

*LIFE SAFETY CODE
MAINTENANCE MANUAL*

FOR

*CERTIFIED HEALTH CARE
FACILITIES
IN MONTANA*

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Prepared by the



Quality Assurance Division Certification Bureau

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INTRODUCTION

On January 10, 2003, the Centers for Medicare and Medicaid Services (CMS) published final rules in the Federal Register adopting the 2000 Edition of NFPA 101, Life Safety Code (LSC). This final rule amended the fire safety standards for certified facilities. Further, this final rule adopted the 2000 Edition of the LSC and eliminated references to all earlier editions. These regulations were effective on September 11, 2003.

The objective of the code is to assure safety to life during fires and other emergencies. These requirements are designed to protect all residents and staff. The final rule allows other options for facilities to meet regulatory requirements when correction of a deficiency will create an undue burden or financial hardship such as the FSES (Fire Safety Evaluation System) or waivers.

This Preventive Maintenance Manual is intended for use by maintenance staff and others in conjunction with health care facilities to maintain and improve life safety conditions for the benefit of residents and employees. This document is intended to provide information to facilities, but is not necessarily fully inclusive of all details of LSC 2000 or other NFPA Standards. Determinations of compliance with Life Safety Code regulations are made at the time of survey. Additionally, this manual does not address state and local building codes.

All new construction, remodeling, or modifications to licensed & certified health care facilities shall be presented to the Montana Department of Public Health & Human Services (DPHHS). Licensed and certified facilities in Montana are: Ambulatory Surgical Centers(ASC), In Patient Hospices, Critical Access Hospitals (CAH), Long Term Care (LTC) Facilities (nursing homes), and Acute Care Hospitals. For further information please, call 406-444-2099.

Any entity servicing fire suppression or alarm systems shall be licensed and endorsed by the State of Montana. Either a copy of the license should be obtained or the company and individual installers' names with appropriate license numbers should be available at the time of the survey.

Alcohol Based Hand Rub (ABHR) Dispensers

- Ensure that corridors are at least 6 feet wide before installing dispensers, there is a minimum spacing of 4 feet from each dispenser.
- Ensure that the maximum individual fluid dispenser capacity is 1.2 liters (2 liters in suites of rooms) and that there are not more than 10 gallons in a single smoke compartment outside a storage cabinet.
- If the floor is carpeted, the building must be fully sprinklered.
- Ensure that ABHR physical location to electrical outlets, switches, etc. are within 1 inch of an electrical source to the left, to the right or below the source or at no time directly above an electrical source.
- Further guidance is available by reviewing CMS Survey & Certification Letters (S&C)
 - 05-33 Adoption of a New Fire Safety Amendment for the Use of Alcohol Based Hand Rubs (ABHRs)
 - 07-01 New Fire Safety Requirements for the Use of (ABHRs) and Installation of Battery Powered Smoke Alarms

Anesthetizing Locations

- An anesthetizing location is: any area of a facility that has been designated to be used for the administration of nonflammable inhalation anesthetic agents in the course of examination or treatment, including the use of such agents for relative analgesia.
- Area alarms shall be provided for each medical gas piping system supplying anesthetizing locations and other vital life support and critical care areas such as post-anesthesia recovery, intensive care units, and coronary care units.
- It shall be the responsibility of the governing body of the hospital to designate anesthetizing locations.
- Administrative authorities shall ascertain that electric maintenance personnel are completely familiar with the function and proper operation of ungrounded electric circuits required by Section 2-6.3.2 in Annex 2. The significance of the signal lamps and audible alarms installed to indicate accidental grounds shall be explained to all personnel affected. A permanent sign shall be installed close to the position of the signal lamps to indicate their significance. Circuits in the panel boxes shall be clearly labeled, distinguishing between grounded and ungrounded, emergency and normal circuits, so that immediate recognition is possible. Extension cords shall not be connected to lighting fixtures in anesthetizing locations under any circumstances.
- Flexible cord for portable lamps or portable electric appliances operating at more than 12 volts between conductors, intended for use in anesthetizing locations, shall be continuous and without switches from the appliance to the attachment plug and of a type designated for extra-hard usage in accordance with Section 501-11 of NFPA 70, National Electric Code. Cords shall be protected at the entrance to equipment by a suitable insulating grommet. The flexible cord shall be of sufficient length to reach any position in which the portable device is to be used, and the attachment plug shall be inserted only in a fixed, approved receptacle. For correct use and maintenance of adapters, the provisions of NFPA 99, Chapter 7-6.2.1.5 shall apply.
- Receptacles for use in anesthetizing locations shall be listed for the use. In anesthetizing locations of new and existing construction having receptacles on isolated and grounded power, all receptacles shall be identified as to whether they are on isolated or grounded power.
- **Electrical safeguards**
 - Physical safeguards built into the anesthetizing locations or storage areas will not provide protection unless safe practices are followed and good maintenance is provided.
 - Scheduled inspections and written reports shall be maintained.
 - Rules to require prompt replacement of defective electrical equipment shall be adopted and rigidly enforced.
 - Personnel working in anesthetizing locations shall be instructed in these electrical safeguards.

