



MEDICAL GAS

MAINTENANCE TRAINING REQUIREMENTS (NFPA 99)

You treat a disease, you win, you lose. You treat a person, I guarantee you, you'll win, no matter what the outcome.

Hunter Doherty "Patch" Adams
Physician, Comedian, Author, Activist



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- Master Plumber & Inspector
- NITC Certs (6010, 6030, 6050)
- CILB Approved Instructor



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MODULE OBJECTIVES

1. Compare the 2012 & 2015 *NFPA 99* maintenance training standards
2. Articulate the compliance options outlined in the 2015 codes
3. Consider the context with Florida's medical gas installation training
4. Discuss challenges with implementation & enforcement
5. Share experiences to assist with compliance & safety

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What do you believe are the greatest challenges with regard to medical gas maintenance?

What do you think the training requirements are for medical gas maintenance personnel today?

What do you think the training requirements are for medical gas installation in Florida?

Are you aware of any national certifications specifically for medical gas maintenance personnel?



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WHY DOES THIS MATTER?



- Matter of life and death
- Protection of patients, staff, visitors
- All aspects of systems must comply
 - NFPA 99
 - State License Laws
 - Accreditation Standards

ASSE

The American Society of Sanitary Engineering was founded in 1906 by plumbing inspectors from 25 U.S. cities. Their 6000 Series represent the Professional Qualification Standards for Medical Gas Systems Personnel. These standards provide jurisdictions and organizations with a nationally recognized standard to use in ensuring that individuals working on critically important medical gas systems possess the knowledge and experience required.

NFPA

The National Fire Protection Association is a non-profit organization established in 1896. Their *Health Care Facilities Code* (NFPA 99) establishes criteria for levels of health care services or systems based on risk to the patients, staff, or visitors in health care facilities to minimize the hazards of fire, explosion, and electricity. These requirements address installation, inspection, testing, maintenance, performance, and safe practices for facilities, material, equipment, and appliances, including medical gas and vacuum systems.

Verification

Medical gas verification is performed by a 3rd party (other than the installing contractor or municipal inspectors). These are rigorous, extensive “inspections” and testing of medical gas installations before being put into service, verifying the installation complies with NFPA 99 (*Health Care Facilities Code*).

O₂ Service

The interior of piping used for medical gas installations must be clean and oil free, using cleaners that are safe for subsequent patient exposure. All medical gas piping must be clean enough for pure oxygen service whether or not the pipes will actually transport oxygen or other pressurized gas for patient use. This is accomplished with a nitrogen purge.

NFPA MANDATES



- Piping materials used, including copper pipe and fittings “cleaned for O₂ service”
- Installation requirements, including:
 - Nitrogen purge during brazing to protect cleanliness inside the pipe
 - Cross connection prevention
 - Proper supports
 - Extensive labeling affixed to all piping

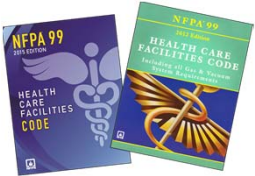
NFPA MANDATES



- Manufacturer’s design requirements:
 - Equipment, inlets & outlets, alarms
 - Assurance of clean, pure, safe systems
 - Specific safeguards against cross connections
- Testing requirements for equipment manufacturers, installers and inspectors

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NFPA MANDATES



- Verification requirements
 - Following all prerequisite inspections
 - Before systems are put into service
 - Proper Verifier training and certification
- Maintenance Requirements
 - After initial installation, testing and verification
 - To keep systems clean, safe and dependable

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COMPARING THE MAINTENANCE STANDARDS

In 2005, maintenance was not addressed.

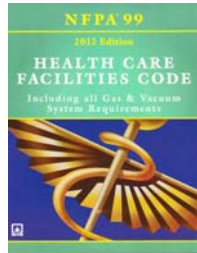
5.1.14.2 would not be used for that purpose until the next edition, 7 years later.



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COMPARING THE MAINTENANCE STANDARDS

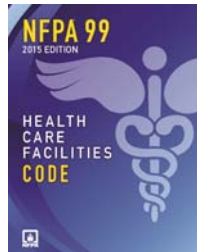
- 5.1.14.2.2.5 Qualifications. Persons maintaining these systems shall be qualified to perform these operations. Appropriate qualification shall be demonstrated by any of the following:
- (1) Training and certification through the health care facility by which such persons are employed to work with specific equipment as installed in that facility
 - (2) Credentialing to the requirements of ASSE 6040, *Professional Qualification Standard for Medical Gas Maintenance Personnel*
 - (3) Credentialing to the requirements of ASSE 6030, *Professional Qualification Standard for Medical Gas Systems Verifiers*



