

Dust explosion in a Silo

EPSC Learning Sheet March 2025



What Happened:

Operators noticed a burning smell coming from a silo containing wheat dust. During attempts to deal with the smouldering substance an explosion occurred rupturing the silo headspace.



Aspects:

- Organic dust can self-heat due to oxidation with potential for fire and explosion. Biological self-heating in agricultural materials like wheat is accelerated by water ingress. Oily products like sunflower seeds are prone to exothermic chemical oxidation.
- Toxic, flammable CO can be created during smouldering.
- Disturbing the smouldering dust in the silo headspace by air ingress, during emergency response or by dust removal, can initiate a dust explosion.
- Be careful with water, that sometimes can not penetrate to the smoulder location, can cause swelling of the silo dust content and can overload the silo.
- Fire fighting is complex, time consuming and requires specialist help. Sometimes N₂ or CO₂ are used.

Take care of Smouldering Dust in a Silo