

Brand och giftig rökutveckling i lagret på en fabrik för produktion av finkemikalier.

880621 MARS 1988_24

Orsaken till brand identifieras inte men tros kunna bero på dåliga lagerprinciper. Eventuellt har kraftigt oxiderande reagens blandats med organiskt material varvid branden utbrutit. Branden spred sig inom några minuter till ett utrymme med brännbara vätskor. Brandalarmet gick, personalen utrymdes och räddningstjänsten ingrep. En katastrofplan för evakuering sattes i verket. 3000 orsbor i riskområdet evakuerades.

Inblandade ämnen och mängder

| | CAS Nr. | Mängd |
|----------------------|---------|----------------|
| 300 olika kemikalier | | totalt 250 ton |

Skador:

Människor: Fem brandmän vårdades på sjukhus med lindrigare skador.

Materiella: Lagerbygganden och lagerinnehållet förstördes. En angränsande pub fattade eld. Nedfallande splinter skadade ett flertal hus i området upp till 100 m från brandområdet.

Miljö/ekologi: Praktiskt taget allt det kontaminerade släckningsvattnet kunde samlas upp i anläggningens egen reningsanläggning. Inga effekter rapporterades.

Infrastruktur: 3000 orsbor evakuerades pga risken för gasförgiftning.

Erfarenheter redovisade (Ja/Nej): Ja

Kortfattat anges förebyggande åtgärder.

Report Profile

Identification of Report:

country: FA ident key: 1988_024_01

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

Date of Major Occurrence: Time of Major Occurrence

start: 1988-06-21 start: 18:00:00

finish: finish:

Establishment:

name:

address:

industry: 2004 pesticides, pharmaceuticals, other fine chemicals

General Chemical (Industrial Fine Chemicals and Laboratory Reagents Manufacturing)

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_024_01

Accident Types:

release: Yes **explosion:** Yes

water contamination: No **other:** No

fire: Yes

description:

ENVIRONMENT AND ATMOSPHERICAL CONDITIONS:... see Appendix Short Report / description of accident types

Substance(s) Directly Involved:

toxic: Yes **explosive:** Yes

ecotoxic: No **other:** Yes

flammable: Yes

description:

At least 300 different chemicals were stored in the area affected by fire, including oxidising materials, highly flammable liquids, chlorinated hydrocarbon solvents and other organic and inorganic compounds including metal salts. The total ... 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/finished products storage warehouse (36m x 24m) of a general chemical industry for manufacturing fine chemicals and laboratory reagents. In the warehouse there were at least 300 different chemicals w... see Appendix Short Report / description of immediate sources

Suspected Causes:

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

human: Yes **other:** Yes

description:

INITIATING EVENT 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: Yes **other:** No

mitigation: Yes

description:

MEASURES TO MITIGATE THE EFFECTS OF THE ACCIDENT:... see Appendix Short Report / description of immediate lessons learned

A Occurrence Full Report

country: FA **ident key:** 1988_024_01

1 Type of Accident

remarks: A fire broke out on June 21 in the oxidising materials section of the Production Store building. The fire spread rapidly and violently, involving within minutes an external drum storage area where flammable liquids were stored (code 1201). ... see Appendix Full Report A / type of accident

2 Dangerous Substances

remarks: At least 300 different chemicals were stored in the area affected by fire, including oxidising materials, highly flammable liquids, chlorinated hydrocarbon solvents and other organic and inorganic compounds including metal salts. The total ... see Appendix Full Report A / dangerous substances

3 Source of Accident

illustration: - not applicable -

remarks: The accident occurred in the raw materials/finished products storage

warehouse (36m x 24m) [code 3201] of a general chemical industry (code 2004)

for the manufacturing of fine chemicals and laboratory reagents. In the

warehouse there were a... see Appendix Full Report A / source of accident -

remarks

4 Meteorological Conditions

precipitation none: fog: rain: hail: snow:

Yes No No No No

wind speed (m/s):

direction (from): NW

stability (Pasquill):

ambient temperature (°C): 22

remarks: Weather dry, settled, sunny and warm with ambient temperature of 22°C. Wind light, North Westerly.

