

Explosion i en sprängämnesfabrik.

880303 MARS 1800_25

Olyckan inträffade i den byggnad där dynamiten förpackades på en ny maskin som uppvisat vissa kalibreringsproblem. Den direkta orsaken är okänd. När explosionen inträffade fanns det 300 kg dynamit i lokalen. De fem personer som befann sig i byggnaden vid explosionen omkom. Ytterligare åtta personer skadades och fick sändas till sjukhus.

Inblandade ämnen och mängder

	CAS Nr.	Mängd
Dynamit		300 kg

Skador:

Människor: Fem personer omkom, ytterligare åtta skadades.
Materiella: Byggnaden där explosionen inträffade totalförstördes.
Miljö/ekologi: Inga effekter rapporterade.
Infrastruktur: Inga.

Erfarenheter redovisade (Ja/Nej): Nej

Report Profile

Identification of Report:

country: FA ident key: 1800_025_01

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

Date of Major Occurrence: Time of Major Occurrence

start: 03/03/1988 start: 08:45:00

finish: finish:

Establishment:

name:

address:

industry: 2999 other

Explosives Production

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_025_01

Accident Types:

release: No explosion: Yes

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: No explosive: Yes

ecotoxic: No other: No

flammable: No

description:

- Dynamite: amount involved = 300 kg.

Immediate Sources of Accident:

storage: No transfer: No

process: Yes other: No

description:

The accident occurred in a factory (built in 1873) for the production of explosives. The production of explosives was about 200 tonnes per day and were employed 140 people. The different manufacturing operations carried out were: nitration ... see Appendix Short Report / description of immediate sources

Suspected Causes:

plant or equipment: No environmental: No

human: No other: Yes

description:

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

Immediate Effects:

material loss: Yes

human deaths: Yes

human injuries: Yes community disruption: No

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: No **decontamination:** No

external services: No **restoration:** No

sheltering: No **other:** Yes

evacuation: No

description:

INTERNAL TO THE ESTABLISHMENT:

The explosives production was halted.

Immediate Lessons Learned:

prevention: No **other:** No

mitigation: No

description:

A Occurrence Full Report

country: FA **ident key:** 1800_025_01

1 Type of Accident

remarks: An explosion (code 1308) occurred in a building in which the dynamite was wrapped on a new machine that had presented some problems of calibration since its installation in the factory. A charge of about 300 kg of dynamite was stored in the... see Appendix Full Report A / type of accident

2 Dangerous Substances

remarks: The total establishment and the potential directly involved inventories of dynamite refer to the amount involved in the explosion that is the charge stored in the building in which it was wrapped.

3 Source of Accident

illustration: - not applicable -

remarks: The accident occurred in a factory (built in 1873) for the production of explosives (code 2999). The different manufacturing operations were: nitration or production of nitroglycerine by action of sulphonic acid with a glycerine-glicol m... 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 5501 other: not identified

- not applicable -

- not applicable -

- not applicable -

- not applicable -

human / organizational - not applicable -

- not applicable -

- not applicable -

- not applicable -

- not applicable -

remarks: The causes of the explosion had not been fully identified (code 5501) even if it must be

underlined how the accident occurred during the wrapping of dynamite with a new machine

which had presented some problems of calibration since its inst... see Appendix Full

Report A / causes of major occurrence

6 Discussion about the Occurrence

- not applicable -

Dangerous substances

country: FA **ident key:** 1800_025_01

a) total establishment inventory

CAS number: identity: Dynamite

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): 0,3

use of substance as: NORMAL FINISHED PRODUCT

b) substance belongs to relevant inventory directly involved: Yes

actual quantity: 0,3 **potential quantity:** 0,3

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_025_01

situation

industry

initiating event 2999 other

associated event - not applicable -

activity/unit

major occurrence 3401 other: packaging (bagging, cylinder filling, drum filling, etc.)

initiating event 3401 other: packaging (bagging, cylinder filling, drum filling, etc.)

associated event - not applicable -

component

major occurrence 4007 machinery/equipment (pump, filter, column separator, mixer, etc.)

