Case No. 38

**Tank explosion due to a chemical reaction because the hose of a tank truck was connected to the wrong flange**

**[Circumstances of Incident]**

The accident occurred when nitric acid delivered to a factory by a tank truck was unloaded into the wrong tank. The tank exploded due to a chemical reaction within the tank.

Around 5:30 in the afternoon on the day of the accident, the driver of the tank truck carrying nitric acid arrived at the factory, handed over a delivery slip to the employee in charge of accepting deliveries, and connected the hose of the tank truck to the flange (for unloading).

As this was the first time for the driver to make deliveries to this factory, his co-worker who has delivered to this factory before told him that the flange for nitric acid was the second from the left. However, as the second flange from the left was made of vinyl chloride and the driver did not think that this could be the pipe for nitric acid, the driver connected the hose to the second flange from the right, which was made of stainless steel.

After the connection of the hose, the employee in charge of accepting deliveries opened the electromagnetic valve, and the driver started the discharge. As the liquid surface of the nitric acid tank did not rise, however, the driver checked the label of the tank and found that he was unloading nitric acid into the tank for triethanolamine.

The driver informed the employee in charge of accepting deliveries of the mistake, connected the hose to the correct flange for the nitric acid tank, and completed the unloading in about 20 minutes. When the driver was going out from the front gate, he noticed white smoke being emitted from the tank. Around 6:25 in the afternoon, the sub-tank and main tank for triethanolamine that were wrongly charged exploded, releasing a chemical spill in the area.

No injuries or fatalities were caused by this accident.

**[Causes]**

The following can be considered as the causes of this accident.

1. The hose of the truck delivering nitric acid was mistakenly connected to the pipe for the wrong chemical.
2. The hose of the truck delivering nitric acid was mistakenly connected to the pipe for the wrong chemical.

3. The contact and coordination procedures for chemical delivery work were insufficient.

4. Safety and health education for workers was insufficient.

[Caused by] Hazardous materials, harmful substances, etc.
[Type of accident] Explosion