

What happened?

During internal cleaning of a tank that was partly filled with sludge (production process water, petroleum residues and sand), an ignition occurred that resulted in an explosive combustion. The explosive atmosphere arose by nebulization of the petroleum residues from the sludge (stirred up). The explosive atmosphere is thought to have been ignited by a static discharge from the mist.



Consequence

The employee who was directly next to the tank opening saw a flash at the back and ducked down immediately. Despite that he suffered minor burns to the face.

Cause

The investigation showed:

- The danger/risk had been incorrectly assessed: 'sludge' as a concept or product was classified by the parties involved as non-hazardous. As a result, the activities had not been planned in as 'high-risk activities'.
- That particular day was very hot, which may have led to nebulization occurring more quickly.



Lessons learned

- During the joint risk assessment, it must always be ensured that the correct information about the product is supplied by the client and that the cleaning technique to be used by the cleaning company is appropriate for it.
- Industrial cleaning of sludge can create an explosive atmosphere because the hydrocarbons in the sludge can form a mist when it is stirred up.
- In industrial cleaning activities, all potential sources of ignition (e.g. static electricity, short circuits in instrumentation, use of non-EX equipment and the flammability/explosiveness of the medium) must be eliminated/controlled as fully as possible.
- Because complete control of all potential sources of ignition is not always possible, explosive atmospheres in the tank must always be prevented and measurements must be taken continuously.
- The procedure for rendering it safe must focus on creating a safe place to work throughout the activity, not just at the start.

Recommendations

- Implement a work instruction/work process that ensures a suitable risk assessment is made for every industrial cleaning activity.
- Ensure that measures are taken during industrial cleaning of sludge and other mixtures of flammable products to prevent explosive atmospheres from occurring (e.g. nitrogen purge, forced ventilation).
- Always measure continuously for the risk of explosion when working with residual products that could contain organic compounds.
- Make sure that the people planning and carrying out industrial cleaning activities know the risks of the product (sludge in this case) and are capable of managing the risks.

The SIR would like to emphasize that it is very important that incidents are reported, as lessons can be learned from them. What happened to someone else today could happen to you tomorrow!

For further information: info@sir-safe.nl



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