

Protection of Kitchen Cooking Equipment

Introduction

In order to ensure that they operate properly when needed and don't trip unnecessarily, both federal certification requirements and state licensure requirements require that health care facilities properly inspect, test and maintain the exhaust hoods, filters and fire-extinguishing equipment protecting their commercial kitchen cooking equipment.

Applicable standards

NFPA 101(12), Sec. 9.2.3 requires that commercial cooking equipment be in accordance with NFPA 96, *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations*. NFPA 101(12), Sec. 2.2 references the 2011 edition of the standard.

NFPA 96, in turn, references four other NFPA standards applicable to automatic fire-extinguishing systems installed to protect kitchen hood systems and cooking equipment [see NFPA 96(11), Sec. 10.2.6]:

- NFPA 12(11), *Standard on Carbon Dioxide Extinguishing Systems*
- NFPA 13(10), *Standard for the Installation of Sprinkler Systems*
- NFPA 17(09), *Standard for Dry Chemical Extinguishing Systems*
- NFPA 17A(09), *Standard for Wet Chemical Extinguishing Systems*

It should be noted that, for purposes of state licensure, MSFC (20), Sec. 904.12 references the same editions of those standard (see Chapter 80, *Referenced Standards*).

Most health care facilities use automatic dry- or wet-chemical fire-extinguishing systems for protection of their kitchen cooking systems. Unless otherwise indicated, therefore, this guide will focus on those types of systems.

System listing

Both NFPA 96(11), Sec. 10.2.3 and MSFC (20), Sec. 904.12 require that automatic dry- or wet-chemical fire-extinguishing systems be listed in accordance with ANSI/UL 300, *Standard for Fire Testing of Fire Extinguishing Systems for Protection of Commercial Cooking Equipment*.

The 2012 *Life Safety Code*[®] now contains provisions that allow decentralized kitchens using residential-type cooking equipment in health care occupancies. Those provisions can be found in NFPA 101(12), Sec. 18.3.2.5/19.3.2.5, *Cooking Facilities*. The cooktop or range in this type of kitchen is still required to be protected with an automatic fire suppression system, but as an alternative, this system can be listed in accordance with UL 300A, *Extinguishing System Units for Residential Range Top Cooking Surfaces* [See NFPA 101(12), Sections 18.3.2.5.3(5)(a)/19.3.2.5.3(5)(a) and 18.3.2.5.4(3)/19.3.2.5.4(3)].

Exhaust system

The entire exhaust system (hood, grease removal devices, fans, and ducts) for kitchen cooking equipment needs to be thoroughly inspected for grease build-up at least every 6 months [see NFPA 96(11), Sec. 11.4 and Table 11.4; MSFC (20), Sec. 607.1 and Table 607.3.3.1]. *This also applies to the cooking equipment in the decentralized kitchens allowed by NFPA 101(12), Sec. 18.3.2.5/19.3.2.5 [see NFPA 101(12), Sections 18.3.2.5.3(10)/19.3.2.5.3(10) and 18.3.2.5.4(3)/19.3.2.5.4(3)].*

Note: If it can be shown that the amount of cooking that produces grease-laden vapors (e.g. frying of raw meats, warming of precooked meats, etc.) is minimal, the authority having jurisdiction (AHJ) may allow the inspection frequency to be extended to every 12 months instead of every 6 months. Typically, to support the approval of such an extension the AHJ will want to see documentation that

the semiannual inspections over an extended period of time (likely 2 years minimum) have shown very limited build-up of grease in the exhaust system.

This inspection must be conducted by a company or person properly trained and qualified to perform such a service. The AHJ may require a certificate or other proof of such training. If the inspection reveals an accumulation of grease deposits, the contaminated portion(s) of the exhaust system must be cleaned by a properly trained and qualified person acceptable to the AHJ [see NFPA 96(11), Sec. 11.6.1; MSFC (20), Sec. 607.3.3]. It should be noted that:

1. At the start of the cleaning process, electrical switches that could be activated accidentally must be locked out (remember your lock out-tag out procedures) – see NFPA 96(11), Sec. 11.6.3.
2. Components of the automatic fire-extinguishing system protecting the kitchen cooking equipment cannot be rendered inoperable during the cleaning process unless they are being serviced by a properly trained and qualified person [see NFPA 96(11), Sections 11.6.4 and 11.6.5].
 - Note: Special care needs to be taken to ensure that cleaning chemicals are not applied on fusible links or other detection devices of the automatic fire-extinguishing system [see NFPA 96(11), Sec. 11.6.7].
3. Flammable solvents or other flammable cleaning aids are not allowed to be used for cleaning [see NFPA 96(11), Sec. 11.6.6].
4. After the exhaust system is cleaned, it cannot be coated with powder or other substances [see NFPA 96(11), Sec. 11.6.8].
5. When the cleaning process is completed [see NFPA 96(11), Sections 11.6.9 through 11.6.12]:
 - All electrical switches and system components must be returned to an operable state,
 - All access panels and cover plates must be replaced.
 - Note: When an access panel is removed, a service company label or tag preprinted with the name of the company and giving the date of cleaning needs to be affixed near the affected access panel(s).
 - Dampers and diffusers must be positioned for proper airflow.

