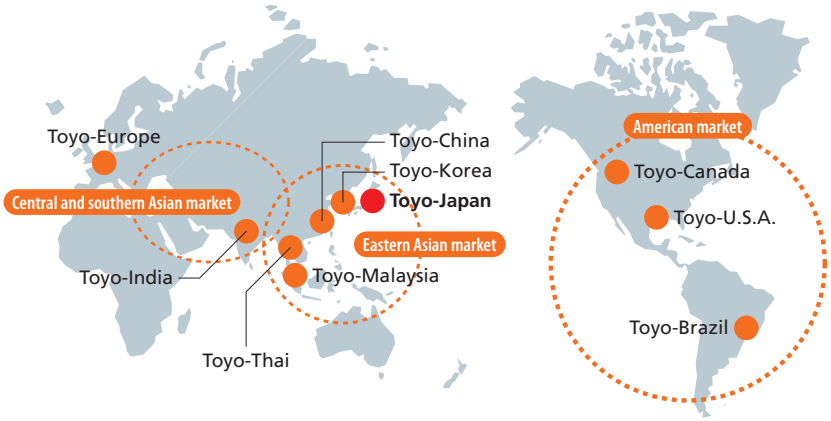
Corporate Profile and Global Toyo

Corporate Profile

- **Corporate name:** Toyo Engineering Corporation
- **Established:** May 1, 1961
- **Representative:** Yutaka Yamada, President and CEO
- **Paid-in capital:** 18.2 billion yen
- **Number of employees:** 1,066 (as of March 31, 2008)
- **Business activities:**
  - R&D collaboration, design, engineering, equipment procurement, construction, test operations and technical guidance in such areas as general chemicals, petrochemicals, oil refinement, natural gas, electric power, nuclear power, advanced production systems, distribution, medicine, biotechnology, environment for various manufacturing plants
  - Procurement, development and sales of systems engineering and other software

Global Toyo

In fiscal 2006, Toyo Group set its corporate vision of "Global Toyo providing client-value enhancing services." We have been striving to enhance client value by optimizing client business systems and supply chains together with clients and in collaboration within TOYO and Toyo Group companies.



Toyo-Japan:	Toyo Engineering Corporation, Japan
Toyo-Korea:	Toyo Engineering Korea Limited
Toyo-China:	Toyo Engineering Corporation, China
Toyo-Malaysia:	Toyo Engineering & Construction Sdn. Bhd.
Toyo-Thai:	Toyo-Thai Corporation Public Company Limited
Toyo-India:	Toyo Engineering India Limited
Toyo-Canada:	Toyo Canada Corporation
Toyo-U.S.A.:	Toyo U.S.A., Inc.
Toyo-Brazil:	Toyo do Brasil–Consultoria E Construcoes Industriais Ltda.
Toyo-Europe:	Toyo Engineering Europe, S.A.

Corporate Safety, Quality and Environment Policy

Corporate Safety, Quality and Environment Policy

Toyo Engineering Corporation is dedicated to contribute globally to the society at large through providing our quality professional engineering services by way of construction of industrial facilities and supply of technical services. As an engineering company, it is our mission "To ensure the satisfaction and success of our clients through the provision of effective total solution." The key to this mission is to meet Quality requirements as well as Safety and Environment requirements called for by our clients and society. In this regard, our company will share the same vision with our clients and will maintain mutually beneficial relationships with all stakeholders, and our business conduct will abide by the following policies:

Policies

1 We supply reliable products that meet clients' requirements, are safe in service and have the least burden on environment.

2 Focusing on creation of safety oriented culture, we complete our job with no accidents and no harm to people.

3 We minimize energy consumption and wastes and maximize reuse of wastes so that regional and global environment can be best preserved.

4 We honor ethics and abide by the laws and regulations regarding Corporate Safety, Quality and Environment.

5 With a firm belief that Corporate Safety, Quality and Environment is the basis of an on-going concern including business continuity management, we make continual improvement for ensuring the effectiveness of their management systems.

January 1, 2005
Yutaka Yamada
President and CEO

Safety

Message on Safety

The premises of a corporation trusted by community include paying sufficient attention to safety. We are confident that our efforts and initiatives, time and expenses to respect human life should take precedence over all other things. Loss of valuable human life must absolutely be avoided in the process of TOYO's and Toyo Group's business evolution, for example, plant construction.

With the recognition that "safety takes precedence over all other things," TOYO will continuously implement safety education programs for all its employees to spread awareness of a culture of safety.

"Safety" is an important brand of TOYO. In order to pass down the brand to all the Toyo Group companies in the world, we are strongly promoting safety measures as part of the company-wide safety goal for fiscal 2008: "Make Safety Standard Penetrate Global Toyo."

Toyo Group actively strives to consolidate a firm culture of safety.

Clients' Commendations for Safety

Our major goal is to hand over superior facilities to our clients through construction work that is completed without any accidents or injuries. For this purpose, Head Office and construction site members, together with the clients and partners, conduct safety management activities in a planned and positive manner, with an established Health, Safety, Security and Environment (HSSE) management system.

In June 2007, TOYO received high commendations from Oita Refinery of Kyushu Oil Co. Ltd., Japan (part of Nippon Oil Corporation since October 2008) for completing the construction without lost time incidents. In January 2008, TOYO achieved a record of 6 million hours without lost time incidents, which was highly appreciated by the client, Yanbu National Petrochemical Company (YANSAB), Saudi Arabia.


感謝状

東洋エンジニアリング株式会社殿

貴社は鹿児島石化分留塔用単独加熱炉設置等工事に於いて卓越した技術と豊富な経験を活かし本日ここに見事に完成を迎えるに至りました これは偏に貴社の努力の賜であり茲に其の労を称え感謝の意を表します

平成十九年六月十五日

出光石油株式会社喜入石油製油所 所長 富澤一司

Kyushu Oil's letter of appreciation

YANSAB's letter of appreciation

TOYO has received letters of appreciation from the clients listed below, in addition to Kyushu Oil and YANSAB.

Commendation for safety received recently

Year and month	Reason for commendation	Client	Description
Jul. 2008	No lost time incidents	Indian Oil Co., Ltd	10 million hours operation without lost time incidents at Indian Oil's ethylene project, India
May 2008	No lost time incidents	Dow Corning (Zhangjiagang) Co., Ltd	7 million hours operation without lost time incidents at Dow Corning's silane project, China
Mar. 2008	No lost time incidents	Qatar Shell GTL Limited	3 million hours operation without lost time incidents at Shell's GTL project, Qatar
Mar. 2008	No lost time incidents	Petróleo Brazileiro S.A. (PETROBRAS)	5 million hours operation without lost time incidents at PETROBRAS's refinery modernization project, Brazil
Dec. 2007	Excellent project execution	Ethylene Malaysia Sdn. Bhd. and Polyethylene Malaysia Sdn. Bhd.	Project for Ethylene Malaysia and Polyethylene Malaysia implemented without lost time incidents by Toyo-Malaysia
May 2007	No lost time incidents	Sakhalin Energy Co., Ltd. Royal Dutch Shell	20 million hours operation without lost time incidents at Shell's LNG project, Sakhalin

Efforts for Safety

■Safety Record

TOYO's safety record for fiscal 2006 through 2008 is as follows.

Both lost time incident rate and total recordable incident rate in fiscal 2008 show a downward trend compared to those in fiscal 2007.