initiating event 4007 machinery/equipment (pump, filter, column separator, mixer, etc.)

associated event - not applicable -

B Consequences Full Report

country: FA **ident key:** 1800_025_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 f... see Appendix

Full Report B / area concerned - remarks

2 People

establishment popul. emergency personnel off-site population

total at risk 140

immediate fatalities 5

subsequent fatalities

hospitalizing injuries 8

other serious injuries

health monitoring

remarks 140 people were working in the factory when the accident occurred: 5 of them (pr... 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 The building where the dynamite was wrapped was destroyed. No data are available... 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 f... see Appendix

7 Discussion of Consequences

C Response Full Report

country: FA **ident key:** 1800_025_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_025_01 report

Appendix Short Report / description of accident types:

ACCIDENT CASE HISTORY DESCRIPTION:

The accident occurred in a building in which the dynamite was wrapped on a new machine that had presented some problems of calibration since its installation in the factory. A charge of about 300 kg of dynamite was stored in the building at the time of the explosion (08:45 h). The causes of the explosion are not yet known. All people present in the building died. Other eight people, working in an adjacent laboratory, were injured.

Appendix Short Report / description of immediate sources:

The accident occurred in a factory (built in 1873) for the production of explosives. The production of explosives was about 200 tonnes per day and were employed 140 people. The different manufacturing operations carried out were: nitration or production of nitroglycerine by action of sulphonic acid with a glycerine-glicol mixture; mixing of nitroglycerine with other materials (ammonium nitrate, nitrocellulose, dinitrotoluene, flours....) or with their mixtures in order to obtain dynamite; wrapping of the dynamite. The explosion occurred in the building where the dynamite was wrapped on a new machine.

Previously, other accidents had occurred in the same factory:

- 30/10/1899: 1 person injured and 4 dead by a dynamite explosion.
- 31/08/1928: 20 people injured and 8 dead by the explosion of many laboratories and of a depot.
- 18/05/1949: 4 people dead by an explosion in the wrapping laboratory.
- 12/03/1985: 3 people dead by a nitroglycerine explosion.
- 05/03/1987: nitroglycerine explosion.

Appendix Short Report / description of suspected causes:

CAUSES:

The causes of the explosion have not been fully identified even if it must be underlined how the accident occurred during the wrapping of dynamite with a new machine which had presented some problems of calibration since its installation.

Appendix Short Report / description of immediate effects:

EFFECTS ON PEOPLE:

140 people were working in the factory when the accident occurred: 5 of them (present in the building) were killed and 8 (working in another laboratory) hospitalized by the explosion.

MATERIAL LOSS:

The building where the dynamite was wrapped was destroyed. No data are available about the cost of the destroyed building.

Appendix Full Report A / type of accident:

An explosion (code 1308) occurred in a building in which the dynamite was wrapped on a new machine that had presented some problems of calibration since its installation in the factory. A charge of about 300 kg of dynamite was stored in the building at the time of the explosion.

Appendix Full Report A / source of accident - remarks:

The accident occurred in a factory (built in 1873) for the production of explosives (code 2999). The different manufacturing operations were: nitration or production of nitroglycerine by action of sulphonic acid with a glycerine-glicol mixture; mixing of nitroglycerine with other materials in order to obtain dynamite; wrapping of the dynamite. The explosion occurred in the building where the dynamite was wrapped on a new machine (codes 3401 and 4007).

Appendix Full Report A / causes of major occurrence:

The causes of the explosion had not been fully identified (code 5501) even if it must be underlined how the accident occurred during the wrapping of dynamite with a new machine which had presented some problems of calibration since its installation (code 5102).

Appendix Full Report B / area concerned - remarks:

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

Appendix Full Report B / people:

140 people were working in the factory when the accident occurred: 5 of them (present in the building) were killed and 8 (working in another laboratory) hospitalized by the explosion.

Appendix Full Report B / ecological harm:

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

Appendix Full Report B / material loss:

The building where the dynamite was wrapped was destroyed. No data are available about the cost of the destroyed building.

Appendix Full Report B / disruption of community life:

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