Learn the ins and outs of medical gas cylinder storage in your facility

Properly storing medical gas cylinders can help diminish fire risks in healthcare facilities.

We often field questions from readers and others about the requirements for nonflammable medical gas storage—in particular, cylinder storage on nursing units.

With that in mind, let’s review the related requirements from the NFPA, The Joint Commission, and the Centers for Medicare & Medicaid Services (CMS).

Though you may typically think of “nonflammable medical gas” simply as oxygen, the phrase covers other gases, as well. NFPA 99, Healthcare Facilities, states that a nonflammable medical gas system could service nitrous oxide, oxygen, and medical air.

Other regulators may go beyond those materials. For example, the Illinois Department of Public Health also considers helium and nitrogen as medical gases, according to an agency memorandum.

It’s common for operating suites to have cylinders of nitrous oxide as a backup for anesthesia supplies, for example, says David Mohile, > p. 2.

The Joint Commission makes a new push for broader use of ILSMs

In what comes across as a change in approach, The Joint Commission has published broad examples of interim life safety measure (ILSM) uses that go beyond construction projects.

In the past, surveyors tended to focus on ILSMs as they related to Life Safety Code® (LSC) deficiencies in construction and renovation work zones.

Yet the January issue of The Joint Commission’s Environment of Care News lists a series of other scenarios to which a facility might apply the ILSMs.

The key to complying with the ILSMs is not necessarily what measures you choose, but how you determine them, says Steven MacArthur, a safety consultant for The Greeley Company, a division of HCPro, Inc., in Marblehead, MA. HCPro publishes this newsletter.

“[Surveyors] want to see an assessment,” MacArthur says. “It’s less about what you decide and more about the process you use..."
Medical gas cylinders

president of Medical Engineering Services in Leesburg, VA.

Protect loose cylinders from toppling
NFPA 99 separates medical gas storage into two broad categories: cylinders for piped medical gas systems and those for portable medical gas equipment. We’ll focus on provisions for the latter, which ultimately seek to prevent a loose cylinder from being knocked over or subjected to adverse conditions.

“What cylinders should never be left without some type of physical support, such as a stand, a cart, or wall strapping,” according to the NFPA’s 2002 Healthcare Facilities Handbook.

The precise use of a cylinder determines which storage requirements kick in.

Different code versions come into play
Technically, the 2000 Life Safety Code® (LSC) points you to the 1999 version of NFPA 99 (see 18/19.3.2.4 in the LSC) for medical gas storage requirements.

However, interpretations from The Joint Commission and CMS regarding medical gas storage reference the 2002 and 2005 editions of NFPA 99, because of newer provisions not found in the 1999 edition.

“You need to look at the rules very carefully on the storage of oxygen cylinders on a unit,” says Mohile, who is chair of the NFPA 99 technical committee on piping systems. (His comments for this article are his personal opinions and not necessarily those of the NFPA.) Let’s break down NFPA 99’s requirements for medical gas cylinder storage based on the volume of stored gas. We’ll also explain which parties reference what edition of NFPA 99 (the chart on p. 3 synopsizes the various references).

Storage of nonflammable gas with volumes less than 300 cubic feet
These provisions generally create the most buzz because they discuss options for classifying and storing in-use cylinders on units—in other words, cylinders, either in a room or on a crash cart, that are immediately available for a patient.

Surveyors are familiar with these rules and, thus, often ask about them. “It’s low-hanging fruit for inspectors” to cite if there’s a problem, says Thomas Salamone, Norwalk (CT) Hospital’s director of safety and security.

The topic is also a confusing maze of standard editions. Here is the gist: The 1999 edition didn’t set specific requirements for cylinder storage less than 300 cubic feet; instead it counted such storage as being less than 3,000 cubic feet (see the provision in the next section on p. 3).

However, the 2002 and 2005 editions of NFPA 99 have introduced the following new wording for facilities with medical gas storage of less than 300 cubic feet:

- These cylinders don’t require special storage if they remain in areas that don’t exceed 22,500 square feet (essentially, a smoke compartment)
- Staff must take precautions listed elsewhere in NFPA 99 for handling these cylinders
- When in use, A-, B-, D-, and E-size cylinders must remain attached to a stand or therapy equipment
- An individual cylinder available in a patient room for immediate use doesn’t require storage in an enclosure
- Staff can’t chain cylinders to portable equipment (e.g., patient beds)

The 2000 LSC doesn’t recognize the above bulleted provisions because they aren’t in the 1999 version of NFPA 99. For that reason, The Joint Commission and CMS have adopted these provisions from the 2005 edition of NFPA 99 (see the March Healthcare Life Safety Compliance for details about CMS’ action).

