

# Gasexplosion och brand i krackningsanläggningen i ett petroleumraffinaderi.

920615 MARS 1800\_007\_004

Ett korroderat rör brast i en 90-graders rörböj varvid gas släpptes fri och fattade eld. Elden drevs huvudsakligen av kolväten. Brandröken var inte giftig. Stora delar av anläggningen skadades svårt. Fabriken stängdes av, strömförsörjningen bröts och all lastning avbröts. Den interna säkerhetsplanen fungerade tillfredsställande.

## Inblandade ämnen och mängder

	CAS Nr.	Mängd
Vätgas (80 vol-%)		
Metan (14 vol-%)		
Svavelväte (1,8 vol-%)		
C <sub>2</sub> , C <sub>3</sub> , C <sub>4</sub> -gas (4,2 vol-%)		

## Skador:

Människor:	Inga skador rapporterade.
Materiella:	Anläggningen skadades. Inga närmare uppgifter.
Miljö/ekologi:	Inga skador rapporterade.
Infrastruktur:	Inga skador rapporterade.

Erfarenheter redovisade (Ja/Nej): Nej

## Report Profile

### Identification of Report:

country: FA ident key: 1800\_007\_04

reported under Seveso I directive as major accident reports: SHORT

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

start: 1992-06-15 start: 15:00:00

finish: 1992-06-15 finish:

### Establishment:

name:

address:

industry: 2002 petrochemical, refining, processing

Petroleum refining

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\_007\_04

**Accident Types:**

**release:** Yes **explosion:** Yes

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

**fire:** Yes

**description:**

The incident occurred in the cracking unit and in the recuperating sulphur system of the refinery. The plant was built on 1974. The last shut down for a complete revision was in 1989. During those maintenance works it was changed a curve of... see Appendix Short Report / description of accident types

**Substance(s) Directly Involved:**

**toxic:** Yes **explosive:** Yes

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

**flammable:** Yes

**description:**

Vapor/gas explosion, flash fire, release of flammable substance... see Appendix Short Report / description of substances involved

**Immediate Sources of Accident:**

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

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

**description:**

The accident occurred in the cracking unit and in the sulphur recuperating system, more exactly in the 90o curve of 8" piping.... see Appendix Short Report / description of immediate sources

**Suspected Causes:**

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

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

**description:**n not given

**Immediate Effects:**

**material loss:** Yes

**human deaths:** No

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

**other:** No

**ecological harm:** No

**national heritage loss:** No

**description:** not given

**Emergency Measures taken:**

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

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

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

**evacuation:** No

**description:**

Plant shut down, stop of electrical supply, stop of all loading unloading operations.

The internal emergency plan operated correctly.

**Immediate Lessons Learned:**

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

**mitigation:** No

**description:**

The installation will be rebuild up. The use of 90o curves will be restricted. The gas speed will be decreased by increasing the tube diameter.

## **Appendices for the FA / 1800\_007\_04 report**

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

The incident occurred in the cracking unit and in the recuperating sulphur system of the refinery. The plant was built on 1974. The last shut down for a complete revision was in 1989. During those maintenance works it was changed a curve of the gas recycle system due to its corrosion. Other curves in the same piping were not corroded. In the period between the years 1989 and 1992 the thickness of the tube was regularly measured and never was found an abnormal corrosion. Results of investigations showed it was a spontaneous rupture in the curve. Through the hole in the curve the escaped gas exploded and took fire. A large part of the plant was destroyed. The fire was mainly petroleum derived. The smoke cloud was not toxic.

### **Appendix Short Report / description of substances involved:**

Vapor/gas explosion, flash fire, release of flammable substance

Recycle gas: 80 vol % hydrogen, 14 vol % methane, 1,8 vol % hydrogen-sulphide, remaining: C2, C3 and C4 gas. The recycle gas is rich of water vapor. Project specifications 50 bar 300oC.

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

The accident occurred in the cracking unit and in the sulphur recuperating system, more exactly in the 90o curve of 8" piping.

Due to the crack of the curve a mixture of flammable gases outcame from the tube; the gas cloud exploded and took fire.