Brad Keyes, CHSP

The New LIFE SAFETY CODE®

How to Prepare in Advance

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HCPro

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Foreword

If our hospitals and nursing homes are constructed to meet local and state building codes, then why do we need the *Life Safety Code®* (*LSC*)? Is the *LSC* relevant, particularly if we no longer have devastating, fatal hospital fires? These are questions that are frequently asked by individuals who do not fully understand the importance placed on compliance with an international safety code. The answer to that question is simple: Without the *LSC*, our hospitals would return to a condition where tragic results would occur from fires and other emergencies.

Early editions of what we now call the *LSC* have been around since 1913, but it wasn't until 1971 that a national authority over hospitals adopted the National Fire Protection Association (NFPA) 101 *LSC* and required hospitals to be in compliance with it. The Health Care Financing Administration (HCFA), the forerunner of the Centers for Medicare & Medicaid Services (CMS), chose the *LSC* over other codes and standards because it addressed the building and staff preparedness to cope with fires and emergencies. Prior to HCFA adopting the *LSC*, compliance with it was regulated only on a local or state level and, in many situations, compliance with the *LSC* was only a recommendation, not a requirement. As a result, there were significant losses of life with fires in hospitals prior to its adoption on a national level, as the following synopsis from official fire inspection reports will show.

Cleveland Clinic, Cleveland, Ohio

In May 1929, a fire in a lower-level storage area, which contained nitrocellulose x-ray film, killed more than 120 people, due mainly to the toxic and explosive gas that was a result of the combustion of the film. There were no sprinklers in the storage area, and unsealed openings between the floors allowed the toxic and explosive gas to travel upward.

Saint Anthony Hospital, Effingham, Ill.

In April 1949, at least 74 people died in this 100-bed hospital located in a small rural community in central Illinois. The fire apparently started in the lower level, where the laundry chute discharged soiled linens, and spread upward via the open chute and through the building. The building was constructed with combustible materials and did not have any smoke compartment barriers or any smoke detection or fire suppression systems.

St. Elizabeth's Mercy Hospital, Davenport, Iowa

Forty-one people lost their lives in a 1950 fire in the female psychopathic hospital caused by a deranged patient. The windows were barred and the doors were locked, and the staff was unable to quickly evacuate the patients. The building was constructed with combustible materials and was not protected with sprinklers.

Hartford Hospital, Hartford, Conn.

In December 1961, 16 people died as a result of a fire that started in the trash chute at the Hartford Hospital. The building was constructed with noncombustible materials but had interior finishes that were combustible. When the fire erupted through the chute door on the 9th floor, combustible ceiling tiles, wall coverings, and flooring ignited, trapping many patients and staff in dead-end corridors. Sprinklers were present in other areas of the hospital but not on the 9th floor, where all the victims were located.

With the requirement starting in 1971 that all hospitals receiving Medicare reimbursement comply with the *LSC*, deaths related to fires in healthcare facilities began to diminish but were not eliminated altogether.

SAC-Osage Hospital, Osceola, Mo.

In December 1974, eight patients died as a result of a fire at the SAC-Osage Hospital. Six patients died of smoke inhalation, and two patients died when a supply valve to their oxygen tent was inadvertently shut off. The facility was only five years old at the time and was constructed to federal and state fire prevention codes in effect at the time. The fire was thought to have started from smoking materials igniting combustibles in a patient's room.

Hospice of Southeastern Michigan, Southfield, Mich.

In December 1985, a fire that started in a recliner in a patient's room led to the death of eight people in this hospice facility. All of the fatalities were in rooms where the doors to these rooms had not been fully closed and latched. Smoke spread through the bathroom ventilation system from room to room.

Riverside General Hospital, Riverside, Calif.

In November 1986, five patients died in the Riverside General Hospital after a fire started in a patient room and spread out into the corridor. According to reports, the patient was smoking in his room and attempted to shut off his oxygen supply but failed. Evacuation of the patients in the area of fire was not able to be completed due to heavy smoke from the fire.

Maimonides Medical Center, Brooklyn, N.Y.

Three patients died in a fire in September 1993 at the Maimonides Medical Center in Brooklyn, N.Y. According to a *New York Times* newspaper article, the fire started in a faulty respirator supplying oxygen to an elderly patient. The article stated hospital engineers had worked on the respirator hours before the fire after nurses and other workers complained it was giving electrical shocks. Investigators said that an electrical fault in the machine caused the fire, which was fueled by pure oxygen, and created a blast so fierce that witnesses said it sent a fireball through the 7th floor hospital window.