Safety record over the past 3 years

Year	Employee Worked (Man-Day)	Employee Hours (A)	Number of Disabling Injured					LTI Rate (Note 1)	Total Recordable Incident Rate (Note 2)
			Fatalities	Lost Time Incident	Medical Treatment (No Lost Time)	LTI Total (B)	Recordable (C)		
2006	8,515,817	86,929,712	3	20	305	23	328	0.26	3.77
2007	9,012,650	89,334,017	1	16	326	17	343	0.19	3.84
*2008	5,501,786	55,360,960	2	8	143	10	153	0.18	2.76

Note 1: Lost time incident (LTI) rate = (B) × 1,000,000 / (A)

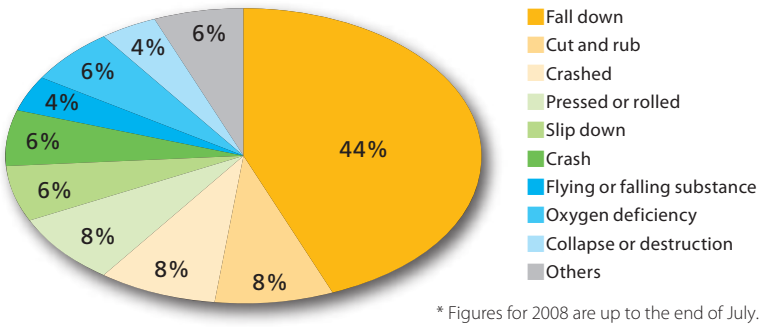
Note 2: Total recordable incident (TRI) rate = (C) × 1,000,000 / (A)

* Figures for 2008 are up to the end of July.

●Number of casualties according to types of incidents

When TOYO's casualties during fiscal 2006–2008 (6 fatalities and 44 injured with lost work time, total 50 people) are divided in incident categories, 44% of the casualties were due to falls. Therefore, the implementation of safety management and preventive measures for elevated work places is essential.

Casualties by categories of incidents (2006–2008*)



* Figures for 2008 are up to the end of July.

■Safety in Construction — Ethylene Project in India —

Under the project, TOYO and Toyo-India are jointly constructing a plant unit to produce 800,000 MTA ethylene and related products. The unit is located near Panipat, State of Haryana, about 100 km north of Delhi, the capital of India.

As the construction is now at a peak, more than 3,000 workers are at the site. The client, TOYO, Toyo-India and all the subcontractors are proceeding with the work collaboratively through the implementation of the safety-oriented activities described below, with the slogan: "Safety takes precedence over all other things."

Safety-related speeches

Speeches about safety are made at the construction site by workers at their own initiative, which motivates other workers to respect workplace safety.

Safety declaration

Poetry about safety, along with a Safety Declaration, is read aloud to raise awareness about safety issues.

Safety-related networking

Safety-related networking events are held periodically together with other project teams working nearby to exchange safety-related information among teams.

■Safety in Construction — Ethylene Project in Thailand —

A world-class plant unit producing ethylene and related products is being constructed by a corporate team led by TOYO and Toyo-Thai.

The construction at the site located about an hour's drive from Bangkok is now at its peak with more than 4,000 workers at the site. The project is being implemented, under safety-centered and organizational management in line with the construction manager's firmly established safety policy. Unique activities described below are conducted.

Drug control

Abuse of drugs and alcohol endangers not only the abuser but also everyone in the work area. The management, in cooperation with the local police, prevents illegal drugs and people influenced by drugs from entering the site.

Health checks

The health of people engaged in risky work such as activities carried out in confined spaces is checked by medical specialists before starting work.

Local intercommunication

Meetings with local community people are held periodically to reduce anxiety about the construction work. To deepen intercommunication with the community, stationery and other education goods are contributed to local primary schools.

■Safety in Construction — PCB Project in Japan —

The project involves the construction of facilities for sorting, disassembling, and disposal of PCB scraps (transformers, condensers, electrical parts that are difficult to dispose of, PCB-contaminated parts, etc.). The construction at the project site, which is about 30 minutes drive from Kokura Station, is now at a peak with more than 120 workers at the site. Construction safety management is performed through cooperation between the client, TOYO, subcontractors, and related companies. Some aspects of these activities are described below.

Promotion of comfortable workplace

In order to operate and maintain comfortable workplace management and to enhance awareness of safety, Comfortable Workplace Promotion Plan has been worked out and approved by the Labor Standards Supervision Office.

Plate of establishment approved under Comfortable Workplace Promotion Plan (approved by Fukuoka Labor Department Director)

Risk management

Risk assessment using KYK Board (Risk Prediction Activity Board) and quality management one-point checks are carried out.

KYK Board

"Hiyari-Hatto" System

Continually accumulated "hiyari-hatto" (near miss) can be utilized effectively as a tool for construction safety management. The construction site employs a management system using an easy-to-enter touch panel.

"Hiyari-Hatto" System entry training

■Safety standard established in Global Toyo

TOYO has established a global standard for the construction HSSE to enable TOYO and its group companies to perform safety management on the same level in any regions in the world.

This standard specifies that occurrence of incident or major near miss should be reported from the site to TOYO within 12 hours. Received information is immediately transmitted to Toyo Group companies and project sites to prevent similar incidents from occurring.

■Continuous movement toward establishing a culture of safety

●In-house safety education

Recognizing that safety is a very basic aspect of corporate activities, TOYO is conducting safety education programs for all the corporate members to spread the culture of safety. This serves as an important motivation to raise employees' awareness of safety.

In order to disseminate a culture of safety and improve sensitivity toward safety issues, education about "Risk Assessment," "Safety Record," "Occupational Health and Safety Management System," etc. is given to particular members.

●Safety SHOT campaign

In April 2008, TOYO implemented a "Safety SHOT Campaign" to enhance awareness of safety as a core element of business. At the campaign, leaders of operations units and project managers expressed their determination to materialize "Safety must take precedence."

●In-house safety commendation

In fiscal 2007, TOYO improved its safety commendation standard.

Before that time, only large projects that had been completed without lost time incidents were recognized by a president's commendation. From 2007, projects that carried out construction work without lost time incidents in mid-course (each 5 million hours for overseas sites, each 0.5 million hours for domestic sites) are also recognized.

As a result, a total of 12 projects were recognized by the president in fiscal 2007.

●Promoting safety campaign

To establish a culture of safety, a "Safety Campaign" was carried out in June and July 2008.

The safety campaign includes the following major activities:

(1) Nationwide safety week (president's message and visit to project sites)
(2) Introducing features of safety management at construction sites in Japan and overseas
(3) Introducing recent incidents
(4) Posting campaign posters in the office
(5) First-aid training
(6) Reporting on "hiyari-hatto" analysis results
(7) Easy-to-do health promotion
(8) Introducing campaigns of Toyo Group companies

It was characteristic of the 2008 safety campaign that Toyo Group companies participated with their own programs worked out individually. The campaign was introduced to the Group companies through the in-house newsletter (domestic) and Global Toyo information magazine (international).

Safety campaigns at TOYO and Toyo Group companies

First-aid training at TOYO

Safety declaration at Toyo-India

Safety workshop at Toyo-Korea

Fire protection workshop at Toyo-China

**THINK SAFE,
ACT SAFE AND
BE SAFE AT ALL TIME**

All Toyo-Malaysia members attached this safety slogan sticker to the rear of their cars to boost safety enlightenment activities.

Safety slogan sticker at Toyo-Malaysia

●Operating "Hiyari-Hatto" System

"Hiyari-hatto" (near miss) is an incident that was prevented just in time before it occurred. At construction sites, people sometimes experience potentially dangerous "hiyari-hatto." It is said that repeated "hiyari-hatto" may lead to a serious incident. "Hiyari-hatto" data management system, developed by TOYO, has been employed since Jan. 2008 at some of the domestic construction sites.

