

Kemikalieutsläpp i fabrik för pesticidproduktion.

871205

MARS 1800_15

En kall natt under igångkörning uppstod en isplugg i produktflödet nedströms en trycksatt värmeväxlare. Värmeväxlaren läckte produkten till kylvattensflödet som mynnade i en fjord. Produktionen avbröts omedelbart då man upptäckte att produktflödet stoppats. Orsaken lokaliserades och värmeväxlaren byttes ut. Kylvattensystemet tömdes och renades. För att förebygga framtida problem installerades ett slutet kylvattensystem.

Inblandade ämnen och mängder

	CAS Nr.	Mängd
MPEM 0,0-dimetyl-S-(karbometoxy metyl) ditiofosforyraester	757-86-8	770 kg

Skador:

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

Erfarenheter redovisade (Ja/Nej): Ja

Installation av ett slutet kylvattensystem.

Report Profile

Identification of Report:

country: FA ident key: 1800_015_01

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

Date of Major Occurrence: Time of Major Occurrence

start: 05/12/1987 start: 09:00:00

finish: finish:

Establishment:

name:

address:

industry: 2004 pesticides, pharmaceuticals, other fine chemicals

Pesticide

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_015_01

Accident Types:

release: No explosion: No

water contamination: Yes other: No

fire: No

description:

The operators stopped the plant as soon as the lack of product delivery to the storage tank was detected....

see Appendix Short Report / description of accident types

Substance(s) Directly Involved:

toxic: Yes explosive: No

ecotoxic: Yes other: No

flammable: No

description:

- MPEM 0,0-dimethyl-S-(carbomethoxy methyl) dithiophosphoric acid ester (C.A.S. CODE: 757-86-8): amount

involved = 770 kg... see Appendix Short Report / description of substances involved

Immediate Sources of Accident:

storage: No transfer: No

process: Yes other: No

description:

The accident occurred in a product heat-exchanger of a pesticide industry. The plant was under start-up

conditions. In this conditions, water could be present in the product. An outdoor temperature below 0°C and no

flow inside the pipe caus... see Appendix Short Report / description of immediate sources

Suspected Causes:

plant or equipment: Yes environmental: Yes

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: No

other: No

ecological harm: No

national heritage loss: No

description:

OTHER:... see Appendix Short Report / description of immediate effects

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:... see Appendix Short Report / description of emergency measures taken

Immediate Lessons Learned:

prevention: Yes **other:** Yes

mitigation: No

description:

INTERNAL TO THE ESTABLISHMENT:... see Appendix Short Report / description of immediate lessons learned

A Occurrence Full Report

country: FA **ident key:** 1800_015_01

1 Type of Accident

remarks: An ice plug in a pipe downstream of a product heat exchanger caused the pipe itself to be blocked. The heat exchanger, being under pressure, leaked the product to the cooling water. As part of the cooling water was discharged into the enviro... see Appendix Full Report A / type of accident

2 Dangerous Substances

remarks: The total establishment and the potential directly involved inventories of MPEM (0,0-dimethyl-S-[carbomethoxy methyl] dithiophosphoric acid ester) refer to the amount involved in the accident.

3 Source of Accident

illustration: - not applicable -

remarks: The accident occurred in a product heat exchanger (codes 3104 and 4009) of a pesticide industry (code 2004). The plant was under start-up conditions. In this conditions, water could be present in the product. An outdoor temperature below 0°... 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: When the accident occurred it was a cold night and the outdoor temperature was below 0°C.

This caused the freezing of the water contained in the product within the pipe downstream the heat exchanger.

5 Causes of Major Occurrence

main causes

technical / physical 5102 operation: component/machinery failure/malfunction

5201 environment: natural event (weather, temperature, earthquake, etc.)

- not applicable -

- not applicable -

- not applicable -

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

- not applicable -

- not applicable -

- not applicable -

- not applicable -

remarks: An ice plug (because of an outdoor temperature below 0°C [code 5201] and no flow of product due to start-up conditions) caused the pipe downstream a heat exchanger to be blocked. The heat exchanger, being under pressure, failed (code 5102) a... see Appendix Full Report A / causes of major occurrence

6 Discussion about the Occurrence

- not applicable -

Type of Accident country: FA ident key: 1800_015_01

event:

major occurrence 1103 release: fluid release to water

initiating event 1103 release: fluid release to water

associated event - not applicable -

Dangerous substances

country: FA ident key: 1800_015_01

a) total establishment inventory

CAS number: 757-86-8 **identity:** M P E M

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): 0,77

use of substance as: NORMAL FINISHED PRODUCT

b) substance belongs to relevant inventory directly involved: Yes

actual quantity: 0,77 **potential quantity:** 0,77

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_015_01

situation

industry

initiating event 2004 pesticides, pharmaceuticals, other fine chemicals

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 4009 heat exchanger (boiler, refrigerator, heating coils, etc.)

initiating event 4009 heat exchanger (boiler, refrigerator, heating coils, etc.)

associated event - not applicable -

B Consequences Full Report

country: FA **ident key:** 1800_015_01

1 Area concerned

affected

extent of effects installation: No

establishment: No

off-site; local: not applicable

off-site; regional: not applicable

off-site; transboundary: not applicable

illustration of effects - not applicable -

remarks In the Original Report there are no data about the possible effects outside the ... 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 (no population within 4 Km from the p... see Appendix

