By now, nearly everyone in the healthcare industry should know that CMS is reviewing the 2012 edition of NFPA 101, Life Safety Code® (LSC), for possible adoption as a regulatory document. Very soon (if it has not happened already by the time you read this) it will announce a proposed rule for adopting the new LSC, and the general public will have 60 days to respond with comments and suggestions. Once CMS reviews all of the comments, it will then issue a final rule presumably setting in stone the adoption of the 2012 edition. Industry experts are predicting late 2014 or early 2015 as the effective date for the 2012 LSC.

There are four accreditation organizations with deeming authority from CMS, which allows them to evaluate and assess hospitals to determine compliance with the CMS Conditions of Participation. Once a hospital has passed a survey by one of the accreditors, it is “deemed” compliant with the federal regulations. The four accreditors, with the year that each one started accrediting hospitals, are:

- American Osteopathic Association/Healthcare Facilities Accreditation Program (1945)
- The Joint Commission (1950)
- Det Norske Veritas Healthcare (2008)
- The Center for Improvement in Healthcare Quality (2013)

All of these accreditors are required by law to enforce the rules and regulations that CMS has adopted. Currently (as of this writing), CMS has adopted the 2000 edition of the LSC, which means the accreditors...
are restricted to that edition when they survey hospitals. They cannot allow hospitals to utilize a more recent edition of the LSC until CMS adopts that edition, which means the accreditors are stuck using a code that is nearly 15 years old. However, CMS did issue Survey & Certification memo 13-58 in August 2013, saying it will allow hospitals to immediately begin using a few of the upcoming changes in the 2012 LSC through the use of categorical waivers, which is a welcome relief for many hospitals. For more information on these categorical waivers, see the November 2013 issue of HLSC.

When the 2012 edition of the LSC is finally adopted, one of the more striking changes that facility managers will have to adjust to is the annual fire and smoke door inspection requirement. Section 19.2.2.2.1 of the 2012 edition of the LSC requires compliance with section 7.2.1. Section 7.2.1.15.2 references NFPA 80, Standard for Fire Doors and Other Opening Protective (2010 edition), and NFPA 105, Standard for Smoke Door Assemblies and Other Opening Protective (2010 edition). Also, for good measure, this testing and inspection requirement is repeated in section 8.3.3.1 in the 2012 edition of the LSC for fire doors.

Fire door testing

Section 5.2 of NFPA 80 provides the following basic requirements for annual inspection and testing, which are summarized here:

1. Fire door assemblies are required to be inspected and tested annually, with the written record of the inspection and test signed and dated.

2. A written performance-based inspection and testing program is permitted as an alternative means of compliance, but such a program needs to be approved by all of your authorities having jurisdiction (AHJ).

3. The functional test of the fire door must be performed by an individual with knowledge and understanding of the operating components of the door being tested. Since the standard does not specify what makes an individual “knowledgeable” or “understanding,” the organization gets to make...
that determination. Be prepared to justify how you did so, and have it documented.

4. Before testing, a visual inspection must be performed on both sides of the door to identify any damage or missing parts that could create a hazard during the test.

5. Inspections must include an operational test to verify that the assembly will close under fire conditions, and the door assembly must be reset after a successful test.

6. Hardware must be examined and any inoperative hardware, parts, or other defects must be replaced without delay.

7. Tin-clad and kalamein doors must be inspected for dry rot of the wood core.

8. Chains and cables employed must be inspected for excessive wear and stretching.

9. A written record signed and dated by the knowledgeable individual performing the inspection must be maintained and made available to the AHJ.

**Swinging fire doors**

On swinging doors, the following additional requirements must be verified:

1. No open holes or breaks exist in the surfaces of either the door or the frame.

2. Glazing, vision light frames, and glazing beads are intact and securely fastened in place.

3. The door, frame, hinges, hardware, and noncombustible threshold are secured, aligned, and in working order with no visible signs of damage.

4. No parts are missing or broken.

5. Clearance under the bottom of the door cannot exceed 3/4 inch; if the door is mounted more than 38 inches above the floor, then the clearance cannot exceed 3/8 inch. Clearances between the top and vertical edges of the door and the frame cannot exceed 1/8 inch for wood doors and must be 1/8 inch (+ 1/16 inch) for steel doors, as measured on the pull side of the door.

6. The self-closing device is operational and the active door must fully close when operated from the full open position.