5 Causes of Major Occurrence

main causes

technical / physical 5501 other: not identified

- not applicable -

- not applicable -

- not applicable -

- not applicable -

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

5401 person: operator error

- not applicable -

- not applicable -

- not applicable -

remarks: The Health and Safety Executive's investigation has not established the precise cause of the fire (code 5501). However, the rapidity of spread of the fire was due to a breakdown in good chemical warehousing practices in the factory which le... see Appendix Full Report A / causes of major occurrence

6 Discussion about the Occurrence

- not applicable -

Type of Accident country: FA **ident key:** 1988_024_01

event:

major occurrence 1307 explosion: VCE (vapour cloud explosion; supersonic wave front)

initiating event - not applicable -

associated event - not applicable -

event:

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

initiating event 1201 fire: conflagration (a general engulfment fire)

associated event 1401 other: combustion products into air

Dangerous substances

country: FA ident key: 1988_024_01

a) total establishment inventory

CAS number: identity: Stored Goods

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): 250

use of substance as: NORMAL FINISHED PRODUCT

b) substance belongs to relevant inventory directly involved: Yes

actual quantity: 250 potential quantity: 250

c) substance belongs to relevant inventory indirectly involved: No

actual quantity: -1 indir_pot_quant: -1

a) total establishment inventory

CAS number: identity: Combustion Products

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: ABNORMAL PRODUCT

b) substance belongs to relevant inventory directly involved: No

actual quantity: -1 potential quantity: -1

c) substance belongs to relevant inventory indirectly involved: Yes

actual quantity: -1 indir_pot_quant: -1

Source of Accident - Situation country: FA ident key: 1988_024_01

situation

industry

initiating event 2004 pesticides, pharmaceuticals, other fine chemicals

associated event 2004 pesticides, pharmaceuticals, other fine chemicals

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

component

major occurrence 4006 free placement (unconfined pile, stack,etc; if bagged or in cylinders, more...F1!)

initiating event 4006 free placement (unconfined pile, stack,etc; if bagged or in cylinders, more...F1!)

associated event 4006 free placement (unconfined pile, stack,etc; if bagged or in cylinders, more...F1!)

B Consequences Full Report

country: FA **ident key:** 1988_024_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 Outside the establishment, 3,000 people were evacuated. No one was injured but a... see Appendix

Full Report B / area concerned - remarks

2 People

establishment popul. emergency personnel off-site population

total at risk 3000

immediate fatalities

subsequent fatalities

hospitalizing injuries

other serious injuries 5

health monitoring

remarks 5 firefighters attended hospital for minor treatment but they were not hospital... 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 Though 3,000 local residents who might have been at risk from toxic components o... 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 2486683

response, clean up, restoration

remarks The chemical store was destroyed and the stored raw materials and finished produ... see Appendix

Full Report B / material loss

6 Disruption of Community Life

establishment/plant evacuated disabled/unoccupiable destroyed

- **nearby residences/hotels** Yes No No

- **nearby factories/offices/small shops** Yes No No

- **schools, hospitals, institutions** Yes No No

- **other places of public assembly** Yes 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 Yes No

- **political interest** No No No

remarks 3,000 local residents who might have been at risk from toxic components of smoke... see Appendix

7 Discussion of Consequences

C Response Full Report

country: FA ident key: 1988_024_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**

Bulk chemical storage at the s... see Appendix Full Report C / lesson learned - prevent

measures to mitigate consequences:

Off-site clear-up was initiate... see Appendix Full Report C / lesson learned - mitigate

useful references:

- not applicable -

5 Discussion about Response

- not applicable -

Appendices for the FA / 1988_024_01 report**Appendix Short Report / description of accident types:****ENVIRONMENT AND ATMOSPHERICAL CONDITIONS:**

Weather dry, settled, sunny and warm with ambient temperature of 22°C. Wind light, North Westerly.

