

# CGA M-1 & ASSE 6015 Certification Exam

## CGA Certification Board, LLC

### Exam Overview

The CGA M-1 & ASSE 6015 certification exam will provide a comprehensive evaluation of a candidate's knowledge of the process of designing, locating, installing, commissioning, maintaining, testing, removing, and documenting work on a bulk compressed medical gas (CMG) supply system in accordance with CGA M-1, *Standard for Medical Gas Supply Systems at Health Care Facilities* (an American National Standard), and ASSE 6015, *Bulk Medical Gas Systems Installers*.

This is an open book exam. Candidates are encouraged to bring:

- CGA M-1, *Standard for Medical Gas Supply Systems at Health Care Facilities* (4th ed.);
- NFPA 99, *Health Care Facilities Code* (2018 ed.);
- NFPA 55, *Compressed Gases and Cryogenic Fluids Code* (2015 ed.); and
- 21 CFR parts 210 and 211, FDA Current Good Manufacturing Practices.

Each candidate will be permitted 2 hours to take the exam; requests for accommodation for additional time can be made when the exam is scheduled. Candidates are not permitted to share material(s) or use any electronic device during the exam.

For the CGACB Certification Procedures & Policies, application forms, and more, please visit [www.CGACB.org](http://www.CGACB.org).

### Exam Outline

The following topics from CGA M-1 (4<sup>th</sup> ed.) are covered in the certification exam:

Definitions of equipment and components in compressed medical gas central fluid supply systems.

Health hazards and safety considerations

Other applicable codes and standards

- NFPA 99
- NFPA 55
- FDA regulations in 21CFR parts 210 and 211
- International Fire Code
- NFPA 1 Fire Code

Personnel

- Quality control unit (QCU) responsibilities
- Personnel qualifications
- Personnel experience

- Personnel education and training
- Training content
- Certification of supplier qualifications
- Training instructor qualifications

#### Site selection

- Meeting code setback distances
- Health care facility responsibilities
- System owner responsibilities
- Supplier responsibilities

#### Developing a suitable site

- Equipment layout
- Foundations
- Security

#### Equipment selection

- System specifications
  - Main supply
  - Reserve supply
- Equipment specifications
  - Vessels / tanks
  - Vaporizers
  - High pressure manifolds
  - Pressure control devices
  - Pressure relief devices
    - Cryogenic supply systems
    - High pressure supply systems
  - Alarms
  - Tubing and valves
  - Fittings
  - Piping supports
- System design
  - Vessels / tanks
  - Reserve supply system
  - Cryogenic compressed medical gas fill system
  - Vaporizers
  - Pressure control devices
- Process flow diagrams
- Regulator set points
- Line pressure relief valves
- Vendor selection
- Equipment reuse

#### Equipment transportation

## Equipment installation

- Temporary system
- Cleaning
- Odor test
- Installation
- Pipe joints
  - Brazed joints
  - Threaded joints
  - Welded joints
  - Axially swaged fittings
  - Axially swaged, elastic strain preload fittings
  - Extruded fittings
- System identification, marking, and tagging
- System pressure test

## Startup

- First fill
- Purge
- Product testing
- Startup testing
- System verification
- Commissioning
  - System checkout
  - Introduction of product to a health care facility

## Operation

- Maintenance
  - Vessel pressure relief valves
  - System inspection
  - Reporting complaints
  - Product recall

## System removal

## Documentation

- Installation and modification
  - Before starting work
  - During work
  - Upon completion of work
- Equipment inspection