"Hiyari-hatto" data at project sites is collected and analyzed at the head office, then fed back to the companies and project sites.

(1) Summary of "Hiyari-Hatto" System analysis results (indicating the top five items)

	Items \ Order		No. 1	(%)	No. 2	(%)	No. 3	(%)	No. 4	(%)	No. 5	(%)
*	When		In the morning	52.2	In the afternoon	36.9	Early in the morning	7.5	Before noon	2.1	Early in the afternoon	0.6
	Work		Piping work	11.9	Civil engineering and architecture	11.7	Transportation	9.7	Building equipment	9.2	Scaffolding assembly or disassembly	6.0
*	Cause	Material	Fly or drop	59.6	Mudslide	8.6	Fire	7.4	Leakage	3.1	Explosion or rupture	1.2
*		Person	Stumble or fall	33.0	Tumble or fall down	17.1	Collision	16.7	Nipped or caught	12.0	Traffic accident	4.6
	Foreseeable damage		Bruise or sprain	39.1	Scar or rub	25.5	Bone fracture	22.8	Burn	3.7	Impaled	1.2
	Why was the incident occurring?	Person	Confirmation not made	22.5	Inability to respond	8.2	In a hurry	8.1	Rule not followed	6.4	Insufficient knowledge or understanding	5.7
		Work	KYK not implemented	26.6	Work by one person	24.0	Insufficient survey	9.0	Error in planning	7.5	Improper instruction	3.5
											TBM not implemented	3.5
		Material	Improper curing	23.0	Improper scaffolding	17.3	Personal protective equipment or tool insufficient or not used	14.1	Insufficiency in safety equipment	13.0	Insufficient indication	8.0

(2) Analysis of the (*)-marked data

●Time of occurrence of "hiyari-hatto"

①Outcome

- "Hiyari-hatto" incidents occurred frequently in the morning (52.2%). More than 50% of the incidents (lost time incidents plus fatalities) in our projects in 2006–2008 occurred in the morning. This trend is observed with "hiyari-hatto" incidents as well. Incidents and "hiyari-hatto" tend to occur in the morning when workers are not well accustomed to the work environment or are not physically and mentally prepared for the work.

②Preventive measures

- Confirm work procedure and safety at morning meeting, KYK (note 1), and TBM (note 2).
- Let all workers see round the work places to identify the conditions before work.
- Make work planning with some margin for time in the morning.

●Causes of "hiyari-hatto"

①Outcome

- Concerning materials, fly and drop occur most frequently.
- Concerning people, stumble and fall occur, followed by fall down and tumble down.

②Preventive measures

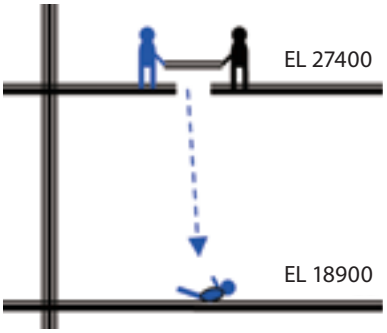
- For safety management in general, be sure to build scaffolding, remove unnecessary materials, make curing, implement KYK, and carry out education.
- Concerning workers' behavior, act carefully, make reconfirmation, and be careful even with familiar work.

These measures are taken at each project site as all-hands safety activity.

(Note 1) KYK stands for "Kiken Yochi Katsudou" (risk prediction activity), or activities for predicting work-related risks before the work is started.
(Note 2) TBM stands for "Tool Box Meeting," or activity to briefly discuss the contents, methods, arrangements, and problems of the work of the day before starting the work at the workplace.

Lessons Learned from Serious Accidents

■Fall down accident



Situation

While a steel-frame floor (at 27.4 m height) was cleared, two workers lifted and carried a steel plate that covered an opening for letting a pipe pass through. One of the two workers fell from the opening to the lower floor (18.9 m height) and was injured. The two workers did not know that the steel plate had been installed for covering the opening and did not even identify the existence of the opening.

Causes

(1) The work leader did not provide an explanation or instruction about the following:
- ●There was an uncovered opening on the floor.
- ●A floor plate was used to cover the opening.
- ●The floor plate for guarding the opening must not be removed.

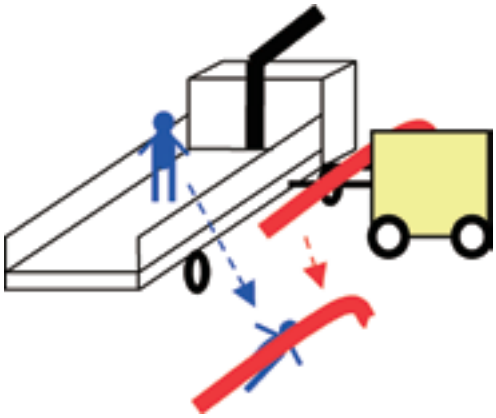
(2) The method of covering and indication of the opening were not appropriate.

Measures

(1) To be carried out at the project site
- ●Attention at pre-work meeting
- ●Indication of openings in the whole work area and periodic check of curing state
- ●Safety re-education about curing of openings to all subcontractors

(2) To be carried out by the head office
- ●Revise the procedure for covering openings to prevent fall down and familiarize all the sites with the revised procedure.
- ●Confirm the observance of procedure with all project sites.
- ●Designate opening fall-down protection as priority check points at safety audit.

■Tumble down accident



Situation

Prefabricated piping materials were reloaded at a material yard from two pickup trucks to a truck, using a forklift. When a worker was working on a pickup truck, a pipe (size 10 inches × 3 meters, approx. 170 kg) began to tip. As the worker held the pipe to keep it from falling, he fell under the pipe.

Causes

(1) The pipe was reloaded by one person.
(2) The prefabricated piping material, which was unstable, was reloaded with a forklift, which was not suitable for the work.
(3) The forklift was operated by an unqualified person.
(4) The forklift key was controlled in an improper manner to prevent unqualified people from operating the forklift.

Measures

(1) To be carried out at the project site
- ●Re-educate all workers about safety issues.
- ●Strengthen the management structure of the project site.
- ●Strictly follow the prohibition of one-person reloading.
- ●Specify cranes suitable for the load shape.
- ●Recheck qualified persons and their qualifications.
- ●Intensify the control of the keys for construction machines.

(2) To be carried out by the head office
- ●Specify in the safety management procedure the transportation methods for prefabricated piping materials using a forklift and a crane.
- ●Assign full-time safety staffs in business units to intensify safety patrols at construction sites.

Environment

Message on Environment

Since its inception, TOYO has been exerting advanced comprehensive engineering capabilities to reduce burdens on the global environment through project execution in the fields of energy and material industries.

We are confident that it is TOYO's mission to contribute to "sustainable development" that can balance competing goals for economic development and conservation of the global environment.

In the execution of projects, TOYO focuses on reducing environmental loads of plants by actively employing energy-saving technologies, appropriate waste water treatment processes, technologies for removing hazardous substances from emission gases, etc.

As a global corporation, TOYO will strive to develop, acquire, and retain global environment conservation technologies, to promote technology exchanges with clients in the world, to make proposals on environmental issues, and to contribute actively to solving environmental issues such as global warming, through international cooperation frameworks.

