Brand på krackningsanläggningen på ett oljeraffinaderi.

900711 MARS 1990_02

Då krackningsanläggningen befann sig i beredskapstillstånd släppte gasolja genom en otät ventil. Då processen återstartades brann gasoljan med stor sotbildning. Den okontrollerade förbränningen stoppades genom att vattenånga blåstes in i röken. På så vis var det möjligt att avlägsna gasoljan ocg fröbränningsprodukterna som fanns kvar i anläggningen. Ett stort gulsvart moln steg från skorstenen och syntes på långt håll.

Inblandade ämnen och mängder

	CAS Nr.	Mängd
gasolja	808-20-6	7500 kg
svaveldioxid	7446-09-5	okänt
kvävedioxid	10102-44-0	okänt

Skador:

Människor:	Inga.
Materiella:	Inga.
Miljö/ekologi:	Inga effekter rapporterade.
Infrastruktur:	Inga.

Erfarenheter redovisade (Ja/Nej): Ja

Mycket kortfattat anges förebyggande åtgärder.

Report Profile

Identification of Report:

country: FA **ident key:** 1990_002_01

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

Date of Major Occurrence: Time of Major Occurrence

start: 1990-07-11 **start:** 13:00:00

finish: finish:

Establishment:

name:

address:

industry: 2002 petrochemical, refining, processing

Petroleum Refinery (Catalytic Cracking Plant)

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:** 1990_002_01

Accident Types:

release: Yes **explosion:** No

water contamination: No **other:** No

fire: Yes

description:

SAFETY SYSTEMS OR OPERATORS INTERVENTION:... see Appendix Short Report / description of accident types

Substance(s) Directly Involved:

toxic: Yes **explosive:** Yes

ecotoxic: No **other:** No

flammable: Yes

description:

Sulphur dioxide and nitrogen dioxide were released during the (uncontrolled) combustion of gasoil.... 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 catalytic cracking plant of a petroleum refinery, during the re-starting of the

plant after a stand-by condition.

Suspected Causes:

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

human: Yes **other:** Yes

description:

CAUSES:... see Appendix Short Report / description of suspected causes

Immediate Effects:

material loss: No

human deaths: No

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

other: Yes

ecological harm: No

national heritage loss: No

description:

OTHER:... 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:... see Appendix Short Report / description of immediate lessons learned

A Occurrence Full Report

country: FA **ident key:** 1990_002_01

1 Type of Accident

remarks: While the plant was in a stand-by condition, raw-material (gasoil) penetrated a not-tight gate valve and, when the catalytic cracking plant was re-started, it burned under evolution of much soot (code 1202). The uncontrolled combustion and ... see Appendix Full Report A / type of accident

2 Dangerous Substances

remarks: The total establishment and the potential directly involved inventories of gasoil refer to the amount burned during the accident (about 10 m3). No data are available about the amount of sulphur dioxide and nitrogen dioxide released during t... see Appendix Full Report A / dangerous substances

3 Source of Accident

illustration: - not applicable -

remarks: The accident occurred in the catalytic cracking plant (codes 3102 and 4002) of a petroleum refinery (code 2002), during the re-starting of the plant after a stand-by condition. From the Original Report it is not fully clear the component in... see Appendix Full Report A / source of accident -

remarks

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 5306 organization: staffing (inadequate, inappropriate)

5307 organization: process analysis (inadequate, incorrect)

5401 person: operator error

- not applicable -

- not applicable -

remarks: The accident was caused by a not-tight manual gate valve that allowed, during the stand-by

condition of the plant, the passage of gasoil in the cracking unit. From the Original

Report it is not fully clear if the installation of a not-tight... see Appendix Full

Report A / causes of major occurrence

6 Discussion about the Occurrence

- not applicable -

Type of Accident **country:** FA **ident key:** 1990_002_01

event:

major occurrence 1401 other: combustion products into air

initiating event 1202 fire: pool fire (burning pool of liquid, contained or uncontained)

associated event - not applicable -

Dangerous substances

country: FA **ident key:** 1990_002_01

a) total establishment inventory

CAS number: 7446-09-5 **identity:** Sulphur Dioxide

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): -1

use of substance as: ABNORMAL PRODUCT

b) substance belongs to relevant inventory directly involved: Yes

actual quantity: -1 **potential quantity:** -1

c) substance belongs to relevant inventory indirectly involved: No

actual quantity: -1 **indir_pot_quant:** -1

a) total establishment inventory

CAS number: 10102-44-0 **identity:** Nitrogen Dioxide

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): -1

use of substance as: ABNORMAL PRODUCT

b) substance belongs to relevant inventory directly involved: Yes

actual quantity: -1 **potential quantity:** -1

c) substance belongs to relevant inventory indirectly involved: No

actual quantity: -1 **indir_pot_quant:** -1

a) total establishment inventory

CAS number: 8008-20-6 **identity:** Gasoil

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): 7,5

use of substance as: STARTING MATERIAL

b) substance belongs to relevant inventory directly involved: Yes

actual quantity: 7,5 **potential quantity:** 7,5

c) substance belongs to relevant inventory indirectly involved: No

actual quantity: -1 **indir_pot_quant:** -1

Source of Accident - Situation **country:** FA **ident key:** 1990_002_01

situation

industry

inititating event 2002 petrochemical, refining, processing

associated event - not applicable -

activity/unit

major occurrence 3102 process: chemical continuous reaction

inititating event 3102 process: chemical continuous reaction

associated event - not applicable -

component

major occurrence 4002 reaction vessel; pressurised

inititating event 4002 reaction vessel; pressurised

associated event - not applicable -

B Consequences Full Report

country: FA **ident key:** 1990_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 yellow-black cloud, visible at far distances, was seen leaving t... see Appendix

Full Report B / area concerned - remarks

2 People

establishment popul. emergency personnel off-site population

total at risk

immediate fatalities

subsequent fatalities

hospitalizing injuries

other serious injuries

health monitoring

remarks No people were injured during the accident.

