Department of Minerals & Energy
Western Australia

No. 16

S A F E T Y B U L L E T I N

HAZARD ALERT - USE OF INERT GASES IN MINING/INDUSTRIAL PROCESSES

THE HAZARD

There are a number of processes both in the mining industry and in general industrial practice which involve the use of inert gases such as nitrogen and carbon dioxide.

Examples include nitrogen inflation of heavy duty tyres, carbon dioxide in fire extinguishing systems, and carbon dioxide and argon and argon/helium mixtures as shielding gases in welding.

Extreme care is required where such gases are used in areas with limited or no ventilation flow, and in particular in confined spaces or workplaces.

Whereas inert gases are not in themselves toxic, they can displace the ambient atmosphere to the extent that its available oxygen content is reduced below the level required to sustain life. (The recommended safe oxygen level in the standard referenced below is 19.5% by volume in a confined space).

In extreme cases the air can be displaced completely and a person exposed to this situation will collapse and die very quickly.

A fatality occurred recently in Western Australia where an operator using an inert gas in a trench was apparently asphyxiated due to a build up of the gas in the confined working environment.

PRECAUTIONS

Where inert gases are in use it is recommended that as a minimum the following precautions are taken to eliminate or control the risks associated with the hazard potential:

- All persons who are to use the gases, or who may be exposed to them in any process, are made fully aware of their properties and their hazard potential.
- Systems of work (including appropriate air monitoring) are devised and implemented to ensure that persons are not exposed to the risk of an irrespirable atmosphere developing.
- In cases where persons are required to use inert gases in confined spaces or in workplaces with limited ventilation flows the procedures contained in the **Australian Standard AS 2865 (1995) - (Safe Working in a Confined Space)** are implemented. As an alternative approach, operating procedures designed to provide at least an equivalent level of protection to that in the Standard may be adopted.

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