## Anlagd brand på en kemikaliefabriks lagerområde.

**891022 MARS 1800_16**

Vid 18-tiden på en söndagskväll satte en pyroman eld på papper och packningsmaterial i ena hörnet av ett lager på 1200 kubikmeter med sågspån, stärkelselim, jordbrukskemikalier och säd. Branden rapporterades till räddningstjänsten klockan 19:22. Klockan 21 var branden nästan helt släckt. En dammexplosion inträffade kl 21:15 och branden spred sig igen. När branden slutligen hade släckts vid midnatt hade ca 1500 kubikmeter vatten använts.

### Inblandade ämnen och mängder

| | CAS Nr. | Mängd |
|---|---|---|
| sågspån | | 88 ton |
| stärkelselim | | 25 ton |
| säd | | 119 ton |
| methiocarb | 2032-65-7 | 2600 kg |
| thiram | 137-26-8 | okänt |
| hymexazol | 10004-44-1 | 800 kg |
| iprodione | 36734-19-7 | 200 kg |
| carbofuran | 1563-66-2 | 200 kg |
| calcium peroxide | 1305-79-9 | okänt |
| **Utsläppta mängder** | | |
| metiocarb | 2032-65-7 | < 13 kg |
| methylthioxylenol | | < 5,5 kg |
| thiourea | 62-56-6 | < 9 kg |
| carbofuran | 1563-66-2 | < 0,1 kg |
| carbofuranphenol | | < 0,2 kg |
| andra pesticider | | < 0,1 kg |

### De flesta av jordbrukskemikalierna förbrändes vid höga temperaturer (800-1200 C).

### Skador:

| | |
|---|---|
| Människor: | Två människor skadades i samband med branden. Graden av skada anges inte. |
| Materiella: | Lager och lagerbyggnder brandskadades. |
| Miljö/ekologi: | Inga skador rapporterade. Bland förbränningsprodukterna fanns ett flertal skadliga ämnen. |
| Infrastruktur: | Inga. |

### Erfarenheter redovisade (Ja/Nej): Ja

Man beslöt att bygga fyra separata lagerlokaler för sågspån, stärkelselim, jordbrukskemikalier och säd

# Report Profile

### Identification of Report:

**country:** FA **ident key:** 1800_016_01

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

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

**start:** 22/10/1989 **start:** 19:00:00

**finish: finish:**

### Establishment:

**name:**

**address:**

**industry:** 2001 general chemicals manufacture

Organic Chemical (Seed Production and Treatment)

**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_016_01

### Accident Types:

**release:** Yes **explosion:** Yes

**water contamination:** Yes **other:** No

**fire:** Yes

**description:**

ENVIRONMENTAL AND ATMOSPHERIC CONDITIONS:... see Appendix Short Report / description of accident types

### Substance(s) Directly Involved:

**toxic:** Yes **explosive:** Yes

**ecotoxic:** Yes **other:** No

**flammable:** Yes

**description:**

SUBSTANCES INVOLVED IN THE EXPLOSION:... see Appendix Short Report / description of substances involved

### Immediate Sources of Accident:

**storage:** Yes **transfer:** No

**process:** Yes **other:** No

**description:**

The accidente occurred in the storage area of an organic chemical industry for seed production and treatment.

The store of 1,200 m2 was containing saw dust, starch glue, seed, agrochemicals and seed treatment machinery.

### Suspected Causes:

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

**human:** Yes **other:** No

**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:** No

**other:** No

**ecological harm:** Yes

**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:** 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:** No

**mitigation:** Yes

**description:**

MEASURES TO PREVENT ANY RECURRENCE OF THE ACCIDENT:... see Appendix Short Report / description of immediate

lessons learned

# A Occurrence Full Report

**country:** FA **ident key:** 1800_016_01

### 1 Type of Accident

**remarks:** A pyromaniac set on fire some papers and packing materials causing a fire

(code 1201) at a store of 1,200 m2 containing saw dust, starch glue, seed,

agrochemicals and seed treatment machinery. The fire caused also a dust

explosion (code 130... see Appendix Full Report A / type of accident

## 2 Dangerous Substances

**remarks:** No data are available about the amounts of calcium peroxide and thiram involved in the accident. Methylthioxylenol (methabolized methiocarb), thiourea (a supposed metabolite of thiram) and carbofuranphenol have been produced by the combusti... see Appendix Full Report A / dangerous substances

## 3 Source of Accident

**illustration:** - not applicable -

**remarks:** The accident occurred in the storage area (code 3201) on an organic chemical industry for seed production and treatment (code 2001). The store of 1,200 m2 was containing saw dust, starch, glue, seed, agrochemicals and seed treatment machine... 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:** The accident occurred on a still Sunday evening.