Both regulators go beyond NFPA 99 by stating that cylinders available for immediate use by staff don’t...
count against the 300-cubic-feet limit. The Joint Commission considers a cylinder in use if it is available to a patient at the bedside, properly secured on a gurney, or in an operating room.

The 300-cubic-feet threshold is what creates the common 12-E-size-cylinders rule that many facilities use. An E cylinder holds about 25 cubic feet, so 12 of those tanks equal 300 cubic feet.

Be wary of E cylinders being stored in utility and electrical closets, because it’s easy to lose track of them and suddenly find yourself above the 300-cubic-feet limit, says Salamone.

Check with your local authorities, too, as some states may take stricter views of medical gas storage on units.

For the above requirements,
- the LSC references section 8-3.1.11.2 (1999 edition of NFPA 99)
- The Joint Commission and CMS reference 9.4.3 (2005 edition)

Storage of nonflammable gas with volumes greater than 300 cubic feet, but less than 3,000 cubic feet

Facilities that store medical gas cylinders in excess of 300 cubic feet, but less than 3,000 cubic feet, must meet the following provisions:
- Restrict access to the cylinders, such as with a door or fence
- If you store the cylinders indoors, verify that the enclosure is made of noncombustible or limited combustible material
- Don’t store cylinders containing oxidizing gases (e.g., oxygen and nitrous oxide) near flammable gas, liquids, and vapors
- Ensure that liquefied gas cylinders meet other referenced requirements in NFPA 99
- Don’t allow storage locations to reach temperatures that exceed 130° F
- Install electrical wall fixtures in the storage area at least 5 ft above the floor
- Protect cylinders from falling objects, tampering, and abnormal movement from outside objects
- Chain or otherwise support freestanding cylinders properly, using a stand or cart

Three editions of NFPA 99 at work for cylinder storage


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<tr>
<th>NFPA 99 references</th>
<th>2000 LSC</th>
<th>The Joint Commission</th>
<th>CMS</th>
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<tr>
<td>1999 edition</td>
<td>Yes</td>
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<td>2002 edition</td>
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Prohibit smoking, open flames, electric heating elements, and other sources of ignition within storage locations and within 20 ft of outside storage locations.

Separate cylinders containing oxidizing gases from combustible materials by a minimum distance of 20 ft (5 ft if sprinklers protect the storage location) or by putting the cylinders in cabinets made of noncombustible materials and with a half-hour fire rating.

Facilities may find it practical to use an approved flammable liquid storage cabinet as a way to meet the last requirement above. It’s easy to install and move these cabinets.

Locations of less than 3,000 cubic feet must also have adequate ventilation, including venting near the floor and ceiling, proper signs, and at least a one-hour fire rating (see 5.1.3.3.2), Mohile says.

Watch out for the distances between cylinders and combustible materials, as noted in the last requirement above, as those distances are often impossible to meet because most storage rooms aren’t even 20 ft across, Salamone says.

Also keep an eye open for loose chains that cordon off cylinders. The chains instead should remain tight to prevent a tank from falling, he adds. Finally, although not required, Salamone also recommends that you lock these storage rooms or keep them under constant staff supervision.

For the above requirements,
- the LSC references section 8-3.1.11.2 (1999 edition of NFPA 99)
- The Joint Commission references 9.4.2 (2002 edition)
- CMS references 8-3.1.11.2 (1999 edition)

Storage of nonflammable gas with volumes equal to or greater than 3,000 cubic feet

NFPA 99 refers facilities to its chapter on gas and vacuum systems when portable medical gas cylinder storage meets or exceeds 3,000 cubic feet.

That chapter states that if facilities store 3,000 cubic feet or more in a location, then the walls, floors, and ceilings separating this location from other occupancies in the building must have a one-hour fire-resistance rating.

Also, such locations must vent to the outside.