7. If a coordinator is installed, the inactive leaf must close before the active leaf.

8. Positive latching hardware operates and secures the door when it is in the closed position.

9. No auxiliary hardware items that interfere with the proper operation of the door are installed on the door or frame.

10. No field modifications have been made to the door or frame that would end up voiding the rated label.

11. Where gasketing and edge seals are required, an inspection is performed to verify their presence and integrity.

**Sliding and overhead fire doors**

Section 5.2 of NFPA 105 requires the following to be verified for horizontal sliding, vertical sliding, or overhead rolling fire doors:

1. No open holes or breaks exist in the surfaces of the door or frame

2. Slats, endlocks, bottom bar, guide assembly, curtain entry hood, and flame baffle are correctly installed and intact

3. Glazing, vision light frames, and glazing beads are intact and securely fastened

4. Curtain, barrel, and guides are aligned, level, plumb, and true

5. Expansion clearance is maintained in accordance with the manufacturer’s listing

6. Drop release arms and weights are not blocked or wedged

7. Mounting and assembly bolts are intact and secured

8. Attachments to jambs are with bolts, expansion anchors, or as otherwise required by the listing

9. Smoke detectors, if equipped, are installed and operational

10. No parts are missing or broken

11. Fusible links, if equipped, are in the proper location; chains/cables, s-hooks, eyes, and so forth are in good condition, meaning they are not kinked, pinched, twisted, or inflexible

12. No auxiliary hardware items that interfere with the proper operation of the door are installed on the door or frame

13. No field modifications to the door assembly have been performed that would void the door label
**Smoke door assemblies**

On smoke compartment door assemblies, the following actions and functions must be verified:

1. Smoke door assemblies must be inspected annually
2. Doors must be operated to confirm full closure
3. Hardware and gaskets must be inspected annually, and any parts found to be damaged or inoperative must be replaced
4. Tin-clad and kalamein doors must be inspected for dry rot of the wood core
5. A written record signed and dated by the knowledgeable individual performing the inspection must be maintained and made available to the AHJ
6. Records must be maintained for at least three years

**Door locks**

The 2000 edition of the LSC does not directly discuss electrically locked doors. However, it does talk about the three types of locks that are permitted in hospitals:

- Access-control locks
- Clinical-needs locks
- Delayed-egress locks

Access-control locks are the most misunderstood locks in hospitals today; according to some industry experts, nearly all hospitals have some sort of deficiency associated with them. Below is a brief review of what is required for access-control locks:

- A motion sensor to automatically unlock the door when someone approaches from the egress side
- A wall-mounted “Push to Exit” button within 5 feet of the door
- Interruption of power to the lock for a minimum of 30 seconds when the “Push to Exit” button is depressed
- Disabling of the lock upon loss of power to the control system
- Automatic door unlocking upon activation of the building’s fire alarm or sprinkler system

Access-control locks end up being a problem for facility managers because they get installed by well-intentioned, but poorly informed individuals who do not consult with the person who is knowledgeable of the LSC.

**Clinical-needs locks**

The phrase “clinical needs” was poorly defined (or not defined at all) in the 2000 edition of the LSC, leaving it to the AHJs to decide what doors in a hospital qualified for clinical-needs locking arrangements. Many AHJs were liberal and allowed clinical-needs locks not only for behavioral health or Alzheimer’s patients, but also for prevention of infant abduction. However, many of the state agencies who perform surveys on behalf of CMS did not permit the use of clinical-needs locks for infant security, which caused significant problems for hospital facility managers.

The 2012 edition of the LSC includes explanatory information (not featured in the 2000 edition) in the annex section that identifies behavioral health, Alzheimer’s, and dementia patients as examples where clinical-needs locks would be allowed. This information specifically does not mention infant security or abduction protection. However, section 19.2.2.5.2 of the 2012 edition says:

Door-locking arrangements shall be permitted where patient special needs require specialized protective measures for their safety, provided that all of the following are met:

- Staff can readily unlock doors at all times
- A total (complete) smoke detection system is provided throughout the locked space or locked doors can be remotely unlocked at an approved, constantly attended location within the locked space
- The building is protected throughout by an approved, supervised automatic sprinkler system
- The locks are electrical locks that fail safely so as to release upon loss of power to the device
- The locks release by independent activation of a smoke detection system or waterflow in the automatic sprinkler system