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COMPARING THE MAINTENANCE STANDARDS

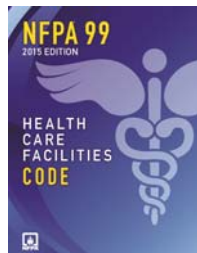
- 5.1.14.2.2.5 Qualifications.
- (A) Persons maintaining these systems shall be qualified to perform these operations.
 - (B) Appropriate qualification shall be demonstrated by any of the following:
 - (1) A documented training program acceptable to the health care facility by which such persons are employed or contracted to work with specific equipment as installed in that facility.
 - (2) Credentialing to the requirements of ASSE 6040, *Professional Qualification Standard for Medical Gas Maintenance Personnel*, and technically competent on the specific equipment as installed in that facility.
 - (3) Credentialing to the requirements of ASSE 6030, *Professional Qualification Standard for Medical Gas Systems Verifiers*, and technically competent on the specific equipment as installed in that facility.



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COMPARING THE MAINTENANCE STANDARDS

Florida is scheduled for transition to NFPA 99 (2015) on December 31st, 2017.



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ASSE 6010 vs 6040

Medical Gas Installer (6010)

Installers include anyone who works on or installs piping or components, including brazers.

The 6010 exam covers:

- Product performance knowledge
- Product installation knowledge
- Testing System and System Components
- Conducting, documenting and recording inspections and tests
- General medical gas knowledge



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ASSE 6010 vs 6040

Medical Gas Maintenance (6040)

A Medical Gas Systems Maintenance Personnel certification candidate is a qualified individual who can demonstrate competence within their scope and will be proficient in and experienced in the maintenance of medical gas and vacuum systems covered by the ASSE Series 6000 Standard.

The 6040 exam covers:

- Medical Gas & Vacuum Source Systems/Equipment
- Medical Gas Station Outlets/Inlets
- Alarm Systems
- General Knowledge Requirements
- Performance & Recordkeeping
- Cylinder Safety



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FLORIDA MEDICAL GAS INSTALLER RULES

61G4-15.031 Medical Gas Certification.

1. Plumbing contractor must have 32 hour training course
2. Training based on NFPA 99 & ASSE 6000 Series
3. Training certificate held rather than an additional license
4. Employees of a licensed plumbing contractor
 - a. Working on Med Gas must also have 32 hour course
 - b. Brazing Med Gas must pass a brazing examination
5. Courses must be by approved providers
6. Requirements effective October 2000
7. Contractor is responsible for qualification compliance
8. Contractor is responsible for presence of qualified personnel



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CHALLENGES & OPINIONS

Training – “A documented training program acceptable to the health care facility” is vague and broad.

- POSITIVE: Allows tremendous flexibility for the facility
- NEGATIVE: Lacks a minimum standard for limiting liability
- There are reasons the national standards are national standards

Maintenance – Some claim one ASSE 6040 Certified Technician can supervise untrained personnel while they perform maintenance on medical gas systems.

- Nothing in the NFPA standards are limited to supervisors
- The language is “Persons maintaining these systems shall be qualified “

Installation – Some claim only one trained Medical Gas Installer must be present while untrained personnel install medical gas systems.

- The Florida Statutes use confusing “be present” language
- Administrative rules are more specific and clear (implementing the statute)

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CHALLENGES & OPINIONS

61G4-15.031 Medical Gas Certification.

(8) It is the responsibility of the licensed plumbing contractor to be sure that on any job site where a medical gas system is being installed, improved, repaired or maintained that a person certified pursuant to Section 489.1136(1)(a) or (b), F.S., **is present.** It is the responsibility of the licensed plumbing contractor to be sure that on any medical gas system job site where brazing work is being performed by a person certified under Section 489.1136(1)(c), F.S., that a person certified under Section 489.1136(1)(a) or (b), F.S., **is present.**

NOTE: Section 489.1136(1) F.S. relates to a licensed contractor (a) and an employed installer (b). However, 61G4-15.031(4) requires anyone employed “to provide work on medical gas systems” be trained, not just present to supervise.

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PRACTICAL APPLICATION

What challenges have you experienced with:

- Implementation?
- Compliance?
- Enforcement?



How are you training Med Gas Maintenance?

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CONCLUSION

Medical Gas Maintenance is not a trivial activity.

These personnel join the front line for protecting the health and safety of patients, staff, and visitors.



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**Thank You
For Your Attendance**

- ✓ We Hope To See You Again.
- ✓ Please Let Us Know Of Any Other Ways We Can Serve You.