## 5 Causes of Major Occurrence

**main causes**

**technical / physical** - not applicable -

- not applicable -

- not applicable -

- not applicable -

- not applicable -

**human / organizational** 5302 organization: management attitude problem

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

5404 person: malicious intervention

- not applicable -

- not applicable -

**remarks:** A pyromaniac set on fire some papers and packing materials (code 5404). This caused a fire at a store containing saw dust, starch glue, seed and agrochemicals. As the toxic substances (i.e. methiocarb, thiram, carbofuran, ecc.) were not sto... see Appendix Full Report A / causes of major occurrence

## 6 Discussion about the Occurrence

- not applicable -

## Type of Accident **country:** FA **ident key:** 1800_016_01

**event:**

**major occurrence** - not applicable -

**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** - not applicable -

## Dangerous substances

**country:** FA **ident key:** 1800_016_01

### a) total establishment inventory

**CAS number:** 137-26-8 **identity:** Thiram

**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:** 62-56-6 **identity:** Thiourea

**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):** 0,009

**use of substance as:** ABNORMAL PRODUCT

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

**actual quantity:** 0,009 **potential quantity:** 0,009

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

**actual quantity:** -1 **indir_pot_quant:** -1

### a) total establishment inventory

**CAS number: identity:** Starch Glue

**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):** 25

**use of substance as:** NORMAL FINISHED PRODUCT

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

**actual quantity:** 25 **potential quantity:** 25

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

**actual quantity:** -1 **indir_pot_quant:** -1

### a) total establishment inventory

**CAS number: identity:** Seed

**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):** 119

**use of substance as:** NORMAL FINISHED PRODUCT

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

**actual quantity:** 119 **potential quantity:** 119

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

**actual quantity:** -1 **indir_pot_quant:** -1

### a) total establishment inventory

**CAS number: identity:** Saw Dust

**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):** 88

**use of substance as:** NORMAL FINISHED PRODUCT

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

**actual quantity:** 88 **potential quantity:** 88

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

**actual quantity:** -1 **indir_pot_quant:** -1

### a) total establishment inventory

**CAS number:** **identity:** Methylthioxylenol

**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):** 0,006

**use of substance as:** ABNORMAL PRODUCT

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

**actual quantity:** 0,006 **potential quantity:** 0,005

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

**actual quantity:** -1 **indir_pot_quant:** -1

### a) total establishment inventory

**CAS number:** 2032-65-7 **identity:** Methiocarb

**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):** 2,6

**use of substance as:** NORMAL FINISHED PRODUCT

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

**actual quantity:** 2,6 **potential quantity:** 2,6

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

**actual quantity:** -1 **indir_pot_quant:** -1

### a) total establishment inventory

**CAS number:** 36734-19-7 **identity:** Iprodione

**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):** 0,2

**use of substance as:** NORMAL FINISHED PRODUCT

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

**actual quantity:** 0,2 **potential quantity:** 0,2

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

**actual quantity:** -1 **indir_pot_quant:** -1

### a) total establishment inventory

**CAS number:** 10004-44-1 **identity:** Hymexazol

**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):** 0,8

**use of substance as:** NORMAL FINISHED PRODUCT

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

**actual quantity:** 0,8 **potential quantity:** 0,8

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

**actual quantity:** -1 **indir_pot_quant:** -1

### a) total establishment inventory

**CAS number: identity:** Carbofuranphenol

**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: 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:** 1563-66-2 **identity:** Carbofuran

**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):** 0,2

**use of substance as:** NORMAL FINISHED PRODUCT

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

**actual quantity:** 0,2 **potential quantity:** 0,2

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

**actual quantity:** -1 **indir_pot_quant:** -1

### a) total establishment inventory

**CAS number:** 1305-79-9 **identity:** Calcium Peroxide

**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:** 1800_016_01

### situation

**industry**

**inititating event** 2001 general chemicals manufacture

**associated event** - not applicable -

**activity/unit**

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

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

**associated event** - not applicable -

**component**

**major occurrence** 4006 free placement (unconfined pile, stack,etc; if bagged or in cylinders,

more...F1!)

**inititating event** 4006 free placement (unconfined pile, stack,etc; if bagged or in cylinders,

more...F1!)