Southside Regional Medical Center, Petersburg, Va.

On December 31, 1994, a fire that started in a patient's room in the Southside Regional Medical Center in Petersburg, Va., resulted in the deaths of six patients. The fire apparently was started by smoking materials, which spread to bedding linens and a mattress. Smoke spread into the corridor because the door to the room of origin was left open. According to reports, the fire alarm transmission to the fire department was delayed because the connection was taken out of service at the time of the fire. The room and the corridor were not protected with sprinklers.

The *LSC* alone could not implement the necessary changes to stop the tragic loss of life in hospital fires. Without the enforcement of the code by an authority, healthcare leaders were reluctant to make the adjustments and changes needed. It took the combined efforts of several authorities having jurisdiction,

but the one with the most notable impact on hospitals was The Joint Commission. In 1983, The Joint Commission adopted the 1981 edition of the *LSC* and started enforcing it with its member organizations.

In 1995, The Joint Commission instituted the *Statement of Conditions*™, which is a resource to assist its member organizations to be in compliance with the *LSC*. This management tool required organizations to make an assessment of their facility on their own to determine how compliant their facility was with the code and document all deficiencies with a plan of how they would be resolved. This document has been shown to be one of the most effective proactive self-assessment tools available for healthcare facility managers today.

Progress continued to be made over the years on fire safety in hospitals. In the five-year span between 1980 and 1984, fire departments in the United States responded to an estimated 7,100 hospital fires annually, resulting in an average of five deaths per year. In a similar time span, between 2006 and 2010, U.S. fire departments responded to an average of only 1,400 fires per year that resulted in less than one death per year. The significant change in this statistic is attributed to the implementation of smoking bans in hospitals. From 1980 to 1984, 35% of the fires were started by smoking materials, compared to only 7% of fires started by smoking materials during the period from 2006 to 2010.

Compliance with the *LSC* requires a program to proactively assess the features of life safety to ensure their proper operation if a fire should occur. One of the methods to accomplish this is through inspecting, testing, and maintaining the fire safety equipment. Furthermore, the code expects hospital staff members will be trained and prepared should an unfortunate event occur. Starting with a fire safety plan, the organization must identify what the staff's response should be in the event of a fire, such as:

- Contacting the fire department
- Isolating a fire (i.e., closing doors)
- Evacuating/relocating patients
- Controlling a fire
- Using a preestablished "code word" for a fire

FOREWORD

Fires will continue to occur in healthcare facilities, and we especially need to be prepared for them. Although smoking bans have reduced the number of fires started by careless use of smoking materials, it hasn't eliminated them. An honest healthcare professional will admit patients are still sneaking cigarettes without the staff's knowledge. When staff members discover a patient smoking in his or her room, all that is frequently done is removal of the smoking materials and warning the patient to discontinue.

These encounters are not often documented, and subsequently no direct action is taken against the patient. It appears this approach is designed more to obtain a positive customer satisfaction score rather than to report the incident, which would result in an investigation. Follow-up interviews and warnings would surely result in the patient feeling embarrassed and perhaps intimidated, which would not result in positive scores. But if the patient had created a fire situation through the careless use of smoking materials, the chances are other patients in the immediate area would be at a severe risk. The lack of valid statistics on patient smoking skews the results, making it difficult to see there is a problem.

A poor life safety program leads to inadequate staff training, resulting in an inappropriate response during a fire emergency. One of the most common areas in a hospital where this occurs is the operating room. Surgical site fires occur much more often than national statistics indicate, simply because they go unreported. The use of heat-producing devices around high-oxygen environments (e.g., cauterizing pens in surgery) creates an environment in which fires will continue to happen.

The Emergency Care Research Institute (ECRI) is an independent, nonprofit organization that researches the best approaches to improving the safety, quality, and cost-effectiveness of patient care. According to their online information, virtually all operating room fires ignite on or in the patient. But the surprising statistic shows only about 10 surgical patient fires per year come to ECRI's attention through various medical and legal communications. For the most part, surgical site fires are not properly reported, and staff members fail to follow the basic training provided to them on fire response procedures required by the fire safety plan and the *LSC*. The U.S. Food and Drug Administration recently released data that more than 650 surgical fires occur each year in the United States, which represents a 550% increase from a decade earlier. Most likely, the increase is based more on a sense of transparency in reporting these fires rather than an actual increase in events.