For the above requirements,
- the LSC references section 8-3.1.11.1 (1999 edition of NFPA 99)
- The Joint Commission references 9.4.1 (2002 edition)
- CMS references 8-3.1.11 (1999 edition)
to make the decision.” Facilities that don’t properly evaluate ILSMs face strict consequences (see “Poor ILSM policies can lead to conditional accreditation” on p. 6).

The 11 ILSMs fall under EC.5.50 (protecting occupants from LSC deficiencies). The rationale statement to the standard indicates that facilities should use ILSMs to compensate for the following:

- Deficiencies that occur during renovation or construction activities
- Deficiencies that staff can’t immediately correct

The second bulleted item above is at the crux of the new examples for ILSM compliance, yet it is an aspect that many facility directors and safety officers don’t consider, according to The Joint Commission.

MacArthur reminds his client facilities to think beyond construction when it comes to ILSMs. “It’s much less risk exposure” to take that broader approach, he says.

Check out the following scenarios described in Environment of Care News, all of which could create LSC deficiencies. The suggested ILSMs were culled from The Joint Commission and Healthcare Life Safety Compliance’s editorial board.

**Common maintenance activities**

**Scenario:** Suppose maintenance crews are replacing lamps in a stairwell, an activity that may require the use of large ladders that will block the stair landings. The ladders could impede egress through a stairwell during a fire or emergency.

To an extent, the level of risk is dependent on whether staff or maintenance crews leave the blocked egress unattended, says Elizabeth Zhani, a spokesperson for The Joint Commission.

If an electrician leaves the ladder in the stairwell to go out to the truck to grab a new fixture, for example, then “the occupants were at risk during that time,” Zhani says. “Was someone assigned to manage the ladder in the stairwell while the electrician was gone? If so, then that person effectively was the ILSM.” It is up to facilities to determine at what point an unattended, blocked egress is too much of a risk without instituting ILSMs, she adds.

**Suggested ILSMs:** Designate alternative exits, tell staff about the blocked egress, and increase surveillance of the affected area.

**Fire equipment testing and maintenance**

**Scenario:** Conducting main drain tests could disable a sprinkler system for several hours.

**Suggested ILSMs:** Alert the local fire department and provide a fire watch if the sprinkler system is disabled for more than four hours in a 24-hour period, provide extra fire extinguishers in the affected areas, ask your housekeeping staff to increase their trash collection to reduce combustible material accumulation, and educate staff about the ILSMs in use and how to compensate for the disabled system.

**Alarm system projects**

**Scenario:** Replacing or upgrading a fire alarm system might leave a facility without alarm protection.

**Suggested ILSMs:** Alert the fire department and provide a fire watch if the alarm system is disabled for more than four hours in a 24-hour period, provide extra fire extinguishers in the affected areas, ask your housekeeping staff to increase their trash collection to reduce combustible material accumulation, and educate staff about the ILSMs in use and how to compensate for the disabled system.

**Painting work in rooms**

**Scenario:** While painting walls and ceilings, contractors might cover up smoke alarms, which would thwart the alarms’ warning abilities.

**Suggested ILSMs:** Designate alternative exits, provide extra fire extinguishers in the affected areas, ask your housekeeping staff to increase their trash collection to reduce combustible material accumulation, conduct extra fire drills in the affected area, and educ-
Weather-related problems
Scenario: A wind storm knocks over a tree into a street, which might block access to the building for firefighters, police, or emergency responders.

Facilities should look at ILSMs from an emergency management perspective, because unexpected circumstances can affect life safety. “During recent emergencies, organizations effectively managed their exit routes and features of fire protection . . . so [that] the emergency was not compounded by compromised life safety,” Zhani says.

Suggested ILSMs: Provide an alternative entry path for emergency responders and alert them to the new route and increase surveillance of the affected area.

Fire door deficiencies
Scenario: Fire doors no longer latch properly or fire door gaps go beyond allowed amounts, both of which might result from a building settling.

Suggested ILSMs: Ensure that alarm, detection, and sprinkler systems are in good order, provide extra fire extinguishers in the affected areas, increase surveillance of the affected areas, and educate staff about the ILSMs in use.

Community emergencies
Scenario: A surge in patients crowds the facility’s corridors, which could block exit paths or create unexpected accumulations of flammable or combustible materials.

Surge capacity plays an important part in facilities testing their emergency management plans. “Emergencies are not one-dimensional and may escalate,” Zhani says. “Managing . . . life safety issues using ILSM may remove one escalation.

