



**DEPARTMENT OF MINES
WESTERN AUSTRALIA**

SIGNIFICANT INCIDENT REPORT NO. 32

STORAGE TANK EXPLOSION

INCIDENT

During routine charging of an elution column with carbon, an operator attached a compressed air line to the carbon storage tank to accelerate the transfer of the carbon. After attaching the air line compressed air was introduced into the storage tank at a pressure of 680 kPa (100 psi).

The welding at the top of the 2 metre diameter storage tank failed and the 2 metre diameter storage tank top was propelled a distance of approximately 20 metres. Although no person was injured in this incident the potential for serious injuries or fatality was high.

CAUSE

The storage tank was not designed to take internal pressure of the magnitude applied; at a pressure of 680 kPa the top of the storage tank was subjected to an end force equivalent to approximately 218 tonnes.

COMMENTS AND PREVENTATIVE ACTION

Compressed air should never be applied to any closed container which is not designed to withstand the maximum pressure that may result.

Storage tanks and similar type of appliances are not normally designed to withstand relatively high internal pressures. Emptying materials such as carbon from storage tanks should be done by gravitation or by the use of a non-compressible fluid such as water. If a non-compressible fluid is used care must be taken to ensure that pre-set pressures are not exceeded and protection is provided by the installation of relief valves on the tanks. Each relief valve must be set to relieve the applied pressure to a tank safely.

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