Claims and Risk Engineering
Commercial Cooking Fire Safety

The purpose of this bulletin is to raise awareness about fire hazards common to commercial cooking operations and to share information about how you can help prevent fires by insuring that your cooking equipment is properly installed, cleaned, maintained and operated.

According to data compiled by the National Fire Protection Association (NFPA), the leading cause of reported eating and drinking establishment fires was due to cooking equipment (61%). Of those fires, failure to clean was a factor in 22%, and deep fat fryers were involved in 21% of fires.¹

State Auto Insurance encourages you to feel empowered and engaged. Below is a checklist containing best practices and select elements of NFPA 96 “Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations. Please review each applicable item in the checklist below to compare your cooking equipment and fire safety program. Take corrective action for noted deficiencies.

KITCHEN EXHAUST SYSTEM AND COOKING EQUIPMENT

Check to make sure that:

- The exhaust ventilation system is operating (running) whenever there is cooking of foods that produce smoke or grease laden vapors?
- The hood is constructed of 18-gauge steel or 20 gauge stainless steel and equipped with baffle type grease filters or effective grease extractors? Mesh type filters are no longer NFPA 96 compliant.
- The hood and ducts have at least 18 inches clearance from combustible construction?
- There are no gaps between grease filters located in the exhaust hood (fire hazard)?
- Grease ducts, especially horizontal sections, have ample access doors to allow good duct cleaning?
- Electric light fixtures have a tight fitting protective globe listed for the application? All electrical equipment should be installed in accordance with NFPA 70, National Electric Code by a licensed electrician.
- Cooking appliance distance from combustible construction (floors, walls, ceiling) meets the minimum requirements indicated in the appliance’s owner manual?
- The cooking appliance area is clear of combustible materials such as paper, boxes, rags, by at least 3 ft. clear space? Never store combustible materials above cooking equipment.
- Deep fat fryers have a high temperature limiting device (separate from the adjustable thermostat) to automatically shut off fuel or energy to the fryer if the cooking oil exceeds 475F temperature -to prevent run-away over-heating of the appliance?
- There is at least 16 inch clearance between the deep fat fryer and adjacent appliances with open flames (such as a gas-fired range top)? If distance is not feasible, a minimum 8-inch high stainless steel or tempered glass baffle plate (barrier) should be installed on the higher appliance to help mitigate the fire hazard.

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KITCHEN FIRE EXTINGUISHING EQUIPMENT

Check to make sure that:

☐ A fixed automatic fire extinguishing system is installed to protect the cooking surfaces, exhaust hoods and ductwork of all cooking equipment that produce smoke or grease-laden vapors (ranges, griddles, deep fat fryers, broilers, grills, woks, stovetops, etc.)?

☐ Automatic fire extinguishing systems are NFPA 96 compliant and not obsolete? Pre-engineered wet chemical automatic fire extinguishing systems should be listed to meet the requirements of UL-300 (or equivalent) fire testing standards to insure that they are capable of extinguishing modern-day high efficiency cooking appliance fires. If your kitchen extinguishing system label doesn’t say “UL-300”, or if it was installed prior to November 1994, it is likely not compliant and it should be replaced without delay.

☐ There is a remote actuator to manually activate the fixed fire extinguishing system in the event that the automatic system fails to operate? It should be accessible and located along the path of egress within 20 ft.

☐ There is an interlocked mechanism to automatically shut-off electric power or fuel supply to all cooking appliances located under the exhaust hood if the automatic fire extinguishing system discharges?

☐ If there is a building fire alarm system, it is integrated to automatically activate upon discharge of the kitchen fixed fire extinguishing system?

☐ The proper type and size of portable fire extinguishers are posted in the kitchen? At least one 1.6 gallon (6-liter) “Class-K” type portable fire extinguisher is required where there is combustible cooking media (vegetable or animal oils and fats). Travel distance should not exceed 30 ft. from the cooking equipment. Class-K extinguishers are specifically designed for use in kitchen cooking fires.

☐ A placard sign is posted adjacent to the Class-K portable fire extinguisher to instruct that in event of a cooking fire, the manual actuator for the fixed fire extinguishing system should be pulled first, and the portable fire extinguisher is to be used to supplement?

