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1.0 PURPOSE

Compressed gases serve various purposes in laboratories, encompassing tasks such as cleaning, establishing controlled environments for tissue cultures and incubators, as well as bubbling and drying samples.

However, cylinders containing compressed gases introduce numerous chemical and mechanical hazards, impacting both users and laboratory occupants. When dealing with these cylinders, it is crucial to consider the gas type and its properties (flammable, reactive, explosive, corrosive) and potential for asphyxiation. It is worth noting that some gases, although not chemical asphyxiants, can still cause asphyxiation by displacing air.

Additionally, the vaporization of most gases induces a cooling effect that may lead to freezing of the skin and tissues. Furthermore, gases pose a risk of embolism if the gas stream is forceful enough to penetrate the skin and arteries. Described as "sleeping giants," cylinders, because of their high pressures, can turn into potential hazards, similar to explosive devices. A sudden release of gas possesses enough energy to propel a cylinder through concrete walls.

2.0 PROCEDURE

- All gas cylinders, full or empty, during transportation, storage or use, must be labelled and must be securely supported upright using racks, chains or stands.
- Regularly inspect regulators for damage or wear and replace them if necessary. Ensure proper functioning and secure attachment to cylinders.

- Verify that pressure relief devices on cylinders are in good condition and functioning correctly to prevent over-pressurization.
- When cylinders are not in use or when they are being transported, remove the regulator and attach the protective cap.
- Avoid subjecting cylinders to temperature extremes.
- Store full and empty cylinders separately. Serious cylinder contamination can occur when an empty cylinder is attached to a pressurized system causing reverse gas flow.
- Avoid dragging, rolling or sliding cylinders. Move cylinders by using a suitable hand truck with a strap, chain or other device for securing the cylinder.
- Never drop cylinders or permit them to strike each other violently.
- Place cylinders where they will not become part of an electric circuit.
- Bond and ground all cylinders, lines and equipment used with flammable compressed gases.
- Use compressed gases only in a well-ventilated area, away from any source of ignition. Toxic, flammable and corrosive gases should be used in a fume hood. Only small cylinders of toxic gases should be used. Consider the use of flow restrictors in the cylinder valve to limit the rate of flow during an accidental release.
- Use a trap or suitable check valve when discharging gas into a liquid to prevent liquid from getting back into the cylinder or regulator.
- Use appropriate safety equipment such as safety goggles, face shield and rubber gloves when using corrosive gases.

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