

Brand på en råoljedepå på ett oljeraffinaderi.

890518 MARS 1989_02

En butanläcka uppstod vid reparationsarbete på en pumpstation på en oljedepå. En explosion uppstod kort efter att flytande butan läckt ut. En person omkom och två skadades. På grund av explosionen brast ett stort antal rörledningar vilket ledde till en omfattande brand som hotade en tank med 50 000 hektoliter bensin. Brandlarmet gick och räddningstjänsten tillkallades. Räddningstjänsten anlände med 10 bilar, 3 båtar och 150 brandmän. Man lyckades förhindra brandens spridning och sedan släcka den inom ett par timmar. I släckningsarbetet användes vatten och skum.

Inblandade ämnen och mängder

	CAS Nr.	Mängd
ämne		

Skador:

Människor: 1 omkom och 2 skadades av explosionen.
Materiella: Svåra skador på anläggningen.
Miljö/ekologi: Inga effekter rapporterade.
Infrastruktur: Ett stort område spärrades av för trafik.

Erfarenheter redovisade (Ja/Nej): Ja

Mycket kortfattat anges förebyggande åtgärder.

Report Profile

Identification of Report:

country: FA ident key: 1989_002_01

reported under Seveso I directive as major accident reports: SHORT+FULL

Date of Major Occurrence: Time of Major Occurrence

start: 1989-05-18 start:

finish: finish:

Establishment:

name:

address:

industry: 2002 petrochemical, refining, processing

Petroleum Refinery (Crude Oil Storage Area)

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:** 1989_002_01

Accident Types:

release: Yes **explosion:** Yes

water contamination: No **other:** No

fire: Yes

description:

ACCIDENT CASE HISTORY DESCRIPTION:... see Appendix Short Report / description of accident types

Substance(s) Directly Involved:

toxic: No **explosive:** Yes

ecotoxic: No **other:** No

flammable: Yes

description:

- Flammable Gases and Liquids: amount involved = 100,000 Kg (no data are available about the amount of materials involved, respectively, in the initial release, the explosion and the subsequent fire).

Immediate Sources of Accident:

storage: Yes **transfer:** No

process: Yes **other:** No

description:

The accident occurred in a crude oil storage area of a petroleum refinery. The component involved was a liquid butane transfer pipeline at the pumping and metering station of the storage area.

Suspected Causes:

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

human: Yes **other:** No

description:

INITIATING EVENT AND CONSEQUENCES:... see Appendix Short Report / description of suspected causes

Immediate Effects:

material loss: Yes

human deaths: Yes

human injuries: Yes **community disruption:** Yes

other: No

ecological harm: No

national heritage loss: No

description:

EFFECTS ON PEOPLE... see Appendix Short Report / description of immediate effects

Emergency Measures taken:

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

external services: Yes **restoration:** No

sheltering: No **other:** No

evacuation: No

description:

INTERNAL TO THE ESTABLISHMENT... see Appendix Short Report / description of emergency measures taken

Immediate Lessons Learned:

prevention: Yes **other:** No

mitigation: No

description:

MEASURES TO PREVENT ANY RECURRENCE OF SIMILAR ACCIDENTS:

After the accident it was established that the procedures for work on liquified gas piping had to be revised.

A Occurrence Full Report

country: FA **ident key:** 1989_002_01

1 Type of Accident

remarks: During repair work on a butane piping at the pumping and metering station of the crude oil storage area, a leakage of butane (code 1101) occurred followed by an explosion (code 1307). Because of the explosion, a number of pipes ruptured and... see Appendix Full Report A / type of accident

2 Dangerous Substances

remarks: The total establishment and the potential directly involved inventories of flammable gases and liquids refer to the whole amount involved in the accident. No data are available about the amount of materials involved, respectively, in the in... see Appendix Full Report A / dangerous substances

3 Source of Accident

illustration: - not applicable -

remarks: The accident occurred in a crude oil storage area (code 3201) of a petroleum refinery (code 2002). The component involved was a liquid butane transfer pipeline (code 4011) at the pumping and metering station of the storage area.

4 Meteorological Conditions

precipitation none: fog: rain: hail: snow:

No No No No No

wind speed (m/s):

direction (from):

stability (Pasquill):

ambient temperature (°C):

remarks: - not applicable -

5 Causes of Major Occurrence

main causes

technical / physical - not applicable -

- not applicable -

- not applicable -

- not applicable -

- not applicable -

human / organizational 5303 organization: organized procedures (none, inadequate, inappropriate, unclear)

- not applicable -

- not applicable -

- not applicable -

- not applicable -

remarks: The accident occurred during repair work on a liquified gas piping because of insufficient maintenance procedures (code 5303).

