

Explosion och brand på ett oljeraffinaderi.

930603 MARS 1993_19

Olyckan inträffade på ett oljeraffinaderi. Ett tryckkärl som innehöll het gasolja exploderade av skäl som inte var kända då rapporten skrevs. Tryckkärlet som vägde 4 ton slungades 100 meter bort av explosionen. En brand utbröt. Den interna brandkåren ryckte ut och med hjälp från räddningstjänsten var branden släckt efter en timme.

Inblandade ämnen och mängder

	CAS Nr.	Mängd
gasolja	8008-20-6	

Skador:

Människor: En anställd på raffinaderiet och 6 personer på grannföretag omkom. Ytterligare 16 personer skadades vid olyckan.

Materiella: Omfattande skador på anläggningen. Det 4 ton tunga tryckkärlet kastades 100 m bort och förstördes.

Miljö/ekologi: Inga effekter rapporterade.

Infrastruktur: Inga.

Erfarenheter redovisade (Ja/Nej): Nej

Report Profile

Identification of Report:

country: FA ident key: 1993_019_01

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

Date of Major Occurrence: Time of Major Occurrence

start: 1993-06-03 start: 13:10:00

finish: 1993-06-03 finish: 14:10:00

Establishment:

name:

address:

industry: 2002 petrochemical, refining, processing

Petroleum Refinery

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_019_01

Accident Types:

release: No **explosion:** Yes

water contamination: No **other:** No

fire: Yes

description:

A pressure vessel containing hot gasoil was involved in an explosion with subsequent violent fire. Due to the explosion, the entire vessel (about 4 tonnes) was lifted and hurled about 100 metres away. 6 people of external companies (involve... see Appendix Short Report / description of accident types

Substance(s) Directly Involved:

toxic: No **explosive:** Yes

ecotoxic: No **other:** No

flammable: Yes

description:

- Gasoil (C.A.S. CODE: 8008-20-6): amount involved = not known.

Immediate Sources of Accident:

storage: No **transfer:** No

process: Yes **other:** No

description:

The accident occurred in the hot gasoil auxiliary plant of a petrochemical industry. The component involved was a pressure vessel (accumulator V-16 A), containing hot gasoil, connected with F2 oven nearby to Topping 4 plant. When the accide... see Appendix Short Report / description of immediate sources

Suspected Causes:

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

human: No **other:** Yes

description:

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

Immediate Effects:

material loss: Yes

human deaths: Yes

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

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... see Appendix Short Report / description of

immediate lessons learned

A Occurrence Full Report

country: FA **ident key:** 1993_019_01

1 Type of Accident

remarks: A pressure vessel containing hot gas-oil was involved in an explosion (code

1307) with subsequent violent fire (code 1202). Due to the explosion, the

entire vessel (about 4 tonnes) was lifted and hurled about 100 metres away.

From the Origin... see Appendix Full Report A / type of accident

2 Dangerous Substances

remarks: No data are available about the amount of gasoil involved in the accident.

3 Source of Accident

illustration: - not applicable -

remarks: The accident occurred in the hot gasoil auxiliary plant of a petrochemical

industry (code 2002). The component involved was a pressure vessel

(accumulator V-16 A), containing hot gasoil, connected with F2 oven nearby

to Topping 4 plant (cod... 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 5501 other: not identified

- not applicable -

- not applicable -

- not applicable -

- not applicable -

human / organizational - not applicable -

- not applicable -

- not applicable -

- not applicable -

- not applicable -

remarks: When the Original Report was prepared, the causes of the explosion and of the following violent fire were not fully identified (code 5501). No previous anomalies had occurred in the plant.

6 Discussion about the Occurrence

- not applicable -

Type of Accident country: FA ident key: 1993_019_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 1307 explosion: VCE (vapour cloud explosion; supersonic wave front)

associated event - not applicable -

Dangerous substances

country: FA ident key: 1993_019_01

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): -1

use of substance as: NORMAL FINISHED 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

Source of Accident - Situation country: FA ident key: 1993_019_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 4004 container; pressurised (bullet, sphere, cylinder, etc.)

initiating event 4004 container; pressurised (bullet, sphere, cylinder, etc.)

associated event - not applicable -

B Consequences Full Report

country: FA ident key: 1993_019_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 Due to the explosion, the entire vessel (about 4 tonnes) was lifted and hurled a... see Appendix

