

Health & Safety Department (Safety Section)

Document Title	Technical Guidelines for Helium Gas Cylinder Safety
Document Code	DM-HSD-GU138-HGS2
Version #	(1)
Issue Date	03/02/2025
Superseded Issue Date	NEW

 حكومة دبي GOVERNMENT OF DUBAI	Organization Unit:	Health & Safety Department	الوحدة التنظيمية:	 بلدية دبي Dubai Municipality
	Document title:	Helium Gas Cylinder Safety Technical Guidelines	اسم الوثيقة:	
	Doc Ref:	DM-HSD-GU138-HGS2	رمز الوثيقة:	

Document History Log

Any modification to the document must be reviewed and approved
as per the corporate policies and procedures of document control

Version #	Date	Prepared/reviewed by	Modifications summary
V 1.0	03/02/2025	Sultan Khalfan Aldahmani Ahmad Saeed Al Naqaz Aamir Zaman Charles Sadek Bhagyashree Nagvenkar Aria Aladdin Omar Ahmed Gouda	Issue – Version (1)

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1 Purpose

Due to its odorless, colorless nature, its inertness with other elements, and its lighter-than-air properties, helium gas has a wide range of applications in daily life. In addition to its common use in helium balloons, it is used in car airbags, medical devices, aircraft, and various high-tech equipment. While helium is often associated with fun for campers and kids, it can be dangerous if not handled properly. Although it is not chemically poisonous, inhaling helium can displace the air in the lungs, leading to suffocation without the person realizing it.

When correctly used Helium gas is a safe, non-flammable, non-toxic gas which is lighter than air. It can be used safely either indoors or outdoors, provided appropriate care and attention is taken. Misuse of Helium can lead to unconsciousness and subsequent death as Helium contains no oxygen and so should not be inhaled.

The purpose of this technical guidance document is to provide clear and comprehensive safety instructions for the handling, storage, and use of helium gas cylinders in balloon applications. It aims to ensure the safe operation of helium-related activities by outlining best practices to prevent accidents, minimize risks of suffocation or injury, and promote responsible usage. This document is intended for anyone involved in the handling of helium gas, including event organizers, retailers, and consumers, to ensure the safe and proper use of helium balloons.

2 Scope

This technical guidance document applies to all organizations within the Emirate of Dubai involved in the handling, storage, transportation, and use of helium gas cylinders for balloon applications. In addition, establishments or entities involved in the storage and supply of Helium gas shall also refer to other applicable requirements and standards as is seen in reference section below, and any other concerned government authority's requirements/guidance applicable in this regard.

3 Definitions

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Unless the context otherwise requires, the following terms shall be deemed to mean the definitions hereby assigned to them.

Definition	Meaning
Accident:	Any incident which occurred and has given rise to ill health, injury, or fatality.
Cylinder:	Pressurized containers are usually made of steel used to store Helium gas.
Emergency Preparedness and Response Plan:	Document developed by the establishment to ensure the safety of people present on site and to minimize the effects of identified emergency events that could endanger an establishment's ability to function.
Helium Gas:	Helium is a colorless, odorless, tasteless, non-toxic, inert, and lighter-than-air gas. It is the second lightest and second most abundant element in the universe, classified as a noble gas due to its exceptionally low reactivity.
Safety Cap:	Device attached to the cylinder to provide protection to the valve.
Valve:	Part of cylinder is used for gas filling, service, and level indication.

4 Helium Gas Cylinder Safety

4-1 General

Companies engaged in the storage, use and supply of Helium cylinders in the Emirate of Dubai are required to satisfy the safety requirements of Dubai Municipality as prescribed in this Technical Guideline.

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4-2 Hazard Identification and Risk Assessment

The employer shall carry out hazard identification and risk assessment to identify the applicable hazards associated with Helium gas cylinder filling, handling, storage, and transportation operations.

Common potential hazards associated with Helium gas are (list is not exhaustive):

- Asphyxiation
- Pressure-related injuries
- Cold burns if Helium comes into contact with skin or eyes.
- Noise-induced harm
- Transportation incidents.
- Handling or Lifting injuries.
- Cylinder valve damage, etc.
- Fire and explosion risk (in rare cases)

Having completed a risk assessment and having taken account of existing controls, the establishment should be able to determine whether existing controls are adequate or need improvement, or if new controls are required.

In cases wherein new or improved controls are necessary, selection should be based on the principle of the hierarchy of hazard controls which consist of elimination or minimization through engineering, administrative and personal protective equipment controls.

