



NY Fire Consultants, Inc. Fire Safety Message

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Second Alarm for a Manhattan Grease Duct Fire

This past month there was a serious fire in a Manhattan hotel. The fire started in the grease exhaust duct system of multiple restaurants located within the hotel. This fire quickly spread throughout the ductwork in the hotel which is a 16-story building 90 feet wide by 100 feet long. This fire went very quickly to a 2nd alarm. Smoke, heat and flames were visible to the first arriving fire department units.

- It has been our experience that most of the grease exhaust duct systems in restaurants, in general, are not being maintained properly and at best are being done to comply with the bare minimum standard. Asian restaurants produce an exorbitant amount of grease for the type and amount of cooking done. National Fire Protection Association (NFPA) Standard 96 states that the hood, duct work, filters and the exhaust fan be cleaned (steamed or hot water pressure washed with chemicals) quarterly at a minimum, more often as per the amount of grease-laden cooking that is done.
- Many of the welds on the seams of the duct work are faulty and leaking. This is a serious issue that must be monitored closely. Flammable rags, cardboard, and grease absorbent are typically used in the drop ceilings to soak up and catch the grease. Ceiling tiles are changed to mask the problem.
- Access panels for cleaning must be considered in the design and construction phases with architects, and engineers. Fire and life safety are paramount. Experts need to be consulted from planning stages, through approval and testing.
- The range hood and duct cleaning business is very much unregulated, in that it requires no qualifications or licensing from the fire department. Some companies have little or no insurance, but come in with a very favorable price. This cannot be judged by economics. This fire is most likely a result of improper cleaning.
- The employees of these companies have no license or training in fire prevention and are usually minimum wage employees.

- Cleaning is mostly done at off-peak hours so there is little supervision by the hotel or restaurant management. We have personally witnessed and inspected kitchen exhaust systems the next day after they were cleaned and can say unequivocally that only a very superficial cleaning was done. The cleaning was not with a pressure washer but by hand with rags and stainless steel polish. In essence, the kitchen hood is polished, the filters cleaned, or if you're very lucky swapped out, and a sticker applied to an external area of the hood to show compliance for another three months.

Another area of great concern is the fusible links in the fire suppression system. By law, these fusible links must be changed every six months. This is regulated by the fire department and does require a license. Typically, when these inspections are done, the kitchen is in operation. Due to the high heat, it is impossible for the linkage to be changed and so it is not done. We have personally witnessed some as old as ten years. This is a dangerous situation, and must be closely monitored. The client is billed as if the fusible link was replaced but, more often than not, the old one is left in place. Usually the client is not even aware that they are required to do this.



By law, kitchen exhaust cleaning is required for virtually every commercial cooking establishment in the United States. Restaurants, hospitals, hotels, employee cafeterias and other food-service locations have a "hood" and ductwork over the stove to exhaust smoke, steam, and fumes out of the building. These exhaust gases leave a residue on the inside of the ductwork. This is usually a grease residue of some sort, depending on the type of cooking. Char broilers commonly leave heavy, black grease. Chinese cooking normally deposits a sticky or rubbery residue. When a charcoal or wood-burning stove is in use, soot and ash residue builds up in the ductwork. Dishwashers leave heavy lint deposits.

When the buildup of grease becomes heavy, a fire hazard exists. Approximately one out of three restaurant fires is caused by grease. A common scenario of how a kitchen exhaust fire starts is this:

- A flame flares up on the stove.
- The fire contacts the filters above the stove on the kitchen hood. The filters ignite.
- Since the exhaust fan is on drawing air into the hood through the filters and up the duct, the flame on the filters is pulled into the duct.
- If significant grease residue exists on the duct interior, this can act as a fuel and the fire spreads up the duct, perhaps all the way into the fan. We have seen fire climb up a ten-story duct to the fan on the roof and burn up the fan.

Modern duct construction is designed to hopefully withstand such duct fires. The duct seams are welded to prevent grease or fire from leaking out and the shafts around the duct are made of fire-resistive materials. However, older buildings are still at risk and, even in modern ones, the fire may leak out or could come out onto the roof via the fan. When an exhaust system is cleaned regularly, however, the chances of a duct fire are extremely remote. In virtually all the duct fires we have seen, the ducts were extremely laden with grease or other flammable material.



There are two primary methods of cleaning kitchen exhaust ductwork:

- Scraping to the bare metal.
- Pressure washing or steam cleaning.

The primary method used is scraping. This is the more economical method and is extremely effective when done thoroughly. We know of no duct fires which have occurred because of using this method (unless it was done poorly). The cleaning method for kitchen exhausts most often used by duct cleaning companies is the scraping method. The alternative to scraping is pressure washing or steam cleaning. This is a more costly and time consuming technique, since it requires considerable prep work to control wastewater and more expensive equipment is involved.



However, this method will clean ductwork down to "bare metal," which is the recommendation of the National Fire Protection Association as spelled out in NFPA Standard 96. We recommend that both pressure washing of kitchen exhausts, as well as scraping the ductwork, be done. This is done for a variety of reasons. Most times the ductwork is inaccessible for scraping/cleaning or the client simply wants to take the least precautionary step of having it cleaned to "bare metal."

HOW OFTEN SHOULD A KITCHEN EXHAUST BE CLEANED?

The most common cleaning frequency is every three months. This is the absolute minimum. This can vary, however. The kitchen exhaust systems that need cleaning most often are those over frying, wood-burning or charcoal-burning stoves. These should be cleaned every month at least, and in some cases as often as every two weeks. The filters should be swapped out at least weekly.