- o All electrical equipment used in inhalation anesthetizing location and areas ancillary thereto, or in other areas using conductive floors constructed in accordance with this section shall be periodically tested for electrical safety. (See NFPA 99, Chapter 12-1.2.1.2)
- o Members of the professional staff shall be required to submit for inspection and approval any special equipment they wish to introduce into anesthetizing locations. Such equipment shall meet the requirements for the protection against electrical shock as given in NFPA 99, Chapter 7-5.1.1.1.
- o Line-powered equipment that introduces current to the patient's body shall have the output circuit isolated from ground to ensure against an unintentional return circuit through the patient.
- Suggested emergency procedures in the event of a fire or explosion in an anesthetizing location. (Review the steps in NFPA 99, Appendix C-12.4.2).
- For Fire and Explosion Hazards in and around Inhalation Anesthetizing Locations, (Review NFPA 99, Chapter 8-2.1)
- **Germicide requirements for all anesthetizing locations include:**
 - o Medicaments, including those dispersed as aerosols, can be used in anesthetizing locations for germicidal purposes, for affixing plastic surgical drape materials, for preparation of wound dressing, or for other purposes.
 - o Liquid germicides used in anesthetizing locations, whenever the use of cautery or electrosurgery is contemplated, shall be nonflammable.
 - o Whenever flammable aerosols are employed, sufficient time shall be allowed to elapse between deposition and application of drapes to permit complete evaporation and dissipation of any flammable vehicle remaining.
- **Ventilation requirements in Anesthetizing Locations**
 - o The mechanical ventilation system supplying anesthetizing locations shall have the capability of controlling the relative humidity at a level of 35 percent or greater.
- **Gas System Information and Warning Signs**
 - o The gas content of medical gas piping systems shall be readily identifiable by appropriate labeling with the name and pressure of the gas contained. Such labeling shall be by means of metal tags, stenciling, stamping, or adhesive markers, in a manner that is not readily removable.
 - o Shutoff valves shall be labeled to reflect the rooms that are controlled by each valve. Valves shall be labeled in substance as follows:

CAUTION
(NAME OF MEDICAL GAS) VALVE
DO NOT CLOSE EXCEPT IN EMERGENCY
THIS VALVE CONTRTOLS SUPPLY TO
 - o Pressure gauges and manometers for medical gas piping systems shall be identified:

(NAME OF THE GAS)
USE NO OIL!
- **Switches and Receptacles in Anesthetizing Locations**
 - o Switches controlling ungrounded circuits within or partially within an inhalation anesthetizing location shall have a disconnecting pole for each conductor.
 - o Receptacles shall be identified as to whether they are on isolated or grounded power.
- **Temperature Control in Anesthetizing Locations**
 - o Window-type temperature regulating units (air-conditioners) are permitted to be installed in exterior windows or exterior walls of anesthetizing locations, as long as the humidity stays at 35 percent or greater.
- **Area Alarm Systems for Vacuum Systems in Anesthetizing Locations**
 - o Area alarm shall be provided for anesthetizing location and critical care areas. Warning signals shall be provided for all medical-surgical vacuum piping systems supplying these areas to indicate if the vacuum decreases from the normal operating range. Actuating vacuum switches for the area alarm signals shall be set to activate their respective warning signals (visual and audible) at and below 12 inches of Hg of vacuum.

Corridor Walls / Fire Walls / Smoke Walls

- Ensure that corridors are separated from use areas by walls that form a barrier to limit the transfer of smoke and, for existing construction, required to have a fire resistance rating of 30 minutes.
- Seal all penetrations with fire-rated materials. Do not use expanding foams to seal penetrations unless fire rated. Products that are acceptable are UL or FM listed. If you have questions call 406-444-4170.
- Replace damaged fire rated ceiling tiles with fire rated ceiling tiles.
- See NFPA 101 19.3.6.1 and 19.3.6.5 for exceptions to the corridor separation requirements and permissible openings such as lounges, waiting areas, nursing stations, mail slots and certain pass-through windows.
- Further guidance is available by reviewing Survey & Certification Letters (S&C):
 - 04-11 Corridor Width and Corridor Mounted Computer Touch Screens in Health Care Facilities
 - 10-18-LSC Revision of SC-04-41, Corridor Width and Corridor Mounted Computer Touch Screens in Facilities

Corridor Width / Means of Egress

- Monitor corridors serving as exit access to ensure that they are clear and unobstructed. Storage occurs when an item is left in place or not in use for over 30 minutes. If the appropriate staff is around and using something every 30 minutes the item is not considered to be stored.
 - Linen carts, soiled utility carts, wheelchairs and lifts **may not be** stored in corridors. Isolation carts and crash carts are allowed in the corridors.
 - Items are not to be placed in the corridors that impede evacuation such as furniture, plants.
 - Monitor facility to ensure that the facility does not have combustible decorations unless they are flame-retardant. Exception: Combustible decorations, such as photographs and paintings, in such limited quantities (less than 20% of wall area) that a hazard of fire development or spread is not present.
 - Storage occurs when an item is left in place or not in use for over 30 minutes. If the appropriate staff is around and using something every 30 minutes the item is not considered to be stored.
 - "Stop signs" attached to exit doors must not obstruct egress or cover hardware.
 - CMS is granting waivers for two situations with items in corridors:
 - Patient Lifting Devices located in corridors
 - Fixed furniture in 8 foot or wider corridors
- Further guidance can be found in 12-21 Instruction Concerning Waivers of Specific Requirements of the 2012 Edition of the National Fire Protection Association (NFPA) 101, the Life Safety Code (LSC), in Health Care Facilities – Clarification Effective Immediately.

Dampers: Smoke, Fire, & Combination

- Smoke/fire dampers shall be designed to resist the passage of smoke and shall be provided for each air transfer opening or duct penetration of a required smoke barrier, unless exempted by the Code. (See exemptions in NFPA 101, 8.3.5).
- In accordance with section 8.3.5.2 of NFPA 101, 2000 edition; required smoke dampers in ducts penetrating smoke/fire barriers shall close upon detection of smoke by approved smoke detectors in accordance with NFPA 72, National Fire Alarm Code, 1999 edition.
- Hospitals can qualify for testing of dampers on a 6 year cycle providing they meet certain requirements. Further information can be reviewed at S&C 10-04-LSC Waiver to Allow Hospitals to Use the NFPA 6-Year Damper Testing Interval.

Doors - Inspect, Repair, and Maintain:

- Ensure that automatic or self closing devices are properly installed and functioning.
- Smoke doors and doors opening into the corridor close properly and resist the passage of smoke. Non-rated gaskets, such as weather stripping, are not an acceptable method to correct door gaps.

