About the April 2006 Accident at the Chiba Refinery and a Series of Misconduct

Web page http://www.cosmo-oil.co.jp/eng/sustainable/06/chiba.html

About the accident of April 2006

Summary

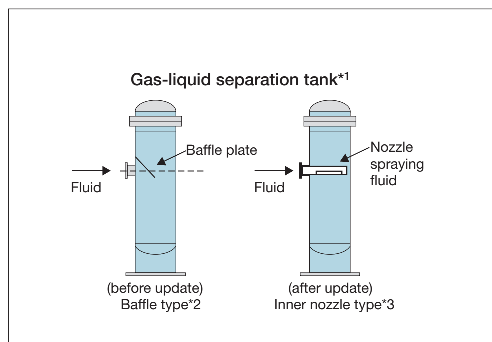
A fire broke out near the Vacuum Gas Oil Desulfurization Unit and the Hydrogen Production Unit No.1 in the Chiba Refinery on April 16, 2006.

After the accident, we set up the "Chiba Refinery Accident Investigation Committee for the Vacuum Gas Oil Desulfurization Unit and the Hydrogen Production Unit No.1" (chairperson: Masahide Furuzono, Managing Director) to find the causes, and submitted a report including the investigation results and preventive actions to the Nuclear and Industry Safety Agency, Ministry of Economy, Trade and Industry, and Chiba Prefecture on June 20, 2006.

Causes and preventive measures

We concluded that the explosion and fire broke out because an opening was formed in the shell plate of the gas-liquid separation tank*[1] in the first hydrogen production system due to wear and corrosion, and hydrogen leaked out of the tank. In 1996, we modified the internal structure when replacing the tank, which changed the flow of fluid causing it to collide with part of the shell plate, resulting in a rapid thickness reduction (see the accompanying figure). At that time, we were not able to foresee the problem, and as a result, the accident occurred because we were unaware of the localized thickness reduction.

According to the above causes, we took the following preventive measures: the internal structure was returned to its original state to prevent fluid from concentrating on one place; the nozzle diameter was increased to reduce the flow velocity by half and the plate material was changed to a stronger one.



*1 Gas-liquid separation tank: Sits in the downstream of the carbon dioxide absorption tower and separates water injected into a pipe connected to the decarbonator.

*2 Baffle type: Includes a baffle plate in the body and lets fluid collide with the plate to diffuse and reduce the flow velocity.

*3 Inner nozzle type: Includes a nozzle in the body to diffuse fluid and reduce the flow velocity.

Report to the helpline and improper procedures found

On July 4, 2006, the corporate ethics helpline received an anonymous letter from an employee of the Cosmo Oil Group. The letter stated that the causes and preventive measures announced by Cosmo Oil were questionable because the announcement did not include the same accident encountered in 1995. The employee thought that the action—returning the internal structure to the original state—did not make sense because the same type of accident had occurred in 1995, and that Cosmo Oil had concealed that fact deliberately. We, mainly the Corporate Ethics Committee, investigated the 1995 accident and found that it was the same type of the 2006 accident, but no report had been sent to the authorities concerned, and the hole had been repaired without permission after the accident. Furthermore, the accident investigation report already submitted included fictitious thickness data of fixed measurement points. We reported it and apologized to the Nuclear and Industry Safety Agency and Chiba Prefecture on August 4, 2006.

Internal investigations conducted by the investigation team and administrative penalties

On August 8, 2006, the agency warned and instructed us to make improvements as follows:

1. Find the causes of the improper procedures in 1995 and plan preventive measures.
2. Check whether correct inspections were carried out according to the High-Pressure Gas Safety Law at all the sites of Cosmo Oil after April 1997.

We also received the same instructions from Chiba Prefecture on August 10, 2006.

Accordingly, Cosmo Oil formed an investigation team which was given the task of interviewing the staff members concerned and examining internal documents and records. The team organized the results and submitted an investigation report to the agency and prefecture on August 31, 2006. The following summarizes the report.

Results of investigation on the 1995 accident at the first hydrogen production system of the Chiba Oil Refinery, and responses following the accident

(1) Accident summary

On December 11, 1995, fluid containing hydrogen leaked out of the gas-liquid separation tank in the first hydrogen production system because a linear opening had occurred in the tank's shell plate. We stopped the system safely and identified neither personal injury nor physical damage.