Kitchen hood fire-extinguishing system

NFPA 96(11), Sec. 11.2.3 requires that the specific inspection and maintenance requirements of the extinguishing system standards, as well as system installation and maintenance manuals and service bulletins, be followed. *This also applies to the cooking equipment in the decentralized kitchens allowed by NFPA 101(12), Sec. 18.3.2.5/19.3.2.5[see NFPA 101(12), Sections 18.3.2.5.3(10)/19.3.2.5.3(10) and 18.3.2.5.4(3)/19.3.2.5.4(3)]*

1. The standards applicable to automatic dry- or wet-chemical fire-extinguishing systems protecting kitchen cooking equipment require that such systems be inspected monthly [see NFPA 17(09), Sec. 11.2/NFPA 17A(09), Sec. 7.2.2]. This inspection is a way to help ensure that:
 - The extinguishing system is in the armed/ready condition
 - Manual actuators are unobstructed
 - Tamper indicators and seals are intact
 - The maintenance tag or certificate is in place
 - There is no obvious physical damage
 - Pressure gauges, if provided, are in operable range
 - Nozzle blow off caps, if provided, are in place, intact and undamaged (these caps help protect the discharge nozzles from entrance of grease vapors, moisture and other foreign materials)

With proper training (perhaps by the company servicing your facility's kitchen hood fire-extinguishing system), this inspection is something that could easily be performed by your kitchen/food service manager or other designated kitchen/food service staff person. Using kitchen/food service personnel to perform this inspection helps them understand the function and importance of the hood system and enlists their help in keeping it in proper operating condition. It is not uncommon during fire/life safety surveys to find that access to the kitchen portable fire extinguisher(s) is found blocked by carts. A prudent standard of care would be to add this item to the monthly inspection checklist.

2. In addition to monthly inspections, the kitchen hood fire-extinguishing system is required to be serviced by properly trained and qualified persons at least every 6 months [see NFPA 96(11), Sec. 11.2.1; MSFC (20), Sec. 904.12.5].
 - This service must include a test of all actuation and control components, including remote manual pull stations, mechanical and electrical devices, detectors and actuators to ensure that they are in operable condition [see NFPA 96(11), Sec. 11.2.2].
 - A visual inspection of fire alarm interconnect switches is also required [see NFPA 72(10), Sec. 14.3.1 and Table 14.3.1, Item 9(d)].
 - a. Fusible links of the metal alloy type and automatic sprinkler heads of the metal alloy type are required to be replaced at least semiannually [see NFPA 96(11), Sec. 11.2.4].
 - b. Fusible links of other than the metal alloy type and bulb-type automatic sprinkler heads are required to be examined and cleaned or replaced at least annually [see NFPA 96(11), Sec. 11.2.4].
3. Fire alarm interconnect switches are required to be tested annually by mechanically or electrically operating the switch to verify receipt of a signal at the fire alarm control panel [see NFPA 72(10), Table 14.4.5, Item 15(c) and Table 14.4.2.2, Item 14(b)]. This testing should be performed as part of the annual test conducted of the building fire alarm system.
4. The standards applicable to automatic dry- or wet-chemical fire-extinguishing systems also contain cylinder inspection and testing requirements that must be followed, including:
 - a. In accordance with NFPA 17(09), Sections 11.3.1.2 and 11.5.1, cylinders for dry chemical kitchen hood extinguishing systems must be:
 - Examined every 6 years to check for caking, and
 - Hydrostatically tested every 12 years.
 - b. In accordance with NFPA 17A(09), Sec. 7.5.1, cylinders for wet chemical kitchen hood extinguishing systems must be hydrostatically tested every 12 years.

DOCUMENT your inspections and service

Almost as important as conducting required inspections, cleaning, testing and maintenance is documenting the fact that they occurred. What follows is a brief synopsis of some of the major documentation requirements you need to be aware of.

Exhaust system

Exhaust system inspections and cleanings are required to be documented [see NFPA 96(11), Sections 11.6.13 through 11.6.15; MSFC (20), Sec. 607.3.1]. The contractor performing these services must be able to provide you

with a certificate showing the name of the servicing company, the name of the person performing the work and the date of inspection or cleaning. In addition, the contractor is required to provide a written report that identifies areas that were inaccessible or not cleaned.

Fire-extinguishing system inspection/service

1. A sample monthly inspection log is attached to this document. The log can be used “as is” or serve as a guide that you can use to create your own log.
2. The person or company performing the 6-month service on your facility’s kitchen hood fire-extinguishing system needs to provide you with a certificate of inspection. Some local jurisdictions may require that copies of these certificates be forwarded to them. The authority for such a requirement comes from MSFC (20), Sec. 907.3.4 and NFPA 96(11), Sec. 11.2.8.

It is important that at least two people in your facility know where your documentation is kept to increase the likelihood that it can be readily provided if requested during an inspection. To meet the requirements of MSFC (20), Sections 607.3.3.3 and 901.6.2, this documentation needs to be maintained on the premises for at least three years.

<<Facility Name>>

Kitchen Hood Fire-extinguishing System – Monthly Inspection Log for (Year): __

Indicate whether the following conditions passed inspection.											
Y = Yes	N = No (Explain in Comments)						N/A = Not applicable				
Date											
Inspector											
Exhaust fan operating properly											
Grease filters in place/clean											
Extinguishing system in armed/ready condition											
No obvious physical damage											
Nozzle blow off caps in place/undamaged											
Manual actuators unobstructed											
Tamper seals intact											
Pressure gauges in operable range											
Maintenance tag in place											
Portable fire extinguisher(s) unobstructed											

