

Brand på en kemikaliefabrik i organisk kemisk industri.

901206 MARS 1990_05

Olyckan inträffade på en anläggning för produktion av vinylestrar. En oväntad nedbrytning av mellanprodukten acetylen inträffade varvid en tryckökning uppstod. Den resulterande tryckökningen var inte tillräckligt stor för att utlösa nödstoppslarmet. Gaserna spred sig till lågtryckssektionen där en ventil slets loss och en jetflamma blossade upp. Orsaken till den oväntade nedbrytningsreaktionen är okänd.

Inblandade ämnen och mängder

	CAS Nr.	Mängd
acetylen	74-86-2	9 kg

Skador:

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

Erfarenheter redovisade (Ja/Nej): Nej

Report Profile

Identification of Report:

country: FA ident key: 1990_005_01

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

Date of Major Occurrence: Time of Major Occurrence

start: 1990-12-06 start:

finish: finish:

Establishment:

name:

address:

industry: 2001 general chemicals manufacture

Organic Chemical (Vinyl Esters Production with Acetylene as Intermediate Product)

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_005_01

Accident Types:

release: No **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:

- Acetylene (C.A.S. CODE: 74-86-2, E.E.C. CODE: 601-015-00-0): amount involved = 9 kg (about 8 Nm³).

Immediate Sources of Accident:

storage: No **transfer:** No

process: Yes **other:** No

description:

The accident occurred during normal operation in the compressor hall of a vinyl esthers production plant in an organic chemical industry. The installation was designed in such a way that the emergency shut-down will be automatically activat... 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: No

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

other: No

ecological harm: No

national heritage loss: No

description:

MATERIAL LOSS:

The compressor hall was damaged by the fire but no data are available about the cost of the damages.

Emergency Measures taken:

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

external services: No **restoration:** No

sheltering: No **other:** No

evacuation: No

description:

INTERNAL TO THE ESTABLISHMENT:

The fire was extinguished but from the Original Report it is not fully clear if it was extinguished by plant or local fire brigade.

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_005_01

1 Type of Accident

remarks: An unexpected acetylene decomposition happened (code 1306) but did not cause the necessary pressure rise to trigger the emergency shut-down which was rebounded in the low pressure section. In that section the pressure rise caused the rip-of... see Appendix Full Report A / type of accident

2 Dangerous Substances

remarks: The total establishment and the potential directly involved inventories of acetylene refer to the amount released during the accident.

3 Source of Accident

illustration: - not applicable -

remarks: The accident occurred during normal operation in the compressor hall (code 4008) of a vinyl esthers production plant (code 3102) in an organic chemical industry (code 2001). The component involved in the jet-fire was a valve in the low pres... 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 accident were still under investigation (the production had been stopped until their fully identification) [code 5501].

6 Discussion about the Occurrence

- not applicable -

Type of Accident country: FA ident key: 1990_005_01

event:

major occurrence 1203 fire: jet flame (burning jet of fluid from orifice)

initiating event 1306 explosion: explosive decomposition (of unstable material)

associated event - not applicable -

Dangerous substances

country: FA ident key: 1990_005_01

a) total establishment inventory

CAS number: 74-86-2 **identity:** Acetylene

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): 0,009

use of substance as: ON-SITE INTERMEDIATE

b) substance belongs to relevant inventory directly involved: Yes

actual quantity: 0,009 **potential quantity:** 0,009

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_005_01

situation

industry

initiating event 2001 general chemicals manufacture

associated event - not applicable -

activity/unit

major occurrence 3102 process: chemical continuous reaction

initiating event 3102 process: chemical continuous reaction

associated event - not applicable -

component

major occurrence 4010 valves/controls/monitoring devices/drain cocks

initiating event 4008 power source (engine, compressor, etc.)

associated event - not applicable -

B Consequences Full Report

country: FA **ident key:** 1990_005_01

1 Area concerned

affected

extent of effects installation: Yes

establishment: No

off-site; local: No

off-site; regional: No

off-site; transboundary: No

illustration of effects - not applicable -

remarks In the Original Report there is no evidence of significant effects outside the c... 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 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 The compressor hall was damaged by the fire but no data are available about the ... 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 c... see Appendix

7 Discussion of Consequences

C Response Full Report

country: FA ident key: 1990_005_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 / 1990_005_01 report

Appendix Short Report / description of accident types:

ACCIDENT CASE HISTORY DESCRIPTION:

An unexpected acetylene decomposition happened but did not cause the necessary pressure rise to trigger the emergency shut-down which was rebounded in the low pressure section. In that section the pressure rise caused the rip-off of a valve that was followed by a jet-fire.

Appendix Short Report / description of immediate sources:

The accident occurred during normal operation in the compressor hall of a vinyl esthers production plant in an organic chemical industry. The installation was designed in such a way that the emergency shut-down will be automatically activate when the set maximum pressure is reached due to acetylene decomposition.

Appendix Short Report / description of suspected causes:

CAUSES:

When the Original Report was prepared the causes of the accident were still under investigation (the production had been stopped until their fully identification).

Appendix Short Report / description of immediate lessons learned:

MEASURES TO PREVENT ANY RECURRENCE OF SIMILAR ACCIDENTS:

After the accident it was established to improve the control and measurement technique so the emergency shut-down will operate also in similar situations.

Appendix Full Report A / type of accident:

An unexpected acetylene decomposition happened (code 1306) but did not cause the necessary pressure rise to trigger the emergency shut-down which was rebounded in the low pressure section. In that section the pressure rise caused the rip-off of a valve that was followed by a jet-fire (code 1203).

Appendix Full Report A / source of accident - remarks:

The accident occurred during normal operation in the compressor hall (code 4008) of a vinyl esthers production plant (code 3102) in an organic chemical industry (code 2001). The component involved in the jet-fire was a valve in the low pressure section (code 4010). The installation was designed in such a way that the emergency shut-down will be automatically activate when the set maximum pressure is reached due to acetylene decomposition.

Appendix Full Report B / area concerned - remarks:

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

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 compressor hall was damaged by the fire but no data are available about the cost of the damages.

Appendix Full Report B / disruption of community life:

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

Appendix Full Report C / lesson learned - prevent:

After the accident it was established to improve the control and measurement technique so the emergency shut-down will operate also in similar situations.