Suggested ILSMs: Designate alternative exits, provide extra fire extinguishers in the affected areas, ask housekeeping staff to increase their trash collection to reduce combustible material accumulation, increase surveillance of the affected areas, and educate staff about the ILSMs in use and how to compensate for the blocked exits.

Poor ILSM policies can lead to conditional accreditation
Don’t underestimate the importance of a sound policy for interim life safety measures (ILSM).

Sources have told us of at least two facilities that received conditional accreditation from The Joint Commission this year because they couldn’t document that staff reviewed ILSM policies as part of construction projects.

Under an accreditation rule known as CON04 within the Comprehensive Accreditation Manual for Hospitals, The Joint Commission can invoke conditional accreditation when facilities fail to implement or enforce applicable ILSMs.

Make sure you have a process in place to review ILSMs when a life safety deficiency occurs that can’t be immediately corrected.

You should also be careful to consider ILSMs for any plans for improvement (PFI) listed under your Statement of Conditions. Not every PFI will require an ILSM, but facilities should have records indicating that staff reviewed the need for ILSMs for each PFI.
**HCPro’s Life Safety Code® Workshop**

**Tips to better navigate Part 2 of the electronic SOC**

These days, the following two things are readily clear about the electronic Statement of Conditions (e-SOC):

1. Technical glitches in The Joint Commission’s e-SOC program are confusing people.
2. The new questions under Part 2 (basic building information) have thrown off facility directors.

Remember, as of January 1, all facilities should have submitted an electronic version of Part 2 to The Joint Commission through the accreditor’s extranet connection.

Yet, at least several attendees of HCPro’s “Life Safety Code® Workshop,” held February 28–March 1 in Fort Lauderdale, FL, had not done so.

The old, paper-based Part 2 was shorter than its replacement, which has additional questions about the buildings covered in the SOC, including the following:

- Percentage of occupancy types in each facility (e.g., healthcare, long-term care, ambulatory, etc.)
- Total monitored critical care beds (e.g., intensive care unit or telemetry beds)
- The types of regulatory life safety inspections within the prior three years

**Sidestep topmost uncertainty**

The most confusing question under Part 2 has been the item about breaking down percentages of occupancy types, said David Hood, president of Russell Phillips & Associates, LLC, in Rochester, NY, who spoke during HCPro’s workshop.

“It’s been a consistent area of confusion,” Hood said. “There’s been a lot of questions.”

The key is to know which occupancy makes up the majority of square footage of the building in question. The Joint Commission’s program appears to default to that majority-based occupancy if you try to enter several occupancies.

So, for example, if you entered 75% healthcare occupancy and 25% ambulatory healthcare occupancy, the program won’t allow you to complete an SOC for any other occupancy, Hood said.

Hospitals with more than 750,000 square feet of area have added pressure with Part 2, because it is the prime document that helps Joint Commission officials determine whether life safety specialists will visit for one or two days during surveys in 2007, according to the accreditor.

Generally, these larger facilities will also host two-day life safety surveys in 2008, but until then, the two-day visits are on a case-by-case basis, using information from Part 2.

**Keep it easy for yourself**

If your facility features several occupancies, it’s easier to simply enter that you have a 100% healthcare occupancy for a hospital building and then create...
new buildings for any other occupancies, such as an ambulatory clinic on site, he added.

If you feel the need to explain your occupancy square footage situation further, you can always offer a description in the “additional comments and notes” at the end of Part 2, he said.

The February Joint Commission Perspectives ran a litany of questions and answers about Part 2 and other sections of the e-SOC that resembled a technical support log for computer technicians.

Enter all new PFIs electronically
Plans for improvement (PFI) under Part 4 of the e-SOC continue to perplex facilities, too.

Remember, all new PFI entries that occurred after January 1 should be entered into the electronic Part 4.

Existing PFIs that remained open as of December 31, 2006, must be entered into the electronic Part 4 by July 1.

This has been a contentious issue for facilities that kept paper-based PFIs or used in-house spreadsheets to track them.

If you can close existing, pre-2007 PFIs before July 1, you don’t need to enter them electronically, according to The Joint Commission Perspectives.

