



# Kitchen Fires

**NFPA STANDARD- NFPA 96-Standard** for Ventilation Control and Fire Protection of Commercial **Cooking** Operations.

**NFPA 921-** Guide for Fire and Explosion Investigations

Kitchen fires are occurring more frequently than ever throughout the country. Cooking fires are the #1 cause of home fires and home fire injuries. Millions of dollars are paid out by insurance companies each year due to these losses. This has an impact on your insurance rates as well as your safety as first responders due to the sheer volume in relation to the number of calls you respond to. Here are some factors to be aware of:

- More than 100,000 home fires associated with cooking equipment are reported each year, resulting in nearly 300 deaths and more than 4,000 injuries.
- Unattended cooking is the leading cause of home cooking fires.
- Three in ten reported home fires start in the kitchen – more than any other place in the home.
- Two out of three reported home cooking fires start with the stove.
- A study published by the U.S. Consumer Product Safety Commission found that 75 percent of stove fires started with food ignitions, 45 percent began with cooking oil and 63 percent occurred when someone was frying.



It is hard to imagine that all of these incidents are accidental causes. A pot on the stove may be more than a simple accident. It is necessary for the first-in fire officer to examine and recognize possible red flags that could indicate the difference between the accidental fire and an intentional act. Here are some issues that you may want to examine when a fire occurs in the kitchen:



- **Type of oil**
  - Different oils have different ignition temperatures and have varying times before reaching their piloted ignition temperatures
    - Vegetable oil ( a mix of canola and soybean oils) (690° F)
    - Olive oil (437° F)
    - Corn Oil (490° F)
    - The time differential in ignition temperatures is directly related to the type of oil used
- **Amount of oil**
  - The amount of oil
    - 2 tablespoons vs. 2 cups
- **Oil cold or already heated**
  - Did the fire occur from an oil poured directly from the bottle or was it preheated or heated due to having cooked
- **Size of pan**
  - Two cups of oil in a wide shallow pan as adverse to a deep small pot will help determine time to ignite due to surface area exposed to the heat
- **Open or covered pan**
  - A covered pan is starved for oxygen and will not openly burn
  - A covered pan will heat more rapidly than an open pan
  - Did the cook remove the lid and the fire flashed?
- **Size of burner**
  - Small or large?
  - Front or rear?
- **Temperature of burner**
  - **It is unusual for someone to cook an entire meal on the high temperature setting**
- **Was there food found on the counter or in the pan consistent with the story of cooking?**

All of these factors need to be established to determine a burn time and whether this burn time is consistent with the occupant's story.

Questions to ask to determine a time line of the fire:

- **Who cooked?**
- **What time did they start cooking?**
- **What time did they finish cooking?**
- **Which burner was used?**
- **What temperature was used?**
  - Low, medium, high
- **What kind and size of pan was used?**
  - Aluminum vs. cast iron, etc.
- **What kind of oil did they use?**
- **How much oil was used?**
- **How much oil was left when they finished cooking?**
- **What did they do with the oil after cooking?**
- **Was the container covered or uncovered?**



- **Was the pan removed from the burner after cooking?**
- **Did the burner get turned off?**
- **Did any other burners get used?**
  - If so, ask the same questions for each burner used
- **Ask them to explain what they did after cooking**
  - Describe in a chronological, step by step order what they did until they discovered the fire
- **At some point have them recite their steps in a reverse order.**
  - Untruthful people will be unable to recite the steps chronologically as they will not be able to exactly remember what they said

The time element is critical to prove if the fire was accidental or intentional. If there are any circumstances that seem suspicious or lead you to believe that this is an intentional act, or just seems odd for any reason, contact a fire investigator to respond to the scene.

### **Preservation of Evidence**

After calling for an investigator, do not attempt to dismantle the stove or take apart any controls that are seriously damaged by fire. Doing so could cause spoliation of the evidence and possibly lead to civil lawsuits. Maintain the appliance in its original condition until turning over to more experienced investigative personnel.

(Spoliation of evidence: loss, destruction, or material alteration of an object or document that is evidence or potential evidence in a legal proceeding by one who has responsibility for its preservation.)

- Attempt to determine what position the control knob was in at the time of the fire.
  - Visual examination only
- Preserve the stove as evidence if the fire was suspicious
- Preserve the cooking pans used in the same location as found
- Locate and preserve any remaining oil

### **Safety Tips**

#### **Don't leave cooking unattended**

Never leave food cooking on your stove or in your oven when you leave home and stay in the kitchen whenever anything is cooking. Turn off stoves and appliances promptly when you're finished using them and unplug electrical appliances when they are not in use.

#### **Turn pot handles inward**

A pot handle sticking out over the edge of your stove can be bumped in passing or grabbed by a child. Prevent burns and stovetop fires by always turning pot handles in toward the back of the stove.