These surgical fires typically result in little damage to equipment but cause considerable injury to patients and are a complete surprise to the staff. Other potentially disastrous fires singe linen, hair, or instruments but are quickly patted out and soon forgotten. With oxygen being administered to the patient, and a

cauterizing instrument, which produces heat, used in the surgery, the basic elements of a fire are always present during surgery. A misstep in the procedure or a momentary lapse of caution can quickly result in a catastrophe. Slow reaction or the use of improper firefighting techniques and tools can lead to damage, destruction, or death. Given the tremendous potential for human and economic disaster resulting from surgical patient fires, ECRI says it is surprising that perioperative fire prevention receives so little attention.

The lesson we have learned is simple: Guided by the *LSC*, lives are saved through well-trained staff members, an effective inspection and testing program of the fire safety equipment to ensure they perform as designed when needed, and the installation of suppression and detection equipment. Our hospitals are safer today than they have ever been, yet we still average 3.8 fires per day in hospitals in the United States, and patient deaths due to fire have not been eliminated. As recently as November 2012, a patient died in a fire in a Durham (NC) regional hospital while the patient received a defibrillation procedure. We cannot let up on our attempt to be compliant with the *LSC*. As a nation, we need to be prepared and ready to face that fire situation when it occurs. Without a national safety standard like the *LSC*, we will have far more tragic results than we have today.

Introduction

At the time this book was written, healthcare organizations that receive Medicare and Medicaid reimbursements from the government are required to comply with the 2000 edition of the NFPA 101 *Life Safety Code®* (*LSC*). In the fall of 2011, the Centers for Medicare & Medicaid Services (CMS) announced that they will review the 2012 edition of the *LSC* for consideration to adopt it. The last time it adopted a newer edition of the *LSC* was in March 2003, when it moved from the 1985 edition to the 2000 edition, which healthcare organizations are still using. Industry experts can only guess when CMS will actually adopt the 2012 edition, but if past history is any guide, then one can presume late 2014 to early 2015.

The 2012 edition of the *LSC* has many appealing changes and improvements that will make life easier (and a few that will make life more difficult) for facility managers in hospitals and nursing homes. After much discussion and deliberation on the anticipated change, people are now getting anxious to make the move and start taking advantage of the new edition.

But the process to adopt a newer edition of the *LSC* is not an easy or simple process for CMS to do. When an independent agency of the United States' government wants to add, remove, or change a rule or regulation, a public notice is issued in the *Federal Register*. This is part of the rulemaking process that was established by the Administrative Procedure Act of 1946. Back in 1946, Congress had great concerns of the expanding powers that federal agencies possessed after the Great Depression and World War II. The Administrative Procedure Act regulates and standardizes federal agency procedures to prevent a dictatorial form of government. This act effectively forces federal agencies to listen to the comments and concerns from people whom the change in regulation would likely affect.

In October, 2011, CMS published a rule that proposed to revise the *Conditions of Participation* for hospitals. Within that rule, CMS discussed the possibility of adopting the 2012 edition of the *LSC* for hospitals and other providers as part of a future rule. The public commented on this discussion and supported the idea of adopting the 2012 edition of the *LSC*.

The CMS *Conditions of Participation* includes a requirement for all hospitals to be in compliance with the 2000 edition of the NFPA 101 *LSC*. To make a change to the 2012 edition of the *LSC*, a notice of proposed rulemaking must be made, which CMS did in October 2011.

At the time this book was written, CMS had not published a proposed rule to adopt the 2012 edition of the *LSC*. CMS said they expect the proposed rule to be published in the fall of 2013.

The reason it takes so long between the periods CMS says it is reviewing the 2012 edition for adoption until such time the proposed rule can be published, is they must evaluate the new edition for expected costs to the public. This process can take many months and years.

Once the new rule allowing the change to the 2012 edition of the *LSC* is formally proposed, there will be a comment period for the public to respond to this proposed rule. The standard public comment period is 60 days and, after the public comment period has closed, CMS begins the process of sorting through and analyzing every comment or suggestion that was submitted, and revises the rule accordingly.

CMS has three years from the date that the proposed rule is published in the *Federal Register*, to subsequently publish a final rule on the matter. So, if the proposed rule is published on October 1, then the public has until November 30 to respond with comments and suggestions. After that, CMS must analyze and review every comment and suggestion, which could take 6 to 12 months or more to issue the final rule, which is well within the three-year limitation. The last time, when they proposed to move to the 2000 edition of the *LSC*, it took 15 months before they published the final rule.