☐ Building fire alarms, fire detection systems and automatic sprinkler systems are inspected by a qualified fire protection equipment contractor at least annually?

MAINTENANCE & HOUSEKEEPING

Check to make sure that:

☐ The automatic fire extinguishing system is inspected, tested and tagged every six (6) months as required by NFPA and the model fire codes? Consider selecting a qualified contractor certified by the National Association of Fire Equipment Distributors (NAFED).

☐ Portable fire extinguishers are inspected and tagged annually by a qualified fire equipment servicing contractor?

☐ The kitchen exhaust hood, grease filters (or grease extractors), exhaust ducts and fans are professionally cleaned by a kitchen exhaust cleaning service on a scheduled frequency? Grease filters should be cleaned whenever they begin to become greasy (at least every week or two). The following is the recommended cleaning frequency for exhaust hood, ductwork and fan:
  ● **Monthly:** Solid fuel cooking operations such as wood or charcoal (inspected monthly, clean as needed)
  ● **Quarterly:** Kitchens that have fryers, charbroiling, woks or high volume cooking operations
  ● **Semi-Annually:** Kitchens that operate at a moderate volume
  ● **Annually:** Kitchens that have low-volume cooking operations (churches, day camps or seasonal businesses)

☐ There is an effective in-house cleaning regimen to remove grease and oil from cooking equipment surfaces, kitchen counters, walls and floors? It is best to have a set schedule or time of day for this activity and to delegate the cleaning responsibility to specific individuals. Spills or accidents should be cleaned up immediately without delay.
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If movement of cooking equipment is necessary for cleaning, the appliance is repositioned exactly back to its original orientation to insure that the fire protection system nozzles remains properly adjusted? Never switch, relocate or replace cooking equipment without reevaluation by your fire extinguishing system contractor because each appliance may have special protection requirements.

The automatic fire extinguishing system nozzles have protective caps or mechanisms to prevent them from being clogged by grease? Grease build-up may interfere with proper nozzle discharge in event of fire.

SPONTANEOUS COMBUSTION FIRES
Spontaneous combustion fires can occur when oil or grease soiled rags, linens or towels begin to dry and oxidize which causes a chemical reaction that generates heat. The hazard is increased for operations that clean their own laundry because the oils are not entirely removed during washing, and heat from the dryer combined with oils in the fabric can sometimes generate heat to the point of ignition.

Check to make sure that:

☐ All oil or grease soiled rags, towels and linens are placed into a metal container with metal lid until being laundered?

☐ If you launder your own linens, towels, etc., check to make sure that:

☐ Items are washed more than once to help remove the oil and grease before they are dried.

☐ The dryer is set to the lowest heat setting and run a full cool down cycle.

☐ Soiled rags and linens are replaced periodically (due to incomplete removal of the oils during washing).

☐ The laundry dryer lint filter is cleaned before each use. The dryer cabinet and exhaust duct are cleaned periodically (at least quarterly).

☐ The laundry area is separated from the remainder of the building by at least 1-hour fire rated construction and/or has automatic sprinkler protection to help prevent potential fire spread.

☐ Consider using a linen cleaning service because their cleaning processes may be more capable of removing oils (and it reduces the fire hazard for your business).

EMPLOYEE TRAINING
Check to make sure that:

☐ All kitchen employees have documented training in kitchen fire safety? This includes how to manually activate the fixed fire extinguishing system and the use of Class-K portable fire extinguishers. Manual activation of the fixed system should always precede use of a portable fire extinguisher.

☐ All employees know never to throw water on a grease fire? Water will cause fire to spread.

☐ Aisles and exit passages are always kept clear to facilitate safe evacuation for employees and patrons in event of a fire emergency?

Also see State Auto Insurance Company’s technical bulletin: “Cooking with Solid Fuels”

For more information, contact the State Auto Claims and Risk Engineering Department:
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References
1. Structure Fires in Eating and Drinking Establishments, Richard Campbell, February 2017, NFPA, 1 Batterymarch Park, Quincy, MA 02169
2. NFPA 96, Standard for Ventilation Control and fire protection of Commercial Cooking Operations