**associated event** - not applicable -

# B Consequences Full Report

**country:** FA **ident key:** 1800_016_01

## 1 Area concerned

**affected**

**extent of effects installation:** Yes

**establishment:** Yes

**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 is no evidence on significant effects outside the e... 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** 2

**other serious injuries**

**health monitoring**

**remarks** Two people were injured by fire (from the Original Report is not fully clear if ... 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 is no evidence of significant ecological harms. It ... 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 water cooling of the walls and the entry confined the fire to one cell but t... 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 e... see Appendix

### 7 Discussion of Consequences

# C Response Full Report

**country:** FA **ident key:** 1800_016_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**

After the accident, it was est... see Appendix Full Report C / lesson learned - prevent

**measures to mitigate consequences:**

After the accident, it was est... see Appendix Full Report C / lesson learned - mitigate

**useful references:**

- not applicable -

## 5 Discussion about Response

- not applicable -

# Appendices for the FA / 1800_016_01 report

## Appendix Short Report / description of accident types:

ENVIRONMENTAL AND ATMOSPHERIC CONDITIONS:

The accident occurred on a still Sunday evening.

At about 18:00 on a Sunday evening, a pyromaniac set on fire some papers and packing materials. This caused a fire at the North East corner of a store of 1,200 m2 containing saw dust, starch glue, seed, agrochemicals and seed treatment machinery. The fire was reported at 19:22 to the local fire brigade and was nearly extinguished by about 21:00. At about 21:15 a dust explosion occurred and the fire spread again. It was finally under control after midnight. In total, about 1,500 m3 of fire fighting water was used. It has been estimated that something less than 3 Kg of methiocarb, 5.5 Kg of methylthioxylenol (metabolized methiocarb), 9 Kg of thiourea (a supposed metabolite of thiram), 0.1 Kg of carbofuran, 0.2 Kg of carbofuranphenol and 0.1 Kg of other pesticides were released with the fire fighting water. It has believed that most of the agrochemicals were burned at high temperatures (800˚1200¯C) and less than 10 Kg of methiocarb was evaporated. Starch glue solubilized in the fire water gave a COD (Chemical Oxygen Demand) of about 3,000˚4,000 mg O2/l.

## Appendix Short Report / description of substances involved:

SUBSTANCES INVOLVED IN THE EXPLOSION:

- Saw dust: amount involved = only a minor part of the total stored amount (about 88,000 Kg) was involved in the explosion.

- Starch glue: amount involved = only a minor part of the total stored amount (about 25,000 Kg) was involved in the explosion.

SUBSTANCES INVOLVED IN THE FIRE:

- Saw dust: amount involved = 88,000 Kg.

- Starch glue: amount involved = 25,000.

- Seed: amount involved = 119,000 kg.

- Methiocarb (C.A.S. CODE: 2032-65-7): amount involved = 2,600 Kg.

- Thiram (C.A.S. CODE: 137-26-8): amount involved = not known.

- Hymexazol (C.A.S. CODE: 10004-44-1): amount involved = 800 kg.

- Iprodione (C.A.S. CODE: 36734-19-7): amount involved = 200 kg.

- Carbofuran (C.A.S. CODE: 1563-66-2, E.E.C. CODE: 67006-026-00-9): amount involved = 200 kg.

- Calcium peroxide (C.A.S. CODE: 1305-79-9): amount involved = not known.

SUBSTANCES RELEASED:

Most of the agrochemicals were burned at high temperatures (800˚1200¯C) and less than 10 Kg of methiocarb was evaporated.

It has been estimated that, with the fire fighting water, were released: < 3 Kg of methiocarb, < 5.5 Kg of methylthioxylenol (methabolized methiocarb), < 9 Kg of thiourea [C.A.S. CODE: 62-56-6] (a supposed metabolite of thiram), < 0.1 of carbofuran, < 0.2 Kg of carbofuranphenol and < 0.1 Kg of other pesticides.

## Appendix Short Report / description of suspected causes:

INITIATING EVENT AND CONSEQUENCES:

A pyromaniac set on fire some papers and packing materials. This caused a fire at a store of 1,200 m2 containing saw dust, starch glue, seed, agrochemicals and seed treatment machinery.

CAUSES:

A pyromaniac set on fire some papers and packing materials. The toxic substances (i.e. methiocarb, thiram, carbofuran, ecc.) were not stored in a separate cell but they were together with saw dust, starch glue and seed. This allowed their combustion and release during the accident.

## Appendix Short Report / description of immediate effects:

EFFECTS ON PEOPLE:

2 people were injured by fire.

MATERIAL LOSS:

The water cooling of the walls and the entry confined the fire to one cell but the store was burned out and the stored materials destroyed. No data are available about the cost of these material damages.