ACCIDENT CASE HISTORY DESCRIPTION:

A fire broke out on June 21 in the oxidising materials section of the Production Store building. The fire spread rapidly and violently, involving within minutes an external drum storage area where flammable liquids were stored. The fire took considerable resources and time to extinguish. During fire, two explosions occurred in the warehouse. Off-site damages were significant and a large number of residents were evacuated from their houses. Fears that large scale pollution of the environment would occur did not realise. No casualties occurred. Five firefighters attended hospital for minor treatment and a number of members of the public required attention following mishaps during the evacuation.

More detailed information about the accident are shown on the Original Report together with three maps showing the surrounding area and the extent of the effects.

Appendix Short Report / description of substances involved:

At least 300 different chemicals were stored in the area affected by fire, including oxidising materials, highly flammable liquids, chlorinated hydrocarbon solvents and other organic and inorganic compounds including metal salts. The total amount of chemicals involved in fire was 250,000 Kg. No data are available about the composition and amount of toxic substances in smoke cloud.

Appendix Short Report / description of immediate sources:

The accident occurred in a raw materials/finished products storage warehouse (36m x 24m) of a general chemical industry for manufacturing fine chemicals and laboratory reagents. In the warehouse there were at least 300 different chemicals were stored, including oxidising materials, highly flammable liquids, chlorinated hydrocarbon solvents and other organic and inorganic compounds including metal salts.

Appendix Short Report / description of suspected causes:**INITIATING EVENT AND CONSEQUENCES:**

Fire started in oxidising materials store when it was unoccupied, and spread to other parts of warehouse and outside drum storage compound.

CAUSES:

The Health and Safety Executive's investigation has not established the precise cause of the fire, but several valid hypotheses (such as the possible leakage of strongly corrosive substances onto organic materials, exothermic decomposition of stored materials and, less likely because it would have required two simultaneous failures, the mixing together of incompatible materials from spills or leaks) have been suggested. The rapidity of spread of the fire was due to a breakdown in good chemical warehousing practices in the factory which led to materials which were incompatible in a fire being stored together. Many of these materials were present as part of a procedure established by the company to ensure that chemicals that were surplus or off-specification to their own or their customer's requirements were disposed of in a satisfactory manner.

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

5 firefighters attended hospital for minor treatment but they were not hospitalized. Outside the establishment, 3,000 people were evacuated. No one was injured but a number of people required attention, following mishaps during evacuation.

MATERIAL LOSS:

The chemical store was destroyed and the stored raw materials and finished products were lost. The cost of the material losses has been estimated in about 2,486,683 UK Pounds. Outside the establishment the adjacent public house were damaged by fire. Minor off-site missiles damages and widespread damages to glazing on buildings within about 100 m of the site.

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

The NorthWest wind caused smoke and fume to drifted towards the Old Town section of Poole.

Appendix Short Report / description of emergency measures taken:

INTERNAL TO THE ESTABLISHMENT:

Automatic fire alarm operated and the fire brigade intervened. Staff on-site was evacuated. A total of 19 pumps, 2 turntable ladders, 1 hydraulic platform, a foam tender, a breathing apparatus tender and control unit were involved, and up to 22 BA sets were in use at any one time, with over 140 individual wearings of sets. Firewater runoff retained almost entirely in on-site effluent treatment plant.

EXTERNAL TO THE ESTABLISHMENT:

Progressive implementation of pre-existing local emergency plan with precautionary evacuation of 3,000 local residents who might have been at risk from toxic components of smoke plume. The site was not subjected to the more stringent requirements arising under article 5 of Directive EEC/501/82 but the storage of petroleum spirit under licence would be known to the emergency services and routine familiarization visits and logs of data held by them would in the circumstances provide a ready guide to the task that faced them. In that way, the generic "all-hazard" emergency off-site plans at County and District Government levels were brought into play and the smoothness of the precautionary evacuation bears tribute to the systems of emergency planning that was in place.