Once the final rule is published, it may not immediately go into effect. If a final rule is considered "major," which is defined as a rule with an anticipated financial impact of $100 million or more in any one year, then there is an automatic 60-day delay in the effective date of the new regulation. The 60-day delay is required in these circumstances to allow for Congressional review of the rule before it becomes effective. However, CMS does not expect that the new *LSC* rule will be a "major" rule.

In fact, the American Society for Healthcare Engineers (ASHE) has published comments saying that adopting the 2012 edition of the *LSC* would not cost hospitals and nursing homes any money, but moving to the 2012 edition would have the potential to save billions of dollars.

What may be the largest myth concerning the adoption of the 2012 edition of the *LSC* is the belief that Congress must vote on the final rule and the president must sign it into law. That simply is not true.

Congress may have the opportunity to review the final rule before it becomes effective, but that is only if CMS determines the new rule is a "major" rule. So far, CMS has indicated the new rule will not be a "major" rule and a Congressional review, let alone any voting on it, will not be necessary.

Many individuals and organizations in the healthcare community have criticized CMS for not adopting newer editions of codes and standards when they become available. What those individuals do not understand is CMS has no choice in the rulemaking process. If CMS wants to change their rules (e.g., adopting a different edition of the *LSC*) then they are bound by law to follow the Administrative Procedures Act and solicit comments from the public. Once they receive these comments, they are again bound by law to review these comments and respond to them.

One may believe that the rule-making law should be changed to allow CMS to adopt newer editions of codes and standards as they become available. Well, that would require a major change in the rule-making process and would be based on legislation that must be passed in both houses of Congress, and then signed into law by the president. The way our politicians play together in Congress, that is not likely to happen. But before that concept is endorsed, understand that you would be giving up the protection of the Administrative Procedures Act and the rights that go along with it. Citizens would no longer be able to make comments and suggestions on the codes and standards that regulate us. Is that what you really want?

CMS is doing the best they can. They are bound by law on how they go about adopting the new 2012 edition of the *LSC*, and it takes many years to do so. This process may have drawbacks and may cause our healthcare organizations to suffer with older editions of the codes and standards, but the alternative of not following the Administrative Procedures Act and allow for public comments may have more stringent and dictatorial implications. It's not a perfect system . . . but what part of government is?

Four organizations have received authorization from CMS to deem whether hospitals are compliant with the respective conditions and standards in order to receive Medicare and Medicaid reimbursements:

- The Joint Commission (TJC)
- Healthcare Facilities Accreditation Program (HFAP)
- Det Norske Veritas Healthcare, Inc. (DNV)
- Center for Improvement in Healthcare Quality (CIHQ)

CIHQ just received its deeming authority from CMS in July 2013 and is the newest accreditation organization to enter the fray. As a result of receiving this deeming authority from CMS, it is obligated to assess and evaluate healthcare facilities to be in compliance with CMS' *Conditions of Participation*. Because of this line of authority, they are bound to enforce the 2000 edition of the *LSC* until such time CMS adopts a more recent edition. When they survey hospitals that are under the auspices of CMS, they have to assess the facility for compliance with the 2000 edition, even though there have been four major revisions to the code since then.

In 1913, the National Fire Protection Association (NFPA) appointed a committee called the Committee on Safety to Life to study the notable fires involving loss of life. This work led to the preparation of standards that effectively regulated how people exited buildings during a fire. The result of those early standards led to what we call the *LSC* today. It is not a standard that was spontaneously created, but through a century of hard work by thousands of fire safety professionals, it evolved and developed into the standard on which we operate our facilities to provide a safe environment for our patients.

Through the years, major changes in the *LSC* have led to improvements in the overall safety for the patients and staff. The following are a few of the more significant changes:

- Limiting the height of the building based on the type of construction
- Requiring smoke compartment barriers to create a safe area where staff and patients can evacuate to
- Requiring corridor doors to have positive latching hardware
- Mandating minimum widths in exit access corridors
- Requiring new construction and renovated areas to be fully sprinklered
- Eliminating smoking materials inside the facility
- Requiring staff training and education on the hospital's fire response plan
- Conducting fire drills on all shifts every three months
- Requiring emergency lighting
- Testing, inspecting, and maintaining fire safety equipment

INTRODUCTION

With new technology and changes in the way we consider human behavior, each new edition of the *LSC* has many changes that benefit the overall safety program for the organization. As an example, the technology on electric locks on doors has become so reliable and available, the 2012 edition has a new section that allows electric locks on doors in the means of egress in the same manner that mechanical locks are permitted. Sadly, most of the hospitals in the United States are stuck on a 13-year-old code that does not recognize these advances in safety and technology. In fact, the 2000 edition of the *LSC* references other standards that the healthcare organization must follow, some of which are now nearly 20 years old. How can we provide safe and efficient environments for our patients when our hands are tied and we are not able to utilize the modern codes and standards that reflect the new technology and changes?