Efforts for Environment

■Office Activities

●Reduction of CO_2 emissions

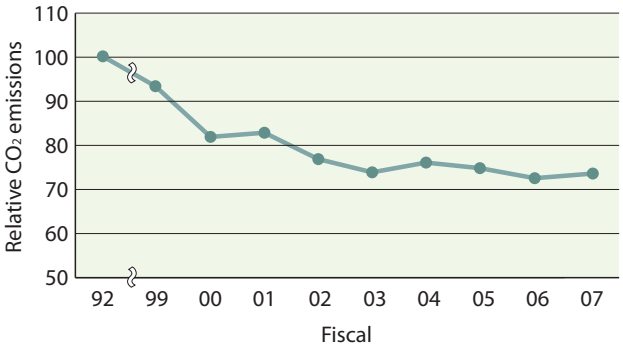
CO_2 emissions are calculated from electricity consumption, urban gas consumption, and consumption of fuel oil A used for emergency power supply.

TOYO launched energy saving activities in fiscal 2000, with office lights being turned off during lunch breaks and unnecessary lights removed. In fiscal 2001, we made energy saving investments, such as installing lighting inverter stabilizers, which produced good results in fiscal 2002 and later.

CO_2 emissions in fiscal 2007 were reduced by 26.1% from the 1992 level.

Note: Office activities are those in the Head Office and Engineering Center (Narashino City).

Relative CO_2 emissions (1992 emissions = 100)



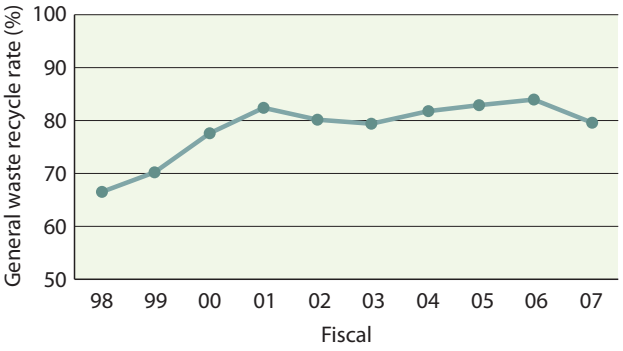
●Improvement of general waste recycle rate

The general waste recycle rate has been more than about 80% since fiscal 2001 when segregation of general waste and double-side printing were encouraged for the first time.

The general waste recycle rate for fiscal 2007 was 79.3%.

TOYO will continue our efforts for maintaining the recycle rate over 80%.

General waste recycle rate (%)



■Construction Waste Gross Discharge

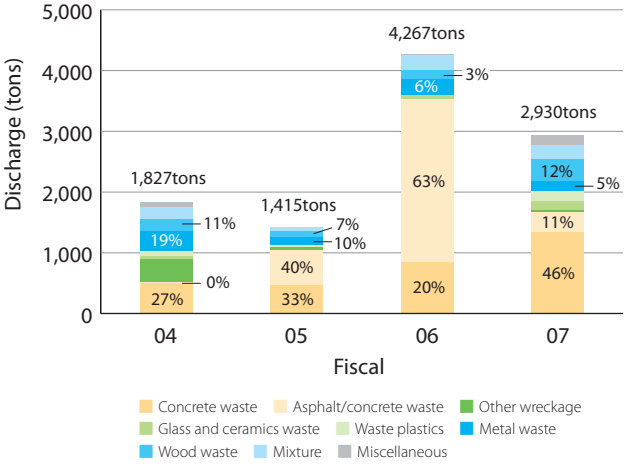
●Domestic project sites

(1) Volume of construction waste discharge

The volume of construction waste discharge from domestic project sites in fiscal 2007 was 2,930 tons, about 1,300 tons less than 4,267 tons discharged in fiscal 2006.

* Renewable waste includes waste concrete, waste asphalt-concrete, metal waste, and wood waste.

Percentage of construction waste by category (% shows only that of recyclable waste *)



(2) Percentage of construction waste by disposal methods

Waste percentage by disposal method (recycle, landfill, and incineration) is shown in the figure: 79% recycled, 17% landfilled, and 4% incinerated. The recycle rate decreased to 79% from 92% in fiscal 2006.

(3) Recycle rates of four items specified by the Construction Material Recycling Act

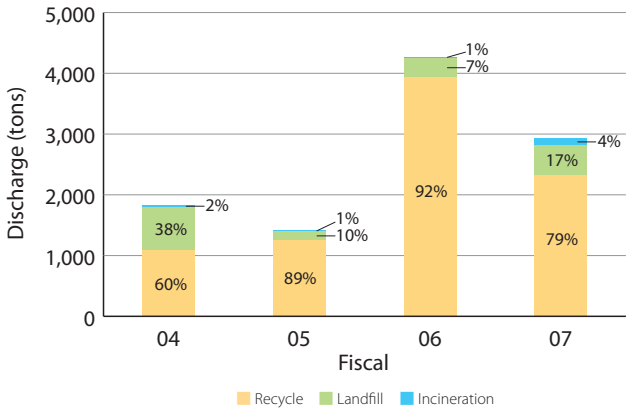
The recycle rates of four items specified by the Construction Material Recycling Act are illustrated.

The recycle rates of waste concrete and waste asphalt-concrete have been kept at almost 100%.

The recycle rate of metal waste has been as high as 100%, except for fiscal 2005.

Although the recycle rates have been increasing, it is considered that disposal of wood waste should be improved.

Percentage of construction waste by disposal methods



●Overseas project sites

Volume of construction waste discharge and percentage by category

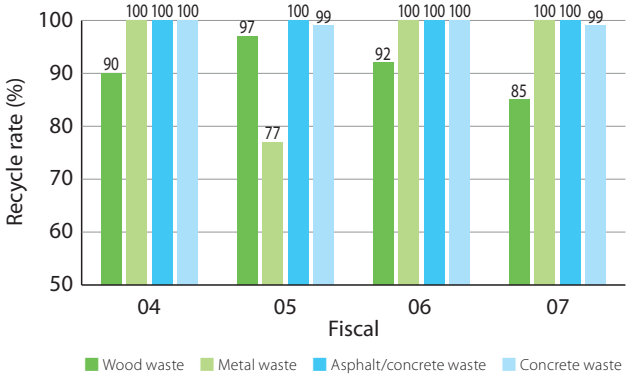
Since 2007, TOYO has been summarizing the volume of construction waste discharge from overseas project sites.

The total discharge volume was 272.3 thousand tons, about 100 times more than that from domestic project sites. This relates to the fact that about 80% of TOYO's orders are from overseas countries and the scale of work per overseas project is larger than that carried out domestically.

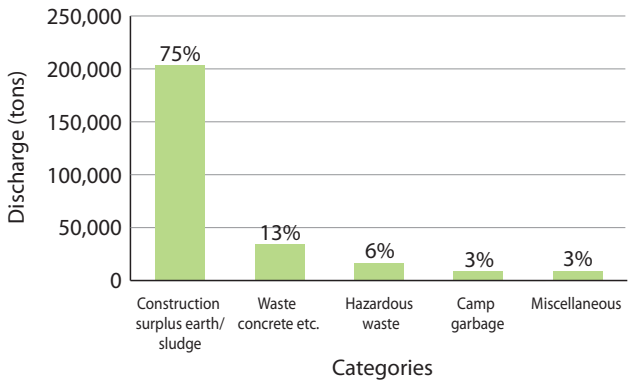
Construction surplus soil/sludge has the highest percentage of waste, 75%, which relates to the fact that fresh ground is exploited for overseas projects more often than for domestic projects.

TOYO will continue to summarize the construction waste discharge volumes at overseas project sites to utilize the data for reducing the environmental load.

