

# Utsläpp av kolväten från en petrokemisk anläggning.

960607

En 1600 mm lång spricka hade uppstått i en svetsfog på en tank. Växlande belastning under igångkörning och avstängning ledde till att tanken brast längs sprickan. Ferritiskt basmaterial hade svetsats samman med austenitiskt CrNiMnW svetsmaterial. Vid igångkörning inträffade en explosion och kolväten och vätgas släpptes ut genom brottöppningen. En jetlåga uppstod. Den automatiska avstängningsmekanismen aktiverades och anläggningens interna brandkår informerades. Inga personskador uppstod.

## Inblandade ämnen och mängder

	CAS Nr.	Mängd
vätgas	1333-74-0	okänt
metan	74-82-8	okänt
etan	74-84-0	okänt
etylen	74-85-1	okänt

## Skador:

Människor: Inga personskador.  
Materiella: Omfattande skador på anläggningen.  
Miljö/ekologi: Inga effekter rapporterade.  
Infrastruktur: Inga effekter.

Erfarenheter redovisade (Ja/Nej): Nej

## Report Profile

### Identification of Report:

country: FA ident key: 1800\_194\_01

reported under Seveso I directive as major accident reports: SHORT

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

start: 07/06/1996 start: 03:11:00

finish: 07/06/1996 finish:

### Establishment:

name:

address:

industry: 2002 petrochemical, refining, processing

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:** 1800\_194\_01**Accident Types:****release:** Yes **explosion:** Yes**water contamination:** No **other:** No**fire:** No**description:**

Release of hydrocarbons (ethane, ethylene, methane) and hydrogen

**Substance(s) Directly Involved:****toxic:** No **explosive:** No**ecotoxic:** No **other:** No**flammable:** Yes**description:**

A release of hydrocarbons (ethane, ethylene, methane) and hydrogen occurred in an olefine plant of a refinery

**Immediate Sources of Accident:****storage:** No **transfer:** No**process:** No **other:** Yes**description:**

During the start-up operation (phase) of the cryogenic unit a separator exploded, releasing ethane, ethylene, methane and hydrogen.

**Suspected Causes:****plant or equipment:** Yes **environmental:** No**human:** Yes **other:** No**description:**

The bursting of a tank was caused by a 1600 mm long incipient crack which had been formed at the inside of the tank along a weld line (a ferritic basis metal had been welded with a austenitic weld metal). The hydrogen induced incipient crack... see Appendix Short Report / description of suspected causes

**Immediate Effects:**

**material loss:** Yes

**human deaths:** No

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

**other:** No

**ecological harm:** No

**national heritage loss:** No

**description:**

Large material damages (losses) due to the destruction of plant (establishment) parts (estimated as approx.

1.5 million ECU). No persons were injured (no injuries). Nevertheless the neighbourhood was strongly disturbed

(community disruption... see Appendix Short Report / description of immediate effects

### **Emergency Measures taken:**

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

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

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

**evacuation:** No

**description:**

The emergency shut-down switch (automatic safety device) was released (activated) and the on-site fire-brigade

was informed. Further the air-conditioning system of the measuring centre (control-centre) were shut-down

(precautionary measure)... see Appendix Short Report / description of emergency measures taken

### **Immediate Lessons Learned:**

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

**mitigation:** No

**description:**

no indication.

## **Appendices for the FA / 1800\_194\_01 report**

### **Appendix Short Report / description of suspected causes:**

The bursting of a tank was caused by a 1600 mm long incipient crack which had been formed at the inside of the tank along a weld line (a ferritic basis metal had been welded with a austenitic weld metal). The hydrogen induced incipient crack (cracking) was caused by the alternating load during start-up and shut-down phases in the course of the operating time. This hydrogen induced cracking has been originated by the geometric form variation and the resulting plastic deformation in the area of (in correspondence of) the damaged longitudinal seam (weld). This incipient cracking was favoured by the high tensile (strength) austenitic CrNiMnW weld metal with its particularly accentuated martensitic composite (mixed) zone (area) along the transition between weld metal and basis metal and was also favoured by its physical characteristics which differ strongly from the basis metal. Possibly lack of maintenance.

### **Appendix Short Report / description of immediate effects:**

Large material damages (losses) due to the destruction of plant (establishment) parts (estimated as approx. 1.5 million ECU). No persons were injured (no injuries). Nevertheless the neighbourhood was strongly disturbed (community disruption) by the noise caused by the bursting of the tank and the consequent flaring activities.

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

The emergency shut-down switch (automatic safety device) was released (activated) and the on-site fire-brigade was informed. Further the air-conditioning system of the measuring centre (control-centre) were shut-down (precautionary measure). The control-centre and the plant were evacuated, the plant (equipment) was emptied and stress released.