- Doors close and latch into the frame (positive latching hardware), without impediments, and they open with one motion.
- Doors are unobstructed and not blocked in any manner.
- Hazardous area doors are self closing (see also hazardous areas).
- Smoke barrier doors that swing in the same direction may be required to have a coordinator to ensure doors close properly which allows one door to close first preventing the doors from hitting.
- Monitor doors with magnetic locked or delayed egress locks to ensure that:
 - Doors release appropriately.
 - No more than one delayed egress locked door in the path of travel.
 - Doors with magnetic locking devices without the delayed egress function shall unlock upon activation of the complete fire alarm system.
 - Doors may not reactivate if the fire alarm system is placed in silent mode. The doors should not relock without the system being reset.
 - Check systems after performance of maintenance to assure systems are returned to working order.
 - Notify the authorities having jurisdiction and obtain any required permits before any changes are made to the system.
- Further guidance is available by reviewing CMS Survey & Certification Letters (S&C):
 - 06-08 Compliance Date for Installation of Emergency Lighting and Replacement of Existing Roller Latches
 - 07-18 Permitted Gaps in Corridor Doors and Doors in Smoke Barriers

Electrical

- Verify that nursing homes with life support equipment have a Type I Essential Electrical System (EES) powered by a generator with a transfer switch and separate power supply. The EES is in accordance with NFPA 99, Sections 3.4.2.2, and 3.4.2.1.4.
- Use of a surge protector as a power strip is prohibited. A surge protector is designed to protect electrical equipment from voltage spikes, where a power strip is designed with a “built in circuit breaker” and is designed to prevent overloads on the power strip resulting in overheating or a fire condition.
- Power strips use will be acceptable when they are:
 - United Laboratories (UL), Factory Mutual (FM) listed devices with a built in circuit breaker.
 - Not used to plug in large appliances such as refrigerators, microwaves, soda machines, etc.
 - Not ran through doorways, window, or similar areas.
 - Not ran under rugs.
 - Not used to plug in life saving devices into them which would include oxygen concentrators.
 - Not suspended from their cord unsupported by the floor, desk, etc.
 - Not allowed to be plugged into another power strip or to have extension cords plugged into them. Where additional outlets are needed, they must be installed in accordance with NFPA 70 National Electrical Code, 1999 Edition
- Maintain three foot clearance around all electrical panels at a minimum.

Elevators & Dumbwaiters

- Subject elevators to routine and periodic inspections and tests as specified in ASME/ANSI A17.1, Safety Code for Elevators and Escalators. All elevators equipped with fire fighter service in accordance with 9.4.4 and 9.4.5 of NFPA 101 are subjected to a monthly operation with a written record of the findings made and kept on the premises as required by ASME/ANSI A17.1, Safety Code for Elevators and Escalators.

Emergency Lighting

- Conduct a functional test on all battery operated emergency lighting system at 30-day intervals for not less than 30 seconds. Conduct the annual test on every required battery-powered emergency lighting system for not less than 1.5 hours (90 minutes). Ensure that

equipment is fully operational for the duration of the test. Written records of visual inspections and tests shall be kept by the facility.

- Monitor exterior exit lighting to ensure that the exterior lighting is equipped with two sources of light either by having two fixtures or one light fixture with two light bulbs. The exit discharge must have a functional emergency light that lasts at least 1.5 hours.
- Further guidance is available by reviewing CMS Survey & Certification Letters (S&C):
 - 06-08 Compliance Date for Installation of Emergency Lighting and Replacement of Existing Roller Latches

Exits

- Monitor exit and directional signs display the correct egress pathway or direction of travel with continuous illumination and are also served by the emergency lighting system in accordance with NFPA 101 sections 7.10., 18.2.10.1.
- Monitor exit accesses are arranged so that exits are readily accessible at all times and that the means of egress is continuously maintained free of all obstructions or impediments to full instant use.
- Monitor exit discharges outside the building have a hard surface to the public way and that the exit discharge is usable during inclement weather and is without impediments.
- Monitor exit discharges outside of the building to ensure they are illuminated along the path to the public way. (Minimum of one foot candle of illumination at floor level).
- Further guidance is available by reviewing CMS Survey & Certification Letters (S&C):
 - 05-38 Clarification of Life Safety Code Survey Issues in Nursing Homes
 - 07-05 Life Safety Code - Exit Discharge Requirements and the Fire Safety Evaluation System (FSES)

Fire Alarm System

- Ensure that the fire alarm system is installed and maintained in accordance with NFPA 72, National Fire Alarm Code, 1999 Edition and that maintenance records are available.
- Inspect the fire alarm system to determine if the sprinkler system is connected to the alarm system including water flow devices. Verify that activation of the sprinkler system causes the fire alarm to sound.
- Verify that the fire alarm system transmits to the local fire department or central station.
- Ensure that the fire alarm system is provided with an alternative power supply in accordance with NFPA 72 as defined in section 9.6.1. 18.3.4.1.3.
- Ensure that hard copy records are available for self monitoring fire alarm systems are still required to maintain and provide all required documentation of maintenance and testing.
- Notify the authorities having jurisdiction and obtain any required permits before any changes are made to the system.

Fire Drills

- Ensure that the facility administration has a plan that has been distributed to staff 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. Establish a system to ensure that all employees are periodically instructed and kept informed with respect to their duties under the plan.
- Monitor fire drills to ensure that the drill includes the transmission of a fire alarm signal and simulation of emergency fire conditions. Document receipt or verification of call to remote monitoring company.
- Monitor fire drills to ensure that drills are held quarterly, per shift, and under varying conditions.
- Maintain documentation concerning fire drills for the preceding 12 months that shows at least the following:
 - One drill per shift per quarter. Drills conducted at shift change are only counted for one shift. If a drill is conducted January 1st, then another drill must be conducted by June 30th to meet the quarterly requirement.
 - Varying conditions of drill must be used. Examples of varying conditions would be different locations on the same shift each time; utilizing different initiating devices to set off the alarm system such as a pull station, smoke detector, etc., unannounced

drills to test staff response. Conducting identical drills on the same shift at the same time for each quarter is not considered varied conditions.

- o Differing days of the week including weekends.
- o Involvement of all departments.
- o Documented observations of staff response.
- o Record of equipment functioning such as the release of doors and alarms sounding.
- o Between the hours of 9:00 PM to 6:00 AM a silent alarm may be used instead of the audible alarm.