6 Discussion about the Occurrence

- not applicable -

Type of Accident country: FA ident key: 1989_002_01

event:

major occurrence 1307 explosion: VCE (vapour cloud explosion; supersonic wave front)

initiating event - not applicable -

associated event - not applicable -

event:

major occurrence 1202 fire: pool fire (burning pool of liquid, contained or uncontained)

initiating event 1101 release: gas/vapour/mist/etc release to air

associated event - not applicable -

Dangerous substances

country: FA ident key: 1989_002_01

a) total establishment inventory

CAS number: identity: Flammable Gases / Liquids

name from Seveso I Directive: - not applicable -

name from Seveso II Directive: - not applicable -

category from Seveso II: - not applicable -

other hazards (1): - not applicable -

other hazards (2): - not applicable -

maximum quantity (tonnes): 100

use of substance as: NORMAL FINISHED PRODUCT

b) substance belongs to relevant inventory directly involved: Yes

actual quantity: 100 potential quantity: 100

c) substance belongs to relevant inventory indirectly involved: No

actual quantity: -1 indir_pot_quant: -1

Source of Accident - Situation country: FA ident key: 1989_002_01

situation

industry

initiating event 2002 petrochemical, refining, processing

associated event - not applicable -

activity/unit

major occurrence 3201 storage: process-associated (stockholding, etc. on-site of manufacture)

initiating event 3201 storage: process-associated (stockholding, etc. on-site of manufacture)

associated event - not applicable -

component

major occurrence 4011 general pipework/flanges

initiating event 4011 general pipework/flanges

associated event - not applicable -

B Consequences Full Report

country: FA ident key: 1989_002_01

1 Area concerned

affected

extent of effects installation: Yes

establishment: Yes

off-site; local: No

off-site; regional: No

off-site; transboundary: No

illustration of effects - not applicable -

remarks Even if a large area external to the establishment was interrupted to the traffi... see Appendix

Full Report B / area concerned - remarks

2 People

establishment popul. emergency personnel off-site population

total at risk 150

immediate fatalities 1

subsequent fatalities

hospitalizing injuries 2

other serious injuries

health monitoring

remarks 1 person was killed and 2 injured by the explosion. 150 fire men were mobilized ... see Appendix

Full Report B / people

3 Ecological Harm

pollution/contamination/damage of:

- **residential area (covered by toxic cloud)** Suspected
- **common wild flora/fauna (death or elimination)** Suspected
- **rare or protected flora/fauna (death or elimination)** Suspected
- **water catchment areas and supplies for consumption or recreation** Suspected
- **land (with known potential for long term ecological harm or** Suspected

preventing human access or activities)

- **marine or fresh water habitat** Suspected
- **areas of high conservation value or given special protection** Suspected

remarks In the Original Report there is no evidence of significant ecological harms.... see Appendix

Full Report B / ecological harm

4 National Heritage Loss

effects on:

- **historical sites** not applicable - **historic monuments** not applicable
- **historic buildings** not applicable - **art treasures** not applicable

remarks No data available.

5 Material Loss

establishment losses off site losses

costs (direct costs to operator) (social costs)

in ECU DM ECU DM

material losses 1,2E+07

response, clean up, restoration

remarks The accident caused large damages within the establishment. The cost of the dama... see Appendix

Full Report B / material loss

6 Disruption of Community Life

establishment/plant evacuated disabled/unoccupiable destroyed

- **nearby residences/hotels** No No No
- **nearby factories/offices/small shops** No No No
- **schools, hospitals, institutions** No No No
- **other places of public assembly** No No No

interruption of utilities etc. no / yes duration

- gas No
- electricity No
- water No
- sewage treatment works No
- telecommunications No
- main roads No
- railways No
- waterways No
- air transport No

significant public concern none local level national level

- off site populations No Yes No
- media interest No No No
- political interest No No No

remarks A large area external to the establishment was interrupted to the traffic.... see Appendix Full R

7 Discussion of Consequences

C Response Full Report

country: FA ident key: 1989_002_01

1 Emergency Measures

taken - on site - not applicable - - not applicable -

- not applicable - - not applicable -

- not applicable - - not applicable -

- off site - not applicable - - not applicable -

- not applicable - - not applicable -

- not applicable - - not applicable -

still - on site - not applicable - - not applicable -

required

- not applicable - - not applicable -

- not applicable - - not applicable -

- off site - not applicable - - not applicable -

- not applicable - - not applicable -

- not applicable - - not applicable -

continuing contamination or danger

-on site not applicable

-off site not applicable

remarks - not applicable -

2 Seveso II Duties

pre-accident evaluation

Article item not due yet not done done/submitted evaluated

6 notification No No No No

7 policy (MAPP) No No No No

9 safety report No No No No

9, 10, 11 update No No No No

11 internal plan No No No No

11 external plan No No No No

13 informing public No No No No

9, 12 siting policy No No No No

post-accident evaluation

Seveso II duty was actual were actual compared with actual

contingency consequences consequences, the

addressed? addressed? predicted extent was?