However, once the 2012 edition is finally adopted, the facility manager and the safety officer and anyone else involved in the facilities will see that there are many changes that they need to be aware of. They will need to modify their policies, processes, and procedures to be in compliance with the new code. But not all these changes are a result of the 2012 edition, as many of them were noted in the 2003, 2006, and the 2009 editions. This book attempts to identify most of the significant changes with the *LSC* since the 2000 edition has been published that every facility manager will need to know.

The purpose of this book is not to identify every detail of the *LSC* involved with the changes from the 2000 edition to the 2012 edition but to provide a highlight of those changes that are considered significant that a facility manager of a healthcare organization may find helpful or interesting. It is not the intention of this book to provide specific code references or a crosswalk identifying every change but rather a narrative explanation to those changes that may be useful in compliance with the new 2012 edition of the *LSC*, once it is finally adopted.

This book seeks to simplify the understanding of the changes that are forthcoming and is not intended to be legal advice or a substitute for professional assistance in evaluating specific circumstances or situations. This book is not a publication of the NFPA. Any opinions expressed and interpretations given or implied are the sole responsibility of HCPro, Inc., and the author and should not be relied upon without reference to the full code or standard.

All *LSC* references used in this book are to the 2012 edition, unless otherwise noted. In some cases where the same subsection is referenced in both Chapter 18 and Chapter 19, it is identified as follows: 18/19.1.1.4.3.

Abbreviations frequently used in this book are common to many healthcare professionals who work in the facilities management field. But for those who may not be as familiar with these abbreviations, a list is provided to assist you.

Brad Keyes, CHSP
September 2013

Abbreviation	Explanation
ABHR	Alcohol-based hand rub: a term used to describe a sanitizing hand rub solution, containing alcohol, usually distributed from wall-mounted dispensers
ASTM	American Society for Testing and Materials: an international standards organization that develops and publishes voluntary consensus technical standards for a wide range of materials
AC	Alternating current: a description of the most common method of distributing electrical current from municipal utility organizations
AHJ	Authority having jurisdiction: any entity, organization, or individual who enforces a code or standards is considered an AHJ
ASHE	American Society for Healthcare Engineering: a nonprofit member organization for healthcare engineering professionals, providing educational and advocacy programs to their members
ATS	Automatic transfer switch: a switch that automatically transfers a circuit from normal power to emergency power
CFM	Cubic feet per minute: a form of measurement to determine the amount of airflow
CIHQ	Center for Improvement in Healthcare Quality: an accreditation organization with deeming authority from CMS to determine whether a healthcare organization is compliant with the *Conditions of Participation*
CMS	The Centers for Medicare & Medicaid Services: the federal organization that sets *Conditions of Participation* that healthcare organizations must comply with in order to receive reimbursement for Medicare services
DNV	Det Norske Veritas Healthcare, Inc.: another accreditation organization with deeming authority from CMS to determine whether a healthcare organization is compliant with the *Conditions of Participation*
HFAP	Healthcare Facilities Accreditation Program: the accreditation arm of the American Osteopathic Association, another organization with deeming authority from CMS to determine whether a healthcare organization is compliant with the *Conditions of Participation*
HIPAA	Health Insurance Portability and Accountability Act: an act of Congress in 1996 protecting individuals' health information
HVAC	Heating, ventilation, air-conditioning
ICC	International Code Council: an organization that writes and publishes model building codes that parallel the requirements of the NFPA *Life Safety Code*®
LSC	*Life Safety Code*®: also known as NFPA 101 *Life Safety Code*®, a document used by AHJs to ensure the safety of occupants of a building in the event of a fire
NAC	Notification appliance circuit: an extender panel used in automatic fire alarm systems that provides additional circuits for notification appliances
NFPA	The National Fire Protection Association: the nonprofit organization that writes and publishes codes and standards, including the *Life Safety Code*®
TIA	Tentative interim amendment: a document issued by the NFPA to amend its codes or standards between the regular revision cycles
TJC	The Joint Commission: another accreditation organization that has deeming authority from CMS to determine whether a healthcare organization is compliant with the *Conditions of Participation*
UPS	Uninterruptable power source: a source of power that is conditioned and not susceptible to power interruptions from the municipal supply