Fire Extinguishers (Portable)

- Inspect portable fire extinguishers on a monthly basis and maintain annually.
- Change chemical for dry chemical fire extinguishers every six years and install the appropriate label for the six year maintenance. All other six year maintenance stickers shall be removed.
- Conduct 12 year hydrostatic vessel test and ensure a sticker stating such is applied.
- Hydrostatically test CO2 portable fire extinguisher vessels every five years. All previous hydrostatic test stickers shall be removed.
- Inspect the Verification of Service (collar) ring to ensure it reflect the most recent hydrostatic test or 6 year maintenance.
- Ensure fire extinguishers are mounted correctly. Fire extinguishers having a gross weight not exceeding 40 lbs (18.14 kg) shall be installed so that the top of the fire extinguisher is not more than 5 feet above the floor. Fire extinguishers having a gross weight greater than 40 lbs shall be installed so that the top of the fire extinguisher is not more than 3.5 feet above the floor. In no case shall the clearance between the bottom of the fire extinguisher and the floor be less than 4 inches.

Fire Safety Plan

- Develop a written health care occupancy fire safety plan that addresses all of the following components:
 - o Use of alarms
 - o Transmission of alarm to fire department
 - o Response to alarms
 - o Isolation of fire
 - o Evacuation of immediate area
 - o Evacuation of smoke compartment
 - o Preparation of floors and building for evacuation
 - o Extinguishment of fire
 - o Ensure that evacuation routes are clearly marked on the plan including alternative routes. The evacuation routes do not have to be posted in the facility.

Fire Watch

- Where a required automatic sprinkler system or a required fire alarm system is out of service for more than four hours in a 24-hour period, the state agency shall be notified, and the building shall be evacuated or an approved fire watch system be provided for all parties left unprotected by the shutdown until the sprinkler system or fire alarm system has been returned to service. When a fire watch is instituted, the facility shall call the State Agency at 406-444-4170 and leave a voice mail message with the following:
 - o Name of facility
 - o Contact Person at Facility
 - o Telephone number to be reached at
 - o Reason fire watch was instituted (e.g. sprinkler system frozen and broken pipe resulted)
 - o Facility staff required to call back when fire watch has been lifted after system is returned to normal.
- A fire watch should at least involve one additional trained staff beyond normal facility staffing. These individuals are specially trained in fire prevention and in occupant and fire department notification, and understand the fire safety.

- A written log or documentation of fire watch rounds should be kept and available for inspection.
- Fire watch policy must address:
 - Notification of the local fire department
 - Notification of the State Agency at 406-444-4170
 - Facility procedures must address separate situations in which the sprinkler system and/or the fire alarm system are out of service for more than four hours in a 24 hour period.

Fire Safety Evaluation Survey (FSES)

The Fire Safety Evaluation Survey (FSES) is a measuring system that compares the level of safety provided by an arrangement of safeguards that differ from those specified in NFPA 101, Life Safety Code. The FSES is to be utilized for specific deficiencies that cannot be corrected or will constitute an extreme financial hardship and undue burden on the facility. The FSES will be conducted for a specific deficiency or K Tag, and it is not intended or designed to be used for deficiencies or K Tags that can be corrected.

Although usually an FSES is performed by the Department, an FSES may be conducted by a qualified engineer or architect. The facility may request an FSES as part of its plan of correction. An FSES must be done each time a Life Safety Code survey is conducted. In order to use the FSES as an equivalency to the Life Safety Code, the facility must meet conditions listed in Table 8 of the FSES. (CMS Form 2786T)

- Further guidance is available by reviewing CMS Survey & Certification Letters (S&C):
 - 04-33 Life Safety Code (LSC) and State Performance Standards

Flammable & Combustible Liquids Storage Tanks

- **Installation**
 - Installation of above ground storage tanks shall be in accordance with Chapter 2-3.2, which addresses the location with respect to property lines, public ways, and important buildings on the same property.
- **Areas subject to Earthquakes**
 - In areas subject to earthquakes, the tank supports and connections shall be designed to resist damage as a result of such shocks.
- **Sources of Ignition.**
 - In locations where flammable vapors could be present, precautions shall be taken to prevent ignition by eliminating or controlling sources of ignition. Sources of ignition can include open flames, lightning, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, and mechanical), spontaneous ignition, chemical and physicochemical reactions, and radiant heat.
- **Location**
 - Unsupervised, isolated aboveground storage tanks shall be secured and marked in such a manner as to identify the fire hazards of the tank and its contents to the general public. The area in which the tank is located shall be protected from tampering or trespassing, where necessary.
- **Fire Protection and Identification**
 - NFPA 30, Section 2- 9.3, requires unsupervised, isolated aboveground storage tanks shall be secured and marked in such a manner as to identify the fire hazards of the tank and its contents to the general public. The area in which the tank is located shall be protected from tampering or trespassing, where necessary. According to NFPA 30, diesel fuel is considered a Class II combustible liquid, meaning, its closed cup flash point is at or above 100 degrees Fahrenheit and below 140 degrees Fahrenheit.
 - And in accordance with NFPA 395, Standards for the Storage of Flammable and Combustible Liquids, Section 2-4.1, Marking of Tanks and Containers, tanks and containers shall be conspicuously marked with the name of the product contained and with the following marking: " FLAMMABLE - KEEP FIRE AND FLAME AWAY. "

