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Suffocation in hotel cellar from gas leak in beverage system

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(Previously titled - **Hotel Cellar Death**)

Purpose

The purpose of this Alert is to inform employers and self-employed persons of a recent fatality which occurred in a hotel cellar, involving pressurised gas, and to recommend preventative measures.

Background

A recent death in the cellar of a hotel in Western Victoria has highlighted the potential dangers of beer and soft drink gas systems. These systems use either carbon dioxide or a mixture of carbon dioxide and nitrogen, to carbonate and provide a pressure head for tapping off beverages.

Carbon dioxide and nitrogen are asphyxiants which when breathed in, can cause suffocation. In a poorly ventilated area like a cellar, the oxygen in the air can be diluted and displaced by gases from a leaking beer or soft drink gas system. These gases are cold when they leak from the system and because they are heavier than air, the entire cellar can become filled with an asphyxiating (oxygen deficient) atmosphere. A person entering a cellar in this situation can be overcome without warning. Death will occur within 3 minutes. Anyone who spontaneously attempts to rescue a victim in these circumstances may also be overcome and die.

There are other features that are commonly associated with work in cellars which may also contribute to this type of accident, such as working alone in an isolated area.

Preventative Measures

Anybody who goes into a cellar (whether they be employees or contractors) needs to be aware of the hazards which may be present, and be trained in the correct way of using and maintaining these gas systems.

The following points should be considered when developing **safe work procedures**:

- It is vital to prevent leaks of asphyxiant gas (carbon dioxide or nitrogen) from the system. This can be achieved by implementing a maintenance program which includes regular inspection, leak testing and servicing of the gas system. There are competent service contractors available to do this work. It is often useful to purchase beverages from

suppliers who can provide routine maintenance, servicing and inspection of the equipment.

- Where gas systems are installed in cellars, consideration should be given to ventilation (either natural and/or mechanical) to try and prevent the build up of gases in the event of a leakage.
- Entry to the cellar should involve a buddy system. The buddy should remain outside the cellar to ensure no mishaps during entry, and to ensure the person leaves the cellar. If there were to be a leakage of gases, the likelihood of death is much higher when the person is working alone.

Entry and Exit to the Cellar

- Getting in and out of the cellar through trap doors (or flaps) should be safe and as far as practicable, without risk of slips, trips or falls. There have been at least two deaths where people have fallen when entering cellars through trap doors. The way you open all trap doors (including those in the bar area) should be examined to minimise the risk of sprain or strain. In addition, employers should ensure that the door is securely fixed when it is open, so that it cannot accidentally close. Barriers such as rope, chains or similar means should be used to keep people not involved in the work away and prevent falls when the door is open.
- The area around the trap door should be kept free from obstructions.
- Stairs to the cellar should be fitted with hand rails.
- A system to prevent unauthorised access to the cellar should be in place eg locks on trapdoors accessible from outside the premise.
- Adequate lighting should be provided and maintained.

Gas Cylinders and Associated Equipment

- Gas cylinders need to be turned off at the cylinder valve when not in use.
- Keep the quantity of stored drink dispensing gas as small as possible.
- The gas cylinders and their labelling should be checked on receipt.
- Gas cylinders must be firmly secured so that they can't be knocked over.
- The valves and other fittings must be protected from accidental damage.
- Consideration should be given to relocating the gas cylinders to an open, well ventilated area.

In the longer term, some of the issues in older cellars can be designed out as hotels are renovated.

Statutory Requirements

Section 21 of the Occupational Health and Safety Act 1985 places a duty on employers *"to provide and maintain for employees a work environment that so far as is practicable is safe and without risk to health"*. This includes, as far as practicable, providing and maintaining safe plant and safe systems of work, as well as ensuring appropriate training and supervision.

Some cellars, primarily those where access is difficult or restrictive, may fall within the definition of a confined space under the Occupational Health and Safety (Confined Spaces) Regulations 1996. If this is the case, there will be specific steps that will need to be taken. If there is any doubt as to whether a cellar is a confined space, further information can be obtained from your local Office.

Further Assistance

Should you require further assistance please contact your nearest WorkCover office.

Copies of the Acts, Regulations and Codes of Practice are available from Information Victoria.

The Code of Practice for Plant is also available from WorkCover offices.

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