Article item

7 policy (MAPP) not applicable not applicable not applicable

9 current safety report not applicable not applicable not applicable

11 internal plan not applicable not applicable not applicable

11 external plan not applicable not applicable not applicable

13 informing public not applicable not applicable not applicable

9, 12 siting policy not applicable not applicable not applicable

evaluation of safety organisation

organisational element element existed did element relate to actual circumstances of

yes / no no / partly / yes adequate?

- written policy objectives No

- specified management No

structure

- specified responsibilities No

- specified working procedures No

- specified procedures for No

assessment/auditing of

management system

- specified procedures for No

review and update of

management policy

- specified general training No

procedures

- specified emergency No

training procedures

evaluation of ecological impact control

organisational element element existed did element relate to actual circumstances of

yes / no no / partly / yes adequate?

- ecological status review No

before incident

- potential ecological No

consequences assessment

- ecological impact review No

after incident

- ecological restoration No

procedures

- subsequent review of No

restoration success

remarks - not applicable -

3 Official Action Taken

legal action

- not applicable -

other official action

- not applicable -

4 Lessons Learned

measures to prevent recurrence

After the accident it was esta... see Appendix Full Report C / lesson learned - prevent

measures to mitigate consequences:

- not applicable -

useful references:

- not applicable -

5 Discussion about Response

- not applicable -

Appendices for the FA / 1989_002_01 report

Appendix Short Report / description of accident types:

ACCIDENT CASE HISTORY DESCRIPTION:

During repair work on a butane piping at the pumping and metering station of the crude oil storage area, a leakage of butane occurred followed by an explosion. Because of the explosion, a number of pipes ruptured and their contents developed a fire that threatened nearby storage tanks, including a tank containing about 5,000,000 litres of flammable liquid (gasoline). The fire alarm was sounded and the fire brigade of Hamburg mobilized 10 fire trucks, 3 fire boats and 150 firemen, and managed to protect the other tanks and pipelines and extinguish the fire by means of water and foam by noon. A large area external to the establishment was interrupted to the traffic.

Appendix Short Report / description of suspected causes:

INITIATING EVENT AND CONSEQUENCES:

During repair work on a butane piping at the pumping and metering station of the crude oil storage area, a leakage of butane occurred followed by an explosion.

CAUSES:

The accident occurred during repair work on a liquified gas piping because of insufficient maintenance procedures.

Appendix Short Report / description of immediate effects:

EFFECTS ON PEOPLE:

1 person was killed and 2 injured by the explosion.

MATERIAL LOSS:

The accident caused large damages within the establishment. The cost of the damages has been estimated in about 12 millions of Deutch Marcs (about 5.9 MECU).

COMMUNITY DISRUPTION:

A large area external to the establishment was interrupted to the traffic.

Appendix Short Report / description of emergency measures taken:

INTERNAL TO THE ESTABLISHMENT:

The fire alarm was sounded and the fire brigade of Hambourg mobilized 10 fire trucks, 3 fire boats and 150 firemen, and managed to protect the other tanks and pipelines and extinguish the fire by means of water and foam by noon.

EXTERNAL TO THE ESTABLISHMENT:

A large area external to the establishment was interrupted to the traffic.

Appendix Full Report A / type of accident:

During repair work on a butane piping at the pumping and metering station of the crude oil storage area, a leakage of butane (code 1101) occurred followed by an explosion (code 1307). Because of the explosion, a number of pipes ruptured and their contents developed a fire (code 1202) that threatened nearby storage tanks, including a tank containing about 5,000,000 litres of flammable liquid (gasoline).

Appendix Full Report A / dangerous substances:

The total establishment and the potential directly involved inventories of flammable gases and liquids refer to the whole amount involved in the accident. No data are available about the amount of materials involved, respectively, in the initial release, the explosion and the subsequent fire.

Appendix Full Report B / area concerned - remarks:

Even if a large area external to the establishment was interrupted to the traffic, in the Original Report there is no evidence of significant effects outside the establishment.

Appendix Full Report B / people:

1 person was killed and 2 injured by the explosion. 150 fire men were mobilized to fight the fire.

Appendix Full Report B / ecological harm:

In the Original Report there is no evidence of significant ecological harms.

Appendix Full Report B / material loss:

The accident caused large damages within the establishment. The cost of the damages has been estimated in about 12 millions of Deutch Marcs (about 5.9 MECU).

Appendix Full Report B / disruption of community life:

A large area external to the establishment was interrupted to the traffic.

Appendix Full Report C / lesson learned - prevent:

After the accident it was established that the procedures for work on liquified gas piping had to be revised.