Don’t count on help coming yet
Meanwhile, The Joint Commission continues to work on an interface program that will allow facilities with in-house PFI spreadsheets to transfer this information via the Internet to the electronic Part 4. As of March 1, that program had not debuted, Hood said.

There is no guarantee that the interface tool will be available by July 1, so facilities with a large amount of pre-2007 PFIs should not wait until the last minute to enter those items electronically. In theory, the e-SOC allows The Joint Commission to track your PFI progress at any moment, so if you’re in-house track-

ing isn’t good, take steps to improve it, said Michael Crowley, PE, senior vice president and engineering manager at Rolf Jensen Associates in Houston, who also spoke during HCPro’s workshop in Fort Lauderdale.

Be wary of big PFI projects
Watch out for larger projects that started before January 1 that have many PFIs associated with them, and pay particular attention to the lead times for new items or equipment needed to close out the PFIs, Crowley said.

“Those lead times [can] kill you” if they go beyond July 1 and cause you to enter the associated PFIs electronically, he added.

Amid all of the new timelines and entry requirements, the ultimate goal is the same: Avoid missing your PFI deadlines, which could lead to a busted plan.

“You don’t want to have a busted plan, because [that means] you’ve broken your contract with The Joint Commission,” Hood said.

Correction

When: February issue, monthly quiz insert

What: Question 6 in our quiz should have said the following:
Pass-through slots and similar openings in corridor windows, doors, and walls can only be in healthcare occupancy smoke compartments that don’t contain patient bedrooms.

We apologize for any confusion caused by this mistake. Please make the above change to the quiz if you’ve saved it.

Thanks to Ron Coté, PE, principal life safety engineer at the NFPA, for pointing out our slipup.
Keep up with equipment that isn’t used regularly

Each month in this column, the staff at Koffel Associates, Inc., in Elkridge, MD, explain fire equipment testing and maintenance concerns. Fire protection engineer Diana Hugue authored this installment.

When it comes to inspection, testing, and maintenance for healthcare facilities, it is easy to feel overwhelmed. These facilities incorporate numerous fire protection systems. Not all of these items are used on a daily basis and, therefore, may be overlooked when it comes to an inspection or testing program.

The following is a list of commonly missed areas and reminders about their required inspection, testing, and maintenance. Remember to document all of these tests and inspections.

- **Emergency lighting**—An important system not used on a daily basis is emergency lighting. In the Life Safety Code®, section 7.9.3 discusses periodic testing of emergency lighting. You must perform a functional test every 30 days for a minimum of 30 seconds. If the emergency lighting system’s backup power supply is a battery, then you must also conduct a 90-minute annual functional test. Even in facilities with emergency lighting tied to emergency generators, battery-powered lighting can be found in some areas (e.g., locations where anesthesia is administered). Self-testing emergency lights are becoming more popular as they reduce the labor of intensive annual testing. However, they are still required to have monthly visual inspections to ensure that the status indicator light does not indicate trouble.

- **Emergency generators**—Reports over the past two years indicate that failure of emergency generators is a real concern in healthcare occupancies. Effective January 1, The Joint Commission mandates that facilities test their generators at least once every 36 months for a minimum of four continuous hours. This test is in addition to the prior requirement to test emergency generators 12 times each year for 30 continuous minutes.

- **Duct detectors**—When it comes to duct detectors, it’s easy to let them stay out of sight and out of mind. Chapter 7 of NFPA 72, National Fire Alarm Code® (1999 edition), covers the inspection of fire alarm systems, including duct detectors. After initial acceptance testing, you must visually inspect duct detectors semiannually. Functional testing is also required once after installation, and then annually.

- **Fire and smoke dampers**—Fire and smoke dampers are difficult to access, but you can’t ignore them. NFPA 90A, Installation of Air-Conditioning and Ventilating Systems (1999 edition), requires that fire and smoke dampers be tested every four years. Annex B in NFPA 90A, however, also recommends a visual inspection of fire and smoke dampers every two years. The Joint Commission allows facilities to not test dampers that are inaccessible, but you must document these damper locations and commit to making the equipment accessible during future renovations or upgrades.