Chapter 1 Authorities Having Jurisdiction, Multiple Occupancies, Exit Enclosures, and Headroom

Authority Having Jurisdiction

In the 2000 edition of the *Life Safety Code*® (*LSC*), the National Fire Protection Association (NFPA) defined the authority having jurisdiction (AHJ) simply as "the organization, office, or individual responsible for approving equipment, materials, an installation, or a procedure." During the revision cycle for the 2006 edition, NFPA decided to alter this definition to read "an organization, office, or individual responsible for enforcing the requirements of this code or standard, or for approving equipment, materials, an installation, or a procedure." The 2012 edition has this same definition of an AHJ, and it is found under section 3.2.2.

The obvious change went from "approving equipment" to "enforcing the requirements of this code." This clarifies who is an actual AHJ. Many facility managers will readily agree that The Joint Commission, the Centers for Medicare & Medicaid Services (CMS), and their state fire marshal are all AHJs, and they would be correct. But the AHJ they may be overlooking is themselves, or at least the individual employed by the organization to be responsible for enforcing the *LSC* for the facility. This new definition clearly says an individual responsible for enforcing the requirements of the *LSC* is an AHJ. So facility managers and safety officers now have that title added to their list, as if they needed another hat to wear.

To be sure, there are multiple AHJs that enforce the LSC at hospitals and nursing homes. They are:

- CMS
- The Joint Commission (or HFAP, DNV, or CIHQ, as applicable)
- State Department of Health

- State fire marshal
- Local fire inspector
- Insurance company
- Facility manager or safety officer

Each of these AHJs will be enforcing the *LSC* as they understand it, and where the code is vague or unclear, the AHJ has to make a judgment call based on his or her knowledge and experience. For most healthcare organizations, this really is not a problem until there are differing opinions between authorities, and then it can get a bit dicey as to which AHJ the organization listens to.

Take this situation as an example: A hospital has multiple existing storage rooms next to the nurses' station that are greater than 50 square feet in size and contain some supplies that are packaged in paper and plastic. This constitutes combustible supplies, and the facility manager takes a look at the hazardous area section of the *LSC* [section 19.3.2.1.5(7) of the 2012 edition], which identifies a storage room as a hazardous room when it is larger than 50 square feet and it contains combustible supplies in quantities deemed hazardous by the AHJ. But the *LSC* does not clearly explain how many supplies packaged in paper and plastic constitute a hazardous area. (The technical committee for NFPA purposely left this ambiguous, so it would be enforced on a case-by-case basis.) This section on hazardous areas is important to the facility manager, because if the storage rooms are deemed to be hazardous areas, he would have to invest thousands of dollars to bring the rooms up to compliance with the codes, as they are not protected with sprinklers or with 1-hour fire-rated barriers. So the facility manager calls his local fire inspector (who is an AHJ) and has him take a look. The local fire inspector says, "Not to worry. That's not enough combustibles to be considered hazardous." The fire inspector even leaves him a written report indicating, in his opinion, that the amount of combustible storage does not constitute a hazardous area; therefore, upgrading the rooms for sprinklers or 1-hour fire-rated barriers would not have to be done.

The facility manager sighs and relaxes until a surveyor from his accreditation organization sees the rooms and says they have to be treated as hazardous areas. The facility manager provides the letter from the local AHJ saying it does not have to be considered hazardous areas. The accreditation surveyor says, "I don't care what the local AHJ says. In my opinion, the room qualifies as a hazardous area and must be treated as such."

This actually happens more than most people would think. And the truth is, both AHJs are correct. Since the *LSC* does not clearly define how many combustibles constitute a hazardous room, then the decision is up to the AHJs, and they will not always agree on this issue. The facility manager will have to learn to prepare his facility according to the most restrictive interpretation by the many different AHJs that inspect his hospital.

The decision of one AHJ is not binding on other AHJs. Just because the local AHJ said it was acceptable to him does not put a burden on any other AHJs to accept that decision, even though they may be enforcing the same section from the *LSC*. They could accept the decision from another AHJ if they wanted to, but they don't have to.

All AHJs involved in the approval of healthcare facilities serve different functions. Each AHJ has a very specific and important role. Issues that are not covered by one of the AHJs are typically covered by another. It is not a fair statement to say there is one AHJ that would "trump" the others.

