

Utsläpp av giftig gas från en kemikaliefabrik.

910322 MARS 1991_02

Olyckan inträffade under rutinmässiga betingelser på en anläggning för produktion av kopparftalcyanin. En operatör tillsatte ett reagens till en satsvis reaktor i snabbare takt än förskrivet, varvid väteklorid bildades under våldsamma former. Anläggningen sveptes in i ett moln av giftiga gaser. Företagets interna brandkår skingrade ångorna genom att använda sig av vattengardiner.

Inblandade ämnen och mängder

	CAS Nr.	Mängd
svaveltrioxid	7446-11-9	några kg
väteklorid	7647-01-0	några kg
klorsulfonsyra	7790-94-5	okänt
kopparftalcyanin		okänt

Skador:

Människor: Inga.
Materiella: En rörledning skadades.
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: 1991_002_01

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

Date of Major Occurrence: Time of Major Occurrence

start: 1991-03-22 start:

finish: finish:

Establishment:

name:

address:

industry: 2001 general chemicals manufacture

General Chemical (Copper or Nickel Phthalocyanine Production 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:** 1991_002_01**Accident Types:****release:** Yes **explosion:** No**water contamination:** No **other:** No**fire:** No**description:**

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

Substance(s) Directly Involved:**toxic:** Yes **explosive:** No**ecotoxic:** No **other:** No**flammable:** No**description:**

- Sulphur Trioxide (C.A.S. CODE: 7446-11-9); amount involved = some kilograms.... see Appendix Short Report / description of substances involved

Immediate Sources of Accident:**storage:** No **transfer:** No**process:** Yes **other:** No**description:**

The accident occurred during normal operation in copper or nickel phthalocyanine production plant of a general chemical industry. The component involved was the batch reactor during the addition of copper phthalocyanine to chlorosulfonic ac... see Appendix Short Report / description of immediate sources

Suspected Causes:**plant or equipment:** No **environmental:** No**human:** Yes **other:** No**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:

A venting pipeline was damaged by the release of acid gases. The cost of the damage has been estimated in about 10,000 Deutch Marcs.

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 mist of acids was removed by the plant fire brigade by means of water spraying.

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:** 1991_002_01

1 Type of Accident

remarks: Despite of the operating instructions, an operator added copper phthalocyanine so fast to chlorosulfonic acid causing a violent formation of hydrogen chloride. The plant was covered by a cloud of toxic gases (code 1101).

2 Dangerous Substances

remarks: No data are available about the exact amounts of sulfur trioxide and hydrogen chloride released into the environment (in the Original Report there is just an indication of "some kilograms acid gases"). Also, no data are available about the ... see Appendix Full Report A / dangerous substances

3 Source of Accident

illustration: - not applicable -

remarks: The accident occurred during normal operation in copper or nickel phthalocyanine production plant of a general chemical industry (code 2001).
The component involved was the batch reactor (codes 3101 and 4001) during the addition of copper p... 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 5401 person: operator error

- not applicable -

- not applicable -

- not applicable -

- not applicable -

remarks: An operator, despite of the operating instructions (code 5401), added copper phthalocyanine so fast to chlorosulfonic acid causing a fast temperature increase in the reaction mixture and foaming and a violent formation of hydrogen chloride.

6 Discussion about the Occurrence

- not applicable -

Type of Accident country: FA ident key: 1991_002_01

event:

major occurrence 1101 release: gas/vapour/mist/etc release to air

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

associated event - not applicable -

Dangerous substances

country: FA ident key: 1991_002_01

a) total establishment inventory

CAS number: 7446-11-9 **identity:** Sulfur Trioxide

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: 7647-01-0 identity: Hydrogen Chloride

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: identity: Copper Phthalocyanine

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: STARTING MATERIAL

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: 7790-94-5 identity: Chlorosulfonic Acid

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: STARTING MATERIAL

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: 1991_002_01

situation

industry

initiating event 2001 general chemicals manufacture

associated event - not applicable -

activity/unit

major occurrence 3101 process: chemical batch reaction

initiating event 3101 process: chemical batch reaction

associated event - not applicable -

component

major occurrence 4001 reaction vessel; non-pressurised

initiating event 4001 reaction vessel; non-pressurised

associated event - not applicable -

B Consequences Full Report

country: FA ident key: 1991_002_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 p... 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 - not applicable -

5 Material Loss

establishment losses off site losses

costs (direct costs to operator) (social costs)

in ECU DM ECU DM

material losses 10000

response, clean up, restoration

remarks A venting pipeline was damaged by the release of acid gases. The cost of the dam... 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 p... see Appendix

7 Discussion of Consequences

C Response Full Report

country: FA ident key: 1991_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 / 1991_002_01 report

Appendix Short Report / description of accident types:

ACCIDENT CASE HISTORY DESCRIPTION:

Despite of the operating instructions, an operator added copper phthalocyanine so fast to chlorosulfonic acid causing a violent formation of hydrogen chloride. The plant was covered by a cloud of toxic gases. The mist of acids was removed by the plant fire brigade by means of water spraying.

Appendix Short Report / description of substances involved:

- Sulphur Trioxide (C.A.S. CODE: 7446-11-9): amount involved = some kilograms.

- Hydrogen Chloride (C.A.S. CODE: 7647-01-0, E.E.C. CODE: 017-002-00-2): amount involved = some kilograms.

- Chlorosulfonic Acid (C.A.S. CODE: 7790-94-5): amount involved = not known.

- Copper Phthalocyanine: amount involved = not known.

Appendix Short Report / description of immediate sources:

The accident occurred during normal operation in copper or nickel phthalocyanine production plant of a general chemical industry. The component involved was the batch reactor during the addition of copper phthalocyanine to chlorosulfonic acid.

Appendix Short Report / description of suspected causes:

CAUSES:

An operator, despite of the operating instructions, added copper phthalocyanine so fast to chlorosulfonic acid causing a fast temperature increase in the reaction mixture and foaming and a violent formation of hydrogen chloride.

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- change of the temperature control loop;
- 2- the installed foam sensor to be connected in such a way that the reaction can be interrupted when the foam is rising.

Appendix Full Report A / dangerous substances:

No data are available about the exact amounts of sulfur trioxide and hydrogen chloride released into the environment (in the Original Report there is just an indication of "some kilograms acid gases"). Also, no data are available about the amount of chlorosulfonic acid and of copper phthalocyanine involved in the accident.

Appendix Full Report A / source of accident - remarks:

The accident occurred during normal operation in copper or nickel phthalocyanine production plant of a general chemical industry (code 2001). The component involved was the batch reactor (codes 3101 and 4001) during the addition of copper phthalocyanine to chlorosulfonic acid. From the Original Report it is not fully clear if the reactor was pressurized or not.

Appendix Full Report B / area concerned - remarks:

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

Appendix Full Report B / ecological harm:

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

Appendix Full Report B / material loss:

A venting pipeline was damaged by the release of acid gases. The cost of the damage has been estimated in about 10,000 Deutch Marcs.

Appendix Full Report B / disruption of community life:

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

Appendix Full Report C / lesson learned - prevent:

After the accident the following measures were established:

- 1- change of the temperature control loop;
- 2- the installed foam sensor to be connected in such a way that the reaction can be interrupted when the foam is rising.