• ANSI/IKECA C-10: Standard for Cleaning of Commercial Exhaust Systems
IKECA Introduces the Kitchen Exhaust Cleaning Industry’s First American National Standard for the Cleaning of Commercial Kitchen Operations
PHILADELPHIA, PA, April 26, 2012: The International Kitchen Exhaust Cleaning Association (IKECA), an international non-profit trade organization committed to fire prevention and life safety by promoting kitchen exhaust cleaning to a higher standard, today announced the availability of a new American National Standards Institute (ANSI) standard, IKECA C10-2011, Standard for Cleaning of Commercial Kitchen Exhaust Systems. For the first time, commercial kitchen exhaust cleaners, owners and managers of facilities, authorities having jurisdiction, insurance loss control specialists, and others have guidance on industry-accepted processes and procedures for cleaning kitchen exhaust systems.

The IKECA C10 standard represents a major commitment to advance the kitchen exhaust cleaning industry. It brings greater attention the vital role of properly cleaning these systems for fire prevention and life safety. IKECA C10 is designed to complement and augment NFPA 96®-2011, Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations, which has long been the only standard for the minimum fire safety requirements related to the design, installation, operation, inspection, and maintenance of all public and private cooking operations.
Major components of the standard include:

- Pre-Cleaning Operations Inspection
- Energy Source Protection
- Protection of Workspace Areas
- By-Product Control Process Preparation
- Process Personnel Protection
- Cleaning Processes and Controls
- Exhaust Duct Access and Labeling
- Exhaust Cleaning Process Reporting
According to the [National Fire Protection Association](https://www.nfpa.org), the majority of restaurant fires originate on the kitchen cooking appliances and flare into the kitchen exhaust system.

Regular maintenance of a restaurant's kitchen exhaust system is one of the primary defenses against fire hazards. By keeping these systems working at their best, they will evacuate the smoke and grease out of the building and produce a cleaner, cooler kitchen and better working environment for staff.
Two Boston firefighters were killed on August 30th, 2007 when a fire at a neighborhood Chinese restaurant grew into a fast-moving inferno. Investigators say the fire burned for an hour or more inside a drop ceiling, where grease had accumulated before it was reported, as unaware diners ate and employees cooked. No employees or customers were injured. Paul Cahill, 55, of Scituate, and Warren Payne, 53, of Canton, were killed. Cahill served on Engine 30 and Payne on Ladder 25, units housed at the same fire station just down the street from the restaurant.

Ten firefighters and a paramedic also were injured in the four-alarm fire at the one-story Tai Ho restaurant.

**Cause of the fire:** The exhaust system was not properly maintained or inspected, had many deficiencies, and was not properly cleaned by a certified exhaust system cleaning company.
Fire trap
Events that lead to Wednesday's fatal blaze

1. About 8 p.m., fire begins in double ceiling, where grease had been accumulating, and burns unnoticed more than an hour.

2. About 9 p.m., the fire drops down into the kitchen, where employees finally see it. They flee the restaurant and ask a passerby to call 911.

3. Firefighters first arriving believe they face a simple kitchen fire and bring in a hose line.

4. 9:12 p.m. Firefighters are ordered to get off roof, which appears in danger of collapsing. The Rapid Intervention Team arrives and immediately begins to try to rescue firefighters.

5. 9:15 p.m. Furnace building up from fire trapped in the ceiling ignite, and the ceiling explodes downward on top of the firefighters.

6. 10:10 p.m., City Hall and Mayor Thomas M. Menino are notified of the fire. The fire has been brought mostly under control. By this time a large force has responded:

   - 11 Engines
   - 6 Ladder trucks
   - 1 Rescue truck
   - 93 Firefighters and chiefs

Source: Boston Fire Department.

Aaron Atencio and Javier Zarracina / Globe Staff
As a result of this tragic event new policies and procedures have been implemented in Boston and we are starting to see similar changes in many other cities.

• Be advised that all commercial hood and ventilation cleaning companies/contractors performing work in the city of Boston are required by law to issue deficiency reports to the establishment owner when they do not comply with NFPA 96 mandated repairs and also if there is no onsite exhaust system diagram. All deficiency reports must be given to the establishment and a copy forwarded to the Boston Fire Department - Fire Prevention Division by following the instructions listed on our website.

• Commercial hood and ventilation cleaning companies/contractors must also report to the Boston Fire Department – Fire Prevention Division when an establishment in Boston does not renew their contract or if your company did not clean the hoods and ventilation systems by the scheduled date required in NFPA 96.

• The Boston Fire Department’s Sample Cleaning and Inspection of Commercial Hood and Ventilation System & Deficiency Report has been updated, please revise your deficiency report to the form dated August 2010. All related information and required forms can be found on our website at http://www.cityofboston.gov/fire/inspections/exhaust.asp.

• Boston Fire Department  
• Fire Prevention Division  
• 1010 Massachusetts Avenue – 4th Floor  
• Boston, MA 02118  
• Tel: 617-343-2019 Fax: 617-343-3696
While there is no current legislation on the table to make any changes in the Pittsburgh and surrounding area, we are hoping to start the education process by speaking with you today.
Basic Commercial Kitchen Layout
Grease Filters
Grease filters, when installed correctly, are the first line of defense in case of a fire. The picture below is the reality of cooking techniques used daily in restaurants. Flames are often within inches of the filters.
Filters must be maintained and cleaned by the establishment or have a filter exchange program in place. There are two types of filters that are permitted by NFPA code 96.

