Fire in an agropharmaceutical products storage area February 1st, 2001 Port-Ia-Nouvelle – [Aude] France Chemistry Pesticides Sulphur Works Hot spot Fire-permit Soil clean-up operations

THE INSTALLATIONS IN QUESTION

This is an old installation (100 years old) and has been the subject of the usual successive authorisation and related orders issued by the Prefect; its activities have evolved from the formulation of agropharmaceutical mixes (without chemical reaction) to the simple packaging of these products.

For decades, the site has been used for grinding sulphur for use in the preparation of agropharmaceutical products.

Storage sites were set up in connection with this activity; they are located at various points around the site, and comprise a total authorised capacity of 400 tonnes of agropharmaceutical materials, less than 200 t of which is composed of toxic materials. At the time of the fire, the installation was classed at the lower end of the Seveso 2 Directive. This is no longer the case (reduced quantities).

The site where the fire broke out is a storage area located under a canopy and back-to-back with a small building.

The building is covered with fibre-cement roofing panels supported by a timber frame whose beams traverse the common wall and support the roofing panels that cover the storage area under the canopy.

A total of around 50 tonnes of agropharmaceutical products are stored in sacks on pallets on this site.

In the past, these premises contained sulphur in bulk.





THE ACCIDENT, ITS BEHAVIOUR AND CONSEQUENCES

The accident

On February 1st, 2001, an outside company began removing the roofing and the timber frame of the adjoining building, which had previously been emptied of its entire contents.

The frame was cut up using a circular saw, and the rubble and chunks of framework were loaded into a lorry by means of a hydraulic shovel.

Activity on the worksite ended at 5.45 p.m. (the installation's normal working hours are 8 a.m. - 6 p.m.). At the site where the works were carried out, a work permit procedure was not obligatory; nevertheless, a permit had been issued and a clean-up inspection was performed at 5.45 p.m.

Alerted by neighbours at approximately 7.30 p.m., the fire department arrived on the site immediately and saw that part of the materials being stored under the canopy was on fire.

The firemen rapidly began to spray down the fire (7.45 p.m.), but without success.

The fire was brought under control at approximately 10.30 p.m., after several minutes of using a water-foam concentrate mixture, consecutive to the initial attempt to extinguish it by applying water.



The consequences

Twenty-four tonnes of phytosanitary products of the 50 tonnes being stored were destroyed; the materials involved in the fire were :

✓ 16 t of fungicide in 25 kg cardboard packaging (powder containing 80% of the active ingredient mancozeb– based on manganese ethylene bisdithiocarbamate –Xi label);

✓ 1 t of nematocide-fungicide in 10-litre cans (aqueous solution containing 51 g/l of the active ingredient metam-sodium – sodium dithiocarbamate C2H4NS2Na - Xn label);

 \checkmark 7 t of plant growth regulator in 10-litre cans (aqueous solution containing 520g/l of the active ingredient hydrogen cyanamid – CH2N2 derived from carbonic acid – T label).



The firefighting water caused mud containing agropharmaceutical materials to spread over approximately 300 square metres, leading to the excavation and incineration of 120 tonnes of polluted soil.

Product loss is estimated at 38,000 Euros; the cost of incineration is estimated at 185,000 Euros.

Neighbouring sites were unaffected by the smoke.







European scale of industrial accidents

By applying the rating rules of the 18 parameters of the scale made official in February 1994 by the Committee of Competent Authorities of the Member States which oversees the application of the 'SEVESO' directive, the accident can be characterised by the following 4 indices.

| Dangerous materials released | 1 | | | |
|-------------------------------|---|--|--|--|
| Human and social consequences | Ŵ | | | |
| Environmental consequences | P | | | |
| Economic consequences | € | | | |

The parameters that comprise these indices and the corresponding rating method are available at the following address: <u>http://www.aria.ecologie.gouv.fr</u>.

The 7 t of hydrogen cyanamide solution at 520 g/l destroyed represents 1.8% of the corresponding Seveso threshold (200 tons - toxic), which equals level 3 of the "quantities of dangerous materials" index according to parameter Q1 (Q1 between 1% and 10%).

Parameter \in 18 of the "economic consequences" index is rated 2, as the cost of incinerating the polluted soil was evaluated at 185,000 \in (\in 18 between 0.05 M \in and 0.2M \in).

ORIGIN, CAUSES AND CIRCUMSTANCES OF THE ACCIDENT

The frame was cut up using a circular saw which, according to findings made on the site, heated the wood to the point of triggering, on part of one beam, a slow, imperceptible phenomenon of combustion at the time the work stopped and the worksite was evacuated at 5.45 p.m..

The beam in question had been cut off at the level of the wall on the building side, but its end, which remained inside the wall, was sticking out under the canopy (roofing support).

The heating phenomenon was probably amplified due to sulphur residue present in the cracks and cavities in the frame and the wall.

Burned particles fell onto the plastic sheeting, causing the fire to spread more easily to the packaging and then to the materials being stored and the pallets.







ACTIONS TAKEN

According to a written report made by the operator on the day of February 2nd, the following measures were taken:

✓ Analysis of the soil

✓ Clean-up of the soil by strip excavation to a depth of 20 cm and incineration of the 120 t of products collected in an authorised waste disposal site

✓ Updating of the procedure and records concerning work permits and fire permits:

- extension to all locations on the site,
- obligatory work stoppage at 3 p.m.,
- inspection 1 h after work stops on the site.
- ✓ Setting up of an internal contingency plan;
- ✓ Purchase of foam concentrate and periodic fire drills with fire-fighters;

✓ Monitoring of ground water pollution by means of analyses, as the installation has an internal and external piezometric network. No pollution peaks were recorded.

LESSONS LEARNED

This fire highlighted the following elements:

✓ The role that the buildings' combustible structural and roofing elements had in spreading the fire.

 \checkmark The importance of a fire permit and the checks associated which these permits not only upon completion of the job site, but also in the hours that follow.

 \checkmark The importance of providing the fire department information regarding the nature of the products and the fire fighting agents to be used in the event of a fire based on scenarios developed in the contingency plan and the periodic exercises.