

Stor brand och kraftig rökutveckling på en kemikaliefabriks lager.

920721 MARS 1992_17

Olyckan inträffade i en lagerbyggnad för förvaring av råmaterial till bl.a. textil- och färgindustrin. Olyckan uppstod till följd av sönderfall av azodi-isobutyronitrile (AZDN) som lagrades i tunnor. Orsaken till sönderfallet är inte känd. AZDN damm som spreds i byggnaden reagerade häftigt med ammonium persulfat varvid reaktionsblandningen antändes och branden startade. Branden spred sig snabbt och satte lagerbyggnaden i brand. De interna nödsystemen aktiverades och räddningstjänsten och polisen tillkallades. 31 brandbilar användes för att kontrollera branden. Arbetet övervakades från en polishelikopter. Släckningsarbetet avslutades efter tre dygn.

Inblandade ämnen och mängder

	CAS Nr.	Mängd
azodi-isobutyronitrile	78-67-1	2 ton
persulfater och andra oxiderande ämnen:		totalt 35 ton
ammonium persulfat	7727-54-0	
natrium persulfat	7775-27-1	

Skador:

Människor:	Totalt 34 personer behandlades för mindre brännskador och ögonirritation. Dessa personer var troligen inte anställda.
Materiella:	Omfattande skador på lager och lagerbyggnad.
Miljö/ekologi:	Inga effekter rapporterade.
Infrastruktur:	Många privatpersoner i närheten av fabriken flydde från sina hem då de såg den tjocka röken. Allmänheten uppmanades att stanna inomhus bakom stängda dörrar och fönster. Polisen upprättade vägspärrar runtomkring fabriken.

Erfarenheter redovisade (Ja/Nej): Nej

Report Profile

Identification of Report:

country: FA ident key: 1992_017_01

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

Date of Major Occurrence: Time of Major Occurrence

start: 1992-07-21 start: 13:30:00

finish: 1992-07-24 finish:

Establishment:

name:

address:

industry: 2001 general chemicals manufacture

Organic Chemical (Chemicals for Printing, Textiles, Weedkiller and Paint Industries)

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: 1992_017_01

Accident Types:

release: Yes explosion: No

water contamination: No other: No

fire: Yes

description:

Due to overheating, azodi-isobutyronitrile (AZDN) was released into a store reserved for oxidising materials.

Due to its incompatibility with the AZDN dust released, Ammonium Persulphate (APS), which was also in the store, they ignited. The... see Appendix Short Report / description of accident types

Substance(s) Directly Involved:

toxic: No explosive: Yes

ecotoxic: No other: No

flammable: Yes

description:

- Azodi-isobutyronitrile [AZDN] (C.A.S. CODE: 78-67-1): amount involved = 2 tons.... see Appendix Short Report

/ description of substances involved

Immediate Sources of Accident:

storage: Yes transfer: No

process: Yes other: No

description:

The accident occurred in a raw materials warehouse of a chemical factory manufacturing organic chemicals for the printing, textile, weedkiller and paint industries. The components involved were the raw materials

containers and the external ... see Appendix Short Report / description of immediate sources

Suspected Causes:

plant or equipment: Yes **environmental:** No

human: No **other:** No

description:

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

Immediate Effects:

material loss: Yes

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: Yes **other:** No

evacuation: Yes

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:** 1992_017_01

1 Type of Accident

remarks: Due to overheating, azodi-isobutyronitrile (AZDN) was released into a store reserved for oxidising materials (code 1104). Due to its incompatibility with Ammonium Persulphate (APS), which was also in the store, they ignited.