Full Report B / area concerned - remarks

2 People

establishment popul. emergency personnel off-site population

total at risk

immediate fatalities 7

subsequent fatalities

hospitalizing injuries 16

other serious injuries

health monitoring

remarks 6 people of external companies (involved in planned maintenance works in nearby ... 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 ECU

material losses

response, clean up, restoration

remarks Due to the explosion, the entire vessel (about 4 tonnes) was lifted and hurled a... 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 Yes No No
- media interest No No No
- political interest No No No

remarks In the Original Report there is no evidence of significant effects outside the e... see Appendix

7 Discussion of Consequences

C Response Full Report

country: FA ident key: 1993_019_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

A letter was prepared (not yet... 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 / 1993_019_01 report

Appendix Short Report / description of accident types:

A pressure vessel containing hot gasoil was involved in an explosion with subsequent violent fire. Due to the explosion, the entire vessel (about 4 tonnes) was lifted and hurled about 100 metres away. 6 people of external companies (involved in planned maintenance works in nearby plants) plus 1 of the company were killed and 16 people injured by the accident.

Appendix Short Report / description of immediate sources:

The accident occurred in the hot gasoil auxiliary plant of a petrochemical industry. The component involved was a pressure vessel (accumulator V-16 A), containing hot gasoil, connected with F2 oven nearby to Topping 4 plant. When the accident occurred, Topping 4 was under planned maintenance and Topping 3 was in operation. Planned maintenance works on Topping 4 were carried out with the help of personnel of external companies.

Appendix Short Report / description of suspected causes:

CAUSES:

When the Original Report was prepared, the causes of the explosion and of the following violent fire were not fully identified. No previous anomalies had occurred in the plant.

Appendix Short Report / description of immediate effects:

EFFECTS ON PEOPLE:

6 people of external companies (involved in planned maintenance works in nearby plants) plus 1 of the company were killed and 16 people injured by the accident.

MATERIAL LOSS:

Due to the explosion, the entire vessel (about 4 tonnes) was lifted and hurled about 100 metres away; the overpressure generated and the heat radiation caused by the fire involved the nearby equipment (oven area of Topping 4 plant) but no data are available about the cost of the material damages.

Appendix Short Report / description of emergency measures taken:

INTERNAL TO THE ESTABLISHMENT:

The internal fire brigade was activated and, with the successive intervention of the fire brigades of the cities of Milazzo and Messina, the fire was extinguished in about 1 hour.

Appendix Short Report / description of immediate lessons learned:

MEASURES TO PREVENT ANY RECURRENCE OF SIMILAR ACCIDENTS:

A letter was prepared (not yet dispatched when the Original Report was sent) to control operating conditions of hot oil plants, verify of maintenance procedures for stand-by and operational circuits, verify safety management for maintenance areas near units in operation.

Appendix Full Report A / type of accident:

A pressure vessel containing hot gas-oil was involved in an explosion (code 1307) with subsequent violent fire (code 1202). Due to the explosion, the entire vessel (about 4 tonnes) was lifted and hurled about 100 metres away. From the Original Report it is not fully clear if was a confined vapour cloud explosion or not.

Appendix Full Report A / source of accident - remarks:

The accident occurred in the hot gasoil auxiliary plant of a petrochemical industry (code 2002). The component involved was a pressure vessel (accumulator V-16 A), containing hot gasoil, connected with F2 oven nearby to Topping 4 plant (codes 3201 and 4004). When the accident occurred, Topping 4 was under planned maintenance and Topping 3 was in operation. Planned maintenance works on Topping 4 were carried out with the help of personnel of external companies.

Appendix Full Report B / area concerned - remarks:

Due to the explosion, the entire vessel (about 4 tonnes) was lifted and hurled about 100 metres away. The overpressure generated by the explosion and the heat radiation caused by the fire involved the nearby equipment (oven area of Topping 4 plant). In the Original Report there is no evidence of significant effects outside the establishment.

Appendix Full Report B / people:

6 people of external companies (involved in planned maintenance works in nearby plants) plus 1 of the company were killed and 16 people injured by the accident.

Appendix Full Report B / ecological harm:

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

Appendix Full Report B / material loss:

Due to the explosion, the entire vessel (about 4 tonnes) was lifted and hurled about 100 metres away; the overpressure generated and the heat radiation caused by the fire involved the nearby equipment (oven area of Topping 4 plant) but no data are available about the cost of the material damages.

Appendix Full Report B / disruption of community life:

In the Original Report there is no evidence of significant effects outside the establishment.

Appendix Full Report C / lesson learned - prevent:

A letter was prepared (not yet dispatched when the Original Report was sent) to control operating conditions of hot oil plants, verify of maintenance procedures for stand-by and operational circuits, verify safety management for maintenance areas near units in operation.