Appendix Short Report / description of immediate lessons learned:

MEASURES TO MITIGATE THE EFFECTS OF THE ACCIDENT:

Off-site clear-up was initiated and completed within a few weeks by staff of firm and specialist fire-fighting/clear-up team from firm's parent company. Off-site property damages have been repaired.

MEASURES TO PREVENT ANY RECURRENCE OF SIMILAR ACCIDENTS:

Bulk chemical storage at the site has been discontinued. A series of notices under the

Health and Safety at Work etc Act 1974 have been served to ensure that the company reviews its procedures for storage and disposal of chemicals, and that revised procedures and standards are adopted and followed if the store is rebuilt on this or other sites.

Appendix Full Report A / type of accident:

A fire broke out on June 21 in the oxidising materials section of the Production Store building. The fire spread rapidly and violently, involving within minutes an external drum storage area where flammable liquids were stored (code 1201). During fire, two explosions occurred in the warehouse (code 1307). A large number of residents were evacuated from their houses due to the risk of toxic substances in smoke plume (code 1401).

Appendix Full Report A / dangerous substances:

At least 300 different chemicals were stored in the area affected by fire, including oxidising materials, highly flammable liquids, chlorinated hydrocarbon solvents and other organic and inorganic compounds including metal salts. The total amount of chemicals involved in fire was 250,000 Kg. No data are available about the composition and amount of toxic substances in smoke cloud.

Appendix Full Report A / source of accident - remarks:

The accident occurred in the raw materials/finished products storage warehouse (36m x 24m) [code 3201] of a general chemical industry (code 2004) for the manufacturing of fine chemicals and laboratory reagents. In the warehouse there were at least 300 different chemicals were stored, including oxidising materials, highly flammable liquids, chlorinated hydrocarbon solvents and other organic and inorganic compounds including metal salts (code 4006).

Appendix Full Report A / causes of major occurrence:

The Health and Safety Executive's investigation has not established the precise cause of the fire (code 5501). However, the rapidity of spread of the fire was due to a breakdown in good chemical warehousing practices in the factory which led to materials which were incompatible in a fire being stored together (codes 5401 and 5303).

Appendix Full Report B / area concerned - remarks:

Outside the establishment, 3,000 people were evacuated. No one was injured but a number of people required attention, following mishaps during evacuation. The extent of the effects of the accident is shown on a map attached to the Original Report.

Appendix Full Report B / people:

5 firefighters attended hospital for minor treatment but they were not hospitalized. Outside the establishment, 3,000 people were evacuated. No one was injured but a number of people required attention, following mishaps during evacuation.

Appendix Full Report B / ecological harm:

Though 3,000 local residents who might have been at risk from toxic components of smoke plume were evacuated, in the Original Report there is no evidence of significant ecological harms.

Appendix Full Report B / material loss:

The chemical store was destroyed and the stored raw materials and finished products were lost. The cost of the material losses has been estimated in about 2,486,683 UK Pounds. Outside the establishment the adjacent public house were damaged by fire. Minor off-site missiles damages and widespread damages to glazing on buildings within about 100 m of the site.

Appendix Full Report B / disruption of community life:

3,000 local residents who might have been at risk from toxic components of smoke plume were evacuated.

Appendix Full Report C / lesson learned - prevent:

Bulk chemical storage at the site has been discontinued. A series of notices under the

Health and Safety at Work etc Act 1974 have been served to ensure that the company reviews its procedures for storage and disposal of chemicals, and that revised

procedures and standards are adopted and followed if the store is rebuilt on this or other sites.

Appendix Full Report C / lesson learned - mitigate:

Off-site clear-up was initiated and completed within a few weeks by staff of firm and specialist fire-fighting/clear-up team from firm's parent company. Off-site property damages have been repaired.