Full Report B / people

3 Ecological Harm

pollution/contamination/damage of:

- **residential area (covered by toxic cloud)** not applicable
- **common wild flora/fauna (death or elimination)** not applicable
- **rare or protected flora/fauna (death or elimination)** not applicable
- **water catchment areas and supplies for consumption or recreation** not applicable
- **land (with known potential for long term ecological harm or not applicable**

preventing human access or activities)

- **marine or fresh water habitat** not applicable
- **areas of high conservation value or given special protection** not applicable

remarks In the Original Report there are no data about the possible ecological harms cau... 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 occurred except the product released during 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

- **railways** No

- **waterways** No

- **air transport** No

significant public concern none local level national level

- **off site populations** No No No

- **media interest** No No No

- **political interest** No No No

remarks In the Original Report there are no data about the possible effects outside the ... see Appendix

7 Discussion of Consequences

C Response Full Report

country: FA **ident key:** 1800_015_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

As the removal of this product... 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 / 1800_015_01 report

Appendix Short Report / description of accident types:

The operators stopped the plant as soon as the lack of product delivery to the storage tank was detected.

Cold night.

An ice plug in a pipe downstream of a product heat-exchanger caused the pipe itself to be blocked. The heat exchanger, being under pressure, leaked the product to the cooling water. As part of the cooling water was discharged into the environment (fiord), part of the product was released with the water.

Appendix Short Report / description of substances involved:

- MPEM 0,0-dimethyl-S-(carbomethoxy methyl) dithiophosphoric acid ester (C.A.S. CODE: 757-86-8): amount involved = 770 kg.

Appendix Short Report / description of immediate sources:

The accident occurred in a product heat-exchanger of a pesticide industry. The plant was under start-up conditions. In this conditions, water could be present in the product. An outdoor temperature below 0°C and no flow inside the pipe caused the water contained in product to freeze.

Appendix Short Report / description of suspected causes:

INITIATING EVENT AND CONSEQUENCES:

During start-up, product was delivered to a storage tank but an ice plug in a pipe downstream of a heat exchanger caused the pipe itself to be blocked. The heat exchanger, being under pressure, leaked the product to cooling water.

CAUSES:

An ice plug (because of an outdoor temperature below 0°C and no flow of product) caused a pipe downstream a product heat exchanger to be blocked. The heat exchanger, being under pressure, failed and leaked the product to the cooling water. As the cooling water was not a closed system (due to an inadequate system design), part of the product was released with the water into environment.

Appendix Short Report / description of immediate effects:

OTHER:

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

MAP OF THE ACCIDENT AREA AND MAX. DENSITY OF POPULATION:

The map of the area of production site (Ronland) is attached to the Original Report. No population within 4 km from the production site.

Appendix Short Report / description of emergency measures taken:

INTERNAL TO THE ESTABLISHMENT:

The operators stopped the plant as soon as the lack of product delivery to the storage tank was detected. The production was suspended until the leak was identified. The heat exchanger was removed and the cooling water return system was cleared up.

Appendix Short Report / description of immediate lessons learned:

INTERNAL TO THE ESTABLISHMENT:

As the removal of this product heat exchanger had been planned during the next scheduled shut-down, it was permanently removed after the accident.

MEASURES TO PREVENT ANY RECURRENCE OF SIMILAR ACCIDENTS:

After this accident, the installation of a closed-loop cooling water system should be recommended for plants where accidental leakage of products into the cooling water may be harmful to the environment.

Appendix Full Report A / type of accident:

An ice plug in a pipe downstream of a product heat exchanger caused the pipe itself to be blocked. The heat exchanger, being under pressure, leaked the product to the cooling water. As part of the cooling water was discharged into the environment (fiord), part of the product was released with the water (code 1103).

Appendix Full Report A / source of accident - remarks:

The accident occurred in a product heat exchanger (codes 3104 and 4009) of a pesticide industry (code 2004). The plant was under start-up conditions. In this conditions, water could be present in the product. An outdoor temperature below 0°C and no flow inside the pipe caused the water contained in product to freeze. The location of the plant is shown on a map attached to the Original Report. No population within 4 Km from the production site.

Appendix Full Report A / causes of major occurrence:

An ice plug (because of an outdoor temperature below 0°C [code 5201] and no flow of product due to start-up conditions) caused the pipe downstream a heat exchanger to be blocked. The heat exchanger, being under pressure, failed (code 5102) and leaked the product to the cooling water. As the cooling water was not a closed system (due to an inadequate system design [code 5308]), part of the product was released with the water into the environment.

Appendix Full Report B / area concerned - remarks:

In the Original Report there are no data about the possible effects outside the establishment of the release.

Appendix Full Report B / people:

No people were injured during the accident (no population within 4 Km from the production site).

Appendix Full Report B / ecological harm:

In the Original Report there are no data about the possible ecological harms caused by the release.

Appendix Full Report B / material loss:

No material losses occurred except the product released during the accident.

Appendix Full Report B / disruption of community life:

In the Original Report there are no data about the possible effects outside the establishment of the release.

Appendix Full Report C / lesson learned - prevent:

As the removal of this product heat exchanger had been planned during the next scheduled shut-down, it was permanently removed after the accident. The cooling water return system was cleared up.

After this accident, the installation of a closed-loop cooling water system should be recommended for plants where accidental leakage of products into the cooling water may be harmful to the environment.