Recycle rates of four items specified by the Construction Material Recycling Act



Volume of construction waste discharge and percentage by category (2007)



■Design, Procurement, and Construction Activities

●Design

TOYO makes efforts to reduce the environmental load in plant operation. These efforts are started in the engineering stage and continued in the construction stage. Based on ISO 9001, TOYO reduces environmental load that occurs at plant operation, through the following work processes:

(1) Clarification and confirmation of client requirements (environmental specifications)

(2) Design review

(3) Design verification

(4) Design validation

TOYO has contributed to client satisfaction with energy saving and resource saving of plants, or TOYO's products, by investigating and improving energy saving and resource saving technologies proven through TOYO's experience, and by proposing such technologies to the clients.

Furthermore, TOYO has made efforts to reduce environmental load through its activities for "eliminating Muri (overdoing), Muda (wasting), and Mura (irregularity)" in design work, while striving for efficient design work and methodology as an environmental goal.

●Procurement

As one of our environmental goals, TOYO has set up "promotion of green procurement." For green procurement, TOYO carried out a survey of environmental management activities of 100 largest vendors-suppliers to TOYO. Vendors that had acquired ISO 14001 and vendors that carried out environmental management activities were qualified as "green corporations."

In fiscal 2007, the amount of procurement from green corporations reached 91% of the total procurement amount. TOYO regards this percentage as the green procurement rate.

In addition, TOYO has issued "Guideline for Green Procurement" as an intra-division guideline. The corporation makes efforts to continue the green procurement in line with the guideline, aiming to maintain the green procurement over 90%.

TOYO promotes paperless work, by computerizing inquiries from clients, quotation requests to vendors, and quotations from vendors as well as inspection reports.

●Construction

Out of TOYO's various work categories, construction site work causes the largest environment load. At a construction site, the following environmental objectives are set up and efforts to reduce the environment load are made:

Safety and environment meeting at construction site
Meetings are regularly held at a construction site to familiarize workers with the knowledge of safety management and environment.

(1) Appropriate treatment of construction waste

- Promote recycle of construction waste by separate collection.
- Check transportation permit and disposal permit.
- Visually check waste disposal at intermediate and final disposal sites.
- Check manifest (industrial waste control sheet) control status.
- Measure and summarize construction waste generated from all the domestic construction sites.

(2) Appropriate treatment of chemicals (paint etc.)

- Obtain Material Safety Data Sheet (MSDS) from paint suppliers.
- Give education about safety and toxicity as well as proper treatment of paints to workers related to painting on construction sites.

(3) Environment-conscious construction method

- Employ noise-free and vibration-free construction method.
- Control dust generation by paving roads and sprinkling water.

(4) Environment-conscious material transportation

- Supervise carriers for preventing leakage of transported materials from loading space.

(5) Turbid water treatment and oily water separation

- Separate mud and oil from turbid water and oil-containing sump water generated by excavation.

Introduction of Environmental Conservation Activities at Overseas Sites

■Saudi Arabia YANSAB EG-1 Project

The project involves the construction of an ethylene glycol producing plant for Yanbu National Petrochemical Company (YANSAB), Saudi Arabia. The project team is doing its best to deliver the plant successfully, which is now under commissioning. The project has been implemented with no lost time incidents under effective HSSE management system since the construction was started.

With regards to environment management, TOYO formulated an environmental policy first, and then set up the objectives and goals in line with the policy. In order to achieve the goals, we set up a program to reduce environmental impacts during construction and commissioning so as to maintain and improve the outstanding environmental performance of this project. This program requires internal environment education be implemented to improve knowledge and environmental awareness of all the workers.

Main equipment of the ethylene glycol producing plant

●Waste management

Waste containers are divided into the following four:

- Non-hazardous substances
- Hazardous substances
- Bio-hazardous substances
- Other substances

Waste container

●Noise management and monitoring

Daily noise monitoring, controlling, and recording are performed with noise level meters. Where noise exceeds 80 dB, ear protection is indicated obliging use of ear pieces.

Indication of ear protection

●Oil contamination control

Various oil leak preventing devices are arranged at various places in the construction site to allow actions be taken immediately in case of oil leaks. The oil leak protection device box contains oil absorbent, disposable working clothes, rubber gloves, long boots, shovel, protection mask, etc.

Oil contamination control applies to hydrocarbon storage area, fuel-driven machinery, and temporary fuel storage area.

Oil leak protection device box

■South Pars 678 Project in Iran

The project, awarded in May 2003 by Petropars Ltd., fully owned by National Iranian Oil Company (NIOC), is to construct a world-class gas processing plant. Natural gas, produced in a gas field off the Gulf, will be separated into LPG, condensate (light oil), etc. At the peak of plant construction, 16,000 workers were mobilized. The plant construction has been completed, and the plant is now under commissioning.

●Wastewater treatment facility

As the quality of daily life water discharged from the project site camp must meet the drainage standard of Iran, the site camp is equipped with a full-scale wastewater treatment facility. Clarified water treated by the facility is subjected to water quality analysis to make sure that it satisfies the drainage standard.

●Use of clarified water for irrigation

Clarified water subjected to the wastewater treatment is supplied to a forestation area for use for irrigation. Although the site region is desert, the forestation area is covered with green with clarified water after wastewater treatment. Site workers can enjoy green landscape.

Wastewater treatment facility
(aeration system using activated sludge)

Clarified water from the wastewater treatment facility

Forestation area

■REVAP Project in Brazil

This project is one of the refinery modernization projects for Petróleo Brasileiro S. A., the largest oil company in Brazil. The project consists of Delayed Coker Unit, Coke Naphtha HDT Unit, Sulfur Recovery Unit, etc.

ECOVAP, a joint venture composed of TOYO, OAS, and SETAL, is carrying out the project in Sao Jose dos Campos, State of Sao Paulo.

●Leftovers zero campaign

Project workers usually lunch at the cafeteria operated by an ECOVAP's affiliate. They used to leave a large amount of food leftovers. In February 2008, ECOVAP started a "Leftovers zero campaign" to reduce garbage, save food materials, and reduce costs.

Each worker receives a card every week. When a worker returns empty dishes without leftovers, he or she receives a stamp on the card. Those who put their fully stamped cards into a box at the end of week, receive various awards by drawing lots.

Lot drawing carried out on April 8

Even after the campaign ended in April, the workers are instructed to continue the custom of eliminating garbage.

ECOVAP distributed a card describing as follows to each of the workers to encourage them to reduce garbage.

Tips for reducing food garbage

◉Just pick the amount of food you will actually eat: Respect towards the food and someone else's work. Pick just enough food for your meal.

◉Do not dump the leftover: At home, learn hot to recycle the leftover: with beans, make soup; with rice, make biscuits; with carrots, make a stew. Overripe fruits can be turned into jam, jelly and stuffing for cakes.

◉Plan your weekly menu: By planning the weekly menu at home, defining the daily means, you can organize the weekly grocery shopping and avoid waste.

Introduction of TOYO-Owned Environment-Contributing Technologies

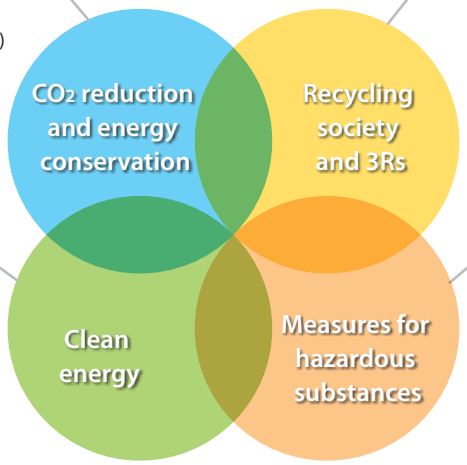
TOYO actively promotes development, introduction, and improvement of technologies on environment.

