

# Ammoniakutsläpp från en fabrik för produktion av gödningsämnen.

941216

Mycket kortfattad

Vid lossning av ammoniak från en järnvägsvagn blockerades en ventil av en bult ( eller en skruv). De automatiska nödstoppmekanismerna fungerade inte. Tanken innehöll 47 ton ammoniak, varav 27 ton släpptes ut i atmosfären under 37 minuter. Ammoniak kunde påvisas upp till 8 km bort från fabriken.

## Inblandade ämnen och mängder

	CAS Nr.	Mängd
nitratgödningsämnen		Okänt
salpetersyra	7697-37-2	Okänt
ammoniak	7664-41-7	27 ton

## Skador:

Människor:	Inga personer skadades. En 11 månaders flicka med astma hölls under sjukhusobservation i några timmar.
Materiella:	Inga skador rapporterade.
Miljö/ekologi:	Inga effekter rapporterade.
Infrastruktur:	All trafik innanför en radie på drygt 2 km spärrades av. Allmänheten uppmanades söka skydd. Ett snabbköp och en skola evakuerades.

## Erfarenheter redovisade (Ja/Nej): Ja

Mycket kortfattat anges förebyggande åtgärder.

## Report Profile

### Identification of Report:

country: FA ident key: 1800\_287\_01

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

### Date of Major Occurrence: Time of Major Occurrence

start: 16/12/1994 start: 17:20:00

finish: 16/12/1994 finish: 17:57:00

### Establishment:

name:

address:

industry: 2015 agriculture

nitric acid (1200 tonnes per day), nitrate fertilisers

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\_287\_01

**Accident Types:**

release: Yes explosion: No

water contamination: No other: No

fire: No

**description:**

Sheltering of the population of 2 communities

**Substance(s) Directly Involved:**

toxic: Yes explosive: No

ecotoxic: No other: No

flammable: No

**description:**

anhydrous ammonia

**Immediate Sources of Accident:**

storage: No transfer: Yes

process: No other: No

**description:**

Failure of the ammonia transfer device (mechanism, equipment)

**Suspected Causes:**

plant or equipment: No environmental: No

human: No other: Yes

**description:**

presence of foreign body / device (bolt)

**Immediate Effects:**

material loss: No

human deaths: No

human injuries: No community disruption: Yes

**other:** No

**ecological harm:** No

**national heritage loss:** No

**description:**

formation of an ammonia cloud

### **Emergency Measures taken:**

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

**external services:** Yes **restoration:** No

**sheltering:** Yes **other:** No

**evacuation:** Yes

**description:**

sheltering of the population; traffic interdiction in a radius of 2.2 km, evacuation of a school and a supermarket.

### **Immediate Lessons Learned:**

**prevention:** Yes **other:** No

**mitigation:** No

**description:**

attention must be drawn towards the adverse effects of automatic control systems (a too high confidence of the operators). over-automated systems.

## **A Occurrence Full Report**

**country:** FA **ident key:** 1800\_287\_01

### **1 Type of Accident**

**remarks:** release of 27 tons of ammonia during 37 minutes

### **2 Dangerous Substances**

**remarks:** - not applicable -

### **3 Source of Accident**

**illustration:** A plant lay out; a simplified technical scheme of the tank and the equipment

directly involved in the accident; two slides indicating a) the causes b)

the consequences of the accident, a detailed functioning scheme of a powered

breakaway co... see Appendix Full Report A / source of accident -

illustration

**remarks:** the release occurred on a valve of the unloading arm of a rail tank

containing 47 tons of (anhydrous) ammonia. This product is employed in the

production of nitric acid and nitrate fertilisers

### **4 Meteorological Conditions**

**precipitation none: fog: rain: hail: snow:**

No No No No No

**wind speed (m/s):** 11

**direction (from):** E/NE

**stability (Pasquill):**

**ambient temperature (°C):**

**remarks:** - not applicable -

## 5 Causes of Major Occurrence

**main causes**

**technical / physical** 5108 operation: blockage

5105 operation: instrument/control/monitoring-device failure

- not applicable -

- not applicable -

- not applicable -

**human / organizational** - not applicable -

- not applicable -

- not applicable -

- not applicable -

- not applicable -

**remarks:** the automatic devices activated by an emergency shut down control did not function correctly. A foreign body (a bolt) blocked (jammed) a valve in an open position

