

Klorutsläpp i en kloralkalifabrik.

801128 MARS 1800_41

Under rutinmässig drift på en kloralkalifabrik läckte klorgas från en förångare ut i varmvattenssystemet. Läckan hade uppstått i en svetsfog. Larmet gick, processen stoppades och systemet isolerades. Förångaren tömdes. Allmänheten varnades.

Inblandade ämnen och mängder

	CAS Nr.	Mängd
klor	7782-50-5	50 kg

Skador:

Människor: Inga.
Materiella: Inga, bortsett från den utsläppta gasen.
Miljö/ekologi: Inga effekter rapporterade.
Infrastruktur: Allmänheten varnades.

Erfarenheter redovisade (Ja/Nej): Nej

Report Profile

Identification of Report:

country: FA ident key: 1800_041_01

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

Date of Major Occurrence: Time of Major Occurrence

start: 1980-11-28 start:

finish: finish:

Establishment:

name:

address:

industry: 2001 general chemicals manufacture

Chlorine-Alkali Process 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: 1800_041_01

Accident Types:

release: Yes explosion: No

water contamination: No other: No

fire: No

description:

SYSTEM ORIGINATING AND OPERATING CONDITIONS:... see Appendix Short Report / description of accident types

Substance(s) Directly Involved:

toxic: Yes explosive: No

ecotoxic: No other: No

flammable: No

description:

- Chlorine (C.A.S. CODE: 7782-50-5, E.E.C. CODE: 017-001-00-7); amount involved = about 50 kg.

Immediate Sources of Accident:

storage: No transfer: No

process: Yes other: No

description:

The accident involved a chlorine evaporator in the electrolytic chlorine-alkali process plant during normal operation. The component involved was a weld between a pipe and a perforated metal sheet of the chlorine evaporator into the hot wat... see Appendix Short Report / description of immediate sources

Suspected Causes:

plant or equipment: Yes environmental: No

human: No other: No

description:

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

Immediate Effects:

material loss: No

human deaths: No

human injuries: No community disruption: Yes

other: No

ecological harm: No

national heritage loss: No

description:

In the Original Report there is no evidence of significant effects caused by the accident.... see Appendix

Short Report / description of immediate effects

Emergency Measures taken:

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

external services: No **restoration:** No

sheltering: Yes **other:** No

evacuation: No

description:

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

Immediate Lessons Learned:

prevention: No **other:** No

mitigation: No

description:

- not applicable -

A Occurrence Full Report

country: FA **ident key:** 1800_041_01

1 Type of Accident

remarks: Chlorine leaked through a corroded weld between a pipe and a perforated metal sheet of the chlorine evaporator into the hot water system (code 1101).

2 Dangerous Substances

remarks: The total establishment and the potential directly involved inventories of chlorine refer to the amount released during the accident. From the Original Report it is not fully clear if chlorine is a finished product or an on-site intermediat... see Appendix Full Report A / dangerous substances

3 Source of Accident

illustration: - not applicable -

remarks: The accident involved a chlorine evaporator (code 3104) in the electrolytic chlorine-alkali process plant (code 2001) during normal operation. The component involved was a weld between a pipe (code 4011) and a perforated metal sheet of the ... 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 5102 operation: component/machinery failure/malfunction

5104 operation: corrosion/fatigue

- not applicable -

- not applicable -

- not applicable -

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

5314 organization: testing/inspecting/recording (none, inadequate,

inappropriate)

- not applicable -

- not applicable -

- not applicable -

remarks: The leakage in the welding (code 5102) was caused by an internal corrosion (code 5104) not detected because of insufficient maintenance/inspection procedures (code 5303). Besides, the maintenance/inspection procedures were not correctly fol... see Appendix Full Report A / causes of major occurrence

6 Discussion about the Occurrence

- not applicable -

Type of Accident country: FA ident key: 1800_041_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: 1800_041_01

a) total establishment inventory

CAS number: 7782-50-5 **identity:** Chlorine

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): 0,05

use of substance as: STARTING MATERIAL

b) substance belongs to relevant inventory directly involved: Yes

actual quantity: 0,05 potential quantity: 0,05

c) substance belongs to relevant inventory indirectly involved: No

actual quantity: -1 indir_pot_quant: -1

Source of Accident - Situation country: FA ident key: 1800_041_01

situation

industry

initiating event 2001 general chemicals manufacture

associated event - not applicable -

activity/unit

major occurrence 3104 process: physical operations (mixing, melting crystallizing, etc.)

initiating event 3104 process: physical operations (mixing, melting crystallizing, etc.)

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: 1800_041_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 Even if the population was alerted, in the Original Report there is no evidence ... 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 toxic release.

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 No material losses except the cost of the escaped chlorine.... 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 The population was alerted.

7 Discussion of Consequences

C Response Full Report

country: FA ident key: 1800_041_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

- not applicable -

measures to mitigate consequences:

- not applicable -

useful references:

- not applicable -

5 Discussion about Response

- not applicable -

Appendices for the FA / 1800_041_01 report

Appendix Short Report / description of accident types:

SYSTEM ORIGINATING AND OPERATING CONDITIONS:

Normal operation.

ACCIDENT CASE HISTORY DESCRIPTION:

Chlorine leaked through a corroded weld between a pipe and a perforated metal sheet of the chlorine evaporator into the hot water system. The alarm was sounded. The plant was shut-down and the system was isolated. The evaporator was emptied through the chlorine destroyer system.

Appendix Short Report / description of immediate sources:

The accident involved a chlorine evaporator in the electrolytic chlorine-alkali process plant during normal operation. The component involved was a weld between a pipe and a perforated metal sheet of the chlorine evaporator into the hot water system.

Appendix Short Report / description of suspected causes:

INITIATING EVENT AND CONSEQUENCES:

Leakage in a welding between a pipe and a perforated metal sheet.

CAUSES:

The leakage in the welding was caused by an internal corrosion not detected because of insufficient maintenance/inspection procedures. Besides, the maintenance/inspection procedures were not correctly followed.

Appendix Short Report / description of immediate effects:

In the Original Report there is no evidence of significant effects caused by the accident.

COMMUNITY DISRUPTION:

The population was alerted.

Appendix Short Report / description of emergency measures taken:

INTERNAL TO THE ESTABLISHMENT:

The alarm was sounded. The plant was shut-down and the system was isolated. The evaporator was emptied through the chlorine destroyer system.

EXTERNAL TO THE ESTABLISHMENT:

The population was alerted.

Appendix Full Report A / dangerous substances:

The total establishment and the potential directly involved inventories of chlorine refer to the amount released during the accident. From the Original Report it is not fully clear if chlorine is a finished product or an on-site intermediate.

Appendix Full Report A / source of accident - remarks:

The accident involved a chlorine evaporator (code 3104) in the electrolytic chlorine-alkali process plant (code 2001) during normal operation. The component involved was a weld between a pipe (code 4011) and a perforated metal sheet of the chlorine evaporator into the hot water system.

Appendix Full Report A / causes of major occurrence:

The leakage in the welding (code 5102) was caused by an internal corrosion (code 5104) not detected because of insufficient maintenance/inspection procedures (code 5303). Besides, the maintenance/inspection procedures were not correctly followed (code 5314).

Appendix Full Report B / area concerned - remarks:

Even if the population was alerted, in the Original Report there is no evidence of significant effects outside the installation.

Appendix Full Report B / ecological harm:

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

Appendix Full Report B / material loss:

No material losses except the cost of the escaped chlorine.