



Message on Safety

Safety

The premises for a corporation that is trusted by the community include paying sufficient attention to safety.

We are confident that our efforts, initiatives, and time and expenses spent to respect human life must take precedence over all other things. Loss of valuable human life must absolutely be avoided in the process of Toyo and its group companies' business evolution, such as 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 boost the brand value of all group companies in the world, we are strongly promoting safety measures as part of the company-wide safety target for fiscal 2009: "Make Safety Standard Drill into Global Toyo."

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

• • • Clients' Commendations for Safety • • •

Our mission is to hand over superior facilities to our clients through construction work completed without any accidents or injuries. For this purpose, the Head Office and construction site members, together with 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 March 2009, Toyo received high commendations from Mitsui Chemicals, Inc., Japan, for completing construction without lost time incidents. In July 2009, Toyo achieved a record of 30 million man-hours without lost time incidents at the Singapore site, which was highly appreciated by the client, Shell Eastern Petroleum (Pte) Ltd.



Letter of appreciation from Mitsui Chemicals, Inc.



Letter of appreciation from Shell Eastern Petroleum (Pte) Ltd.

Toyo has received letters of appreciation from the clients listed below, in addition to Mitsui Chemicals, Inc., and Shell Eastern Petroleum (Pte) Ltd.

Commendations for safety (January 2008–June 2009)

Year and month	Reason for commendation	Client	Description
May 2009	No lost time incidents	Dow Corning (Zhangjiagang) Co., Ltd.	10 million hours continuous operation without lost time incidents at Dow Corning's silane project, China
Dec. 2008	Completed with no lost time incidents	Bridgestone (Huizhou) Synthetic Rubber Co., Ltd.	3.28 million hours continuous operation without lost time incidents at Bridgestone (Huizhou) Synthetic Rubber's project, China
Aug. 2008	Excellent project execution	Petróleo Brasileiro S.A. (PETROBRAS)	Nominated as the most excellent contractor for 2007 in PETROBRAS' refinery modernization project, Brazil
Jul. 2008	No lost time incidents	Indian Oil Co., Ltd.	10 million hours continuous operation without lost time incidents at Indian Oil's ethylene project, India
Mar. 2008	No lost time incidents	Qatar Shell GTL Ltd.	3 million hours continuous operation without lost time incidents at Shell's GTL project, Qatar

• • • Efforts for Safety • • •

■ Safety Record

Toyo's safety record for 2007–2008 (2009 partially included) is as follows:

Safety record over the past 3 years

Year	Employee Worked (Man-Day)	Employee Hours (A)	Number of Disabling Injuries					LTI Rate*1	Total Recordable Incident Rate*2
			Fatalities	Lost Time Incidents	Non-Lost Time Incidents (Medical Treatment)	LTI Total (B)	Recordable (C)		
2007	9,012,650	89,334,017	1	16	326	17	343	0.19	3.84
2008	9,685,066	96,925,454	3	14	236	17	253	0.18	2.61
2009*3	5,366,536	53,050,587	0	5	86	5	91	0.09	1.72

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

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

*3: Figures for 2009 are up to the end of June.

Both LTI rate and TRI rate in fiscal 2008 show a downward trend compared to those in fiscal 2007.

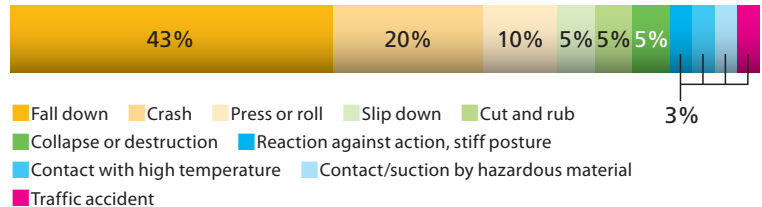
As of the end of May 2009, the total non-lost time incidents (non-LTI) hours of the ongoing projects*4 exceeded 100 million man-hours.