Through utilizing these technologies, TOYO provides a variety of solutions to environmental conservation and contributes to sustainable economic development, with unique engineering services in view of the global environment.

On the basis of accumulated knowledge and experience, TOYO aggressively applies R&D engineering to the field of environmental conservation, making various approaches to CO_2 reduction and energy conservation, clean energy and new energy, recycling-oriented society and Reduce, Reuse, Recycle (3Rs), and measures for hazardous substances.

(1) Energy-saving urea process (ACES21™)
(2) Energy-saving propylene-production boosting process (OCT)
(3) Highly active steam reforming catalyst (ISOP)
(4) New autothermal steam reforming process (ATR)
(5) CO_2 fixation technology
(6) Analysis and optimization technology for energy saving
(7) CDM/JI

(1) Reuse of waste water
(2) Reduced-product-loss and low-drainage-load type automated line changeover device (XY router™)
(3) Waste biomass recycling technology
(4) Sludge-volume reducing technology (using low-temperature-hydrothermal reaction)
(5) Incinerator-residue recycling technology



(1) Dimethylether (DME)
(2) Gas-to-Liquid (GTL)
(3) Hydrogen
(4) Methanol
(5) Liquefied natural gas (LNG)
(6) Biomass energy
(7) Fuel cell

(1) Electric precipitator
(2) Exhaust-gas desulfurizer using magnesium-hydroxide process
(3) High-performance waste-water treatment unit (BioPOP)
(4) Dioxin decomposing device using catalyst
(5) Hazardous waste treatment (PCB etc.)

■TOYO's Solutions to CO_2 Reduction and Energy Conservation

●Energy-Saving Urea Process (ACES21™)

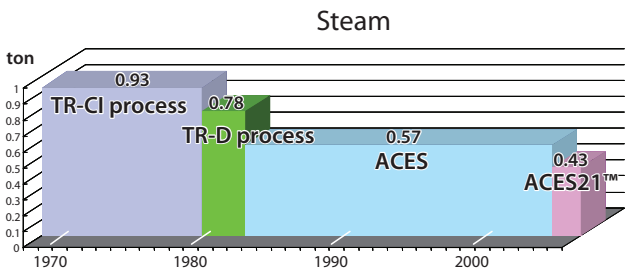
Since established in 1961, TOYO has been a leader in urea technologies worldwide, designing, engineering, constructing and commissioning almost 100 urea plants based on its own processes.

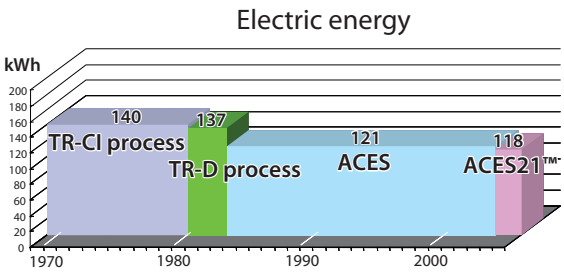

Urea product


ACES21™ urea plant

The history of urea plants is the history of energy conservation. While producing one-ton urea required 0.93 ton steam and 140 kWh electric power in the past, the newest process, ACES21™, requires only 0.43 ton steam and 118 kWh electric power to produce one-ton urea, which largely contribute to energy conservation and CO_2 reduction.

Energy consumption per ton of urea



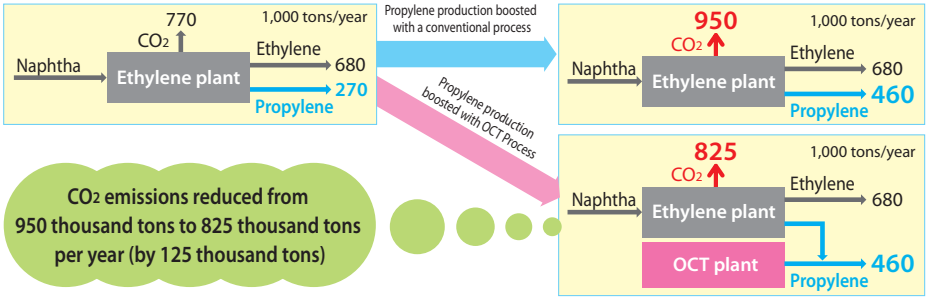


●Energy-Saving Propylene-Production Boosting Process (OCT)

TOYO, jointly with Lummus Technology, takes charge of selling Lummus' Olefins Conversion Technology (OCT) in Asian region. The OCT can boost the production of propylene at a low cost and reduce CO_2 largely when the OCT Process is integrated with an ethylene plant, so the OCT Process is expected as a new propylene boosting technology to fill up recent propylene shortage.

For example, when propylene production is increased by 190,000 tons per year, the OCT Process can reduce CO_2 by 125,000 tons per year compared to the conventional processes.

Comparison in the case of boosting propylene production by 190 thousand tons



■Utilization of CDM/JT

TOYO promotes projects utilizing Clean Development Mechanism (CDM) and Joint Implementation (JI) (note 1). We expect plural CDM/JI projects in which TOYO participates will reduce more than 1 million tons of greenhouse gases in terms of carbon dioxide per year. This gives an emission credit, contributing to reducing Japan's greenhouse emission burden.

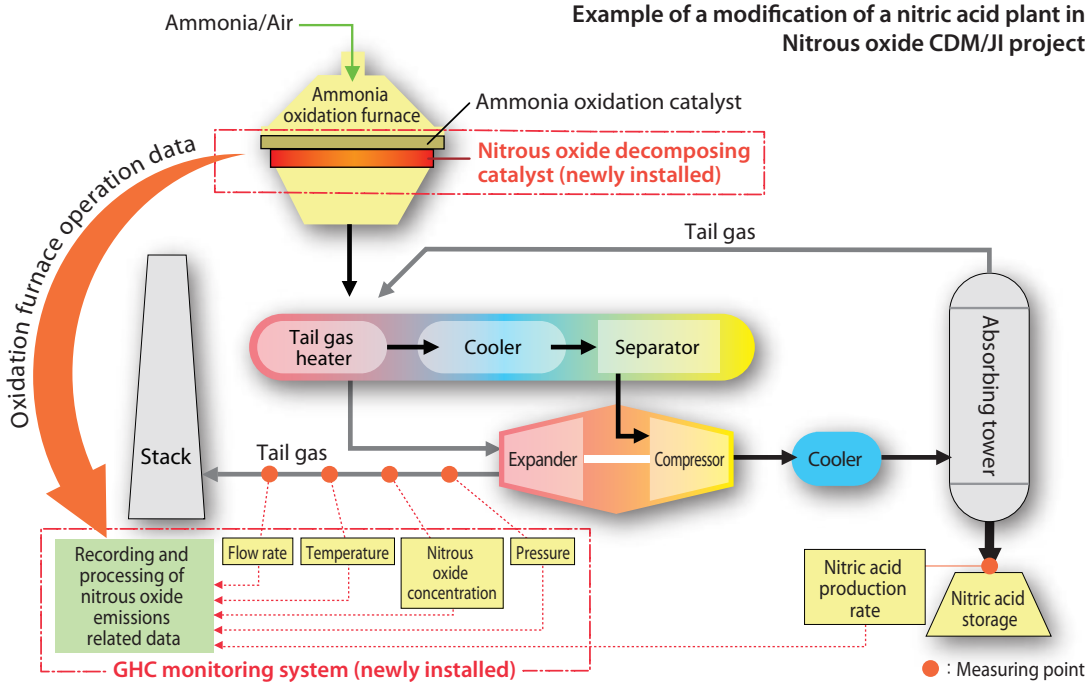
TOYO participates in projects for reducing nitrous oxide (note 2) that is discharged from nitric acid plants. As the technical adviser and system integrator for a trading firm that is the project implementing body of the Japanese side and for the plant owner of the client country such as China and Russia, TOYO offers assistance in projects for decomposing nitrous oxide into N_2 and O_2 using catalyst.