- **Main drain tests**—There are many requirements for the testing of sprinkler systems, but the main drain test is often overlooked or not performed properly. Surveyors have cited hospitals for this oversight. NFPA 25, Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems, discusses main drain test requirements. The required annual test verifies that the water supply is adequate to meet the system’s demand. The results of the test alone are not useful unless they’re compared to previous results. A main drain test showing a marked decrease in available water supply could point to a closed valve or obstruction in the underground piping.
Questions & Answers

Each month, Jennifer Frecker and James Latbro of fire protection consulting firm Koffel Associates, Inc., in Elkridge, MD, answer your questions about life safety compliance. Our editorial advisory board also reviews the Q&A column.

Panic and fire exit hardware

Q: We have solid (i.e., windowless) exit doors that have bars that you use to open the doors; there are no door knobs. Is there a requisite number of persons in a room or area that would require the use of these doors in hospitals?

A: You are describing doors with panic or fire exit hardware. Panic hardware is used on nonfire-rated doors, and fire exit hardware is used on fire-rated doors. The items look almost exactly the same except for the label, which typically says, “panic hardware” or “fire exit hardware.”

There are no requirements for healthcare occupancies to use fire exit or panic hardware. So why do we see it? First, it is commonly used as a matter of convenience.

It also might be used because another chapter of the Life Safety Code® (LSC) requires it. For example, under paragraphs 12/13.2.2.2.3 (assembly chapters of the LSC), any room with an occupant load of 100 or more persons must have panic hardware on all exit access doors serving that space if the door has a lock or latch.

You may wonder why the LSC reference above is from the assembly chapters when we are talking about a healthcare occupancy. Section 6.1.14 discusses the concept of a mixed occupancy and defines this as “an occupancy in which two or more classes of occupancy exist in the same building or structure and where such classes are intermingled so that separate safeguards are impracticable.”

Now many of those spaces are what the exception to 6.1.14.2 refers to as “incidental,” and therefore we just consider them part of the healthcare occupancy. However, an assembly room with more than 50 people (e.g., cafeteria, auditorium, large conference room, etc.) can’t be considered “incidental.” In such cases, you apply the mixed occupancy requirements of 6.1.14.2.

For the most part, healthcare requirements are more restrictive than other occupancies in the LSC. But there are certain items, such as the panic hardware described above, for which other occupancies are more restrictive.

In your situation, the assembly requirements are more restrictive, and panic hardware or fire exit hardware is necessary.

Codes referenced by the LSC

Q: We recently built a new high-rise addition. NFPA 1, Uniform Fire Code™, contains specific requirements for stairwell signs, and yet NFPA 1 doesn’t appear under the mandatory references of the LSC. Does that mean NFPA 1 isn’t mandatory? And if it is mandatory, are there other NFPA codes applicable to healthcare of which we should be aware that are not in the mandatory references?

A: NFPA 1 and other fire codes associated with the building codes (e.g., the International Fire Code) are usually adopted by local jurisdictions as their standard.

So, if a local authority doesn’t enforce NFPA 1, it isn’t a mandatory reference for the LSC. However, in
your situation, the requirements for stairwell signs are also located in the LSC and are required for all stairs serving five or more stories (see 7.2.2.5.4).

We suggest that you contact your local jurisdictions (i.e., city, county, and state) to obtain a list of all of the codes and standards that they enforce. In addition, these jurisdictions may have amended codes and standards, so you will also want to get a copy of the amendments as well.

**Measuring clear width of doors**

**Q:** When you measure clear width of doors, do you measure from the door when it is open to the frame or from frame to frame?

**A:** This is not as easy a subject as it sounds, and there have been numerous changes over the past several editions of the LSC. This response is based on the 2000 edition of the LSC. First, it is important to know why you measure the door.

The LSC treats clear width and door width, or door leaf width, differently. There are also differences between newly constructed and existing facilities.

If the LSC specifies clear width as asked in your question, refer to paragraph 7.2.1.2.1, which requires you to measure the clear width of doors “between the face of the door and the stop” when the door is open at 90°.

However, the exception for existing doors allows you to take this measurement with the door in the fully open position. Also note that the paragraphs in this area of the LSC all have annex notes that provide diagrams of how to take the measurements.

**Penetration hole size for piping**

**Q:** We’re installing sprinklers throughout our facility, and I came across an issue with the size of the hole being cut to penetrate fire-rated walls for piping. I seem to remember from prior training that there are specific requirements for the size of the hole based on the size of the pipe. The sprinkler contractor is not using a consistent-sized hole. What are the requirements for this situation?