The annex section of 19.2.2.5.2 does state that pediatric units, maternity units, and emergency departments are examples of areas that qualify for “safety needs” locks. While the annex section is not part of the enforceable code, it does offer guidance and direction for AHJs to follow in their overall interpretation of the LSC. This new section in the 2012 edition should solve the debate over whether a nursery or pediatric unit can be locked.
Delayed-egress locks

There is a subtle change with the use of delayed-egress locks in healthcare occupancies in the 2012 LSC. Previously, the 2000 LSC limited the use of delayed-egress locks to not more than one such device installed in the path of egress. This restriction was found in the healthcare chapters (18 & 19) of the LSC, rather than in chapter 7. The 2012 LSC does away with this limitation, effectively allowing as many delayed-egress locks as you wish as long as you comply with the requirements found in 7.2.1.6.1. The 2012 edition of the LSC also lifts the restriction of delayed-egress locks on exterior doors in ambulatory healthcare occupancies.

Electrically locked doors

When the 2012 edition of the LSC is adopted, there will be a new version of door lock requirements, which will solve some of the associated problems. The three locks permitted in hospitals (clinical needs, delayed egress, and access control) will remain, but Chapter 7 will now permit doors that are “electrically locked” to be considered the same as any other normal lock on the door. Section 7.2.1.5.6 says:

Door assemblies in the means of egress shall be permitted to be electrically locked if equipped with approved, listed hardware, provided that all of the following conditions are met:
– The hardware for the occupant release of the lock is affixed to the door leaf
– The operation has an obvious method of operation that is readily operated in the direction of egress
– The hardware is capable of being operated with one hand in the direction of egress
– Operation of the hardware interrupts the power supply directly to the electric lock and unlocks the door assembly in the direction of egress
– Loss of power to the listed releasing hardware automatically unlocks the door assembly in the direction of egress
– Hardware for new installation is listed in accordance with ANSI/UL 294

It is important to note that this section is under heading 7.2.1.5, “Locks, Latches and Alarm Devices” (2012 edition), not under heading 7.2.1.6, “Special Locking Arrangements.” That implies this new section is not considered a special locking arrangement, but squarely on the same level as regular door locks. This is significant because the healthcare occupancy chapters (18 and 19) specifically permit the new “electrically locked doors” under section 18/19.2.2.2.1, which says, “Doors complying with 7.2.1 shall be permitted.” That alone permits 7.2.1.5 and does not require a door to qualify as a “special locking arrangement” under 7.2.1.6, which includes the access control requirements. However, situations where a card-swear reader or a proximity reader is used in conjunction with a magnetic lock will not qualify under 7.2.1.5, as those locks require the use of a special tool. Section 19.2.2.2.4 (2012 edition) still does not allow the use of a special key or tool to operate the lock.

Many significant changes are in store for hospital facility managers on door inspections and locks when the 2012 edition of the LSC is implemented. Become familiar with them now to ensure that you’re fully prepared.

Delayed egress on doors in ambulatory healthcare occupancies

Can you use a delayed-egress lock on interior doors in an ambulatory healthcare occupancy? The 2000 Life Safety Code® (LSC) limits special locking arrangements to exterior doors in ambulatory health care occupancy, but the 2012 LSC does not include that limitation.

The 2012 edition of the LSC did away with the limitations of the special locking arrangements found in section 7.2.1.6 of the LSC. Section 20/21.2.2.2 of the 2012 edition of the LSC now permits delayed-egress locks on any door in the path of egress, whereas the 2000 edition of the LSC limited them to the exterior door.

At first blush, one might think an organization bound by the 2000 edition of the LSC—such as a Joint Commission-accredited organization, or perhaps a CMS provider for Medicare—would have to comply with the conditions of the 2000 edition of the LSC and could not take advantage of the more lenient 2012 edition until such time as that edition is adopted by CMS and/or The Joint Commission.

To read more analysis on this topic, visit the blog post below.
Fire safety plans: Ways to ensure compliance

According to sections 18/19/20/21.7.1.1 of the 2000 edition of the Life Safety Code® (LSC), evacuation and relocation plans are required for every healthcare occupancy and ambulatory healthcare occupancy, new and existing. Most facility managers don’t worry too much about these plans as nearly every hospital has a fire safety plan, which is generally considered to meet the requirements for the LSC evacuation and relocation plans. After all, the accreditation organizations require management plans on fire safety, so those plans would also meet the requirements of the LSC, right?

