

September 2018

## DESCRIPTION AND CAUSE OF EVENT

A fire occurred in a third party warehouse in which routine fumigation of seed was taking place using Aluminium Phosphide tablets.

Shortly after an approved and licensed contractor started the fumigation process smoke was seen emanating from the secured warehouse.

Fire and smoke damage has caused significant damage to the inventory and warehouse building

The previous evening a heavy rain storm had occurred and rain water had entered the warehouse space.



## LESSONS LEARNED / GOOD PRACTICE

The Process Hazards Section undertook to investigate how Aluminium Phosphide behaves:

- On contact with moisture, Aluminium Phosphide (AIP) produces highly toxic flammable gas (Phosphine) which has been the cause of many fatal accidents
- In addition the interaction with moisture produces heat, humid air conditions are sufficient to cause the reaction to occur
- Direct contact with grain or seeds would result in the generation of both heat and gas, this could result in a fire
- It is possible that the contact between the AIP pellets and a “dry” concrete/cement or wood could also result in heat and gas generation leading to a fire
- Using more than 5 pellets in close proximity could result in the generation of excessive heat and gas which could lead to a fire.

Recommendations:

- Always follow the manufacturers instructions
- during the fumigation process the material to be fumigated must be completely contained BUT the fumigant must be able to circulate freely within the containment ensuring there are no isolated small pockets in which higher (explosive) concentrations of AIP may accumulate
- The maximum dosage should be 5 x 3g AIP pellets per m<sup>3</sup>
- The pellets should not be placed directly on the seed, a metal tray is recommended
- The area in which fumigation will take place should be protected from weather such that ingress of water cannot occur and there should be no accumulated water in the area (e.g. puddles)

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