

# Utsläpp av svaveltrioxid från en fabrik för produktion av organiska lösningsmedel.

930402 MARS 1993\_07

Vid förberedelser för reparationsarbete på en rörledning blåstes röret rent med tryckluft. En propp av fast svaveltrioxid gjorde emellertid att kvarvarande svavelsyra i ledningen pressades ut genom en ventil och vidare till ett kärl med ammonium sulfat. Den kraftiga värmeutvecklingen som uppstod spräckte en rörledning. Blandningen av svavelsyra och svaveltrioxid släpptes ut i fabrikslokalen. Utsläppet stoppades genom att lämpliga ventiler stängdes från kontrollrummet. Vattengardiner användes för begränsa spridningen av ångorna.

## Inblandade ämnen och mängder

	CAS Nr.	Mängd
oleum (svavelsyra)	7664-93-9	500 kg
svaveltrioxid	7446-11-9	

## Skador:

Människor:	24 personer fördes till sjukhus.
Materiella:	Skador på anläggningen.
Miljö/ekologi:	Ett litet moln med svaveltrioxid och svavelsyra drev över floden Main och in i Schwanheimerskogen. Inga effekter rapporterade.
Infrastruktur:	Inga.

## Erfarenheter redovisade (Ja/Nej): Ja

Kortfattat anges förebyggande åtgärder.

## Report Profile

### Identification of Report:

country: FA ident key: 1993\_007\_01

reported under Seveso I directive as major accident reports: SHORT

### Date of Major Occurrence: Time of Major Occurrence

start: 1993-04-02 start: 14:00:00

finish: finish:

### Establishment:

name:

address:

industry: - not applicable -

Plant for production of organic chemicals or solvents as alcohol, aldehyde, chetone, acids, esters,

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\_007\_01

**Accident Types:**

**release:** Yes **explosion:** No

**water contamination:** No **other:** No

**fire:** No

**description:**

The transfert pipe from a mobile vessel to a oil storage vessel (for solfuric acid) was blown with pressurized air to be emptied in order to prepare a repair work (leakage from a valve). But unknown to the service personnel the blowpipe of ... see Appendix Short Report / description of accident types

**Substance(s) Directly Involved:**

**toxic:** No **explosive:** No

**ecotoxic:** No **other:** No

**flammable:** Yes

**description:**

Oleum, circa 500 kg

**Immediate Sources of Accident:**

**storage:** No **transfer:** Yes

**process:** No **other:** No

**description:**

Reparation work for elimination of a leak in a valve.

In order to eliminate this leakage , the taking-over pipe between a mobile vessel and a stockage vessel was first emptied, by pressurized air.

**Suspected Causes:**

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

**human:** Yes **other:** No

**description:**

Choking of the discharge line of an Oleum storage vessel.

**Immediate Effects:**

**material loss:** Yes

**human deaths:** No

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

**other:** No

**ecological harm:** No

**national heritage loss:** No

**description:**

- 24 people were hospitalized

- Glass rupture in the oil-absorber, corrosion due to oil escape on equipments, pipes and internal system canal.

**Emergency Measures taken:**

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

**external services:** No **restoration:** No

**sheltering:** No **other:** No

**evacuation:** No

**description:**

The outlet was finally stopped by remote control of the bottom blow valve in the stock bin. Immediately after the alarm the firemen intervened in order to condense the stratus cloud with water screens. It was not possible to avoid, that the... see Appendix Short Report / description of emergency measures taken

**Immediate Lessons Learned:**

**prevention:** Yes **other:** No

**mitigation:** No

**description:**

In the future the upper side of the stock bin will be completely heated and isolated, so that the venting line could never more obstruct. In the same time the pressure in the vessel will be measured and registered. Over a pressure of 0,3 ba... see Appendix Short Report / description of immediate lessons learned

## Appendices for the FA / 1993\_007\_01 report

**Appendix Short Report / description of accident types:**

The transfert pipe from a mobile vessel to a oil storage vessel (for solfuristic acid) was blown with pressurized air to be emptied in order to prepare a repair work (leakage from a valve). But unknown to the service personnel the blowpipe of the oleum stockage vessel was stopped by crystalline SO<sub>3</sub>, so inside the vessel a pressure generated.

Thereby the liquid oleum (SO<sub>3</sub>) was first squeezed, through the bottom blow valve, in a climb piping and from there directly to absorption vessel with ammonium sulphate.

Through the contact of oleum with the absorption mittel was released a big amount of sulphur trioxide (SO<sub>3</sub>). Due to the strong heat development occurred a contemporary rupture of one gas pipe such that Oleum invaded directly the plant and from there to the outside (about 500 kg SO<sub>3</sub>).

**Appendix Short Report / description of emergency measures taken:**

The outlet was finally stopped by remote control of the bottom blow valve in the stock bin. Immediately after the alarm the firemen intervened in order to condense the stratus cloud with water screens. It was not possible to avoid, that the cloud would cross over Main river and could move in the direction of Schwanheimer wood.

**Appendix Short Report / description of immediate lessons learned:**

In the future the upper side of the stock bin will be completely heated and isolated, so that the venting line could never more obstruct. In the same time the pressure in the vessel will be measured and registered. Over a pressure of 0,3 bar an alarm results on the instrumentation. After any extraction the bottom valve will be automatically closed.

The control succeeds through the connection of the oil supply. For each filling process the bottom valve will be closed by hand. The messenger routes within the installation will be checked and improved. In the future through organizational measures will be insured that aggrieved operations within the installation will be tempestively warned.