

SAFETY ALERT



SILO COLLAPSE HIGHLIGHTS STRUCTURAL ISSUES

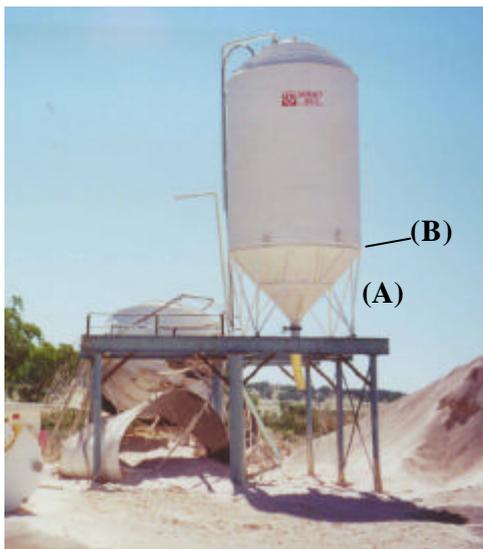
INCIDENT

An overhead silo suddenly collapsed. Fortunately, no one was hurt in the incident.

CIRCUMSTANCES

The silo had been installed for about 6 months. It was designed to hold over 100 tonnes of product. At the time of the failure the silo contained 70–80 tonnes of product.

Operators heard a loud noise and found the collapsed silo under the supporting steel framework. Operational activities and climate conditions were not considered to have been part of the silo failure.



The collapsed silo is to the left of the upright one on the right.

The white pipe framework (A), which appears to have failed on the collapsed silo, is shown between the main support and the silo.

"B" indicates the location of the top pipe ring.

INVESTIGATION

The pipe framework immediately beneath the silo failed, causing the silo to drop onto the steel support frame. The impact caused a web shear failure of the main structure.

A previous minor incident, the failure of the top pipe ring ("B" in the photograph), had resulted in a slight settling and lean of the silo. This had led to a small amount of local deformation in the fibreglass silo wall and slight shearing of fibreglass over a pipe strut.

Because of the earlier incident, the silo had been emptied and replaced with a new unit that included a reinforced pipe ring. After the silo collapse, an inspection of the pipe ring indicated that the modification was structurally sound. However, the welds on the remainder of the framework were sub standard.

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RECOMMENDATIONS

- Mine sites using any storage facilities should obtain appropriate engineering advice on the suitability of support structures.
- All buildings and structures should be reviewed to ensure that they comply with appropriate Australian Standards.
- The structural integrity of all load-bearing components should be included in all routine “regular inspection programs”.

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