*4: The total non-LTI of ongoing projects is the latest sum of non-LTI hours of ongoing projects (excluding completed projects). Non-LTI of a project in which an accident occurred returns to zero and the count starts again.

● Number of injuries according to types of incidents

When Toyo's number of injuries during fiscal 2007–2009 (figures for 2009 are up to the end of June; 4 fatalities and 35 injured with lost time incidents, total 39 people) are divided in incident categories, 43% of the injuries were due to fall down accidents. Therefore, the implementation of safety management and preventive measures for elevated work places is essential.

Injuries by category of incident (2007–2009*)



* Figures for 2009 are up to the end of June.

■ Safety in Construction: Oil Refinery Modernization Project in Brazil

Joint venture "ECOVAP," composed of Toyo, Construtora OAS Ltda., and Setal Óleo e Gás S.A., is constructing an oil refinery plant as one of the refinery modernization projects awarded by PETROBRAS, the largest oil company in Brazil. The plant site is situated in the suburbs of the city of São José dos Campos, about a one hour drive from São Paulo.

As the construction is now at its peak activity, more than 5,000 workers are at the site. The client, ECOVAP, and all the subcontractors are carrying out safety oriented activities with effective mutual communication, with the slogan: "Safety takes precedence over all other things."

Safety training:

Workers receive training for work in closed spaces and high places from outside instructors, under a priority program in both theory and practice.



Safety guard:

A safety guard is assigned from a work team every day to keep team members safe.



Education and training:

Manpower development programs are implemented with the clients' cooperation. Through this program, many workers receive education and training to improve their skills.



■ Safety in Construction: Ethylene Project in Singapore

This project, awarded by Shell Eastern Petroleum (Pte) Ltd., is to construct a world-class complex producing ethylene and related products. The project is implemented by a joint venture of Toyo and CB&I Lummus.

The plant site is located on an island situated about 5km southeast of the Singapore mainland, or about 20 minutes by ferry. Construction is now at its peak activity with more than 10,000 workers at the site. In addition to top management's firm commitment, various safety activities are carried out under the safety oriented management system, with the slogan: "Think of safety, act safely."

Medical services:

A full-time medical staff, including doctors, provides optimum medical services on a round-the-clock basis.



Green Area:

A safety activity place called "Green Area" is provided at the site. In this area, participants from all subcontractors exchange opinions freely about safety information and improvement proposals.



Various events:

To enhance the safety awareness of the site workers, a safety meeting is held monthly, with events such as a commendation ceremony. These meetings are attended by all site members.



■ Safety in Construction: Propylene Project for Mitsui Chemicals' Ichihara Works

This project, awarded by Mitsui Chemicals, Inc., is to install a new plant for converting C4 fraction obtained as a by-product of ethylene from an existing plant into propylene through catalytic reaction.

This is the first construction project for Toyo at the client's Ichihara Works. Therefore, we are making efforts to comprehend the client's safety management policy and procedures through close communication with the client at progress control meetings and through other actions.

Risk assessment meeting:

Prior to starting construction operations, all subcontractors and Toyo's manager and engineers expose risks and establish safety measures.



Safety meeting:

The client and all the site workers participate in the safety meeting. This energetic meeting features a KYK (*Kiken Yochi Katsudou*; Risk Prediction Activity) demonstration, a safety declaration, safety commendations, and distribution of participation prizes.



■ Global Toyo HSSE Activities



Meeting of persons in charge of Global Toyo HSSE:

Group members participating in the meeting:

•Toyo-Japan •Toyo-Korea •Toyo-India •Toyo-China •Toyo-Malaysia

Toyo and its group members have established Global Toyo HSSE Standards to ensure that safety management is conducted at the same level in all countries and regions. We promote Global Toyo HSSE activities in order to thoroughly follow these standards.

To promote Global Toyo HSSE activities, the persons in charge of HSSE from Toyo and its group members gather together twice a year to discuss the safety activity plan, its implementation, and challenges and measures for safety management activities.