Generators

- Inspect all generators weekly and exercise under load for 30 minutes per month in accordance with NFPA 99 3.4.4.1. Maintenance and testing of essential electrical system
- The monthly testing of Level 1 and Level 2 EES needs to be conducted by one of the following two methods:
 - Under operating temperature conditions or at not less than 30 percent of the EPS nameplate rating.
 - Diesel-powered EPS installations that do not meet the above requirements shall be exercised monthly with the available EPS load and exercised annually with supplemental loads at 25 percent of nameplate rating for 30 minutes, followed by 50 percent of nameplate rating for 30 minutes, followed by 75 percent of nameplate rating for 60 minutes, for a total of 2 continuous hours. Ensure that the startup and or cool down times are not included in the 30 minute load test.
- Maintain all records of inspections and running under load. Records should include at least:
 - Date of inspection
 - Time of inspection
 - Generator's general condition (leaks, hoses, fuel supply, oil, belts, battery, cooling system, transfer switch)
 - Start and end times of the load test including start-up time and cool-down time
 - Generator output readings during load test
 - Signature of individual conducting inspection, testing, or repair
 - Ensure that electrical power is transferred within 10 seconds of interruption when using a generator.
- Ensure that there is battery powered emergency lighting at generator set locations inside a facility (a flashlight is not considered emergency lighting).
- NFPA 99 requires an emergency generator in a health care facility when life support equipment is utilized. Monitor facility supplies to ensure that the appropriate fuel for the facility's generator is available.
- Emergency generator sets are required to have a minimum of a 90 minute fuel supply. Facilities with Level 1 electrical systems and located in Seismic Zone 3 or 4 per the Uniform Building Code are required to have 96 hours of fuel onsite.
- Maintain a remote generator annunciator panel in an attended area that is staffed twenty four hours a day seven days a week. Remote annunciators should be included on generators installed after September 11, 2003 or for existing generators a waiver from CMS must be in place.

Hazardous Areas

- A hazardous area is defined as an area of a structure or building that poses a degree of hazard greater than that normal to the general occupancy of the building or structure, such as areas used for the storage or use of combustibles or flammables; toxic, noxious or corrosive materials; or heat-producing appliances.
- Ensure that any hazardous area is separated by a one-hour fire construction or is completely sprinklered. If area is sprinklered, maintain a solid wood core door with automatic self closing device equipped with positive latching hardware that resists the passage of smoke.
- Monitor mechanical rooms to ensure that the rooms are clean and orderly and are not used for combustible storage.
- Ensure that storage is in accordance with the Life Safety Code and Local Fire and Building Codes.
- Ensure that there is a minimum of a 3 foot clearance around all electrical panels and heat producing equipment such as a gas furnace.
- Monitor changes in use of any room that may lead to a hazardous area.
- Hazardous areas may include:
 - Boiler and Fuel-Fired Heater Rooms
 - Laundries greater than 100 square feet
 - Repair Shops and Paint Shops
 - Laboratories if classified as a severe hazard

- o Combustible storage Rooms/Spaces (over 50 square feet) Trash Collection Rooms
- o Soiled Linen Rooms
- o Smoking Rooms

Heating, Ventilation, Air Conditioning, & Cooling (HVAC)

- Ensure that all HVAC units are installed and maintained in accordance with NFPA 90A Standard for the Installation of Air-Conditioning and Ventilation Systems, 1999 Edition.
- Examine each fire, smoke or ceiling damper should be reviewed every two years to ensure that it is not rusted or blocked giving attention to hinges and other moving parts. At least every 4 years, fusible links (where applicable) shall be removed; all dampers shall be operated to verify that they fully close; the latch, if provided, shall be checked; and moving parts shall be lubricated as necessary.
- Hospitals are allowed to revert to a 6 year fusible link maintenance based on CMS S&C 11-07.
- Monitor facility plant to ensure that all air filters are kept free of excess dust and combustible material. Unit filters should be renewed or cleaned according to manufacturer's recommendations
- Semiannually (twice a year) inspect electrical equipment automatic filters and observe the operation cycle to ensure that the motor, relays, and other controls function as intended. Inspect drive motors and gear reductions at least semiannually and lubricate when necessary.
- Further guidance is available by reviewing Survey & Certification Letters (S&C)
 - o 06-18 Clarification of the Amount of Air Movement Allowed Between Corridors and Resident Rooms
 - o 10-04 Waiver to Allow Hospitals to Use the NFPA 6-Year Damper Testing Interval

Hood Suppression System

- Inspect and maintain the hood suppression system in accordance with NFPA 96.
- Verify that fuel sources are automatically disconnected when the extinguishing system is activated.
- Clearly mark and locate the extinguishing system activator in the path of egress from the kitchen.
- Verify that activation of the extinguishing system activates the facility fire alarm.
- Ensure that the hood suppression system is UL 300 compliant or equivalent.
- Train staff in the operation of any range hood extinguishing system.
- Monitor all cooking locations to limit or avoid creating grease laden vapors in accordance with NFPA 96.
- Cleaning of hoods shall be done semi-annually by a qualified contractor or qualified staff. Cleaning of hood includes all the exhaust ventilation ductwork, fans, etc. when required.

Horizontal Exits

- Horizontal exits shall comply with NFPA 101, Section 7.2.4 and the following modifications:
 - o Where horizontal exits are used in a means of egress, they shall conform to the general requirements of NFPA 101, Section 7.1 and the requirements of Section 7.2.4.
 - o Horizontal exits shall be permitted to be substituted for other exits where the total egress capacity of the other exits is not less than half that required for the entire area of the building or connected buildings and provided that none of the other exits is a horizontal exit.
 - o Not less than 30 net feet² per patient in a hospital or nursing home, or not less than 15 net feet² per resident in a limited care facility, shall be provided within the aggregated area of corridors, patient rooms, treatment rooms, lounge or dining areas, and other similar areas on each side of the horizontal exit.
 - o A door in a horizontal exit shall not be required to swing in the direction of egress travel.
 - o Door openings in horizontal exits shall be protected by a swinging door providing a clear width of not less than 32 inches or by a horizontal sliding door complying with NFPA 101, Section 7.1.1.14 that provides a clear width of not less than 32 inches.