Well, that may be the case in many facilities, but it surprisingly is not the case for every hospital, nursing home, ambulatory surgical center, and outpatient therapy unit that has to comply with the healthcare and ambulatory care occupancy requirements. A reexamination of the requirements in the code will demonstrate what is actually required for LSC evacuation and relocation plans, and where they may differ from those plans required by the accreditation organizations:

1. A written copy of the evacuation and relocation plan has to be available to all supervisory personnel. Paper copies can be distributed to each person, but that can become a nightmare when an organization wants to update its plan and has to switch out every copy of the old plan with the new one. Instead, the most common approach by hospitals today is to make use of their intranet and place the plan on a Web page for all to see and use. The downside is the need to make alternative plans in the event of the loss of the intranet. This usually involves having written backup plans on paper and stored in a central location.

2. The evacuation and relocation plan requires the organization to protect all persons in the event of fire. The organization has to explain how it meets this requirement, which can be accomplished in many different ways. The most effective, of course, is staff training. If your staff is well-trained and knows what to do to prevent a fire from starting; removes obstructions to features of fire safety; and responds immediately to an actual fire by following the fire plan, then you have established a very effective approach to protecting everyone in your facility. But human nature being what it is, staff can become complacent and, due to one reason or another, might not always follow the fire plan correctly. That’s why it is also smart to have an early detection system and a fire-suppression system—not to mention the mandatory fire/smoke dampers, fire-rated barriers, emergency exits, and clear corridors for the rapid removal of patients. While most of these safety features are mandatory, some are optional and organizations can decide to install features above and beyond the level required by the code.

3. The evacuation and relocation plan must explain how the organization will evacuate everyone in the building to an area of refuge within the building. Healthcare occupancies and ambulatory care occupancies of a certain size are required to divide every story into at least two smoke compartments. These smoke compartments are separated from each other with barriers that, while not fire-rated, do resist the passage of smoke. These individual smoke compartments are the required areas of refuge.

4. The evacuation and relocation plan must describe how the building will be evacuated when necessary. If your answer to this question is, “We’ll wait for the local fire response forces to come and assist,” think again. In a large-scale disaster, such assistance may not be available, so the organization has to have a plan for how it will evacuate everyone out of the building and where people will be taken. This is the most common area of noncompliance. Hospitals not only tend to shy away from training their staff on how to evacuate patients down stairs and out of the building, but they also frequently do not provide the staff with resources to do so. Yes, a whole-building evacuation drill is costly in terms of time and resources, but having a plan and training staff to follow it is a code requirement—plus, it’s the right thing to do.

5. Staff must receive instruction periodically on the evacuation and relocation plan and what their
responsibilities are. While the LSC does not specify the frequency of this instruction, it is generally accepted that staff must be trained annually. The traditional safety fairs, where staff meet in the hospital auditorium or cafeteria to receive friendly hands-on training in fire safety procedures, are increasingly being replaced by faceless, impersonal computer learning modules. These modules may provide a more efficient and organized focus on all the requirements needed for annual certification and training, but they lack the personal touch that attendees used to receive from safety fairs.

6. A copy of the evacuation and relocation plan must be readily available at all times to the telephone operator and the security officer. The code selected these two locations as it believes one or both will be continuously monitored 24 hours a day, meaning either the operator or the security officer will be available to access the plan in the event of an emergency. Nothing is more frustrating than not being able to find something when you need it, so with the plan being permanently stored in either of these locations, it should always be accessible.

7. Fire drills are part of the evacuation and relocation plan. As you probably know, you must perform a fire drill at least once per shift per quarter in every building classified as a healthcare or ambulatory care occupancy. The code requires the activation of the fire alarm signal every time you conduct a drill, other than times between 9:00 p.m. and 6:00 a.m. The code also requires the transmission of the fire alarm signal, which is interpreted by most authorities to mean that the signal is transmitted all the way to the local emergency fire response forces or their dispatch center. All too often the fire alarm signal is transmitted to the monitoring company, but stopped there and not sent on to the local fire department. For every drill, it is suggested you contact the local fire department (but not the monitoring company) and inform it of the drill, then allow the alarm signal to transmit to the monitoring company, which will contact the fire department. You can use this opportunity to see how long the monitoring company takes to transmit the signal; the maximum time permitted is 90 seconds.