Toyo and its group members will continue striving to establish a firm culture of safety.

■ Continuous Movement toward Establishing a Culture of Safety

● In-house safety education

Since August 2006, Toyo has been conducting safety education programs for all corporate members, including directors, to enhance the safety awareness of each corporate member.

In order to spread a culture of safety, each attendant of a safety session receives renewed or additional follow-up materials.

In parallel with in-house safety education, education about such topics as "Risk Assessment," "OHSAS18001 Occupational Health and Safety Management System," and "Work Execution Register in Compliance with the Construction Industry Act" is given to particular members and particular divisions.



In-house safety education materials



Training session on "Work Execution Register in Compliance with the Construction Industry Act"

● Distribution of supplementary safety education materials to project managers

In addition to creating a safety scheme and operating the structure in a reliable manner, project managers take leadership in enhancing the safety awareness of all workers at sites both in Japan and overseas. Therefore, Toyo distributes supplementary safety education materials to all project managers for their reference.

These materials include points regarding safety management and the latest information about safety.

● In-house safety commendation



Recipients of President's commendation:

- Project for Shell Eastern Petroleum (Pte) Ltd.: 15 million hours continuous operation without lost time incidents
- Project for Indian Oil Co., Ltd.: 15 million hours continuous operation without lost time incidents



Recipients of SQE Promotion Committee

Chairperson's commendation:

- Project for Daikin Industries: project completion without lost time incidents
- Project for Takeda Pharmaceutical Co., Ltd.: project completion without lost time incidents

In fiscal 2008, Toyo revised its safety commendation standard.

Before that time, only projects larger than a certain scale that had been completed without lost time incidents were recognized by a President's commendation. From 2008, projects still under progress that have carried out construction work without lost time incidents are also recognized.

As a result, a total of 11 projects were recognized by the President in fiscal 2008.

In addition, a total of 5 projects were recognized by the Chairperson of the SQE Promotion Committee.

● The 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*. Repeated *hiyari-hatto* may lead to a serious incident. The *hiyari-hatto* data management system, developed by Toyo, has been employed since January 2008 at some 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. In the following report, 304 incidents from July through October 2008 are analyzed:

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

Order		No. 1	(%)	No. 2	(%)	No. 3	(%)	No. 4	(%)	No. 5	(%)
Items											
Time of occurrence		Morning	39.1	Afternoon	33.9	Early morning	10.9	Before noon	8.9	Evening/night	7.2
Cause	Material	Fly or drop	59.3	Mudslide	11.4	Fire	9.8	Explosion or rupture	3.3	Leakage	0.8
	Person	Stumble or slip down	36.8	Tumble or fall down	21.5	Collision	17.5	Crushed or caught	8.8	Contact with high/low temperature	6.1
Reason for occurrence	Person	Confirmation not made	21.4	Inability to respond	11.2	Inattention	8.5	Insufficient organization	7.9	No one-person KY ^{*3}	7.7
	Work	Insufficient KYK ^{*1}	61.1	Work by one person	22.2	Improper instruction	2.8	Insufficient survey	1.4	Other	5.5
								Mix-up	1.4		
						Long time	2.8	Error in planning	1.4		
	Material	Improper curing	26.5	Personal protective equipment or tool insufficient or not used	21.7	Insufficient safety equipment	14.5	No periodic checkup	10.8	Improper scaffolding	9.6

(2) Countermeasures based on analysis

We will follow the measures below to prevent the recurrence of *hiyari-hatto*.

1) Countermeasures in view of frequent occurrences in the morning:

- Thoroughly implement the morning meeting, KYK^{*1} and TBM^{*2} and confirm work procedures before morning work.
- Let all workers look around the workplace to identify conditions before work is started.

2) Countermeasures in view of frequent fly or drop accidents as well as stumble or slip down accidents:

- Put the workplace in order every day; be aware of and take countermeasures against hazardous places.
- Provide education regarding instances of accidents and *hiyari-hatto*.

