

Explosion och brand på en fabrik för produktion av polyvinylalkohol.

930315 MARS 1993_05

Vid inspektion av det reaktionssteg där polyvinylacetat produceras kom luft in i reaktionsutrymmet genom en öppnad inspektionsventil. Polyvinylacetat är en intermediär i framställningen av polyvinylalkohol. Den insläppta luften blandades med metanol och metylacetatångor och bildade en explosiv ångblandning. Ångorna antändes och gav upphov till en explosion. En person omkom och en skadades vid explosionen. Företagets interna brandkår och räddningstjänsten larmades. Det påföljande nödstoppet av produktion orsakade att ett sprängbleck gav med sig och att reaktionsblandning släpptes ut. Utsläppet bestod av ungefär 1000 kg polyvinylacetat och 250 kg metanol. Räddningstjänsten beordrade att anläggningen och kringliggande byggnader utanför fabriksområdet skulle utrymmas. Det framgår inte om detta andra utsläpp antändes, bara att räddningstjänsten fick branden under kontroll.

Inblandade ämnen och mängder

	CAS Nr.	Mängd
metanol och metylacetat		tillsammans 25 kg
metanol	67-56-1	
metylacetat	79-20-9	
brandfarliga gaser		1000 kg
polyvinylacetat	9003-20-7	250 kg

Skador:

Människor: 1 person omkom och 1 skadades.

Materiella:

Miljö/ekologi: 7 kg metanol rann ut i floden Main.

Infrastruktur:

Erfarenheter redovisade (Ja/Nej): Ja

Kortfattat anges förebyggande åtgärder.

Report Profile

Identification of Report:

country: FA ident key: 1993_005_01

reported under Seveso I directive as major accident reports: SHORT

Date of Major Occurrence: Time of Major Occurrence

start: 1993-03-15 start: 09:00:00

finish: finish:

Establishment:

name:

address:

industry: - not applicable -

Plant for production of Polyvinil alcohol (Mowiol)

Seveso II status: not applicable: Yes art. 6 (notification): No

art. 7 (MAPP): No

art. 9 (safety report): No

Date of Report:

short: full:

Authority Reporting:

name:

address:

Authority Contact:

rep_cont_name:

rep_cont_phone:

rep_cont_fax:

Additional Comments:

a) - not applicable -

b) - not applicable -

c) - not applicable -

d) - not applicable -

e) - not applicable -

Short Report

country: FA ident key: 1993_005_01

Accident Types:

release: No explosion: Yes

water contamination: No other: No

fire: Yes

description:

In the production phase as a first step is produced polyvinyl acetate for polyvinylalcohol. On a alcoholysis band (rubber transport-band) took place an explosion: through the open inspection valve air arrived in the band-case, which togethe... see Appendix Short Report / description of accident types

Substance(s) Directly Involved:

toxic: No explosive: No

ecotoxic: No other: No

flammable: Yes

description:

- Involved in the explosion: Flammable gas, Methanol and Methylacetate, ca. 25 kg
- Involved in the fire: Flammable gases as above 1000 kg and 250 kg of polyvinylacetate

Immediate Sources of Accident:

storage: No transfer: No

process: Yes other: No

description:

The accident originated during inspection works.

Development of an igniting mixture of methanol-methylacetate-air

Suspected Causes:

plant or equipment: No **environmental:** Yes

human: Yes **other:** No

description:

Development of a flammable mixture of methanol-methylacetate-air.

Immediate Effects:

material loss: Yes

human deaths: Yes

human injuries: Yes **community disruption:** No

other: No

ecological harm: No

national heritage loss: No

description:

- not applicable -

Emergency Measures taken:

on-site systems: Yes **decontamination:** No

external services: Yes **restoration:** No

sheltering: No **other:** No

evacuation: No

description:

The fire brigade brought the fire under control. The quenching water was collected in a vessel of the biological clarification plant, but about 7 kg of methanol reached the Main river.... see Appendix Short

Report / description of emergency measures taken

Immediate Lessons Learned:

prevention: No **other:** No

mitigation: No

description:

Inspection valves can not be opened, if the entire band-case is not flushed by nitrogen. A sensor examined the methanol and methylacetate concentration. For maintenance works the band-case should stay idle and through blowing-out by water ... see Appendix Short Report / description of immediate lessons learned

Appendices for the FA / 1993_005_01 report

Appendix Short Report / description of accident types:

In the production phase as a first step is produced polyvinyl acetate for polyvinylalcohol. On a alcoholysis band (rubber transport-band) took place an explosion: through the open inspection valve air arrived in the band-case, which together with the existing vapors (methanol and methylacetate, about 25 kg) created an explosive mixture. The releasing ignition spark arised obviously in the cutter, that is directly connected to the band and that during the inspection was on duty. Due to the explosion the shift leader died and the department head was injured. Immediately after the explosion got into fire the rubber-transport-band, part of the facing building front and the asphalted tar paper.

The firemen brought the fire under control. The quenching water was collected in a vessel of the biological clarification plant, but about 7 kg of methanol arrived in the Main river. Due to the explosion the polymerization from polyvinylacetate should be interrupted. Emergency disconnection caused a rupture of the rupture-disk and of the vessel which in turn provoqued the outcoming of a mixture (1000 kg) of methanol and polyvinyl acetate circa 250 kg, leaked mixture flowing over the roof of the installation. The fire brigade ordered precautionally the evacuation of the installation and of the neighbour buildings. Dioxin analysis showed the usual values in burnt components.

Appendix Short Report / description of emergency measures taken:

The fire brigade brought the fire under control. The quenching water was collected in a vessel of the biological clarification plant, but about 7 kg of methanol reached the Main river.

Externally the fire brigade breached early the involved building and other adjacent installations and office buildings.

Appendix Short Report / description of immediate lessons learned:

Inspection valves can not be opened, if the entire band-case is not flushed by nitrogen. A sensor examined the methanol and methylacetate concentration. For maintenance works the band-case should stay idle and through blowing-out by water is prepared for reparation; an inspection of the band-case during running cutter and running mill in future is technically possible; besides this in future running polymerization can be finished by the fact that the measurement values open the central quick-shut-valves for the passage of the methanole.