So, there is no "major" AHJ that has authority over all the other AHJs. Not one AHJ has final authority over any other AHJ, but every AHJ has the authority to make interpretations of the *LSC* as they see fit, according to their knowledge and understanding of the code. That includes the federally mandated *Conditions of Participation* from CMS, all the way to the facility manager or the safety officer in the organization. With the changes in the definition for AHJ, it should clarify the issue for everyone.

Mixed vs. Separated Occupancies

Every hospital seems to have more than one type of occupancy inside its facility, whether it is mixed together, where there is no effort made to separate them, or the contrary, where rated barriers have been created to actually separate the different occupancies from each other. The most common occupancies found in hospitals are:

- Healthcare occupancy
- Ambulatory care occupancy
- Business occupancy

Healthcare occupancy is where the patients are treated and cared for and is defined when four or more individuals are incapable of self-preservation and when sleeping accommodations are provided. Ambulatory care occupancies are areas where four or more individuals are incapable of self-preservation, but no sleeping accommodations are provided. Business occupancies are defined as an area of transacting business, other than mercantile.

So healthcare occupancy locations include the units where inpatients are housed, treated, and cared for, such as a Med/Surg unit, a cardiac cath lab, operating rooms, and a radiology unit. Ambulatory care areas could include the emergency room, physical therapy unit, and possibly the operating rooms as well. Business occupancies could include administration, laboratory, pharmacy, engineering, central sterile processing, kitchen, dining room, boiler room, and any other area where there are no inpatients.

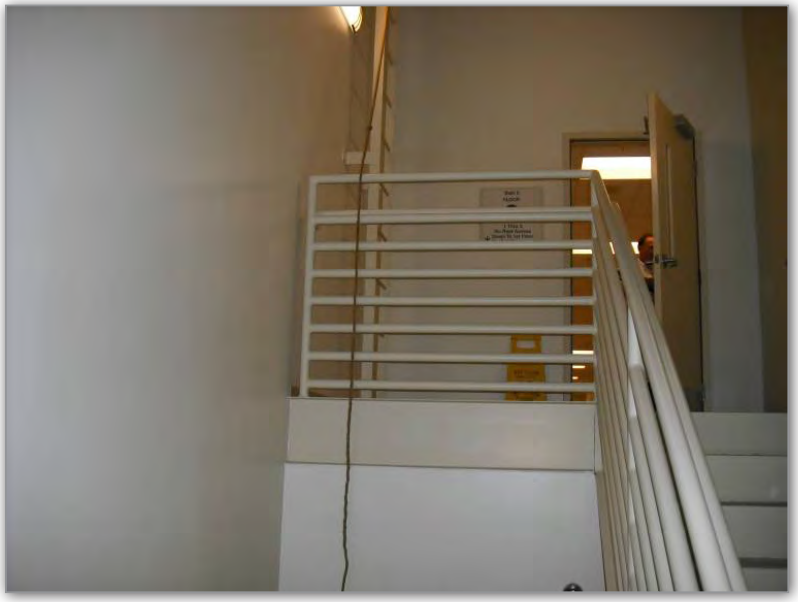
The 2000 edition of the *LSC* did a very poor job of defining the difference between mixed and separated occupancies, so the common vernacular used by most people was to say they had "mixed" occupancies when they actually had fire-rated barriers separating the occupancies. Section 6.1.14 of the 2012 edition now clarifies this issue much better by providing the following definitions:

- **Single occupancy:** A building with only one occupancy throughout.
- **Multiple occupancies:** A building with two or more occupancies.
- **Mixed occupancy:** A multiple occupancy building where the occupancies are intermingled.
- **Separated occupancy:** A multiple occupancy building where the occupancies are separated by fire-rated barriers.

If your building has multiple occupancies, there are significant advantages to you if you can separate them with fire-rated barriers. This will allow you to take advantage of the less restrictive code requirements for the ambulatory care occupancy and the business occupancy. Requirements for items such as corridor width, smoke compartments, travel distances, and corridor doors become much less of an issue when you can classify your non-patient care areas as business occupancies. With the new definition in the 2012 edition of the *LSC*, there should be less confusion as to the differences between mixed and separated occupancies.

Exit Enclosures

Stairwells used for exiting from a building are also known as exit enclosures. The 2000 edition of the *LSC* does not permit an unoccupied room to have its entrance (or exit) open onto an exit enclosure or stairwell.



Unoccupied mechanical room opens onto the exit enclosure.