Interior Finish, Furnishings, & Decorations

- Facilities are required to maintain documentation as to the flame and smoke spread ratings of all their interior finishes.
- Corridor finishes must be Class A or B (existing buildings).
- Interior finishes for non-corridor areas may be Class A, B or C if the building is fully sprinklered (existing buildings).
- Monitor facility to ensure that the means of egress is continuously maintained free of all obstructions or impediment to full instant use in the case of fire or other emergency. No furnishings, decorations, or other objects shall obstruct exits, access thereto, egress there from, or visibility thereof. NFPA 101 section 7.1.10.
- Monitor facility to ensure that no signs or decorations are attached to sprinkler heads or exit signs.
- Inspect curtains for flammability, review labels, or tags. Section 10.3.1 requires these materials to be flame resistant as demonstrated by testing in accordance with NFPA 701, Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.
- Fabrics can be made flame resistant by chemical treatment. However, such treatments can be made ineffective by laundering, dry cleaning or water leaching. Maintain records to document that treated fabrics are maintained in accordance with the manufacturer's specification to retain flame resistance.
- Monitor facility to ensure that the facility does not have combustible decorations unless they are flame-retardant. Exception: Combustible decorations, such as photographs and paintings, in such limited quantities (less than 20% of wall area) that a hazard of fire development or spread is not present.
- Monitor use of outdoor decorations that are placed near the building as these can create a hazard, e.g. hay bales. Consider alternative to mulch in outside bedding areas to reduce the risk of fire.
- Monitor facility to ensure that furnishings or decorations of an explosive or highly flammable character are not used. Examples of explosive or highly flammable decorations include live or cut Christmas trees and pine branches/roping/garland; not effectively flame-retardant treated crepe paper decorations; finely divided tinsel-like material, garland; pyrozylin plastic decorations.

Laboratories

- Laboratories employing quantities of flammable, combustible, or hazardous materials that are considered a severe hazard shall be protected in accordance with NFPA 99. Laboratories that are not considered to be a severe hazard shall meet the provisions of a hazardous area under K29. Laboratories in Health Care occupancies and medical and dental offices shall be in accordance with NFPA 99, Standard for Health Care Facilities Section 10.5.1.
- Procedures for laboratory emergencies shall be developed. Such procedures shall include alarm actuation, evacuation, and equipment shutdown procedures, and provisions for control of emergencies that could occur in a laboratory, including specific detailed plans for control operations by an emergency control group within the organization or a public fire department in accordance with NFPA 99, Sections 10.2.1.3.1, 18.3.2.2, 19.3.2.1.
- Emergency procedures shall be established for controlling chemical spills in accordance with NFPA 99, Section 10.2.1.3.2.
- Continuing safety education and supervision shall be provided, incidents shall be reviewed monthly, and procedures reviewed annually shall be in accordance with NFPA 99, Section 10.2.1.4.2.
- Fume hoods shall be in accordance with NFPA 99, Sections 5.4.3, and 5.6.2.
- Emergency shower – where the eyes or body of any person can be exposed to injurious corrosive materials, suitable fixed facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use. Fixed eye baths designed and installed to avoid injurious water pressure shall be in accordance with NFPA 99, Section 10.6.
- Flammable and combustible liquids shall be used from and stored in approved containers in accordance with NFPA 30 and NFPA 45. Storage cabinets for flammable and combustible

liquids shall be constructed in accordance with NFPA 30 in accordance with NFPA 99, Sections 4.3 and 10.7.2.1.

Laundry /Trash

- Ensure that soiled linen or trash is stored in rooms protected as a hazardous area.
- Monitor facility to ensure that trash and soiled linen containers do not exceed 32 gallons in a 64 square foot area.

Laundry Chutes/Rubbish Chutes

- Any existing linen and trash chute, including pneumatic rubbish and linen systems, that opens directly onto any corridor shall be sealed by fire-resistive construction to prevent further use or shall be provided with a fire door assembly having a fire protection rating of 1 hour. All new chutes shall comply with NFPA 101, Section 9.5.
- Any rubbish chute or linen chute, including pneumatic rubbish and linen systems, shall be provided with automatic extinguishing protection in accordance with Section 9.7.
- Any trash chute shall discharge into a trash collection room used for no other purpose and protected in accordance with Section 8.4.

Master Alarm Panels

- A master alarm system shall be provided to monitor the operation and condition of the source of supply, the reserve (if any), and the pressure of the main lines of all medical gas piping systems.
- The master alarm system shall consist of two or more alarm panels located in two separate locations. One panel shall be located in the principal working area of the individual responsible for the maintenance of the medical gas piping systems and one or more panels shall be located to assure continuous surveillance during the working hours of the facility (e.g., the telephone switchboard, security office, or other continuously staffed location).
- Each master alarm panel shall include visual indicators for each of the following conditions:
 - A separate indicator shall be provided for all systems supplied by a manifold or an alternating-type bulk system that has as part of its normal operation a changeover from one portion of the operating supply to another portion. It shall indicate when, or just before, this changeover occurs.
 - Where a manifold or bulk supply consists of one or more units that continuously supply the piping system while another unit remains as the reserve supply and operates only in case of an emergency, it shall be indicated separately for each system when, or just before, this changeover occurs.
 - Where check valves are not provided for each cylinder lead of the reserve supply for a manifold or bulk supply system, it shall be indicated separately for each system when the reserve supply is reduced to one average day's supply. If check valves are provided in each cylinder lead, this signal is not required.
 - When a cryogenic liquid storage unit is used as a reserve for a bulk supply system, it shall be indicated separately for each system when the contents of the reserve is reduced to one average day's supply and when the gas pressure available in the reserve unit is reduced below the pressure required to function properly.
 - It shall be indicated separately for each medical gas piping system when the pressure in the main line increases 20 percent or decreases 20 percent from the normal operating pressure. The actuating switch for these signals shall be installed in the main line immediately downstream (on the piping distributing side) of the main line shutoff valve or the source valve if the main line shutoff valve is not required.
 - Each of the individual alarms required in NFPA 99, Chapter 4-3.1.2.2(d)1 shall be indicated. This shall be either by a separate indicator for each condition monitored or with a single indicator labeled "Medical Air System Fault" or similar wording and that indicates when any of the conditions monitored occurs.
 - A separate indicator shall be provided for dew point per NFPA 99, Chapter 4-3.1.2.2(d)2.