Hazard identification should be conducted by a person(s) with competence in relevant hazard identification methodologies and techniques and appropriate knowledge of the work activity.

Being odorless, colorless, tasteless, and non-irritating, helium has no warning properties. Although helium is non-toxic and inert, it can act as a simple asphyxiant by displacing oxygen in the air to levels below that required to support life. Inhalation of helium in excessive amounts can cause dizziness, nausea, vomiting, loss of consciousness and death

4-3 Safe Systems of Work

Employers are required to implement safe systems of work which include information, training, instruction, and supervision. Safe systems of work must be effectively communicated to all stakeholders detailing potential hazards, duties and responsibilities, procedures, and guidelines. Ensure that workers are properly supervised to follow safe work procedures and guidelines and to ensure proper and diligent use of protective and lifting equipment.

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4-4 General Helium Cylinder Requirements

- Ensure that all Helium cylinders distributed in the Emirate of Dubai are professionally designed, fabricated, tested, filled, marked/labeled, color coded and checked in accordance with MoIAT (Ministry of Industry and advanced Technology), UAE Federal law, and other applicable UAE government regulations.

Companies engaged in filling, the pre-filling inspecting party and the rehabilitation party for gas cylinders and valves must have clear, announced, and written instructions for the process of withdrawal or cancellation of Helium cylinders in the market in accordance with MoIAT (Ministry of Industry and advanced Technology) and other applicable UAE government regulations.

These instructions must include the rules that are taken into consideration while replacing valves of cylinders that are in service, as well as the permission of reusing valves off cancelled cylinders.

4-5 General Storage Provisions

All Helium gas cylinders shall be stored upright in a well-ventilated, dry, cool, secure area wherein no Helium gas cylinder shall be stored or kept under direct sunlight and protected from the weather, preferably fire-resistant.

No part of a cylinder should ever be allowed to exceed 125°F (52°C) and areas should be free of combustible materials. Never deliberately overheat a cylinder to increase the pressure or discharge rate

Cylinders should be stored away from heavily traveled areas and emergency exits. Avoid areas where salt and other corrosive materials are present.

The valve outlet seal and valve protective cap should be left in place until the cylinder has been secured against a wall or bench, or placed in a cylinder stand and is ready for use.

When returning empty cylinders, ensure the valve is closed and that some positive pressure remains in the cylinder. Replace any valve outlet and protective caps originally shipped with the container and label the cylinder as “Empty.” Do not store full and empty containers together.

Safety management systems shall be carefully reviewed and revised to assess effectiveness and suitability of existing control measures.

4-6 Safe Handling Requirements:

Cylinder range: Weights can range from 4.4kg up to 80kg.

Before handling and using helium gas cylinders, ensure you understand the properties of the gas, the potential hazards, correct manual cylinder handling and actions to take in the event of an emergency.

- Read any Helium Gas Safety Data Sheet and keep it for reference

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- Ensure you understand the properties and hazards of the gas you are using and the correct operating procedures for filling balloons
- The cylinder label identifies the gas contents of the cylinder and provides basic safety information.
- Never use a cylinder unless it can be clearly identified
- If a cylinder is delivered without a label it should be returned to supplier
- To avoid muscle strain and injury, use correct lifting techniques. Cylinder trolleys should be used when necessary
- Never drop, drag, roll, or slide cylinders. Use a specifically designed equipment for cylinder movement
- Never attempt to lift a cylinder by its cap/valve
- Use cylinders in an upright position and secure them to prevent toppling.
- Do not attempt to catch a falling cylinder; move out of the way.
- The valve on high-pressure helium gas cylinders should never be opened unless the appropriate filling kit is attached.
- Check if the valve outlet is free from contamination before fitting the filling kit.
- Slowly open the cylinder valve by turning it in an anti-clockwise direction. Listen for any obvious leaks. If there is a leak, turn off the valve, release any excess gas in the filling kit and check you have fitted the filling kit correctly.
- The cylinder valve should be closed when the cylinder is empty or not in use. The cylinder valve is closed by turning it in a clockwise direction, hand tight only.
- Remove the filling kit if moving the cylinder any distance or ceasing use. Before removing the filling kit, turn off the cylinder valve and release the pressure in the kit.
- Wrenches should never be used to open or close a valve equipped with a handwheel. If the valve is faulty or handwheels are missing, contact the gas supplier.
- If difficulty is experienced operating the container valve or using the container connections, discontinue use and contact the gas supplier. Use only the proper connections on the container. **DO NOT USE ADAPTERS!**
- Always open a compressed gas cylinder valve slowly to avoid rapid system pressurization.
- NEVER insert an object (e.g., wrench, screwdriver, pry bar, etc.) into the opening of the cylinder cap. Doing so may damage or inadvertently open the valve. Use only a specially designed strap wrench to remove over-tightened or rusted caps.
- Never tamper with the safety devices on valves or cylinders.