Below are various types of cooking establishments and their most commonly recommended cleaning frequencies:

- Wood-burning or charcoal-burning stoves, char broilers, 24-hour restaurants, some hamburger places: 30 days
- Many hamburger restaurants and fast-food locations: 60 days.
- Average restaurant, employee cafeteria, hotel or hospital kitchen: 90 days.
- Pizza places, convalescent hospital, small snack bar, oven hood: 90 days.
- Hoods over non-grease creating appliances, such as steam kettles, dishwashers, soup vats, etc.: one year.

Kitchen exhaust cleaning is a standard part of the routine maintenance of any cooking establishment. All kitchen managers or restaurant owners should be aware of their role in fire prevention and ensure it is done on a regular basis. This also applies to the automatic fire suppression systems in the kitchen. These types of fires cost hundreds of millions of dollars in damage and lost revenue every year. This can be prevented with an aggressive preventive maintenance program, supervision of the company doing the cleaning, and periodic spot checks.

COMMERCIAL KITCHEN FIRES STILL A PROBLEM

Despite some positive trends and decreases in some regions, commercial kitchen fires continue to cause about \$100 million annually in property damage, with cooking and heating activities being the primary culprits. There were 7,100 restaurant fires in 2002, the latest year available, according to the National Fire Data Center of the U.S. Fire Administration. These fires resulted in 108 injuries and \$116 million in property loss. Add to that are lost revenue, lost productivity, cost of emergency services, and the disruption of lives and businesses. Cooking oil and grease were the materials that were most frequently first ignited, the report said. Two examples cited in the report, published in October 2004, vividly illustrate the potential danger of grease-laden vapors:

- A fire that started in the deep fat fryer of a St. Petersburg, Florida restaurant caused \$50,000 in damage. The restaurant was three months overdue for routine cleaning of its exhaust duct and hood. The grease in the exhaust system also ignited and fueled the flames.
- An early morning fire at a fast food restaurant in Columbia, Missouri caused \$900,000 in damages. The fire, which was caused by grease-laden vapors in an exhaust hood over a char-broiler, took about three hours to control. Firefighters used 100,000 gallons of water by the time the fire was under control.

Shown here is an actual restaurant that a company was called in to clean after a fire spread through their kitchen exhaust system.



Burnt Grease

After Proper Cleaning

The company that had been servicing this system for many years had been performing a partial cleaning on the areas that were easily seen and completely neglecting the areas that were "out of sight, out of mind." This resulted in a fire that spread through the entire exhaust system and destroyed the fan. After the

"inaccessible areas" were made accessible the duct were properly cleaned for the first time.



Burnt Grease

After Proper Cleaning

The hard to reach "inaccessible areas" were found and a full cleanup was performed on the exhaust system that had the fire, as well as the other neglected systems in the facility.



Grease in Duct

After Proper Cleaning

As a restaurant owner or manager, it is very important that all areas of the exhaust system be cleaned properly to avoid heavy grease buildup. As you can see from the above example, cheap is not always the way to go when choosing an exhaust cleaning company. For a little bit more money, these systems could have been maintained properly, and the fire could have been avoided.



Burnt Grease

After Proper Cleaning

We can offer you a complete and thorough inspection of your kitchen exhaust system, and your fire suppression system. We will identify and document all problems that are visible and accessible. We will provide you with a complete report with pictures. You will be sure that your entire system is fire safe, and being properly maintained. Insurance companies ask for cleaning and maintenance records in the event of a claim. If your system is not being maintained you can be held accountable for any damages sustained. For any further information pertaining to this or any other Fire and Life Safety issue, or to schedule an appointment for an inspection, we can be reached through our office.

Emergency Action Plans

Deadline for all New York City Office Buildings December 31, 2006

Fire Department grants an extension until March 2, 2007

What is an EAP? An Emergency Action Plan outlines the procedures for a buildings response to a non-fire-related emergency involving an explosion, biological, chemical, radiological, nuclear or hazardous materials incident, natural disasters such as a hurricane or earthquake, or other emergency conditions that occur inside or in close proximity to their buildings.



Emergency Action Plans are professionally designed plans that include an official EAP document that is filed with the Fire Department and kept on site at a building. EAP training and implementation manuals must be created for the buildings staff and tenants. Emergency Action Plans take into account the building's size, its number of occupants, the number of exits/emergency stair pathways, how staff and tenants are to be notified of emergencies, the frequency of drills and who is in charge in an emergency.

NY Fire Consultants Services:

Fire and Life Safety Consulting

Fire and Life Safety Inspections
Fire Safety Plans for Residential Buildings (LL 10 of 1999)
Fire Safety & Evacuation Plans
Commercial (Class E) Buildings

Emergency Action Plans

Expert Witnesses Provided

Emergency Procedures Manuals

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Hotel Staff
Building Service Employees

Interior Fire Alarms Consultants

Violations Correction & Removal

Environmental Control Board
Fire & Building Department
Housing Preservation & Development

Fire Consultantants Construction Protects

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Personal Life Safety Guide Book

Fireproof Residential Apartment Buildings

The Personal Life Safety Guide Book offers a quick reference for fire and life safety emergencies. A must for residential building staff.

Bomb Threat
Carbon Monoxide
Chemical Spills
Extreme Heat
Fire
First Aid
Gas Leaks
Heart Attack

Person Trapped in Elevator
Poisoning
Power Outage
Robbery or Mugging
Shelter in Place
Suspected Terrorist
Suspicious Packages
Threatening Behavior

HOTEL
EMPLOYEES
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NOW AVAILABLE
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- Overall size 3.5 " x 5.5"
- Coated card stock
- Can write emergency telephone numbers on back
- Comes with a vinyl pouch that fits in your shirt pocket

Prices:	
<u>100 +</u>	<u>500 +</u>
\$4.50 ea.	\$4.25 ea.



Basic Emergency Information at Your Finger Tips

Phone (718) 432-1600
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