Accident Profile

Title

Release of a cloud of irritant vapours during the unloading of a lorry in a hazardous industrial waste treatment centre

Date/Time of Major Occurrence

Start Date 02-04-2004 **End Date** 02-04-2004

Event Type

Major Accident

Reported under

EU Seveso II Directive

Seveso II Status

- not known / not applicable -

Industrial Activity

Waste storage, treatment and disposal

Reasons for Reporting

- [ ] Substances involved: greater than 5% of quantity in Column 3 of Annex I
- [x] Injury to persons: >= 1 fatalities, >= 6 hospitalizing injuries, evacuation, shelter-in-place, utility disruption and damage to real estate
- [ ] Immediate damage to the environment (according to Annex VI)
- [ ] Damage to property: on-site >2M €, off-site > 0.5M €
- [ ] Cross-border damage: transboundary accidents
- [ ] Interesting for lessons learned.

Accident Report

Accident description

A cloud of irritant vapours was released during the unloading of a lorry in a hazardous industrial waste treatment centre.

This accident is notified because of the confinement of 180 persons for 2.5 hours (near the notification criterion of the Seveso directive of 500 persons X hours). It is classified at level 3 of the accident gravity scale, as officially published in February 1994 by the Comity of Competent Authorities for the implementation of the Seveso Directive, because 18 members of the public were injured.

Accident involving

- [ ] Domino effects
- [ ] Natech events
- [ ] Transboundary effects
- [x] Contractors

Release

Major Occurences

gas/vapour/mist/etc release to air

Site and installation

Site description

hazardous industrial waste treatment centre

Installation/Unit description

During unloading operations of a lorry in hazardous industrial waste treatment centre, a chemical reaction occurred while filling 2-bromoisobutyryl Bromide into a tank before incineration. The pressure in the container rose and a cloud of irritant vapours was formed. The runaway thermal reaction took place during the transfer of the brominated substance from a 200-litre barrel to an 11000-litre tank.

Transfer

Major occurrences	Equipment Type
loading/unloading activities (transfer interfaces)	

Substances

Substances Involved

A whitish cloud of alkyl bromides (corrosive and irritant) and hydrogen bromide (C.A.S. No: 10035-10-6) was formed after the transfer of 2-bromoisobutyryl Bromide (C.A.S. No: 20769-85-1).

Substances Classification

10 i. ANY CLASSIFICATION - R14

Substances detail

Substance	CAS Number	Quantities (t.)	
		Involved	Potential
alkyl bromides	CAS Number		
hydrogen bromide	10035-10-6		
2-bromoisobutyryl bromide	20769-85-1		

Causes

The pressure rise appears to have been caused by the presence of a contaminant in the tank, which triggered the decomposition reaction of the substance. With the approval of the firemen, the emergency release vents of the tank were opened in order to avoid the risk of explosion.

Plant/Equipment

Causative Factor	Type
runaway reaction	
unexpected reaction/phase-transition	

Other

Yes

Consequences

Visible from several km away and carried along by strong winds, the cloud headed towards a sawmill and 4 warehouses situated in an uninhabited zone. Atmospheric measurements showed that the toxic thresholds were not reached. Eighteen employees in neighbouring enterprises complained of headaches and difficulty in breathing; 7 were given treatment, 4 were put on oxygen, but none was hospitalized. The health services warned health professionals in the area concerned on the toxic risk run by the population and to draw their attention to any clinical indications likely to appear.

Disruption

Off site	Quantity	Quantity/Effect
schools, hospitals, institutions		60 pupils in a school confined
other		confinement of 180 persons for 2.5 hours

Emergency Response

The onsite emergency response services, helped by some dozens of firemen flushed the tank for cooling it down and abating the irritant vapours, which were thus diluted and recovered in the retention basins of the site. A crisis unit was set up at the Prefecture, while a medical team was dispatched to the scene. A safety perimeter was set up and the Onsite Emergency Plan was activated at 12.25 hrs. The confinement measures affected nearly 180 people: the employees of the site and of enterprises situated within a radius of 1 km and about sixty pupils in an infant school 4 km outside the safety perimeter. At about 13.30, the chemical decomposition reaction was brought under control. The strong wind eventually dispersed the cloud. At about 16.00, the safety perimeter and the onsite emergency plan were lifted simultaneously. The tank involved is placed out of service for sampling and analysis.

Emergency Response	Quantity	Quantity/Effect
On-site systems		emergency services; emergency plan
Off-site external services		fire services; medical services
Sheltering		180 people, including 60 pupils in a school
Evacuation		
Other		

Remedial Measure	Quantity	Quantity/Effect
Decontamination		
Restoration		
Other		

Lessons Learned

Theme of the Lessons Learned

Causes - Organisational
Causes - External

Lessons Learned

The operator contacted his sub-contractor in order to obtain information on the state of the tank (quality of cleaning carried out, history of the substances it had contained, etc.). The 8 tanks present on the site and which contain substances of the same nature, are to be inspected and kept under control.

Event Profile

Publication Date