Since both AZDN... see Appendix Full Report A / type of accident

2 Dangerous Substances

remarks: The total establishment and the potential directly involved inventories of Azodi-isobutyronitrile (AZDN) refer to the amount stored into the raw materials warehouse. The whole amount of ammonium persulphate (APS), sodium

persulphate and the... see Appendix Full Report A / dangerous substances

3 Source of Accident

illustration: - not applicable -

remarks: The accident occurred in a raw materials warehouse and the nearby drum storage area (code 3201) of a chemical factory (code 2001) manufacturing organic chemicals for the printing, textile, weedkiller and paint industries. The components inv... 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 5107 operation: unexpected reaction/phase-transition

5501 other: not identified

- not applicable -

- not applicable -

- not applicable -

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

5307 organization: process analysis (inadequate, incorrect)

- not applicable -

- not applicable -

- not applicable -

remarks: The accident occurred due to the decomposition of Azodi-butyronitrile (code 5107) which has a self accelerating decomposition temperature (SADT) of about 50°C. The decomposition resulted in a release of AZDN dust into the warehouse. Due to ... see Appendix Full Report A / causes of major occurrence

6 Discussion about the Occurrence

- not applicable -

Type of Accident country: FA ident key: 1992_017_01

event:

major occurrence 1201 fire: conflagration (a general engulfment fire)

initiating event 1104 release: solid release to ground

associated event - not applicable -

Dangerous substances

country: FA ident key: 1992_017_01

a) total establishment inventory

CAS number: 7775-27-1 identity: Sodium Persulphate

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: Yes

actual quantity: -1 potential quantity: -1

c) substance belongs to relevant inventory indirectly involved: No

actual quantity: -1 indir_pot_quant: -1

a) total establishment inventory

CAS number: identity: Other Oxidising Materials

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: Yes

actual quantity: -1 potential quantity: -1

c) substance belongs to relevant inventory indirectly involved: No

actual quantity: -1 indir_pot_quant: -1

a) total establishment inventory

CAS number: 78-67-1 identity: Azodi-isobutyronitrile

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): 2

use of substance as: NORMAL FINISHED PRODUCT

b) substance belongs to relevant inventory directly involved: Yes

actual quantity: 2 potential quantity: 2

c) substance belongs to relevant inventory indirectly involved: No

actual quantity: -1 indir_pot_quant: -1

a) total establishment inventory

CAS number: 7727-54-0 identity: Ammonium Persulphate

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: Yes

actual quantity: -1 potential quantity: -1

c) substance belongs to relevant inventory indirectly involved: No

actual quantity: -1 indir_pot_quant: -1

Source of Accident - Situation country: FA ident key: 1992_017_01

situation

industry

initiating event 2001 general chemicals manufacture

associated event - not applicable -

activity/unit

major occurrence 3201 storage: process-associated (stockholding, etc. on-site of manufacture)

initiating event 3201 storage: process-associated (stockholding, etc. on-site of manufacture)

associated event - not applicable -

component

major occurrence 4003 container; non-pressurised (hopper, tank, drum, bag, etc.)

initiating event 4003 container; non-pressurised (hopper, tank, drum, bag, etc.)

associated event - not applicable -

B Consequences Full Report

country: FA ident key: 1992_017_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 - not applicable -

remarks Many nearby house-holders left their homes to escape the smoke produces by the f... see Appendix

Full Report B / area concerned - remarks

2 People

establishment popul. emergency personnel off-site population

total at risk 300 150

immediate fatalities

subsequent fatalities

hospitalizing injuries 12 34

other serious injuries

health monitoring

remarks 34 people were treated for minor burns and eye irritation but from the Original ... 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 British Pounds ECU British Pounds

material losses 6000000

response, clean up, restoration

remarks The company has estimated the damages to the warehouse and to the drum storage a... see Appendix

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 Many nearby house-holders left their homes to escape the thick smoke and others ... see Appendix

7 Discussion of Consequences

C Response Full Report

country: FA **ident key:** 1992_017_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 / 1992_017_01 report

Appendix Short Report / description of accident types:

Due to overheating, azodi-isobutyronitrile (AZDN) was released into a store reserved for oxidising materials. Due to its incompatibility with the AZDN dust released, Ammonium Persulphate (APS), which was also in the store, they ignited. The fire spread quickly involving the warehouse and the external drum storage area.

Appendix Short Report / description of substances involved:

- Azodi-isobutyronitrile [AZDN] (C.A.S. CODE: 78-67-1): amount involved = 2 tons.

- Ammonium Persulphate [APS] (C.A.S. CODE: 7727-54-0), Sodium Persulphate (C.A.S. CODE: 7775-27-1) and other oxidising agents: total amount involved = 35 tons.