(2) Causes of accident
The fluid entering the gas-liquid separation tank collided with the baffle plate, which changed the flow and concentrated the fluid onto part of the shell plate, and the wear and corrosion that developed caused a linear opening about 7 mm long, from which the fluid leaked.

(3) Improper procedures during and after the accident
After the accident occurred, we did not inform the authorities concerned as stipulated in the Law on the Prevention of Disasters in Petroleum Industrial Complexes and Other Petroleum Facilities, and sent no notification based on the High-Pressure Gas Control Law . The day following the accident, we closed the opening (first-aid repair) without permission from Chiba Prefecture.

(4) Causes of improper procedures
The reason for not reporting the accident according to the law was that we thought it might take a long time to describe the causes and measures, which would delay repairs and cause a longer system down time. We gave priority not only to safety but also to early recovery. Accordingly, we selected the first-aid repair without permission to restart the system for a short time.

(5) False data created when the equipment was replaced in 1996
We replaced the gas-liquid separation tank in June 1996. The documents prepared to request the equipment change indicated that the reason for this replacement was that the wall thickness had reduced with time. As a result of the investigation, we came to a conclusion that thickness data of fixed measurement points without actual measurement was created out of a need to prove the aforementioned reason.

Results of investigation on procedures and inspections carried out according to the High-Pressure Gas Safety Law made after April 1997 and administrative penalties

We found that seven unauthorized repairs that did not follow the High-Pressure Gas Safety Law were made from April 1997 to August 31, 2006. On September 1, 2006, the day after we presented an investigation report, the Nuclear and Industry Safety Agency announced that penalties would be imposed on Cosmo Oil, and determined them on September 19, 2006.

- The Chiba Refinery has lost the certifications for completion and safety inspections.
- The Yokkaichi, Sakai, and Sakaide Refineries have lost the certification for completion inspections.

About identifying other violations of laws and internal penalties

In a successive investigations, we found violations of Industrial Safety and Health Law, the Fire Defense Law, etc. As a result, the total number of violations turned out to be 47 in 36 engineering works at all the oil refineries, and 13 of them pertained to leaking accidents. According to these investigation results, we corrected the investigation report for the April 2006 accident at the Chiba Refinery and resubmitted it on October 3, 2006.

Main corrections

(1) We added the results of the investigations of the 1995 accident.
(2) We added the fact that all the members, except the chairperson of the Accident Investigation Committee set up before June 20, 2006, did not refer to the 1995 accident even though they knew about it.
(3) We deleted the fictitious thickness data of fixed measurement points.

Moreover, we determined and announced on October 3, 2006 that we would impose penalties on the management.

Main penalties

- Voluntary return of a part of salary

Keiichiro Okabe, Chairman (50% of the salary for 3 months)
Yaichi Kimura, President (50% of the salary for 3 months)

- Pay cut

Masahide Furuzono, Managing Director (50% of the salary for 3 months)
Masatoshi Sawada, Senior Executive Officer & General Manager, Refining & Technology Dept. (30% of the salary for 3 months)
Seizo Suga, Senior Executive Officer & General Manager of Yokkaichi Refinery (30% of the salary for 3 months)
Takashi Yashima, Executive Officer & General Manager of Chiba Refinery (30% of the salary for 3 months)
Hajime Marukawa, Executive Officer & General Manager of Sakai Refinery (30% of the salary for 3 months)
Hideto Matsumura, Executive Officer & General Manager of Sakaide Refinery (30% of the salary for 3 months)

For the recurrence prevention

With deep regret for the accident and the series of improper procedures, Cosmo Oil will quickly take the necessary measures, raise awareness of corporate ethics, and reform our safety and compliance systems in order to prevent any recurring problem and to recover our credibility. We have already started or determined the following actions (for more information, see pages 13 and 14 of this report):

- Boosting activities for raising awareness of corporate ethics (see page 13).
- Reinforcing checking and monitoring functions (see page 13).
- Verifying and reforming our safety control system (see page 14).

In the near future, we will take the necessary measures based on the internal investigation results and will describe them in the next report.