An example of a modification of a nitric acid plant in which TOYO participates is illustrated below. Newly established systems in this diagram are the nitrous oxide decomposing catalyst equipment and the GHC monitoring system. For these projects, a greenhouse gas emission and reduction data processing system uniquely developed in accordance with the United Nations' methodology is provided.

(Note 1): Clean Development Mechanism (CDM) is an arrangement allowing industrialized countries to invest in projects that reduce emissions in developing countries as an alternative to emission reductions in their own countries, that is, the countries are allowed to credit the volume of CO_2 reduced in the projects to their allocated accounts under the Kyoto Protocol. Joint Implementation (JI) is the same arrangement as CDM between industrialized countries involving Russia.

(Note 2): Nitrous oxide (N_2O) is 310 times more than carbon dioxide in terms of the global warming effect.

Example of a modification of a nitric acid plant in Nitrous oxide CDM/JI project



■TOYO's Solutions in the Field of Clean Energy

●GTL

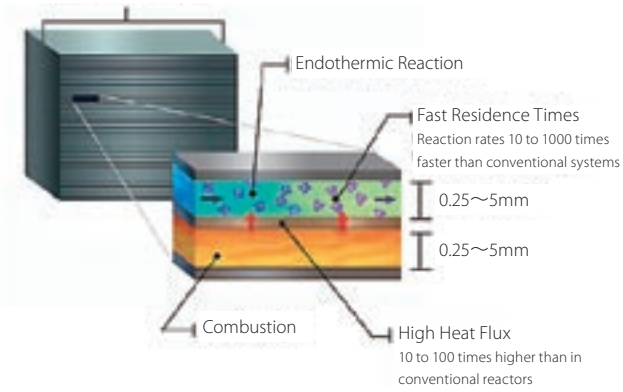
Gas to Liquids (GTL) is a process that converts natural gas into liquid fuels, mainly diesel fuel. The liquid fuels provide clean energy because they do not contain impurities such as sulfur.

TOYO has concluded an agreement for joint development and commercialization of offshore GTL plants with Mitsui Ocean Development & Engineering Co., Ltd. (MODEC) and Velocys Inc. TOYO and MODEC have been cooperating in the field of Floating Production, Storage and Offloading (FPSO) system. Velocys Inc. is a U.S.-based technology development venture, leading particularly in the field of micro-process technologies.

TOYO is developing jointly with Velocys Inc. a new GTL process using "micro-channel technology," a technology to let exothermic reaction and endothermic reaction take place simultaneously in two adjacent micro-channels. This will allow GTL production plot area to be downsized into one sixth of that of conventional system, contributing greatly to the commercialization of offshore GTL.

Offshore GTL utilizes effectively natural gas that was difficult to exploit and oil-associated gas that was discharged to the atmosphere and flared. Therefore offshore GTL contributes to environmental improvement by reducing global greenhouse gas emissions.

Velocys Reactor using micro-channel technology



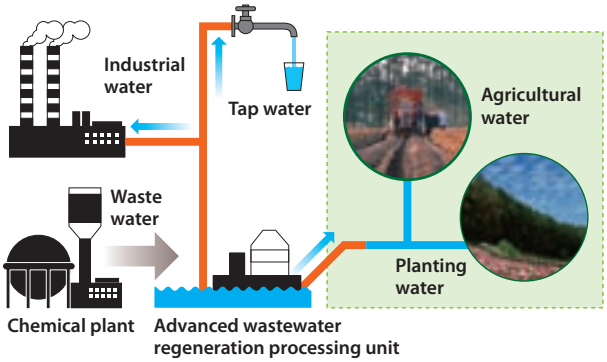
View of FPSO (provided by MODEC)

■TOYO's Solutions toward Environment-Oriented Society

●Reuse of wastewater

Reuse of industrial wastewater not only reduces the environmental load by reducing wastewater discharge, but also creates a new water resource.

TOYO has developed an "advanced wastewater regeneration processing unit" to reuse wastewater from chemical plants (right figure). The technology has been developed for DME (Dimethylether) plants, whose product is attracting attention as a new energy.

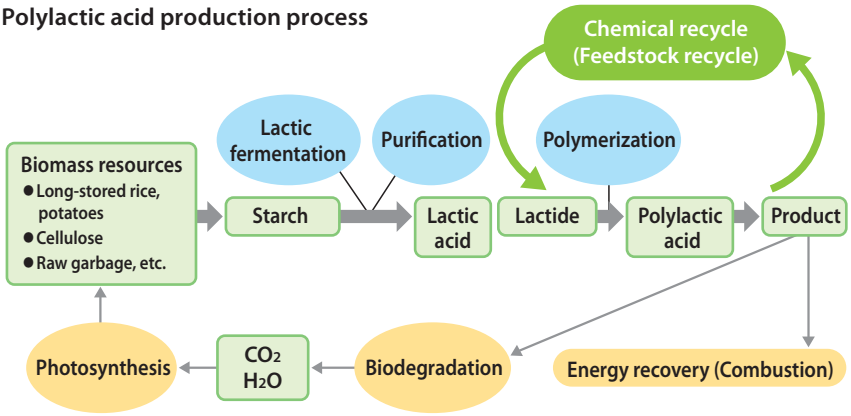


■TOYO's Solutions in the Field of Clean Energy

●Chemical recycle of polylactic acid

Polylactic acid is a biodegradable, biopolymeric material. A wide range of use is expected for packaging containers, home appliances and automobiles, fibers and others. TOYO has participated in research and development projects supported by the Ministry of Agriculture, Forestry and Fisheries in Japan, such as the production of refined lactic acid from raw garbage and the system for manufacturing polylactic acid from saccharide sulfates derived from waste wood. We have constructed a demonstration facility for chemical recycling (feedstock recycle) of polylactic acid in response to a request from Musashino Chemical Laboratory, Ltd.

Polylactic acid production process



Musashino Chemical Laboratory, Ltd.
Polylactic acid demonstration plant for chemical recycling (feedstock recycle)

■TOYO's Solutions Contributing to Measures for Hazardous Substances

●PCB detox treatment

Polychlorinated biphenyl, PCB for short, is widely known as a toxic substance which caused the Kanemi Incident in Japan. Since 1974, the production, the use and import of PCB have been prohibited, while the Japanese government law enacted in 2001 prescribes July 2016 as the mandatory deadline for disposal.

Among technologies for the disposal of electric equipment containing PCB such as transformers, capacitors, etc., TOYO has focused on the treatment of contaminated casing and internals (so-called "Container treatment"). Since the 1990s, TOYO has been active for detox treatment and recycling through the precision cleaning by organic solvents.