8. Fire drills have to be performed under varied conditions. Conduct your drills using different scenarios and at different times of the shift. If staff figure out that you always perform a drill at the same time on the same day of the week, they will respond differently to the drill than they would to a real incident.

9. Staff must be trained on life safety procedures and devices. Many hospitals have adopted the acronym RACE, which stands for:

- Rescue whoever is in the harm’s way of the fire
- Activate the alarm by pulling the manual fire station and calling the emergency number
- Confine the fire by closing all the doors
- Evacuate the patients; or Extinguish the fire

RACE provides a basic start for life safety procedures, and if every person who works in the building fully understands the purpose and exactly how to implement each step, that is a good start to a successful plan.

Safety devices found in hospitals may include the following:

- Fire extinguishers
- Fire alarm system
- Manual activation station for a fire suppression system
- Fire doors
- Fire blankets
- Smoke compartment doors
- Corridor doors

Organizations usually do a good job of placing these life safety devices in their facilities, but they often fail to provide adequate training to their staff on the purpose of each device and where the devices are located.

A plan is just that: a plan. During a disaster, you start with the plan, and you do the best job that you can with the resources that are available to you. In some situations, therefore, you may need to abandon the plan and take alternate actions. That’s okay. There is a saying that once a disaster begins, all bets are off—in other words, all the training that has been accomplished to that point may not prepare you for the specific circumstances that you find yourself in. You improvise and do what you have to in order to protect patients and visitors. You start with a plan, and you go from there.
A look at evacuation route maps

Drawings (or maps) are required to be posted in hospital corridors on units and departments to show the proper path of egress in order to evacuate the area in case of an emergency—right? Well, no, not really, at least according to the language in the 2000 Life Safety Code® (LSC).

It may sound like you need such maps, but the LSC’s language actually does not require them. Section 18/19.7.1.1 states: “The administration of every health care occupancy shall have, in effect and available to all supervisory personnel, written copies of a plan for the protection of all persons in the event of fire, for their evacuation to areas of refuge, and for their evacuation from the building when necessary.” A review of the 2012 edition of the LSC shows that there has not been any change in the requirements of this section.

A written plan is required that describes the actions by staff in the event of a fire, including the evacuation of their area. This is a basic standard, which is found in the CMS Conditions of Participation §482.41(b) (7); Joint Commission standard EC.02.03.01, element of performance 10; Det Norske Veritas standard PE.2, SR.4; and Healthcare Facilities Accreditation Program standard 11.04.01. However, although these national authorities require written plans, nowhere do they require evacuation route maps.

So if the LSC does not require them, and the national authorities do not require them, why do so many hospitals have maps in their corridors? An unofficial answer to this question is they were required at one time. Back in the 1980s, the precursor to today’s CMS did in fact require evacuation route maps in the corridors of hospitals. This requirement was sporadically enforced back then, partly because it was not based on any code or standard, and also because the system of follow-up surveys and inspections that we have today was not yet in place.

The requirement to have evacuation route maps was explained as a misunderstanding of the LSC requirement to have written plans on how to evacuate to areas of refuge. Back then, the thought process was if you need written plans on evacuation, an evacuation route map would be required.

As the federal agency contracted with state agencies to conduct more validation surveys, the issue of evacuation route maps began to be cited when they were not present. Eventually, someone objected to CMS that the LSC did not require them, and CMS agreed and had the requirement removed from its inspection forms.

Granted, evacuation route maps are useful and handy. Many hospitals place additional information on these maps, such as the locations of:
- Emergency exits
- Smoke compartment barrier doors
- Portable fire extinguishers
- Fire alarm pull stations
- Emergency shutoff valves for medical gases
- Emergency power outlets

The maps can also serve as a focus point for critical information during an emergency, such as an explanation of the RACE fire plan or the PASS system for properly using a fire extinguisher.

So, to sum up, some state or local authorities may require the continued use of evacuation route maps, but there is no national authority that says you must have them ... right? Well, that may not be the case any longer.

“I have been informed that the North Carolina Department of Labor has cited a healthcare practice for not having an evacuation map,” says John Ganley, CHFM, CHSP, safety director for FirstHealth of the Carolinas, in Pinehurst, N.C. “The information requiring evacuation route maps is found in an appendix, which is documented as non-mandatory guidance.”