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 No ecological harm occurred because the pollutants concentration in soil samples... 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 ECU

material losses

response, clean up, restoration

remarks No material losses occurred except the cost of the burned gasoil.... 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 yellow-black cloud, visible at far distances, was seen leaving the 210m ... see Appendix

7 Discussion of Consequences

C Response Full Report

country: FA **ident key:** 1990_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 the followi... 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 / 1990_002_01 report

Appendix Short Report / description of accident types:

SAFETY SYSTEMS OR OPERATORS INTERVENTION:

The uncontrolled combustion and the large evolution of the soot were stopped by blowing water vapour into the unit.

ACCIDENT CASE HISTORY DESCRIPTION:

While the plant was in a stand-by condition, raw-material (gasoil) penetrated a not-tight gate valve and, when the catalytic cracking plant was re-started, gasoil burned under evolution of much soot. The uncontrolled combustion and evolution of soot were stopped by blowing in water vapour. In such a way, it was possible to take out the gasoil and the combustion products still present in the unit. A large yellow-black cloud, visible at far distances, was seen leaving the 210m high chimney.

Appendix Short Report / description of substances involved:

Sulphur dioxide and nitrogen dioxide were released during the (uncontrolled) combustion of gasoil.

- Gasoil (C.A.S. CODE: 8008-20-6): amount involved = about 7,500 Kg (10 m3).

- Sulphur Dioxide (C.A.S. CODE: 7446-09-5, E.E.C. CODE: 016-011-00-9): amount involved = not known.

- Nitrogen Dioxide (C.A.S. CODE: 10102-44-0): amount involved = not known.

Appendix Short Report / description of suspected causes:

CAUSES:

The accident was caused by a not-tight manual gate valve that allowed, during the stand-by condition of the plant, the passage of gasoil in the cracking unit. From the Original Report it is not fully clear if the installation of a not-tight manual valve was due to insufficient process analysis and design plant or to a human error.

Appendix Short Report / description of immediate effects:

OTHER:

No material losses occurred except the cost of the burned gasoil.

ECOLOGICAL HARM:

No ecological harm occurred because the pollutants concentration in soil samples taken after the accident were below the threshold limits.

Appendix Short Report / description of emergency measures taken:

INTERNAL TO THE ESTABLISHMENT:

The catalytic cracking plant was shut-down and the uncontrolled combustion and evolution of soot were stopped by blowing in water vapour. In such a way, it was possible to take out the gasoil and the combustion products still present in the unit.

EXTERNAL TO THE ESTABLISHMENT:

Police and fire brigade were alerted. The neighbourhood was controlled by means of a helicopter. A car was alerted to carry-out measurements.

Appendix Short Report / description of immediate lessons learned:

MEASURES TO PREVENT ANY RECURRENCE OF SIMILAR ACCIDENTS:

After the accident the following measures were established:

-1 installation of a remote controlled gate valve;

-2 regular check of gate valves.

Appendix Full Report A / type of accident:

While the plant was in a stand-by condition, raw-material (gasoil) penetrated a not-tight gate valve and, when the catalytic cracking plant was re-started, it burned under evolution of much soot (code 1202). The uncontrolled combustion and evolution of soot were stopped by blowing in water vapour. In such a way, it was possible to take out the gasoil and the combustion products. A large yellow-black cloud (code 1401), visible at far distances, was seen leaving the 210m high chimney.

Appendix Full Report A / dangerous substances:

The total establishment and the potential directly involved inventories of gasoil refer to the amount burned during the accident (about 10 m3). No data are available about the amount of sulphur dioxide and nitrogen dioxide released during the (uncontrolled) combustion of gasoil.

Appendix Full Report A / source of accident - remarks:

The accident occurred in the catalytic cracking plant (codes 3102 and 4002) of a petroleum refinery (code 2002), during the re-starting of the plant after a stand-by condition. From the Original Report it is not fully clear the component involved in the accident.

Appendix Full Report A / causes of major occurrence:

The accident was caused by a not-tight manual gate valve that allowed, during the stand-by condition of the plant, the passage of gasoil in the cracking unit. From the Original Report it is not fully clear if the installation of a not-tight manual valve was due to insufficient process analysis (code 5307) and design plant (code 5308) or to a human error (code 5401).

Appendix Full Report B / area concerned - remarks:

Even if a large yellow-black cloud, visible at far distances, was seen leaving the 210m high chimney, in the Original Report there is no evidence of significant effects outside the establishment (the pollutants concentration in soil samples taken after the accident were below the threshold limits).

Appendix Full Report B / ecological harm:

No ecological harm occurred because the pollutants concentration in soil samples taken after the accident were below the threshold limits.

Appendix Full Report B / material loss:

No material losses occurred except the cost of the burned gasoil.

Appendix Full Report B / disruption of community life:

A large yellow-black cloud, visible at far distances, was seen leaving the 210m high chimney.

Appendix Full Report C / lesson learned - prevent:

After the accident the following measures were established:

-1 installation of a remote controlled gate valve;

-2 regular check of gate valves.