

Process Safety Forum

The Process Safety Forum consists of representatives from UKPIA, TSA, CIA, OGUK and NIA

Process Safety Alert 005

Issued on:

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Issued by:

Process Safety Forum

Subject:

Storage and Handling of Self-Reactive, Energetic Substances

Issue

Tank floor failure in 2-Ethylhexylnitrate service.

The tank failure occurred due to internal corrosion of the floor and lower wall resulting in a hole of approximately 10mm.



The floor and wall of the tank was uncoated carbon steel and had been inspected in the last 10 years. No pH checks were carried out as part of this inspection. The inspection concluded that the tank was in good condition.

The tank had no water draw sump but a downturned suction nozzle.

Following the failure, inspection revealed that a small amount of moisture had accumulated on the tank floor due to normal tank inbreathing/outbreathing. It is likely that in the presence of water the product can hydrolyse to nitric acid, thus causing the corrosion.

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Learning

Consideration should be given to the storage and handling of self-reactive, energetic substances.

- When performing Hazardous Operations (Hazop) Analysis, this should assume that water may always be present (even in small quantities), unless special measures have been taken to remove the water content.
- Where appropriate, inspection frequencies should be reviewed and evidence of the ingress of water should be considered as part of the inspection process.

Further Consideration

None.

Distribution:

Process Safety Forum, Health and Safety Executive