Medical Gas Storage

- Monitor facility to ensure appropriate medical gas storage including verifying that:
 - Doors are secured against unauthorized entry.
 - Interior doors of storage locations are equipped with self-closing devices and positive latching hardware to establish the required separation. Door must have at least a 3/4 hour fire rating when transferring of liquid oxygen occurs within the storage location.
 - Oxygen cylinders are separated from combustible materials by a minimum distance of five feet if the entire storage location is protected by an automatic sprinkler system.
 - Medical gas container storage is mechanically ventilated or has natural ventilation to the outside.
 - Cylinder and container storage locations meet temperature limitations. Where enclosures (interior or exterior) for supply systems are located near sources of heat, such as furnaces, incinerators, or boiler rooms, they shall be of construction that protects cylinders from reaching temperatures exceeding 130°F (54°C).
 - Ordinary electrical wall fixtures in medical gas supply rooms are installed in fixed locations not less than five feet (1.5 m) above the floor to avoid physical damage.
 - Monitor facility to ensure that medical gas cylinders are protected to avoid damage to the cylinder, valve, or safety device. Such cylinders shall not be stored near elevators, gangways, or in locations where heavy moving objects will strike them or fall on them.
 - Monitor facility to ensure that freestanding cylinders are properly chained or supported in a proper cylinder stand or cart.
 - Monitor medical gas storage area to ensure the separation of full and empty cylinders.
 - Monitor facility to ensure that smoking, open flames, electric heating elements, and other sources of ignition do not occur within storage locations or within 20 feet of outside storage locations
 - Maintain non-smoking and no smoking signs in areas where oxygen is used or stored.
 - Maintain a precautionary sign, readable from a distance of five feet that is conspicuously displayed on each door or gate of the storage room or enclosure. The sign shall include the following wording as a minimum:

CAUTION
OXIDIZING GAS(ES) STORED WITHIN
NO SMOKING

- Transferring of Liquid Oxygen
 - Transferring of liquid oxygen from one container to another shall be accomplished at a location specifically designated for the transferring that is as follows:
 - Separated from any portion of a facility wherein patients are housed, examined, or treated by a separation of a fire barrier of 1-hour fire-resistive construction; and
 - The area is mechanically ventilated, is sprinklered, and has ceramic or concrete flooring; and
 - The area is posted with signs indicating that transferring is occurring, and that smoking in the immediate area is not permitted.
 - Transferring shall be accomplished utilizing equipment designed to comply with the performance requirements and producers of CGA Pamphlet P-2.6, Transfilling of Low-Pressure Liquid Oxygen to be Used for Respiration, and adhering to those procedures.
 - The use and operation of small portable liquid oxygen systems shall comply with the requirements of CGA Pamphlet P-2.7, Guide for the Safe Storage, Handling and Use of Portable Liquid Oxygen Systems in Health Care Facilities.

- Ensure that liquid gases such as oxygen are transferred in an area in a separate portion of the facility away from where residents reside and separated by 1-hour fire resistive construction.
- Monitor facility to ensure that the area is posted with signs indicating transferring is occurring and that smoking in the immediate area is prohibited.
- Transfilling of Medical Gases
 - Mixing of compressed gases in cylinders shall be prohibited.
 - Transfer of gaseous oxygen from one cylinder to another shall be in accordance with CGA Pamphlet P-2.5, Transfilling of High Pressure Gaseous Oxygen to Be Used for Respiration. Transfer of any gases from one cylinder to another in patient care areas of health care facilities shall be prohibited.
- Further guidance is available by reviewing CMS Survey & Certification Letters (S&C):
 - 07-10 Medical Gas Storage and Usage Considerations for storage requirements of compressed oxygen of 300 cubic feet or less allowed per smoke compartment.

Occupational Classification for Hospital or Critical Access Hospital Facilities

- Hospital facilities will be evaluated for what section of the code applies to an occupancy utilized by and billed under the provider number of the hospital. Further information can be found in S&C 11-05-LSC Hospital and Critical Access Hospital (CAH) Facility Life Safety Code (LSC) Occupancy Classification Update.

Portable space heating devices

- Portable space heating devices are prohibited in health care occupancies. NFPA 101 section 18.7.8, 19.7.8 Exception: portable space-heating devices shall be permitted to be used in non-sleeping staff and employee areas where the heating elements of such devices do not exceed 212 Degrees F (100 degrees) C.
- If a facility is utilizing space heaters, the facility must maintain documentation/policies consistent with the Life Safety Code.

Relative Humidity

- The Centers for Medicare & Medicaid Services (CMS) is issuing a categorical LSC waiver permitting new and existing ventilation systems supplying hospital and critical access hospital (CAH) anesthetizing locations to operate with a RH of ≥ 20 percent, instead of ≥ 35 percent. We are also recommending that RH not exceed 60 percent in these locations. This Waiver Does Not Apply:
 - When more stringent RH control levels are required by State or local laws and regulations; or
 - Where reduction in RH would negatively affect ventilation system performance.
- Further information can be found in S&C 13-35-LSC/ASC Relative Humidity (RH): Waiver of Life Safety Code (LSC) Anesthetizing Location Requirements; Discussion of Ambulatory Surgical Center (ASC) Operating Room Requirements.

Short Form Process

- CMS has allowed the use of a shorter life safety code process at long term care facilities only that meet specific requirements. To be eligible for the Short Form process the facility must:
 - Be fully sprinklered;
 - Generally not have any waivers or use the Fire Safety Evaluation System – Health Care (FSES/HC) to be certified;
 - Have not been cited for K0062 Sprinkler Maintenance, K0054 Smoke Detector Maintenance, K0050 Fire Drills, K0104 Smoke Barriers and 0051 Fire Alarms in the last two years.
 - Not have more than 2 survey cycles since the last Long Form survey was conducted.
- Further information can be found in S&C 13-22-NH Life Safety Code (LSC) Short Form Survey for Nursing Homes – Limited Option

Smoke Compartmentation & Control

- Smoke barriers shall be provided to form at least two smoke compartments on every sleeping room floor for more than 30 patients. (See NFPA 101, 19.3.7.1 & 2)
- Smoke compartments shall not exceed 22500 square feet and the travel distance to and from any point to reach a door in the required barrier shall not exceed 200 feet. (See NFPA 101, 19.3.7.1)

Smoke Control Systems

- Existing engineered smoke control systems, unless specifically exempted by the authority having jurisdiction, shall be tested in accordance with established engineering principles. (Two documents that provide recognized engineering principles for the testing of smoke control systems are NFPA 92A and 92B).

