CAMPUS FIRE SAFETY CODE TALK

Campus Fire Safety e-NewZone

The top 7 fire safety items you need to know about your commercial cooking operations – PART 2

4. Understand Exhaust Duct Systems

The requirements for exhaust duct systems, provided in Chapter 7, is by far the largest Chapter in NFPA 96. This chapter provides requirements for clearance, openings, other grease ducts, exterior installation, interior installations and termination of exhaust ducts which includes both rooftop terminations and wall terminations.

To understand the purpose of all these provisions, think about the air flow through the system. Once the smoke and grease-laden vapors have been captured by the hood and the majority of the grease removed from the air by the grease removals devices, the air is carried through the exhaust duct to be expelled at the system termination. The main principals of the duct system design is to provide enough access so that it can be cleaned and inspected, ensure that it is constructed with materials and connections that will not compromise its integrity should a fire occur in the duct, and ensure that the termination is at a location so as to not exhaust any contaminated air in a location where that air could be recirculated back into the building or any adjacent building.

5. Identify your Fire Extinguishing Systems – and Know how to Use Them

Cooking equipment that produces grease laden vapors and that could be a source of ignition of grease in the hood, grease removal device, or duct are required to be protected by fire-extinguishing equipment, which includes automatic as the primary protection and portable fire extinguishers for backup.

The automatic extinguishing systems are required to comply with the ANSI/UL 300, *Standard for Fire Testing of Fire Extinguishing Systems for Protection of*

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Commercial Cooking Equipment, or other equivalent standards and are required to be installed with the requirements of the listing. What is important to note is that in the early 1990s, the ANSI/UL 300 test standard was modified to reflect modern cooking conditions with better energy efficient appliances and an updated cooking medium in the test by replacing animal lard with vegetable oil, which burns hotter. With the "new" test standard, dry chemical systems are no longer capable of passing the ANSI/UL 300 test standard. Check the fire extinguishing systems installed in your facility and make sure the system complies with the ANSI/UL 300 test standard, or an equivalent test standard.

In addition, it is important to note that all sources of fuel and electrical power that produce heat to all equipment requiring protection by a fire extinguishing system are required to be automatically shut off to prevent re-ignition.

The manual pull stations associated with the automatic fire extinguishing systems are required to be accessible, and located a minimum of 3ft and maximum of 6ft from the protected hood and in the path of egress. Remember, they are required to be accessible (i.e. do not have materials blocking these manual pull stations or any means of egress). All employees should know the location of these manual pull stations as well as how and when to operate them.

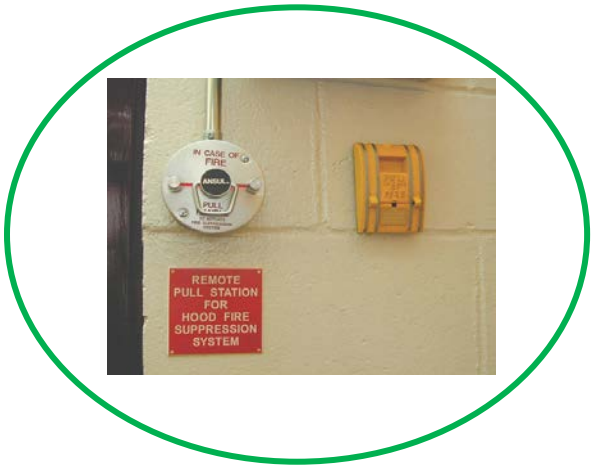

Figure 1: Blocked manual pull station.

Figure 2: Accessible manual pull station

Portable fire extinguishers are required to be selected and installed in accordance with NFPA 10, *Standard on Portable Fire Extinguishers*, and be listed for their use. Class K fire extinguishers should be used if vegetable oils and animal oils/fats are present in the kitchen. However, all buildings have Class A fire hazards and where ordinary combustibles are present (i.e. in dining areas of restaurants). Employees should be trained on the various types of portable extinguishers and how to use them in the event of a fire.

Most fire extinguishers use the P.A.S.S. technique:

Pull the pin
Aim low, pointing the extinguisher nozzle at the base of the fire
Squeeze the handle to release the extinguishing agent
Sweep from side to side at the base of the fire until it appears to be out.