Appendix Short Report / description of immediate sources:

The accident occurred in a raw materials warehouse of a chemical factory manufacturing organic chemicals for the printing, textile, weedkiller and paint industries. The components involved were the raw materials containers and the external drum storage area.

Appendix Short Report / description of suspected causes:

INITIATING EVENTS AND CONSEQUENCES:

The accident occurred due to the decomposition of Azodi-isobutyronitrile (AZDN). The decomposition resulted in a release of AZDN dust into the warehouse. Since the AZDN was incompatible with the ammonium persulphate (APS) which was also in the store, they ignited.

CAUSES:

When the Original Report was prepared, the causes that led to the decomposition of Azodi-isobutyronitrile, and consequently to the release of AZDN dust into the warehouse, have not fully clarified. The release of AZDN dust then resulted in a fire because it was not stored in a safe manner (it was not segregated from Ammonium Persulphate).

Appendix Short Report / description of immediate effects:

EFFECTS ON PEOPLE:

34 people were treated for minor burns and eye irritation. Several fire-fighters suffered broken feet and one a broken shoulder. None of the factory's 300- strong work force was injured.

MATERIAL LOSS:

The company has estimated the damages to the warehouse and to the drum storage area in about 6,000,000 UK pounds.

COMMUNITY DISRUPTION:

Many nearby house-holders left their homes to escape the thick smoke and others were advised to close the doors and the windows. Traffic chaos was caused when roadblocks were put-up around the factory.

Appendix Short Report / description of emergency measures taken:

INTERNAL TO THE ESTABLISHMENT:

The internal emergency systems were called to fight the fire and some of the workers were evacuated. 31 fire engines were used to fight the fire controlled by a police helicopter.

EXTERNAL TO THE ESTABLISHMENT:

The off-site emergency plan was activated. Roadblocks were put-up around the factory. Many nearby house-holders left their homes to escape the thick smoke produced by the fire and others were advised to close their doors and windows.

Appendix Full Report A / type of accident:

Due to overheating, azodi-isobutyronitrile (AZDN) was released into a store reserved for oxidising materials (code 1104). Due to its incompatibility with Ammonium Persulphate (APS), which was also in the store, they ignited. Since both AZDN and APS were combustible, the fire spread quickly involving the warehouse (code 1201) and the external drum storage area.

Appendix Full Report A / dangerous substances:

The total establishment and the potential directly involved inventories of Azodi-isobutyronitrile (AZDN) refer to the amount stored into the raw materials warehouse. The whole amount of ammonium persulphate (APS), sodium persulphate and the other oxidising materials involved in the fire was about 35 tons but no data are available about the single amounts.

Appendix Full Report A / source of accident - remarks:

The accident occurred in a raw materials warehouse and the nearby drum storage area (code 3201) of a chemical factory (code 2001) manufacturing organic chemicals for the printing, textile, weedkiller and paint industries. The components involved were the raw materials containers and the drums in the external storage area which were involved in the fire (code 4003).

Appendix Full Report A / causes of major occurrence:

The accident occurred due to the decomposition of Azodi-butyronitrile (code 5107) which has a self accelerating decomposition temperature (SADT) of about 50°C. The decomposition resulted in a release of AZDN dust into the warehouse. Due to its incompatibility with the ammonium persulphate (APS) which was also in the warehouse (codes 5303 and 5307), they ignited. The causes of AZDN decomposition have not fully clarified (code 5501).

Appendix Full Report B / area concerned - remarks:

Many nearby house-holders left their homes to escape the smoke produces by the fire and others were advised to close their doors and windows.

Appendix Full Report B / people:

34 people were treated for minor burns and eye irritation but from the Original Report is not clear if they owned to off-site population or not. Several fire-fighters suffered broken feet and one a broken shoulder. None of the industry's 300-strong work force was injured.

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 company has estimated the damages to the warehouse and to the drum storage area in about 6,000,000 UK Pounds.

Appendix Full Report B / disruption of community life:

Many nearby house-holders left their homes to escape the thick smoke and others were advised to close the doors and the windows. Traffic chaos was caused when roadblocks were put-up around the factory.