This requirement actually appears to have its roots in the 1976 edition, but many hospitals still in use today have been designed and constructed prior to the adoption of the 1976 *LSC*. Architects and engineers have been designing healthcare buildings with mechanical rooms on the top floor of the facility for decades. The access to the mechanical room was usually from one of the stairwells, or exit enclosures, which was very convenient for the designers. Actually, architects and engineers continued to design this arrangement into hospitals long after 1976, but this deficiency was generally not caught by code reviewers until The Joint Commission started employing *Life Safety Code* experts as surveyors in 2005. Then hospitals began to take notice of this little section of the code and started asking their architects how they could design a new structure that didn't meet the *LSC*.

Starting with the 2003 edition, the technical committee for the *LSC* decided to provide relief to this problem by allowing existing nonoccupied mechanical rooms to open onto an exit enclosure, provided the following items were met:

- The protected opening (door assembly) must have the approved fire-resistive rating
- The mechanical space is solely used for non-fuel-fired mechanical equipment
- The mechanical space does not contain any storage of combustible materials
- The building is protected throughout by automatic sprinklers

This still means designers of buildings could not create new construction or renovated areas with unoccupied rooms that open onto an exit enclosure. The change in the code in 2003 applied only to existing conditions that met the listed provisions. To resolve this problem for new construction, all the architect had to do was design a vestibule between the unoccupied room and the exit enclosure, and that met the requirements. Subsequent editions of the *LSC* allowed doors to interstitial spaces in exit enclosures provided:

- The building construction type was type I or type II
- The interstitial space was used only for the distribution of pipe, conduits, and ducts
- There was no storage in the interstitial space
- The interstitial space was properly separated from the exit enclosure by fire-resistive-rated construction

With the adoption of the new 2012 edition of the *LSC*, relief for the facility manager is on its way. Section 7.1.3.2.1(9) of the 2012 edition now provides the clarifications that must be followed to allow the existing unoccupied mechanical rooms to have their entrance open onto the stairwell.

Section 7.1.3.2.1(10) of the 2012 edition of the *LSC* also now permits existing penetrations in exit enclosures to remain. Often times, contractors who didn't understand the *LSC* very well would run pipes, conduits, and ductwork to upper floors via the exit enclosures, which served as a convenient shaft.

Ductwork that does not serve the stairwell pressurization feature penetrates the exit enclosure.

The problem with this action is it is not permitted according to the 2000 edition of the *LSC*. Surveyors and inspectors have been observing the misuse of the exit enclosures when contractors ran their mechanicals in enclosure, and organizations have had the difficulty of removing the pipes, conduit, and ductwork and relocating them to another area of the building. With the adoption of the new 2012 edition of the *LSC*, these existing errors and mistakes may remain. The penetrations must still be properly fire stopped in accordance with the applicable codes and standards, but this will prevent many facilities from having to find new shafts and areas for their mechanical runs.

Headroom

Even as far back as the 1967 edition of the *LSC*, headroom was defined as requiring exits and exit accesses to be designed and maintained to provide adequate headroom, but in no case shall the ceiling be less than 7 feet 6 inches nor any projection from the ceiling be less than 6 feet 8 inches from the floor. By the 2000 edition, this definition was modified to allow the minimum ceiling height to be no less than two-thirds of the ceiling area of any room or space, provided the remaining ceiling height is not less than 6 feet 8 inches.

Ceiling height in corridors often is lower due to mechanicals above the ceiling.

The 2000 edition of the *LSC* also allowed an exception for existing ceilings to be no less than 7 feet from the floor. Section 7.1.5.1 of the 2012 edition of the *LSC* now allows a tolerance of ¾ inch when making these measurements, which is a huge benefit for older buildings that have difficulty meeting this minimum ceiling height requirement. Overzealous surveyors and inspectors have been known to cite organizations as being deficient on minimum ceiling height when the ceilings are as little as ¼ inch out of compliance. With this new tolerance of ¾ inch, these picky findings should be reduced.

Take-Away Summary

Feature	Change	2012 *LSC* Reference
Authority Having Jurisdiction	Includes anyone responsible for enforcing the *LSC*	3.2.2
Multiple Occupancies	Clarifies the differences between mixed and separated occupancies	6.1.14
Exit Enclosures	Permits existing openings to mechanical rooms in exit enclosures	7.1.3.2.1(9)
Exit Enclosures	Permits existing penetrations to remain in exit enclosures	7.1.3.2.1(10)
Headroom	Allows a tolerance of ¾ inch in minimum ceiling height	7.1.5.1

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