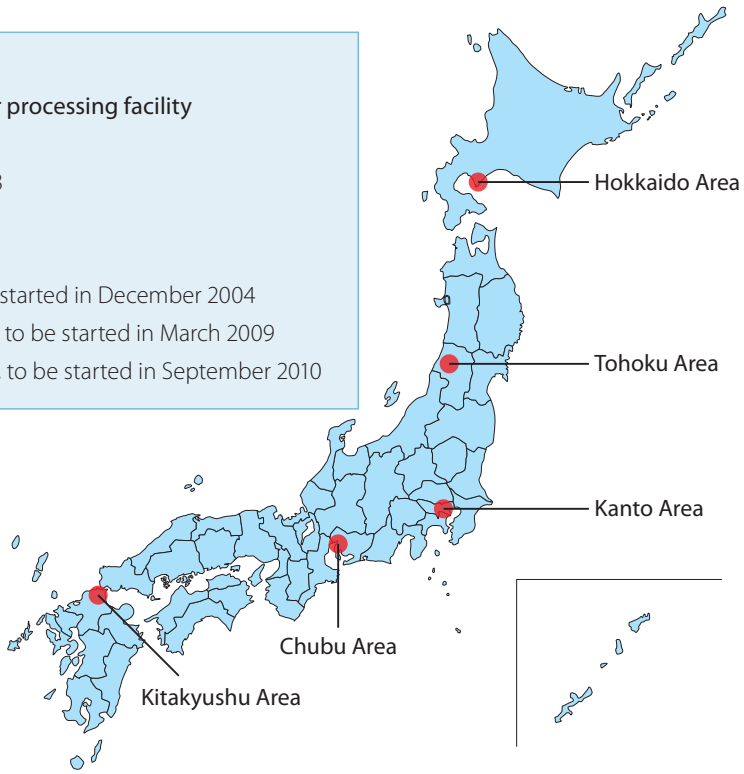
<TOYO's experience in PCB detox facilities>

Low-density PCB containing transformer container processing facility

- Kanto Area Recycle Center, started in June 2003
- Tohoku Area Recycle Center, started in January 2008
- Chubu Area Recycle Center, started in May 2008

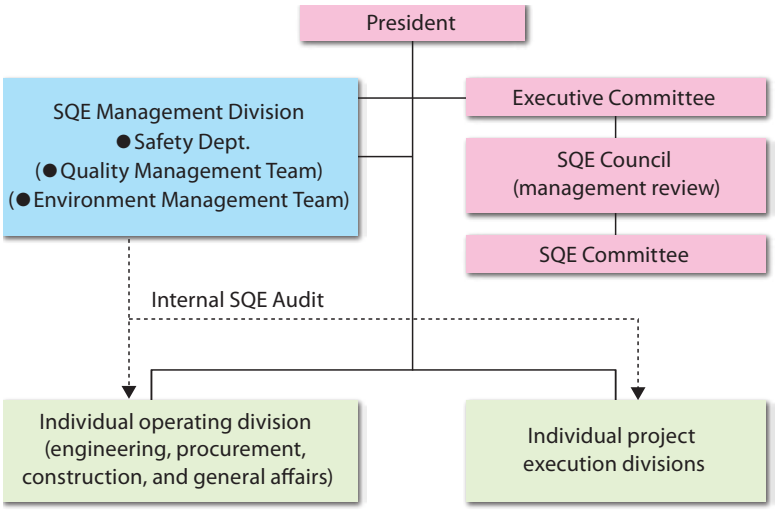
High-density PCB waste pre-treatment facility

- PCB waste treatment center (phase I) in Kitakyushu, started in December 2004
- PCB waste treatment center (phase II) in Kitakyushu, to be started in March 2009
- PCB waste treatment center (expansion) in Muroran, to be started in September 2010



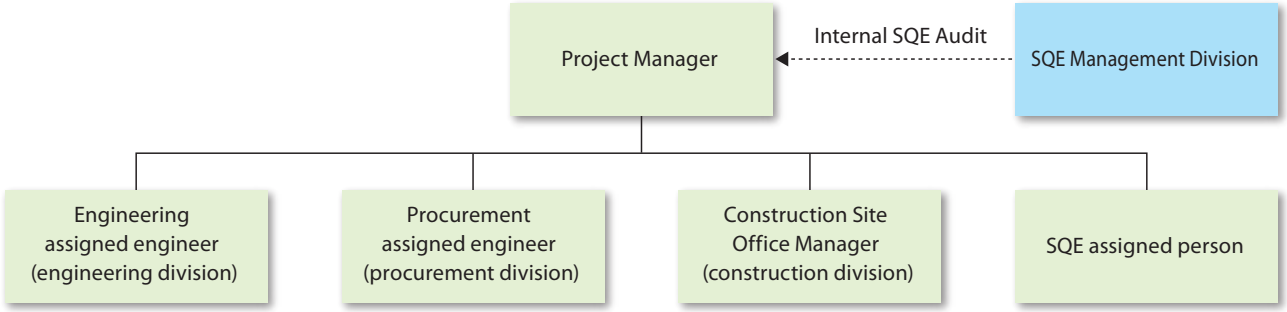
Companywide Safety, Quality, and Environment (SQE) Management Structure

TOYO's companywide SQE management structure is illustrated here. The SQE Council, reporting directly to the President, establishes companywide SQE management operating policies, and assesses and approves general SQE activities. The SQE Committee promotes companywide activities in line with the basic policy of the SQE Council. The SQE Management Division performs Internal SQE Audit and reports the results to SQE Committee and SQE Council.



Individual Project SQE Management Structure

SQE management structure and effects for an each individual project are maintained and improved through continual monitoring by the SQE engineer of each project over engineering, procurement, and construction divisions, and also by through the internal audit SQE Management Division.



ISO Approval and Internal Audit

■ISO approval

In March 1994, TOYO acquired Quality Management Standard ISO 9001:1987 certificate from the United Kingdom Accreditation Service (UKAS) and the Japan Accreditation Board for Conformity Assessment (JAB) after the surveillance by Lloyd's Register Quality Assurance (LRQA). In April 2006, TOYO passed the fourth Renewal Assessment for ISO 9001:2000.

In October 2004, TOYO obtained Environmental Management Standard ISO 14001:1996 certification that covers the Head Office and construction sites within Japan. The certification was given by the United Kingdom Accreditation Service (UKAS) and the Japan

ISO 9001 Certificate of Approval

ISO 14001 Certificate of Approval

Accreditation Board for Conformity Assessment (JAB) after the surveillance by the Lloyd's Register Quality Assurance (LRQA) as the certification body. In October 2007, TOYO passed the first Renewal Assessment for ISO 14001:2004.

LRQA's surveillance is carried out twice (March and September) a year, simultaneously for the above two standards. TOYO takes corrective actions following LRQA's comments so as to continuously improve TOYO's quality and environment management systems and performance.

Other than ISO certification, TOYO is making preparations for conducting OHSAS 18001, an international occupational health and safety management system specification.

Closing meeting of LRQA's surveillance

■Internal audit

In order to make sure that TOYO's quality and environment management is effectively carried out, internal audit is conducted regularly for quality and environment simultaneously. The audit aims to be useful for corporate management, contributing to enhancing the corporate value.

Safety audit on sites is also performed regularly along with environment audit.

Internal audit
Audit is performed by two auditors at the audited department office.

SQE Education

TOYO's SQE education includes "TEC Special Course: Quality and HSSE Management" held regularly and "Internal Quality and Environment Auditor Training Course." Special education by outside instructors is also carried out as required.

■"TEC Special Course: Quality and HSSE Management"

TEC Special Courses are held covering a wide range of engineering and management fields for the purpose of "promptly educating young employees as professionals" and "complementing intra-division education and extending peripheral knowledge" by in-house instructor. "Quality and HSSE Management" has been added to the series of TEC Special Courses to implement education on safety, quality, and environment.

■Internal Quality and Environment Auditor Training Course

Selected candidates for Internal Quality and Environment Auditors are educated by an external auditor training institute.

TOYO ENGINEERING CORPORATION

2-8-1 Akanehama,
Narashino-shi, Chiba 275-0024, Japan
Tel: 81-47-454-1132
Fax: 81-47-454-1833
http://www.toyo-eng.co.jp/