3) Countermeasures against insufficient KYK by referring to potential causes of accidents:

- Provide education to KYK members in accordance with in-house manuals.
- Implement one-person KY^{*3} using KY cards.

*1: "KYK" stands for *Kiken Yochi Katsudou* (risk prediction activities), which are activities for predicting work-related risks before work is started.

*2: "TBM" stands for "Tool Box Meeting," which is an activity to briefly discuss the contents, methods, arrangements, and problems of the work of the day before starting work at the workplace.

*3: "One-person KY" means KYK that each worker carries out immediately before starting work using "KY cards" (self-questioning cards for risk prediction).

• • • Lessons Learned from Accidents • • •

■ Drop and Fall Down Accident

Situation

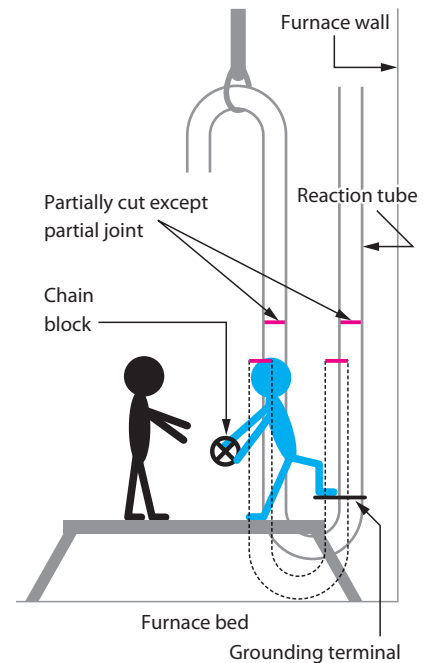
While cutting and removing a reaction tube (radiant coil) in a furnace, a worker removed a chain block that was hanging the lower part of the cut reaction tube to replace the chain block with another one. Thereafter, when the worker stepped on the grounding terminal for plasma cutting that was installed to the lower reaction tube, a joint of the upper and lower tubes fractured suddenly, and the lower reaction tube dropped down. The dropping tube hit the right side of the worker's face and broke his protective glasses, broken pieces of which tore his right eyelid.

Causes

- The worker tried to replace the chain block without prior communication.
- The worker put his foot (weight) on the grounding terminal for plasma cutting, on which a load should not be applied.
- The worker did not use an access platform suitable for the work.

Countermeasures

- (1) To be carried out at the project site:
 - The work procedure for cutting a furnace coil was revised (use of safety jack, change of partial cutting method, modification of platform, etc.).
 - The revision of the work procedure was explained to all relevant workers so as to familiarize them with the changes.
- (2) To be carried out by the Head Office:
 - The accident was immediately reported to all project sites to promote safety awareness and to prevent similar accidents from occurring.
 - The in-house manuals were revised, requiring implementation of risk assessment whenever a work procedure is revised.



■ Drop Accident

Situation

While a high-place work vehicle was being lifted with a crane in order to be moved, the nylon sling suddenly broke at a height of 20 meters from the ground, and the vehicle fell. Although the accident did not cause personal injury, it damaged equipment located below the falling vehicle.

Causes

- Error in selection of nylon slings
Each of the four lifting lugs of the high-place work vehicle was marked 8 tons, which meant a total lifting load of 32 tons (8 tons × 4 lugs). However, the person responsible for the work misunderstood the total lifting load as 8 tons and used four nylon slings specified for 4 tons. This caused an error in the selection of nylon slings.

Countermeasures

- (1) To be carried out at the project site:
 - A sign board indicating total weight was attached to each high-place work vehicle.
 - Safety coefficient for lifting was clarified and described in the work procedure.
 - Special training session was given to lifting operators to let them reconfirm the work procedure.
- (2) To be carried out by the Head Office:
 - The accident was immediately reported to all project sites to promote safety awareness and to prevent similar accidents from occurring.
 - In addition to the regular corporate safety audit, an additional safety audit was conducted and guidance for preventive measures was made at sites.