**Baffle Filter – Most common**

**Spark Arrestors – used for above wood burning equipment.**
NFPA Code 96 – 6.1.3 Mesh filters **shall** not be used unless evaluated as an integral part of a listed exhaust hood or listed in conjunction with a primary filter in accordance with UL 1046.
In order to keep sparks from entering the duct work all filters must be placed at a 45 degree angle flush with the hood with no gaps present.
This is what filter placement should look like. Filters must be at least 18” above the cooking equipment. Filters should be kept grease free by the establishment.
A proper exhaust system is essential in kitchens to ensure that they are odor free and grease free. Gas cook tops add three unwelcomed gases to the environment; these gases are carbon dioxide, carbon monoxide, and nitrogen dioxide. It is necessary to get rid of these gases from the air in the kitchen to provide a safe work environment.
PLENUM AREA
This plenum, behind the filters, accumulates the grease laden vapors and the grease continues up the ductwork.

What we would see after 6 months of a school or nursing facility. What we would see 13 weeks after a cleaning of a fast food restaurant.
This is an exhaust system of a fast food restaurant that was not cleaned properly for years. Our first time in we took 65 pounds of grease out of the duct work. The fire suppression system would not have gone off should there have been a fire.

Fire protection is non-existent with the amount of grease on the fusible link.
This type of hood is what we call a low-boy, it is very close to the cooking equipment. You will see this type mostly in fast foods. Filters must be maintained by the establishment due to the proximity to the flammable cooking surface.
This is a close up of the last slide, supposedly it was cleaned every 13 weeks by a non-certified exhaust cleaner for 4 years. What I can’t believe looking at this fire load is that due to the proximity of the cooking equipment they did not have a fire.

AGAIN FIRE SUPRESSION IS INOPERABLE
This is looking from the roof top unit down of the same duct, grease measured a little over 4 inches.
The picture below shows an exhaust system installation prior to completion. The ductwork can be clearly seen. Ductwork is vitally important to carry grease laden vapors out of the cooking area but more importantly its primary function is to carry and contain a fire should there be one.
Access Doors
This picture shows ductwork that goes straight to the fan, the system has been cleaned to bare metal and no need for access doors.
This system does not go directly to the fan, there is approximately 40 feet of duct work and 4 access panels between the plenum area and the exhaust fan.

View from the filter area      View from the fan looking down
NFPA – Code 96 – Access Panels

- According to NFPA96 all access panels shall conform to the following standards:
  - 7.1.6 A sign stating the following shall be placed on all access panels;
    - Access Panel – Do Not Obstruct
  - Openings shall be provide at the sides or top of the duct and at changes of direction
  - 7.3.4 For hoods with dampers, an access panel for cleaning and inspection shall be provided in the duct or hood within 18in of damper
  - 7.4.1.1 On **horizontal ducts**, at least one 20x20in opening shall be provided for personal entry
  - 7.4.1.2 Where an opening this size is not possible, openings large enough to permit through cleaning **shall be provided every 12ft**
  - 7.4.2.2 Where personnel entry is not possible in **vertical duct**, access for cleaning **shall be on each floor**
Access panel entry before and after
When an access panel is removed, a service company label or tag preprinted with the name of the company and giving the date of inspection or cleaning shall be affixed near the affected access panels.
Access doors must meet NFPA Code 96 by meeting the 1500°F rating and also be grease tight. The access door below is made of cardboard covered by duct tape. Grease can also be seen leaking from the seems of the ductwork.
Approved NFPA & UL listed access doors
Both are 16 gauge steel with a gasket rated to 2300F. They both will accommodate fire wrap for flat ducts. They are very easy to install and do not require welding.
According to NFPA Code 96, ductwork must be a liquid tight continuous external weld in order to hold fire. They must also be constructed and supported by carbon steel not less than .054 inch or stainless steel not less than .043 inch.

House duct work used for the grease exhaust for a restaurant that houses 2 apartments above it.

Different types of duct work pieced together with duct tape.
Ceiling tiles that show damage from ductwork that is leaking from above.
NFPA 8.1.1.1 Approved Upblast fans with motors surrounded by the airstream shall be hinged, supplied with flexible weatherproof electrical cable and service hold-open retainers, and listed for this use.

Correctly hinged fan

Not to code
NFPA Code 96 – Table 11.4 Schedule of Inspection for Grease Buildup

<table>
<thead>
<tr>
<th>Type of Volume of Cooking</th>
<th>Inspection Frequency</th>
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<tbody>
<tr>
<td>Systems serving solid fuel cooking operations. Ex. Wood Burners</td>
<td>Monthly</td>
</tr>
<tr>
<td>Systems serving high-volume cooking operations, such as 24-hour cooking, charbroiling, or wok cooking.</td>
<td>Quarterly</td>
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<tr>
<td>Systems serving moderate-volume cooking operations.</td>
<td>Semiannually</td>
</tr>
<tr>
<td>Systems serving low-volume cooking operations, such as churches, day camps, seasonal businesses, or senior centers.</td>
<td>Annually</td>
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NFPA Code 96 – 11.6.13 – When an exhaust cleaning service is used, a certificate showing the name of the servicing company, date of inspection or cleaning shall be maintained on the premises. Certificate of Performance stickers are usually placed right on the hood. If serious inaccessible areas exists in the ductwork, it will be checked off. That means there are sections of the ductwork that are behind finished ceilings or walls and access cannot be gained to properly clean. Documentation is left with the establishment making them aware of the deficiency so that they may correct the problem.
Thank you for giving us this opportunity to start the education process in our commitment to fire prevention and life safety by promoting kitchen exhaust cleaning to a higher standard.

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