Smoke Detectors

- Maintain and calibrate smoke detector systems in accordance with NFPA 72.
- Test all smoke detectors at least annually to ensure that each detector is operative and produces the intended response.
- Check smoke detector sensitivity shall be checked within 1 year after installation and every alternate year thereafter. After the second required calibration test, if sensitivity tests indicate that the detector has remained within its listed and marked sensitivity range (or 4 percent obscuration light gray smoke, if not marked), the length of time between calibration tests shall be permitted to be extended to a maximum of 5 years. If the frequency is extended, records of detector-caused nuisance alarms and subsequent trends of these alarms shall be maintained. In zones or in areas where nuisance alarms show any increase over the previous year, calibration tests shall be performed.
- Maintain records that indicate what testing of smoke detectors has been done over the past 12 months including hard copy or the ability to produce a hard copy of records of automated sensitivity testing.
- Ensure that smoke detectors are installed at the appropriate distance from intake and exhaust ventilation.
- Further guidance is available by reviewing CMS Survey & Certification Letters (S&C):
 - 05-25 Adoption of a New Fire Safety Requirement for LTC Facilities
 - 07-01 New Fire Safety Requirements for the Use of (ABHRs) and Installation of Battery Powered Smoke Alarms

Smoking Regulations

- Monitor facility to ensure that ashtrays of noncombustible material and safe design are provided in all indoor and outdoor areas where smoking is permitted.
- Provide metal containers with self-closing cover devices into which ashtrays can be emptied that are readily available to all areas where smoking is permitted.
- Evaluate smoking areas for use of gravel rather than flammable mulch around building.
- Maintain required "OXYGEN IN USE" signs. Signs may be required in non-smoking facilities if entrances are not marked with smoking prohibited in this facility signage. The exception is if all major exits including those used by staff have a "no smoking" sign at them.
- Monitor facility to ensure that smoking does not occur in any location where oxygen is in use, regardless of whether supplied by comparators, concentrators, tank, direct flow, wall unit, piped-in system, portable back pack, etc.

Sprinkler System

- Inspect and maintain sprinkler system in accordance with NFPA 25. Retain maintenance records of the sprinkler system for the at least the preceding 24 months and ensure availability for inspections.
- Monitor facility to ensure that there are no gaps in ceiling adjacent to sprinkler heads.

- Ensure that all storage is kept at least 18 inches below and away from any sprinkler heads. The clearance between the deflector and the top of storage shall be 18 in. (457 mm) or greater. The 18-in. (457-mm) dimension is not intended to limit the height of shelving on a wall or shelving against a wall in accordance with 5-6.6. Where shelving is installed on a wall and is not directly below sprinklers, the shelves, including storage thereon, can extend above the level of a plane located 18 in. (457 mm) below ceiling sprinkler deflectors. Shelving, and any storage thereon, directly below the sprinklers cannot extend above a plane located 18 in. (457 mm) below the ceiling sprinkler deflectors.
- Monitor facility to ensure that cubicle curtains are installed to prevent interference with the sprinkler system.
- Maintain a supply of at least two spare sprinkler heads for each type of sprinkler used in the facility. (Note- more than two sprinkler heads may be required depending on the number of heads used in a facility). Keep the sprinkler wrench with the spare sprinkler heads.
- Ensure that the same type of sprinkler head is used throughout each compartment. (Note there are exceptions for special areas such as boiler rooms which may have higher than normal temperatures.)
- According to NFPA 13, a compartment is defined as a space completely enclosed by walls and a ceiling. The compartment enclosure is permitted to have openings to an adjoining space if the openings have a minimum lintel depth of 8 in (203 mm) from the ceiling.
- Maintain sprinkler heads clean, dust free, and paint free.
- Fire pumps shall be inspected per requirements that include weekly, monthly, semiannually, biannually, and annually.
- Further guidance is available by reviewing CMS Survey & Certification Letters (S&C):
 - 05-38 Clarification of Life Safety Code Survey Issues in Nursing Homes
 - 07-29 Canopy and Overhang Sprinkler Requirements and the Use of the Fire Safety Evaluation System
 - 09-04 Adoption of New Fire Safety Requirements for LTC, Mandatory Sprinkler Installation Requirement

Vertical Openings

- Ensure that stairways, elevator shafts, light and ventilation shafts and other vertical openings, including pneumatic rubbish and linen systems, that open directly onto any corridor is sealed by fire-resistive construction to prevent further use or is provided with a fire door assembly having a fire protection rating of one hour with self closing device and positive latching hardware.
- Monitor facility to ensure that the area under stairways is not used for storage, unless by special design.

Waivers

- Time Limited Waivers or Temporary Construction Waivers
 - The purpose of a temporary construction waiver (TCW) is to allow a facility additional time to obtain bids, permits, architectural designs or plans, plan approval, construction time, etc.
 - In order to qualify for a temporary construction waiver the correction period required must be for more than 60 days from survey exit date. The maximum time allowed is 6 months from the date of exit.
 - Documentation must be submitted to the Life Safety Code Supervisor at the Certification Bureau and should include such documentations as construction bids, pricing quotes, and signed contracts.
 - Facility must contact Life Safety Code Supervisor if they are unable to meet their original time frame for completion. A good faith effort must have been made in order for a facility to be granted a beyond 6 months extension from CMS.
- Standard Waivers or Continuing Waivers

- A continuing or annual waiver is for deficiencies that are not covered by the Fire Safety Evaluation Survey (FSES) and are structurally impossible or impracticable to correct and are an undue burden and financial hardship on a facility.
- To be eligible for a continuing waiver the following criteria must be met.
- Must not adversely affect the safety & health of the residents.
- Must not adversely affect the safety & health of the staff.
- Must be a financial hardship and undue burden on the facility.
- Supporting documentation must be provided to support the claim of no adverse affect on residents and staff, and that it would be a financial hardship to correct.
- Continuing waivers must be renewed from year to year along with all required supporting documentation. Note- deficiencies are cited at each survey.
- Further guidance is available by reviewing CMS Survey & Certification Letters (S&C):
 - 04-33 Life Safety Code (LSC) and State Performance Standards