## 6 Discussion about the Occurrence

- not applicable -

**Type of Accident** country: FA ident key: 1800\_287\_01

**event:**

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

**initiating event** - not applicable -

**associated event** - not applicable -

## Dangerous substances

country: FA ident key: 1800\_287\_01

### a) total establishment inventory

**CAS number: identity:** nitrate fertilisers

**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:** normal finished product

**b) substance belongs to relevant inventory directly involved:** No

**actual quantity:** 0 **potential quantity:** 0

**c) substance belongs to relevant inventory indirectly involved:** No

actual quantity: 0 indir\_pot\_quant: 0

**a) total establishment inventory**

CAS number: 7697-37-2 identity: nitric acid

name from Seveso I Directive: - not applicable -

name from Seveso II Directive: - not applicable -

category from Seveso II: oxidising

other hazards (1): - not applicable -

other hazards (2): - not applicable -

maximum quantity (tonnes): -1

use of substance as: normal finished product

**b) substance belongs to relevant inventory directly involved: No**

actual quantity: 0 potential quantity: 0

**c) substance belongs to relevant inventory indirectly involved: No**

actual quantity: 0 indir\_pot\_quant: 0

**a) total establishment inventory**

CAS number: 7664-41-7 identity: anhydrous ammonia

name from Seveso I Directive: - not applicable -

name from Seveso II Directive: - not applicable -

category from Seveso II: toxic

other hazards (1): flammable liquids

other hazards (2): - not applicable -

maximum quantity (tonnes): 1780

use of substance as: starting material

**b) substance belongs to relevant inventory directly involved: Yes**

actual quantity: 27 potential quantity: 47

**c) substance belongs to relevant inventory indirectly involved: No**

actual quantity: 0 indir\_pot\_quant: 0

**Source of Accident - Situation** country: FA ident key: 1800\_287\_01

**situation**

**industry**

initiating event - not applicable -

associated event - not applicable -

**activity/unit**

**major occurrence** 3304 transfer: loading/unloading activities (transfer interfaces)

initiating event - not applicable -

associated event - not applicable -

**component**

**major occurrence** 4004 container; pressurised (bullet, sphere, cylinder, etc.)

**initiating event** - not applicable -

**associated event** - not applicable -

## **B Consequences Full Report**

**country:** FA **ident key:** 1800\_287\_01

### **1 Area concerned**

**affected**

**extent of effects installation:** Yes

**establishment:** Yes

**off-site; local:** Yes

**off-site; regional:** No

**off-site; transboundary:** No

**illustration of effects** a map showing the extension of the toxic cloud and indicating the sampling point... see Appendix Full Report B / area concerned - illustration of effects

**remarks** the ammonia was detected at 8 kilometres (8 km) from the release point... see Appendix Full Report B / area concerned - remarks

### **2 People**

**establishment popul. emergency personnel off-site population**

**total at risk** -1 -1 -1

**immediate fatalities** -1 -1 -1

**subsequent fatalities** 0 0 0

**hospitalizing injuries** 0 0 0

**other serious injuries** 0 0 0

**health monitoring** 0 0 0

**remarks** only a small girl of 11 months, suffering from asthma, which had crossed the cl... see Appendix Full Report B / people

### **3 Ecological Harm**

**pollution/contamination/damage of:**

- residential area (covered by toxic cloud) Yes

- common wild flora/fauna (death or elimination) No

- rare or protected flora/fauna (death or elimination) No

- water catchment areas and supplies for consumption or recreation No

- land (with known potential for long term ecological harm or preventing human access or activities) No

- marine or fresh water habitat No

- areas of high conservation value or given special protection No

**remarks** - not applicable -

#### **4 National Heritage Loss**

effects on:

- historical sites None - historic monuments None

- historic buildings None - art treasures None

remarks - not applicable -

#### **5 Material Loss**

establishment losses off site losses

costs (direct costs to operator) (social costs)

in ECU FFR ECU FFR

material losses -1 -1 -1 -1

response, clean up, restoration -1 -1 -1 -1

remarks - not applicable -

#### **6 Disruption of Community Life**

establishment/plant evacuated disabled/unoccupiable destroyed

- nearby residences/hotels No No No

- nearby factories/offices/small shops Yes No No

- schools, hospitals, institutions Yes 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 Yes No

- political interest No No No

remarks - not applicable -

#### **7 Discussion of Consequences**

## **C Response Full Report**

country: FA ident key: 1800\_287\_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

increased vigilance (attention... see Appendix Full Report C / lesson learned - prevent

**measures to mitigate consequences:**

no information is given

**useful references:**

no information is given

**5 Discussion about Response**

- not applicable -

## **Appendices for the FA / 1800\_287\_01 report**

**Appendix Full Report A / source of accident - illustration:**

A plant lay out; a simplified technical scheme of the tank and the equipment directly involved in the accident; two slides indicating a) the causes b) the consequences of the accident, a detailed functioning scheme of a powered breakaway coupler with its check valve; a technical scheme of the anhydrous ammonia (NH<sub>3</sub>) storage facility; two articles analysing in detail the accident, its causes, its consequences and the lessons learned

**Appendix Full Report B / area concerned - illustration of effects:**

a map showing the extension of the toxic cloud and indicating the sampling points is annexed

**Appendix Full Report B / area concerned - remarks:**

the ammonia was detected at 8 kilometres (8 km) from the release point

**Appendix Full Report B / people:**

only a small girl of 11 months, suffering from asthma, which had crossed the cloud with her parents was hospitalised for observation during 2 hours

**Appendix Full Report C / lesson learned - prevent:**

increased vigilance (attention) during maintenance operations in order to avoid to leave foreign elements (bodies), insertion of filters upstream (before) the rail tank valves, verification (control, check) of the automatic safety devices.