**A:** First, you need to determine whether your facility is in a seismic zone. If so, the required sprinkler piping clearances can be found in section 6-4.4 of the 1999 edition of NFPA 13, *Installation of Sprinkler Systems*. There are several scenarios based on the size of the piping. Also note that newer editions of NFPA 13 contain important updated information (the 2000 LSC refers to the 1999 version of NFPA 13).

There are no code-driven clearance criteria for through penetrations in nonseismic zones. However, there are listing requirements for the firestopping system being used to seal the penetration after the contractor installs the piping.

Section 8.2.3.2.4 in the LSC requires facilities to seal penetrations with “materials capable of maintaining the fire resistance of a fire barrier.” For new penetrations, use listed through-penetration firestopping systems to ensure that you meet this requirement.

Ask your firestopping contractor or a vendor to provide the listing for the firestopping system being used in your facility.

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**Send us your questions**

If you have a question about life safety compliance, fire codes and standards, or the environment of care, pass it along to us, and we’ll include it in a future “Questions & Answers” column.

Send us your questions in writing by

✔ mail to Healthcare Life Safety Compliance, 200 Hoods Lane, P.O. Box 1168, Marblehead, MA 01945
✔ e-mail to swallask@hcpro.com (reference “Q&A” in the subject line)
✔ fax to 781/639-2982 (to the attention of Healthcare Life Safety Compliance)
Quick tip

Educate workers who carry bottles of hand gel about associated fire risks

If staff use pocket-sized containers of alcohol-based hand gel, you may want to talk to them about associated fire risks that they probably haven’t thought about much.

A series of February postings on a listserv run by Hospitals for a Healthy Environment highlighted concerns that crop up when nurses and other clinicians carry around the small bottles of hand gel.

If staff accidentally forget to remove hand gel containers from their pockets before their uniforms go into the laundry, there could be a fire in the clothes dryer, posted one materials management director from a hospital in New York.

The NFPA has chronicled several healthcare facilities fires that stemmed from problems in dryers, so introducing alcohol-based gel into a heated appliance could be dangerous.

It is worth alerting staff about the potential fire hazards these small bottles bring.

Another concern not related to fire safety—but none-the-less important when it comes to the use of pocket-sized gel bottles—is the added cost to the facility if staff use personal containers when the facility has already purchased bulk amounts to fill wall-mounted dispensers.

Most of the fires we’ve written about in these pages that involved hand gel had little to do with the container they were in (i.e., wall dispenser versus personal container) and more to do with staff who didn’t let the rub evaporate. In such cases, workers can receive static shocks that set off flash fires because of the gel on their hands.

There don’t appear to be any NFPA requirements that specifically govern staff using the pocket-sized hand gel containers.

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1. (T) (F) The Life Safety Code® (LSC) requires you to test emergency lighting every 30 days for a minimum of one hour.

2. (T) (F) Nursing units can store up to 12 H-size medical gas cylinders without special protection.

3. (T) (F) Even though panic hardware for doors isn’t required under the healthcare chapters of the LSC, the hardware may nonetheless be mandated due to mixed-occupancy provisions.

4. (T) (F) Interim life safety measures (ILSM) are strictly for construction and renovation activities.

5. (T) (F) As of July 1, all plans for improvement (PFI) must be entered into the electronic Statement of Conditions (SOC).

6. (T) (F) Main drain tests should be conducted annually.

7. (T) (F) The NFPA dissuades the use of pocket-sized containers of alcohol-based hand gel.

8. (T) (F) Storage of nonflammable gas with volumes equal to or greater than 3,000 cubic feet requires the containers to vent to the outside.

9. (T) (F) The Joint Commission has tied the ILSMs to emergency preparedness.

10. (T) (F) Under the electronic SOC, the basic building information is required only if you have new electronic PFI entries as of January 1.
1. **False.** The LSC requires these tests every 30 days for a minimum of 30 seconds.

2. **False.** Nursing units can store up to 12 E-size cylinders without special protection.

3. **True**

4. **False.** ILSMs are to compensate for any LSC deficiency that can’t be immediately corrected.

5. **True**

6. **True**

7. **False.** The NFPA doesn’t discuss the use of pocket-sized containers of gel.

8. **True**

9. **True**

10. **False.** All facilities completing an SOC should have submitted their electronic basic building information by January 1.