Kemikalieutsläpp till följd av skenande reaktion på en kemikaliefabrik.

930322 MARS 1993_03

Olyckan inträffade på en fabrik för produktion av kemikalier bl.a. till färgindustrin. I en reaktor där ortonitroklorbensen reageras med metanol i närvaro av natriumhydroxid för produktion av ortonitroanisol begick operatören ett misstag. Reaktionen sker normalt under omrörning. Efter ett produktionsstopp kopplades inte omrörningen på och reaktionen fortlöpte utan omrörning under den förväntade reaktionstiden. När misstaget upptäcktes kopplades omröraren på och en kraftig, skenande värmeutvecklande reaktion inträffade. Temperaturen steg från 95°C till 115°C samtidigt som trycket steg från 9 till 16 bar. Säkerhetsventilerna öppnades och ungefär 40% av reaktionsblandningen släpptes ut. På grund av de okontrollerade omständigheterna innehöll denna reaktionsblandning onormala biprodukter som diklorazolbensen och diklorazoxibensen. Utsläppet spred sig över ett område på 25-30 ha och täckte det med en tydlig gul avlagring. Mer än 2000 personer bor i området. Under de närmast påföljande dagarna sökte ett hundratal människor medicinsk hjälp för symptom som huvudvärk, irritation i andningsvägar och slemhinnor.

Inblandade ämnen och mängder

	CAS Nr.	Mängd
ortonitroklorbensen		
ortonitroanisol		
metanol	67-56-1	
natriumhydroxid	1310-73-2	
diklorazolbensen		
diklorazoxibensen		

Skador:

Människor:	1 person på fabriken skadades av utsläppet. Under de närmast påföljande dagarna sökte ett hundratal människor medicinsk hjälp för symptom som huvudvärk, irritation i andningsvägar och slemhinnor.
Materiella:	Jordmån i ett stort antal trädgårdar fick forslas bort. Tak på ett flertal hus fick ersättas.
Miljö/ekologi:	Utsläppet spred sig över ett område på 25-30 ha och täckte det med en tydlig gul avlagring. Inga effekter rapporterade.
Infrastruktur:	

Erfarenheter redovisade (Ja/Nej): Nej

Report Profile

Identification of Report:

country: FA **ident key:** 1993_003_01

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

Date of Major Occurrence: Time of Major Occurrence

start: 1993-02-22 **start:** 04:00:00

finish: finish:

Establishment:

name:

address:

industry: - not applicable -

Plant for fabrication, production of products through chemical reaction

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:** 1993_003_01

Accident Types:

release: Yes **explosion:** No

water contamination: No **other:** No

fire: No

description:

In the kettle affected by the perturbance is generated ortho-nitroanisole an under substance for painting

material and pigments. As for this were given and mixed methanole and orthonitrochlorobenzene, the mixer was

shut down and nitrogen im... see Appendix Short Report / description of accident types

Substance(s) Directly Involved:

toxic: Yes **explosive:** No

ecotoxic: No **other:** No

flammable: No

description:

Ortho-nitroanisole

Immediate Sources of Accident:

storage: No **transfer:** No

process: Yes **other:** No

description:

Through an operation failure the proceeding exothermic reaction was strongly accelerated, this led to a

temperature and pressure arise and as consequence to the opening of the safety valves.

Suspected Causes:

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

human: Yes **other:** No

description:

Operational error.

Immediate Effects:

material loss: Yes

human deaths: No

human injuries: Yes **community disruption:** Yes

other: No

ecological harm: Yes

national heritage loss: No

description:

1 person inside the establishment was hospitalized by release.

The released reaction mixture led over an area of 25-30 ha (in which live about 2000 persons) a conspicuously

visible yellow deposit .

Emergency Measures taken:

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

external services: No **restoration:** No

sheltering: Yes **other:** No

evacuation: No

description:

In the contaminated city zones the soil was abraded by cleaning equipe of Hoechst AG, colonies of little

garden were completely digged, the roofs of the garden huts were changed. The highest layer of streets and

sidewalks was milled off by... see Appendix Short Report / description of emergency measures taken

Immediate Lessons Learned:

prevention: No **other:** No

mitigation: Yes

description:

Protection of the stirring apparatus with product feed.

Appendices for the FA / 1993_003_01 report

Appendix Short Report / description of accident types:

In the kettle affected by the perturbance is generated ortho-nitroanisole an under substance for painting material and pigments. As for this were given and mixed methanole and orthonitrochlorobenzene, the mixer was shut down and nitrogen impressed. Then, without the stirring apparatus again connected (operational error)

the reactor was heated at the preestablished temperature and was pumped in the reactor the preestablished quantity of methanolic caustic soda. After waiting of the prescribed reaction time was observed that the stirring apparatus did not run. The apparatus controller switched it in. Then the running exothermic reaction became very strong accelerated, with a temperature rise from 95 to 115oC. The reactor pressure rised from 9 to 16 bar. The safety valves opened. About 40% of the reaction mixture

(10t) were out pounded through 2 valves. During the transformation of in the reaction kettle originate normally ortho-nitroanisole, common salt and water. During the

perturbance the mixture, due to the incomplete reaction and to the strong over heating, changed itself in a way that resulted other chemical connections, that during normal service don't occur, like dichlorazolbenzene and dichlorazoxibenzene. The released reaction mixture diffused over an area of 25-30 ha, in which lived more than 2000 persons, covering it with a distinct visible yellow sediment. In the northern side of the Main river was affected an area of 0.8 ha, in the same river a bird isle and a water-lock in which stay two river-ships. In total about 100 persons in the following days suffered for head hache, irritation of the breath ways and mucous membrane and received on demand ambulatory care.

Appendix Short Report / description of emergency measures taken:

In the contaminated city zones the soil was abraded by cleaning equipe of Hoechst AG, colonies of little garden were completely digged, the roofs of the garden huts were changed. The highest layer of streets and sidewalks was milled off by special machines, gardrails and house roofs were exchanged.