

SAFETY: GRAIN DUST CONTROL IN SEALED STORAGES AND GAS CLEARING TECHNIQUES

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ABSTRACT

Introduction of a new technique in grain storage and handling may bring new, unfamiliar problems relating to safety. The use of sealed storages is one such technique. The very nature of the process, aiming to contain gases within a structure, also creates the potential for problems associated with build-up of airborne dust, retention of residual fumigant in workspaces and stresses in the storage structure which may be altered by sealing. Specific measures are required to ensure these cause no hazard or discomfort to workers. Sealed Vertical Silo bins pose few direct safety problems as workers are not normally required to work in them. They must be fitted with efficient dust extraction systems to remove dust raised during inloading and with a simple aeration system to remove gases so that personnel can gain access to the grain without hazard. Pressure relief valves must be fitted to ensure structurally dangerous air pressures are not generated, notably during outloading, in the bin.

The operational safety problems raised by sealing horizontal stores are much greater as it is often necessary for personnel to work within the store. The structure itself may be able to stand less air pressure. Particular attention is thus required to both the provision of a method of ventilation and to pressure relief systems.

It is necessary to monitor gas and dust concentrations to check that they are within acceptable limits. Exhaust gases from grain moving equipment may also build up unless properly vented.

These problems may be minimised by providing forced (or efficient natural) ventilation during grain handling or after fumigation. The ventilation systems must be designed to be sealable when not in use.