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- Use piping and equipment designed to withstand the maximum pressures encountered.
- Use a pressure reducing regulator or separate control valve along with properly designed pressure relief devices to safely discharge gas to working systems.
- Use a non-return valve to prevent reverse gas flow into the containers.
- It is recommended that all vents be piped to the exterior of the building and are in accordance with local regulations.
- Refilling or shipping a compressed gas cylinder without the consent of the owner is forbidden
- Do not scrap a high-pressure cylinder
- Always point the balloon and inflator away from you during inflation. The cylinder valve should also be properly secured after use.

4-7 Storage

- Helium gas cylinders can rupture when heated in a fire.
- Store cylinders in a well-ventilated, non-smoking area, away from other flammable materials and sources of ignition or heat.
- Store cylinders in an upright position and secure them to prevent toppling. Never turn your back on a free-standing cylinder. Use cylinder safety stands, trolleys, and wall straps.
- Cylinders stored in the open should stand on a well-drained, shaded, and flat surface.
- Keep the cylinders from children all the time, as only responsible adults should be trusted to use the cylinders or any other equipment with helium gas.
- Do not leave helium cylinders unattended or in an unsupervised public place.

4-8 Transport

- Check the cylinder for any leakage before transporting it.
- Use an open vehicle where possible. If using a closed vehicle, ensure there is good ventilation.
- Always make sure the cylinder is properly secured so it cannot move, even during emergency braking.
- Unload cylinders as soon as possible.
- Do not use or store cylinders in a vehicle.
- Should your vehicle be involved in a fire, call the Fire Brigade, and inform them that you are carrying a high-pressure helium gas cylinder.

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- If you are carrying a load containing twenty or more helium gas cylinders your journey may come within the scope of the Carriage of Dangerous Goods Regulations.

4-9 Leak detection

- The commonly used method for testing gas equipment for leaks is to apply a leak detect solution.
- Leaks detect solutions are soapy in nature and leaks are indicated by the presence of bubbles.
- When using such leak detect solutions it is important to ensure the solution is compatible with the materials used in the equipment construction.
- Ensure good ventilation when using helium to prevent asphyxiation in enclosed spaces.
- Use proper pressure regulators when introducing helium into a system.
- Avoid contaminating vacuum systems with excessive helium, as it can take time to pump out.
- Follow equipment manufacturer guidelines for mass spectrometer and sniffing probes.

4-10 Fire Fighting Requirements:

Since helium is non-flammable, special firefighting equipment and instructions are not needed. However, upon exposure to intense heat or flame, cylinders may vent rapidly and/or rupture violently. Most cylinders are designed to vent contents when exposed to elevated temperatures. Pressure in a container can build up due to heat, and it may rupture if pressure relief device should fail to function.

4-11 Fire Extinguishers:

- **Class K (wet chemical) fire extinguishers** should be readily available in areas with helium cylinders to address any potential fires involving surrounding materials, especially if flammable materials are present.
- **CO2 extinguishers** may also be effective in the event of a fire near helium cylinders, as CO2 can help to smother flames by displacing oxygen.
- **Dry powder extinguishers** can be used to put out fires in cases of electrical equipment or combustible materials near helium cylinders.

4-12 Warning Sign/Notice:

Provide clear information regarding safety, handling, and fire precautions related to helium gas cylinders.

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A label indicating that the cylinder contains compressed gas.



A clear label indicating that the cylinder is empty to prevent confusion.

4-13 Training

Employers are required to provide suitable and sufficient training for employees especially those engaged in Helium cylinder handling operation and even visitors. Records of any training including induction and toolbox talks shall be properly kept for at least five (5) years and be made readily available to Dubai Municipality inspectors.

Scope of training may include risks of handling Helium cylinders, safe handling and storage, proper use of lifting equipment, precautions to be observed while working with Helium gas, location of firefighting provisions, use of PPE's, etc.

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4-14 Personal Protective Equipment

The employer shall ensure to provide suitable personal protective equipment which in accordance with MoIAT (Ministry of Industry and advanced Technology).

and/or conforms to international standards such as BS, EN, ISO, ANSI, ASTM, etc. Employer shall refer to applicable Technical Guidelines issued by the Health and Safety Department on Dubai Municipality website (www.dm.gov.ae).