6. Inspect, Test and Maintain Your Commercial Cooking Operation

Although inspections for grease buildup and fire extinguishing systems at specified intervals are typically contracted out, there are several items that can be inspected on a daily basis by restaurant employees through a training program in which you develop and have your facility operations personnel or restaurant manager enforce. Have employees routinely look out for normal wear and tear of equipment (i.e. broken seals, missing screws, exposed wires). All employees should start their routine with inspecting the equipment to ensure it was properly cleaned from the previous night (or shift), confirm that if the equipment requires a fire extinguishing system, the nozzles are clear and not clogged with grease. Many restaurants utilize heaters to keep the food hot after it's been cooked; make sure employees know to check that are no flammable materials on top of or near the heaters. Before starting the fryer,

employees should check to make sure the oil level isn't too low because if the heating coil is exposed above or close to the oil surface, residue and oil can catch fire. These are all very simple, yet effective steps in the fire protection program of your facility that do not require hiring and outside contractor to perform the work.

There are items that need to be inspected that only trained, qualified, and certified person(s) are capable of conducting. For example, the inspection and servicing of the cooking equipment must be completed annually, the fire extinguishing system needs to be inspected at least every 6 months, and the entire exhaust system is required to be inspected for grease buildup in accordance with Table 11.4 of NFPA 96, which bases the quantity of inspections on the amount of cooking and type of cooking taking place at a facility.

Table 11.4 Schedule of Inspection for Grease Buildup

Type or Volume of Cooking	Inspection Frequency
Systems serving solid fuel cooking operations	Monthly
Systems serving high-volume cooking operations, such as 24-hour cooking, charbroiling, or wok cooking	Quarterly
Systems serving moderate-volume cooking operations	Semiannually
Systems serving low-volume cooking operations, such as churches, day camps, seasonal businesses, or senior centers	Annually

Figure 3: Schedule of Inspection for Grease Buildup (NFPA 96, 2014 edition)

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7. Importance of Cleaning

Since 1 in every 5 of the fires cited in Evart's report had a failure to clean as a factor contributing to its ignition, cleaning seems like an easy and obvious solution to mitigate fire risks. However, when many hear (or in this case read) the word "cleaning" they assume hiring a company to clean the grease within the ductwork, and although this is a critical process that cannot be missed, there are many ways restaurant facility managers and restaurant managers can ensure the staff know how to reduce the risk of fire within their facility. Developing and/or enforcing a training program for all employees is great method to achieve this goal. New employees should be trained and current employees should be recertified on the specific procedures of a facility every 6 to 12 months.

If during the scheduled inspection, the exhaust system is found to be contaminated with deposits from grease-laden vapors, the contaminated portions of the system are required to be cleaned by a properly trained, qualified and certified person(s). Once the cleaning is complete, a written report detailing the amount of grease buildup, as well as any maintenance or repairs needed, and any areas that were inaccessible or not cleaned have been marked, the report must be provided to the owner of the system.

Figure 4: Unacceptable amount of grease Plate

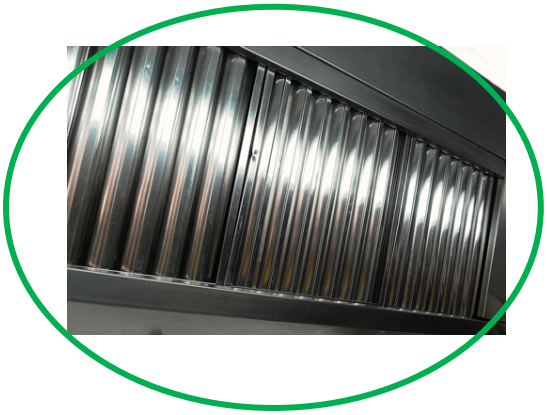

Figure 5: Acceptable Baffle

Accumulation on baffle plate

8. Owners Take Responsibility

NFPA 96 requires that the standard be applied as a united whole. It is important to recognize that all the chapters in NFPA 96 may be working on individual components of ventilation control and fire protection, but each of them are needed for the overall goal of reducing the potential fire hazard of cooking operations.

Ultimately, it is the owner's responsibility that cooking equipment, hoods, ducts, fans, fire-extinguishing equipment and special effluent or energy control equipment installed in their facility be maintained to ensure the entire system works properly and provides the appropriate level of protection. In addition, the owner is responsible for the inspection, testing, maintenance, and cleanliness of the ventilation control and fire protection of the commercial

cooking operation, provided that this responsibility has not been transferred in written form to a management company, tenant, or other party.

Additional information about NFPA 96: *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations*, can be found on NFPA's website.

Find Part 1 of this article in our January issue of Campus Fire Safety e-NewZone.

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