



Grain fire and dust explosion in silo

Background

A farmer was seriously injured when he tried to extinguish a barley grain fire inside a large grain silo. The farmer had climbed the external silo ladder to access the hatch on the roof approximately eight metres high. As he attempted to extinguish the fire by squirting water into the silo, the suspended grain dust in the silo ignited, causing an explosion that blew the roof off. The farmer fell to the ground, resulting in serious injury.



The explosion blew off the silo roof, and the remaining structure was demolished to access the fire

Contributing factors

Squirting water into the silo introduced more air and may have raised more grain dust into the air.

Four elements must be present for a grain dust explosion to occur:

1. Fuel - Small particles of dust were suspended in the space of the silo
2. Oxygen - Air supply was increased by opening the hatch on the silo roof
3. Confinement - Barley grain and dust was ignited in the confined space of the silo
4. Ignition Source - A grain dryer unit was in use at the time.

Action required

1. Stay clear of the silo if smoke or steam is observed coming out of openings or if rumbling or vibration is evident.
2. Do not add water or foam to a fire contained within a silo or spray water on the external wall without first obtaining expert advice.
3. Contact the Department of Fire Emergency Services immediately for assistance and further advice.

Further information

- [Hazardous or combustible dusts, fumes and fibres](#) Jan 2013 WorkSafe WA
- [Agricultural safety and health workbook](#) 2008 WorkSafe WA
- Guidance Note [Falls prevention in the agricultural sector](#) 2011

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