ECOLOGICAL HARM:

It has been estimated that something less than 3 Kg of methiocarb, 5.5 Kg of methylthioxylenol (metabolized methiocarb), 9 Kg of thiourea (a supposed metabolite of thiram), 0.1 Kg of carbofuran, 0.2 Kg of carbofuranphenol and 0.1 Kg of other pesticides were released with the fire fighting water. It has believed that most of the agrochemicals were burned at high temperatures (800˚1200¯C) and less than 10 Kg of methiocarb was evaporated. Starch glue solubilized in the fire water gave a COD (Chemical Oxygen Demand) of about 3,000˚4,000 mg O2/l.

## Appendix Short Report / description of emergency measures taken:

INTERNAL TO THE ESTABLISHMENT:

The water cooling of the walls and the entry confined the fire to one cell but the store was burned out and the stored materials destroyed. The fire was fighted from fire ladders and from the roof by the local fire brigade.

## Appendix Short Report / description of immediate lessons learned:

MEASURES TO PREVENT ANY RECURRENCE OF THE ACCIDENT:

After the accident, it was established to rebuild the store with the chemicals in 4 different fire cells separated from seed and saw dust in such a way to avoid that, in case of an accident involving them, toxic substances could be burned or released into the environment or with the fire fighting water.

MEASURES TO MITIGATE THE EFFECTS OF THE ACCIDENT:

After the accident, it was established to evaluate the possibility to collect fire water for re-using it or for conveying it safely for treatment will be examined.

## Appendix Full Report A / type of accident:

A pyromaniac set on fire some papers and packing materials causing a fire (code 1201) at a store of 1,200 m2 containing saw dust, starch glue, seed, agrochemicals and seed treatment machinery. The fire caused also a dust explosion (code 1305). Most of the agrochemicals were burned at high temperatures (code 1401) but small fractions of them were released with the fire fighting water (code 1403).

## Appendix Full Report A / dangerous substances:

No data are available about the amounts of calcium peroxide and thiram involved in the accident. Methylthioxylenol (methabolized methiocarb), thiourea (a supposed metabolite of thiram) and carbofuranphenol have been produced by the combustion of the agrochemicals involved in the fire. The quantities of these substances refer to the estimated amounts released with the fire fighting water.

## Appendix Full Report A / source of accident - remarks:

The accident occurred in the storage area (code 3201) on an organic chemical industry for seed production and treatment (code 2001). The store of 1,200 m2 was containing saw dust, starch, glue, seed, agrochemicals and seed treatment machinery (code 4006).

## Appendix Full Report A / causes of major occurrence:

A pyromaniac set on fire some papers and packing materials (code 5404). This caused a fire at a store containing saw dust, starch glue, seed and agrochemicals. As the toxic substances (i.e. methiocarb, thiram, carbofuran, ecc.) were not stored in a separate cell but they were together with saw dust, starch glue and seed, the fire caused their combustion and release. The lack of separation between them was caused by an inadequate plant design (codes 5302 and 5308).

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

In the Original Report there is no evidence on significant effects outside the establishment. It has believed that most of the agrochemicals were burned at high temperatures (800ˆ1200¯C) and less than 10 Kg of methiocarb was evaporated. Starch glue solubilized in the fire water gave a COD of about 3,000ˆ4,000 mg O2/l. Less than 20 Kg of toxic substances (methiocarb, methylthioxylenol, thiourea, carbofuran, carbofurnaphenol and other persticides) were released with fire fighting water.

## Appendix Full Report B / people:

Two people were injured by fire (from the Original Report is not fully clear if they were hospitalized or not).

## Appendix Full Report B / ecological harm:

In the Original Report there is no evidence of significant ecological harms. It has believed that most of the agrochemicals were burned at high temperatures (800ˆ1200¯C) and less than 10 Kg of methiocarb was evaporated. Starch glue solubilized in the fire water gave a COD (Chemical Oxygen Demand) of about 3,000ˆ4,000 mg O2/l. It is estimated that, together with the fire fighting water, were released:methiocarb, methylthioxylenol, thiourea, carbofuran, carbofuranphenol and other pesticides.

## Appendix Full Report B / material loss:

The water cooling of the walls and the entry confined the fire to one cell but the store was burned out and the stored materials destroyed. No data are available about the cost of the material damages.

## Appendix Full Report B / disruption of community life:

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

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

After the accident, it was established to rebuild the store with the toxic chemicals in 4 different fire cells separated from seed and saw dust in such a way to avoid that, in case of accident involving them, toxic substances could be burned or released into the environment or with the fire fighting water.

## Appendix Full Report C / lesson learned - mitigate:

After the accident, it was established to evaluate the possibility to collect fire water for re-using it or for conveying it safely for treatment will be examined.