Specifically, Section 1910.38, Subpart E, Appendix “Employee Emergency Plans” states: “The use of floor plans or workplace maps which clearly show the emergency escape routes should be included in the emergency action plan.”

“It looks like OSHA has the right to enforce the requirement for evacuation route maps,” says Ganley. “If this is the case here in North Carolina, then that may open the door for the evacuation route maps to be required in healthcare occupancies all across the country.”

Just when you thought you no longer needed them, along comes another authority that requires them.
Editorially speaking …

A look at life safety overseas

Editor’s note: This month, Senior Editor Brad Keyes, CHSP, offers his thoughts, concerns, and comments on issues pertaining to healthcare life safety.

I have had the privilege to work with a hospital system in Saudi Arabia, and find that hospitals there have many similarities to hospitals in the United States. I first visited the Kingdom of Saudi Arabia a year ago, and just last month I returned from my second visit. Most of the hospitals that I inspected were very similar to most hospitals in America. They have all the latest medical equipment and services that American hospitals offer, and the staff is just as professional and well-trained as any you would find in the States.

So what is the difference between hospitals in the United States and the hospitals I visited in Saudi Arabia? The Life Safety Code® (LSC). Apparently, the Saudi government does not enforce any operational fire codes that compare to the LSC.

The hospital system that I visited was accredited by Joint Commission International (JCI), which is the international arm of The Joint Commission. The JCI standards have many of the same requirements that you would find in the Environment of Care section, but they do not have any requirements to comply with the LSC. None whatsoever.

Why doesn’t JCI require compliance with the LSC? I don’t know for sure, but one can guess that since the LSC is an American-written code, it may not be well received as a requirement in other countries. (Incidentally, if stateside readers are thinking that The Joint Commission only enforces the LSC because CMS requires it, think again. The Joint Commission was the first national authority to require compliance with the LSC, even before CMS and its predecessors adopted the code. Additionally, The Joint Commission requires compliance with the LSC for those healthcare providers that are not under the authority of CMS and that receive reimbursement funds for Medicare or Medicaid services.)

So JCI does not enforce the LSC in the Saudi hospitals that I visited. What that means is there is very little attention to the concept of life safety that we are accustomed to in American hospitals. I asked staff what codes and standards were used to build the hospitals, and the answer I received was United Kingdom codes and standards. I was also told that the Kingdom of Saudi Arabia has construction codes and regulations of its own.

While the physical structures are constructed to government regulations and building codes, those codes and regulations do not address how the hospital operates the building after it is occupied. Also, it is apparent to me that there is no system of review by code officials before renovation or remodeling is conducted. The end result is many features of life safety included during the construction of the building are later modified and breached to the point they are no longer reliable.

For example, I observed stairwell doors modified to the point that they no longer closed and latched; in some cases they were removed altogether. Sprinklers were installed in some locations, but not in areas where they would best control a fire. Features of life safety, such as fire alarm systems, fire pumps, fire dampers, and fire doors, were not always tested; if they were, they were not confirmed to operate fully and correctly. Exits were closed or obstructed with no consideration for interim life safety measures.

Fires in U.S. hospitals will never be eliminated, but we have learned how to control them to prevent the widespread tragedies we’ve experienced in the past. In 2011, a fire in a Kolkata, India hospital killed 94 people, and in 2013 a fire in a hospital in the Novgorod region of Russia killed 37 people. Such fires that kill patients in American hospitals are very rare today (although they do still happen, as evidenced by the University of Maryland Medical Center fire in Baltimore last November).

What can turn a potential major tragedy with large loss of life into a controlled fire with no or limited loss of life? The LSC. Never have I been so gratified to know that American hospitals are protected by a fire safety code that government officials and private accreditation organizations have insisted we comply with. Isn’t it sad that other countries do not have the same level of protection?
Editor’s note: Each month, Senior Editor Brad Keyes, CHSP, owner of Keyes Life Safety Compliance, answers your questions about life safety compliance. Our editorial advisory board also reviews the Q&A column. Follow Keyes’ blog on life safety at www.keyeslifesafety.com for up-to-date information.

Power strips

**Q** I read the June 2012 article in HLSC about power strips in healthcare facilities, and we have been hesitant to use power strips in patient care areas because the manufacturer’s instructions specifically spell out that they should not be used for life support equipment—and there is no way to know if the power strip will inadvertently be used for life support equipment. I would be interested in your response to this.

