



DQA CODE QUESTION AND ANSWER

Q&A 99-3 Medical Gas Cylinder Storage

This response is issued to provide general guidance to designers, facilities, and DQA regulators in Wisconsin. Individual situations may be considered, so contact the assigned DQA regulator. DQA reserves the right to revise any and all responses since the codes, standards, and conditions used to formulate this answer are subject to change. Nothing in this response can be construed as a waiver or variance. This response does not supersede or waive plan review authority.

1. Question

How many medical gas oxygen cylinders can be stored in various locations?

2. Code Quotation

NFPA 99 (1999 edition) Medical gas storage greater than 3000 cubic ft

8-3.1.11.1 and 4-3.1.1.2: (paraphrased) Medical gases greater than 3,000 cubic feet must be stored in a separate room, with 1-hour fire rated walls and 45 minute doors. The room must be vented to the outside or with a dedicated mechanical ventilation system. Electrical fixtures shall be located 5 ft above finish floor. Ignition sources are prohibited within the storage space (for example: smoking, heating elements, and other sources of ignition).

NFPA 99 (1999 edition) Medical gas storage under 3000 cubic ft

8-3.1.11.2 (paraphrased): Stored outdoors or enclosed in a noncombustible room with lockable doors. Oxidizing gases must be separated from combustibles (5 ft if the space is sprinkled or 20 ft if not sprinkled) or may be kept in a 30 min rated enclosed flammable liquid storage cabinet. Electrical fixtures shall be located 5 ft above finish floor and ignition sources are prohibited within the storage space.

4-3.1.1.2 (c): Doors shall be provided with 72in² of total free area and not open onto an egress corridor. If the louvered area can not be provided, a dedicated mechanical ventilation system is required.

NFPA 99 (1999 edition), 8-6.2.5: (paraphrased) Transferring liquid oxygen must be performed within a 1 hour rated construction, is mechanically ventilated, sprinkle protected, has ceramic or concrete flooring, and signage concerning no smoking and the nature of the hazard. Electrical fixtures shall be located 5 ft above finish floor. Ignition sources are prohibited within the storage space. Compressed Gas Association (CGA) Pamphlet P-2.7-2000 sections 5.3 and 6.1, state that oxygen use shall be at least 5 feet away from ignition sources, including electrical appliances.

CMS S&C Memo 07-10 permits 300 cubic ft of medical gas based upon the NFPA 99 (2005 edition), 9.4.3. Oxygen may be kept in each smoke compartment for routine operational usage. This amount is not considered storage. Cylinders must be secured from falling and may be placed in nurse stations, alcoves, or other spaces that do not present an egress obstruction.

3. Response

- a. **Immediate Use** – Clinician medical orders permit patients / residents to have direct and immediate access to medical gases based upon a PRN (pro re nada) or “as needed” order. Daily usage quantities are not subject to the storage requirements above yet are subject to the ignition source spacing requirements, fall protection precautions, not obstruct egress routes, and any other manufacturer requirements.
- b. **Operational Supply** – 300 cubic feet or less of compressed gas (12 E-size cylinders). See CMS S&C Memo 07-10 and NFPA 99 (2005 edition) section 9.4.3 for specific requirements.
- c. **Unit Storage** – 3,000 cubic feet or less of compressed gas (120 E-size, or 12 M-size cylinders). See NFPA 99 (1999 edition) sections 8-3.1.11.2 and 4-3.1.1.2 (c) for specific requirements.
- d. **Central Storage** – Greater than 3,000 cubic feet of compressed gas has no limit on the number of cylinders stored as long as the space meets the requirements of NFPA 99 (1999 edition) sections 8-3.1.11.1 and 4-3.1.1.2.
- e. **Liquefied Oxygen** – No limit on the number of liquid storage vessels as long as the space meets the requirements of NFPA 99 (1999 edition) 8-6.2.5. Interior space needs to accommodate proper maneuvering and operational space with the door closed.
- f. **Bulk Oxygen** - Storage of 50,000 cubic feet or more of oxygen must follow NFPA 50 (1999) for bulk storage.

4. DQA Final Action

DQA Fire Authority Approval: David R. Soens

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