Case No.10

Organic solvent poisoning during work to remodel a used tank

[Circumstances of Incident]

This accident occurred at a company that processes industrial waste when an used tank that had been used for toluene was being remodeled for acid and alkali.

On the day of the accident, two workers were replacing a flange that had lost its air tightness, and which was located near the bottom of the tank.

The two workers affixed a rope ladder and a main rope for safety belt at the upper part of the tank's exterior wall. They then entered the tank alternatively in an unsuccessful effort to adjust the size of the replacement flange to the tank.

The lead worker left the work site after giving the other worker instructions to clean the portion of the tank to which the flange is fixed from the outside of the tank.

Soon after returning to the site, the lead worker found his colleague lying unconscious inside the tank. He pushed the tank over on its side, cut off the upper end of the tank and pulled the victim out, only to find that he was already dead.

[Causes]

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

1. The assumed direct cause is residual organic solvent sludge in the tank was stirred up by the activity of the workers and started to evaporate and fill the tank. The victim entered the tank without knowing what was happening and poisoned by the organic solvent gas.

2. The indirect causes of this accident relate to the following:

   (1) The contents of the used tank were not confirmed when the tank was purchased.
   (2) Although the oxygen concentration was measured to prevent oxygen deficiency, the concentration of organic solvent vapor was not measured.
   (3) Ventilation was not performed before starting work and protective respirators were not used.
   (4) No watchman was placed at the work site despite the fact that the work was being done inside the tank.
   (5) Workers had no knowledge concerning the risks and toxicity dangers for work inside the tank, and had not undergone the necessary education or training.
[Type of business] Industrial waste management business
[Type of accident] Contact with hazardous substances
[Number of victims] One fatality

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