Employers must note that use of personal protective equipment does not provide unlimited protection against hazards and are not substitutes for sound risk control measures but should be used in conjunction with engineering controls and sound safety practices.

Workers shall be provided by employers with adequate training and instruction in the proper use, testing and fitting of personal protective equipment.

All PPE's including emergency response equipment shall be properly stored, checked, maintained, and tested at regular intervals.

Personnel must be thoroughly familiar with properties and safety considerations before being allowed to handle helium and/or its associated equipment.

The use of safety glasses, safety shoes, and leather work gloves is recommended when handling cylinders. Only trained and certified emergency responders should respond to emergency situations. In emergency situations, self-contained breathing apparatus (SCBA) must be used.

First aid: Persons suffering from lack of oxygen should be moved to fresh air. If the victim is not breathing, administer artificial respiration. If breathing is difficult, administer oxygen. Obtain immediate medical attention. Self-contained breathing apparatus (SCBA) may be required to prevent asphyxiation of rescue personnel.

4-15 Workers Responsibility

- All workers shall ensure to fulfill their duties and responsibilities for their personal, workplace and general public health and safety during the conduct of activities related to gas cylinder storage and handling. The following are:
- Abide with all health, safety and protection procedures including all applicable safety rules and regulations of the establishment at all times while at work.
- Personal protective equipment as required shall be properly and diligently used.
- Ensure cooperation with the employer with regards to health, safety, and protection programs.

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- Refrain from unsafe actions or disregard of health and safety rules of the establishment which could create unsafe conditions and situations.
- Willing to accept information, training, instruction, and supervision from the employer.
- Report to the employer any unsafe acts, hazards, situations, and conditions that may arise or is present in the workplace.

4-16 Emergency Preparedness and Response

The employer shall ensure that Emergency Preparedness and Response Plan (EPRP) shall be properly developed, maintained, and implemented in cases of emergency situations. The EPRP shall cover all foreseeable emergencies such as gas leak, fire, and explosion, etc. and shall be commensurate with the nature and magnitude of the risks.

Arrangements for developing EPRP shall involve the following steps:

- Identification of potential incidents and evaluation of its related risks.
- Development of necessary emergency plans and procedures to address identified incidents and risks.
- Acquisition of appropriate emergency response equipment,
- Conducting training to the staff to properly implement response plans and procedures including proper use of emergency equipment.
- Conduct emergency response drills periodically to evaluate EPRP.
- Review and update plan, as necessary.

Emergency Preparedness and Response Plan shall include reporting procedure of emergency incidents to Dubai Municipality and other competent government authorities.

Emergency equipment shall be properly maintained and inspected and be readily available as needed.

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4-17 Reporting Requirements

The establishment shall immediately call the following Dubai Government Emergency Contact Numbers in cases of fire, gas leak or other emergencies:

Dubai Police	999
Dubai Civil Defense	997
Dubai Corporate for Ambulance Services	999/998
Dubai Municipality	800900

Emergency incidents which resulted to workers' injury or fatality shall be reported within 24 hours to Health and Safety Department of Dubai Municipality, Failure to submit incident/accident report to Dubai Municipality within the above given time limit shall subject the company to appropriate legal actions.

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5 Suggestions, Comments & Complaints

For (suggestions, comments, and complaints)	For further information
- Unified interactive platform that connects Dubai Government and its customers: The 04 Platform https://04.gov.ae/ 📞 Dubai Municipality - Call Center (24/7): 800900	✉ Safety@dm.gov.ae 📞 Dubai Municipality - Call Center (24/7): 800900

6 References

- Local Order No. (61) of 1991 Concerning Environment Protection Systems in the Emirate of Dubai
- Local Order No. (11) of 2003 Concerning Public Health and Safety of the Society in the Emirate of Dubai
- Emirates Authority for Standardization and Metrology (ESMA) - standards for the design, fabrication, testing, filling, marking, checking and cancellation of Helium Cylinders.
- Department of Economic Development (DED)
- Dubai Civil Defense (DCD)
- Roads and Transport Authority (RTA)
- Dubai Municipality (Environmental Sustainability Department): environment protection and permit requirements.
- MoIAT (Ministry of Industry and advanced Technology)
- Dubai Municipality (Building Permit Department) - approval of building/warehouse facility;
- Australia and New Zealand Industrial Gas Association (ANZIGA) HELIUM – SAFETY INFORMATION
- Technical Guidelines (53) for Liquefied Petroleum Gas Cylinders, Health and Safety Department - Dubai Municipality.

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