**A** My response would be to follow the manufacturer’s recommendation. Your concern is valid: You purchased the power strips for a non–life support situation; then, unbeknownst to you, they could be moved to an area for use in a life support situation. When actual standards that regulate devices are not written, authorities having jurisdiction will resort to other sources, such as UL listings, manufacturer’s recommendations, and the risk associated with the use of the device, when determining their appropriateness. It is always best to take a very conservative approach in determining the use of these (and any other medical) devices, not only for accreditation compliance purposes, but also for the safety of patients and staff.

Flammable liquids

**Q** Are there any special storage requirements for flammable liquids and flammable aerosol cans in the work area?

**A** Yes, flammable liquids in all forms and capacities must be stored in compliance with section 8.4.3.1 of the 2000 edition of the *LSC*, which in turn requires compliance with NFPA 30, 1996 edition. According to NFPA 30, class IA flammable liquids are permitted to be stored outside of a protected cabinet as long as the container is not greater than 1 gallon. As long as the aerosol can is less than 1 gallon, you should not have a problem with keeping it in a regular cabinet. Once you reach an aggregate total of 5 gallons of class IA flammable liquids, they need to be stored in a fire-rated cabinet.

IT closets

**Q** Are there any requirements for firestop penetrations in information technology (IT) closets and electrical rooms in business occupancies?

**A** Only if the barriers surrounding the IT closets are designated as being fire rated on the life safety drawings, or by an authority. Penetrations in fire-rated barriers must be properly firestopped regardless of what the barrier serves. I am not aware of a *LSC*...
requirement for IT closets to have fire-rated barriers, but local or state authorities may have regulations that require it. You should check with them.

Emergency response plan

Q We are going to prepare an action card for fire safety as part of our major emergency response plan. What information regarding fire safety would you suggest we include on the emergency response job action card?

A Emergency response preparedness involves many different aspects, including fire safety. In order to write a job action sheet (or job action card) for fire safety, I would suggest that you utilize your basic fire response plan for the internal portion of emergency preparedness. Many hospitals utilize the familiar acronym RACE to help remind their staff as to the organization’s fire response plan:

- R = Rescue anyone in harm’s way of the fire
- A = Activate the alarm by pulling the manual fire alarm station and dialing ________
- C = Contain the fire by closing all the doors
- E = Extinguish the fire with portable extinguishers, OR Evacuate patients from the scene of the fire

For external fires, a job action sheet may include some (or all) of the following:

- Shutting down all of the fresh-air intakes for the hospital’s ventilation system
- Placing boards on windows
- Proactively wetting down combustible portions of the facilities or grounds
- Relocating patients from one wing or area to another
- Emptying parking lots and garages close to the hospital
- Evacuating the hospital
- Redirecting traffic away from the hospital
- Controlling access to the emergency department
- Suspending shift changes and proceeding to a 12-hour-on/12-hour-off rotation

Hazardous areas

Q If hazardous areas like a carpentry shop and a paint shop are combined in a separate building distant from the hospital, what is an appropriate reference to determine the required fire and life safety measures? If this building is a single story and has HVAC ductwork, is it required to also provide smoke compartmentation and fire dampers?

A It is apparent that the building you described does not house patients, so it could be considered a business or industrial occupancy—it really depends on what else is in the building besides the carpentry shop and paint shop. For example, if this separated building also houses offices or general storage, then I could see it having to comply with business occupancy requirements. In business occupancies, hazardous areas that have a degree of hazard greater than that normal to the general occupancy of the building must be enclosed with one-hour fire-rated barriers or protected with an automatic sprinkler system. These code references are found in the 2000 edition of the LSC, sections 39.3.2.1 and 8.4. However, if the separated building is not mixed with offices or general storage, and is only a carpentry shop and a paint shop, then you could classify it as an industrial occupancy. Section 40.3.2 does not require added protection of hazards in industrial occupancies as long as the hazards are not considered “high hazards.” A high hazard (another name for this is a “severe hazard”) is one in which quantities of flammable, combustible, or hazardous materials are present that are capable of sustaining a fire of sufficient magnitude to breach a one-hour fire separation. According to NFPA 90A, 1999 edition, fire dampers are only required in fire barriers of two-hour rating or greater, with the exception of a one-hour fire rated vertical shaft, or if the HVAC duct is open ended (a return air plenum ceiling) on one side of a one-hour fire-rated barrier. Your question indicated the building is single story, so it appears that a vertical shaft is not present. If the option of a one-hour fire-rated barrier is selected for the protection around the carpentry shop and paint shop in a business occupancy, and the HVAC duct is open at the fire barrier, then a fire damper would be required. Please check with your local and state authorities to determine whether they have other requirements that may apply.
**Quick tip**

