

Klorutsläpp på en fabrik för produktion av klormetan.

880906 MARS 1988_21

Under uppstart av en klormetanfabrik uppstod en läcka till följd av ett operatörsmisslag. Flytande klor omdirigerades felaktigt till en avgasningsanläggning där en ventil gick sönder eftersom den inte utformats för att hantera flytande klor. Katastrofmanskapet stoppade flödet av flytande klor och sökte begränsa klorspridningen med hjälp av vattengardiner. De lokala myndigheterna underrättades och trafiken i närheten av fabriken spärrades av i 40 minuter.

Inblandade ämnen och mängder

	CAS Nr.	Mängd
klor	7782-50-5	okänt

Skador:

Människor: Fem människor blev klorförgiftade
Materiella: Inga.
Miljö/ekologi: Inga effekter rapporterade.
Infrastruktur: Trafiken i närheten spärrades av i 40 minuter.

Erfarenheter redovisade (Ja/Nej): Ja

Kortfattat anges förebyggande åtgärder.

Report Profile

Identification of Report:

country: FA ident key: 1988_021_01

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

Date of Major Occurrence: Time of Major Occurrence

start: 1988-09-06 start:

finish: finish:

Establishment:

name:

address:

industry: - not applicable -

Organic Chemical (Chloromethane 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: 1988_021_01

Accident Types:

release: Yes explosion: No

water contamination: No other: No

fire: No

description:

A leakage of chlorine occurred during the start-up of chloromethane production plant due to wrong diversion of chlorine to the main manifold of the degassing system which failed. The plant emergency crew intervened to stop the flow of chlor... 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 = not known.

Immediate Sources of Accident:

storage: No transfer: No

process: Yes other: No

description:

The accident occurred during the start-up of a chloromethane production plant in an organic chemical industry.

The component involved was one of the two valves in the main manifold of the degassing system.

Suspected Causes:

plant or equipment: Yes environmental: No

human: Yes other: No

description:

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

Immediate Effects:

material loss: No

human deaths: No

human injuries: Yes **community disruption:** Yes

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:** 1988_021_01

1 Type of Accident

remarks: A leakage of chlorine (code 1101) occurred during the start-up of chloromethane production plant due to wrong diversion of chlorine to the main manifold of the degassing system which failed. The plant emergency crew intervened to stop the f... see Appendix Full Report A / type of accident

2 Dangerous Substances

remarks: No data are available about the amount of chlorine released during the accident.

3 Source of Accident

illustration: - not applicable -

remarks: - not applicable -

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

- not applicable -

- not applicable -

- not applicable -

- not applicable -

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

5304 organization: training/instruction (none, inadequate, inappropriate)

5308 organization: design of plant/equipment/system (inadequate, inappropriate)

5401 person: operator error

- not applicable -

remarks: The accident occurred during the plant start-up and was caused by the wrong diversion of chlorine to the main degassing manifold (code 5401, 5303 and 5304). As one of the two valves installed on the manifold broke (code 5102), liquid chlori... see Appendix Full

Report A / causes of major occurrence

6 Discussion about the Occurrence

- not applicable -

Type of Accident country: FA ident key: 1988_021_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: 1988_021_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): -1

use of substance as: STARTING MATERIAL

b) substance belongs to relevant inventory directly involved: Yes

actual quantity: -1 potential quantity: -1

e) substance belongs to relevant inventory indirectly involved: No

actual quantity: -1 indir_pot_quant: -1

B Consequences Full Report

country: FA ident key: 1988_021_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 In the Original Report there is no evidence of significant effects outside the e... 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 5

other serious injuries

health monitoring

remarks Inside the establishment 5 people were intoxicated by inhalation of chlorine.... 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 No data are available about the material damages caused by the accident.... 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 40 minutes

- **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 traffic in a secondary road was interrupted for about 40 minutes.... see Appendix Full Report

7 Discussion of Consequences

C Response Full Report

country: FA ident key: 1988_021_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 follow... 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 / 1988_021_01 report

Appendix Short Report / description of accident types:

A leakage of chlorine occurred during the start-up of chloromethane production plant due to wrong diversion of chlorine to the main manifold of the degassing system which failed. The plant emergency crew intervened to stop the flow of chlorine to the chloromethane production plant and to contain the chlorine released by means of water curtains.

Appendix Short Report / description of suspected causes:**CAUSES:**

The accident occurred during the plant start-up and was caused by the wrong diversion of chlorine to the main degassing manifold. As one of the two valves installed on the manifold broke, liquid chlorine was admitted to the degassing header. The header then failed because it was not designed under the hypothesis of the presence of liquid chlorine. The admission of liquid chlorine into the degassing system was made possible by an inadequate plant design related to the isolating system of the liquid chlorine pipes.

Appendix Short Report / description of immediate effects:**EFFECTS ON PEOPLE:**

Inside the establishment 5 people were intoxicated by inhalation of chlorine.

COMMUNITY DISRUPTION:

The traffic in a secondary road was interrupted for about 40 minutes.

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

The plant emergency crew intervened to stop the flow of chlorine to the chloromethane production plant and to contain the chlorine released by means of water curtains.

EXTERNAL TO THE ESTABLISHMENT:

Notification to the Civil Protection System and its alertation. The traffic was interrupted for about 40 minutes in a secondary road.

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 safety valves;
- 2- installation of a new isolating system for the liquid chlorine pipes, physically independent, from the degassing system;
- 3- installation of an intermediate depot with a 1,000kg liquid chlorine capacity having two level detection systems with optical and acoustic alarm sensors.

Appendix Full Report A / type of accident:

A leakage of chlorine (code 1101) occurred during the start-up of chloromethane production plant due to wrong diversion of chlorine to the main manifold of the degassing system which failed. The plant emergency crew intervened to stop the flow of chlorine to the chloromethane production plant and to contain the chlorine released by means of water curtains.

Appendix Full Report A / causes of major occurrence:

The accident occurred during the plant start-up and was caused by the wrong diversion of chlorine to the main degassing manifold (code 5401, 5303 and 5304). As one of the two valves installed on the manifold broke (code 5102), liquid chlorine was admitted to the degassing header then failed because it was not designed under the hypothesis of the presence of liquid chlorine. The admission of liquid chlorine into the degassing system was made possible by an inadequate plant design (code 5308).

Appendix Full Report B / area concerned - remarks:

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

Appendix Full Report B / people:

Inside the establishment 5 people were intoxicated by inhalation of chlorine.

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 data are available about the material damages caused by the accident.

Appendix Full Report B / disruption of community life:

The traffic in a secondary road was interrupted for about 40 minutes.

Appendix Full Report C / lesson learned - prevent:

After the accident, the following measures were established:

- 1- change of the safety valves;
- 2- installation of a new isolating system for the liquid chlorine pipes, physically independent, from the degassing system;
- 3- installation of an intermediate depot with a 1,000kg liquid chlorine capacity having two level detection systems with optical and acoustic alarm sensors.