**Summary of changes to fire and smoke door testing and inspection requirements when the 2012 Life Safety Code is adopted**

The changes in the following chart will not take effect until an authority having jurisdiction adopts the 2012 edition of the Life Safety Code. All “Fail” items must be repaired immediately or assessed for interim life safety measures.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
<th>Results</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have a documented program of inspection and testing of all fire and smoke doors. Have written records signed and dated by the individual performing the inspection and test.</td>
<td>Annually</td>
<td>Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Document that the individual performing the inspection and test is knowledgeable and fully understands the operating components of the door.</td>
<td>One time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visually inspect the door to identify any damage or missing parts.</td>
<td>Prior to door being tested</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physically operate the door to ensure it functions properly under fire conditions.</td>
<td>Annually</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Examine door hardware. Repair or replace any defective hardware immediately.</td>
<td>Annually</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspect tin-clad and kalamein doors for dry-rot.</td>
<td>Annually</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspect chains and cables used on the fire door for excessive wear and stretching.</td>
<td>Annually</td>
<td></td>
<td></td>
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<tr>
<td>Ensure there are no open holes or breaks in the surfaces of the door or frame.</td>
<td>Annually</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure glazing is intact and firmly fastened.</td>
<td>Annually</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure clearance under the bottom of the door does not exceed ¾ inch.</td>
<td>Annually</td>
<td></td>
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<tr>
<td>Ensure the self-closing device is operational and closes and latches the door.</td>
<td>Annually</td>
<td></td>
<td></td>
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<tr>
<td>Ensure the inactive leaf closes before the active leaf where a coordinator is installed.</td>
<td>Annually</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure positive-latching hardware secures the door when in the closed position.</td>
<td>Annually</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure auxiliary items are not attached to the door or frame and do not interfere with the proper operation of the door.</td>
<td>Annually</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure no field modifications have been made to the door or frame.</td>
<td>Annually</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test smoke compartment barrier doors to ensure they close properly.</td>
<td>Annually</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: NFPA 80 and NFPA 105, 2010 editions.
1. (T) (F) CMS is currently using a version of the Life Safety Code® (LSC) that is nearly 15 years old.

2. (T) (F) When the 2012 edition of the LSC is finally adopted, one of the most striking changes facility managers will need to adjust to is construction type requirements.

3. (T) (F) The 2012 edition of the LSC has a new section on electrically locked doors.

4. (T) (F) The 2000 edition of the LSC allows clinical-needs locks to be used to protect newborn babies and pediatric patients.

5. (T) (F) Under the 2012 edition of the LSC, the limitation to have only one delayed-egress lock in the path of egress has been removed.

6. (T) (F) If you have a management plan on fire safety for an accreditation organization, you can be sure it qualifies for the LSC’s evacuation and relocation plan requirements.

7. (T) (F) The LSC evacuation and relocation plan must describe how you are going to evacuate the building.

8. (T) (F) Under the 2012 edition of the LSC, evacuation route maps must be posted in all nursing units in hospitals.

9. (T) (F) Hospitals in the Kingdom of Saudi Arabia are not required to comply with the LSC.

10. (T) (F) Interim life safety measures (ILSM) are not required for LSC deficiencies in business occupancies.
1. True.

2. False. Construction type requirements will not change with the adoption of the 2012 LSC. Fire and smoke door inspection and testing requirements, however, will.

3. True.

4. False. Well... The 2000 LSC does not address the usage of clinical-needs locks for newborn or pediatric safety, but under CMS’ interpretation of the LSC, such usage is not permitted.

5. True.

6. False. There is no guarantee your plan will qualify in this way. While management plans may serve as the LSC evacuation and relocation plan, there are some subtle differences in requirements.

7. True.

8. False. There is no NFPA requirement for the posting of evacuation route maps, although such maps may be very handy for staff.


10. False. The requirement for ILSMs is found in chapter 4 of the LSC, which applies to all occupancies. In addition, The Joint Commission’s overview to its Life Safety chapter says ILSMs are applicable to all occupancies.

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